

Microsoft Project 2016

Step

by

Step

Carl Chatfield
Timothy Johnson



PRACTICE FILES

Microsoft Project 2016 Step by Step

Carl Chatfield
Timothy Johnson



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Contents

Introduction

[Who this book is for](#)

[The *Step by Step* approach](#)

[Download the practice files](#)

[Ebook edition](#)

Sidebar: [Adapt procedure steps](#)

[Get support and give feedback](#)

[Errata and support](#)

[We want to hear from you](#)

[Stay in touch](#)

Part 1: Get started with Microsoft Project

1 Project, project management, and you

[Meet the Project program](#)

[Meet the Project family](#)

[See the new features in Project 2016](#)

[What was new in Project 2013](#)

[What was new in Project 2010](#)

[Take a project manager's perspective](#)

[Let's get started!](#)

2 Take a guided tour

[Explore the Project user interface](#)

[Manage files and set options in the Backstage view](#)

Sidebar: [Templates: Avoid reinventing the wheel](#)

[Work with schedule details in views](#)

[Use reports to check a plan's status](#)

[Skills review](#)

[Practice tasks](#)

Part 2: Simple scheduling basics

3 Start a new plan

[Create a new plan and set its start date](#)

[Set nonworking days in the project calendar](#)

[Enter the plan title and other properties](#)

Sidebar: [Project management focus: Project is part of a larger picture](#)

[Skills review](#)

[Practice tasks](#)

[4 Build a task list](#)

[Create tasks](#)

Sidebar: [Project management focus: Defining the right tasks for the deliverable](#)

[Enter task durations and dates](#)

Sidebar: [Project management focus: How do you come up with accurate task durations?](#)

[Enter milestone tasks](#)

[Create summary tasks to outline the plan](#)

Sidebar: [Project management focus: Top-down and bottom-up planning](#)

[Link tasks to create dependencies](#)

[Switch task scheduling from manual to automatic](#)

[Check a plan's duration and finish date](#)

[Document task information](#)

[Skills review](#)

[Practice tasks](#)

[5 Set up resources](#)

[Set up work resources](#)

Sidebar: [Equipment resource considerations](#)

[Enter the maximum capacity for work resources](#)

[Enter work resource pay rates](#)

Sidebar: [Project management focus: Getting resource cost information](#)

[Adjust working time in a resource calendar](#)

[Set up cost resources](#)

[Document resources by using notes](#)

[Skills review](#)

[Practice tasks](#)

[6 Assign resources to tasks](#)

[Assign work resources to tasks](#)

[Control work when adding or removing resource assignments](#)

Sidebar: [Project management focus: When should effort-driven scheduling apply?](#)

[Assign cost resources to tasks](#)

[Check the plan after assigning resources](#)

[Skills review](#)

[Practice tasks](#)

7 Format and share your plan

[Customize a Gantt chart view](#)

Sidebar: [Drawing on a Gantt chart](#)

[Add tasks to a Timeline view](#)

Sidebar: [Panning and zooming a Gantt chart view from a Timeline view](#)

[Customize reports](#)

[Copy views and reports](#)

[Print views and reports](#)

[Skills review](#)

[Practice tasks](#)

8 Track progress: Basic techniques

[Understand progress tracking](#)

[Save a baseline of your plan](#)

[Track a plan as scheduled](#)

[Enter a task's completion percentage](#)

[Enter actual values for tasks](#)

Sidebar: [Project management focus: Is the project on track?](#)

[Skills review](#)

[Practice tasks](#)

Part 3: Advanced scheduling techniques

9 Fine-tune task scheduling

[See task relationships by using Task Path](#)

[Adjust task link relationships](#)

[Control task scheduling by using constraints](#)

[Interrupt work on a task](#)

[Adjust working time for individual tasks](#)

[Control task scheduling by using task types](#)

Sidebar: [Assignment units, Peak, and the assignment calculation](#)

Sidebar: [Task types and effort-driven scheduling](#)

[See task schedule details by using the Task Inspector](#)

[Skills review](#)

[Practice tasks](#)

10 Fine-tune task details

[Enter deadline dates](#)

[Enter fixed costs](#)

[Create a recurring task](#)

[View the plan's critical path](#)

[Schedule summary tasks manually](#)

[Skills review](#)

[Practice tasks](#)

11 Fine-tune resource and assignment details

[Change resource availability over multiple date ranges](#)

[Work with multiple resource pay rates](#)

[Change resource pay rates over different date ranges](#)

[Delay the start of assignments](#)

[Apply contours to assignments](#)

[Create and assign material resources](#)

[View resource capacity](#)

[Adjust assignments in the Team Planner view \(Project Professional only\)](#)

[Skills review](#)

[Practice tasks](#)

12 Fine-tune the Project plan

[Examine resource allocations over time](#)

Sidebar: [Project management focus: Evaluate resource allocation](#)

[Resolve resource overallocations manually](#)

[Level overallocated resources](#)

[Check the plan's cost and finish date](#)

Sidebar: [Project management focus: Finish date and critical tasks](#)

[Inactivate tasks \(Project Professional only\)](#)

[Skills review](#)

[Practice tasks](#)

[13 Organize plan details](#)

[Sort plan details](#)

[Group plan details](#)

[Filter plan details](#)

[Create new tables](#)

Sidebar: [Create custom fields quickly](#)

[Create new views](#)

[Skills review](#)

[Practice tasks](#)

[14 Track progress: Detailed techniques](#)

[Update a baseline](#)

Sidebar: [Save interim plans](#)

[Track actual and remaining work for tasks and assignments](#)

Sidebar: [Enter actual costs manually](#)

[Track timephased actual work for tasks and assignments](#)

Sidebar: [Project management focus: Collect actuals from resources](#)

[Reschedule incomplete work](#)

[Skills review](#)

[Practice tasks](#)

[15 View and report project status](#)

[Examine a plan's variance](#)

Sidebar: [Project management focus: Get the word out](#)

[Identify tasks that have slipped](#)

Sidebar: [Project management focus: Is variance ever a good thing?](#)

[Examine task costs](#)

[Examine resource costs](#)

[Skills review](#)

[Practice tasks](#)

[Part 4: In-depth and special subjects](#)

16 Format and print views: In-depth techniques

[Format a Gantt chart view](#)

[Format a Timeline view](#)

[Format a Network Diagram view](#)

[Format a Calendar view](#)

[Print and export views](#)

[Skills review](#)

[Practice tasks](#)

17 Format reports: In-depth techniques

[Create a custom report](#)

 Sidebar: [How reports compare to views](#)

[Customize charts in a report](#)

[Customize tables in a report](#)

[Skills review](#)

[Practice tasks](#)

18 Customize Project

[Share custom elements between plans](#)

[Record and run macros](#)

[Edit macros](#)

[Customize the ribbon and Quick Access Toolbar](#)

[Skills review](#)

[Practice tasks](#)

19 Share information with other programs

[Copy Project data to and from other programs](#)

[Open files in other formats in Project](#)

[Save to other file formats from Project](#)

 Sidebar: [Share files with previous versions of Project](#)

[Generate reports with Excel and Visio](#)

[Skills review](#)

[Practice tasks](#)

20 Consolidate projects and resources

[Share a resource pool across multiple plans](#)

Sidebar: [Create a dedicated resource pool](#)

[Consolidate plans](#)

Sidebar: [Keep consolidated plans simple](#)

[Create dependencies between plans](#)

[Skills review](#)

[Practice tasks](#)

[Appendix A: A short course in project management](#)

[Appendix B: Develop your project-management skills](#)

[Appendix C: Collaborate: Project, SharePoint, and PWA](#)

[Appendix D: Use this book in a classroom](#)

[Glossary](#)

[Index](#)

[About the authors](#)



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Introduction

Welcome! This *Step by Step* book has been designed so you can read it from the beginning to learn about Microsoft Project 2016 and then build your skills as you learn to perform increasingly specialized procedures. Or, if you prefer, you can jump in wherever you need ready guidance for performing tasks. The how-to steps are delivered crisply and concisely—just the facts. You’ll also find informative, full-color graphics that support the instructional content.

Who this book is for

Microsoft Project 2016 Step by Step is designed for use as a learning and reference resource by home and business users of Microsoft Office programs who want to use Project to create and manage projects more efficiently. The content of the book is designed to be useful for people who have previously used earlier versions of Project and for people who are discovering Project for the first time.

The Step by Step approach

The book’s coverage is divided into chapters representing general Project skill sets. Each part is divided into chapters representing skill set areas, and each chapter is divided into topics that group related skills. Each topic includes expository information followed by generic procedures. At the end of the chapter, you’ll find a series of practice tasks you can complete on your own by using the skills taught in the chapter. You can use the practice files that are available from this book’s website to work through the practice tasks, or you can use your own files.

Download the practice files

Before you can complete the practice tasks in this book, you need to download the book’s practice files to your computer from <http://aka.ms/project2016sbs/downloads>. Follow the instructions on the Downloads tab.



Important

Project 2016 is not available from the book’s website. You should install that program before working through the procedures and practice tasks in this book.

You can open the files that are supplied for the practice tasks and save the finished versions of each file. If you later want to repeat practice tasks, you can download the original practice files again.

The following table lists the practice files for this book.

Chapter	Folder	Files
Part 1: Get started with Microsoft Project		
1: Project, project management, and you	Ch01	None
2: Take a guided tour	Ch02	TakeGuidedTour.mpp
Part 2: Simple scheduling basics		
3: Start a new plan	Ch03	None
4: Build a task list	Ch04	SimpleBuildTaskList.mpp
5: Set up resources	Ch05	SimpleSetUpResources.mpp
6: Assign resources to tasks	Ch06	SimpleAssignCheckPlan.mpp SimpleAssignControlWork.mpp SimpleAssignCostResource.mpp SimpleAssignWorkResource.mpp
7: Format and share your plan	Ch07	SimpleFormat.mpp
8: Track progress: Basic techniques	Ch08	SimpleTrackActuals.mpp SimpleTrackBaseline.mpp
Part 3: Advanced scheduling techniques		

9: Fine-tune task scheduling	Ch09	ScheduleTasksAdvanced.mpp ViewTaskPath.mpp
10: Fine-tune task details	Ch10	FineTuneTasks.mpp
11: Fine-tune resource and assignment details	Ch11	FineTuneAssignments.mpp FineTuneResources.mpp
12: Fine-tune the Project plan	Ch12	FineTunePlan.mpp
13: Organize plan details	Ch13	OrganizeDetails.mpp
14: Track progress: Detailed techniques	Ch14	RescheduleIncompleteWork.mpp TrackTimephasedWork.mpp TrackWork.mpp UpdateBaseline.mpp
15: View and report project status	Ch15	ReportStatus.mpp
Part 4: In-depth and special subjects		
16: Format and print views: In-depth techniques	Ch16	FormatInDepth.mpp
17: Format reports: In-depth techniques	Ch17	FormatReportsInDepth.mpp
18: Customize Project	Ch18	CustomizeProjectA.mpp CustomizeProjectB.mpp
19: Share information with other programs	Ch19	SampleTaskList.xlsx ShareInformation.mpp
20: Consolidate projects and resources	Ch20	ConsolidatePlansA.mpp ConsolidatePlansB.mpp ShareResourcesA.mpp ShareResourcesB.mpp

Ebook edition

If you're reading the ebook edition of this book, you can do the following:

- Search the full text
- Print
- Copy and paste

You can purchase and download the ebook edition from the Microsoft Press Store at <http://aka.ms/project2016sbs/detail>.

Adapt procedure steps

This book contains many images of the Project user interface elements (such as the ribbon and the program window) that you'll work with while performing tasks in Project on a Windows computer. Depending on your screen resolution or window width, the Project ribbon on your screen might look different from that shown in this book. (If you turn on Touch mode, the ribbon might display some commands in a different layout.) As a result, procedural instructions that involve the ribbon might require a little adaptation.

Simple procedural instructions use this format:

1. On the **Task** tab, in the **View** group, click the **Gantt Chart** button.

If the command is in a list, our instructions use this format:

1. On the **View** tab, in the **Data** group, click the **Filter** arrow and then, in the **Filter** list, click **Summary Tasks**.

If differences between your display settings and ours cause a button to appear differently on your screen than it does in this book, you can easily adapt the steps to locate the command. First click the specified tab, and then locate the specified group. If a group has been collapsed into a group list or under a group button, click the list or button to display the group's commands. If you can't immediately identify the button you want, point to likely candidates to display their names in ScreenTips.

Multistep procedural instructions use this format:

1. On the **View** tab, in the **Resource Views** group, click the **Resource Sheet** button to display the Resource Sheet view.
2. On the **View** tab, in the **Data** group, click the **Tables** button, and then click **Cost**.

The instructions in this book assume that you're interacting with on-screen elements on your computer by clicking (with a mouse, touchpad, or other hardware device). If you're using a different method—for example, if your computer has a touchscreen interface and you're tapping the screen (with your finger or a stylus)—substitute the applicable tapping action when you interact with a user interface element.

Instructions in this book refer to Project user interface elements that you click or tap on the screen as *buttons*, and to physical buttons that you press on a keyboard as *keys*, to conform to the standard terminology used in documentation for these products.

When the instructions tell you to enter information, you can do so by typing on a connected external keyboard, tapping an on-screen keyboard, or even speaking aloud, depending on your computer setup and your personal preferences.

Get support and give feedback

This topic provides information about getting help with this book and contacting us to provide feedback or report errors.

Errata and support

We've made every effort to ensure the accuracy of this book and its companion content. If you discover an error, please submit it to us at <http://aka.ms/project2016sbs/errata>.

If you need to contact the Microsoft Press Support team, please send an email message to mspinput@microsoft.com.

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The survey is short, and we read every one of your comments and ideas. Thanks in advance for your input!

Stay in touch

Let's keep the conversation going! We're on Twitter at <http://twitter.com/MicrosoftPress>.

Part 1: Get started with Microsoft Project

[CHAPTER 1 Project, project management, and you](#)

[CHAPTER 2 Take a guided tour](#)

1. Project, project management, and you

In this chapter

- [Meet the Project program](#)
 - [Meet the Project family](#)
 - [See the new features in Project 2016](#)
 - [Take a project manager's perspective](#)
-

Practice files

There are no practice tasks in this chapter.

Thank you for adding this book to your Microsoft Project 2016 skills development plan. This book is designed as a learning and reference resource. Most of the chapters that follow include hands-on activities in Project.

This chapter does not involve hands-on work in Project. Instead, read it to better understand how Project and project management fit with your personal skills development goals. This chapter introduces you to Project and the field of project management.

Meet the Project program

Project can be the go-to tool in your project-management toolbox. This book explains how to use Project to build schedules (which we'll generally call *plans*), complete with tasks and resources.

Project is a powerful program that you can use to plan and manage a wide range of projects. From meeting crucial deadlines and budgets to selecting the right resources, you can be more productive and realize better results by using the set of features Project offers. You can use Project to do the following:

- Create plans at the level of detail that's right for your project. Work with summary data initially, and then shift to a more detailed approach when needed.
- Control what tasks Project can schedule automatically and which ones you'll schedule manually.
- Manage tasks, resources, work, and costs at whatever level of detail is appropriate for your project's needs.
- Work with your plan's data in a variety of views and reports.
- Track and manage your plan throughout the life of the project.
- Collaborate and share data with others in your organization.
- Use resource pools, consolidated projects, and cross-project links to extend your project-management focus across multiple projects.

Project 2016 builds on previous versions to provide powerful project-management tools.

See “See the new features in Project 2016“ later in this chapter for a list of the major new features from the last several releases of Project, and for cross-references to the related topics in this book.

Meet the Project family

The Project desktop program is available in two different editions:

- **Project Standard** This edition is the entry-level desktop program with which you can create, modify, and track plans.
- **Project Professional** This edition includes all the functionality of Project Standard plus a few additional features, such as the Team Planner view. Project Professional can also work with Project Online and Project Server. (When Project Professional is obtained via a Microsoft Office 365 subscription, you might see it referred to as *Project Pro.*)

In addition to installing the Project desktop programs on your computer, you have other options for accessing Project and related services:

- **Project Online** Delivered through Office 365, Project Online is the Microsoft Project and Portfolio Management (PPM) solution. (Note that Project Online is not a web-based version of the Project program.)
- **Project Server** This is the Microsoft on-premises PPM solution.
- **[Project Web App \(PWA\)](#)** This is the browser-based interface for the PPM solution.



For more information about using Project with the Microsoft SharePoint and PPM solutions, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA.](#)“ To learn more about Project Online and Office 365 subscription offerings, go to <https://products.office.com/Project>.

This book focuses on the features in the Project Standard and Project Professional desktop programs. When a feature that is unique to Project Professional appears, you’ll see instructions for users of both Project Standard and Project Professional.

See the new features in Project 2016

The 2016 version of Project includes some new and improved features, such as the following:

- **Timeline view updates** Display multiple timeline bars with custom date ranges. For more information, see “Format a timeline view” in [Chapter 16](#), “[Format and print views: In-depth techniques.](#)“
- **Tell Me** This is a help and feature search text box on the ribbon. Use it to quickly find a Project feature (or help content about that feature). For more information, see [Chapter 2](#), “[Take a guided tour.](#)“

- **New themes** Change the visual style of Project by applying one of the new Office themes. You do so on the General page of the Project Options dialog box (available via the File tab).

If you're upgrading to Project 2016 from a previous version, you're probably most interested in the differences between the old and new versions and how they will affect you. The following sections list new features that were introduced in Project 2013 and Project 2010. These features are also present in Project 2016 and, depending on the version of Project from which you are upgrading, might be new to you.

What was new in Project 2013

The 2013 version included several new features and some improved ones, such as the following:

- **Reports** Project 2013 replaced the previous tabular reports feature with an entirely new way of visualizing your Project data. The reports feature includes a dynamic mix of tables, charts, and textual content, and it's highly customizable. For more information, see, "[Customize reports](#)" in [Chapter 7](#), "[Format and share your plan](#)," and [Chapter 17](#), "[Format reports: In-depth techniques](#)."
- **Task Path** Use this feature to quickly identify the Gantt bars of the selected task's predecessors and successors. For more information, see "[See task relationships by using Task Path](#)" in [Chapter 9](#), "[Fine-tune task scheduling](#)."
- **Redesigned Backstage and OneDrive integration** As with other Office programs, quick access to Microsoft OneDrive storage is integrated into the Project Backstage view. For more information, see "[Manage files and set options in the Backstage view](#)" in [Chapter 2](#), "[Take a guided tour](#)."
- **A much later project finish date** The latest possible date Project can work with was moved from December 31, 2049 to December 31, 2149.
- **Support for touch input** As in other Office programs, you can optimize the Project interface (primarily the commands on the ribbon) for either touch or mouse input.
- **Skype integration (Project Professional only)** In Project, you can start a Skype for Business chat or create an email message to a resource directly from Project. To do so, point to the resource name and start an instant messaging session or video chat.
- **Support for apps for Office** Project supports third-party add-ins and apps available from the Office Store, located at store.office.com.

What was new in Project 2010

The 2010 version included the following:

- **The ribbon interface** The ribbon interface organized all the commands that most people use in a new way, making them quickly accessible from tabs at the top of the program window. For more information, see "[Explore the Project user interface](#)" in [Chapter 2](#), "[Take a guided tour](#)."
- **The Backstage view** All the tools you need to work with your files are accessible

from one location. For more information, see “[Manage files and set options in the Backstage view](#)” in [Chapter 2](#), “[Take a guided tour](#).”

- **Manually scheduled tasks** Begin creating tasks with whatever information you might have, and don’t worry about automatic scheduling of tasks until you’re ready. Manually scheduled tasks are not affected by changes in duration, start or finish dates, dependencies, or other items that otherwise would cause Project to reschedule a task. You can then switch individual tasks or an entire plan from manual to automatic scheduling. For more information, see “[Create tasks](#)” and “[Switch task scheduling from manual to automatic](#)” in [Chapter 4](#), “[Build a task list](#).”
- **Timeline view** Create a “project at a glance” view that includes just the summary tasks, tasks, and milestones that you choose. Easily copy the Timeline view as a graphic image to paste into other programs. For more information, see “[Add tasks to a Timeline view](#)” in [Chapter 7](#), “[Format and share your plan](#).”
- **Improved pasting to Excel and Word** Paste Project data into Microsoft Excel or Word and preserve the column headings and outline structure of your Project data. For more information, see “[Copy Project data to and from other programs](#)” in [Chapter 19](#), “[Share information with other programs](#).”
- **Customizable ribbon** Create your own tabs and groups to suit the way you work. For more information, see “[Customize the ribbon and Quick Access Toolbar](#)” in [Chapter 18](#), “[Customize Project](#).”
- **Custom fields** Just start typing a numeric value, date value, or text string into the rightmost column in a table, and Project will identify the right data type. For more information, see “[Create new tables](#)” in [Chapter 13](#), “[Organize plan details](#).”
- **AutoFilter improvements** Use Excel-like column filtering, in addition to sorting and grouping, directly from AutoFilter arrows on column headings. For more information, see “[Filter plan details](#)” in [Chapter 13](#), “[Organize plan details](#).”
- **Save as PDF or XPS** Create PDF or XPS-format documents directly from Project. For more information, see “[Print and export views](#)” in [Chapter 16](#), “[Format and print views: In-depth techniques](#).”
- **Team Planner view (Project Professional only)** Perform actions like reassigning a task from one resource to another with simple drag-and-drop actions in the Team Planner view. For more information, see “[Adjust assignments in the Team Planner view](#)” in [Chapter 11](#), “[Fine-tune resource and assignment details](#).”
- **Inactivate tasks (Project Professional only)** Disable (but don’t delete) tasks from a plan so that they have no effect on the overall schedule but can be reactivated later if you need them. For more information, see “[Inactivate tasks](#)” in [Chapter 12](#), “[Fine-tune the Project plan](#).”
- **SharePoint Task List integration (Project Professional only)** Publish and synchronize tasks between Project and a SharePoint list. For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Take a project manager's perspective

Project management is a broadly practiced art and science. If you're reading this book, chances are that you're either seriously involved in project management or you want to be.

Project is unique among the Office programs in that Project is a specialized tool designed for the specific domain of project management. You might be invested in your professional identity as a project manager, or you might not identify yourself with project management at all. Either way, your success as a user of Project, to a large degree, will be related to your success as a project manager. Let's take a moment to explore this subject.

At its heart, project management is a combination of skills and tools that help you predict and control the outcomes of endeavors undertaken by your organization. Your organization might be involved in other work apart from projects. Projects (such as developing a new product) are distinct from ongoing operations (such as running payroll services). Projects are defined as *temporary endeavors undertaken to create some unique deliverable or result*. With a good project-management system in place, you should be able to answer such questions as the following:

- What tasks must be performed, and in what order, to produce the deliverable of the project?
- When should each task be performed, and what is the final deadline?
- Who will complete these tasks?
- How much will it cost?
- What if some tasks are not completed as scheduled?
- What's the best way to communicate project details to those who have an interest or stake in the project?

Good project management does not guarantee the success of every project, but poor project management often leads to failure.

A core principle of this book's instructional strategy is that success with Project is built on success with basic project-management practice. Although Project is a feature-rich program, mastery of its features alone is no guarantee of success in project management. For this reason, you will find material about project-management best practices throughout this book. See, for example, the following:

- The many "Project management focus" sidebars throughout the chapters
- [Appendix A](#), "[A short course in project management](#)"
- [Appendix B](#), "[Develop your project-management skills](#)"

Let's get started!

In the *Practice tasks* hands-on activities in this book, you will play the role of a project manager at a fictitious children's book publishing company, Lucerne Publishing. Each new book (even this one) constitutes its own project; in fact, some are complex projects involving costly resources and aggressive deadlines. We think you'll be able to recognize many of the scheduling needs that the project managers at Lucerne Publishing encounter, and transfer their strategies and solutions to your own scheduling needs.

We've been working with Project since it debuted for Windows, and each version has offered something that made project planning and management a little easier. Project 2016 continues that tradition for desktop project management, and we look forward to showing you around.

2. Take a guided tour

In this chapter

- [Explore the Project user interface](#)
 - [Manage files and set options in the Backstage view](#)
 - [Work with schedule details in views](#)
 - [Use reports to check a plan's status](#)
-

Practice files

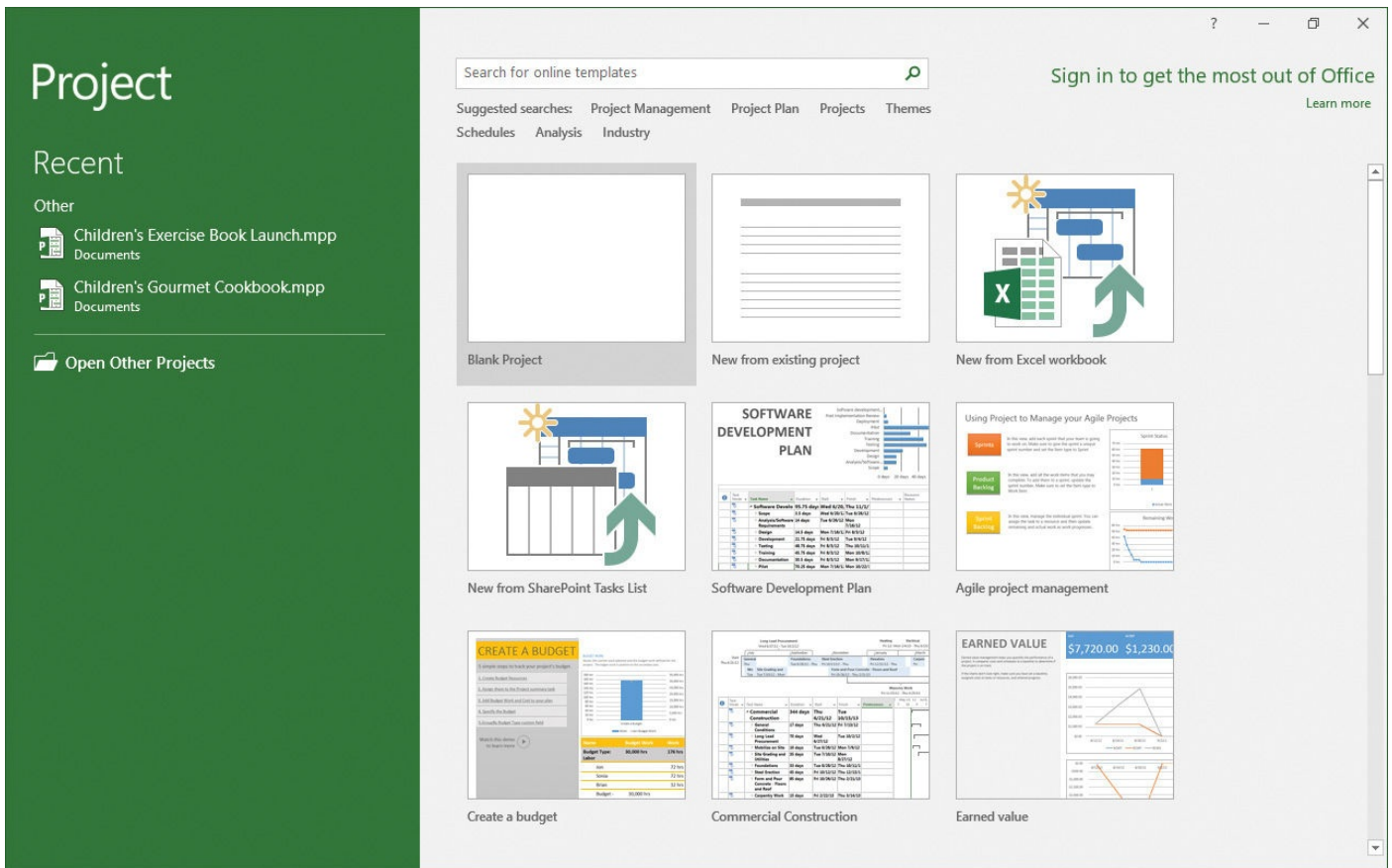
For this chapter, use the TakeGuidedTour practice file from the Project2016SBS\Ch02 folder. For practice file download instructions, see the introduction.

This chapter leads you on a quick tour of Project 2016. You'll see the essential features that make it such a powerful program. In this chapter, you'll be introduced to many of the Project features and conventions that you'll work with throughout this book.

This chapter guides you through procedures related to managing files and setting options in the Backstage view, working with schedule details in views, and using reports to check a plan's status.

Explore the Project user interface

When you start Project, its Start screen appears. Here you can quickly open a plan that was recently opened, open another plan, or create a new plan. The new plan can be empty or it can be based on a template or on another plan.

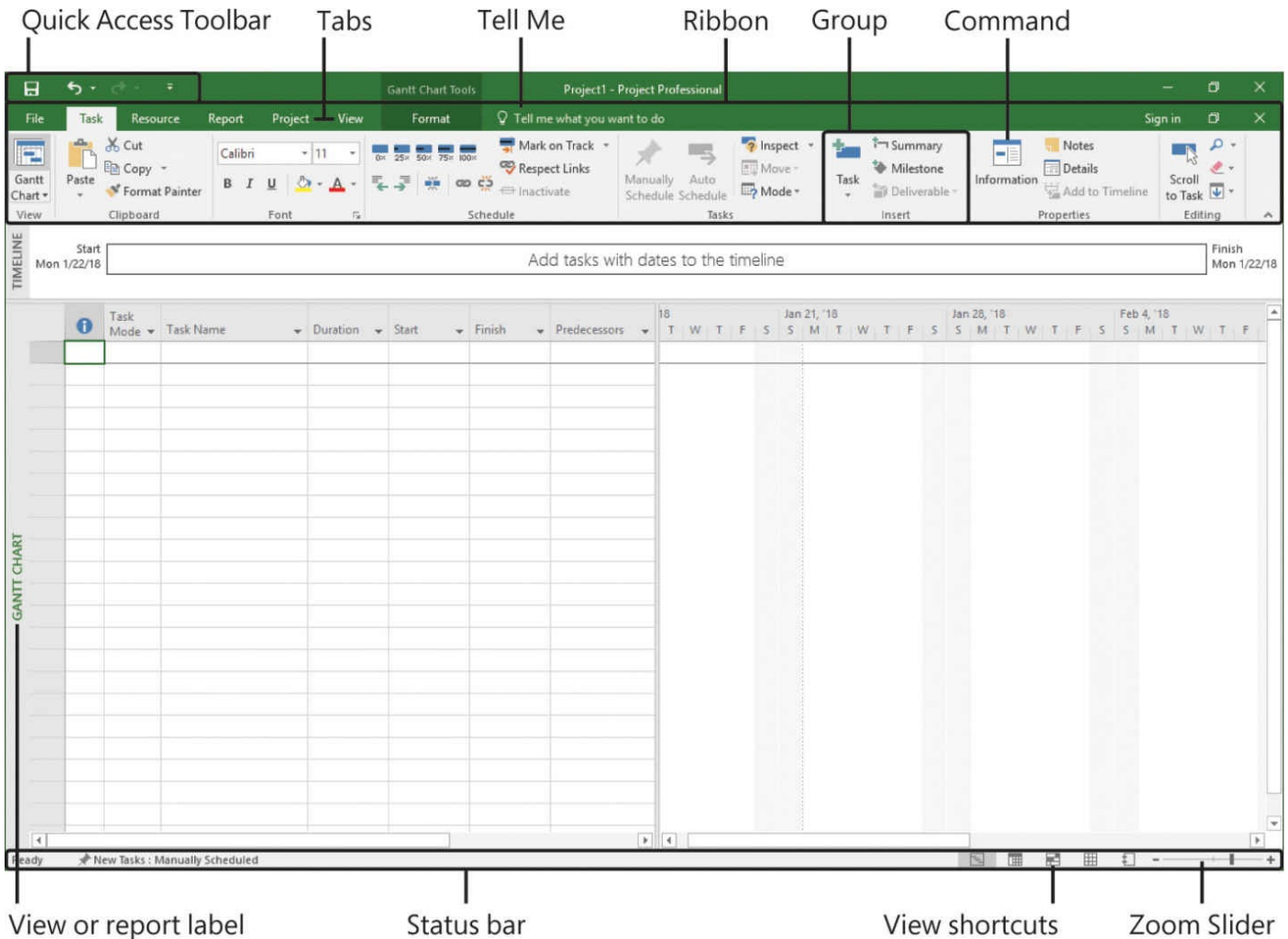


The Project Start screen includes options for creating a new plan or opening a plan



If the Start screen does not appear when you start Project, do the following: On the File tab, click Options. In the Project Options dialog box, click General, and under Start Up Options, click Show The Start Screen When This Application Starts.

You create a new plan by clicking the Blank Project option on the Start screen. Doing so creates the new plan in the main Project interface.



Here are the major parts of the Project interface; note the label of the active view along the left edge



Some items you see on your screen, such as commands on the ribbon in the Project window, might differ from what's shown in this book. This might depend on your screen resolution and any previous customizations made to Project on your computer.

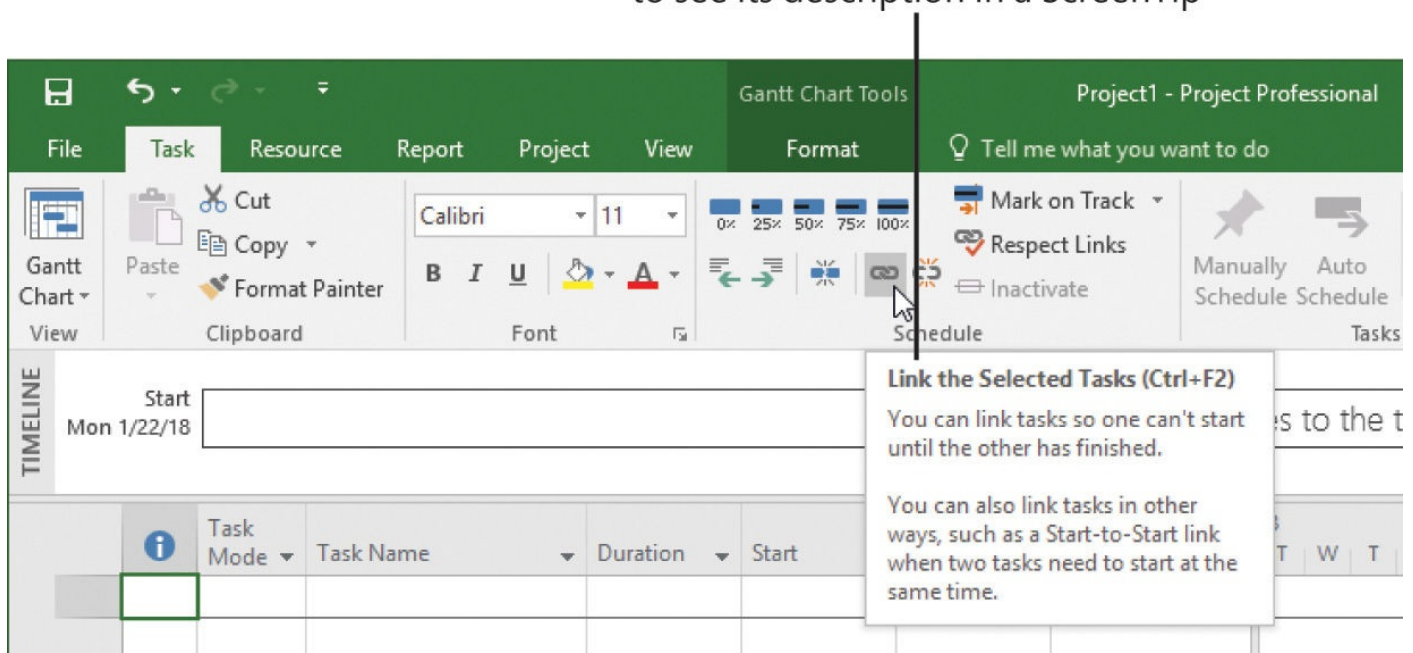
Let's walk through the major parts of the Project interface:

- The *Quick Access Toolbar* is a customizable area of the interface where you can add your favorite or frequently used commands. For more information, see [Chapter 18](#), “[Customize Project](#).”
- Use the *Tell Me box* to quickly find a Project command, or help about that command or feature.
- The *ribbon* contains the commands you use to perform actions in Project. Tabs on the ribbon organize the major features and commands in Project into logical groups. The tabs on the Project ribbon are discussed in detail later in this topic.
- [Groups](#) are collections of related commands. Each tab is divided into multiple

groups.

- **Commands** are the specific features you use to perform actions in Project. Each tab contains several commands. Some commands, like Cut on the Task tab, perform an immediate action. Other commands, like Change Working Time on the Project tab, open a dialog box or prompt you to take further action in some other way. Some commands are available only when you're in a particular type of view or report.
- **ScreenTips** are short explanatory descriptions of commands, column headings, and many other items in Project. You can see an item's ScreenTip by pointing to the item.

Point to an item such as a command to see its description in a ScreenTip



Information about commands and many other items throughout Project can be displayed in descriptive ScreenTips

- The **active view (or report)** is displayed in the main Project window. Project can display a single view or multiple views in separate panes. A multiple-view display is called a **split view** or **combination view**.
- The **view label (or report label)** appears along the left edge of the active view. Project includes dozens of views, so this is a handy reminder of what your active view is.
- The **status bar** displays some important details like the scheduling mode of new tasks (manual or automatic) and whether a filter has been applied to the active view.
- You use **view shortcuts** to quickly switch between recently used views and reports.
- The **Zoom Slider** zooms the active view or report in or out.
- **Shortcut menus** (also called **context menus** or **right-click menus**) and Mini Toolbars appear when you right-click most items in a view or report.

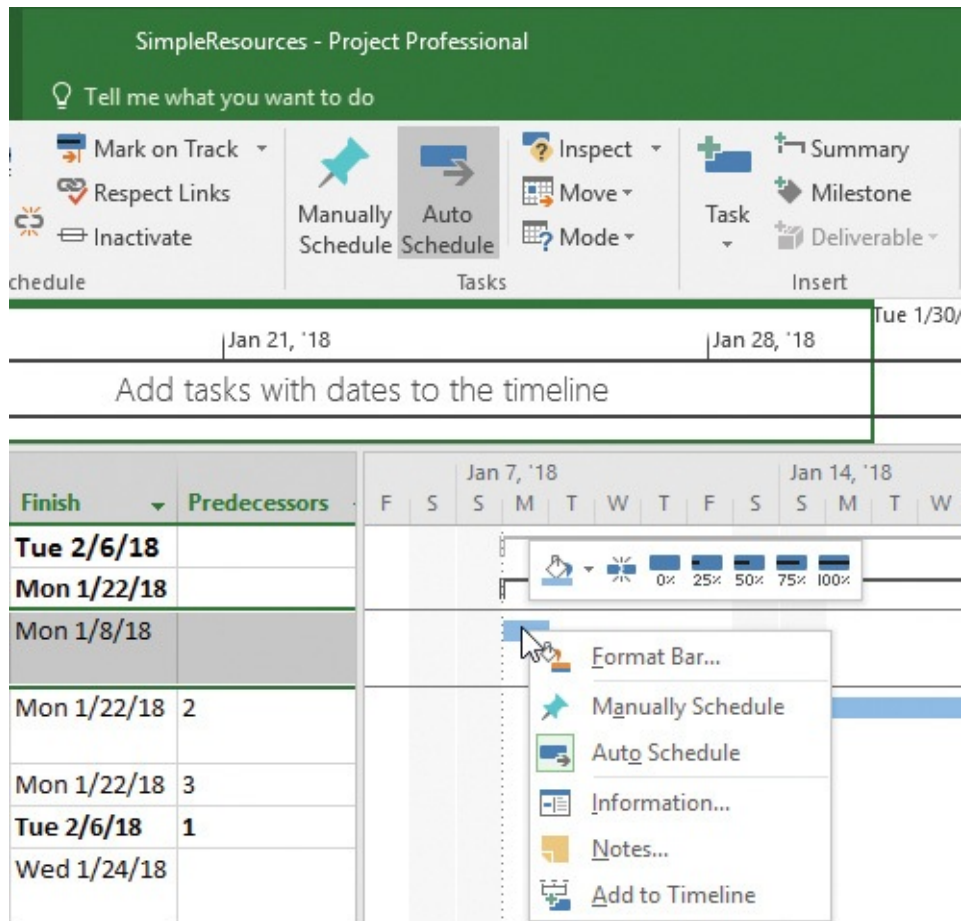
The screenshot displays the Microsoft Project interface. At the top, the ribbon includes 'File', 'Task', 'Resource', 'Report', 'Project', 'View', 'Format', and 'Tell me what you want to do'. The 'Task' ribbon is active, showing options for 'Clipboard', 'Font', and 'Schedule'. Below the ribbon, a 'TIMELINE' view shows a project start on 'Mon 1/8/18' and an end on 'Jan 21, '18'. The main area is a 'GANTT CHART' with a table of tasks. A context menu is open over the 'Simple Plan' task (row 0), listing various actions such as 'Cut Cell', 'Copy Cell', 'Paste', 'Insert Task', and 'Auto Schedule'. A 'Mini Toolbar' is also visible above the menu, containing icons for font and scheduling.

Task ID	Task Name	Start	End	Predecessors
0	Simple Plan	Mon 1/8/18	Tue 2/6/18	
1	Planning Phase	Mon 1/8/18	Mon 1/22/18	
2	Assign launch team members	Mon 1/8/18	Mon 1/8/18	
3	Design and order	Mon 1/22/18	Mon 1/22/18	2
4	Planning complete	Mon 1/22/18	Mon 1/22/18	3
5	Public Launch	Mon 1/22/18	Tue 2/6/18	1
6	Distribute advance copy	Wed 1/24/18	Wed 1/24/18	
7	Coordinate magazine feature articles	Fri 2/2/18	Fri 2/2/18	6
8	Launch public web portal	Mon 2/5/18	Mon 2/5/18	7
9	Launch social media programs for	Tue 2/6/18	Tue 2/6/18	8

Right-click a task's name or other value to see available shortcut menu commands and the Mini Toolbar



Here's a good general practice: when you're not sure what actions you can perform with something you see in Project, right-click the item to see what commands are available for that item.



Right-clicking another item, such as a Gantt bar, displays different available commands and a different Mini Toolbar

Similar to other Microsoft Office programs, Project uses the interface commonly called the *ribbon*. The most prominent parts of this interface are the tabs and ribbon that span the top of the Project window.

These tabs logically group together the commands that apply to major areas of focus in Project:

- The Task tab includes commands for adding, formatting, and organizing tasks.
- Use the Resource tab to add resources to a plan, assign them to tasks, and manage their workloads.
- The Report tab contains commands you can use to view reports and compare two plans.
- The Project tab contains commands that usually apply to the entire plan, such as the command for setting the plan's working time.
- The View tab helps you control what you see in the Project window and how that information is displayed.
- Tool tabs include the Format tab, the Design tab, and the Layout tab, among others. A tool tab appears when a certain kind of information is displayed in the active view or report, or when a certain kind of item is selected. For example, when a task view like the Gantt Chart view is displayed, the commands on the Format tool tab apply to tasks and Gantt Chart items like Gantt bars. The current context of the Format tab

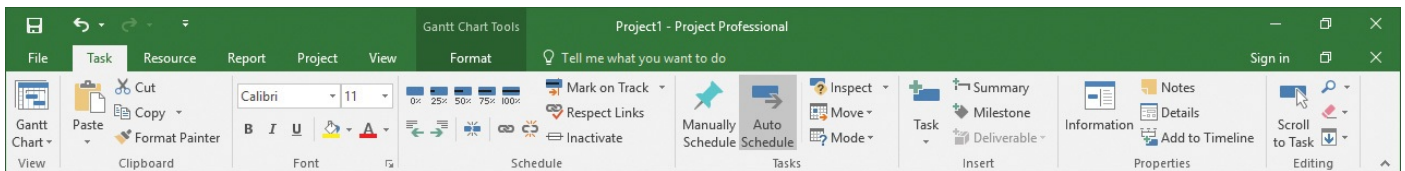
is shown above the tab label—Gantt Chart Tools, for example.



Tip

You can double-click a tab label to collapse or expand the ribbon. You can also view a collapsed tab by clicking the tab label and then selecting the command you want.

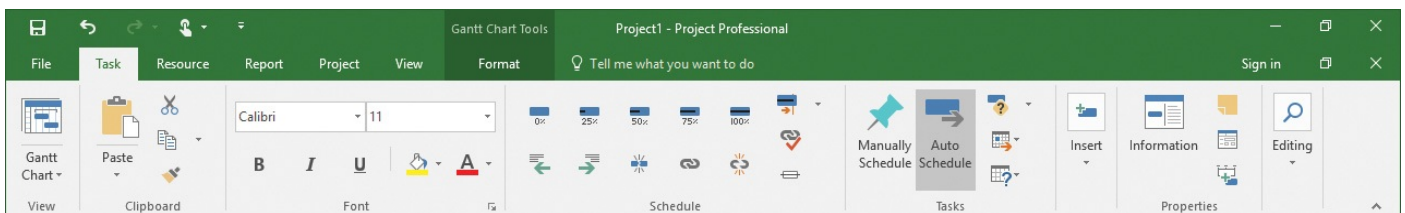
Let's look more closely at the tabs.



Commands on the ribbon are grouped on tabs

Like all tabs on the ribbon, the Task tab contains a large number of commands, and these commands are organized into groups. The Task tab includes the View, Clipboard, Font, and other groups.

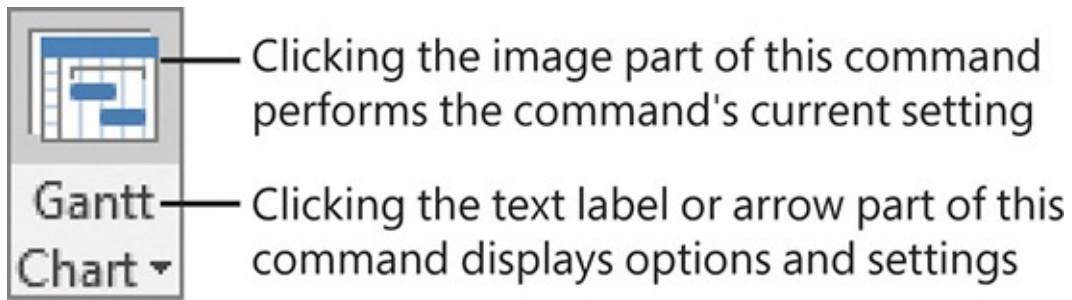
If you enabled touch input (by clicking the button on the Quick Access Toolbar in the upper-left corner of the Project window), the commands on the ribbon appear larger and some lack text labels.



Turning on touch input makes the commands on the ribbon easier to tap

Some commands perform an immediate action, whereas other commands lead you to more options. One example of the second type of command is one that you will use frequently in Project: a *split button*. This type of command can either perform an immediate action or show you more options. A good example is the Gantt Chart button, which is described here:

- Clicking the image part of this command immediately switches to the previously viewed Gantt chart view.
- Clicking the text label part of this command (or just the arrow, for commands that have an arrow but no text label) shows you the available settings for that command.

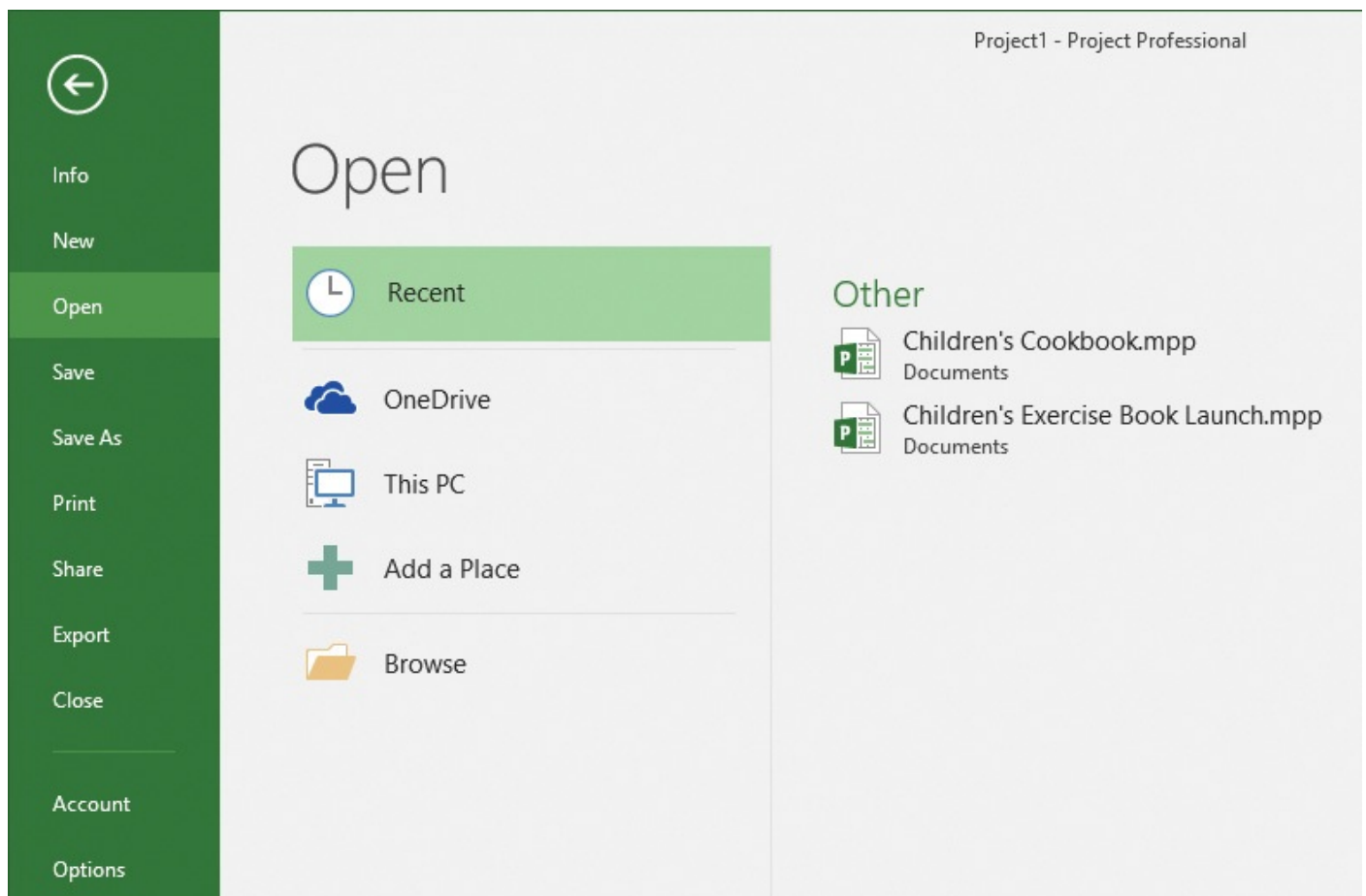


The Gantt Chart command is an example of a split button

If you're familiar with Office programs such as Microsoft Word and Excel, you should have no trouble navigating in the Project user interface.

Manage files and set options in the Backstage view

The Backstage view contains customization and sharing options that apply to the entire plan, in addition to the essential commands for file management such as Open, New, Print, and Save.



The options in the Backstage view are organized on tabs that appear along the left edge of the window

Here is a brief list of the pages in the Backstage view. In most cases, you can click the tab name to see more options:

- The Info page gives you access to the Organizer, a feature used to share customized elements like views between plans; the Organizer is described in [Chapter 18](#), “[Customize Project](#).” The Info page also displays information about the active plan, like its start and finish date, statistics, and advanced properties. You work with

advanced properties in [Chapter 3](#), “[Start a new plan](#).” If you’re using Project Professional with the Project Web App, you can also manage Project Web App accounts here.

- The New page displays options for creating a new plan, either from scratch or based on a template.
- Open, Save, Save As, and Close are standard file-management commands.
- The Print page includes options for printing a plan, in addition to the print preview. You’ll work with printing options in [Chapter 7](#), “[Format and share your plan](#)” and in [Chapter 16](#), “[Format and print views: In-depth techniques](#).”
- The Share page includes options for Microsoft SharePoint synchronization and attaching a plan to an email message.
- The Export page includes options for generating a copy of the plan in PDF or XML Paper Specification (XPS) format, and other options for exporting content. You’ll work with these features in [Chapter 19](#), “[Share information with other programs](#).”
- The Account page displays connected services and information about Project, such as version information. With a Microsoft account, you can use services such as Microsoft OneDrive file storage and roaming personal settings. When you are signed in, your user information appears in the upper-right corner of the Project window.
- Clicking Options opens the Project Options dialog box. This dialog box itself contains several pages through which you can adjust a wide range of default settings and behaviors in Project, such as whether you want to see the Start screen when Project starts.

Here are a few tips about files and settings:

- When you first start Project and are on the New page of the Backstage view, you can press the Esc key to open a new blank plan.
- You can pin recently opened plans to the Recent Projects list on the Open page. Right-click a plan name, and in the shortcut menu that appears, click Pin To List.
- You can pin favorite templates to the New page by pointing to the template and clicking the pin that appears in the lower-right corner of the template preview.
- If you are working offline, you’ll see templates only from your local computer.
- To exit the Backstage view, click the Back button in the upper-left corner of any Backstage page. You can also press the Esc key.

Templates: Avoid reinventing the wheel

Instead of creating a plan from scratch, you might be able to use a template that includes much of the initial information you need, like task names and [relationships](#). Sources of templates include:

- **Templates installed with Project** These can vary depending on the installation options that were selected when Project was installed on your computer.
- **Online templates** Microsoft makes a large number of Project templates available for free download via the web.
- **Templates within your organization** You might be in an organization that has a central library of templates. Often, such templates contain detailed task definitions, resource assignments, and other details that are unique to the organization.

To see available templates, click the File tab and then click New. Templates also appear on the Project Start screen.

In addition, Project can generate a new file based on an existing file from Project, or from another program via the Import Wizard. For more information, see [Chapter 19](#), “[Share information with other programs](#).”

You can also create templates from your plans for later use or to share. One common concern with sharing plans is that they might contain sensitive information like resource pay rates. When you create a template from a plan, you have the option to clear such information, in addition to schedule progress. The original plan is not affected.

To create a new plan as a blank project

1. Click the **File** tab to display the Backstage view.
2. Click **New** to display the New page.
3. Click **Blank Project**.

To create a new plan based on another plan or template, or on data in another file format

1. In the Backstage view, click **New**.
2. Do any of the following:
 - Click **New From Existing Project** to create a new plan based on a previous plan.
 - Click **New From Excel Workbook** to create a new plan based on an Excel list.
 - Click **New From SharePoint Tasks List** to create a new plan based on a SharePoint list.
 - Click the template you want, to create a new plan based on that template.

To open a plan

1. In the Backstage view, click **Open**. Project displays options for opening plans, in addition to a list of recently opened plans.
2. Select the location and plan you want to open.

To save a plan

1. In the Backstage view, click **Save As**.
2. Select the location and folder where you want to save the plan.
3. In the **Save As** dialog box, enter a file name, and then click **Save**.

To create a template from an existing plan

1. In the Backstage view, click **Export**.
2. Click **Save Project As File**.
3. Under **Save Project As File**, click **Project Template**.
4. Click **Save As**.
5. Navigate to the folder where you want to create the new template.
6. In the **File Name** box, enter the template file name that you want, and then click **Save**.
7. When the **Save As Template** dialog box opens, select the types of information, such as resource pay rates, that you want removed from the template.
8. Click **Save**.

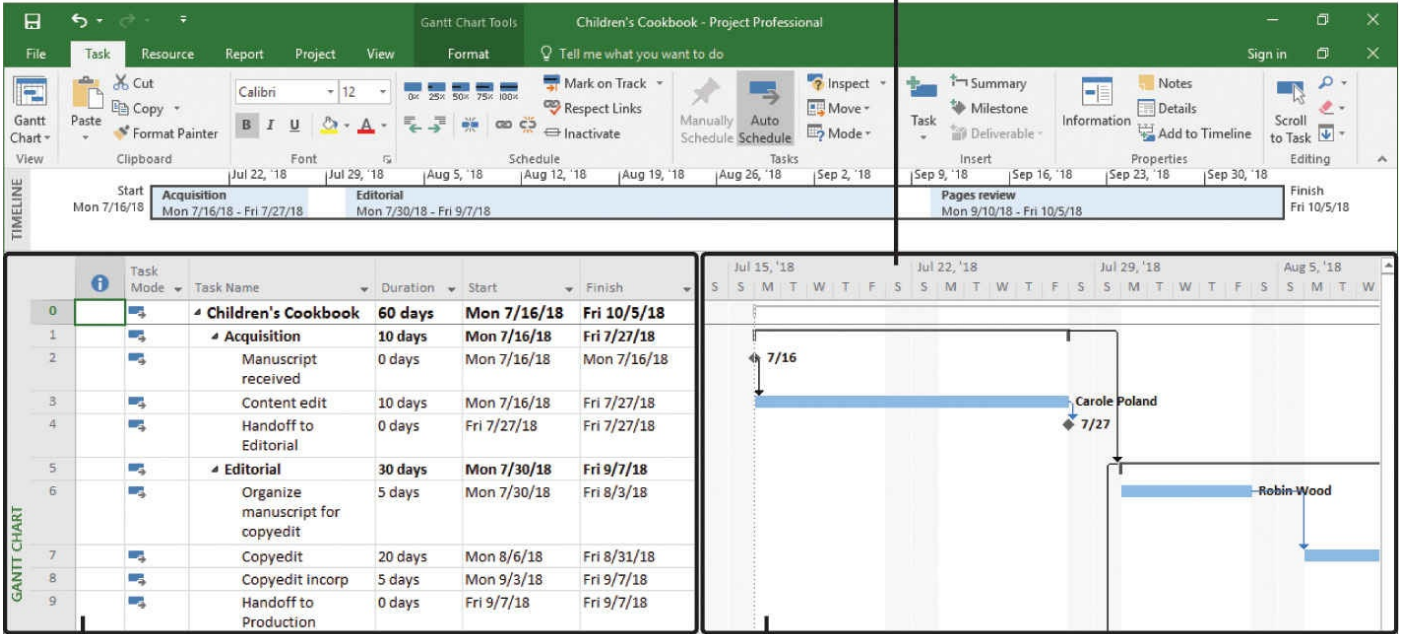
Work with schedule details in views

You create and work with your plan's data in views. Project includes many types of views. Examples of views include tables with graphics, tables with timescales, tables alone, charts and diagrams, and forms. In some views, you can filter, sort, or group data, and specify what types of data are displayed. You can use and customize the views that come with Project in addition to creating your own.

Project contains dozens of views, but most people usually work with one view (or sometimes two in a *split view*, also known as a *combination view*) at a time. You use views to enter, edit, analyze, and display your project information. The default view—the one you see when you create a new plan—is called the Gantt With Timeline view.

In general, views focus on task, resource, or assignment details. The Gantt Chart view, for example, lists task details in a table on the left side of the view and graphically represents each task as a bar in the chart on the right side of the view.

You can adjust the timescale to show more or less detail in the chart portion

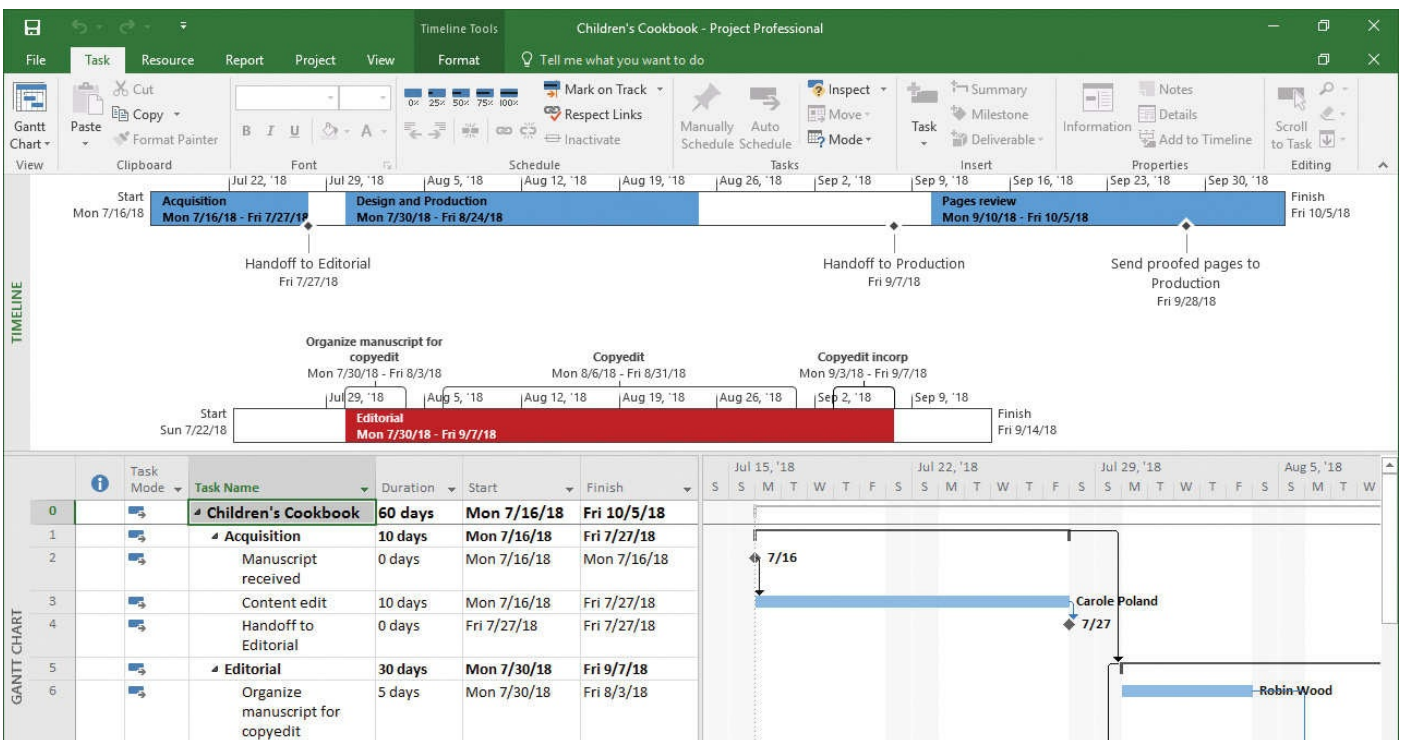


A Gantt Chart view includes a table portion... and a chart portion

The Gantt With Timeline view is a split view with the Timeline view in the top pane and the Gantt Chart view below it

The Gantt Chart view is a common way to represent a schedule. This type of view is also useful for entering and fine-tuning task details and for analyzing your plan. You can adjust the timescale in the Gantt Chart view in several ways to see more or less of the plan.

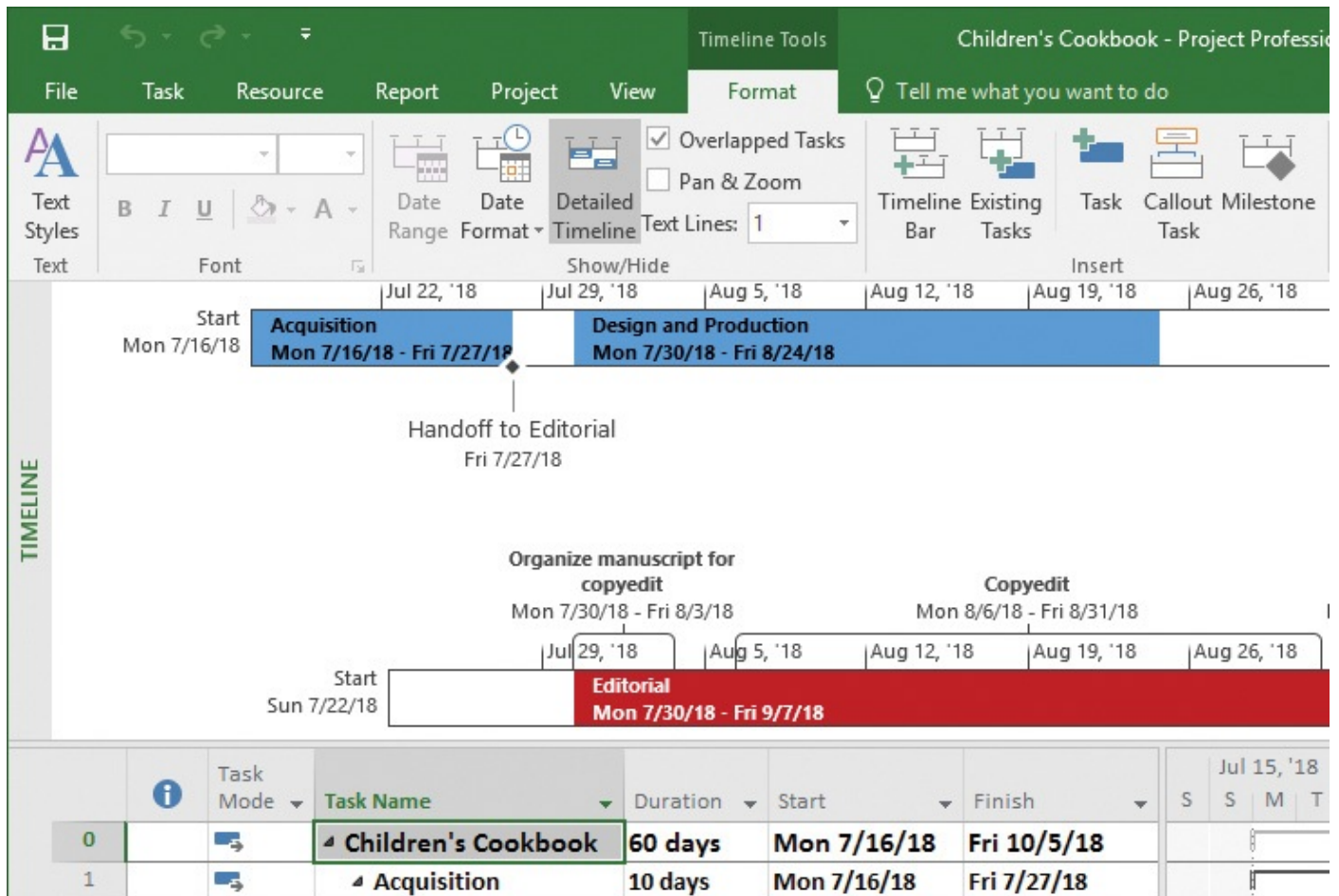
The Timeline view is a handy way of seeing the “big picture” of the plan.



You can set up multiple timeline bars in the Timeline view

When you click in the Timeline view, the label above the Format tool tab changes from

Gantt Chart Tools to Timeline Tools.



When the Timeline view is selected, its formatting commands are available on the Timeline Tools Format tab

In this case, the commands displayed on the Format tab are specific to the Timeline view. As you display or select different views, reports, or specific items in Project, note when the label above the Format tab changes accordingly.

Next we'll examine *sheet views*. The Resource Sheet view displays details about resources in a row-and-column format (called a *table*), with one resource per row. Another sheet view, called the *Task Sheet* view, lists the task details. In most views in Project, many different tables are available, allowing you to focus on the type of data that most interests you.

Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1 Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
2 Color Setting Services	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3 Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4 John Evans	Work		J		100%	\$62.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5 Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6 Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
7 Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
8 William Flash	Work		W		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

A sheet view contains a table that organizes information into rows and columns

The Resource Sheet view doesn't tell you much about the tasks to which resources might be assigned. To see that type of information, you need a different view.

The Resource Usage view groups the tasks to which each resource is assigned and shows you the work assignments per resource on a timescale, such as daily or weekly.

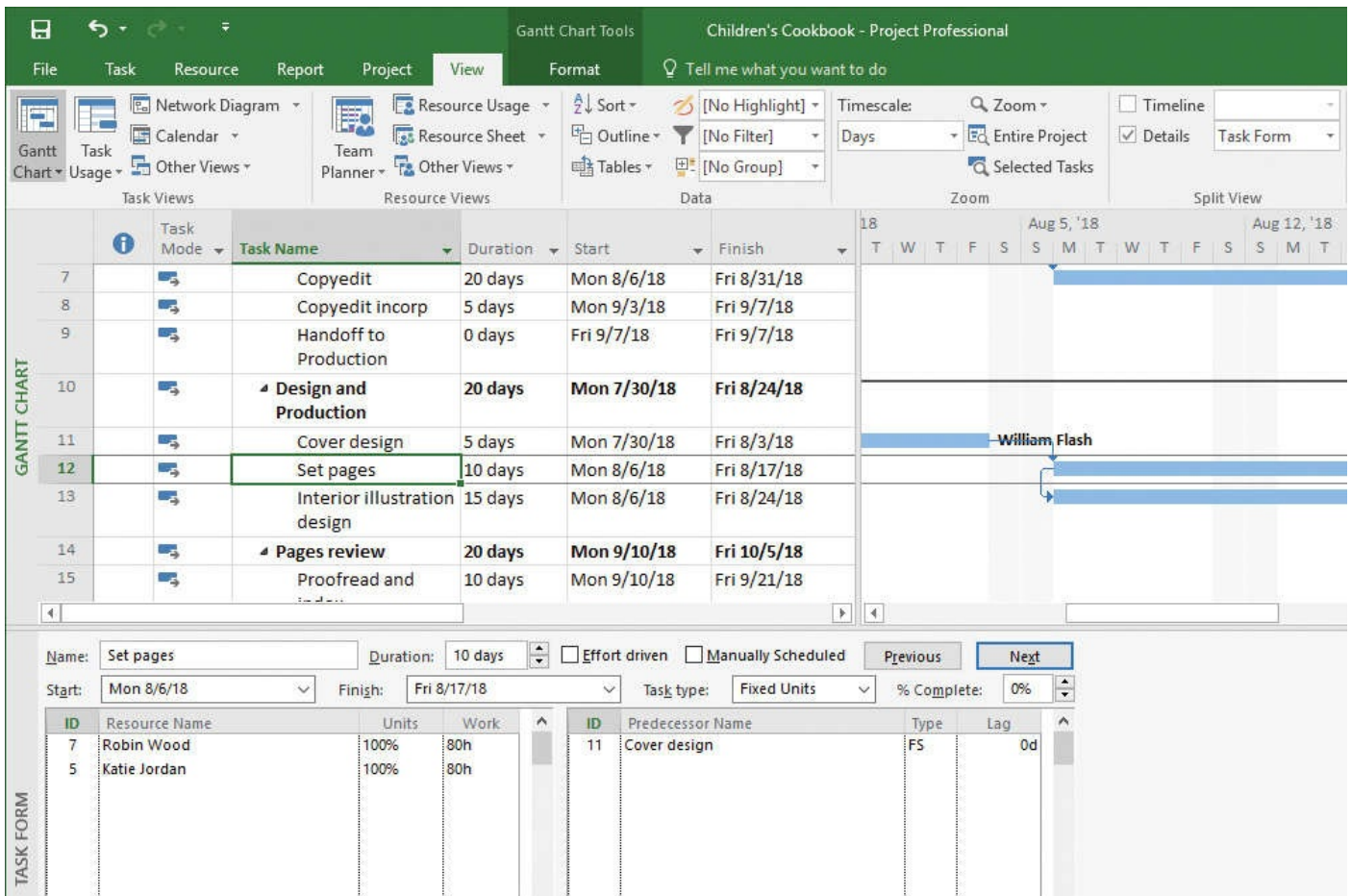
				Resource Usage Tools							Children's Cookbook - Project Professional			
				View			Format				Tell me what you want to do			
				Resource Usage			[No Highlight]				Timescale: Days			
				Resource Sheet			[No Filter]				Zoom			
				Other Views			[No Group]				Selected Tasks			
				Add New Column			Data				Split View			
				Details			Jul 22, '18							
							S M T W T F S							
		Unassigned	0 hrs	Work										
		Send to print	0 hrs	Work										
1		Carole Poland	120 hrs	Work	8h	8h	8h	8h	8h				8h	8h
		Manuscript n	0 hrs	Work	0h									
		Content edit	80 hrs	Work	8h	8h	8h	8h	8h				8h	8h
		Handoff to E	0 hrs	Work										
		Incorporate J	40 hrs	Work										
2		Color Setting Ser	0 hrs	Work										
3		Copyeditors	160 hrs	Work										
		Copyedit	160 hrs	Work										
4		John Evans	80 hrs	Work										
		Proofread an	80 hrs	Work										
5		Katie Jordan	200 hrs	Work										
		Set pages	80 hrs	Work										
		Proofread an	80 hrs	Work										
		Enter page cc	40 hrs	Work										

Usage views organize assignments per task or per resource, and present the assignment details against a timescale

As with the Gantt Chart timescale, you can adjust this timescale by using the Timescale command on the View tab or the Zoom Slider on the status bar in the lower-right corner of the Project window. In usage views, you can also switch to a different table to focus on the type of information that you're most interested in.

Another usage view, the Task Usage view, flips the data around to display all the resources assigned to each task. You'll work with usage views in [Chapter 9, "Fine-tune task scheduling."](#)

A handy split view is the Task Form combined with a Gantt chart or other view.



In a split view like this one, details about the item selected in the primary pane are displayed in the secondary pane

In this type of split view, the Gantt Chart is the primary view and the Task Form is the details pane. Details about the selected task in the Gantt Chart view appear in the Task Form. You can also edit values directly in the Task Form. You will work with the Task Form in [Chapter 6, “Assign resources to tasks,”](#) and with the similar Resource Form in [Chapter 5, “Set up resources.”](#)

There are many other views in Project. Keep in mind that, in all views in Project, you are looking at different aspects of the same set of details about a plan. Even a simple plan can contain too much data to display at one time. Use views to help you focus on the specific details you want.

To switch between views

1. On the **View** tab, in either the **Task Views** or **Resource Views** group, do one of the following:
 - If the button for the view you want is shown, click it.
 - If the button for the view you want is not shown, click **Other Views**, and then click the view you want.
 - If the view you want is not listed on the **Other Views** menu, click **More Views**, click the view you want, and then click **Apply**.

To adjust the timescale in a view

In views with a timescale, such as the Gantt chart, this action adjusts the timescale. In other views, it changes how much detail is displayed.

1. Do either of the following:

- On the **View** tab, in the **Zoom** group, click the **Zoom** command, and then click the zoom level you want.
- In the lower-right corner of the status bar, on the **Zoom Slider** bar, click **Zoom Out** or **Zoom In**.

To switch to another table in a view

This action applies only to views that include tables (such as the Gantt chart), not to views that lack tables (such as the [Calendar view](#)).

1. On the **View** tab, in the **Data** group, click **Tables**.

2. Do either of the following:

- If the table you want is listed, click the table.
- If the table you want is not listed, click **More Tables**, click the table you want, and then click **Apply**.

To display a split (combination) view

1. On the **View** tab, in the **Split View** group, click **Details**.

2. In the **Details** box, click the view you want to load into the bottom pane of the split view.

To display or hide the timeline view

1. On the **View** tab, in the **Split View** group, select or clear the **Timeline** check box.

Use reports to check a plan's status

You can use reports to convey your plan's data in compelling formats. Reports can include elements such as charts, tables, and images to communicate the status of your plan. Reports present task and resource data from your plan. You can view reports directly in the Project window or print them like any view. You can also copy reports and paste them into other programs such as Microsoft PowerPoint. Project includes several built-in reports, which you can use as-is or customize, and you can create your own reports.

Report Tools Children's Cookbook - Project Professional

File Task Resource Report Project View Design Tell me what you want to do

Gantt Recent Themes Colors Fonts Effects Images Shapes Chart Table Text Box Manage Copy Report Page Breaks Margins Orientation Size

View Themes Insert Report Page Setup

RESOURCE OVERVIEW

RESOURCE STATS
Work status for all work resources.

WORK STATUS
% work done by all the work resources.

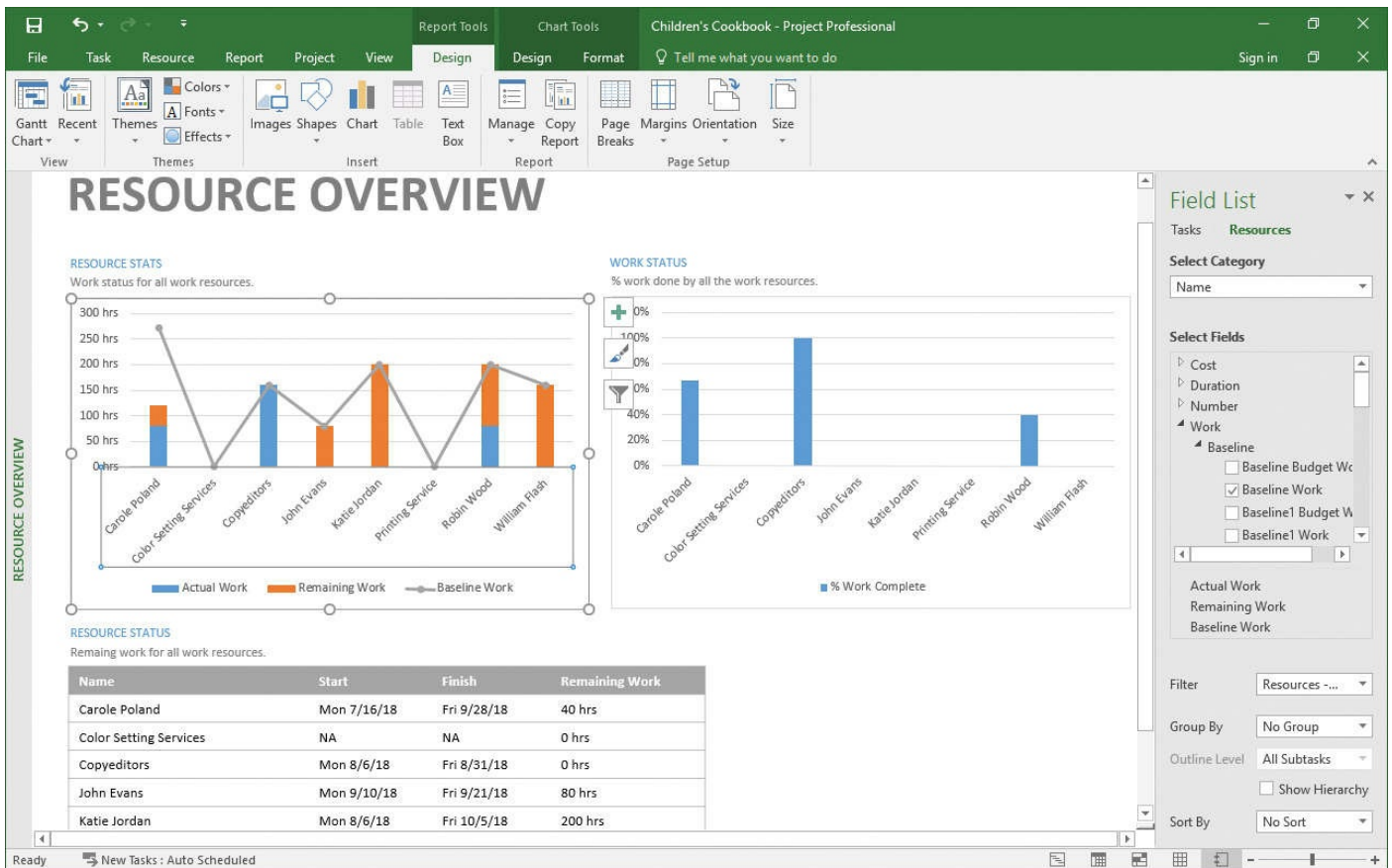
RESOURCE STATUS
Remaining work for all work resources.

Name	Start	Finish	Remaining Work
Carole Poland	Mon 7/16/18	Fri 9/28/18	40 hrs
Color Setting Services	NA	NA	0 hrs
Copyeditors	Mon 8/6/18	Fri 8/31/18	0 hrs
John Evans	Mon 9/10/18	Fri 9/21/18	80 hrs
Katie Jordan	Mon 8/6/18	Fri 10/5/18	200 hrs

Ready New Tasks : Auto Scheduled

Reports can contain a mix of charts, tables, and images

When you click a table or chart in a report, the Field List pane appears on the right side of the window.

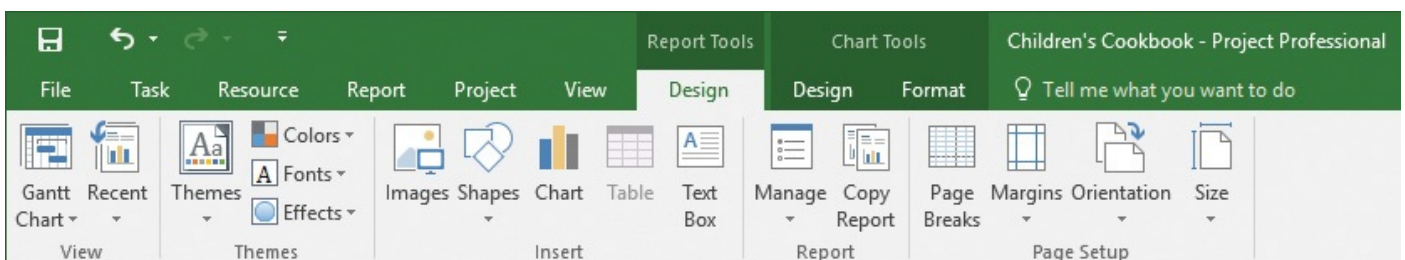


Use the Field List to control what data appears in the selected chart or table in a report

You use the Field List pane to determine what data to include in the table or chart. You will customize reports in [Chapter 7, “Format and share your plan,”](#) and in [Chapter 17, “Format reports: In-depth techniques.”](#)

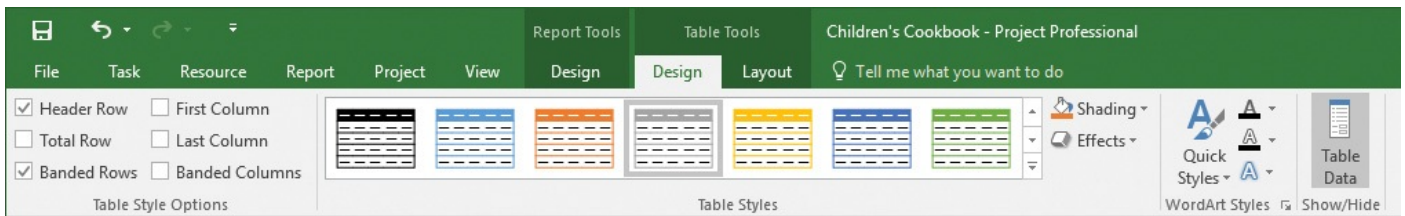
The tool tabs change when a report is displayed or when an item in a report is selected. Because a report can include a variety of items, such as charts and tables, Project includes tool tabs for both the report overall and for the specific types of items within the report.

The Report Tools Design tab includes commands you can use to control the overall design of a report.



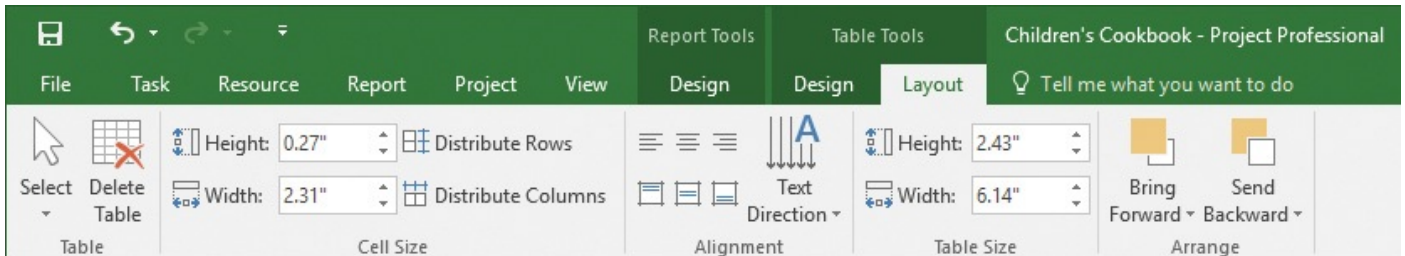
When a report is displayed, the Report Tools Design tool tab is available

When you are working with a table in a report, the Table Tools Design tool tab is available.



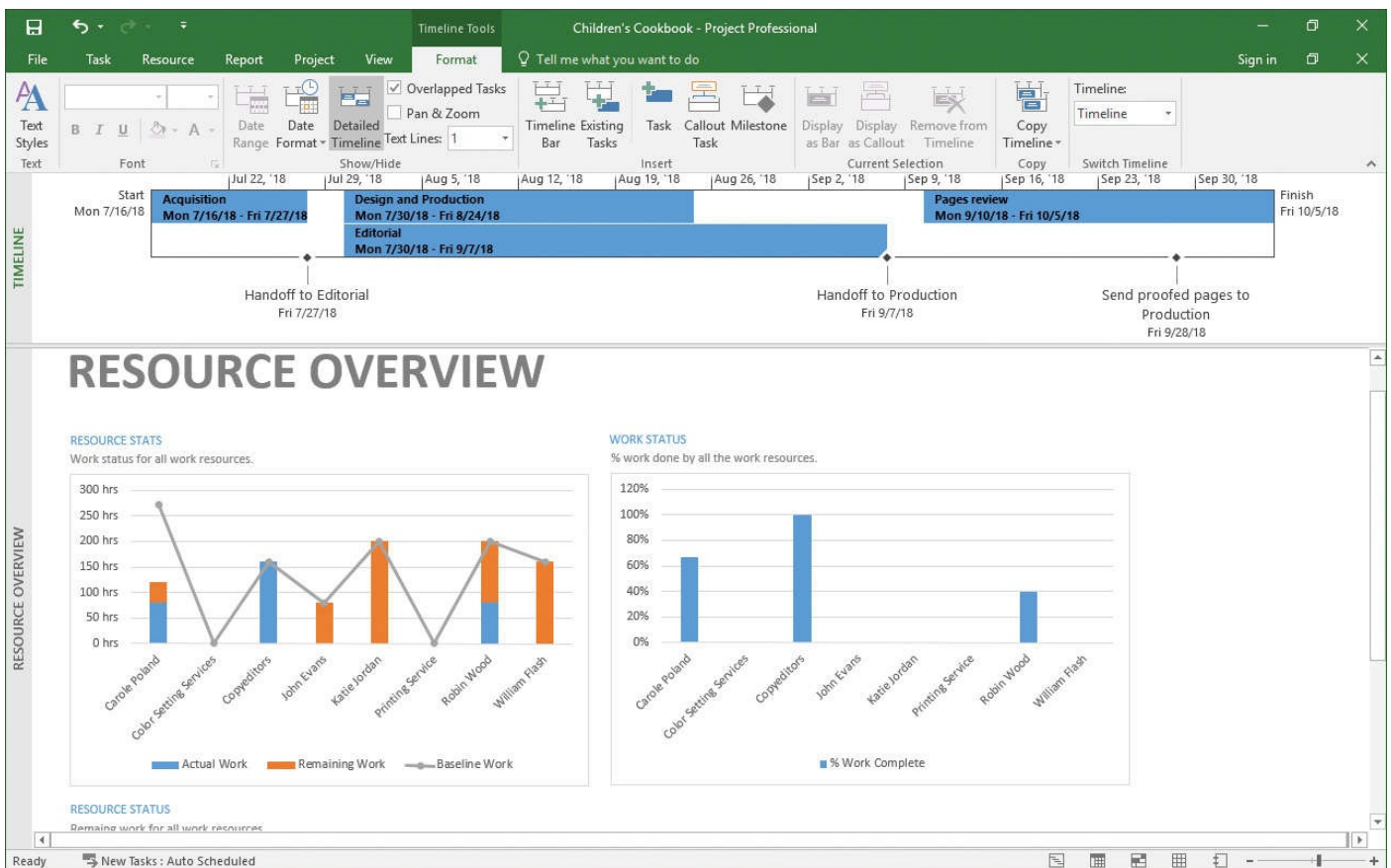
Select a table in a report to access the Table Tools tabs

The Table Tools Layout tool tab is available when you are working with a table in a report.



Most commands on the Design tool tab apply to the entire table, whereas most commands on the Layout tool tab apply to the selected cells, rows, or columns

As with views, you can display a report and a view in a split view layout.



You can mix views and reports in split views

To display a report

1. On the **Report** tab, in the **View Reports** group, click the report category and then click the specific report you want.

To display a report and a view simultaneously

1. Display the report you want.

2. Do either of the following:

- On the **View** tab, in the **Split View** group, click **Details**. In the **Details** box, click the view you want to display in the bottom pane of the split view.
- On the **View** tab, in the **Split View** group, click **Timeline** to display the Timeline in the top pane of the split view (if it's not already visible).

Skills review

In this chapter, you learned how to:

- Explore the Project user interface
- [Manage files and set options in the Backstage view](#)
- [Work with schedule details in views](#)
- [Use reports to check a plan's status](#)



Practice tasks

The TakeGuidedTour practice file for these tasks is located in the Project2016SBS\Ch02 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Manage files and set options in the Backstage view

Start Project, and then perform the following tasks:

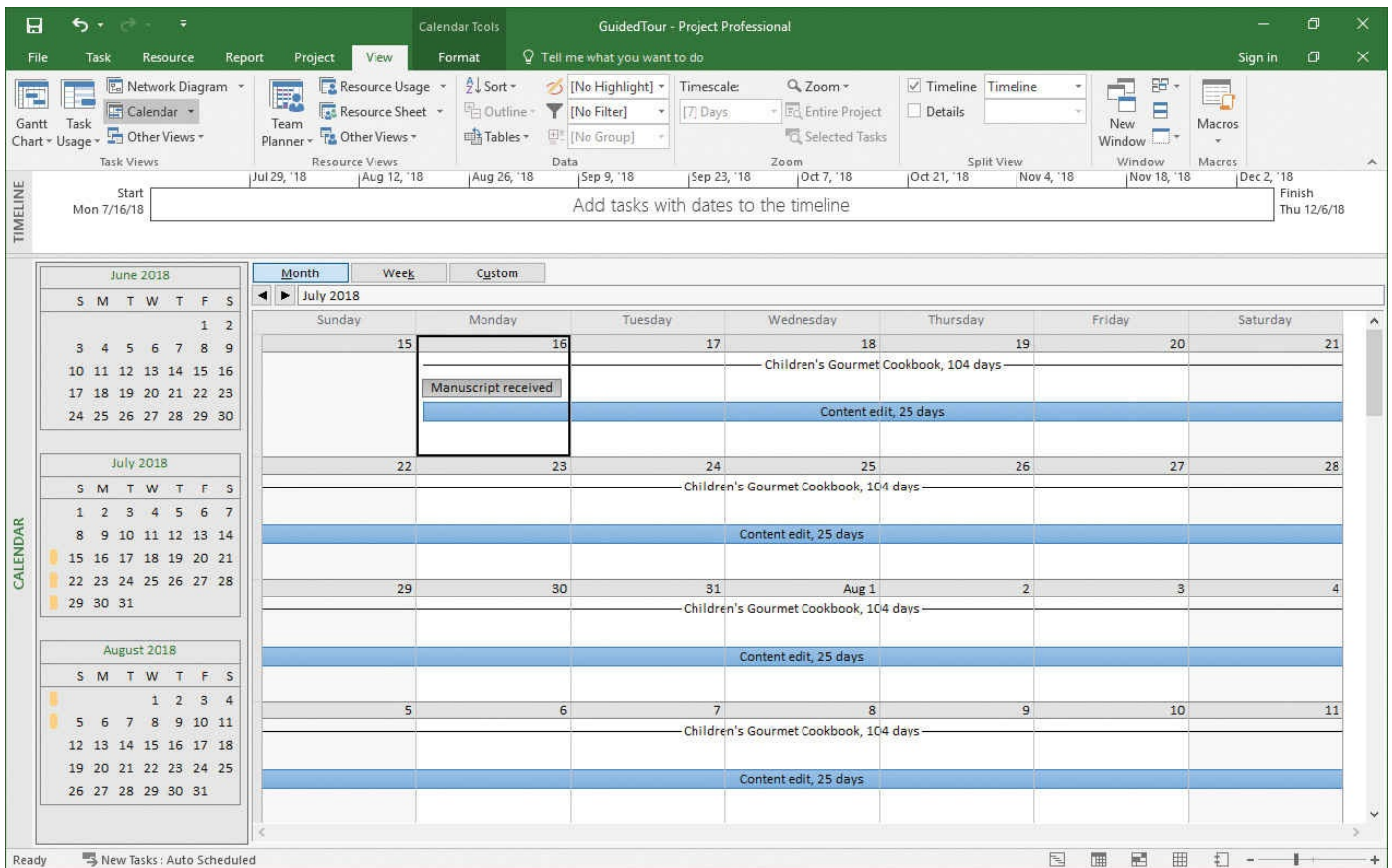
1. Open the **TakeGuidedTour** plan in Project.
2. In the Backstage view, click **Save As**.
3. Navigate to the **Ch02** practice file folder.
4. In the **File name** box, enter a unique name for the practice file, and then click **Save**.

Work with schedule details in views

The scenario: You'd like to see other parts of this plan's data in other views. Continuing in the TakeGuidedTour plan, perform the following tasks:

1. Display the Resource Sheet view.

2. Switch to the Calendar view.

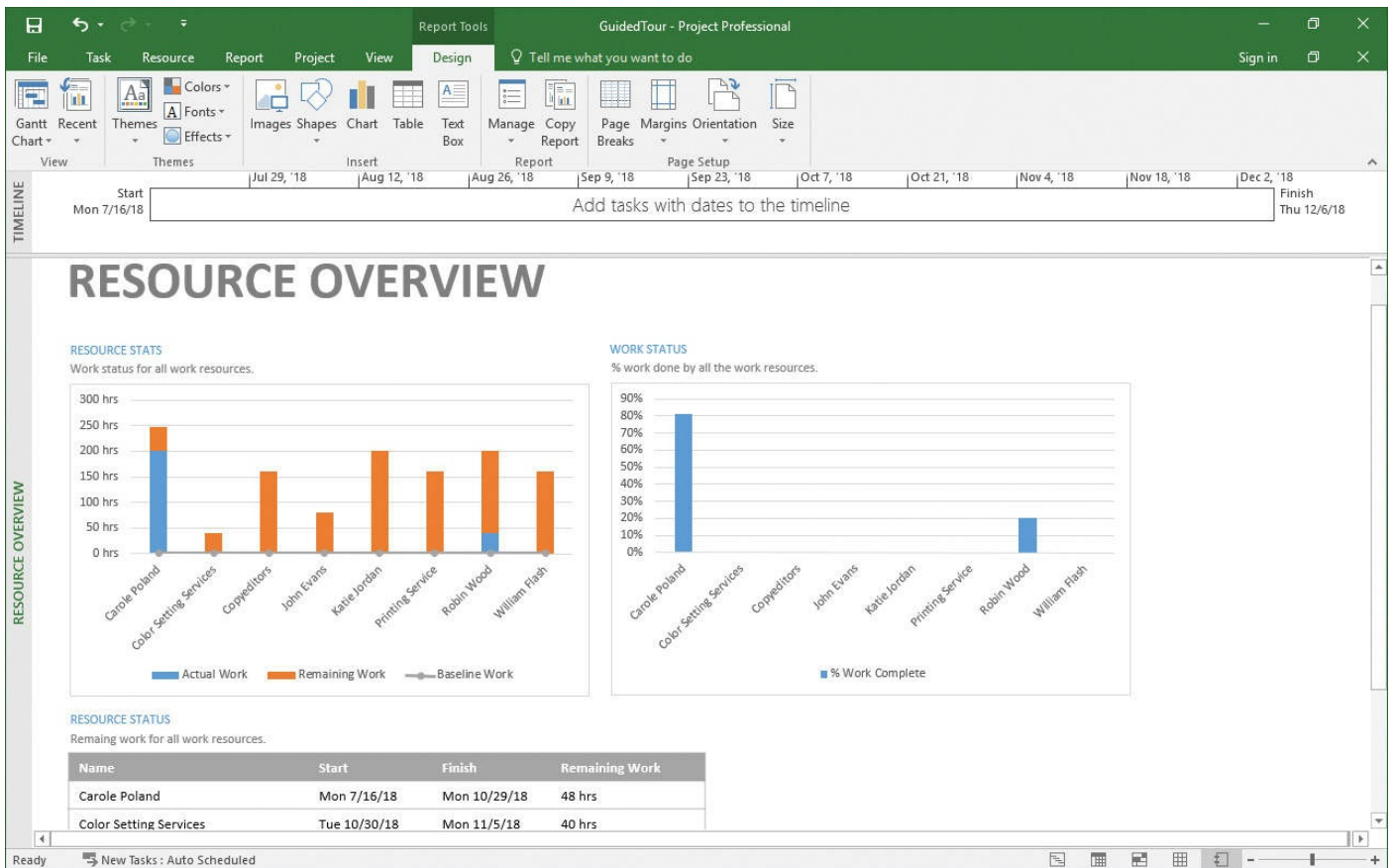


The Calendar view is a handy “month-at-a-glance” view

Use reports to check a plan’s status

The scenario: You’d like to see this plan’s data in a report. Continuing in the TakeGuidedTour plan, perform the following tasks:

1. Display the Project Overview report, which is located in the **Dashboards** report category.
2. Switch to the Resource Overview report.



See resources' work status in the Resource Overview report

Part 2: Simple scheduling basics

[CHAPTER 3 Start a new plan](#)

[CHAPTER 4 Build a task list](#)

[CHAPTER 5 Set up resources](#)

[CHAPTER 6 Assign resources to tasks](#)

[CHAPTER 7 Format and share your plan](#)

[CHAPTER 8 Track progress: Basic techniques](#)

3. Start a new plan

In this chapter

- [Create a new plan and set its start date](#)
 - [Set nonworking days in the project calendar](#)
 - [Enter the plan title and other properties](#)
-

Practice files

No practice files are necessary to complete the practice tasks in this chapter.

A project's schedule or plan is essentially a model that you construct of some aspects of a project you are anticipating—what you expect will happen, or what you want to happen. This model focuses on key aspects of a project, such as tasks, resources, timeframes, and possibly their associated costs. Note that throughout this book, we'll refer to the types of documents that Project 2016 works with as *plans*, not documents or schedules.

This chapter guides you through procedures related to creating a new plan and setting its start date, setting nonworking days in a [project calendar](#), and entering a plan's title and other properties.

Create a new plan and set its start date

As you might expect, Project focuses primarily on time. Sometimes you might know the expected start date of a project, the expected finish date, or both. However, when working with Project, you specify only one date, not both: the plan's start date or finish date. Why? Because after you enter the plan's start or finish date and other details, Project calculates the other date for you. Remember that Project is not merely a static repository of your schedule information or a Gantt chart drawing tool—it is an active scheduling engine.

Most plans should be scheduled from a start date, even if you know that the plan should finish by a certain deadline date. Scheduling from a start date sets all tasks to begin as soon as possible, and it gives you the greatest scheduling flexibility. In this and later chapters, you will see this flexibility in action as you work with a plan that is scheduled from a start date.

To create a new plan

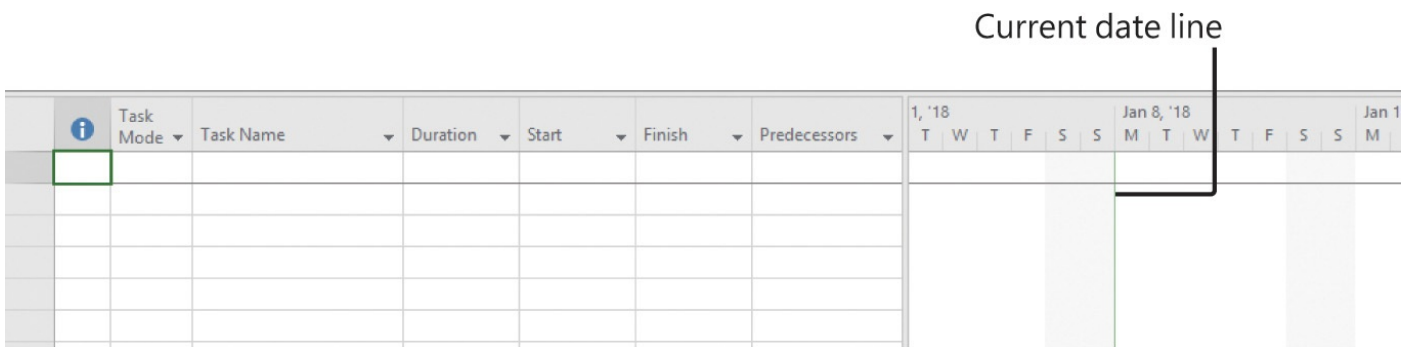
1. In Project, if the **File** tab is displayed, click it, and then click **New**.
2. In the list of templates, click **Blank Project** or any other template you want.

Or

1. If you already have a list of available templates on the Start screen, click **Blank Project** or any other template you want.

When you create a new plan, Project sets the plan's start date to the current date. Project draws a thin green vertical line in the chart portion of the Gantt Chart view at

the current date.



The current date is shown in the Gantt Chart view; look for the green vertical line (your current date will likely differ)

To set (or change) the plan's start date

1. On the [Project](#) tab, in the **Properties** group, click **Project Information**.
2. In the **Project Information** dialog box, in the **Start Date** box, enter the start date you want or click the arrow to select one from the calendar.



Tip

In the calendar, you can use the left and right arrows to navigate to any month and then click the date you want, or click Today to quickly choose the current date.

3. Click **OK** to accept the start date and close the **Project Information** dialog box.

To save the new plan

1. Click the **File** tab, and then click **Save As**.
2. On the **Save As** page, navigate to the location where you want to save the plan.



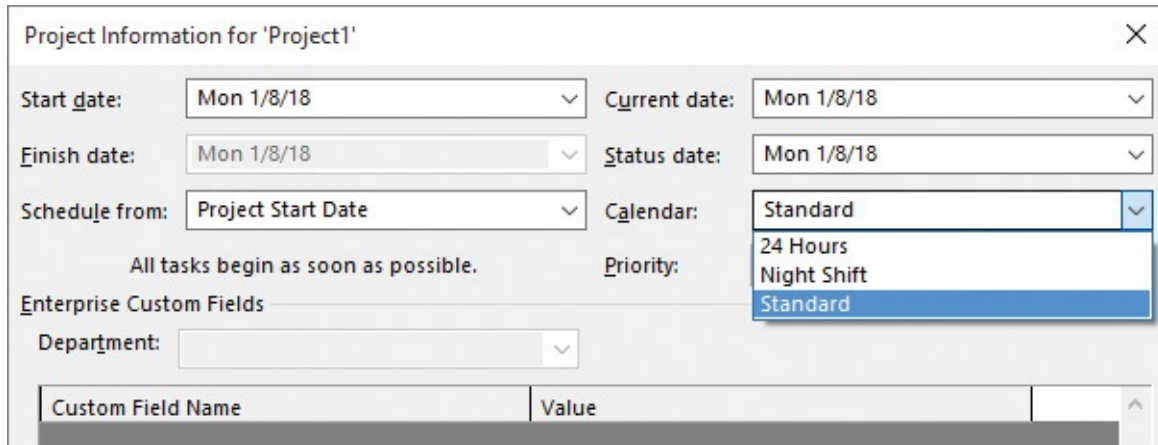
Tip

You can adjust Project settings related to files. For example, you can set Project to automatically display the Project Information dialog box each time you create a new plan. To make this change, click the File tab, and then click Options. In the Project Options dialog box, click Advanced, and then, in the General section, select the Prompt For Project Info For New Projects check box. You can also instruct Project to automatically save the active plan at predefined intervals, such as every 10 minutes. In the Project Options dialog box, click Save, select the Auto Save Every check box, and then specify the time interval you want.

Set nonworking days in the project calendar

Calendars are the primary means by which you control when each task and resource can be scheduled for work in Project. In later chapters, you will work with other types of calendars; in this chapter, we focus on the project calendar.

The project calendar defines the general working and nonworking days and times for tasks. Project includes multiple calendars, called base calendars, any one of which can serve as the project calendar for a plan. You select the base calendar that will be used as the project calendar in the Project Information dialog box.



Project Information for 'Project1'

Start date: Mon 1/8/18 Current date: Mon 1/8/18

Finish date: Mon 1/8/18 Status date: Mon 1/8/18

Schedule from: Project Start Date Calendar: Standard

All tasks begin as soon as possible. Priority: Standard

Enterprise Custom Fields

Department: [Dropdown]

Custom Field Name	Value
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Set the plan's start date, project calendar, and other essential schedule settings in the Project Information dialog box



Important

If you are using Project Professional rather than Project Standard, the Project Information dialog box and some other dialog boxes contain additional options relating to Project Server. For more information about Project Server, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

The Calendar list contains the three base calendars that are included with Project:

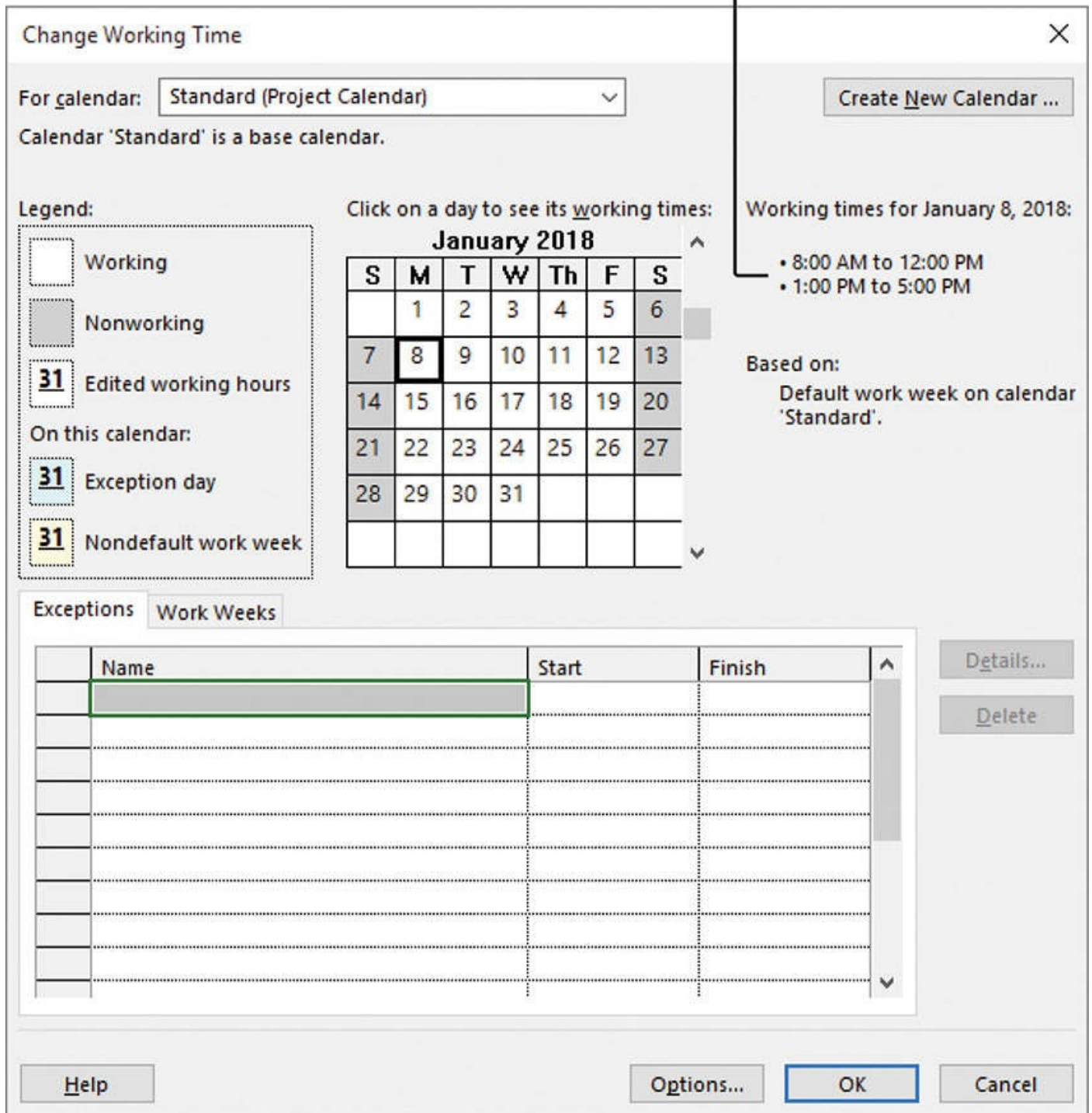
- **24 Hours** Has no nonworking time
- **Night Shift** Covers a late-night “graveyard” shift schedule of Monday night through Saturday morning, 11:00 P.M. to 8:00 A.M., with a one-hour break each day
- **Standard** The traditional working day and week, Monday through Friday from 8:00 A.M. to 5:00 P.M., with a one-hour break each day

Only one of the base calendars serves as the project calendar; the Standard calendar is the default.

Think of the project calendar as your organization's normal working days and hours. For example, this might be Monday through Friday, 8:00 A.M. through 5:00 P.M., with a one-hour lunch break each day. Your organization or specific resources might have exceptions to this normal working time, such as holidays or vacation days. You'll address resource vacations in [Chapter 5, “Set up resources.”](#)

You customize calendars in the Change Working Time dialog box (which opens when you click the Change Working Time button on the Project tab).

The selected day's working times and calendar



Customize a calendar's working time in the Change Working Time dialog box

Use this dialog box to set normal working schedules and working time exceptions for individual resources or the entire plan. Other common examples of working time adjustments include:

- Recurring holidays or other times off that follow a known pattern, such as weekly, monthly, or annually.
- Variable working times per week; for example, to address seasonal changes in working times.

- Unique working hours for a resource. You'll make such settings in [Chapter 5](#), "[Set up resources](#)."

To select the project calendar

1. On the **Project** tab, in the **Properties** group, click the **Project Information** button.
2. In the **Project Information** dialog box, in the **Calendar** box, click the arrow, and then click the calendar you want to use as the project calendar.

To set a specific date as nonworking

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. On the **Exceptions** tab in the lower portion of the **Change Working Time** dialog box, in the **Name** field, enter a description of the exception.



Tip

You don't need to name calendar exceptions, but it's a good practice for you or others to identify the reason for the exception.

3. In the **Start** and **Finish** fields, enter or select the dates you want.
4. Click **OK**.

To set up a recurring nonworking time

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. On the **Exceptions** tab of the **Change Working Time** dialog box, in the **Name** field, enter a description of the recurring exception.
3. Click in the **Start** field, and then click **Details**.
4. In the **Details** dialog box, under **Recurrence Patterns**, select the recurrence values you want, and then click **OK**.
5. Click **OK** to close the **Change Working Time** dialog box.

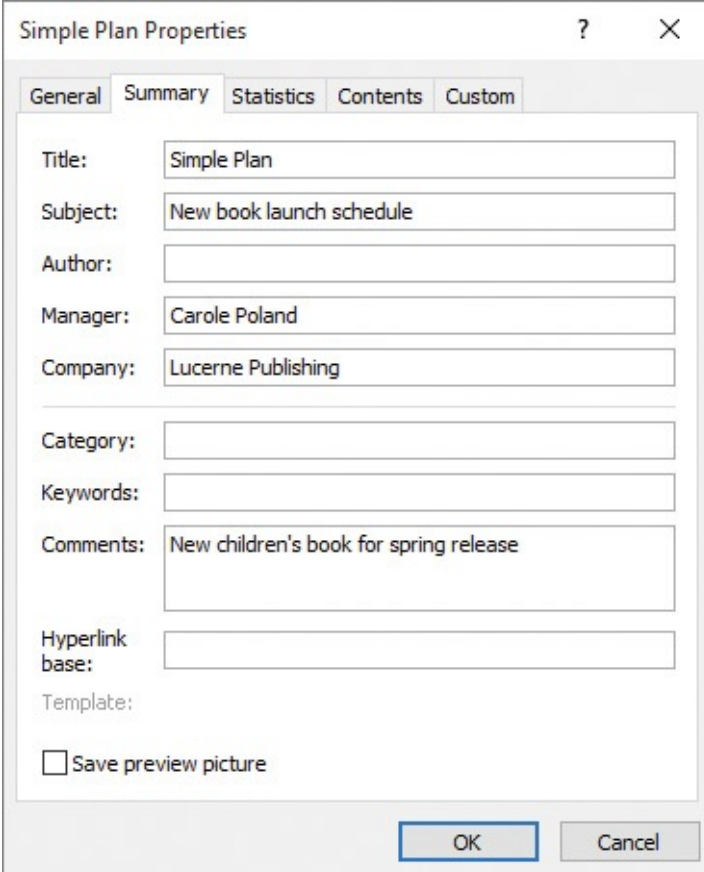
To set up a custom work week

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. Click the **Work Weeks** tab in the lower portion of the **Change Working Time** dialog box.
3. Click a row below the "[Default]" value.
4. Enter a description and the date range for which you want the custom work week to apply.

5. In the **Start** and **Finish** fields, enter or select the date range for which you want the custom work week to apply.
6. Click **Details**.
7. In the **Details** dialog box, select the day and time values you want, and then click **OK**.
8. Click **OK** to close the **Change Working Time** dialog box.

Enter the plan title and other properties

Like other Microsoft Office apps, Project keeps track of several document properties. Some of these properties are statistics, such as how many times the document has been revised. Other properties include information that you might want to record about a plan, such as the project title, the project manager's name, or keywords to support a file search. Some of these properties are used in views, in reports, and in page headers and footers when printing. You can view and record these properties in the Properties dialog box.



The screenshot shows the 'Simple Plan Properties' dialog box with the 'Summary' tab selected. The dialog box has a title bar with a question mark and a close button. The tabs are 'General', 'Summary', 'Statistics', 'Contents', and 'Custom'. The 'Summary' tab contains the following fields:

- Title: Simple Plan
- Subject: New book launch schedule
- Author: (empty)
- Manager: Carole Poland
- Company: Lucerne Publishing
- Category: (empty)
- Keywords: (empty)
- Comments: New children's book for spring release
- Hyperlink base: (empty)
- Template: (empty)

At the bottom, there is a checkbox labeled 'Save preview picture' which is unchecked, and two buttons: 'OK' and 'Cancel'.

Record useful summary information about a plan in the Properties dialog box

To enter a plan's properties

1. Click the **File** tab, and then click **Info**.
2. On the right side of the **Info** screen, click **Project Information**. In the menu that appears, click **Advanced Properties**.
3. Enter whatever properties you want to record (all are optional), and then click **OK**.

Project management focus: Project is part of a larger picture

Depending on your needs and the information to which you have access, the plans that you develop in Project might not deal with other important aspects of your projects. For example, many large projects are undertaken in organizations that have a formal change-management process. Before a major change to the scope of a project is allowed, it must be evaluated and approved by the people managing and implementing the project. Even though this is an important project-management activity, it is not something done directly within Project.

Skills review

In this chapter, you learned how to:

- [Create a new plan and set its start date](#)
- [Set nonworking days in the project calendar](#)
- [Enter the plan title and other properties](#)



Practice tasks

No practice files are necessary to complete the practice tasks in this chapter.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Create a new plan and set its start date

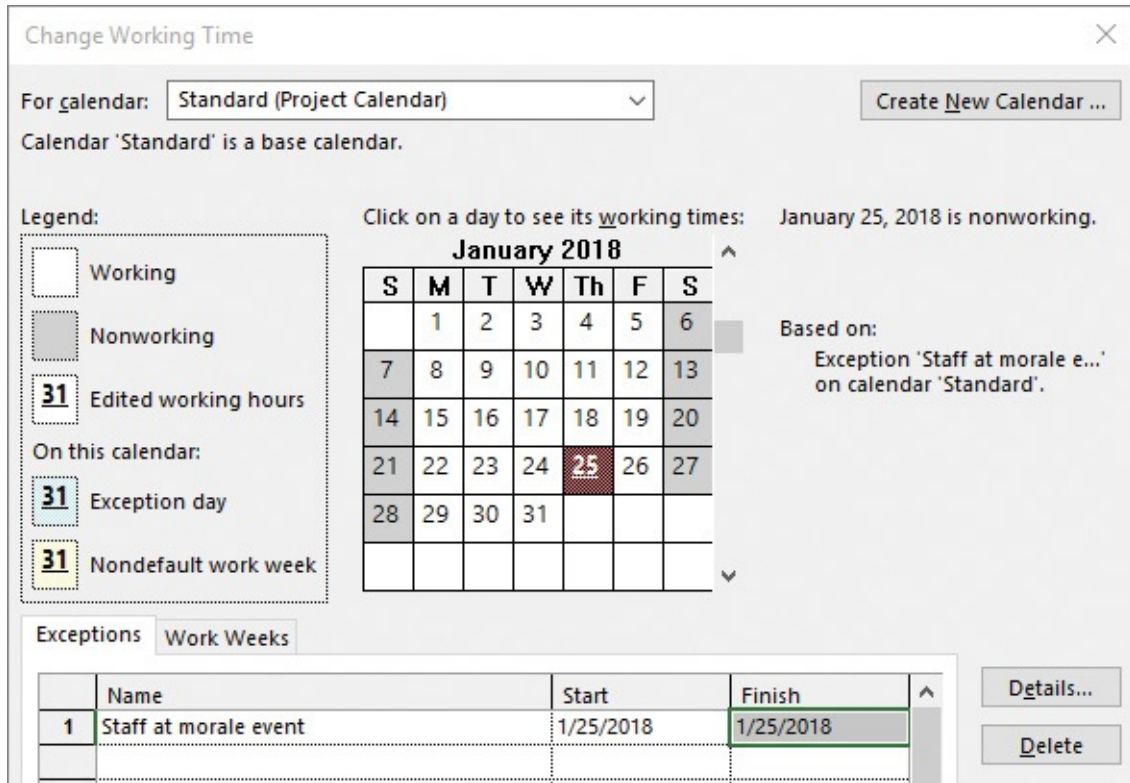
The scenario: Throughout this book, you’ll play the role of a project manager at Lucerne Publishing, a book publisher that specializes in children’s books. Lucerne is about to publish a major new book, and you’ve been asked to develop a plan for the book launch. Start Project, and perform the following tasks:

1. Create a new plan based on the **Blank Project** template.
2. Set the new plan’s start date to January 8, 2018.
3. Save the new plan as **Simple Plan** in the Project2016SBS\Ch03 folder.

Set nonworking days in the project calendar

The scenario: At Lucerne Publishing, you need to account for an upcoming date on which the entire Lucerne staff will be unavailable to work on the book launch project. Continuing in the Simple Plan plan, perform the following task:

1. In the project calendar, create a nonworking day calendar exception named **Staff at morale event** for January 25, 2018.



The calendar exception you created should look like this in the Change Working Time dialog box

Enter the plan title and other properties

The scenario: You want to record top-level information about the new book launch plan. These details won't affect the overall schedule but relate to important supplemental information you want to keep in the plan. Continuing in the Simple Plan plan, perform the following task:

1. Give the Simple Plan the following properties:
 - Subject: **New book launch schedule**
 - Manager: **Carole Poland**
 - Company: **Lucerne Publishing**
 - Comments: **New children's book for spring release**

4. Build a task list

In this chapter

- [Create tasks](#)
 - [Enter task durations and dates](#)
 - [Enter milestone tasks](#)
 - [Create summary tasks to outline the plan](#)
 - [Link tasks to create dependencies](#)
 - [Switch task scheduling from manual to automatic](#)
 - [Check a plan's duration and finish date](#)
 - [Document task information](#)
-

Practice files

For this chapter, use the SimpleBuildTaskList practice file from the Project2016SBS\Ch04 folder. For practice file download instructions, see the introduction.

Tasks are the most basic building blocks of any project's plan. Tasks represent the work to be done to accomplish the goals of the project. Tasks describe work in terms of dependencies, duration, and resource requirements. In Project 2016, there are several kinds of tasks. These include summary tasks, subtasks, and milestones (all discussed in this chapter). More broadly, what are called *tasks* in Project are sometimes more generally called *activities* or *work packages*.

This chapter guides you through procedures related to creating tasks, entering task durations and dates, entering milestone tasks, creating summary tasks, linking tasks to create dependencies, switching task scheduling from manual to automatic, checking a plan's duration and finish date, and documenting task information.

Create tasks

Tasks represent the work to be done to accomplish the goals of the project. Every task in a plan is given an ID number, but the number does not necessarily represent the order in which tasks occur.

Every task in Project has one of two scheduling modes that controls how the task is scheduled: manual (the default) or automatically scheduled. Think of a manually scheduled task as an initial placeholder you can create at any time without affecting the rest of the schedule. You might not know more than a task name to start with, and that's OK. As you discover or decide more details about the task, such as when it should occur, you can add those details to the plan. You'll work with automatic scheduling in "[Switch task scheduling from manual to automatic](#)" later in this chapter.

As you might suspect, naming the task is the first step in creating a task. For this reason, it's worth developing good practices about how you name tasks in your plans.

Task names should be recognizable and make sense to the people who will perform the tasks and to other stakeholders who will read the task names. Here are some guidelines for creating good task names:

- Use short verb phrases that describe the work to be done, such as “Edit manuscript.”
- If tasks will be organized into an outline, don't repeat details from the summary task name in the subtask name unless it adds clarity.
- If tasks will have resources assigned to them, don't include resource names in the task names.

Keep in mind that you can always edit task names later, so don't worry about getting them exactly right when you're initially entering them into a plan. Do aim to use concise, descriptive phrases that communicate the required work and make sense to you and others who will perform the work or review the plan. When necessary, you can also add more details in task notes, described later in this chapter.

To enter task names

1. Click an empty cell in the **Task Name** column.
2. Enter your task names, and then press the **Enter** key after each one.

To insert a new task within a task list

1. Click in the **Task Name** column where you want to insert the new task.
2. On the **Task** tab, in the **Insert** group, click **Task**.

Project inserts a row for a new task and renumbers the subsequent tasks. Project names the new task *<New Task>*.

3. With *<New Task>* selected, enter the task name, and then press **Enter**.

To delete a task

1. Right-click the task name, and then click **Delete Task**.

Project management focus: Defining the right tasks for the deliverable

Every project has an ultimate goal or intent, the reason that the project was started. This is called the project's deliverable. This deliverable might be a tangible product, such as a new book, or a service or event, such as a product launch party. Defining the right tasks to create the deliverable is an essential skill for a project manager. The task lists you create in Project should describe all the work required, and only the work required, to complete the project successfully.

When developing your task lists, you might find it helpful to distinguish product scope from project scope. Product scope describes the quality, features, and functions of the deliverable of the project. In the practice tasks scenario used in this part of the book, for example, the deliverable is a new children's book, and the product scope might include its number of pages and illustrations. Project scope, on the other hand, describes the work required to produce the new children's book. In the scenario for the new children's book, the project scope includes detailed tasks relating to generating publicity and advance reviews for the book.

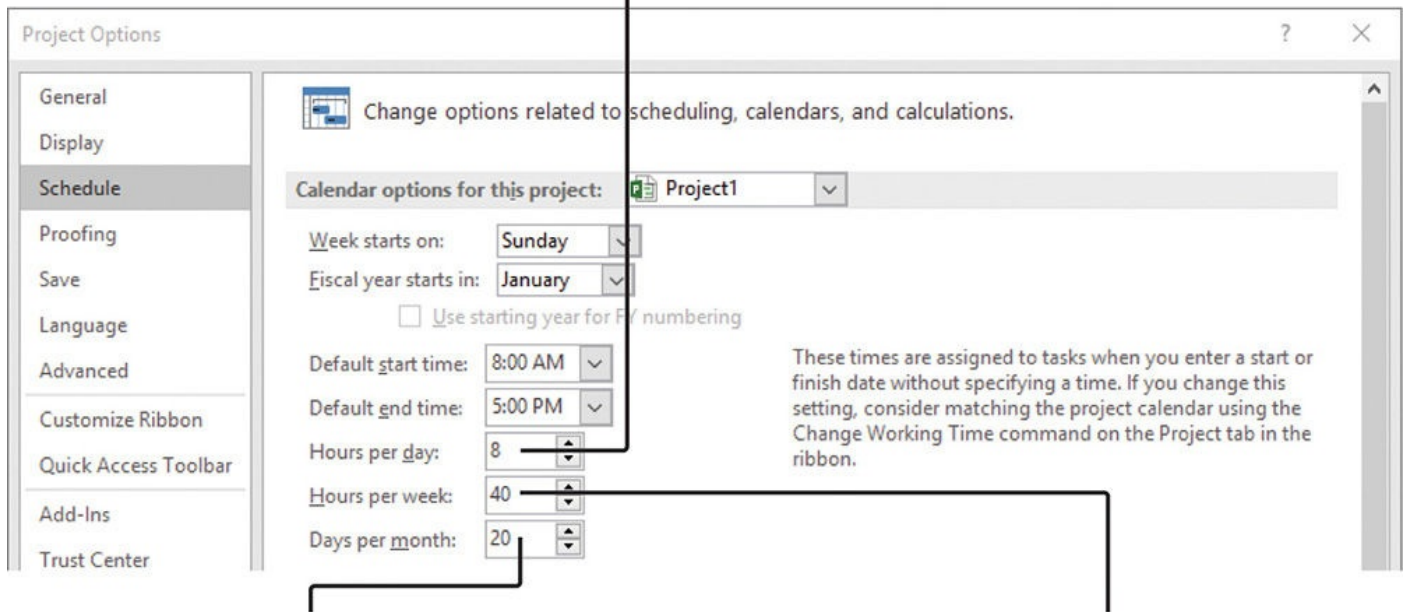
Scope as a component of the project manager's focus (along with time and cost) is described more in [Appendix A](#), "[A short course in project management](#)."

Enter task durations and dates

A task's duration represents the amount of time you expect it will take to complete the task. Project can work with task durations that range from minutes to months. Depending on the scope of your plan, you'll probably want to work with task durations on the scale of hours, days, and weeks. Giving your tasks duration values is one of the benefits of using a scheduling tool like Project over a simple checklist or to-do approach to organizing work.

Project uses standard values for minutes and hours for durations: 1 minute equals 60 seconds, and 1 hour equals 60 minutes. For the durations of days, weeks, and months, you can use Project's defaults (for example, 20 days per month) or define your own values in the Project Options dialog box.

With a setting of 8 hours per day,
entering a two-day task duration (2d)
is the same as entering 16 hours (16h)



With a setting of 20 days per month,
entering a one-month task duration (1mo)
is the same as entering 160 hours
(8 hours per day x 20 days)

With a setting of 40 hours per week,
entering a three-week task duration (3w)
is the same as entering 120 hours (120h)

Manage time-related settings on the Schedule tab of the Project Options dialog box

Let's explore task durations with an example. Assume that a plan has a project calendar with working time defined as 8:00 A.M. through 5:00 P.M., with one hour off for lunch breaks, Monday through Friday, leaving nonworking time defined as evenings (after 5:00 P.M.) and weekends. If you estimate that a task will take 16 hours of working time, you could enter its duration as 2d to schedule work over two 8-hour workdays. You should then expect that starting the task at 8:00 A.M. on a Friday means that it will not be completed until 5:00 P.M. on the following Monday. No work would be scheduled over the weekend because Saturday and Sunday have been defined as nonworking time.

The practice tasks in this chapter use Project's default values: 8 hours per day, 40 hours per week, and 20 days per month. In fact, throughout this book we use Project's default settings unless noted otherwise.

See Also

For a refresher on the project calendar, see "[Set nonworking days in the project calendar](#)" in [Chapter 3](#), "[Start a new plan](#)."

You can use the following abbreviations when entering durations.

If you enter this abbreviation	It appears like this	And it means
m (such as 30m)	30 mins	30 minutes
h (such as 6h)	6 hrs	6 hours
d (such as 4d)	4 days	4 days
w (such as 3w)	3 wks	3 weeks
mo (such as 2mo)	2 mons	2 months

As noted earlier in the “[Create tasks](#)” topic, Project handles task scheduling in two ways. Automatically scheduled tasks always have a duration (one day by default). Manually scheduled tasks, however, do not initially have any duration. A task’s duration is essential for Project to schedule a task, so it makes sense that a manually scheduled task, which is not scheduled by Project, does not require a duration. You can, however, enter placeholder duration values for manually scheduled tasks—you’ll do so in this chapter.

With manually scheduled tasks, you can enter regular duration values by using the abbreviations shown in the preceding table—for example, *3d* for three days. You can also enter text values, such as *Check with Bob* or *Sometime next quarter*. Such text values are replaced with the default one-day duration value when you convert a task from manual to automatic scheduling. Project will not allow you to enter a text value (such as *Check with Bob*) for an automatically scheduled task’s duration, start, or finish value.



Tip

When you create an automatically scheduled task, Project adds a question mark (?) after the one-day duration to indicate that the duration is an estimate. This is a handy reminder that you will need to determine the task’s correct duration at some point. In fact, you can flag any task as having an estimated duration. Select the task, and on the Task tab, in the Properties group, click Information, and then select the Estimated check box.

If needed, you can schedule tasks to occur during nonworking and working time. To do this, enter an [elapsed duration](#) to a task. You enter elapsed duration by preceding the duration abbreviation with an *e*.

You might use an elapsed duration for a task that goes on continuously rather than just during normal working hours. For instance, a construction project might have the tasks *Pour foundation concrete* and *Remove foundation forms*. If so, you might also want a task called *Wait for concrete to cure*, because you don’t want to remove the forms until the concrete has cured. The task *Wait for concrete to cure* should have an elapsed duration because the concrete will cure over a contiguous range of days, whether they are working or nonworking days. If the concrete takes 48 hours to cure, you can enter the duration for that task as *2ed*, schedule the task to start on Friday at 9:00 A.M., and expect it to be

complete by Sunday at 9:00 A.M. In most cases, however, you'll work with non-elapsed durations in Project.

Project management focus: How do you come up with accurate task durations?

You should consider two general rules when estimating task durations:

- Overall project duration often correlates to task duration.
- Long projects tend to have tasks with longer durations than short projects have.

If you track progress against your plan (as described in [Chapter 8](#), “[Track progress: Basic techniques](#),” and in Part 3, “[Advanced scheduling techniques](#)”), you need to consider the level of detail you want to apply to your plan's tasks.

If you have a multiyear project, for example, it might not be practical or even possible to track tasks that are measured in minutes or hours. In general, you should measure task durations at the lowest level of detail or control that is important to you, but no lower.

For the plans you work on in the practice tasks sections of this book, the durations are supplied for you. For your projects, you will often have to estimate task durations. Good sources of task duration estimates include:

- Historical information from previous, similar projects.
- Estimates from the people who will complete the tasks.
- The expert judgment of people who have managed similar projects.
- The standards of professional or industrial organizations that carry out projects similar to yours.

One principle to consider is called the [8/80 rule](#). This rule suggests that task durations between 8 hours (or 1 day) and 80 hours (10 working days, or two weeks) are generally sized about right. Tasks shorter than one day might be too granular, and tasks longer than two weeks might be too long to manage properly. There are many legitimate reasons to vary from this rule, but for most tasks in your projects, it's worth considering.

For complex, long-duration projects or projects involving a large number of unknowns, you might be able to make detailed duration estimates only of tasks to be started and completed soon (for example, within two to four weeks). You then might have only very general duration estimates for tasks that will start later (for example, after two to four weeks). You could hold a recurring task-duration estimating session with the team according to a regular cadence as time progresses.

For complex projects, you probably would combine these and other strategies to estimate task durations. Because inaccurate task duration estimates are a major source of risk in any project, making good estimates is well worth the effort.

To enter task duration

1. Click a cell in the [Duration](#) column for a task.

2. Enter a duration value.



You can also click the up and down arrows in the cell to enter or change the value in the Duration field.

Project initially sets all new tasks that have a duration value to start at the project start date. This is true whether the tasks are manually or automatically scheduled.

For manually scheduled tasks, you can enter a duration as either a numeric value, such as *2d*, or as placeholder text, such as *Check with Marketing team*. For any columns that are too narrow to display the full value, point to the cell; its full value will appear in a ScreenTip.

For both manually and automatically scheduled tasks, Project draws a Gantt bar in the chart portion of a Gantt chart view. The length of the bar represents the task's duration.

To schedule a task to span nonworking and working times with an elapsed duration

1. When entering the task's duration, precede the duration abbreviation with an **e**. For example, enter **1ed** to indicate one full 24-hour day, or **1ew** to equal seven 24-hour days, or **1emo** to equal thirty 24-hour days.

To calculate the duration of a manually scheduled task

1. In the **Start** and **Finish** fields for the task, enter or select the start date and finish date values you want.

Project calculates the Duration value. Note that when the task gets switched to be automatically scheduled, the start and finish values might change based on predecessor relationships, the project start date, or other scheduling factors. The duration value, however, will be preserved.

Enter milestone tasks

In addition to entering tasks to be completed, you might want to account for an important event for your project's plan, such as the end of a major phase of the project. To do this, you will create a milestone task.

Milestones are significant events that are either reached within the plan (such as the completion of a phase of work) or imposed upon the plan (such as a deadline by which to apply for funding). Because the milestone itself doesn't normally include any work, milestones are normally represented as tasks with zero duration. To visually distinguish milestones, their Gantt chart symbol appears as a diamond rather than a bar. However, you can flag any task of any duration as a milestone.

To enter a milestone task

1. In the **Task Name** column, click where you want to insert the milestone.
2. On the **Task** tab, in the **Insert** group, click [Milestone](#).

Project inserts a new row for the new task and renumbers subsequent tasks. Project names the new task <New Milestone> and gives it a zero-day duration.



To convert a task of any duration to a zero-duration milestone task, set its Duration value to 0.

To mark a task of any duration as a milestone

1. Select a task name.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. In the **Task Information** dialog box, click **Advanced**.
4. Select the **Mark Task As Milestone** check box.

Create summary tasks to outline the plan

You'll find it helpful to organize groups of closely related tasks into an outline by using summary tasks. A summary task is made up of and summarizes the subtasks indented below it in the plan's outline. When the summary tasks are sequenced over time, the highest-level summary tasks are called phases.

When you are reviewing a project's plan, seeing tasks organized in an outline helps you and your stakeholders think in terms of major work items or phases. For example, it is common to divide book publishing projects into Editorial, Design, and Production phases. With an outline applied, you can then expand or collapse the outline to show just the level of detail you want. You create an outline by indenting and outdenting tasks.

Summary tasks are automatically scheduled and not manually scheduled by default. The duration of an automatically scheduled summary task is calculated by Project as the span of working time from the earliest start date to the latest finish date of its subtasks. If you directly edit the duration of an automatically scheduled summary task, or its start or finish date, it will be switched to a manually scheduled task.

When a summary task is manually scheduled, its duration will be calculated based on its subtasks, just like the duration of an automatically scheduled summary task. However, you can edit the duration of a manually scheduled summary task, and Project will keep track of both the manual duration that you entered and the calculated duration. You will learn about summary tasks with both manual and automatically calculated durations in [Chapter 10](#), "[Fine-tune task details](#)."

The highest level of a plan's outline is called the project summary task. Project automatically generates the project summary task but does not display it by default. Because the project summary task is at the highest level of the plan's outline, it includes

rolled-up details from all subtasks. It also represents the full duration of the plan, so it's a handy way of seeing some essential details, such as the plan's overall duration. You will learn about the plan's duration and finish date later in this chapter.

Project management focus: Top-down and bottom-up planning

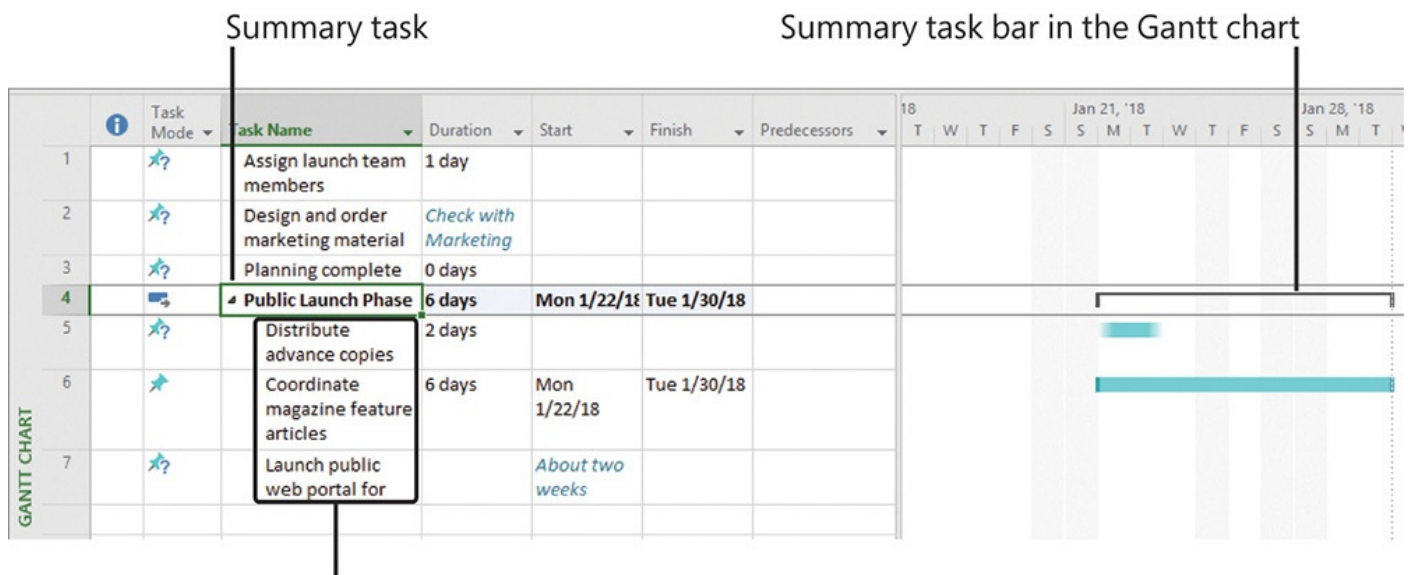
Two common approaches to developing tasks and phases are top-down and bottom-up planning:

- **Top-down planning** This approach identifies major phases or components of the project before filling in all the details required to complete those phases, which are represented in the plan as summary tasks. Complex plans can have several layers of nested summary tasks. This approach works from general to specific.
- **Bottom-up planning** This approach identifies as many of the bottom-level detailed tasks as possible before outlining them into phases or summary tasks. This approach works from specific to general.

Creating accurate tasks and phases for most complex plans requires a combination of top-down and bottom-up planning. Typically, a project manager begins with established, broad phases for a plan (top-down planning), and the resources who will execute the plan provide the detailed tasks that fill out each phase (bottom-up planning).

To promote a task to a summary task

1. Select the tasks directly below the task that you want to make a summary task.
2. On the **Task** tab, in the **Schedule** group, click the **Indent Task** button.



Subtasks indented under the summary task

Project uses text and bar formatting to distinguish between summary tasks and subtasks

When you make a manually scheduled task a summary task, Project switches the new summary task to be automatically scheduled.

To insert a new summary task within a task list

1. Select the name of the tasks that will become subtasks.
2. On the **Task** tab, in the **Insert** group, click **Summary**.

Project inserts a row for a new task, indents all of the selected tasks directly below it, and renumbers the subsequent tasks. Project names the new task <New Summary Task>.

3. With <New Summary Task> selected, enter the summary task name.

To demote a summary task to a task

1. Select all subtasks below the summary task.
2. On the **Task** tab, in the **Schedule** group, click the **Outdent Task** button.

Link tasks to create dependencies

When you link tasks, you create scheduling relationships between the tasks. These task relationships are called dependencies, as in *the start of this task is dependent upon the completion of a prior task*. When you create task dependencies (also called links), Project can automatically adjust the scheduling of linked tasks as changes occur in your plan. Creating dependencies by linking tasks is crucial to getting the full benefit of the Project scheduling engine.

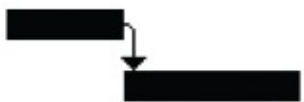



Let's look at one type of dependency relationship you can create between two tasks. Most projects require tasks to be performed in a specific order. For example, the task of writing a chapter of a book must be completed before the task of editing the chapter can occur.

These two tasks have a finish-to-start relationship, which has two aspects:

- The second task must occur after the first task; this is a *sequence*.
- The second task can occur only if the first task is completed; this is a [dependency](#).

In Project, the first task (*Write the chapter*) is called the predecessor because it precedes tasks that depend on it. The second task (*Edit the chapter*) is called the successor because it succeeds, or follows, tasks on which it is dependent. Any task can be a predecessor for one or more successor tasks. Likewise, any task can be a successor to one or more [predecessor tasks](#).

Although this might sound complicated, two tasks can have one of only four types of task relationships, as described in the following table.

Task relationship	Meaning	Appearance in the Gantt chart	Example
Finish-to-start (FS)	The finish date of the predecessor task determines the start date of the successor task. This is the default task relationship.		A book chapter must be written before it can be edited.
Start-to-start (SS)	The start date of the predecessor task determines the start date of the successor task.		The tasks <i>Schedule Prepress Time</i> and <i>Order Paper</i> are closely related, and they should start simultaneously.
Finish-to-finish (FF)	The finish date of the predecessor task determines the finish date of the successor task.		Tasks that require specific equipment must end when the equipment rental period ends.
Start-to-finish (SF)	The start date of the predecessor task determines the finish date of the successor task.		The time when the print run is scheduled to start determines when a binder selection task must end.

For finish-to-start relationships (the default link type), the predecessor with the later finish date determines the start date of the successor task. This predecessor task is sometimes called the “[driving predecessor](#)” because it determines or drives the start date of its successor task. Project includes a feature that helps you identify driving predecessor and successor relationships more easily. The feature is called Task Path and is described in [Chapter 9, “Fine-tune task scheduling.”](#)

A task with two or more successor tasks might have different task relationships with each successor. For example, the predecessor task can have a finish-to-start relationship with one successor and a finish-to-finish relationship with another successor.

Representing task relationships and handling changes to scheduled start and finish dates are two areas where the use of a real scheduling tool such as Project really pays off. For example, you can change task durations or add or remove tasks from a chain of linked tasks, and Project will reschedule tasks accordingly.

[Automatically scheduled tasks](#) are dynamically rescheduled when their predecessor task details change. Manually scheduled tasks, however, are not rescheduled by schedule updates to their predecessor tasks, but you can force a manually scheduled task to respect its predecessor links whenever you want. You can, in effect, “nudge” a manually

scheduled task to respect its links.

Task relationships appear in several ways in Project, including the following:

- In Gantt chart and [Network Diagram views](#), task relationships appear as the lines connecting tasks.
- In tables, such as the [Entry table](#), task ID numbers of predecessor tasks appear in the Predecessor fields of successor tasks. (In a Gantt chart view, you might need to drag the vertical divider bar to the right to display the Predecessor column.)



Tip

You can adjust the schedule relationship between predecessor and successor tasks by adding lead and lag times. For example, you can set a two-day lag between the end of a predecessor task and the start of its successor task. For more information, see [Chapter 9](#), “[Fine-tune task scheduling](#).”

To link tasks

1. Select the names of the tasks you want to link. If the tasks are not adjacent, select the first task, hold down the **Ctrl** key, and then select the additional task or tasks.
2. On the **Task** tab, in the **Schedule** group, click the **Link the Selected Tasks** button (which looks like two chain links).

Project links the tasks with a finish-to-start relationship.

Change highlighting indicates values that are affected after a change is made to a plan

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18								
				F	S	S	M	T	W						
1		▶ Planning Phase	2 days	Mon 1/8/18	Tue 1/9/18										
2		Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18										
3		Design and order marketing	Check with Marketing	Tue 1/9/18	Tue 1/9/18	2									
4		Planning complete	0 days												
5		▶ Public Launch Phase	6 days	Mon 1/22/18	Tue 1/30/18										

A link line indicates a task relationship between tasks

Create schedule dependencies between tasks by linking them

Or

1. In the chart portion of a Gantt chart view, point to the predecessor task bar and then drag down to the task bar for the successor task.

Note that as you drag, the pointer changes to a link icon and pop-up window that updates with information as you point to other task bars.

This tooltip can help you link tasks by using the mouse. The pointer changes to indicate that you are linking tasks.

2. When the pointer is over the successor task bar, release the mouse button.

This tooltip can help you link tasks by using the mouse

Task ID	Task Name	Duration	Start	Finish	Predecessors
1	Planning Phase	2 days	Mon 1/8/18	Tue 1/9/18	
2	Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18	
3	Design and order marketing	Check with Marketing	Tue 1/9/18	Tue 1/9/18	2
4	Planning complete	0 days			
5	Public Launch Phase	6 days	Mon 1/22/18	Tue 1/30/18	
6	Distribute advance copies	2 days			

The pointer changes to indicate that you are linking tasks

One way to link tasks is to drag the pointer from the predecessor's Gantt bar to the successor's Gantt bar

Or

1. In the **Predecessors** field for the successor task, enter the predecessor task's ID. You might have to scroll the table to the right to display the Predecessor column.



Tip

When working with summary tasks, you can either link summary tasks directly or link the latest task in the first phase with the earliest task in the second phase. The scheduling result is the same in either situation. Under no circumstances, however, can you link a summary task to one of its own subtasks. Doing so creates a circular scheduling problem, so Project doesn't allow it.

Or

1. Select the task for which you want to specify a predecessor task or multiple predecessor tasks.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. On the **Predecessors** tab of the **Task Information** dialog box, enter the ID value or select or enter the task name of the predecessor task you want, and then click **OK**.



Tip

Adding predecessor tasks via the Task Information dialog box is a good way of specifying multiple predecessors for a single successor task.

To unlink tasks

1. Select the tasks you want to unlink.
2. On the **Task** tab, in the **Schedule** group, click the **Unlink Tasks** button (which looks like a broken chain link).

To force a manually scheduled task to respect its predecessor task's scheduling result





1. Select the manually scheduled task you want to be rescheduled as determined by its predecessor task relationships.
2. On the **Task** tab, in the **Schedule** group, click the **Respect Links** button.

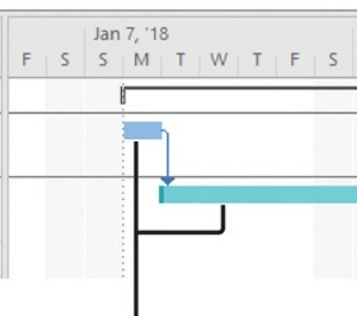
Switch task scheduling from manual to automatic

Project, by default, sets new tasks to be manually scheduled. In fact, so far in Part 2 of this book you've worked only with manually scheduled tasks. In Project, you control the scheduling of tasks in two different ways:

- Work with manually scheduled tasks to quickly capture some details but without scheduling the tasks. Think of a manually scheduled task as an initial placeholder you can create at any time without affecting the rest of the plan. You might not initially know more than a task's name, and that's OK. As you discover or decide more details about the task, such as when it should occur, you can add those details to the plan.
- Work with automatically scheduled tasks to take full advantage of the powerful scheduling engine in Project.

The icons in this column indicate whether a task is manually or automatically scheduled

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18								
							F	S	S	M	T	W	T	F	S
1		Planning Phase	11 days	Mon 1/8/18	Tue 1/23/18										
2		Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18										
3		Design and order marketing	2 wks	Tue 1/9/18	Mon 1/22/18	2									
4		Planning complete	0 days	Tue 1/23/18	Tue 1/23/18	3									



The style of the task bars also indicates whether a task is manually or automatically scheduled

Switch individual tasks or the entire plan from manually to automatically scheduled

When you create automatically scheduled tasks, Project assigns a duration and start and finish date values to them. With automatic scheduling, Project updates calculated schedule values such as task durations, start dates, and finish dates automatically in response to changes in a plan. Changes to factors such as task relationships and calendars can also cause Project to recalculate affected tasks.

To switch a single task from manual to automatic task scheduling

1. Select the manually scheduled task you want to change.
2. Click in the **Task Mode** field of the selected task, and then click the arrow that appears.
3. In the list that appears, click **Auto Scheduled**.

To switch several tasks from manual to automatic task scheduling

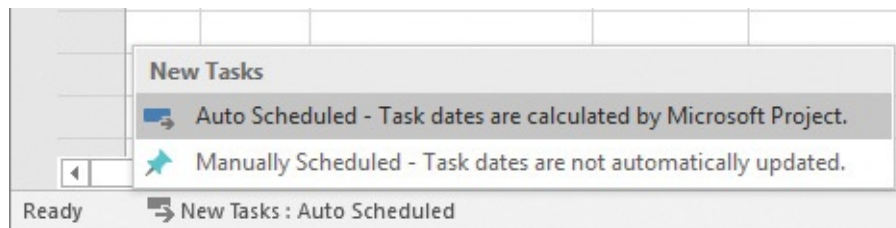
1. Select the manually scheduled tasks you want to change.
2. On the **Task** tab, in the **Tasks** group, click the **Auto Schedule** button.

To switch the currently open plan from manual to automatic task scheduling

1. On the **Task** tab, in the **Tasks** group, click the **Mode** button, and then click **Auto Schedule**.

Or

1. Click the **New Tasks** status bar text.
2. Click the scheduling mode you want.



To make all new tasks automatically scheduled, you can use the command on the status bar

To change the default scheduling mode that Project applies to all new plans

1. On the **File** tab, click **Options**, and then in the **Project Options** dialog box, click the **Schedule** tab.
2. In the **Scheduling Options For This Project** box, click **All New Projects**, and then in the **New Tasks Created** box, click **Auto Scheduled**.
3. Click **OK**.

Check a plan's duration and finish date

At any time in the planning or execution of a project, you and other project stakeholders will want to know how long the project is expected to take. You don't directly enter a total project duration or finish date in a plan, and you don't need to. Project calculates these values based on the task durations, dependencies, project calendar adjustments, and many other factors you have recorded in a plan.

Project calculates the plan's finish date based on the span of working days required to complete the tasks, starting at the plan's start date. Any change to the start date causes Project to recalculate the finish date.

Project determines the plan's duration by counting the working days between the earliest start date and the latest finish date of the plan's tasks. Because Project distinguishes between working and nonworking time, a task's duration doesn't necessarily correlate to elapsed time.

Some handy ways to view the plan's duration and scheduled start and finish dates include the Timeline view, the project summary task, and the Project Statistics dialog box.

To check a plan's finish date in the Timeline

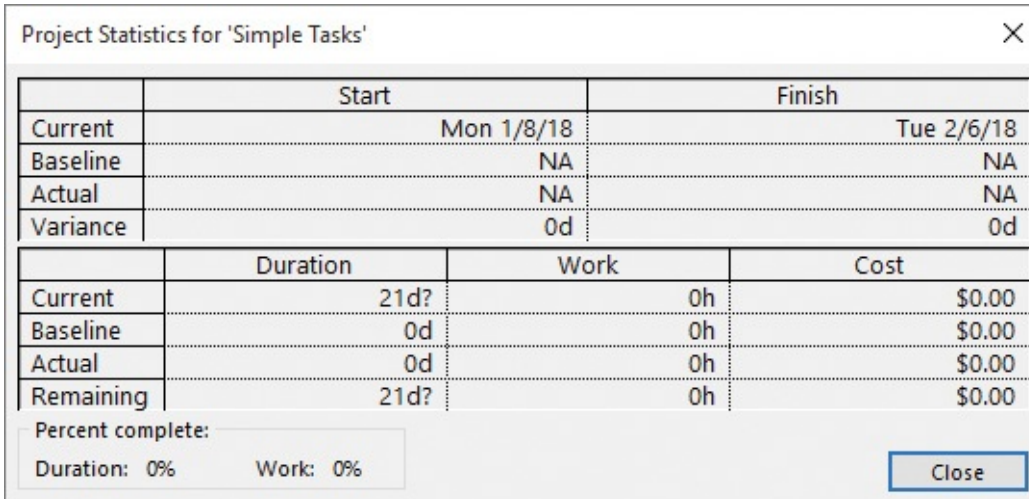
1. In the Timeline view above the Gantt Chart view, note the plan's current start and finish dates.



If the Timeline view is not shown, on the View tab, in the Split View group, select the Timeline check box.

To check a plan's duration, finish date, and more in the Statistics dialog box

1. On the **Project** tab, in the **Properties** group, click the **Project Information** button.
2. In the **Project Statistics** dialog box, click **Statistics**.



The screenshot shows the 'Project Statistics for 'Simple Tasks'' dialog box. It contains two tables and a progress indicator.

	Start	Finish
Current	Mon 1/8/18	Tue 2/6/18
Baseline	NA	NA
Actual	NA	NA
Variance	0d	0d

	Duration	Work	Cost
Current	21d?	0h	\$0.00
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	21d?	0h	\$0.00

Percent complete:
Duration: 0% Work: 0%

Close

Check key indicators of the plan in the Project Statistics dialog box

To display the project summary task



1. Click anywhere in a Gantt chart view.

When the focus is on a Gantt chart view, the label of the Format tab is Gantt Chart Tools.

2. On the **Format** tab, in the **Show/Hide** group, select the [Project Summary Task](#)

check box.

Project displays the project summary task at the top of the Gantt Chart view with an ID of 0.

		Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18							
								F	S	S	M	T	W	T	F
0			Simple Plan	21 days?	Mon 1/8/18	Tue 2/6/18									
1			Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18									
2			Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18									
3			Design and order	2 wks	Tue 1/9/18	Mon 1/22/18	2								

Display the project summary task (task 0) to view the plan's start and finish dates and its overall duration

Here you'll find the same duration and start and finish values displayed in Project Statistics, and a Gantt bar that's drawn from the start and finish dates of the overall plan.

Document task information

You can record additional information about a task in a note. For example, you might have detailed descriptions of a task but want to keep the task's name succinct. You can add such details to a task note rather than to the task's name. That way, the information resides in the plan and can be easily viewed or printed.

There are three types of notes: task notes, resource notes, and assignment notes. You can enter and review task notes on the Notes tab in the Task Information dialog box. Notes in Project support a wide range of text formatting options; you can even link to or store graphic images and other types of files in notes.



Tip

You will work with resource notes in [Chapter 5](#), "[Set up resources.](#)"

Notes appear in a ScreenTip when there's a note icon in the Indicators column.

5		Public Launch Pha	10 days?
6		Distribute	2 days
7		magazine feature articles	6 days

Notes: 'Get recipient list from publicist'

View task notes by pointing to the note icon in the Indicators column

For notes that are too long to appear in a ScreenTip, you can double-click the note icon to display the full text of the note.

The project summary task, mentioned earlier, also supports a task note. Because the project summary task spans the entire plan, it's a great place to capture important information about the plan. Text entered in the Comments field of the Properties dialog

box appears as a note on the project summary task. If you add or change a note on the project summary task, the change will appear in the Comments field in the Properties dialog box.

Sometimes you might want to associate a task in a plan with information stored in a different document or on a webpage. Hyperlinks allow you to connect a specific task, resource, or assignment to additional information that resides outside of the plan.

To add a note to a task

1. Select the name of the task to which you want to add a note.
2. On the **Task** tab, in the **Properties** group, click the **Notes** button.

Or

Right-click the task name, and then click [Notes](#).

3. In the **Notes** box, enter the note text you want, and then click **OK**.

To add a hyperlink to a task

1. Right-click the task name, and then click [Hyperlink](#) to open the **Insert Hyperlink** dialog box.
2. In the **Text to display** box, enter the link text you want to display.
3. In the **Address** box, enter the URL of the destination address you want to link to.
4. Click **OK**.



To open the webpage in your browser, either click the hyperlink icon or right-click the hyperlink icon and, in the shortcut menu that appears, point to **Hyperlink**, and then click **Open Hyperlink**.

To quickly remove notes, hyperlinks, or formatting from selected tasks

1. On the **Task** tab, in the **Editing** group, click the **Clear** button (which looks like an eraser), and then select the command you want.

Skills review

In this chapter, you learned how to:

- [Create tasks](#)
- [Enter task durations and dates](#)
- [Enter milestone tasks](#)
- [Create summary tasks to outline the plan](#)
- [Link tasks to create dependencies](#)

- [Switch task scheduling from manual to automatic](#)
- [Check a plan's duration and finish date](#)
- [Document task information](#)



Practice tasks

The SimpleBuildTaskList practice file for these tasks is located in the Project2016SBS\Ch04 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”








Create tasks

The scenario: You are a project manager at Lucerne Publishing. You've collected the initial task names for a new book launch and are ready to start. Open the SimpleBuildTaskList plan in Project and perform the following tasks:

1. Enter the following task names:
 - **Assign launch team members**
 - **Design and order marketing material**
 - **Distribute advance copies**
 - **Coordinate magazine feature articles**
 - **Launch public web portal for book**

While reviewing the tasks you entered, you realize that you missed a task. You'll insert that task next.

2. Insert a new task named **Public Launch Phase** so that it will appear above the *Distribute advance copies* task.

		Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾	Predecessors ▾	T	F	S	S	M
1			Assign launch team members									
2			Design and order marketing material									
3			Public Launch Phase									
4			Distribute advance copies									
5			Coordinate magazine feature articles									
6			Launch public web portal for book									

Your initial task list should look like this

Enter task durations and dates

The scenario: You showed your initial task list to the resources who will perform the work and to other project stakeholders. They gave you their preliminary (although incomplete) feedback on some task durations and dates, which you'd like to record in the new book launch plan. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Enter a duration of one day for task 1, *Assign launch team members*.
2. Enter the following durations or text phrases for the other tasks.

Task ID	Task name	Duration
2	<i>Design and order marketing material</i>	Check with Marketing team
3	<i>Public Launch Phase</i>	(Leave blank)
4	<i>Distribute advance copies</i>	2d

3. For task 5, *Coordinate magazine feature articles*, in the **Start** field enter **1/22/18** and in the **Finish** field enter **1/30/18**.

Project calculates the duration as six days. Note that this is six working days: Monday through Wednesday, and Friday of the first week, and then Monday and Tuesday of the following week. Project also draws the Gantt bar for the task to span these working days plus the nonworking days (the Thursday, January 25 morale event you set up in [Chapter 3](#), “[Start a new plan](#),” plus the weekend) between them.

For task 6, *Launch public web portal for book*, you don't know a duration or start or finish date yet, but you can still capture what you do know.

4. In the **Start** field for task 6, enter **About two weeks before launch complete**.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18			Jan 14, '18			Jan 21, '18				
							T	F	S	S	M	T	W	T	F	S	S
1		Assign launch team members	1 day														
2		Design and order marketing material	Check with Marketing														
3		Public Launch Phase															
4		Distribute advance copies	2 days														
5		Coordinate magazine feature articles	6 days	Mon 1/22/18	Tue 1/30/18												
6		Launch public web portal for book		About two weeks													

After entering durations and dates, your task list should look like this

Enter milestone tasks

The scenario: You just learned the date by which the new book launch’s planning activities need to be completed for the book launch to occur on time. You want this date to have visibility in the plan. Continuing in the SimpleBuildTaskList plan, perform the following task:

1. Insert a new milestone task named **Planning complete** so that it will appear above task 3, *Public Launch Phase*.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18					
							T	F	S	S	M	T
1		Assign launch team members	1 day									
2		Design and order marketing material	Check with Marketing									
3		Planning complete	0 days									1/8
4		Public Launch Phase										

After adding a milestone task, the plan should look like this

Create summary tasks to outline the plan

The scenario: The new book launch plan is developed enough now to be organized into two phases. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Make the *Public Launch Phase* task the summary task of tasks 5, *Distribute advance copies*, through 7, *Launch public web portal for book*.

Notice the scheduling effect of creating the summary task. Because task 6 had specific start and finish dates already, Project set the start date of the summary task (and its other subtask with a duration) to the same date, January 22.

2. Insert a new summary task named **Planning Phase** that will include tasks 1 through 3, so they become its subtasks.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	T	F	S	S	M	T
1		Planning Phase	1 day	Mon 1/8/18	Mon 1/8/18							
2		Assign launch team members	1 day									
3		Design and order marketing	<i>Check with Marketing</i>									
4		Planning complete	0 days									
5		Public Launch Phase	6 days	Mon 1/22/18	Tue 1/30/18							
6		Distribute advance copies	2 days									
7		Coordinate magazine feature articles	6 days	Mon 1/22/18	Tue 1/30/18							
8		Launch public web portal for		<i>About two weeks</i>								

Now the plan is organized into two phases of work

Link tasks to create dependencies

The scenario: The new book launch plan is coming together nicely. Tasks have been outlined under summary tasks, and you're now ready to create task relationships. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Enter a task ID in the **Predecessor** field to link tasks 2 and 3 with a finish-to-start relationship.

Note that task 3 previously had no start or finish date, but by making it a successor of task 2, you gave Project enough information to give task 3 a start date: January 9th, the next working day following the end of task 2.

Next, you'll link tasks 3 and 4 by using a different technique.

2. Make task 3, *Design and order marketing material*, a predecessor of task 4 by using the **Task Information** dialog box.
3. Link all subtasks under *Public Launch Phase* (tasks 6 through 8) all at once by using the **Link the Selected Tasks** command.

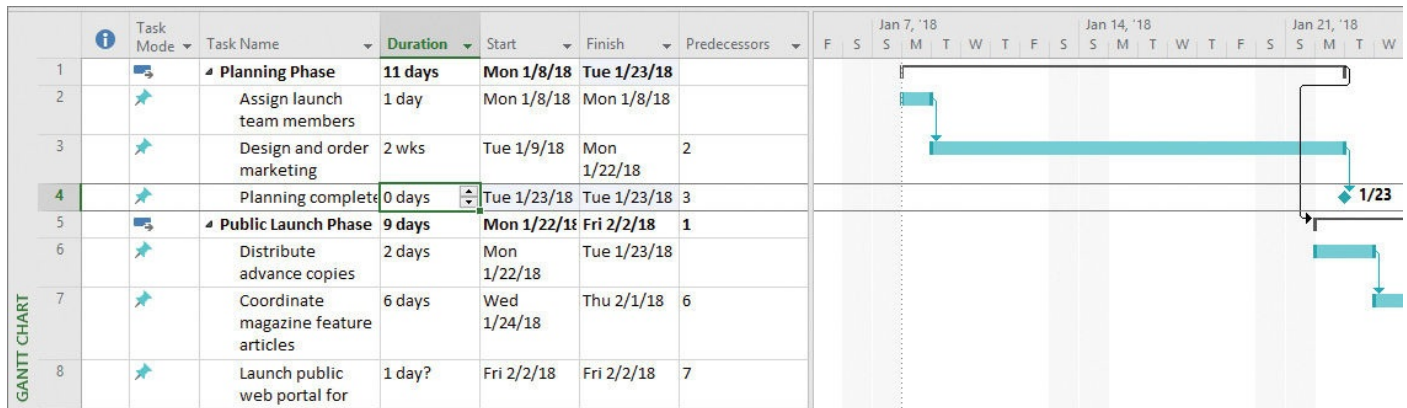
As you do so, keep an eye on task 8's text value of *About two weeks* in the Start field. Notice that Project replaced the text value in the Start field of task 8 with a scheduled date and supplied the default one-day duration. Project did so because it required a date value for the task as soon as it was linked to another task. The question mark following the duration value indicates that this is an estimated duration; the question mark has no effect on the scheduling of the task.

4. Link task 1, *Planning Phase*, to task 5, *Public Launch Phase*, by using your mouse in the chart portion of the Gantt Chart view.
5. The Lucerne marketing team has reported that its estimate is that task 3 should have a two-week duration. Change the duration of task 3 from the placeholder text *Check with Marketing* to two weeks.

Notice that the new duration for task 3 caused the Planning Phase summary task's

duration to increase, but it did not affect the scheduling of the task 4 milestone. Why not? Remember that this task is still manually scheduled. In the next step, you will force Project to adjust the start and finish dates of this task to honor its predecessor task while leaving it as manually scheduled.

6. Adjust task 4, *Planning Complete*, so that it respects the predecessor link.



Link lines between Gantt bars and task IDs in the Predecessors column convey task relationships

Project reschedules task 4 to start following the completion of its predecessor, task 3.

You might have noticed that the start of the Public Launch Phase summary task does not respect its link to its predecessor, the Planning Phase summary task. Clicking the Respect Link button with the Public Launch Phase summary task selected will not cause it to be rescheduled, as it did for task 4. That's because the start and finish dates of the summary task are driven by the earliest start and latest finish dates of its subtasks, which in this case are still manually scheduled.

Switch task scheduling from manual to automatic

The scenario: The new book launch plan has been reviewed by the resources who will carry out the work and by other project stakeholders. Although you expect the plan to change somewhat as you learn more about the book launch, you now have enough confidence in the plan overall to switch from manual to automatic task scheduling. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Switch tasks 2 through 4 to be automatically scheduled by using the **Auto Schedule** command on the **Task** tab.

Project changes the Task Mode icons and the formatting of the tasks' Gantt bars to indicate that they are now automatically scheduled.

2. Use the **Task Mode** field of task 6 to change it to be automatically scheduled.

This time, task 6 was rescheduled to start later. Why did this happen? Recall the dependency between the two summary tasks. The dependency said, in effect, that the Public Launch Phase should start when the Planning Phase was finished. However, because task 6 and the other subtasks of the Public Launch Phase were manually scheduled, Project did not reschedule the subtasks to account for this dependency. As soon as you set task 6 to automatic scheduling, Project also adjusted the start date

of its summary.

The remaining subtasks 7 and 8 are still manually scheduled, so Project did not reschedule them.

3. Switch tasks 7 and 8 to be automatically scheduled by using any method you prefer.

Project reschedules the remaining tasks. This extends the duration of the Public Launch Phase and of the overall project.

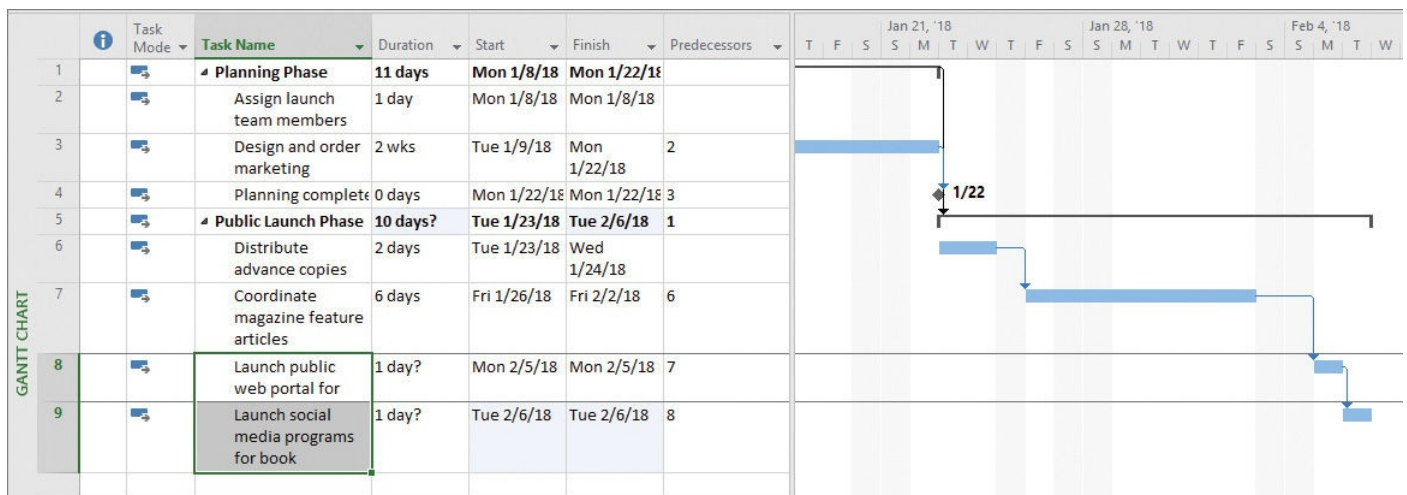
Right now, this plan is set to treat any new tasks you might enter as manually scheduled. You could leave this setting as is and then switch specific tasks to be automatically scheduled. However, this plan is developed enough now to switch to automatic scheduling. You can later set some specific tasks to manually scheduled as needed.

4. Switch the plan to make all new tasks automatically scheduled.

5. Enter a new task named **Launch social media programs for book below task 8.**

Project adds the new task to the plan. By default, it is not linked to any other task, is given a one-day duration, and is scheduled to start at its summary task's start date.

6. Link tasks 8 and 9.



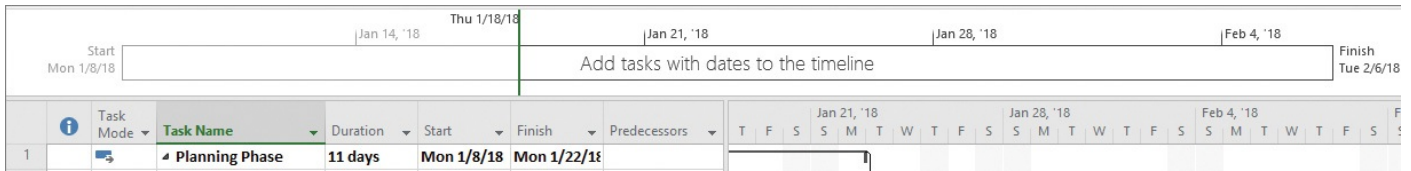
Now all tasks in the plan are automatically scheduled—note the icons in the Task Mode column

Project links the two tasks. Notice that the duration of the Public Launch Phase summary task was updated automatically from 9 to 10 days.

Check a plan's duration and finish date

The scenario: Your plan for the new book launch is helping the team get organized for the upcoming work. You are frequently asked to provide the currently scheduled duration and finish date for the book launch. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. In the Timeline view, note the plan's current start and finish dates.



You can view the plan’s overall timeframe at a glance in the Timeline view

2. Find the plan’s finish date in the **Project Information** dialog box.
3. Next, look at the duration information in more detail in the **Project Statistics** dialog box.

	Start	Finish
Current	Mon 1/8/18	Tue 2/6/18
Baseline	NA	NA
Actual	NA	NA
Variance	0d	0d

	Duration	Work	Cost
Current	21d?	0h	\$0.00
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	21d?	0h	\$0.00

Percent complete:
 Duration: 0% Work: 0%

Close

You can check key indicators of the plan in the Project Statistics dialog box

4. Display the project summary task in the Gantt Chart view.

Document task information

You have some details about a few tasks in the new book launch plan that you’d like to record in the plan. This will help you later by keeping such details right in the plan, and it will also be valuable for any other project stakeholders who might work with the plan in the future. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Add the note **Get recipient list from publicist** to task 6, *Distribute advance copies*.
2. Point to the note icon for task 6.

The note appears in a ScreenTip.











You might notice a note icon for task 0, the project summary task. We’ll look at that next.

3. Point to the note icon for task 0.

You might recognize the note that appears in the ScreenTip from [Chapter 3](#), “[Start a new plan](#).” This text was entered in the Comments field of the Properties dialog box.

4. Add the hyperlink text **Add to spring catalog here**, with an address of <http://www.lucernepublishing.com>, to task 8, *Launch public web portal for book*.

A hyperlink icon appears in the Indicators column. Pointing to the icon displays the descriptive text you entered earlier.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Jan 7, '18				
							F	S	S	M	T
0		Simple Plan	21 days?	Mon 1/8/18	Tue 2/6/18						
1		Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18						
2		Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18						
3		Design and order	2 wks	Tue 1/9/18	Mon 1/22/18	2					
4		Planning compl	0 days	Mon 1/22/18	Mon 1/22/18	3					
5		Public Launch Pha	10 days?	Tue 1/23/18	Tue 2/6/18	1					
6		Distribute advance copies	2 days	Tue 1/23/18	Wed 1/24/18						
7		Coordinate magazine feature articles	6 days	Fri 1/26/18	Fri 2/2/18	6					
8	 	Add to spring catalog here	1 day?	Mon 2/5/18	Mon 2/5/18	7					

The task notes and hyperlinks you have added to tasks are indicated by the icons in the Indicators column

5. Set up resources

In this chapter

- [Set up work resources](#)
 - [Enter the maximum capacity for work resources](#)
 - [Enter work resource pay rates](#)
 - [Adjust working time in a resource calendar](#)
 - [Set up cost resources](#)
 - [Document resources by using notes](#)
-

Practice files

For this chapter, use the SimpleSetUpResources practice file from the Project2016SBS\Ch05 folder. For practice file download instructions, see the introduction.

Resources include the people, equipment, and material needed to complete the work of a project. Effective resource management is one of the most significant advantages of using Project 2016 rather than task-focused planning tools such as issue-ticketing systems.

You can manage three types of resources in Project—work resources and two special-purpose resources: cost and material. Work resources include the people and equipment needed to complete the tasks in a project’s plan. Cost resources represent categories of financial costs, derived from specific tasks, that you need to account for in the plan. Examples include categories of expenses like travel and entertainment. Material resources are consumables that get used up as the project proceeds. For example, a construction project might need to track steel or concrete as it is used throughout the project. You will work with material resources in [Chapter 11](#), “[Fine-tune resource and assignment details](#).”

Setting up resource information in Project takes a little effort, but the time is well spent if your project is primarily driven by time or cost constraints (as nearly all projects are).

This chapter guides you through procedures related to setting up work resources, entering the maximum capacity for work resources, entering work resource pay rates, adjusting working time in a [resource calendar](#), setting up cost resources, and documenting resources by using notes.

Set up work resources

Work resources are the people and equipment doing the work of the project. Project focuses on two aspects of work resources: their availability and their costs. *Availability* pertains to when specific resources can work on tasks and how much work those resources can perform. *Costs* refer to the financial costs incurred by resources performing work on the project.

In Project, work resource names can refer to specific people or to specific job titles. Use

whatever naming convention makes the most sense to you and to those who will see your plan. The important questions are these: who will see these resource names, and how will they identify the resources? The resource names you choose will appear both in Project and in any resource information shared from Project.

A resource might refer to somebody who is already on staff, or to a position to be filled later. If you have not yet filled all the resource positions required, you might not have the names of specific people to enter. In that case, use descriptive placeholder names or job titles when setting up resources in Project.

Some examples of how you can enter work resource names are listed in the following table.

Work resource	Examples
An individual person identified by name	Jun Cao; Zac Woodall
An individual person identified by job title or function	Publisher; Contract specialist
A group of people who have common skills (when assigning such interchangeable resources to a task, you might not be concerned about who the individual resource is as long as that person has the right skills)	Copyeditors
Equipment	Offset lithography press

Project can help you make smarter decisions about managing resources and monitoring financial costs.

To enter work resource names

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet** to display the Resource Sheet view.
2. Click an empty cell in the **Resource Name** column.
3. Enter your resource names, pressing the **Enter** key after each one.

Project applies the default Work resource type in the Type field.



Tip

You can quickly import resources from your email address book. First, switch to the Resource Sheet view. Then, on the Resource tab, click Add Resources.

To insert a new work resource within a resource list

1. Display the Resource Sheet view.
2. Click in the cell in the **Resource Name** column where you want to insert the new

resource.

3. On the **Resource** tab, in the **Insert** group, click **Add Resources**, and then click **Work Resource**.

Project inserts a new row with the *<New Resource>* name in the Resource Name column, and renumbers the subsequent resources.

4. With *<New Resource>* selected, enter the resource name, and then press **Enter**.

To delete a resource

1. Right-click the resource name, and then click **Delete Resource**.

Equipment resource considerations

In Project, you set up people and equipment resources in exactly the same way; they are both examples of work resources. However, you should be aware of important differences in how you can schedule these two work resources. Most people resources have a typical working day of 8 hours and usually no more than 12 hours, but equipment resources might have much more varied capacities for work, ranging from short durations (followed by maintenance) to around-the-clock sessions without interruption. Moreover, people resources might be flexible in the tasks they can perform, but equipment resources tend to be more specialized. For example, a content editor for a book project might also act as a copyeditor when required, but a desktop copy machine cannot replace a printing press.

You do not need to track every piece of equipment that will be used in your plan, but you might want to set up equipment resources when:

- Multiple teams or people might need a piece of equipment to accomplish different tasks simultaneously, and the equipment might be overbooked.
- You want to plan and track costs associated with the equipment.

Consider these issues if your plans involve equipment resources.

Enter the maximum capacity for work resources

Work resources do not have unlimited capacity within the limited duration of a plan, and Project helps you manage this. The Max. Units field represents the maximum capacity of a resource to work on the tasks assigned to that resource. Specifying that a resource has 100% maximum units means that 100 percent of that resource's working time is available to work on assigned tasks in the plan. Project will alert you with an indicator and formatting if you assign the resource to more tasks than the resource can accomplish. For example, a resource will be overallocated if it is assigned to two or more tasks at 100% capacity each and the tasks overlap. 100% is the default Max. Units value for new work resources.

For a resource that represents not a specific person but a category of interchangeable people with a common skill set, you can enter a larger maximum units value to indicate the number of available people. For example, entering a maximum units value of 200%

for such a resource means that you expect two individual people who belong to that resource category to be available to work full time every workday, or four individual people to each work half time, or any equivalent combination.

For a resource that has less than full-time availability, you can enter a smaller maximum units value. For example, entering a maximum units value of 75% for such a resource means that you expect that resource's capacity to be three-quarters of a full-time resource. For a 40-hour work week, this equals 30 hours of capacity. Note that such a part-time working capacity might apply to a part-time worker or to a full-time worker who is allocated to a specific project only part time.

To adjust a resource's working capacity

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view click the **Max. Units** field for the resource you want to adjust (the *Max.* portion of the field's column heading might be the only part visible).



When you click a numeric value in a field like Max. Units, up and down arrows appear. You can click these to display the number you want, or you can enter the number directly in the field.

-
3. Enter the new value for the resource. For example, enter **200%** to represent two resources, or enter **50%** for a resource who has only half-time availability.



If you prefer, you can display and enter maximum units as partial or whole numbers (such as 0.5, 1, or 4) rather than as percentages (such as 50%, 100%, or 400%). To use this format, on the File tab, click Options. In the Project Options dialog box, click the Schedule tab. Under the Schedule heading, in the Show Assignment Units As A box, click Decimal.

Enter work resource pay rates

Almost all projects have some financial aspect, and cost limits the scope of many projects. Tracking and managing cost information in Project allows the project manager to answer such important questions as:

- What is the expected total cost of the project based on task durations and resource assignments?
- Is the organization using expensive resources to do work that less expensive resources could do?
- How much money will a specific type of resource or task cost over the life of the

project?

- Is the organization spending money at a rate that it can sustain for the planned duration of the project?

In Project, you can enter standard rates and costs per use for work and material resources, in addition to overtime rates for work resources. Recall that in Project there are three types of resources: work, cost, and material.



Tip

Cost resources do not use pay rates and are described later in this chapter. Material resources are introduced in [Chapter 11](#), “[Fine-tune resource and assignment details](#).”

You can enter pay rates with a variety of time bases—per minute, hourly (the default), daily, weekly, monthly, or yearly. You enter rates in the format of *rate/period*—for example, *30/h* for \$30 per hour. Period abbreviations are */m* for minutes, */h* for hours, */d* for day, */w* for week, */mo* for month and */y* for year.

When a work resource has a standard pay rate entered and is assigned to a task, Project calculates the cost of the assignment. Project does so by multiplying the resource’s assigned work value by his or her pay rate—both using a common increment of time (such as hours). You can then see the cost per resource, cost per assignment, and cost per task (and also costs rolled up to summary tasks and the entire plan). You will assign resources to tasks in [Chapter 6](#), “[Assign resources to tasks](#).”

Project handles overtime expenses differently. Project applies the overtime pay rate only when you specifically record overtime hours for an assignment. Project does not automatically calculate overtime hours and associated costs because there’s too great of a chance that it would apply overtime when you did not intend it.




Tip

If you work with a large number of resources who have the same standard or overtime pay rates, you can set up Project to apply these pay rates automatically whenever you add a new resource. To do this, on the File tab, click Options. In the Project Options dialog box, click Advanced. Under the heading General Options For This Project, enter the default pay rates you want.

You can specify when work resource standard and overtime costs should accrue. The options are at the start of work on a task, at the end of work on the task, or prorated (the default) evenly over the duration of the task.

In addition to or instead of cost rates, a resource can include a set fee that Project applies to each task to which the resource is assigned. This is called a *cost per use*. Unlike cost rates, the cost per use does not vary with the task’s duration or amount of work the resource performs on the task.

		Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
1		Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
2		Sharon Salavaria	Work		S		50%	100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
3		Toby Nixon	Work		T		100%	700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
4		Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5		Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6		Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

View a resource's pay rates and other cost-related details in the Resource Sheet view

To enter a standard rate for a resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click the **Std. Rate** field for the resource for which you want to set a standard pay rate.

Depending on the width of the column, you might only see *Std.* in the column heading.

3. Enter a standard rate by using the format of rate/period, such as **30/h**.

To enter an overtime rate for a resource

1. Display the Resource Sheet view.
2. Click the **Ovt. Rate** field for the resource for which you want to set an overtime pay rate.

Depending on the width of the column, you might only see *Ovt.* in the column heading.

3. Enter an overtime rate by using the format of rate/period, such as **45/h**.

To enter a cost per use for a resource

1. Display the Resource Sheet view.
2. In the **Cost/Use** field, enter the value you want.

Project management focus: Getting resource cost information

Work resources can account for the majority of costs in many projects. To take full advantage of the extensive cost-management features in Project, the project manager ideally should know the costs associated with each work resource. For people resources, it might be difficult to obtain such information. In many organizations, only senior management and human resource specialists know the pay rates of all resources working on a project, and they might consider this information confidential. Depending on your organizational policies and project priorities, you might not be able to track resource pay rates.

If you do include cost details in your plan and this is considered sensitive information, consider requiring a password to open such plans. To set a password, click the File tab and then click Save As. Select the location you want, and in the Save As dialog box, click Tools and then click General Options. In the General Options dialog box, select the password-protection options you want.

Another strategy to consider is to use averaged burdened rates for people resources. A *burdened rate* is a pay rate plus overhead costs per worker. An averaged burdened rate describes everyone in general, but no one in particular.

Adjust working time in a resource calendar

Project uses different types of calendars for different purposes. [Chapter 3, “Start a new plan,”](#) describes the project calendar, which specifies nonworking days for the entire plan. This topic focuses on resource calendars. A resource calendar controls the working and nonworking times of a specific resource. Project uses a resource calendar to determine when work for a resource can be scheduled. Resource calendars apply only to work resources (people and equipment), not to material or cost resources.

When you initially create resources in a plan, Project creates a resource calendar for each work resource. The initial working-time settings for resource calendars exactly match those of the project calendar, which by default is the Standard base calendar. The Standard base calendar is built into Project and accommodates a default work schedule from 8:00 A.M. to 5:00 P.M., Monday through Friday, with an hour off for lunch each day.

If all the working times of your resources match the working time of the project calendar, you do not need to edit any resource calendars. However, chances are that some of your resources will need exceptions to the working time in the project calendar, such as:

- A flex-time work schedule.
- Vacation time.
- Other times when a resource is not available to work on the project, such as time spent in training or attending a conference.



Tip

If you have a resource who is available to work on your project only part time, you might be tempted to set the working time of the resource in your project to reflect a part-time schedule, such as 8:00 A.M. to 12:00 P.M. daily. However, a better approach is to adjust the availability of the resource as recorded in the Max. Units field accordingly—in this case, to 50%. Changing the unit availability of the resource keeps the focus on the *capacity* of the resource to work on the project rather than on the specific times of the day when that work might occur. You can set the maximum units for a resource in the Resource Sheet view.

Changes that you make to the project calendar are reflected automatically in resource calendars derived from the same project calendar. For example, in the practice tasks in [Chapter 3](#), “[Start a new plan](#),” you specified a nonworking day for a staff morale event, and Project rescheduled all work to skip that day. Note, however, that after you create a resource calendar exception, that exception is not affected by later changes to the project calendar that cover the same time period.



Tip

If you find that you must edit several resource calendars in a similar way (to handle a night shift, for example), it might be easier to assign a different base calendar to a resource or collection of resources. This is more efficient than editing individual resource calendars, and you can use the base calendar to make plan-wide adjustments if needed. For example, if your project includes a day shift and a night shift, you can apply the [Night Shift base calendar](#) to resources who work the night shift. You change a base calendar in the Change Working Time dialog box. For collections of resources, you can select a specific base calendar directly in the Base Calendar column on the Entry table in the Resource Sheet view.

To specify a calendar exception for a work resource

1. On the **Project** tab, in the **Properties** group, click **Change Working Time**.
 2. In the **For calendar** box, click the name of the resource whose calendar you want to change.
-



Tip

When working in the Change Working Time dialog box, pay close attention to the value in the For Calendar field. It's not difficult to accidentally edit the wrong calendar.

3. In the **Name** field on the **Exceptions** tab in the lower portion of the dialog box, enter a description of the exception.

The description for the calendar exception is a handy reminder for you and others who might view the plan later.

4. In the **Start** and **Finish** fields, enter or select the dates you want.



Tip

To set up a partial working-time exception for a resource, such as a portion of a day when a resource cannot work, click Details. In the Details dialog box, you can also create recurring exceptions to the resource's availability.

Change Working Time

For calendar: Toby Nixon Create New Calendar ...

Base calendar: Standard

Legend:

- Working
- Nonworking
- 31 Edited working hours
- On this calendar:
- 31 Exception day
- 31 Nondefault work week

Click on a day to see its working times: January 26, 2018 is nonworking.

Based on:
Exception 'Toby attending a ...'
on calendar 'Toby Nixon'.

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Exceptions **Work Weeks**

	Name	Start	Finish
1	Toby attending a conference	1/26/2018	1/26/2018

Details...
Delete

Review or create working time calendar exceptions for individual resources in the Change Working Time dialog box

5. Click **OK** to close the Change Working Time dialog box.

To modify a resource's default working week days and times

1. Display the **Change Working Time** dialog box.
2. In the **For calendar** box, click the name of the resource whose calendar you want to change.
3. Click the **Work Weeks** tab.
4. Click **[Default]** directly under the **Name** column heading, and then click **Details**.
5. Under **Selected Day(s)**, select the day or the days you want to adjust.
6. Do any of the following:
 - To set the full days to nonworking, click **Set days to nonworking times**.
 - To set working times that differ from the base calendar, click **Set day(s) to these**

specific working times and then, in the **From** and **To** columns, enter the working times.

- To return to the base calendar working times, click **Use times from base calendar for these days**.

	From	To
1	8:00 AM	12:00 PM
2	1:00 PM	7:00 PM

Create nonstandard work-week schedules in the Details dialog box

7. After you complete your edits to the work week, click **OK**, and then click **OK** again to close the **Change Working Time** dialog box.



Tip

You can have a different, non-default working week for a specific time period. For example, you can set up a resource to work four 10-hour days each week for just one month. On the Work Weeks tab, click below [Default], add a name and the start and finish of the period. Then click Details to change the working times and days as described earlier in this procedure.

To assign a different base calendar to a resource

1. On the **Project** tab, in the **Properties** group, click **Change Working Time**.
2. In the **For calendar** field, select the resource you want.
3. In the **Base calendar** field of the resource, select the base calendar you want.



Tip

To quickly apply the same base calendar to multiple resources, in the Resource Sheet view, use the Base Calendar field.

Set up cost resources

Another type of resource you can use in Project is the cost resource. You can use a cost resource to represent a financial cost associated with a task in a plan. Although work resources (people and equipment) can have associated costs (hourly rates and fixed costs per assignment), the sole purpose of a cost resource is to associate a particular type of cost with one or more tasks. Common types of cost resources might include categories of expenses you want to track in a plan for accounting or financial reporting purposes, such as travel, entertainment, or training.

Cost resources do no work and have no effect on the scheduling of a task. The Max. Units, Standard and Overtime pay rate, and Cost Per Use fields do not apply to cost resources. After you assign a cost resource to a task and specify the cost amount per task, you can then see the cumulative costs for that type of cost resource, such as total travel costs in a project.

The way in which cost resources generate cost values differs from that of work resources. When you assign a work resource to a task, the work resource can generate a cost based on a pay rate (such as \$40 per hour for the length of the assignment), a flat per-use cost (such as \$100 per assignment), or both. You set up such pay rates and cost-per-use amounts once for the work resource, as described in the “[Enter work resource pay rates](#)” topic earlier in this chapter. However, you enter the cost value of a cost resource only when you assign it to a task. You do this in the Cost field of the Assign Resources dialog box or in the Cost field of the Task form with the Cost detail shown. This is described in “[Assign cost resources to tasks](#)” in [Chapter 6](#), “[Assign resources to tasks](#).”

To add a cost resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click in the **Resource Name** column where you want to add the cost resource.
3. On the **Resource** tab, in the **Insert** group, click **Add Resources**, and then click [Cost Resource](#).

Project inserts a row for the new cost resource. Project names the new cost resource <New Resource>.

4. With <New Resource > selected, enter the cost resource name, and then press **Enter**.

Document resources by using notes

You might recall from [Chapter 4](#), “[Build a task list](#),” that you can record additional information about a task, resource, or assignment in a note. For example, if a resource has flexible skills that can help the project, it is a good idea to record this in a note. That way, the note resides in the plan and can be easily viewed or printed.

[Chapter 4](#), “[Build a task list](#),” described creating a task note by clicking the Notes button on the Task tab, in the Properties group. You can enter resource notes in a similar way (by clicking the Notes button on the Resource tab, in the Properties group). Another option is

to enter notes directly in the Resource Form view. The advantage of using the Resource Form is that you can view and edit notes for multiple resources more quickly.

To enter a note for a resource in the Resource Information dialog box

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. Select a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Notes**.
4. In the **Notes** box, enter a note for the resource.

To enter a note for a resource by using the Resource Form

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. On the **Resource** tab, in the **Properties** group, click the **Details** button.

In this type of split view, details about the item that is selected in the upper pane (a resource, in this case) appear in the lower pane. You can quickly change the selected resource name in the upper pane by clicking a name directly, or by clicking Previous or Next in the Resource Form.

The Resource Form view can display one of several details; initially, it displays the Schedule details.

3. Click anywhere in the Resource Form view to change the focus to the Resource Form. The label of the Format tab changes to Resource Form Tools.
4. On the **Format** tab, in the **Details** group, click **Notes**.



You can also right-click in the gray background area of the Resource Form view and, in the shortcut menu that appears, click Notes.

The Notes details appear in the Resource Form view.

File Task Resource Report Project View Format Tell me what you want to do...

Resource Form Resource Name Form Schedule Work Cost Notes Objects

Type	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue
	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated
	Sharon Salavaria	Work		S		50%	100.00/wk	\$0.00/hr	\$0.00	Prorated
	Toby Nixon	Work		T		100%	700.00/wk	\$0.00/hr	\$0.00	Prorated
	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated
	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated
	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated
	Travel	Cost		T						Prorated

RESOURCE SHEET

Name: Sharon Salavaria Initials: S Max units: 50% Previous Next

Costs

Std rate: \$1,100.00/w Per use: \$0.00 Base cal: Standard

Ovt rate: \$0.00/h Accrue at: Prorated Group: Code:

RESOURCE FORM

Sharon's standard pay rate is adjusted for her half-time work schedule.

This is a great split view for quickly adding, editing, or reviewing resource details like notes

5. In the **Notes** box, enter the note for the resource.

Notice that as soon as you start typing the note, the Previous and Next buttons change to OK and Cancel.

6. Click **OK**.

Skills review

In this chapter, you learned how to:

- [Set up work resources](#)
- [Enter the maximum capacity for work resources](#)
- [Enter work resource pay rates](#)
- [Adjust working time in a resource calendar](#)
- [Set up cost resources](#)
- [Document resources by using notes](#)



Practice tasks

The SimpleSetUpResources practice file for these tasks is located in the Project2016SBS\Ch05 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA.](#)”

Set up work resources

The scenario: At Lucerne Publishing, you have a good start on the new book launch’s task list. You are now ready to set up the work resources needed to complete the new book launch. As with the task list, you expect some future changes to the resource details as you learn more about the project, but you have enough information to get started now. Open the SimpleSetUpResources plan in Project, and perform the following tasks:

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. Enter the following resource names:
 - **Jun Cao**
 - **Sharon Salavaria**
 - **Toby Nixon**
 - **Toni Poe**
 - **Zac Woodall**
 - **Copyeditors**


	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavaria	Work		S		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

The resource names you entered should look like this in the Resource Sheet

Enter the maximum capacity for work resources

The scenario: You need to change the default 100% maximum units value for some resources. You learned that the equivalent of four copyeditors will be allocated to the new book launch. You also have one resource in the plan, Sharon Salavaria, who is available for this project half time. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Change the Copyeditors resource maximum units value to **400%**.
2. Change Sharon Salavaria's maximum units value to **50%**.

		Resource Name ▾	Type ▾	Material ▾	Initials ▾	Group ▾	Max. ▾	Std. Rate ▾
1		Jun Cao	Work		J		100%	\$0.00/hr
2		Sharon Salavaria	Work		S		50%	\$0.00/hr
3		Toby Nixon	Work		T		100%	\$0.00/hr
4		Toni Poe	Work		T		100%	\$0.00/hr
5		Zac Woodall	Work		Z		100%	\$0.00/hr
6		Copyeditors	Work		C		400%	\$0.00/hr

After customizing the Max Units values for two resources, the Resource Sheet should look like this

Enter work resource pay rates

The scenario: You received the pay rates for the work resources involved in the new book launch from your payroll department. These pay rates are a mix of hourly and weekly rates. You need to enter these pay rates in the new book launch's plan. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Enter the following pay rates in the Standard (Std.) Rate field.

Resource Name	Standard Rate
Jun Cao	\$42 per hour
Sharon Salavaria	\$1,100 per week
Toby Nixon	\$2,700 per week
Toni Poe	Leave at \$0.00/hr (Toni is the book author, and you're not tracking her rate-based costs in this plan.)
Zac Woodall	\$55 per hour
Copyeditors	\$45 per hour

2. Enter an overtime rate of \$63 per hour for Jun Cao.

		Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use
1		Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00
2		Sharon Salavaria	Work		S		50%	100.00/wk	\$0.00/hr	\$0.00
3		Toby Nixon	Work		T		100%	700.00/wk	\$0.00/hr	\$0.00
4		Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00
5		Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00
6		Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00

The Resource Sheet should look like this after entering pay rates

Adjust working time in a resource calendar

The scenario: You have a couple of working-time updates to make in the new book launch’s plan. Toby Nixon has told you he’ll be away at a conference, and Jun Cao works a full-time but nonstandard schedule of 10 hours per day, four days per week (a “4-by-10” work schedule). You need to update their resource calendars accordingly. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Make January 26, 2018 a nonworking time calendar exception for Toby Nixon. Name the exception **Toby attending a conference**.

Change Working Time

For calendar: Toby Nixon Create New Calendar ...

Base calendar: Standard

Legend:

- Working
- Nonworking
- Edited working hours

On this calendar:

- Exception day
- Nondefault work week

Click on a day to see its working times: January 26, 2018 is nonworking.

Based on:
Exception 'Toby attending a ...' on calendar 'Toby Nixon'.

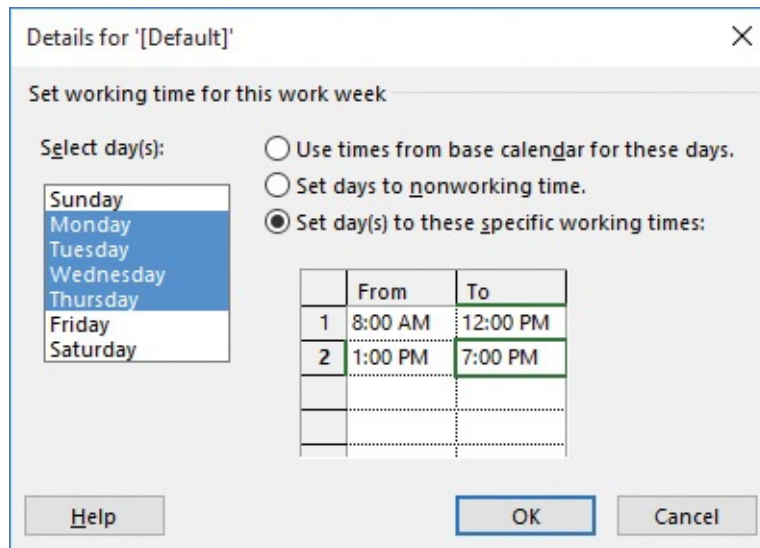
S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

	Name	Start	Finish
1	Toby attending a conference	1/26/2018	1/26/2018

Details...
Delete

After creating an exception in the Change Working Time dialog box, note the description and formatting of the date in the calendar

2. For Jun Cao, change the default work week to a “4-by-10” weekly work schedule (that is, 4 days per week, 10 hours per day Monday through Thursday, with Friday off). On the days Jun works, she’ll work from 8:00 AM to 7:00 PM with the noon hour off for lunch.



The working time settings for the selected days appear here; to see Friday's nonworking settings, select it

Set up cost resources

The scenario: For accounting purposes, you need to track travel expenses in the plan. You'll do so via a cost resource. Continuing in the SimpleSetUpResources plan, perform the following task:

1. Create a cost resource named **Travel**.

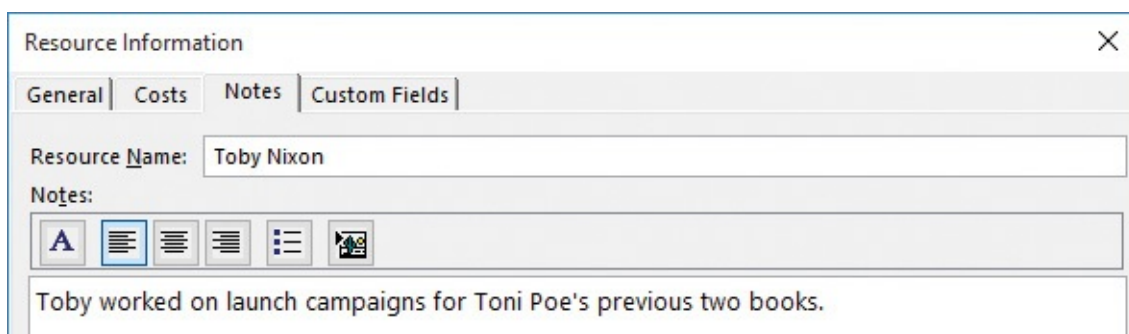
		Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
1		Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
2		Sharon Salavaria	Work		S		50%	100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
3		Toby Nixon	Work		T		100%	700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
4		Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5		Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6		Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
7		Travel	Cost		T						Prorated	

Your cost resource should look like this in the Resource Sheet

Document resources by using notes

The scenario: You collected some resource details that would be valuable to record in the plan. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Add this note for Toby Nixon in the **Resource Information** dialog box: **Toby worked on launch campaigns for Toni Poe's previous two books.**



Your resource note should look like this in the Resource Information dialog box

2. Use the **Resource Form** to add this note for Sharon Salavaria: **Sharon's standard pay rate is adjusted for her half-time work schedule.**

Name: Sharon Salavaria		Initials: S	Max units: 50%	Previous	Next
Costs		Base cal: Standard			
Std rate: \$1,100.00/w	Per use: \$0.00	Group:			
Ovt rate: \$0.00/h	Accrue at: Prorated	Code:			
Sharon's standard pay rate is adjusted for her half-time work schedule.					

Your resource note should look like this in the Resource Form



Tip

If you want to save your work, remember to save it with a different file name. This will preserve the original practice file for future use.

6. Assign resources to tasks

In this chapter

- [Assign work resources to tasks](#)
 - [Control work when adding or removing resource assignments](#)
 - [Assign cost resources to tasks](#)
 - [Check the plan after assigning resources](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch06 folder. For practice file download instructions, see the introduction.

In earlier chapters, you created tasks and resources. You are now ready to assign resources to tasks. An assignment is the matching of a resource to a task to do work. The process of assigning a resource might be called a *task assignment* or a *resource assignment*, depending on the perspective. It is the same thing in either case: a task plus a resource equals an assignment.



Important

When we talk about resources throughout this chapter, we are talking about work resources (people and equipment) unless we specify material or cost resources (see [Chapter 5, “Set up resources”](#)).

You do not have to assign resources to tasks in Project 2016; you could work only with tasks. However, when you assign resources to tasks, you can answer questions such as the following: Who should be working on what tasks, and when? Do we have the correct number of resources to accomplish the scope of work that our project requires? Are we expecting a resource to work on a task at a time when that resource will not be available to work? Have we assigned a resource to so many tasks that we have overallocated the resource?

This chapter guides you through procedures related to assigning work and cost resources to tasks.

Assign work resources to tasks

You might recall from [Chapter 5, “Set up resources,”](#) that the capacity of a resource to work is measured in units (a level-of-effort measurement) and recorded in the Max. Units field. The specific assignment of a work resource to a task involves an assignment units value, normally expressed as a percentage. Unless you specify otherwise, Project assigns 100 percent of the units for the resource to the task—that is, Project assumes that all the resource’s work time can be allotted to the task. If the resource has less than 100 percent maximum units, Project assigns the resource’s Max. Units value.

When you assign a work resource to a task, Project uses the resource's assignment units and the task's duration values to calculate the resulting work. If the resource has a pay rate, Project also calculates the resource and task costs for you.

Project calculates work by using this formula:

$$\text{Duration} \times \text{Assignment Units} = \text{Work}$$

Here's a simple example:

$$40 \text{ hours task duration} \times 100\% \text{ assignment units} = 40 \text{ hours of work}$$

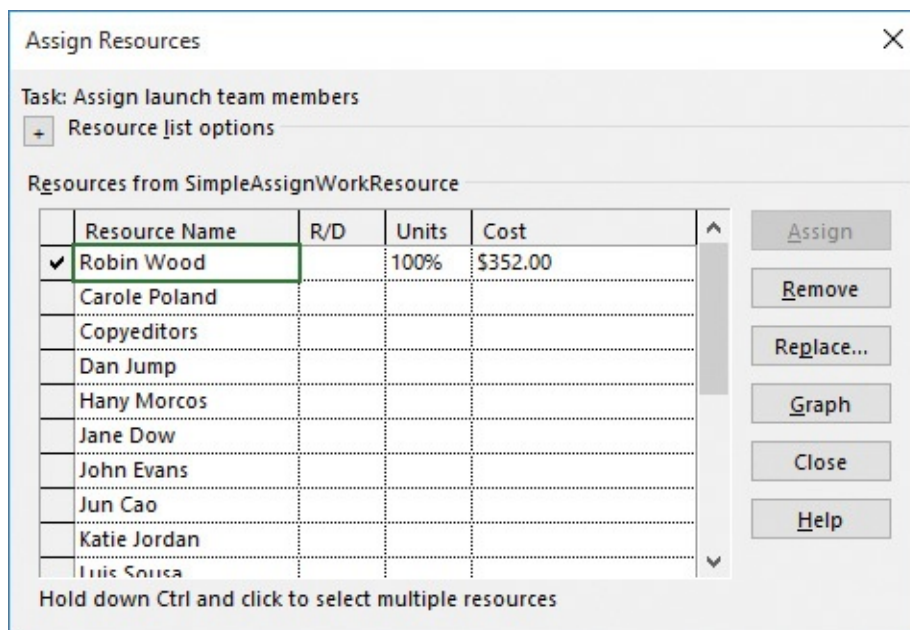
Here's a slightly more complicated example. If you assign two resources to a task that has a three-day duration, the result is:

$$24 \text{ hours (that's three 8-hour days) task duration} \times 200\% \text{ (for two resources) assignment units} = 48 \text{ hours of total work}$$

The 48 hours of work is the sum of each of the two resources' 24 hours of work. In other words, both resources will work full time on the task in parallel for its three-day duration.

After making the initial resource assignment to a task, you have some flexibility in determining how Project should respond when you add subsequent resources to the same task (or remove them). When you add (assign) or remove (unassign) resources, you can tell Project whether you want to change that initial work value and how it might affect other values of assignments and the duration of the task. We'll dive into adding or removing assignments in the "[Control work when adding or removing resource assignments](#)" topic later in this chapter.

There are different ways to assign resources. The Assign Resources dialog box works well in task-centric views like the Gantt Chart, Task Sheet, or Task Usage views.



Except for assigned resources, which always appear at the top of the list, resources are sorted alphabetically in the Assign Resources dialog box

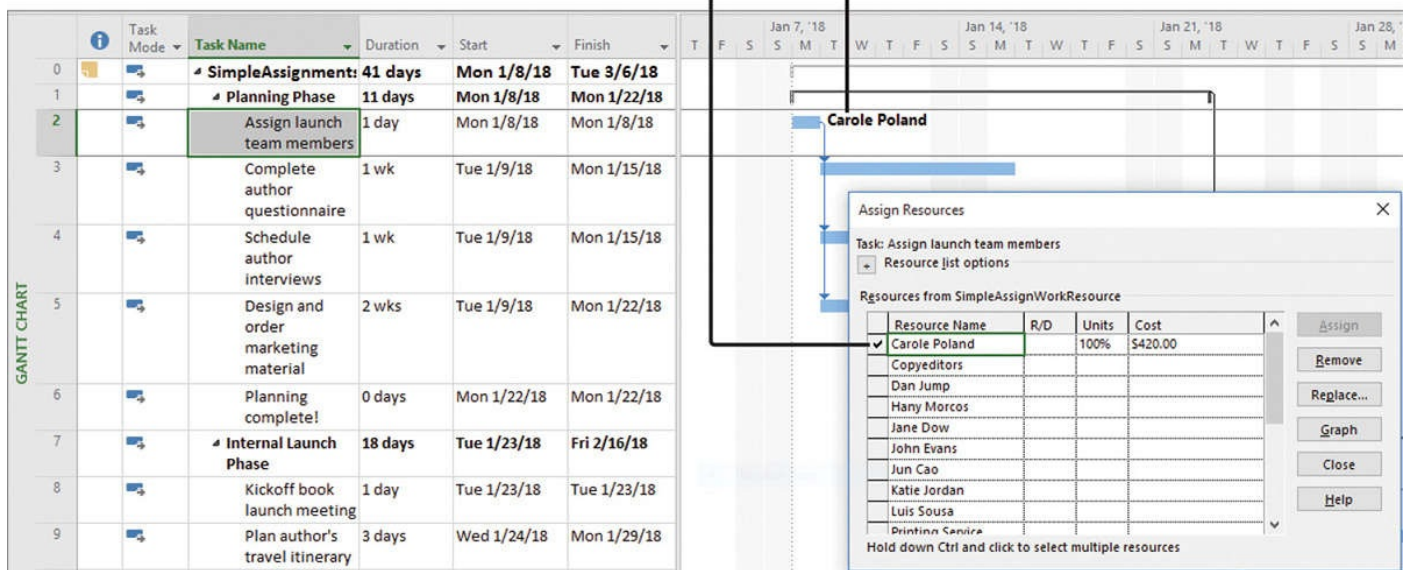
Important

If you are using Project Professional rather than Project Standard, the Assign Resources dialog box and some other dialog boxes will contain additional options relating to Project Server. Throughout this book, we won't use Project Server, so you can ignore these options. For more information about Project Server, see [Appendix C, "Collaborate: Project, SharePoint, and PWA."](#)

After you assign resources, you can see the results of the assignments in a number of ways.

The resource assigned to the selected task has a check mark next to its name in the Assign Resources dialog box

The name of the assigned resource appears next to the Gantt bar



Task ID	Task Name	Duration	Start	Finish
0	SimpleAssignment	41 days	Mon 1/8/18	Tue 3/6/18
1	Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18
2	Assign launch team members	1 day	Mon 1/8/18	Mon 1/8/18
3	Complete author questionnaire	1 wk	Tue 1/9/18	Mon 1/15/18
4	Schedule author interviews	1 wk	Tue 1/9/18	Mon 1/15/18
5	Design and order marketing material	2 wks	Tue 1/9/18	Mon 1/22/18
6	Planning complete!	0 days	Mon 1/22/18	Mon 1/22/18
7	Internal Launch Phase	18 days	Tue 1/23/18	Fri 2/16/18
8	Kickoff book launch meeting	1 day	Tue 1/23/18	Tue 1/23/18
9	Plan author's travel itinerary	3 days	Wed 1/24/18	Mon 1/29/18

Resource Name	R/D	Units	Cost
<input checked="" type="checkbox"/> Carole Poland		100%	\$420.00
<input type="checkbox"/> Copyeditors			
<input type="checkbox"/> Dan Jump			
<input type="checkbox"/> Hany Morcos			
<input type="checkbox"/> Jane Dow			
<input type="checkbox"/> John Evans			
<input type="checkbox"/> Jun Cao			
<input type="checkbox"/> Katie Jordan			
<input type="checkbox"/> Luis Sousa			
<input type="checkbox"/> Drishittin Sanjiva			

In the default Gantt Chart view, the names of assigned resources appear next to the Gantt bars of the tasks to which they are assigned

A cost value and check mark appear next to the assigned resource's name in the Assign Resources dialog box. Project calculates the cost of the assignment (the resource's standard pay rate times the resource's scheduled amount of work on the task) and displays the resulting value in the Cost field of the Assign Resources dialog box.

Another handy view in which you can see assignment details is the Task Form view.

The names of the view or views displayed appear here

ID	Resource Name	Units	Work
14	Toni Poe	100%	40h

In this split view, the Gantt Chart view appears in the upper pane, and below it is the Task Form

If you read [Chapter 5, “Set up resources,”](#) you might recognize that the Task Form is similar to the Resource Form but shows different kinds of information. In this type of split view, information about the item (a task, for example) that is selected in the upper pane appears in the lower pane. The Task Form displays one of several sets of information at a time, which are referred to as *details*.

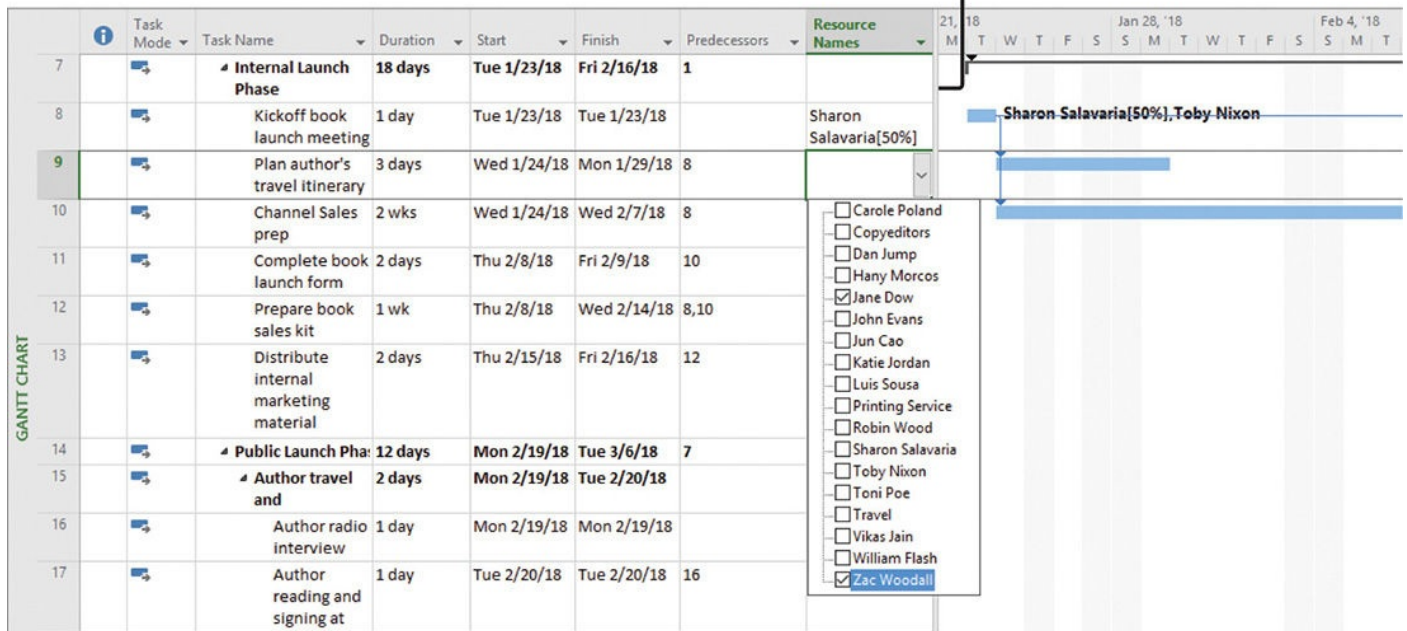
You can change the displayed details in the Task Form. With the Work details displayed, you can see the essential scheduling values for a task: for example, the values could be one week duration, 40 hours of work, and 100% assignment units.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
14	Toni Poe	100%	40h	0h	0h	0h	40h

Change the details option displayed in the Task Form; here Work details are displayed

Another quick way to assign resources is to use the Resource Names column in a Gantt Chart view.

Drag this vertical divider bar to see more or less of the table portion of the Gantt Chart view



Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
	Internal Launch Phase	18 days	Tue 1/23/18	Fri 2/16/18	1	
	Kickoff book launch meeting	1 day	Tue 1/23/18	Tue 1/23/18		Sharon Salavaria[50%]
	Plan author's travel itinerary	3 days	Wed 1/24/18	Mon 1/29/18	8	
	Channel Sales prep	2 wks	Wed 1/24/18	Wed 2/7/18	8	
	Complete book launch form	2 days	Thu 2/8/18	Fri 2/9/18	10	
	Prepare book sales kit	1 wk	Thu 2/8/18	Wed 2/14/18	8,10	
	Distribute internal marketing material	2 days	Thu 2/15/18	Fri 2/16/18	12	
	Public Launch Phase	12 days	Mon 2/19/18	Tue 3/6/18	7	
	Author travel and	2 days	Mon 2/19/18	Tue 2/20/18		
	Author radio interview	1 day	Mon 2/19/18	Mon 2/19/18		
	Author reading and signing at	1 day	Tue 2/20/18	Tue 2/20/18	16	

Resource Names list for the selected task:

- Carole Poland
- Copyeditors
- Dan Jump
- Hany Morcos
- Jane Dow
- John Evans
- Jun Cao
- Katie Jordan
- Luis Sousa
- Printing Service
- Robin Wood
- Sharon Salavaria
- Toby Nixon
- Toni Poe
- Travel
- Vikas Jain
- William Flash
- Zac Woodall

You can display the Resource Names list per task, and assign or unassign resources in the list

You select the check boxes of the resources you want to assign to the active task, or clear a check box to unassign a resource.

To assign a work resource to a task

You can perform the following steps in most task-centric views that include a table. Examples include the Gantt Chart, Task Sheet, and Task Usage views.

1. Click the task to which you want to assign a resource.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources**. The Assign Resources dialog box opens. You can drag it anywhere you want on the screen.
3. In the **Resource Name** column in the **Assign Resources** dialog box, click the resource or resources you want to assign, and then click **Assign**.

Or

You can perform the following steps in any task-centric view with the Entry table displayed.

1. Click in the **Resource Names** column for a task, and then click the arrow that appears. A list of resource names appears.



If the Resource Names column is not already visible, in a Gantt Chart view, drag the vertical divider bar to the right.

2. In the list of resource names, select the check box for the resource or resources you want to assign to the selected task, and then press the **Enter** key.
-



In addition to the methods of assigning resources shown here, you can assign resources in the Task Form view and on the Resources tab of the Task Information dialog box, among other places. As you use Project, you'll likely develop your own preference for the way you assign resources.

To view or edit assignment details in the Task Form view

You can perform these steps in the Task Sheet or Task Usage view, or any Gantt chart view.

1. On the **View** tab, in the **Split View** group, select the **Details** check box. Project splits the window into two panes with the Task Form view in the bottom pane.
2. Click anywhere in the Task Form view. With the focus on the Task Form, note that the label of the Format tab changes to Task Form Tools. Now the commands available on the Format tab apply to the Task Form.
3. On the **Format** tab, in the **Details** group, click **Work**. The Work details appear in the Task Form.

Control work when adding or removing resource assignments

As you saw previously, you define the amount of work that a task represents when you initially assign one or more resources to it. For tasks that are automatically (as opposed to manually) scheduled, Project gives you an option that allows you to control how it should calculate work on a task when you assign additional resources to or unassign resources from the task.

This option is called [effort-driven scheduling](#), and when it is in effect, it works like this:

- The work of a task remains constant as you assign or unassign resources.
- As more resources are assigned to a task, its duration decreases. The total work remains the same and is distributed among the assigned resources.
- Similarly, as resources are unassigned from a task, its duration increases. The total work remains the same and is distributed among the remaining assigned resources.

You have flexibility in how you apply effort-driven scheduling. By default, effort-driven scheduling is disabled for all tasks you create in Project. You can turn on effort-driven scheduling for an entire plan or just specific tasks. You can also use the options in an Actions list (described later in this topic) to control how Project should recalculate work on a task immediately after assigning or unassigning a resource.

Let's walk through an example of how effort-driven scheduling works. We've included the Task Form view in our example because it's a convenient way to see assignment units,

work, and duration values.

The screenshot displays the Gantt chart and the Task Form for task 5, "Design and order marketing material". The Gantt chart shows the task duration from Tue 1/9/18 to Mon 1/22/18, assigned to Toby Nixon. The Task Form shows the task details and the resource assignment table.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
13	Toby Nixon	100%	80h	0h	0h	0h	80h

To better see how effort-driven scheduling affects assignment units, work, and duration values, display the Task Form

Initially, Toby is assigned to task 5. A quick check of the assignment calculation looks like this:

80 hours (the same as 10 days, or two weeks) task duration × 100% of Toby's assignment units = 80 hours of work

Toby needs some help with this task, so you add Zac to the task.

The screenshot displays the Gantt chart and the Task Form for task 5, "Design and order marketing material", after adding Zac Woodall. The Gantt chart shows the task duration from Tue 1/9/18 to Mon 1/22/18, assigned to Toby Nixon and Zac Woodall. The Task Form shows the task details and the resource assignment table.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
13	Toby Nixon	100%	80h	0h	0h	0h	80h
18	Zac Woodall	100%	80h	0h	0h	0h	80h

With effort-driven scheduling turned off, assigning an additional resource to a task results in more work and the same duration

Because effort-driven scheduling is turned off for this task, Project adds more work to this task and updates the assignment values:

80 hours (the same as 10 days, or two weeks) task duration × 200% (that is, the sum of Toby's and Zac's assignment units) = 160 hours of work

You use the Actions list to control how Project schedules the work on a task when adding or removing resources. Note the small green triangle in the upper-left corner of the name of task 5. This is a graphical indicator that an action is now available. Until you perform another action, you can use the Actions list to choose how you want Project to handle the additional resource assignment.



Tip

Actions indicators appear immediately after you perform certain actions such as assigning or unassigning resources in task-centric views that include tables. You can perform some of the same actions in the Task Forms, but doing so does not trigger the Actions indicators.

The small triangle in the upper-left corner of the field indicates that the Actions list is available. Click it to see the available options.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem.
13	Toby Nixon	100%	80h	0h	0h	0h	80h
18	Zac Woodall	100%	80h	0h	0h	0h	80h

The Actions indicator appears immediately after you change resource assignments

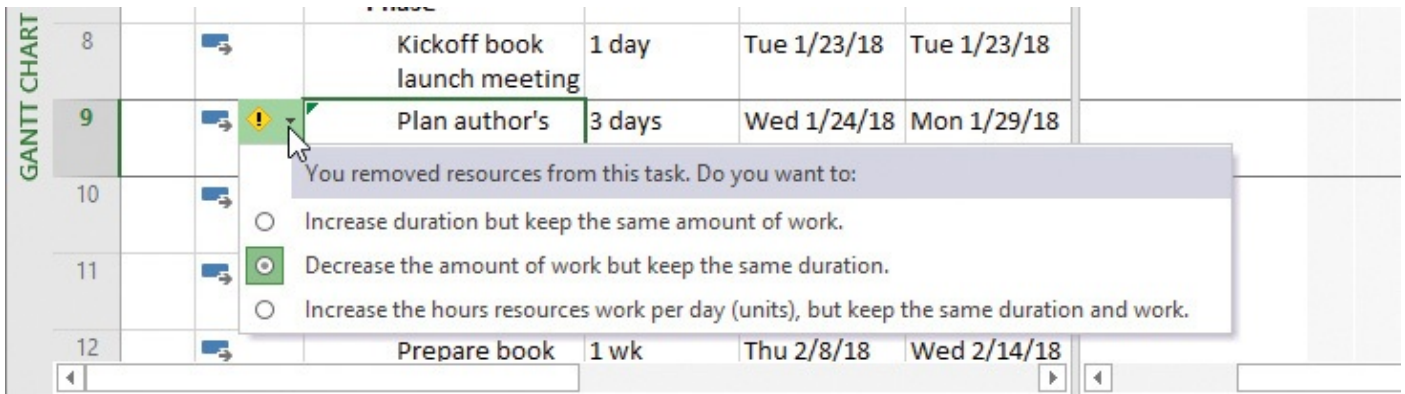
You can use these options to choose the scheduling result that you want. You can adjust the task's duration, the resources' work, or the assignment units.



Tip

You will see other Actions indicators while using Project. They generally appear when you might otherwise ask yourself, "Hmm, why did Project just do that?" (such as when a task's duration changes after you assign an additional resource). The Actions list gives you the chance to change how Project responds to your actions.

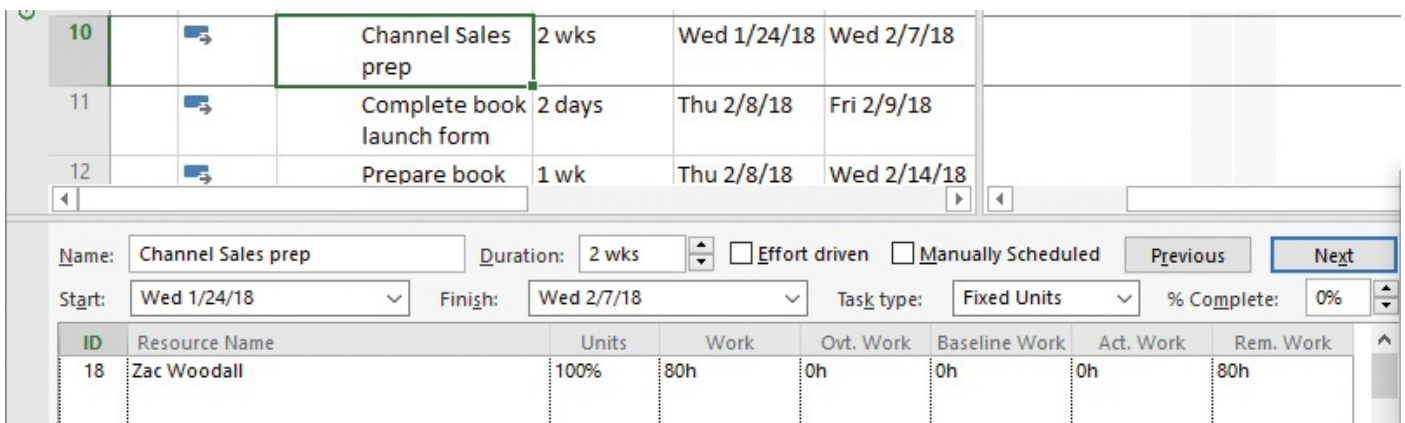
When a task has multiple resources assigned and you unassign one from the task, you can also use the Actions list to instruct Project how to schedule the remaining resource assignments on the task.



Use the Actions list to control how Project reschedules the remaining assignments when you unassign a resource from a task

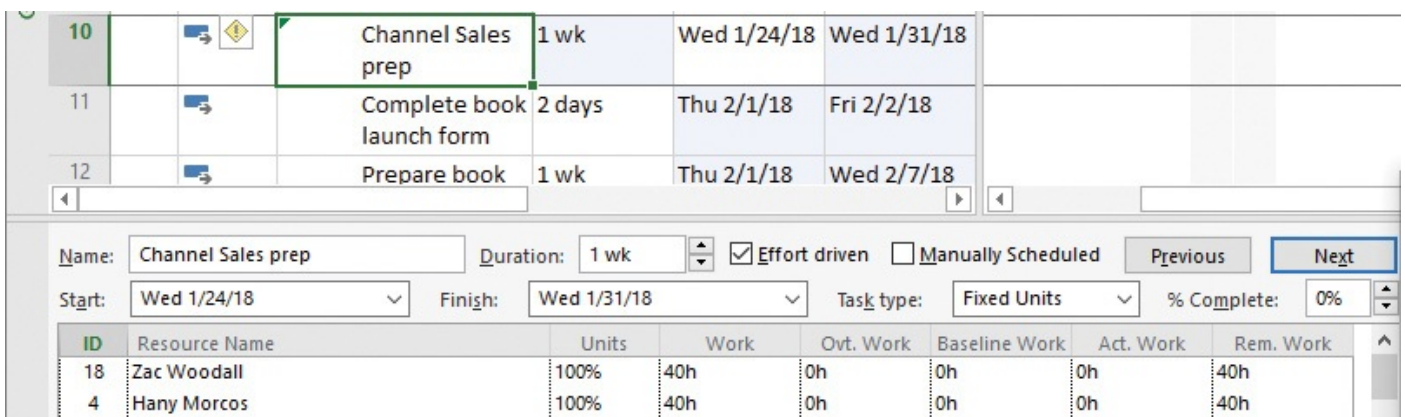
So far, we've focused on adjusting duration and work values as you add or remove resources from tasks. You can also change the default setting for a task such that as you add resources to the task, its work is unchanged and duration is decreased.

Let's return to our effort-driven scheduling example. Currently, just Zac is assigned to task 10, and it has a two-week duration. Notice in the Task Form that currently effort-driven scheduling is off for this task.



The Task Form also conveys the selected task's effort-driven scheduling status

When effort-driven scheduling is turned on and another resource is assigned to the task, note the result.



When effort-driven scheduling is enabled, assigning an additional resource to a task has a different result

The task 10 duration is reduced from two weeks to one week. The total work on the task remains 80 hours, but now it is split evenly between Zac and Hany. If this wasn't the

scheduling result you wanted, you could use the Actions list to change how Project responds to the additional resource assignment.

The order of your actions matters when effort-driven scheduling is enabled. If you initially assign two resources to a task with a duration of three days (equal to 24 working hours), Project schedules each resource to work 24 hours, for a total of 48 hours of work on the task. However, you might initially assign one resource to a task with a duration of 24 hours and later add a second resource. In this case, effort-driven scheduling will cause Project to schedule each resource to work 12 hours in parallel, keeping the total of 24 hours of work on the task. Remember that when it's turned on, effort-driven scheduling adjusts the task duration only if you add or remove resources from a task.

Project management focus: When should effort-driven scheduling apply?

You should consider the extent to which effort-driven scheduling should apply to the tasks in your projects. For example, if one resource should take 10 hours to complete a task, could 10 resources complete the task in 1 hour? How about 20 resources in 30 minutes? Probably not—the resources would likely get in each other's way and require additional coordination to complete the task.

No single rule exists about when you should apply effort-driven scheduling and when you should not. As the project manager, you should analyze the nature of the work required for each task in your project and use your best judgment.

To change the schedule result when you assign an additional resource to a task

You can perform these steps in any task-centric view that includes a table. Examples include the Gantt Chart, Task Sheet, and Task Usage views.

1. Select a task that already has a resource or resources assigned.
 2. In the **Assign Resources** dialog box, click the resource you want, and then click **Assign**.
 3. Click the **Actions** button that appears just to the left of the task name, and then select the schedule result you want.
-



When you make changes to assignments in the Resource name column, you will also see the Actions button. You will only see this on automatically scheduled tasks.

To change the schedule result when you remove a resource from a task

These steps apply as long as at least one resource remains assigned to the task. You can perform these steps in any task-centric view that includes a table.

1. Select a task that has multiple resources assigned.

2. In the **Assign Resources** dialog box, click the assigned resource you want, and then click **Remove**.
 3. Click the **Actions** button that appears just to the left of the task name, and then select the schedule result you want.
-



If you unassign all resources from a task, the **Actions** button will not appear. That's because the **Actions** button applies only when a task has work, and work is the result of assigning a resource to the task.

To manage effort-driven scheduling for a specific task or tasks

1. Select the task or tasks you want.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. On the **Advanced** tab of the **Task Information** dialog box, select or clear the **Effort Driven** check box.

To turn on effort-driven scheduling for all new tasks in a plan

1. On the **File** tab, click **Options**.
2. In the **Project Options** dialog box, click **Schedule**.
3. Under **Scheduling Options For This Project**, select the **New Tasks Are Effort Driven** check box.

Assign cost resources to tasks

Recall from [Chapter 5](#), “[Set up resources](#),” that a cost resource is used to represent a financial cost associated with a task in a project. Cost resources might include categories of expenses you want to budget and track for accounting or financial reporting purposes.

Cost resources do not incur assignment units, so they do no work and have no effect on the scheduling of a task. In fact, the cost value derived from assigning a cost resource to a task will remain the same regardless of any changes made to the scheduling of the task, such as work resources being assigned or unassigned, or the task's duration changing.

Broadly speaking, the costs that tasks can incur include:

- Work resource costs, such as a person's standard pay rate times the amount of work that person performs on the task.
- Cost resource costs, which are fixed dollar amounts you enter when assigning the cost resources to a task.

The costs derived from cost-resource assignments represent planned costs. (Indeed, you should consider all costs that Project has calculated so far in the schedule to be planned costs, such as those resulting from work-resource assignments to tasks.) Later, you can enter actual costs if you want to compare them with the budget.

To assign a cost resource to a task

1. In a task-centric view that includes a table, click the task to which you want to assign a cost resource. Examples include the Gantt Chart, Task Sheet, and Task Usage views.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources**. The Assign Resources dialog box opens. You can drag it anywhere you want on the screen.
3. In the **Assign Resources** dialog box, click the **Cost** field for the cost resource you want to assign, and then enter a cost value for that assignment.

Check the plan after assigning resources

After you create a task list and assign resources to tasks, your plan contains a large number of details. Some of these details will be critical to the success of your plan, but they might not be visible in the view you have displayed. This topic illustrates several ways of seeing a plan's key indicators.

There are many ways you can see key indicators of a plan in Project. These indicators can help answer such questions as the following:

- Who is assigned to do what work in the plan?
- How long will it take to complete the project?
- How much will it cost?

For many projects, the answers to these questions are likely to change as time passes. For this reason, it's a good practice to quickly be able to show current project status. This can keep you, the project manager, informed, and it can also be useful information for the resources performing the work, the project's sponsors, and other stakeholders.



In addition to the views and features described in this topic, the Timeline, Project Summary task, and Project Statistics dialog box are all great places to see the key indicators of a plan. These features were introduced in [Chapter 4, "Build a task list."](#)

After resources have been assigned to tasks in a plan, two common questions that might come up are, "How much will this cost?" and "Who's doing what work, and when?" In this topic, we'll introduce features that help answer these questions. Because these are such important questions for successful project management, we'll return to these and related features frequently in later chapters.

First, let's focus on costs. We'll switch to a Task Sheet view with the Cost table displayed. Sheet views are handy when you want to focus on the content of the table and don't need to see a chart.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
0	▸ New book launch	\$0.00	Prorated	19,740.00	\$0.00	\$19,740.00	\$0.00	19,740.00
1	▸ Planning Phase	\$0.00	Prorated	\$11,900.00	\$0.00	\$11,900.00	\$0.00	\$11,900.00
2	Assign launch te	\$0.00	Prorated	\$420.00	\$0.00	\$420.00	\$0.00	\$420.00
3	Complete autho	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	Schedule autho	\$0.00	Prorated	\$1,680.00	\$0.00	\$1,680.00	\$0.00	\$1,680.00
5	Design and orde	\$0.00	Prorated	\$9,800.00	\$0.00	\$9,800.00	\$0.00	\$9,800.00
6	Planning compl	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	▸ Internal Launch Ph	\$0.00	Prorated	\$7,040.00	\$0.00	\$7,040.00	\$0.00	\$7,040.00
8	Kickoff book lau	\$0.00	Prorated	\$650.00	\$0.00	\$650.00	\$0.00	\$650.00
9	Plan author's tra	\$0.00	Prorated	\$2,640.00	\$0.00	\$2,640.00	\$0.00	\$2,640.00
10	Channel Sales p	\$0.00	Prorated	\$3,750.00	\$0.00	\$3,750.00	\$0.00	\$3,750.00
11	Complete book	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	Prepare book sa	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	Distribute inter	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
14	▸ Public Launch Pha	\$0.00	Prorated	\$800.00	\$0.00	\$800.00	\$0.00	\$800.00
15	▸ Author travel ar	\$0.00	Prorated	\$800.00	\$0.00	\$800.00	\$0.00	\$800.00
16	Author radio	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	Author readi	\$0.00	Prorated	\$800.00	\$0.00	\$800.00	\$0.00	\$800.00

TASK SHEET

Displaying the Task Sheet view with the Cost table displayed is a good way to see cost details per task, and rolled up to summary tasks and to the project summary task

The Cost table includes various cost values for each subtask. These subtask cost values roll up to their summary tasks, and ultimately all cost values roll up to the project summary task.

To shift focus from a task-centric to a resource-centric view of costs, use the Cost table in the Resource Sheet view.

	Resource Name	Cost	Baseline	Variance	Actual Cost	Remaining
1	Carole Poland	\$420.00	\$0.00	\$420.00	\$0.00	\$420.00
2	Copyeditors	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	Dan Jump	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	Hany Morcos	\$1,550.00	\$0.00	\$1,550.00	\$0.00	\$1,550.00
5	Jane Dow	\$2,640.00	\$0.00	\$2,640.00	\$0.00	\$2,640.00
6	John Evans	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	Jun Cao	\$1,680.00	\$0.00	\$1,680.00	\$0.00	\$1,680.00
8	Katie Jordan	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	Luis Sousa	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	Robin Wood	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	Sharon Salavaria	\$110.00	\$0.00	\$110.00	\$0.00	\$110.00
13	Toby Nixon	\$5,940.00	\$0.00	\$5,940.00	\$0.00	\$5,940.00
14	Toni Poe	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15	Travel	\$800.00	\$0.00	\$800.00	\$0.00	\$800.00
16	Vikas Jain	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	William Flash	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18	Zac Woodall	\$6,600.00	\$0.00	\$6,600.00	\$0.00	\$6,600.00

RESOURCE SHEET

Displaying the Resource Sheet view with the Cost table displayed is a good way to see cost details per resource

This view displays the total costs per resource, based on the resource's pay rates, cost per use, and specific assignments.

Project includes many ways of answering the "Who does what, when?" question. A handy view for this purpose is the Task Usage view with the Summary table displayed.

	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Details	S	Jan 7, '18	M
0		New book launch	36 days	Mon 1/8/18	Tue 2/27/18	0%	\$19,740.00	396 hrs	Work			10h
1		Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18	0%	\$11,900.00	248 hrs	Work			10h
2		Assign launch te	1 day	Mon 1/8/18	Mon 1/8/18	0%	\$420.00	8 hrs	Work			8h
		Carole Polai		Mon 1/8/18	Mon 1/8/18		\$420.00	8 hrs	Work			8h
3		Complete autho	1 wk	Tue 1/9/18	Mon 1/15/18	0%	\$0.00	40 hrs	Work			
		Toni Poe		Tue 1/9/18	Mon 1/15/18		\$0.00	40 hrs	Work			
4		Schedule autho	1 wk	Mon 1/8/18	Mon 1/15/18	0%	\$1,680.00	40 hrs	Work			2h
		Jun Cao		Mon 1/8/18	Mon 1/15/18		\$1,680.00	40 hrs	Work			2h
5		Design and orde	2 wks	Tue 1/9/18	Mon 1/22/18	0%	\$9,800.00	160 hrs	Work			
		Toby Nixon		Tue 1/9/18	Mon 1/22/18		\$5,400.00	80 hrs	Work			
		Zac Woodal		Tue 1/9/18	Mon 1/22/18		\$4,400.00	80 hrs	Work			
6		Planning compl	0 days	Mon 1/22/18	Mon 1/22/18	0%	\$0.00	0 hrs	Work			
7		Internal Launch Ph	13 days	Tue 1/23/18	Fri 2/9/18	0%	\$7,040.00	140 hrs	Work			
8		Kickoff book lau	1 day	Tue 1/23/18	Tue 1/23/18	0%	\$650.00	12 hrs	Work			
		Sharon Sala		Tue 1/23/18	Tue 1/23/18		\$110.00	4 hrs	Work			
		Toby Nixon		Tue 1/23/18	Tue 1/23/18		\$540.00	8 hrs	Work			
9		Plan author's tr	6 days	Wed 1/24/18	Thu 2/1/18	0%	\$2,640.00	48 hrs	Work			
		Jane Dow		Wed 1/24/18	Thu 2/1/18		\$2,640.00	48 hrs	Work			

TASK USAGE

The Task Usage view groups the assigned resources below each task and shows you, among other things, assignment details rolled up per task

The pivot of this view is the Resource Usage view with the Summary table applied.

									Jan 21, '18		
									S	M	T
Resource Name	Group	Max. Units	Pt	Std. Rate	Ovt. Rate	Cost	Work	Details			
Unassigned		100%	0%	\$0.00/hr	\$0.00/hr	\$0.00	0 hrs	Work			
Planning corr			100%			\$0.00	0 hrs	Work			
Complete bo			100%			\$0.00	0 hrs	Work			
Prepare book			100%			\$0.00	0 hrs	Work			
Distribute int			100%			\$0.00	0 hrs	Work			
Author radio			100%			\$0.00	0 hrs	Work			
Distribute ad			100%			\$0.00	0 hrs	Work			
Distribute bo			100%			\$0.00	0 hrs	Work			
Coordinate r			100%			\$0.00	0 hrs	Work			
Launch publi			100%			\$0.00	0 hrs	Work			
Launch socia			100%			\$0.00	0 hrs	Work			
Launch comp			100%			\$0.00	0 hrs	Work			
1	Carole Poland	100%	100%	100.00/wk	\$0.00/hr	\$420.00	8 hrs	Work			
	Assign launcl		100%			\$420.00	8 hrs	Work			
2	Copyeditors	400%	0%	\$45.00/hr	\$0.00/hr	\$0.00	0 hrs	Work			
3	Dan Jump	50%	0%	\$75.50/hr	\$0.00/hr	\$0.00	0 hrs	Work			
4	Hany Morcos	100%	100%	550.00/wk	\$0.00/hr	\$1,550.00	40 hrs	Work			
	Channel Sale:		100%			\$1,550.00	40 hrs	Work			
5	Jane Dow	100%	100%	\$55.00/hr	\$0.00/hr	\$2,640.00	48 hrs	Work			
	Plan author's		100%			\$2,640.00	48 hrs	Work			
6	John Evans	100%	0%	780.00/wk	\$0.00/hr	\$0.00	0 hrs	Work			
7	Jun Cao	100%	100%	\$42.00/hr	\$63.00/hr	\$1,680.00	40 hrs	Work			
	Schedule auti		100%			\$1,680.00	40 hrs	Work			

The Resource Usage view groups the assigned tasks below each resource and shows you, among other things, assignment details rolled up per resource

The Resource Usage view groups the assigned tasks below each resource—this is the same assignment information as is shown in the Task Usage view, but grouped by resources rather than tasks. The two usage views give you insights into who does what work, and when. You’ll work with them frequently in later chapters.

To check the plan’s costs per task

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost**. The Cost table appears, replacing the Entry table.

To check the plan’s costs per resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost**. The Cost table appears, replacing the Entry table.

To see resource assignment and other details grouped by task

1. On the **View** tab, in the **Task Views** group, click **Task Usage**. The Task Usage view appears.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Summary**. The Summary table appears, replacing the Entry table.

To see task assignment and other details grouped by resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage**. The Resource Usage view appears.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Summary**. The Summary table appears, replacing the Entry table.

Skills review

In this chapter, you learned how to:

- [Assign work resources to tasks](#)
- [Control work when adding or removing resource assignments](#)
- [Assign cost resources to tasks](#)
- [Check the plan after assigning resources](#)



Practice tasks

The practice files for these tasks are located in the Project2016SBS\Ch06 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Assign work resources to tasks

The scenario: At Lucerne Publishing, you are ready to make the initial resource assignments in the new book launch plan. Because you previously accounted for the pay rates of work resources, you also want to see the initial cost and duration calculations of the plan for later comparison. Open the SimpleAssignWorkResource plan in Project, and then perform the following tasks:

1. Check the plan’s initial values via the Task Usage view with the **Summary** table visible.

	Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾	% Comp ▾	Cost ▾	Work ▾	Details	S
0	➔	▸ New book launch	41 days	Mon 1/8/18	Tue 3/6/18	0%	\$0.00	0 hrs	Work	
1	➔	▸ Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18	0%	\$0.00	0 hrs	Work	
2	➔	Assign launch te	1 day	Mon 1/8/18	Mon 1/8/18	0%	\$0.00	0 hrs	Work	
3	➔	Complete autho	1 wk	Tue 1/9/18	Mon 1/15/18	0%	\$0.00	0 hrs	Work	
4	➔	Schedule autho	1 wk	Tue 1/9/18	Mon 1/15/18	0%	\$0.00	0 hrs	Work	
5	➔	Design and orde	2 wks	Tue 1/9/18	Mon 1/22/18	0%	\$0.00	0 hrs	Work	
6	➔	Planning compl	0 days	Mon 1/22/18	Mon 1/22/18	0%	\$0.00	0 hrs	Work	
7	➔	▸ Internal Launch Ph	18 days	Tue 1/23/18	Fri 2/16/18	0%	\$0.00	0 hrs	Work	
8	➔	Kickoff book lau	1 day	Tue 1/23/18	Tue 1/23/18	0%	\$0.00	0 hrs	Work	
9	➔	Plan author's tr	3 days	Wed 1/24/18	Mon 1/29/18	0%	\$0.00	0 hrs	Work	
10	➔	Channel Sales p	2 wks	Wed 1/24/18	Wed 2/7/18	0%	\$0.00	0 hrs	Work	
11	➔	Complete book	2 days	Thu 2/8/18	Fri 2/9/18	0%	\$0.00	0 hrs	Work	
12	➔	Prepare book se	1 wk	Thu 2/8/18	Wed 2/14/18	0%	\$0.00	0 hrs	Work	
13	➔	Distribute inter	2 days	Thu 2/15/18	Fri 2/16/18	0%	\$0.00	0 hrs	Work	

TASK USAGE

In the Task Usage view with the Summary table displayed, the project summary task conveys some of the plan's essential details

Note the current duration of 41 days and zero work and cost, visible for the project summary task. After you assign work and cost resources, you'll check these values again.

2. Switch back to the Gantt Chart view, and then use the **Assign Resources** dialog box to assign Carole Poland to task 2, *Assign launch team members*.

After you assign Carole, note the resulting assignment cost value in the Assign Resources dialog box.

3. Use the same technique to assign Toni Poe to task 3, *Complete author questionnaire*.

Because Toni has no pay rate, her resulting assignment cost is zero.

4. Display the Task Form view with **Work** details.

5. Assign the following resources to tasks. As you do so, note the **Duration**, **Units**, and **Work** values in the **Task Form** (recall that these are the three essential variables for assignment calculations).

For this task	Assign this resource
4, Schedule author interviews	Jun Cao
5, Design and order marketing material	Toby Nixon

In the Task Form, keep your eye on the selected task’s duration, assignment units, and work values as you assign more resources to the task

Next, you will assign two resources to a single task.

6. Use the **Assign Resources** dialog box to simultaneously assign Sharon Salavaria and Toby Nixon to task 8, *Kickoff book launch meeting*.

Between the Gantt Chart view, Assign Resources dialog box, and Task Form, Project provides multiple ways to display task assignments’ schedule details

Recall from [Chapter 5](#), “[Set up resources](#),” that Sharon has a 50% Max. Units value to account for her half-time availability. As a result, Project assigned her at 50% units. Project accounted for this assignment units value when it calculated the task’s resulting work value.

7. Use the **Resource Names** column to simultaneously assign Jane Dow and Zac Woodall to task 9, *Plan author’s travel itinerary*.

8. Assign Zac Woodall to task 10, *Channel Sales prep*.

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
5		Design and order marketing	2 wks	Tue 1/9/18	Mon 1/22/18	2	Toby Nixon
6		Planning complete!	0 days	Mon 1/22/18	Mon 1/22/18	5	
7		Internal Launch Phase	18 days	Tue 1/23/18	Fri 2/16/18	1	
8		Kickoff book launch meeting	1 day	Tue 1/23/18	Tue 1/23/18		Sharon Salavaria[50%], Toby Nixon
9		Plan author's travel itinerary	3 days	Wed 1/24/18	Mon 1/29/18	8	Jane Dow, Zac Woodall
10		Channel Sales prep	2 wks	Wed 1/24/18	Wed 2/7/18	8	Zac Woodall

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
18	Zac Woodall	100%	80h	0h	0h	0h	80h

The Resource Names column conveys some of the same assignment details as does the Assign Resources dialog box

Control work when adding or removing resource assignments

The scenario: Some time has passed since you made the initial resource assignments for the new book launch plan. You received some feedback from the assigned resources that require some adjustments to assignments. As you make these adjustments, you will control how the revised assignments should affect the tasks. Open the SimpleAssignControlWork plan, and then perform the following tasks:

Important

The following tasks refer to the Task Form, which is a convenient way of seeing the results of actions. However, don't perform the tasks directly in the Task Form; doing so does not display the Actions button and the options it provides you.

1. Use the **Assign Resources** dialog box to add Zac Woodall to task 5 so that both Zac and Toby are assigned.
2. Use the **Actions** button to verify that assigning Zac will increase work but not change the task's duration.

You can see this result in the Task Form: Zac was assigned the additional work, and task 5's duration was not changed.

3. Remove Zac's assignment from task 9, *Plan author's travel itinerary*.
4. Use the **Actions** button to increase the duration of the task but keep the same amount of work on the task.

Again, you can see the result of the assignment change in the Task Form.

5. Use the **Task Information** dialog box to turn on effort-driven scheduling for task 10, *Channel Sales prep*.

6. Assign Hany Morcos to the task. Verify that the task's duration is reduced and that the total work is split between the two assigned resources, Hany and Zac.

The screenshot displays the 'Assign Resources' dialog box for the task 'Channel Sales prep'. The task duration is 1 week, starting on Wed 1/24/18 and finishing on Wed 1/31/18. The dialog shows two resources assigned: Hany Morcos and Zac Woodall, each with 100% units and 40 hours of work. The 'Task' field is set to 'Channel Sales prep' and the 'Task type' is 'Fixed Units'.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
18	Zac Woodall	100%	40h	0h	0h	0h	40h
4	Hany Morcos	100%	40h	0h	0h	0h	40h

By using the options available from the Actions button, you can control how Project recalculates task durations and work values when you change resource assignments

Assign cost resources to tasks

The scenario: You want to enter planned travel costs for a task in the new book launch plan. This task requires air travel by the children's book author, Toni Poe, and you allocated \$800 in anticipation of this expense. Open the SimpleAssignCostResource plan, and then perform the following tasks:

1. In the **Assign Resources** dialog box, assign the cost resource named *Travel* to task 17; specify an **\$800** cost to the assignment.

The screenshot displays the 'Assign Resources' dialog box for the task 'Author reading and signing at book fair'. The task duration is 1 day, starting on Tue 2/13/18 and finishing on Tue 2/13/18. The dialog shows two resources assigned: Toni Poe and Travel. Toni Poe has 100% units and 8 hours of work, and Travel has a cost of \$800.00. The 'Task' field is set to 'Author reading and signing at book fair' and the 'Task type' is 'Fixed Units'.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
14	Toni Poe	100%	8h	0h	0h	0h	8h
15	Travel						

As you can see in the Gantt Chart view and Task Form, assigning a cost resource has no effect on the scheduling of the task

Note that the task has the same duration of one day, and Toni Poe has the same units and work values as before. Assigning the cost resource affected only the cost incurred by this task; the cost resource assignment had no impact on the scheduling of the task.

Recall that Toni Poe is the author of the children's book and has no pay rate in the plan, so her assignment cost is zero.

2. Close the **Assign Resources** dialog box.

Check the plan after assigning resources

The scenario: It's time to explore the results of the resource assignments you've made. Open the SimpleAssignCheckPlan plan, and then perform the following tasks:

1. Display the Task Usage view with the Summary table. If necessary, drag the divider bar to the right to display the Work column.

	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Details	S	Jan 7, '18	S	M
0		New book launch	36 days	Mon 1/8/18	Tue 2/27/18	0%	\$19,740.00	396 hrs	Work				10h
1		▸ Planning Phase	11 days	Mon 1/8/18	Mon 1/22/18	0%	\$11,900.00	248 hrs	Work				10h
2		▸ Assign launch te	1 day	Mon 1/8/18	Mon 1/8/18	0%	\$420.00	8 hrs	Work				8h
		Carole Polari		Mon 1/8/18	Mon 1/8/18		\$420.00	8 hrs	Work				8h
3		▸ Complete autho	1 wk	Tue 1/9/18	Mon 1/15/18	0%	\$0.00	40 hrs	Work				
		Toni Poe		Tue 1/9/18	Mon 1/15/18		\$0.00	40 hrs	Work				
4		▸ Schedule autho	1 wk	Mon 1/8/18	Mon 1/15/18	0%	\$1,680.00	40 hrs	Work				2h
		Jun Cao		Mon 1/8/18	Mon 1/15/18		\$1,680.00	40 hrs	Work				2h
5		▸ Design and orde	2 wks	Tue 1/9/18	Mon 1/22/18	0%	\$9,800.00	160 hrs	Work				
		Toby Nixon		Tue 1/9/18	Mon 1/22/18		\$5,400.00	80 hrs	Work				
		Zac Woodal		Tue 1/9/18	Mon 1/22/18		\$4,400.00	80 hrs	Work				
6		Planning compl	0 days	Mon 1/22/18	Mon 1/22/18	0%	\$0.00	0 hrs	Work				
7		▸ Internal Launch Ph	13 days	Tue 1/23/18	Fri 2/9/18	0%	\$7,040.00	140 hrs	Work				
8		▸ Kickoff book lau	1 day	Tue 1/23/18	Tue 1/23/18	0%	\$650.00	12 hrs	Work				
		Sharon Sala		Tue 1/23/18	Tue 1/23/18		\$110.00	4 hrs	Work				
		Toby Nixon		Tue 1/23/18	Tue 1/23/18		\$540.00	8 hrs	Work				
9		▸ Plan author's tra	6 days	Wed 1/24/18	Thu 2/1/18	0%	\$2,640.00	48 hrs	Work				
		Jane Dow		Wed 1/24/18	Thu 2/1/18		\$2,640.00	48 hrs	Work				

Check the plan's key indicators on the project summary task in the Task Usage view

Note the duration value of the project summary task: 36 days. At the start of the Practice Tasks section, the plan's duration was 41 days. This shorter duration you see now is the result of assignment changes you made earlier.

Note the project summary task's total cost value: \$19,740. This cost value is the sum of the work-resource assignments plus the one cost resource assignment you previously made.

2. Display the Resource Usage view with the Summary table.

										Jan 21, '18		
										S	S	M
Resource Name	Group	Max. Units	Pt	Std. Rate	Ovt. Rate	Cost	Work	Details				
▲ Unassigned		100%	0%	\$0.00/hr	\$0.00/hr	\$0.00	0 hrs	Work				
<i>Planning con</i>			100%			\$0.00	0 hrs	Work				
<i>Complete bo</i>			100%			\$0.00	0 hrs	Work				
<i>Prepare book</i>			100%			\$0.00	0 hrs	Work				
<i>Distribute int</i>			100%			\$0.00	0 hrs	Work				
<i>Author radio</i>			100%			\$0.00	0 hrs	Work				
<i>Distribute ad</i>			100%			\$0.00	0 hrs	Work				
<i>Distribute bo</i>			100%			\$0.00	0 hrs	Work				
<i>Coordinate r</i>			100%			\$0.00	0 hrs	Work				
<i>Launch publi</i>			100%			\$0.00	0 hrs	Work				
<i>Launch socia</i>			100%			\$0.00	0 hrs	Work				
<i>Launch comp</i>			100%			\$0.00	0 hrs	Work				
1 ▲ Carole Poland		100%	100%	100.00/wk	\$0.00/hr	\$420.00	8 hrs	Work				
<i>Assign launc</i>			100%			\$420.00	8 hrs	Work				
2 Copyeditors		400%	0%	\$45.00/hr	\$0.00/hr	\$0.00	0 hrs	Work				
3 Dan Jump		50%	0%	\$75.50/hr	\$0.00/hr	\$0.00	0 hrs	Work				
4 ▲ Hany Morcos		100%	100%	550.00/wk	\$0.00/hr	\$1,550.00	40 hrs	Work				
<i>Channel Sale:</i>			100%			\$1,550.00	40 hrs	Work				
5 ▲ Jane Dow		100%	100%	\$55.00/hr	\$0.00/hr	\$2,640.00	48 hrs	Work				
<i>Plan author's</i>			100%			\$2,640.00	48 hrs	Work				
6 John Evans		100%	0%	780.00/wk	\$0.00/hr	\$0.00	0 hrs	Work				
7 ▲ Jun Cao		100%	100%	\$42.00/hr	\$63.00/hr	\$1,680.00	40 hrs	Work				
<i>Schedule auti</i>			100%			\$1,680.00	40 hrs	Work				

RESOURCE USAGE

It's handy to switch between the Task Usage and Resource Usage views; both views show you assignment details, but grouped in different ways

This view organizes assignment-level details per resource. The Summary table conveys assignment cost and work values rolled up per resource.

7. Format and share your plan

In this chapter

- [Customize a Gantt chart view](#)
 - [Add tasks to a Timeline view](#)
 - [Customize reports](#)
 - [Copy views and reports](#)
 - [Print views and reports](#)
-

Practice files

For this chapter, use the SimpleFormat practice file from the Project2016SBS\Ch07 folder. For practice file download instructions, see the introduction.

In some respects, a Project plan is really a database of information, not unlike a Microsoft Access database file. You don't usually see all the data in a plan at one time. Instead, you focus on the aspect of the plan you're currently interested in viewing. Views and reports are the most common ways to observe or print a plan's data. In both cases, you can substantially format the data to meet your needs.

In this chapter, you customize and share common views from Project—views like the Gantt Chart, which is strongly identified with project management.

Another means of visualizing your schedule is with reports. Reports can include colorful charts and images, in addition to tables. Project includes many reports you can use as-is or customize.



This chapter introduces you to some of the simpler view and report formatting features in Project. You'll find more information about formatting, printing, and sharing your plans in [Chapter 13, “Organize plan details,”](#) [Chapter 16, “Format and print views: In-depth techniques,”](#) [Chapter 17, “Format reports: In-depth techniques,”](#) and [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

This chapter guides you through procedures related to customizing a Gantt chart view, adding tasks to a Timeline view, customizing reports, and copying and printing views and reports.

Customize a Gantt chart view

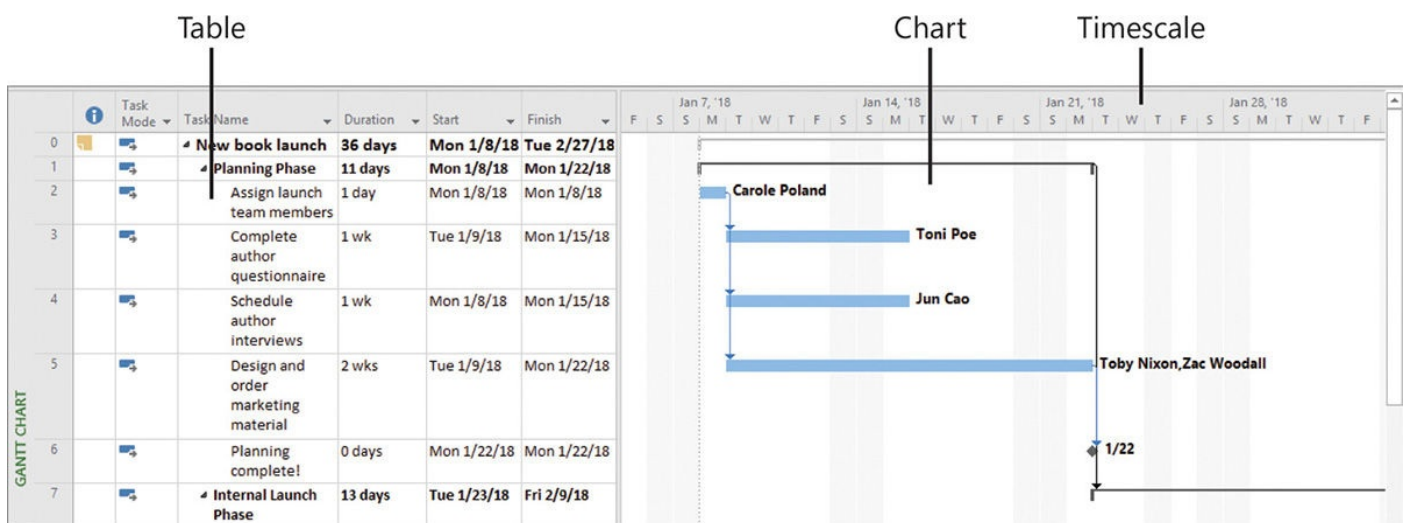
The Gantt chart became a standard way of visualizing schedules when, in the early twentieth century, American engineer Henry Gantt developed a bar chart showing the use of resources over time. For many people, the Gantt chart is the most common visualization of a project's schedule or plan. In fact, the Gantt chart is a popular and widely understood representation of schedule information throughout the project management world. In Project, the default view is dominated by a Gantt chart. You are likely to spend a lot of your time in this view when working in Project.



Tip

By default, when you create a new plan, Project displays a split view named Gantt with Timeline. However, you can change this setting to display any view you want as the default view for a new plan. On the File tab, click Options. In the Project Options dialog box, click General. In the Default View box, click the view you want. The next time you create a new plan, the view you have chosen will appear.

A Gantt chart view consists of two main parts: a table on the left and a bar chart with a timescale on the right.



The major elements of the Gantt chart view include a table on the left, a chart on the right, and a timescale above the chart

The bar chart includes an adjustable timescale band across the top that denotes units of time. The bars on the chart graphically represent the tasks in the table in terms of start and finish dates, duration, and status (for example, whether work on the task has started or not).

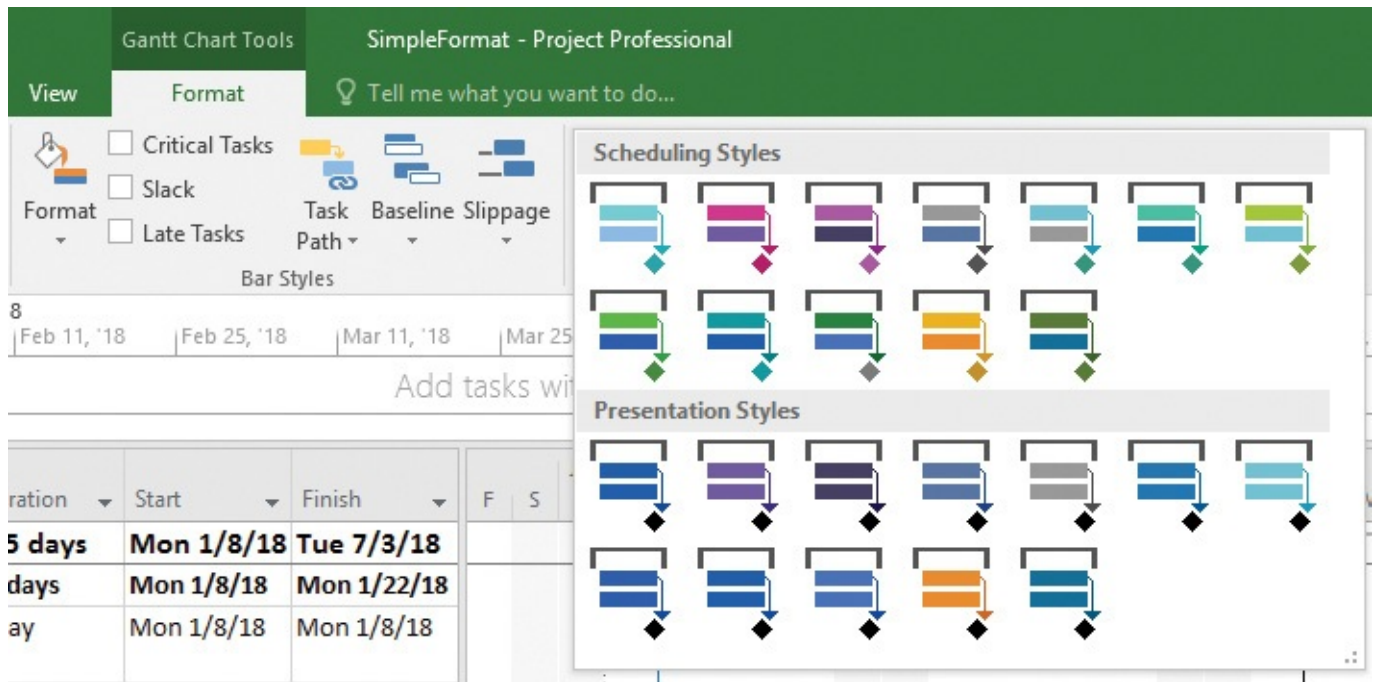
On a Gantt chart, tasks, summary tasks, and milestones all appear as Gantt bars or symbols, and each type of bar has its own format. Whenever you work with Gantt bars, keep in mind that they represent tasks in a plan. Other elements on the chart, such as link lines, represent relationships between tasks.

The default formatting applied to a Gantt chart view works well for on-screen viewing, sharing with other programs, and printing. However, you can change the formatting of

almost any element on a Gantt chart.

There are several ways to format the chart elements in a Gantt chart view:

- Quickly apply predefined color combinations from the Gantt Chart Style group.

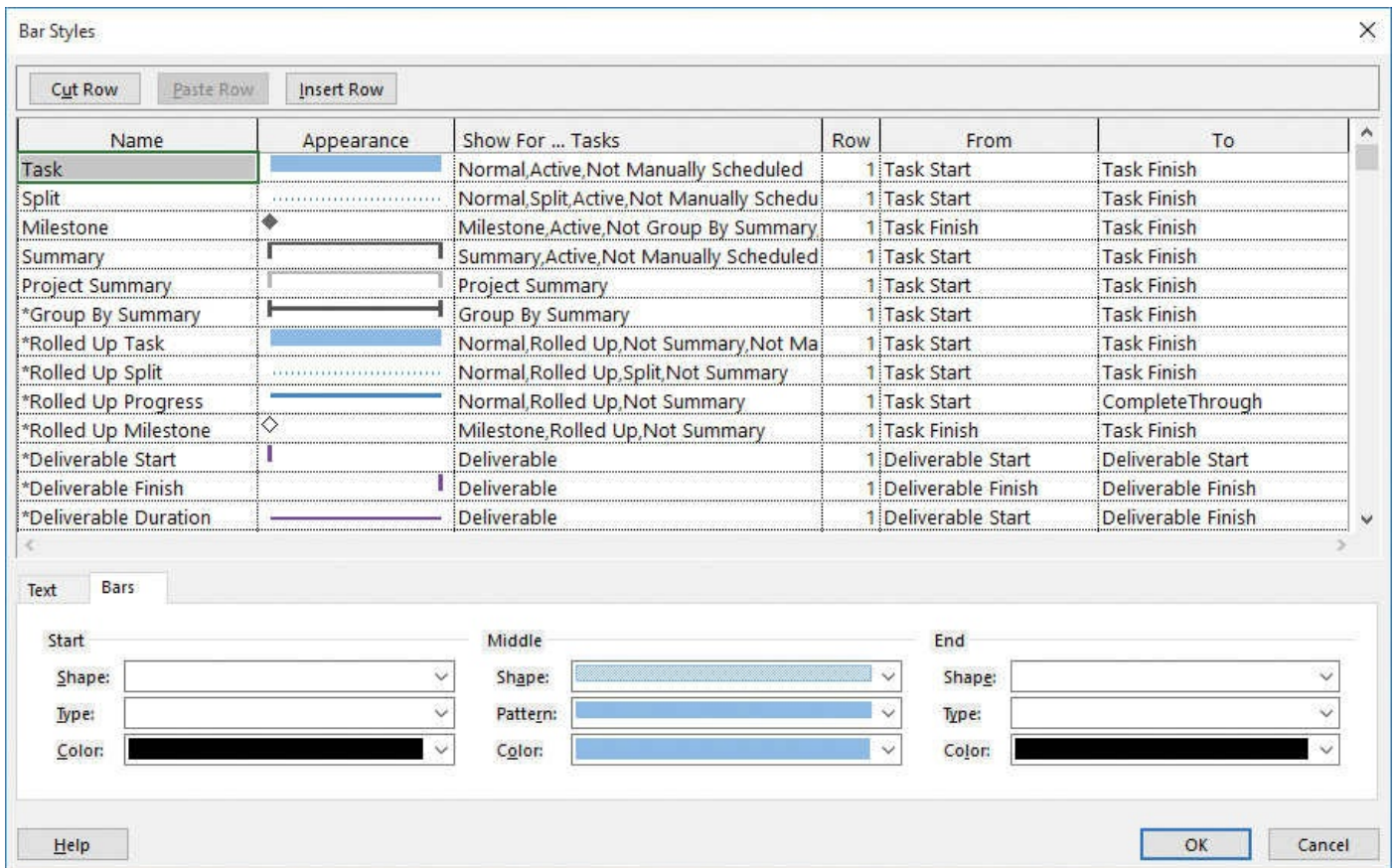


Use the Gantt Chart styles to quickly apply color combinations to a Gantt chart view

The Gantt Chart styles are divided into two groups:

- **Scheduling Styles** These styles distinguish between manually and automatically scheduled tasks.
- **Presentation Styles** These styles do not make that distinction. Applying a presentation style to a Gantt chart view is a good option when you don't want to distinguish between manually and automatically scheduled tasks—when showing a Gantt chart to an audience for whom you do not want to make this distinction, for example.

- Apply highly customized formatting to Gantt bars in the Bar Styles dialog box.



Use the settings on the Bars tab of the Bar Styles dialog box to change the appearance of all instances of a specific type of Gantt bar

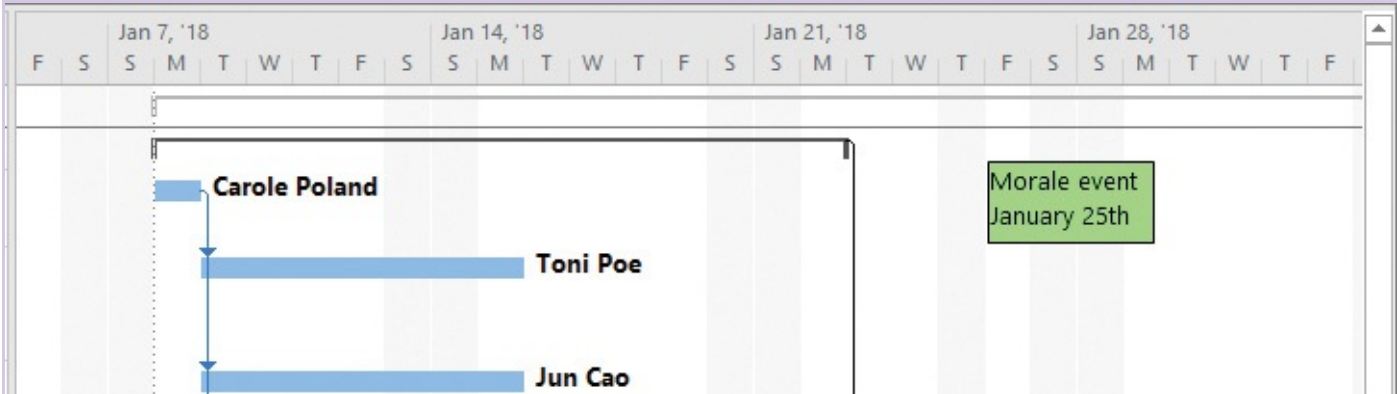
In this case, the formatting changes you make to a particular type of Gantt bar (a summary task, for example) apply to all such Gantt bars in the Gantt chart. Applying or customizing bar styles is a powerful formatting feature; for more information, see [Chapter 16, “Format and print views: In-depth techniques.”](#)

- Format individual Gantt bars directly. The direct formatting changes you make have no effect on other bars in the Gantt chart.

In the table portion of a Gantt chart view, you can format text and cell values. The cell formatting options in Project are similar to those in Microsoft Excel.

Drawing on a Gantt chart

Project includes a drawing tool with which you can draw objects directly on the chart portion of a Gantt chart. For example, if you would like to note a particular event or graphically call out a specific item, you can draw an object—such as a text box, arrow, or other item—directly on the Gantt chart.



Add text boxes and other graphic objects directly on a Gantt chart

You can also link a drawn object to either end of a Gantt bar or to a specific date on the timescale. Here's how to choose the type of link you need:

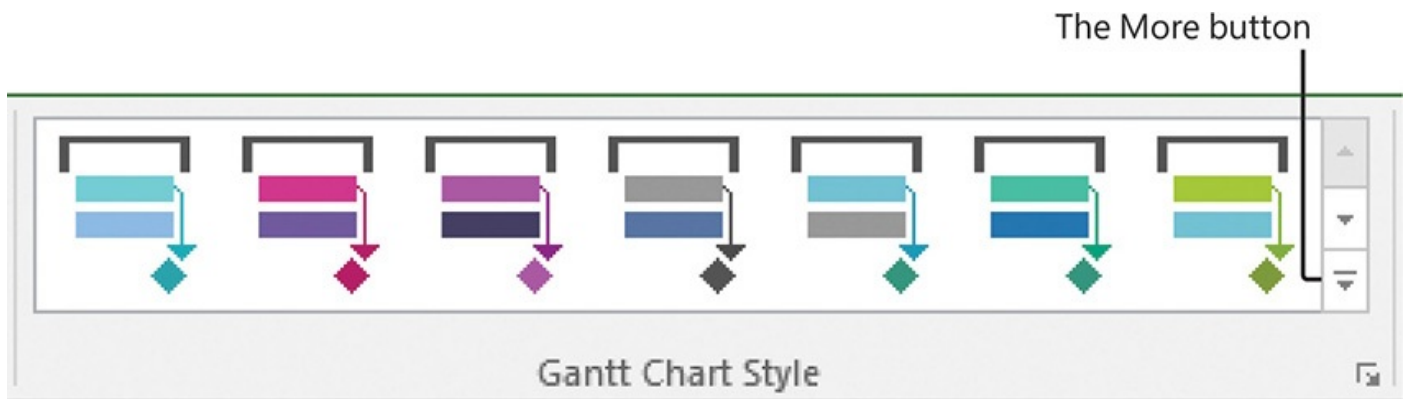
- Link objects to a Gantt bar when the object is specific to the task that the Gantt bar represents. The object will move with the Gantt bar if the task is rescheduled.
- Link objects to a date when the information the object refers to is date-sensitive. The object will remain in the same position relative to the timescale no matter which part of the timescale is displayed.

If you want to draw on a Gantt chart, follow these instructions: On the **Format** tab, in the **Drawings** group, click **Drawing**. Select the drawing shape you want, and then draw it anywhere you want in the chart portion of a Gantt chart view.

To set the type of link you want applied to the drawn object, do this: First select the object. Then on the **Format** tab, in the **Drawings Group**, click **Drawing**, and then click **Properties**. Click the **Size & Position** tab, and then select the options you want.

To apply a Gantt chart style to Gantt bars

1. Switch to a Gantt chart view.
2. On the **Format** tab, in the **Gantt Chart Style** group, click the **More** button to display the predefined color styles.



Click the More button to display all of the Gantt Chart Style options available

3. Click the style you want.

To format an individual Gantt bar shape

1. Double-click a Gantt bar.

Or

Click the name of the task whose bar you want to format. Then, on the **Format** tab, in the **Bar Styles** group, click **Format**, and then click **Bar**.

2. In the **Format Bar** dialog box, select the formatting options you want.



Tip

A milestone indicator uses just the Start shape options in the Format Bar dialog box.

To remove direct formatting from an individual Gantt bar shape

1. Double-click a previously formatted Gantt bar.

Or

Click the name of the task of the previously formatted Gantt bar. Then, on the **Format** tab, in the **Bar Styles** group, click **Format**, and then click **Bar**.

2. In the **Format Bar** dialog box, click **Reset**.

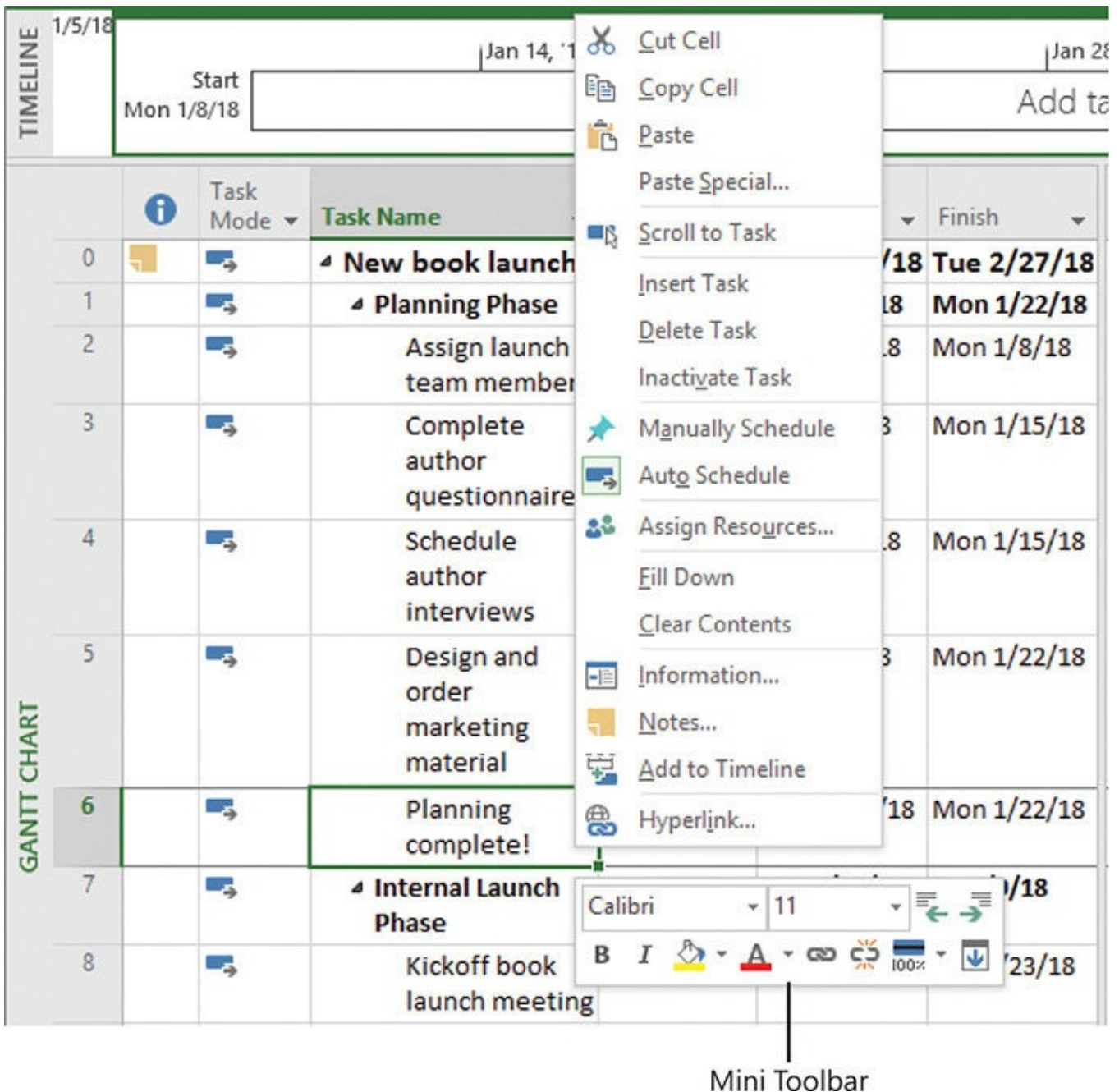
To format a cell or range of cells

1. In the table portion of a Gantt chart view, select the cell or range of cells you want to format.
2. On the **Task** tab, in the **Font** group, select the formatting options you want.

Or

1. Select the cell or range of cells you want to format.
2. Right-click the selected cell or range of cells.

A shortcut menu appears.



Right-click a table cell, such as one that includes a task name, to see the shortcut menu and Mini Toolbar

In addition to the regular shortcut menu, note that the Mini Toolbar appears.

3. On the **Mini Toolbar**, select the text or cell background formatting options you want.

To remove all formatting that has been applied to a cell

1. Select the previously formatted cell or range of cells.
2. On the **Task** tab, in the **Editing** group, click **Clear** (the button that looks like an eraser), and then click **Clear Formatting**.

To adjust the timescale in a Gantt chart view

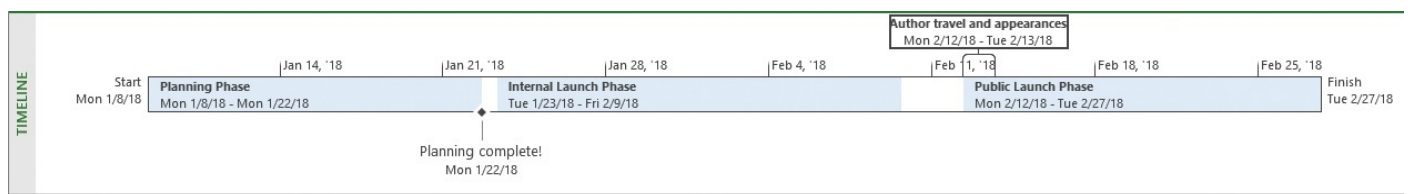
1. Do either of the following:
 - On the **View** tab, in the **Zoom** group, click **Timescale**, and then click the setting

you want.

- Use the **Zoom Slider** in the lower-right corner of the status bar to adjust the zoom setting.

Add tasks to a Timeline view

A Timeline view is best suited to display key tasks and milestones from your plan in a simple and compact format. This view is especially well suited for conveying quick summaries of plans and is easily shared with Microsoft PowerPoint presentations, email messages, and other formats beyond Project (you'll do so later in this chapter). You can add just enough detail to the Timeline view to convey your message, especially to other project stakeholders.



A thoughtfully populated Timeline view can be your “project at a glance” view

A Timeline view usually is displayed above the current view. Initially, the Timeline view is empty, even when the plan contains tasks. You select the existing tasks or add new tasks that you want to have included on a Timeline view, and you determine how they should appear.

In fact, you can display multiple Timelines at one time—each one can include different tasks and formatting options. For more information about multiple Timelines, see [Chapter 16, “Format and print views: In-depth techniques.”](#)

To add existing tasks to a Timeline view

1. Click anywhere in a Timeline view.



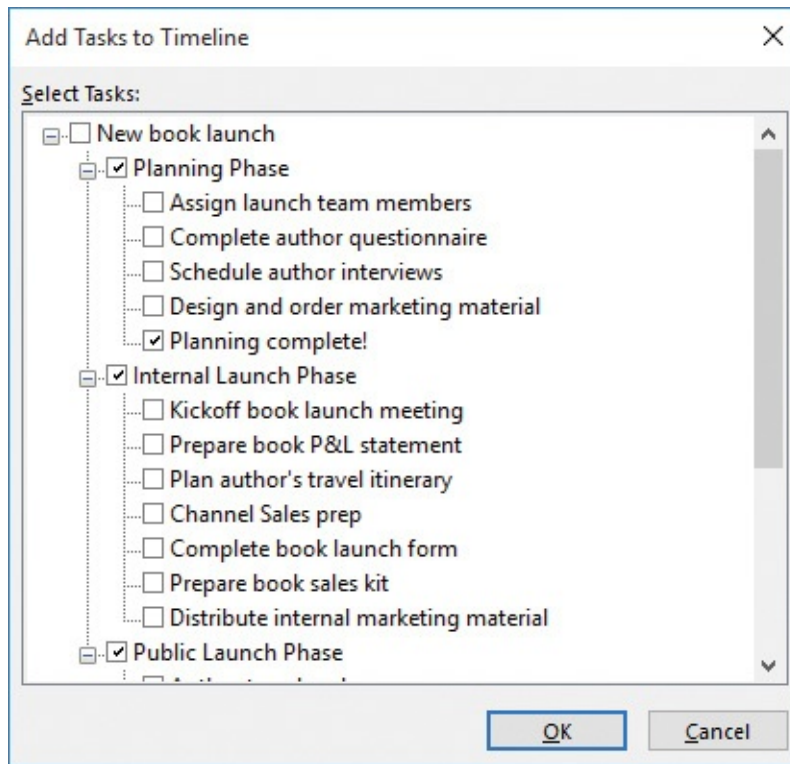
Tip

If the Timeline is not visible, on the View tab, in the Split View group, select the Timeline check box.

Project shifts focus to the Timeline view and displays the Timeline Tools label above the Format tab.

2. On the **Format** tab, in the **Insert** group, click **Existing Tasks**.

The Add Tasks To Timeline dialog box opens. This dialog box contains an outline of the summary and subtasks in the plan.



This dialog box is a handy way to quickly add tasks to a Timeline view

3. Select the tasks you want to appear on the Timeline, and then click **OK**.

Or

1. In the active task view, click the task you want to appear on the Timeline.

2. On the **Task** tab, in the **Properties** group, click **Add to Timeline**.

Or

1. Right-click the task and click **Add to Timeline** in the shortcut menu that appears.

To add a new task to a Timeline view

1. Click anywhere in a Timeline view.

2. On the **Format** tab, in the **Insert** group, click **Task**.

3. In the **Task Information** dialog box, enter the new task's information, and then click **OK**.

Project adds the new task to the plan. It will be visible both in the Timeline and Gantt Chart views.

To switch task bars to callouts in the Timeline view

1. Click anywhere in the Timeline view.

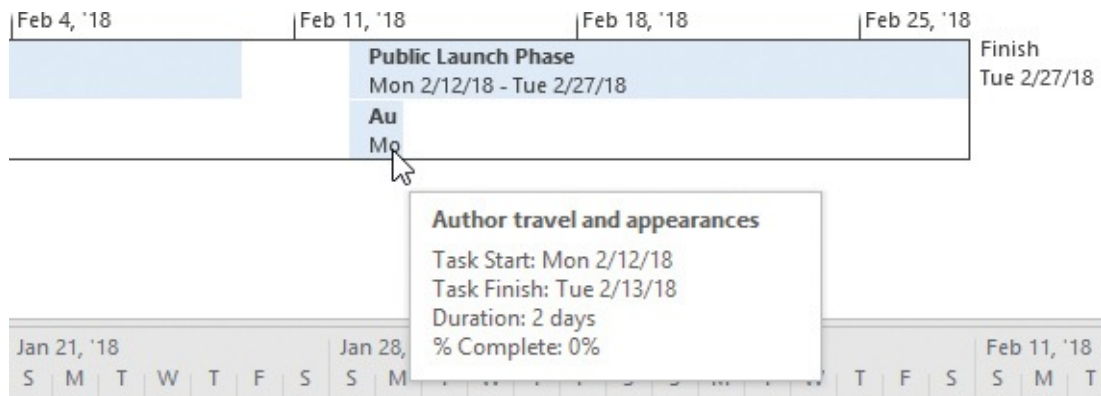
Project shifts focus to the Timeline view and displays the Timeline Tools label above the Format tab.

2. In the **Timeline** view, click a task bar you want to display as a callout.



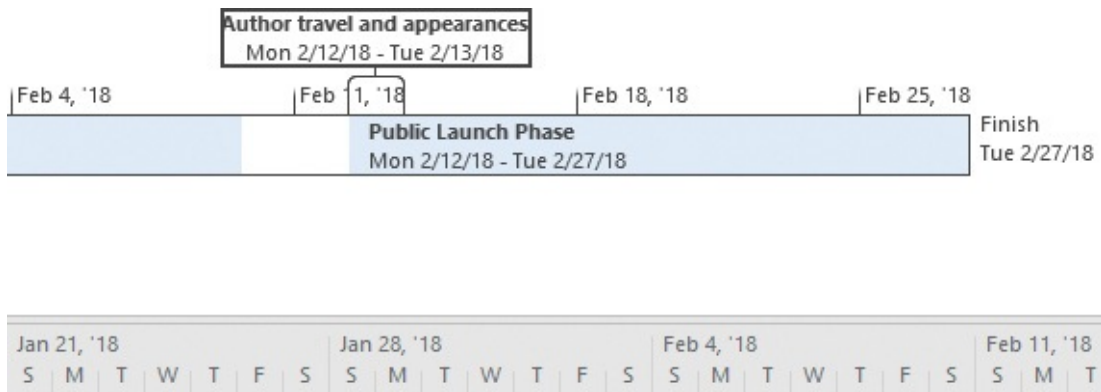
Tip

To see the full name and other details about a task on the Timeline, point to the task. Its details appear in a ScreenTip.



To see the full name and other details of a task on a Timeline view, point to the task name

3. On the **Format** tab, in the **Current Selection** group, click **Display as Callout**. Project displays the task as a callout.

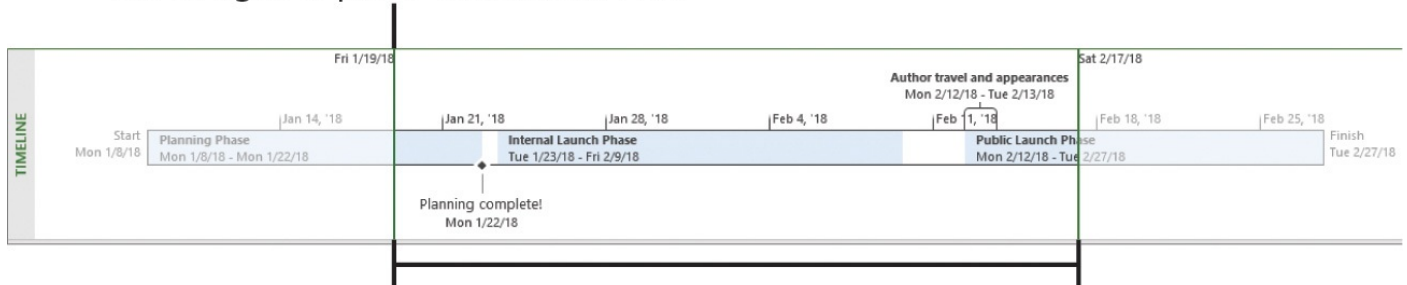


To give a task on a Timeline greater visibility, format it as a callout

Panning and zooming a Gantt chart view from a Timeline view

Have you noticed the shading and the vertical and horizontal lines on the Timeline view? This is the pan and zoom control, which you can use to horizontally scroll the chart portion of a Gantt chart view or to change its timescale.

Drag the top of the pan and zoom control
left or right to pan a Gantt chart view



Drag these vertical lines of the pan and zoom
control left or right to zoom a Gantt chart view

Use the pan and zoom control in a Timeline view to change the appearance of a Gantt chart view

The pan and zoom control appears in the Timeline view when the Gantt chart's timeline shows less than the full plan's duration on the screen.

To scroll a Gantt chart view, drag the top line of the pan and zoom control. This is a convenient way to display a specific date range in a Gantt chart.

To change the timescale in a Gantt chart view, drag the left or right vertical line on the edge of the pan and zoom control. As you do so, Project adjusts the timescale in the chart portion of a Gantt chart view so that the time frame that appears in the unshaded portion of the Timeline view is also visible in a Gantt chart view.

You might find the Timeline view useful not only for creating simplified representations of key details from your plans, but also for navigating a Gantt chart view. If you want to hide the pan and zoom control, do this: click anywhere in the Timeline view, and then on the Format tab, in the Show/Hide group, clear the Pan & Zoom box.

Customize reports

You can use Project reports to see details of your plans in a variety of ways. Project includes several built-in reports, and you can customize those or create your own for the unique information needs of your project's stakeholders.

Reports are intended to be used for viewing Project details. You don't directly edit your plan's data in a report as you can in a view. However, you can extensively customize what data appears in a report and how it's formatted.

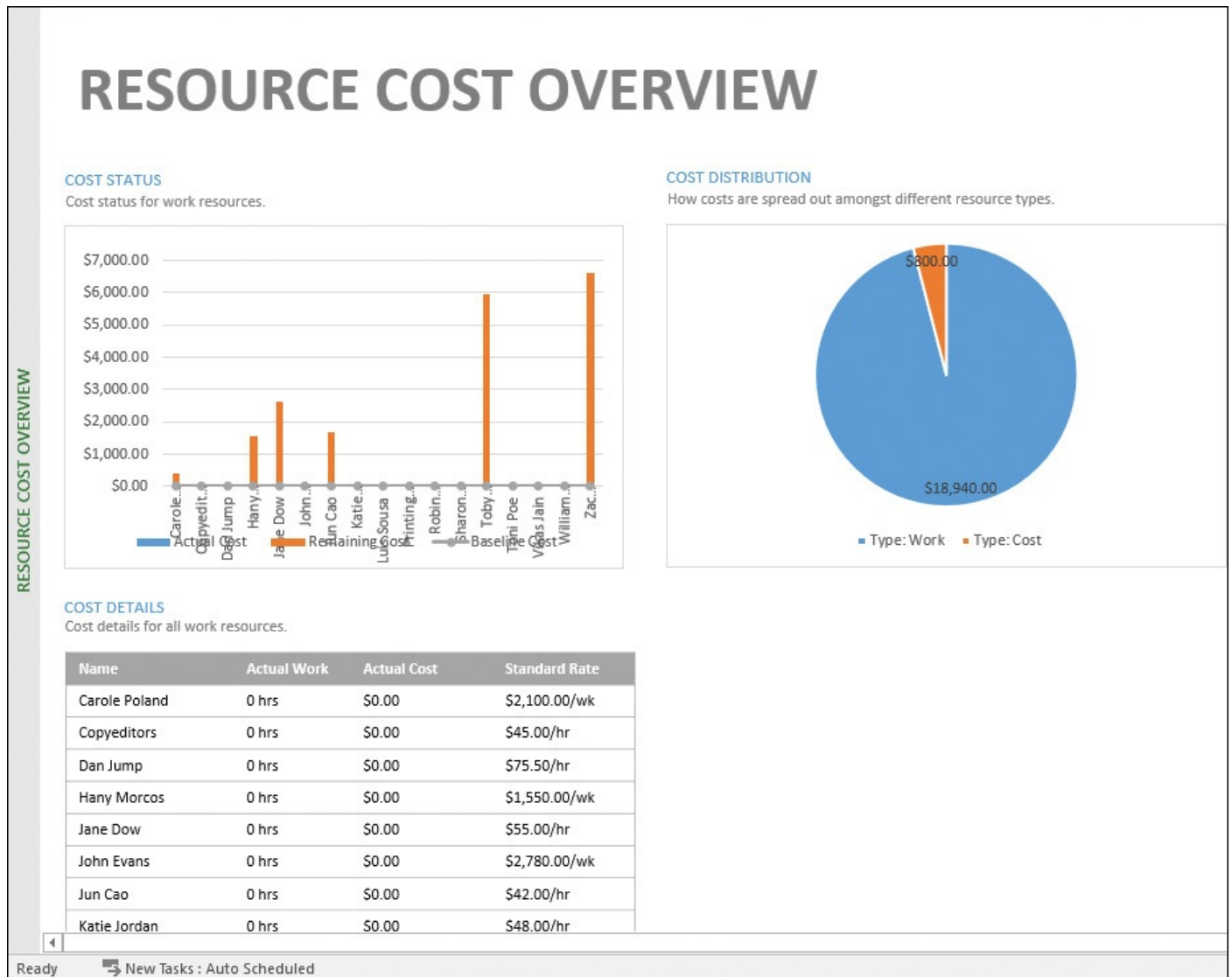
Some of the useful things you can do are:

- Create graphical reports within Project rather than exporting the Project data to another program.

- Include colorful charts and images, in addition to tables, in your reports.
- Print reports or copy them to other programs.

Project includes many reports you can use as is or customize, or you can create your own unique reports. Unlike most views in Project, a report is more like a blank canvas onto which you can place the elements (such as tables or charts) that focus on the information of most interest to you.

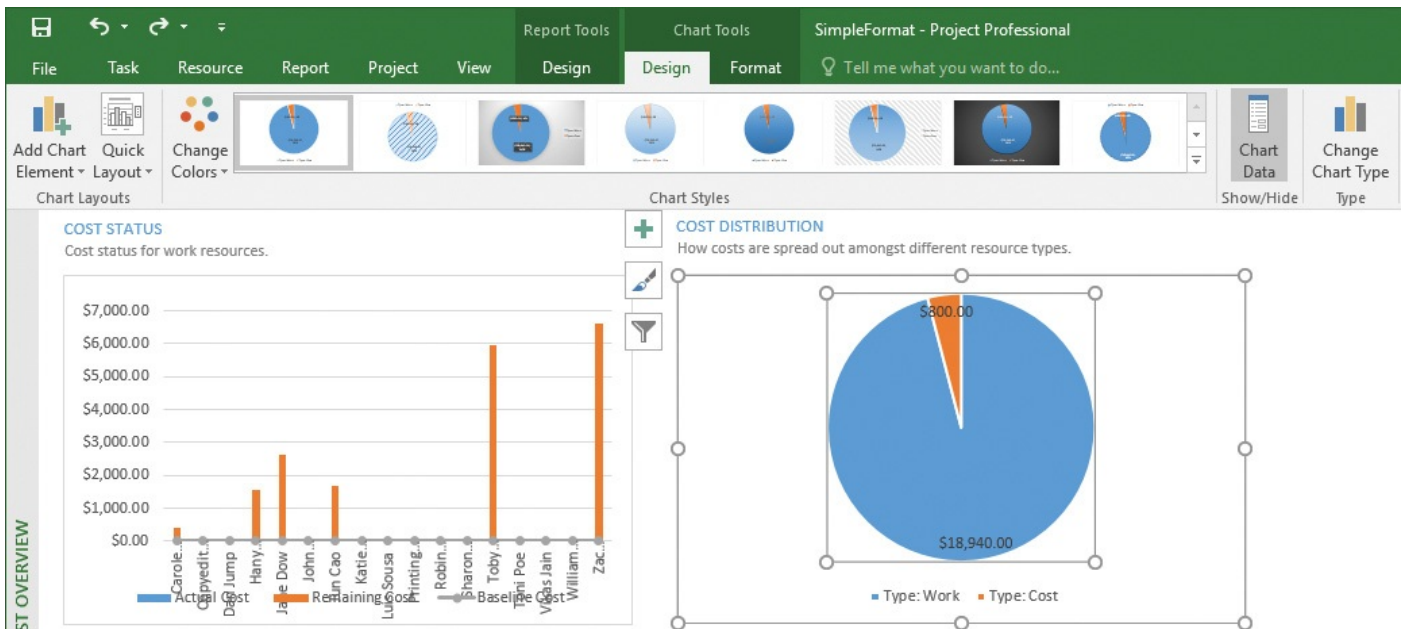
A single report can include a dynamic mix of tables, charts, and textual content.



The Resource Cost Overview report is a great example of a report that includes a mix of data and presentation formats

You can change both the formatting and content of charts and tables in a report. As soon as you click a chart (or a table), the Field List pane opens on the right side of the screen. In [Chapter 17, “Format reports: In-depth techniques,”](#) you will use the Field List to customize the data that is included in reports.

In addition to changing what type of data appears in a chart, you can change its visual appearance. When you click in a report—or in a chart, table, or other element in a report—Project displays tool tabs unique to the selected element.



As you select different elements in a report, the Design and Format tool tabs give you options specific to the selected element

See Also

This topic introduces report formatting. For more details about reports, see [Chapter 15, “View and report project status,”](#) and [Chapter 17, “Format reports: In-depth techniques.”](#)

To display a report

1. On the **Report** tab, in the **View Reports** group, click a category, and then click the specific report you want.

To apply a style to a chart in a report

1. Display the report that includes a chart that you want to style.
2. Click anywhere in the chart.
3. On the **Chart Tools Design** tab, in the **Chart Styles** group, click the style you want.

To apply a style to a table in a report

1. Display the report that includes a table that you want to style.
2. Click anywhere in the table.
3. On the **Table Tools Design** tab, in the **Table Styles** group, click the style you want.

Copy views and reports

Project supports standard copying and pasting of data, such as a range of task names and details via the Clipboard. There are times, though, when you might want to share views from your plans with colleagues who do not have Project, or who might prefer a simple schedule snapshot. You can quickly copy most views and reports from Project. Copied views and reports can then be pasted into email messages, presentations, and other documents. Views that cannot be directly copied from Project include the Team Planner (Project Professional only), Form views (such as the Task Form), and the Relationship diagram.



Tip

If you find that you need a visual snapshot of a view or report that cannot be directly copied from Project, use a screen capture utility such as the Windows Snipping Tool.

Both Gantt charts and Timeline views are well suited for sharing schedule details. The Timeline is a concise “project at a glance” view, and the Gantt chart is a widely used format of schedules.

Reports are also well suited for sharing with other project stakeholders. Reports can be especially effective in conveying your plan’s information in charts that you might otherwise need to create in Excel.



Tip

When copying a Timeline view or any report to a Microsoft Office app, you have some choices about what gets pasted. The Office apps support pasting a graphic image, or pasting editable elements of the copied Timeline or report.

To copy a view

Use this technique to copy a Gantt chart and most other views in Project.

1. Set up the view the way you want it to appear when copied. For example, in a Gantt chart view, you can scroll to display the range of tasks you want to copy, and their Gantt bars.
-

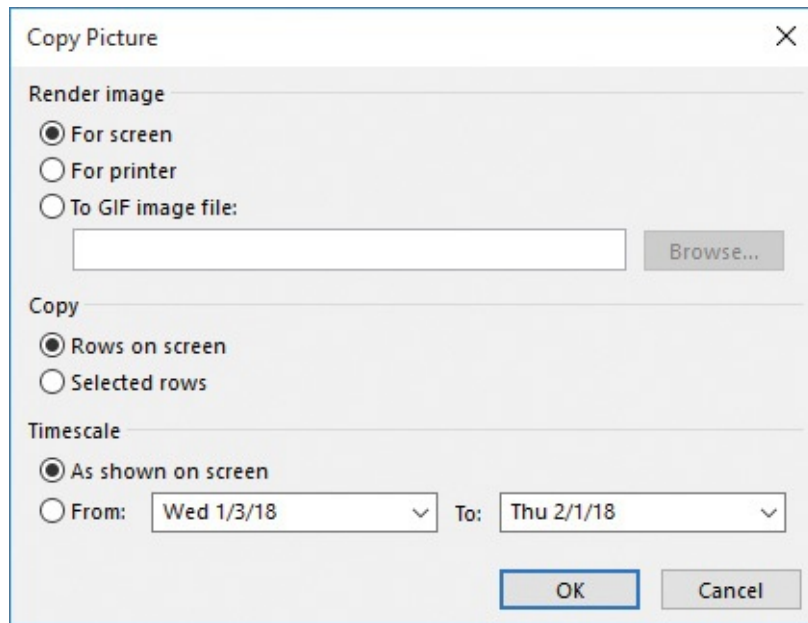


Tip

You can quickly scroll the Gantt chart to display the Gantt bars of the selected task. On the Task tab, in the Editing group, click Scroll To Task.

2. On the **Task** tab, in the **Clipboard** group, click the arrow next to **Copy**, and then click **Copy Picture**.

The Copy Picture dialog box opens.



Use the options in the Copy Picture dialog box to generate the image you want to copy

In this dialog box, you can control how Project copies details from the plan to the Clipboard or saves it to a file. The first two options under Render Image control the size and resolution of the view you copy; the third allows you to save the copied image as a Graphics Interchange Format (GIF) image file. The options under *Copy* and *Timescale* let you fine-tune what you want to copy. The Timescale options are not available when you are copying views that do not include a timescale, such as Sheet views.

3. Select the copy options you want, and then click **OK**.

Project copies a graphic image of the view to the Clipboard. You can then paste it into another program.

To copy a Timeline view

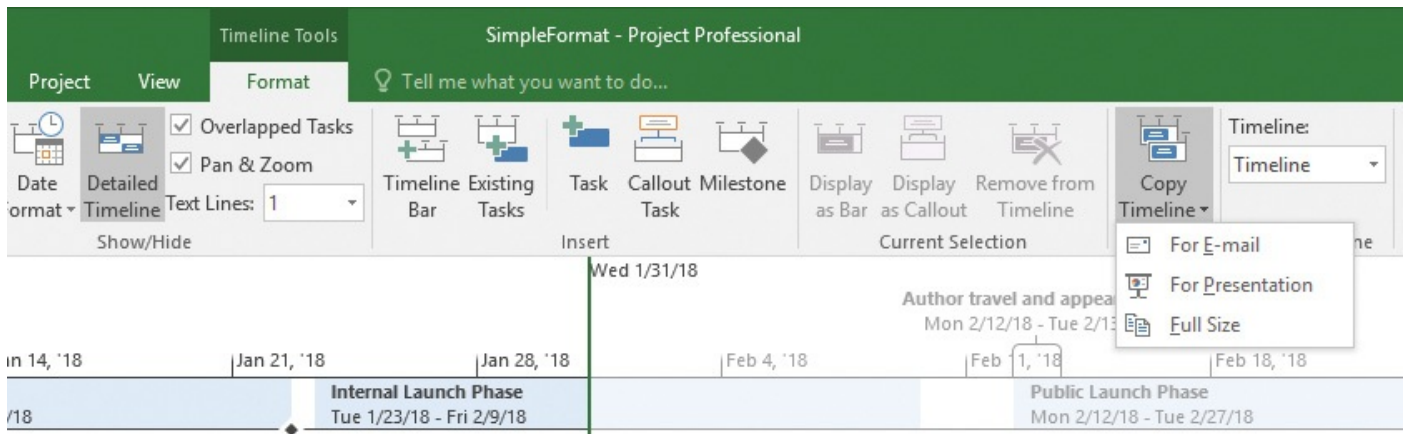
You copy most other views in Project much like you do a Gantt chart view. The Timeline view, however, has unique options for copying. You can copy the Timeline at different resolutions and levels of detail, depending on the destination you have in mind.

1. Click anywhere in the Timeline view.

With the focus now on the Timeline, the label of the Format tab changes to Timeline Tools.

2. On the **Format** tab, in the **Copy** group, click **Copy Timeline**.

The Copy Timeline options appear.



When you are copying a Timeline view, Project includes handy options to optimize the image for the destination format you have in mind

3. Click the sizing option you want.

Project copies the timeline to the Clipboard.



Tip

You can quickly switch the Timeline view between a more or less detailed format. Click anywhere in the Timeline view, and then on the Format tab, in the Show/Hide group, click Detailed Timeline.

To copy a report

1. On the **Report** tab, in the **View Reports** group, display the report you want.
2. Click anywhere in the report and then, on the **Report Tools Design** tab, in the **Report** group, click **Copy Report**.

Project copies a graphic image of the entire report to the Clipboard.



Tip

To copy just one chart or other element from a report, right-click the outer edge of the element you want and, in the shortcut menu that appears, click Copy.

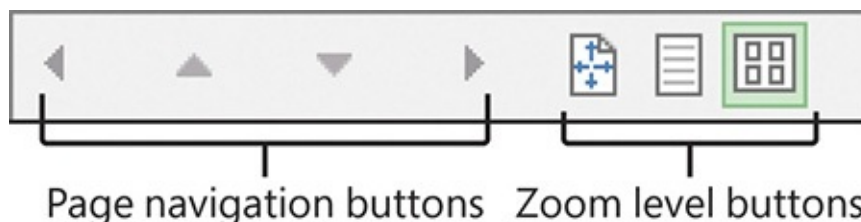
Print views and reports

In addition to sharing your plan's information by copying and pasting, you can print most views and all reports. The views that cannot be printed include the form views and the Relationship Diagram.

For a plan with many tasks, what you can see on your screen at one time might be a relatively small portion of the full plan. Printing from Project can use quite a bit of paper; in fact, some heavy-duty Project users make poster-size printouts of their plans by using plotters. Whether you use a printer or plotter, it's a good idea to preview the views and reports you intend to print.

You have several options when printing from Project, such as printing a specific date range in a Gantt chart view (described later in this topic). You can also control what will print in a view prior to printing by [filtering](#) or collapsing tasks, or by displaying only summary tasks. (This is described in [Chapter 13](#), “[Organize plan details](#).”) You work with these options in the Print window. Some of the most useful options are described in this topic.

Start with the page navigation buttons in the lower-right corner of the screen.

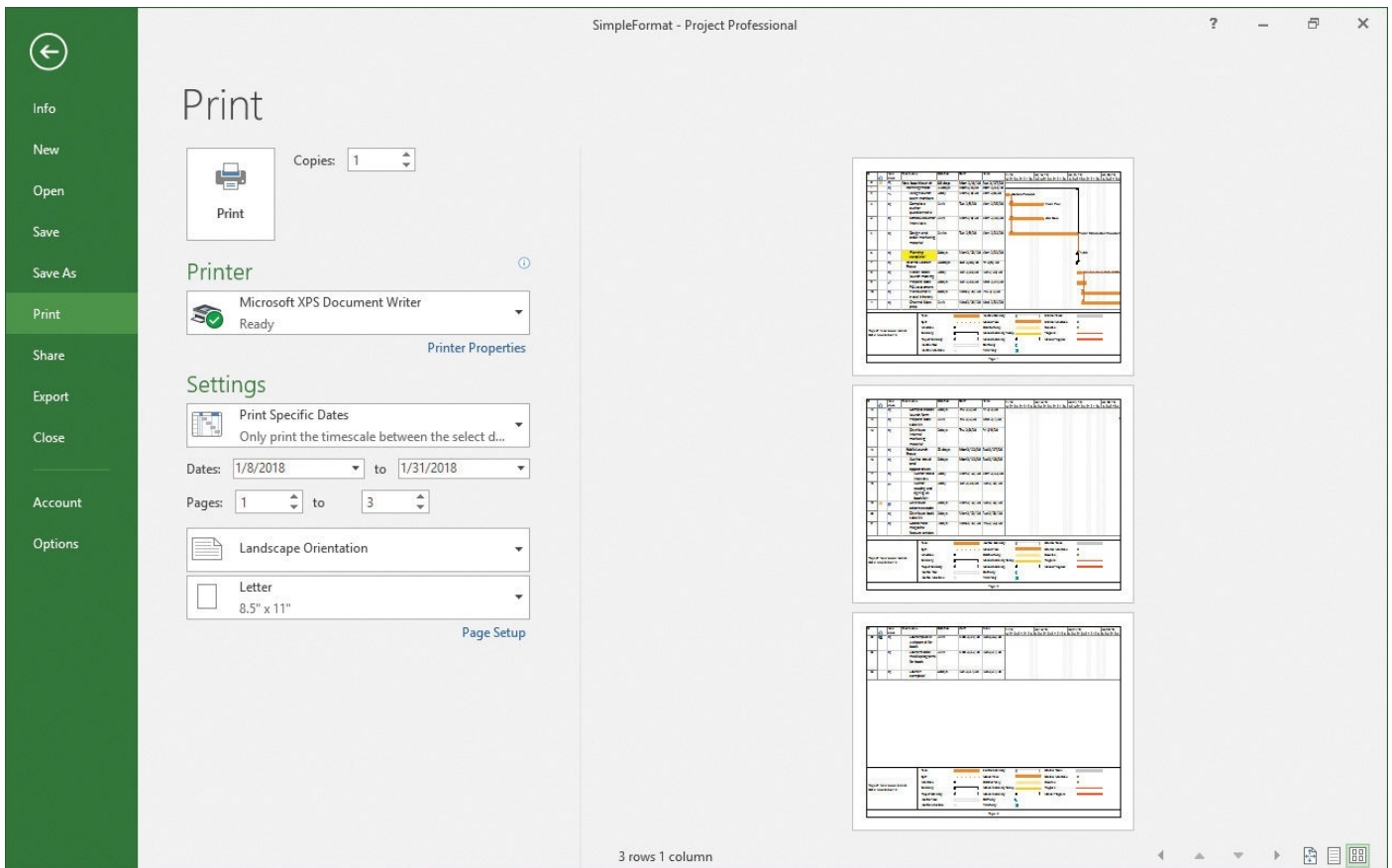


Use the page navigation and zoom controls in the lower-right corner of the Print window to control what is displayed

To preview a broader view of the output, you can switch to a multipage view. When you do, the full view or report will appear in the Print window. Assuming that you have a letter-sized sheet as your selected paper size, you might see the view or report spread across several sheets.

With timescaled views like the Gantt Chart, you can be more selective. You can adjust the preview to include just the portion of the view that covers a specific date range. You do so via the Settings options.

For example, you can set a Gantt chart’s options in the Print window to show just a specific date range.



Use the Print options to control how a Gantt chart view will appear when printed

Compared to views, a report can be a more compact way to print information about your plan. Reports use commonly understood formats, such as tables and charts, to organize and present information.

Printing reports in Project is mainly a “what you see is what you get” action. Project offers some report-specific printing options on the Report Tools Design tab (which is visible when you click in a report).

The Page Breaks command is especially useful when you intend to print a report. It draws dashed lines in the report that tell you how it will print across pages based on the current page settings. The other options available in the Page Setup group, such as margins and paper size, can be useful as you design your report.



Tip

Some views, such as the Form views and the relationship diagram, cannot be printed from Project. However, you can use a screen-capture utility like the Windows Snipping Tool to capture a snapshot of such a view and then print that.

To print a view

1. On the **View** tab, in the **Task Views** group, display the view you want to print.
2. On the **File** tab, click **Print**.

The Print page of the Backstage view is displayed with the view in the preview.

3. Select the options you want, and then click **Print**.

To print a report

1. On the **Report** tab, in the **View Reports** group, display the report you want to print.
2. On the **Report Tools Design** tab, in the **Page Setup** group, select any options you want.
3. On the **File** tab, click **Print**.

The Print page of the Backstage view is displayed with the report in the preview.

4. Select the options you want, and then click **Print**.

To adjust page setup options in a report

1. Display the report whose page setup options you want to adjust.
2. Click the **Report Tools Design** tab.

In the Page Setup group, note the four commands available.

3. Do any of the following:
 - Click **Page Breaks** to see where the page breaks will occur in the report based on your currently selected paper size.
 - Click **Margins** to adjust the page margins of the report when printed.
 - Click **Orientation** to switch the report between landscape (horizontal) and portrait (vertical) layout.
 - Click **Size** to select your paper size.

Skills review

In this chapter, you learned how to:

- [Customize a Gantt chart view](#)
- [Add tasks to a Timeline view](#)
- [Customize reports](#)
- [Copy views and reports](#)
- [Print views and reports](#)



Practice tasks

The SimpleFormat practice file for these tasks is located in the Project2016SBS\Ch07 folder.



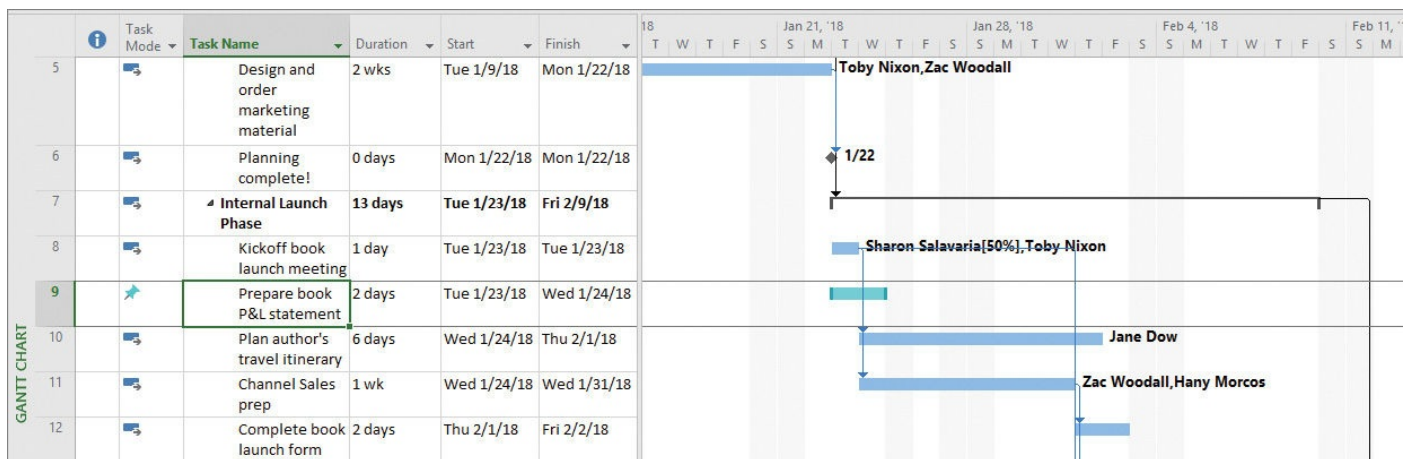
Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA.](#)”

Customize a Gantt chart view

The scenario: At Lucerne Publishing, you are almost done with planning the new book launch project, and the team is about to commence work. You want to format the plan to highlight a key milestone. You also want a few other details from the plan to visually stand out. Open the SimpleFormat plan in Project and perform the following tasks:

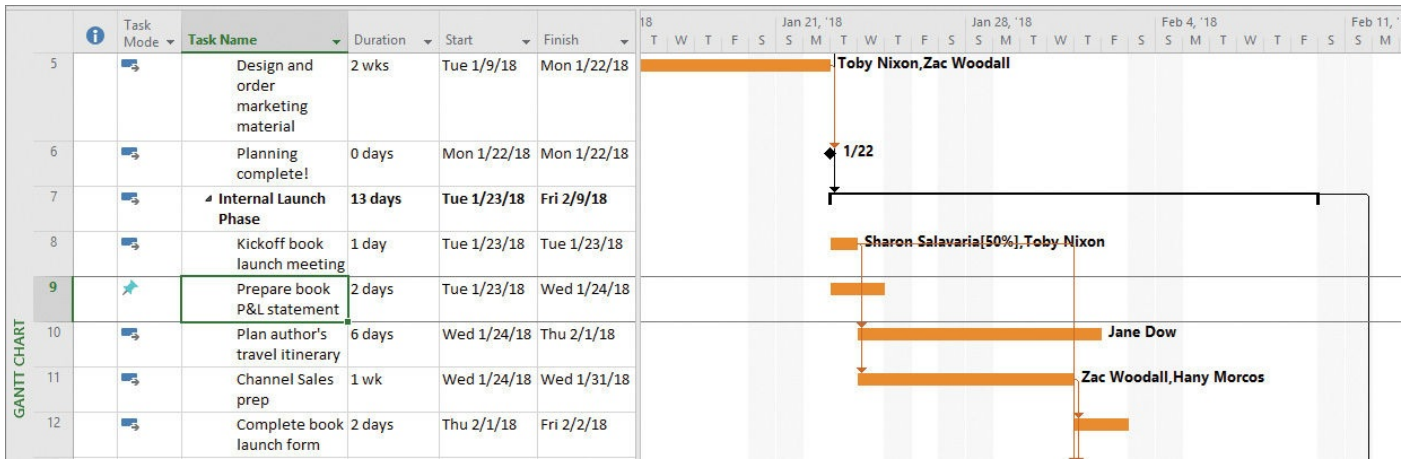
1. In the Gantt Chart view, scroll to the manually scheduled task 9, *Prepare book P&L statement*.



The default formatting of the Gantt bars for manually scheduled tasks differs from that of automatically scheduled tasks

As you can see, the Gantt bar of this manually scheduled task does not look like the Gantt bars of the automatically scheduled tasks. Keep an eye on this Gantt bar as you apply a different Gantt chart style to the plan.

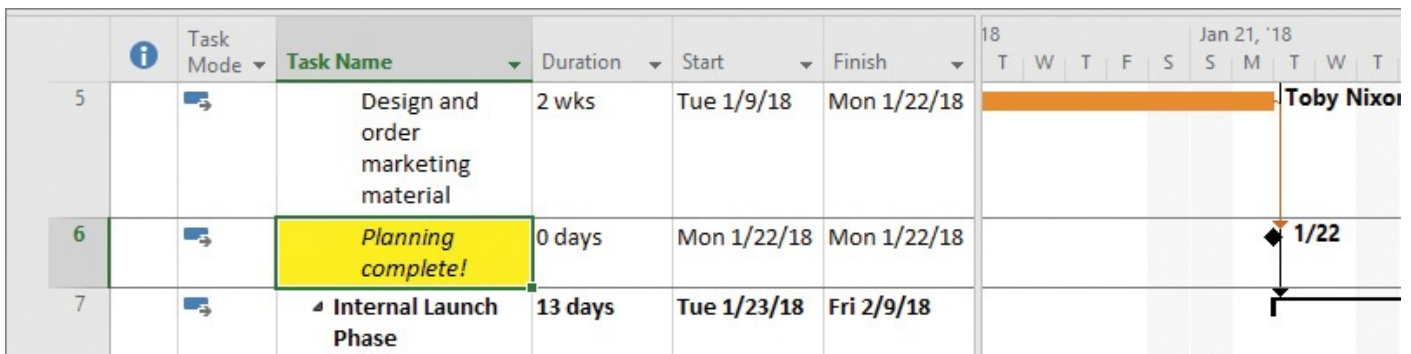
2. Apply the predefined orange color style from the **Presentation Styles** area of the style gallery.



After a presentation style is applied, there is no formatting distinction between the Gantt bars of manually and automatically scheduled tasks

Project changes the formatting of all Gantt bars. The Gantt bar of task 9, the manually scheduled task, is no longer visually distinct from those of the automatically scheduled tasks.

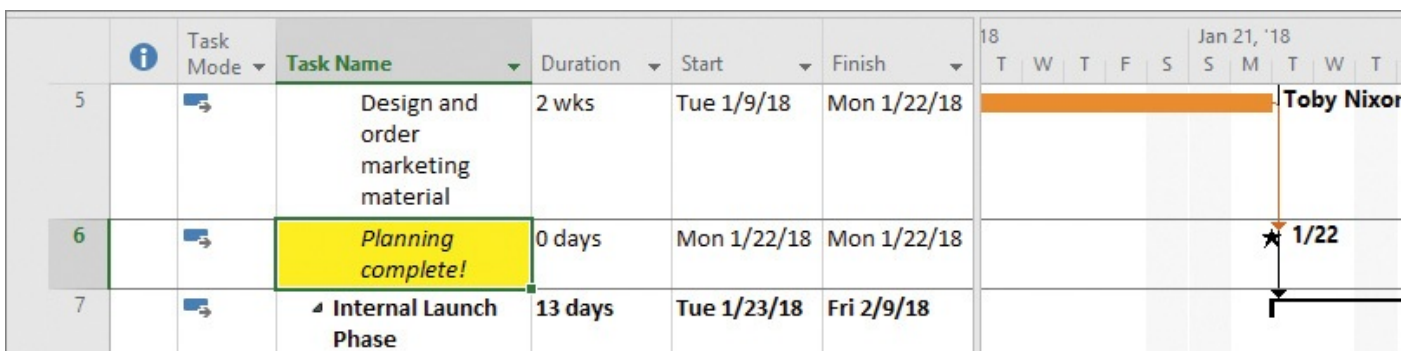
- Task 6 is a milestone task that describes the end of the first phase of the new book launch at Lucerne Publishing. You'd like to highlight this task name. Apply italic text formatting and a yellow background color to the name of task 6, *Planning Complete!*



Text and background formatting of a task name can help it stand out

Now the milestone task name stands out.

- Notice that a shape appears instead of a Gantt bar in the Gantt chart area for task 6. This is because the task is a milestone task. Format the Gantt bar (shape) of task 6 to be a star shape.



Formatting a milestone's shape can help it stand out in a Gantt chart

Add tasks to a Timeline view

The scenario: You know from past experience that some of the stakeholders of the new book launch project will find your Gantt chart view to be more detailed than they like. To help such stakeholders see the key details you want to convey, you decide to build a Timeline view. Later you will copy the Timeline view to another program as a quick “project at a glance” image. Continuing in the SimpleFormat plan, perform the following tasks:

1. Add the following existing tasks to the Timeline:
 - **Planning Phase**
 - **Planning complete!**
 - **Internal Launch Phase**
 - **Public Launch Phase**
 - **Author travel and appearances**
2. In the Timeline view, switch the task bar for *Author travel and appearances* to a callout so its full title is visible.



Give distinct focus to certain tasks on the Timeline by formatting them as callouts

Customize reports

The scenario: You want to share the Resource Cost Overview report with the team. However, you’d like to change the formatting of some elements in the report. Continuing in the SimpleFormat plan, perform the following tasks:

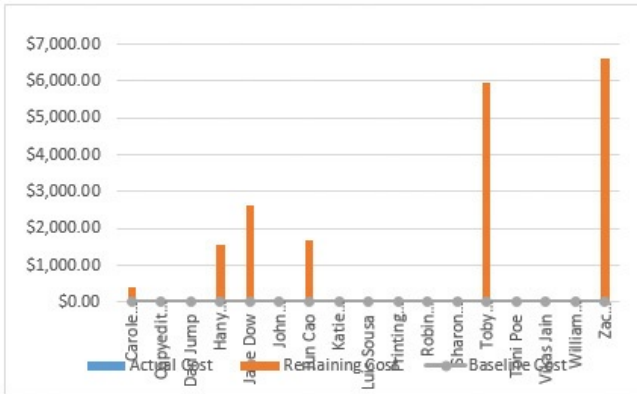
1. Display the Resource Cost Overview report.

RESOURCE COST OVERVIEW

RESOURCE COST OVERVIEW

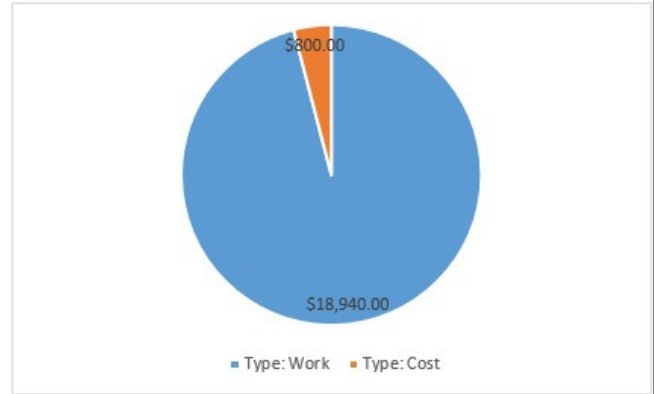
COST STATUS

Cost status for work resources.



COST DISTRIBUTION

How costs are spread out amongst different resource types.



COST DETAILS

Cost details for all work resources.

Name	Actual Work	Actual Cost	Standard Rate
Carole Poland	0 hrs	\$0.00	\$2,100.00/wk
Copyeditors	0 hrs	\$0.00	\$45.00/hr
Dan Jump	0 hrs	\$0.00	\$75.50/hr
Hany Morcos	0 hrs	\$0.00	\$1,550.00/wk
Jane Dow	0 hrs	\$0.00	\$55.00/hr
John Evans	0 hrs	\$0.00	\$2,780.00/wk
Jun Cao	0 hrs	\$0.00	\$42.00/hr
Katie Jordan	0 hrs	\$0.00	\$48.00/hr

Ready New Tasks : Auto Scheduled

This report includes chart and table elements—both types of elements support extensive formatting

2. Apply the black background chart style (**style 7**) to the pie chart.
3. Apply the gray background table style (**themed style 1, accent 3**, located under **Best Match for Document** in the top row) to the table.

SimpleFormat - Project Professional

File Task Resource Report Project View Design Design Layout Tell me what you want to do...

Header Row First Column
 Total Row Last Column
 Banded Rows Banded Columns

Table Style Options

Table Styles

Shading Effects

Quick Styles

Table Data

WordArt Styles Show/Hide

RESOURCE COST OVERVIEW

COST STATUS
Cost status for work resources.

COST DISTRIBUTION
How costs are spread out amongst different resource types.

COST DETAILS
Cost details for all work resources.

Name	Actual Work	Actual Cost	Standard Rate
Carole Poland	0 hrs	\$0.00	\$2,100.00/wk
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Dan Jump	0 hrs	\$0.00	\$75.50/hr
Hany Morcos	0 hrs	\$0.00	\$1,550.00/wk
Jane Dow	0 hrs	\$0.00	\$55.00/hr

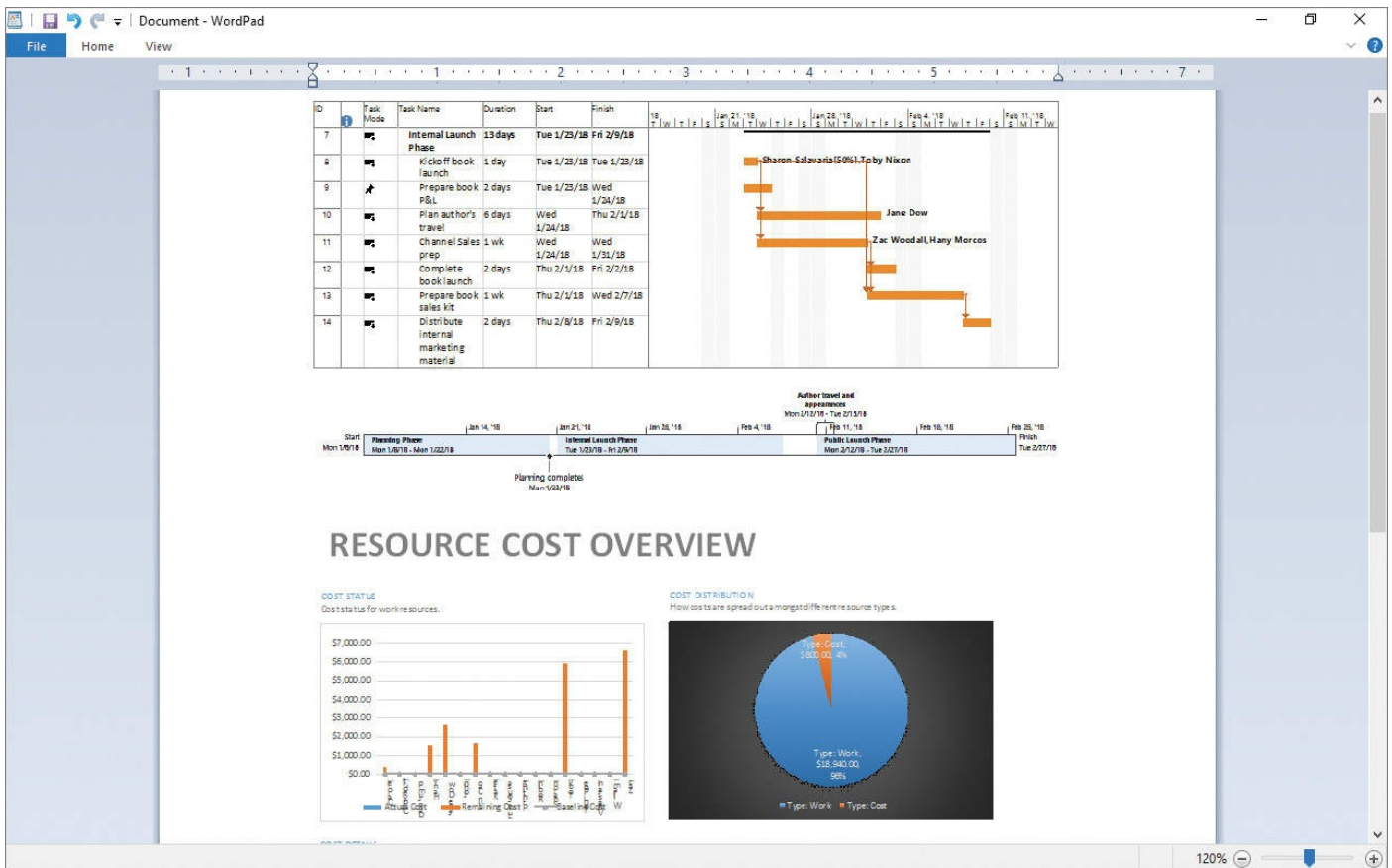
Ready New Tasks : Auto Scheduled

Use the Design tool tabs to change the formatting of the selected report element

Copy views and reports

The scenario: You'd like to share snapshots of key views and a report from the plan via email or Microsoft Word documents. Continuing in the SimpleFormat plan, perform the following tasks:

1. Display the Gantt Chart view so the Gantt bars of tasks 7 through 14 are visible.
2. Copy a picture of tasks 7 through 14. Render the picture for the screen.
3. Paste the image into a new document or email message.
4. Copy a full-sized image of the detailed Timeline, and paste it into the same document or email message.
5. Copy the Resource Cost Overview report, and paste it into the same document or email message.

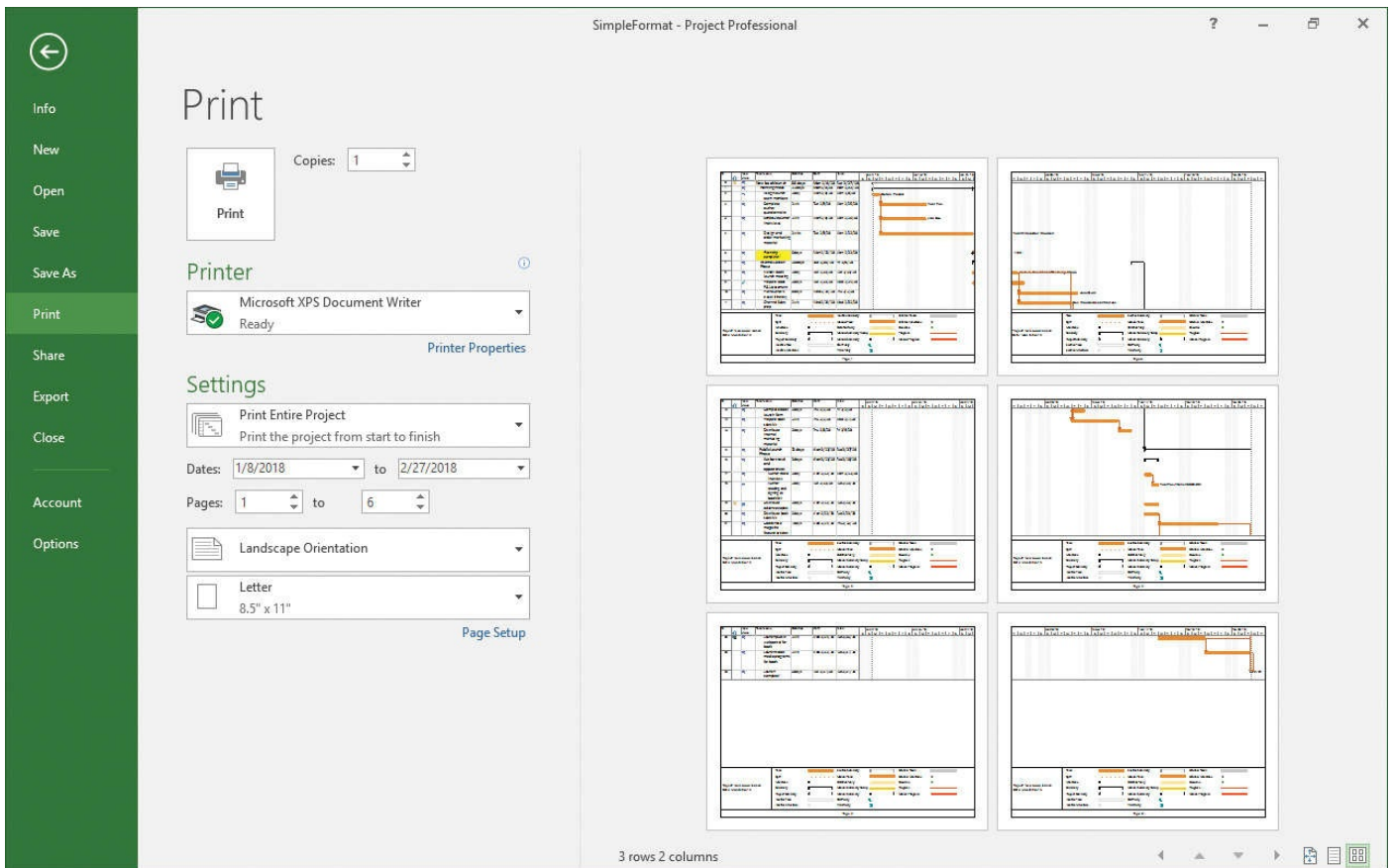


You can copy most views and other elements you see in Project

Print views and reports

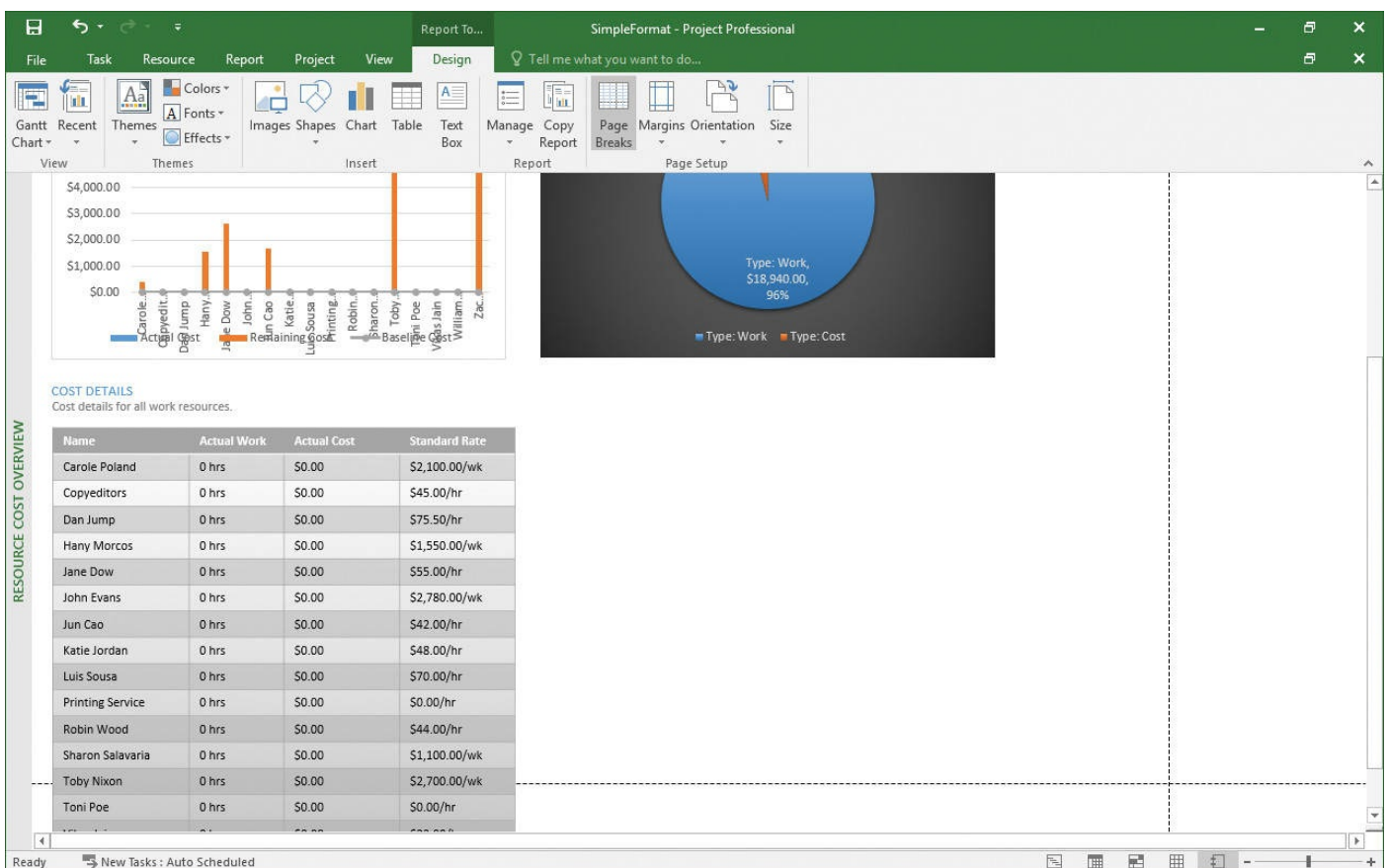
The scenario: You'd like to print views and reports from the plan to post to the wall space for the team to mark with feedback or clarifications. Continuing in the SimpleFormat plan, perform the following tasks:

1. Display the print preview of the full Gantt Chart view, set to multiple pages.



When previewing a large view or report, use the page navigation and zoom controls to manage what is displayed. What is displayed might differ, depending on your selected printer and paper size

2. Display page breaks in the Resource Cost Overview report.



You can show page breaks in multipage reports outside of the print preview

8. Track progress: Basic techniques

In this chapter

- [Understand progress tracking](#)
 - [Save a baseline of your plan](#)
 - [Track a plan as scheduled](#)
 - [Enter a task's completion percentage](#)
 - [Enter actual values for tasks](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch08 folder. For practice file download instructions, see the introduction.

Until now, you have focused on project planning—developing and communicating the details of a plan before actual work begins. When work begins, so does the next phase of project management: tracking progress. *Tracking* means recording details such as who did what work, when the work was done, and what the cost was. These details are often called *actuals*. As you start tracking actuals on tasks, a number of things happen. As you record progress on a task, Project 2016 calculates actual and remaining cost, work, and duration values. These updated values are rolled up to their summary tasks. Such changes are the result of Project dynamically recalculating the plan.

This chapter guides you through procedures related to saving a baseline of your plan, tracking a plan as scheduled, entering a task's completion percentage, and entering actual values for tasks.

Understand progress tracking

Tracking actuals is essential to properly managing a project, as opposed to just planning it. The project manager must know how well the team is performing and when to take corrective action. By properly tracking project performance and comparing it with the original plan (as saved in a baseline), you are able to answer such questions as the following:

- Are tasks starting and finishing as planned? If not, what will be the impact on the project's finish date?
- Are resources spending more or less time than planned to complete tasks?
- Are higher-than-anticipated task costs driving up the overall cost of the project?
- When planning similar projects in the future, will you be able to determine how good your (or the team's) estimating skills were in prior projects?

Project supports several ways to track progress. Your choice of a tracking method should depend on the level of detail or control required by you, your project sponsor, and other

stakeholders. Tracking the fine details of a project requires additional work from you and, possibly, from the resources working on the project. Therefore, before you begin tracking progress, you should determine the level of detail you need.

The different levels of tracking detail include the following, ordered from simplest to most comprehensive:

- Record project work as scheduled. This level works best if everything in the project occurs exactly as planned.
- Record each task's percentage of completion, either at precise values or at preset increments such as 25, 50, 75, and 100 percent.
- Record the actual start and finish dates, and actual and remaining work and duration values for each task or assignment.
- Track assignment-level work by time period. This is the most detailed level of tracking. Here, you record actual work values per day, week, or other interval. (This level of detail is addressed in [Chapter 14](#), "[Track progress: Detailed techniques](#).")

Because different portions of a project might have different tracking needs, you might need to apply a combination of these approaches within a single plan. For example, you might want to track high-risk tasks more closely than low-risk ones.

Save a baseline of your plan

After you develop a plan, one of your most important activities as a project manager is to record actuals and evaluate project performance. As you record actuals or update your plan, the scheduled plan will likely change. This makes it difficult to keep track of the plan in its original state.

The current "as scheduled" state of a task is described by its start, finish, and duration values. As you enter Actual Start and Actual Finish dates, the Start, Finish, and Duration fields will update to reflect the current state of that task.

To judge project performance properly, you'll find it helpful to compare the performance with your original plan. This original plan is called the *baseline plan*, or just the baseline. Saving a baseline captures the original scheduled start, finish, and duration values in addition to work and cost values per task, resource, and assignment. The baseline also includes work and cost values distributed over time (called timephased values, which you will work with in [Chapter 14](#), "[Track progress: Detailed techniques](#)"). Use the baseline for later comparison of what you thought was going to happen to what actually has happened.

When you save a baseline, Project takes a snapshot of the existing values and saves it in your plan for future comparison. You should save a baseline when:

- You have developed the plan as fully as possible. (However, this does not mean that you cannot add tasks, resources, or assignments to the plan after work has started—this is often unavoidable.)
- You have not yet started entering actual values, such as a task's percentage of completion.

- You want to save a subsequent baseline (up to 11 per plan).

The specific values saved in a baseline include several task, resource, and assignment fields, in addition to timephased fields.

Task fields	Resource fields	Assignment fields
Start	Work and timephased work	Start
Finish	Cost and timephased cost	Finish
Duration		Work and timephased work
Work and timephased work		Cost and timephased cost
Cost and timephased cost		

Project supports not just one baseline, but up to 11 baselines in a single plan. The first one is called *Baseline*, and the rest are *Baseline 1* through *Baseline 10*. Saving multiple baselines can be useful for projects with especially long planning phases, in which you might want to compare different sets of baseline values. For example, you might want to save and compare the baseline plans every month as the planning details change, or you might want to save a new baseline at various points during the execution of the project. You could, for example, save Baseline before work starts, Baseline 1 a month after work starts, Baseline 2 two months after work starts, and so on. You can then view the various baselines and compare them to the actual schedule throughout the project’s duration.

One great way to see tasks’ scheduled and baseline values side by side for easy comparison is in the Variance table.

	Task Mode	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0		New book laun	Mon 1/8/18	Fri 3/2/18	Mon 1/8/18	Tue 2/27/18	0 days	3 days
1		Planning Phasi	Mon 1/8/18	Mon 1/22/18	Mon 1/8/18	Mon 1/22/18	0 days	0 days
2		Assign laun	Mon 1/8/18	Mon 1/8/18	Mon 1/8/18	Mon 1/8/18	0 days	0 days
3		Complete a	Tue 1/9/18	Mon 1/15/18	Tue 1/9/18	Mon 1/15/18	0 days	0 days
4		Schedule al	Mon 1/8/18	Mon 1/15/18	Mon 1/8/18	Mon 1/15/18	0 days	0 days
5		Design and	Tue 1/9/18	Mon 1/22/18	Tue 1/9/18	Mon 1/22/18	0 days	0 days
6		Planning co	Mon 1/22/18	Mon 1/22/18	Mon 1/22/18	Mon 1/22/18	0 days	0 days
7		Internal Launc	Tue 1/23/18	Wed 2/14/18	Tue 1/23/18	Fri 2/9/18	0 days	3 days
8		Kickoff bool	Tue 1/23/18	Tue 1/23/18	Tue 1/23/18	Tue 1/23/18	0 days	0 days
9		Prepare boc	Wed 1/24/18	Mon 1/29/18	Wed 1/24/18	Fri 1/26/18	0 days	1 day
10		Plan author	Tue 1/23/18	Thu 2/1/18	Wed 1/24/18	Thu 2/1/18	-1 day	0 days
11		Channel Sal	Wed 1/24/18	Mon 2/5/18	Wed 1/24/18	Wed 1/31/18	0 days	3 days
12		Complete b	Tue 2/6/18	Wed 2/7/18	Thu 2/1/18	Fri 2/2/18	3 days	3 days
13		Prepare boc	Tue 2/6/18	Mon 2/12/18	Thu 2/1/18	Wed 2/7/18	3 days	3 days
14		Distribute it	Tue 2/13/18	Wed 2/14/18	Thu 2/8/18	Fri 2/9/18	3 days	3 days

Displaying the Variance table is a great way to compare tasks’ scheduled and baseline values

For example, consider a plan in which the Start and Finish dates are the “as scheduled”

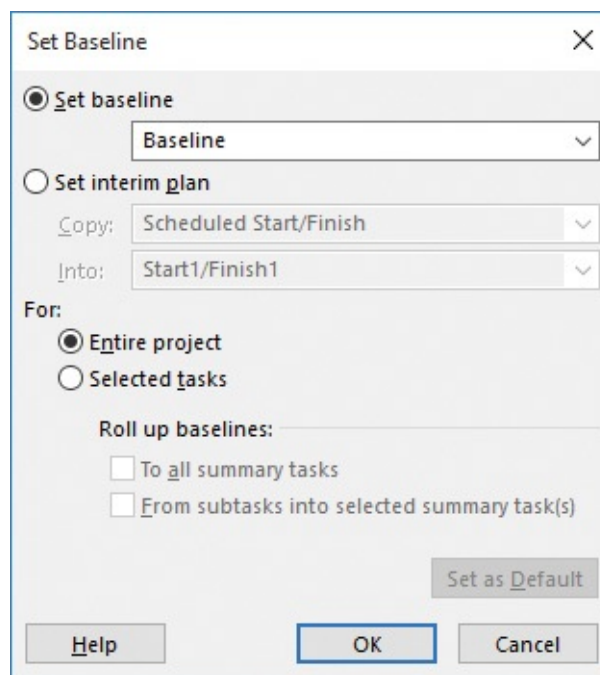
dates. These might differ from the Baseline start and finish dates due to the variance caused by actuals that did not match the baseline dates, or by other schedule adjustments made by the project manager.

Project includes several built-in views that compare the current schedule to the baseline—notably the Tracking Gantt view, which is described in [Chapter 14](#), “[Track progress: Detailed techniques](#).” You can also format the Gantt Chart view to include baseline Gantt bars. A baseline Gantt bar represents a task’s baseline start, finish, and duration values on the chart portion of a Gantt chart view.

To save a baseline

1. On the **Project** tab, in the **Schedule** group, click **Set Baseline**, and then click **Set Baseline**.

The Set Baseline dialog box opens.



In the Set Baseline dialog box, you can save or update up to 11 baselines per plan



Tip

When working with a plan that includes a saved baseline, you can see when the baseline was saved in the Set Baseline dialog box. The date the baseline was saved appears after the baseline name in the Set Baseline field.

2. To save the plan’s initial baseline, click **Set Baseline**, and then select **Baseline** from the list.

Or

To save a subsequent baseline, click **Set Baseline**, and then select the baseline number you want.



Tip

Interim plans are similar to baselines. You will work with interim plans and the other options in the Set Baseline dialog box in [Chapter 14](#), “[Track progress: Detailed techniques](#).”

3. Click **OK**.

Project saves the baseline, even though there’s no indication in the Gantt Chart view that anything has changed.

To clear a previously saved baseline

1. On the **Project** tab, in the **Schedule** group, click **Set Baseline**, and then click **Clear Baseline**.
2. In the **Clear Baseline** dialog box, select the options you want, and then click **OK**.

To display baseline Gantt bars in a Gantt chart view

1. In a Gantt chart view, on the **Format** tab, in the **Bar Styles** group, click **Baseline**, and then click the baseline (**Baseline** or **Baseline1** through **Baseline10**) that you want to display.

Project draws baseline Gantt bars for the baseline you choose.

To display scheduled and baseline values by using the Variance table

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task Sheet**.

The Task Sheet view appears. Because this is a tabular view, it does not include a Gantt chart, so more room is available to see the fields in the table.

2. On the **View** tab, in the **Data** group, click **Tables**.
 3. Click **Variance**.
-

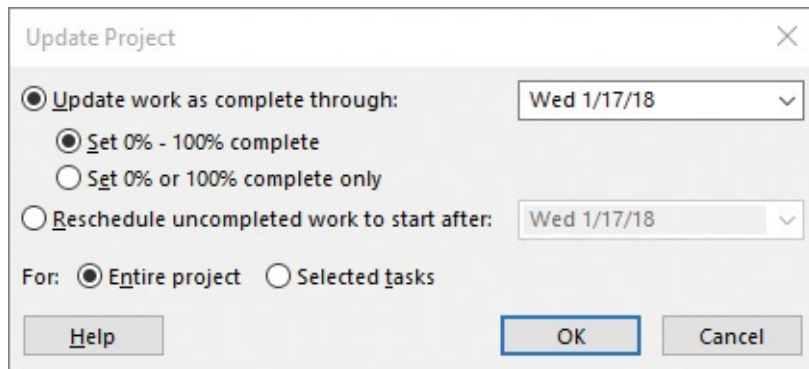


Tip

You also can right-click the Select All button in the upper-left corner of the active table to switch to a different table.

Track a plan as scheduled

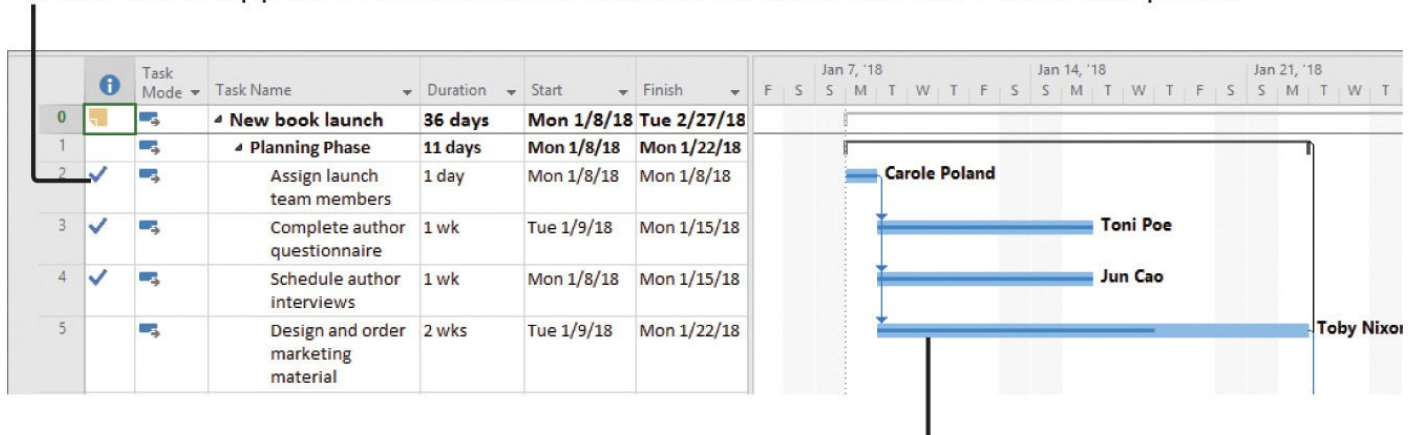
The simplest approach to tracking progress is to report that the actual work is proceeding exactly as planned. For example, if the first week of a five-week project has elapsed and all of its tasks have started and finished as scheduled, you can quickly record this in the Update Project dialog box.



The Update Project dialog box gives you options for basic tracking

When you record progress on tasks, Project displays that progress by drawing [progress bars](#) within the Gantt bars for those tasks.

Check marks appear in the Indicators column for tasks that have been completed



Progress bars indicate the portion of each task that has been completed

Visual indicators of task progress in a Gantt chart view include the task completion check marks in the Indicators column and the progress bars inside the Gantt bars

In the chart portion of the Gantt Chart view, the progress bar shows how much of each task has been completed. For example, consider a Gantt chart view in which tasks 2, 3, and 4 have been completed. A check mark appears in the Indicators column for those tasks, and the progress bars extend through the full length of those tasks' Gantt bars. Task 5, which is only partially completed, shows a partial progress bar in its Gantt bar.

When you record progress through a specific date, Project calculates the actual duration, the remaining duration, actual costs, and other values up to the date you entered. This approach might be fine even if the actual work and cost values generated by Project won't exactly match what happened in the real world, but are close enough for your schedule-tracking purposes. This is a judgment call that you as a project manager (in consultation with your project sponsors and other stakeholders) can consider.

To record work as scheduled through a specific date

1. On the **Project** tab, in the **Status** group, click **Update Project**.

The Update Project dialog box opens.

2. Make sure **Update work as complete through** is selected. In the adjacent date box, enter or select the date through which you want to record work completed as

scheduled.

3. Click **OK**.

To record work as scheduled through the current date or status date

1. Select the task or tasks whose work you want to record.
2. On the **Task** tab, in the **Schedule** group, click **Mark on Track**.

This command applies only to the selected tasks, and it sets them as complete through the current date or the status date. (To learn about the status date, see [Chapter 15, “View and report project status.”](#))

Enter a task’s completion percentage

After work begins on a task, you can quickly record its progress as a percentage. When you enter a completion percentage greater than 0, Project sets the task’s actual start date to match its scheduled start date. Project then calculates the actual duration, the remaining duration, actual costs, and other values based on the percentage you enter. For example, if you specify that a four-day task is 25 percent complete, Project calculates that it has had one day of actual duration and has three days of remaining duration.

Here are some ways to enter completion percentages:

- Use the preset increment buttons 0%, 25%, 50%, 75%, and 100% Complete in the Schedule group of the Task tab.
- Add the percent complete column (labeled % Complete in the interface) to a table in a task view, and enter the value you want.
- Enter any percentage value you want in the Task Information dialog box.
- Use the mouse to set progress on Gantt bars.

Here are some additional tips and suggestions for entering task completion percentages:

- There is a simple tracking technique for projects with a large number of short-duration, “to-do-list” types of tasks that don’t require detailed tracking: use just the 0%, 50%, and 100% Complete values. A 0% value means work on the task has not yet started, 50% means work has started, and 100% means the task is complete. If you only need to know what’s in progress and what’s done, this is the simplest form of tracking you can apply.
- If you can collect the actual start date of a task, it is a good practice to record the actual start date (described in the next section) and then record a completion percentage.
- By default, Project shows Gantt bars in front of nonworking time (such as weekends), as you see in the images in this chapter. However, Project can show nonworking time in front of task bars, visually indicating that no work on the task will occur during the nonworking time. If you prefer this type of presentation, right-click any shaded nonworking time (such as a weekend) in the chart portion of the Gantt Chart view and click Nonworking Time in the shortcut menu. In the Timescale

dialog box, click the Non-Working Time tab. Next to Draw, click In Front Of Task Bars.

To record a task's percent complete value in preset increments

1. In the **Task Name** column, select the task for which you want to record a percent complete value.
2. On the **Task** tab, in the **Schedule** group, click the **25%**, **50%**, **75%**, or **100% Complete** button.

To record a task's percent complete value

1. In the **Task Name** column, select the task for which you want to record a percent complete value.
2. On the **Task** tab, in the **Properties** group, click **Information**.

The Task Information dialog box opens.



Tip

You can also double-click a task name to open its Task Information dialog box.

3. On the **General** tab of the dialog box, enter the **Percent Complete** value you want.

To use the % Complete column in a table

1. Right-click any column heading in a task table.
2. In the shortcut menu that appears, click **Insert Column**.

A list of fields appears.

3. Enter or select **% Complete**.
4. Record the percent complete values you want for any tasks in the table.

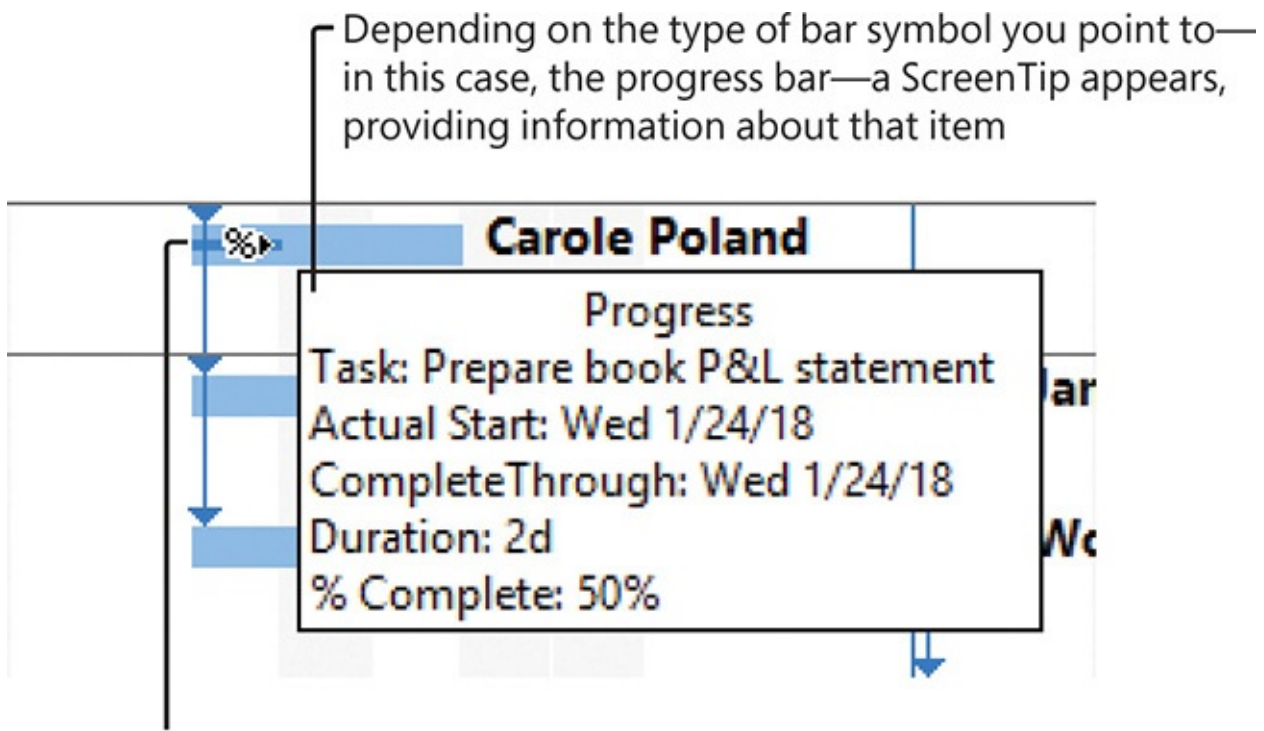
To use the mouse to set or extend progress on Gantt bars

1. Point to a Gantt bar (or progress bar within a Gantt bar).
2. When the mouse pointer changes to a percent symbol and right arrow, drag the mouse pointer from left to right within the Gantt bar. As you do so, note the CompleteThrough date value that appears in a ScreenTip.

	Task Mode	Task Name	Duration	Start	Finish	W	T	F	S	Jan 21, '18	Jan 28, '18
6	✓	Planning complete!	0 days	Mon 1/22/18	Mon 1/22/18					1/22	
7		Internal Launch Phase	13 days	Tue 1/23/18	Fri 2/9/18						
8	✓	Kickoff launch									
9		Prepare book P&L statement	2 days	Wed 1/24/18	Fri 1/26/18						

Drag the mouse pointer within a task's Gantt bar to record progress

3. To see a task's progress details, point to the progress bar inside the Gantt bar.



The mouse pointer changes to a percent symbol and arrow when pointing to a progress bar

Point to any Gantt bar to see the task's key progress values

Enter actual values for tasks

A more detailed way to keep your schedule up to date is to record what actually happened for each task in your plan. You can record each task's actual start, finish, work, and duration values. For example, when you enter three days of actual duration on a task with five days of scheduled duration and 40 hours of work, Project calculates the actual work to be 24 hours, the percent complete to be 60%, and the remaining duration to be two days. When you record actual duration, Project recalculates the task's essential schedule values such as percent complete and remaining duration.

Task Name	Act. Start	Act. Finish	% Comp	Phys. % Comp	Act. Dur.	Rem. Dur.	Act. Cost	Act. Work
3 Complete author questionnaire	Tue 1/9/18	NA	60%	0%	3 days	2 days	\$0.00	24 hrs

Name:	Complete author questionnaire	Duration:	5 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Tue 1/9/18	Finish:	Mon 1/15/18	Task type:	Fixed Units	% Complete:	60%

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
14	Toni Poe	100%	40h	0h	40h	24h	16h

The combination of the Tracking table in a Gantt chart view and the Task Form show how actual duration affects the task's schedule values

When you enter various actual values, Project uses the following rules to update the plan:

- When you enter a task's actual start date, Project moves the scheduled start date to match the actual start date.

- When you enter a task's actual finish date, Project moves the scheduled finish date to match the actual finish date and sets the task to 100 percent complete.
- When you enter a task's actual work value, Project recalculates the task's remaining work value, if any.
- When you enter a task's actual duration, if it is less than the scheduled duration, Project subtracts the actual duration from the scheduled duration to determine the remaining duration.
- When you enter a task's actual duration, if it is equal to the scheduled duration, Project sets the task to 100 percent complete.
- When you enter a task's actual duration, if it is longer than the scheduled duration, Project adjusts the scheduled duration to match the actual duration and sets the task to 100 percent complete.

Because your plan is updated with actuals, your plan as scheduled will likely change. The original plan as saved in a baseline is not altered, however.

Project supports multiple ways of recording actuals. Two we'll explore in this chapter are:

- Recording actuals in the Tracking table. This works well when you want to update actuals and see remaining duration and cost values in a single table.
- Recording actuals in the Update Tasks dialog box. This works well when you want to focus on a single task or want to update tasks in views that don't support tables, such as the Network Diagram view.

The screenshot shows the 'Update Tasks' dialog box with the following details:

- Name:** Design and order marketing material
- Duration:** 2w
- % Complete:** 0%
- Actual dur:** 0w
- Remaining dur:** 2w
- Actual Start:** NA
- Actual Finish:** NA
- Current Start:** Tue 1/9/18
- Current Finish:** Mon 1/22/18

Use the Update Tasks dialog box to record a task's actual duration, start, and other tracking values

Here's one thing to pay attention to in the Update Tasks dialog box. When you enter a percent complete, actual duration, or remaining duration value, the other values are not dynamically updated in the dialog box. They are recalculated as soon as you click OK. If you then return to the dialog box, you'll see the updated values.

Let's look at an example of how values are handled in the Update Tasks dialog box. If you enter an initial actual duration of two days on a four-day task, the remaining duration field will still show four days. When you click OK and then open the Update Tasks dialog box again, the remaining duration field will now show two days of remaining duration. If you had entered two days of actual duration and four days of remaining duration, Project would record the task as having four days of remaining duration left and an overall

duration of six days rather than the original four.



Tip

You can also apply all the tracking methods shown in this chapter to manually scheduled tasks. Additionally, you can record an actual start, actual finish, or remaining duration value for a manually scheduled task.

Project management focus: Is the project on track?

Evaluating a project's status properly can be tricky. Consider the following issues:

- For many tasks, it is very difficult to evaluate a completion percentage. When is an engineer's design for a new motor assembly 50 percent complete? Or when is a programmer's code for a software module 50 percent complete? Reporting work in progress is, in many cases, a best-guess effort and inherently risky.
- The elapsed portion of a task's duration is not always equal to the amount of work accomplished. For example, a task might require relatively little effort initially, but it might require more work as time passes. (This is referred to as a *back-loaded task*.) When 50 percent of its duration elapses, far less than 50 percent of its total work will be completed. In fact, Project tracks both values: % Complete tracks the percentage of the task's *duration* that has been completed, whereas % Work Complete tracks the percentage of the task's *work* that has been completed.
- The resources assigned to a task might have different criteria for what constitutes the task's completion than the criteria determined by the project manager or the resources assigned to successor tasks. In other words, the team might lack a common definition of "done."

Good project planning and communication can help you avoid or mitigate these and other problems that arise in project execution. For example, developing proper task durations and status-reporting periods should help you identify tasks that have varied substantially from baseline values early enough to make adjustments. Having well-documented and well-communicated task-completion criteria should help prevent downstream surprises. Nevertheless, large, complex projects will almost always vary from the baseline.

To record a task's actual values in the Tracking table

1. On the **View** tab, in the **Data** group, click **Tables** and then click **Tracking**.

The Tracking table appears.

2. Enter the actual values for the task.



Tip

You can display whichever table is most relevant to the details you are focused on while tracking progress in a plan. Useful tables include the Work table, which focuses on work values, and the Cost table, which focuses on cost values.

To record a task's actual values in the Update Tasks dialog box

1. In the **Task Name** column, select the task for which you want to record actual values.
2. On the **Task** tab, in the **Schedule** group, click the arrow to the right of **Mark on Track**, and then click **Update Tasks**.
3. In the **Update Tasks** dialog box, enter the task's actual values (actual duration, remaining duration, actual start, or actual finish).

Skills review

In this chapter, you learned how to:

- Understand progress tracking
- [Save a baseline of your plan](#)
- [Track a plan as scheduled](#)
- [Enter a task's completion percentage](#)
- [Enter actual values for tasks](#)



Practice tasks

The practice files for these tasks, SimpleTrackBaseline and SimpleTrackActuals, are located in the Project2016SBS\Ch08 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Save a baseline of your plan

The scenario: At Lucerne Publishing, the new book launch plan is now fully developed. Actual work on the project will soon begin. To allow for later comparison of actual work and the current schedule with the original plan, you will first save a baseline. Open SimpleTrackBaseline, and then perform the following tasks:

1. Save the baseline for the entire plan; use the default baseline settings.
2. Switch to the Task Sheet view.
3. Display the **Variance** table to see scheduled and baseline values.

	Task Mode	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0		▲ New book laun	Mon 1/8/18	Tue 2/27/18	Mon 1/8/18	Tue 2/27/18	0 days	0 days
1		▲ Planning Phasi	Mon 1/8/18	Mon 1/22/18	Mon 1/8/18	Mon 1/22/18	0 days	0 days
2		Assign laun	Mon 1/8/18	Mon 1/8/18	Mon 1/8/18	Mon 1/8/18	0 days	0 days
3		Complete a	Tue 1/9/18	Mon 1/15/18	Tue 1/9/18	Mon 1/15/18	0 days	0 days
4		Schedule au	Mon 1/8/18	Mon 1/15/18	Mon 1/8/18	Mon 1/15/18	0 days	0 days
5		Design and	Tue 1/9/18	Mon 1/22/18	Tue 1/9/18	Mon 1/22/18	0 days	0 days
6		Planning co	Mon 1/22/18	Mon 1/22/18	Mon 1/22/18	Mon 1/22/18	0 days	0 days
7		▲ Internal Launc	Tue 1/23/18	Fri 2/9/18	Tue 1/23/18	Fri 2/9/18	0 days	0 days
8		Kickoff bool	Tue 1/23/18	Tue 1/23/18	Tue 1/23/18	Tue 1/23/18	0 days	0 days

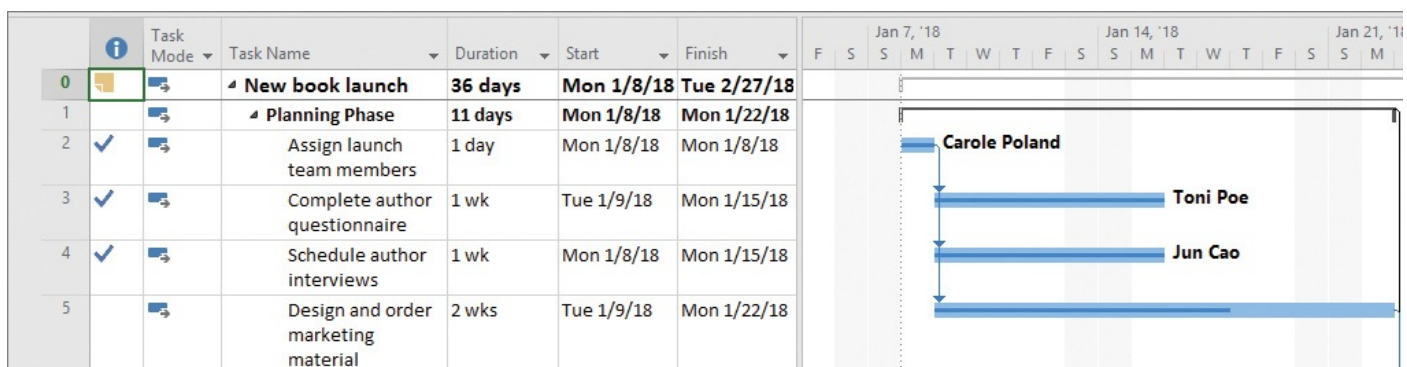
The scheduled dates in this plan match its baseline dates, so the variance values are zero

Track a plan as scheduled

The scenario: Some time has passed since you saved the baseline in the new book launch plan. Work has been completed through the first week and a half, as planned. You need to account for the completed work in the plan. Open the SimpleTrackActuals plan, and then perform the following task:

1. Use the options in the **Update Project** dialog box to record that work has been completed as scheduled through January 17, 2018.

Project records the completion percentage for the tasks that were scheduled to start before January 17. It displays that progress by drawing progress bars in the Gantt bars for those tasks.



After you record progress through a specific date, Project displays the progress bars and, for completed tasks, the completion check marks in the Gantt Chart view

In the chart portion of the Gantt Chart view, the progress bar shows how much of each task has been completed. Because tasks 2, 3, and 4 have been completed, a check mark appears in the Indicators column for those tasks, and the progress bars extend through the full length of those tasks' Gantt bars. Task 5 is only partially completed, however.

Enter a task's completion percentage

The scenario: Work continues on the new book launch. You have additional progress to record in the plan as percent complete values. Continuing in the SimpleTrackActuals plan, perform the following tasks:

1. Set the following tasks to 100 percent complete:

- 5, *Design and order marketing material*
- 6, *Planning complete!*
- 8, *Kickoff book launch meeting*

Project records the actual work for the tasks as scheduled and extends progress bars through the length of the Gantt bars.



Recording 100 percent complete is a quick checklist way of recording that a task was completed as scheduled, with no variance

Because task 6 is a milestone task with no duration, there is no change in the appearance of its symbol in the chart portion of the Gantt Chart view as there was for tasks 5 and 8. However, the completion check marks for all three tasks appear in the Indicators column.

2. Set task 9, *Prepare book P&L statement*, to 50 percent complete, and then point to its progress bar.



Point to the progress bar in the partially completed task's Gantt bar to see its key progress indicators in a ScreenTip

Note that although 50 percent of the work on task 9 is completed, the progress bar does not span 50 percent of the length of the Gantt bar. This is because Project measures duration in working time but draws the Gantt bars to extend over nonworking time, which in this case includes Thursday, January 25, a nonworking

day.

Enter actual values for tasks

The scenario: A few more days have passed, and work on the new book launch has progressed. Resources performing the work have given you actual progress that differs somewhat from the plan, and you want to record these actuals and observe the effect on the overall plan. Continuing in the SimpleTrackActuals plan, perform the following tasks:

1. Use the **Tracking** table to record that task 9, *Prepare book P&L statement*, required a total of 24 hours of actual work to complete.

Because 24 hours is greater than its original duration of 16 hours, Project marks the task as completed and extends the Gantt bar of the task to indicate its longer duration.

Task Name	Act. Start	Act. Finish	% Comp	Phys. % Comp.	Act. Dur.	Rem. Dur.	Act. Cost	Act. Work	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
7	Internal Launch Phase	Tue 1/23/18	NA	17%	0%	2.17 days	10.83 days	\$1,910.00	36 hrs																
8	Kickoff book	Tue 1/23/18	Tue 1/23/18	100%	0%	1 day	0 days	\$650.00	12 hrs																
9	Prepare book P&L	Wed 1/24/18	Mon 1/29/18	100%	0%	3 days	0 days	\$1,260.00	24 hrs																
10	Plan author's	NA	NA	0%	0%	0 days	6 days	\$0.00	0 hrs																

When you record actual duration, the change highlighting is a great way to see what other changes in the plan the actuals introduced

2. Use the options in the **Update Tasks** dialog box to record that task 10, *Plan author's travel itinerary*, started one working day ahead of schedule (the Tuesday before its scheduled start date) and required a total of seven days to complete.

Update Tasks dialog box showing task details for 'Plan author's travel itinerary'. The dialog includes fields for Name, Duration, % Complete, Actual dur., Remaining dur., Actual Start, Actual Finish, Current Start, and Current Finish. The 'Actual' section shows the task is 0% complete with an actual duration of 7 days, starting on Tue 1/23/18 and finishing on NA. The 'Current' section shows the task is currently 6 days in duration, starting on Wed 1/24/18 and finishing on Thu 2/1/18. Buttons for Help, Notes..., OK, and Cancel are visible at the bottom.

When recording actual duration, you should also record the actual start date if it differs from the scheduled start date

3. Click **OK**.

Project records the actual values for the task and marks it as complete. The updated values roll up to the *Internal Launch Phase* summary task (task 7) and the project summary task (task 0), as indicated by the change highlighting.

Task Name	Act. Start	Act. Finish	% Comp	Phys. % Comp.	Act. Dur.	Rem. Dur.	Act. Cost	Act. Work	Jan 21, '18							Jan 28, '18						
0 New book laun	Mon 1/8/18	NA	46%	0%	16.7 days	19.3 days	16,890.00	340 hrs														
1 Planning Phas	Mon 1/8/18	Mon 1/22/18	100%	0%	11 days	0 days	\$11,900.00	248 hrs														
2 Assign launch	Mon 1/8/18	Mon 1/8/18	100%	0%	1 day	0 days	\$420.00	8 hrs														
3 Complete author	Tue 1/9/18	Mon 1/15/18	100%	0%	1 wk	0 wks	\$0.00	40 hrs	ni Poe													
4 Schedule author	Mon 1/8/18	Mon 1/15/18	100%	0%	1 wk	0 wks	\$1,680.00	40 hrs	Cao													
5 Design and order marketing	Tue 1/9/18	Mon 1/22/18	100%	0%	2 wks	0 wks	\$9,800.00	160 hrs	Toby Nixon, Zac Woodall													
6 Planning complete!	Mon 1/22/18	Mon 1/22/18	100%	0%	0 days	0 days	\$0.00	0 hrs	1/22													
7 Internal Launch Phase	Tue 1/23/18	NA	44%	0%	5.72 days	7.28 days	\$4,990.00	92 hrs														
8 Kickoff book	Tue 1/23/18	Tue 1/23/18	100%	0%	1 day	0 days	\$650.00	12 hrs	Sharon Salavaria[50%], Toby Nixon													
9 Prepare book P&L	Wed 1/24/18	Mon 1/29/18	100%	0%	3 days	0 days	\$1,260.00	24 hrs	Carole Poland													
10 Plan author's	Tue 1/23/18	Thu 2/1/18	100%	0%	7 days	0 days	\$3,080.00	56 hrs	Jan													

Actual values that you record at the task level roll up to the task's summary task and to the project summary task

- Use the options in the **Update Tasks** dialog box for task 11, *Channel Sales prep*. This task started on time and has three days of actual duration but will still require five days of remaining duration to complete. (Remember to enter the new remaining duration value after entering the actual duration value.)

This gives the task a new total duration of eight days: three days actual duration plus five days remaining duration.

Task Name	Act. Start	Act. Finish	% Comp	Phys. % Comp.	Act. Dur.	Rem. Dur.	Act. Cost	Act. Work	21, '18							Jan 28, '18							Feb 4, '18						
7 Internal Launch Phase	Tue 1/23/18	NA	50%	0%	8 days	8 days	\$7,240.00	140 hrs																					
8 Kickoff book	Tue 1/23/18	Tue 1/23/18	100%	0%	1 day	0 days	\$650.00	12 hrs	Sharon Salavaria[50%], Toby Nixon																				
9 Prepare book P&L	Wed 1/24/18	Mon 1/29/18	100%	0%	3 days	0 days	\$1,260.00	24 hrs	Carole Poland																				
10 Plan author's	Tue 1/23/18	Thu 2/1/18	100%	0%	7 days	0 days	\$3,080.00	56 hrs	Jane Dow																				
11 Channel Sales prep	Wed 1/24/18	NA	38%	0%	3 days	5 days	\$2,250.00	48 hrs	2																				

Unless you record an actual start date, Project assumes the task started as scheduled

Because you did not specify an actual start date, Project assumes that the task started as scheduled. However, the actual duration and updated remaining duration value you entered caused Project to calculate a new finish date.

Part 3: Advanced scheduling techniques

[CHAPTER 9 Fine-tune task scheduling](#)

[CHAPTER 10 Fine-tune task details](#)

[CHAPTER 11 Fine-tune resource and assignment details](#)

[CHAPTER 12 Fine-tune the Project plan](#)

[CHAPTER 13 Organize plan details](#)

[CHAPTER 14 Track progress: Detailed techniques](#)

[CHAPTER 15 View and report project status](#)

9. Fine-tune task scheduling

In this chapter

- [See task relationships by using Task Path](#)
 - [Adjust task link relationships](#)
 - [Control task scheduling by using constraints](#)
 - [Interrupt work on a task](#)
 - [Adjust working time for individual tasks](#)
 - [Control task scheduling by using task types](#)
 - [See task schedule details by using the Task Inspector](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch09 folder. For practice file download instructions, see the introduction.

In Part 3, “[Advanced scheduling techniques](#),” you’ll complete a full project life cycle (planning, tracking progress, and responding to variance) as you did in Part 2, “[Simple scheduling basics](#).” In Part 3, however, you dive deeper into the Project 2016 feature set to handle more complex needs. This chapter and [Chapter 10](#), “[Fine-tune task details](#),” introduce you to a broad feature set that focuses on a deeper level of task management. This chapter focuses on core task scheduling features, including task links, constraints, and task types.



As you fine-tune a schedule, watch for blue highlighting to appear on changed values throughout a plan immediately after you make a change to a calculated value for a task, resource, or assignment. This automatic change highlighting helps you identify the impact of adjusting task relationships (or any other action that causes a date change in a plan) on the schedule. Change highlighting remains visible until you perform another editing action or save the file.

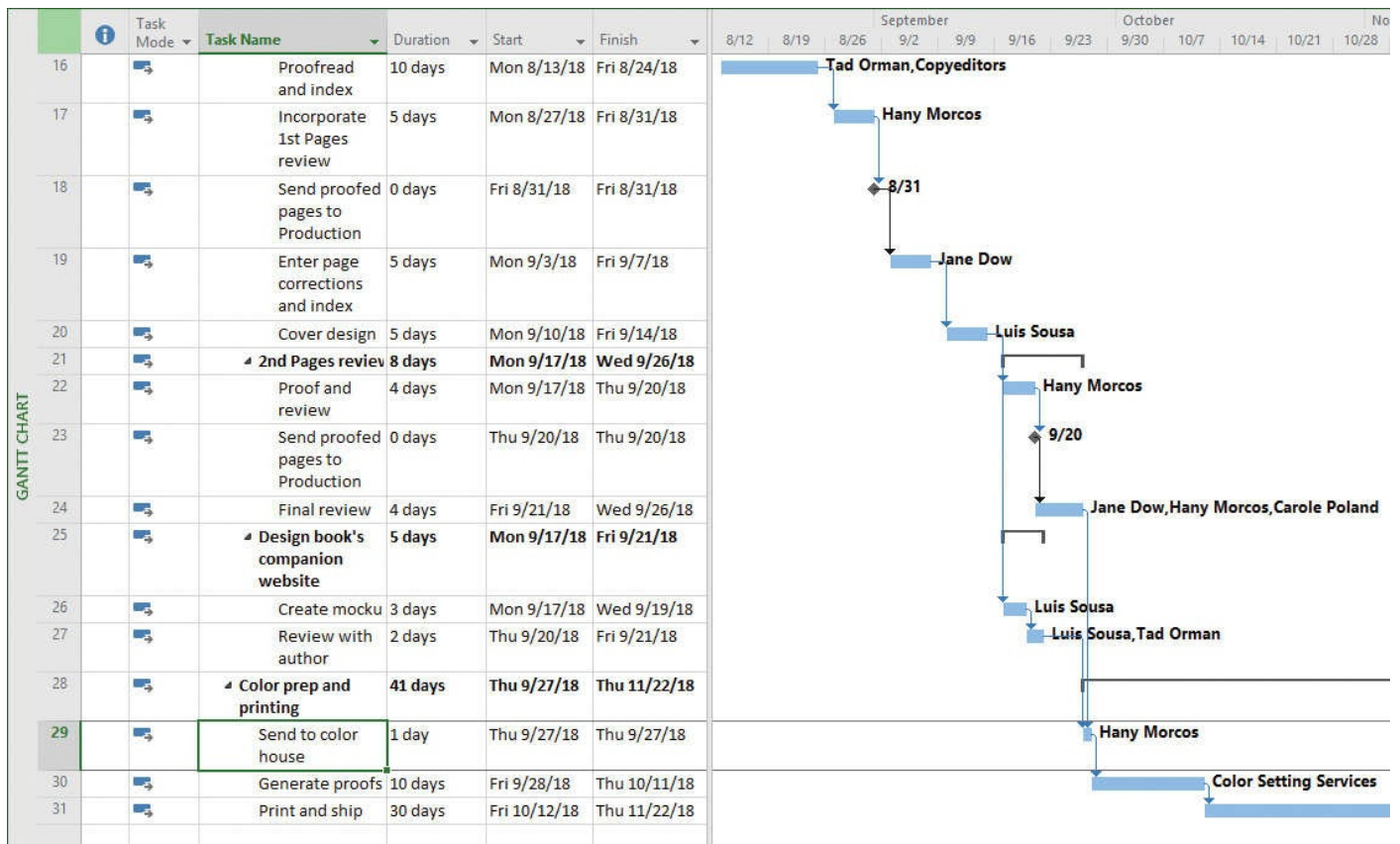
This chapter guides you through procedures related to seeing task relationships by using Task Path, adjusting task link relationships, controlling task scheduling by using constraints, interrupting work on a task, adjusting working time for individual tasks, controlling task scheduling by using task types, and seeing task schedule details by using the Task Inspector.

See task relationships by using Task Path

When fine-tuning task relationships, you need to keep track of the predecessor tasks that affect the scheduling of their successor tasks. In complex plans, visually identifying predecessor and successor relationships is not always easy. This is especially true when a single task has multiple predecessors or successors.

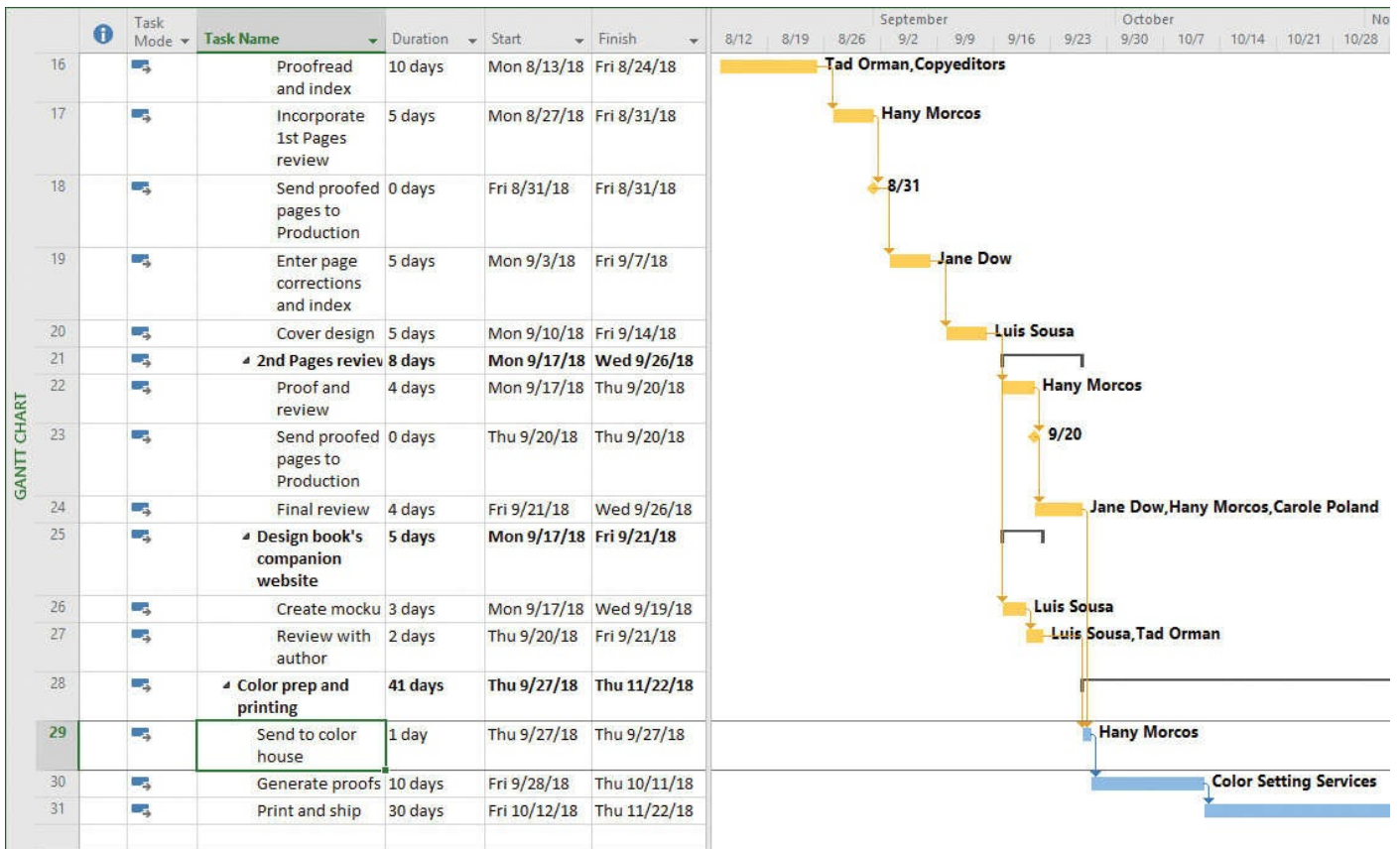
The Task Path feature applies color formatting to the Gantt bars of the selected task's predecessor and successor tasks. Task Path can also distinguish a task's driving predecessors (the predecessor tasks that directly determine, or drive, the start date of the task) from that task's other predecessors. (Predecessor tasks that can slip without rescheduling their successor tasks are said to have slack, which is described in detail in [Chapter 10, "Fine-tune task details."](#)) The Task Path feature can also do the same for driving successor tasks.

The distinct color highlighting applied to driving predecessor and successor tasks is especially useful when you're focused on managing the overall duration of a sequence of linked tasks. Without Task Path formatting applied, it can be difficult to determine the path of related tasks on a Gantt chart.



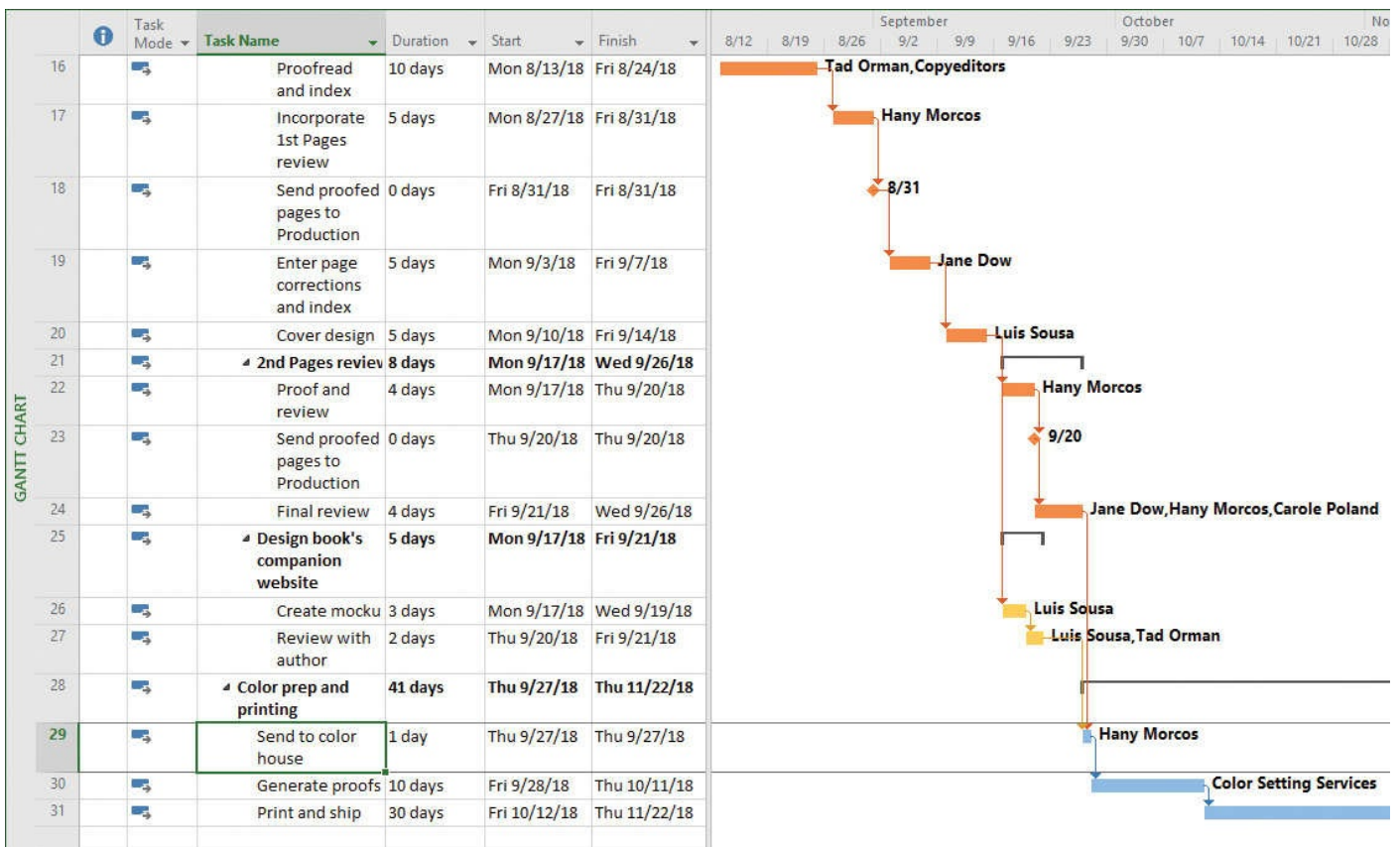
In this Gantt chart view, all tasks have the same bar and link colors, regardless of predecessor and successor task relationships

To identify the chain of a task's predecessor tasks, turn on Task Path predecessor formatting.



Task Path formatting applies a gold highlight to the Gantt bars of task 29's predecessor tasks

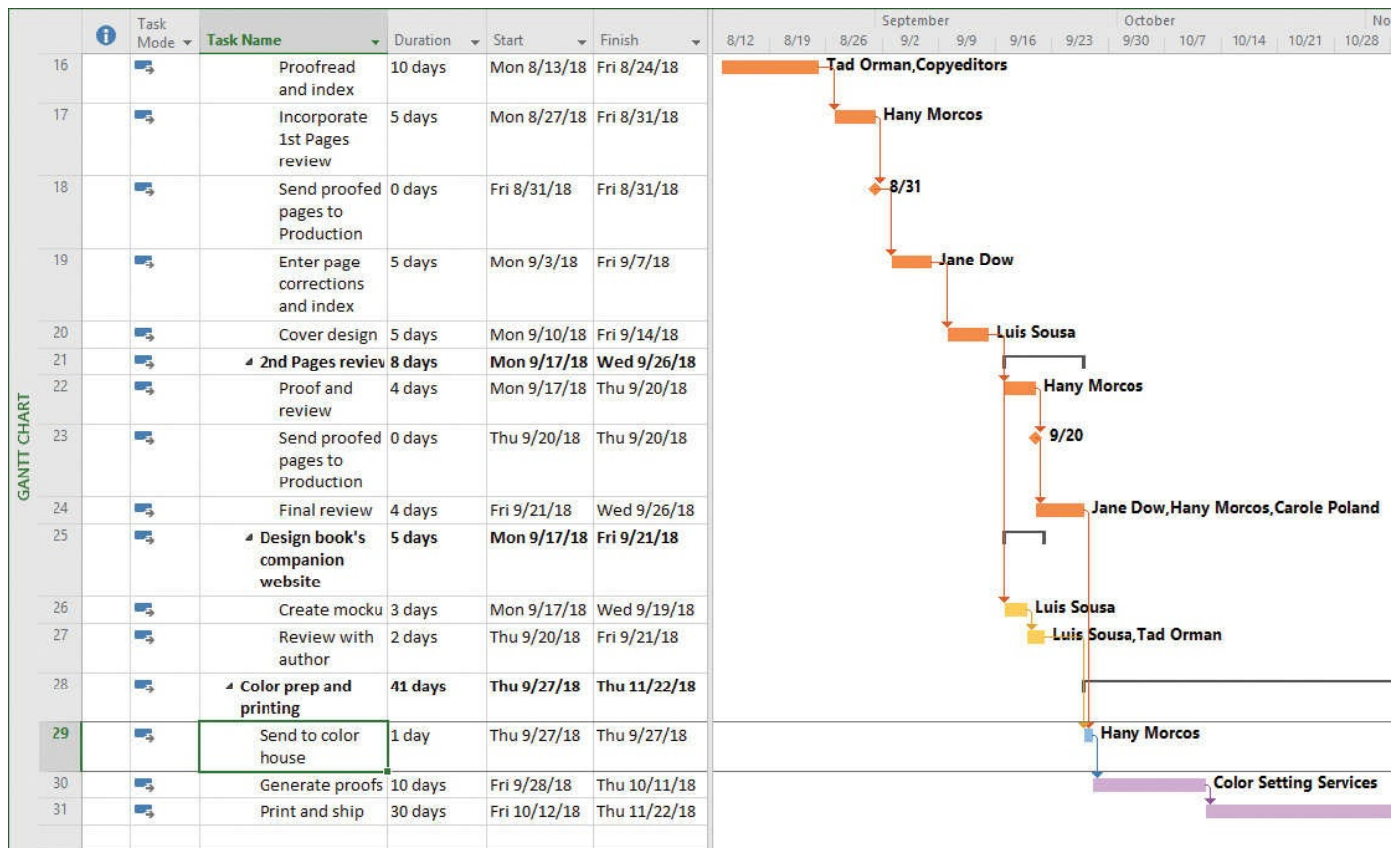
A task can have a long chain of predecessor tasks, but which of these directly drive the scheduling of the task? Task Path can visually distinguish these driving predecessors, too.



Task Path formatting applies a dark orange highlight to the Gantt bars of task 29's driving predecessor tasks

Some predecessor tasks directly drive the scheduling of a task and are its driving predecessors. Other predecessor tasks might have some amount of slack between them and the selected task. With the Task Path highlighting applied, you can more easily see which tasks are currently determining the scheduling of the selected task. Any schedule changes to these driving predecessor tasks will affect the selected task.

In addition to predecessor highlighting, you can also use Task Path to highlight the selected task’s successor tasks.



Task Path formatting applies a light purple highlight to the Gantt bars of task 29’s successor tasks

Project applies a light purple highlight formatting to the Gantt bars of a task’s successor tasks.

To apply Task Path formatting to a task’s predecessor or successor tasks

1. In a Gantt chart view, click a task name.
2. On the **Format** tab, in the **Bar Styles** group, click the **Task Path** button, and then click the options you want.

To turn off Task Path formatting

1. On the **Format** tab, in the **Bar Styles** group, click the **Task Path** button, and then click **Remove Highlighting**.

Adjust task link relationships

You might recall from [Chapter 4](#), “[Build a task list](#),” that there are four types of task dependencies, or relationships:

- **Finish-to-start (FS)** The finish date of the predecessor task determines the start date of the successor task.
- **Start-to-start (SS)** The start date of the predecessor task determines the start date of the successor task.
- **Finish-to-finish (FF)** The finish date of the predecessor task determines the finish date of the successor task.
- **Start-to-finish (SF)** The start date of the predecessor task determines the finish date of the successor task.

When you link tasks in Project by using the Link Tasks button on the Task tab, in the Schedule group, those tasks are given a finish-to-start relationship by default. This is fine for many tasks, but you will most likely change some task relationships as you fine-tune a plan. The following are some examples of tasks that require relationships other than finish-to-start:

- You can start setting pages as soon as you start illustration work on a book project (a start-to-start relationship). This reduces the overall time required to complete the two tasks, because they are completed in parallel.

	Task Name	Predecessors	Day -1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
1	Illustration			█	█	█							
2	Set pages	1SS		█	█	█	█						

With a start-to-start relationship, the start date of the predecessor task determines the start date of the successor task

- Planning the editorial work for a book can begin before the manuscript is complete, but it cannot be finished until the manuscript is complete. You want the two tasks to finish at the same time (a finish-to-finish relationship).

	Task Name	Predecessors	Day -1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
6	Write manuscript			█	█	█	█	█					
7	Edit manuscript	6FF				█	█	█	█				

With a finish-to-finish relationship, the finish date of the predecessor task determines the finish date of the successor task

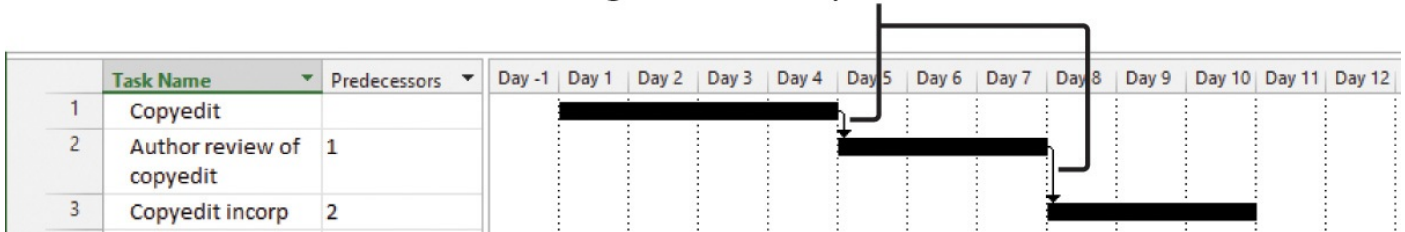
Task relationships should reflect the sequence in which work should be performed. After you have established the correct task relationships, you can fine-tune your schedule by entering overlap ([lead time](#)) or delay ([lag time](#)) between the finish or start dates of predecessor and successor tasks.

When two tasks have a finish-to-start relationship:

- Lead time causes the successor task to begin before its predecessor task concludes.
- Lag time causes the successor task to begin sometime after its predecessor task concludes.

Here's an example of how lead and lag time affect task relationships. Assume that you initially planned three tasks—copyedit, author review, and copyedit incorporation—by using Project's default finish-to-start relationships.

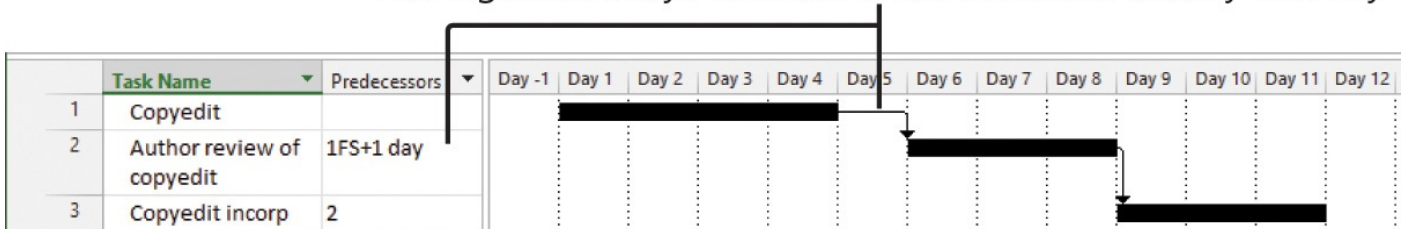
Initially, the tasks are linked with finish-to-start relationships, so the successor task is scheduled to begin when the predecessor task finishes



Project's default task relationship is finish-to-start (FS)

Before task 2 can begin, you need to allow an extra day for the copyedited manuscript to be shipped to the author. You do not want to add a day to the duration of task 1, because no real work will occur on that day. Instead, you enter a one-day lag between tasks 1 and 2.

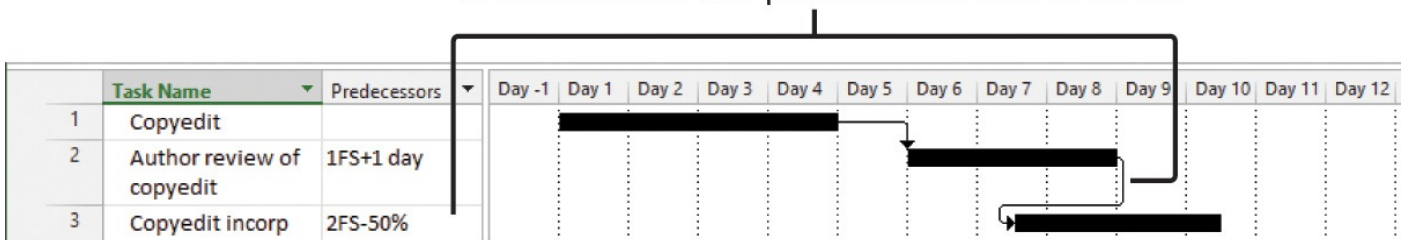
This lag time delays the start of the successor task by one day



To add a delay between the end of the predecessor and the start of the successor, add lag time to the relationship

However, task 3 can start as soon as task 2 is halfway completed. To make this happen, you would enter a 50-percent lead time between tasks 2 and 3.

This lead time schedules the successor task to start before the predecessor task finishes



To add overlap between the end of the predecessor and the start of the successor, add lead time to the relationship

You can enter lead and lag time as units of time, such as two days, or as a percentage of the duration of the predecessor task, such as 50 percent. Lag time is entered in positive units and lead time in negative units (for example, $-2d$ or -50%). You can apply lead or lag time to any type of task relationship: finish-to-start, start-to-start, or any other type.



Tip

Adjusting relationships between tasks and entering lead or lag times where appropriate are excellent techniques to fine-tune task relationships so that you get the results you want. However, Project cannot automatically make such schedule adjustments for you. As a project manager, you must analyze the sequences and relationships of your tasks and use your best judgment when making such adjustments.

Some places in which you can enter lead or lag time include the Task Information dialog box (available from the Task tab), the Predecessors column in the Entry table, the Task Form (which you can display by clicking the Details command on the View tab, in the Split View group), and the Task Dependency dialog box (which you can open by double-clicking a link line between Gantt bars).

To change the type of task relationship between tasks

1. Select a successor task that you want to change.
 2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box, which contains details about the currently selected task.
-



Tip

Double-clicking a task name is a quick way to open the Task Information dialog box.

3. Click the **Predecessors** tab.
4. On the **Predecessors** tab, in the **Type** column for the predecessor task, select the relationship type you want between the tasks, and then click **OK**.
5. Click **OK** to close the Task Information dialog box.

To add lead or lag time between linked tasks

1. Select the successor task to which you want to add lead or lag time.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Predecessors** tab, and then do either of the following:
 - In the **Lag** field for a predecessor task, enter the lead value you want. Lead values are entered as negative lag values. Lead can be a number of working days (for example, $-2d$) or a percentage of the duration of the predecessor task (for example, -25%).
 - In the **Lag** field for a predecessor task, enter the lag value you want. Lag values

are entered as positive values. Lag can be a number of working days (for example, 3d) or a percentage of the duration of the predecessor task (for example, 50%).

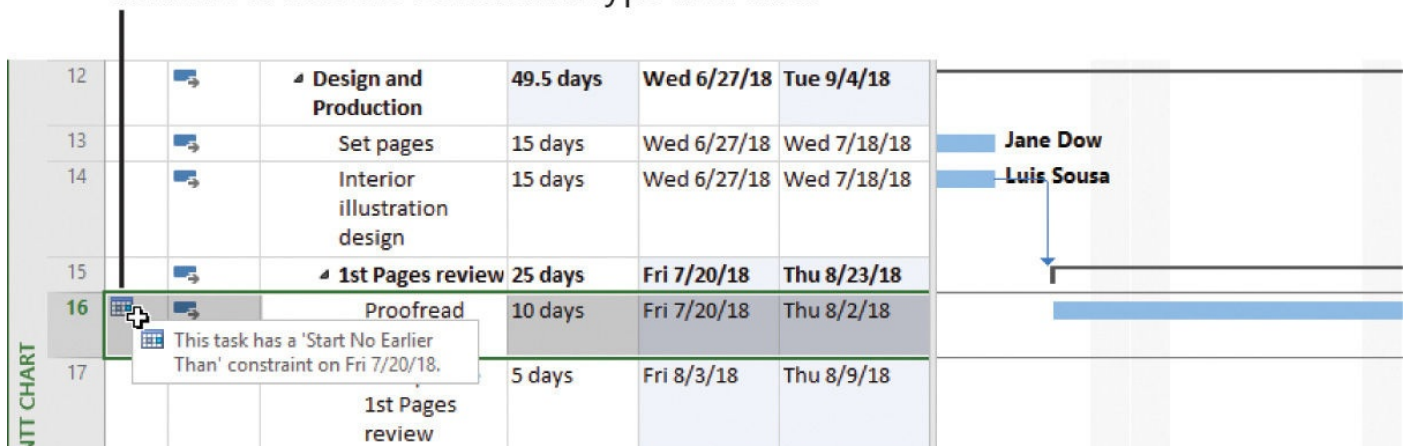
Control task scheduling by using constraints

Every task that you enter into Project has some type of constraint applied to it. A constraint determines the degree to which an automatically scheduled task can be rescheduled. You can manage the constraint details of automatically scheduled tasks. When working with a manually scheduled task, however, you cannot change the constraint type or set a constraint date. The reason is that Project does not schedule manually scheduled tasks, so constraints have no effect. For more information about manually scheduled tasks versus automatically scheduled tasks, see [Chapter 4, “Build a task list.”](#)

There are three categories of constraints:

- **Flexible constraints** Project can change the start and finish dates of a task. Project’s default constraint type causes tasks to start as soon as possible. This type of flexible constraint is called *As Soon As Possible*, or *ASAP* for short. No constraint date is associated with flexible constraints. Project does not display any special indicator in the Indicators column for flexible constraints.
- **Semi-flexible constraints** With this type of constraint, a task has a start or finish date boundary. However, within that boundary, Project has the scheduling flexibility to change the start and finish dates of a task. For example, consider a task that must finish no later than June 22, 2018, but that could finish before this date. Semi-flexible constraints are sometimes called *soft constraints* or *moderate constraints*. When a semi-flexible constraint has been applied to a task, Project displays a special constraint indicator (which looks like a calendar) in the Indicators column.
- **Inflexible constraints** With this type of constraint, a task must begin or end on a certain date. For example, you can specify that a task must end on November 16, 2018. Inflexible constraints are sometimes called *hard constraints*. When an inflexible constraint has been applied to a task, Project displays a constraint indicator in the Indicators column. You can point to a constraint indicator to display the constraint details in a ScreenTip.

Point to the constraint indicator in the Indicators column to see the constraint type and date



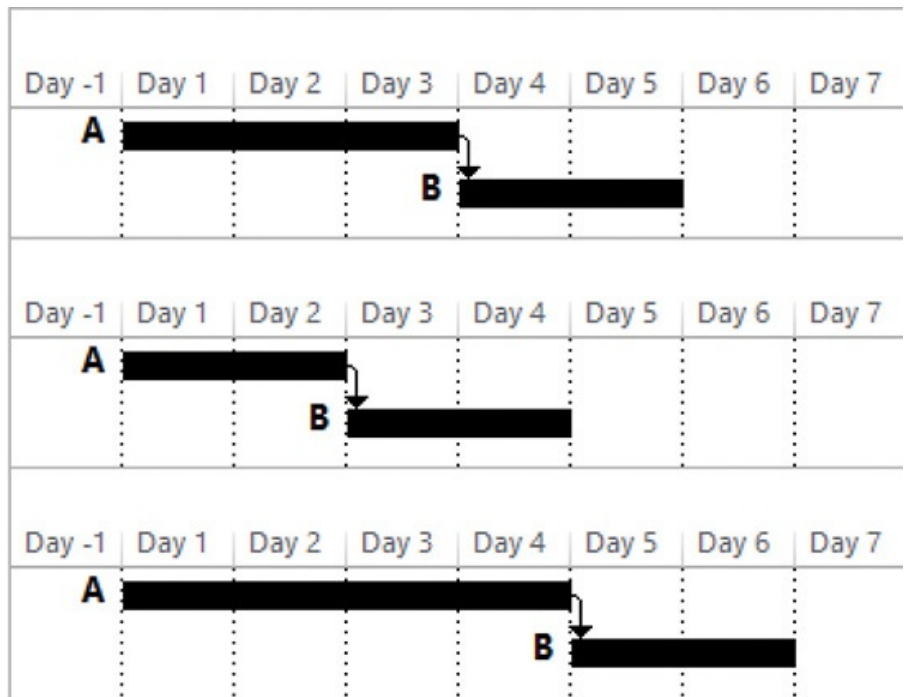
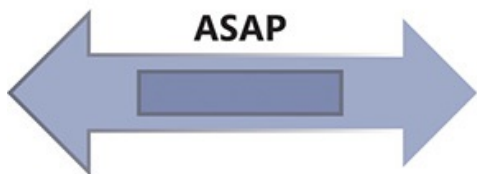
Use the ScreenTip to get the constraint’s details

In total, there are eight types of task constraints, as described in the following table.

Constraint category	Constraint type	Description
Flexible	As Soon As Possible (ASAP)	Project schedules a task to occur as soon as it can occur. This is the default constraint type applied to all new tasks when you are scheduling from the project's start date. There is no constraint date for an ASAP constraint.
Flexible	As Late As Possible (ALAP)	Project schedules a task to occur as late as it can occur. This is the default constraint type applied to all new tasks when you are scheduling from the project's finish date. There is no constraint date for an ALAP constraint.
Semi-flexible	Start No Earlier Than (SNET)	Project schedules a task to start on or after the constraint date you specify. Use this constraint type to ensure that a task will not be scheduled to start before a specific date.
Semi-flexible	Start No Later Than (SNLT)	Project schedules a task to start on or before the constraint date you specify. Use this constraint type to ensure that a task will not start after a specific date.
Semi-flexible	Finish No Earlier Than (FNET)	Project schedules a task to finish on or after the constraint date you specify. Use this constraint type to ensure that a task will not finish before a specific date.
Semi-flexible	Finish No Later Than (FNLT)	Project schedules a task to finish on or before the constraint date you specify. Use this constraint type to ensure that a task will not finish after a specific date.
Inflexible	Must Start On (MSO)	Project schedules a task to start on the constraint date you specify. Use this constraint type to ensure that a task will start on an exact date.
Inflexible	Must Finish On (MFO)	Project schedules a task to finish on the constraint date you specify. Use this constraint type to ensure that a task will finish on an exact date.

These three constraint categories have different effects on the scheduling of tasks:

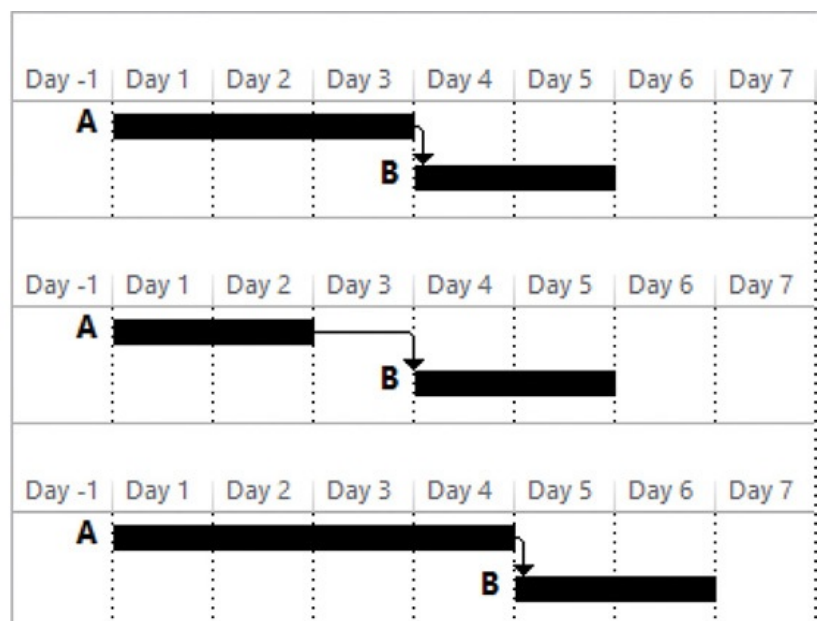
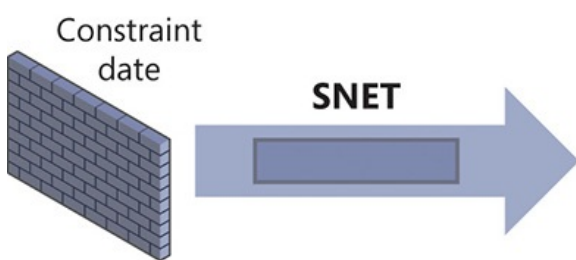
- **Flexible constraints** These constraints, such as As Soon As Possible (ASAP), allow tasks to be scheduled without any limitations other than their predecessor and successor relationships, and the project's start date (for ASAP task constraints) or finish date (for As Late As Possible [ALAP] task constraints). No fixed start or end dates are imposed by these constraint types. Use these constraint types whenever possible.



The As Soon As Possible (ASAP) constraint gives you the maximum scheduling flexibility

For example, consider a schedule in which tasks A and B are linked and task B has an ASAP constraint applied. As the duration of task A shrinks or grows, the start date of task B is automatically adjusted accordingly.

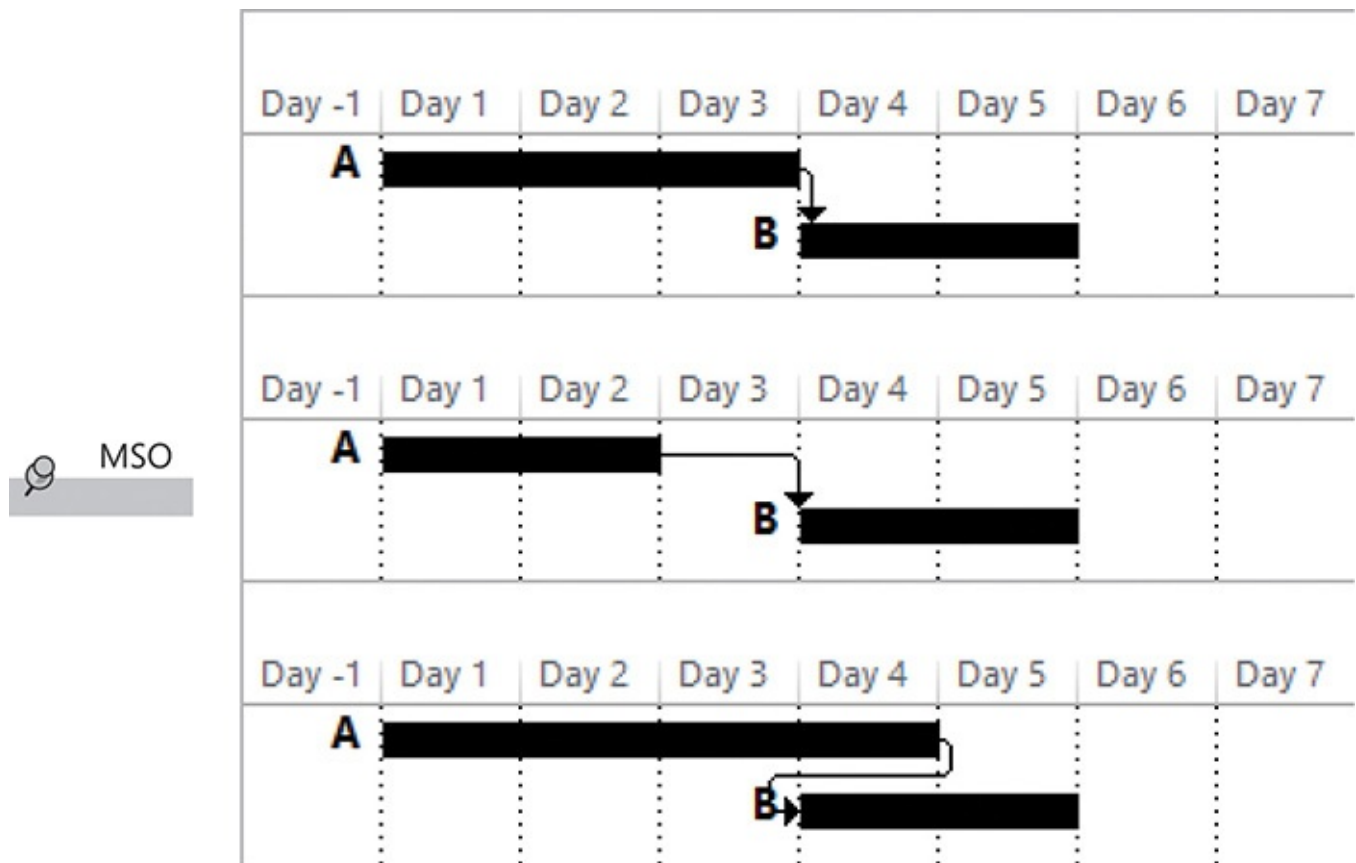
- **Semi-flexible constraints** These constraints, such as Start No Earlier Than or Start No Later Than (SNET or SNLT), limit the rescheduling of a task within the date boundary you specify.



The Start No Earlier Than (SNET) constraint limits your scheduling flexibility starting at the constraint date

With an SNET type of constraint, tasks A and B are linked and task B has an SNET constraint set to day 4. If task A's duration decreases, the start of task B is unaffected. However, if task A's duration extends, Project adjusts task B's start date automatically.

- **Inflexible constraints** These constraints, such as Must Start On (MSO), prevent the rescheduling of a task. Use these constraint types only when absolutely necessary.



A Must Start On (MSO) constraint “pins” the start date of a task to a specific date, with no scheduling flexibility

In this example, tasks A and B are linked and task B has an MSO constraint set to day 4. If task A’s duration decreases or increases, the start of task B is unaffected.

The type of constraint you apply to the tasks in your plans depends on what you need from Project. You should use inflexible constraints only if the start or finish date of a task is fixed by factors beyond the control of the project team. Examples of such tasks include handoffs to clients and the end of a funding period. For tasks without such limitations, you should use flexible constraints. Flexible constraints provide the most discretion in adjusting start and finish dates, and they allow Project to adjust dates if your plan changes. For example, if you used ASAP constraints and the duration of a predecessor task changes from four days to two days, Project adjusts, or *pulls in*, the start and finish dates of all successor tasks. However, if a successor task has an inflexible constraint applied, Project cannot adjust its start or finish dates.

Here are a few other things to keep in mind when applying constraints to tasks:

- Entering a finish date for a task (for example, in the Finish column) applies a Finish No Earlier Than constraint to the task.
- Entering a Start date for a task (for example, in the Start column) or dragging a Gantt bar directly on the Gantt chart applies a Start No Earlier Than constraint to the task.
- In many cases, entering a deadline date is a preferable alternative to entering a semi-

flexible or inflexible constraint. You will work with deadline dates in [Chapter 10](#), “[Fine-tune task details](#).”

- Unless you specify a time, Project schedules a constraint date’s start or finish time by using the Default Start Time or Default End Time value that is set on the Schedule tab of the Project Options dialog box. (To open this dialog box, click the File tab to display the Background view, and then click Options.) The default start time is 8:00 A.M. If you want a constrained task to be scheduled to start at a different time, enter that time along with the start date. For example, if you want to schedule a task to start at 10:00 A.M. on July 19, 2018, enter *7/19/18 10AM* in the Start field.
- If you must apply semi-flexible or inflexible constraints to tasks in addition to task relationships, you might create what is called [negative slack](#). For example, assume that you have a successor task that has a finish-to-start relationship with its predecessor task. If you enter a Must Start On constraint for the successor task earlier than the finish date of the predecessor task, this results in negative slack and a scheduling conflict. By default, the constraint date applied to the successor task overrides the relationship. However, if you prefer, you can set Project to honor relationships over constraints. To do so, in the Project Options dialog box, on the Schedule tab, clear the Tasks Will Always Honor Their Constraint Dates check box.
- If you must schedule a project from a finish date rather than a start date, some constraint behaviors are different. For example, the As Late As Possible constraint type, rather than As Soon As Possible, becomes the default for new tasks. You should pay close attention to constraints when scheduling from a finish date to make sure that you create the effect you intend.

To apply a task constraint

1. Select the name of the task to which you want to apply a constraint.



Important

The task must be automatically scheduled; task constraints do not apply to manually scheduled tasks.

-
2. On the **Task** tab, in the **Properties** group, click the **Information** button.



Tip

Double-clicking a task name is a quick way to open the Task Information dialog box.

-
3. In the **Task Information** dialog box, click the **Advanced** tab.
 4. In the **Constraint Type** box, select the constraint type you want.
 5. All constraint types except As Soon As Possible and As Late As Possible require a

constraint date. In the **Constraint Date** box, enter or select the date you want, and then click **OK**.

To remove a task constraint

1. Select a task that has had a constraint applied.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Advanced** tab.
4. In the **Constraint Type** box, select **As Soon As Possible** or (if scheduling from the project finish date) **As Late As Possible**.

Interrupt work on a task

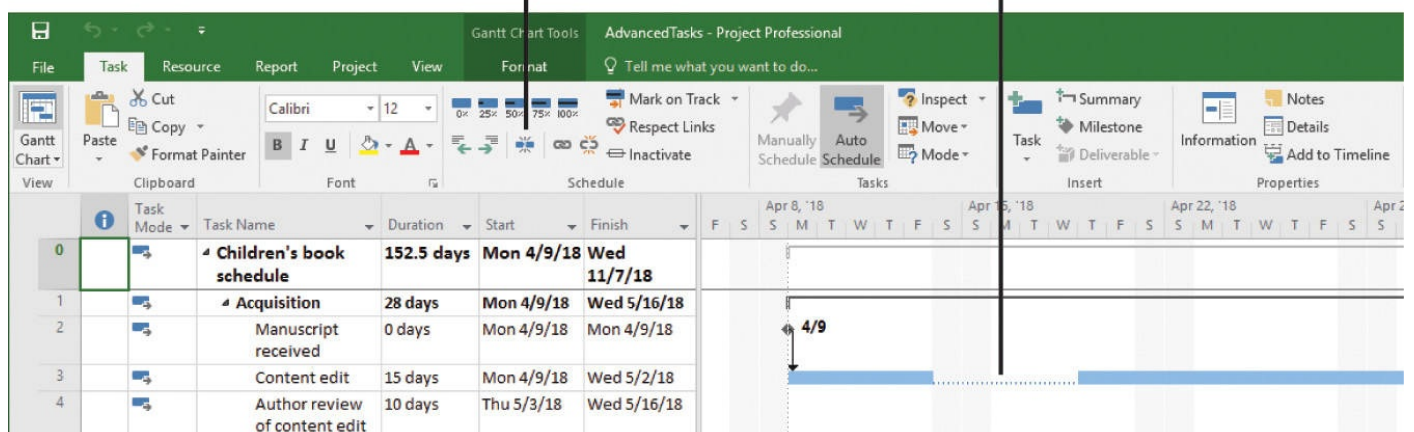
When initially planning project tasks, you might know that work on a certain task will be interrupted. Rather than listing a task twice to account for a known interruption in work, you can split the task into two or more segments. The following are some reasons why you might want to split a task:

- You anticipate an interruption in a task. This might be the case, for example, if the facility where a task must be performed will not be accessible midway through the task's duration.
- A task is unexpectedly interrupted. After a task is underway, a resource might have to stop work on the task because some other issue has taken priority. After the other issue is resolved, the resource can resume work on the task.

You drag the mouse pointer within a Gantt bar to split the task into multiple segments.

The split, which indicates an interruption of work on a task, appears as a dotted line connecting the segments of the tasks

Split Task command



Split a task to account for an interruption of work on the task

After you split a task, Project draws a dotted line between the two segments of the task in Gantt chart views.

Here are a few other things to keep in mind when splitting tasks:

- You can drag a segment of a split task either left or right to reschedule the split.

- The time of the task split, represented by the dotted line, is not counted in the duration of the task. No work occurs during the split.
- You can hide the dotted line between segments if you want, by clearing the Show Bar Splits check box in the Layout dialog box. (You can access this dialog box by clicking the Layout button in the Format group on the Format tab.)
- If the duration of a split task changes, the last segment of the task is increased or decreased accordingly.
- If a split task is rescheduled (for example, if its start date changes), the entire task is rescheduled, splits and all. The task keeps the same pattern of segments and splits.
- Resource leveling or manually [contouring](#) assignments over time can cause tasks to split. You will contour assignments in [Chapter 11](#), “[Fine-tune resource and assignment details](#),” and level resources in [Chapter 12](#), “[Fine-tune the Project plan](#).”

To split a task into multiple segments

1. If the task’s Gantt bar is not visible in the chart portion of the Gantt chart view, select the task name and then, on the **Task** tab, in the **Editing** group, click **Scroll to Task**.
2. On the **Task** tab, in the **Schedule** group, click the **Split Task** button (which looks like a broken Gantt bar) to display a ScreenTip and change the mouse pointer to task-splitting mode.
3. Move the mouse pointer over the Gantt bar of the task (but don’t click) until the start of the split you want appears in the ScreenTip.
4. Click, and then drag the mouse pointer to the right until the start date that you want for the new segment appears in the ScreenTip. Release the mouse button.



Tip

If you initially don’t get the result you want, you can undo the split (press Ctrl+Z) and try again.

To reschedule the second segment of a split task

1. Drag the second or later segment of the task to the new start date that you want.



Tip

If you drag the first segment of a split task, you will reschedule the entire task and introduce an SNET constraint on the task. To adjust the split between the first and second segments of a split task, drag the second segment, not the first.

To rejoin two segments of a split task

1. Drag one segment of the task until it touches the other segment.

Adjust working time for individual tasks

Occasionally you might want a specific task to occur at a time that differs from the working time of the project calendar. Or perhaps you want a task to occur at a time outside of the assigned resource's normal working time, as determined by the resource's calendar. To accomplish this, you apply a task calendar to such tasks. As with the project calendar, you specify which base calendar to use as a task calendar. Here are some examples of when you might need a task calendar:

- You are using the Standard base calendar as your project calendar, with 8:00 A.M. to 5:00 P.M. as your normal working hours, and you have a task that must run overnight.
- You have a task that must occur on a specific weekday.
- You have a task that must occur over a weekend.

Project treats tasks differently from resources, in that it does not create calendars as you create tasks. (If you need a refresher on resource calendars, see [Chapter 5](#), “[Set up resources](#).”) When you need a task calendar, you assign a base calendar to the task. This base calendar might be one that is provided with Project or a new base calendar that you create.



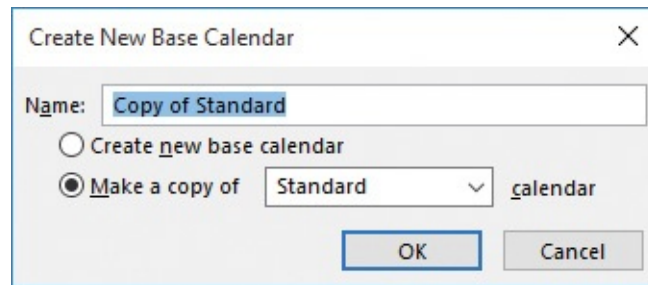
One benefit of creating a new calendar by copying the Standard base calendar is that all the working-day exceptions from the Standard calendar that you have already entered, such as holidays, will also appear in the new calendar. Any future changes made to either calendar do not affect the other calendar, however.

For tasks that have both a task calendar and resource assignments, Project schedules work during the working times that are common between the task calendar and resource calendars. If there is no common working time, Project alerts you when you apply the task calendar or assign a resource to the task.

When you apply a task calendar to a task, you can choose to ignore resource calendars for all resources assigned to the task. Doing so causes Project to schedule the resources to work on the task according to the task calendar and not their own resource calendars (for example, to work 24 hours per day).

To create a new base calendar

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button to open the Change Working Time dialog box.
2. In the **Change Working Time** dialog box, click **Create New Calendar** to open the Create New Base Calendar dialog box.



When creating a new base calendar, give it a name that will make sense to anyone who works with it

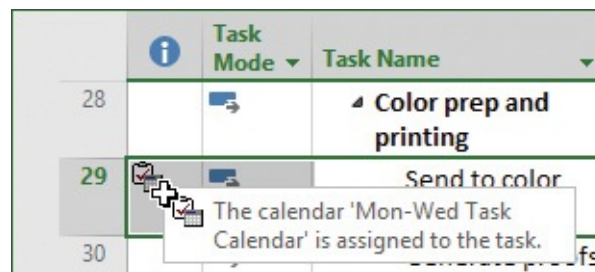
3. In the **Name** box, enter the name of the new base calendar, and then do either of the following:
 - To create a new calendar with Monday–Friday, 8:00 A.M.–5:00 P.M. working times, click **Create new base calendar**.
 - To create a new calendar that initially matches an existing base calendar, click the **Make a copy of** option and then select the base calendar you want from the list.
4. Click **OK**.
5. To enter the working-time details for this new calendar, in the **Change Working Time** dialog box, on the **Exceptions** and **Work Weeks** tabs, enter the specific working time exceptions or global changes you want for this calendar.
6. Click **OK** to close the **Change Working Time** dialog box.

To apply a base calendar to a task

1. Select the name of the task to which you want to apply the base calendar.
2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box.
3. Click the **Advanced** tab.
4. In the **Calendar** box, select the base calendar from the list of available base calendars.

Use the Calendar field in the Task Information dialog box to apply a base calendar to a task

5. Click **OK** to close the dialog box. Project applies the base calendar to the task; for this task, the base calendar is its task calendar. A calendar icon appears in the Indicators column, reminding you that this task has a task calendar applied to it.
6. To see the calendar details, point to the calendar icon. A ScreenTip appears, showing the calendar details.



Use the ScreenTip to see the calendar's name

Control task scheduling by using task types

You might recall from [Chapter 6](#), “[Assign resources to tasks](#),” that Project uses the following formula to calculate a task’s work value:

$$\text{Duration} \times \text{Assignment Units} = \text{Work}$$

Each value in this formula corresponds to a task type. A task type determines which of the three values remains fixed if the other two values change. You can change a task’s type to better control its scheduling as you change its work, duration, or assignment units values.

The default task type is *fixed units*: If you change a task’s duration, Project will recalculate work. Likewise, if you change a task’s work, Project will recalculate the duration. In either case, the units value is not affected.

The two other task types are *fixed duration* and *fixed work*. For these task types, when Project responds to schedule changes, it records the highest units value per assignment in a field called Peak.

For a fixed-work task:

- You can change the assignment units value and Project will recalculate the duration.
- You can change the duration value and Project will recalculate peak units. The assignment units value is not affected.

 **Important**

You cannot turn off effort-driven scheduling for a fixed-work task. If you need a refresher on effort-driven scheduling, see “[Control work when adding or removing resource assignments](#)” in [Chapter 6](#), “[Assign resources to tasks](#).”

For a fixed-duration task:

- You can change the assignment units value and Project will recalculate work.
- You can change the work value and Project will recalculate peak units. The assignment units value is not affected.

 **Important**

You cannot change the task type of a manually scheduled task; the effect of changing the task type on the scheduling of a task as described here applies only to automatically scheduled tasks. If you need a refresher on manually scheduled tasks, see [Chapter 4](#), “[Build a task list](#).”

You can change a task type at any time. Note that characterizing a task type as *fixed* does not mean that its duration, assignment units, or work values are unchangeable. You can change any value for any task type.

Which is the right task type to apply to each of your tasks? It depends on how you want Project to schedule that task.

... and you change the

	Duration	Assignment units	Work
Fixed duration	Work	Work	Peak
Fixed units	Work	Duration	Duration
Fixed work	Peak	Duration	Duration

If the task type is then Project recalculates

This table summarizes the effects of changing any value for any task type; it works like a multiplication table

Changing a task type has no immediate effect on a plan. To better see the effect of task

types, let's look at an example of how task types determine how tasks are rescheduled in response to a change in duration, work, or assignment units.

Consider the new book plan, which can be shown in a customized Task Usage view (with the addition of the Peak field), and with the Task Form visible. With this view combination you can see work, duration, assignment units, and Peak values. This example focuses on task 8, *Copyedit*. Its task type is fixed units, the default task type.

TASK USAGE	ID	Task Name	Work	Duration	Peak	Start	Finish	Details	T	W	T	F
6		Editorial	420 hrs	32.5 days		Thu 5/17/18	Mon 7/2/18	Work	8h	8h	16h	16h
7		Organize manus	40 hrs	5 days		Thu 5/17/18	Ned 5/23/18	Work	8h	8h		
		Hany Morcc	40 hrs		100%	Thu 5/17/18	Wed 5/23/18	Work	8h	8h		
8		Copyedit	240 hrs	15 days		Thu 5/24/18	Ned 6/13/18	Work			16h	16h
		Copyeditors	240 hrs		200%	Thu 5/24/18	Wed 6/13/18	Work			16h	16h

Name:	Copyedit	Duration:	15 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Thu 5/24/18	Finish:	Wed 6/13/18	Task type:	Fixed Units	% Complete:	0%

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
3	Copyeditors	200%	240h	0h	0h	0h	240h

In this customized split view, you can see the selected task's work, duration, assignment units, and Peak values

Assignment units, Peak, and the assignment calculation

In early versions of Project, it was possible that a resource's initial assignment units value would change, and this led to unexpected results with regard to the assignment calculation. This behavior changed starting with Project 2010. Project now tracks both the assignment units value and a calculated value called *Peak*.

Project uses the assignment units value when initially scheduling or later rescheduling a task, but it reports a resource's maximum assignment units value as *Peak*. *Peak* is the assigned resource's highest calculated assignment units value subsequent to the initial assignment calculation. Here's one example: If you initially assigned a resource at 100% assignment units to a one-day, fixed-unit task, Project used that value to initially calculate 8 hours of work. However, if you then recorded 10 hours of actual work on the task, versions of Project prior to 2010 would have recalculated the assignment units to be 120% to keep the assignment calculation accurate. If you then added more work or changed the duration of the task, Project would have scheduled the task by using the 120% assignment units value—probably not the result you'd want. Project 2010 and later, however, record the 120% peak value, and if you subsequently add work or change the duration of the task, Project uses the original assignment units value of 100% rather than the peak value of 120% to reschedule the task.

Task 8, with the default task type of Fixed Units, has a total work value of 240 hours, a resource assignment units value of 200% (that's the equivalent of two full-time copyeditors), and a duration of 15 days. When we increase the task's duration to 20 days, we can observe the effects on the other values.

After the task's duration is changed to 20 days, Project increases the work to 320 hours. Change highlighting is applied to the Work and Finish date values.

TASK USAGE	ID	Task Name	Work	Duration	Peak	Start	Finish	Details	T	W	T	F
									8h	8h	16h	16h
6		Editorial	500 hrs	37.5 days		Thu 5/17/18	Mon 7/9/18	Work	8h	8h	16h	16h
7		Organize manus	40 hrs	5 days		Thu 5/17/18	Wed 5/23/18	Work	8h	8h		
		Hany Morcc	40 hrs		100%	Thu 5/17/18	Wed 5/23/18	Work	8h	8h		
8		Copyedit	320 hrs	20 days		Thu 5/24/18	Wed 6/20/18	Work			16h	16h
		Copyeditors	320 hrs		200%	Thu 5/24/18	Wed 6/20/18	Work			16h	16h

Name:	Copyedit	Duration:	20 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Thu 5/24/18	Finish:	Wed 6/20/18	Task type:	Fixed Units	% Complete:	0%
ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
3	Copyeditors	200%	320h	0h	0h	0h	320h

With a fixed-units task type, a change to duration causes Project to recalculate work

As expected, the assignment units values were not changed with this fixed-units task type.

Now let's look at what happens when we start with the original 15-day duration task and 240 hours of work, but this time make it a fixed-duration task and change its work value. After we change the task's work to 320 hours, Project updates Peak units but keeps the duration the same.

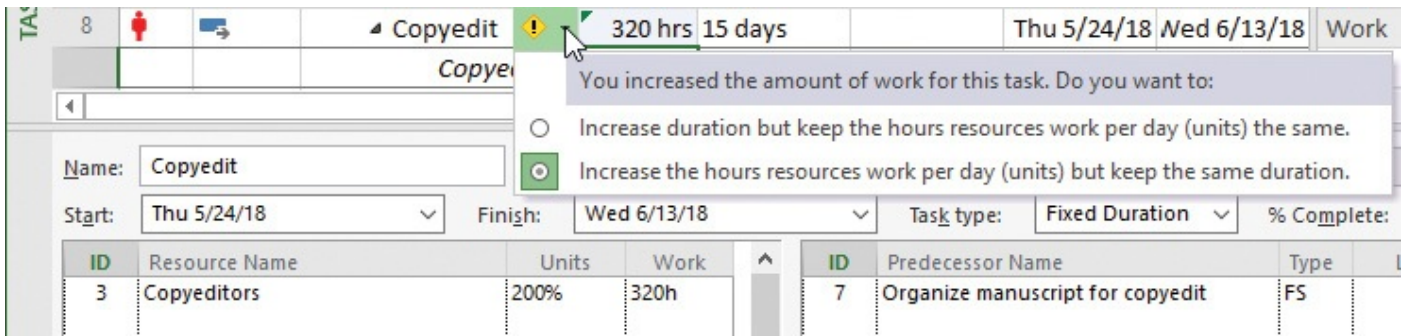
TASK USAGE	ID	Task Name	Work	Duration	Peak	Start	Finish	Details	T	W	T	F
									8h	8h	21.33h	21.33h
6		Editorial	500 hrs	32.5 days		Thu 5/17/18	Mon 7/2/18	Work	8h	8h	21.33h	21.33h
7		Organize manus	40 hrs	5 days		Thu 5/17/18	Wed 5/23/18	Work	8h	8h		
		Hany Morcc	40 hrs		100%	Thu 5/17/18	Wed 5/23/18	Work	8h	8h		
8		Copyedit	320 hrs	15 days		Thu 5/24/18	Wed 6/13/18	Work			21.33h	21.33h
		Copyeditors	320 hrs		267%	Thu 5/24/18	Wed 6/13/18	Work			21.33h	21.33h

Name:	Copyedit	Duration:	15 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Thu 5/24/18	Finish:	Wed 6/13/18	Task type:	Fixed Duration	% Complete:	0%
ID	Resource Name	Units	Work	ID	Predecessor Name	Type	Lag
3	Copyeditors	200%	320h	7	Organize manuscript for copyedit	FS	0d

With a fixed-duration task type, a change to work causes Project to recalculate Peak units

The copyeditors' increased peak units value of 267% appears in the Peak field. This value accounts for the schedule change while Project preserves the original assignment units value of 200%, as shown in the Task Form.

Changing a task's default task type lets you "lock in" how Project will handle one of the three assignment calculation variables as either of the other two variables changes. However, you always have the final word on how a task responds to changed assignment calculation variables via the Actions button. (If you need a refresher on the Actions button, see [Chapter 6](#), "[Assign resources to tasks.](#)")



Regardless of the task's type, you can fine-tune how Project responds to a scheduling adjustment by using the Actions button

As you fine-tune your plans in Project, you might find times when a quick adjustment to Project's response to a schedule change via the Actions button is sufficient. At other times, you might choose to change a task type to more consistently control how Project will handle its scheduling.

Task types and effort-driven scheduling

Many people misunderstand task types and effort-driven scheduling and conclude that these two issues are more closely related than they really are. Both settings can affect your schedule. Although the effect of a task type applies whenever you edit a task's work, duration, or unit values, effort-driven scheduling affects your schedule only when you're assigning or removing resources from tasks. For more information about effort-driven scheduling, see [Chapter 6, "Assign resources to tasks."](#)

To view or change a task's task type

1. Select the name of the task whose task type you want to change. The task must be automatically scheduled; task types do not apply to manually scheduled tasks.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Advanced** tab.
4. In the **Task Type** field, do either of the following:
 - Note the current task type.
 - Select the new task type that you want.
5. Click **OK** to close the Task Information dialog box.



Tip

You can also view the task type in the Task Form. When your plan is in a task-focused view, display the Task Form by clicking Details on the View tab, in the Split View group.

See task schedule details by using the Task Inspector

The Task Inspector is a pane you can display in Project that succinctly reveals the scheduling factors that affect the selected task. These factors include predecessor task relationships, resource calendars, task calendars, or a combination of factors. In some cases, the Task Inspector includes options to resolve schedule issues such as resource overallocation.

Task ID	Task Name	Duration	Start	Finish
15	1st Pages review	25 days	Mon 7/23/18	Mon 8/27/18
16	Proofread and index	10 days	Mon 7/23/18	Mon 8/6/18
17	Incorporate 1st Pages review	5 days	Mon 8/6/18	Mon 8/13/18
18	Send proofed pages to Production	0 days	Mon 8/13/18	Mon 8/13/18
19	Enter page corrections and index	5 days	Mon 8/13/18	Mon 8/20/18
20	Cover design	5 days	Mon 8/20/18	Mon 8/27/18
21	2nd Pages review	8 days	Mon 8/27/18	Thu 9/6/18
22	Proof and review	4 days	Mon 8/27/18	Fri 8/31/18
23	Send proofed pages to Production	0 days	Fri 8/31/18	Fri 8/31/18
24	Final review	4 days	Fri 8/31/18	Thu 9/6/18
25	Design book's companion website	5 days	Mon 8/27/18	Mon 9/3/18
26	Create mockup	3 days	Mon 8/27/18	Thu 8/30/18
27	Review with author	2 days	Thu 8/30/18	Mon 9/3/18
28	Color prep and printing	44 days	Mon 9/10/18	Thu 11/8/18
29	Send to color house	1 day	Mon 9/10/18	Mon 9/10/18
30	Generate proofs	10 days	Tue 9/11/18	Mon 9/24/18

The Task Inspector pane displays details about the selected task, in addition to options under Actions to address schedule problems

For example, consider a task, *Proof and review* (task 22), whose predecessor is task 20, *Cover design*. The Task Inspector pane shows that Project has proposed two actions to resolve the resource overallocation: *Move task to resources' next available time*, and *View overallocated resources in Team Planner*.

You can click most items in the Task Inspector that are displayed in blue to get details about those items. For example, you can click the assigned resource's name under Calendars to see that resource's calendar. You do not need to display the Task Inspector to change task details, but it can be a handy tool.

To display schedule details of a task in the Task Inspector pane

1. Display a task-centric view such as a Gantt chart view.
2. On the **Task** tab, in the **Tasks** group, click the **Inspect** button to open the Task Inspector pane.

3. Click a task. In the Task Inspector pane, you can view the scheduling factors affecting the selected task.

Skills review

In this chapter, you learned how to:

- [See task relationships by using Task Path](#)
- [Adjust task link relationships](#)
- [Control task scheduling by using constraints](#)
- [Interrupt work on a task](#)
- [Adjust working time for individual tasks](#)
- [Control task scheduling by using task types](#)
- [See task schedule details by using the Task Inspector](#)



Practice tasks

The practice files for these tasks, ViewTaskPath and ScheduleTasksAdvanced, are located in the Project2016SBS\Ch09 folder.



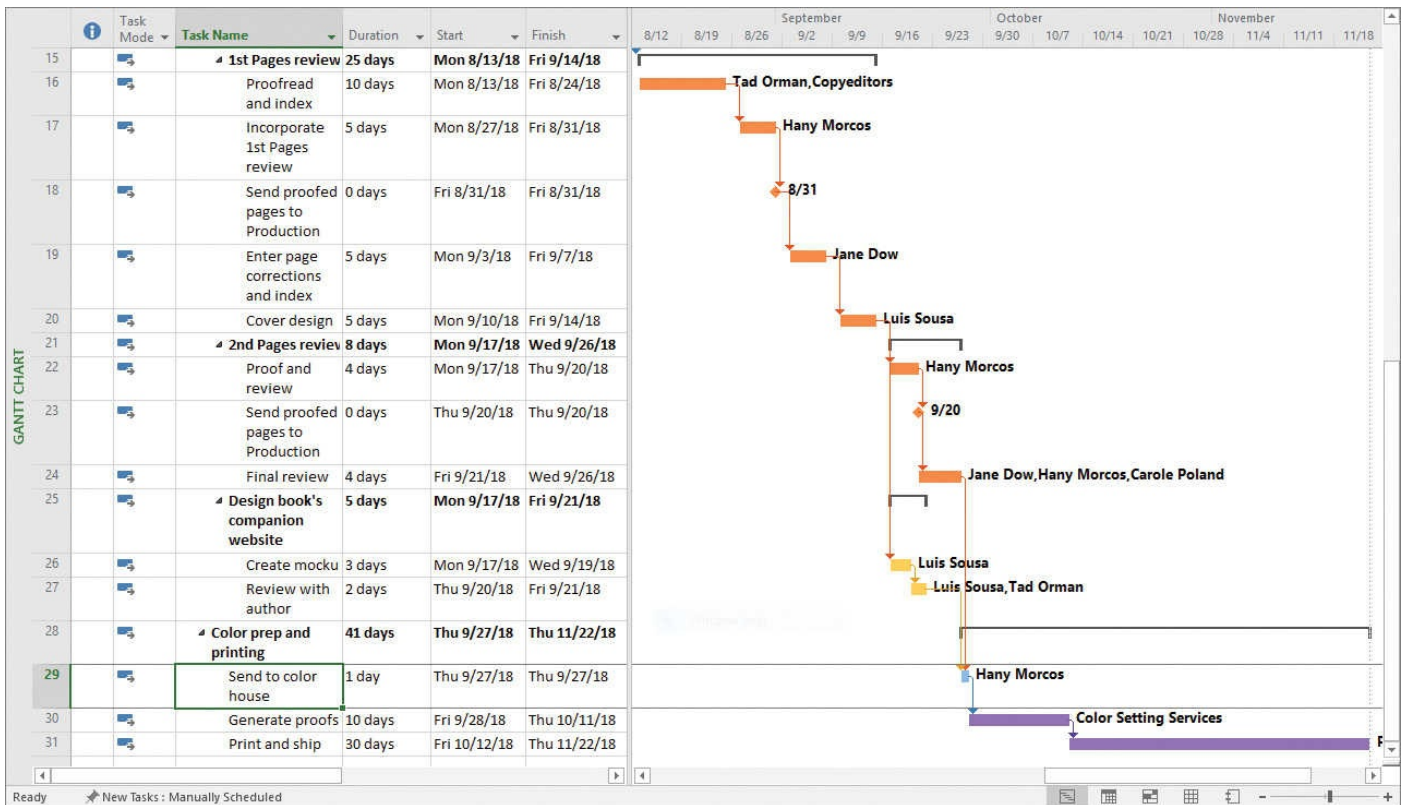
Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

See task relationships by using Task Path

The scenario: At Lucerne Publishing, at an upcoming team meeting, you’d like to demonstrate some of the more complex task dependencies in a new children’s book plan. Open ViewTaskPath, and perform the following tasks:

1. Apply the **Task Path** command to task 29, *Send to color house*. First highlight the predecessors, then the driving predecessors, then the successors, and finally, the driven successors tasks.



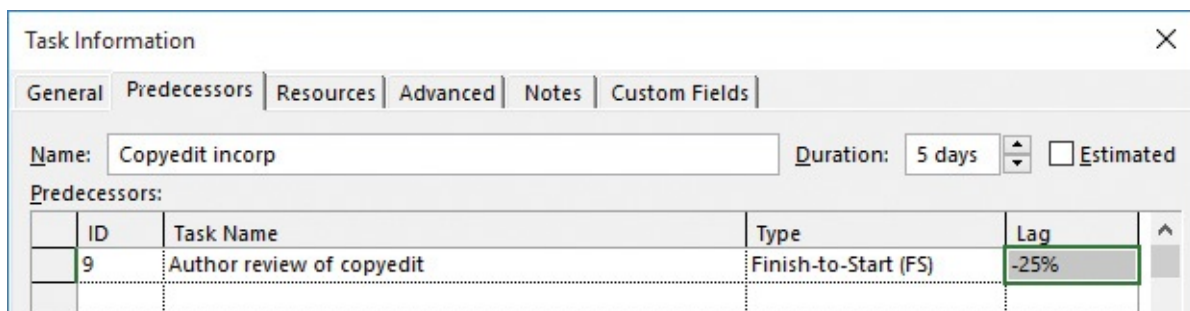
With Task Path highlighting applied, you can more clearly distinguish task relationships in a Gantt chart view

2. Remove the Task Path highlighting.
3. Close the **ViewTaskPath** practice file.

Adjust task link relationships

The scenario: Editorial and design work on a new children's book is about to begin. At this stage, you have an initial plan with task names, durations, relationships, and resource assignments. Now you want to fine-tune those task relationships. Open *ScheduleTasksAdvanced*, and perform the following tasks:

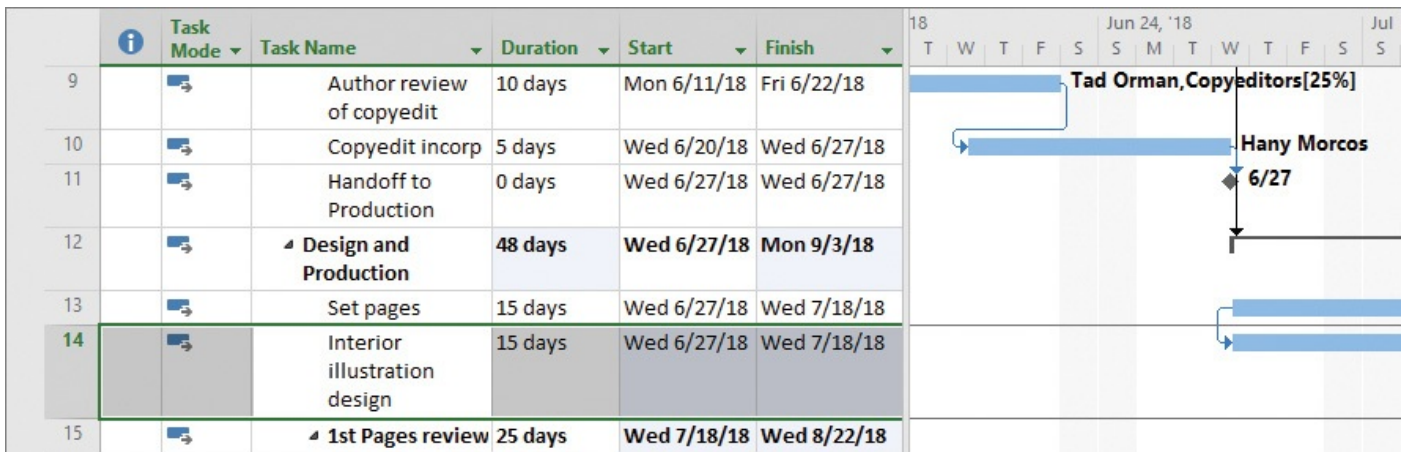
1. Add lag between task 31, *Print and ship*, and its predecessor, task 30, *Generate proofs*, so that task 31 starts three working days after task 30 finishes.
2. Overlap task 10, *Copyedit incorp*, with its predecessor, task 9, *Author review of copyedit*, when task 9 is at the 25 percent remaining point of its duration. Hint: Remember that lag is entered as negative lead time.



Project treats a negative lag value as lead time

3. Change the task relationship between task 14, *Interior illustration design*, and its

predecessor, task 13, *Set pages*, to start-to-start (SS).

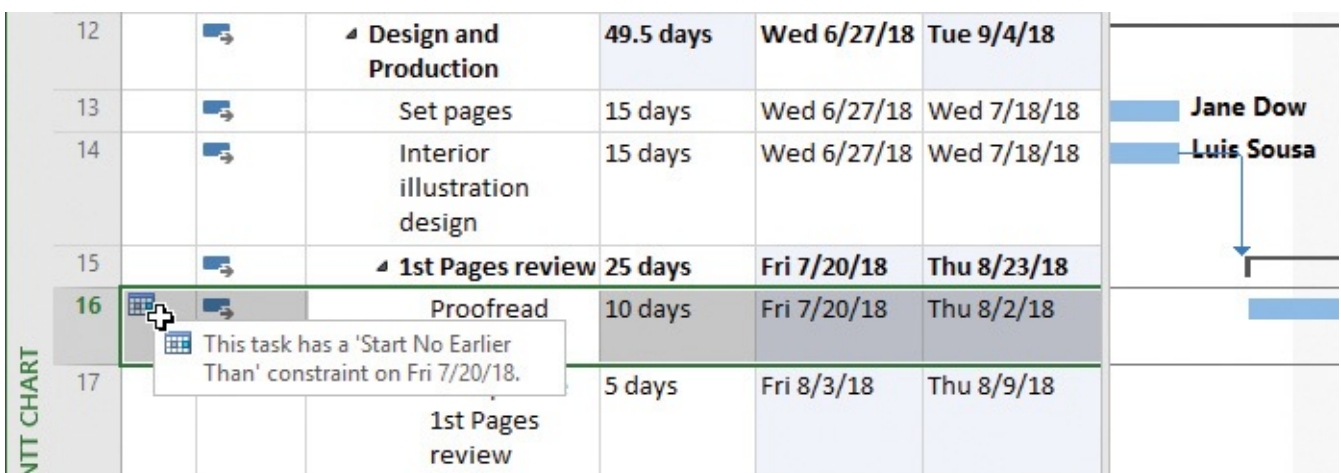


This is what finish-to-start with lead time and start-to-start task relationships look like in a Gantt chart view

Control task scheduling by using constraints

The scenario: A task in the new children’s book plan cannot start quite as early as you had expected. Tad Orman, the children’s book author, needs to proofread his book—this work is accounted for in task 16, *Proofread and index*. However, Tad has informed you that because of his travel schedule, he will be unable to start his review before July 20—later than currently scheduled. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Apply a Start No Earlier Than (SNET) constraint of **7/20/18** to task 16, *Proofread and index*.
2. Point to the icon in the **Indicators** column to see the constraint details in a ScreenTip.



After applying the SNET constraint, point to the constraint indicator to see its details

Interrupt work on a task

The scenario: You’ve learned that work on a task in the new children’s book plan will be interrupted. You’d like to account for this in the plan by recording the interruption, during which no work should be scheduled, but keep the assigned work values on the task unchanged. Continuing in the ScheduleTasksAdvanced plan, perform the following task:

1. Split task 3, *Content edit*, so that its first segment runs through the end of the day on Friday, April 13, and its second segment begins on Thursday, April 19.

	Task Mode	Task Name	Duration	Start	Finish	1, '18	Apr 8, '18	Apr 15, '18																	
						M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
0		Children's book schedule	152.5 days	Mon 4/9/18	Wed 11/7/18																				
1		Acquisition	28 days	Mon 4/9/18	Wed 5/16/18																				
2		Manuscript received	0 days	Mon 4/9/18	Mon 4/9/18																				
3		Content edit	15 days	Mon 4/9/18	Wed 5/2/18																				
4		Author review of content edit	10 days	Thu 5/3/18	Wed 5/16/18																				
5		Handoff to Editorial	0 days	Wed 5/16/18	Wed 5/16/18																				

The segments of a split task are connected by a dotted line

Adjust working time for individual tasks

The scenario: You need to record that a task in the new children's book project has a more restrictive working time than the rest of the tasks. The plan includes a task for the handoff of final book proofs to a color-setting services firm, which then prepares the book for commercial printing. However, this firm only does this type of work Mondays through Wednesdays. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Create a new base calendar named **Mon-Wed Task Calendar**. Set its weekly work settings so that Monday, Tuesday, and Wednesday are normal workdays, but Thursday and Friday (and weekends) are nonworking days.
2. Apply the Mon-Wed Task Calendar base calendar to task 29, *Send to color house*.

The task calendar causes Project to reschedule the task to the next available working day, which is the following Monday. A calendar icon appears in the Indicators column, reminding you that this task has a task calendar applied to it.

3. Point to the calendar icon in the **Indicators** column to see the task's calendar details in a ScreenTip.

	Task Mode	Task Name	Duration	Start	Finish	T	F	S	Sep 9, '18						
						T	F	S	S	M	T	W	T	F	S
28		Color prep and printing	44 days	Mon 9/10/18	Thu 11/8/18										
29		Send to color	1 day	Mon 9/10/18	Mon 9/10/18										
30		fs 10 days	10 days	Tue 9/11/18	Mon 9/24/18										
31		Print and ship	30 days	Fri 9/28/18	Thu 11/8/18										

After applying the base calendar to the task, point to the calendar indicator to see its name

Control task scheduling by using task types

Scenario: The default task type of Fixed Units works for most of the tasks in the new book plan. However, there is a task for which you'd like to keep the duration fixed. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Display the Task Usage view with the Task Form, and then click task 24, *Final*

review, in the Task Usage view.

		Task Mode	Task Name	Work	Duration	Start	Finish	Details	F	S	Sep 2, '18	M	T	W	T	F
			Jane Dow	40 hrs		Mon 8/13/18	Mon 8/20/18	Work								
20			Cover design	40 hrs	5 days	Mon 8/20/18	Mon 8/27/18	Work								
			Luis Sous	40 hrs		Mon 8/20/18	Mon 8/27/18	Work								
21			2nd Pages review	128 hrs	8 days	Mon 8/27/18	Thu 9/6/18	Work	16h			24h	24h	24h	12h	
22			Proof and rev	32 hrs	4 days	Mon 8/27/18	Fri 8/31/18	Work	4h							
			Hany Mo	32 hrs		Mon 8/27/18	Fri 8/31/18	Work	4h							
23			Send proofec	0 hrs	0 days	Fri 8/31/18	Fri 8/31/18	Work	0h							
			Hany Mo	0 hrs		Fri 8/31/18	Fri 8/31/18	Work	0h							
24			Final review	96 hrs	4 days	Fri 8/31/18	Thu 9/6/18	Work	12h			24h	24h	24h	12h	
			Carole Pc	32 hrs		Fri 8/31/18	Thu 9/6/18	Work	4h			8h	8h	8h	4h	
			Hany Mo	32 hrs		Fri 8/31/18	Thu 9/6/18	Work	4h			8h	8h	8h	4h	
			Jane Dow	32 hrs		Fri 8/31/18	Thu 9/6/18	Work	4h			8h	8h	8h	4h	

Name:	Final review	Duration:	4 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Fri 8/31/18	Finish:	Thu 9/6/18	Task type:	Fixed Duration	% Complete:	0%

ID	Resource Name	Units	Work	ID	Predecessor Name	Type	Lag
6	Jane Dow	100%	32h	23	Send proofed pages to Production	FS	0d
5	Hany Morcos	100%	32h				
1	Carole Poland	100%	32h				

This split view includes the selected task's essential scheduling values, in addition to its task type

You can see that task 24 is set to Fixed Units and has a total work value of 96 hours, a resource assignment units total value of 300%, and a duration of 4 days.

2. Change task 24 to **Fixed Duration** and then, in the Task Usage view, increase total work to **120** hours.

		Task Mode	Task Name	Work	Duration	Start	Finish	Details	F	S	Sep 2, '18	M	T	W	T	F
			Jane Dow	40 hrs		Mon 8/13/18	Mon 8/20/18	Work								
20			Cover design	40 hrs	5 days	Mon 8/20/18	Mon 8/27/18	Work								
			Luis Sous	40 hrs		Mon 8/20/18	Mon 8/27/18	Work								
21			2nd Pages review	152 hrs	8 days	Mon 8/27/18	Thu 9/6/18	Work	19h			30h	30h	30h	15h	
22			Proof and rev	32 hrs	4 days	Mon 8/27/18	Fri 8/31/18	Work	4h							
			Hany Mo	32 hrs		Mon 8/27/18	Fri 8/31/18	Work	4h							
23			Send proofec	0 hrs	0 days	Fri 8/31/18	Fri 8/31/18	Work	0h							
			Hany Mo	0 hrs		Fri 8/31/18	Fri 8/31/18	Work	0h							
24			Final review	120 hrs	4 days	Fri 8/31/18	Thu 9/6/18	Work	15h			30h	30h	30h	15h	
			Carole Pc	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h			10h	10h	10h	5h	
			Hany Mo	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h			10h	10h	10h	5h	
			Jane Dow	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h			10h	10h	10h	5h	

Name:	Final review	Duration:	4 days	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Fri 8/31/18	Finish:	Thu 9/6/18	Task type:	Fixed Duration	% Complete:	0%

ID	Resource Name	Units	Work	ID	Predecessor Name	Type	Lag
6	Jane Dow	100%	40h	23	Send proofed pages to Production	FS	0d
5	Hany Morcos	100%	40h				
1	Carole Poland	100%	40h				

After adding work to the fixed-duration task, note the schedule changes and light-blue change highlighting

As expected, the duration didn't change, but the total work increased. Consequently, the assigned resources are overallocated; their Peak units (not visible in this view, but see the next set of practice tasks) are now 125 percent each. The resources can handle this level of overallocation for this task.

See task schedule details by using the Task Inspector

The scenario: You'll use the Task Inspector to investigate some questions that came up at the team meeting about what's driving the scheduling of a couple of tasks. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Ensure that task 24, *Final review*, is still selected in the Task Usage view, and then display the Task Inspector to view additional information about this task.

You can see some of the details, including the peak units based on adding additional work on the task in the previous practice task. Notice that Project is giving you additional actions that you can take to resolve the overallocation of those resources who are working beyond their capacity. As the project manager, you are aware of this situation and will work with the affected resources accordingly.

Task Inspector

24 - Final review

Resources working beyond their maximum capacity

Name	Peak Unit	Max Unit
Jane Dow	125%	100%
Hany Morcos	125%	100%
Carole Poland	125%	100%

ACTIONS:

- Increase Duration: Increase duration to fit work.
- Reduce Work: Reduce work to fit duration.
- Assign Resource: Add more people.

INFO:

Auto Scheduled
Start: Fri 8/31/18
Finish: Thu 9/6/18

Predecessor Tasks:

Name	Type	Lag
23 - Send proofed pages to Production	Finish To	0 days

TASK USAGE

ID	Task Name	Work	Duration	Start	Finish	Details	F	S	Sep 2, '18
20	Jane Dow	40 hrs		Mon 8/13/18	Mon 8/20/18	Work			S
	Cover design	40 hrs	5 days	Mon 8/20/18	Mon 8/27/18	Work			
	Luis Sous	40 hrs		Mon 8/20/18	Mon 8/27/18	Work			
21	2nd Pages review	152 hrs	8 days	Mon 8/27/18	Thu 9/6/18	Work	19h		
22	Proof and rev	32 hrs	4 days	Mon 8/27/18	Fri 8/31/18	Work	4h		
	Hany Mo	32 hrs		Mon 8/27/18	Fri 8/31/18	Work	4h		
23	Send proofec	0 hrs	0 days	Fri 8/31/18	Fri 8/31/18	Work	0h		
	Hany Mo	0 hrs		Fri 8/31/18	Fri 8/31/18	Work	0h		
24	Final review	120 hrs	4 days	Fri 8/31/18	Thu 9/6/18	Work	15h		
	Carole Pc	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		
	Hany Mo	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		
	Jane Dow	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		

TASK FORM

Name: Final review Duration: 4 days Effort driven Manually Scheduled Previous Next

Start: Fri 8/31/18 Finish: Thu 9/6/18 Task type: Fixed Duration % Complete: 0%

ID	Resource Name	Units	Work	ID	Predecessor Name	Type	Lag
6	Jane Dow	100%	40h	23	Send proofed pages to Production	FS	0d
5	Hany Morcos	100%	40h				
1	Carole Poland	100%	40h				

New Tasks : Manually Scheduled

Use the Task Inspector to see details and troubleshoot scheduling issues for the selected task

2. Click task 22, *Proof and review*, and review details about this task.

Project indicates that there is a resource, Hany Morcos, who is overallocated due to work on other tasks. Task 22 ends on the same day Hany starts work on task 24, causing her overallocation; again, she is aware of this overallocation and what needs to be done to manage the work on that day.

Task Inspector

22 - Proof and review

Resources overallocated due to work on other tasks
Hany Morcos

ACTIONS:

- Reschedule Task**: Move task to resources' next available time.
- Team Planner**: View overallocated resources in Team Planner.

INFO:

Auto Scheduled
Start: Mon 8/27/18
Finish: Fri 8/31/18

Predecessor Tasks:

Name	Type	Lag
20 - Cover design	Finish To Start	0 days

Calendars:
Resource: Hany Morcos

Show warning and suggestion indicators for this task.

ID	Resource Name	Units	Work
5	Hany Morcos	100%	32h

ID	Predecessor Name	Type	Lag
20	Cover design	FS	0d

Task Mode	Task Name	Work	Duration	Start	Finish	Details	F	S	Sep 2, '18
	Jane Dow	40 hrs		Mon 8/13/18	Mon 8/20/18	Work			
20	Cover design	40 hrs	5 days	Mon 8/20/18	Mon 8/27/18	Work			
	Luis Sous	40 hrs		Mon 8/20/18	Mon 8/27/18	Work			
21	2nd Pages review	152 hrs	8 days	Mon 8/27/18	Thu 9/6/18	Work	19h		
22	Proof and rev	32 hrs	4 days	Mon 8/27/18	Fri 8/31/18	Work	4h		
	Hany Mo	32 hrs		Mon 8/27/18	Fri 8/31/18	Work	4h		
23	Send proofec	0 hrs	0 days	Fri 8/31/18	Fri 8/31/18	Work	0h		
	Hany Mo	0 hrs		Fri 8/31/18	Fri 8/31/18	Work	0h		
24	Final review	120 hrs	4 days	Fri 8/31/18	Thu 9/6/18	Work	15h		
	Jane Dow	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		
	Hany Mo	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		
	Carole Pc	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	5h		

Name: Proof and review Duration: 4 days Effort driven Manually Scheduled Previous Next

Start: Mon 8/27/18 Finish: Fri 8/31/18 Task type: Fixed Units % Complete: 0%

In the Actions area, the Task Inspector pane includes remedies to some scheduling problems such as overallocated resources (note that the Team Planner feature shown here is available in Project Professional only, not Project Standard)

3. In the Task Inspector, click the resource name **Hany Morcos** to view her resource calendar.
4. Close the **Change Working Time** dialog box, and then close the Task Inspector.

10. Fine-tune task details

In this chapter

- [Enter deadline dates](#)
 - [Enter fixed costs](#)
 - [Create a recurring task](#)
 - [View the plan's critical path](#)
 - [Schedule summary tasks manually](#)
-

Practice files

For this chapter, use the FineTuneTasks practice file from the Project2016SBS\Ch10 folder. For practice file download instructions, see the introduction.

In this chapter, you continue the deep dive into task-management features that you began in the previous chapter. This chapter focuses on specific features you can apply to individual tasks.

This chapter guides you through procedures related to entering deadline dates, entering fixed costs, creating a recurring task, viewing the plan's critical path, and scheduling summary tasks manually.

Enter deadline dates

One common mistake made by new Project users is to place semi-flexible or inflexible constraints on too many tasks in their plans. Such constraints severely limit your scheduling flexibility. (If you need a refresher on task constraints, see “[Control task scheduling by using constraints](#)” in [Chapter 9](#), “[Fine-tune task scheduling](#).”)

In many cases, setting a deadline date for a task is a better choice. When you set a deadline for a task, you identify the latest date by which you want the task to be completed. The deadline date itself does not constrain the scheduling of the task. Project displays a deadline symbol on the chart portion of a Gantt chart view. If the task's finish date moves past its deadline date, a missed deadline indicator (a red exclamation point) appears in the Indicators field for that task. When you spot the missed deadline indicator, you can take corrective steps.

Here's an example of how you might use a deadline rather than a constraint. Assume that you have a five-day task that you want completed by April 20. If you enter a Must Finish On constraint on the task and set it to April 20, Project will move the task out so that it will indeed end on April 20.

Pointing to the constraint indicator displays constraint details

	Task Mode	Task Name	Duration	Start	Finish	Apr 8, '18							Apr 15, '18							Apr 22, '18						
						T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
12		Prepare deliverables	5 days	Mon 4/2/18	Fri 4/6/18																					
13		Hand off deliverables	5 days	Mon 4/16/18	Fri 4/20/18																					

This task has a Must Finish On constraint, so Project schedules it to end on the specified date, but no earlier

When the constraint is applied to task 13, Project keeps the finish-to-start task relationship with its predecessor but reschedules the task to honor its constraint type and date

Even if the task could be completed earlier, Project will not reschedule it to start earlier. In fact, by applying that constraint, you have *increased* the risk for this task. If the task is delayed for even one day for any reason (if a required resource is sick, for example), the task will miss its planned finish date.

A better approach to scheduling this task is to use the default As Soon As Possible constraint and then enter a deadline of April 20.

The deadline indicator appears on a Gantt chart

	Task Mode	Task Name	Duration	Start	Finish	Apr 8, '18							Apr 15, '18							Apr 22, '18						
						T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
12		Prepare deliverables	5 days	Mon 4/2/18	Fri 4/6/18																					
13		Hand off deliverables	5 days	Mon 4/9/18	Fri 4/13/18																					

When an As Soon As Possible constraint is applied, the task starts earlier and leaves some time between its finish date and the deadline date

The deadline date lets you keep track of the important target finish date, but gives you greater scheduling flexibility

Now the task has the greatest scheduling flexibility. It might be completed well before its deadline, depending on resource availability, predecessor tasks, and whatever other scheduling issues apply. If the scheduled completion of the task moves past its deadline date, Project will display the missed deadline indicator in the Indicators column.

	Task Mode	Task Name	Duration	Start	Finish	Apr 8, '18							Apr 15, '18							Apr 22, '18						
						T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
12		Prepare deliverables	11 days	Mon 4/2/18	Mon 4/16/18																					
13		Hand off deliverables	5 days	Tue 4/17/18	Mon 4/23/18																					

This task goes past its deadline on Fri 4/20/18

The missed deadline indicator appears if the task's finish date is scheduled after the deadline date

You can then take corrective action to pull in the task's finish date prior to its deadline.

To set a deadline date on a task

1. Select the task for which you want to set a deadline.

2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box, which contains details about the currently selected task.
-



Double-clicking a task name is a quick way to open the Task Information dialog box.

3. Click the **Advanced** tab, and then in the **Deadline** field, enter or select the date you want.
 4. Click **OK** to close the Task Information dialog box.
-



You can also change an existing deadline date by dragging the deadline indicator in the chart portion of a Gantt chart view.

To remove a deadline date

1. Select the task that has a deadline date applied.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Advanced** tab.
4. Clear the **Deadline** field.

Enter fixed costs

For plans in which you must track a budget or financial costs, you might need to work with several different sources of costs. These include costs associated with resources, in addition to costs associated directly with specific tasks.

For many plans, financial costs are derived mainly from costs associated with work resources (people and equipment) or with material resources. To handle costs of similar types for which you want to track aggregate sums (travel is one example in many plans), Project supports cost resources. (If you need a refresher on cost resources, see [Chapter 5](#), “[Set up resources.](#)”)

However, you might occasionally want to associate a cost with a task that is not tied to resources or work and is not something you want to aggregate across the plan as a cost resource. In such cases, apply a fixed cost to the task. A fixed cost is a specific monetary amount budgeted for a task. It remains the same regardless of the task’s duration and any costs of resources that could be assigned to it.

The following are common examples of fixed costs in plans:

- A setup fee, charged in addition to a per-day rental fee, for a piece of equipment

- A building permit

If you assign resources with pay rates, assign cost resources, or add fixed costs to a task, Project adds all of these costs together to determine the task's total cost. For example, consider a final review task whose total cost is the sum of a work resource assignment's cost plus a fixed cost. The resource costs are derived from the resource pay rates times the resources' assignments to the task.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Details	M	T	W
21	▸ 2nd Pages review	\$0.00	Prorated	\$7,575.00	\$0.00	\$7,575.00	Work	16h	24h	24h
22	▸ Proof and review	\$0.00	Prorated	\$1,550.00	\$0.00	\$1,550.00	Work	4h		
	Hany Morcos			\$1,550.00	\$0.00	\$1,550.00	Work	4h		
23	▸ Send proofed pages to Production	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	Work	0h		
	Hany Morcos			\$0.00	\$0.00	\$0.00	Work	0h		
24	▸ Final review	\$175.00	End	\$6,025.00	\$0.00	\$6,025.00	Work	12h	24h	24h
	Carole Poland			\$2,100.00	\$0.00	\$2,100.00	Work	4h	8h	8h
	Hany Morcos			\$1,550.00	\$0.00	\$1,550.00	Work	4h	8h	8h
	Jane Dow			\$2,200.00	\$0.00	\$2,200.00	Work	4h	8h	8h
25	▸ Design book's companion website	\$0.00	Prorated	\$2,800.00	\$0.00	\$2,800.00	Work	8h		

The total cost breakdown is clearly shown in the Task Usage view with the Cost table displayed

You can specify when fixed costs should accrue, as follows:

- **Start** The entire fixed cost is scheduled for the start of the task. When you track progress, the entire fixed cost of the task is incurred as soon as the task starts.
- **End** The entire fixed cost is scheduled for the end of the task. When you track progress, the entire fixed cost of the task is incurred only after the task is completed.
- **Prorated (default accrual method)** The fixed cost is distributed evenly over the duration of the task. When you track progress, the plan incurs the cost of the task at the rate at which the task is completed. For example, if a task has a \$100 fixed cost and is 75 percent complete, the plan has incurred \$75 against that task.

When you plan a project, the accrual method you choose for fixed costs determines how those costs are scheduled over time. This can be important in anticipating budget and cash-flow needs. By default, Project uses the prorated accrual method for fixed costs, but you can change that to match your organization's cost accounting practices.

To enter a fixed cost amount and accrual method

1. On the **View** tab, in the **Task Views** group, select any task-centric view that includes a table, such as the Gantt Chart, Task Sheet, or Task Usage view.
2. On the **View** tab, in the **Data** group, click the **Tables** button, and then click **Cost**.
3. In the **Fixed Cost** field, enter the fixed cost amount you want.
4. In the **Fixed Cost Accrual** field, click the accrual method you want.

Create a recurring task

Many projects require repetitive tasks, such as attending team meetings, creating and publishing status reports, or running quality-control inspections. Although it is easy to overlook the scheduling of such events, you should consider accounting for them in your plan. After all, team meetings and similar events that indirectly support the project require time from resources, and such events take time away from your resources' other assignments.

To help account for such events in your plan, create a recurring task. As the name suggests, a recurring task is repeated at a specified frequency such as daily, weekly, monthly, or yearly. When you create a recurring task, Project creates a series of tasks with Start No Earlier Than constraints, effort-driven scheduling turned off, and no task relationships defined.

Recurring tasks in Project are similar to recurring appointments in calendar programs such as Microsoft Outlook. When you set up a recurring task, you set its recurrence pattern (for example, daily or once per week) and the applicable timespan or number of occurrences.

Recurring Task Information

Task Name: Editorial staff meeting Duration: 1h

Recurrence pattern

Daily Recur every 1 week(s) on:

Weekly

Monthly Sunday Monday Tuesday Wednesday

Yearly Thursday Friday Saturday

Range of recurrence

Start: Mon 4/16/18 End after: 13 occurrences

End by: 7/9/18

Calendar for scheduling this task

Calendar: None Scheduling ignores resource calendars

Help OK Cancel

Setting up a recurring task in Project is similar to setting up a recurring meeting in a calendar program

You also can assign resources and perform other task-centric activities with recurring tasks.

All occurrences of a recurring task are organized under a single summary recurring task. As with a regular summary task, the duration of a summary recurring task spans the earliest start to latest finish date of the individual occurrences of the recurring task. Each occurrence of the recurring task is sequentially numbered. Initially, the recurring task is displayed in expanded form.

3. On the **Task** tab, in the **Insert** group, click the **Task** arrow (not the button), and then click [Recurring Task](#) to open the Recurring Task Information dialog box.
 4. In the **Task Name** field, enter the recurring task's name.
 5. In the **Duration** field, enter the duration of each occurrence of the recurring task.
 6. Under **Recurrence pattern**, specify how often the task should repeat.
 7. Under **Range of recurrence**, specify a start date. For the end date, you can specify either a specific number of occurrences or an end date.
 8. Under **Calendar for scheduling this task**, if you want the recurring task to use a specific base calendar, select that calendar. If you want the selected calendar to override resource calendars so that assigned resources are scheduled to the recurring tasks at times they might not normally work, select the **Scheduling ignores resource calendars** check box.
 9. Click **OK**.
-



To edit a recurring task, double-click the summary recurring task's name to open the Recurring Task Information dialog box. Then make your changes.

To assign resources to a recurring task

1. Select and expand the summary recurring task.
2. On the **Resource** tab, in the **Assignments** group, click the **Assign Resources** button.
3. In the **Assign Resources** dialog box, select the resources you want to assign to the recurring task. To select multiple resources, hold down the **Ctrl** key while selecting additional names.
4. Click **OK**.

To assign resources to a specific occurrence of a recurring task

1. Expand the summary recurring task to show its occurrences.
2. Select the specific occurrence to which you want to assign a resource.
3. On the **Resource** tab, in the **Assignments** group, click the **Assign Resources** button.
4. In the **Assign Resources** dialog box, select the resources you want to assign to the recurring task's occurrence. To select multiple resources, hold down the **Ctrl** key while selecting additional names.
5. Click **OK**.

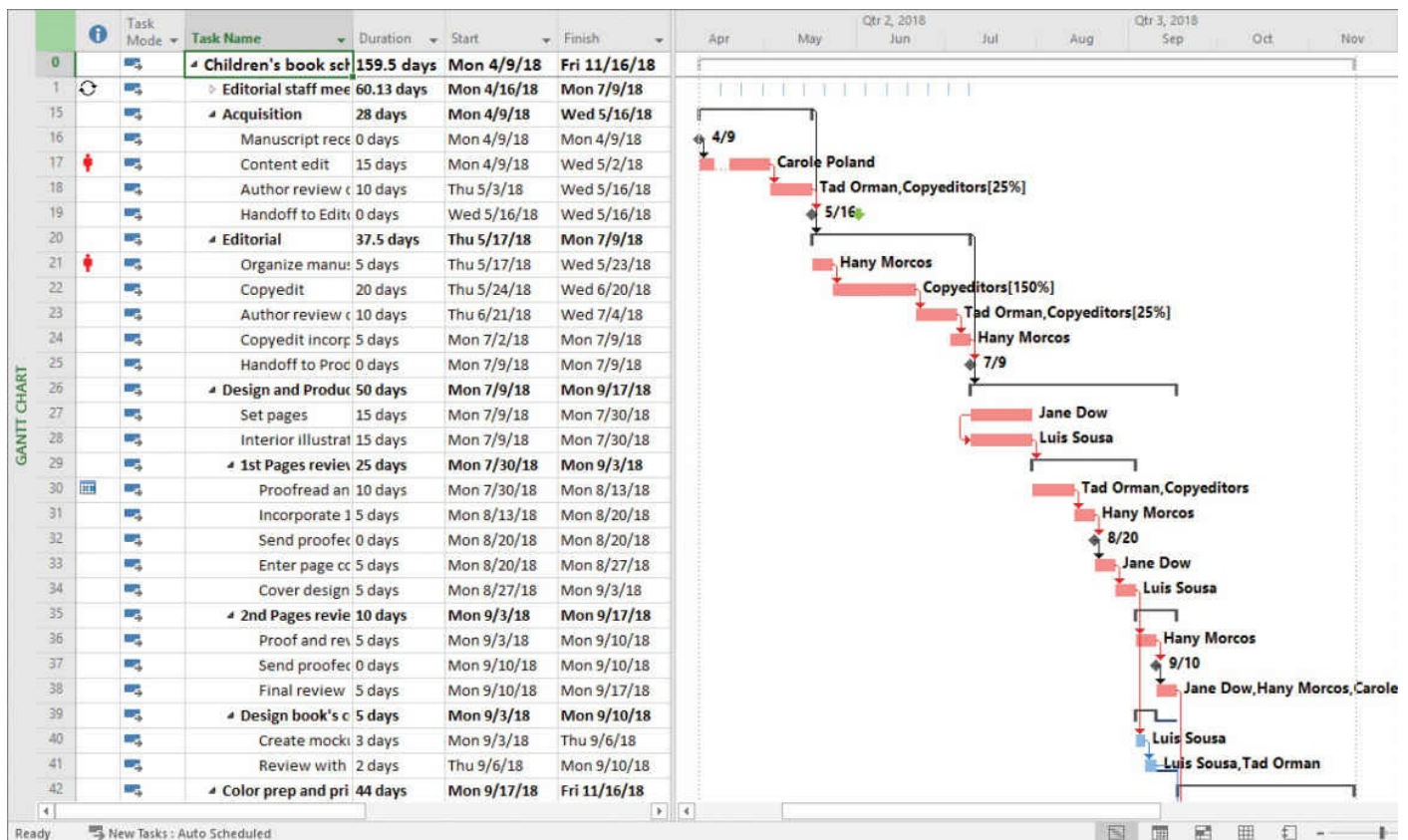
View the plan's critical path

A critical path is the series of tasks that will push out the plan's end date if any of those tasks are delayed. The word *critical* in this context has nothing to do with how important these tasks are to the overall plan. It refers only to how their scheduling will affect the plan's finish date. However, the plan's finish date is of great importance to most projects. If you want to shorten the duration of a plan to bring in the finish date, you must begin by shortening (also referred to as *crashing*) the critical path.

Over the life of a project, the plan's critical path is likely to change from time to time as tasks are completed ahead of or behind schedule. Schedule changes, such as changing task relationships or durations, can also alter the critical path. In fact, Project automatically recalculates the critical path in response to schedule changes even if you never display the critical path.

One key to understanding the critical path is to understand slack, also known as *float*. There are two types of slack: free and total. The amount of time a task can be delayed before it delays another task is referred to as [Free slack](#). Total slack is the amount of time a task can be delayed before it delays the completion of the plan. (Note that after a task on the critical path is completed, it is no longer critical because it cannot affect the plan's finish date.)

A task is on the critical path if its total slack is less than or equal to a certain threshold—by default, if its slack is zero days (you can adjust this threshold if you want). In contrast, [noncritical tasks](#) have slack, meaning that they can start or finish earlier or later within their slack time without affecting the completion date of the plan.



As this Gantt chart view is formatted, both the tasks on the critical path (in red) and the free slack of noncritical tasks are displayed



Tip

The Task Path feature introduced in [Chapter 9, “Fine-tune task scheduling,”](#) distinguishes between the selected task’s predecessor and successor relationships. The critical path, in contrast, applies to whatever sequence of linked tasks in a plan drives the plan’s finish date.

Working with the critical path is the most important way to manage a plan’s overall duration. Checking the critical path and, when necessary, shortening the overall duration are important project management skills.

Here are a couple of other things to keep in mind when working with the critical path:

- Critical tasks and free slack are represented in the chart portion of the Detail Gantt view, and you can also see the values of free and total slack in the Schedule table. You can apply the Schedule table to any Gantt chart or Task Sheet view.
 - Another way to identify the tasks on the critical path is to select Critical in the Highlight or Filter box on the View tab, in the Data group.
-



Tip

To learn more about the critical path, click the Tell Me box at the top of the Project window, and in the Search box, enter [critical path](#).

To display the plan’s critical path

1. On the **Format** tab, in the **Bar Styles** group, select the **Critical Tasks** check box. Project applies red formatting to the critical tasks’ Gantt bars.
-



Tip

You can adjust the Gantt chart’s timescale to see more or less of the plan by clicking the Zoom In or Zoom Out command in the lower-right corner of the screen.

To display slack for noncritical tasks

1. On the **Format** tab, in the **Bar Styles** group, select the **Slack** check box. Project draws slack lines from the finish dates of the Gantt bars of the noncritical tasks.

To change the slack threshold for a task to be considered critical

By default, Project defines a task as critical if it has zero slack. However, you can change the amount of slack required for a task to be considered critical. You might do this, for example, if you want to more easily identify tasks that are within one or two days of affecting the project’s finish date.

1. Click the **File** tab to display the Backstage view, and then click **Options**.
2. In the **Project Options** dialog box, click **Advanced**.
3. On the **Advanced** page, in the **Tasks Are Critical If Slack Is Less Than Or Equal To** box in the **Calculation options of this project** section, enter the number of days you want.

Schedule summary tasks manually

In [Chapter 4](#), “[Build a task list](#),” you worked with summary tasks and subtasks. Recall that the default behavior of Project is to automatically calculate a summary task’s duration as the span of time between the earliest start and latest finish dates of its subtasks. For this reason, Project sets summary tasks as automatically scheduled—their durations are automatically determined by their subtasks, regardless of whether those subtasks are manually or automatically scheduled (or are a mix of both).

There might be times, however, when you want to directly enter a duration value for a summary task that is independent of its calculated duration as determined by its subtasks. For example, a summary task might represent a phase of work for which you want to allocate 60 working days and compare that duration with the calculated duration determined by the subtasks (their durations, task relationships, and other factors). This is especially likely during the initial planning of a plan, when you might need to account for the gap between how long you’d like a phase of work to take and its duration as determined by its subtasks.

Fortunately, you can enter any duration you want for a summary task. When you do so, Project switches the summary task from automatic to manually scheduled and reflects both durations as separate parts of the summary task’s Gantt bar. The upper bar represents the duration of the manually scheduled task, and the lower bar represents the automatically scheduled duration.

It’s useful to compare the duration of a manually scheduled task and its new finish date with the automatically scheduled duration and finish date as determined by the subtasks of the summary task. You can also point to the summary task’s Gantt bars in the chart portion of a Gantt chart view. The ScreenTip that appears includes these and other values.

This summary task is now manually scheduled

20					
21		Editorial	30 days	Thu 5/17/18	Wed 6/27/18
22		Organize manuscript for copyedit	5 days	Thu 5/17/18	Wed 5/23/18
23		Copyedit	20 days	Thu 5/24/18	Wed 6/20/18
		Author review of copyedit	10 days	Thu 6/21/18	Wed 7/4/18

This ScreenTip provides details of the manual summary task

Use the ScreenTips for both parts of the Gantt bar of a manually scheduled summary task to view important scheduling details

When you enter a duration for a manually scheduled summary task, Project makes the following adjustments to the schedule:

- The summary task is switched from automatically scheduled (the default for

summary tasks) to manually scheduled. Note the pin icon in the Task Mode column that reflects the task's scheduling status.

- Project draws two Gantt bars for the summary task. The upper bar represents the duration of the manually scheduled task, and the lower bar represents the automatically scheduled duration.
- Project draws a red squiggly line under the new finish date to flag it if there is a potential scheduling conflict.
- Project reschedules the summary task's successor tasks based on the summary task's manually entered duration.

Setting a manually scheduled duration for a summary task is a good way to apply a *top-down* focus to a plan. You can, for example, introduce some slack or buffer to a phase of work by entering a manually scheduled duration for the summary task that is longer than its calculated duration. Conversely, you can enter a preferred manually scheduled duration that is shorter than the scheduled duration of a summary task to give the assigned resources a more aggressive target to work toward.

To enter a manually scheduled duration on a summary task

1. In the **Duration** field of a summary task, enter the manually scheduled duration value you want.

To see the manually and automatically scheduled durations and other details on a summary task

1. Point to the upper or lower part of the summary task's Gantt bar. Project displays different ScreenTips for each part of the Gantt bar: the lower bar, which represents the summary task as it is automatically scheduled; and the upper bar, which represents it as it is manually scheduled.

To convert a manually scheduled summary task back to an automatically scheduled summary task

1. Click the **Task Mode** field of the summary task, and then click the arrow that appears.
2. In the list, click **Auto Scheduled**.

Skills review

In this chapter, you learned how to:

- [Enter deadline dates](#)
- [Enter fixed costs](#)
- [Create a recurring task](#)
- [View the plan's critical path](#)
- [Schedule summary tasks manually](#)



Practice tasks

The FineTuneTasks practice file for these tasks is located in the Project2016SBS\Ch10 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Enter deadline dates

The scenario: At Lucerne Publishing, the publisher has directed that the acquisition tasks for the new children’s book should not slip past a certain date. You’d like to flag this date without unduly restricting your scheduling flexibility in the plan. Open the FineTuneTasks plan in Project, and perform the following task:

1. Set a deadline date of **6/1/18** on task 5, *Handoff to Editorial*. This task is a milestone marking the end of the acquisition phase of the new book project.

Task ID	Task Name	Duration	Start	Finish	Calendar
0	Children’s book schedule	159.5 days	Mon 4/9/18	Fri 11/16/18	
1	Acquisition	28 days	Mon 4/9/18	Wed 5/16/18	
2	Manuscript received	0 days	Mon 4/9/18	Mon 4/9/18	
3	Content edit	15 days	Mon 4/9/18	Wed 5/2/18	
4	Author review of content edit	10 days	Thu 5/3/18	Wed 5/16/18	Tad Orman, Copyeditors[25%]
5	Handoff to Editorial	0 days	Wed 5/16/18	Wed 5/16/18	5/16
6	Editorial	37.5 days	Thu 5/17/18	Mon 7/9/18	

Task 5 is a milestone task that signifies the scheduled completion of a major phase of work—a good candidate for a deadline date

Enter fixed costs

The scenario: You’ve learned that the generating of page proofs by the color-setting services firm will cost \$500. You’d like to schedule this expense to accrue when the color-setting services firm completes the task. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Enter a fixed cost of **\$500** on task 30, *Generate proofs*.
2. Set the fixed cost to accrue at the end of the task.

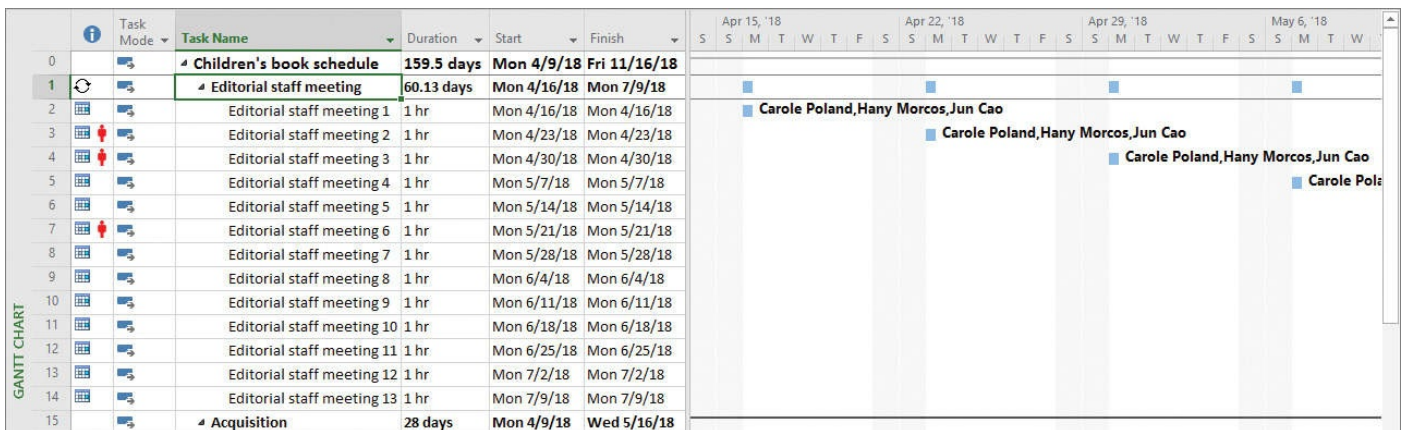
Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	W	T	F	S	S	M	T	W	T	F	S	
28	Color prep and printing	\$0.00	Prorated	\$810.00	\$0.00	\$810.00											
29	Send to color house	\$0.00	Prorated	\$310.00	\$0.00	\$310.00											
30	Generate proof	\$500.00	End	\$500.00	\$0.00	\$500.00											
31	Print and ship	\$0.00	Prorated	\$0.00	\$0.00	\$0.00											

The Cost table is a handy place to enter a fixed cost on a task

Create a recurring task

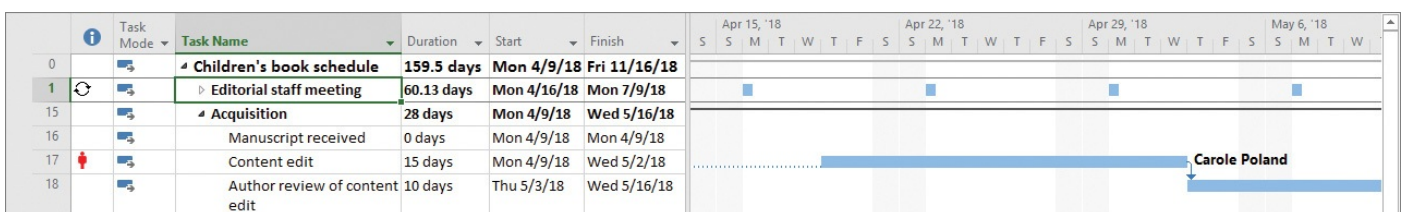
The scenario: The new children’s book project requires a weekly status meeting involving some, but not all, of the resources working on the project. You’d like this recurring status meeting to have visibility in the plan. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Insert a new recurring task named **Editorial staff meeting** so that it appears above task 1, *Acquisition*. The recurring task should have a one-hour duration every Monday, starting on April 16, 2018, and ending by July 9, 2018.
2. Assign the following resources to the summary recurring task:
 - Carole Poland
 - Hany Morcos
 - Jun Cao



Although you assigned resources to the summary recurring task, their names appear next to each occurrence of the recurring task

3. Collapse the summary recurring task.

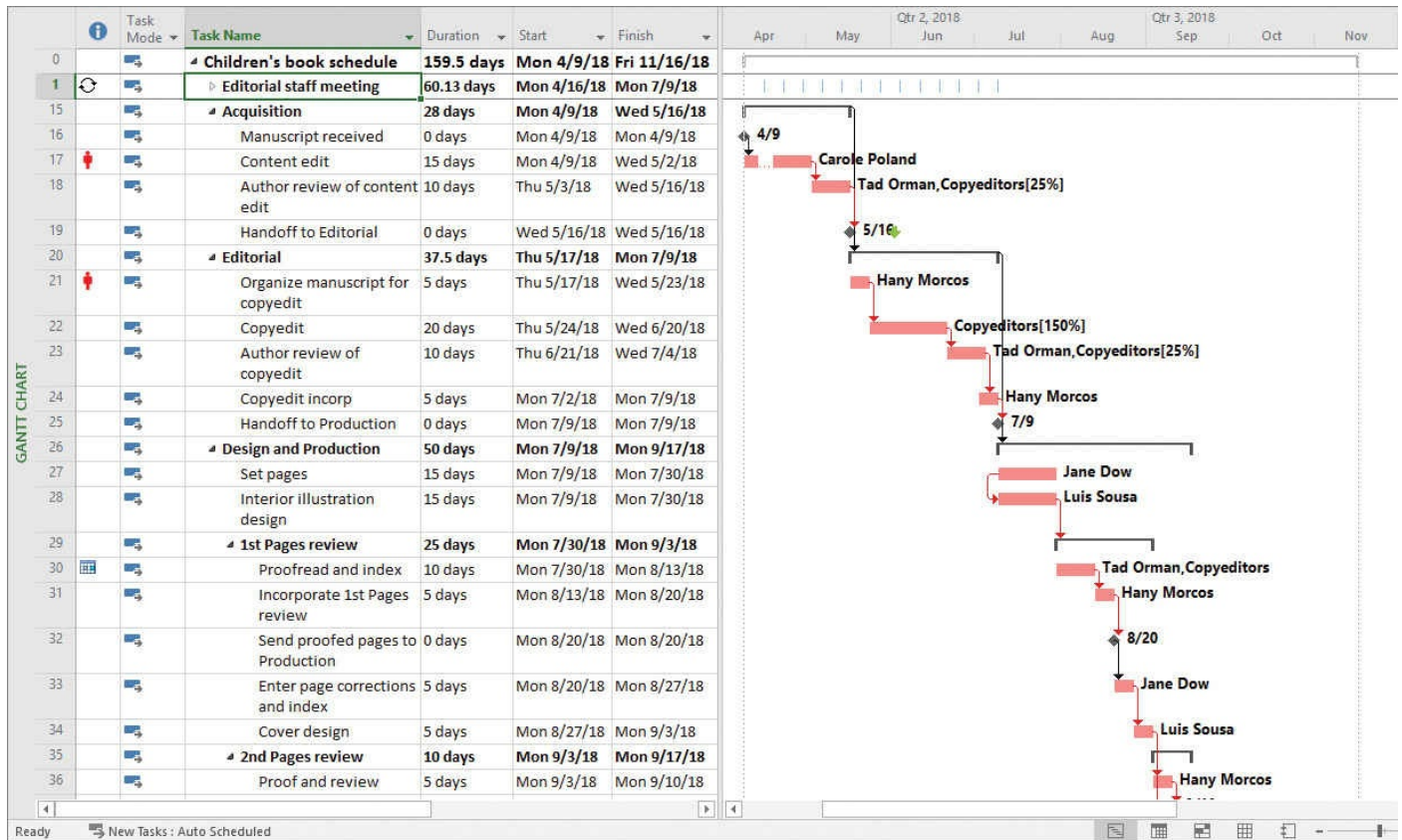


The summary recurring task’s Gantt bar shows each occurrence of the recurring task but hides the names of assigned resources; this is handy for seeing just when the recurring task will occur

View the plan's critical path

The scenario: You are frequently asked when the new children's book project will be completed. You can quickly see the project's overall duration and finish date in Project, but occasionally you need to show a project stakeholder the project's critical path, because that sequence of tasks drives the project's duration. One way to see the critical path is to format critical tasks. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Display critical tasks in the plan.



With critical path formatting applied, it's easier to see the chain of tasks that is driving the plan's finish date

2. Turn off the critical tasks formatting.

Schedule summary tasks manually

The scenario: The publisher has challenged the team to aim for a 30-working-day duration for the Editorial phase of the new children's book project. You'll enter a manual duration on the Editorial summary task and later compare that duration with the automatically scheduled duration provided by Project. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Enter a 30-day duration on summary task 20, *Editorial*. Entering a duration value for the summary task switches it to be manually scheduled.
2. Check task 20's updated schedule details in each of its Gantt bar's ScreenTips.

20		✦ Editorial	30 days	Thu 5/17/18	Wed 6/27/18
21	📌	Organize manuscript for copyedit	5 days	Thu 5/17/18	Wed 5/23/18
22		Copyedit	20 days	Thu 5/24/18	Wed 6/20/18
23		Author review of copyedit	10 days	Thu 6/21/18	Wed 7/4/18

When working with manually scheduled summary tasks, note the pin indicator (which indicates that the task is manually scheduled) and the two parts of the Gantt bar, each of which can display a helpful ScreenTip

11. Fine-tune resource and assignment details

In this chapter

- [Change resource availability over multiple date ranges](#)
 - [Work with multiple resource pay rates](#)
 - [Change resource pay rates over different date ranges](#)
 - [Delay the start of assignments](#)
 - [Apply contours to assignments](#)
 - [Create and assign material resources](#)
 - [View resource capacity](#)
 - [Adjust assignments in the Team Planner view \(Project Professional only\)](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch11 folder. For practice file download instructions, see the introduction.

Because work resources (people and equipment) are often the most expensive part of a project, understanding how to make the best use of resources' time is an important project management skill. In this chapter, you use a variety of advanced Project 2016 features relating to resources—their availability, assignments to tasks, and resulting costs. Project Professional users also use the Team Planner view to manage assignments (this feature is not available in Project Standard).

This chapter guides you through procedures related to changing resource availability over multiple date ranges, working with multiple resource pay rates, changing resource pay rates over different date ranges, delaying the start of assignments, applying contours to assignments, creating and assigning material resources, viewing resource capacity, and adjusting assignments in the Team Planner view (Project Professional only).

Change resource availability over multiple date ranges

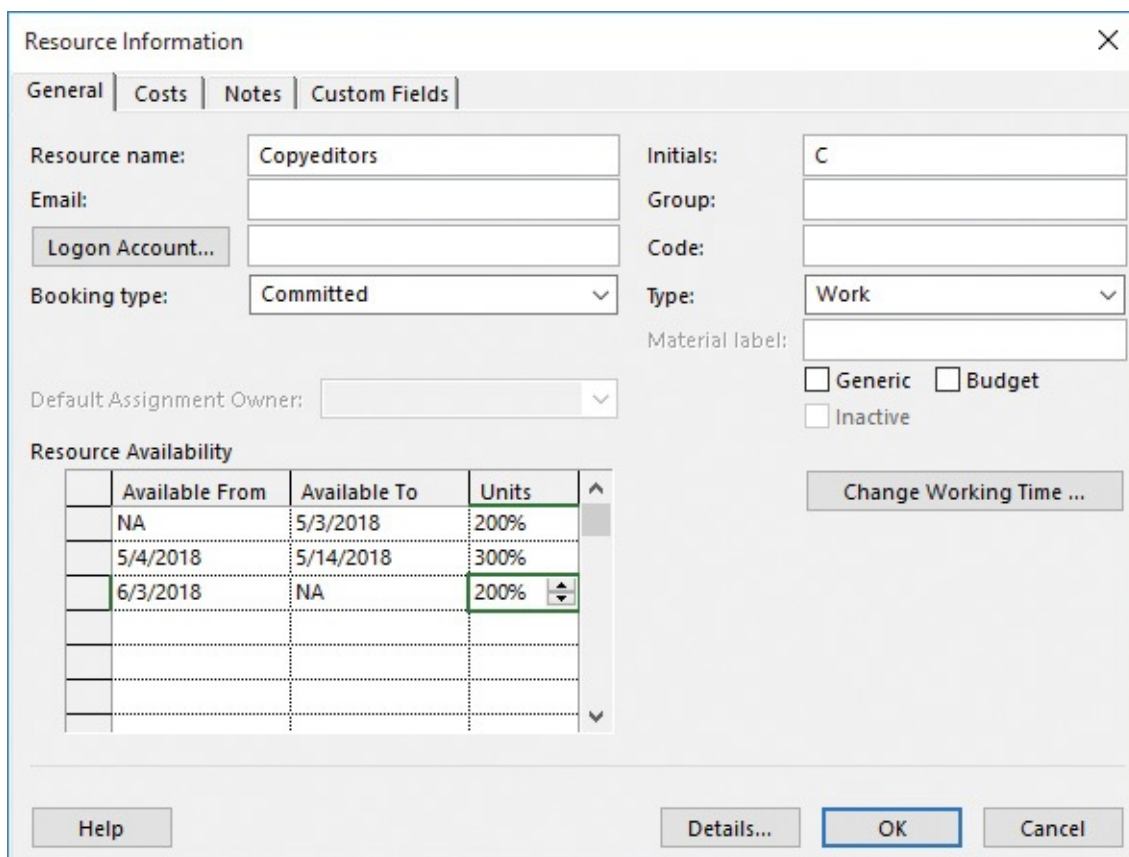
One of the values that Project stores for each work resource is the resource's maximum units value. This is the maximum capacity of a resource to accomplish tasks. A resource's working-time settings (recorded in the individual resource's calendar) determine when work assigned to a resource can be scheduled. However, the resource's capacity to work (as defined by the resource's maximum units value) determines the extent to which the resource can work within those hours without becoming overallocated. A resource's maximum units value does not prevent a resource from becoming overallocated, but Project will indicate when the resource's assignments exceed the resource's maximum units capacity.

 **See Also**

For a refresher on resource capacity, see [Chapter 5](#), “[Set up resources.](#)”

You can specify that a resource’s maximum units value be adjusted from one date range to another. Changing a resource’s availability over time enables you to control exactly what a resource’s maximum units value will be at any time. For example, you might have two copyeditors available for the first eight weeks of a project, three for the next six weeks, and then two for the remainder of the project. Or you might have a compositor who is normally available at 100 percent capacity reduced to just 50 percent capacity for six weeks, and then returned to full capacity.

You customize a resource’s availability in the Resource Information dialog box. You do so by specifying maximum units per date range in the Resource Availability table in the dialog box. When *NA* (for *not applicable*) appears at the beginning of the first date range, it means that the resource has no specific start date for their availability. When it is at the end of the final date range, it means that the resource has no specific end date. Every resource’s initial availability is unspecified, or *NA*.



Resource Information

General | Costs | Notes | Custom Fields

Resource name: Copyeditors Initials: C

Email: Group:

Logon Account... Code:

Booking type: Committed Type: Work

Material label:

Generic Budget

Inactive

Change Working Time ...

Default Assignment Owner:

Resource Availability

Available From	Available To	Units
NA	5/3/2018	200%
5/4/2018	5/14/2018	300%
6/3/2018	NA	200%

Help Details... OK Cancel

Set up multiple date ranges for resource availability on the General tab of the Resource Information dialog box

Project shows the then-current maximum units value for the resource wherever maximum units are displayed (such as in the Resource Sheet view). Project uses the current date based on your computer’s system clock to identify the correct date range and its maximum units value.

To customize a resource's availability over time

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**. In the Resource Sheet view, you can see and edit resources' maximum units values. The maximum units values displayed here normally apply to the full duration of the project.
 2. In the **Resource Name** column, click the name of a resource whose maximum units value you want to vary at different times.
 3. On the **Resource** tab, in the **Properties** group, click **Information** to display the Resource Information dialog box. If the **General** tab is not visible, click it.
-



Here are a couple of shortcuts for quickly displaying the Resource Information dialog box. When you are in a resource-centric view such as the Resource Sheet, right-click the Resource Name and, on the shortcut menu, click Information. Or double-click a resource name. Double-clicking a resource name also works in the Assign Resources dialog box when you are in a task-centric view such as a Gantt chart.

4. Under **Resource Availability**, in the first row of the **Available From** column, leave **NA** (not applicable).
5. In the **Available To** cell in the first row, enter or select the end date of the first date range you want.
6. In the **Units** cell in the first row, enter a maximum units value for the first date range.
7. Enter the values for the second date range. In the **Available From** cell in the second row, enter or select the start date of the second date range.
8. Do either of the following:
 - If you plan to set up a third or additional date range, in the **Available To** cell in the second row, enter or select the end date of the second date range you want. Then repeat steps 7 and 8 for subsequent date ranges.
 - If the second date range is the last one you want to set up, leave the **Available To** cell in the second row blank. (Project will insert *NA* for you.)

You can later add additional date ranges with unique maximum units values. Just leave the final Available To field blank.

9. Click **OK** to close the Resource Information dialog box.

Work with multiple resource pay rates

Some resources might perform different tasks with different pay rates. You can set up different pay rates for the same resource, and then specify which rate to use per assignment (you'll do so later in this chapter).

For example, in the new children's book project, the project editor could also serve as a content editor. Because the costs for project editor and content editor are different, you can set up two cost rate tables for the resource (additionally, a cost rate table can include a standard pay rate and an optional overtime rate, and even a per-use cost). Then, after you assign the resource to tasks, you specify which pay rate should apply.

Each work or material resource can have up to five different pay rates, each recorded in a cost rate table. You set up pay rates in the cost rate tables on the Costs tab of the Resource Information dialog box. The default rate table (the rate Project applies unless you specify another one) is on tab A. If you completed the practice tasks in [Chapter 5](#), "[Set up resources](#)," you might recognize the pay rates you initially entered for resources. You can create up to four additional rate tables on tabs B through E.

Resource Information

General Costs Notes Custom Fields

Resource Name: Hany Morcos

Cost rate tables

For rates, enter a value or a percentage increase or decrease from the previous rate. For instance, if a resource's Per Use Cost is reduced by 20%, type -20%.

A (Default)	B	C	D	E
Effective Date	Standard Rate	Overtime Rate	Per Use Cost	
--	\$45.00/h	\$60.00/h	\$0.00	

Cost accrual: Prorated

Help Details... OK Cancel

Create up to five different cost rate tables (including standard and overtime rates, and per-use cost) on the Costs tab of the Resource Information dialog box

When you assign a resource with one or more pay rates to a task, Project initially uses cost rate table A by default. However, you can specify that another rate table should be used. You do so on the General tab of the Assignment Information dialog box.

After setting up multiple cost rate tables for a resource, you can pick which table to use for individual assignments

To create an additional cost rate table for a resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Information** to open the Resource Information dialog box.
4. Click the **Costs** tab.
5. In the [Cost rate tables](#) area, click the **B**, **C**, **D**, or **E** tab.
6. In the **Standard Rate** and **Overtime Rate** fields, enter the pay rate values you want. In addition to or instead of pay rates, you can also enter a value in the **Per Use Cost** field.
7. Click **OK** to close the Resource Information dialog box.

To change the cost rate table to be applied to an assignment

1. Do either of the following:
 - On the **View** tab, in the **Task Views** group, click **Task Usage**.
 - On the **View** tab, in the **Resource Views** group, click **Resource Usage**.

As with other assignment-level activities, you can perform this procedure in either view.

2. Select the assignment you want to edit.
3. On the **Format** tab, in the **Assignment** group, click **Information** to open the Assignment Information dialog box. Click the **General** tab if it is not already selected.
4. In the **Cost Rate Table** box, select a cost rate table, and then click **OK** to close the

Assignment Information dialog box.



Tip

If you frequently change cost rate tables for assignments, you will find it quicker to display the Cost Rate Table field directly in the Resource Usage or Task Usage view. To do so, display the right edge of the table portion of a usage view, click Add New Column, and then select Cost Rate Table.

Change resource pay rates over different date ranges

When you set up pay rates for a resource, Project uses those rates for the duration of the plan. However, you can change a resource's rates to be effective as of the dates you choose. For example, you could initially set up a resource with a standard rate of \$40 per hour, and plan to raise the resource's standard rate to \$44 per hour six months later.

You set up the effective date of each pay rate on the Costs tab of the Resource Information dialog box, which was introduced in the previous topic.

Resource Information

General Costs Notes Custom Fields

Resource Name: Jane Dow

Cost rate tables

For rates, enter a value or a percentage increase or decrease from the previous rate. For instance, if a resource's Per Use Cost is reduced by 20%, type -20%.

A (Default)	B	C	D	E
	Effective Date	Standard Rate	Overtime Rate	Per Use Cost
	--	\$55.00/h	\$0.00/h	\$0.00
	Mon 7/2/18	\$63.25/h	\$0.00/h	\$0.00

Cost accrual: Prorated

Help Details... OK Cancel

The Effective Date determines when a resource's pay rate is applied to work the resource performs

Project uses pay rates when calculating resource costs based on when the resource's work is scheduled. You can assign up to 25 pay rates to be applied at different times in each of a resource's five cost rate tables.

You can use a couple of different formats to enter the additional pay rates; Project is flexible. You can:

- Enter a pay rate as a specific dollar value.
- Enter a percentage change from the previous rate. Enter a positive percentage value (for example 5%) for an increase. Enter a negative percentage (for example, -3%) for a decrease. Project calculates the new rate, and it replaces the percentage value you entered.

For example, in the Resource Usage view, you might see the cost of a resource's assignment change midway through the assignment when the effective date of a new pay rate applies.

			Jul 1, '18										
	Resource Name	Work	Details	W	T	F	S	S	M	T	W	T	F
6	Jane Dow	200 hrs	Work		8h	8h			8h	8h	8h	8h	8h
			Cost		\$440.00	\$440.00			\$506.00	\$506.00	\$506.00	\$506.00	\$506.00
	Set pages	120 hrs	Work		8h	8h			8h	8h	8h	8h	8h
			Cost		\$440.00	\$440.00			\$506.00	\$506.00	\$506.00	\$506.00	\$506.00
	Enter page cc	40 hrs	Work										
			Cost										
	Final review	40 hrs	Work										
			Cost										

The Effective Date for Jane Dow's new pay rate occurred midway through her assignment to the Set Pages task; the resulting change in cost is shown.

To set up a different resource cost rate to apply later

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Information** to open the Resource Information dialog box.
4. Click the **Costs** tab. If you've set up multiple cost rate tables, click the tab of the cost rate table you want to change. Leave the resource's original pay rate as-is for the first row; you will enter the upcoming effective date and pay rate in the second row.
5. In the **Effective date** cell in the second row, enter or select a date, and then enter the new pay rates. The new rates can include standard or overtime rates and per-use cost value. If you want to add multiple future pay rate changes, enter them in chronological order on subsequent rows.
6. Click **OK** to close the Resource Information dialog box.

Delay the start of assignments



Tip

So far in this chapter, we've focused on resource details. For the remainder of the chapter, the focus shifts to fine-tuning assignment details.

If more than one resource is assigned to a task, you might not want all the resources to

start working on the task at the same time. You can delay the start of work for one or more resources assigned to a task.

Let's look at a specific example. The new children's book plan includes a task to which both a copyeditor and the book author, Tad Orman, are assigned. The intent of this task is that the author will review the edits made to his book manuscript, and shortly afterward, the copyeditor will begin to incorporate the author's feedback.

Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S	May 6, '18	S	M	T	W	T	F
0	Children's book sch	1,859 hrs	160 days?	Mon 4/9/18	Fri 11/16/18	Work	8h	16h	16h				19h	16h	16h	16h	16h
1	Editorial staff mee	39 hrs	60.13 days	Mon 4/16/18	Mon 7/9/18	Work							3h				
15	Acquisition	280 hrs	28 days	Mon 4/9/18	Ned 5/16/18	Work	8h	16h	16h				16h	16h	16h	16h	16h
16	Manuscript rece	0 hrs	0 days	Mon 4/9/18	Mon 4/9/18	Work											
17	Content edit	120 hrs	15 days	Mon 4/9/18	Wed 5/2/18	Work	8h										
	Carole Polari	120 hrs		Mon 4/9/18	Wed 5/2/18	Work	8h										
18	Author review c	160 hrs	10 days	Thu 5/3/18	Ned 5/16/18	Work		16h	16h				16h	16h	16h	16h	16h
	Copyeditors	80 hrs		Thu 5/3/18	Wed 5/16/18	Work		8h	8h				8h	8h	8h	8h	8h
	Tad Orman	80 hrs		Thu 5/3/18	Wed 5/16/18	Work		8h	8h				8h	8h	8h	8h	8h
19	Handoff to Editi	0 hrs	0 days	Ned 5/16/18	Ned 5/16/18	Work											

Here's what the assignments initially look like in the Task Usage view

Right now, both resources have work that is assigned to them throughout the duration of the task, but you'd like to delay the start of the copyeditor's work by two working days. You do so in the assignment-level Start field.

After changing the start date of the copyeditor's assignment, you can see the later start of the copyeditor's work on the task accounted for in the timephased portion of the view.

The duration of this task has increased because the work is scheduled over a longer period of time

Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S	May 6, '18	S	M	T	W	T	F
0	Children's book sch	1,859 hrs	160 days?	Mon 4/9/18	Fri 11/16/18	Work	8h	8h	8h				19h	16h	16h	16h	16h
1	Editorial staff mee	39 hrs	60.13 days	Mon 4/16/18	Mon 7/9/18	Work							3h				
15	Acquisition	280 hrs	30 days	Mon 4/9/18	Fri 5/18/18	Work	8h	8h	8h				16h	16h	16h	16h	16h
16	Manuscript rece	0 hrs	0 days	Mon 4/9/18	Mon 4/9/18	Work											
17	Content edit	120 hrs	15 days	Mon 4/9/18	Wed 5/2/18	Work	8h										
	Carole Polari	120 hrs		Mon 4/9/18	Wed 5/2/18	Work	8h										
18	Author review c	160 hrs	12 days	Thu 5/3/18	Fri 5/18/18	Work		8h	8h				16h	16h	16h	16h	16h
	Copyeditors	80 hrs		Mon 5/7/18	Fri 5/18/18	Work		0h	0h				8h	8h	8h	8h	8h
	Tad Orman	80 hrs		Thu 5/3/18	Wed 5/16/18	Work		8h	8h				8h	8h	8h	8h	8h
19	Handoff to Editi	0 hrs	0 days	Fri 5/18/18	Fri 5/18/18	Work											

Here's what the assignments look like after the copyeditor's start date for the assignment has been adjusted

The other resource assigned to the task is not affected. Note that the total work of this task did not change, but its duration did—the finish date moved out two working days.

To delay the start of a resource assignment on a task

1. On the **View** tab, in the **Task Views** group, click **Task Usage**. The Task Usage view groups the assigned resources below each task. It's a useful view for this activity.
2. In the **Start** field of the resource assignment you want to delay, enter or select a new start date.



Tip

If you want an assignment to start at a specific time in addition to on a specific date, you can specify the time in the Start field. For example, if you want the resource's assignment to start at 1:00 P.M. on May 1, 2018, enter *5/1/18 1:00 PM*. Otherwise, Project uses the default start time. To change the default start time, enter the value you want in the Default Start Time field on the Schedule page of the Project Options dialog box.

Apply contours to assignments

In the Resource Usage and Task Usage views, you can see exactly how each resource's assigned work is distributed over time. In addition to viewing assignment details, you can change the amount of time a resource works on a task in any given time period. There are various ways to do this:

- Apply a predefined work [contour](#) to an assignment. Predefined contours generally describe how work is distributed over time in terms of graphical patterns. For example, the Bell predefined contour distributes less work to the beginning and end of the assignment and distributes more work toward the middle. If you were to graph the work over time, the graph's shape would resemble a bell.

Task ID	Task Mode	Task Name	Work	Duration	Details	Aug 26, '18							Sep 2, '18			
						T	F	S	S	M	T	W	T	F	S	S
40		▲ Create mockup	48 hrs	6 days	Work		9.12h			11.52h	15.37h	7.37h	3.52h	1.12h		
		Hany Morcos	24 hrs		Work		1.12h			3.52h	7.37h	7.37h	3.52h	1.12h		
		Luis Sousa	24 hrs		Work		8h			8h						
41		▲ Review with author	32 hrs	2 days	Work											16h

This assignment has a bell-shaped contour applied; note the contour indicator in the Indicators column

- Edit the assignment details directly. For example, in the Resource Usage or Task Usage view, you can change the assigned work values directly in the timescaled grid.

Task ID	Task Mode	Task Name	Work	Duration	Details	Aug 26, '18							Sep 2, '18			
						T	F	S	S	M	T	W	T	F	S	S
40		▲ Create mockup	42 hrs	6 days	Work		9.12h			5.52h	15.37h	7.37h	3.52h	1.12h		
		Hany Morcos	24 hrs		Work		1.12h			3.52h	7.37h	7.37h	3.52h	1.12h		
		Luis Sousa	18 hrs		Work		8h			2h	8h					
41		▲ Review with author	32 hrs	2 days	Work											16h

This assignment has been directly edited in the timephased portion of the Task Usage view; note the indicator

- Edit work values at the task level. When you change a work value at the task level, Project adjusts the resulting work value per assignment in accordance with each assigned resource's units value. For example, assume that on a specific day, two resources were assigned four hours each to a task that had a total work value of eight hours. If you then change the total work on the task for that day to 12 hours, Project will increase the work per resource from four to six hours.

				Sep 2, '18									
Task ID	Task Name	Work	Duration	Details	T	F	S	S	M	T	W	T	F
38	Final review	68 hrs	5 days	Work		16h			16h	4h	16h	16h	
	Carole Poland	17 hrs		Work		4h			4h	1h	4h	4h	
	Hany Marcos	17 hrs		Work		4h			4h	1h	4h	4h	
	Jane Dow	34 hrs		Work		8h			8h	2h	8h	8h	
39	Design book's companion website	74 hrs	8 days	Work	3.52h	1.12h			16h	16h			

The total work was edited for the task, and Project updated the assigned resources' individual work values according to their assignment units values; note the indicators

How you contour or edit an assignment depends on what you need to accomplish.

Predefined contours work best for assignments in which you can predict a likely pattern of effort—for example, a task that requires gradual ramp-up time might benefit from a back-loaded contour to reflect the likelihood that the resource will work the most toward the end of the assignment.

Here are a few more things to note about contouring assignments:

- Depending on the task type, applying a contour to an assignment might cause the overall duration of the task to be extended. Applying a contour to a fixed-duration task will not affect its duration. When you apply a contour to a fixed-duration task, Project recalculates the resource's work value so that the resource works less in the same time period. For a fixed-work or fixed-unit task, however, the duration will be affected. If you do not want a contour to extend a task's duration, change the task type (on the Advanced tab of the Task Information dialog box) to Fixed Duration before applying the contour.
- You can split a task in the Gantt Chart view to account for an interruption in the task, as you saw in [Chapter 9, "Fine-tune task scheduling."](#) You can also split a task in the Task Usage view by entering 0 work values in the task's row in the timephased grid for the date range that you want. To preserve the total work on the task, you should add the same amount of work to the end of the task that you subtracted with the split. For example, assume that a task starts on Monday and has eight hours of total work per day for four days. Its work pattern (in hours per day) is 8, 8, 8, and 8. You interrupt work on the task on Tuesday and then add those eight hours to the end of the task (in this case, on Friday). The new work pattern would be 8, 0, 8, 8, and 8.
- When editing values in the timephased grid, you can work with the cells similar to how you might work in a Microsoft Excel worksheet—you can drag values and use the AutoFill handle to copy values to the right or down.

To apply a predefined work contour to an assignment

1. Do either of the following:

- On the **View** tab, in the **Task Views** group, click **Task Usage**.
- On the **View** tab, in the **Resource Views** group, click **Resource Usage**.

Both of these views show assignment-level work values per time period, such as daily or weekly. The Task Usage view groups assignments per task, whereas the Resource Usage view groups assignments per resource.

2. Click the assignment to which you want to apply a predefined contour.



The next two steps are not required, but they can help you see the result of applying a work contour.

3. On the **View** tab, in the **Zoom** group, click the arrow next to the **Timescale** box and click the smallest unit of time (such as Days) that you want displayed in the right side of the usage view.
4. On the **Task** tab, in the **Editing** group, click **Scroll to Task**.
5. On the **Format** tab, in the **Assignment** group, click **Information**. The Assignment Information dialog box opens.
6. Click the **General** tab if it is not already selected.
7. Click the arrow to display the options in the Work Contour box. These are all predefined work contours; some of the names of the contours are graphical representations of a resource's work over time with that contour applied.
8. Select the contour pattern you want, and then click **OK** to close the Assignment Information dialog box. Project applies the contour to the selected assignment. If the timescaled work values are visible, you should see the updated work values per time period. You will also see a contour indicator in the Indicators column.

To manually edit work per time period for an assignment

1. Do either of the following:
 - On the **View** tab, in the **Task Views** group, click **Task Usage**.
 - On the **View** tab, in the **Resource Views** group, click **Resource Usage**.
2. If the assignment values you want to edit are not visible, select the resource's name in the **Task Name** column.
3. On the **Task** tab, in the **Editing** group, click **Scroll to Task**.
4. On the **View** tab, in the **Zoom** group, click the arrow next to the **Timescale** box and click the smallest unit of time (such as Days) that you want displayed in the right side of the usage view.
5. In the timescaled grid in the right pane of the usage view, edit the assignment values you want. These appear in the details row labeled *Work*.

Create and assign material resources

Material resources are consumables that you use up as the project proceeds. For example, on a construction project, material resources might include nails, lumber, and concrete. You work with material resources in Project to track a fixed quantity or a rate of consumption of the material resource and its associated costs. Unlike with work resources, maximum units values do not apply to cost and material resources, because neither type performs work.

Although Project is not a complete system for tracking inventory, it can help you stay better informed about how quickly your project is consuming material resources, and at what cost. Let's look at an example.

The Material field applies only to material resources

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
16	Travel	Cost		T						Prorated	
17	Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
18	William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
19	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
20	Advance proofs	Material	copies	AP			\$15.00		\$0.00	Prorated	

Note the unique value in the Material field for material resources

This example is of a material resource named *Advance proofs*. This resource has a Material label named *copies*. Copies are the unit of measure of this material resource; other types of material resources would have different labels. A liquid material resource might be labeled (and measured) in gallons or liters, for example. This material resource has a per-unit cost of \$15. In other words, each copy of an advance proof used in the project costs the plan \$15.

Assigning a material resource to a task is similar to assigning work resources, but with some important differences. When you assign a material resource to a task, you specify the unit quantity for the task. Project then calculates the cost of the material resource assignment as the per-unit cost you specified times the number of units on the assignment.

Recall that material resources are used up or “consumed” as a project progresses. Common material resources you might find on a construction project, for example, include lumber and concrete.

When you assign a material resource to a task, its label value appears in the Units column

Assign Resources

Task: Final review

Resource list options

Resources from AdvancedAssignments

	Resource Name	R/D	Units	Cost
✓	Advance proofs		20 copies	\$300.00
✓	Carole Poland		50%	\$1,050.00
✓	Hany Morcos		50%	\$775.00
✓	Jane Dow		100%	\$2,530.00
	Color Setting Services			
	Copyeditors			
	Dan Jump			
	John Evans			
	Jun Cao			
	Katie Jordan			

Assign

Remove

Replace...

Graph

Close

Help

Hold down Ctrl and click to select multiple resources

With material resource assignments, “units” refers to the quantity of the material resource assigned; this appears as the material resource label throughout Project

When assigning a material resource, you can handle consumption and cost in one of two ways:

- **Assign a fixed consumption rate** This means that, regardless of the duration of the task to which the material resource is assigned, an absolute quantity of the resource will be used. For example, pouring concrete for a house foundation requires a fixed amount of concrete no matter how long it takes to pour it. Project multiplies the unit cost of this resource by the number of units assigned to determine the total cost.
- **Assign a variable-rate quantity** Project adjusts the quantity and cost of the resource as the task’s duration changes. A variable consumption rate means that the quantity of the material resource consumed depends on the duration of the task. When operating a generator, for example, you will consume more fuel in four hours than in two, and you can determine an hourly rate at which you consume the fuel. You enter a variable consumption rate in units per time period; for example, you enter “2/h” to record the consumption of two gallons of fuel per hour. After you enter a variable consumption rate for a material resource’s assignment, Project calculates the total quantity of the material resource consumed based on the task’s

duration.

The advantage of using a variable rate of consumption is that the rate is tied to the task's duration. If the duration changes, the calculated quantity and cost of the material resource will also change. When you need this level of cost tracking for a material resource, use a variable consumption rate.

To set up a material resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the **Resource Sheet**, click the row where you want to insert a new material resource.
3. On the **Resource** tab, in the **Insert** group, click **Add Resources**, and then click **Material Resource**. Project inserts a new row for the material resource.
4. Enter a name for the material resource.
5. In the **Material Label** field, enter the name of the unit of measure of the material resource.
6. In the **Std. Rate** field, enter the per-unit cost of the material resource, and then press **Enter**.

To assign a material resource to a task

1. In a task-centric view, such as the Gantt Chart, select the name of the task to which you want to assign the material resource.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources** to open the Assign Resources dialog box.
3. Do either of the following:
 - To assign a [fixed consumption rate](#), in the **Units** field for the material resource, enter or select the quantity of the material resource you want to assign.
 - To assign a variable consumption rate, in the **Units** field for the material resource, enter the variable consumption rate in units per time period. For example, enter *2/h* to set a consumption rate of two units of the material resource per hour.

View resource capacity

Recall that the amount of time that a resource is able to work on tasks in a project is called the resource's *maximum capacity*; in Project, this is measured in units. By default, such units are presented as a percentage value, with 0% meaning no capacity and 100% meaning the full or maximum capacity of a single resource with the normal working schedule of 40 hours per week. In Project, a resource's maximum capacity to do work is tracked as the resource's maximum units (labeled Max. Units) value.

Even experienced project managers have been known to overestimate resource capacity for the people allocated to work on a particular project. This can lead to unhappy resources and problems during the execution of a project, especially when the project manager has also underestimated the amount of work required to complete the tasks in the

project. There are many legitimate reasons to expect some variability with task work estimates—especially in the initial planning stage of a project. This topic introduces some useful tools in Project that can help you better see and understand resource capacity.

Viewing the working capacity per resource gives you a better understanding of overall capacity for your project. This, in turn, can help inform you and the project’s stakeholders about any adjustments you might be able to make to the scope of the project to better match the capacity of the team (or adjustments you can make to the team’s capacity to better match project scope). Normally, you can expect one of the following conditions for resource capacity:

- Planned work is less than the working capacity of the team. You might be able to use some portion of your resources’ time for other projects or to do more work on this project.
- Planned work exceeds the working capacity of the team. You might need to reduce the scope of work or add more resources.
- Planned work is approximately equal to the working capacity of the team.



Tip

This approach to understanding project scope and resource capacity is explored further in [Appendix A, “A short course in project management.”](#)

A customized Resource Usage view is a great view in which to see resource capacity.

			Apr 15, '18													
			M	T	W	T	F	S	S	M	T	W	T	F		
	Resource Name	Work	Rem. Avail.	8h	8h	8h	8h	8h			8h	8h	8h	8h	8h	
		0 hrs	% Alloc.													
1	▶ Unassigned	0 hrs	Rem. Avail.	0h	0h	0h	0h	0h		7h	8h	8h	0h	0h		
		157 hrs	% Alloc.	150%	100%	100%	100%	100%		13%	0%	0%	100%	100%		
2	▶ Carole Poland	80 hrs	Rem. Avail.	16h	16h	16h	16h	16h		16h	16h	16h	16h	16h		
		360 hrs	% Alloc.													
3	▶ Copyeditors	360 hrs	Rem. Avail.	16h	16h	16h	16h	16h		16h	16h	16h	16h	16h		
		0 hrs	% Alloc.													
4	Dan Jump	0 hrs	Rem. Avail.	4h	4h	4h	4h	4h		4h	4h	4h	4h	4h		
		0 hrs	% Alloc.													
5	▶ Hany Morcos	353 hrs	Rem. Avail.	0h	8h	8h	8h	8h		7h	8h	8h	8h	8h		
		200 hrs	% Alloc.	100%						13%						
6	▶ Jane Dow	200 hrs	Rem. Avail.	8h	8h	8h	8h	8h		8h	8h	8h	8h	8h		
		0 hrs	% Alloc.													
7	John Evans	0 hrs	Rem. Avail.	8h	8h	8h	8h	8h		8h	8h	8h	8h	8h		
		0 hrs	% Alloc.													
8	▶ Jun Cao	13 hrs	Rem. Avail.	10h	10h	10h	10h			9h	10h	10h	10h			
		13 hrs	% Alloc.							10%						

This customized Resource Usage view shows individual resource capacity and assigned allocation at a glance

In the Resource Usage view, the left pane organizes tasks under the resources to which the tasks are assigned. The right pane shows assignment and other values organized on the timeline. A handy customization is to show only the Remaining Availability and Percent Allocation details; hide resource assignments, and set the view’s zoom level to whatever incremental time period your team normally plans for, such as weekly or monthly.



Tip

In this topic, we've focused on resource capacity as shown in the Resource Usage view. Other Project features that help you see and manage resource capacity include the Resource Graph view (available from the Other Views menu in the Resource Views group on the View tab) and the two resource-focused reports (available from the Resources menu in the View Reports group on the Report tab).

To view resource capacity per time period

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage**.
2. On the **Format** tab, in the **Details** group, click **Add Details** to open the Detail Styles dialog box.
3. In the **Available Fields** list, select **Percent Allocation**, and then click **Show**.
4. Select **Remaining Availability**, click **Show**, and then click **OK** to close the dialog box. To further simplify the view, also perform the following steps.
5. On the **Format** tab, in the **Details** group, clear the **Work** check box. Project hides the Work details, leaving the Percent Allocation and Remaining Availability details visible.
6. Click the **Resource Name** column heading.
7. On the **View** tab, in the **Data** group, click **Outline**, and then click **Hide Subtasks**. Project hides assignments, leaving only the resource rows visible.
8. On the **View** tab, in the **Zoom** group, in the **Timescale** box, click the time period you want. Use whatever time period your team normally focuses on; daily or weekly might be a good level of focus for resource availability.

Adjust assignments in the Team Planner view (Project Professional only)



Important

The Team Planner view is available only in Project Professional, not in Project Standard. If you have Project Standard, you can skip this topic.

By now you've seen how to work in the Task Usage and Resource Usage views to accomplish detailed tasks like manually contouring resource assignments. Another view that can help give you insights into tasks, resources, and assignments is the Team Planner view.

In the Team Planner view, tasks are organized by the resource to which they are assigned (as in the Resource Usage view) and any unassigned tasks are also visible. Both assigned and unassigned tasks might be either:

- **Scheduled tasks** These tasks are scheduled for a specific time period and displayed

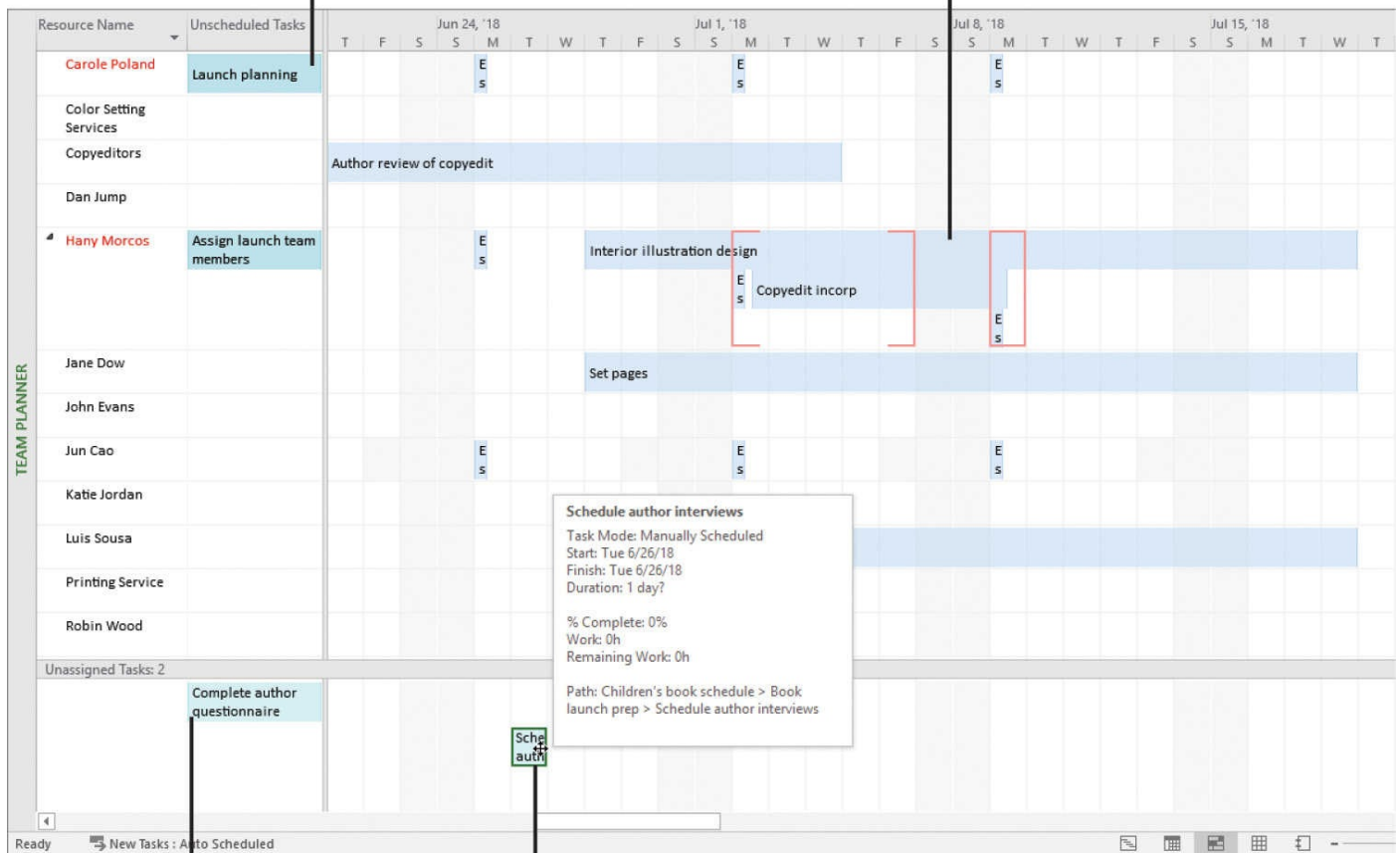
in the Team Planner view at a specific point in time.

- **Unscheduled tasks** These tasks are manually scheduled.

The Team Planner view supports a simple drag-and-drop method of rescheduling or reassigning tasks.

The Team Planner view includes four sections: assigned but unscheduled tasks...

...assigned and scheduled tasks...



...unassigned and unscheduled tasks...

...and unassigned but scheduled tasks

When working in the Team Planner view, use the ScreenTips to see the full names and other details of visible tasks

What makes the Team Planner unique is its support for drag-and-drop scheduling and other means of handling assignments:

- Drag tasks to assign, reassign, reschedule, or unassign them.
- Right-click an assigned task and reassign it to another resource.

The Team Planner view supports many of the view adjustment and navigation techniques you use elsewhere in Project. These include:

- Using the Scroll To Task button (on the Task tab, in the Editing group) to horizontally scroll the timescale portion of the view to display task assignments (bars).
- Displaying ScreenTips to see the full name and other details for tasks that might not be fully visible in a Team Planner task bar.
- Making timescale adjustments by using the Timescale box (on the View tab, in the Zoom group).
- Displaying overallocated resource names in red.



Important

Dragging an automatically scheduled task horizontally will apply a Start No Earlier Than (SNET) constraint. The Team Planner describes the constraint in the task bar's ScreenTip, and you will see the constraint's indicator in Gantt chart views.

To assign and schedule unassigned tasks

1. On the **View** tab, in the **Resource Views** group, click **Team Planner** to display the Team Planner view.
-



Tip

You can also click the Team Planner view shortcut on the status bar, in the lower-right corner of the Project window.

2. Drag a task and drop it into a resource's row, at the start date you want. The task you drag can be from the unassigned and unscheduled tasks corner in the lower-left corner, or from the unassigned but scheduled corner in the lower-right. The task is assigned and scheduled but remains a manually scheduled task until you switch it to be automatically scheduled.
-



Tip

You can also assign but not schedule a task by dragging it to a resource's **Unscheduled Tasks** column.

To schedule assigned but unscheduled tasks

1. In the Team Planner view, drag a task from the **Unscheduled Tasks** column of the view and drop it into a resource's row, at the start date you want. The task is assigned and scheduled but remains a manually scheduled task until you switch it to be automatically scheduled.

To reassign a task from one resource to another

1. In the Team Planner view, right-click the assigned task and, on the shortcut menu that appears, click **Reassign To**. Then select the resource to whom you want to assign the task.



Tip

You can also reassign tasks by dragging them from one resource to another. To better control the scheduling of tasks when you reassign them this way, set the timescale to daily (to do this, click Days in the Timescale box in the Zoom group on the View tab).

Skills review

In this chapter, you learned how to:

- [Change resource availability over multiple date ranges](#)
- [Work with multiple resource pay rates](#)
- [Change resource pay rates over different date ranges](#)
- [Delay the start of assignments](#)
- [Apply contours to assignments](#)
- [Create and assign material resources](#)
- [View resource capacity](#)
- [Adjust assignments in the Team Planner view \(Project Professional only\)](#)



Practice tasks

The practice files for these tasks, FineTuneResources and FineTuneAssignments, are located in the Project2016SBS\Ch11 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Change resource availability over multiple date ranges

The scenario: At Lucerne Publishing, you secured additional copyediting capacity for a portion of the duration of the new children’s book plan. You need to record this in the plan. Open the FineTuneResources plan in Project, and then perform the following task:

1. Customize the copyeditors’ resource availability. Set the time periods as follows:
 - The first time period should end on **5/3/18** at **200%** maximum units.

- The second period should start on **5/4/18** and end on **6/3/18** at **300%** maximum units.
- The third period should start on **6/4/18** at **200%** maximum units; keep *NA* for the end of the period.

Resource Information

General | Costs | Notes | Custom Fields

Resource name: Copyeditors Initials: C

Email: Group:

Logon Account... Code:

Booking type: Committed Type: Work

Material label:

Default Assignment Owner:

Generic Budget

Inactive

Change Working Time ...

Available From	Available To	Units
NA	5/3/2018	200%
5/4/2018	6/3/2018	300%
6/4/2018	NA	200%

Help Details... OK Cancel

The copyeditors' availability should look like this; note where the NA values appear

Work with multiple resource pay rates

The scenario: Hany Morcos is currently assigned to task 36, *Proof and review*, as a content editor rather than in her default role of project editor. You will set up and apply a different pay rate to account for her content editor role on this task. Continuing in the FineTuneResources plan, perform the following tasks:

1. Create an additional cost rate for Hany Morcos by using cost rate table B. Set her additional standard pay rate to **\$45** per hour and her overtime rate to **\$60** per hour.

Resource Information

General Costs Notes Custom Fields

Resource Name: Jane Dow

Cost rate tables

For rates, enter a value or a percentage increase or decrease from the previous rate. For instance, if a resource's Per Use Cost is reduced by 20%, type -20%.

A (Default)	B	C	D	E
	Effective Date	Standard Rate	Overtime Rate	Per Use Cost
	--	\$55.00/h	\$0.00/h	\$0.00
	Mon 7/2/18	\$63.25/h	\$0.00/h	\$0.00

Cost accrual: Prorated

Help Details... OK Cancel

The additional cost rate values apply only after the Effective Date arrives

Delay the start of assignments

The scenario: The new children's book plan includes a task to which both a copyeditor and the book author, Tad Orman, are assigned. Right now, both resources are assigned work throughout the duration of the task, but you'd like to delay the start of the copyeditor's work by two working days. Open the FineTuneAssignments plan in Project, and then perform the following task:

1. In the Task Usage view, delay the start of the copyeditors' assignment on task 18, *Author review of content edit*, to **5/7/18**.

Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S	May 6, '18	M	T	W
	Children's book set	1,859 hrs	160 days?	Mon 4/9/18	Fri 11/16/18	Work	8h	8h	8h			19h	16h	16h
	Editorial staff mee	39 hrs	60.13 days	Mon 4/16/18	Mon 7/9/18	Work						3h		
	Acquisition	280 hrs	30 days	Mon 4/9/18	Fri 5/18/18	Work	8h	8h	8h			16h	16h	16h
	Manuscript rece	0 hrs	0 days	Mon 4/9/18	Mon 4/9/18	Work								
	Content edit	120 hrs	15 days	Mon 4/9/18	Wed 5/2/18	Work	8h							
	Carole Polar	120 hrs		Mon 4/9/18	Wed 5/2/18	Work	8h							
	Author review c	160 hrs	12 days	Thu 5/3/18	Fri 5/18/18	Work		8h	8h			16h	16h	16h
	Copyeditors	80 hrs		Mon 5/7/18	Fri 5/18/18	Work		0h	0h			8h	8h	8h
	Tad Orman	80 hrs		Thu 5/3/18	Wed 5/16/18	Work		8h	8h			8h	8h	8h
	Handoff to Edit	0 hrs	0 days	Fri 5/18/18	Fri 5/18/18	Work								

The copyeditors' assignment to task 18 should look like this after editing

Apply contours to assignments

The scenario: One of the resources working on the new children’s book tells you that she knows from past experience that the daily work pattern she expects on one of her tasks doesn’t match the task as it is currently scheduled. You want to update the plan to more accurately model the expected work contour on this assignment. You also have another assignment that requires an adjustment. Continuing in the FineTune-Assignments plan, perform the following tasks:

1. In the Task Usage view, apply a back-loaded work contour to Carole Poland’s assignment to task 38, *Final review*.

	Task Mode	Task Name	Work	Duration	Start	Finish	Details	Sep 2, '18							
								F	S	S	M	T	W	T	F
35		2nd Pages review	112 hrs	10 days	Fri 8/24/18	Thu 9/6/18	Work	12.5h			13.5h	14.5h	15.5h	16h	
36		Proof and rev	40 hrs	5 days	Fri 8/24/18	Thu 8/30/18	Work								
		Hany Mo	40 hrs		Fri 8/24/18	Thu 8/30/18	Work								
37		Send proofec	0 hrs	0 days	Thu 8/30/18	Thu 8/30/18	Work								
		Hany Mo	0 hrs		Thu 8/30/18	Thu 8/30/18	Work								
38		Final review	72 hrs	5 days	Fri 8/31/18	Thu 9/6/18	Work	12.5h			13.5h	14.5h	15.5h	16h	
		Carole Pc	12 hrs		Fri 8/31/18	Thu 9/6/18	Work	0.5h			1.5h	2.5h	3.5h	4h	
		Hany Mo	20 hrs		Fri 8/31/18	Thu 9/6/18	Work	4h			4h	4h	4h	4h	
		Jane Dow	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	8h			8h	8h	8h	8h	
39		Design book's c	80 hrs	5 days	Fri 8/24/18	Thu 8/30/18	Work								

After applying the back-loaded contour to this assignment, note the contour indicator in the Indicators column—point to it to see details about the contour in a ScreenTip

Because task 38 is a fixed-duration task, Project recalculated the assignment-level work but did not change the task’s duration.

2. Manually edit Hany Morcos’s assignment to task 38, *Final review*. Change her assignment on Wednesday and Thursday, September 5 and 6, 2018, from 4 hours to **8 hours** each.

	Task Mode	Task Name	Work	Duration	Start	Finish	Details	Sep 2, '18							
								F	S	S	M	T	W	T	F
35		2nd Pages review	120 hrs	10 days	Fri 8/24/18	Thu 9/6/18	Work	12.5h			13.5h	14.5h	19.5h	20h	
36		Proof and rev	40 hrs	5 days	Fri 8/24/18	Thu 8/30/18	Work								
		Hany Mo	40 hrs		Fri 8/24/18	Thu 8/30/18	Work								
37		Send proofec	0 hrs	0 days	Thu 8/30/18	Thu 8/30/18	Work								
		Hany Mo	0 hrs		Thu 8/30/18	Thu 8/30/18	Work								
38		Final review	80 hrs	5 days	Fri 8/31/18	Thu 9/6/18	Work	12.5h			13.5h	14.5h	19.5h	20h	
		Carole Pc	12 hrs		Fri 8/31/18	Thu 9/6/18	Work	0.5h			1.5h	2.5h	3.5h	4h	
		Hany Mo	28 hrs		Fri 8/31/18	Thu 9/6/18	Work	4h			4h	4h	8h	8h	
		Jane Dow	40 hrs		Fri 8/31/18	Thu 9/6/18	Work	8h			8h	8h	8h	8h	
39		Design book's c	80 hrs	5 days	Fri 8/24/18	Thu 8/30/18	Work								

Hany Morcos’s edited assignment should look like this

Create and assign material resources

The scenario: The advance proofs of the new children’s book are the consumable resource that interests you most. These are high-fidelity mockups of the new book that are created before the book is commercially printed. Because the advance proofs are expensive to produce, you’d like to account for their costs in the plan. To do so, you need to create and assign a material resource. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. Create a material resource named **Advance proofs** with the material label of **copies**, the initials **AP**, and a standard rate of **\$15** at the bottom of the resource list. This is the per-unit cost of this material resource; put another way, each copy of an advance

proof costs \$15.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
16	Travel	Cost		T						Prorated	
17	Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
18	William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
19	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
20	Advance proofs	Material	copies	AP			\$15.00		\$0.00	Prorated	

The material resource you set up should look like this

- In the Gantt Chart view, open the **Assign Resources** dialog box.
- Assign the material resource *Advance proofs* to task 38, *Final review*. Specify **20** units.

When assigning a material resource, note the Units and Cost values in the Assign Resources dialog box

View resource capacity

The scenario: At this point in the planning for the new children’s book project, you’ve set up an initial task list and initial resource details. Now you’ll examine resource capacity in detail. Continuing in the FineTuneAssignments plan, perform the following tasks:

- In the Resource Usage view, show only the Percent Allocation and Remaining Availability details.
- Hide the assignments under the resource names.
- Zoom the timescale to days.

				Apr 8, '18							Apr 15, '18						
				F	S	S	M	T	W	T	F	S	S	M	T	W	
RESOURCE USAGE		Unassigned	0 hrs	8h			8h	8h	8h	8h	8h			8h	8h	8h	
	1	Carole Poland	149 hrs	8h			0h	0h	0h	0h	0h			7h	8h	8h	
		Color Setting Ser	80 hrs				150%	100%	100%	100%	100%			13%	0%	0%	
	2			16h			16h	16h	16h	16h	16h			16h	16h	16h	
		Copyeditors	360 hrs														
	3			16h			16h	16h	16h	16h	16h			16h	16h	16h	
		Dan Jump	0 hrs														
4			4h			4h	4h	4h	4h	4h			4h	4h	4h		
	Hany Morcos	361 hrs															
5			8h			0h	8h	8h	8h	8h			7h	8h	8h		
	Jane Dow	200 hrs				100%							13%				
6			8h			8h	8h	8h	8h	8h			8h	8h	8h		
	John Evans	0 hrs															
7			8h			8h	8h	8h	8h	8h			8h	8h	8h		

This customized Resource Usage view gives you at-a-glance insight into the workload and availability of each resource

Adjust assignments in the Team Planner view (Project Professional only)

The scenario: You have found the Team Planner view to be especially helpful when reviewing assignments with resources working on the new children's book plan. You've identified some assignment issues you need to address, and you will do so in the Team Planner view. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. Display the Team Planner view.
2. Drag Carole Poland's unscheduled task, *Launch planning*, in Carole's row so that the task start date is Monday, August 13, 2018.
3. Drag the name of Hany Morcos's unscheduled task, *Assign launch team members*, to Carole Poland's row so that the task start date is Tuesday, August 14, 2018.
4. Drag the first unassigned task, *Complete author questionnaire*, to Hany Morcos's row so that the task start date is Monday, August 20, 2018.

12. Fine-tune the Project plan

In this chapter

- [Examine resource allocations over time](#)
 - [Resolve resource overallocations manually](#)
 - [Level overallocated resources](#)
 - [Check the plan's cost and finish date](#)
 - [Inactivate tasks \(Project Professional only\)](#)
-

Practice files

For this chapter, use the FineTunePlan practice file from the Project2016SBS\Ch12 folder. For practice file download instructions, see the introduction.

In the previous three chapters, we focused on details about tasks, resources, and assignments. Now, we will dive deeper into optimizing resource assignments. In some cases, we'll revisit Project features introduced in previous chapters. In this chapter, however, the focus is on managing across the entire plan—including overall duration and cost.

This chapter guides you through procedures related to examining resource allocations over time, resolving resource overallocations manually, leveling overallocated resources, checking the plan's cost and finish date, and inactivating tasks (Project Professional only).

Examine resource allocations over time

In this topic, we focus on resource allocation—how assignments affect the workloads of the work resources (people and equipment).

Recall from [Chapter 5](#), “[Set up resources](#),” that a resource's capacity to work is measured in units; the maximum capacity of a particular resource is called *maximum units* (labeled Max Units in Project). Units are measured either as a percentage (such as 300% units) or as numbers (such as three units).

A resource's capacity to work in a specific time period is determined by that resource's maximum units and resource calendar. The relationship between a resource's capacity and that person's task assignments is called *allocation*. At any specific time, a work resource may be:

- **Underallocated** The resource's assignments do not fill the resource's maximum capacity to do work. For example, a full-time resource who has only 25 hours of work assigned in a 40-hour workweek is underallocated.
- **Fully allocated** The resource's assignments fill the resource's maximum capacity. For example, a full-time resource who has 40 hours of work assigned in a 40-hour workweek is fully allocated.

- **Overallocated** The resource's assignments exceed the resource's maximum capacity to do work. For example, a full-time resource who has 65 hours of work assigned in a 40-hour workweek is overallocated.

These states of allocation apply to work resources. Cost and material resources do no work; therefore, their assignments are not subject to allocation issues.

Project includes several views and features that can help you focus on resource allocation. By using these views and features, you can do the following:

- Set the timeframe threshold (such as daily or weekly) at which Project evaluates a resource as overallocated or not. You do so in the Resource Leveling dialog box, which is introduced in the "[Level overallocated resources](#)" topic later in this chapter.
- See overallocation indicators next to the names of overallocated resources, or the tasks to which overallocated resources are assigned. Point to any overallocation indicator to display more details in a ScreenTip.
- Use the Resource Graph to see allocations for each resource graphed against a timescale.
- Display the Overallocated Resources report to see the work details of overallocated resources.
- Project Professional users can use the Team Planner view to see assignments per resource in a simpler format. For more information about the Team Planner view, see [Chapter 11](#), "[Fine-tune resource and assignment details](#)."
- Switch to the Resource Usage view. For more information about this view, see [Chapter 11](#), "[Fine-tune resource and assignment details](#)" and later in this chapter.
- Display the Resource Allocation view. This is a combination view that includes the Resource Usage view in the top pane and the Leveling Gantt view in the lower pane. We'll focus on this view in this topic.

In the Resource Allocation combination view, the details in the lower view are specific to the selected item in the top view (a resource or assignment, in this example). Let's take a closer look at the parts of this combination view.

RESOURCE USAGE					Sep 2, '18							
Resource Name	Work	Add New Column	Details	T	F	S	S	M	T	W	T	F
Unassigned	0 hrs		Work									
1 Carole Poland	213 hrs		Work		4.5h			5.5h	6.5h	7.5h	8h	8h
2 Color Setting Services	80 hrs		Work									
3 Copyeditors	300 hrs		Work									
4 Dan Jump	0 hrs		Work									
5 Hany Morcos	393 hrs		Work	8h	4h			4h	4h	4h	4h	
6 Jane Dow	240 hrs		Work		16h			16h	16h	16h	16h	
7 Jun Cao	13 hrs		Work									
8 Luis Sousa	200 hrs		Work	8h								
9 Printing Service	240 hrs		Work									
10 Tad Orman	296 hrs		Work	8h								
11 Travel			Work									
12 Advance proofs	0 copies		Work									

LEVELING GANTT						Sep 2, '18								
Task Mode	Name	Leveling Delay	Duration	Start		T	F	S	S	M	T	W	T	F
27	Set pages	0 edays	15 days	Thu										
33	Enter page corrections	0 edays	5 days	Fri										
38	Final review	0 edays	5 days	Fri										Jane Dow
47	Launch planning	0 edays	5 days	Fri										Carole Poland

In this Resource Allocation view example, the resource assignments are collapsed (hidden) below the resource names

On the left side of the Resource Usage view is a table (the Usage table, by default). This table shows assignments grouped per resource, the total work assigned to each resource, and each assignment's work. This information is organized into an outline that you can expand or collapse.

The right side of the view contains details (work, by default) arranged on a timescale. You can horizontally scroll the timescale to see different time periods. You can also change the tiers on the timescale to display data in units of weeks, days, hours, minutes, and seconds.

In the lower pane, the Leveling Gantt view shows the Gantt bars and any slack of the tasks to which the selected resource is assigned. Slack is represented as a thin line following the Gantt bar. When a single assignment is selected, the Leveling Gantt view shows the Gantt details of the specific assignment's task.

Both panes of the Resource Allocation view are synchronized to the same timescale at the top of the view. Because the view shows each resource's assigned work per time period, it's easy to pinpoint when underallocations or overallocations occur. Also, you can directly edit assignment values in the view to address allocation problems.

Project management focus: Evaluate resource allocation

It is tempting to say that fully allocating all resources at every opportunity is every project manager's goal, but that would be an oversimplification. Depending on the nature of your project and the resources working on it, some underallocations might be perfectly fine. Overallocation might not always be a problem either, depending on the amount of overallocation. If one resource is overallocated for just a half-hour, Project will flag the overallocation. However, depending on the resource involved and the nature of the assignment, such a minor overallocation might not be a problem that you need to solve. Severe overallocation—for example, a resource being assigned twice the work he could possibly accomplish in one week—is always a problem, however. You should know how to identify severe overallocations and maintain strategies for addressing them. This chapter helps you identify and remedy resource overallocations.

Here are a few other things to keep in mind when examining resource allocations in the Resource Usage view:

- A quick way to navigate to resource overallocations in the Resource Usage view is to use the Next Overallocation button in the Level group of the Resources tab. The Next Overallocation button works in a similar way in Gantt chart, Task Usage, and Calendar views.
- By default, the Resource Usage view displays the Usage table; however, you can display a different table by selecting it from the Table list that is available on the View tab, in the Data group.
- By default, the Resource Usage view displays work values in the timescaled grid. However, you can display additional assignment values, such as cost and remaining availability, by selecting another value from the Details group on the Format tab.

To find overallocations in the Resource Allocation view

1. On the **View** tab, in the **Resource Views** group, click **Resource Allocation** to display the Resource Allocation view.



The Resource Allocation view is a split view. To hide the bottom pane, clear the Details check box on the View tab. The Resource Usage view will remain visible.

2. Click anywhere in the Resource Usage view.
3. On the **View** tab, in the **Data** group, in the **Filter** box, select **Overallocated Resources** to filter the view to show only overallocated resources.



Tip

To clear the filter, click No Filter.

4. If the selected resource's work values are not visible in the timescaled grid on the right side of the view, on the **Task** tab, in the **Editing** group, click **Scroll to Task**.
 5. To show the assignments of the selected resource, click the expand/collapse arrow next to the resource's name.
-



Tip

Set the timescale to the time setting that makes the most sense for your organization or the specific overallocated resource. This is likely to be daily or weekly. You can change the timeframe by clicking the one you want in the Timescale box on the View tab, in the Zoom group.

To see allocations for each resource graphed against a timescale

1. On the **View** tab, in the **Resource Views** group, click **Other Views**, and then click **Resource Graph**.
2. Use the arrow keys or the horizontal scroll bar to switch between resources in this view.

To see work details of overallocated resources in the Overallocated Resources report

1. On the **Report** tab, in the **View Reports** group, click [Resources](#), and then click **Overallocated Resources**.

Resolve resource overallocations manually

In this topic and the next, we continue to focus on resource allocation—how assignments affect the workloads of the work resources in the plan. This topic focuses on *manually* editing assignments to resolve resource overallocations. The next topic focuses on *automatically* resolving resource overallocations.

A great view for editing resource assignment values is the Resource Usage view (either by itself or in the upper pane of the combination Resource Allocation view, described in the previous topic).

				Sep 2, '18											
Resource Name				Work	Add New Column	Details	T	F	S	S	M	T	W	T	F
6	↑	Jane Dow	240 hrs	Work			16h				16h	16h	16h	16h	
		Enter page corrections and	40 hrs	Work											
		Set pages	120 hrs	Work											
		Final review	40 hrs	Work		8h			8h	8h	8h	8h			
		Launch planning	40 hrs	Work		8h			8h	8h	8h	8h			
7		Jun Cao	13 hrs	Work											

In the Resource Usage view, overallocated resources (and their assignments) are easy to spot

In this view, the names of overallocated resources appear in red. You can horizontally scroll the view to find overallocations. Some might be minor (for example, 42 hours in a 40-hour workweek), whereas others might be severe enough to require more attention.

You directly edit the assigned work values per time period in the right side of the view for the assignments you want. As you do so, the resource's total work per time period is updated.

Rather than editing assignment values, you can delay the start of a task that is causing a resource overallocation. Because delaying the start of a task is one technique used by automatic leveling (described in the next section), the delay is referred to as a *leveling delay*.

Editing an assignment or task manually is just one way to resolve a resource overallocation. Other solutions in task-centric views such as a Gantt chart view include the following:

- Replace the overallocated resource with another resource by clicking the Replace button in the Assign Resources dialog box (available from the Resource tab).
- Reduce the value in the Units field in the Assignment Information or Assign Resources dialog box.
- Assign an additional resource to the task so that both resources share the work.

To edit assignment-level work

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage** to display the Resource Usage view.
2. Locate the overallocated resource you want to focus on (an overallocated resource's name is formatted in red).
3. In the timescaled grid, locate the resource's overallocation you want to resolve.
4. If the resource's assignments are not visible, click the expand/collapse arrow next to the resource's name to show that resource's assignments.



Tip

You also can expand the outline by pressing Alt+Shift+Plus sign.

5. Edit the work values in the timescaled grid to resolve the overallocation.

To manually add leveling delay

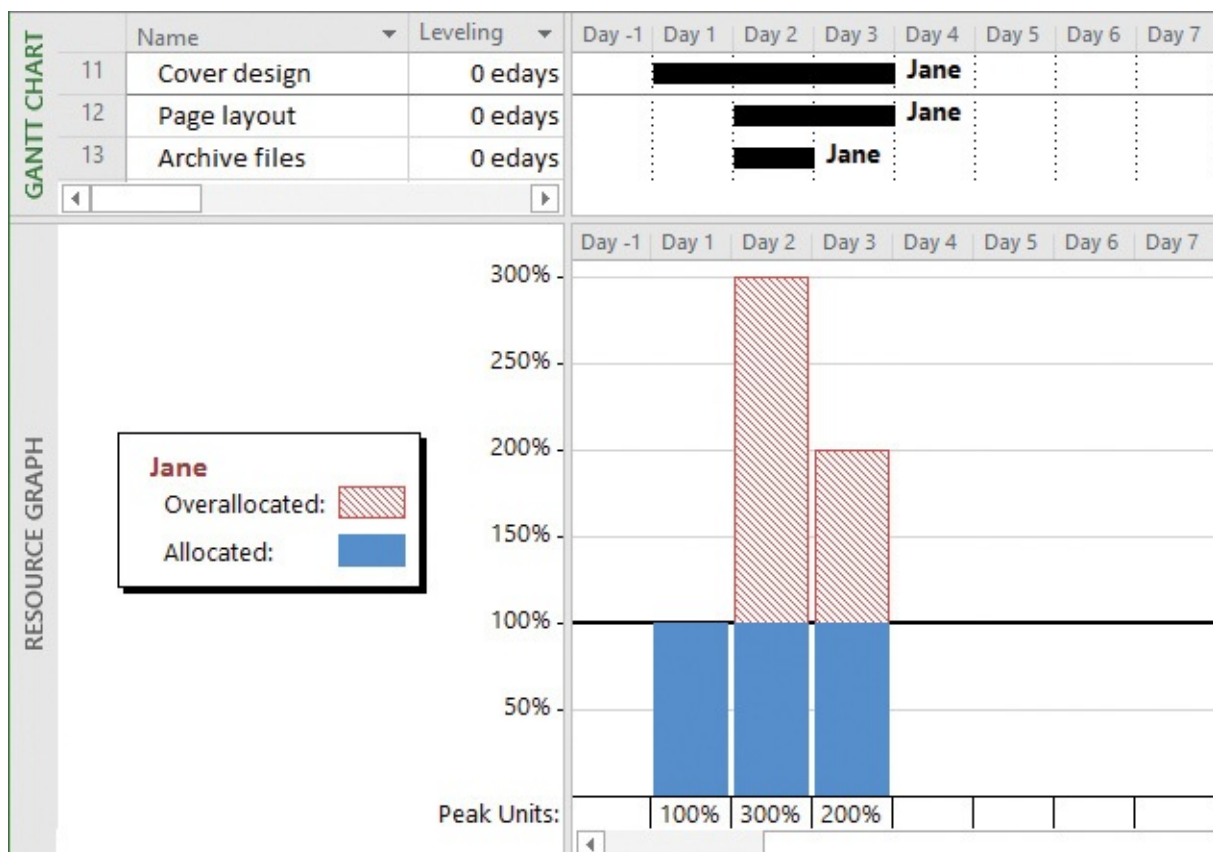
This technique delays the start of a task to resolve an overallocation but does not change the amount of work on the assignment.

1. On the **View** tab, in the **Resource Views** group, click **Other Views**, click **More Views**, and then click **Resource Allocation** to display the Resource Allocation view.
2. In the upper pane of the view, select an overallocated resource.
3. In the lower pane, identify the overlapping assignments that are causing the overallocation. The overallocated resource indicator appears next to these task names.
4. Enter a delay in the start of one of the tasks in the **Leveling Delay** field. The time value you enter is an elapsed value, not a working time value. The task's start date is adjusted. Note that any other resources assigned to the same task are also delayed, whether they were overallocated or not.

Level overallocated resources

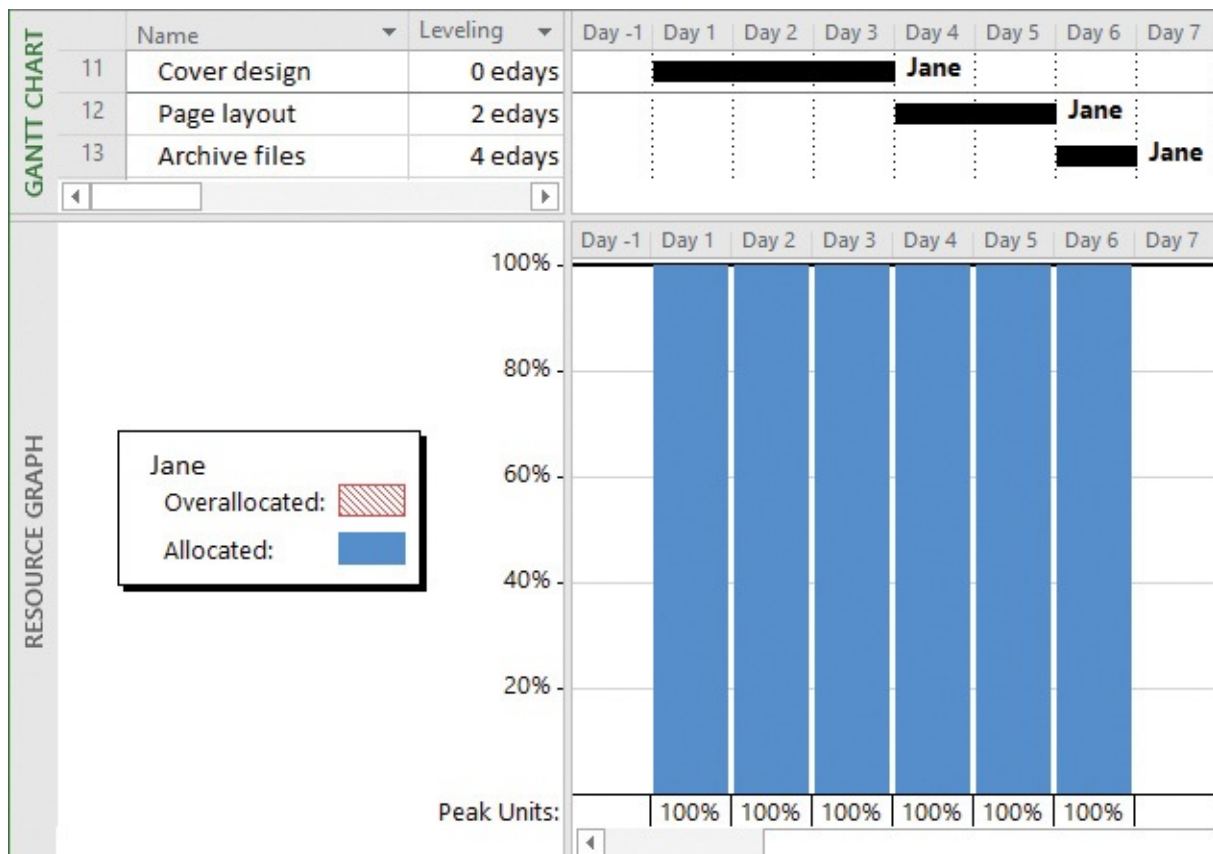
The previous topics described resource allocation and how to resolve overallocations manually. This topic introduces the resource leveling feature in Project.

Resource leveling is the process of delaying or splitting a resource's work on a task to resolve an overallocation. For example, consider the same full-time resource assigned to three tasks. On day 1, the resource is fully allocated at 100%. On day 2, the resource is overallocated at 300%. On day 3, she is again overallocated, this time at 200%.



In this split view, the Resource Graph view below the Gantt Chart view clearly shows that the resource is overallocated

If you perform resource leveling, Project delays the start dates of the second and third tasks so that the resource is not overallocated.



Leveling the resource has addressed the overallocation

In this example, the finish date of the latest scheduled task moved from day 2 to day 6. This is common with resource leveling, which often pushes out the plan's finish date. There was a total of six days of work before leveling, but two of those days overlapped, causing the resource to be overallocated on those days. After leveling, all six days of work are still there, but the resource is no longer overallocated.



Tip

Although the effects of resource leveling on a schedule might be significant, resource leveling does not change who is assigned to tasks or the total work or assignment unit values of those assignments.

You can adjust resource leveling options to control how you want Project to resolve resource overallocations. Project will apply your settings to resolve overallocations when you choose to level resources. Depending on the options you choose, this might involve delaying the start date of an assignment or task, or splitting the work on the task.

Resource leveling is a powerful tool, but it accomplishes only a few basic things: it delays tasks, splits tasks, and delays resource assignments. It does this by following a fairly complex set of rules and options that you specify in the Resource Leveling dialog box.

Resource leveling is a great fine-tuning tool, but it cannot replace your good judgment about resource availability, task durations, relationships, and constraints. Resource

leveling works with all this information as it is entered into your plan, but it might not be possible to fully resolve all resource overallocations within the timeframe you want unless you change some of the basic task and resource values in the plan. Additional remedies might include reducing the overall scope of work or adding additional resources.



Tip

To learn more about resource leveling, enter *Level resource assignments* in the Tell Me box located above the ribbon, and then click Get Help On.

As mentioned earlier, the Resource Leveling dialog box is where you tell Project how you want it to resolve resource overallocations.

Set the leveling options you want in the Resource Leveling dialog box



Tip

If you are using Project Professional rather than Project Standard, the Resource Leveling dialog box and some other dialog boxes contain additional options relating to Project Server. (In the Project Professional version of the Resource Leveling dialog box, the Level Resources With The Proposed Booking Type check box is a Project Server–related option.) Throughout this book, we won't use Project Server, so you can ignore these options for now. For more information about Project Server, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Most of the options in this dialog box are described in Project Help, but let's look more closely at a few options that deserve some additional explanation:

- The *Leveling Calculations* group includes some important options:

- Selecting *Automatic* sets Project to level resources constantly. Automatic leveling occurs as soon as a resource becomes overallocated.
 - Selecting *Manual* sets Project to level resources only when you tell it to do so. This is the default setting.
-



Important

All settings in the Resource Leveling dialog box apply to all plans that you work with in Project, not only to the active plan. Using automatic leveling might sound tempting, but it will cause frequent adjustments to plans whether you want them or not. For this reason, we recommend that you use the Manual setting.

- The selection you make in *Look For Overallocations On A <Timeframe> Basis* determines the timeframe Project will use when evaluating whether a resource is overallocated. If a resource is overallocated, the resource's name is formatted in red, and Project also shows the Overallocated indicator next to the resource's name.
-



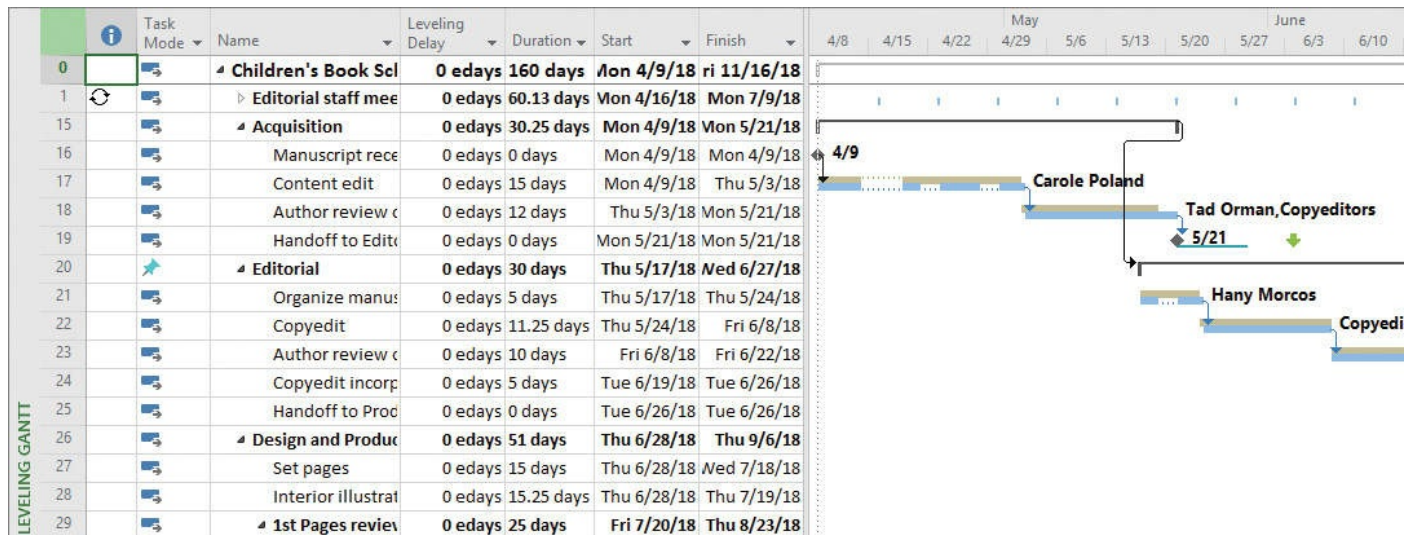
Tip

On most projects, leveling in finer detail than day by day can result in unrealistically precise adjustments to assignments. If you prefer not to see overallocation indicators for day-by-day overallocations, select *Week By Week* in the *Look For Overallocations On A <Timeframe> Basis* box. Doing so will not level resources, but it will determine when Project displays overallocation indicators next to resource names.

- Selecting the *Clear Leveling Values Before Leveling* check box removes any existing leveling delays from all tasks and assignments before leveling. This applies regardless of the source of the leveling delays—that is, whether they were entered manually (see the previous topic) or automatically by prior leveling.
- The *Leveling Order* settings let you control the priority that Project uses to determine which tasks it should delay to resolve a resource conflict:
 - Selecting the *ID Only* option delays tasks only according to their ID numbers: numerically higher ID numbers will be delayed before numerically lower ID numbers (for example, task 10 will be delayed before task 5). You might want to use this option when your plan has no task relationships or constraints.
 - Selecting the *Standard* option delays tasks according to predecessor relationships, start dates, task constraints, slack, priority, and IDs.
 - Selecting the *Priority, Standard* option tells Project to look at the task priority value before the other standard criteria. (Task priority is a numeric ranking between 0 and 1000 that indicates the task's appropriateness for leveling. Tasks with the lowest priority are delayed or split first.)

After you set the leveling options that you want in the Resource Leveling dialog box, you can level the plan immediately or later via the Level All button (on the Resource tab). You don't need to return to the Resource Leveling dialog box unless you want to change leveling options. The on-demand leveling options are located on the Resource tab, in the Level group.

A good view for seeing the plan before and after leveling is the Leveling Gantt view.



The Leveling Gantt view is a great view in which to see the before-and-after results of leveling

In this view, each task has two bars. The top bar represents the pre-leveled task. You can see a task's pre-leveled start, finish, and duration by pointing to a light tan-colored bar. The bottom bar represents the leveled task as it's now scheduled.

To set leveling options and level resources

1. On the **Resource** tab, in the **Level** group, click **Leveling Options** to open the Resource Leveling dialog box.
2. In the [Resource Leveling](#) dialog box, select the options you want.
3. Do either of the following:
 - To level resources now by using the options you've set, click **Level All**.
 - To save these options but delay leveling resources until later, click **OK**.

To level resources by using the current Resource Leveling dialog box options

1. On the **Resource** tab, in the **Level** group, do one of the following:
 - Click **Level Selection** to level resources assigned to the selected tasks.
 - Click **Level Resource** to level the selected resource only.
 - Click **Level All** to level all resources in the plan.

To clear leveling delays

You can remove leveling delays for the entire plan or for selected tasks.

1. On the **Resource** tab, in the **Level** group, click **Clear Leveling**, and then select the options you want.

To display the Leveling Gantt view

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow, and then click **More Views**.
2. In the **More Views** dialog box, click **Leveling Gantt**, and then click **Apply**. Project switches to the Leveling Gantt view.

Check the plan's cost and finish date

Not all plans include cost information, but for those that do, keeping track of project costs might be as important as, or more important than, keeping track of the scheduled finish date. In this topic, we examine both the cost and the finish date of the plan.

Two factors to consider when examining project costs are the specific types of costs you want to see and how you can best see them. The types of costs that you might encounter over the life of a project include the following:

- **Baseline costs** The original planned task, resource, or assignment costs that were saved as part of a baseline plan.
- **Current (or scheduled) costs** The calculated costs of tasks, resources, and assignments in a plan. As you make adjustments in a plan, such as assigning or removing resources, Project recalculates current costs much like it recalculates task start and finish dates. After you start to incur actual costs (typically by tracking actual work), the current cost equals the actual cost plus the remaining cost per task, resource, or assignment. Current costs are the values you see in the fields labeled Cost or Total Cost.
- **Actual costs** The costs that have been incurred for tasks, resources, or assignments.
- **Remaining costs** The difference between the currently scheduled costs and the actual costs for tasks, resources, or assignments.

You might need to compare these costs (for example, baseline versus actual) or examine them individually per task, resource, or assignment. Or you might need to examine cost values for summary tasks or for an entire plan. Some common ways to view these types of costs include the following:

- See the plan's cost values in the Project Statistics dialog box.

	Start	Finish
Current	Wed 4/11/18	Mon 11/19/18
Baseline	Mon 4/9/18	Thu 11/8/18
Actual	Wed 4/11/18	NA
Variance	2d	6.75d

	Duration	Work	Cost
Current	158.75d	2,007h	\$75,877.25
Baseline	154d	1,975h	\$74,554.75
Actual	22.34d	280h	\$9,900.00
Remaining	136.41d	1,727h	\$65,977.25

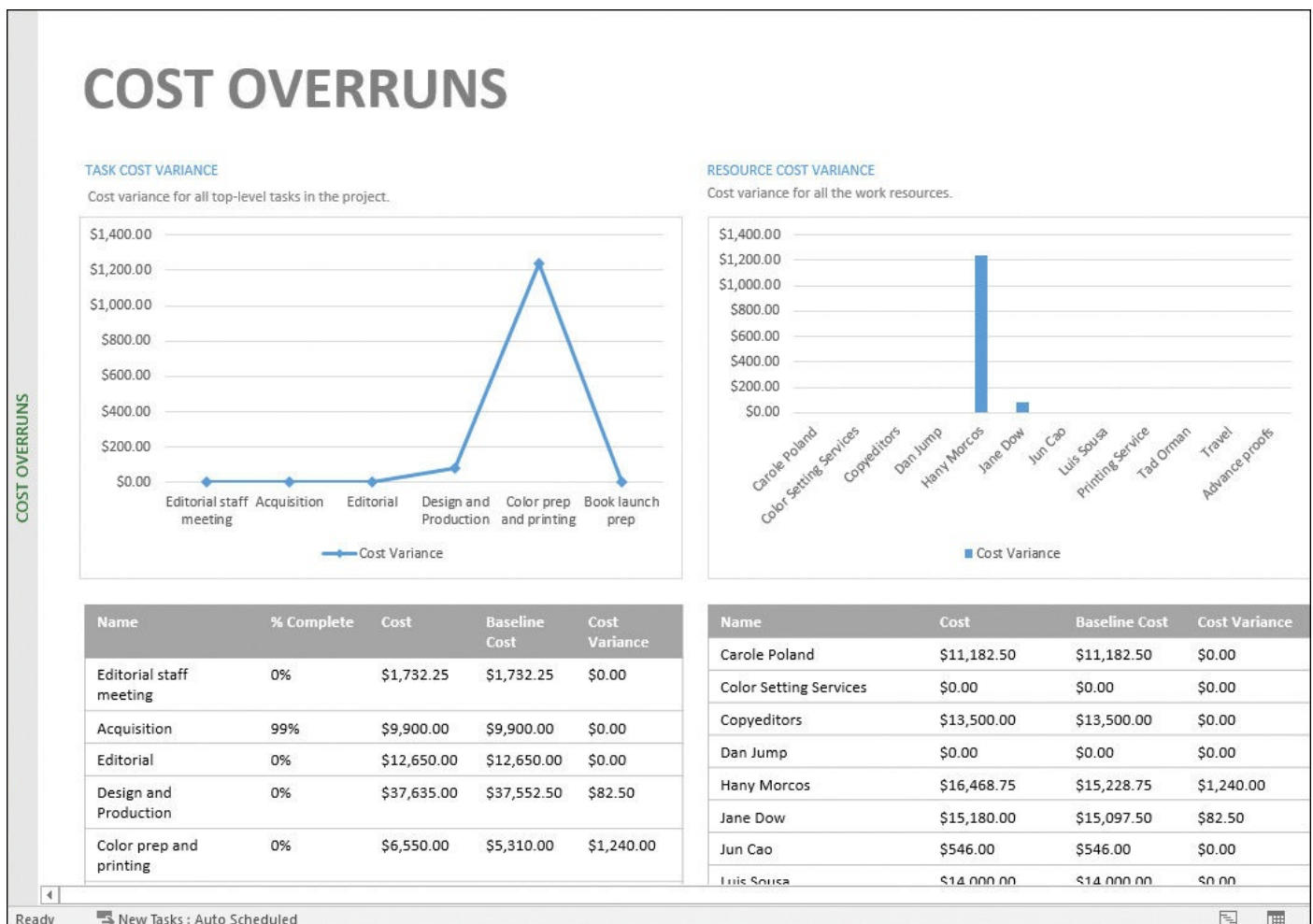
Percent complete:
Duration: 14% Work: 14%

Close

Use the Project Statistics dialog box for an at-a-glance view of essential cost and schedule values

In the Project Statistics dialog box, you can see the plan's four total cost values: Current, Baseline, Actual, and Remaining.

- See or print reports that include cash flow, budget, cost overruns for both tasks and resources, and earned value.



Reports such as the Cost Overruns report present Project data in compelling layouts

- See task-level, resource-level, or assignment-level cost information by displaying the Cost table.

	Task Name	Fixed	Fixed Cost	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Sc	\$0.00	Prorated	\$75,877.25	\$74,554.75	\$1,322.50	\$9,900.00	\$65,977.25
1	Editorial staff mee	\$0.00	Prorated	\$1,732.25	\$1,732.25	\$0.00	\$0.00	\$1,732.25
15	Acquisition	\$0.00	Prorated	\$9,900.00	\$9,900.00	\$0.00	\$9,900.00	\$0.00
16	Manuscript rece	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	Content edit	\$0.00	Prorated	\$6,300.00	\$6,300.00	\$0.00	\$6,300.00	\$0.00
18	Author review c	\$0.00	Prorated	\$3,600.00	\$3,600.00	\$0.00	\$3,600.00	\$0.00
19	Handoff to Editi	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20	Editorial	\$0.00	Prorated	\$12,650.00	\$12,650.00	\$0.00	\$0.00	\$12,650.00
21	Organize manu:	\$0.00	Prorated	\$1,550.00	\$1,550.00	\$0.00	\$0.00	\$1,550.00
22	Copyedit	\$0.00	Prorated	\$8,100.00	\$8,100.00	\$0.00	\$0.00	\$8,100.00
23	Author review c	\$0.00	Prorated	\$900.00	\$900.00	\$0.00	\$0.00	\$900.00
24	Copyedit incorp	\$0.00	Prorated	\$2,100.00	\$2,100.00	\$0.00	\$0.00	\$2,100.00
25	Handoff to Proc	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
26	Design and Produc	\$0.00	Prorated	\$37,635.00	\$37,552.50	\$82.50	\$0.00	\$37,635.00
27	Set pages	\$0.00	Prorated	\$7,590.00	\$7,507.50	\$82.50	\$0.00	\$7,590.00
28	Interior illustrat	\$0.00	Prorated	\$13,050.00	\$13,050.00	\$0.00	\$0.00	\$13,050.00

Displaying the Cost table (shown here in the Task Sheet view) is a great way to see cost details

Here you can see many types of cost values for the overall plan (the total cost of the project summary task, which is task 0), project phases (summary tasks), and individual tasks.

- See cost details distributed over time in a usage view.

Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Details	Jul 1, '18						
							S	M	T	W	T	F	
26	Design and Produc	\$0.00	Prorated	\$37,635.00	\$37,552.50	\$82.50	Cost		\$344.00	\$1,376.00	\$1,376.00	\$1,376.00	\$1,376.00
27	Set pages	\$0.00	Prorated	\$7,590.00	\$7,507.50	\$82.50	Cost		\$126.50	\$506.00	\$506.00	\$506.00	\$506.00
	Jane Dow			\$7,590.00	\$7,507.50	\$82.50	Cost		\$126.50	\$506.00	\$506.00	\$506.00	\$506.00
28	Interior illustrat	\$0.00	Prorated	\$13,050.00	\$13,050.00	\$0.00	Cost		\$217.50	\$870.00	\$870.00	\$870.00	\$870.00
	Hany Morcc			\$4,650.00	\$4,650.00	\$0.00	Cost		\$77.50	\$310.00	\$310.00	\$310.00	\$310.00
	Luis Sousa			\$8,400.00	\$8,400.00	\$0.00	Cost		\$140.00	\$560.00	\$560.00	\$560.00	\$560.00
29	1st Pages review	\$0.00	Prorated	\$7,780.00	\$7,780.00	\$0.00	Cost						

Display the Cost table and Cost detail in the Task Usage view to see the most granular cost values

In addition to cost, the finish date is a critical (often the most critical) measure of a plan. A plan's finish date is a function of its duration and its start date. Most projects have a preferred finish date (also called a *soft* finish date), and many projects have a *must-hit* finish date (also called a *hard* finish date). When managing projects like these, it is essential that you know the plan's current or scheduled finish.

Project management focus: Finish date and critical tasks

In the language of project management, a project's finish date is determined by its critical path. The critical path is the series of tasks whose delay will push out the project's end date. For this reason, when evaluating the duration of a project, you should focus mainly on the tasks on the critical path, which are called *critical tasks*. Remember that the word *critical* has nothing to do with how important these tasks are to the overall project. The word refers only to how their scheduling will affect the project's finish date. If you need a refresher on critical paths, see [Chapter 10](#), "[Fine-tune task details](#)."

To see cost and finish date in the Project Statistics dialog box

1. On the **Project** tab, in the **Properties** group, click **Project Information**.
 2. In the **Project Information** dialog box, click **Statistics**.
-



Another way to open the Project Statistics dialog box is to click the File tab to open the Backstage view. On the Info page, click Project Information, and then click Project Statistics.

To display the Costs report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.

To display the Cost table in the Task Sheet view

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost** to display the Cost table.

To display cost distributed over time in the Task Usage or Resource Usage view

1. On the **Format** tab, in the **Details** group, click **Add Details**, and then select the cost values you want.

Inactivate tasks (Project Professional only)

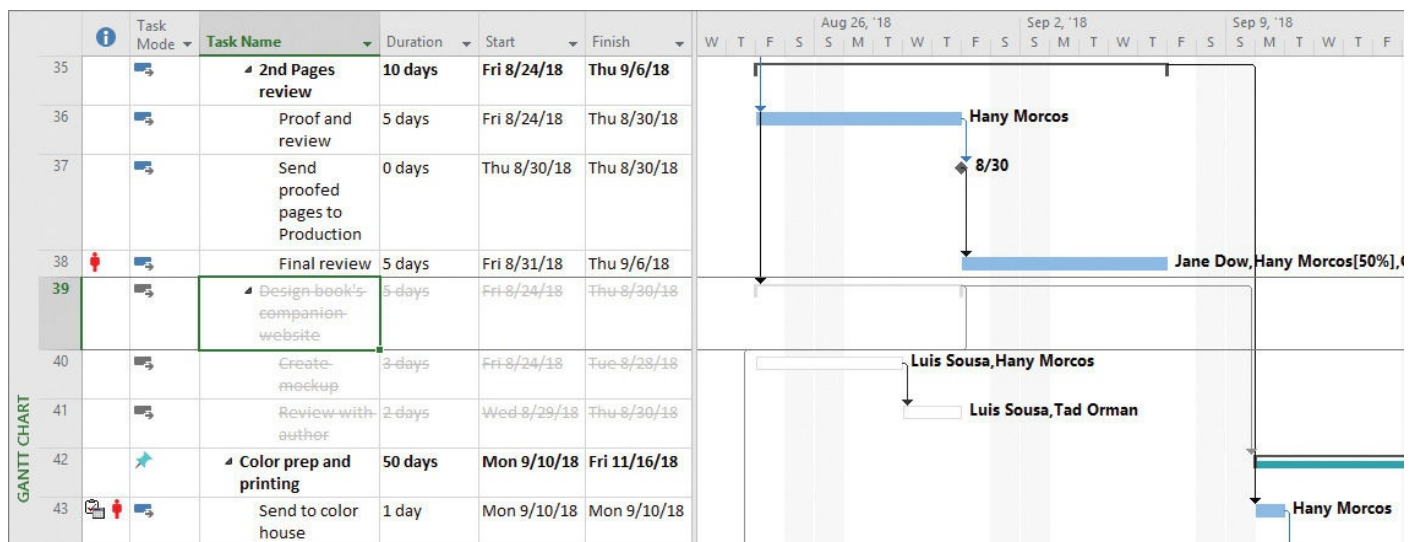


The ability to inactivate tasks is available only in Project Professional and not in Project Standard. If you have Project Standard, you can skip this section.

You can include tasks in a plan that you might later decide you don't want to have completed, but whose details you also don't want to lose by deleting them. You might, for example, develop tasks that pose "what-if" questions that you can't begin to answer until other preliminary questions get answered. Or you could design a plan that describes a likely case scenario for project completion but that also includes more optimistic and pessimistic sets of tasks.

In Project Professional, you can inactivate a single task or multiple tasks. Inactivating tasks can be preferable to deleting tasks, in that it keeps the task information in the plan but removes the scheduling effect of those tasks. A task that drives the start of a successor task, for example, remains visible when inactivated, but it has strikethrough formatting applied in the Gantt Chart and other views, and its link relationship is broken and its

successor is rescheduled.



Inactivated tasks are formatted as strikethrough text, and their Gantt bars appear as colorless outlines

If you later want to reactivate inactivated tasks, you can easily do so; Project restores them as active tasks with the same scheduling impact they previously had.



Tip

You can inactivate only tasks that have no progress recorded against them. You cannot inactivate completed tasks or tasks that have any progress recorded.

To inactivate tasks (Project Professional only)

1. Select the name of the task or tasks you want to inactivate. If you inactivate a summary task, all of its subtasks will be inactivated.
2. On the **Task** tab, in the **Schedule** group, click **Inactivate**. The original task information is still visible, but now it has no impact on the overall plan. Later, if you decide to include these tasks in the plan, you can reactivate them by clicking **Inactivate** again.

Skills review

In this chapter, you learned how to:

- [Examine resource allocations over time](#)
- [Resolve resource overallocations manually](#)
- [Level overallocated resources](#)
- [Check the plan's cost and finish date](#)
- [Inactivate tasks \(Project Professional only\)](#)



Practice tasks

The FineTunePlan practice file for these tasks is located in the Project2016SBS\Ch12 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Examine resource allocations over time

The scenario: At Lucerne Publishing, the new children’s book plan has been developed to the point that you’re ready to closely examine resource assignments and overallocation issues. You’ll begin with Carole Poland. Open the FineTunePlan plan in Project, and perform the following task:

1. Use the Resource Usage view to examine Carole Poland’s overallocation on Monday, April 23, 2018.

		Resource Name	Work	Add New Column	Details	F	S	S	M	T
		Unassigned	0 hrs		Work					
		Manuscript received	0 hrs		Work					
1		Carole Poland	213 hrs		Work	8h			9h	8h
		Editorial staff meeting 1	1 hr		Work					
		Editorial staff meeting 2	1 hr		Work				1h	
		Editorial staff meeting 3	1 hr		Work					
		Editorial staff meeting 4	1 hr		Work					
		Editorial staff meeting 5	1 hr		Work					
		Editorial staff meeting 6	1 hr		Work					
		Editorial staff meeting 7	1 hr		Work					
		Editorial staff meeting 8	1 hr		Work					
		Editorial staff meeting 9	1 hr		Work					
		Editorial staff meeting 10	1 hr		Work					
		Editorial staff meeting 11	1 hr		Work					
		Editorial staff meeting 12	1 hr		Work					
		Editorial staff meeting 13	1 hr		Work					
		Content edit	120 hrs		Work	8h			8h	8h
		Handoff to Editorial	0 hrs		Work					

Carole’s overallocation on Monday is not severe enough to require a change to the plan



Important

If you do not see any overallocated resources, verify in the Resource Leveling dialog box that Day By Day and Manual are selected (on the Resource tab, in the Level group, click Leveling Options to open the Resource Leveling dialog box). If you still don't see overallocated resources, click the Clear Leveling button in the Leveling Options dialog box. If all else fails, close and reopen the FineTunePlan practice file.

Resolve resource overallocations manually

The scenario: You see more resource overallocations in the new children's book plan. Unlike the minor overallocation for Carole Poland that you examined earlier, the more severe overallocations for Hany Morcos do require corrective action. Continuing in the FineTunePlan plan, perform the following tasks:

1. In the Resource Usage view, locate Hany Morcos's overallocations in the last week of August.
2. Edit Hany's assignment on the *Proof and Review* task from eight hours to four hours per day on August 24, 27, and 28.
3. Also edit Hany's assignment on the *Create mockup* task from eight hours to four hours per day on August 24, 27, and 28.

				Aug 26, '18						
				T	F	S	S	M	T	W
5		Resource Name	Work							
		Hany Morcos	369 hrs		8h			8h	8h	8h
		Editorial staff meeting 1	1 hr							
		Editorial staff meeting 2	1 hr							
		Editorial staff meeting 3	1 hr							
		Editorial staff meeting 4	1 hr							
		Editorial staff meeting 5	1 hr							
		Editorial staff meeting 6	1 hr							
		Editorial staff meeting 7	1 hr							
		Editorial staff meeting 8	1 hr							
		Editorial staff meeting 9	1 hr							
		Editorial staff meeting 10	1 hr							
		Editorial staff meeting 11	1 hr							
		Editorial staff meeting 12	1 hr							
		Editorial staff meeting 13	1 hr							
		Organize manuscript for c	40 hrs							
		Handoff to Production	0 hrs							
		Interior illustration design	120 hrs							
		Incorporate 1st Pages revi	40 hrs							
		Send proofed pages to Pra	0 hrs							
		Proof and review	28 hrs		4h			4h	4h	8h
		Send proofed pages to Pra	0 hrs							
		Final review	20 hrs							
		Create mockup	12 hrs		4h			4h	4h	
		Send to color house	8 hrs							
		Complete author question	40 hrs							

Now that this resource's assignments have been edited, the resource is no longer overallocated; she now has 8 hours of assigned work per day, whereas she previously had 16 hours of work per day

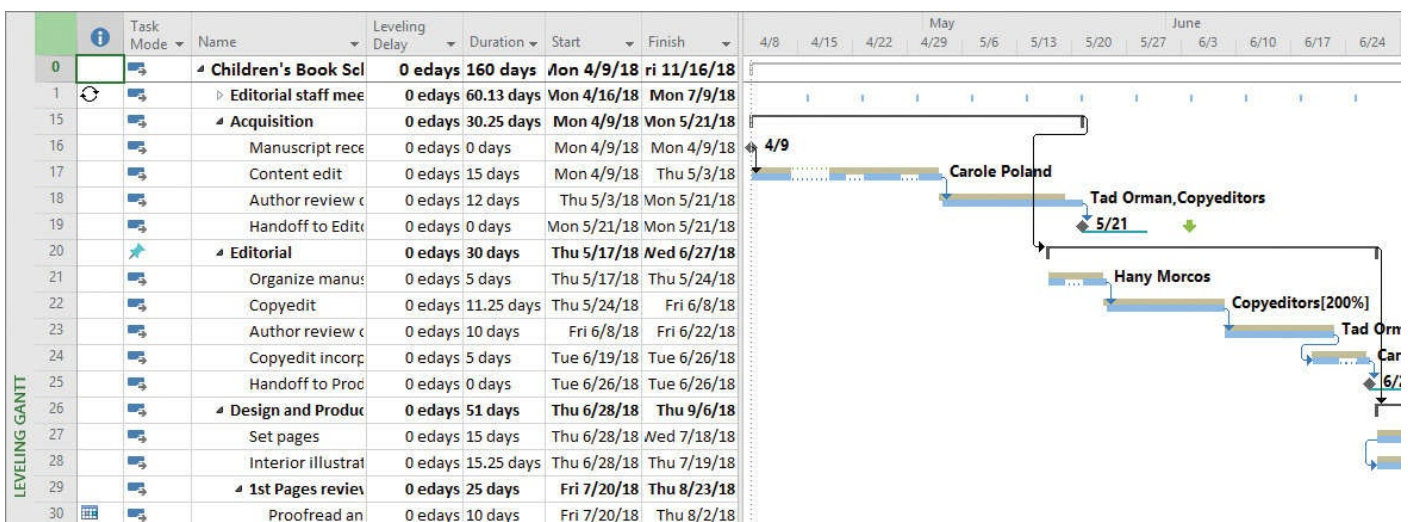
Level overallocated resources

The scenario: You've examined and manually resolved some resource overallocation issues in the new children's book plan. Now that you understand the basics of resource leveling, you're ready to use Project's resource-leveling feature. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the Leveling Gantt view. Use the default settings to level the plan.

Note the default settings in the Resource Leveling dialog box

2. In the Leveling Gantt view, examine the impact of leveling across the plan.



After leveling, note the before and after Gantt bars; in this case, Project introduced splits to assignments but did not need to add any leveling delays

Check the plan's cost and finish date

The scenario: You've fine-tuned important parts of the new children's book plan, including resource assignments, costs, and task durations. To see the plan's current cost and finish date values, you'll switch to a different view and then see summary values in the Project Information dialog box. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the **Cost** table in the Task Sheet view. Examine the plan's cost details there.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Scl	\$0.00	Prorated	73,575.25	\$0.00	\$73,575.25	\$0.00	73,575.25
1	Editorial staff mee	\$0.00	Prorated	\$1,732.25	\$0.00	\$1,732.25	\$0.00	\$1,732.25
15	Acquisition	\$0.00	Prorated	\$9,900.00	\$0.00	\$9,900.00	\$0.00	\$9,900.00
16	Manuscript rece	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	Content edit	\$0.00	Prorated	\$6,300.00	\$0.00	\$6,300.00	\$0.00	\$6,300.00
18	Author review c	\$0.00	Prorated	\$3,600.00	\$0.00	\$3,600.00	\$0.00	\$3,600.00
19	Handoff to Editc	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20	Editorial	\$0.00	Prorated	\$12,650.00	\$0.00	\$12,650.00	\$0.00	\$12,650.00
21	Organize manus	\$0.00	Prorated	\$1,550.00	\$0.00	\$1,550.00	\$0.00	\$1,550.00
22	Copyedit	\$0.00	Prorated	\$8,100.00	\$0.00	\$8,100.00	\$0.00	\$8,100.00
23	Author review c	\$0.00	Prorated	\$900.00	\$0.00	\$900.00	\$0.00	\$900.00
24	Copyedit incorp	\$0.00	Prorated	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00
25	Handoff to Prod	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
26	Design and Produc	\$0.00	Prorated	\$36,573.00	\$0.00	\$36,573.00	\$0.00	\$36,573.00
27	Set pages	\$0.00	Prorated	\$7,458.00	\$0.00	\$7,458.00	\$0.00	\$7,458.00
28	Interior illustrat	\$0.00	Prorated	\$13,050.00	\$0.00	\$13,050.00	\$0.00	\$13,050.00
29	1st Pages review	\$0.00	Prorated	\$7,780.00	\$0.00	\$7,780.00	\$0.00	\$7,780.00
30	Proofread an	\$0.00	Prorated	\$900.00	\$0.00	\$900.00	\$0.00	\$900.00

At this point in the project life cycle, the plan does not yet include a baseline; therefore, the Baseline column contains only zero values—similarly, the plan does not yet contain any actual progress, so the Actual column contains only zero values

2. Check the plan's finish date and other summary values in the **Project Statistics** dialog box.

	Start	Finish
Current	Mon 4/9/18	Fri 11/16/18
Baseline	NA	NA
Actual	NA	NA
Variance	0d	0d

	Duration	Work	Cost
Current	160d	1,951h	\$73,575.25
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	160d	1,951h	\$73,575.25

Percent complete:
 Duration: 0% Work: 0%

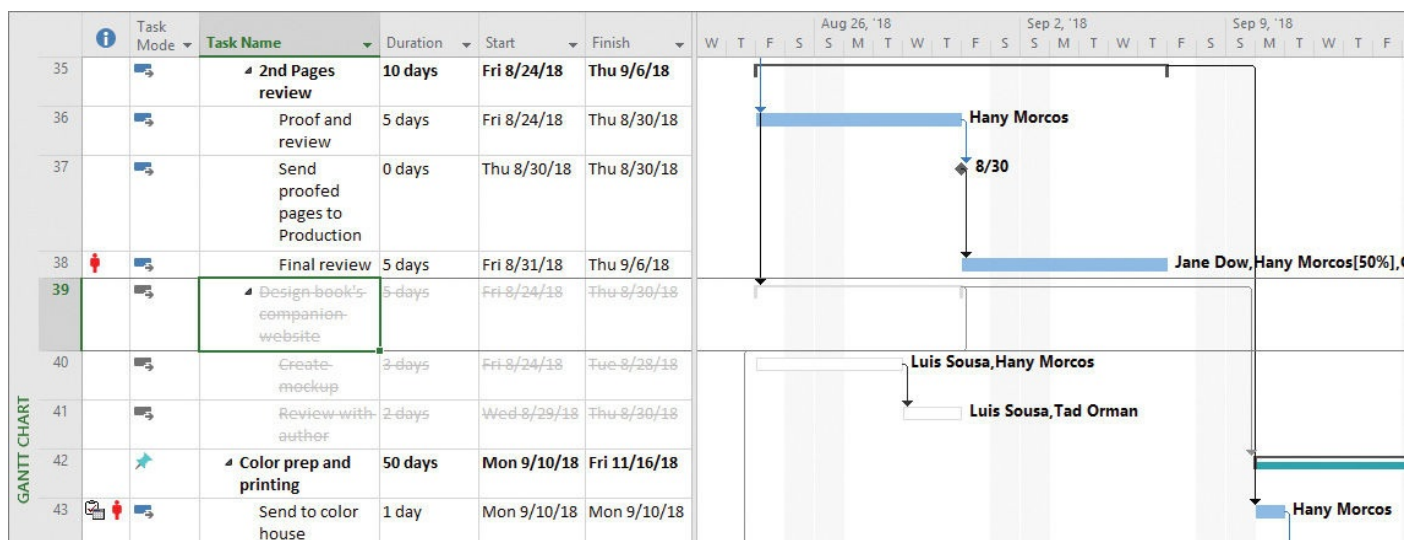
Close

The Project Statistics dialog box is a great place to get an at-a-glance view of key measures of the plan

Inactivate tasks (Project Professional only)

The scenario: You've shared the current cost and schedule details of the new children's book plan with the publisher. She has asked you to identify some activities that could be cut to reduce costs without risking the essential deliverables of the plan. You've identified the activities that could be cut, and to see the result of cutting them while keeping the opportunity to easily restore them, you'll inactivate the tasks in question. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the Gantt Chart view and locate summary task 39.
2. Inactivate task 39. This will also inactivate its subtasks.



Note the strikethrough formatting applied to the names of inactivated tasks, and their Gantt bar formatting

3. Review the impact of inactivating this task on the plan's overall cost and duration.

Project Statistics for 'AdvancedPlan'			
	Start		Finish
Current	Mon 4/9/18		Fri 11/16/18
Baseline	NA		NA
Actual	NA		NA
Variance	0d		0d
	Duration	Work	Cost
Current	160d	1,883h	\$70,310.25
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	160d	1,883h	\$70,310.25
Percent complete:			
Duration: 0%		Work: 0%	
			Close

Inactivating the summary task and its subtasks affected the plan's work and cost, but not its finish date

13. Organize plan details

In this chapter

- [Sort plan details](#)
 - [Group plan details](#)
 - [Filter plan details](#)
 - [Create new tables](#)
 - [Create new views](#)
-

Practice files

For this chapter, use the OrganizeDetails practice file from the Project2016SBS\Ch13 folder. For practice file download instructions, see the introduction.

After you build a plan in Project, you will likely need to examine specific aspects of the plan for your own analysis or to share with other stakeholders. Although the built-in views, tables, and reports in Project 2016 provide many ways to examine a plan, you might need to organize information to suit your own specific needs.

In this chapter, you use some of the tools in Project to control what data appears and how it is organized. Project includes many features that you can use to organize and analyze data that otherwise would require separate tools, such as a spreadsheet program.

This chapter guides you through procedures related to sorting, grouping, and filtering plan details; creating new tables; and creating new views.

Sort plan details

Sorting is a simple way to reorganize tasks or resources in Project. When you're working in a view that includes a table, simple sorting by a single column is available in the table.

You can quickly sort a table by clicking the AutoFilter arrow

The screenshot shows a table with columns: Resource Name, Group, Max., Peak, Std. Rate, Ovt., Cost, Work, and Add New Column. The 'Cost' column is highlighted in green, and its AutoFilter menu is open, showing options to sort smallest to largest, largest to smallest, and a list of filters. The 'Work' column shows values in hours and copies.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
1	Carole Poland	Editorial	100%	100%	\$2			213 hrs	
2	Color Setting Services	Production	200%	100%				80 hrs	
3	Copyeditors	Editorial	200%	200%				300 hrs	
4	Dan Jump	Design	50%	100%				94.5 hrs	
5	Hany Morcos	Editorial	100%	200%				401 hrs	
6	Jane Dow	Editorial	100%	100%				240 hrs	
7	Jun Cao	Editorial	100%	100%				13 hrs	
8	Luis Sousa	Design	100%	100%				200 hrs	
9	Printing Service	Production	100%	100%				240 hrs	
10	Tad Orman	Other	100%	100%				296 hrs	
11	Travel	Other		0%					
12	Advance proofs	Production		0 copies/day				20 copies	

Quickly sort any table by using the sort options on the AutoFilter menu, which you display by clicking the arrow next to a column heading

For more sophisticated, multicolumn sorting, you can sort tasks or resources by built-in criteria. You can even create your own sort order with up to three levels of nesting. For example, you can sort resources by resource group (which is the value in the [Group field](#)) and then by cost within each resource group. You do so via the Sort dialog box.

The Sort dialog box has three sections for 'Sort by', 'Then by', and 'Then by'. The first section is set to 'Group' with 'Ascending' selected. The second section is set to 'Cost' with 'Descending' selected. The third section is empty with 'Ascending' selected. There are checkboxes for 'Permanently renumber resources' (unchecked) and 'Sort resources by project' (checked). Buttons for 'Sort', 'Cancel', 'Reset', and 'Help' are on the right.

The resource-specific Sort dialog box is shown; the task-specific version differs slightly

You can sort tasks or resources by any field, not just the fields that are visible in the active view. However, it's helpful to see the field by which you sort.

When you sort data, the sort order applies to the active view regardless of the specific table currently displayed in the view. For example, if you sort the Gantt Chart view by start date while displaying the Entry table and then switch to the Cost table, you'll see the tasks sorted by start date in the Cost table. You can also sort in most views that do not

include a table, such as the Resource Graph view.

Like grouping and filtering, which you will work with later in this chapter, sorting does not (with one exception) change the underlying data of your plan; it simply reorders the data you have in the active view. The one exception is the option that Project offers to renumber task or resource IDs after sorting.

It's fine to renumber tasks or resources permanently if that's what you intend to do. For example, when building a resource list, you might enter resource names in the order in which the resources join your project. Later, when the list is complete, you might want to sort them alphabetically by name and permanently renumber them.



Important

The Sort dialog box includes a Permanently Renumber Tasks (when in a task-centric view) or Permanently Renumber Resources (when in a resource-centric view) check box. This check box is a Project-level (that is, program) setting; if selected, it permanently renumbers tasks or resources in any plan in which you sort. Because you might not want to renumber tasks or resources permanently every time you sort, it's a good idea to keep this check box cleared.

When you do not permanently renumber items when sorting them, the reordered ID numbers give you a visual indication that a task or resource view has been sorted. If you see that a sort has been applied but you don't know which one, you can look in the Sort By dialog box. You cannot save custom sort settings that you have specified, as you can with grouping and filtering settings (described later in this chapter). However, the sort order that you most recently specified will remain in effect until you re-sort the view. To get your tasks or resources back to their prior order, just click Reset in the Sort dialog box, or resort by ID number.

A handy way to sort resources is by resource group. You can assign a resource to one of several resource groups. Resource groups are flexible. You might use resource groups to represent functional teams, departments, employment status, or whatever most logically describes collections of similar resources. Sorting by the Group field is a handy way to sort resources—assuming you enter data in the Group field.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs
11	Travel	Other		0%			\$3,500.00	
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs
12	Advance proofs	Production		0 copies/day	\$15.00		\$300.00	20 copies
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs

This example shows departments as one example of useful Group field data

You can combine sorting by resource group and then sorting by other criteria within each group. For example, you can sort resources by group and then within each group by cost, from most to least expensive. This can help you plan your project's budget.

To sort tasks or resources by using column headings

1. Display a task-centric or resource-centric view that includes a table. Examples include the Gantt Chart or Resource Sheet view.
2. If necessary, on the **View** tab, in the **Data** group, click **Tables**, and select the table that contains the value by which you want to sort.



Tip

You can identify the active table by pointing to the Select All button in the upper-left corner of the active table. You also can right-click the Select All button to switch to a different table.

3. Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you want to sort the tasks or resources, and then click the sorting criterion you want.



Important

If you do not see an arrow to the right of each column heading, on the View tab, in the Data group, click in the Filter box, and then click Display AutoFilter.

To sort tasks or resources by one or more criteria

1. Display the view you want to sort.

2. On the **View** tab, in the **Data** group, click **Sort**, and then do either of the following to open the Sort dialog box:

- Click the sort criterion you want.
- Click **Sort By** to create your own sort criteria.

In the Sort dialog box, you can apply up to three nested levels of sort criteria.

3. In the **Sort By** field, click the top level of sorting criteria you want.



When selecting items from a list like this, you can often begin typing the name of the item you want, and when its full name appears, select it.

4. Do either of the following:

- To sort lowest to highest, click **Ascending**.
- To sort highest to lowest, click **Descending**.

5. In the first **Then By** field, click the second sorting criterion you want, and then click **Ascending** or **Descending**.

6. If you want to apply a third sort criterion, select it in the second **Then By** field and click **Ascending** or **Descending**.

7. Click **Sort**.

To reset a sorted list

1. On the **View** tab, in the **Data** group, click **Sort**, and then click **Sort By**.

2. Click **Reset**. Project sorts the view by the ID field.

3. Click **Sort**.

Group plan details

As you develop a plan, you can use the views available in Project to view and analyze your data in several ways. One important way to see the data in task and resource views is by grouping. Grouping allows you to organize task or resource information (or, when in a usage view, assignment information) according to criteria you choose. For example, rather than viewing the resource list in the Resource Sheet view sorted by ID, you can view resources sorted by cost. Grouping goes a step beyond just sorting, however. Grouping adds summary values, or *roll-ups*, at intervals that you can customize. Not all views support grouping; the Calendar view, for example, does not.

Let's walk through an example. Consider a Resource Sheet view in which the resources are grouped by their Group values (in this case, departments within an organization). All quantified values in the table, such as Cost and Work, are summed per Group.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work
	Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs
	Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs
	Group: Other	Other	100%	100%			\$3,500.00	296 hrs
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs
11	Travel	Other		0%			\$3,500.00	
	Group: Production	Production	300%	200%			\$300.00	320 hrs
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs
12	Advance proofs	Production		0 copies/day	\$15.00		\$300.00	20 copies

This resource list is grouped by the Group field to show who's in what department

In this view, it's easy to see what each department costs. To fine-tune the view, we can create a custom group that applies a two-level grouping: first by Group (in this case, department), and then by Cost, with \$1,000 cost intervals.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work
	Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs
	Cost: \$14,000.00 - <\$15,000.00	Design	100%	100%			\$14,000.00	200 hrs
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs
	Cost: \$7,000.00 - <\$8,000.00	Design	50%	100%			\$7,134.75	94.5 hrs
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs
	Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs
	Cost: \$15,000.00 - <\$16,000.00	Editorial	200%	300%			\$30,927.50	641 hrs
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs
	Cost: \$13,000.00 - <\$14,000.00	Editorial	200%	200%			\$13,500.00	300 hrs
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs
	Cost: \$11,000.00 - <\$12,000.00	Editorial	100%	100%			\$11,182.50	213 hrs
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs
	Cost: \$0.00 - <\$1,000.00	Editorial	100%	100%			\$546.00	13 hrs
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs
	Group: Other	Other	100%	100%			\$3,500.00	296 hrs
	Cost: \$3,000.00 - <\$4,000.00	Other		0%			\$3,500.00	
11	Travel	Other		0%			\$3,500.00	
	Cost: \$0.00 - <\$1,000.00	Other	100%	100%			\$0.00	296 hrs
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs
	Group: Production	Production	300%	200%			\$300.00	320 hrs
	Cost: \$0.00 - <\$1,000.00	Production	300%	200%			\$300.00	320 hrs
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs
12	Advance proofs	Production		0 copies/day	\$15.00		\$300.00	20 copies

With a two-level grouping applied, you can easily see total cost per department, and the per-resource costs per department, separated into cost increments

Project applies color formatting to the summary data rows. Because the summary data is derived from subordinate data, you cannot edit it directly. Displaying these summary

values has no effect on the cost or schedule calculations of the plan.

Grouping changes the way that you view your task or resource data, allowing for a more refined level of data analysis and presentation. Grouping doesn't change the underlying structure of your plan; it simply reorganizes and summarizes the data. As with sorting, when you group data in a view, the grouping applies to all tables that you can display in the view. You can also group the Network Diagram view, which does not contain a table.

As with sorting, you can quickly group most task or resource data via the column heading menu. To quickly group data by a single column, look for a Group By or Group On command in the column heading menu. Some fields, such as the Duration and Start fields, offer built-in Group By criteria.

You can also customize any of the built-in groups or create your own. An easy way to create your own group is to copy and then customize one of the built-in task or resource groups in the More Groups dialog box (available on the View tab, from the Group By box).

By default, all new custom groups you create are available for all other plans you work with in Project.



You can prevent a custom group from becoming available in other plans that you might work with that are unrelated to this book. To do so, click the File tab, click Options to open the Project Options dialog box, display the Advanced page of the dialog box, and under Display, clear the Automatically Add New Views, Tables, Filters, And Groups To The Global check box.

All built-in groups and any groups you create are available to you through the Group By box on the View tab. The name of the active group appears in the box. Click the arrow on the Group By box to see other group names. If no group is applied to the current table, the words *No Group* appear in the box.

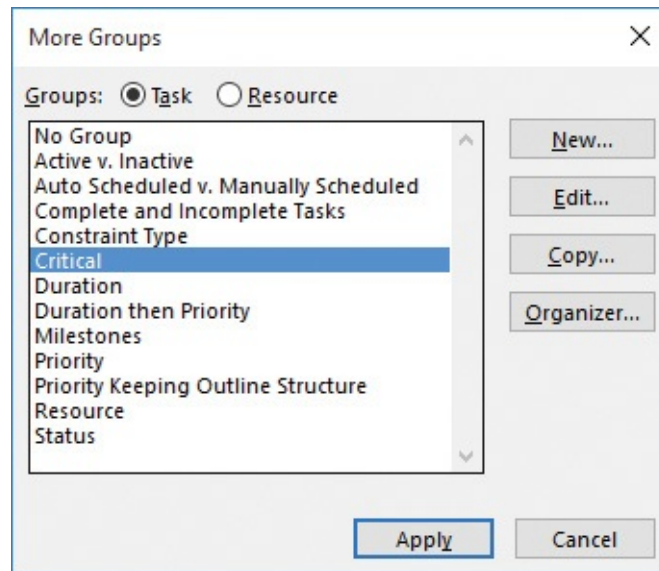
To group tasks or resources by using column headings

1. Display the view and table that contains the column on which you want to group.
2. Click the arrow to the right of the column heading on which you want to group, and then click the grouping criterion you want.

Project reorganizes the task or resource data into groups, adds summary values per group, and presents the data in an expanded outline form.

To edit or create a custom group

1. Display the view you want to group.
2. On the **View** tab, in the **Data** group, click the arrow next to the **Group By** box, and then click **More Groups** to open the More Groups dialog box.



In the More Groups dialog box, you can see all of the available groups for tasks (when in a task-centric view) or resources (when in a resource-centric view)

3. Do one of the following:

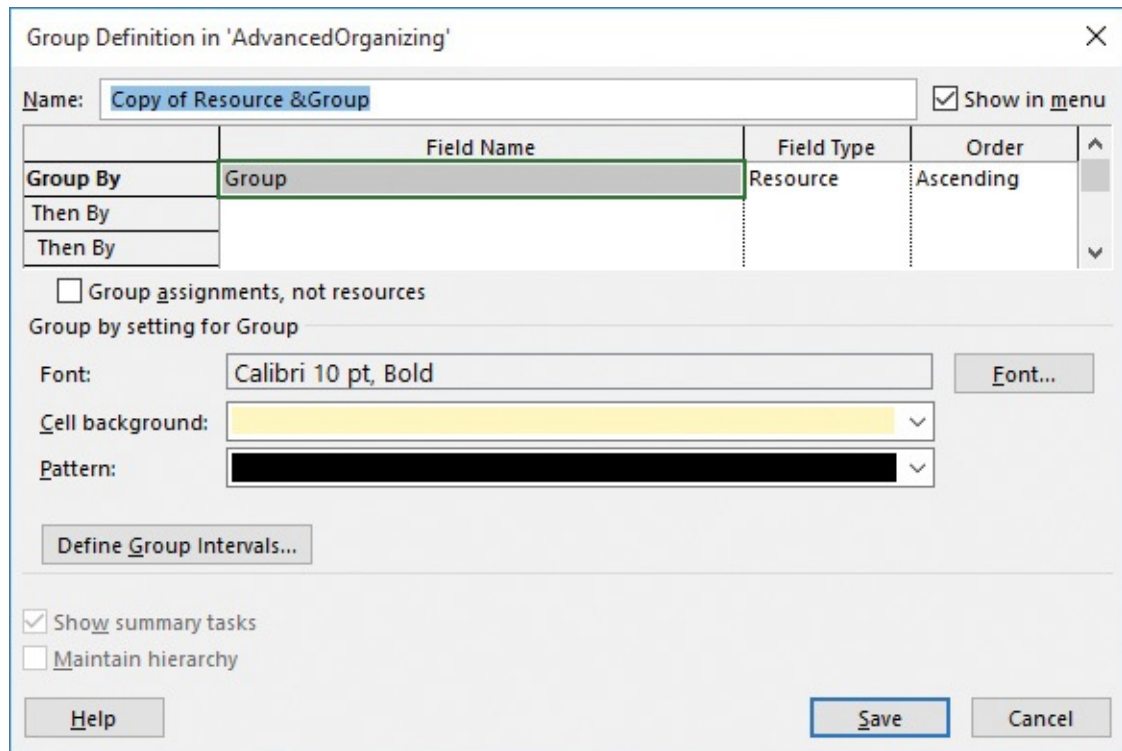
- Click **New** to create a new group from scratch.
- Select an existing group, and then click **Edit** to edit the group.
- Select an existing group, and then click **Copy** to create a new group based on an existing group.



Tip

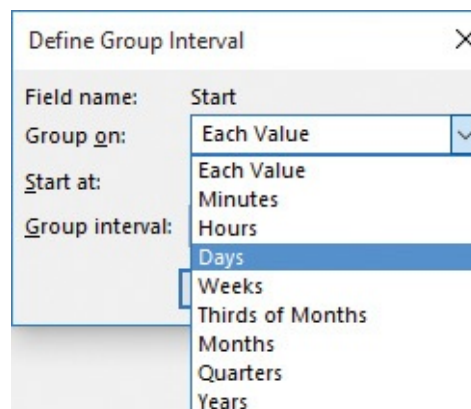
To keep the built-in groups intact, you can copy an existing group and then edit the copy.

In all cases, the Group Definition dialog box opens.



Enter grouping criteria in the Group Definition dialog box

4. If you clicked New or Copy in step 3, name the group.
5. Enter the grouping criteria, intervals, and other options you want. Some settings need further explanation:
 - Use the Group Assignments, Not Tasks (or Group Assignments, Not Resources) check box when you are working with a group that applies to usage views.
 - Click Define Group Intervals to open a dialog box in which you can specify how Project will present values within a group. The button is active only when certain types of fields are selected in the Field Name column. The available interval values vary depending on the type of field selected. A Start field's interval values, for example, are Minutes, Hours, Days, and so on.



The type of interval you can set depends on the type of field to which the interval applies

6. To apply your changes in the Group Definition dialog box, click **Save**.

To group tasks or resources by using built-in or custom groups

1. Switch to the view you want to group. The grouping criteria you want need not be visible in the view, but you must be in a task-centric view to group tasks or a resource-centric view to group resources.
2. On the **View** tab, in the **Data** group, click the **Group By** arrow to display a list (the box initially contains *[No Group]*), and then do either of the following:
 - Click the grouping criterion you want.
 - If the grouping criterion you want is not listed, click **More Groups**, select the grouping, and then click **Apply**.

To clear grouping of tasks or resources

1. Do either of the following:
 - On the **View** tab, in the **Data** group, click the **Group By** arrow to display a list, and then click **Clear Group**.
 - Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you have grouped tasks or resources, and then click **No Group**.

Filter plan details

Another useful way to change how you view Project task and resource information is by filtering. As the name suggests, filtering hides task or resource data that does not meet the criteria you specify, displaying only the data in which you're interested. Like grouping, filtering does not change the underlying data in your plan; it merely changes what data is displayed.

There are two ways to use filters. You can either apply an AutoFilter from a column heading in a table or you can apply a built-in or custom filter to a view.

Use AutoFilters for ad hoc filtering in any table in Project. Small arrows appear next to the names of column headings; the same arrow is used for sorting, grouping, and filtering. Click the arrow to display a list of criteria by which you can filter the data. Which criteria you see depends on the type of data contained in the column—for example, AutoFilter criteria in a date column include choices such as *Today* and *This Month*, in addition to a *Custom* option, with which you can specify your own criteria. After applying an initial filter, you can then filter the results based on another criterion. You use AutoFilters in Project in the same way you might use AutoFilters in Microsoft Excel.

When you apply an AutoFilter, a funnel-shaped filter indicator appears next to the column label, and an *AutoFilter Applied* message appears on the status bar. Pointing to the AutoFilter Applied message on the status bar displays a ScreenTip that tells you the fields that have been filtered.

This is a visual indicator that an AutoFilter has been applied to this column

	Task Mode	Task Name	Duration	Start	Finish	F	S
0		Children's Book Schedule	158.63 days	Mon 4/9/18	Thu 11/15/18		
15		Acquisition	30.25 days	Mon 4/9/18	Mon 5/21/18		
16		Manuscript received	0 days	Mon 4/9/18	Mon 4/9/18		
19		Handoff to Editorial	0 days	Mon 5/21/18	Mon 5/21/18		
20		Editorial	29.13 days	Mon 5/21/18	Fri 6/29/18		
25		Handoff to Production	0 days	Fri 6/29/18	Fri 6/29/18		
26		Design and Production	53.25 days	Fri 6/29/18	Wed 9/12/18		
29		1st Pages review	25 days	Fri 7/20/18	Fri 8/24/18		
32		Send proofed pages to Production	0 days	Fri 8/10/18	Fri 8/10/18		
35		2nd Pages review	13 days	Fri 8/24/18	Wed 9/12/18		
37		Send proofed pages to Production	0 days	Tue 9/4/18	Tue 9/4/18		

AutoFilters are applied to these columns: Duration.

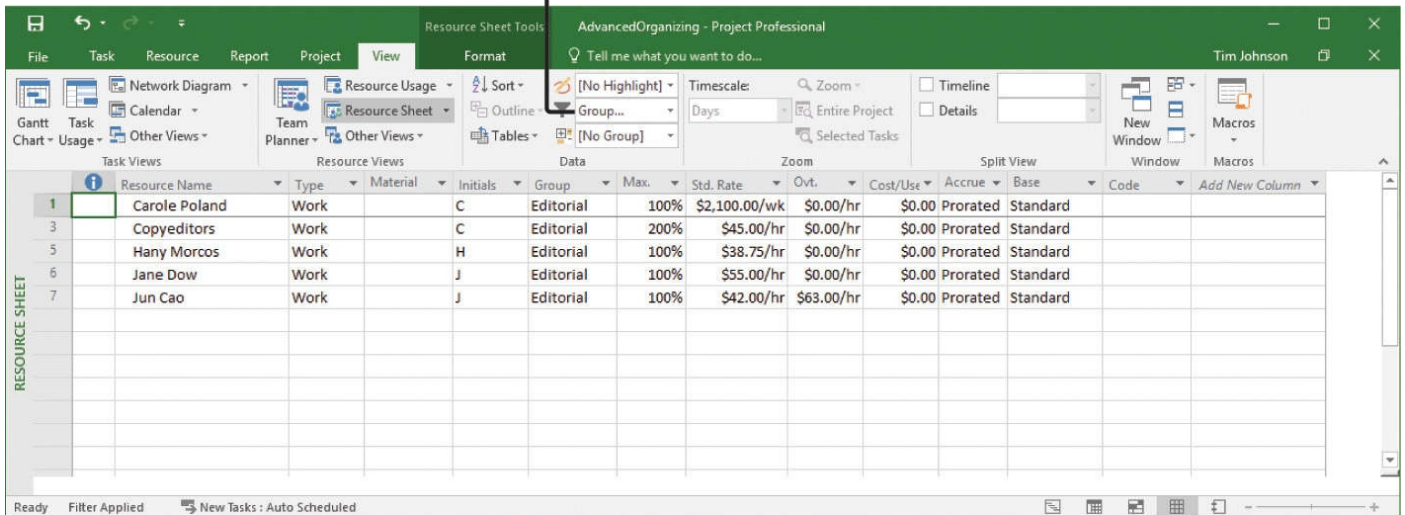
Ready AutoFilter Applied New Tasks : Auto Scheduled

The status bar indicates when an AutoFilter is applied. Pointing to the AutoFilter Applied label tells you the fields that have been filtered.

These visual indicators appear when an AutoFilter has been applied

In addition to AutoFilters that you can apply on any visible column, Project includes several built-in filters. These are listed in the Filter box (on the View tab). When you apply a built-in filter, its name appears in the Filter box and the status bar indicates that a filter is applied.

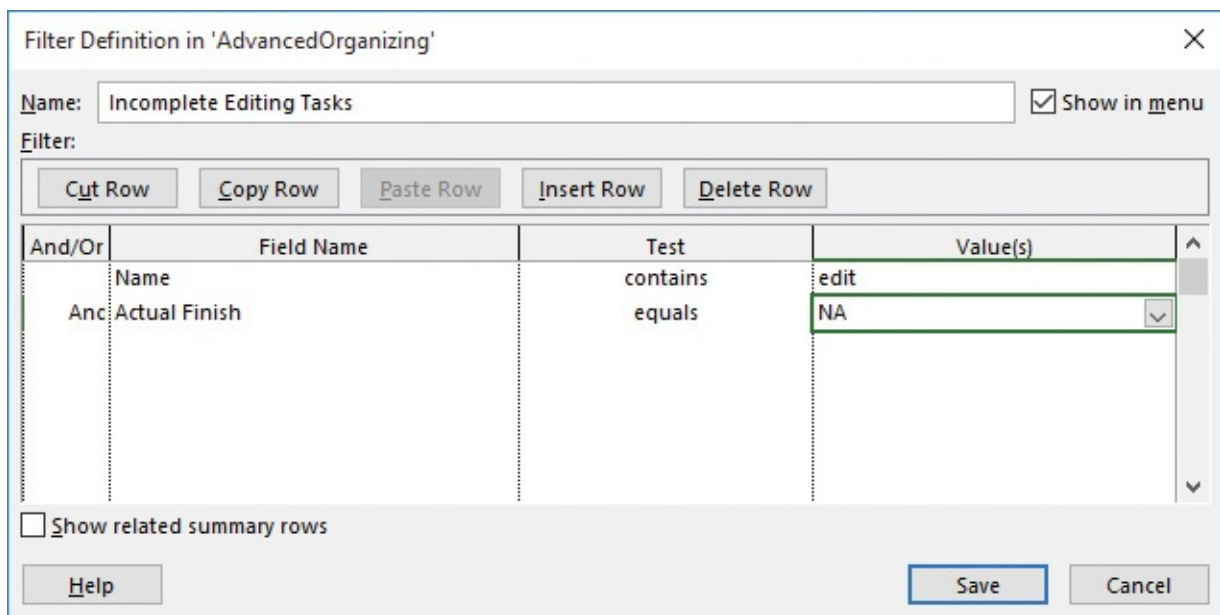
The name of the applied filter appears here



The status bar indicates that a filter is applied

You can apply a built-in filter, even when the filter criteria are not visible in the active view

If the AutoFilters or built-in filters don't meet your needs, you can create custom filters. You do so in the Filter Definition dialog box.



In the Filter Definition dialog box, an NA value means “not applicable” and is the way that Project marks some fields that do not yet have a value; in this example, any editing task that does not have an actual finish date must be uncompleted

All filters hide rows in task or resource sheet views that do not meet the criteria you specify. You might see gaps in the task or resource ID numbers. The “missing” data is only hidden and not deleted. As with sorting and grouping, when you filter data in a view, the filtering applies to all tables you can display in the view. Views that do not include tables, such as the Calendar and Network Diagram views, also support built-in and custom filters (through the Filter box on the View tab), but not AutoFilters.

A similar feature is *highlighting*. Whereas applying a filter hides information that does not

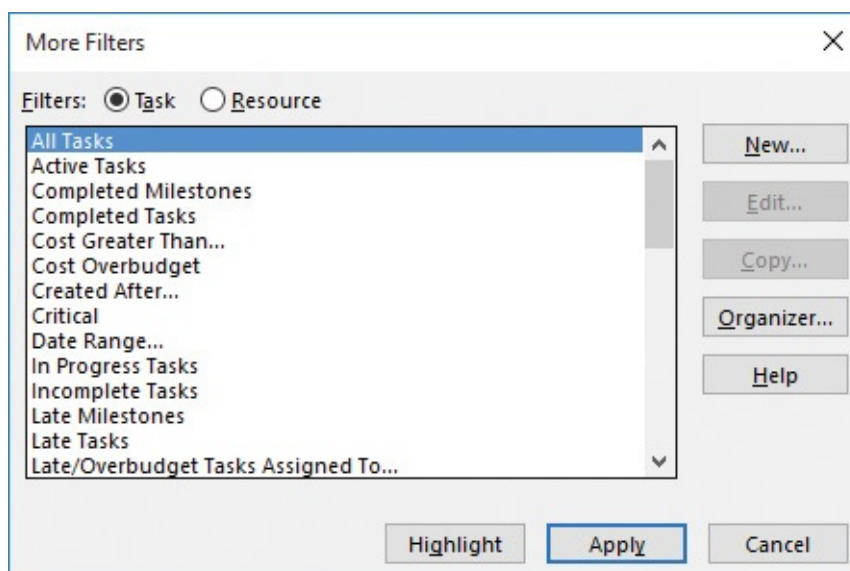
meet your criteria, applying a highlight applies a yellow format to information that does meet your criteria. Otherwise, the two features are nearly identical—you can apply built-in highlights or create custom highlights, just as with filters. When a highlight is applied, the *Highlight Filter Applied* message appears on the status bar.

To filter tasks or resources by using column headings

1. Display a task-centric or resource-centric view that includes a table. Good examples include the Gantt Chart or Resource Sheet view.
2. If necessary, switch to the table that contains the value by which you want to sort: on the **View** tab, in the **Data** group, click **Tables**, and then select the table you want.
3. Click the arrow to the right of the column heading on which you want to filter.
4. In the menu that appears, do one of the following:
 - Click **Select All** to clear all of the values listed, and then select just the values you want displayed.
 - Click **Filters** (if available; this depends on the field type), and then apply a filter or create a custom AutoFilter.

To edit or create a filter

1. Display the view you want to filter.
2. On the **View** tab, in the **Data** group, click the **Filter** arrow, and then click **More Filters** to open the More Filters dialog box.



In the More Filters dialog box, you can see all of the available filters for tasks (when in a task-centric view) or resources (when in a resource-centric view)

3. Do one of the following:
 - Click **New** to create a new filter from scratch.
 - Select an existing filter, and then click **Edit** to edit it.
 - Select an existing filter, and then click **Copy** to create a new filter based on the existing filter.



Tip

To keep the built-in filters intact, you can copy an existing filter and edit the copy.

In all cases, the Filter Definition dialog box opens.

The screenshot shows the 'Filter Definition in 'AdvancedOrganizing'' dialog box. The 'Name' field contains 'Copy of I&ncomplete Tasks' and the 'Show in menu' checkbox is checked. Below the name field are buttons for 'Cut Row', 'Copy Row', 'Paste Row', 'Insert Row', and 'Delete Row'. The main area is a table with columns: 'And/Or', 'Field Name', 'Test', and 'Value(s)'. The table contains three rows: 1. 'And/Or' is empty, 'Field Name' is '% Complete', 'Test' is 'does not equal', and 'Value(s)' is '100%'. 2. 'And/Or' is 'Or', 'Field Name' is '% Work Complete', 'Test' is 'does not equal', and 'Value(s)' is '100%'. 3. 'And/Or' is 'And', 'Field Name' is 'Assignment', 'Test' is 'equals', and 'Value(s)' is 'Yes'. At the bottom, the 'Show related summary rows' checkbox is checked, and there are 'Help', 'Save', and 'Cancel' buttons.

And/Or	Field Name	Test	Value(s)
	% Complete	does not equal	100%
Or	% Work Complete	does not equal	100%
And	Assignment	equals	Yes

You can create filters that use And/Or criteria; in this example, the filter will show tasks that are not 100% complete (whether the tasks have assigned resources or not), or tasks that are both less than 100% work complete and assigned to a resource

4. If you clicked **New** or **Copy** in step 3, name the filter.
5. Enter the filter criteria you want. If you want the resulting filter to display the summary rows of the tasks that the filter will display, select the **Show related summary rows** check box.
6. Click **Save**.

To filter tasks or resources by using a built-in or custom filter

1. Display the view you want to filter. The filter criterion you want does not need to be visible in the view, but you must be in a task-centric view to filter tasks or a resource-centric view to filter resources.
2. On the **View** tab, in the **Data** group, click the **Filter** arrow (the box initially contains *[No Filter]*), and then do either of the following:
 - Click the filter criterion you want.
 - If the filter criterion you want is not listed, click **More Filters**, select the filter you want, and then click **Apply** to filter the view.

To highlight tasks or resources by using built-in or custom highlight filters

Highlight filters are similar to regular filters. Rather than hiding details that don't meet the filter criteria, highlight filters apply a yellow highlight to the details that do,

and leave the other details visible.

1. Display the view you want to highlight.
2. On the **View** tab, in the **Data** group, click the **Highlight** arrow (the box initially contains *[No Highlight]*), and then do either of the following:
 - Click the highlight criterion you want.
 - If the highlight filter criterion you want is not listed, click **More Highlights**, select the highlight filter you want, and then click **Highlight** to highlight the view.

To clear the filtering or highlighting of tasks or resources

















1. Do any of the following:
 - On the **View** tab, in the **Data** group, click the **Filter** arrow, and then click **Clear Filter**.
 - On the **View** tab, in the **Data** group, click the **Highlight** arrow, and then click **Clear Highlight**.
 - Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you have filtered tasks or resources, and then click **Clear Filter** to turn it off.

Create new tables

By now you've done a lot of work in tables. A table is a spreadsheet-like presentation of project data organized into vertical columns and horizontal rows. Each column represents one of the many fields in Project, and each row represents a single task or resource (or, in usage views, an assignment). The intersection of a column and a row can be called a *cell* (if you're oriented toward spreadsheets) or a *field* (if you think in database terms).

A good example of a table is the Entry table in the Task Sheet view.

Point to the Select All button to identify the active table.
Right-click the button to switch to a different table.

	 Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
0		Children's Book Sc	158.63 days	Mon 4/9/18	Thu 11/15/18			
1		Editorial staff mee	60.13 days	Mon 4/16/18	Mon 7/9/18			
15		Acquisition	30.25 days	Mon 4/9/18	Mon 5/21/18			
16		Manuscript rece	0 days	Mon 4/9/18	Mon 4/9/18			
17		Content edit	15 days	Mon 4/9/18	Thu 5/3/18	16	Carole Poland	
18		Author review c	12 days	Thu 5/3/18	Mon 5/21/18	17	Tad Orman,Copy	
19		Handoff to Editr	0 days	Mon 5/21/18	Mon 5/21/18	18	Carole Poland	
20		Editorial	29.13 days	Mon 5/21/18	Fri 6/29/18	15		
21		Organize manus	5.13 days	Mon 5/21/18	Mon 5/28/18		Hany Morcos, Da	
22		Copyedit	11.25 days	Mon 5/28/18	Tue 6/12/18	21	Copyeditors[200	
23		Author review c	10 days	Tue 6/12/18	Tue 6/26/18	22	Tad Orman,Copy	
24		Copyedit incorp	5.13 days	Fri 6/22/18	Fri 6/29/18	23FS-25%	Carole Poland,D	
25		Handoff to Proc	0 days	Fri 6/29/18	Fri 6/29/18	24	Hany Morcos	
26		Design and Produc	53.25 days	Fri 6/29/18	Wed 9/12/18	20		
27		Set pages	15 days	Fri 6/29/18	Fri 7/20/18		Jane Dow	

Each table in Project is optimized for showing certain data

Project includes several tables that can be applied in views. You've already seen some of these tables, such as the Entry and Summary tables. It's likely that most of the time, Project's built-in tables will contain the fields that you want. However, you can modify any built-in table, or you can create a new table that contains just the data you want.



If all you need is to add a column to the current table, you might not need to create a new table. You can add or remove columns quickly in a table (see the instructions in the procedures at the end of this topic).

Create custom fields quickly

Project supports a wide range of custom fields, and you can add a custom field to any table easily. The rightmost column in a table is labeled *Add New Column*, and you can either click the column heading and select the field you want to add, or you can simply start entering text in a cell in the *Add New Column* column. When you enter text in a new column, Project detects the type of data you're entering and applies the correct custom field type. For example, if you enter a date value, Project uses one of the custom date fields, such as Date1. If you want, you can later retitle that field to be more meaningful to you.

The custom fields supported by Project include the following:

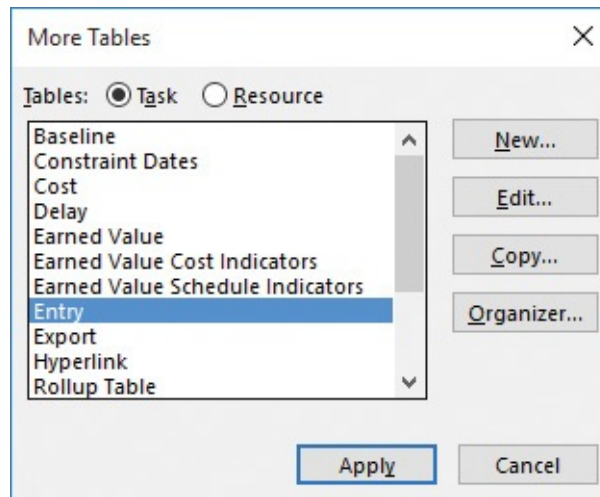
- Cost (up to 10 cost fields)
- Date (up to 10 date fields)
- Duration (up to 10 duration fields)
- Finish (up to 10 finish date fields)
- Flag (up to 20 "Yes" or "No" fields)
- Number (up to 20 number fields)
- Outline code (up to 10 outline codes)
- Start (up to 10 start date fields)
- Text (up to 30 text fields)

In fact, Project supports the preceding custom fields for tasks and for resources as different sets of fields. For example, you can customize the Text1 custom field in a task view and also customize the Text1 field (a different custom field) in a resource view.

These custom fields are a great way to store additional information about tasks or resources in your plans. Usually, none of these custom fields have any impact on the scheduling of tasks or resources.

To edit or create a custom table

1. On the **View** tab, in the **Data** group, click **Tables**, and then click **More Tables** to open the More Tables dialog box.



In the More Tables dialog box, you can see all of the available tables for tasks and resources

2. Click either **Task** or **Resource** to display that set of tables.

3. Do one of the following:

- Click **New** to create a new table from scratch.
- Select an existing table, and then click **Edit** to edit it.
- Select an existing table, and then click **Copy** to create a new table based on the existing table.



Tip

To keep the built-in tables intact, you can copy an existing table and then edit the copy.

In all cases, the Table Definition dialog box opens.

Table Definition in 'AdvancedOrganizing'

Name: Show in menu

Table

Field Name	Align Data	Width	Title	Align Title	Header Wrapping	Text Wrapping
ID	Center	6		Left	Yes	No
Indicators	Left	6		Left	Yes	No
Task Mode	Left	9		Left	Yes	No
Name	Left	24	Task Name	Left	Yes	Yes
Duration	Left	14		Left	Yes	No
Start	Left	16		Left	Yes	No
Finish	Left	16		Left	Yes	No

Date format: Row height:

Lock first column
 Auto-adjust header row heights
 Show 'Add New Column' interface

Use the Cut Row button and the other buttons to reorder or change the fields in a table (the dialog box lists them as rows, but in the table they are columns)

4. Edit or enter the table definition values you want.
5. Click **OK** to close the Table Definition dialog box.



Tip

If you selected the Show In Menu check box, your custom table's name appears under the Custom heading in the Tables list on the View tab.

To add a column to a table

1. Select the column where you want to insert a new column. The selected column will be moved to the right when the new column is inserted.
2. On the **Format** tab, in the **Columns** group, click **Insert Column**. Project displays all fields available for the type of table you have displayed (task or resource).



Tip

You can also insert a new column in a table by right-clicking a column heading and selecting Insert Column from the shortcut menu.

3. Select the field (column) you want to add.



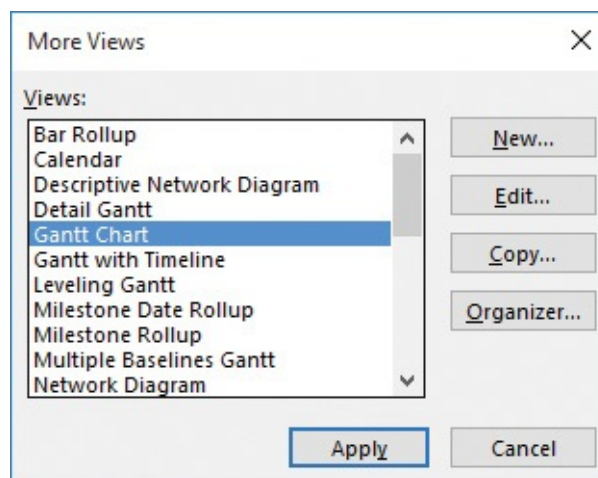
Tip

To remove a column, right-click the column heading, and then click Hide Column.

Create new views

Nearly all work you perform in Project occurs in a view. A view might contain elements such as tables, groups, and filters. You can combine these with other elements (such as a timescaled grid in a usage view) or with graphic elements (such as the graphic representation of tasks in the chart portion of a Gantt chart view).

Project includes dozens of views that organize information for specific purposes. You can see all of these views in the More Views dialog box.

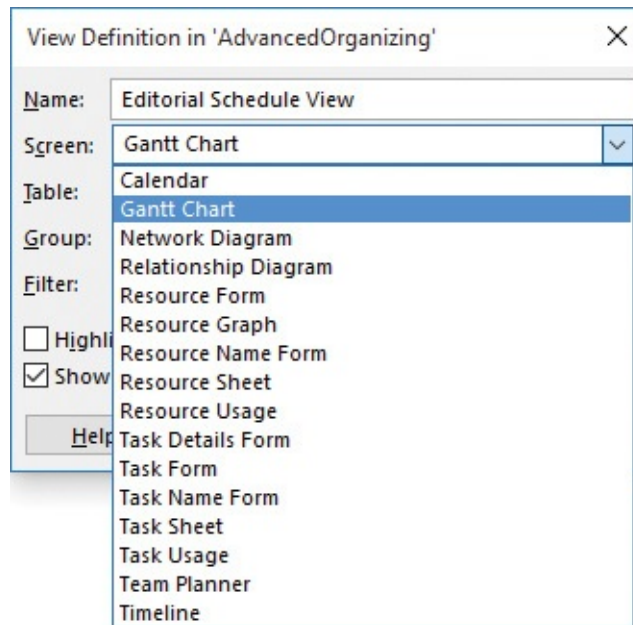


The More Views dialog box lists all the views in Project; you can edit these views or create your own

You might find that you need to see your plan's information in some way that is not available in the built-in views. If the available views in Project do not meet your needs, you can edit an existing view or create your own view.

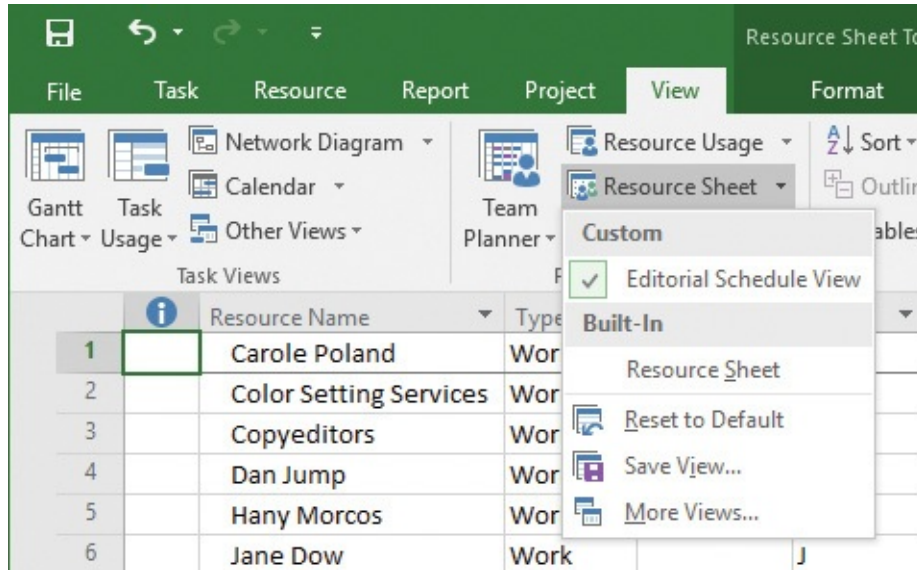
Your new view can be either a single-pane view or a multi-pane view. Most views occupy a single pane, but a view can consist of two separate panes. In fact, the default view in Project is really a two-pane view: the Gantt Chart and the Timeline.

When you create a new view, you specify whether it will be a task-centric or resource-centric view. In either case, you then work in the View Definition dialog box.



In the View Definition dialog box, you specify the essential ingredients of a custom view, such as its table

All views are either task-centric or resource-centric views. The specific tables, groups, and filters listed in the View Definition dialog box lists depend on the type of view you selected in the Screen field. For example, if Task Sheet is selected in the Screen field, only filters that apply to tasks, such as the Critical filter, are available in the Filter field. In addition, the specific elements available vary by view type. For example, if you select the Calendar view type, the Table and Group options do not apply.



New views appear under the Custom label wherever views are listed so that they are easily accessible

To edit or create a view

1. On the **View** tab, in the **Task Views** group or **Resource Views** group, click **Other Views**, and then click **More Views** to open the More Views dialog box. In this dialog box, you can see all the views available to you.
2. Do one of the following:

- Click **New** to create a new view from scratch. Then, in the **Define New View** dialog box, do either of the following:
 - Click **Single View**.
 - Click **Combination View**.



Tip

If you select Combination view, you then specify the two single-pane views (built-in or custom) you want used in the Combination view. Because the two single-pane views are existing views, you're done with the new view definition and return to the More Views dialog box.

-
- Select an existing view, and then click **Edit** to edit it.
 - Select an existing view, and then click **Copy** to create a new view based on the existing view.



Tip

To keep the built-in views intact, you can copy an existing view and then edit the copy.

In all cases, the View Definition dialog box opens.

View Definition in 'AdvancedOrganizing' [X]

Name: Copy of &Gantt Chart

Screen: Gantt Chart

Table: Entry

Group: No Group

Filter: All Tasks

Highlight filter

Show in menu

Help OK Cancel

When creating a new view, you can't leave any of the View Definition fields blank

3. Select or edit the view definition options you want:

- To assign a keyboard shortcut to the new view, precede a letter in its name with the ampersand symbol (&).
- In the Screen box, you can see all the types of views supported by Project. Many of these views consist of a table (such as Resource Sheet), a table plus a chart (such as Gantt Chart), or a form (such as Task Form). Other views are purely diagrammatic, such as the Network Diagram and Timeline views. You can change the screen type only when creating a new view.

- In the Table box, select the default table the view will contain. A table is required for a single-pane view.
- In the Group box, you can include a custom or built-in group as part of your view definition. If you do not want to include a group, select **No Group**.
- In the Filter box, you can include a custom or built-in filter as part of your view definition. If you do not want to include a filter, select **All Tasks**. Or, if you want the filter to highlight but not hide values, select the **Highlight filter** check box.
- Select or clear the **Show in Menu** check box.

4. Click **OK** to close the View Definition dialog box.



Tip

If you created a new view and you selected the Show In Menu check box, the view's name appears under the Custom heading in the related view type list on the View tab. For example, if you create a custom Gantt chart view, it will appear in the Gantt Chart view list on the View tab.

Skills review

In this chapter, you learned how to:

- [Sort plan details](#)
- [Group plan details](#)
- [Filter plan details](#)
- [Create new tables](#)
- [Create new views](#)



Practice tasks

The OrganizeDetails practice file for these tasks is located in the Project2016SBS\Ch13 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Sort plan details

The scenario: At Lucerne Publishing, you'd like to examine resource costs in the new children's book launch plan in detail. In addition to seeing resource costs, you'd also like to see the cost values organized by the resource groups that map to departments at Lucerne. These include groups like *Editorial* and *Production*. Open the OrganizeDetails plan in Project, and then perform the following tasks:

1. In the Resource Sheet view, with the **Summary** table displayed, sort resources on the **Cost** column, from most to least expensive.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
11	Travel	Other		0%			\$3,500.00		
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
12	Advance proofs	Production		copies/day	\$15.00		\$300.00	20 copies	
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	

After sorting by cost, you can easily see the financial impact of all resources on the plan

2. Use the **Sort By** command to sort resources by the Group field in ascending order, and then by the Cost field in descending order.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
11	Travel	Other		0%			\$3,500.00		
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	
12	Advance proofs	Production		copies/day	\$15.00		\$300.00	20 copies	
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	

After applying the two-level sort, you can now see per-department resource costs (the departments are the entries in the Group field)

Group plan details

The scenario: You continue your examination of resource costs. You found sorting by resource group to be helpful because the resource group values map to departments within Lucerne Publishing. Now you'd like to see aggregate totals per group in addition to sorting resources per group by cost. Continuing in the OrganizeDetails plan, perform the following tasks:

1. In the Resource Sheet view, with the **Summary** table displayed, group the resources by the built-in Resource Group group. Using the Resource Group group adds the department-level summary roll-up values for all quantifiable fields.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
	▲ Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs	
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
	▲ Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs	
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
	▲ Group: Other	Other	100%	100%			\$3,500.00	296 hrs	
11	Travel	Other		0%			\$3,500.00		
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	
	▲ Group: Production	Production	300%	200%			\$300.00	320 hrs	
12	Advance proofs	Production		0 copies/day	\$15.00		\$300.00	20 copies	
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	

The sorting per Group field that you previously applied is preserved

2. Clear the grouping from the list, and re-sort resources by ID.

Filter plan details

The scenario: You frequently need to look up various editing-related tasks because these are resource-intensive. You can quickly display editing-related tasks with a custom AutoFilter. Continuing in the OrganizeDetails plan, perform the following tasks:

1. In the Gantt Chart view, apply a custom AutoFilter on the **Task Name** column. The criterion for the Filter is *Name contains edit*.

Use a custom AutoFilter to filter tasks that contain a specific term—“edit” in this case

2. Apply but don't save the custom AutoFilter.

	Task Mode	Task Name	Duration	Start	Finish	Apr 8, '18								
						F	S	S	M	T	W	T	F	S
0		Children's Book Schedule	158.63 days	Mon 4/9/18	Thu 11/15/18									
1		Editorial staff meeting	60.13 days	Mon 4/16/18	Mon 7/9/18									
15		Acquisition	30.25 days	Mon 4/9/18	Mon 5/21/18									
17		Content edit	15 days	Mon 4/9/18	Thu 5/3/18									
18		Author review of content edit	12 days	Thu 5/3/18	Mon 5/21/18									
19		Handoff to Editorial	0 days	Mon 5/21/18	Mon 5/21/18									
20		Editorial	29.13 days	Mon 5/21/18	Fri 6/29/18									
21		Organize manuscript for copyedit	5.13 days	Mon 5/21/18	Mon 5/28/18									
22		Copyedit	11.25 days	Mon 5/28/18	Tue 6/12/18									
23		Author review of copyedit	10 days	Tue 6/12/18	Tue 6/26/18									
24		Copyedit incorp	5.13 days	Fri 6/22/18	Fri 6/29/18									

After applying the custom AutoFilter, your task list should include just tasks whose names include “edit” plus their summary tasks

3. Clear the custom AutoFilter from the view.

Create new tables

The scenario: You continue your focus on editorial tasks in the new children’s book plan. To that end, you decide to create a custom table, and in that table expose some descriptions of editorial work that have been added to a text field in the plan.

Before you create a new table, however, you’ll make one temporary change to your Project settings. You’ll make this adjustment to prevent this new table from becoming available in other plans that you might work with that are unrelated to this training material. (You’ll switch the adjustment back to the original setting at the end of the practice tasks.) Continuing in the OrganizeDetails plan, perform the following tasks:

1. Click the **File** tab, and then click **Options** to open the Project Options dialog box.
2. Click **Advanced**, and under **Display**, clear the **Automatically add new views, tables, filters, and groups to the global** check box.
3. Click **OK** to close the Project Options dialog box. With that housekeeping chore for the practice task completed, you are ready to create a new table.
4. Create a new table that is a copy of the Entry table.
5. Name the new table **Editorial Table**, and set it to appear in the menu.
6. Add the custom field named *Editorial Focus (Text9)* to the table. Set its width to **20**.

Table Definition in 'AdvancedOrganizing'

Name: Show in menu

Table

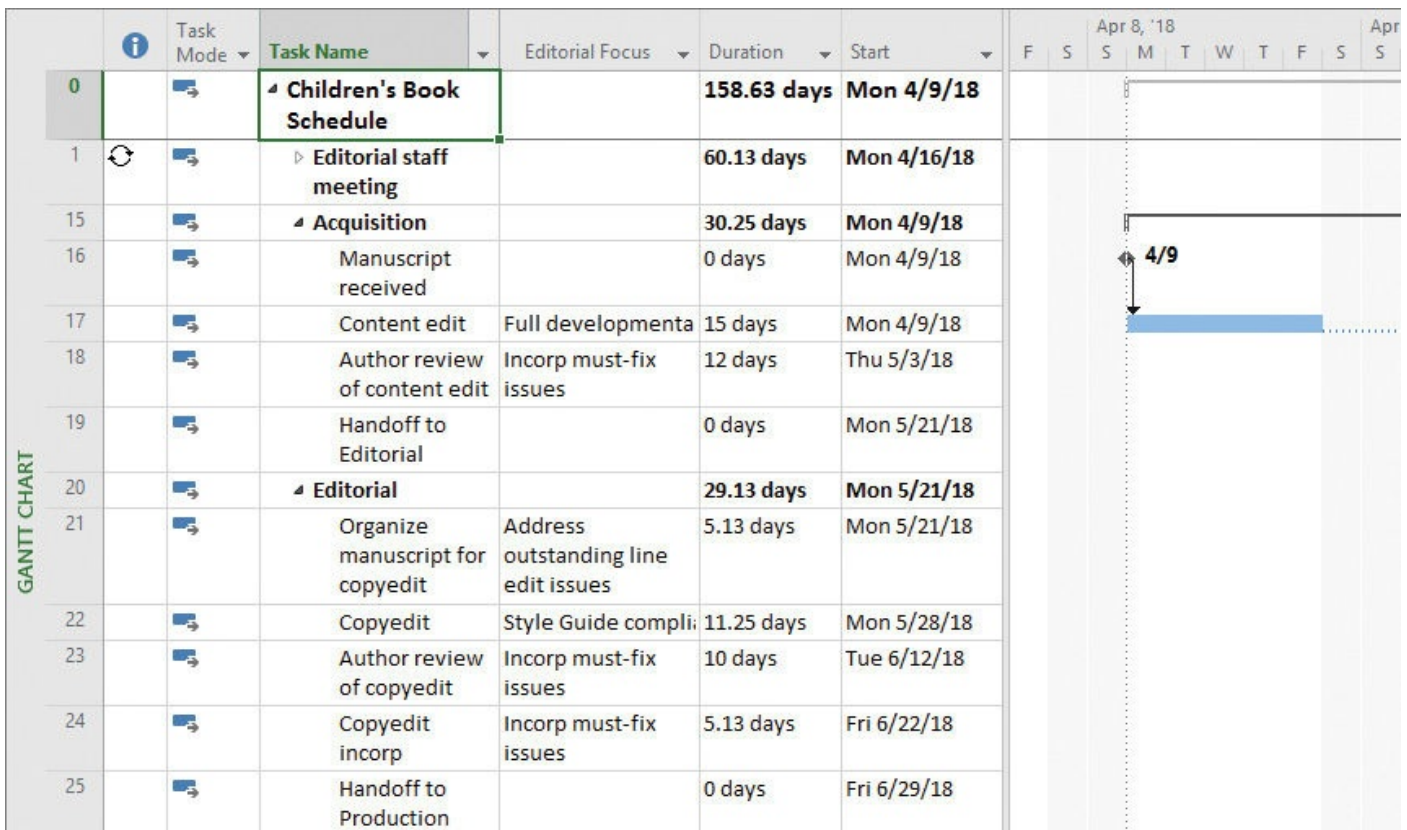
Field Name	Align Data	Width	Title	Align Title	Header Wrapping	Text Wrapping
ID	Center	6		Left	Yes	No
Indicators	Left	6		Left	Yes	No
Task Mode	Left	9		Left	Yes	No
Name	Left	24	Task Name	Left	Yes	Yes
Editorial Focus	Left	20		Center	Yes	No
Duration	Left	14		Left	Yes	No
Start	Left	16		Left	Yes	No

Date format: Row height:

Lock first column
 Auto-adjust header row heights
 Show 'Add New Column' interface

This custom table definition uses a previously customized text field (specifically Text9), named Editorial Focus

7. Display the new table in the Gantt Chart view.

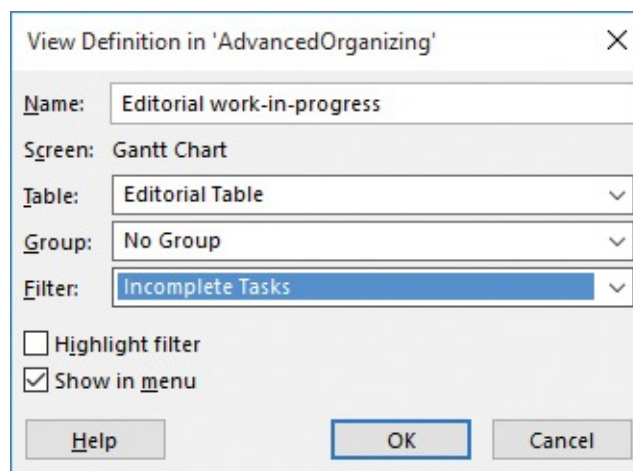


Your custom table should look like this in the Gantt Chart view

Create new views

The scenario: You have made good use of the custom table you created previously to help you focus on editorial tasks in the new children's book plan. Now you'd like to combine this customization into a custom view that you can easily switch to whenever you want. To wrap up the practice tasks, you'll then switch your Project option setting back to the default setting. Continuing in the OrganizeDetails plan, perform the following tasks:

1. Create a new view that is a copy of the Gantt Chart view.
2. Name the new view **Editorial work-in-progress**.
3. Add the *Editorial Table* custom table to the new view.
4. Apply the **Incomplete Tasks** filter to the new view.
5. Do not apply a group to the new view.



View Definition in 'AdvancedOrganizing'

Name: Editorial work-in-progress

Screen: Gantt Chart

Table: Editorial Table

Group: No Group

Filter: Incomplete Tasks

Highlight filter

Show in menu

Help OK Cancel

Include the custom table you created earlier in the new custom view

6. Display the new view.

							Apr 8, '18							Apr		
							F	S	S	M	T	W	T	F	S	S
0	Task Mode	Task Name	Editorial Focus	Duration	Start											
		Children's Book Schedule		158.63 days	Mon 4/9/18											
1		Editorial staff meeting		60.13 days	Mon 4/16/18											
15		Acquisition		30.25 days	Mon 4/9/18											
16		Manuscript received		0 days	Mon 4/9/18											
17		Content edit	Full developmenta	15 days	Mon 4/9/18											
18		Author review of content edit	Incorp must-fix issues	12 days	Thu 5/3/18											
19		Handoff to Editorial		0 days	Mon 5/21/18											
20		Editorial		29.13 days	Mon 5/21/18											
21		Organize manuscript for copyedit	Address outstanding line edit issues	5.13 days	Mon 5/21/18											
22		Copyedit	Style Guide compli	11.25 days	Mon 5/28/18											
23		Author review of copyedit	Incorp must-fix issues	10 days	Tue 6/12/18											
24		Copyedit incorp	Incorp must-fix issues	5.13 days	Fri 6/22/18											
25		Handoff to Production		0 days	Fri 6/29/18											

EDITORIAL WORK-IN-PROGRESS

Here's what your custom view should look like (note the custom view's name along the left edge of the program window)

Because of the housekeeping adjustment that you performed in the previous set of practice tasks, the new custom view is not available in other plans. However, when you create your own custom views, you probably will want them available in any plan, so you'll change the display setting back to the default. That way, any custom views that you create in the future will be available in any plan you work with.

7. Click the **File** tab, and then click **Options** to open the Project Options dialog box.
8. Click **Advanced**, and under **Display**, select the **Automatically add new views, tables, filters, and groups to the global** check box.
9. Click **OK** to close the Project Options dialog box.

14. Track progress: Detailed techniques

In this chapter

- [Update a baseline](#)
 - [Track actual and remaining work for tasks and assignments](#)
 - [Track timephased actual work for tasks and assignments](#)
 - [Reschedule incomplete work](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch14 folder. For practice file download instructions, see the introduction.

Building, verifying, and communicating a sound plan might take much or even most of your time as a project manager. However, planning is only the first phase of managing your projects. After the planning is completed, the implementation of the project starts—carrying out the plan that was previously developed. Ideally, projects are implemented exactly as planned, but this is seldom the case. In general, the more complex the plan and the longer its duration, the more opportunity there is for variance to appear. Variance is the difference between what you intended to happen (as recorded in the plan’s baseline) and what actually happened (as recorded by your tracking efforts).

Properly tracking actual work and comparing it against the original plan enables you to identify variance early and adjust the remaining portion of the plan when necessary.

This chapter guides you through procedures related to updating a baseline, tracking actual and remaining work for tasks and assignments, tracking timephased actual work for tasks and assignments, and rescheduling incomplete work.

Update a baseline

In [Chapter 8](#), “[Track progress: Basic techniques](#),” you learned how to save a baseline for a plan. Recall that a baseline is a collection of important values in a plan, such as the planned start dates, finish dates, and costs of tasks, resources, and assignments. When you save (or set) a baseline, Project takes a “snapshot” of the existing values and saves it in the plan for future comparison. If you’ve previously saved a baseline, you might need to update it before recording actual work.



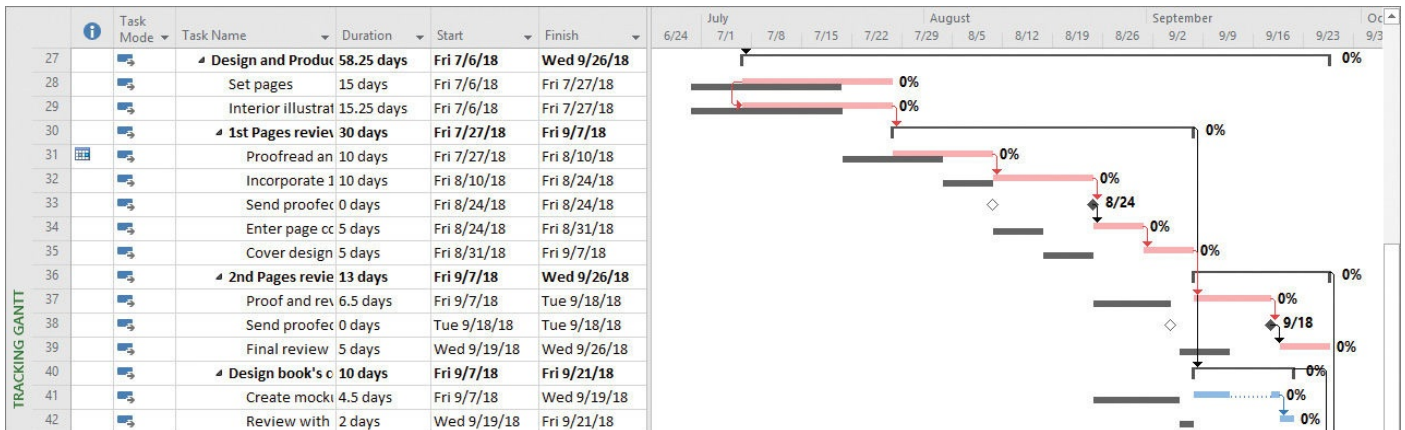
Tip

If you're not sure whether a plan already has a saved baseline (or multiple baselines), or if you'd like to see when a baseline was saved, here's what to do: On the Project tab, in the Schedule group, click the Set Baseline button, and then click the Set Baseline command. In the Set Baseline field of the dialog box, any previously saved baselines in the plan will be indicated by the dates they were saved.

Keep in mind that the purpose of the baseline is to record what you expected the plan to look like at one point in time. As time passes, however, you might need to change your expectations. After saving an initial baseline plan, you might need to fine-tune the plan by adding or removing tasks or assignments or making other adjustments. To keep an accurate baseline for later comparison, you have several options:

- **Update the baseline for the entire project** This simply replaces the original baseline values with the currently scheduled values.
- **Update the baseline for selected tasks** This does not affect the baseline values for other task or resource baseline values in the plan.
- **Save a second or subsequent baseline** You can save up to 11 baselines in a single plan. The first one is called *Baseline*, and the rest are *Baseline 1* through *Baseline 10*.

A great view for comparing a baseline with the plan as it is currently scheduled is the Tracking Gantt view.



The Tracking Gantt view shows how tasks in the plan as it is currently scheduled compare to its baseline schedule

In the chart portion of this view, the tasks as they are currently scheduled appear as blue bars (if they are not critical tasks) or red bars (if they are critical tasks). Below them, the baseline values of each task appear as gray bars.



Tip

In Gantt chart views such as the Tracking Gantt view, the colors, patterns, and shapes of the bars on the right side of the view represent specific things. To see what any item represents, just point to it and a description will appear in a ScreenTip. To see a complete legend of Gantt chart items and their formatting, on the Format tab, in the Bar Styles group, click Format, and then click Bar Styles.

Save interim plans

After you start tracking actual values or any time you adjust your plan, you might want to take another snapshot of the current start and finish dates. You can do this with an [interim plan](#). Like a baseline, an interim plan is a set of current values from the plan that Project saves with the file. Unlike the baseline, however, an interim plan saves only the start and finish dates of tasks, not resource or assignment values. You can save up to 10 different sets of interim dates in a plan. (If you find that you need multiple snapshots of scheduled values in addition to start and finish dates, you should instead save additional baselines.)

Depending on the scope and duration of your projects, you might want to save an interim plan at any of the following junctures:

- At the conclusion of a major phase of work
- At preset time intervals, such as weekly or monthly
- Just before or after entering a large number of actual values

To compare a plan as it is currently scheduled with its previously saved baseline

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow, and then click **Tracking Gantt**.
2. If necessary, adjust the zoom level: on the **View** tab, in the **Zoom** group, in the **Timescale** box, select the timescale setting you want. Project compares the plan with the baseline.
3. To compare the plan with another baseline (Baseline 1 through Baseline 10), on the **Gantt Chart Tools Format** tab, in the **Bar Styles** group, click **Baseline**, and then click the baseline you want to see compared.

To update a previously saved baseline or add an additional baseline

1. On the **Project** tab, in the **Schedule** group, click **Set Baseline**, and then click **Set Baseline** to open the Set Baseline dialog box.
2. Do either of the following:
 - To update a previously saved baseline, click **Set Baseline**, and then select the

specific baseline you want to update.

- To save a new baseline, click **Set Baseline**, and then select the additional baseline you want to save.

3. Then do either of the following:

- To update or add the selected baseline for the plan, under **For**, click **Entire Project**, and then click **OK**.
- To update or add the selected baseline just for the selected tasks, under **For**, click **Selected Tasks**. When you do this, the options under Roll Up Baselines become available. You can control how baseline updates should affect the baseline values for summary tasks. For example, you could resave a baseline for a subtask and update its related summary task baseline values if you want.

4. Click **OK**.

To remove a baseline

1. On the **Project** tab, in the **Schedule** group, click the **Set Baseline** button, and then click **Clear Baseline**.

To save an interim plan

1. On the **Project** tab, in the **Schedule** group, click the **Set Baseline** button, and then click **Set Baseline**.
2. In the **Set Baseline** dialog box, select **Set Interim Plan**.
3. In the **Copy** field, select the date values you want to copy.
4. In the **Into** field, select the date values into which you want to copy the fields you selected in the **Copy** field.
5. Click **OK**.

Track actual and remaining work for tasks and assignments

In [Chapter 8, “Track progress: Basic techniques,”](#) you learned how to work with actual start, finish, and duration values for individual tasks. For tasks that have resources assigned to them, you can enter actual and remaining work values for the task as a whole or for specific assignments to that task. To help you understand how Project handles the actual values you enter, consider the following:

- If a task has a single resource assigned to it, the actual work values you enter for the task or assignment apply equally to both the task and the resource assignment. For example, if you record that the assignment has five hours of actual work, those values apply to the task and to the assigned resource.
- If a task has multiple resources assigned to it, the actual work values you enter for the task are distributed among or rolled down to the assignments according to their assignment units. This level of detail is appropriate if you aren't concerned about the details at the individual assignment level.

- If a task has multiple resources assigned to it, the actual work values you enter for one assignment are rolled up to the task. However, the new actual work values do not affect the other assignments' work values on the task. This level of detail is appropriate if details at the individual assignment level are important to you.
- If the actual work value you enter is greater than the planned work, Project sets Remaining Work to zero. If actual work is less than planned work, Project recalculates Remaining Work accordingly. You can also directly edit the Remaining Work value if you want.

A great view for recording actual and remaining work is the Task Usage view with the Work table displayed.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	T	W
0	Children's Book Sci	2,317.5 hrs	2,317.5 hrs	0 hrs	127 hrs	2,190.5 hrs	5%	Work	8h	8h
1	Editorial staff mee	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	15%	Work		
15	Acquisition	444 hrs	444 hrs	0 hrs	120 hrs	324 hrs	27%	Work	8h	8h
16	Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	100%	Work		
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h
	Carole Polai	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h
18	Original art revi	164 hrs	164 hrs	0 hrs	0 hrs	164 hrs	0%	Work		
	Hany Morcc	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		
	Jane Dow	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		
19	Author review c	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work		
	Copyeditors	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	0%	Work		

The Task Usage view has two parts: a table on the left and timephased data (that is, data organized under a timescale) on the right

As you might recall from [Chapter 9, “Fine-tune task scheduling,”](#) the two sides of the usage view are split by a vertical divider bar. This view lists resources under the tasks to which they're assigned. This information appears in the table on the left side. On the right side are rows organized under a timescale. The rows show you the scheduled work values for each task and assigned resource. The Task Usage view color-codes the rows on the right side: task rows have a shaded background, and assignment rows have a white background.



Tip

In this topic, we focus on the Task Usage view to show the results of entering actual work per task or assignment. Other means of recording actual work include the Task Form or the Task Details Form with the Work detail displayed in a split view with a Gantt chart, Task Usage, or other task-centric view. For a refresher on the Task Form, see [Chapter 6, “Assign resources to tasks.”](#)

Let's walk through some examples of entering actual work. We'll start in the Task Usage view with the Work table displayed.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F
0	Children's Book Schedule	2,317.5 hrs	2,317.5 hrs	0 hrs	127 hrs	2,190.5 hrs	5%	Work	8h	20h	24h
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	15%	Work			
15	Acquisition	444 hrs	444 hrs	0 hrs	120 hrs	324 hrs	27%	Work	8h	20h	24h
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	100%	Work			
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
	Carole Poland	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
18	Original art review	164 hrs	164 hrs	0 hrs	0 hrs	164 hrs	0%	Work		12h	16h
	Hany Morcos	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		6h	8h
	Jane Dow	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		6h	8h
19	Author review of content edit	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work			

In this example, task 18 initially has 164 hours of scheduled work, which is evenly split between the two assigned resources

The Work table includes the Actual Work and Remaining Work columns. The values in the Work column are the task-level and assignment-level totals for scheduled work. Note that each task's work value is the sum of its assignment work values.

In a usage view, you see work values at two different levels of detail: the total value for a task or assignment on the left and the more detailed timephased level on the right. These two sets of values are directly related. Consider, for example, a task named *Original art review*, which is task 18 in the plan. The 164 hours of total work for task 18 is the sum of Hany Morcos's 82 hours of work on the task plus Jane Dow's 82 hours.

In the timephased grid, the scheduled work values per time period are displayed—daily, in this example. If you add up the daily work values for a specific task or assignment, the total equals the value in the Work column for that task or assignment.

Let's look more closely at the results of entering an actual work value. In this example, when we enter 92 hours of actual work on task 18, Project distributes the actual work among the assigned resources and adjusts their remaining work.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F
0	Children's Book Schedule	2,317.5 hrs	2,317.5 hrs	0 hrs	219 hrs	2,098.5 hrs	9%	Work	8h	20h	24h
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	15%	Work			
15	Acquisition	444 hrs	444 hrs	0 hrs	212 hrs	232 hrs	48%	Work	8h	20h	24h
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	100%	Work			
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
	Carole Poland	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
18	Original art review	164 hrs	164 hrs	0 hrs	92 hrs	72 hrs	56%	Work		12h	16h
	Hany Morcos	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work		6h	8h
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work		6h	8h
19	Author review of content edit	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work			

This is what the view looks like after 92 hours of actual work are recorded on task 18

Several important things occurred when we entered the actual work on task 18:

- Project applied change highlighting to the updated values in the table.
- The amount of actual work we entered was subtracted from the Remaining Work column (labeled *Remaining* in the Work table).
- The actual work was distributed to the two assignments on the task, resulting in 46

hours of actual work being recorded for Hany Morcos and 46 hours for Jane Dow. Likewise, the remaining work values were recalculated for each assignment.

- The updated actual and remaining work values were rolled up to the Acquisition summary task and to the Project summary task.

Now that you've seen the effect of recording actual work at the task level, let's look at entering actual work at the assignment level. Again, we'll focus on task 18. When we assigned 92 hours of work to the task, Hany Morcos was assigned 46 hours of that work. Now, after we record actual work of 62 hours for Hany, we see that her actual and remaining work values are updated, and those updates also roll up to the task and its summary task. (Project highlights the changed values.) However, the actual and remaining work values for Jane Dow, the other resource assigned to the task, are not affected.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F
0	Children's Book Schedule	2,317.5 hrs	2,317.5 hrs	0 hrs	235 hrs	2,082.5 hrs	10%	Work	8h	20h	24h
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	15%	Work			
15	Acquisition	444 hrs	444 hrs	0 hrs	228 hrs	216 hrs	51%	Work	8h	20h	24h
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	100%	Work			
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
	Carole Poland	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	100%	Work	8h	8h	8h
18	Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	66%	Work		12h	16h
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	76%	Work		6h	8h
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work		6h	8h
19	Author review of content edit	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work			

After 62 hours of actual work are recorded on Hany Morcos's assignment to task 18, Hany's work values are updated, but Jane Dow's assignment is not affected



Tip

A handy way to quickly record actual work and other progress details per assignment is via the Tracking tab of the Assignment Information dialog box. In either the Task Usage or Resource Usage view, double-click an assignment. In the dialog box, you can set actual work, remaining work, actual start, and other values. This dialog box is available regardless of what table is displayed in the usage view.

Tracking a task's actual work-complete value is more detailed than entering a simple percentage-complete value on a task. However, neither method is as detailed as entering timephased actual work for tasks or assignments (as you will see in the next topic). There's nothing wrong with tracking actual work at the task or assignment level (or simply entering a percentage-complete value, for that matter), if that level of detail meets your needs. In fact, whether you see the timephased details or not, Project always distributes any percentage-complete or task-level or assignment-level actual work value you enter into corresponding timephased values.

Enter actual costs manually

When you enter actual work values, Project calculates actual cost values for the affected task, its summary task, the resources assigned to the task, and the entire plan. By default, Project calculates actual costs and does not allow you to enter them directly. In most cases, this is what we recommend and what is done with the practice files used in this book. However, if you want to enter actual cost values yourself in your own plans, follow these steps.

Important

The following procedure is provided for your general information; however, do not follow this procedure now if you are completing the practice tasks in this book. Doing so will produce results that will not match those shown in this book.

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
2. Click the **Schedule** tab.
3. Under the **Calculation options for this project** label, clear the **Actual costs are always calculated by Project** check box.
4. Click **OK**.

After automatic cost calculation is turned off, you can enter or import task-level or assignment-level actual costs in the Actual field. This field is available in several locations, such as the Cost table. You can also enter actual cost values daily or at another interval in any timescale view, such as the Task Usage or Resource Usage view. To do so, with a usage view displayed, click Actual Cost on the Format tab, in the Details group.

To record actual and remaining work per task

1. On the **View** tab, in the **Task Views** group, click **Task Usage** to display the Task Usage view.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Work** to display the Work table.
3. In the **Actual** column for the task for which you want to record actual work, enter an actual work value.
4. If you want, enter a new **Remaining Work** value for the task.

To record actual and remaining work per assignment

1. Display the Task Usage view and the **Work** table.
2. In the **Actual** column for the assigned resource for which you want to record actual work, enter an actual work value.
3. If you want, enter a new **Remaining Work** value for the assignment.

Track timephased actual work for tasks and assignments

In [Chapter 8](#), “[Track progress: Basic techniques](#),” you were introduced to simpler ways of tracking actuals in a plan. These include recording the percentage of a task that has been completed, in addition to its actual start and finish dates. These methods of tracking progress are fine for many projects, but Project 2016 also supports more detailed ways of tracking.

This topic introduces techniques to track work per time period, such as actual work completed per week or per day. Information distributed over time is commonly referred to as being *timephased*, so tracking work by time period is sometimes referred to as *tracking timephased actuals*. This is the most detailed level of tracking progress available in Project.

As with the simpler tracking methods, tracking timephased actuals helps you address the most basic questions of managing a project:

- Are tasks starting and finishing as planned? If not, what will be the impact on the project’s finish date?
- Are resources spending more or less time than planned to complete tasks?
- Is it taking more or less money than planned to complete tasks?

Entering timephased actuals requires more work on the project manager’s part and might require more work from resources, if they have to inform the project manager of their daily or weekly actuals. However, using timephased actuals gives you far more detail about the plan’s task and resource status than the other methods used for tracking progress. Entering timephased values might be the best approach to take if you have a group of tasks or an entire plan that includes the following:

- High-risk tasks
- Tasks of relatively short duration, for which a variance of even one day could put the overall project at risk
- Tasks for which you’d like to develop or validate throughput metrics, or rates at which a specified quantity of a deliverable can be completed over a specified time period, such as *Copyedit 3000 words per day*
- Tasks in which sponsors or other stakeholders have an especially strong interest
- Tasks that require hourly billing for labor

When you need to track actual work at the most detailed level possible, use the Work table and the timephased grid in the Task Usage or Resource Usage view.

In the Task Usage view, you can enter timephased actual work at the task or assignment level. In the Resource Usage view, you enter actuals at the assignment level. In both views, entering actual work in the left side of the view will cause Project to update work values distributed over time in the right side of the view. In this topic, we’ll look at the reverse: entering actual work in the timephased side of the view and seeing the results per task or assignment on the left side of the view.

The previous topic's example featured the Task Usage view; in this topic, we'll begin with the Resource Usage view.

	Resource Name	% Comp	Work	Overtime	Baseline	Variance	Actual	Remaining	Details	May 13, '18						
										S	M	T	W	T	F	
RESOURCE USAGE	3	Copyeditors	29%	316 hrs	0 hrs	300 hrs	16 hrs	92 hrs	224 hrs	Work		4h	8h	8h	8h	8h
		Author review of content	100%	92 hrs	0 hrs	80 hrs	12 hrs	92 hrs	0 hrs	Work		4h	8h	8h	8h	8h
		Copyedit	0%	184 hrs	0 hrs	180 hrs	4 hrs	0 hrs	184 hrs	Work						
		Author review of copyedi	0%	20 hrs	0 hrs	20 hrs	0 hrs	0 hrs	20 hrs	Work						
		Proofread and index	0%	20 hrs	0 hrs	20 hrs	0 hrs	0 hrs	20 hrs	Work						
										Act. W						
										Act. W						
										Act. W						
										Act. W						
										Act. W						
	4	Dan Jump	3%	114.5 hrs	0 hrs	114.5 hrs	0 hrs	3.5 hrs	111 hrs	Work		0.5h				
										Act. W		0.5h				
	5	Hany Morcos	16%	563 hrs	0 hrs	563 hrs	0 hrs	89 hrs	474 hrs	Work		1h				
		Handoff to Production	0%	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work						
		Incorporate 1st Pages review	0%	80 hrs	0 hrs	80 hrs	0 hrs	0 hrs	80 hrs	Work						
										Act. W						

The Resource Usage view shows assignments per resource



Tip

You can change the details (that is, the fields) shown in the timephased grid in a usage view. You can add or remove fields and change the formatting of the fields that are shown. For example, you can add the Actual Work field. To see the available fields and formatting options, on the Format tab, in the Details group, click Add Details.

In both views, you can enter actual work values for individual assignments daily, weekly, or at whatever time period you want (by adjusting the timescale). For example, if a task has three resources assigned to it and you know that two resources worked on the task for eight hours one day and the third resource worked for six hours, you can enter these as three separate values on a timephased grid.

A key to working effectively in a usage view is setting the timescale correctly. You can change the zoom level of the timescale to control the time period in which you enter actual values in the timephased grid. For example, you can change the timescale to show weeks rather than days; when you enter an actual value at the weekly level, that value is distributed over the week.



Tip

Project includes several handy shortcuts for navigating in the timephased grid side of the usage views. In the Task Usage view, use the Scroll To Task button on the Task Tab, in the Editing group, to display the earliest scheduled work on the selected task or assignment. You can also use the Scroll To Task command in the shortcut menu for tasks. In the Resource Usage view, use Scroll To Task to see the selected resource's or assignment's scheduled work. In both views, you can quickly get to a specific date in the grid (or a task or resource ID) by using the Go To command via the keyboard shortcut Ctrl+G. If you forget this keyboard shortcut, just enter *go to* in the Tell Me box and Project will show you the command.

Here's an example of entering timephased actuals in a usage view. As you saw in the previous topic, the scheduled work per task, resource, or assignment is equal on the two sides of a usage view. The difference is that the scheduled work is shown as a single total value on the left side but distributed over time on the right side.

We'll begin in the timephased grid of the Task Usage view with the Work table displayed. We'll record actual work for task 19, *Author review of content edit*.

	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	May 13, '18						
								T	F	S	S	M	T	
15	Acquisition	444 hrs	444 hrs	0 hrs	302 hrs	142 hrs	Work	16h	10h				16h	16h
							Act. W	16h	10h					
16	Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work							
							Act. W							
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work							
							Act. W							
18	Original art review	164 hrs	164 hrs	0 hrs	164 hrs	0 hrs	Work	8h						
							Act. W	8h						
19	Author review of content edit	160 hrs	160 hrs	0 hrs	18 hrs	142 hrs	Work	8h	10h				16h	16h
							Act. W	8h	10h					
	Copyeditors	80 hrs	80 hrs	0 hrs	9 hrs	71 hrs	Work	4h	5h				8h	8h
							Act. W	4h	5h					
	Tad Orman	80 hrs	80 hrs	0 hrs	9 hrs	71 hrs	Work	4h	5h				8h	8h
							Act. W	4h	5h					
20	Handoff to Edit	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work							
							Act. W							
	Carole Polari	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work							
							Act. W							

Here we've entered 8 hours of actual work for Thursday (which is what was scheduled) and 10 hours of actual work for Friday (when 16 hours was originally scheduled) on task 19

As you saw in the previous topic, the actual work recorded on the task is distributed to its assignments. In the timephased grid, you can see per time period how the actual work gets distributed.



Tip

When entering actual work, you do not need to include the “h” abbreviation (to denote hours). You can simply enter the number and Project will record it as hours. Hours is the default work value for data entry. If you want, you can change this. Click the File tab to display the Backstage view, and then click Options. On the Schedule page of the Project Options dialog box, in the Work Is Entered In box, select the default time increment you want.

Next we’ll enter actual work on the assignment in the timephased grid.

		Task Name	Work	Baseline	Variance	Actual	Remaining	Details	T	F	S	May 13, '18				
												S	M	T		
TASK USAGE	15	▾ Acquisition	444 hrs	444 hrs	0 hrs	316 hrs	128 hrs	Work	16h	10h				14h	16h	
								Act. W	16h	10h				14h		
	16	Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work								
								Act. W								
	17	▸ Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work								
								Act. W								
	18	▸ Original art review	164 hrs	164 hrs	0 hrs	164 hrs	0 hrs	Work	8h							
								Act. W	8h							
	19	▾ Author review c	160 hrs	160 hrs	0 hrs	32 hrs	128 hrs	Work	8h	10h				14h	16h	
								Act. W	8h	10h				14h		
			Copyeditors	80 hrs	80 hrs	0 hrs	15 hrs	65 hrs	Work	4h	5h				6h	8h
								Act. W	4h	5h				6h		
		Tad Orman	80 hrs	80 hrs	0 hrs	17 hrs	63 hrs	Work	4h	5h				8h	8h	
							Act. W	4h	5h				8h			
20	▾ Handoff to Edit	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work									
							Act. W									
		Carole Polar	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work								
							Act. W									

Here we’ve entered 6 hours of actual work for the Copyeditors and 8 hours for Tad Orman for Monday on the same task

In this example, the actual work values entered for the assignments differed from the scheduled work. Project accounted for the difference by adjusting the scheduled work at the end of the assignments.

TASK USAGE	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	T	W	T	F
15	Acquisition	444 hrs	444 hrs	0 hrs	316 hrs	128 hrs	Work	16h	16h	15h	1h
							Act. W				
16	Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				
							Act. W				
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work				
							Act. W				
18	Original art review	164 hrs	164 hrs	0 hrs	164 hrs	0 hrs	Work				
							Act. W				
19	Author review c	160 hrs	160 hrs	0 hrs	32 hrs	128 hrs	Work	16h	16h	15h	1h
							Act. W				
	Copyeditors	80 hrs	80 hrs	0 hrs	15 hrs	65 hrs	Work	8h	8h	8h	1h
							Act. W				
	Tad Orman	80 hrs	80 hrs	0 hrs	17 hrs	63 hrs	Work	8h	8h	7h	
							Act. W				
20	Handoff to Edit	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				0h
							Act. W				
	Carole Polai	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				0h
							Act. W				

Project adjusted the scheduled work to account for the actual work values that were recorded that varied from scheduled work

When you record actual work in the table on the left side of the view, Project records the actual work to match scheduled work in the timephased grid on the right side of the usage view. The main advantage of entering actual work in the timephased grid instead of in the table on the left side of the view is that you can precisely control the dates for which the actual work gets recorded.

Project management focus: Collect actuals from resources

The Resource Usage view is similar to a timecard. In fact, to enter assignment-level actual work values, you might need some form of paper timecard or its electronic equivalent. Several methods are used to collect such data from resources, assuming that you need to track actual and remaining work at this level of detail. Some collection methods include the following:

- **Collect actual values yourself** This method is feasible if you communicate with only a small group of resources on a frequent basis, such as a weekly status meeting. It's also a good opportunity to talk directly to the resources about any blocking issues or surprises they might have encountered (either positive or negative) while performing the work.
- **Collect actuals through a formal status reporting system** This technique might work through the already-existing hierarchy of your organization and serve additional purposes besides project status reporting.

Regardless of the data collection methods you use, be aware that resources might have some concern about how their actual work values reflect their overall performance. You might need to communicate to resources that schedule actuals help in managing the project, but performance evaluation is a business management focus, not a project management focus.

If your organization uses a timecard reporting system, you might be able to utilize this timecard data in Project as timephased actuals. You might not need to track at this level, but if resources complete timesheets for other purposes (billing other departments within the organization, for example), you can use their data and save yourself some work.

Speaking of timecards, depending on how your organization operates, you might want to explore Project Professional and its interoperability with Microsoft SharePoint and Project Web App (PWA). For more information, see [Appendix C, "Collaborate: Project, SharePoint, and PWA."](#)



Tip

Task and assignment values are directly related; an update to one directly affects the other. However, you can break this relationship if you want. Doing so enables you to record progress for resource assignments, for example, and manually enter actual values for the tasks to which those resources are assigned. You normally should not break this relationship unless you have special reporting needs within your organization—for example, when you must follow a status reporting methodology based on something other than the actual values recorded for assignments in plans. To break this relationship, do the following: Click the File tab to display the Backstage view, and click Options. In the Project Options dialog box, on the Schedule tab, under the Calculation Options For This Project label, clear the Updating Task Status Updates Resource Status check box. This setting applies to the entire plan you have open at the time; you cannot apply it only to some tasks within a plan.

To record timephased actual work in the Task Usage view

1. On the **View** tab, in the **Task Views** group, click **Task Usage** to display the Task Usage view.
2. On the **Task Usage Tools Format** tab, in the **Details** group, click **Actual Work**. The Actual Work detail row appears in the timephased portion of the view.
3. If needed, adjust the timescale to match the time interval at which you want to enter actual work (for example, daily or weekly): On the **View** tab, in the **Zoom** group, click the **Timescale** arrow, and then click the timescale time unit you want.
4. In the timephased grid, at the intersection of the task or assignment and the date you want, enter an actual work value.

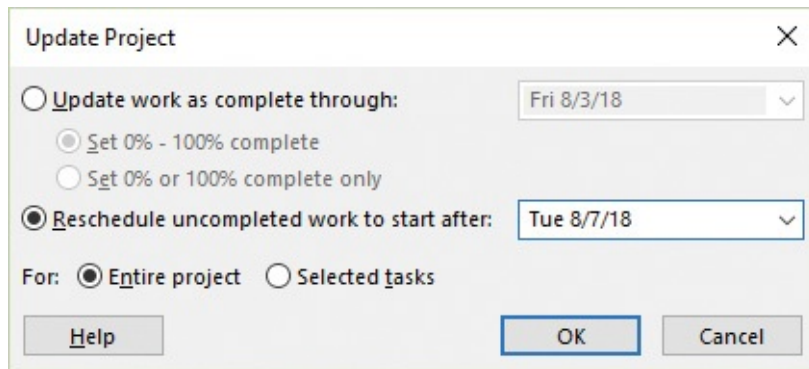
To record timephased actual work in the Resource Usage view

1. Display the Resource Usage view and Actual Work detail, and adjust the timescale as needed.
2. In the timephased grid, at the intersection of an assignment and the date you want, enter an actual work value.

Reschedule incomplete work

During the course of a project, work might occasionally be interrupted for a specific task or for the entire project. If this happens, you can have Project reschedule the remaining work to restart after the date you specify.

When you reschedule incomplete work, you specify the date after which work can resume—the rescheduled date. You reschedule incomplete work in the Update Project dialog box.



Use the Update Project dialog box to reschedule incomplete work

Here is how Project handles tasks in relation to the rescheduled date:

- If the task does not have any actual work recorded for it prior to the rescheduled date and does not have a constraint applied, the entire task is rescheduled to begin after that date.
- If the task has some actual work recorded prior to the rescheduled date but none after it, the task is split so that all remaining work starts after the rescheduled date. The actual work is not affected.
- If the task has some actual work recorded for it prior to, and after, the rescheduled date, the task is not affected.

To reschedule incomplete work

1. To reschedule work just for specific tasks, select those tasks first.
2. On the **Project** tab, in the **Status** group, click **Update Project** to open the Update Project dialog box.
3. Select **Reschedule uncompleted work to start after**, and in the date box, enter or select the date you want.
4. Do one of the following:
 - Click **Selected Tasks** to reschedule work just for the selected tasks.
 - Click **Entire Project** to reschedule work for the entire project.
5. Click **OK**.

Skills review

In this chapter, you learned how to:

- [Update a baseline](#)
- [Track actual and remaining work for tasks and assignments](#)
- [Track timephased actual work for tasks and assignments](#)
- [Reschedule incomplete work](#)



Practice tasks

The practice files for these tasks are located in the Project2016SBS\Ch14 folder.



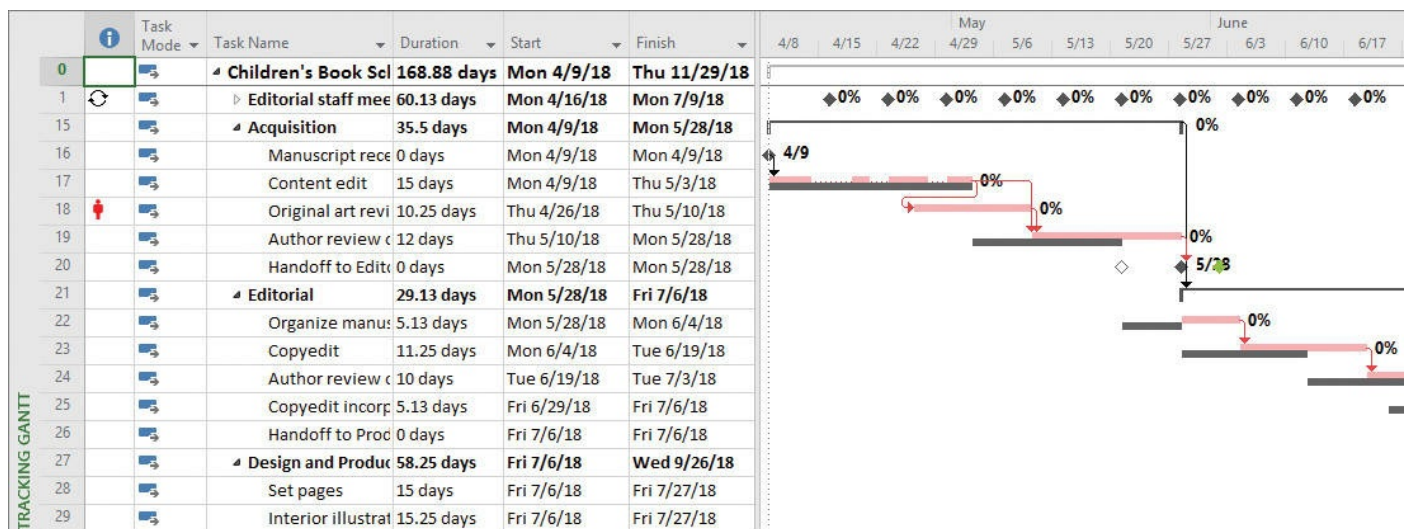
Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Update a baseline

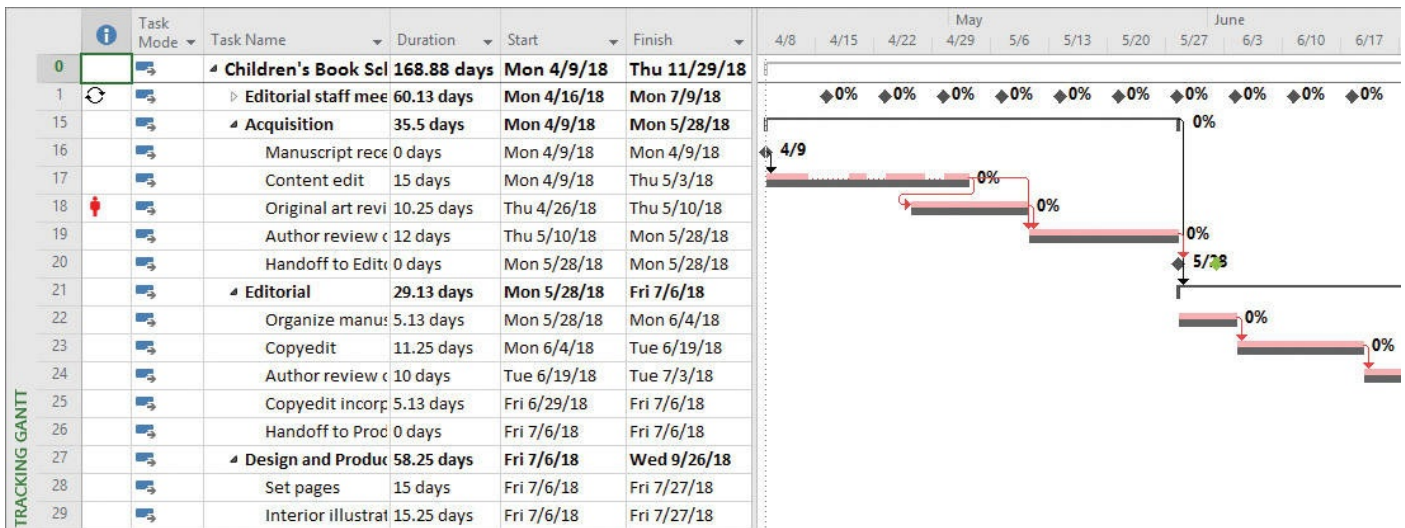
The scenario: At Lucerne Publishing, the planning for the new children’s book project has undergone some additional fine-tuning, including adjustments to task durations and the addition of a task. Because of these changes, you need to capture a new baseline before work begins. Open the UpdateBaseline plan in Project, and perform the following tasks:

1. Examine the current baseline in the Tracking Gantt view with the timescale set to weekly.



In the Tracking Gantt view, note that the recently added task 18 lacks a baseline

2. Update the baseline for the entire plan.



After the plan's baseline is updated, the baseline dates align with the as-scheduled task dates and task 18 now has a baseline

Track actual and remaining work for tasks and assignments

The scenario: Several tasks in the plan have more than one resource assigned. You'd like to get a better look at how your recording of actual work on such tasks affects assigned work. Open the TrackWork plan in Project, and perform the following tasks:

1. Display the Work table in the Task Usage view.
2. Record 92 hours of actual work on task 18, *Original art review*.

Task Name	Work	Baseline	Variance	Actual	Remaining	Details	Apr 8, '18			
							S	M	T	
Children's Book Sci	2,317.5 hrs	2,317.5 hrs	0 hrs	219 hrs	2,098.5 hrs	Work		8h	8h	8h
Editorial staff mee	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	Work				
Acquisition	444 hrs	444 hrs	0 hrs	212 hrs	232 hrs	Work		8h	8h	8h
Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				
Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work		8h	8h	8h
Carole Polai	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work		8h	8h	8h
Original art revi	164 hrs	164 hrs	0 hrs	92 hrs	72 hrs	Work				
Hany Morcc	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work				
Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work				
Author review c	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	Work				

After entering actual work on task 18, note how the actual work is split between the two assigned resources

3. On the same task, change Hany Morcos's 46 hours of actual work to 62 hours.

	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	Apr 8, '18			
								S	M	T	W
0	Children's Book Scl	2,317.5 hrs	2,317.5 hrs	0 hrs	235 hrs	2,082.5 hrs	Work		8h	8h	8h
1	Editorial staff mee	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	Work				
15	Acquisition	444 hrs	444 hrs	0 hrs	228 hrs	216 hrs	Work		8h	8h	8h
16	Manuscript rece	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work		8h	8h	8h
	Carole Polari	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work		8h	8h	8h
18	Original art revi	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work				
	Hany Morcc	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Work				
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work				
19	Author review c	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	Work				

After entering actual work on an assignment to task 18, note that the other assignment to the same task is not affected

Track timephased actual work for tasks and assignments

The scenario: The Acquisition phase of work has been completed, and the Editorial phase has begun. Because of the larger number of resources involved and the variability of the editorial work, these tasks are the riskiest ones so far in the project. To manage the actuals of these tasks in the most detailed way possible, you will record timephased actuals. Open the TrackTimephasedWork plan in Project, and perform the following tasks:

1. Scroll the timephased grid in the Task Usage view until the scheduled work for task 22, *Organize manuscript for copyedit*, is visible.
2. Show the **Actual Work** detail in the timephased grid of the view.
3. Record **9** hours of actual work on task 22 for Wednesday, May 30, and **15** hours for Thursday, May 31.

	Task Name	Work	Baseline	Variance	Actual	Details	T			
							T	W	T	F
0	Children's Book Scl	2,345.5 hrs	2,317.5 hrs	28 hrs	516.5 hrs	Work	8h	9h	15h	12h
						Act. W	8h	9h	15h	
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	24.5 hrs	Work				
						Act. W				
15	Acquisition	468 hrs	444 hrs	24 hrs	468 hrs	Work	8h			
						Act. W	8h			
21	Editorial	404 hrs	400 hrs	4 hrs	24 hrs	Work		9h	15h	12h
						Act. W		9h	15h	
22	Organize manus	60 hrs	60 hrs	0 hrs	24 hrs	Work		9h	15h	12h
						Act. W		9h	15h	
	Dan Jump	20 hrs	20 hrs	0 hrs	8 hrs	Work		3h	5h	4h
						Act. W		3h	5h	
	Hany Morcc	40 hrs	40 hrs	0 hrs	16 hrs	Work		6h	10h	8h
						Act. W		6h	10h	
23	Copyedit	184 hrs	180 hrs	4 hrs	0 hrs	Work				
						Act. W				
	Copyeditors	184 hrs	180 hrs	4 hrs	0 hrs	Work				
						Act. W				

After entering task-level timephased actual work, note the updates to the two assignments on the task

4. Adjust the timescale to weekly.

5. Record **12** hours of actual work for Dan Jump’s assignment to task 22, *Organize manuscript*, for the week of June 3.

	Task Name	Work	Baseline	Variance	Actual	Details	June				
							5/20	5/27	6/3	6/10	
TASK USAGE	0 Children's Book Sci	2,345.5 hrs	2,317.5 hrs	28 hrs	528.5 hrs	Work	83.5h	51.5h	79.5h	83.5h	
						Act. W	83.5h	43.5h	12h		
	1 Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	24.5 hrs	Work	3.5h	3.5h	3.5h	3.5h	
						Act. W	3.5h	3.5h			
	15 Acquisition	468 hrs	444 hrs	24 hrs	468 hrs	Work	80h	16h			
						Act. W	80h	16h			
	21 Editorial	404 hrs	400 hrs	4 hrs	36 hrs	Work		32h	76h	80h	
						Act. W		24h	12h		
	22 Organize manus	60 hrs	60 hrs	0 hrs	36 hrs	Work		32h	28h		
						Act. W		24h	12h		
		Dan Jump	20 hrs	20 hrs	0 hrs	20 hrs	Work		8h	12h	
						Act. W		8h	12h		
	Hany Morcc	40 hrs	40 hrs	0 hrs	16 hrs	Work		24h	16h		
					Act. W		16h				
23 Copyedit	184 hrs	180 hrs	4 hrs	0 hrs	Work			48h	80h		
					Act. W						
	Copyeditors	184 hrs	180 hrs	4 hrs	0 hrs	Work			48h	80h	
					Act. W						

After actual work is recorded on one assignment to task 22, the blue change highlighting shows you the task-level and summary task-level changes to actual work

Reschedule incomplete work

The scenario: Editorial work has been completed. The team has started work on the next phase. However, you need to troubleshoot a delay in work caused by an unforeseen problem. Open the RescheduleIncompleteWork plan in Project, and perform the following tasks:

1. Scroll the Task Usage view to display the latest actual work recorded for task 31, *Proofread and index*.
2. Reschedule incomplete work for the entire project to start after August 7, 2018.

	Task Name	Work	Baseline	Variance	Actual	Details	Aug 5, '18						
							F	S	S	M	T	W	T
SAGE	27 Design and Production	906 hrs	888 hrs	18 hrs	410 hrs	Work	16h			0h	0h	12h	8h
						Act. W	16h						
	28 Set pages	120 hrs	120 hrs	0 hrs	120 hrs	Work							
						Act. W							
	29 Interior illustration design	258 hrs	240 hrs	18 hrs	258 hrs	Work							
						Act. W							
	30 1st Pages review	320 hrs	320 hrs	0 hrs	32 hrs	Work	16h			0h	0h	12h	8h
						Act. W	16h						
	31 Proofread and index	100 hrs	100 hrs	0 hrs	32 hrs	Work	16h			0h	0h	12h	8h
						Act. W	16h						
		Copyedit	20 hrs	20 hrs	0 hrs	16 hrs	Work	8h			0h	0h	4h
						Act. W	8h						
	Tad Orman	80 hrs	80 hrs	0 hrs	16 hrs	Work	8h			0h	0h	8h	8h
					Act. W	8h							

Note the absence of scheduled work for task 31 (as indicated by 0h) on Monday and Tuesday due to the rescheduled incomplete work; in a Gantt chart view, this would appear as a split task

15. View and report project status

In this chapter

- [Examine a plan's variance](#)
 - [Identify tasks that have slipped](#)
 - [Examine task costs](#)
 - [Examine resource costs](#)
-

Practice files

For this chapter, use the ReportStatus practice file from the Project2016SBS\Ch15 folder. For practice file download instructions, see the introduction.

Communicating project status to key stakeholders is arguably the most important function of a project manager. Although the perfect flow of communications cannot guarantee a project's success, a project with poor communications flow is almost guaranteed to fail.

A key to communicating project status properly is knowing the answers to the following questions: Who needs to know the project's status, and for what purpose? What format or level of detail do these people need?

The time to answer these questions is in the initial planning phase of the project. After work on the project is underway, your main communications task will be reporting project status. This can take several forms:

- Status reports that describe where the project is in terms of cost, scope, and schedule (the three sides of the project triangle, as described in [Appendix A](#), "[A short course in project management](#)")
- Progress reports that document the specific accomplishments of the project team
- Forecasts that predict future project performance

This chapter guides you through procedures related to examining a plan's variance, identifying tasks that have slipped, examining task costs, and examining resource costs.

Examine a plan's variance

After a plan's baseline has been set and work has begun, the primary focus of the project manager shifts from planning to collecting, analyzing, and sharing performance details. For most plans, there are three primary questions to help analyze project performance details:

- At the rate work is being completed, is the plan on track to finish when we expect it to?
- How has the plan's duration, work, or cost changed?
- What has work on the plan cost so far, and what's projected for remaining work?

Comparing the answers to these questions against the baseline provides the project manager and other stakeholders with a good way to measure progress and to determine when corrective action might be necessary.

Where the scheduled or actual performance differs from the baseline plan, you have variance. Variance is usually measured as time, such as days behind schedule, or as cost, such as dollars over budget. After initial planning is complete, many project managers spend most of their time identifying, investigating, and responding to variance. Before you can respond to variance, you must first identify it. That subject is introduced in this topic.

In this topic, you'll examine some useful Project features that can help you understand and share project status. We focus on status reporting features (especially reports) that are likely to be useful across a wide range of project types and sizes, and across different industries.

To start off, for a quick “status-at-a-glance” snapshot, use the Project Statistics dialog box.

The screenshot shows a dialog box titled "Project Statistics for 'ReportingStatus'". It contains two tables and a progress indicator.

	Start	Finish
Current	Mon 4/9/18	Thu 1/3/19
Baseline	Mon 4/9/18	Thu 11/29/18
Actual	Mon 4/9/18	NA
Variance	0d	25.13d

	Duration	Work	Cost
Current	194d	2,730.5h	\$112,482.00
Baseline	168.88d	2,317.5h	\$96,911.50
Actual	117.85d	1,861.5h	\$77,685.00
Remaining	76.15d	869h	\$34,797.00

Percent complete:
 Duration: 61% Work: 68%

Close

In this example, you can see the 25 days of variance between the baseline finish date and the finish date as currently scheduled

In this dialog box, you can see (among other things) the plan’s finish date and variance. Keep in mind that this variance is the scheduled finish date compared to the baseline finish date; without a saved baseline, there is no tracked variance. If you need a refresher on baselines, see [Chapter 14, “Track progress: Detailed techniques.”](#)



Tip

To see overall project-wide values, display the project summary task by clicking Project Summary Task on the Format tab, in the Show/Hide group. You can also apply a number of useful tables such as the Cost and Variance tables in tabular views such as the Gantt Chart and usage views. We describe these tables in the task-specific and resource-specific topics later in this chapter.

For broad schedule and cost variance analysis and reporting, use the Project “dashboard” reports. We’ll begin with the Project Overview report.

PROJECT OVERVIEW

MON 4/9/18 - THU 1/3/19

% COMPLETE

61%

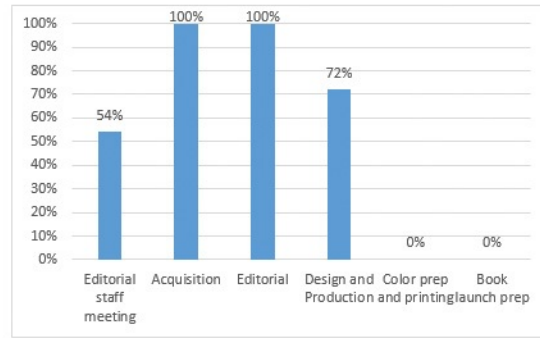
MILESTONES DUE

Milestones that are coming soon.

Name	Finish
Send proofed pages to Production	Fri 9/28/18
Send proofed pages to Production	Tue 10/23/18

% COMPLETE

Status for all top-level tasks. To see the status for subtasks, click on the chart and update the outline level in the Field List.



LATE TASKS

Tasks that are past due.

Name	Start	Finish	Duration	% Complete	Resource Names
Send proofed pages to Production	Fri 9/28/18	Fri 9/28/18	0 days	0%	Hany Morcos
Enter page corrections and index	Mon 10/1/18	Fri 10/5/18	5 days	0%	Jane Dow, Dan Jump[50%]

PROJECT OVERVIEW

The Project Overview report prominently displays the plan's overall percent of duration completed (61% in this example), percent complete by summary task, and more

This report focuses on overall progress of summary tasks and milestones. This is a good report to share with project stakeholders who need big-picture status.

For cost-centric reports, you can start with the Cost Overview report. This report conveys the plan's overall scheduled cost and cost status.

COST OVERVIEW

MON 4/9/18 - THU 1/3/19

COST

\$112,482.00

REMAINING COST

\$34,797.00

% COMPLETE

61%

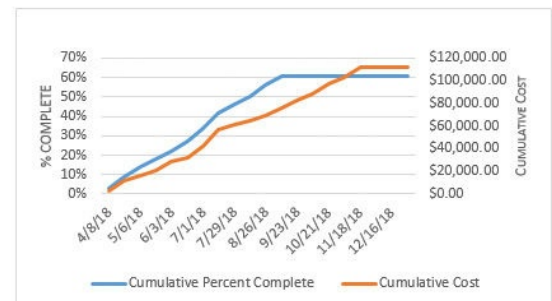
COST STATUS

Cost status for top level tasks.

Name	Actual Cost	Remaining Cost	Baseline Cost	Cost	Cost Variance
Editorial staff meeting	\$1,197.00	\$1,026.00	\$2,223.00	\$2,223.00	\$0.00
Acquisition	\$18,127.50	\$0.00	\$17,587.50	\$18,127.50	\$540.00
Editorial	\$16,183.00	\$0.00	\$15,670.00	\$16,183.00	\$513.00

PROGRESS VERSUS COST

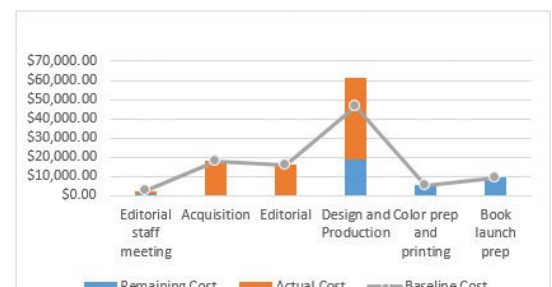
Progress made versus the cost spent over time. If % Complete line below the cumulative cost line, your project may be over budget.



COST STATUS

Cost status for all top-level tasks. Is your baseline zero?

[Try setting as baseline](#)



COST OVERVIEW

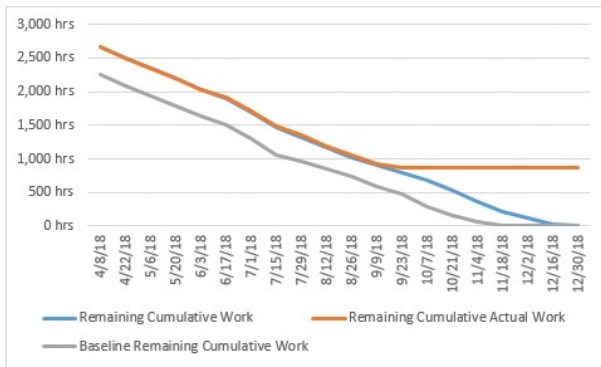
The Cost Overview report conveys total and remaining costs, in addition to historical and future cost trends for the plan

Another cost report that's useful for big-picture cost reporting is the Burndown report.

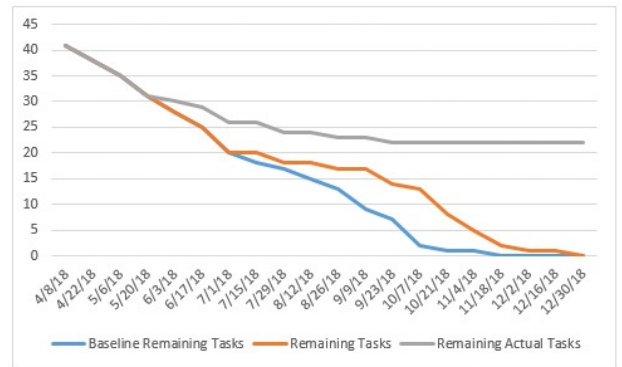
Mon 4/9/18 - Thu 1/3/19

BURNDOWN

BURNDOWN



WORK BURNDOWN



TASK BURNDOWN

The Burndown report helps you answer the question “At the rate we are working, when will we complete the project?”

This report helps you see at a broad level how much work has been completed, how much remains, and the predicted rate at which remaining work will be completed.

Project management focus: Get the word out

There is no shortage of features in Project that support reporting project status, but the main point to keep in mind is that the method by which you report project status is less a technical question than a communications question. For example, what format and level of detail do your stakeholders need to see? Should project sponsors see aspects of a project's performance that are different than those seen by its resources? These questions are central to the project manager's job. Fortunately, as noted earlier, Project is a rich communications tool you can use to construct the type of project status information that best meets the needs of your stakeholders.

If you work in an organization that is highly focused on projects and project management, chances are that standard methods and formats already exist within your organization for communicating project status. If not, you might be able to introduce project status formats that are based on clear communication and effective project-management principles.

Some other Project features that can help you report project status include the following:

- If you have Microsoft Excel or Visio, print a status-focused visual report. (To do this, on the Report tab, in the Export group, click Visual Reports.) For more information, see [Chapter 19, “Share information with other programs.”](#)
- Copy Project data to other programs—for example, to copy the Gantt Chart view, use Copy Picture. (To do this, on the Task tab, in the Clipboard group, click the Copy arrow.) For more information, see [Chapter 19](#).
- Export Project data in other formats. (To do this, on the File tab, click Export, and then click Create PDF/XPS Document, or click Save Project As File and then select the format you want.) For more information, see [Chapter 19](#).
- Share Project information with others via Microsoft SharePoint and Project Web App (PWA). For more information, see [Appendix C: “Collaborate: Project, SharePoint, and PWA.”](#)

To open the Project Statistics dialog box

1. Click the **File** tab to display the Backstage view, and then click the **Info** tab.
2. On the **Info** page of the Backstage view, click **Project Information**, and then click **Project Statistics**.

To display a Dashboard report (including Project Overview, Cost Overview, and Burndown reports)

1. On the **Report** tab, in the **View Reports** group, click **Dashboards**.
2. Click the Dashboard report you want.

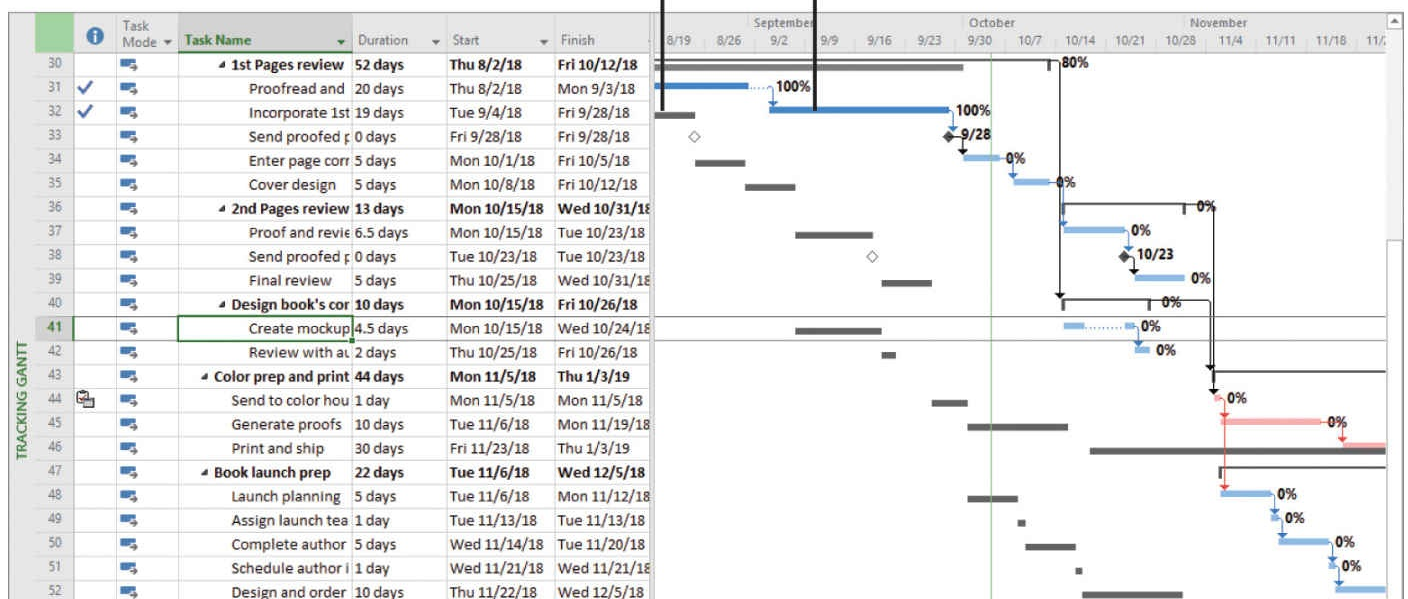
Identify tasks that have slipped

When tasks start or finish earlier or later than planned, schedule variance is the result. One cause of schedule variance is delays in starting or finishing tasks. You certainly want to know about tasks that started late or future tasks that might not start as scheduled. Let's look at various ways of spotting task variance.

The Tracking Gantt view is a handy view in which to see task variance graphically represented. This view graphically illustrates the difference between scheduled, actual, and baseline performance. The Tracking Gantt view uses color to distinguish the tasks on the critical path. This is especially important when looking at variance, because variance on critical tasks directly affects the plan's finish date.

A gray bar represents the original (baseline) schedule in the Tracking Gantt view

A blue or red bar represents the task as it is currently scheduled or when it was completed



By comparing the currently scheduled Gantt bars with the baseline Gantt bars, you can see what tasks have slipped from their original baseline schedule



Tip

To see details about any bar or other item in a Gantt chart view, point to it. After a moment, a ScreenTip appears with details.

The Variance table in the Task Sheet or any task-centric tabular view is especially useful for identifying variance from the baseline.

	Task Mode	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0		Children's Book Sc	Mon 4/9/18	Thu 1/3/19	Mon 4/9/18	Thu 11/29/18	0 days	25.13 days
1		Editorial staff me	Mon 4/16/18	Mon 7/9/18	Mon 4/16/18	Mon 7/9/18	0 days	0 days
15		Acquisition	Mon 4/9/18	Tue 5/29/18	Mon 4/9/18	Mon 5/28/18	0 days	1.5 days
21		Editorial	Wed 5/30/18	Mon 7/9/18	Mon 5/28/18	Fri 7/6/18	1.5 days	0.88 days
22		Organize manu	Wed 5/30/18	Tue 6/5/18	Mon 5/28/18	Mon 6/4/18	1.5 days	1.38 days
23		Copyedit	Wed 6/6/18	Wed 6/20/18	Mon 6/4/18	Tue 6/19/18	1.38 days	0.88 days
24		Author review	Wed 6/20/18	Wed 7/4/18	Tue 6/19/18	Tue 7/3/18	0.88 days	0.88 days
25		Copyedit incor	Mon 7/2/18	Mon 7/9/18	Fri 6/29/18	Fri 7/6/18	0.88 days	0.88 days
26		Handoff to Pro	Mon 7/9/18	Mon 7/9/18	Fri 7/6/18	Fri 7/6/18	0.88 days	0.88 days
27		Design and Produ	Mon 7/9/18	Wed 10/31/18	Fri 7/6/18	Wed 9/26/18	0.88 days	25.13 days
28		Set pages	Mon 7/9/18	Mon 7/30/18	Fri 7/6/18	Fri 7/27/18	0.88 days	0.88 days
29		Interior illustra	Mon 7/9/18	Wed 8/1/18	Fri 7/6/18	Fri 7/27/18	0.88 days	3.13 days
30		1st Pages review	Thu 8/2/18	Fri 10/12/18	Fri 7/27/18	Fri 9/7/18	3.13 days	25.13 days
31		Proofread ai	Thu 8/2/18	Mon 9/3/18	Fri 7/27/18	Fri 8/10/18	3.13 days	16.13 days
32		Incorporate	Tue 9/4/18	Fri 9/28/18	Fri 8/10/18	Fri 8/24/18	16.13 days	25.13 days

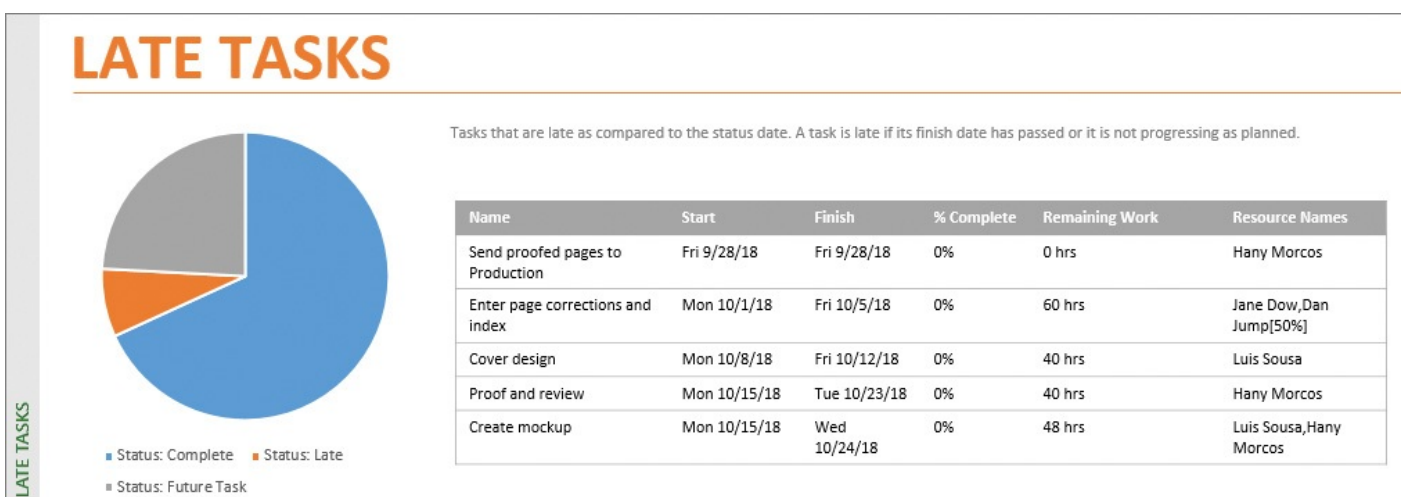
The Variance table shows the number of days of variance for each task's start and finish dates



Tip

To focus on only tasks that have variance, you can apply the Slipping Tasks filter to the task list. This filter shows only uncompleted tasks that, as they are now scheduled, have slipped from their baseline schedule. In this context, “slipping” means “slipping from baseline.” Other useful filters include the Slipped/Late Progress and Late Tasks filters.

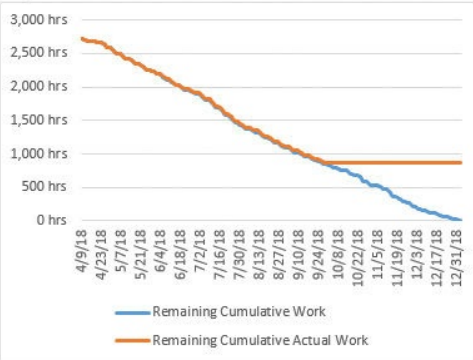
Two useful reports that cover task variance are the Late Tasks and Slipping Tasks reports. The Late Tasks report is focused on the status date—the current date, unless you set a different status date.



Use the Late Tasks report to focus on tasks that finished or will finish later than planned

The Slipping Tasks report focuses on task status in relation to the tasks' baseline finish dates.

SLIPPING TASKS



Tasks where the finish date is past the baseline finish date.

Name	Start	Finish	% Complete	Remaining Work	Resource Names
Send proofed pages to Production	Fri 9/28/18	Fri 9/28/18	0%	0 hrs	Hany Morcos
Enter page corrections and index	Mon 10/1/18	Fri 10/5/18	0%	60 hrs	Jane Dow, Dan Jump[50%]
Cover design	Mon 10/8/18	Fri 10/12/18	0%	40 hrs	Luis Sousa
Proof and review	Mon 10/15/18	Tue 10/23/18	0%	40 hrs	Hany Morcos
Send proofed pages to Production	Tue 10/23/18	Tue 10/23/18	0%	0 hrs	Hany Morcos
Final review	Thu 10/25/18	Wed 10/31/18	0%	80 hrs	Jane Dow, Hany Morcos[50%], Carole Poland[50%], Advance proofs[20 copies]
Create mockup	Mon 10/15/18	Wed 10/24/18	0%	48 hrs	Luis Sousa, Hany Morcos
Review with author	Thu 10/25/18	Fri 10/26/18	0%	40 hrs	Luis Sousa, Tad Orman, Travel[\$1,500.00], Dan Jump[50%]

When a plan includes a baseline, the Slipping Tasks report helps you identify tasks that have slipped from the baseline

Project management focus: Is variance ever a good thing?

In project management, we generally look for variance that can have an adverse effect on a project, such as variance that pushes out the finish date or increases the cost of a project. However, the term *variance* refers to any difference between planned and actual events—even differences that have a helpful effect, such as an earlier finish date or a lower-than-expected cost. If you have the good fortune of managing a project that experiences such helpful variance, the techniques described here will help you identify the beneficial variance in addition to any adverse variance. Your focus as a project manager is basically the same regardless of the nature of the variance—watch for it, and when it does occur, communicate it and its effects to project sponsors and other stakeholders and (if it's adverse variance) mitigate against it according to the nature of the project.

To display the Variance table in the Task Sheet view

You can also add the Variance table to any task-centric tabular view.

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task Sheet** to display the Task Sheet view.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Variance**.

To display the Tracking Gantt view

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow, and then click **Tracking Gantt**.

To display the Late Tasks or Slipping Tasks report

1. On the **Report** tab, in the **View Reports** group, click **In Progress**.

2. Click the report you want.

Examine task costs

Measuring the schedule's status (that is, determining which tasks start and finish on time), although critical to nearly all projects, is only one indicator of overall project health. For projects that include cost information, another critical indicator is cost variance: are tasks running over or under budget?

Task costs in Project include the following:

- Fixed costs applied directly to tasks
- Resource costs derived from assignments

When tasks cost more or less than planned to complete, cost variance is the result. Evaluating cost variance enables you to make incremental budget adjustments for individual tasks to avoid exceeding your overall budget.

Although tasks and resources (and their costs) are directly related, it's informative to evaluate each individually. This topic focuses on the views, reports, and other features that help you identify and communicate task costs. The next topic does the same for resource costs.

A great place to start is to show the Cost table in any task-centric tabular view, such as the Task Sheet.

	Task Name	Fixed	Fixed Cost	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Sel	\$0.00	Prorated	\$112,482.00	\$96,911.50	\$15,570.50	\$77,685.00	\$34,797.00
1	▶ Editorial staff mee	\$0.00	Prorated	\$2,223.00	\$2,223.00	\$0.00	\$1,197.00	\$1,026.00
15	▶ Acquisition	\$0.00	Prorated	\$18,127.50	\$17,587.50	\$540.00	\$18,127.50	\$0.00
21	▶ Editorial	\$0.00	Prorated	\$16,183.00	\$15,670.00	\$513.00	\$16,183.00	\$0.00
22	Organize manus	\$0.00	Prorated	\$3,213.00	\$3,060.00	\$153.00	\$3,213.00	\$0.00
23	Copyedit	\$0.00	Prorated	\$8,460.00	\$8,100.00	\$360.00	\$8,460.00	\$0.00
24	Author review c	\$0.00	Prorated	\$900.00	\$900.00	\$0.00	\$900.00	\$0.00
25	Copyedit incorp	\$0.00	Prorated	\$3,610.00	\$3,610.00	\$0.00	\$3,610.00	\$0.00
26	Handoff to Prod	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
27	▶ Design and Produc	\$0.00	Prorated	\$61,196.50	\$46,679.00	\$14,517.50	\$42,177.50	\$19,019.00
28	Set pages	\$0.00	Prorated	\$7,590.00	\$7,590.00	\$0.00	\$7,590.00	\$0.00
29	Interior illustrat	\$0.00	Prorated	\$15,147.50	\$13,050.00	\$2,097.50	\$15,147.50	\$0.00
30	▶ 1st Pages review	\$0.00	Prorated	\$26,280.00	\$13,860.00	\$12,420.00	\$19,440.00	\$6,840.00
31	Proofread an	\$0.00	Prorated	\$7,200.00	\$900.00	\$6,300.00	\$7,200.00	\$0.00
32	Incorporate 1	\$0.00	Prorated	\$12,240.00	\$6,120.00	\$6,120.00	\$12,240.00	\$0.00
33	Send proofec	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

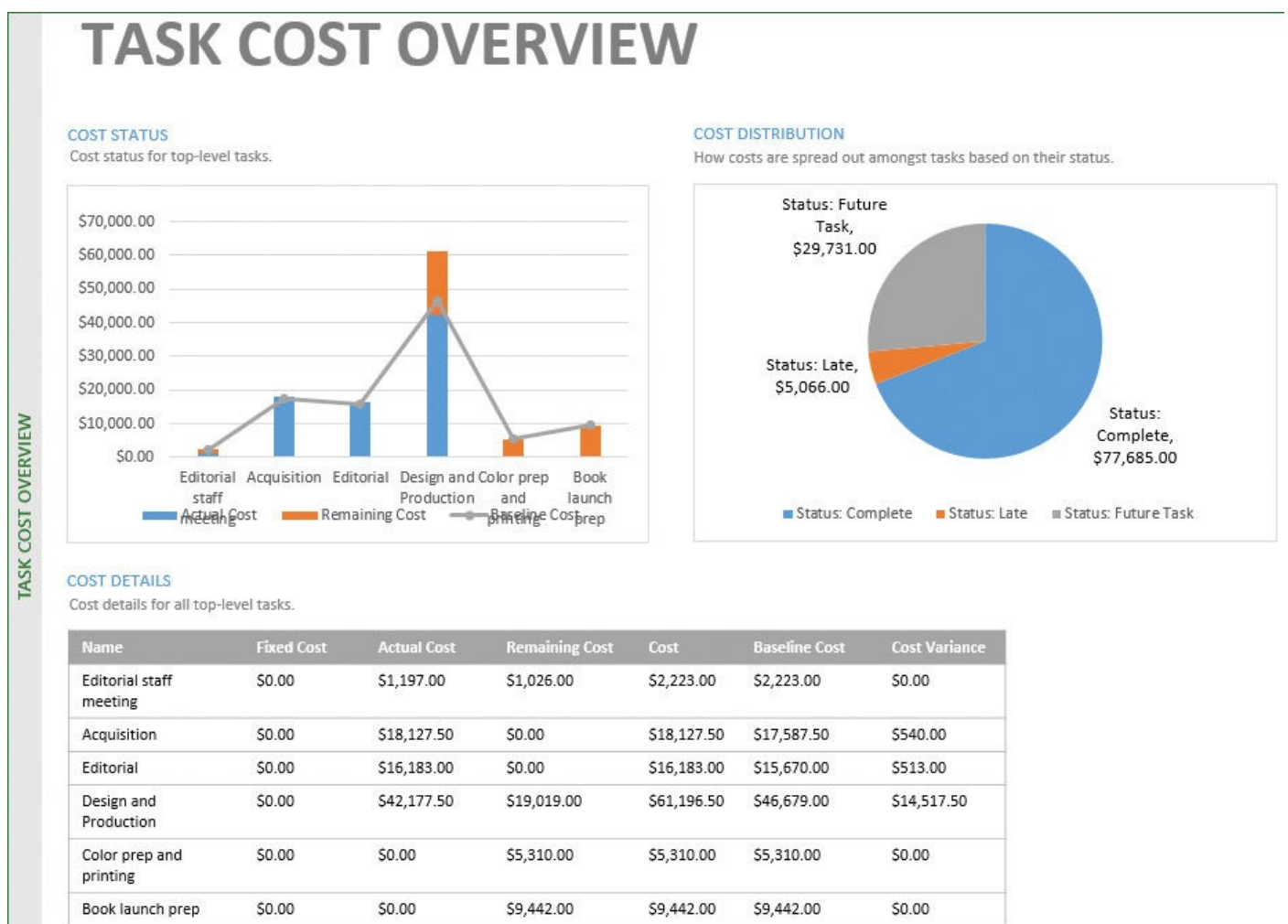
Display the project summary task to see the complete cost rollup from subtasks to summary tasks to the project summary task

In this table, *Total Cost* represents the calculated cost (sometimes you'll hear this called *scheduled cost*) of a task based on the cost rates of the assigned resources and their assignment durations, plus any fixed cost that has been specified for the task. If the task has been completed, Total Cost is equal to the task's actual cost.

Displaying the project summary task (identified as task 0) is useful when examining a plan's costs. The project summary task's cost values are the plan's cost values, and they match the values you would see in the Project Statistics dialog box. These values include the following:

- The current total cost value is the sum of the actual (that is, completed) and remaining (uncompleted) cost values.
- The baseline cost value is the project's planned cost when its baseline was set.
- The actual cost is the cost that has been incurred so far.
- The remaining cost is the difference between the current cost and actual cost.

Project includes several reports that focus on task costs. The Task Cost Overview report includes multiple charts and tables that present summary and detailed task cost information.



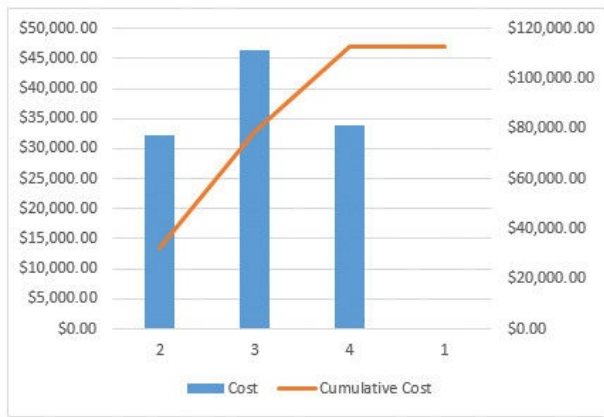
In the Task Cost Overview report, the Cost Distribution pie chart sums task costs by their completion status

Another useful report is the Cash Flow report. This report shows cumulative project costs per quarter, or over whatever budgeting time period you need.

CASH FLOW

CASH FLOW

Actual Cost	Baseline Cost	Remaining Cost	Cost Variance
\$77,685.00	\$96,911.50	\$34,797.00	\$15,570.50



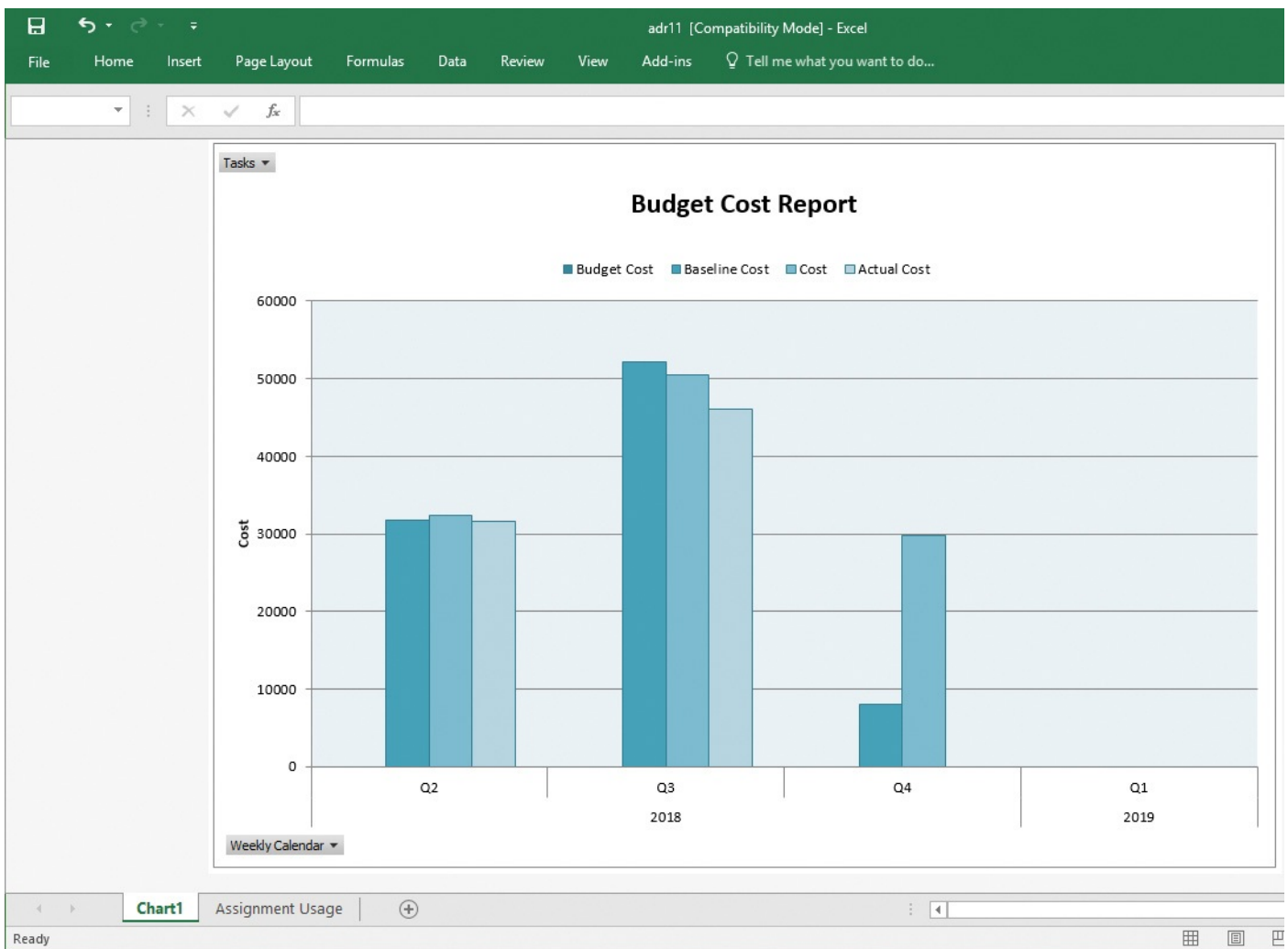
The chart shows the project's cumulative cost and the cost per quarter. To see the costs for a different time period, select the Edit option from the Field List.

The table below shows cost information for all top-level tasks. To see cost stats for all tasks, set the Outline Level in the Field List.

Name	Remaining Cost	Actual Cost	Cost	ACWP	BCWP	BCWS
Editorial staff meeting	\$1,026.00	\$1,197.00	\$2,223.00	\$1,197.00	\$1,197.00	\$2,223.00
Acquisition	\$0.00	\$18,127.50	\$18,127.50	\$18,127.50	\$17,587.50	\$17,587.50
Editorial	\$0.00	\$16,183.00	\$16,183.00	\$16,183.00	\$15,670.00	\$15,670.00
Design and Production	\$19,019.00	\$42,177.50	\$61,196.50	\$42,177.50	\$27,660.00	\$45,179.00
Color prep and printing	\$5,310.00	\$0.00	\$5,310.00	\$0.00	\$0.00	\$2,372.50
Book launch prep	\$9,442.00	\$0.00	\$9,442.00	\$0.00	\$0.00	\$1,435.50

Display the Cash Flow report to see the plan's cost and cumulative cost values over time

We'll end our walkthrough of task-centric and cost-centric Project features with a visual report. Visual reports are a category of reports that use Project data that is exported to Excel or Visio. The Budget Cost visual report presents budget (in this context meaning *as currently scheduled*), baseline, and actual costs per time period. When you generate this visual report, Project exports data to Excel, creates a PivotTable, and then produces the chart in Excel.



The Budget Cost visual report is based on an Excel PivotTable and offers the rich data manipulation available with a PivotTable

Here are some additional tips and suggestions for working with tasks' cost data:

- Apply the Late/Overbudget Tasks Assigned To filter for a specific resource. This filter is available from the More Filters list on the View tab, available from the Filters command in the Data group.
- Display work variance in the Work table in a task view by clicking Work on the Tables menu that is available from the View tab, in the Data group. Remember that for a plan in which most costs are derived from work resources, examining work variance is one way to examine cost variance.
- You can compare timephased baseline and scheduled work in a usage view. For example, in the Task Usage view, on the Format tab, in the Details group, click Baseline Work.
- To see cost variance over time for assignments to a task, switch to the Task Usage view, and then apply the Cost table. While in a usage view, you can also show Cost, Baseline Cost, and Actual Cost details via the Add Details dialog box. On the Format tab, in the Details group, select the options you want.

To display the Cost table in the Task Sheet view

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task**

Sheet to display the Task Sheet view.

2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost**.

To display the Task Cost Overview or Cash Flow report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.

2. Click the report you want.

To display the Budget Cost visual report (requires Excel)

1. On the **Report** tab, in the **Export** group, click **Visual Reports** to open the Visual Reports dialog box.

2. Click the **Assignment Usage** tab.

3. Click **Budget Cost Report**, and then click **View**. The report appears in Excel.

Examine resource costs

Project managers sometimes focus on resource costs as a means of measuring progress and variance within a project. However, resource cost information also serves other people and other needs. For many organizations, resource costs are the primary, or even the only, costs incurred while completing projects, so closely watching resource costs might directly relate to the financial health of an organization. It might not be a project manager, but instead an executive, cost accountant, or resource manager who is most interested in resource costs on projects as they relate to organizational costs.

Another common reason to track resource costs is for billing either within an organization (for example, billing another department for services your department has provided) or externally. In either case, the resource cost information stored in plans can serve as the basis for billing for your department's or organization's services to others.

This topic walks you through some effective features, views, and reports for focusing on resource costs in your plans. We begin with the Cost table, which you can display in any resource-centric tabular view, such as the Resource Sheet view.

	Resource Name	Cost	Baseline	Variance	Actual Cost	Remaining
3	Copyeditors	\$20,700.00	\$13,500.00	\$7,200.00	\$20,700.00	\$0.00
5	Hany Morcos	\$25,941.25	\$22,066.25	\$3,875.00	\$16,623.75	\$9,317.50
4	Dan Jump	\$11,740.25	\$8,644.75	\$3,095.50	\$9,399.75	\$2,340.50
8	Luis Sousa	\$15,400.00	\$14,000.00	\$1,400.00	\$9,800.00	\$5,600.00
1	Carole Poland	\$11,182.50	\$11,182.50	\$0.00	\$8,767.50	\$2,415.00
2	Color Setting Ser	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	Jane Dow	\$18,172.00	\$18,172.00	\$0.00	\$12,100.00	\$6,072.00
7	Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00
9	Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	Travel	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00
12	Advance proofs	\$300.00	\$300.00	\$0.00	\$0.00	\$300.00

RESOURCE SHEET

Use the sorting and filtering features to organize and present resource cost information in tabular views

To see cost variance over time for assignments per resource, display the Resource Usage view, and then apply the Cost table. Then you can also show Cost and Baseline Cost details in the timephased grid. This also works in the Task Usage view.

	Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining	Details	M	T	W						
6	▶ Jane Dow	\$18,172.00	\$18,172.00	\$0.00	\$12,100.00	\$6,072.00	Cost	\$253.00	\$506.00	\$506.00						
							Base. Cost	\$506.00	\$506.00	\$506.00						
7	▶ Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00	Cost	\$42.00								
							Base. Cost	\$42.00								
8	◀ Luis Sousa	\$15,400.00	\$14,000.00	\$1,400.00	\$9,800.00	\$5,600.00	Cost	\$280.00	\$560.00	\$560.00						
							Base. Cost	\$560.00	\$560.00	\$560.00						
							Cover design	\$2,800.00	\$2,800.00	\$0.00	\$0.00	\$2,800.00	Cost			
													Base. Cost			
							Interior illustr	\$9,800.00	\$8,400.00	\$1,400.00	\$9,800.00	\$0.00	Cost	\$280.00	\$560.00	\$560.00
													Base. Cost	\$560.00	\$560.00	\$560.00
							Create mocku	\$1,680.00	\$1,680.00	\$0.00	\$0.00	\$1,680.00	Cost			
						Base. Cost										
	Review with c	\$1,120.00	\$1,120.00	\$0.00	\$0.00	\$1,120.00	Cost									
							Base. Cost									
9	▶ Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	Cost									
							Base. Cost									
10	▶ Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	Cost									
							Base. Cost	\$0.00	\$0.00	\$0.00						
11	▶ Travel	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00	Cost									
							Base. Cost									
12	▶ Advance proofs	\$300.00	\$300.00	\$0.00	\$0.00	\$300.00	Cost									
							Base. Cost									

RESOURCE USAGE

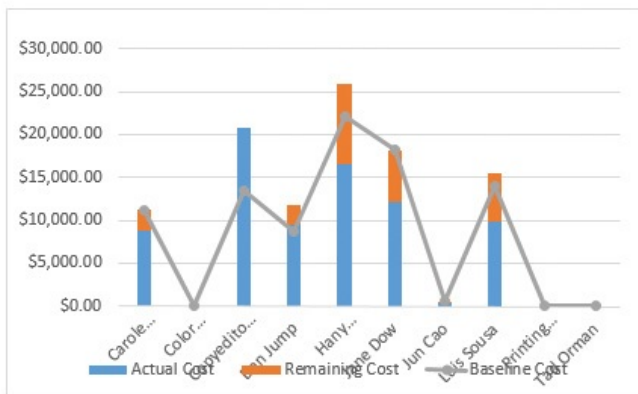
With both the Cost table and cost-related timephased details visible, the Resource Usage view gives you a detailed level of timephased cost data

Project also includes reports that focus on resource costs, such as the Resource Cost Overview report.

RESOURCE COST OVERVIEW

COST STATUS

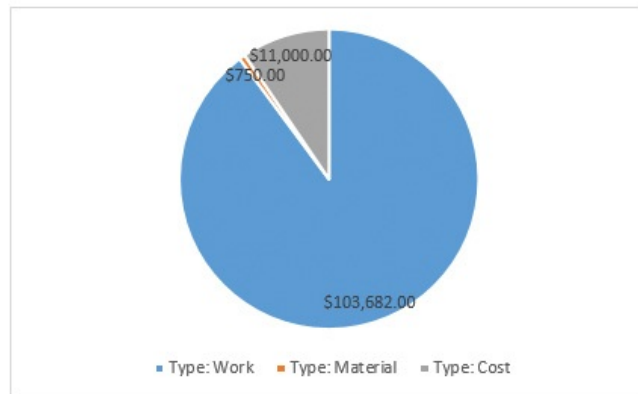
Cost status for work resources.



Window Snip

COST DISTRIBUTION

How costs are spread out amongst different resource types.



COST DETAILS

Cost details for all work resources.

Name	Actual Work	Actual Cost	Standard Rate
Carole Poland	167 hrs	\$8,767.50	\$2,100.00/wk
Color Setting Services	0 hrs	\$0.00	\$0.00/hr
Copyeditors	460 hrs	\$20,700.00	\$45.00/hr
Dan Jump	124.5 hrs	\$9,399.75	\$75.50/hr
Hany Morcos	429 hrs	\$16,623.75	\$38.75/hr
Jane Dow	202 hrs	\$12,100.00	\$55.00/hr

RESOURCE COST OVERVIEW

Ready New Tasks : Auto Scheduled

The Resource Cost Overview report includes a mix of charts and tables that focus on cost details per resource

This report includes a simple summary table of resource cost details, plus charts that convey actual and remaining costs per resource, and cost totals by resource type. The Cost Distribution pie chart is especially relevant if your plan includes a significant portion of material and cost resources.

To display the Cost table in the Resource Sheet view

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet** to display the Resource Sheet view.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost**.

To sort resources by cost amounts

1. Display the Cost table.
2. Click the **AutoFilter** arrow in a column heading such as *Cost* or *Variance*, and in the menu that appears, click **Sort Largest to Smallest**.

To display the Cost table and cost details in the Resource Usage view

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage** to display the Resource Usage view.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost**. The Cost

table appears in the Resource Usage view.

3. On the **Resource Usage Tools Format** tab, in the **Details** group, click the **Cost** detail to add it to the timephased side of the view.
4. To add more timephased details, click **Add Details** to open the Detail Styles dialog box. Then, in the **Available Fields** list, click the cost-related fields you want to add, and click **Show**.

To display the Resource Cost Overview report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.
2. Click **Resource Cost Overview**.

Skills review

In this chapter, you learned how to:

- [Examine a plan's variance](#)
- [Identify tasks that have slipped](#)
- [Examine task costs](#)
- [Examine resource costs](#)



Practice tasks

The ReportStatus practice file for these tasks is located in the Project2016SBS\Ch15 folder.



Important

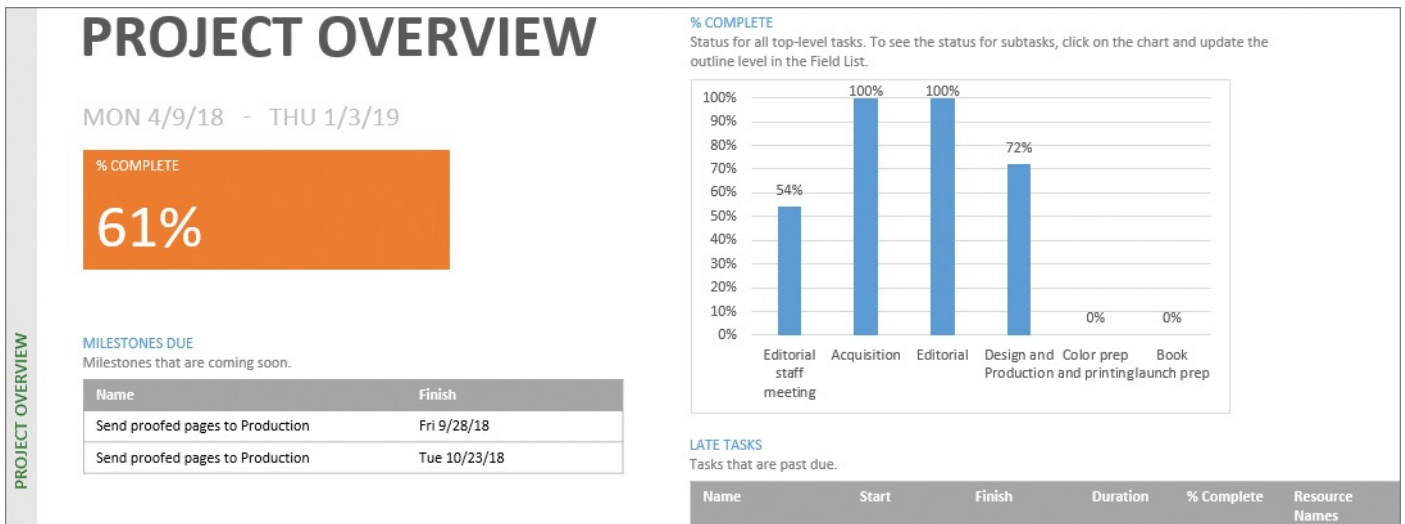
If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Examine a plan's variance

The scenario: At Lucerne Publishing, work on the children's book plan is well underway. You have encountered some variance from the plan—in other words, actual work has not always matched the plan as captured in its baseline. You'd like to get a broad look at what work has been completed and what remains. Open the ReportStatus plan in Project, and perform the following tasks:

1. Locate the plan's overall schedule variance of its finish date (just over 25 days) in the **Project Statistics** dialog box.

2. Display the Project Overview report, and note the percent complete values of the top-level summary tasks.



The Project Overview report prominently displays overall percent complete, in addition to the completion status of top-level summary tasks

Identify tasks that have slipped

The scenario: You've seen the overall variance for the children's book plan. Next you'll focus on the summary tasks that have incurred the highest variance. Continuing in the ReportStatus plan, perform the following tasks:

1. Display the **Variance** table in the Task Sheet view.
2. Filter the table to display only summary tasks.
3. Identify the summary tasks (or phases) of the plan that have incurred the highest finish variance.

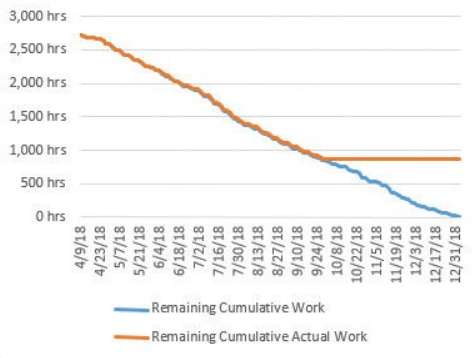
Task Mode	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0	Children's Book Schedule	Mon 4/9/18	Thu 1/3/19	Mon 4/9/18	Thu 11/29/18	0 days	25.13 days
1	Editorial staff meeting	Mon 4/16/18	Mon 7/9/18	Mon 4/16/18	Mon 7/9/18	0 days	0 days
15	Acquisition	Mon 4/9/18	Tue 5/29/18	Mon 4/9/18	Mon 5/28/18	0 days	1.5 days
21	Editorial	Wed 5/30/18	Mon 7/9/18	Mon 5/28/18	Fri 7/6/18	1.5 days	0.88 days
27	Design and Production	Mon 7/9/18	Wed 10/31/18	Fri 7/6/18	Wed 9/26/18	0.88 days	25.13 days
30	1st Pages review	Thu 8/2/18	Fri 10/12/18	Fri 7/27/18	Fri 9/7/18	3.13 days	25.13 days
36	2nd Pages review	Mon 10/15/18	Wed 10/31/18	Fri 9/7/18	Wed 9/26/18	25.13 days	25.13 days
40	Design book's companion website	Mon 10/15/18	Fri 10/26/18	Fri 9/7/18	Fri 9/21/18	25.13 days	25.13 days
43	Color prep and printing	Mon 11/5/18	Thu 1/3/19	Wed 9/26/18	Thu 11/29/18	27.13 days	25.13 days
47	Book launch prep	Tue 11/6/18	Wed 12/5/18	Mon 10/1/18	Wed 10/31/18	25.13 days	25.13 days

Apply the Summary Task filter to more simply focus on summary tasks' variance values

4. Display the Slipping Tasks report, and identify the tasks with the most remaining work that have slipped from the baseline.

SLIPPING TASKS

SLIPPING TASKS



Tasks where the finish date is past the baseline finish date.

Name	Start	Finish	% Complete	Remaining Work	Resource Names
Send proofed pages to Production	Fri 9/28/18	Fri 9/28/18	0%	0 hrs	Hany Morcos
Enter page corrections and index	Mon 10/1/18	Fri 10/5/18	0%	60 hrs	Jane Dow, Dan Jump[50%]
Cover design	Mon 10/8/18	Fri 10/12/18	0%	40 hrs	Luis Sousa
Proof and review	Mon 10/15/18	Tue 10/23/18	0%	40 hrs	Hany Morcos
Send proofed pages to Production	Tue 10/23/18	Tue 10/23/18	0%	0 hrs	Hany Morcos
Final review	Thu 10/25/18	Wed 10/31/18	0%	80 hrs	Jane Dow, Hany Morcos[50%], Carole Poland[50%], Advance proofs[20 copies]
Create mockup	Mon 10/15/18	Wed 10/24/18	0%	48 hrs	Luis Sousa, Hany Morcos
Review with author	Thu 10/25/18	Fri 10/26/18	0%	40 hrs	Luis Sousa, Tad Orman, Travel[\$1,500.00], Dan Jump[50%]

Scan down the Remaining Work column to identify the slipping tasks with the most remaining work

Examine task costs

The scenario: You've examined task schedule variance in the children's book plan. Next you'll examine task cost variance. Continuing in the ReportStatus plan, perform the following tasks:

1. Display the **Cost** table in the Task Sheet view to find the total remaining costs per summary task.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Schedule	\$0.00	Prorated	\$112,482.00	\$96,911.50	\$15,570.50	\$77,685.00	\$34,797.00
1	Editorial staff meeting	\$0.00	Prorated	\$2,223.00	\$2,223.00	\$0.00	\$1,197.00	\$1,026.00
15	Acquisition	\$0.00	Prorated	\$18,127.50	\$17,587.50	\$540.00	\$18,127.50	\$0.00
21	Editorial	\$0.00	Prorated	\$16,183.00	\$15,670.00	\$513.00	\$16,183.00	\$0.00
27	Design and Production	\$0.00	Prorated	\$61,196.50	\$46,679.00	\$14,517.50	\$42,177.50	\$19,019.00
30	1st Pages review	\$0.00	Prorated	\$26,280.00	\$13,860.00	\$12,420.00	\$19,440.00	\$6,840.00
36	2nd Pages review	\$0.00	Prorated	\$6,345.00	\$6,345.00	\$0.00	\$0.00	\$6,345.00
40	Design book's companion website	\$0.00	Prorated	\$5,834.00	\$5,834.00	\$0.00	\$0.00	\$5,834.00
43	Color prep and printing	\$0.00	Prorated	\$5,310.00	\$5,310.00	\$0.00	\$0.00	\$5,310.00
47	Book launch prep	\$0.00	Prorated	\$9,442.00	\$9,442.00	\$0.00	\$0.00	\$9,442.00

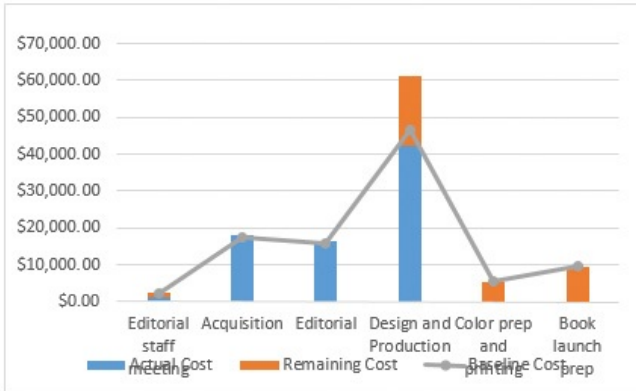
Use the Cost table to spot variance per task and summary task (this view still has the summary task filter applied)

2. Display the Task Cost Overview report, and then find the expected cost of the plan's incomplete future tasks.

TASK COST OVERVIEW

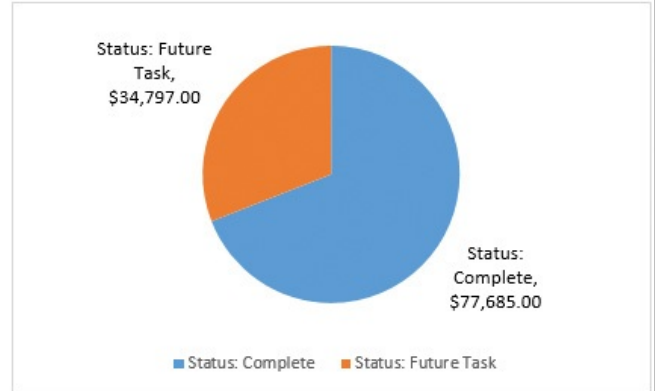
COST STATUS

Cost status for top-level tasks.



COST DISTRIBUTION

How costs are spread out amongst tasks based on their status.



COST DETAILS

Cost details for all top-level tasks.

Name	Fixed Cost	Actual Cost	Remaining Cost	Cost	Baseline Cost	Cost Variance
------	------------	-------------	----------------	------	---------------	---------------

The pie chart in the Task Cost Overview report conveys the total cost of both completed and future tasks

Examine resource costs

The scenario: Expenses in the children's book plan are derived, for the most part, from the costs of resource assignments. You've already seen the task costs, so next you'll focus on resource cost variance. Continuing in the ReportStatus plan, perform the following tasks:

1. Display the **Cost** table in the Resource Sheet view.
2. Sort the resources from most to least cost variance.

Resource Name	Cost	Baseline	Variance	Actual Cost	Remaining
3 Copyeditors	\$20,700.00	\$13,500.00	\$7,200.00	\$20,700.00	\$0.00
5 Hany Morcos	\$25,941.25	\$22,066.25	\$3,875.00	\$16,623.75	\$9,317.50
4 Dan Jump	\$11,740.25	\$8,644.75	\$3,095.50	\$9,399.75	\$2,340.50
8 Luis Sousa	\$15,400.00	\$14,000.00	\$1,400.00	\$9,800.00	\$5,600.00
1 Carole Poland	\$11,182.50	\$11,182.50	\$0.00	\$8,767.50	\$2,415.00
2 Color Setting Ser	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6 Jane Dow	\$18,172.00	\$18,172.00	\$0.00	\$12,100.00	\$6,072.00
7 Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00
9 Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10 Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11 Travel	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00
12 Advance proofs	\$300.00	\$300.00	\$0.00	\$0.00	\$300.00

With resources sorted by cost variance, it's easy to spot which resources have incurred the most variance

Part 4: In-depth and special subjects

[CHAPTER 16 Format and print views: In-depth techniques](#)

[CHAPTER 17 Format reports: In-depth techniques](#)

[CHAPTER 18 Customize Project](#)

[CHAPTER 19 Share information with other programs](#)

[CHAPTER 20 Consolidate projects and resources](#)

16. Format and print views: In-depth techniques

In this chapter

- [Format a Gantt chart view](#)
 - [Format a Timeline view](#)
 - [Format a Network Diagram view](#)
 - [Format a Calendar view](#)
 - [Print and export views](#)
-

Practice files

For this chapter, use the FormatInDepth practice file from the Project2016SBS\Ch16 folder. For practice file download instructions, see the introduction.

This chapter introduces you to some of the more in-depth formatting features in Project 2016. A well-formatted plan can be valuable when communicating details to resources, customers, and other stakeholders. Some of the formatting capabilities in Project are similar to those of a style-based word processing program such as Microsoft Word, in which defining a style once affects all content in the document to which that style has been applied. In Project, you can use styles to change the appearance of a specific type of Gantt bar, such as a summary bar, throughout a plan. Other formatting options introduced in this chapter focus on direct formatting of tasks and formatting some of the more commonly used views.

This chapter guides you through procedures related to formatting and printing views by using the more in-depth formatting and printing features in Project.

Format a Gantt chart view

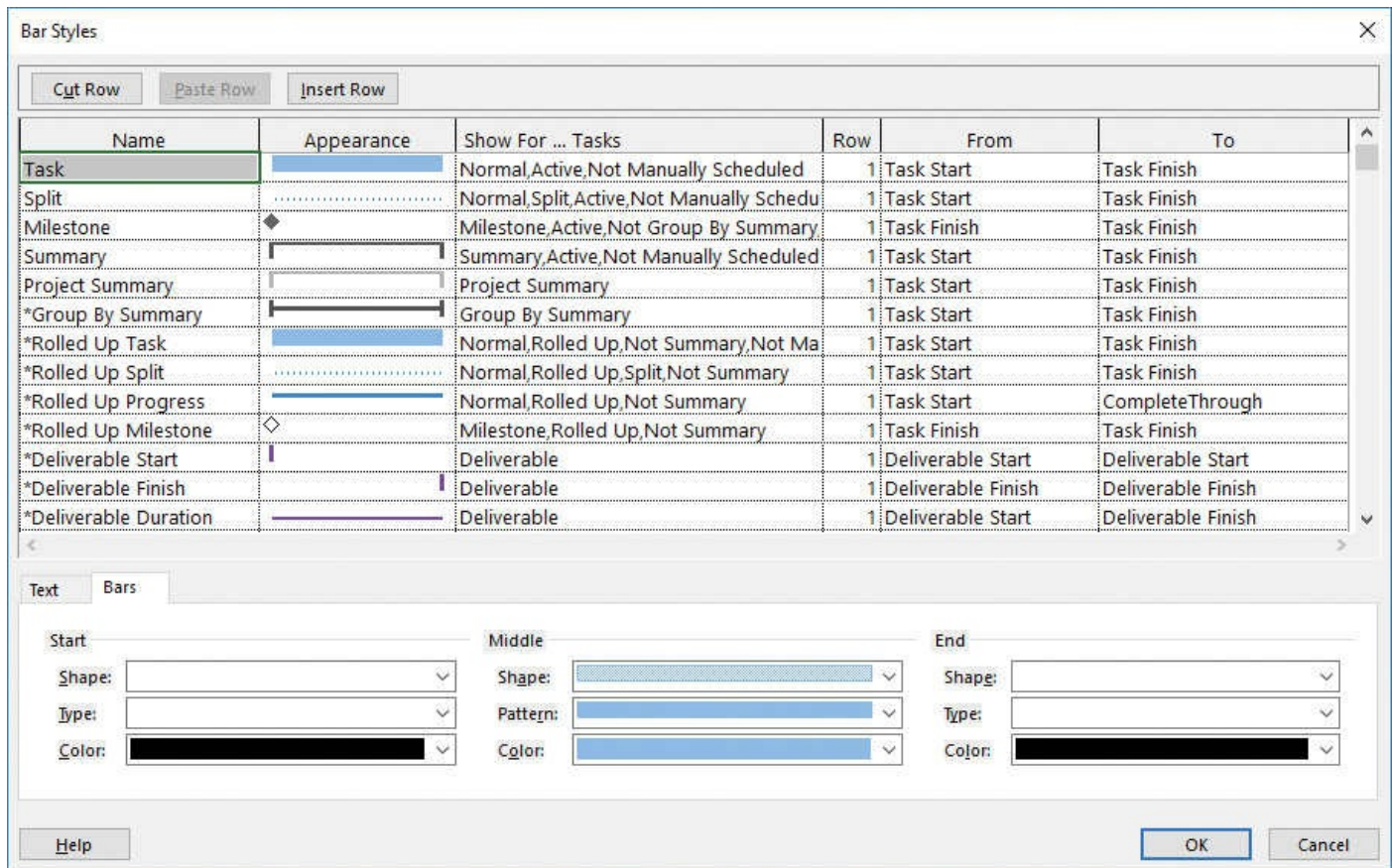
[Chapter 7, “Format and share your plan,”](#) introduced Gantt chart styles and direct formatting of Gantt bars. This topic describes how to use bar styles to change the visual appearance of specific types of Gantt bars (such as summary tasks) and other elements (such as deadline indicators) in ways that the Gantt chart styles cannot.



Remember that several built-in views are Gantt chart views, even though only one view is specifically called the *Gantt Chart* view. Other Gantt chart views include the Detail Gantt, Leveling Gantt, Multiple Baselines Gantt, and Tracking Gantt. The term [Gantt chart view](#) generally refers to a type of presentation that shows Gantt bars organized along a timescale.

You can format specific categories of items in a Gantt chart view to change the appearance of that type of item. You do so by using the Bar Styles dialog box (available from the Bar

Styles group on the Format tab). The bar style and other formatting changes you make in one Gantt chart view apply only to that view.



Use the Bar Styles dialog box to change the appearance of entire categories of items in Gantt chart views

In this dialog box, the formatting changes you make to a particular bar type (critical tasks, for example) or other element apply to all such bars or elements in the Gantt chart.

Project draws bars and other elements on a bar row in the order in which they are listed in the Bar Styles dialog box. This introduces the possibility of one bar being layered on top of (and obscuring) another bar (or other element). The task bar style appears higher in the Bar Styles list than does the progress bar style, for example, so Project draws progress bars on top of task bars. Usually you'll get the results you expect. If you don't get the results you want, look at the order of items in the Bar Styles dialog box.



Tip

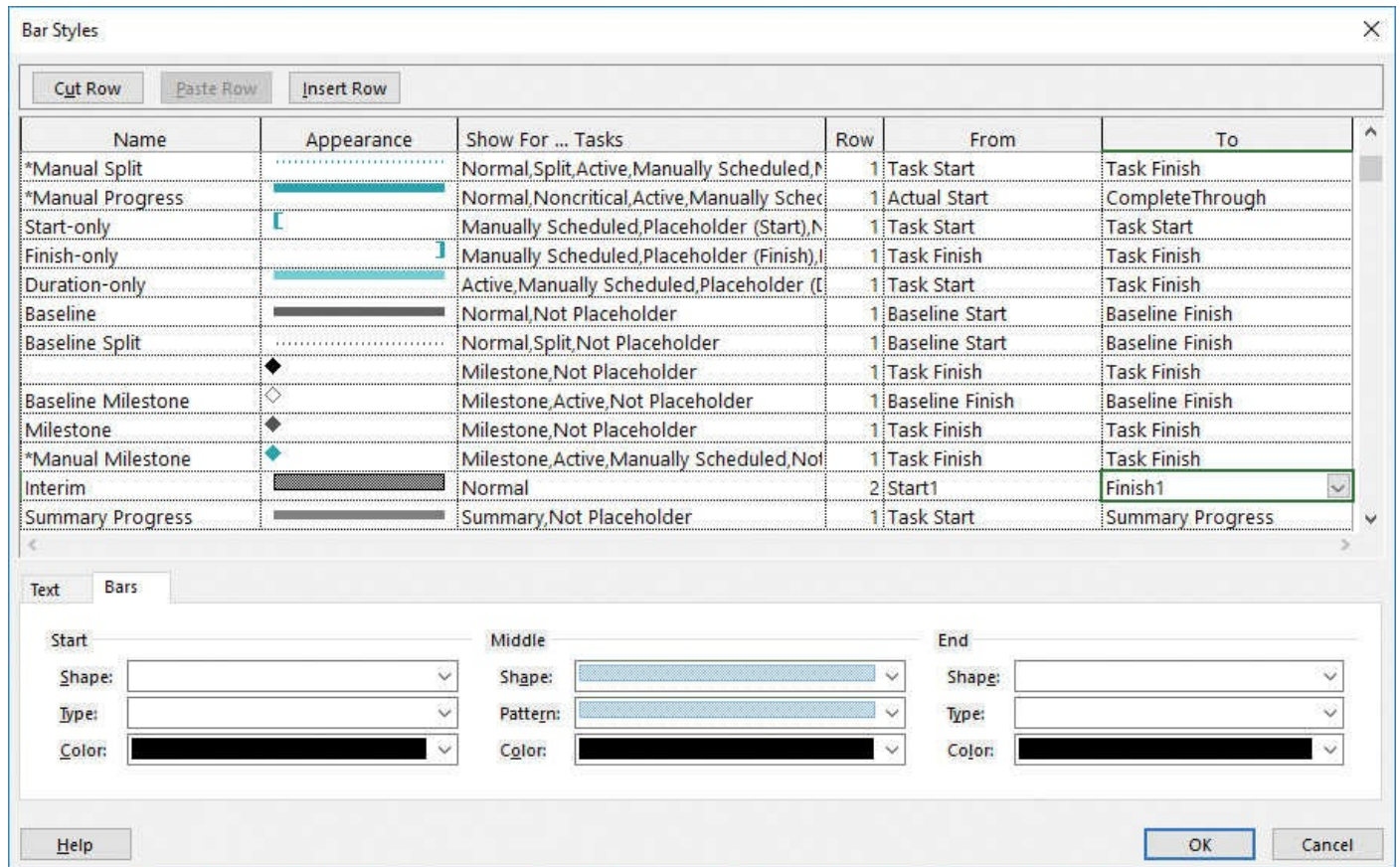
Some of the items in the Name column of the Bar Styles dialog box begin with an asterisk (*). When you are printing Gantt chart views, the names of task bars appear in the legend—except for the task bar names that begin with an asterisk.

In addition to changing the formatting of items that can appear in a Gantt chart view (such as a task's Gantt bar), you can add or remove items. For example, it might be useful to compare baseline, interim, and scheduled plans in a single view. (For a refresher on interim plans, see [Chapter 14, "Track progress: Detailed techniques."](#)) The baseline and scheduled Gantt bars are already available in the Bar Styles dialog box, but interim Gantt

bars are not. Let's walk through how you would add them.

To begin, you would add a new row in the Bar Styles dialog box. Because the order in which Gantt bars are listed in the Bar Styles dialog box determines the order in which Project draws the Gantt bars, you'll want to pay attention to their order.

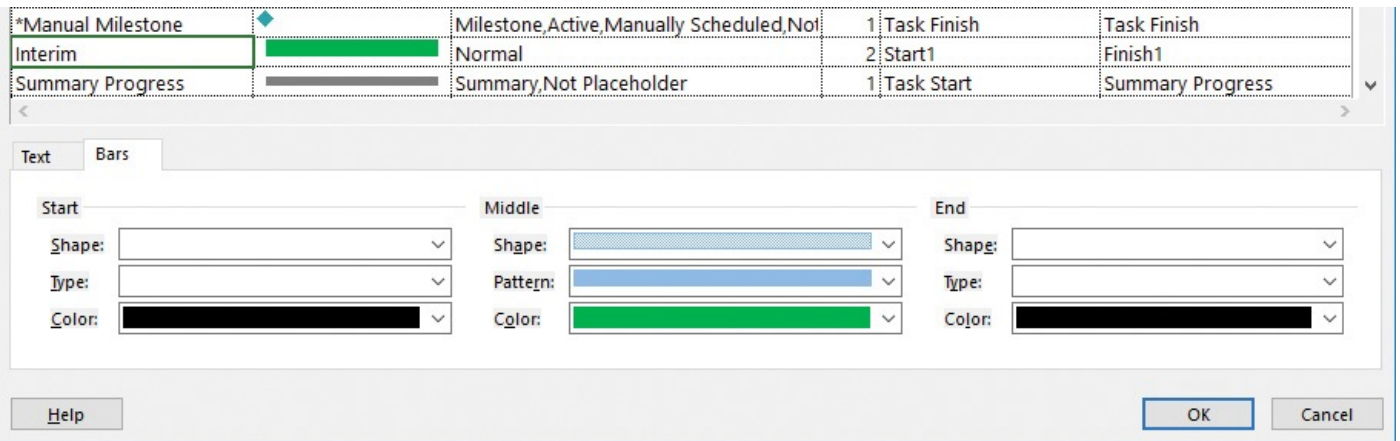
Next you enter the details you want for the new Interim Gantt bar. For the purposes of this example, you want Project to draw Interim Gantt bars for normal tasks, and use the interim plan's Start1 and Finish1 values as the From and To dates.



In this example, the custom bar style named Interim is being created

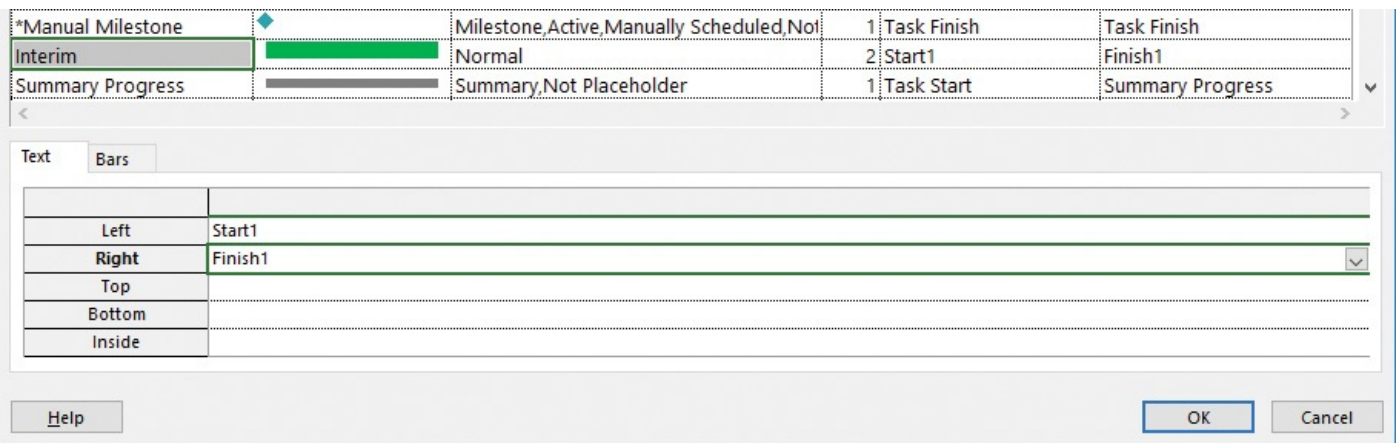
In this example, the new Gantt bar style named *Interim* will appear for normal tasks, it will appear on the second bar row, and it will span the interim plan's Start1 through Finish1 dates. So far, you have instructed Project to display the first interim plan's start and finish dates as bars. Next, you'll focus on the lower half of the Bar Styles dialog box. There you will change the visual appearance of the new bar style.

For this example, assume that you'd like your interim plan's Gantt bars to be full-height shape and solid green.



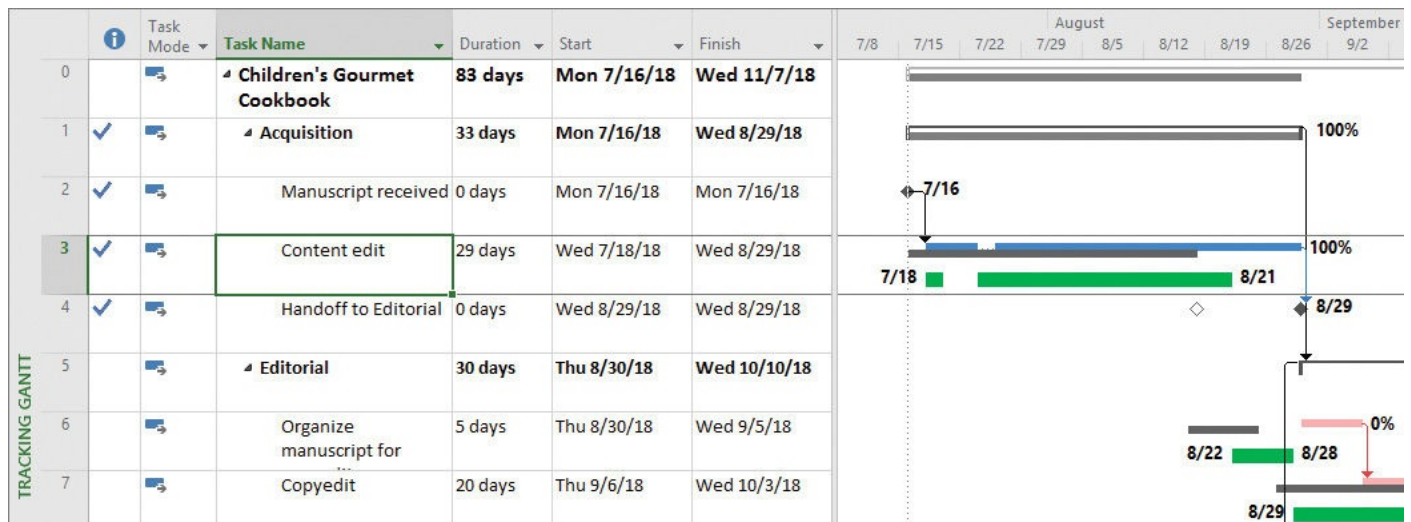
In this example, the new Interim Gantt bar style is formatted as solid green

To finish your custom Gantt bar definition, you'll set the text you want to appear in or around each interim Gantt bar. For these Gantt bars, you'd like the interim bars to show their start and finish dates as recorded in the Start1 and Finish1 fields on either side of the bar.



In this example, the new Interim bar style is set up so the interim plan's start and finish dates appear to the left and right of each interim task bar

In this example, you'll display the Start1 and Finish1 fields' values to the right and left of the bar. When you finish creating the custom Interim Gantt bar style, your custom Gantt bars based on the interim plan are drawn on the Tracking Gantt chart.



In this example, the new Interim bar style applies to every task in the plan that has interim data, such as task 3



Tip

To see details about any bar on a Gantt chart, just point to the bar. Its details will appear in a ScreenTip.

Project supports several other Gantt chart formatting features in addition to the ones described in this topic. If you want to explore other formatting options, look at these buttons on the Format tab:

- To format text associated with a specific task type, such as summary task text, use the Text Styles button in the Format group. You can also use the Text Styles button to format other items such as summary task names, the timescale labels, and bar text.
- To format the appearance of link lines and Gantt bars, use the Layout button in the Format group.
- If you saved multiple baselines (Baseline and Baseline1 through Baseline10), you can quickly change which baseline is shown (on the Tracking Gantt Chart view, for example). You do so by using the Baseline button in the Bar Styles group. As you do so, Project automatically switches the From and To values in the Bar Styles dialog box for the baseline bars and elements to use the values of the baseline you displayed.
- When you select options in the Bar Styles group on the Format tab (other than the Format button itself), those options will be represented in the Bar Styles dialog box.

To create a new Gantt bar style

1. Switch to a Gantt chart view.
 2. On the **Gantt Chart Tools Format** tab, in the **Bar Styles** group, click **Format** and then click **Bar Styles** to open the Bar Styles dialog box.
-



Tip

You can also open this dialog box by double-clicking the background of the chart portion of a Gantt chart view or by right-clicking the background and clicking Bar Styles on the shortcut menu.

3. In the **Bar Styles** dialog box, select the row where you'd like to add the new Gantt bar style. Remember that Project draws Gantt bars in the order in which they are listed in the Bar Styles dialog box.
4. Click **Insert Row**. Project inserts a row for a new bar type in the table.
5. Enter the name you want for the new bar style.



Tip

Remember that you can prevent a bar style from appearing in a printed legend by starting the bar style name with an asterisk (*).

6. In the **Show For...Tasks** field, select the type of task the bar will represent (such as a normal task, a summary task, or a milestone) or the status of the task (such as critical or in progress).
-



Tip

You can define a bar style that excludes specific task types by first selecting the task type in the Show For...Tasks field and then entering *Not* in front of the task type's name. For example, to exclude summary tasks from a bar style, first include *Summary* in the Show for...Tasks field and then edit it to be *Not Summary*. You can see many examples of task type exclusions in the built-in bar styles.

7. To add additional task types to the same bar style, double-click in the **Show For...Tasks** field and then enter the names of the additional task types you want. Separate each task type name with a comma. You can see many examples of multiple task types per bar style in the built-in bar styles.
 8. In the **Row** field, select in which row the bar will appear. Each task can have up to four bar rows.
 9. In the **From** and **To** fields, select the start and end points for the bar. For milestone shapes, enter the same Task Finish value in both the From and To fields.
 10. In the lower part of the **Bar Styles** dialog box, click the **Bars** tab.
 11. Pick the **Start**, **Middle**, and **End** display settings you want for the bar style. You can see your selected display settings for the bar in the Appearance column.
 12. To add text values to the new bar style, follow the steps in the next procedure. If you do not want to add text values at this time, click **OK**.
-



Tip

For more ideas about what you can do with bar styles, review some of the built-in bar styles.

To add or change text displayed with a Gantt bar style

1. Open the **Bar Styles** dialog box.
2. In the **Bar Styles** dialog box, select the bar style you want.
3. In the lower half of the **Bar Styles** dialog box, click the **Text** tab.

4. In the row that corresponds to the text position you want relative to the bar, select a field value.
-



When selecting items from a list like this, you can often begin typing the name of the item you want, and when its full name appears, select it. For example, if you type *s*, Project shows the values that begin with the letter *s*. If you then type *t*, Project shows the values that begin with the letters *st*.

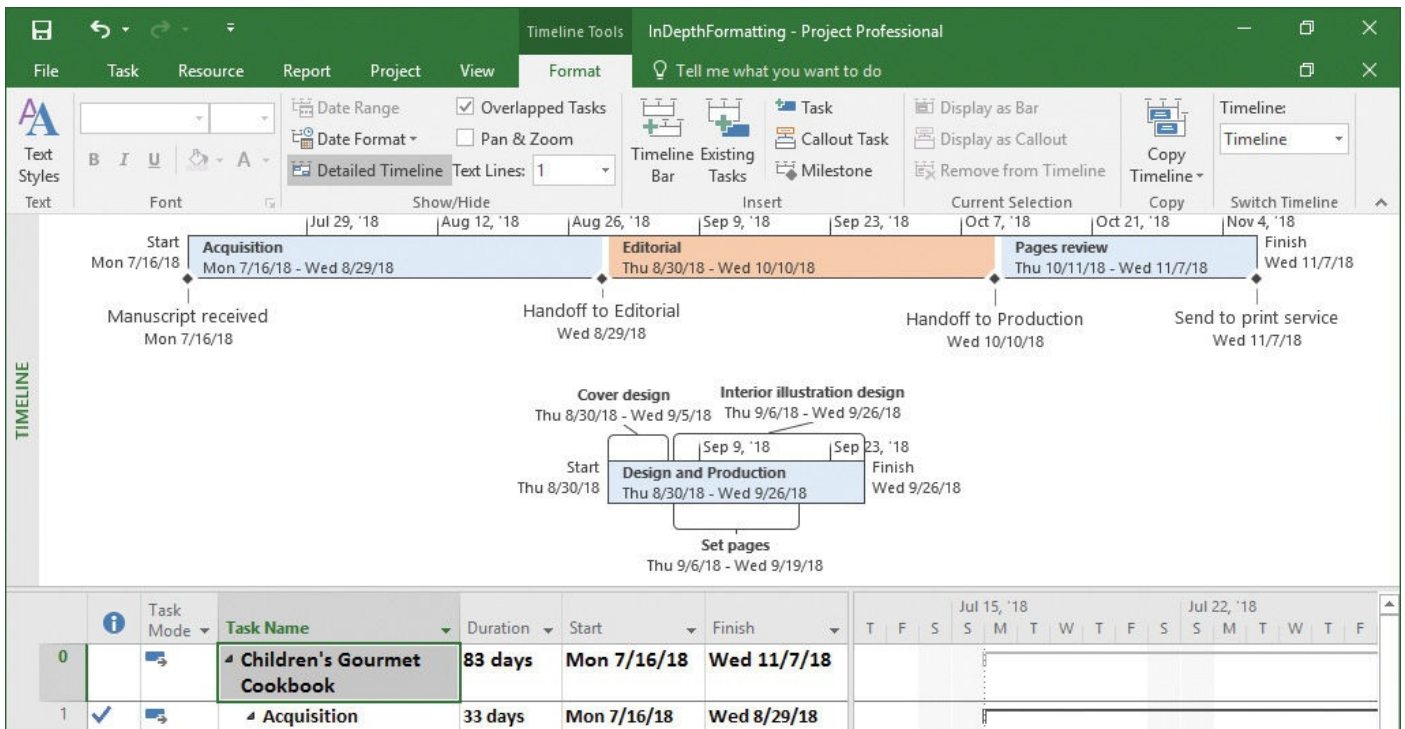
5. Add whatever additional text values you want, and then click **OK**.

To reorder bar styles to control drawing precedence order

1. Open the **Bar Styles** dialog box.
2. Select the name of the bar style you'd like to move up or down in the drawing precedence order.
3. Click **Cut Row**.
4. Select the row where you want to move the first bar style.
5. Click **Paste Row**, and then click **OK**.

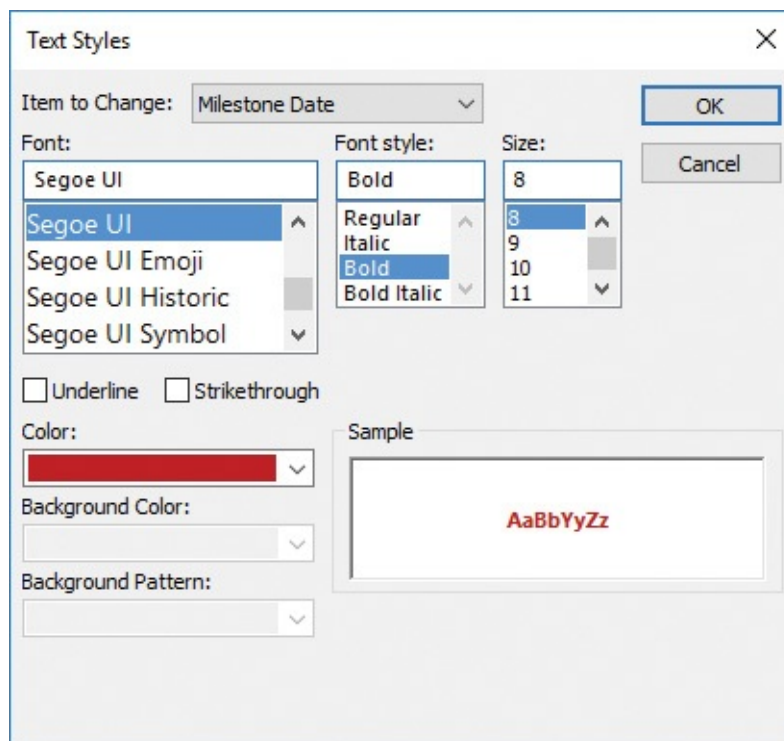
Format a Timeline view

As you might recall from [Chapter 2](#), “[Take a guided tour](#),” and [Chapter 7](#), “[Format and share your plan](#),” the Timeline view is a handy way of seeing the “big picture” of the plan. You can display one or more timeline bars in a single Timeline view, and you can customize the timeline bars independently.



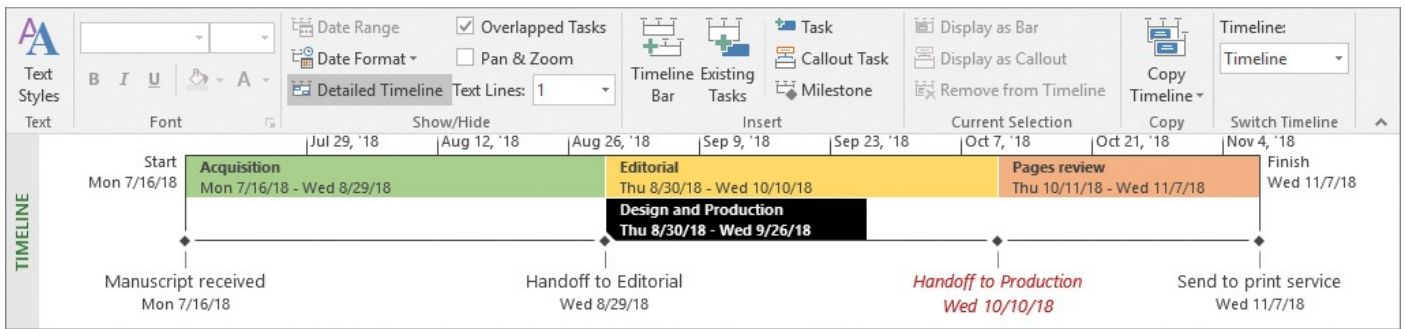
When you put the focus in the Timeline view, the buttons on the Format tab change; remember that the Format tab is contextual, so it changes based on what is currently selected

You might find that the default formatting of a timeline bar meets your needs, but if not, you can customize its look. You can format the text of entire categories of timeline items (such as all milestone dates) by using text styles.



Style-based formatting in the Timeline view is limited to text

In addition to using styles to reformat categories of items, you can also directly format an item in a Timeline view. To do so, select the item and use the buttons on the Format tab to get the result you want.



In this example, the task bars have been directly formatted with color backgrounds

When you add additional timelines to a single Timeline view, you can format each timeline independently. This gives you great flexibility to use the Timeline view to put focus on important parts of your overall plan, such as the final activities in multiple phases of work.



Tip

The Timeline view is a great Project view to share with others via email, a document, or a presentation. For more information, see [Chapter 19, “Share information with other programs.”](#)

To change Timeline text styles

1. If necessary, on the **View** tab, in the **Split View** group, select the **Timeline** check box to display the Timeline view.
2. Click anywhere in the Timeline view, and then click the **Timeline Tools Format** tab.
3. On the **Format** tab, in the **Text** group, click **Text Styles** to open the Text Styles dialog box.
4. In the dialog box, in the **Item to Change** list, select the type of timeline item whose style you want to change.
5. Apply the formatting options you want for the selected item type, and then click **OK**.

To directly format an item in a Timeline

1. In the Timeline view, click the item you'd like to format.
2. On the **Format** tab, in the **Font** group, apply the formatting options you want.



Tip

You can also right-click an item you want to change and use the formatting options on the Mini Toolbar that appears.

To add additional timeline bars (up to 10) to the Timeline view

1. Click anywhere in the Timeline view.
 2. On the **Format** tab, in the **Insert** group, click **Timeline Bar**. Project adds an additional timeline bar to the Timeline view. It is initially empty.
 3. Make sure the new timeline bar is selected, and then on the **Format** tab, in the **Insert** group, click **Existing tasks** to open the Add Tasks To Timeline dialog box.
 4. In the dialog box, click the tasks you want to add to the new timeline bar, and then click **OK**.
-



You can drag and drop tasks between timeline bars within the Timeline view. To delete a timeline bar, right-click the bar and then click Remove From Timeline.

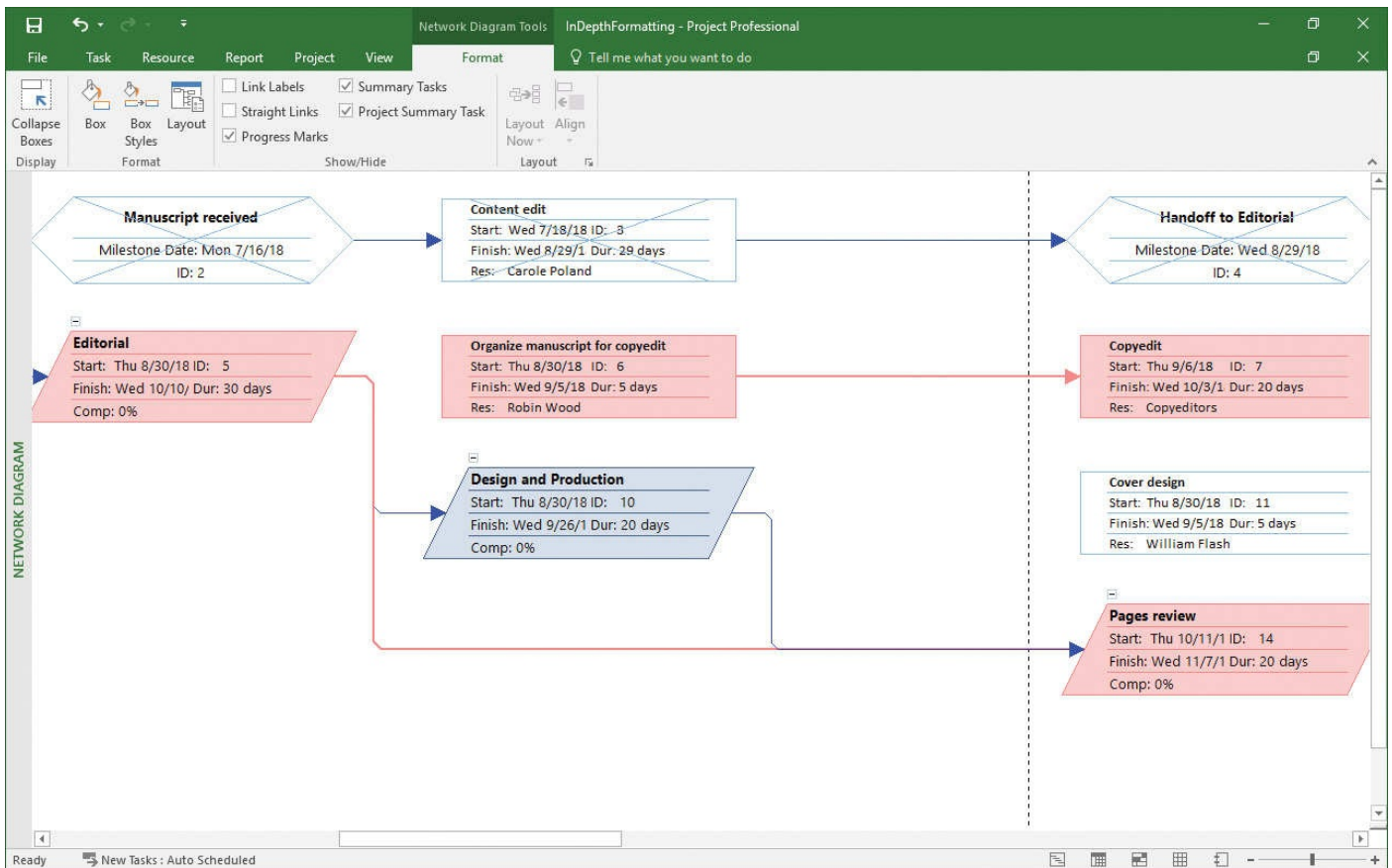
To adjust the date range over which a timeline bar is drawn

1. Click a timeline bar.
2. On the **Format** tab, in the **Show/Hide** group, click **Date Range** to open the Set Timeline Dates dialog box.
3. In the dialog box, select the start and finish dates you want, and then click **OK**.

Format a Network Diagram view

In traditional project management, a network diagram is a standard way of representing project activities and their relationships. Tasks are represented as boxes, which are also called *nodes*, and the relationships between tasks are drawn as lines connecting the nodes. Unlike a Gantt chart, which is a timescaled view, a network diagram enables you to view project activities in a manner more closely resembling a flowchart format. This is useful if you'd like to place more focus on the relationships between tasks rather than on their durations and sequence.

In the Network Diagram view, each node contains several pieces of information (fields) about the task.

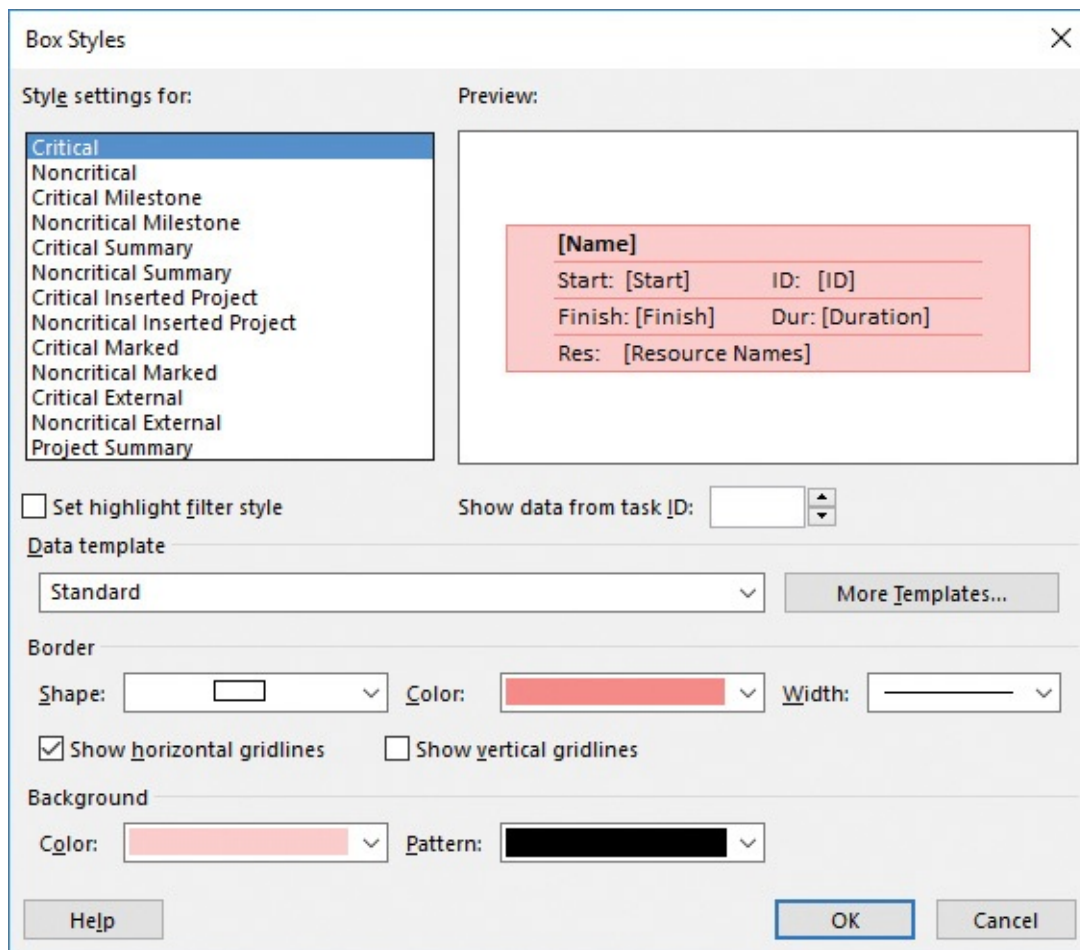


The Network Diagram view puts a strong focus on the relationships between tasks

Project represents completed tasks as nodes with an X drawn through them and summary tasks as nodes shaped as parallelograms.

As with Gantt chart views, Project provides rich formatting options for the Network Diagram view. For example, you can change the overall layout of the Network Diagram view to group nodes by time period. If you're a heavy-duty network diagram user, you'll want to explore the formatting options in greater detail.

Use the Box Styles dialog box (available from the Format tab, in the Format group, when you are in the Network Diagram view) to change the appearance of different types of nodes.

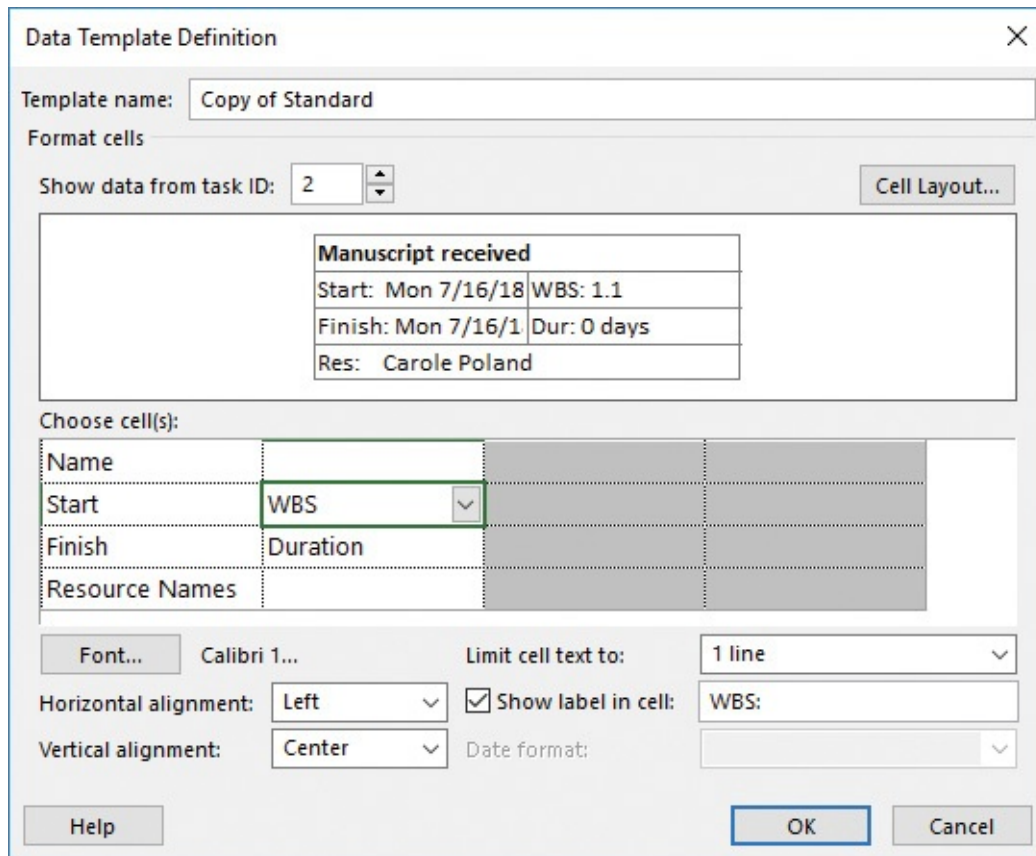


Use the Box Styles dialog box to control the content and appearance of boxes (nodes) in the Network Diagram view

In the Network Diagram view, box styles are similar to bar styles in a Gantt chart in that different box styles apply to different task types. Box styles include three main parts: data templates, box border formatting, and box background formatting. The Network Diagram view's box styles are all predefined. You can alter the appearance of the built-in box styles (specifically, you can adjust the border and background appearance), but you cannot create your own.

For the Network Diagram view, Project uses data templates such as *Standard* and *Summary*. In this context, *templates* determine what fields appear in boxes (nodes) in addition to their layout. (These templates are not to be confused with file templates.)

You can either apply another built-in data template to your Network Diagram view or create your own template. For example, you can create a template that includes each task's Work Breakdown Structure (WBS) code field. You do so in the Data Template Definition dialog box.



Use the Data Template Definition dialog box to control how fields appear in nodes in the Network Diagram view

Here are some additional formatting buttons on the Format tab that apply to the Network Diagram view:

- In the Network Diagram view, you can format all boxes by using the Box Styles button, or you can format just the active box by using the Box button. This is similar to the Bar Styles and Bar buttons available on the Format tab when you have a Gantt chart view displayed.
- Use the Layout button to control items such as the overall arrangement of task boxes by time period, such as by week or by month.
- Show or hide the types of task relationships, such as Start to Start (SS), between tasks by selecting the Link Labels check box.
- Use the Collapse Boxes button to quickly zoom the Network Diagram view out to show more of the network.

To modify a Network Diagram box style

1. On the **View** tab, in the **Task Views** group, click **Network Diagram** to display the Network Diagram view.
2. On the **Network Diagram Tools Format** tab, in the **Format** group, click **Box Styles** to open the Box Styles dialog box.
3. In the **Style Settings For** box, select the box style you want to modify.
4. In the **Data template** list, select the data template for which you want to change a box style.

5. In the **Border** section, select the shape, color, and other display options you want to apply to this box style.
6. In the **Background** section, select the color and pattern you want.
7. Click **OK**.

To create or modify a Network Diagram box (node) data template

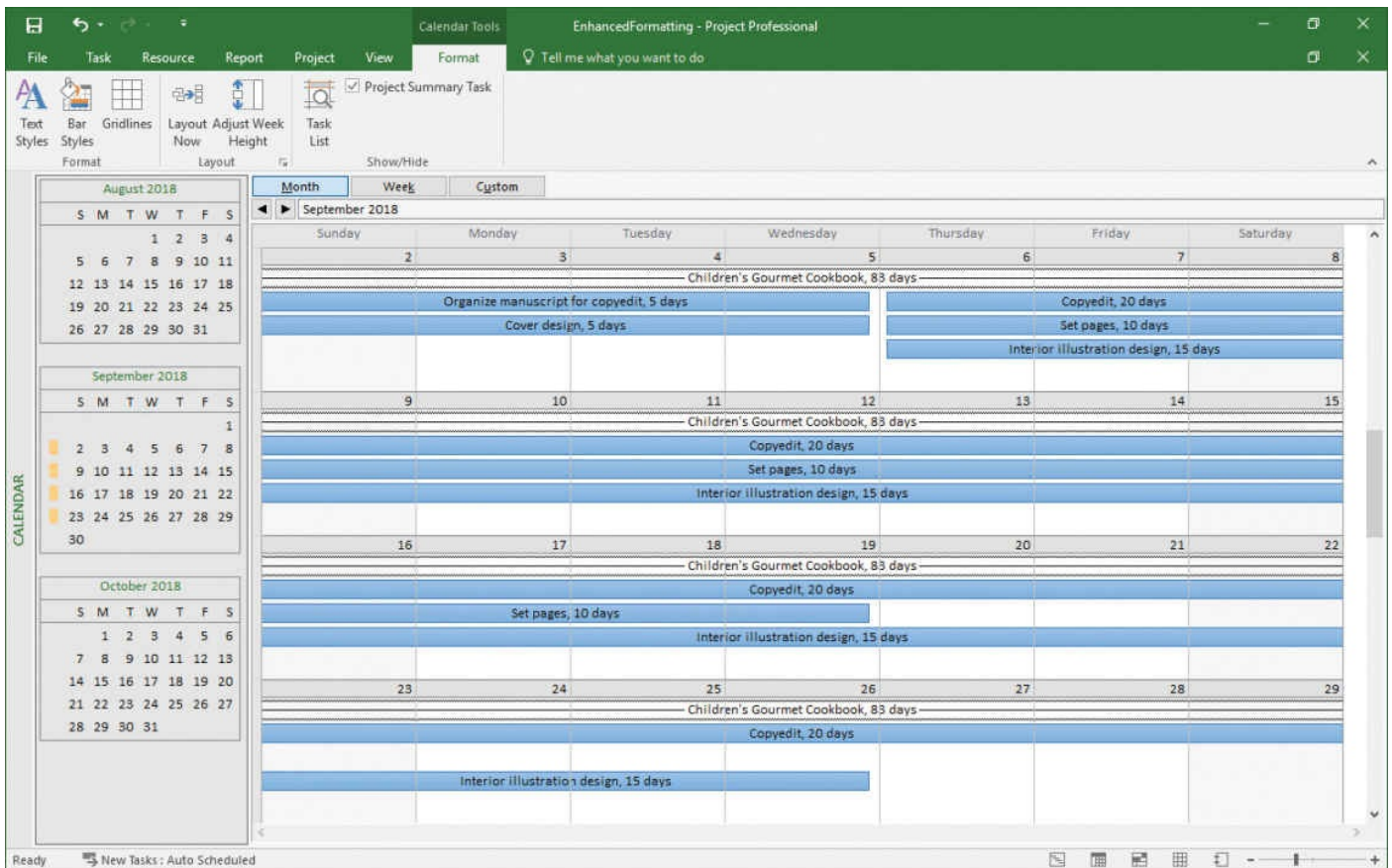
1. In the Network Diagram view, open the **Box Styles** dialog box.
2. Click **More Templates** to open the Data Templates dialog box. In this dialog box you can either create a brand-new data template or create a copy of a template.
3. Do one of the following:
 - Click **New** to create a new template.
 - Select a template and then click **Copy** to create a copy.
 - Select a template and then click **Edit** to edit the template.
4. In the **Data Template Definition** dialog box, select the options you want. Use the task node preview in the dialog box to help guide your work.
5. Click **OK** to close the Data Template Definition dialog box, and then click **Close** to close the Data Templates dialog box.
6. In the **Box Styles** dialog box, make sure your modified or new data template is selected, and then click **OK**.

To modify a specific task box (node) in the Network Diagram view

1. In the Network Diagram view, select the task box you want to modify.
2. On the **Format** tab, in the **Format** group, click **Box** to open the Format Box dialog box.
3. In the **Format Box** dialog box, select the options you want. Use the preview in the dialog box to help guide your work.
4. Click **OK**.

Format a Calendar view

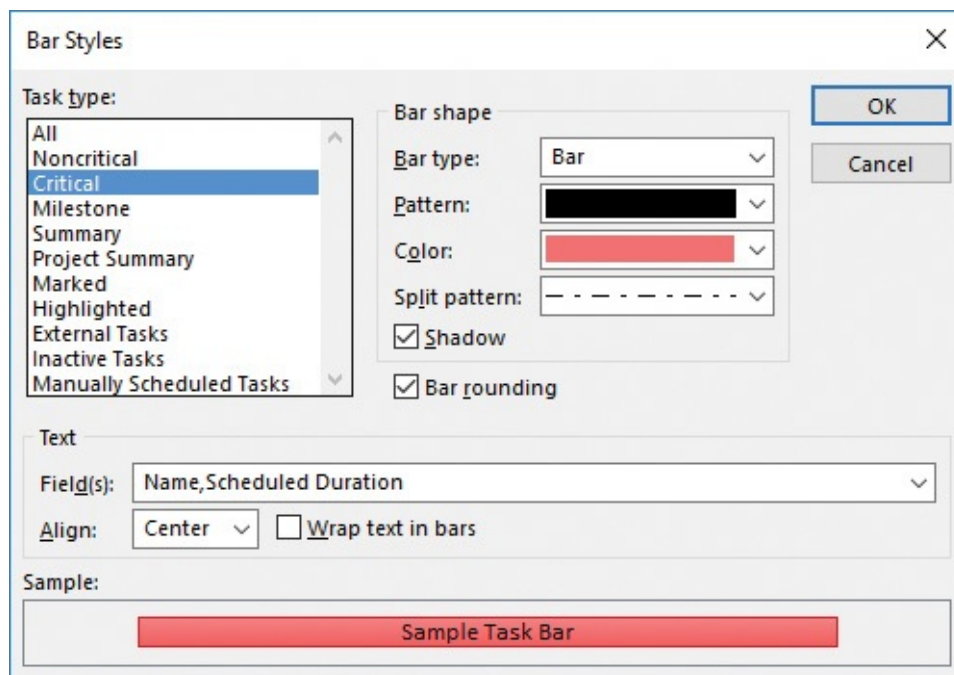
Like the Timeline view, the Calendar view is one of the simpler views available in Project. This view is especially useful for sharing schedule information with resources or stakeholders who prefer a traditional “month-at-a-glance” format rather than a more detailed view, such as the Gantt Chart view.



The Calendar view resembles a traditional “month-at-a-glance” calendar and displays tasks as bars spanning the days on which they are scheduled to occur

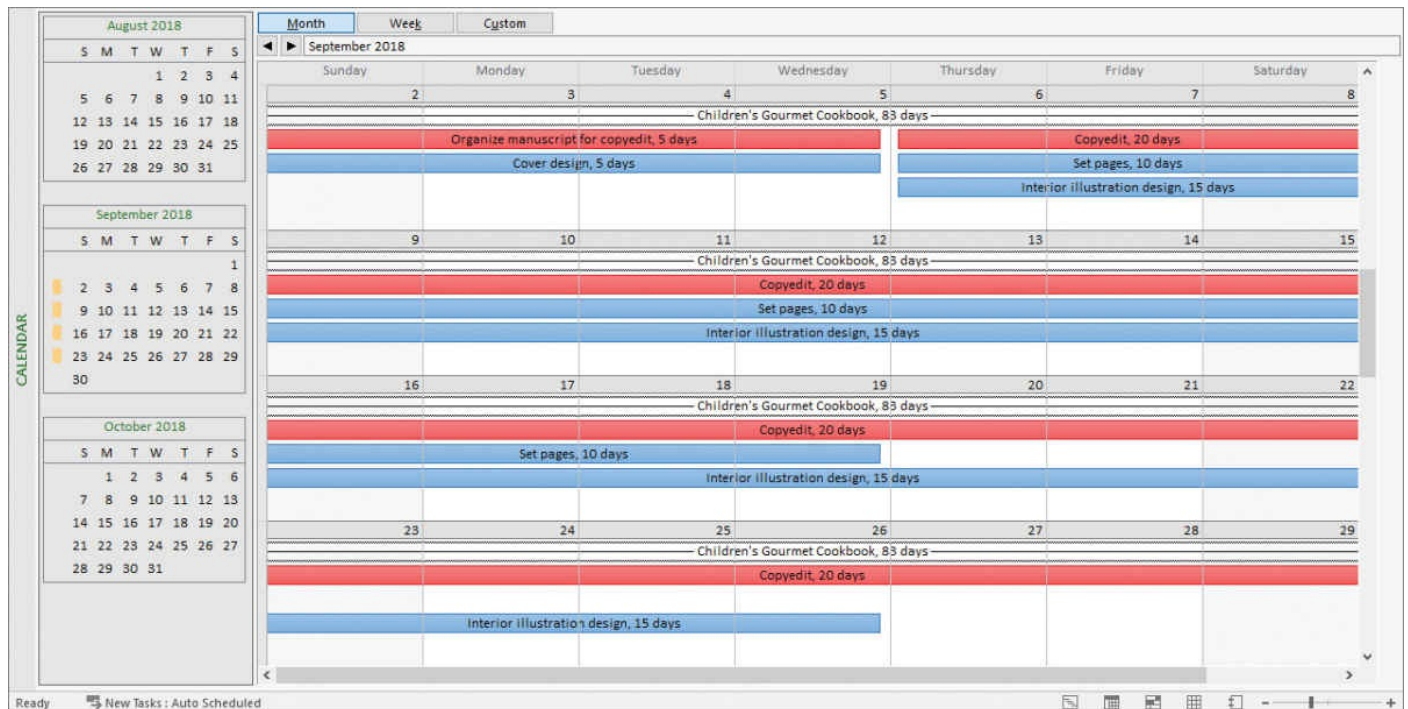
This view displays several weeks at a time. The visible weeks are indicated by the orange blocks in the monthly calendars on the left side of the view.

As with other views, Project supports style-based formatting of the Calendar view. You can change the appearance of all instances of a particular type of item in the Calendar view. For example, you can make all tasks on the plan’s critical path appear red.



Use the Bar Styles dialog box to change the appearance of entire categories of items in the Calendar view

Like bar style formatting in Gantt chart and other views, style-based formatting in the Calendar view applies to all of that style's task type in the view.



In this example, tasks on the critical path are visually distinct from other tasks, and the weekly row height has been adjusted to show more tasks

Depending on the number of tasks that are scheduled on the same day, you might not see all of the bars for those tasks, or the week height might be taller than you need for the number of tasks you want to display. In either case, use the Adjust Week Height button (on the Format tab, in the Layout group) to change the week row height.

To change Calendar bar styles

1. On the **View** tab, in the **Task Views** group, click **Calendar**.
2. On the **Calendar Tools Format** tab, in the **Format** group, click **Bar Styles** to open the Bar Styles dialog box.
3. In the **Task type** list, select the type of task whose style you want to change.
4. In the **Bar Shape** and **Text** sections, select the formatting options you want. Use the preview in the **Sample** area to help guide your work.
5. Click **OK**.
6. If your style changes affect the height or position of bars, on the **Format** tab, in the **Layout** group, click **Layout Now**.

To adjust week height

1. Display the Calendar view.
2. On the **Format** tab, in the **Layout** group, click **Adjust Week Height**.

Print and export views

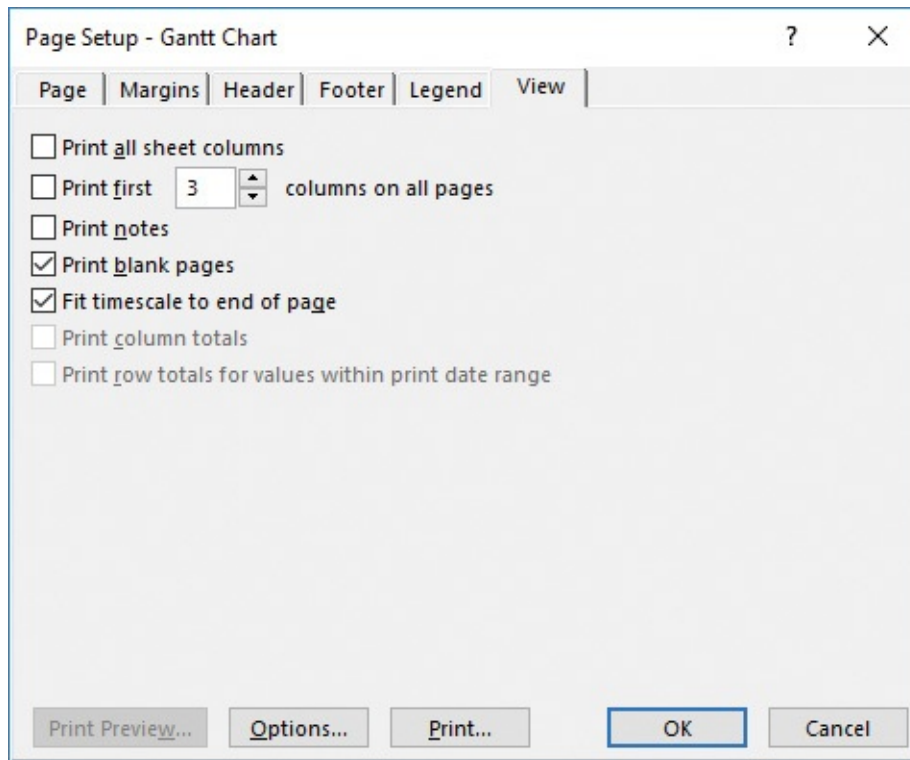
Project offers customization options for printing views beyond what was covered in [Chapter 7](#), “[Format and share your plan](#).” Because views such as the Gantt Chart view are often shared with resources and other project stakeholders, you might find that you need to adjust details for the views you print.

Printing in Project is similar to printing in other Microsoft Office programs. Some settings differ for Project, however. A handy print setting in Project is the option to print data for a specified date range. In a Gantt chart view, for example, Project will print the table portion of a Gantt chart view as it is currently set up in the view, and then just the date range you specify from the chart portion of the view.

ID	Task Mode	Task Name	Duration	Start	Finish
0		Children's Gourmet Cookbook	83 days	Mon 7/16/18	Wed 11/7/18
1	✓	Acquisition	33 days	Mon 7/16/18	Wed 8/29/18
2	✓	Manuscript received	0 days	Mon 7/16/18	Mon 7/16/18
3	✓	Content edit	19 days	Wed 7/18/18	Wed 8/29/18
4	✓	Handoff to Editorial	0 days	Wed 8/29/18	Wed 8/29/18
5	✓	Editorial	30 days	Thu 8/30/18	Wed 10/10/18
6		Organize manuscript for copyedit	5 days	Thu 8/30/18	Wed 9/5/18
7		Copyedit	10 days	Thu 9/6/18	Wed 10/3/18
8		Copyedit incorp	5 days	Thu 10/4/18	Wed 10/10/18
9		Handoff to Production	0 days	Wed 10/10/18	Wed 10/10/18
10		Design and Production	20 days	Thu 8/30/18	Wed 9/26/18
11		Cover design	5 days	Thu 8/30/18	Wed 9/5/18
12		Set pages	10 days	Thu 9/6/18	Wed 9/19/18
13		Interior illustration design	15 days	Thu 9/6/18	Wed 9/26/18
14		Pages review	20 days	Thu 10/11/18	Wed 11/7/18
15		Proofread and index	10 days	Thu 10/11/18	Wed 10/24/18
16		Incorporate 1st Pages review	5 days	Thu 10/25/18	Wed 10/31/18
17		Send proofed pages to Production	0 days	Wed 10/31/18	Wed 10/31/18

Use the preview on the Print page to get the printed output you want

The printing and page layout options you can adjust vary with the type of view that is currently displayed. Simpler views, like the Resource Sheet view, have fewer printing and page layout options than do more complex views, like the Gantt Chart view. You'll see these differences in the Page Setup dialog box.



The available options on the Legend and View tabs vary depending on the active view

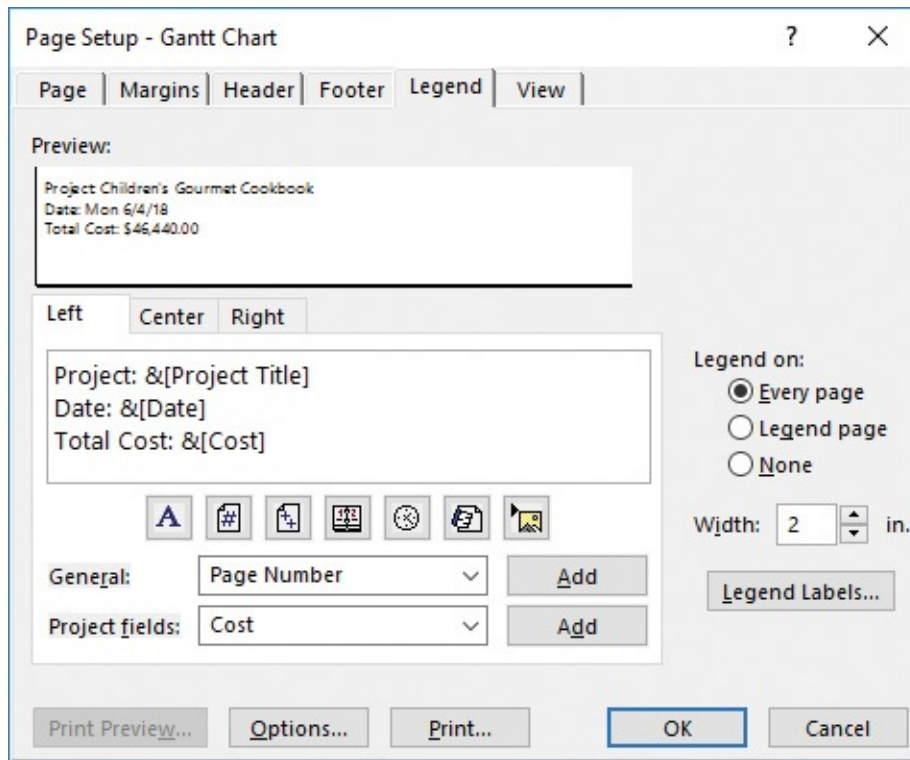
Here are some examples of how the page setup options can vary:

- For Gantt chart and usage views, you can have the timescale sized to fit the page.
- For usage views, you can choose to include row and column totals.
- The Legend tab is not available for sheet views such as the Task Sheet or Resource Sheet view.

When printing most types of views, you can choose from a wide range of options. For example, you can customize headers and footers, specify what will print in the legend, and include specific options such as task or resources notes.

One common thing to customize when printing is the legend that is printed with a Gantt chart view. You do so on the Legend tab of the Page Setup dialog box.

You can add general items to the legend such as the project title, or you can add specific field values such as the plan's total cost (recorded in the Cost field).



This customized legend in the Page Setup dialog box includes the plan's Total Cost value

The legend tab includes a preview of how the field codes and other text in the Left, Center, and Right tabs will appear. You can even insert an image into the legend. Explore the Legend options to include exactly the information you want in your printed views.

Sometimes, you might need to share a snapshot of a Project view with others who might not have Project. To this end, Project supports easy generation of PDF and XPS format files. You “print” to a PDF or XPS file as if you were printing to a printer, so all of the page setup options described in this topic apply when generating PDF or XPS output files.

To adjust print options

1. Display and arrange the view the way you want it to appear in the printout. For example, in a Gantt chart view, you can adjust the timescale and visible columns.
2. Click the **File** tab to display the Backstage view, and then click **Print** to display the Print page with the active view in the preview.
3. In the **Settings** section, adjust the print settings you want. Use the preview to help guide your work.

To adjust view-specific options

1. Display and arrange the view the way you want it to appear in the printout.
2. Display the **Print** page of the Backstage view.
3. At the bottom of the **Settings** section, to the left of the print preview, click the **Page Setup** link to open the Page Setup dialog box.
4. The view-specific options appear on the Legend and View tabs. Select the options you want, and then click **OK**.

To customize a view's header or footer

1. Display and arrange the view the way you want it to appear in the printout.
2. Display the **Print** page of the Backstage view.
3. In the **Settings** section, click **Page Setup** to open the Page Setup dialog box.
4. Select the options you want on the Header and Footer tabs, and then click **OK**.

To generate a PDF or XPS file

1. Display and arrange the view the way you want it to appear in the printout.
2. Click the **File** tab to display the Backstage view, and then click **Export** to display the Export page.
3. Click **Create PDF/XPS Document**.
4. On the right side of the page, click **Create PDF/XPS** to open the Browse dialog box.
5. Select the location where you want to save the file, and enter the file name you want.
6. In the **Save as type** box, select either **PDF Files** or **XPS Files** (depending on which format you want), and then click **OK** to open the Document Export Options dialog box.
7. In the **Document Export Options** dialog box, select the date range and other options you want, and then click **OK**.

Skills review

In this chapter, you learned how to:

- [Format a Gantt chart view](#)
- [Format a Timeline view](#)
- [Format a Network Diagram view](#)
- [Format a Calendar view](#)
- [Print and export views](#)



Practice tasks

The FormatInDepth practice file for these tasks is located in the Project2016SBS\Ch16 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Format a Gantt chart view

Scenario: At Lucerne Publishing, you’re managing a book project that is now underway. For this project, you are tracking progress closely and have found value in showing the team a view that compares current progress with a baseline plan. Now you’d like to add an interim plan to this view, because the interim plan is more timely than the original baseline. Open the FormatInDepth plan in Project and perform the following tasks:

1. Display the Tracking Gantt view.
2. Add a new bar style named **Interim** for normal tasks. Make it a solid green bar that appears in row 2 and uses the Start1 and Finish1 date values.

Name	Appearance	Show For ... Tasks	Row	From	To
*Manual Split		Normal Split,Active,Manually Scheduled,Not Placeholder	1	Task Start	Task Finish
*Manual Progress		Normal Noncritical,Active,Manually Scheduled,Not Placeholder	1	Actual Start	CompleteThrough
Start-only		Manually Scheduled,Placeholder (Start),Not Placeholder	1	Task Start	Task Start
Finish-only		Manually Scheduled,Placeholder (Finish),Not Placeholder	1	Task Finish	Task Finish
Duration-only		Active,Manually Scheduled,Placeholder (Center),Not Placeholder	1	Task Start	Task Finish
Baseline		Normal,Not Placeholder	1	Baseline Start	Baseline Finish
Baseline Split		Normal Split,Not Placeholder	1	Baseline Start	Baseline Finish
Baseline Milestone		Milestone,Active,Not Placeholder	1	Task Finish	Task Finish
Milestone		Milestone,Not Placeholder	1	Baseline Finish	Baseline Finish
*Manual Milestone		Milestone,Active,Manually Scheduled,Not Placeholder	1	Task Finish	Task Finish
Interim		Normal	2	Start1	Finish1
Summary Progress		Summary,Not Placeholder	1	Task Start	Summary Progress

Text Bars

Start Middle End

Shape: [Dropdown] Shape: [Dropdown] Shape: [Dropdown]

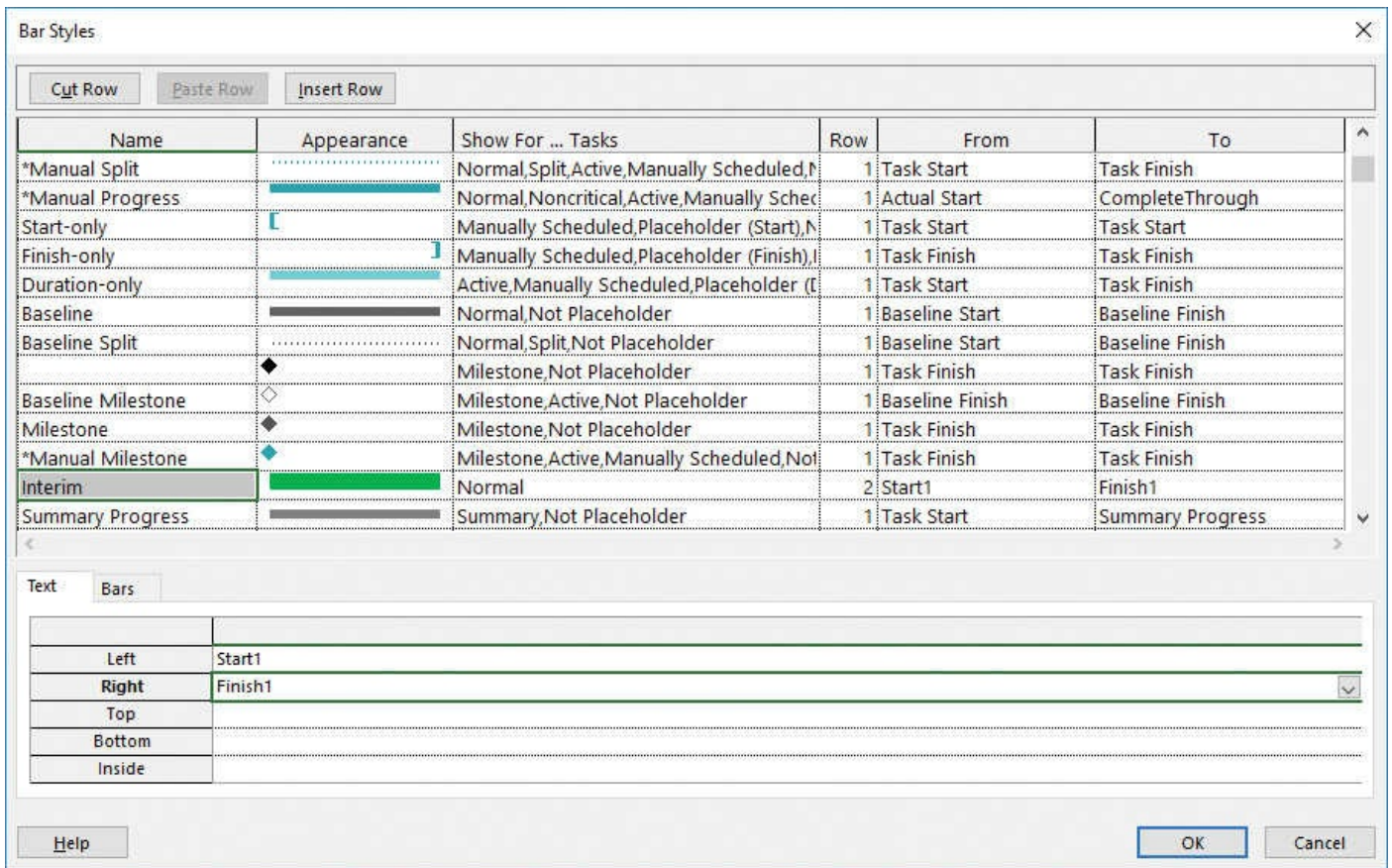
Type: [Dropdown] Pattern: [Dropdown] Type: [Dropdown]

Color: [Color Picker] Color: [Color Picker] Color: [Color Picker]

Help OK Cancel

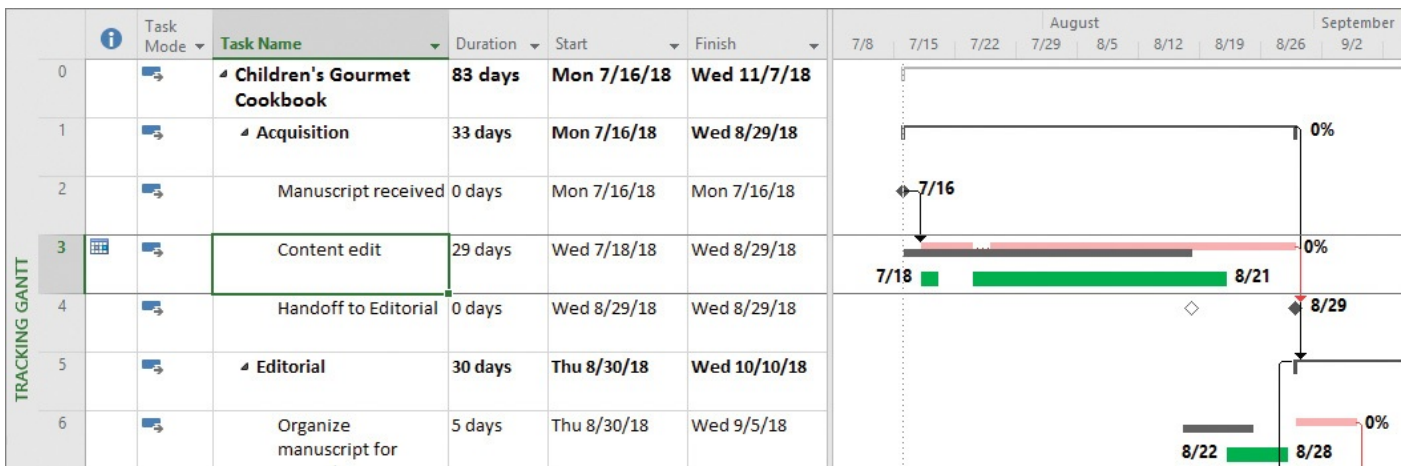
The Interim custom bar style’s definition should look like this

3. Add the Start1 and Finish1 fields’ values to either side of the bar.



Set the Start1 and Finish1 values to appear at either end of each Interim bar

4. Click **OK** to display the new *Interim* bar style in the Tracking Gantt view.

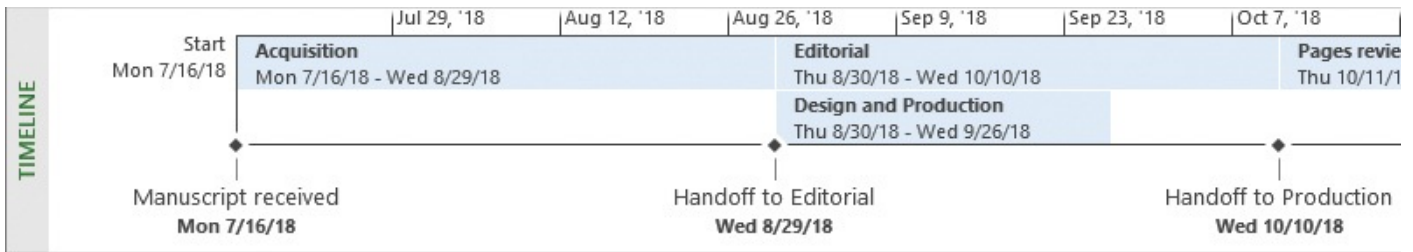


The new Interim bar style uses interim plan start and finish dates that were previously saved in the practice file

Format a Timeline view

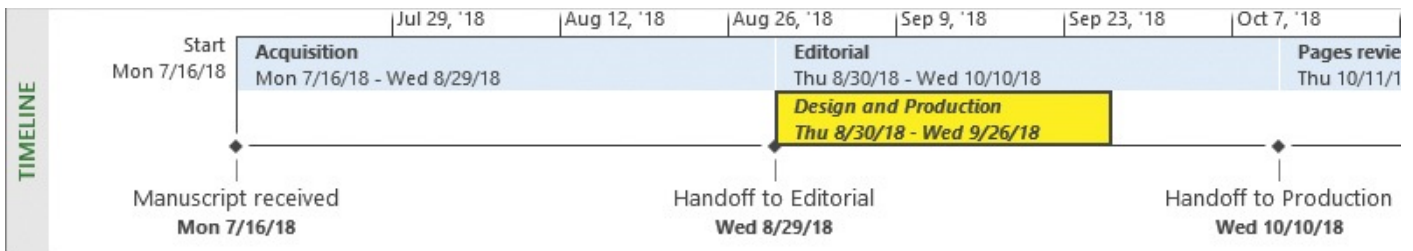
Scenario: You've found that team members like the simplified format of the Timeline view, but you've received a request to break out some tasks to a separate timeline and change some formatting. Continuing in the FormatInDepth plan, perform the following tasks:

1. Reformat the Timeline's text style for milestone dates so that they are bold.



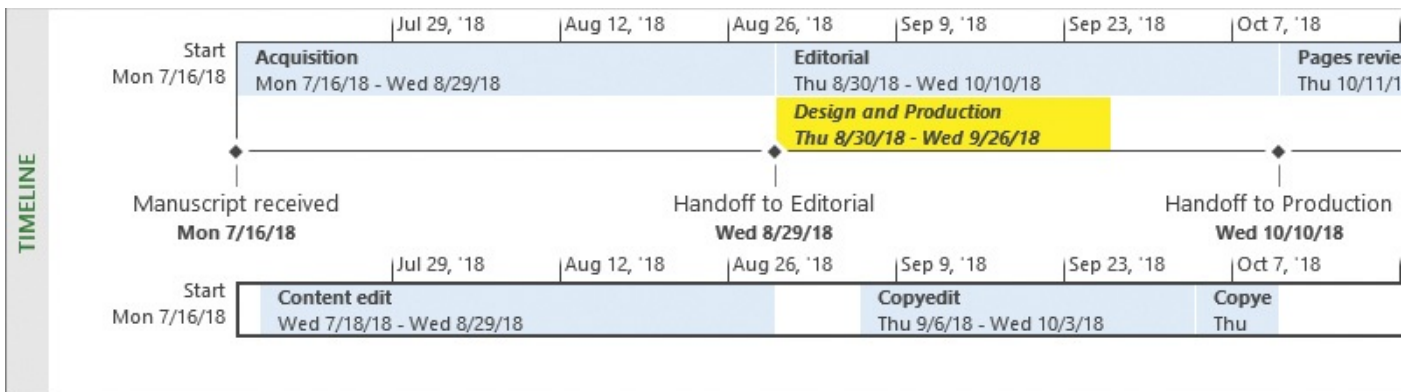
Your milestone dates should look like this in the Timeline view

2. Reformat the *Design and Production* task bar so that its text is italic and it has a yellow background.



Your Design and Production task bar should look like this

3. Add an additional timeline bar by using the default project start and finish date range, and then add tasks 3, 7, and 8 to the new timeline bar.

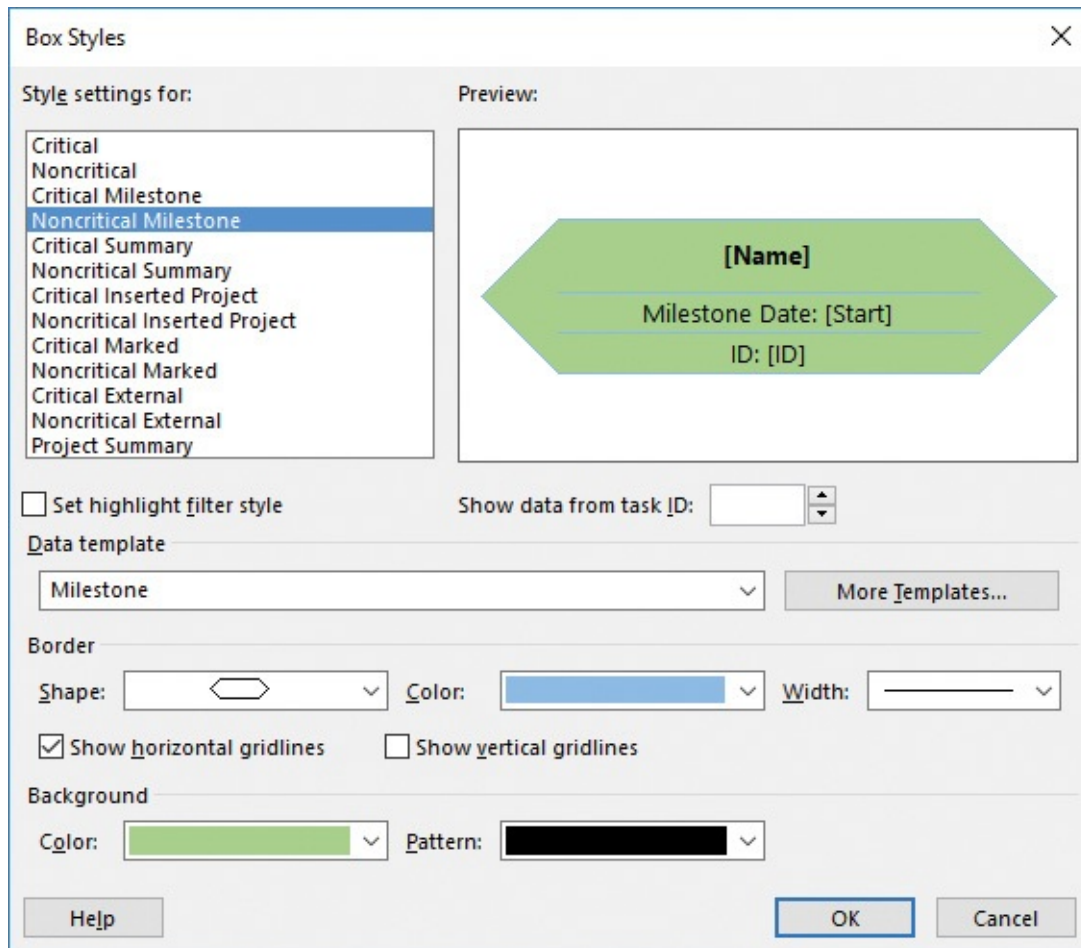


After the second timeline bar has been added and populated, your Timeline view should look like this

Format a Network Diagram view

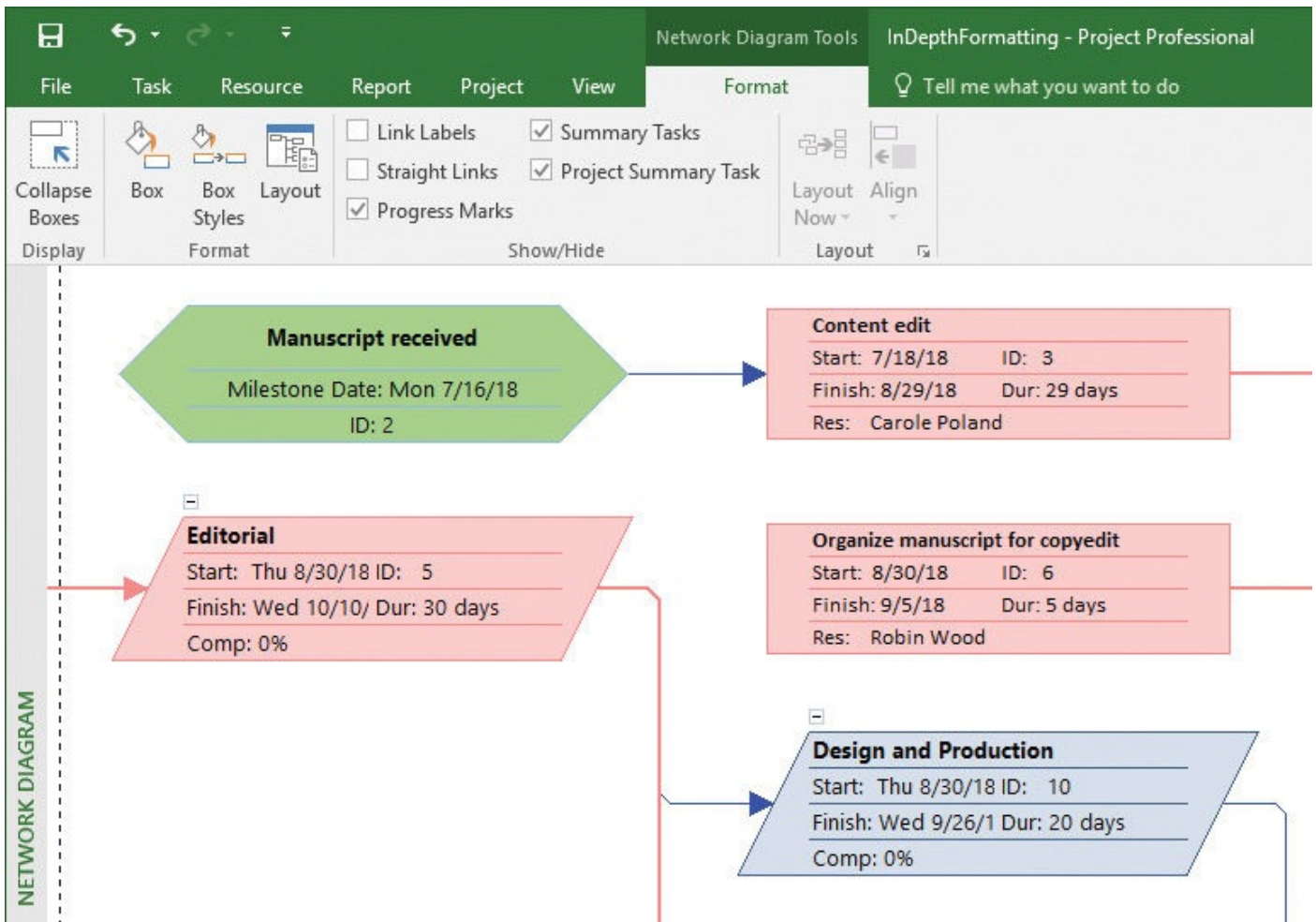
Scenario: You've found that the Network Diagram view helps the project team more clearly focus on task relationships rather than the sequence of the tasks. You decide to adjust the formatting of the Network Diagram view. Continuing in the FormatInDepth plan, perform the following tasks:

1. Hide the Timeline view to give yourself more working space.
2. Switch to the Network Diagram view.
3. Change the box style for noncritical milestones to use a green background color.



The color formatting of noncritical task nodes should look like this

4. Apply the updated box style to the Network Diagram view.

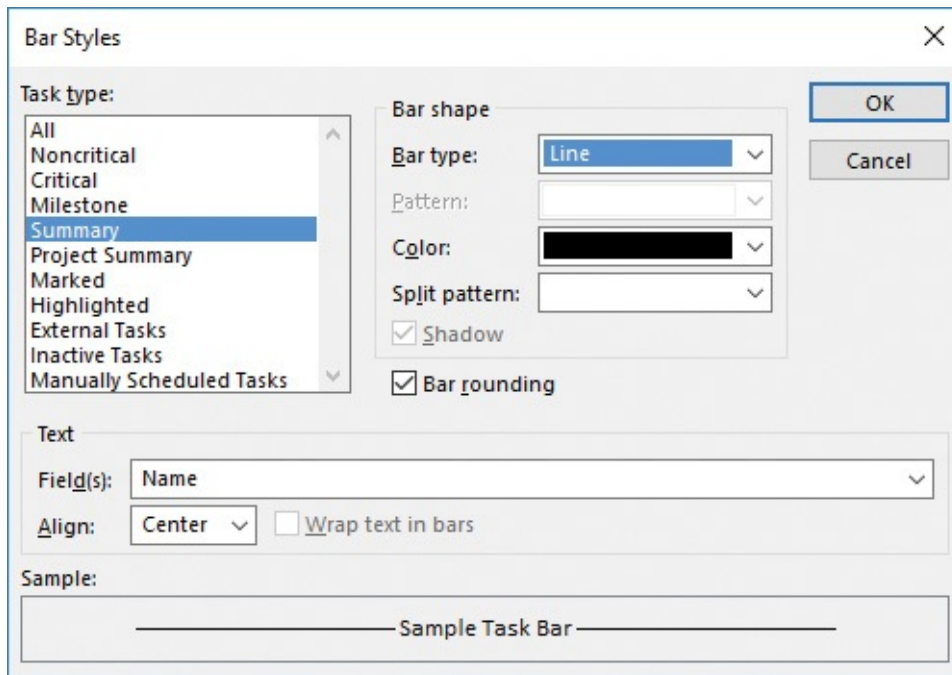


Here is the customized noncritical task node in the Network Diagram view

Format a Calendar view

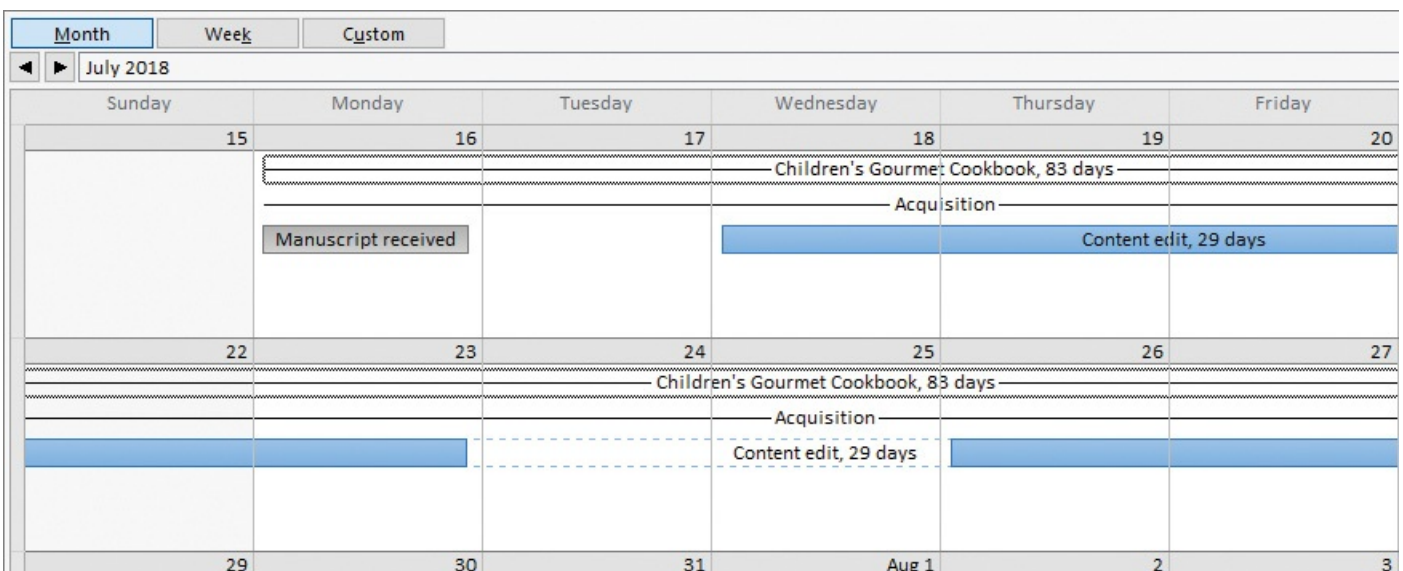
Scenario: Some of your team members have told you that they like the simplicity of the Calendar view. However, the default Calendar view doesn't include everything you'd like it to, and you want to visually distinguish tasks on the critical path from those that aren't. Continuing in the FormatInDepth plan, perform the following tasks:

1. Display the Calendar view.
2. Format the Summary bar style to be a line bar.



Your customized summary bar style should look like this

3. Apply the updated summary bar style and update the Calendar view's layout.



In the Calendar view, the customized summary bars now appear as a thin line

Print and export views

Scenario: You frequently need to print the Gantt Chart view to post it for team members. In addition, some team members have requested Timeline-view snapshots as PDF files they can view on their computers. Continuing in the FormatInDepth plan, perform the following tasks:

1. Display the print preview of the Gantt Chart view on the **Print** page.

InDepthFormatting - Project Professional

Print

Copies: 1

Printer

Microsoft XPS Document Writer
Ready [Printer Properties](#)

Settings

Print Entire Project
Print the project from start to finish

Dates: 7/16/2018 to 11/7/2018

Pages: 1 to 8

Landscape Orientation

Letter
8.5" x 11" [Page Setup](#)

ID	Task Mode	Task Name	Duration	Start	Finish	Jul 16, 18	Jul 22, 18
0		Children's Gourmet Cookbook	83 days	Mon 7/16/18	Wed 11/7/18		
1		Acquisition	33 days	Mon 7/16/18	Wed 8/29/18		
2		Manuscript received	0 days	Mon 7/16/18	Mon 7/16/18		
3		Content edit	29 days	Wed 7/18/18	Wed 8/29/18		
4		Handoff to Editorial	0 days	Wed 8/29/18	Wed 8/29/18		
5		Editorial	30 days	Thu 8/30/18	Wed 10/10/18		
6		Organize manuscript for copyedit	5 days	Thu 8/30/18	Wed 9/5/18		
7		Copyedit	20 days	Thu 9/6/18	Wed 10/3/18		
8		Copyedit incorp	5 days	Thu 10/4/18	Wed 10/10/18		
9		Handoff to Production	0 days	Wed 10/10/18	Wed 10/10/18		
10		Design and Production	20 days	Thu 8/30/18	Wed 9/26/18		
11		Cover design	5 days	Thu 8/30/18	Wed 9/5/18		
12		Set pages	10 days	Thu 9/6/18	Wed 9/19/18		
13		Interior illustration design	15 days	Thu 9/6/18	Wed 9/26/18		
14		Pages review	20 days	Thu 10/11/18	Wed 11/7/18		
15		Proofread and index	10 days	Thu 10/11/18	Wed 10/24/18		
16		Incorporate 1st Pages review	5 days	Thu 10/25/18	Wed 10/31/18		
17		Send proofed pages to Production	0 days	Wed 10/31/18	Wed 10/31/18		

Project: Children's Gourmet Co
Date: Wed 2/10/16

Page 1

On the Print page, note the current appearance of the table portion of the Gantt Chart view in the preview

2. Change the page setup to print all sheet columns.

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Jul 15, '18						
								S	S	M	T	W	T	F
0		Children's Gourmet Cookbook	83 days	Mon 7/16/18	Wed 11/7/18									
1		Acquisition	33 days	Mon 7/16/18	Wed 8/29/18									
2		Manuscript received	0 days	Mon 7/16/18	Mon 7/16/18		Carole Poland							
3		Content edit	29 days	Wed 7/18/18	Wed 8/29/18	2	Carole Poland							
4		Handoff to Editorial	0 days	Wed 8/29/18	Wed 8/29/18	3	Carole Poland							
5		Editorial	30 days	Thu 8/30/18	Wed 10/10/18	1								
6		Organize manuscript for copyedit	5 days	Thu 8/30/18	Wed 9/5/18		Robin Wood							
7		Copyedit	20 days	Thu 9/6/18	Wed 10/3/18	6	Copyeditors							
8		Copyedit incorp	5 days	Thu 10/4/18	Wed 10/10/18	7	Robin Wood							
9		Handoff to Production	0 days	Wed 10/10/18	Wed 10/10/18	8	Robin Wood							
10		Design and Production	20 days	Thu 8/30/18	Wed 9/26/18	5,5								
11		Cover design	5 days	Thu 8/30/18	Wed 9/5/18		William Flash							
12		Set pages	10 days	Thu 9/6/18	Wed 9/19/18	11	Robin Wood, Katie							
13		Interior illustration design	15 days	Thu 9/6/18	Wed 9/26/18	12,5	William Flash							
14		Pages review	20 days	Thu 10/11/18	Wed 11/7/18	10,5								
15		Proofread and index	10 days	Thu 10/11/18	Wed 10/24/18		John Evans, Katie							
16		Incorporate 1st Pages review	5 days	Thu 10/25/18	Wed 10/31/18	15	Carole Poland							
17		Send proofed pages to Production	0 days	Wed 10/31/18	Wed 10/31/18	16	Robin Wood							

Project: Children's Gourmet Co Date: Wed 2/10/16	Task	Inactive Summary	External Task
	Split	Manual Task	External Milestone
	Milestone	Duration-only	Deadline
	Summary	Manual Summary Rollup	Progress
	Project Summary	Manual Summary	Manual Progress
	Inactive Task	Start-only	
	Inactive Milestone	Finish-only	

Page 1

The preview of your Gantt Chart view should now look like this

3. Exit the print preview.

17. Format reports: In-depth techniques

In this chapter

- [Create a custom report](#)
 - [Customize charts in a report](#)
 - [Customize tables in a report](#)
-

Practice files

For this chapter, use the FormatReportsInDepth practice file from the Project2016SBS\Ch17 folder. For practice file download instructions, see the introduction.

This chapter focuses on creating, customizing, and formatting reports. Reports can contain two data-focused elements: tables and charts. In addition, reports can include text boxes, images, and shapes for elaboration or decoration.

This chapter guides you through procedures related to creating a custom report with custom chart and table elements.

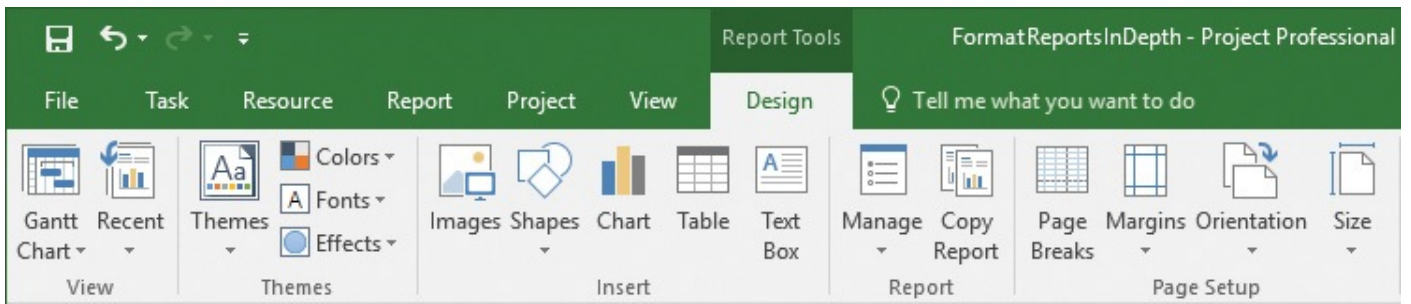
Create a custom report

In [Chapter 7](#), “[Format and share your plan](#),” you applied styles to the built-in reports in Project. When a built-in report doesn’t meet your needs, you can create a custom report. Custom reports can include any mix of information that you want. In fact, you can combine task, resource, and supplemental information together in a single report to convey insights not possible elsewhere in Project.

Think of a custom report as a container of any combination of these elements:

- **Charts** Add bar, area, or other types of charts to a report.
- **Tables** Use tables to present information in a row-and-column layout.
- **Images** Add images such as a JPEG or PNG format files to a report.
- **Shapes** Insert and customize ready-made shapes such as arrows, circles, and speech bubbles. Shapes are great for drawing attention to important information on a report.
- **Text boxes** Add a text box anywhere on a report.

The buttons to insert these elements into a report appear on the Report Tools Design tab, in the Insert group.

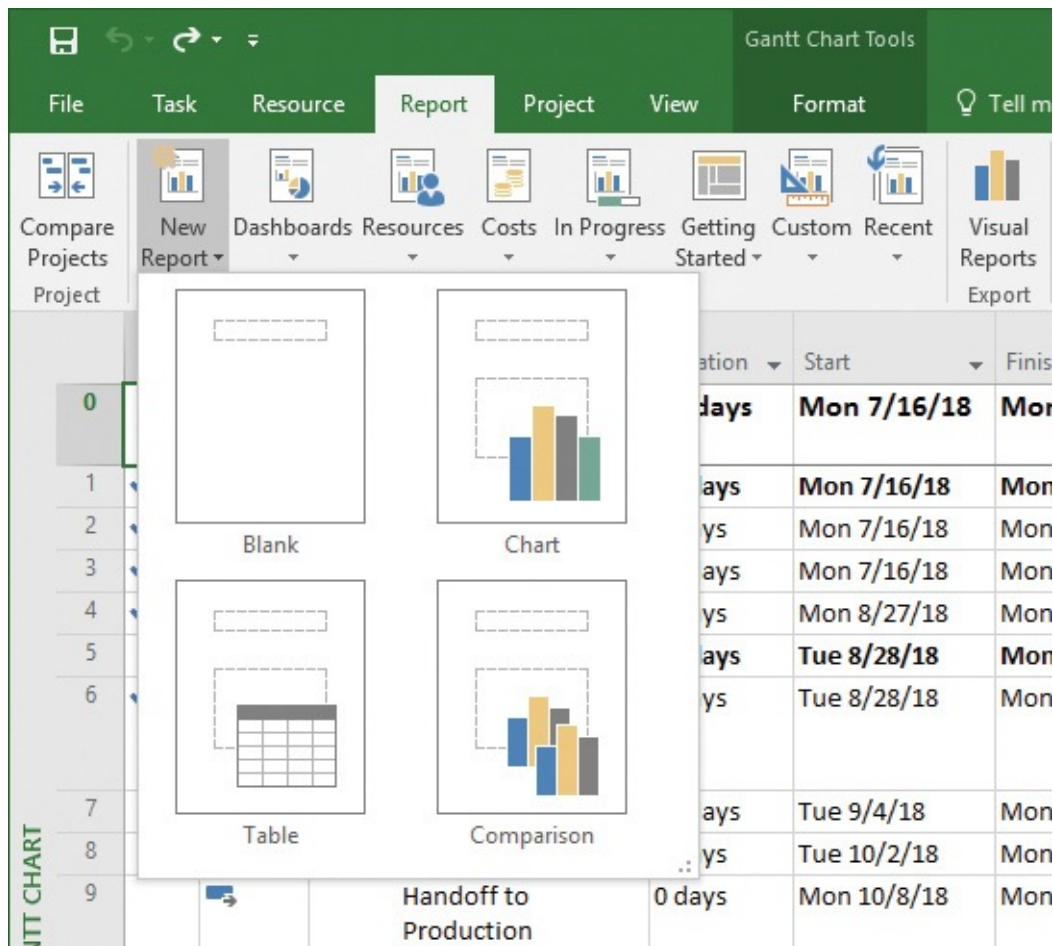


Use the buttons in the Insert group of the Report Tools Design tab to add elements to a report

Use these features in a Project report just like you'd use them in other Microsoft Office documents such as a PowerPoint presentation or an Excel workbook.

Charts and tables are different from the other report elements. Charts and tables use task and resource field data from the open plan in Project. The field values included in a chart or table will automatically be updated as the underlying data changes in the plan.

When you create a new report, you have the option of choosing the report elements to start with.



When creating a new report, you can pick the components you want to include

You can use these options to start either with a blank report or with a report that includes an initial table or chart. The Comparison option creates a new report that contains two identical charts, with the expectation that you'll customize one or both.

It's easy to add additional components to a custom report, so it doesn't really matter which components you include when creating a new report. You'll likely want to start by

building a chart or table (or both) to convey the essential details from your plan, and then add text boxes, images, or shapes to enhance or decorate your key points in the charts and tables.

When you insert or edit a chart or table in a report, Project displays the Field List pane. Use this pane to control what values from the plan are displayed in the selected chart or table, and how those values should be organized.

Gourmet Cookbook Cost Summary

Name	Actual Cost	Remaining Cost	Cost
Carole Poland	\$12,180.00	\$2,100.00	\$14,280.00
Color Setting Services	\$0.00	\$0.00	\$0.00
Copyeditors	\$0.00	\$0.00	\$0.00

Field List

Select Category: Name

Select Fields:

- Cost
 - Baseline
 - Custom
 - Actual Cost
 - Actual Overtime Cost
 - ACWP
 - BCWP
 - BCWS
 - Budget Cost
 - Cost

Filter: All Tasks

Group By: No Group

Outline Level: Level 1

Sort By: No Sort

In this custom report, the Field List pane opens for the selected chart (as shown here) or table

The Field List pane groups fields into task fields and resource fields. The currently selected fields are listed at the bottom of the field list for easy reference.

The bottom of the Field List pane includes options to filter, group, outline, or sort the selected fields. These are similar to the filter, group, outline, and sort features you use in task or resource views as described in [Chapter 13, “Organize plan details.”](#) Use these options to control how the selected fields are displayed in reports. Here are just a few examples of your options to control how report data is organized:

- In a pie chart that contains cost fields for tasks, show only top-level summary task cost values by setting Outline Level to Level 1.
- In a table that contains task fields, show only milestone tasks by applying the Milestones filter.

- In a table that contains resources' remaining work values, sort in descending order by Remaining Work.

The remaining topics in this chapter explore these options for charts and tables in more detail.



Project includes a set of instructional tools designed as reports. On the Report tab, in the View Reports group, click Getting Started, and then click Get Started With Project. You'll also find more information about reports in the online help for Project. In the Tell Me box, enter *Create a Project report*, and then click Get Help.

How reports compare to views

Let's compare reports and views. Any report or view focuses on just a subset of your plan's data. Every report and view included with Project is designed to help you better visualize some aspect of your plan. You normally need to work with multiple reports and views over time to manage the aspects of your plan that matter most to you.

For example, if your project is primarily deadline-driven, you'll get the best insight into your plan by working with timescaled views such as the Gantt chart views, the Timeline and usage views, and reports such as Upcoming Tasks, Critical Tasks, and Late Tasks.

There are important differences between reports and views, however. Throughout this book, you've worked in views both to enter and modify schedule data (such as task names and resource assignments) and to see schedule details (such as which resources are assigned to what tasks). With reports, however, you can't directly change your plan's data. You can't add or delete tasks or change resource assignments, for example. What reports excel at is giving you additional options for discovering and sharing key aspects of your plan in formats that are visually compelling. In addition, you can customize reports to include just the information you want, presented the way you want.



Custom reports reside within the plan in which they were created and are not available in other plans. To make a custom report available in any plan you work with in Project, use the Organizer to copy it to the [Global template](#). For more information about the Organizer, see [Chapter 18](#), "[Customize Project](#)."

To create a new report

1. On the **Report** tab, in the **View Reports** group, click **New Report**.

2. Select the type of new report you want: blank or with other components included.
3. In the **Report Name** dialog box, enter a name, and then click **OK**. This name will be the title at the top of the report and will appear in the Custom list (on the Report tab, in the View Reports group) so that you can view this report later.

To add a chart to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Chart** to open the Insert Chart dialog box.
2. On the left side of the dialog box, select the chart type you want, and then select the specific chart layout you want. Then click **OK**. Project adds the new chart to the report and displays the Field List pane.
3. Drag the chart to position it where you want it on the report.



Tip

For instructions on customizing the content and format of a chart, see the [“Customize charts in a report”](#) topic later in this chapter.

To add a table to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Table**.
2. Drag the table to position it where you want it on the report.



Tip

For instructions on customizing the content and format of a table, see the [“Customize tables in a report”](#) topic later in this chapter.

To add a text box to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Text Box**.
2. In the report, click where you want to position the upper-left corner of the text box, and drag down and to the right until the text box looks the way you want it. Then release the mouse button.
3. Enter the text you want inside the text box.
4. Select additional text formatting options you want from the **Drawing Tools Format** tab and on the **Task** tab, in the **Font** group.

To add a shape to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Shapes**.
2. In the **Shapes** list, click the specific shape you want.

3. In the report, click and drag to create and size the shape.
4. If you want, add text to the shape and apply whatever additional formatting options you want from the **Drawing Tools Format** tab and on the **Task** tab, in the **Font** group.

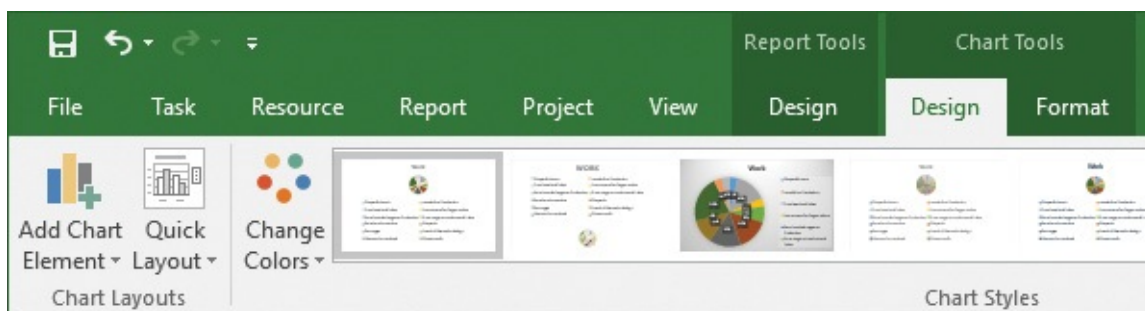
To add an image to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Images**.
2. Select the image you want to add to the report, and then click **Open**. After the image is added, you can move and resize it, and use the **Picture Tools Format** buttons to further modify it.

Customize charts in a report

The reports in Project give you charting capabilities comparable to what you'd find in a spreadsheet program like Microsoft Excel. In Project, you can create a variety of chart types, including column, line, pie, and bar charts.

When you add a chart or select it in a report, the Field List pane opens, as mentioned earlier, and two Chart Tools tabs appear on the ribbon.

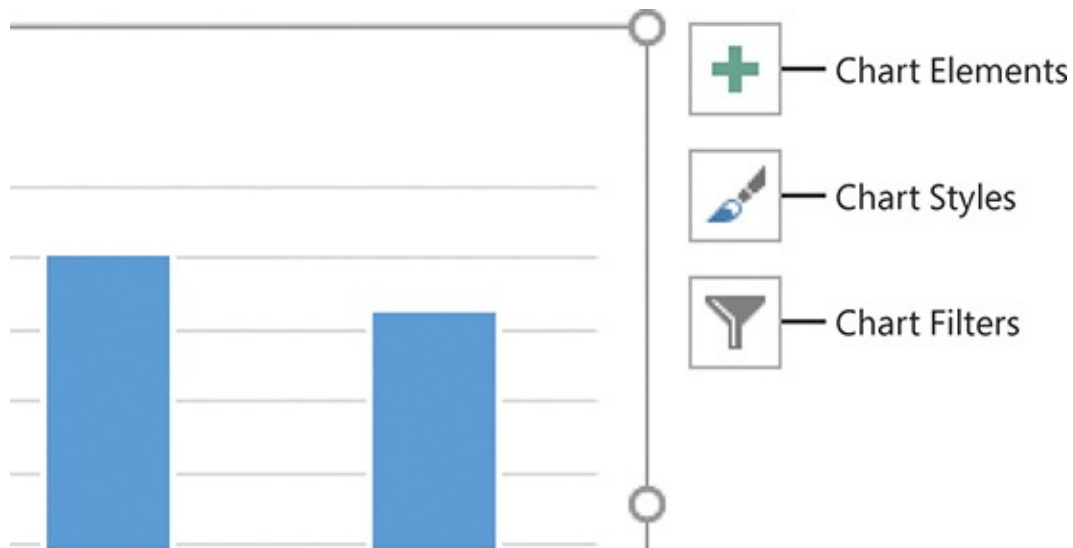


The Chart Tools Design and Format tabs are visible when you add or select a chart

These tabs, Design and Format, are described here:

- **The Design tab** Use the buttons on this tab to change the chart's layout and style, and include elements such as data labels.
- **The Format tab** Use the buttons on this tab to format chart elements such as data series.

In addition, whenever you select a chart, three buttons appear to the right of it.



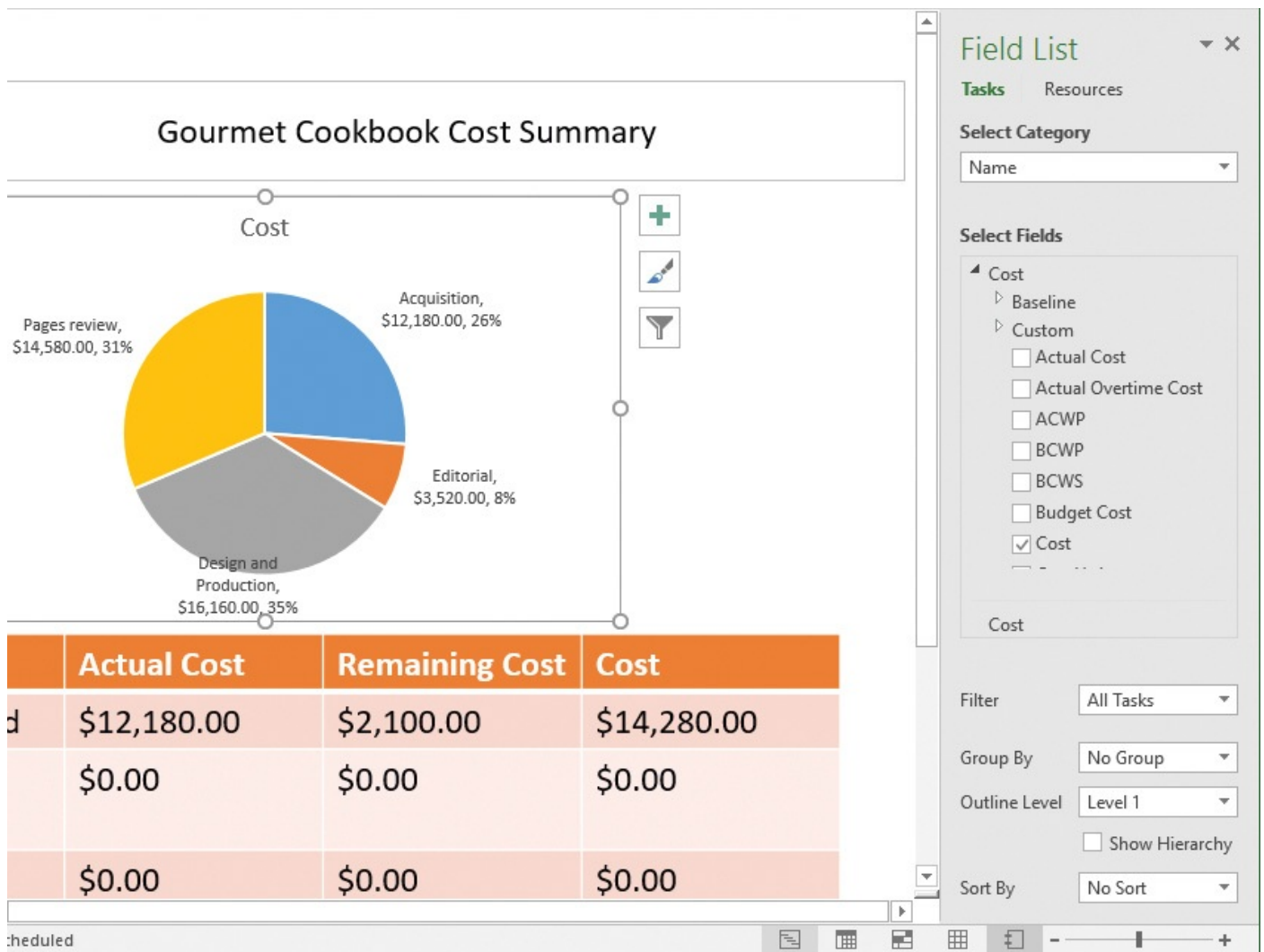
The Chart Elements, Chart Styles, and Chart Filters buttons are visible when you add or select a chart

You can use these buttons to refine your chart, as follows:

- **Chart Elements** Quickly add or remove elements such as data labels.
- **Chart Styles** Switch the selected chart to a different chart style (including color and fill combinations) and change the chart's color scheme.
- **Chart Filters** Add or remove the specific data series (which correspond to Project fields) and data categories (which correspond to specific tasks or resources).

These three buttons give you quick access to some of the features on the Chart Tools Design tab.

As noted in the previous topic, when you select a chart in a report, the Field List pane opens.



The Field List pane is the primary interface for controlling what data appears in the selected chart and how it is organized

Let's look in more detail at what's in the Field List pane for charts:

- **Tasks or Resources** Pick the type of data you want to work with. A chart can display data from either Task fields or Resource fields.
- **Category** Pick the primary item to be charted. When you are working with task data, the available categories include descriptive attributes like task ID and task name. Resource data categories include attributes like the resource name. Some categories, like time, are available for both task and resource data. When you are working with a bar or line chart, the category determines what field's labels are shown on the x-axis.
- **Available fields** Fields are organized into an outline by type, such as Cost or Work. Expand each field category to see its fields.
- **Selected fields** The currently selected fields are listed at the bottom of the field list for easy reference.
- **Data organization features (Filter, Group By, and so on)** Use these settings to control how the task or resource data is presented in the chart. For example, you can group tasks by critical tasks, or filter resources to show only overallocated resources.

The Field List pane gives you a great deal of flexibility for building charts. As you make

changes in the Field List pane, you'll instantly see your results in the chart.

To select the Project information to include in a chart

1. Select the chart.
 2. In the **Field List** pane, click the type of data you want to work with: **Tasks** or **Resources**.
 3. In the **Select Category** list, select the category of data that will be charted, such as the task name for tasks or the resource name for resources. If you select **Time** as a category, an **Edit** button will appear so you can edit the time settings.
 4. In the **Select Fields** box, select the check boxes for the fields you want included in the chart.
-



The names of the selected fields appear at the bottom of the Select Fields box. To adjust the order of the fields as they appear in the chart, drag the selected field names up or down. You can also right-click a field name to remove or rename it.

5. At the bottom of the **Field List** pane, select any filter or other options you want to apply to the tasks or resources.
 6. To further adjust the chart's content, click the **Chart Filters** button to the right of the chart and then fine-tune the series (the specific values to be charted) and categories (the labels on the x-axis) until the chart appears as you want it to.
-



Building a chart can be a highly iterative process. As you adjust the chart's settings, the chart instantly updates accordingly. You can also examine the Field List and other settings of the built-in charts in Project, and then create the same results in your custom charts.

To change a chart's format and style

1. Select the chart.
2. On the **Chart Tools Format** tab, select the chart type, elements, and other options you want.
3. On the **Chart Tools Design** tab, select the layout, color, or style options you want.



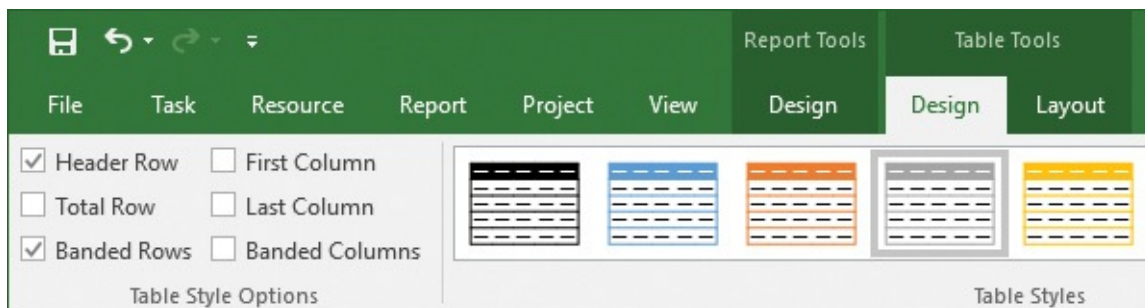
Tip

You can also use the three floating chart buttons to apply format and design options or adjust the series and category values you want. For example, if the chart does not include the specific chart element you want to format, click the Chart Elements button and then add the element you want. You can also use this button to remove elements you do not want.

Customize tables in a report

As with views, tables in reports use Project field labels as column headings and display field values in the rows. The field labels (such as *Duration*) and values (such as *20 days*) are the same labels and values you see in views and dialog boxes throughout Project.

When you select a table in a report, two Table Tools tabs appear on the ribbon.



The Table Tools Design and Layout tabs are visible when you add or select a table

These tabs, Design and Layout, are described here:

- **The Design tab** Use the buttons on this tab to add or remove a header row, change the table's formatting, apply table styles (color schemes), and apply WordArt styles to selected text in the table.
- **The Layout tab** Use the buttons on this tab to adjust row height and column width, adjust the alignment of content in the table's cells, and make other table size adjustments.

Just like with charts, when you select any table in a report, the Field List pane opens. In this pane, you control what fields are included in the selected table. In the Field List pane, you can also apply filtering, grouping, and sorting of the table rows and, for task fields, change the outline levels to determine what tasks are displayed.

Fields in Project are organized into task fields and resource fields. These groupings apply to charts but not to tables, so the Select Category box does not appear for tables.

Remaining Work	Resource Names
88 hrs	Copyeditors
40 hrs	Robin Wood
0 hrs	Robin Wood
160 hrs	John Evans,Katie Jordan
40 hrs	Carole Poland
0 hrs	Robin Wood
80 hrs	Katie Jordan,Robin Wood
0 hrs	

Field List

Tasks Resources

Select Fields

- ID
- Name
- Resource Names
- ▶ Cost
- ▲ Date
 - ▶ Baseline
 - ▶ Custom
 - Actual Finish

Name
Start
Finish
% Complete
Remaining Work
Resource Names

Filter: Critical

Group By: No Group

Outline Level: All Subtasks

Show Hierarchy

Sort By: No Sort

The names of selected fields, and their order, appear here

The Field List pane is the primary interface for controlling what data appears in the selected table and how it is organized

The order in which fields get added to a table determines the table's column organization from left to right. As you add fields, their names appear at the bottom of the Select Fields box. To reorder the columns in the table, drag the field names up or down. As you do so, the table updates to show the result.

The options to filter, group, or sort the table data at the bottom of the Field List pane are similar to the same features you use in view-based tables. The Outline Level box is available only when working with task fields, because resources do not have an outline structure.

To select the project information to include in a table

1. Select the table.
2. In the **Field List** pane, click the type of data you want to work with: **Tasks** or

Resources.

3. In the **Select Fields** box, select the check boxes for the fields you want to include in the table. Either select the fields in the sequence you want them to be ordered from left to right, or drag the selected field names up or down at the bottom of the Select Fields box.
4. To further adjust the table's content, apply whatever filter, group, sort, or (for task fields) outline level settings you want at the bottom of the **Field List** pane.

To change a table's design and layout

1. Select the table.
2. On the **Table Tools Layout** tab, select the size, alignment, and other options you want.
3. On the **Table Tools Design** tab, select the style options you want.



Tip

You can right-click the border of a table and, in the shortcut menu that appears, select Font to adjust the font settings of the entire table.

Skills review

In this chapter, you learned how to:

- [Create a custom report](#)
- [Customize charts in a report](#)
- [Customize tables in a report](#)



Practice tasks

The FormatReportsInDepth practice file for these tasks is located in the Project2016SBS\Ch17 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA.](#)”

Create a custom report

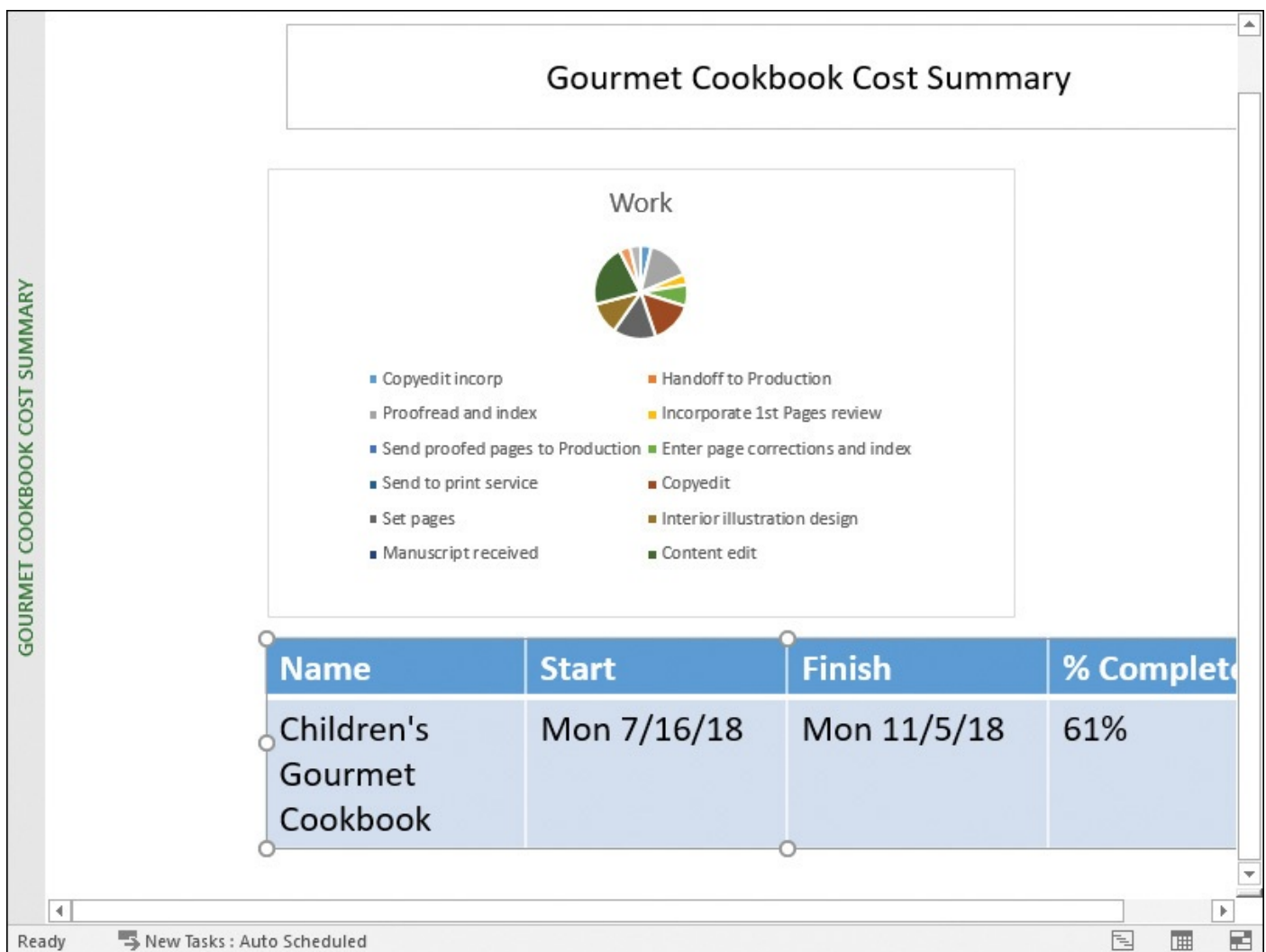
The scenario: At Lucerne Publishing, you are sometimes asked for project cost details in terms of both summary tasks (or phase) and resources. You'll create a custom report that includes the mix of cost information you want. Open the FormatReportsInDepth plan in Project, and then perform the following tasks:

1. Create a new blank report.
2. Name the custom report **Gourmet Cookbook Cost Summary**.
3. Insert a pie chart. Use the default two-dimensional pie chart style.
4. Insert a table and position it below the pie chart. You'll customize the chart and table in the next practice tasks.



Tip

You might need to cancel the selection of the chart (by clicking in an empty area on the report) before you can add a table.



Your custom report should include a pie chart and table; you'll change them next

Customize charts in a report

The scenario: You'd like to change the chart's data and format in the custom report. Continuing in the FormatReportsInDepth plan, perform the following tasks:

1. Select the pie chart.
2. Update the information in the **Field List** pane so the chart includes only the Cost field and not the Work field.
3. Set the **Filter** value to **All Tasks**, the **Group By** value to **No Group**, and the **Outline Level** value to **Level 1**.
4. Apply the **Style 3** style (the third style shown on the **Chart Tools Design** tab, in the **Chart Styles** group).

Name	Start	Finish	% Complete
Children's Gourmet Cookbook	Mon 7/16/18	Mon 11/5/18	61%

Field List

Tasks Resources

Select Category: Name

Select Fields:

- Actual Cost
- Actual Overtime Cost
- ACWP
- BCWP
- BCWS
- Budget Cost
- Cost
- Cost Variance

Cost

Filter: All Tasks

Group By: No Group

Outline Level: Level 1

Show Hierarchy

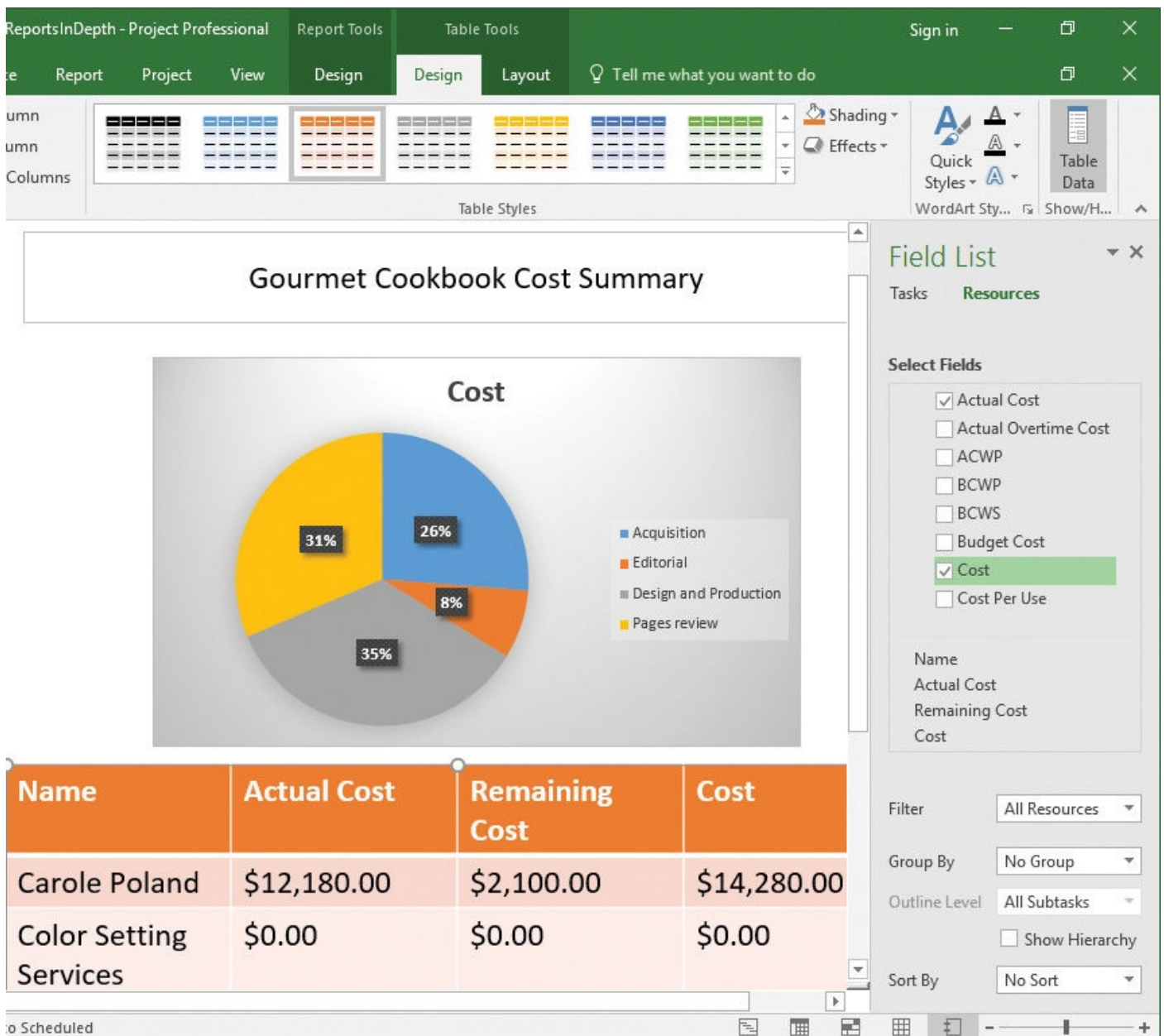
Sort By: No Sort

Your custom report's pie chart should now look like this

Customize tables in a report

The scenario: To finish your custom report, you'll change the data and format of the table. Continuing in the FormatReportsInDepth plan, perform the following tasks:

1. Select the table.
2. Update the information in the **Field List** pane to show the Resource field names.
3. Leave the **Name** field selected, but remove the **Start** and **Finish** date fields.
4. In the **Cost** field group, select the **Actual Cost**, **Remaining Cost**, and **Cost** fields.
5. Apply the **Medium Style 2 - Accent 2** style (the third style shown on the **Table Tools Design** tab, in the **Table Styles** group).



The screenshot displays the Microsoft Project interface with the 'ReportsInDepth - Project Professional' window open. The 'Table Tools Design' tab is active, showing various table styles. The report content includes a pie chart titled 'Cost' and a table with the following data:

Name	Actual Cost	Remaining Cost	Cost
Carole Poland	\$12,180.00	\$2,100.00	\$14,280.00
Color Setting Services	\$0.00	\$0.00	\$0.00

The 'Field List' pane on the right shows the 'Resources' group selected. Under the 'Cost' field group, the following fields are checked:

- Actual Cost
- Actual Overtime Cost
- ACWP
- BCWP
- BCWS
- Budget Cost
- Cost
- Cost Per Use

The 'Name' field group shows the following fields:

- Actual Cost
- Remaining Cost
- Cost

Your custom report with chart and table should now look like this

18. Customize Project

In this chapter

- [Share custom elements between plans](#)
 - [Record and run macros](#)
 - [Edit macros](#)
 - [Customize the ribbon and Quick Access Toolbar](#)
-

Practice Files

For this chapter, use the practice files from the Project2016SBS\Ch18 folder. For practice file download instructions, see the introduction.

This chapter describes some of the ways you can customize Project 2016 to suit your own preferences. Like most Microsoft Office programs, Project uses the ribbon interface, which offers good customization options. Project has other customization features, such as the Organizer and global template, that are unique to it. In addition, Project has customization features, such as the ability to record Microsoft Visual Basic for Applications (VBA) macros, that are similar to those in other Office programs.

This chapter guides you through procedures related to sharing custom elements between plans, recording and running macros, editing macros, and customizing the ribbon and Quick Access Toolbar.

Share custom elements between plans

Project uses a global template, named Global.mpt, to provide the built-in views, tables, reports, and other elements you see in Project. The very first time you display a view, table, or similar element in a plan, it is copied automatically from the global template to that plan. Thereafter, the element resides in the plan. Any subsequent customization of that element in the plan (for example, changing the fields displayed in a table) applies to only that one plan and does not affect the global template. The global template is installed as part of Project, and you normally don't work with it directly.

Initially, the specific definitions of all views, tables, and other elements are contained in the global template. For example, the fact that the default Usage table contains one set of fields and not others is determined by the global template. The list of elements provided by the global template includes the following:

- Views
- Reports
- Tables
- Filters
- Calendars

■ Groups

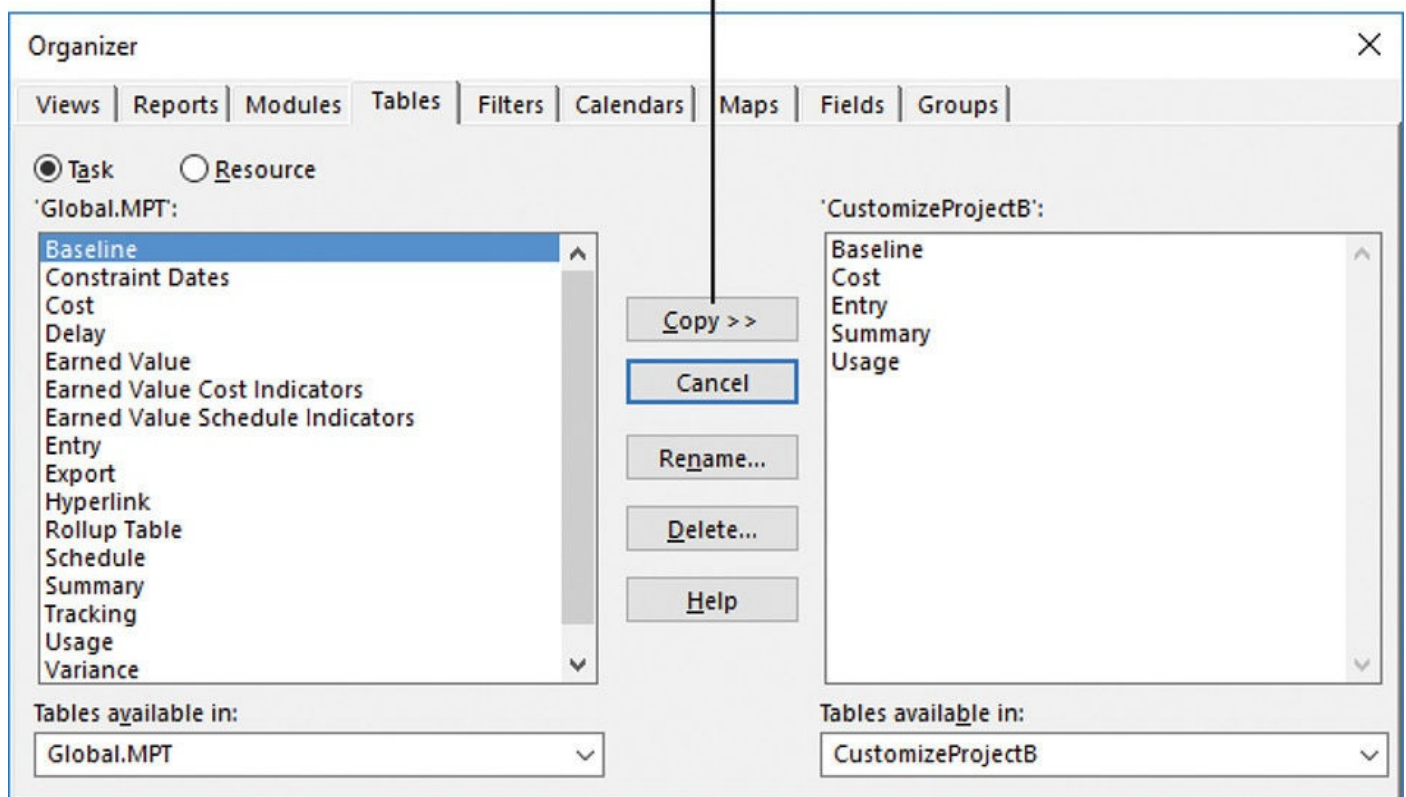
In addition, you can copy modules (VBA macros), import/export maps, and custom fields to the global template or between plans.

When you customize a built-in element like a view, the customized element remains in the plan in which it was customized. With views and tables, you have the option to replace the version of that element in the global template with your own customized view or table. If you create a new element, however, such as a new view, that new element is copied to the global template and thereafter becomes available in all other plans you might work with. If you don't want a new element to be copied to your global template, you can change this behavior.

One exception, however, is calendars. When you create a custom calendar, it remains just in the plan in which it was created. A customized standard calendar that meets your needs in one plan could redefine working times in other plans in ways you do not intend. For this reason, Project has a feature you can use to share custom calendars (and other elements) between plans in a controlled way. That feature is the [Organizer](#).

The complete list of elements you can copy between plans by using the Organizer is indicated by the names of the tabs in the Organizer dialog box.

Click the element you want to copy, rename, or delete. The arrows on the Copy button indicate where the selected element will be copied.



In the Organizer dialog box, you can copy elements between plans, or between a plan and the global template

Most tabs of the Organizer dialog box have a similar structure: elements in the global template appear on the left side of the dialog box, and the elements that have been used in the active plan at any time (for example, views displayed) appear on the right. You use the

tabs and two sides of the Organizer dialog box to copy elements between the global template and a plan. Alternatively, you can select another open plan rather than the global template, to copy elements between plans.

Selecting an element on the left side of the dialog box and then clicking the Copy button copies that element to the plan listed on the right. Conversely, selecting an element on the right side of the dialog box and then clicking the Copy button copies that element to the file listed on the left (the global template, by default).

You could use Project extensively and never need to touch the global template. However, when you do work with the global template, you normally do so through the Organizer. Some actions you can accomplish with the global template include the following:

- Copy one customized element, such as a custom report, from one plan to another.
- Create a customized element, such as a custom calendar, and make it available in all plans you work with by copying the custom calendar into the global template.
- Replace a customized element, such as a view or table, in a plan by copying the original, unmodified element from the global template to the plan in which you've customized the same element.

As you customize views, tables, and other elements, you might find the Organizer to be a useful feature for managing your customized elements and the built-in elements in Project.



A view itself can contain other elements, such as a table, filter, or group. If you want to copy a customized view that itself uses other customized elements, you must copy the customized view and its customized elements between plans. You do so via the various element tabs of the Organizer dialog box.

To copy an element between two plans

1. Open the two plans between which you want to copy an element.
2. Click the **File** tab to display the Backstage view, click **Info**, and then click **Organizer** to open the Organizer dialog box.
3. At the bottom of the **Organizer** dialog box, in the *Elements available in* boxes, click the names of the plans between which you want to copy an element.
4. Next, click the tab of the type of element you want to copy.
5. On either the left or right side of the **Organizer** dialog box, select the element you want to copy *from* its plan *to* the other plan. On the **Tables**, **Filters**, **Fields**, or **Groups** tab, you might first need to click **Task** or **Resource** to display the element you want to copy. The two arrow symbols on the Copy button switch direction when you select an element on either side of the dialog box and point toward the plan to which you will copy the selected element.
6. Click the **Copy** button.

7. Click **Close** to close the Organizer dialog box.

To copy a customized element to the global template

1. Open the plan that contains the customized element (such as a view).
2. Open the **Organizer** dialog box.
3. Click the tab of the type of element you want to copy.
4. Verify that *Global.MPT* appears on the left side of the dialog box. If it does not, in the **Elements available in** box on the left side of the dialog box, select **Global.MPT**.
5. On the right side of the dialog box, select the custom element you want to copy to the global template. The two arrow symbols (>>) on the Copy button switch direction (<<) when you select an element on the right side of the dialog box.
6. Click the **Copy** button.
7. Click **Close** to close the Organizer dialog box.

To prevent customized elements from automatically being added to the global template

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
2. Display the **Advanced** page.
3. Under **Display**, clear the **Automatically Add New Views, Tables, Filters And Groups to the global** check box, and then click **OK**.

Record and run macros

Many activities you perform in Project can be repetitive. To save time, you can record a macro that captures keystrokes and mouse actions for later playback. The macro is recorded in Visual Basic for Applications (VBA), the built-in macro programming language of Office. You can do sophisticated things with VBA, but you can record and play back simple macros without ever directly seeing or working with VBA code.

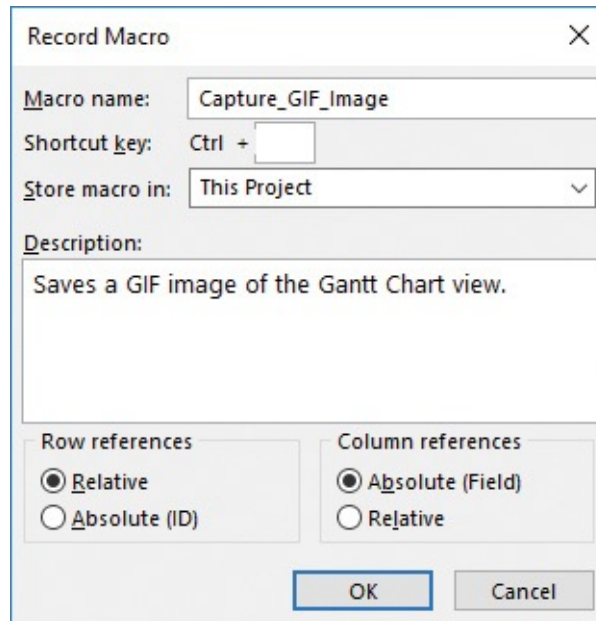
What kinds of repetitive activities might you want to capture in a macro? Here's one example. Creating a graphic-image snapshot of a view is a great way to share project details with others. However, it's likely that the details you initially capture will become obsolete quickly as the plan is updated. Capturing updated snapshots can be a repetitive task that is ideal for automation through a macro. When this task is automated, you can quickly generate a new GIF image snapshot of a plan and save the GIF image to a file. From there, you can attach the GIF image file to an email message, publish it to a website, insert it into a document, or share it in other ways.

The macros you create are stored in the global template by default. Because the global template is open whenever Project is running, its macros are always available to you in Project. The plan for which you originally created the macro need not be open to run the macro in other plans. You can also use the Organizer to copy macros between plans. For

example, you can use the Organizer to copy a VBA module that contains the macro from the global template to another plan to give it to a friend.

When a macro is stored in a plan, that macro can be used in any plan when the plan that contains the macro is open.

When you begin recording a macro, you first record information about the macro in the Record Macro dialog box.



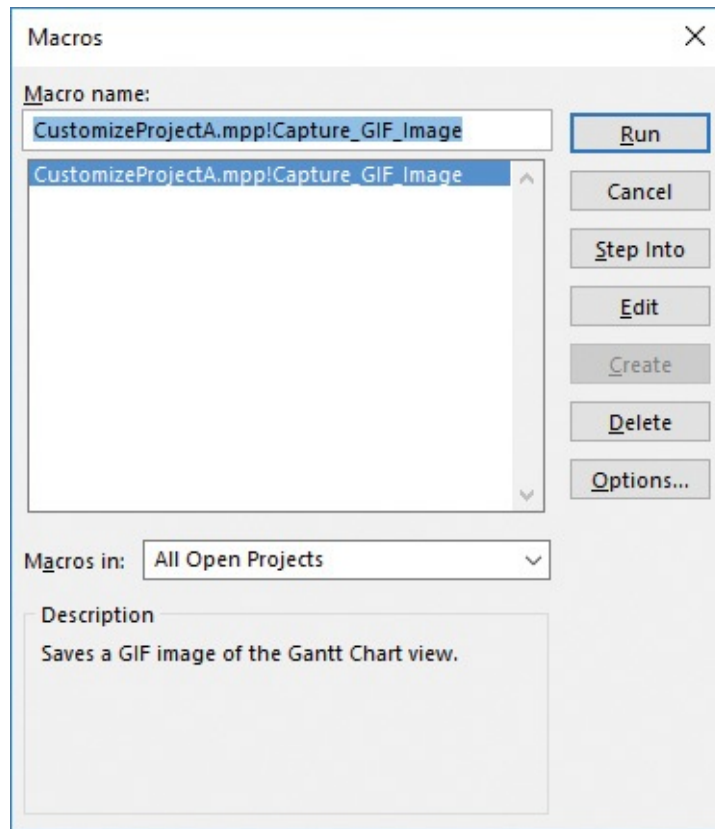
When recording a new macro, you give it a name and more in the Record Macro dialog box

Macro names must begin with a letter and cannot contain spaces. To improve the readability of your macro names, you can use an underscore (_) in place of a space. For example, rather than naming a macro *CaptureGIFImage*, you can name it *Capture_GIF_Image*.

When recording a macro, you can assign the macro a keyboard shortcut key. You cannot use a Ctrl+ combination that is already reserved by Project, so combinations like Ctrl+F (the keyboard shortcut for Find) and Ctrl+G (Go To) are unavailable.

Project does not literally record and play back every mouse movement and passing second while you record a macro. Instead, Project records only the results of the keystrokes and mouse actions that you make. Do not feel that you have to rush to complete the recording of the macro.

After you record a macro, you run it from the Macros dialog box or via its shortcut key, if you assigned one.



Recorded macros appear in the Macros dialog box; from here you can run, edit, or delete macros



Important

Your security-level setting in Project affects Project's ability to run macros that you record or receive from others. You might not have set the security level directly, but it might have been set when you installed Project or by a system policy within your organization. You can check your macro security settings in the Trust Center. On the View tab, in the Macros group, click the Macros arrow, and then click Macro Security.

To record a macro

1. On the **View** tab, in the **Macros** group, click the **Macros** arrow, and then click **Record Macro** to open the Record Macro dialog box.
2. Enter a name, description, and other options you want, and then click **OK**. Project begins recording the new macro.
3. Perform the actions you want recorded in the macro.
4. When you're ready to stop the recording of the macro, on the **View** tab, in the **Macros** group, click the **Macros** arrow, and then click **Stop Recording**.

To run a macro

1. On the **View** tab, in the **Macros** group, click **Macros** to open the Macros dialog box.

2. In the **Macro name** box, click a macro name, and then click **Run**.



Tip

If you assigned a Ctrl+ keyboard shortcut to the macro, you can also run the macro by pressing its key combination.

To delete a macro

1. Open the **Macros** dialog box.
2. In the **Macro name** box, click a macro name, and then click **Delete**.
3. Confirm the deletion, and then click **Close**.

Edit macros

After you've recorded a macro, it might work perfectly fine the way you recorded it, or it might benefit from some adjustments to its code. By editing the macro's code, you can give the macro functionality that you cannot capture when recording the macro, such as dismissing an alert. A macro's code resides in a VBA module, and you work with the code in the VBA environment, commonly called the *Visual Basic Editor*. If you view the VBA module's code, you might recognize some code values that correspond to whatever actions you recorded in the macro, such as *FilterApply* (applies a filter) and *EditCopyPicture* (copies a picture).

This VBA code was generated when Project recorded a macro

```
Sub Capture_GIF_Image ()  
    ' Saves a GIF image of the Gantt Chart view.  
    ViewApplyEx Name:="&Gantt Chart", ApplyTo:=0  
    ZoomTimescale Entire:=True  
    FilterApply Name:="Summary Tasks"  
    EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0,  
    FilterApply Name:="All Tasks"  
    ZoomTimescale Reset:=True  
End Sub
```

In this sample code from a recorded macro, you might generally recognize what the code strings do even if you don't know VBA in detail

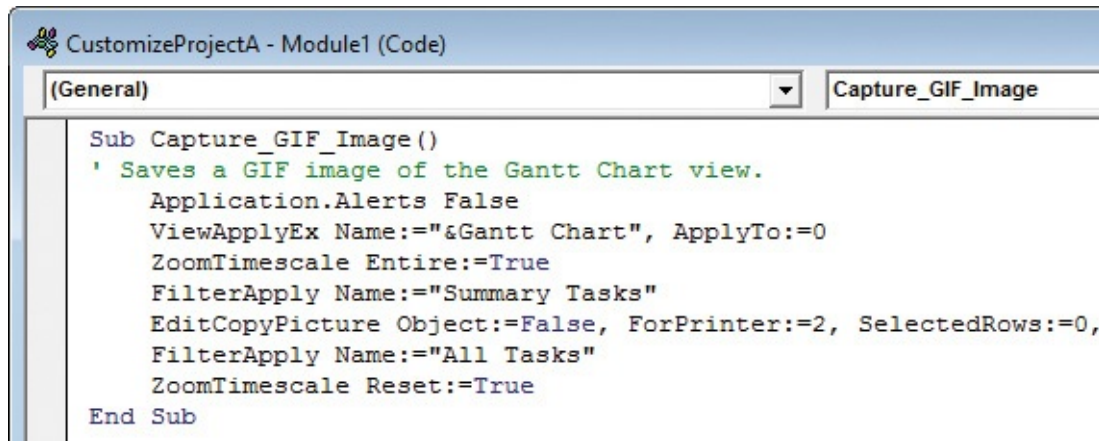
A full explanation of the VBA language is beyond the scope of this book, but here's one example of the power of VBA for automating tasks. Let's say you've recorded a macro that includes saving a GIF image file of a view. When you initially save the file while

recording the macro, the process works fine.

However, when you subsequently run the macro, it is interrupted by a dialog box that asks you to verify whether you want to replace the existing GIF image file with a file of the same name.

You can use a single line of VBA code to avoid the interruption every time you run the macro.

```
Application.Alerts False
```



```
Sub Capture_GIF_Image()  
' Saves a GIF image of the Gantt Chart view.  
Application.Alerts False  
ViewApplyEx Name:="&Gantt Chart", ApplyTo:=0  
ZoomTimescale Entire:=True  
FilterApply Name:="Summary Tasks"  
EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0,  
FilterApply Name:="All Tasks"  
ZoomTimescale Reset:=True  
End Sub
```

In this sample code from a recorded macro, an added line of code suppresses the display of a dialog box

In the GIF image file example, this line of code suppresses the dialog box you received when running the macro. Instead, the macro causes Project to accept the default option of replacing the existing GIF image file with one of the same name.



Tip

The VBA language and Visual Basic Editor are standard in many Office programs, including Project. Although the specific details of each program differ, the general way in which you use VBA in each is the same. VBA automation is a powerful tool you can master, and that knowledge can be used in many Microsoft programs.

Here are some additional tips for working with VBA macros in Project:

- VBA is a rich and well-documented programming language. If you would like to take a closer look at VBA in Project, try this: On the View tab, in the Macros group, click the Macros arrow, and then click Visual Basic. The Microsoft Visual Basic for Applications window (referred to as the *Visual Basic Editor*) opens. In the Visual Basic Editor, on the Help menu, click Microsoft Visual Basic For Applications Help.
- While working in a module, you can get help on specific items such as objects, properties, and methods. Click a word, and then press the F1 key.
- As you type in the Visual Basic Editor, selection boxes and ScreenTips might appear. The Visual Basic Editor uses such tools and feedback to help you enter text in a module correctly.
- To close the Visual Basic Editor and return to Project, on the File menu, click Close

And Return To Microsoft Project.

To edit a macro

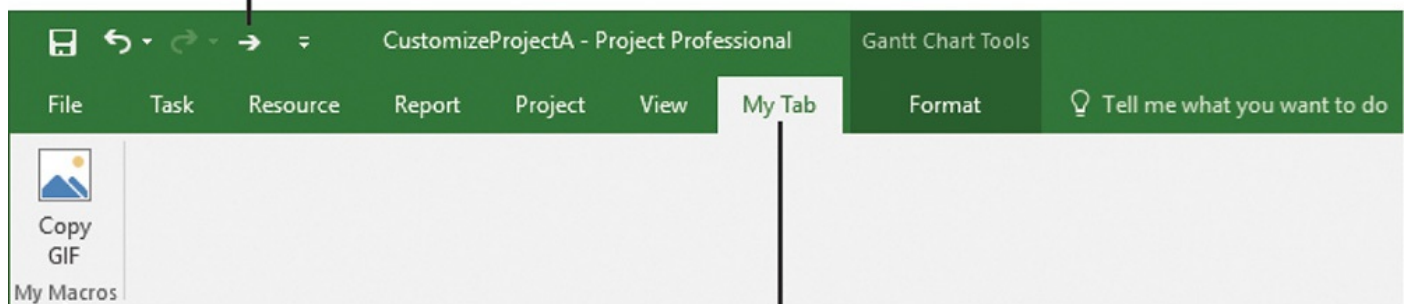
1. On the **View** tab, in the **Macros** group, click **Macros**.
2. Click the name of a macro, and then click **Edit**. Project loads the module that contains the macro in the Visual Basic Editor.
3. Edit the VBA code.
4. When you're done editing the macro, on the **File** menu in the Visual Basic Editor, click **Close and Return to Microsoft Project**. The Visual Basic Editor closes, and you return to the plan.

Customize the ribbon and Quick Access Toolbar

As with other Office programs, you have several choices regarding how to work with Project. Some of the many customization settings include the following:

- Add frequently used commands to the Quick Access Toolbar.
- Customize commands on the ribbon.

This customized Quick Access Toolbar includes the Go To command



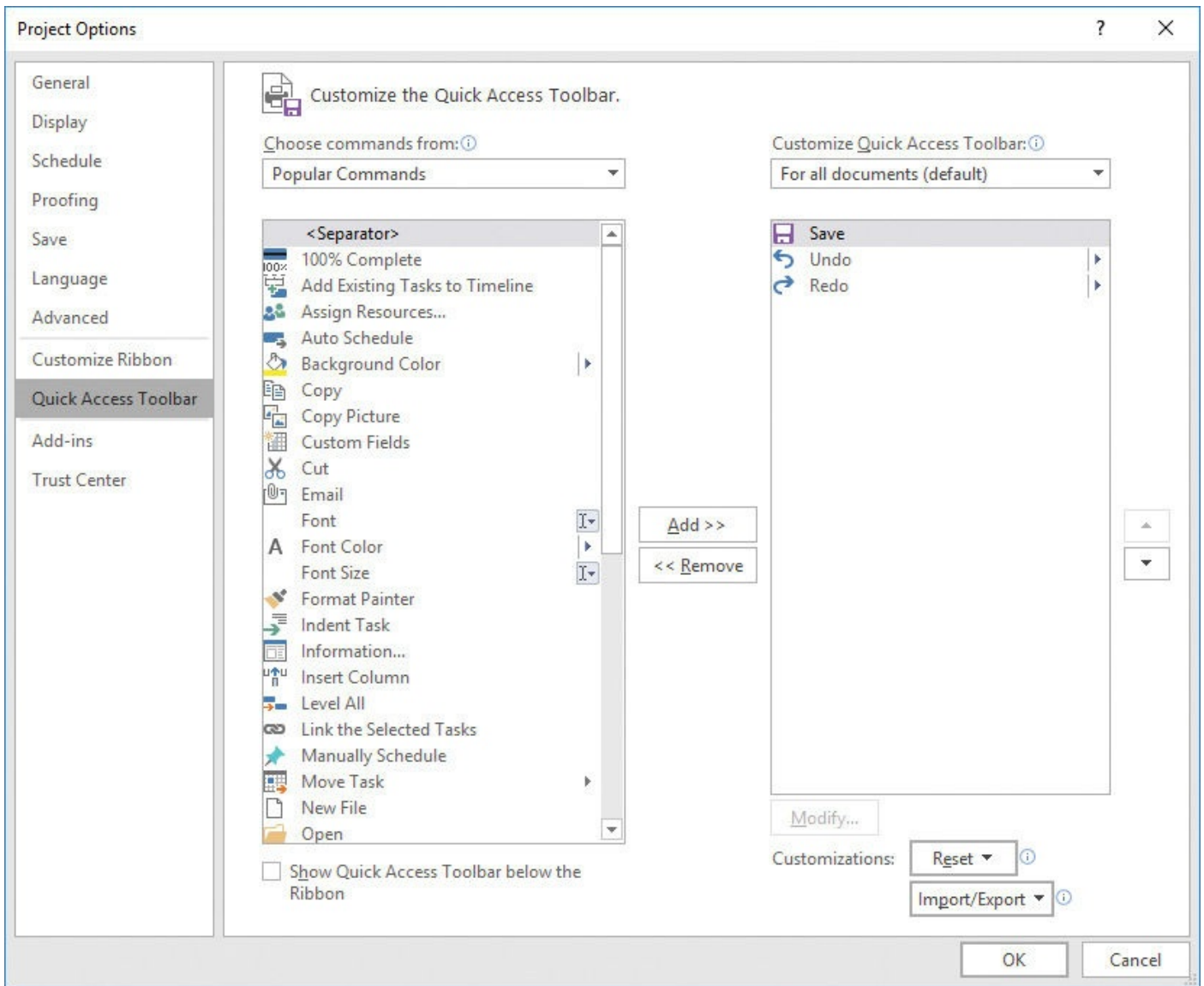
A custom tab, group, and command on the ribbon

A customized Quick Access Toolbar and a custom tab that contains a custom command

The customizations you make to the Quick Access Toolbar and ribbon are normally available to you regardless of what plan you have open in Project. If you prefer, you can make a customized Quick Access Toolbar available only to a specific plan.

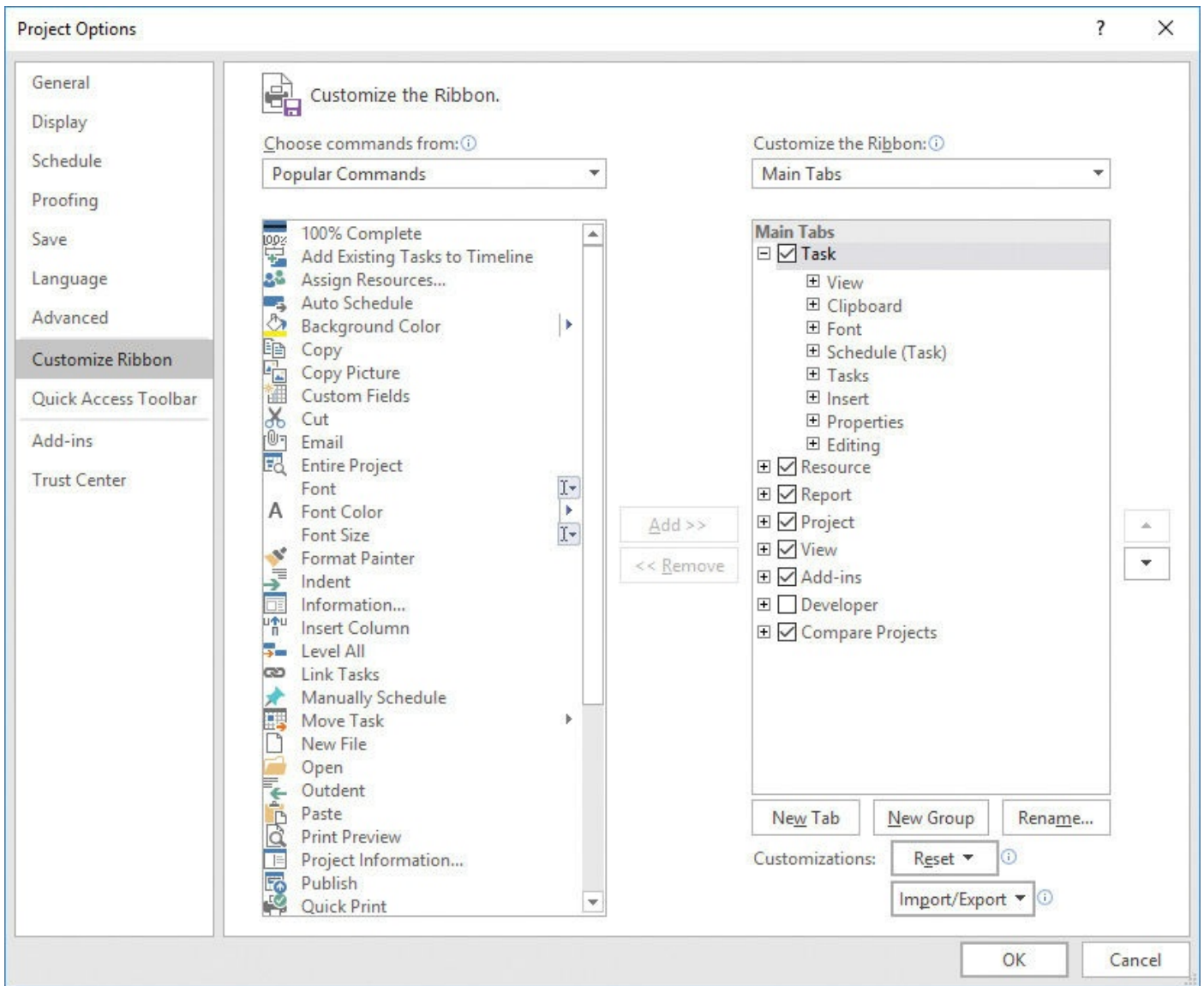
There are multiple ways to customize the Quick Access Toolbar:

- Right-click any command on the ribbon, and in the shortcut menu that appears, click **Add To Quick Access Toolbar**.
- Click the **Customize Quick Access Toolbar** launcher, and then click an item in the list of common commands.
- Use the **Project Options** dialog box to add, reorder, or remove commands from the Quick Access Toolbar.



Use the Quick Access Toolbar page of the Project Options dialog box to add, remove, or reorder commands on the Quick Access Toolbar

You use the Customize Ribbon page of the same Project Options dialog box to customize the ribbon.



Use the Customize Ribbon page of the Project Options dialog box to customize the ribbon

On the Customize Ribbon page, you can add or remove commands from any tab, or you can create new tabs. You can also remove all customizations from the ribbon or Quick Access Toolbar and reset them back to their original appearance by using a single command in the Project Options dialog box.



You can share a customized ribbon with other Project users. The Customize Ribbon page of the Project Options dialog box includes the Import/Export command for this purpose.

To quickly add or remove a single command to or from the Quick Access Toolbar

1. Do either of the following:

- To add a command to the Quick Access Toolbar, right-click the command where it

appears on the ribbon, and then click **Add to Quick Access Toolbar**.

- To remove a command from the Quick Access Toolbar, right-click the command where it appears in the Quick Access Toolbar, and in the shortcut menu that appears, click **Remove From Quick Access Toolbar**.

To customize the Quick Access Toolbar

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
 2. In the **Project Options** dialog box, display the **Quick Access Toolbar** page.
-



You can also click the arrow at the right end of the Quick Access Toolbar and then click More Commands to display the Quick Access Toolbar page of the Project Options dialog box.

3. On the left side of the dialog box, in the **Choose commands from** box, select the category of commands you want.
4. By default, the Quick Access Toolbar applies to all plans you work with in Project. To set the customized Quick Access Toolbar to apply only to a specific open plan, in the **Customize Quick Access Toolbar** box, click the name of the plan to which you want it to apply.
5. In the list of available commands (in the large box on the left side of the dialog box), select the command you want to add to the Quick Access Toolbar, and then click the **Add** button.
6. To reorder the commands on the Quick Access Toolbar, in the list of Quick Access Toolbar commands (in the large box on the right side of the dialog box), select a command and then use the up and down arrow buttons to the right of the box to move it.
7. When you have finished your customization, click **OK**.

To reset the Quick Access Toolbar to its original appearance

1. On the **Quick Access Toolbar** page of the **Project Options** dialog box, click the **Reset** button, and then click **Reset Only Quick Access Toolbar**.

To customize the ribbon

1. In the **Project Options** dialog box, display the **Customize Ribbon** page.



Tip

You can also right-click the ribbon and then click **Customize The Ribbon** to display the **Customize Ribbon** page of the **Project Options** dialog box.

2. Perform any of the following customizations:

- To reorder the commands on a specific tab, in the list of ribbon commands (in the large box on the right side of the dialog box), select a command and then use the up and down arrow buttons to the right of the box to move it.
 - To remove a command, in the list of ribbon commands (on the right side of the dialog box), do one of the following:
 - Select the command and click the **Remove** button.
 - Right-click the command and, in the shortcut menu that appears, click **Remove**.
 - To create a new tab or a new group on the selected tab, click the **New Tab** or **New Group** button. Then click the **Rename** button to give the new tab or group a name.
 - To add a command to a custom tab, first select the custom tab's group (on the right side of the dialog box). Then click a command in the list of available commands (on the left side of the dialog box) and click the **Add** button.
-



Tip

Commands that are dimmed on the **Customize Ribbon** page cannot be reordered or removed from the ribbon.

3. When you have finished your customization, click **OK**.

To reset the ribbon to its original appearance

1. On the **Customize Ribbon** page of the **Project Options** dialog box, do either of the following:
 - To reset a tab on the ribbon back to its original appearance, select the tab in the list of ribbon commands (on the right side of the dialog box), click the **Reset** button, and then click **Reset Only Selected Ribbon Tab**.
 - To reset the complete ribbon back to its original appearance, click the **Reset** button, and then click **Reset All Customizations**. This action will also reset the Quick Access Toolbar.

Skills review

In this chapter, you learned how to:

- [Share custom elements between plans](#)
- [Record and run macros](#)

- [Edit macros](#)
- [Customize the ribbon and Quick Access Toolbar](#)



Practice tasks

The practice files for these tasks, `CustomizeProjectA` and `CustomizeProjectB`, are located in the `Project2016SBS\Ch18` folder.



Important

Some of the actions you perform in this chapter can affect your overall settings in Project regardless of the specific plan you are using. To keep your Project environment unaffected or at the “factory settings” throughout this chapter, we include steps to undo some actions.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Share custom elements between plans

The scenario: At Lucerne Publishing, you previously created a calendar to apply to a task in a plan. Another plan includes the same type of task with the same calendar requirements. You’d like to use the task calendar in this other plan. Open the `CustomizeProjectA` plan in Project, and perform the following tasks:

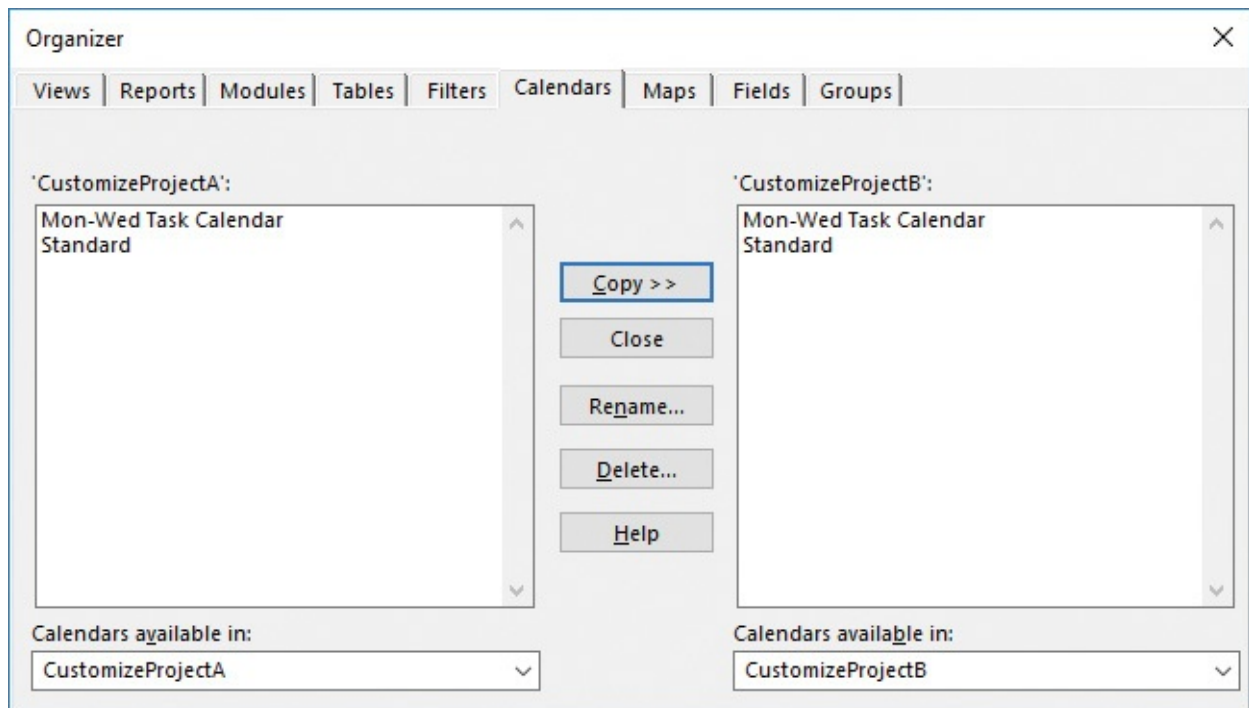
1. In `CustomizeProjectA`, point to the Calendar indicator of task 44. Note the ScreenTip: the task has the Mon-Wed Task Calendar applied.

	Task Mode	Task Name	Duration	Start	Finish	Apr S
0		Children's Book Schedule	174 days	Mon 4/9/18	Thu 12/6/18	
1		Editorial staff meeting	60.13 days	Mon 4/16/18	Mon 7/9/18	
15	✓	Acquisition	37 days	Mon 4/9/18	Tue 5/29/18	
21		Editorial	28.5 days	Wed 5/30/18	Mon 7/9/18	
27		Design and Production	64.5 days	Mon 7/9/18	Fri 10/5/18	
43		Color prep and printing	44 days	Mon 10/8/18	Thu 12/6/18	
44		Send to color	1 day	Mon 10/8/18	Mon 10/8/18	
45		Print and ship	10 days	Tue 10/9/18	Mon 10/22/18	
46		Print and ship	30 days	Fri 10/26/18	Thu 12/6/18	
47		Book launch prep	22 days	Tue 10/9/18	Wed 11/7/18	

This plan contains the custom calendar you need to copy to another plan

2. Open **CustomizeProjectB**.

3. Use the **Organizer** to copy the Mon-Wed Task Calendar from CustomizeProjectA to CustomizeProjectB.



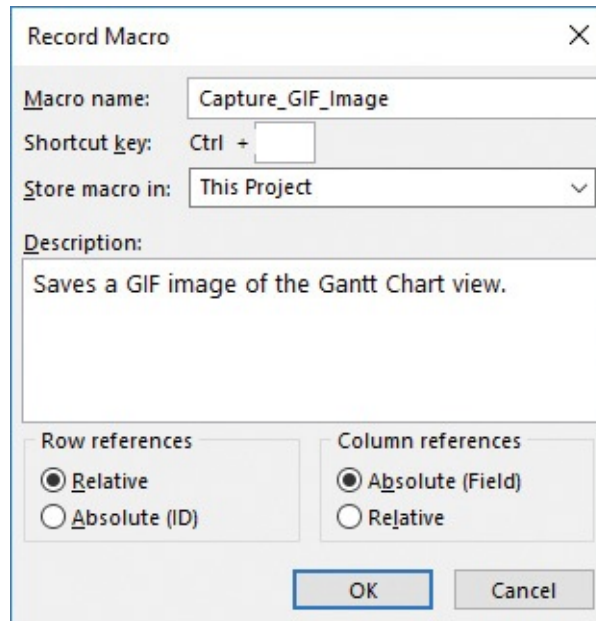
After you copy the calendar, it appears as a Calendar element in both plans

4. Save and close **CustomizeProjectB**. Leave CustomizeProjectA open.

Record and run macros

The scenario: You frequently generate a GIF image snapshot of a plan for sharing with the team. You'd like to automate this task. Continuing in the CustomizeProjectA plan, perform the following tasks:

1. Open the **Record Macro** dialog box. Name the macro **Capture_GIF_Image**, don't use a shortcut key, store the macro in the open plan **CustomizeProjectA**, and replace the default **Description** text with **Saves a GIF image of the Gantt Chart view**.



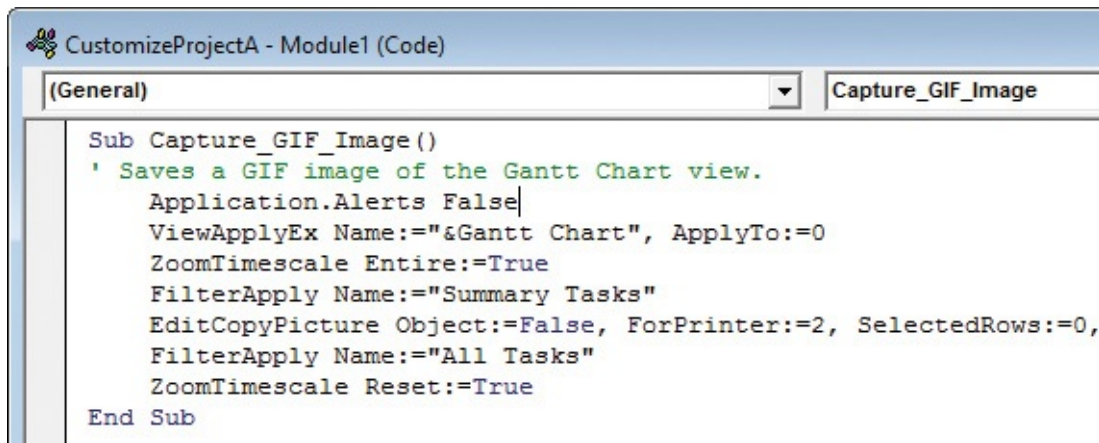
After entering this information in the Record Macro dialog box, you're ready to record the macro

2. Click **OK** to start recording the macro, and then perform the following actions:
 - a. On the **View** tab, in the **Task Views** group, click **Gantt Chart**. Do this even though the Gantt Chart is currently displayed. That way the Gantt Chart selection will be captured in the macro regardless of what view is initially displayed.
 - b. On the **View** tab, in the **Zoom** group, click **Entire Project**.
 - c. On the **View** tab, in the **Data** group, in the **Filter** box, click **Summary Tasks**.
 - d. On the **Task** tab, in the **Clipboard** group, click the **Copy** arrow, and then click **Copy Picture** to open the Copy Picture dialog box.
 - e. Under **Render Image**, click **To GIF Image File**, browse to the **Ch18** folder, and use the default file name.
 - f. Click **OK** to close the Copy Picture dialog box.
 - g. On the **View** tab, in the **Data** group, in the **Filter** box, click **No Filter**.
 - h. On the **View** tab, in the **Zoom** group, click **Zoom**, and then click **Zoom** to open the Zoom dialog box.
 - i. Click **Reset**, and then click **OK**.
3. On the **View** tab, in the **Macros** group, click the **Macros** arrow, and then click **Stop Recording**.
4. Now run the macro from the **Macros** dialog box. When prompted, overwrite the GIF image file.

Edit macros

The scenario: You work in the Visual Basic Editor to fine-tune and enhance the macro you recorded in the previous set of practice tasks and then run it. Continuing in the CustomizeProjectA plan, perform the following tasks:

1. Open the **Macros** dialog box.
2. Edit the **Capture_GIF_Image** macro in the Visual Basic Editor.
3. At the beginning of the ViewApplyEX line, press **Enter** to add a new line above it.
4. In the new line, enter **Application.Alerts False** with no closing punctuation.



```
CustomizeProjectA - Module1 (Code)
(General) Capture_GIF_Image
Sub Capture_GIF_Image ()
' Saves a GIF image of the Gantt Chart view.
Application.Alerts False|
ViewApplyEx Name:="%Gantt Chart", ApplyTo:=0
ZoomTimescale Entire:=True
FilterApply Name:="Summary Tasks"
EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0,
FilterApply Name:="All Tasks"
ZoomTimescale Reset:=True
End Sub
```

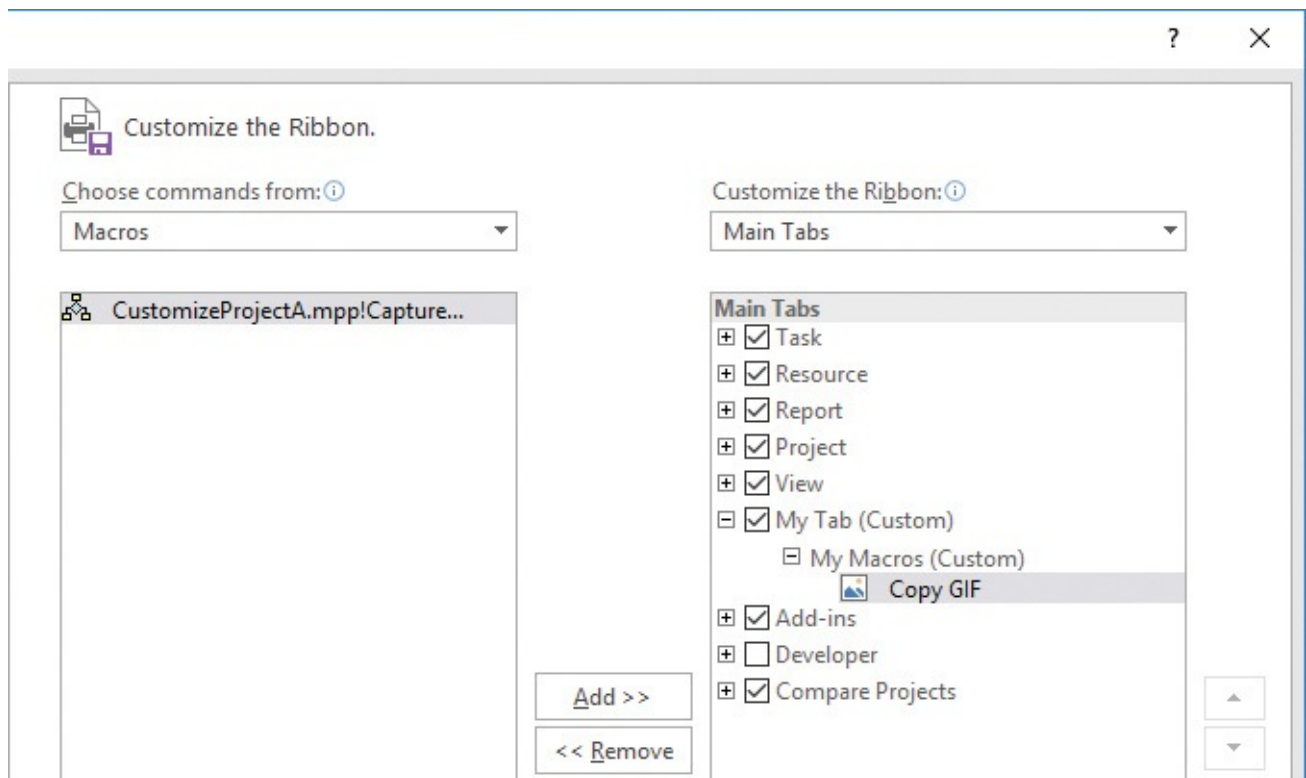
After editing the macro code, you should no longer see the prompt to overwrite the previously saved GIF image

5. Close the Visual Basic Editor.
6. Run the macro. This time, you should not see the prompt to overwrite the previously saved GIF image.

Customize the ribbon and Quick Access Toolbar

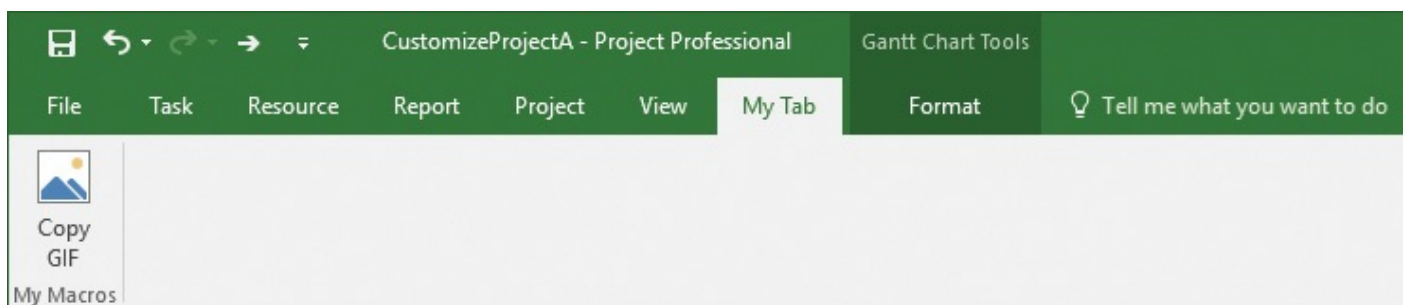
The scenario: You want to make your custom macro that generates a GIF image snapshot of a plan accessible via a custom tab. Continuing in the CustomizeProjectA plan, perform the following tasks:

1. Add the **Go To** command to the end of the Quick Access Toolbar. You can either add the command for all plans or just for the CustomizeProjectA plan.
2. Add a new tab named **My Tab** and a new group named **My Macros** to the ribbon. Position the new tab after the **View** tab.
3. Add the **Capture_GIF_Image** macro to the **My Tab** tab, in the **My Macros** group. Rename the macro **Copy GIF**, and assign it to the picture symbol in the second row of symbols.



Your custom ribbon, group, and command should look like this in the Project Options dialog box

4. Click **OK** to close the Project Options dialog box and display your custom tab.



Your custom ribbon, group, and command should look like this in the ribbon

5. On the **My Tab** tab, in the **My Macros** group, click **Copy GIF**. Your macro should run.

6. If you want, remove the custom tab. Otherwise, it will appear when you work with any other plans in Project.

19. Share information with other programs

In this chapter

- [Copy Project data to and from other programs](#)
 - [Open files in other formats in Project](#)
 - [Save to other file formats from Project](#)
 - [Generate reports with Excel and Visio](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch19 folder. For practice file download instructions, see the introduction.

This chapter focuses on various ways of getting data into and out of Project. In addition to the standard Microsoft Office copy and paste features with which you might be familiar, Project offers a variety of options for importing and exporting data.

Throughout this chapter, you'll see the following terms:

- The *source program* is the program from which you copy information.
- The [destination program](#) is the program to which you paste information.

This chapter guides you through procedures related to copying Project data to and from other programs, opening files in other formats in Project, saving to other file formats from Project, and generating reports with Microsoft Excel and Visio.

Copy Project data to and from other programs

You can copy information out of and paste information into Project. However, because Project information is highly structured, there are a few things to note.

When copying data from Project (the source program) into other (destination) programs, you have some options for the results that you get:

- You can copy information (such as task names and dates) from a table in Project and paste it as structured tabular data in spreadsheet programs like Excel, or as a table in word-processing programs that support tables, like Microsoft Word.

Gantt Chart Tools							ShareInformation - Project Professional		
File		Task	Resource	Report	Project	View	Format		Tell me what you want to do
View	Clipboard	Font	Schedule	Tasks					
	Task Mode	Task Name	Duration	Start	Finish	M	T	W	
4	✓	Handoff to Editorial	0 days	Mon 8/27/18	Mon 8/27/18				8/27
5		▾ Editorial	30 days	Tue 8/28/18	Mon 10/8/18				
6		Organize manuscript for copyedit	5 days	Tue 8/28/18	Mon 9/3/18				
7		Copyedit	20 days	Tue 9/4/18	Mon 10/1/18				
8		Copyedit incorp	5 days	Tue 10/2/18	Mon 10/8/18				
9		Handoff to Production	0 days	Mon 10/8/18	Mon 10/8/18				
10		▾ Design and Production	20 days	Tue 8/28/18	Mon 9/24/18				
11		Cover design	5 days	Tue 8/28/18	Mon 9/3/18				
12		Set pages	10 days	Tue 9/4/18	Mon 9/17/18				
13		Interior illustration design	15 days	Tue 9/4/18	Mon 9/24/18				
14		▾ Pages review	20 days	Tue 10/9/18	Mon 11/5/18				
15		Proofread and index	10 days	Tue 10/9/18	Mon 10/22/18				

This selected data in Project includes a summary and subtask hierarchy

In most cases, the table's column headings for the data you copied will also be pasted, and the summary/subtask hierarchy will be indicated by the indentation of the subtasks.

Pasting into Word generates a formatted table that preserves the column headings and the summary task and subtask outline structure from Project

- You can copy text from a table in Project and paste it as tab-delimited text in text editor programs that do not support tables, like WordPad or Notepad.
- When pasting information from Project into an email program such as Microsoft Outlook, you probably will get tabular results if your email program supports the HTML format.
- You can create a graphic-image snapshot of the active view and paste the image into any program that supports graphic images. You learned about the Copy Picture feature (on the Task tab) in [Chapter 7](#), “[Format and share your plan.](#)”



Tip

Many Office programs—such as Word, Excel, and PowerPoint—have a Paste Special feature. This feature provides you with more options for pasting data from Project into the destination program. For example, you can use the Paste Special feature in Word to paste formatted or unformatted text, or a picture. You can also choose to paste only the data, or paste it with a persistent link back to the source data. When the data is pasted into Project with a persistent link, the data in Project can be updated whenever the source data is changed. When pasting data into calculated fields, such as start and finish dates, use the paste link option with care and verify that you get the results you want.

Here are a couple of techniques for selecting tabular data in Project:

- To select a range, click the upper-left corner of the range, hold down the Shift key,

and then click the value in the lower-right corner of the range you want to select.

- Click the **Select All** button in the upper-left corner of a table. Project selects the entire table, although only cells that contain values will be copied.

The pasting of rich tabular data from Project does not work the same way in all programs. If you paste Project data into Notepad, for example, the result would be tab-delimited data and no column headings. Feel free to experiment with this.

You also have options when pasting data from other source programs into Project:

- You can paste a graphic image from another program into a graphical portion of a Gantt Chart view. You can also paste a graphic into a task, resource, or assignment note; into a form view such as the Task or Resource Form view; or into a report.
- You can paste text (such as a list of task or resource names) into a table in Project. For example, you can paste a range of cells from Excel or a group of paragraphs from Word into Project, and you can paste a series of task names that are organized in a vertical column from Excel or Word into the Task Name column in Project.

Pasting text as multiple columns into Project requires some planning. First, make sure that the order of the information in the source program matches the order of the columns in the Project table. You can either rearrange the data in the source program to match the column order in the Project table or vice versa. Second, make sure that the columns in the source program support the same types of data (for example, text, numbers, and dates) as do the columns in Project.

If you need to paste a set of task or resource names into Project, you can work with partial data. For example, if you paste only a set of task names into Project, Project gives them an estimated 1-day duration and schedules them to start on the plan's start date. You can then update the new tasks' schedule details as needed.

To copy tabular data from Project to another program

1. In Project, organize the data you want to copy (for example, switch to the table that contains the fields you want).
2. Select the range of data you want, and then on the **Task** tab, in the **Clipboard** group, click **Copy**. Project copies the selected range to the Clipboard.
3. Switch to the destination program, and then paste the data. If the destination program supports it, you can experiment with pasting formatted or plain text.

To paste tabular data from another program into Project

1. In the source program, select and copy the data you want to paste into Project. If you need to copy multiple columns, take care that the tabular data is organized into the correct field order you'll need in Project.
2. Switch to Project, and select the cell in a table that will contain the first value of the first row of the data to be pasted. If you need to paste multiple columns, take care to ensure that the field order you have in the Project table corresponds to how the copied data is organized.

3. To paste the copied data, on the **Task** tab, in the **Clipboard** group, click **Paste**. Project pastes the data into the table.

To paste a graphic image from another program into Project

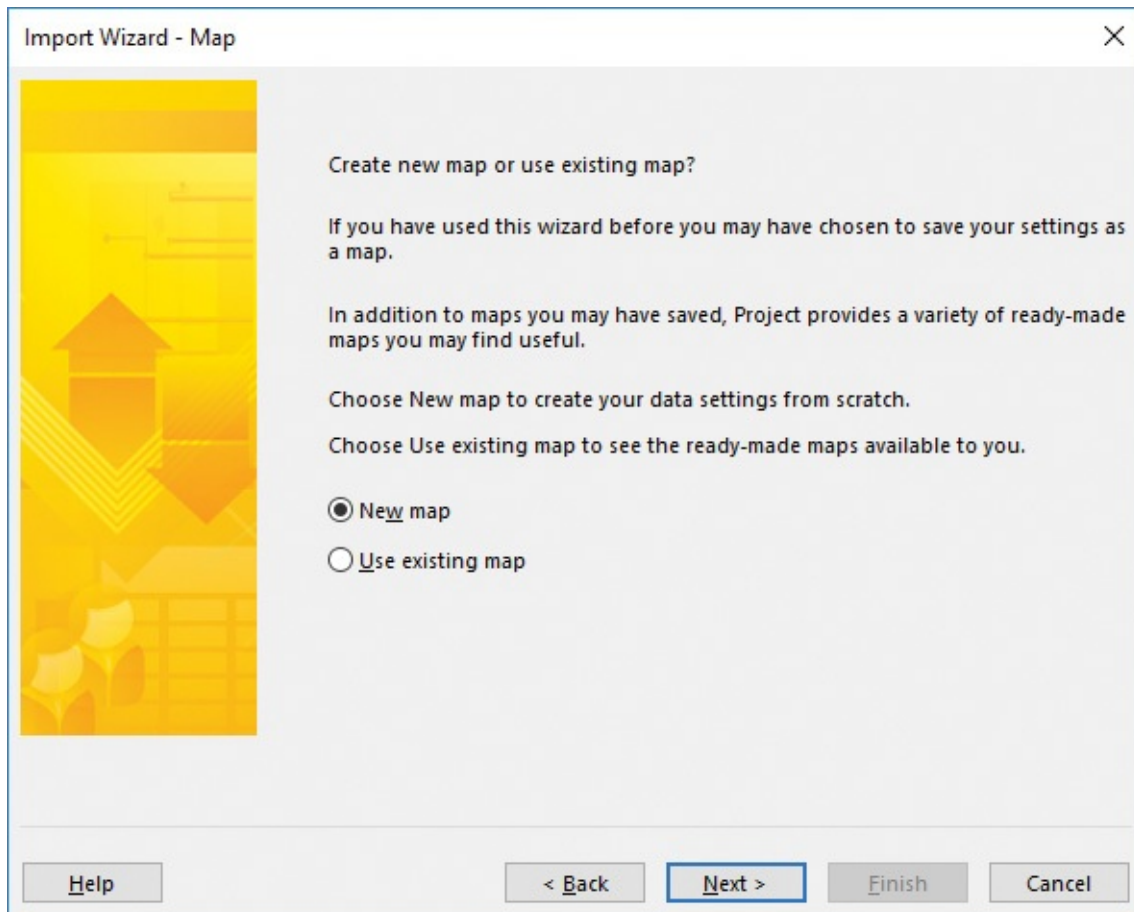
1. In the source program, copy the image you want to paste into Project.
2. Do any of the following:
 - To paste the copied image into the chart portion of a Gantt Chart view, click the chart portion and then, on the **Task** tab, in the **Clipboard** group, click **Paste**. Project pastes the image. You can then reposition or resize the image.
 - To paste the copied image into a task or resource note, open or create the note. Click in the **Notes** field, and then press **Ctrl+V**.
 - To paste the copied image into a report, open the report. Click in an empty area of the report to make sure none of the report's elements are selected, and then press **Ctrl+V** or, on the **Task** tab, in the **Clipboard** group, click **Paste**.

Open files in other formats in Project

Information that you need to incorporate into a plan in Project can come from a variety of sources. A task list from a spreadsheet or a resource list from a database are two examples. You might want to use the unique features of Project to analyze data from another program. For example, many people keep to-do lists and simple task lists in Excel, but accounting for basic scheduling issues, such as distinguishing between working and nonworking time, is impractical in Excel. You might find that simply copying data from other source programs and pasting it into Project is fine for one-time data sharing. However, if you need to frequently share the same type of data, or if its structure is too complex for copying and pasting, sharing via a data file might be a better option.

When saving data to or opening data from files in other formats, Project uses maps (also called import/export maps or *data maps*) that specify the exact data to import or export and how to structure it. You use data maps to specify how you want individual fields in the source program's file to correspond to individual fields in the destination program's file. After you set up an import/export map, you can use it over and over again.

Project uses a feature called the Import Wizard to guide you through creating the correct data map for the data you want to import.



You can move forward and backward in the Import Wizard to set the data mapping options you want when importing files in other formats into Project

The Import Wizard uses maps to organize the way that structured data that is in another file format is imported into Project. When you import a task list from Excel, for example, the Import Wizard shows you what the imported task list will contain.

Import Wizard - Task Mapping

Map Tasks Data

Source worksheet name:

Verify or edit how you want to map the data.

From: Excel Field	To: Microsoft Project Field	Data Type
Name	Name	Text
Duration	Duration	Text

Add All Clear All Insert Row Delete Row

Preview

Excel:	Name	Duration
Project:	Name	Duration
Preview:	Analysis and design	10 days
	Timesetting	15 days

Help < Back Next > Finish Cancel

Use the Preview area to see how the data from a file in another format will be mapped to Project fields, based on the settings you choose above

On the Task Mapping page of the Import Wizard, you specify how Project should import data from other file formats—in this case, an Excel workbook

Then, when you import the data, it is ready for more detailed work such as setting up task relationships.

Important

Project has a security setting that might prevent you from opening or saving files from previous versions of Project or files in other nondefault formats. You can change this setting.

	Task Mode	Task Name	Duration	Start	Finish
1	?	Analysis and design	10 days		
2	?	Typesetting	15 days		
3	?	1st Pages review	20 days		
4	?	Revise page proofs	5 days		
5	?	Develop final pages	5 days		

An imported task list is ready for schedule fine-tuning

To open a file that is in another format

1. Click the **File** tab to display the Backstage view, and then click **Open**.
2. Click **Browse**, and then navigate to the location of the file you want to open.
3. In the file type box (which is initially labeled *Projects*), in the drop-down list, select the file format you want.



Tip

You can scroll through the file type box to see the file formats that Project can import data from. If you work with programs that can save data in any of these file formats, you can import their data into Project.

4. Select the file you want, and then click **Open** to start the Import Wizard. This wizard guides you through the steps required to import structured data from a different format into Project.
5. Complete the steps in the Import Wizard, and then click **Finish**. Project imports the data.

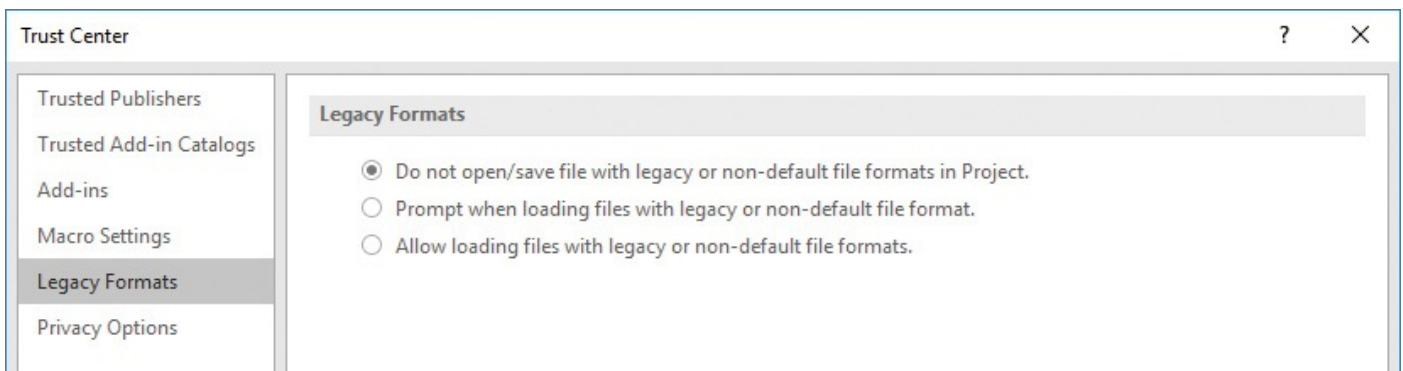
To change your legacy file format setting for opening files in other formats



Important

If you need to edit your legacy file format setting, you should do so only when you need to work with legacy file formats you know to be from a trusted source. Your ability to edit your legacy file format setting in the Trust Center as described here might be blocked by a Group Policy or other setting within your organization.

1. In Project, click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
2. Click **Trust Center**.
3. Click **Trust Center Settings** to open the Trust Center dialog box.
4. Click **Legacy Formats**.
5. Under **Legacy Formats**, click the option you want.



Use the Legacy Formats page in the Trust Center dialog box to control how Project should respond when you attempt to open or save files in other formats

6. Click **OK** to close the Trust Center dialog box, and then click **OK** again to close the Project Options dialog box.

Save to other file formats from Project

Pasting Project data into other programs as described in an earlier topic might be fine for one-time or infrequent needs, but this technique might not work as well if you must export a large volume of data from Project. Instead, you can save Project data in different file formats. This can be accomplished in various ways, including the following:

- You can save the entire project in Extensible Markup Language (XML) format for structured data exchange with other programs that support XML.
- You can save only the data you specify in a different format. The supported formats include Excel workbooks and tab-delimited or comma-delimited text. When saving to these formats, you choose the format in which you want to save, choose a built-in export map (or create your own), and export the data.

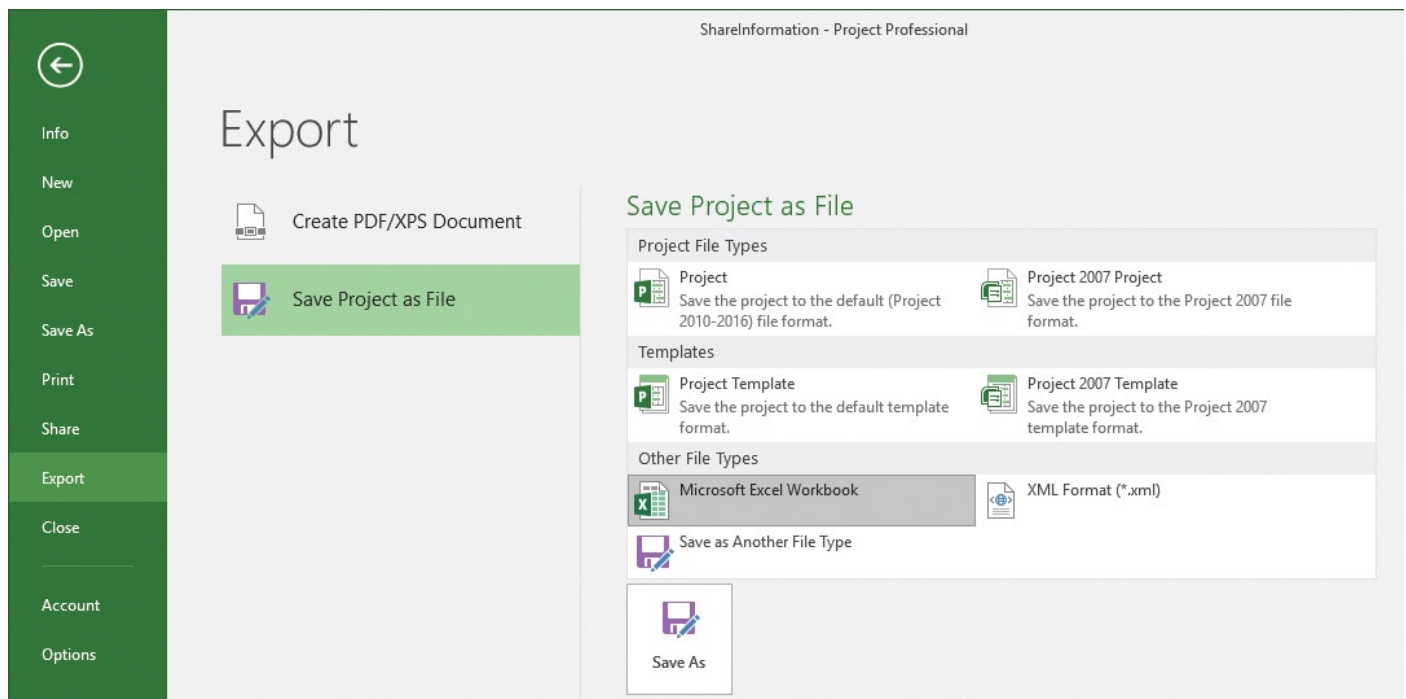


Tip

You can also save the active view to an archival format such as XPS or PDF that preserves layout and formatting but is generally not editable. For more information, see [Chapter 16, “Format and print views: In-depth techniques.”](#)

When you need to export Project data to another file format, it makes no difference what current view is displayed in Project. The current view does not affect what data can or cannot be exported.

You begin on the Export page in the Backstage view. Here you can see the major categories of file types supported by Project.



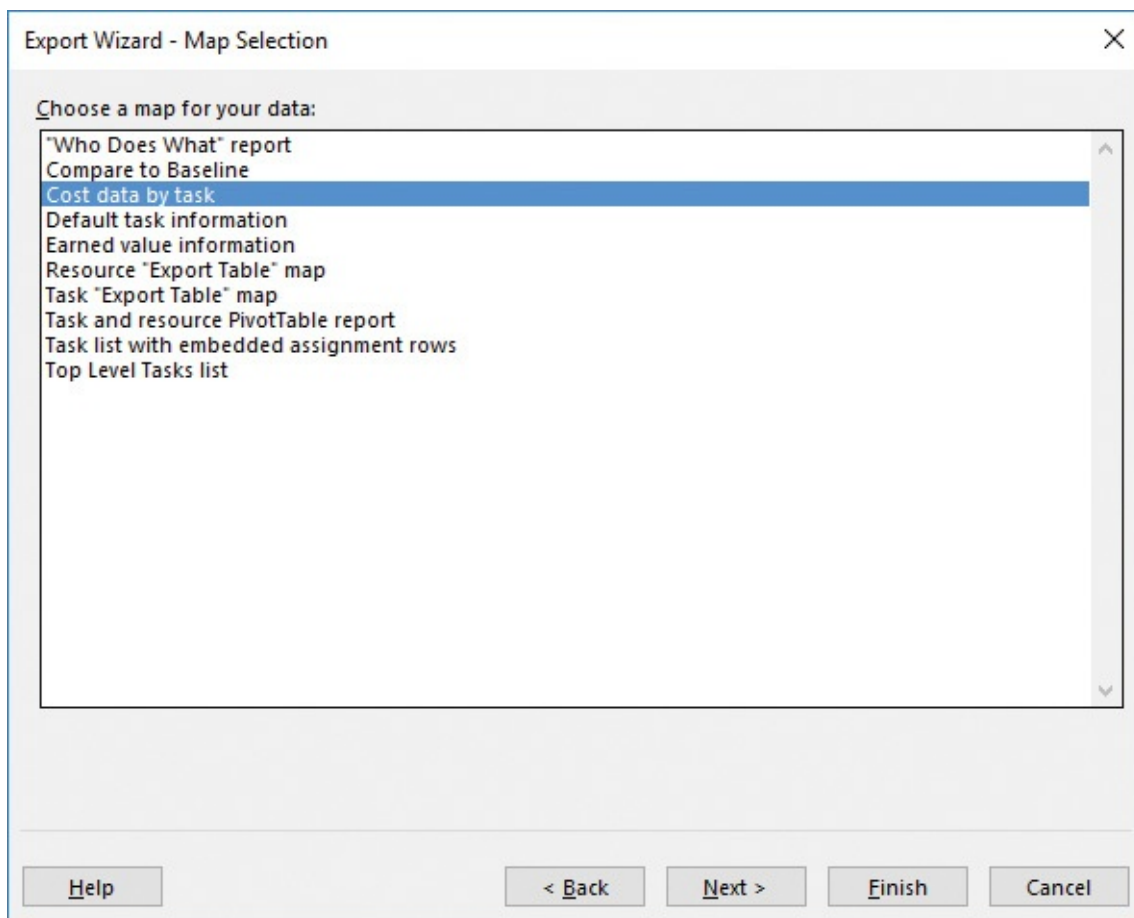
The export file formats supported by Project are listed on the Export page of the Backstage view

The file types include:

- The current Project file format, which spans Project 2010 through Project 2016.
- The Project 2007 file format.
- Project templates for both groups of Project formats.
- Excel workbook format.
- XML format.
- Other file types such as text (tab-delimited) or comma-separated value (CSV) formats.

If you select any of the Project formats or the XML format, Project immediately exports the plan’s data. The other file formats require data maps to control how individual fields from the active plan should be organized when exported.

When you begin the export process for a format that requires a data map, you work through the Export Wizard. In this wizard you either define a new data map, use one of the built-in data maps in Project, or use a data map you've previously created.



Experiment with the available data maps to find what works best when you want to export data from Project

As you progress, the Export Wizard shows you the detailed field mapping to be applied for the export.

Export Wizard - Task Mapping

Map Tasks Data

Destination worksheet name: Export filter:

Verify or edit how you want to map the data.

From: Microsoft Project Field	To: Excel Field	Data Type
ID	ID	Text
Active	Active	Text
Task Mode	Task_Mode	Text
Name	Task_Name	Text
Fixed Cost	Fixed_Cost	Text

Add All Clear All Insert Row Delete Row Base on Table...

Preview

Project:	ID	Active	Task Mode	Name	Fixed
Excel:	ID	Active	Task_Mode	Task_Name	Fixed_
Preview:	1	Yes	Auto Scheduled	Acquisition	\$0.00
	2	Yes	Auto Scheduled	Manuscript receiv	\$0.00

Help < Back Next > Finish Cancel

After you select a specific data map, you can preview and adjust its field mapping details on this page of the Export Wizard

The built-in data maps in Project are extensive, but if they don't meet your needs, you can build your own. Data map-based exporting is especially useful when you must repeatedly export large volumes of Project data to feed into other programs or systems.

Share files with previous versions of Project

When running Project 2016, you might find that you need to share plans with users of previous versions of Project. You don't need to do anything special to open or save files in Project 2010 or later formats. The Project 2007 format differs, however. (This file format is listed in the Save As Type box in the Save As dialog box.) Some data relating to new features in Project will be changed or discarded when the plan is saved in the older format. Manually scheduled tasks, for example, will be converted to automatically scheduled tasks.

To learn more about file formats and Project versions, in the Tell Me box, enter *Supported file formats*, and then click Get Help.

Important

Project has a security setting that might prevent you from opening or saving files from previous versions of Project or files in other nondefault formats. You can change this setting, as described in the previous topic.

To save data in another file format

1. Click the **File** tab to display the Backstage view, and then click **Export**.
2. Click **Save Project as File**. In the Save Project As File area, you can see some of the supported file types.
3. In the **Save Project as File** area, select the format you want, and then click **Save As**.



Important

Depending on the file format you select and your legacy file format setting in the Trust Center, a confirmation message box might appear.

If the file type you selected does not require a data map, Project generates the exported file.

4. If the file type you selected requires a data map, the Export Wizard starts. This wizard guides you through the steps required to export structured data from Project into a different format. Complete the steps in the Export Wizard, and then click **Finish**. Project exports the data.

Generate reports with Excel and Visio

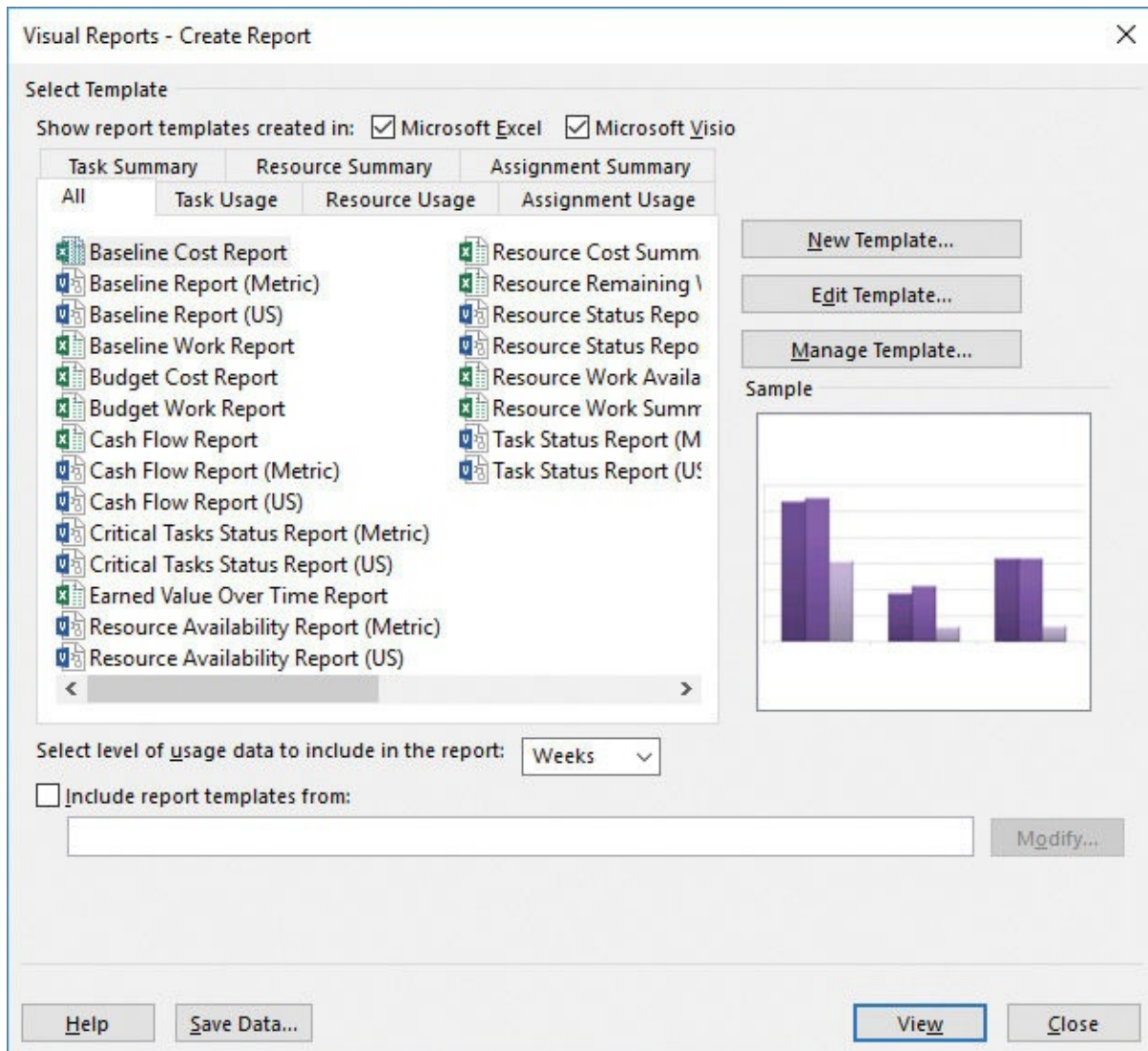
Project can generate data visualizations that focus on sharing schedule details with other programs. Specifically, you can use the Visual Reports feature to export data from Project to either Excel or Visio and, after the data is there, visually represent schedule details in compelling formats.



Tip

Some visual reports (especially those that are generated in Excel) are similar to the built-in reports available in Project. You might find visual reports beneficial when you want to do more complex data analysis in Excel.

A visual report can include task, resource, or assignment details. You can see all available visual reports listed in the Visual Reports dialog box.



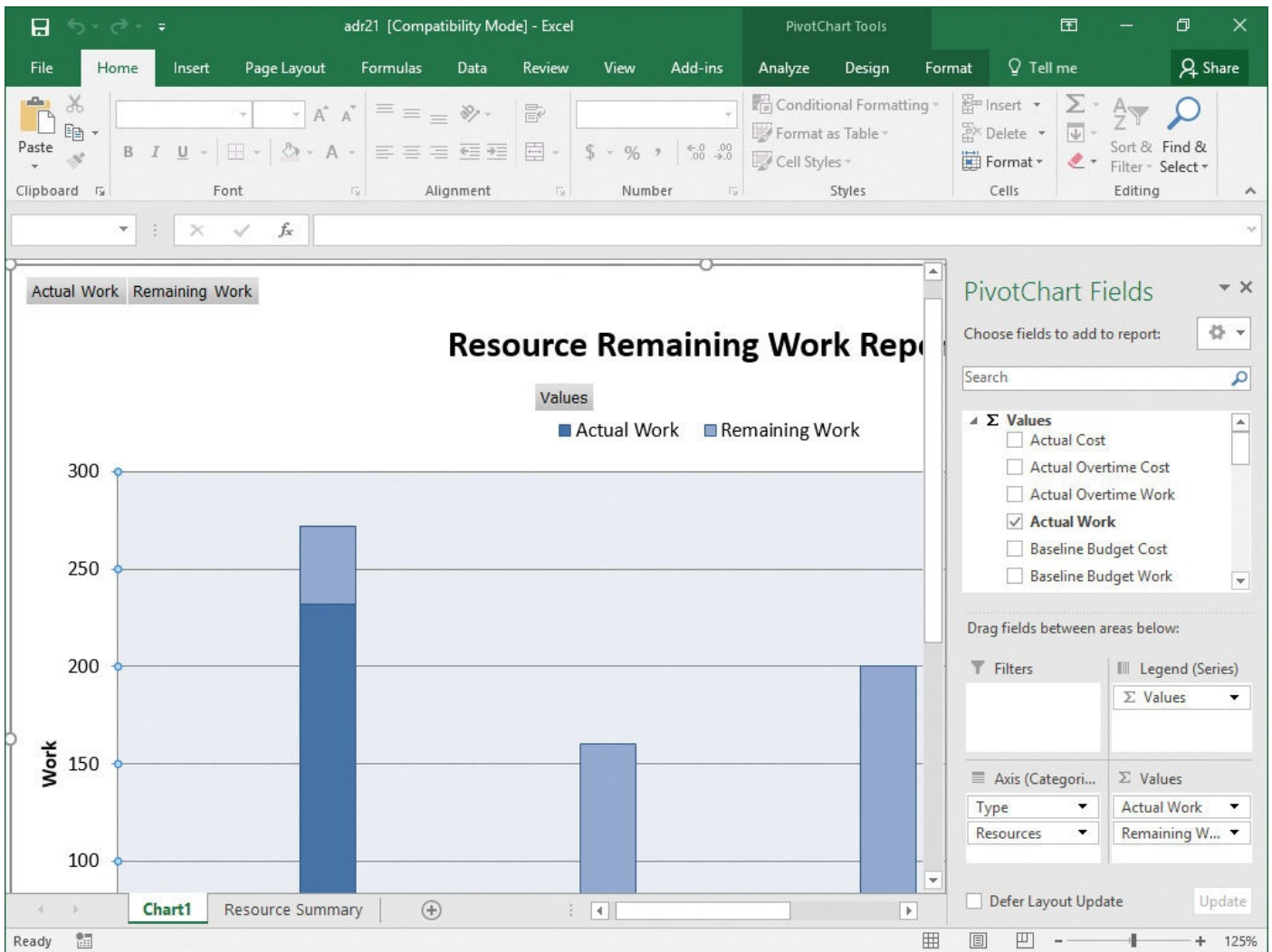
The Visual Reports dialog box lists the reports available for Excel or Visio, if those programs are installed on the same computer as Project

The Visual Reports dialog box groups visual reports in a number of ways: all reports; only Excel or only Visio reports; and task, resource, or assignment details (divided into summary and usage reports). The dialog box includes a simplified preview of the type of graphic (chart or diagram) associated with each visual report.

When you select a visual report in Project, the Visual Reports feature generates a highly structured database, called an *Online Analytical Processing (OLAP) cube*, from your plan. Project then starts either Excel or Visio (depending on the visual report you selected), loads and organizes the data used by that program, and generates a graphical representation of that data (an Excel chart or a Visio diagram).

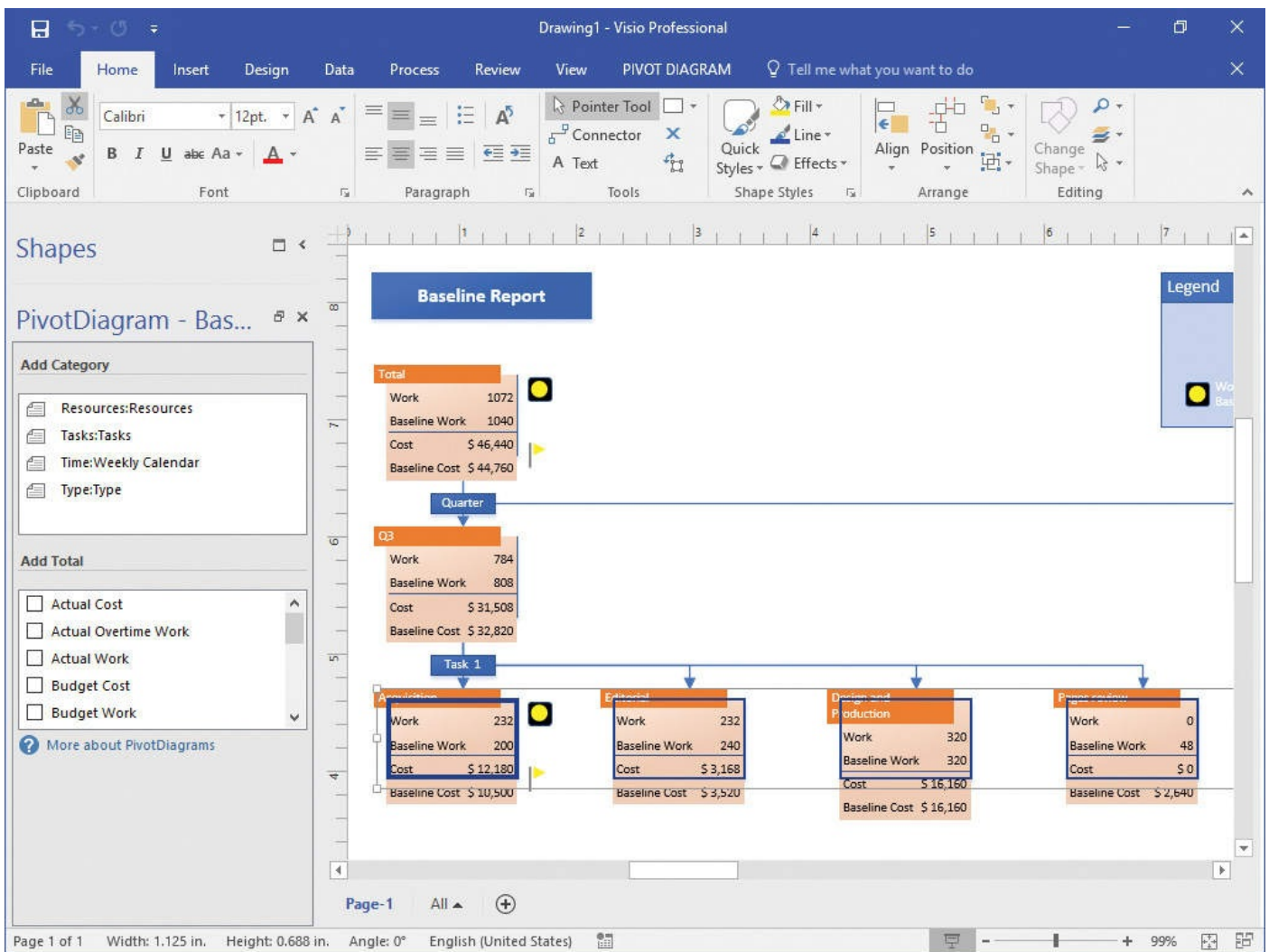
The specific results you obtain depend on the type of visual report you choose:

- Excel visual reports use the PivotTable and PivotChart features in Excel. You can format the chart and modify the details in the PivotTable report from which the chart is derived. PivotTable reports are well suited for analyzing and summarizing the large volumes of data that plans can contain.



A Project visual report for Excel generates a PivotChart

- Visio visual reports use the PivotDiagrams feature in Visio. PivotDiagrams are well suited for presenting hierarchical data and can complement the Project summary/subtask outlines very well. Not only can you customize the visual report as a Visio diagram, you can also filter and rearrange the data from which the diagram is derived.



A Project visual report for Visio generates a PivotDiagram

Project includes several Excel and Visio visual report templates. You can also create your own visual reports from scratch or modify one of the supplied templates. Visual reports can be beneficial to any Project user. If you are already familiar with Excel PivotTables or if you are a Visio power user, and you have the need to analyze and present Project data, you'll find visual reports especially interesting.

To generate a visual report (requires Excel or Visio)

1. On the **Report** tab, in the **Export** group, click **Visual Reports** to open the Visual Reports dialog box.
2. Next to **Show Report Templates Created In**, select the check box or boxes for the supported visual reports you want to see: Excel, Visio, or both.
3. Click the tab of the report type you want.
4. Click the specific report you want, and then click **View**. Project generates the data required by this report, starts Excel or Visio, and creates the report.

Skills review

In this chapter, you learned how to:

- [Copy Project data to and from other programs](#)

- [Open files in other formats in Project](#)
- [Save to other file formats from Project](#)
- [Generate reports with Excel and Visio](#)



Practice tasks

The practice files for these tasks, ShareInformation and SampleTaskList (an Excel file), are located in the Project2016SBS\Ch19 folder.



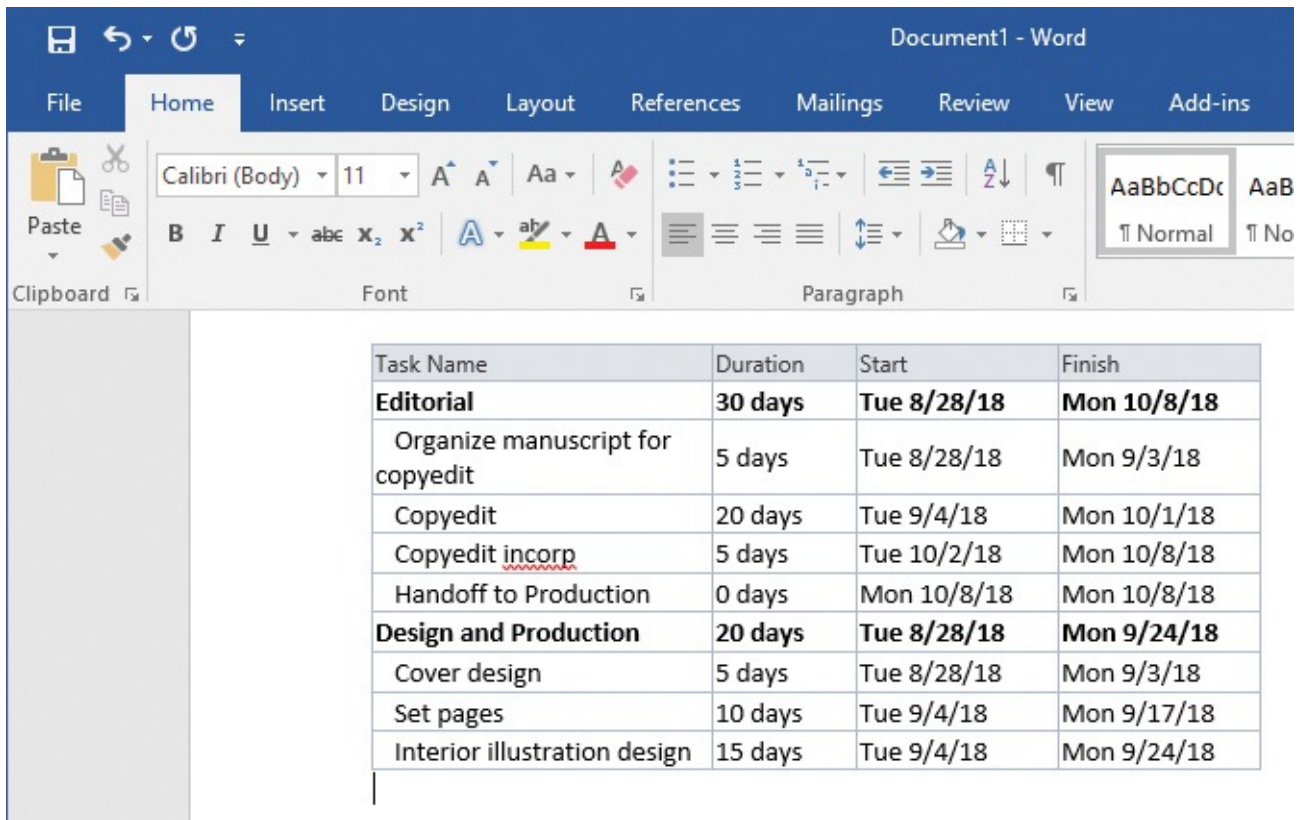
Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C](#), “[Collaborate: Project, SharePoint, and PWA](#).”

Copy Project data to and from other programs

The scenario: At Lucerne Publishing, you’d like to share task list data from Project with a word-processing program. Open the ShareInformation plan in Project, and perform the following tasks:

1. In the Entry table on the left side of the Gantt Chart view, select the range from the name of task 5, *Editorial*, through task 13’s finish date, *Wed 9/24/18*.
2. Copy the tasks to the Clipboard.
3. Start Word (or a comparable word-processing program), create a new document, and then paste the copied tasks into the new document. Use the default paste option.

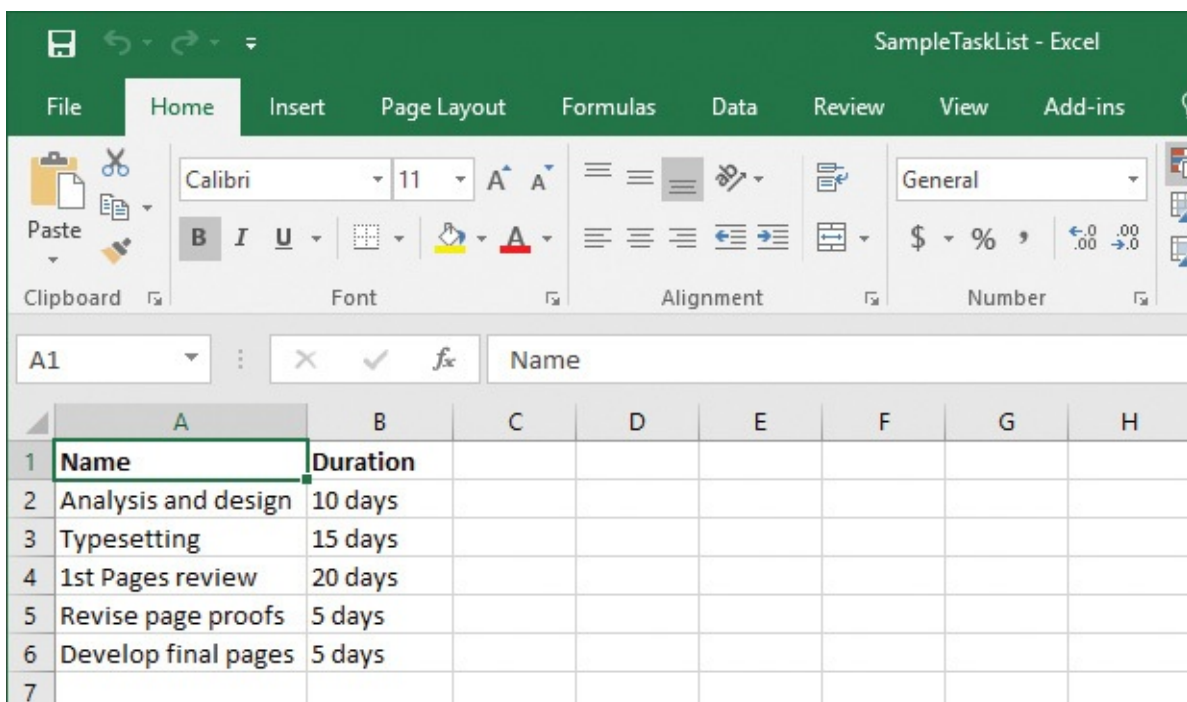


If you have Word, your screen should look like this

Open files in other formats in Project

The scenario: A colleague has sent you an Excel workbook that contains her recommended tasks and durations of activities for some work that Lucerne Publishing might do in the future. You'd like to import this data into Project. Continuing in the ShareInformation plan, perform the following tasks:

1. Before importing the data into Project, you'll look at it in Excel. In Excel, open the workbook named **SampleTaskList** from the practice file folder.



The Excel workbook you will import into Project

The important things to note about the SampleTaskList workbook are the names and order of the columns, the presence of a header row (the labels at the top of the columns), and that the data is in a worksheet named *Tasks*.

2. When you are finished reviewing the workbook, close it without saving it.
3. In the **Open** dialog box in Project, navigate to the practice file folder.
4. In the file type box (initially labeled *Projects*), in the drop-down list, select **Excel Workbook**.
5. Select the **SampleTaskList** file, and then click **Open** to start the Import Wizard.
6. On the first pages of the **Import Wizard**, specify that you will use the existing map named **Default Task Information** and that you will import the data into a new project.
7. Specify that you will import tasks data, and instruct Project that the import includes headers.
8. On the **Task Mapping** page of the wizard, specify that **Tasks** is the source worksheet name.

Import Wizard - Task Mapping

Map Tasks Data

Source worksheet name:
Tasks

Verify or edit how you want to map the data.

From: Excel Field	To: Microsoft Project Field	Data Type
Name	Name	Text
Duration	Duration	Text

Add All Clear All Insert Row Delete Row

Preview

Excel:	Name	Duration
Project:	Name	Duration
Preview:	Analysis and desig	10 days
	Tunecutting	15 days

Help < Back Next > Finish Cancel

On the Task Mapping page of the Import Wizard, note the Source Worksheet Name value

9. Finish the **Import Wizard** and review the resulting task list. The tasks should be manually scheduled, have various durations, and all start at the new plan's start date (today's date).

	Task Mode	Task Name	Duration	Start	Finish
1	?	Analysis and design	10 days		
2	?	Typesetting	15 days		
3	?	1st Pages review	20 days		
4	?	Revise page proofs	5 days		
5	?	Develop final pages	5 days		

The task list you import will be scheduled to start at the new plan's start date, which likely will differ from what is shown here

10. Close the new plan without saving it, and return to the **ShareInformation** plan.

Save to other file formats from Project

The scenario: A financial planner has requested some project data in Excel format. Continuing in the ShareInformation plan, perform the following tasks:

1. Export the plan to a new Excel workbook. Name the workbook **ShareInformationExport** and save it in the practice file folder.
2. As you do so, use the **Export Wizard** to specify these data export options:
 - Export selected data.
 - Use the existing data map named **Default Task Information**.
 - Export task data and include headers.
3. After you complete the export from Project, open the **ShareInformationExport** workbook in Excel.

ShareInformationExport - Excel

File Home Insert Page Layout Formulas Data Review View Add-ins Tell me what you want to do

Clipboard Font Alignment Number Styles

Calibri 11 A A B I U General Conditional Formatting Format as Table Cell Styles

A1 ID

	A	B	C	D	E	F	G	H
1	ID	Active	Task_Mod	Task_Name	Duration	Start_Date	Finish_Date	Predecessor
2	0	Yes	Auto Sche	Children's Gourmet Cook	81 days	July 16, 2018 8:00 AM	November 5, 2018 5:00 PM	
3	1	Yes	Auto Sche	Acquisition	31 days	July 16, 2018 8:00 AM	August 27, 2018 5:00 PM	
4	2	Yes	Auto Sche	Manuscript received	0 days	July 16, 2018 8:00 AM	July 16, 2018 8:00 AM	C
5	3	Yes	Auto Sche	Content edit	29 days	July 16, 2018 8:00 AM	August 27, 2018 5:00 PM	2 C
6	4	Yes	Auto Sche	Handoff to Editorial	0 days	August 27, 2018 5:00 PM	August 27, 2018 5:00 PM	3 C
7	5	Yes	Auto Sche	Editorial	30 days	August 28, 2018 8:00 AM	October 8, 2018 5:00 PM	1
8	6	Yes	Auto Sche	Organize manuscript for	5 days	August 28, 2018 8:00 AM	September 3, 2018 5:00 PM	R
9	7	Yes	Auto Sche	Copyedit	20 days	September 4, 2018 8:00 AM	October 1, 2018 5:00 PM	6 C

The Excel workbook exported from Project

4. Close the **ShareInformationExport** workbook and return to Project.

Generate reports with Excel and Visio

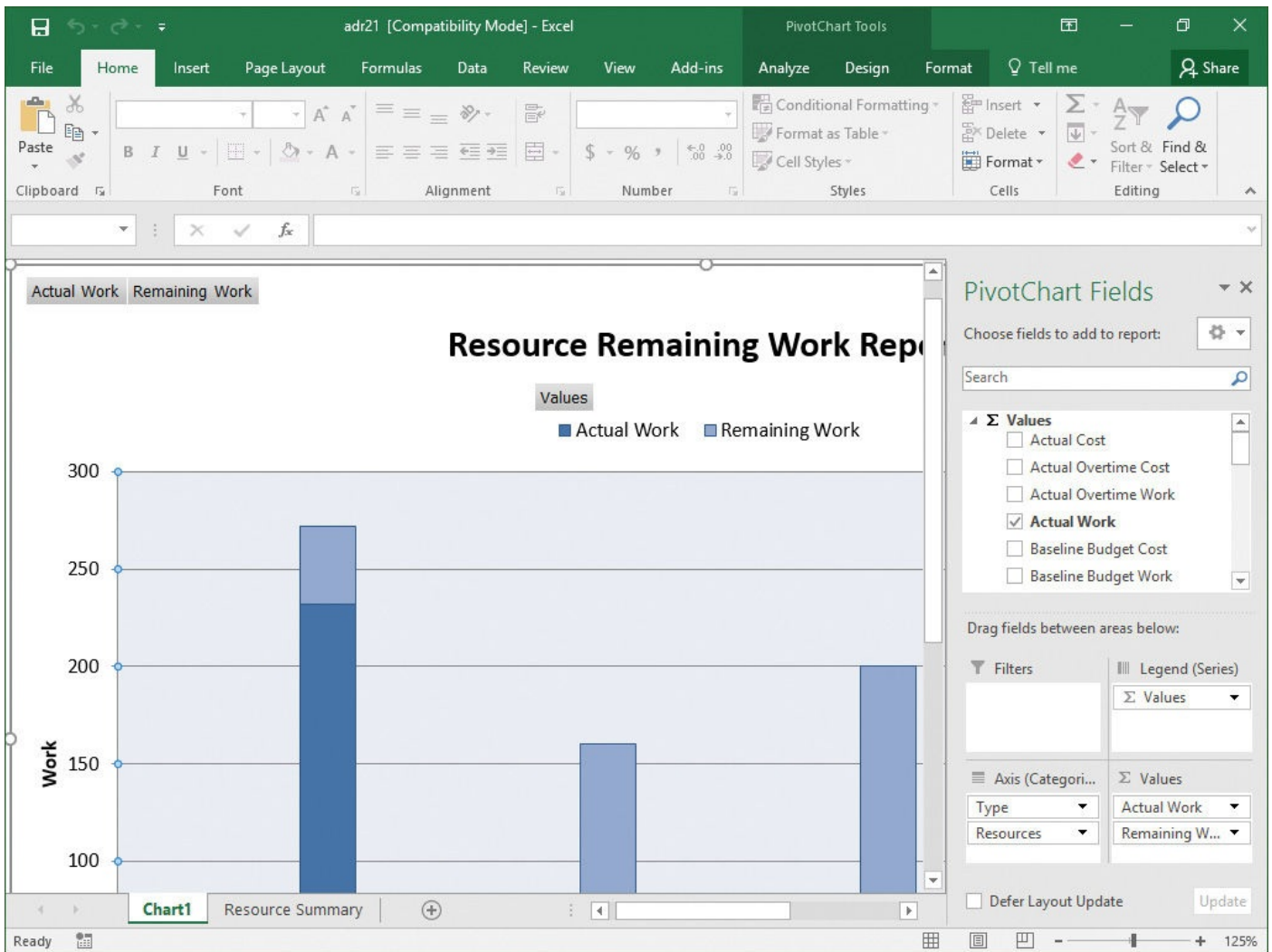


Important

If the computer on which you are now working does not have Excel installed, you cannot complete this exercise.

The scenario: A colleague asked you for some Project data in an Excel PivotChart and PivotTable. You decide to generate a visual report. Continuing in the ShareInformation plan, perform the following tasks:

1. In Project, generate a Resource Remaining Work Report. Set the usage data in the report to **Weeks**.
2. View the report in Excel.
3. Click anywhere on the chart to open the PivotChart Fields pane.



The Excel workbook generated from a Project visual report

4. Close the Excel workbook without saving it, and return to Project.

20. Consolidate projects and resources

In this chapter

- [Share a resource pool across multiple plans](#)
 - [Consolidate plans](#)
 - [Create dependencies between plans](#)
-

Practice files

For this chapter, use the practice files from the Project2016SBS\Ch20 folder. For practice file download instructions, see the introduction.

In the previous chapters in this book, you usually worked with one plan at a time. Although a single plan might be your main focus in Project much of the time, it's likely that at some point you or your organization will need to coordinate people, work, and deliverables across multiple projects. This chapter introduces you to the powerful features in Project that can help you optimize your resources, consolidate multiple plans into a single consolidated plan, and create dependencies between plans.

This chapter guides you through procedures related to sharing a resource pool across multiple plans, consolidating plans, and creating dependencies between plans.

Share a resource pool across multiple plans

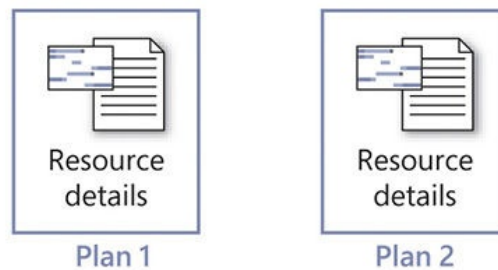
When managing multiple projects, you might find that work resources (people and equipment) need to be assigned to more than one project at a time. It might become difficult to coordinate the work resources' time among the multiple projects, especially if those projects are managed by different people. For example, a resource might have task assignments in three projects that are proceeding simultaneously. In each plan, the resource might be fully allocated or even underallocated. However, if you add all of that resource's tasks from these plans together, you might discover that the resource has been overallocated; that is, the resource has been assigned more work than that person can handle at one time.

A [resource pool](#) can help you see how resources are utilized across multiple plans. The resource pool is a plan from which other plans draw their resource information. It contains information about all resources' task assignments from all plans that are linked to the resource pool.

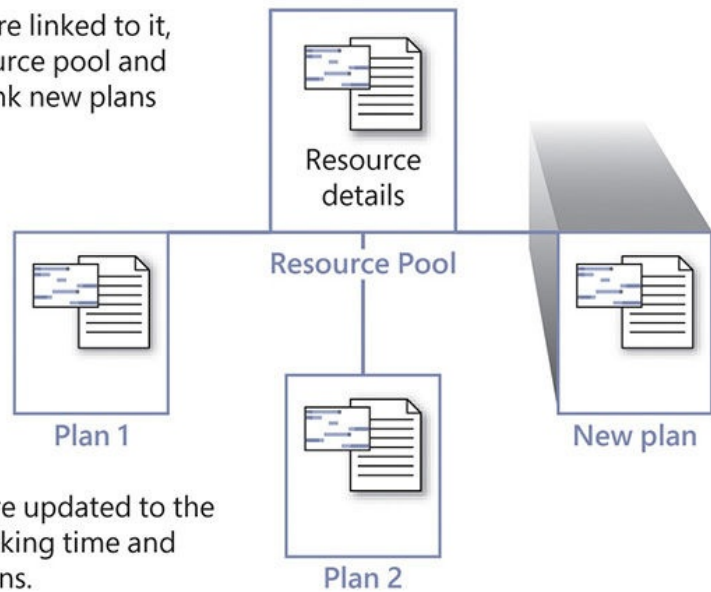
A resource pool is useful for more than work resources. When working with cost resources in multiple plans, you might want to see not only the cost per plan associated with a cost resource, but also the cumulative costs across plans. Likewise, when working with material resources in multiple plans, you can see cumulative consumed material resources in whatever unit of consumption you are using.

The plans that are linked to the resource pool are called *sharer plans*.

Before a resource pool is created, each plan contains its own resource information. This might lead to overallocation and duplication of resource information for the resources assigned in both plans.



After a resource pool is created and plans are linked to it, resource information is merged in the resource pool and updated in the sharer plans. You can also link new plans to the resource pool.



Assignment details from the sharer plans are updated to the resource pool. Resource details such as working time and standard rate are updated to the sharer plans.

One way of visualizing a resource pool and sharer plans

You can link a sharer plan to a resource pool at any time: when initially entering the plan's tasks, after you assign resources to tasks, or even after work begins. After you set up a resource pool, you might find it helpful to make all new plans sharer plans. A time-saving advantage of creating new plans as sharer plans of a resource pool is that your resource information is instantly available. You do not have to reenter any resource data.

If you manage only one project with resources that are not used in other plans, a resource pool provides you no benefit. However, if your organization manages multiple projects, setting up a resource pool enables you to do the following:

- Find resources who are overallocated across multiple plans, even if those resources are underallocated in individual plans.
- View resources' assignment and cost details from multiple plans in a single location.
- Change working times for a base calendar in the resource pool and see the changes updated to all sharer plans that use that calendar. For example, if you specify that certain days (such as holidays) are to be nonworking days in the resource pool, that change is made to all sharer plans.

Here's a closer examination of how a resource pool can help deliver such benefits. Consider two plans that include some of the same resources assigned to tasks.

ShareResourcesA												
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base	
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard	
2	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
3	Dan Jump	Work		D		50%	\$75.50/hr	\$0.00/hr	\$0.00	Prorated	Standard	
4	Hany Morcos	Work		H		100%	\$1,550.00/wk	\$0.00/hr	\$0.00	Prorated	Standard	
5	Jane Dow	Work		J		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
6	John Evans	Work		J		100%	\$2,780.00/wk	\$0.00/hr	\$0.00	Prorated	Standard	
7	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard	
8	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
9	Luis Sousa	Work		L		100%	\$70.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
10	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
11	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
12	Sharon Salavaria	Work		S		50%	\$1,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard	

ShareResourcesB												
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base	
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard	
2	Color Setting Ser	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
3	Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
4	John Evans	Work		J		100%	\$62.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
5	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
6	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
7	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
8	William Flash	Work		W		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	

Several of the same resources appear in both plans

Let's say that none of these resources are overallocated in either plan. After the two plans are linked to a common resource pool, however, you can start to more accurately measure the resources' true scope of allocations.

Lucerne Resource Pool												
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base	
1	Carole Poland	Work		C		100%	100.00/v					
2	Copyeditors	Work		C		400%	\$45.00/v					
3	Dan Jump	Work		D		50%	\$75.50/v					
4	Hany Morcos	Work		H		100%	550.00/v					
5	Jane Dow	Work		J		100%	\$55.00/v					
6	John Evans	Work		J		100%	780.00/v					
7	Jun Cao	Work		J		100%	\$42.00/v					
8	Katie Jordan	Work		K		100%	\$48.00/v					
9	Luis Sousa	Work		L		100%	\$70.00/v					
10	Printing Service	Work		P		100%	\$0.00/v					
11	Robin Wood	Work		R		100%	\$44.00/v					
12	Sharon Salavaria	Work		S		50%	100.00/v					
13	Toby Nixon	Work		T		100%	700.00/v					
14	Toni Poe	Work		T		100%	\$0.00/v					
15	Travel	Cost		T								
16	Vikas Jain	Work		V		100%	\$22.00/v					
17	William Flash	Work		W		100%	\$0.00/v					
18	Zac Woodall	Work		Z		100%	\$55.00/v					
19	Color Setting Ser	Work		C		100%	\$0.00/v					

ShareResourcesB												
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base	
1	Carole Poland	Work		C		100%	\$2,100.00/v					
2	Copyeditors	Work		C		400%	\$45.00/v					
3	Dan Jump	Work		D		50%	\$75.50/v					
4	Hany Morcos	Work		H		100%	\$1,550.00/v					
5	Jane Dow	Work		J		100%	\$55.00/v					
6	John Evans	Work		J		100%	\$2,780.00/v					
7	Jun Cao	Work		J		100%	\$42.00/v					
8	Katie Jordan	Work		K		100%	\$48.00/v					
9	Luis Sousa	Work		L		100%	\$70.00/v					
10	Printing Service	Work		P		100%	\$0.00/v					
11	Robin Wood	Work		R		100%	\$44.00/v					
12	Sharon Salavaria	Work		S		50%	\$1,100.00/v					

ShareResourcesA												
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base	
1	Carole Poland	Work		C		100%	\$2,100.00/v					
2	Copyeditors	Work		C		400%	\$45.00/v					
3	Dan Jump	Work		D		50%	\$75.50/v					
4	Hany Morcos	Work		H		100%	\$1,550.00/v					
5	Jane Dow	Work		J		100%	\$55.00/v					
6	John Evans	Work		J		100%	\$2,780.00/v					
7	Jun Cao	Work		J		100%	\$42.00/v					
8	Katie Jordan	Work		K		100%	\$48.00/v					
9	Luis Sousa	Work		L		100%	\$70.00/v					
10	Printing Service	Work		P		100%	\$0.00/v					
11	Robin Wood	Work		R		100%	\$44.00/v					
12	Sharon Salavaria	Work		S		50%	\$1,100.00/v					

In the resource pool, Project merges resource information from the sharer plans based on the names of the resources

The resource pool contains the resource information from all sharer plans. Now you can more easily identify how resources are assigned across multiple plans.

 **Important**

Project cannot match variations of a resource's name—for example, *John Evans* from one sharer plan and *J. Evans* from another. For this reason, you should develop a convention for naming resources in your organization and then apply it consistently.

A resource pool is especially beneficial when you are working with other Project users across a network. In those cases, the resource pool would be stored in a central location, such as a network server, and the individual owners of the sharer plans (which might be stored locally or on a network server) would share the common resource pool.

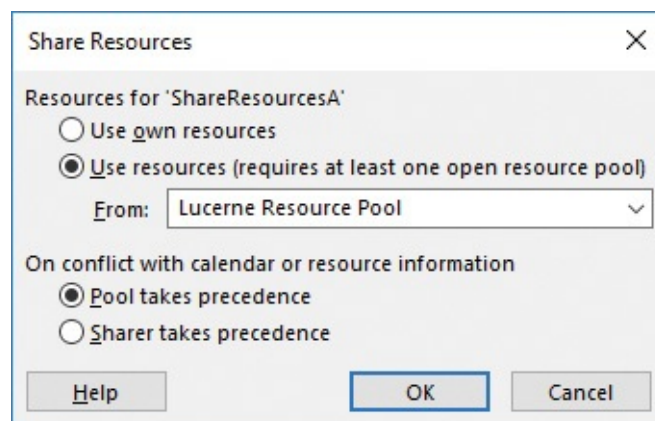
Create a dedicated resource pool

Any plan, with or without tasks, can serve as a resource pool. However, it is a good idea to designate as the resource pool a plan that does not contain tasks. This is because any project with tasks will almost certainly conclude at some point, and you might not want assignments for those tasks (with their associated costs and other details) to be included indefinitely in the resource pool.

Moreover, a dedicated resource pool without tasks can enable people such as [line managers](#) or resource managers to maintain some information about their resources, such as nonworking time, in the resource pool. These people might not have a role in project management, and they will not need to deal with task-specific details in the resource pool.

You can give a resource pool any name you want, but we recommend naming it so that it's clear it is a resource pool file.

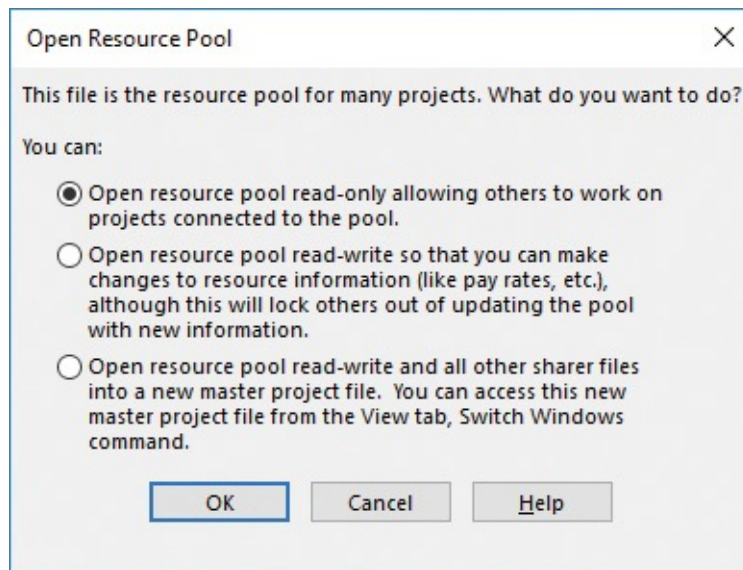
After you've created a resource pool file, you use the Share Resources dialog box to link plans to it, making them sharer plans.



Link plans to a resource pool in the Share Resources dialog box

After the link to share resources between the pool and the plan is made, Project merges resource names between the plan and the pool. You can change resource information—such as maximum units, cost rates, and nonworking time—in the resource pool, and all sharer plans will use the updated information.

Because a resource pool and sharer plans are linked, Project gives you options when you open either type of file. When you open a resource pool file, Project prompts you to select how you want to open it. The default option is to open the resource pool as read-only.



When you open the resource pool file, Project prompts you to select how you want to open it

If you store the resource pool locally, you should open it as read/write.

You might want to choose the read-only option if you and other Project users share a resource pool across a network. That way, you won't prevent other Project users from updating the resource pool. You can quickly push resource and assignment updates from the sharer plan to the read-only resource pool as needed. After that is done, anyone else who opens the resource pool will see the latest assignment information.

When working with sharer plans and a resource pool, when you open a sharer plan, you must also open the resource pool if you want the sharer plan to be updated with the most recent changes to the resource pool. For example, assume that you change the project calendar's working time in the resource pool, save it, and close it. If you later open a sharer plan but do not also open the resource pool, that sharer plan will not reflect the updated project calendar's working time.

As we said earlier, one of the most important benefits of using a resource pool is that it allows you to see how resources are allocated across plans. In the resource pool, a great way to examine the details of resources' assignments and allocations is to show the Resource Form in combination with the Resource Usage view.

In this combination view, you can see both the resource's assigned tasks and details about each assignment

The screenshot displays a combination view of resource usage and details. The top section, labeled 'RESOURCE USAGE', shows a list of tasks assigned to 'Carole Poland' with their respective work hours. The bottom section, labeled 'RESOURCE FORM', provides detailed information about the resource, including costs, base calculation, and a table of assignments across multiple plans.

Project	ID	Task Name	Work	Leveling Delay	Delay	Scheduled Start	Scheduled Finish
ShareResourcesA	2	Assign launch team members	8h	0d	0d	Mon 7/23/18	Mon 7/23/18
ShareResourcesB	2	Manuscript received	0h	0d	0d	Wed 7/18/18	Wed 7/18/18
ShareResourcesB	4	Handoff to Editorial	0h	0d	0d	Thu 8/30/18	Thu 8/30/18
ShareResourcesB	3	Content edit	232h	0d	0d	Wed 7/18/18	Wed 8/29/18
ShareResourcesB	16	Incorporate 1st Pages review	40h	0d	0d	Thu 10/25/18	Wed 10/31/18

The Resource Form shows assignments across multiple plans when you are using a resource pool

In this combination view, you can see all resources in the resource pool and their assignments (in the upper pane), and the selected resource's details (in the lower pane) from all sharer plans.

The Resource Form is just one way to see the details of specific assignments from sharer plans. You can also add the Project or Task Summary Name column to the table portion of the Resource Usage view. Doing so shows you which project each task assignment is from and that assignment's summary task name.

When you are working in a sharer plan, as long as the resource pool is open, Project keeps the resource pool synchronized as you work. Any changes you make to resource assignments or other resource information in any sharer plans immediately show up in all other open sharer plans and in the resource pool.

To link a plan to a resource pool

1. Open an existing resource pool, or create a new plan that will become a resource pool. If you open an existing resource pool, when prompted, open it as read/write.



Important

When you open a resource pool file that is linked to sharer plans, Project prompts you to select how you want to open it. The default option is to open the resource pool as read-only.

2. Open or switch to the plan you want to make a sharer plan.
3. On the **Resource** tab, in the **Assignments** group, click **Resource Pool**, and then click **Share Resources** to open the Share Resources dialog box.
4. Under **Resources for 'file name'**, select **Use resources**.
5. The From box contains the open plans that can be used as resource pools. In the **From** box, click the name of the resource pool file.
6. If the same resource name is listed in both the sharer plan and the resource pool, specify how Project should resolve conflicting information. If you want Project to use resource information in the resource pool rather than in the sharer plan, under **On conflict with calendar or resource information**, make sure that **Pool takes precedence** is selected.
7. Click **OK** to close the Share Resources dialog box.
8. Save the sharer plan and the resource pool.

To unlink a sharer plan from a resource pool

1. Open the resource pool as read/write.
2. In the sharer plan, on the **Resources** tab, click **Resource Pool**, and then click **Share Resources**.
3. Under **Resources For 'Current Project Name'**, select **Use Own Resources**.
4. Click **OK**.
5. Save the unlinked plan and the resource pool.

To update a read-only resource pool from a sharer plan

1. In the sharer plan, make whatever resource or assignment updates are needed.
2. On the **Resource** tab, in the **Assignments** group, click **Resource Pool**, and then click **Update Resource Pool**. Project updates the assignment information in the resource pool with the new details from the sharer plan and then saves the resource pool. Anyone else who opens or refreshes the resource pool now will see the updated assignment information.

To view resource usage details in the resource pool

1. Open or switch to the resource pool file.
2. On the **View** tab, in the **Resource Views** group, click **Resource Usage** to display

the Resource Usage view.

3. If you want, you can also display the Resource Form in a split view. On the **View** tab, in the **Split View** group, click **Details**.

To manage sharer plans linked to a resource pool

1. Open the resource pool and sharer plans as read/write.
 2. In the resource pool, on the **Resource** tab, in the **Assignments** group, click **Resource Pool**, and then click **Share Resources** to open the Share Resources dialog box.
 3. Under **Sharing Links**, select a sharer plan. You can then open that sharer plan, break its link to the resource pool, or adjust its conflict resolution setting.
 4. When you are done in the **Share Resources** dialog box, click **OK**.
-



Tip

A sharer plan's assignment information is recorded in its resource pool. If a sharer plan is deleted, its assignment information remains in the resource pool. To clear this assignment information from the resource pool, you must break the link to the sharer plan. To do this, open the resource pool as read/write. On the Resource tab, in the Assignments group, click Resource Pool, and then click Share Resources. In the Share Resources dialog box, click the name of the now-deleted sharer plan, and click Break Link. Note that the contents of the Share Resources dialog box for a resource pool differ from those for sharer plans.

To update all sharer plans' working times in a resource pool

1. Open or switch to the resource pool.
 2. On the **Project** tab, in the **Properties** group, click **Change Working Time** to open the Change Working Time dialog box.
 3. In the **For calendar** box, select **Standard (Project Calendar)** from the list.
-



Tip

Base calendars—such as 24 Hours, Night Shift, and Standard—appear at the top of the list in the For Calendar box. Resource calendar names appear below the base calendars.

Changes in working time to the Standard base calendar in the resource pool affect all plans that are sharer plans of the resource pool.

4. On the **Exceptions** tab of the **Change Working Time** dialog box, make your working time adjustments.
5. Click **OK** to close the Change Working Time dialog box. All plans that are sharer

plans of the same resource pool will see this change in this base calendar.



Important

By default, all sharer plans share the same base calendars, and any changes you make to a base calendar in one sharer plan are reflected in all other sharer plans through the resource pool. If you have a specific sharer plan for which you want to use different base calendar working times, change the base calendar that sharer plan uses.

Consolidate plans

You might find yourself managing multiple plans that involve some of the same resources and that might be related to the same overall goal or deliverable of an organization. You might even need to coordinate with several people working on tasks at different times, sometimes in different locations, and frequently for different supervisors. In either case, you might need to produce a single “all-up” view of distinct but related plans.

A good way to pull together far-flung project information is to use a [consolidated plan](#). This is a plan that contains other plans, called [inserted plans](#). The inserted plans do not reside within the consolidated plan; rather, they are linked to it in such a way that they can be viewed and edited either on their own or from within the consolidated plan. If an inserted plan is edited outside of the consolidated plan, the updated information appears in the consolidated plan the next time it is opened.



Tip

Consolidated plans are also known as consolidated projects or master projects, and inserted plans are also known as *subprojects*; however, this chapter uses the terms *consolidated* and *inserted* plans.

Using consolidated plans is a powerful capability. Some of the beneficial uses of consolidated plans include the following:

- See all tasks from your organization’s plans in a single view.
- Roll up information to higher levels of management. For example, you might insert a team’s plan into the larger department’s consolidated plan and then insert that plan into the larger organization’s consolidated plan.
- Divide your project data into different plans to match the nature of your project, such as by phase, component, or location. Then you can pull the information back together into a consolidated plan for a comprehensive look at the whole plan.
- See all your plans’ information in one location so that you can filter, sort, and group the data.

So how does it work? Consolidated plans use the Insert Subproject command and Project’s outlining features. An inserted plan initially appears as a collapsed summary task in the

consolidated plan, and its summary Gantt bar is gray. Project displays an inserted project icon in the Indicators column.

Note the inserted project icon in the Indicators column and gray summary task bars

	Task Mode	Task Name	Duration	Start	Finish	15, '18							Jul 22, '18						
						M	T	W	T	F	S	S	M	T	W	T	F	S	
1		Children's Gourme	81 days	Wed 7/18/18	Wed 11/7/18														
2		Children's Exercise	38 days	Mon 7/23/18	Wed 9/12/18														

In this view of a consolidated plan, the Gantt bars of the inserted plans are collapsed

The summary tasks representing inserted plans are sequentially numbered as 1, 2, and so on. When you expand the collapsed summary task of each inserted plan, the task IDs within each inserted plan start at 1. This numbering scheme preserves the task IDs within each inserted plan, whether you work with it as a stand-alone plan you open directly in Project, or as an inserted plan you open from within a consolidated plan.

When you are working with a consolidated plan, it is especially useful to display the project summary task. Recall from [Chapter 4](#), “[Build a task list](#),” that the project summary task sums up the values from quantified fields such as work and cost. In a consolidated plan, the project summary task’s roll-up values represent the total values from all of the inserted plans. Similarly, the start and finish dates of the project summary task span the earliest start and latest finish dates from the inserted plans.

	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Jul 15, '18							
									S	S	M	T	W	T	F	S
0		Lucerne Consolidat	81 days	Wed 7/18/18	Wed 11/7/18	18%	\$83,994.00	1,852 hrs								
1		Children's Exerci	38 days	Mon 7/23/18	Wed 9/12/18	0%	\$37,554.00	780 hrs								
1		Planning Phase	11 days	Mon 7/23/18	Mon 8/6/18	0%	\$11,900.00	248 hrs								
7		Internal Launch	13 days	Tue 8/7/18	Thu 8/23/18	0%	\$13,102.00	268 hrs								
14		Public Launch P	14 days	Fri 8/24/18	Wed 9/12/18	0%	\$12,552.00	264 hrs								
2		Children's Gourn	81 days	Wed 7/18/18	Wed 11/7/18	27%	\$46,440.00	1,072 hrs								
1		Acquisition	31 days	Wed 7/18/18	Thu 8/30/18	100%	\$12,180.00	232 hrs								
5		Editorial	30 days	Thu 8/30/18	Wed 10/10/18	0%	\$3,520.00	240 hrs								
10		Design and Proc	20 days	Thu 8/30/18	Wed 9/26/18	0%	\$16,160.00	320 hrs								
14		Pages review	20 days	Thu 10/11/18	Wed 11/7/18	0%	\$14,580.00	280 hrs								

The values of this summary task, such as duration and work, represent the rolled-up values of the inserted plans

Keep consolidated plans simple

When you are working in a consolidated plan, Project won’t prevent you from adding new tasks or resources that are not part of an inserted plan. However, we do not recommend that you add tasks or resources outside of the inserted plans. Think of a consolidated plan as basically being a container of inserted plans. For simplicity, the inserted plans should contain all of the schedule details.



Tip

If you want to share resources across the inserted plans in a consolidated plan, connect the inserted plans to a common resource pool as described in the previous topic.

To create a consolidated plan

1. Click the **File** tab to display the Backstage view, and then click **New**.
 2. On the **New** page, click **Blank project**. Project creates a new plan. This plan will become the consolidated plan into which you insert other plans.
 3. On the **Project** tab, in the **Insert** group, click **Subproject** to open the Insert Project dialog box.
-



Tip

You can insert two or more plans into the consolidated plan if the plans to be inserted are located in the same folder. In the Insert Project dialog box, select each plan while pressing the Ctrl key, and then click Insert.

4. Locate and select each plan you want to insert into the consolidated plan, and then click **Insert**. Project inserts the plan (or plans) into the consolidated plan. Each inserted plan appears as a collapsed summary task with an inserted project indicator in the Indicators column.
-



Tip

You can quickly create a consolidated plan that includes some or all of the currently open plans. On the View tab, in the Windows group, click New Window. Under Projects, press the Ctrl key while selecting the plans to be inserted into the new consolidated plan, and then click OK.

To display the details of an inserted plan

1. Display the consolidated plan in a task-oriented view that includes a table, such as the Gantt Chart view with Entry table.
2. Click the **Select All** button in the upper-left corner of the table.
3. On the **View** tab, in the **Data** group, click **Outline**, and then click **All Subtasks**. Project expands the inserted plan or plans.

Or

1. Display the consolidated plan, in a task-oriented view that includes a table.
2. Click the expand/collapse arrow next to the name of each inserted plan.

To display the project summary task of a consolidated plan

1. In the consolidated plan, on the **Format** tab, in the **Show/Hide** group, click **Project Summary Task**.

Create dependencies between plans

Most projects do not exist in a vacuum. Tasks or phases in one project might depend on tasks in other projects. You can show such dependencies by linking tasks between plans.

Reasons that you might need to create dependencies between plans include the following:

- The completion of one task in a plan might enable the start of a task in another plan. For example, another project manager might need to complete an environmental impact statement before you can start to construct a building. Even if these two tasks are managed in separate plans (perhaps because separate departments of a construction company are completing them), one plan has a logical dependency on the other.
- A person or a piece of equipment might be assigned to a task in one plan, and you need to delay the start of a task in another plan until that resource completes the first task. The two tasks might have nothing in common other than needing that resource.

You create a link between plans by entering information about the predecessor task in the plan that contains the successor task. Specifically, you enter the external predecessor link in the format *File Name\Task ID*. You do so in a task's predecessor field such as in the Predecessors column in the Entry table, or in the ID field in the Task Information dialog box, on the Predecessors tab.

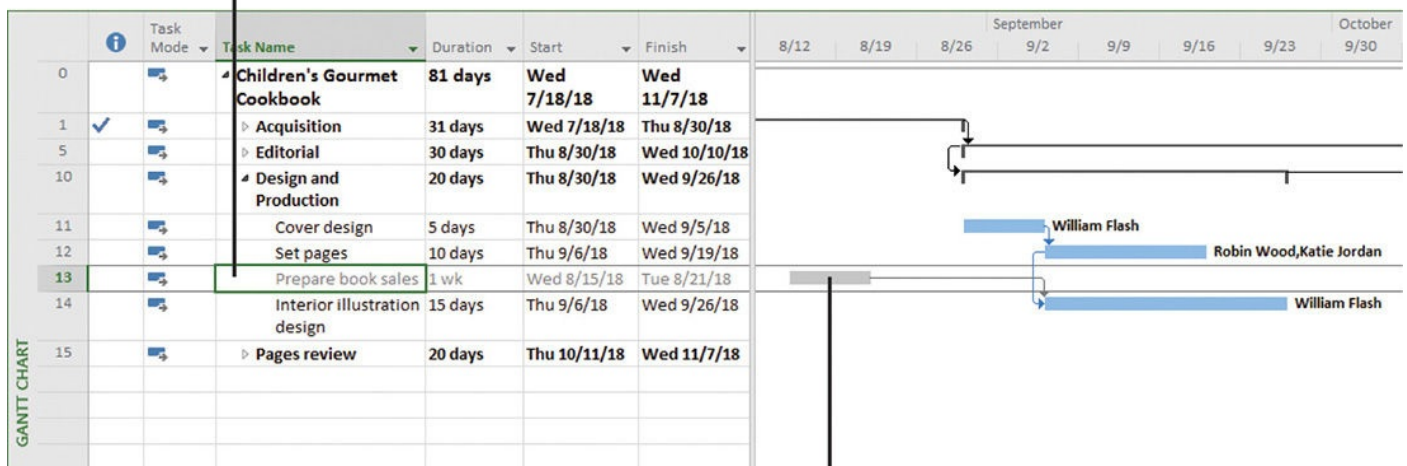
		Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resou	Sep 2, '18
									S M T W T F S
1			Children's Exercise	38 days	Mon 7/23/18	Wed 9/12/18			
1			Planning Phase	11 days	Mon 7/23/18	Mon 8/6/18			
7			Internal Launch Ph	13 days	Tue 8/7/18	Thu 8/23/18	1		
8			Kickoff book la	1 day	Tue 8/7/18	Tue 8/7/18		Sharo	
9			Plan author's tra	6 days	Wed 8/8/18	Wed 8/15/18	8	Jane f	
10			Channel Sales p	1 wk	Wed 8/8/18	Tue 8/14/18	8	Zac W	
11			Complete book	2 days	Wed 8/15/18	Thu 8/16/18	10	Toby	
12			Prepare book se	1 wk	Wed 8/15/18	Tue 8/21/18	8,10	Hany	
14			Distribute inter	2 days	Wed 8/22/18	Thu 8/23/18	12	Zac W	
15			Public Launch Pha	14 days	Fri 8/24/18	Wed 9/12/18	7		
2			Children's Gourme	81 days	Wed 7/18/18	Wed 11/7/18			
1			Acquisition	31 days	Wed 7/18/18	Thu 8/30/18			
5			Editorial	30 days	Thu 8/30/18	Wed 10/10/18	1		
10			Design and Produc	20 days	Thu 8/30/18	Wed 9/26/18	5SS		
11			Cover design	5 days	Thu 8/30/18	Wed 9/5/18		Willia	William Fl
12			Set pages	10 days	Thu 9/6/18	Wed 9/19/18	11	Robin	
14			Interior illustrat	15 days	Thu 9/6/18	Wed 9/26/18	Ch20\ConsolidatePlansA.mpp\12	Willia	
15			Pages review	20 days	Thu 10/11/18	Wed 11/7/18	10,5		

Create cross-plan links by entering the file name and task number of the predecessor task in the successor task's Predecessors field

After you create a task relationship between plans, the relationship looks similar to links between tasks within a plan. The visual indication of a task relationship between plans is that external predecessor and successor tasks have gray task names and Gantt bars

(sometimes referred to as *ghost tasks*).

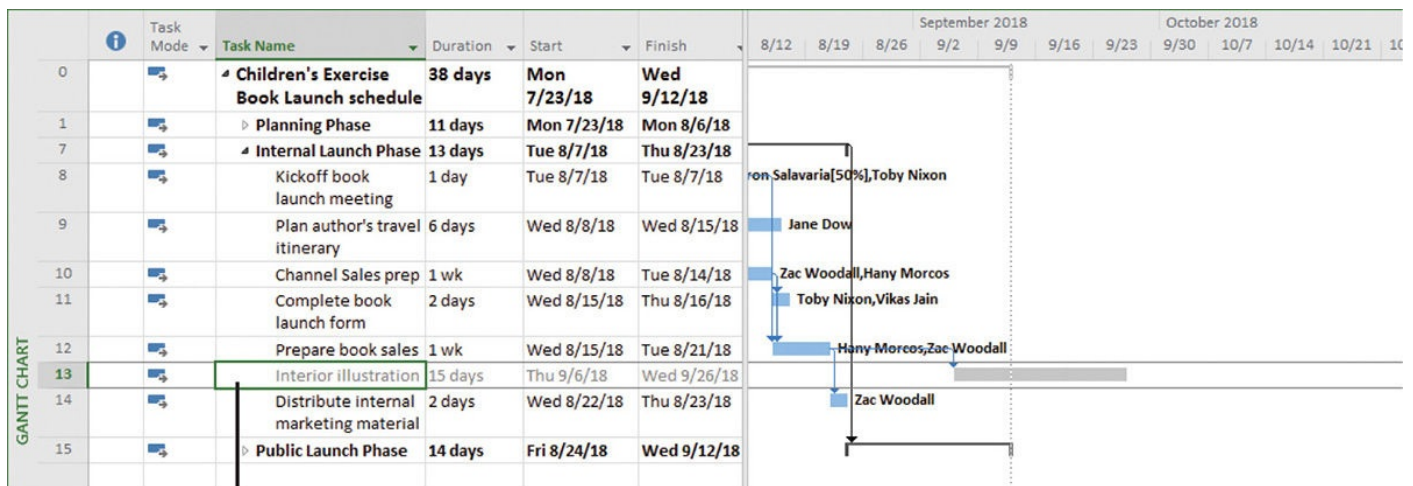
The external predecessor task (13) appears in the plan that contains the successor task (14)



The external task's Gantt bar is gray

The external predecessor appears as a gray “ghost task” in the file to which it is linked

The same visual treatment of external links appears in both plans—the source plan that contains the predecessor task, and the destination plan that contains the successor.



The external successor task (13) appears with its task name in gray in the plan that contains the predecessor task (12)

The external successor task also appears as a gray “ghost task” in the file to which it is linked

The link between the two plans will remain until you break it. Deleting a task in the source plan or the external task in the destination plan deletes the corresponding task or external task in the other plan.

When you are working with consolidated plans (see the previous topic), links between two inserted plans function like normal task links within a single plan. In fact, creating cross-plan links is easy in a consolidated plan. If you have complex cross-plan link needs, you might find it easiest to first insert the plans into a consolidated plan and then create the links you need.

The following are a few additional tips and suggestions for working with cross-plan links:

- If you point to the external task's Gantt bar, Project displays a ScreenTip that contains details about the external task, including the full path to the external plan where the external predecessor task resides.
- You can turn off the display of external tasks if you want. To do this, click the File tab, and click Options. In the Project Options dialog box, on the Advanced tab, under Cross Project Linking Options For <File Name>, clear the Show External Successors and Show External Predecessors check boxes.
- Each time you open a plan with cross-plan links, Project prompts you to update the cross-plan links. You can suppress this prompt if you would rather not be reminded, or you can tell Project to accept updated data from the linked plan automatically. To do this, click the File tab, and click Options. In the Project Options dialog box, on the Advanced tab, under Cross Project Linking Options For <File Name>, select the options you want.

To create cross-plan links between two plans

1. Open the two plans you want to link.
2. In the plan that contains the task you want to be the successor task, display the Entry table if it's not already visible.
3. Click the **Predecessors** field of the task you want to be the successor task.
4. In the **Predecessors** field, enter the file name and task ID of the predecessor task in the format *File Name\Task ID*, and then press **Enter**. For example, you would enter **Children's Cookbook\5** to make task 5 of the file *Children's Cookbook.mpp* a cross-plan predecessor.

To create cross-plan links between inserted plans in a consolidated plan

1. Select the task you want to be the predecessor task, and then select the task you want to be the successor task.
2. On the **Task** tab, in the **Schedule** group, click **Link The Selected Tasks**. The two tasks are linked with a finish-to-start relationship.

To change the relationship type of a cross-project link in a consolidated plan

1. Select the successor task.
2. On the **Task** tab, in the **Properties** group, click **Information** to open the Task Information dialog box.
3. Click the **Predecessors** tab.
4. In the **Type** field, click the link type you want.

To delete a cross-plan link

1. Click the successor task first.
2. On the **Task** tab, in the **Properties** group, click **Information** to open the Task

Information dialog box.

3. Click the **Predecessors** tab.

4. In the **Predecessors** box, select the external task link's ID, and press **Delete**.

To identify and manage all links (external predecessors and external successors) in a plan

1. On the **Project** tab, in the **Properties** group, click **Links Between Projects** to open the Links Between Projects dialog box.

2. Choose the options you want on the **External Predecessors** and **External Successors** tabs, and then click **Close**.

Skills review

In this chapter, you learned how to:

- [Share a resource pool across multiple plans](#)
- [Consolidate plans](#)
- [Create dependencies between plans](#)



Practice tasks

The practice files for these tasks are located in the Project2016SBS\Ch20 folder.



Important

If you are running Project Professional with Project Web App/Project Server, take care not to save any of the practice files you work with in this book to Project Web App (PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Share a resource pool across multiple plans

The scenario: At Lucerne Publishing, you frequently assign work resources (people) to different tasks in different plans. Although you manage those plans in Project, you have occasionally inadvertently overallocated some resources when all their work across the plans is accounted for. To help avoid this problem in the future, you decide to create a resource pool and connect it to your current plans. Open the ShareResourcesA and ShareResourcesB plans in Project, and then perform the following tasks:

1. Create a new plan and save it in the practice file folder. Name the file **Lucerne Resource Pool**.
2. Make the **ShareResourcesA** and **ShareResourcesB** plans sharer plans of the

resource pool.

3. Display the Resource Sheet view in the resource pool.

The screenshot shows the Microsoft Project interface with the 'Resource Sheet' view selected. The ribbon includes 'View' and 'Format' tabs. The 'View' tab has options for 'Task Views' (Gantt Chart, Task Usage, Network Diagram, Calendar, Other Views) and 'Resource Views' (Resource Usage, Resource Sheet, Other Views). The 'Format' tab has options for 'Data' (Sort, Outline, Tables) and 'Zoom' (Timescale, Zoom, Entire Project, Selected Tasks). The 'Resource Sheet' table is displayed below the ribbon.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt.	Cost/Use	Accrue	Base
1	Carole Poland	Work		C		100%	100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
2	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3	Dan Jump	Work		D		50%	\$75.50/hr	\$0.00/hr	\$0.00	Prorated	Standard
4	Hany Morcos	Work		H		100%	550.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
5	Jane Dow	Work		J		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	John Evans	Work		J		100%	780.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
7	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
8	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
9	Luis Sousa	Work		L		100%	\$70.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
10	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
11	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
12	Sharon Salavaria	Work		S		50%	100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
13	Toby Nixon	Work		T		100%	700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
14	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
15	Travel	Cost		T						Prorated	
16	Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
17	William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
18	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
19	Color Setting Ser	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

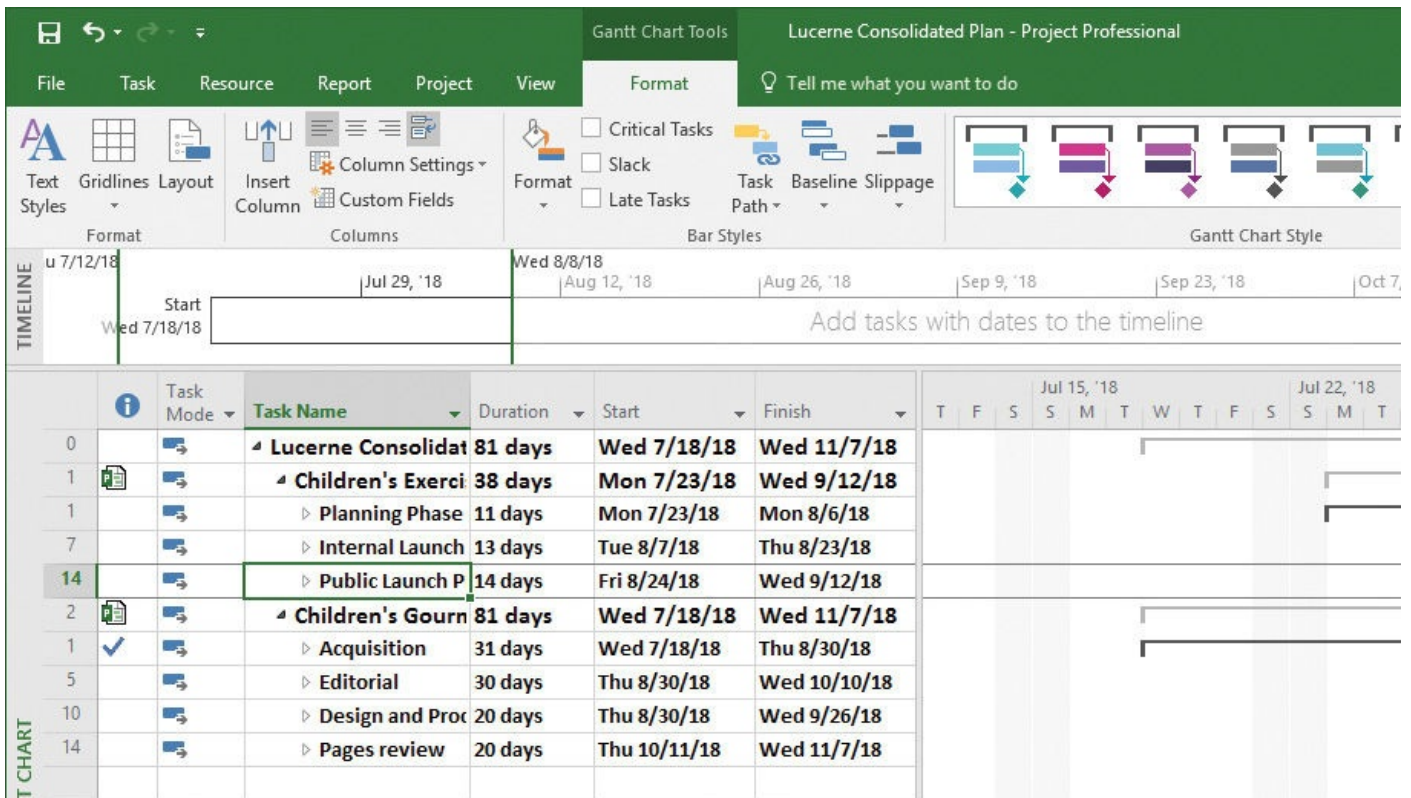
Your resource pool should look like this

4. Save and close all plans.

Consolidate plans

The scenario: You occasionally need to look at information spread between closely related but distinct projects. To get an “all-up” view across plans, you decide to add them to a consolidated plan. In Project, perform the following tasks:

1. Create a new plan and save it in the practice file folder. Name the file **Lucerne Consolidated Plan**.
2. Insert the **ConsolidatePlansA** and **ConsolidatePlansB** plans into **Lucerne Consolidated Plan**.
3. In **Lucerne Consolidated Plan**, expand both inserted plans to see their details.
4. Display the project summary task.

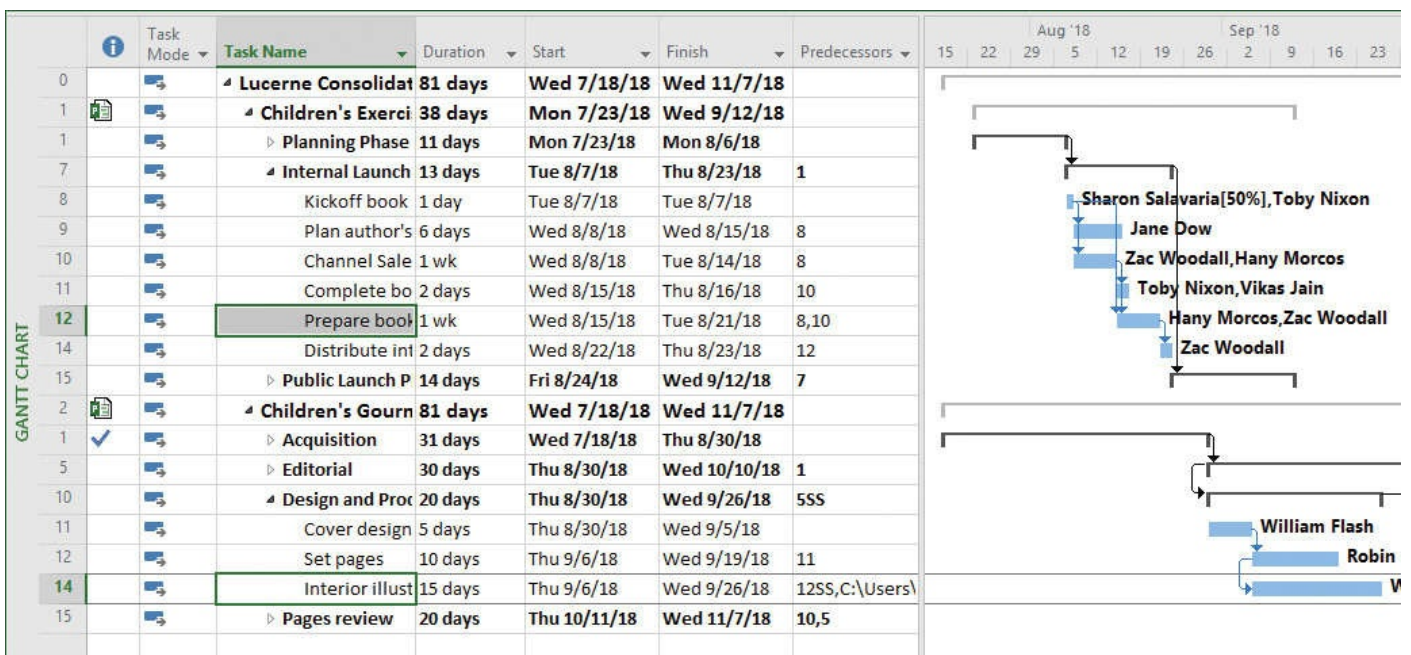


Your consolidated plan should look like this

Create dependencies between plans

The scenario: You have identified that the deliverable of a task from one plan is required before a task in another plan can begin. You decide to create a cross-project link between these two plans. Continuing in the Lucerne Consolidated Plan you previously created, perform the following tasks:

1. In **Lucerne Consolidated Plan**, make task 12 in **ConsolidatePlansA** (Children's Exercise Book Launch schedule) the predecessor of task 13 in the **ConsolidatePlansB** (Children's Gourmet Cookbook) plan.



Your cross-project link should look like this in the consolidated plan

2. Save and close all plans.

Appendix A. A short course in project management

Throughout this book, we've included advice on how best to use Project 2016 while following sound project-management practices. This appendix focuses on the basics of project management, regardless of any software tools you might use to help you manage projects. Although project management is a broad, complex subject, in this appendix we focus on the [project triangle](#) model. In this model, you consider projects in terms of time, cost, and scope.

Understand what defines a project

Succeeding as a project manager requires that you complete your projects on time, finish within budget, and make sure your customers are happy with what you deliver. That sounds simple enough, but how many projects have you heard of (or worked on) that were completed late, cost too much, or didn't meet the needs of their customers?

A Guide to the Project Management Body of Knowledge (published by the Project Management Institute)—referred to as the PMBOK and pronounced “pimbok”—defines a project as “a temporary endeavor undertaken to create a unique product or service.” Let's walk through this definition to clarify what a project is—and what it is not.



For more information about the Project Management Institute and the PMBOK, see [Appendix B](#), “[Develop your project-management skills](#).”

First, a project is *temporary*. A project's duration might be just one week, or it might go on for years, but every project has an end date. You might not know that end date when the project begins, but it's out there somewhere in the future. Projects are not the same as [ongoing operations](#), although the two have a great deal in common. Ongoing operations, as the name suggests, go on indefinitely; you don't establish an end date. Examples include most activities of accounting and human resources departments. People who run ongoing operations might also manage projects; for example, a manager of a human resources department for a large organization might plan a college recruiting fair. Yet projects are distinguished from ongoing operations by an expected end date, such as the date of the recruiting fair.

Next, a project is an *endeavor*. Resources, such as people and equipment, need to do work. The endeavor is undertaken by a team or an organization, and therefore projects have a sense of being intentional, planned events. Successful projects do not happen spontaneously; some amount of preparation and [planning](#) happens first.

Finally, every project creates a *unique product or service*. This is the [deliverable](#) for the project and the reason that the project was undertaken. A refinery that produces gasoline does not produce a unique product. The whole idea, in this case, is to produce a standardized commodity; you typically don't want to buy gas from one station that is significantly different from gas at another station. On the other hand, commercial airplanes

are unique products. Although all Boeing 787 Dreamliner airplanes might look more or less the same to most of us, each is, in fact, highly customized for the needs of its purchaser.

By now, you might realize that much of the work that goes on in the world is project-oriented work. In fact, a substantial portion of your work might be focused on project management—even if that’s not your job title.

Project management has been a recognized profession for many decades, but project-management work in some form has been occurring for as long as people have been doing complex work. When the Great Pyramids at Giza in Egypt were built, somebody somewhere was tracking resources, schedules, and specifications in some fashion.

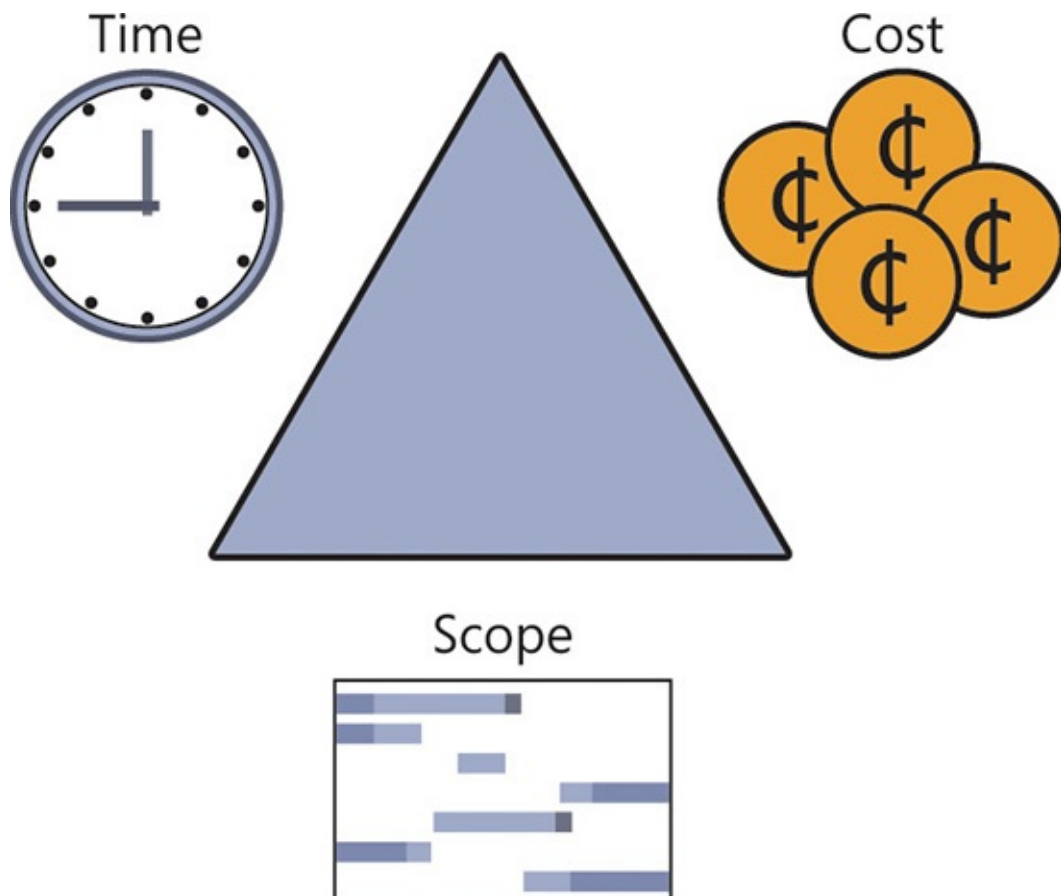


Tip

Project management is now a well-recognized profession in most industries. To learn more about organizations that train project managers and advance project management as a profession, see [Appendix B](#), “[Develop your project-management skills](#).”

The project triangle: View projects in terms of time, cost, and scope

You can visualize project work in many ways, but our favorite method is what is sometimes called the project triangle or *triangle of triple constraints*.



The project triangle is a helpful model for visualizing how time, cost, and scope relate to each other in a project

This theme has many variations, but the basic concept is that every project has some element of a time constraint, has some type of budget, and requires some amount of work to complete. (In other words, it has a defined scope.) The term [*constraint*](#) has a specific meaning in Project, but here we're using the more general meaning of "a limiting factor." Let's consider these constraints one at a time.

Time

Have you ever worked on a project that had a deadline? (Maybe we should ask whether you've ever worked on a project that did not have a deadline.) Limited time is the one constraint of any project with which we are all probably most familiar. If you're working on a project right now, ask your team members to name the date of the project deadline. They might not know the project budget or the scope of work in great detail, but chances are they all know their immediate deadlines, and probably also the overall project deadline.

The following are examples of time constraints:

- You are building a house and must finish the roof before the rainy season arrives.
- You are assembling a large display booth for a trade show that starts in two months.
- You are developing a new inventory-tracking system that must be tested and running by the start of the next fiscal year.

Since we were children, we have been trained to understand time. We carry wristwatches, paper organizers or smartphones, and other tools to help us manage time. For many projects that create a product or event, time is the most important constraint to manage.

Cost

You might think of cost simply in monetary terms, but in the context of projects, cost has a broader meaning: costs include all the resources required to carry out the project. Costs include the people and equipment doing the work, the materials being used, and all the other events and issues that require money or someone's attention in a project.

The following are examples of cost constraints:

- You signed a fixed-price contract to develop an e-commerce website for a client. If your costs exceed the agreed-upon price, your customer probably won't be willing to renegotiate the contract.
- The president of your organization has directed you to carry out a customer research project using only the staff and equipment in your department.
- You received a \$5,000 grant to create a public art installation. You have no other funds.

For virtually all projects, cost is ultimately a limiting constraint; few projects can go over budget without eventually requiring corrective action.

Scope

You should consider two aspects of scope: [product scope](#) and [project scope](#). Every successful project produces a unique product: a tangible item or service. Customers usually have some expectations about the features and functions of products they consider purchasing. Product scope describes the intended quality, features, and functions of the product, often in minute detail. Documents that outline this information are sometimes called *product specifications*. A service or event usually also has some expected features. We all have expectations about what we'll do or see at a party, concert, or sporting event.

Project scope, on the other hand, describes the work required to deliver a product or service with the intended product scope. Project scope is usually measured in [phases](#) and tasks.

The following are examples of scope constraints:

- Your organization won a contract to develop an automotive product that has exact requirements—for example, physical dimensions measured to 0.01 milli-meters. This is a product scope constraint that will influence project scope plans.
- You are constructing a building on a lot that has a height restriction of 50 feet.
- You can use only internal services to develop part of your product, and those services follow a product development methodology that is different from what you had planned.

Product scope and project scope are closely related. The project manager who manages project scope should also understand product scope or know how to communicate with those who do.

Time, cost, and scope: Manage project constraints

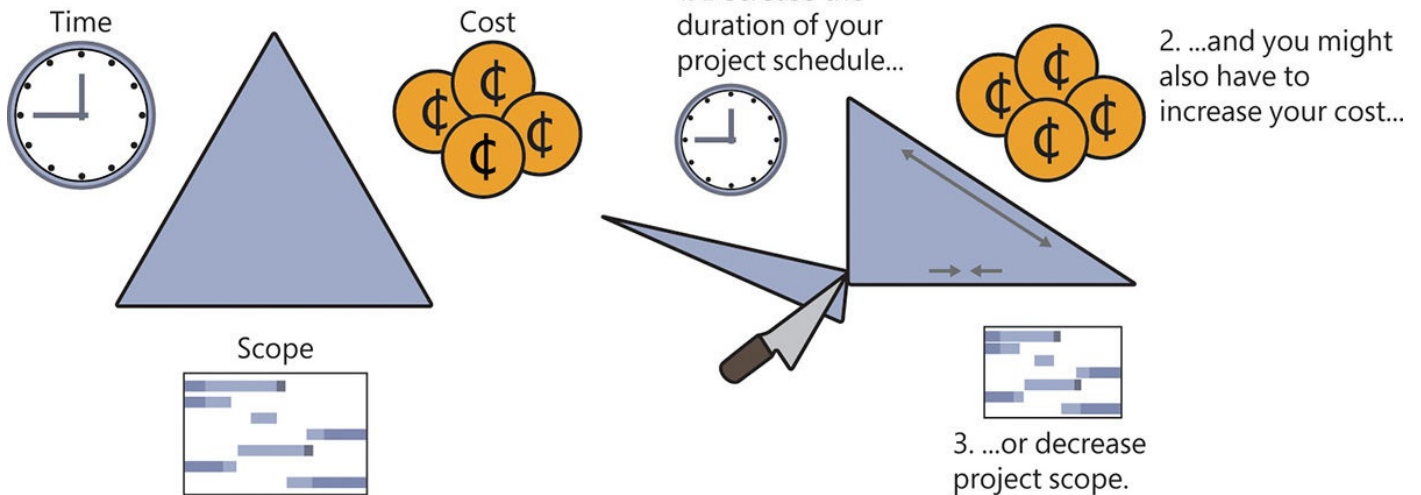
Project management gets most interesting when you must balance the time, cost, and scope constraints of your projects. The project triangle illustrates the process of balancing constraints because the three sides of the triangle are connected, and changing one side of a triangle affects at least one other side. The following sections provide examples of constraint balance.

You have less time

If the duration (time) of your project schedule decreases, you might need to increase budget (cost) because you must hire more resources to do the same work in less time. If you cannot increase the budget, you might need to reduce the scope because the resources you have cannot complete all the planned work in less time.

Your initial plan has these time, cost, and scope constraints

You should adjust your plan if your schedule duration is decreased



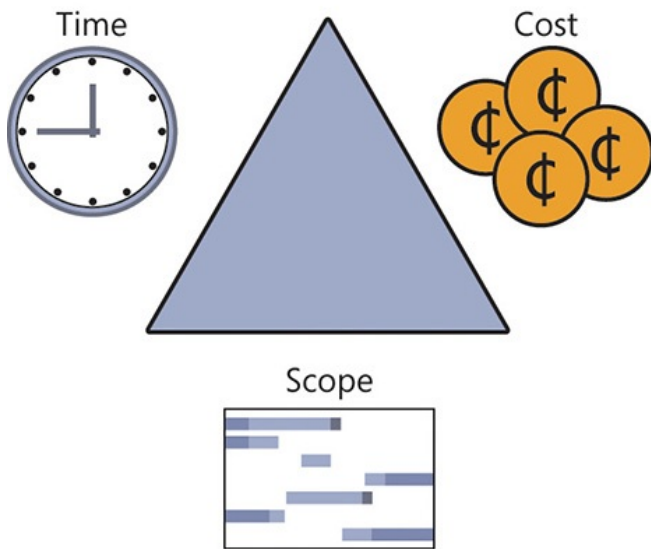
When you have less time than you planned for, you might need to increase cost or decrease scope (or both)

If you must decrease a project's duration, make sure that overall project quality is not unintentionally lowered. For example, testing and quality control often occur last in a software development project; if project duration is decreased late in the project, those tasks might be the ones to suffer from cutbacks. You must weigh the benefits of decreasing the project duration against the potential downside of a deliverable of poorer quality.

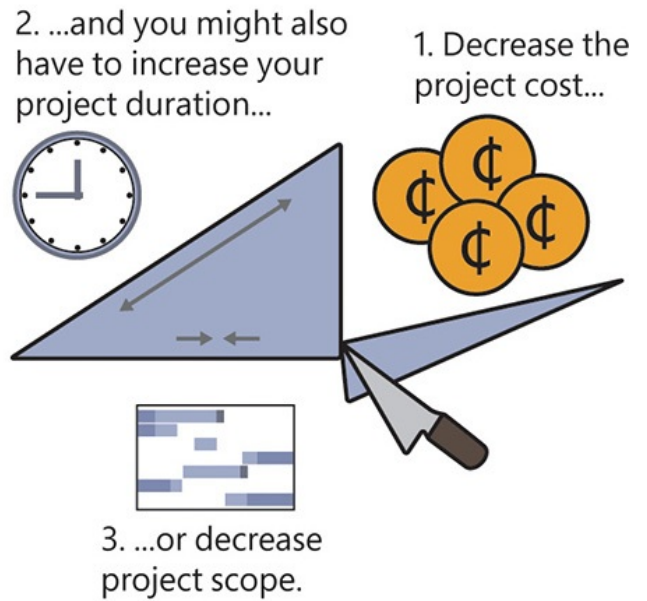
You have fewer resources

If the budget (cost) of your project decreases, you might need more time because you cannot pay for as many resources or for resources of the same efficiency. If you cannot increase the time, you might need to reduce project scope because fewer resources cannot complete all the planned work in the time remaining.

Your initial plan has these time, cost, and scope constraints



You should adjust your plan if your cost is decreased



When you have decreased cost (or fewer resources) than you planned for, you might need to increase time or decrease scope (or both)

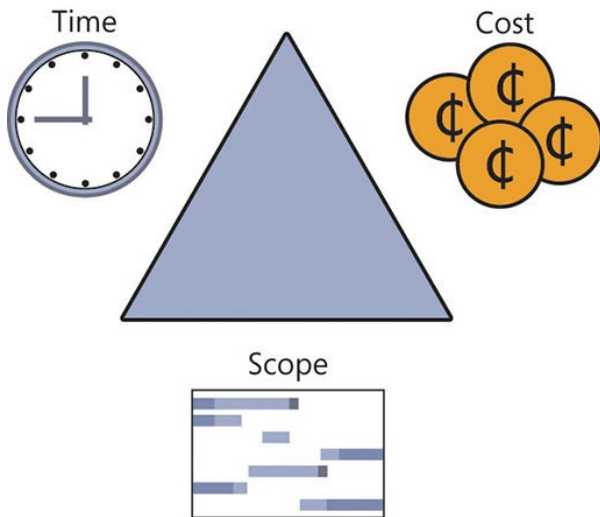
If you must decrease a project's budget, you could look at the grades of [material resources](#) for which you had budgeted. A lower-grade material is not necessarily a lower-quality material. As long as the grade of material is appropriate for its intended use, it might still be of high quality. Here's one example we can all relate to: fast food and gourmet food are two grades of restaurant food, but you might find high-quality and low-quality examples of each.

You should also look at the costs of the human and equipment resources you planned to use. Can you hire less-experienced people for less money to carry out simpler tasks? Reducing project costs can lead to a poorer-quality deliverable, however. As a project manager, you must consider (or, more likely, communicate to the decision makers) the benefits versus the risks of reducing costs.

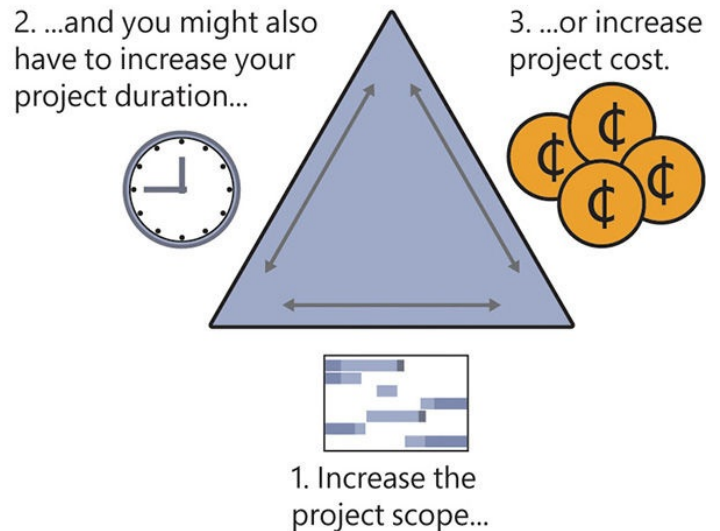
You have more work

If your project scope increases, you might need more time or resources (cost) to complete the additional work. When project scope increases after the project has started, it's called *scope creep*. Changing project scope midway through a project is not necessarily a bad thing; for example, the environment in which your project deliverable will operate might have changed, or you might have learned more about the nature of the work since beginning the project. Changing project scope is a bad thing only if the project manager doesn't recognize and plan for the new requirements—that is, when other constraints (cost and time) are not correspondingly examined and, if necessary, adjusted.

Your initial plan has these time, cost, and scope constraints



You should adjust your plan if your project scope is increased



When you have more work than you planned for, you might need to increase time or cost (or both)

Time, cost, and scope are the three essential elements of any project. To succeed as a project manager, you should know how all three of these constraints apply to your projects and be able to communicate this to your stakeholders.

Here is our final word about the project triangle model. Like all simple models of complex subjects, this model is a useful learning tool but not always a reflection of the real world. If real projects always performed as the project triangle suggests that they should, you might see projects delivered late but at the planned cost or with the expected scope; or projects might be completed on time and with the expected scope, but at higher cost. In other words, you'd expect to see at least one element of the project triangle come in as planned. But the sad truth is that many projects, even with rigorous project management oversight, are delivered late, over budget, *and* with far less than the expected scope of functionality. You've probably participated in a few such projects yourself. Project management is a demanding field. Success in project management requires a rare mix of skills and knowledge about schedule practices and tools, in addition to skill in the domain or industry in which a project is executed.

Manage your projects with Project

The best project-management tool in the world can never replace your good judgment. However, the right tool can and should help you accomplish the following:

- Track all the information you gather about the work, duration, and resource requirements for your project.
- Visualize your project plan in standard, well-defined formats.
- Schedule tasks and resources consistently and effectively.
- Exchange project information with stakeholders in a variety of ways.
- Communicate with resources and other stakeholders while leaving ultimate control in the hands of the project manager.

In the chapters of this book, you were introduced to the rich functionality of Project. Not everything in this book might have applied to your needs, and you probably have needs that this book did not address. We hope that this book helps you get off to a great start with Project!

Appendix B. Develop your project-management skills

If you completed most of or all the chapters in this book, you're well on your way to mastering Microsoft Project 2016. However, one book can get you only so far. To help further your knowledge of Project and project management, start with the sources listed in this appendix.

Join a Project learning community

Many Project users love to talk about the program and their work with it and to share ideas with others. Whether you work in a large organization or independently, you're likely to find a community of Project users nearby.

If you're in a large organization, especially one with a strong project-management focus, you might find an internal Project user group or support group there. Such groups often meet informally to provide peer training and support, critique plans, and share best practices. If such a group does not exist in your organization, perhaps you can start one.

In the public realm, there are many Project user groups around the world. These groups typically meet on a regular basis to share tips and tricks about Project. Joining a user group is a great way to broaden your exposure to Project usage; it also can be a great source for informal product support, training, and career networking.

The following are a few places where you can investigate Project user groups and related resources:

- The Microsoft Project User Group (MPUG) is the official industry association for Project. MPUG offers information about a variety of Project and project-management resources, in addition to a directory of Project user groups around the world. Find it on the web at mpug.com.
- The Microsoft and Office website includes a variety of tools and information to help you succeed with Project. Useful pages include:
 - The main Project product page at <https://products.office.com/project>.
 - Help and customer support at <https://support.office.com>.
 - Community questions and answers about Project at answers.microsoft.com.
 - In-depth blog posts from the Project product team members at <https://blogs.office.com/project>.

To showcase your Project expertise formally, you can become certified. Microsoft developed certifications for Project and enterprise project-management solutions. To learn about training opportunities and requirements for Project-related certifications, visit <https://www.microsoft.com/learning>.

Join a project-management learning community

Perhaps more than other desktop programs, Project requires you to be involved in a specific formal activity: project management. Project management can be an exciting mix of technical, organizational, and social challenges. The Project Management Institute (PMI) is the leading organization of professional project management. PMI focuses on setting project-management standards, developing and offering educational programs, and certifying project managers. The most widely recognized PMI certification is the Project Management Professional (PMP) certification.

A Guide to the Project Management Body of Knowledge—published by the PMI and referred to as the PMBOK (pronounced “pimbok”) describes generally accepted project-management practices, knowledge areas, and terminology. In addition, the PMI publishes the *Project Management Journal* and *PM Network* journals. You can learn more about the PMI on the web at pmi.org. If you are professionally invested in the practice of project management, you should be in the PMI.



Project includes some PMI-related and PMBOK-related templates that might be of interest to you. These include the Project Management Institute Process and PMBOK Compliant Project Management templates. To view these, click the File tab, click New, and then click them in the list of available templates.

There are, of course, many worthwhile commercial and nonprofit organizations dedicated to Project and project management besides those we have described here. Project enjoys a leading position in the diverse, sometimes contentious, but always interesting world of project management. Wherever you are in your own Project and project-management knowledge and career development, you can find a great variety of supporting organizations and peers today. The authors wish you the greatest success!

Appendix C. Collaborate: Project, SharePoint, and PWA

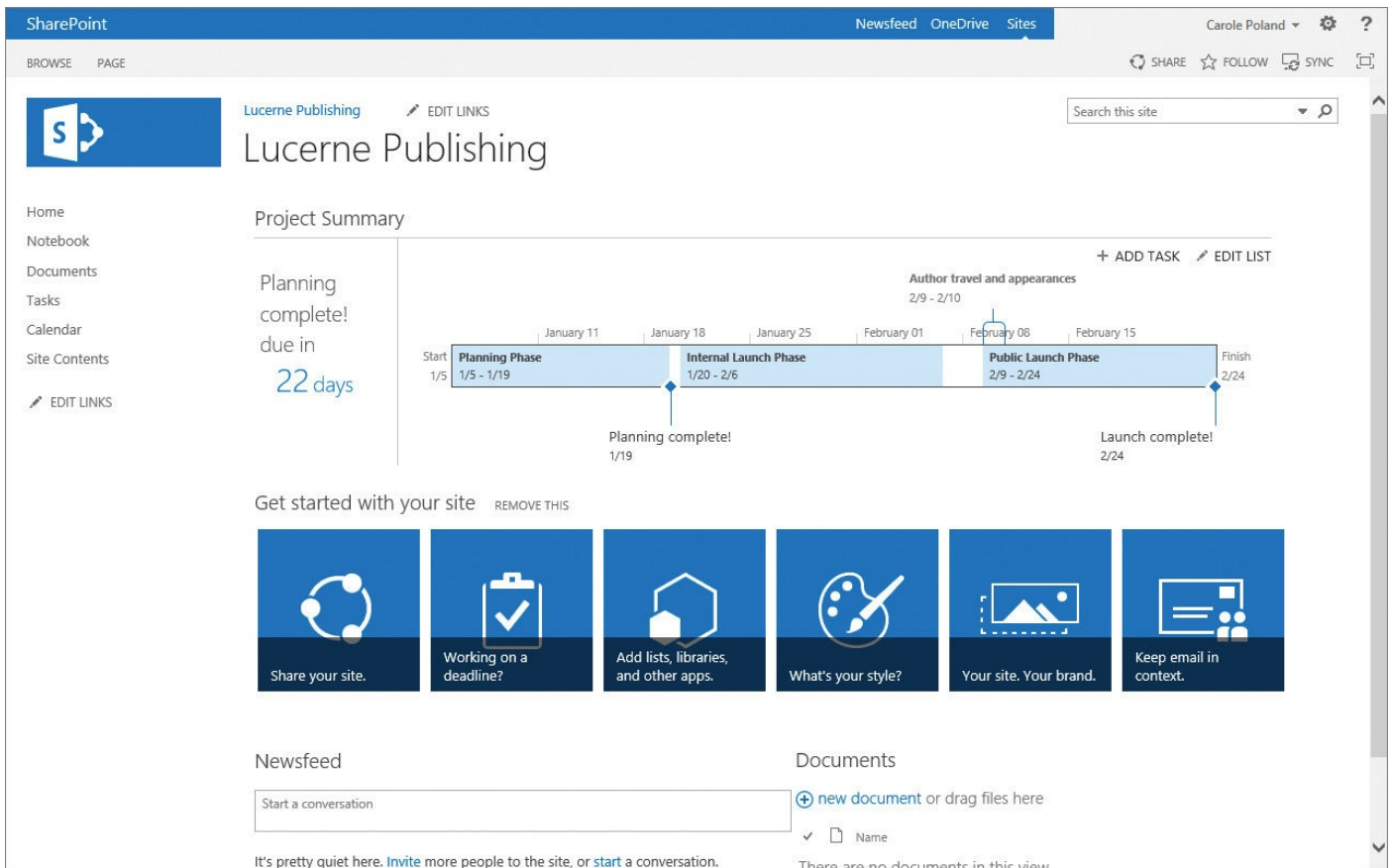
This appendix introduces you to some of the team-collaboration features available when you combine Project Professional 2016 with Microsoft SharePoint or Project Web App (PWA). Although full coverage of the interoperability of Project with SharePoint and PWA is beyond the scope of this book, we want to help you gain a basic understanding of the benefits these products offer beyond the capabilities of Project on the desktop. We conclude the appendix with a discussion of [project portfolio management \(PPM\)](#) and the capabilities that PPM can add to your organization.

Because you might not have access to SharePoint or PWA, this appendix describes and illustrates these services but does not include hands-on activities with practice files. Each topic concludes with a “[Sources for more information](#)” list of online resources you can investigate.

Share your plan by using SharePoint

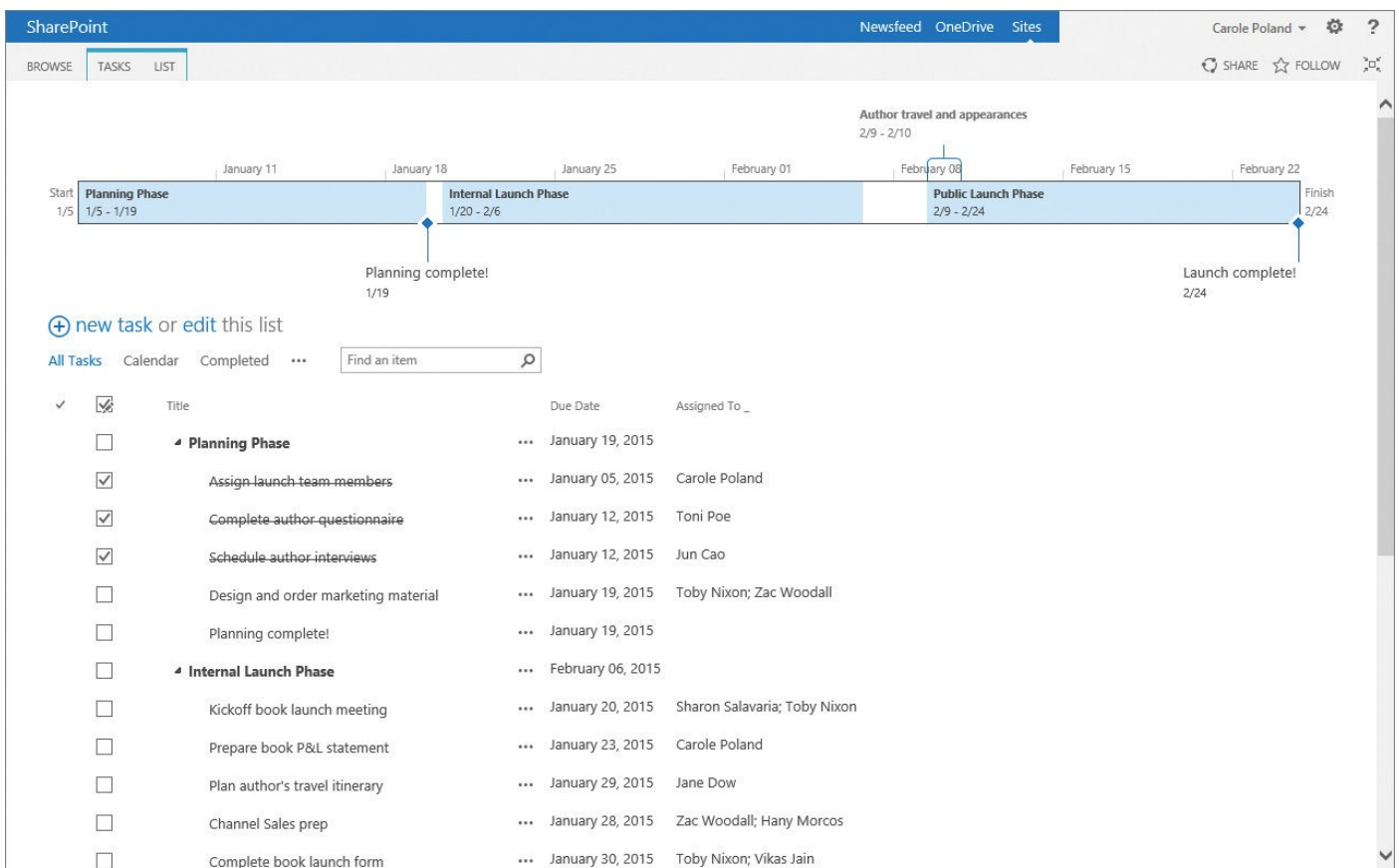
Project managers and teams benefit when they share information. With Project Professional, you can synchronize tasks between Project and SharePoint. You can either create the initial task list in Project and then synchronize it to a list in SharePoint or create the initial task list in SharePoint and then create a new Project plan based on the task list. Team members can view, edit, and report the status of their tasks in the SharePoint tasks list.

The SharePoint Project Summary page includes a timeline and other key details about the plan.



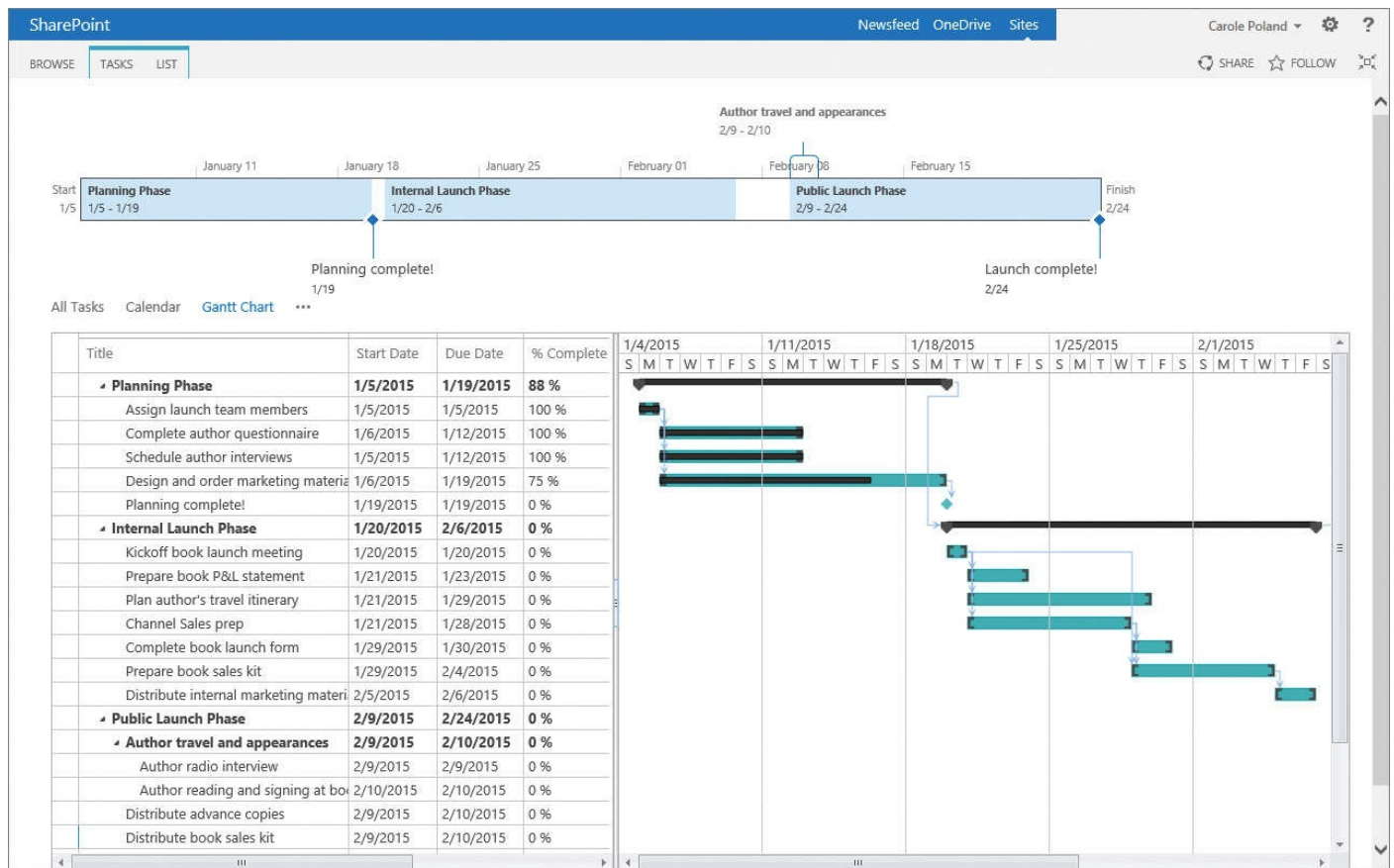
The Project Summary page in SharePoint includes key details and a timeline snapshot of a plan

From the Project Summary page, you can share the plan, customize the site, and drill into the task list.



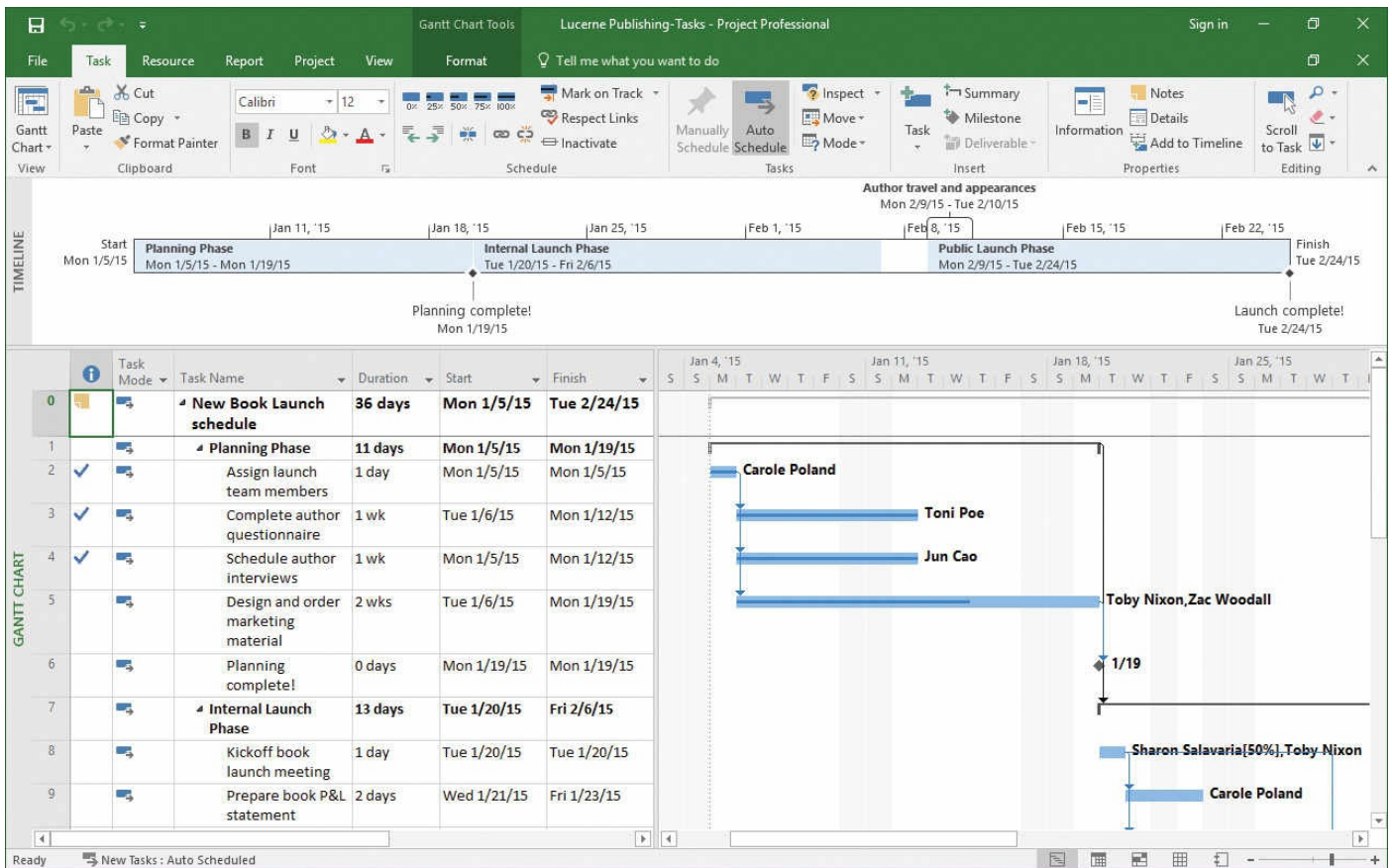
Here's what a timeline and tasks list look like in SharePoint

In SharePoint, you can track progress on a task or add new tasks, but no active scheduling occurs. You can even view your tasks list in other views, including a calendar and a Gantt Chart view.



SharePoint supports common views such as the Gantt chart and timeline views familiar to Project users

When the SharePoint tasks list is synchronized with Project, you can then take full advantage of the Project feature set and scheduling engine.



The SharePoint tasks list from the preceding illustration now shown in Project Professional

Project Professional users can think of task synchronization with SharePoint as serving two very useful purposes:

- You can create an initial task list in SharePoint and invite team members and other stakeholders to add tasks, durations, and other details in SharePoint. You can then open the list in Project and do scheduling work in Project. Then you can resynchronize back to SharePoint so that the team can see the results.
- You can create an initial task list in Project and then synchronize it with SharePoint. You can then invite team members and other stakeholders to adjust task details as needed. Then you can edit the list in Project for additional schedule fine-tuning.

In both cases, you use the scheduling engine in Project and the collaborative, multi-user capabilities of SharePoint—the best combination of the strengths of both products.

You can also convert a SharePoint task list into a PWA project (described in the next topic). You might choose to do so, for example, when you find you need more detailed status tracking or workflow management of tasks.

This topic introduced you to Project and SharePoint integration via task list synchronization. Depending on the collaborative practices and tools of your organization, you might find that Project and SharePoint together make a powerful combination.

Sources for more information

The following are some resources about Project Professional and SharePoint integration:

- In Project, you can share a plan with SharePoint from the Save As page of the [Backstage view](#). To learn more, in Project, in the Tell Me box, enter *sync with SharePoint*, and then click Get Help.
- In SharePoint, you can open a tasks list in Project by clicking the Open With Project button in the Connect & Export group of the List tab while in a tasks list view. To learn more, in SharePoint, click the Help button (which looks like a question mark) in the upper-right corner of the SharePoint window, and in the Help Search box, enter *Project site*.
- Visit the SharePoint product portal at <https://products.office.com/sharepoint> to learn more about SharePoint.
- Members of the Project engineering team have written some detailed posts on the Office Blog about Project and SharePoint task lists. Visit <https://blogs.office.com/project>, and then search for *SharePoint task list*.

Team collaboration with Project Web App

Project Web App (PWA) is the browser-based interface to Project Server running on-premises, or to Project Online hosted in the cloud. Project managers can use PWA in conjunction with Project Professional to build and manage projects. Others who might find PWA useful include:

- Team members who have task assignments.
- Portfolio managers who collect and analyze data across multiple projects.
- Site administrators who set up and manage access to PWA and create custom user experiences.

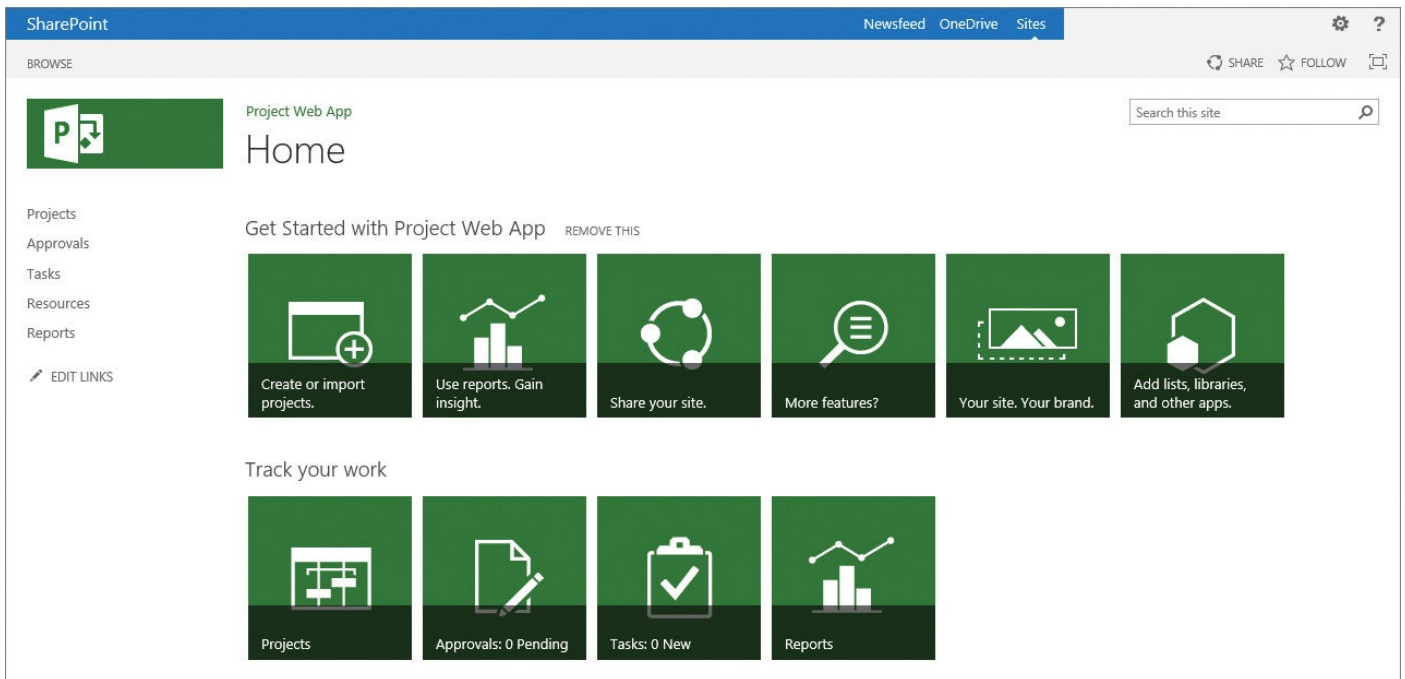
Projects that can be managed in PWA can come from a variety of sources, including:

- Project Professional plans (MPP files).
- SharePoint task lists.
- Projects created directly in PWA.

A PWA project is stored in Project Server or Project Online, and it can be edited by authorized stakeholders in PWA and by the project manager in Project.

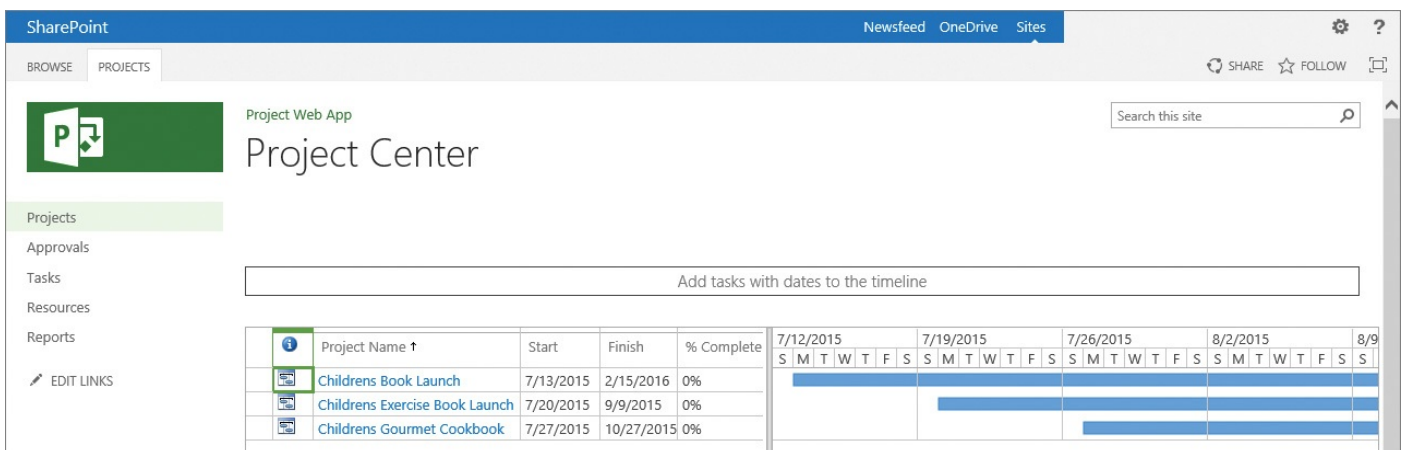
At first glance, a tasks list in PWA might look similar to a SharePoint tasks list. PWA tasks lists offer much greater scheduling capabilities, however, and support the scheduling features in PWA and the full feature set of Project Professional.

The hub of PWA is the Home page.



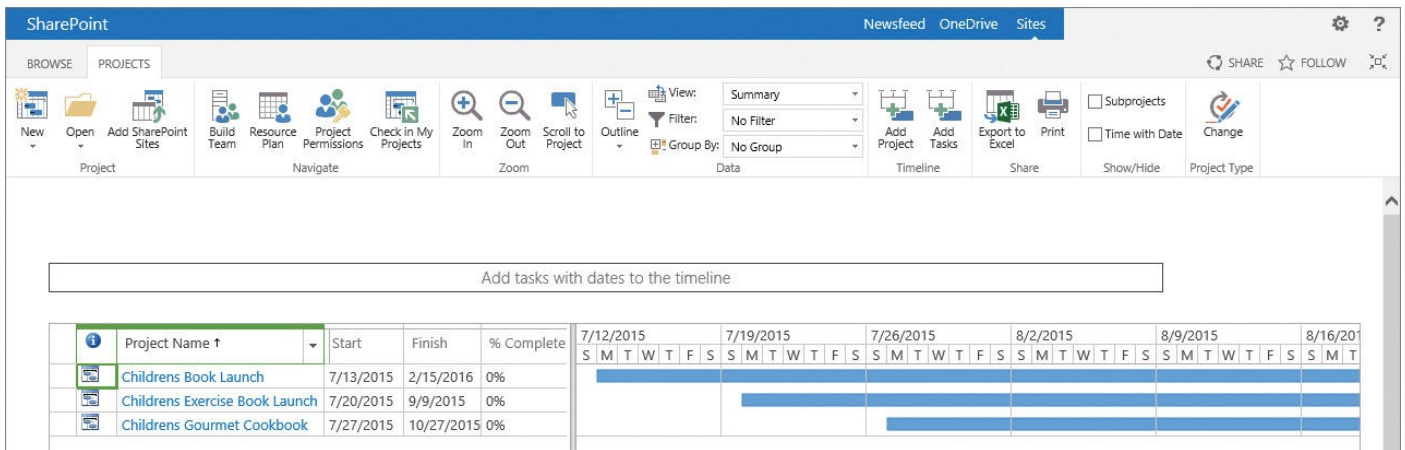
The Project Web App Home page displays some of the capabilities in PWA for project managers and team members

From the Home page, you can manage your PWA site and drill down into your projects and tasks.



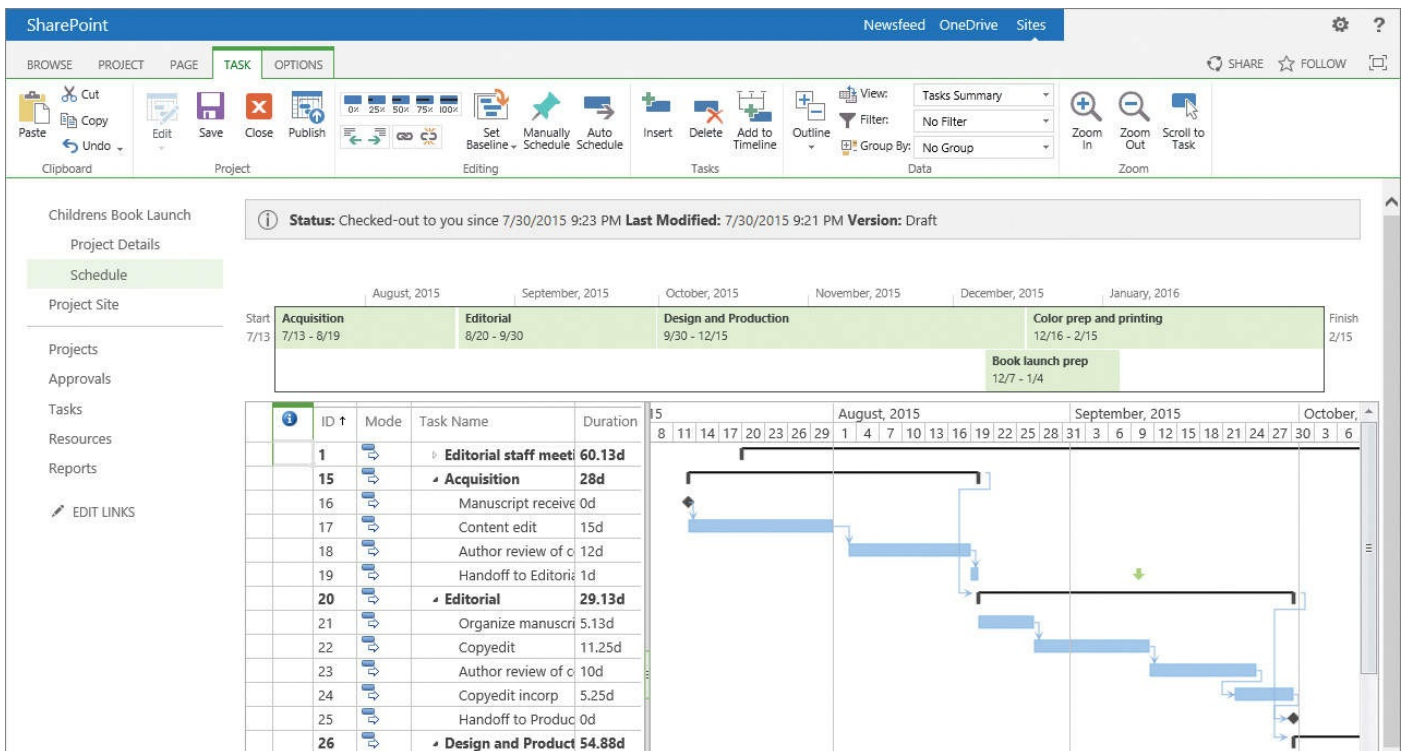
Here is what a collection of projects, or a portfolio, looks like in the Project Center

The commands on the Projects tab indicate some of the actions you can perform. Important abilities include adding new projects to the portfolio, controlling access to projects, and changing how the list of projects appears.



Use the commands on the Projects tab to manage a portfolio of projects

When you view a project, you get a familiar Gantt Chart with Timeline view very similar to what you would see in Project. In fact, on the Task tab you can see many of the same task-management features that are in Project, including those for tracking progress and applying groups or filters.



The commands and views in Project Web App should be familiar to Project users

Next, we'll examine PWA from the perspective of a team member who has task assignments in a PWA project.

One important thing team members can use PWA for is to record work status in sheet, timephased, or Gantt Chart format.

SharePoint Newsfeed OneDrive Sites

STATUS: There are unsaved updates.

Task Name	Start	Finish	Remain	% Wor	Work	Period Total	Mon 7/27	Tue 7/28	Wed 7/29	Thu 7/30	Fri 7/31	Sat
Copyedit incorp	9/22/2015	9/29/2015	40h	0%	Planned Actual							
Launch planning	12/7/2015	12/14/2015	20h	0%	Planned Actual							
Final review	12/9/2015	12/15/2015	12h	0%	Planned Actual							
Assign launch team members	12/17/2015	12/18/2015	8h	0%	Planned Actual							
Project Name: Childrens Exercise Bo	7/20/2015	7/20/2015	8h	0%	Planned Actual							
Assign launch team members	7/20/2015	7/20/2015	8h	0%	Planned Actual							
Project Name: Childrens Gourmet Co	7/27/2015	10/20/2015	170h	0%	Planned Actual							
Manuscript received	7/27/2015	7/27/2015	0h	100%	Planned Actual	6h	6h	0h	0h	0h	0h	0h
Content edit	7/28/2015	8/18/2015	106h	9%	Planned Actual	34h	0h	6h	4h	8h	8h	0h
Handoff to Editorial	8/18/2015	8/18/2015	8h	0%	Planned Actual							
Incorporate 1st Pages review	10/14/2015	10/20/2015	40h	0%	Planned Actual							

Here a team member records timephased actuals (that is, actual work distributed over time) on some of her assigned tasks

After the team member has recorded her work status, she can submit her status for approval by the project manager.

SharePoint Newsfeed OneDrive Sites

APPROVALS

Approval Type	Name	Project	Update Type	Resource	Total	7/27/2015	7/28/2015	7/29/2015	7/30/2015
<input type="checkbox"/> Status Update	Channel Sales prep	Childrens Exercise Book	Task update	Hany Morcos	Actual 15h Planned 40h				
<input checked="" type="checkbox"/> Status Update	Content edit	Childrens Gourmet Cook	Task update	Carole Poland	Actual 10h Planned 116h		6h	4h	0h
<input checked="" type="checkbox"/> Status Update	Manuscript received	Childrens Gourmet Cook	Task update	Carole Poland	Actual 6h Planned 6h	6h			

Here's what a team member's status update looks like to the project manager

Team members can add comments to their status per task.

SharePoint Newsfeed OneDrive Sites

BROWSE APPROVALS

Filter: No Filter From: 7/27/2015 To: 7/31/2015

Group By: No Group

Accept Reject Preview Updates Scroll To Update

Export to Excel Print

Planned Non-Billable Overtime Time with Date

History Manage Rules Workflow Approvals

Actions Data Date Range Share Show/Hide Navigate

May need to adjust deliverables list of Channel Sales prep task. Let's talk more at status meeting.

	Finish	Total	% Complete	Remaining Work	Total	7/27/2015	7/28/2015	7/29/2015	7/30/2015
Actual		15h							
Planned		40h							
Actual	7/30/2015	10h	38%	25h			6h	4h	0h
Planned	7/30/2015	116h	9%	106h			6h	4h	8h
Actual	7/30/2015	6h	100%	0h		6h			
Planned	7/27/2015	6h			6h				

This is what a team member's comment looks like to the project manager

After the project manager accepts the status updates, Project's scheduling engine responds to the progress reported by team members and any other changes made to the plan in PWA.

File Task Resource Report Project View Format

Team Planner Assign Resource Add Information Notes Details

Level Selection Resource All Next Overallocation

Leveling Options Clear Leveling

Task Mode	Task Name	Duration	Start	Finish	Jul 26, '15
0	Children's Gourmet Cookbook	67.25 days	Mon 7/27/15	Wed 10/28/15	
1	Acquisition	17.25 days	Mon 7/27/15	Wed 8/19/15	
2	Manuscript received	1 day	Mon 7/27/15	Mon 7/27/15	Carole Poland
3	Content edit	15.25 days	Tue 7/28/15	Tue 8/18/15	
4	Handoff to Editorial	1 day	Tue 8/18/15	Wed 8/19/15	
5	Editorial	30 days	Wed 8/19/15	Wed 9/30/15	

Project Professional processes the team members' status updates as actuals recorded in the plan

The next time the plan is published, all team members and other stakeholders will see the changes. This collaborative process continues throughout the life of the project.

Sources for more information

The following are some resources about Project Professional and PWA integration:

- If you have access to PWA, you can get an overview of supported activities in the PWA Help system. Click the Help button (which looks like a question mark) in the upper-right corner of the PWA window, and explore the Help content.
- Visit the Project product portal at <https://products.office.com/Project>.
- Visit <https://technet.microsoft.com/projects/server> for IT pro content about Project Server.
- Members of the Project engineering team have written some detailed posts on the

Office Blog about Project and PWA. Visit <https://blogs.office.com/project>, and then search for *PWA*.

Project portfolio management

The previous topics introduced you to some of the team collaboration features available with SharePoint and Project Web App (PWA). Behind PWA sits Project Server running on-premises, or Project Online hosted in the cloud. Project Professional combined with Project Server or Project Online makes up the Microsoft project portfolio management solution, or *PPM* for short. (You might also see the related label *enterprise project management*, or *EPM*.) The project management functionality of PPM extends far beyond the desktop functionality of Project as you've practiced it in this book.

This topic introduces some of the key differences between desktop project management and PPM. PPM is one of the more complex but potentially rewarding practices that a large organization can adopt.

Some organizational benefits of PPM include the following:

- You can capture your organization's best practices with regard to workflow models and resource skills in enterprise templates.
- You can gain insight into resource workload and availability across all projects and other activities in your organization.
- You can develop consistent ways of describing and tracking project activities across your organization.
- You can collect a broad range of data relating to projects and report this data in timely and informative ways.

Although you might be the sole user of Project in your organization, the real “user” of PPM is the entire organization; thus, the software toolset is correspondingly more complex than Project running on a single computer. For this reason, fully addressing the details of PPM is far beyond the scope of this book. However, we want to introduce PPM here so that you can start to determine whether it can serve a useful role in your organization. For most organizations, we think the answer will be “Yes,” but getting from an initial interest in PPM to a full implementation is a series of complex steps. We hope that this brief introduction can help you formulate some ideas about how PPM can improve your organization's performance.

If you read the chapters of this book, you have a good introduction to project management on the scale of a single project manager with projects that have dozens of resources working on hundreds of tasks. You might be practicing project management at this scale now. Indeed, with a resource pool and multi-project features such as consolidated projects, a single project manager should be able to stay on top of several different projects in various stages of completion by using Project running on a single computer.

Now imagine dozens of project managers planning and tracking hundreds of projects, each with hundreds or even thousands of resources and tasks—all within a single organization. Project management at this scale requires a high degree of planning, coordination, and standardization. This is the realm of PPM: a large organization planning, coordinating, and

executing a large number of projects simultaneously.

Think about any past or current experiences you've had working on projects in a large organization, and try to answer these questions:

- Were potential projects evaluated against the goals and objectives of the organization such that the projects selected for execution aligned well with the strategic goals of the organization?
- Were the projects defined and scoped in a consistent way that enabled apples-to-apples comparisons?
- Were resource assignments made with full knowledge of each resource's skills, location, and availability?
- Did the executive leadership of the organization have a clear picture of the status of each project?

If your answer to these questions is “No,” the organization was probably not practicing PPM effectively. There is no question that many large organizations can gain great benefits by adopting PPM; however, this is no easy task, or they would have implemented PPM already. Succeeding with PPM requires a strong willingness from the leadership of the organization (executive sponsorship), a well-trained group of administrators, project and [resource managers](#), and a software infrastructure (either on-premises or hosted) capable of supporting it.

Sources for more information

The following are some resources to help you with the evaluation, planning, and deployment of a PPM solution:

- Review all the relevant material on the Project product website. Visit <https://products.office.com/Project>, and then navigate to Project Server or Project Online content.
- Consider attending classroom training on PPM deployment from Microsoft Learning. Check the Microsoft Learning website for PPM information: <https://www.microsoft.com/learning>.
- If you are in an organization that is relatively new to the project and portfolio management discipline, consider working with a recognized Project partner. You can begin your search for a qualified partner firm here: <https://pinpoint.microsoft.com>.

We hope this brief introduction will give you and your organization a good start in exploring PPM tools and practices.

Appendix D. Use this book in a classroom

This book is suitable for various learning environments and needs, including:

- Individual self-paced training.
- Instructor-led classroom training.

If you are an instructor preparing training material for classroom delivery, this appendix offers some suggestions for how to best integrate this book into your syllabus or lesson plans.

Match content to instructional needs

The following table describes the organization of this book and how you as an instructor can incorporate this book into your classroom training environment.

Book level	Training focus
Entire book	Assign for the duration of your course or the portion of the course that focuses on Project 2016 skills development.
Part	<p>Part 1, "Get started with Microsoft Project," includes Chapters 1 and 2. Chapter 2, "Take a guided tour," is an introduction to Project and is especially well-suited to those who are new to Project.</p> <p>Part 2, "Simple scheduling basics," includes Chapters 3 through 8. These chapters cover a complete project life cycle and introduce the simpler task, resource, assignment, formatting, and tracking features of Project. The chapters in Part 2 follow a logical sequence to build a plan and track progress. If your students have some experience with Project, you can elect to skip Part 2.</p> <p>Part 3, "Advanced scheduling techniques," (Chapters 9 through 15) covers a complete project life cycle. Part 3 introduces more in-depth features and skills relating to task, resource, assignment, formatting, and tracking activities in Project. The chapters in Part 3 follow a logical sequence in which you fine-tune a plan and track progress.</p> <p>Part 4, "In-depth and special subjects," (Chapters 16 through 20), covers some subjects that are not a specific part of a project life cycle but are important for well-rounded training in Project. The chapters in Part 4 are not in any particular sequence and can be used in any order.</p>

Chapter

Each chapter is a complete explanatory solution that focuses on a major feature set of Project. Most chapters in this book include hands-on “Practice tasks” activities and require the use of at least one practice file and sometimes multiple practice files.

If you have specific feature areas you want to cover, you can assign chapters based on subject matter. For example, if you want to focus on resource features in Project, you could assign Chapter 5, “Set up resources,” followed by Chapter 11, “Fine-tune resource and assignment details,” and possibly Chapter 20, “Consolidate projects and resources” (if you want to address resource pools).

Several chapters include “Project management focus” sidebars, in which project-management principles or issues are brought up in the context of Project functionality. These sidebars are a great opportunity to broaden classroom discussions and activities to encompass project-management practices.

Topic

Each chapter consists of several topics. At the beginning of each chapter, you will find the learning objectives addressed in that chapter. The objectives state the instructional goals for each topic so that you and your students understand what skills they will master.

In this book, the topics are strongly sequential within the chapter; students are expected to complete topics in the order in which they appear.

Explanatory portion of topic	Each topic includes an explanatory portion, which defines core concepts, and enumerated how-to procedures. Each topic also has a set of corresponding hands-on activities in the “Practice tasks” section at the end of the chapter. When presenting core concepts to students, you might want to elaborate on the supplied content. For example, if you are teaching project management in an engineering course, you might want to provide more engineering-specific examples and terms in your explanation.
“Practice tasks” hands-on activities	<p>The “Practice tasks” activities can be completed by students or by an instructor while observed by students. The “Practice tasks” activities are outcome focused and might require the student to refer back to a specific topic for details.</p> <p>Students might work through the “Practice tasks” activities outside the classroom, or in the classroom if it is equipped with computers. For lab environments, you might find it helpful to pair up students so that one completes the activity while the other reads the instructions, and both discuss the results. They can then alternate roles between topics.</p>
Practice files	This book includes instructions about downloading the practice files used in the “Practice tasks” hands-on activities throughout this book. If your practice files become unsuitable for new users (for example, if students complete activities but overwrite the original practice files), you can download fresh practice files from the website.

The topics and chapters in this book vary in terms of page count and, for the “Practice tasks” hands-on activities, completion time. For this reason, we recommend that you complete the activities yourself that you intend to assign to students so that you can better estimate how long the assignments should take. An experienced Project user should be able to complete any chapter in this book within one hour; a new Project user, however, might require substantially more time.

Depending on your classroom environment and training objectives, you might find a variety of instructional strategies to be effective, including the following:

- The instructor leads a lecture or discussion through the explanatory portion of a topic and then demonstrates the “Practice tasks” activities in Project.
- The instructor leads a lecture and then assigns students to complete the “Practice tasks” activities at computers in the classroom or lab.
- The instructor leads a lecture and then assigns students to complete the “Practice tasks” activities outside the classroom.
- The instructor assigns the reading and completion of “Practice tasks” activities to students, to be completed outside the classroom.

These are just a few possible options.

Teach project management with Project

A core principle of this book's instructional strategy is that success with Project is built on success with basic project-management practice. Although Project is a feature-rich program, mastery of its features alone is no guarantee of success in project management. For this reason, you will find material about project-management practice throughout this book. See, for example, the following:

- The many “Project management focus” sidebars throughout the chapters
- [Appendix A](#), “[A short course in project management](#)”
- [Appendix B](#), “[Develop your project-management skills](#)”

This book does not prescribe a specific project-management methodology but in general aims to be in alignment with the Project Management Institute's (PMI's) *A Guide to the Project Management Body of Knowledge* (PMBOK) and generally accepted project-management practices.

That said, it is important to acknowledge that some core areas of project management are beyond the scope of activities performed with Project. Resource recruiting and procurement, for example, are critical activities for many projects, but they are not activities that Project directly supports. If your instructional context is more focused on Project features than project-management practice, you should explore this issue with your students so that they gain a fuller understanding of the broad domain of project management and where specifically Project can best support them.

Glossary

8/80 rule A general guideline regarding the estimation of task duration. Task durations between 8 hours (or one day) and 80 hours (10 working days, or two weeks) are generally sized to a manageable duration. See [Chapter 4](#).

accrual The method by which a plan incurs the cost of a task or a resource. The three types of accrual are *start*, *prorated*, and *end*. See [Chapter 10](#).

actual A detail about task progress recorded in a plan in Project. Before actuals are recorded, the plan contains scheduled or planned information. Comparing planned project information to actuals helps the project manager better control project execution. See [Chapters 8](#) and [14](#).

allocation The portion of the capacity of a resource devoted to work on a specific task. See [Chapter 12](#).

assignment The matching of a work resource (a person or a piece of equipment) to a task. You can also assign a material or cost resource to a task, but those resources have no effect on work or duration. See [Chapters 6](#) and [11](#).

AutoFilter In a table, a quick way to view or organize only the task or resource information that meets the criteria you choose. See [Chapter 13](#).

automatically scheduled task A task for which Project dynamically adjusts the start or finish date to account for schedule changes in a plan. See [Chapter 4](#).

Backstage view The view accessed from the File tab that is standardized across most Office 2016 programs. This view contains customization and sharing options, in addition to the essential commands for file management like Open, New, and Save. See [Chapter 2](#).

base calendar A calendar that can serve as the project calendar or a task calendar. A base calendar also defines the default working times for resource calendars. Project includes three base calendars named *Standard*, *24 Hours*, and *Night Shift*. You can customize these, or you can use them as a basis for your own base calendar. See [Chapter 3](#).

baseline The original plan, saved for later comparison with the revised or updated plan. The baseline includes the planned start and finish dates, durations and work values of tasks and assignments, and their planned costs. Plans can have up to 11 baselines. See [Chapters 8](#), [14](#), and [15](#).

bottom-up planning A method of developing a plan that starts with the lowest-level tasks and organizes them into broad phases. See [Chapter 4](#).

calendar The settings that define the working days and time for a plan, resources, and tasks. See [Chapter 11](#).

Calendar view A simple view in Project that shows tasks in a “month-at-a-glance” layout. See [Chapter 16](#).

consolidated plan A plan in Project that contains one or more inserted plans. The inserted plans are linked to the consolidated plan so that any changes to the inserted plans are reflected in the consolidated plan, and vice versa. A consolidated plan is also known as a

consolidated project or *master project*. See [Chapter 20](#).

constraint A restriction, such as Must Start On (MSO) or Finish No Later Than (FNLT), that you can place on the start or finish date of a task. See [Chapter 9](#).

contour The manner in which a resource's work on a task is scheduled over time. Project includes several predefined work contours that you can apply to an assignment. For example, a back-loaded contour schedules a small amount of work at the beginning of an assignment and then schedules increasing amounts of work as time progresses. Applying a predefined contour or manually contouring an assignment causes Project to display a work contour icon in the Indicators column. See [Chapter 11](#).

contouring Manually editing work values for an assignment in a usage view, such as the Resource Usage view, to create a custom contour. See [Chapter 11](#).

cost The resources required to carry out a plan, including the people who do the work, the equipment used, and the materials consumed as the work is completed. Cost is one side of the project triangle model. See [Chapter 15](#) and [Appendix A](#).

cost rate table The resource pay rates that are stored on the Costs tab of the Resource Information dialog box. You can have up to five separate cost rate tables per resource. See [Chapter 11](#).

cost resource A type of resource used to represent financial costs associated with tasks in a plan. Use cost resources to account for standard categories of costs that you want to track in a plan, such as costs for travel or catering. A cost resource does no work and has no effect on the scheduling of a task to which it is assigned. See [Chapters 5](#) and [6](#).

critical path A series of tasks that, if delayed, will push out the end date of a plan. See [Chapters 10](#) and [15](#).

deadline A date value that you can enter for a task that indicates the latest date by which you want the task to be completed. If the scheduled completion date of a task is later than its deadline, Project notifies you. The benefit of entering deadline dates is that they do not constrain tasks. See [Chapter 10](#).

deliverable The final product, service, or event that a plan is intended to produce. See [Chapter 4](#) and [Appendix A](#).

dependency A link between a predecessor task and a successor task. A dependency controls the start or finish of one task relative to the start or finish of the other task. The most common dependency is finish-to-start (FS), in which the finish date of the predecessor task determines the start date of the successor task. See [Chapter 4](#).

destination program The program into which you place the data when exchanging data between Project and another program. See [Chapter 19](#).

driving predecessor A predecessor task that directly affects, or drives, the scheduling of its successor task. See [Chapter 9](#).

duration The span of working time that you expect it will take to complete a task. See [Chapter 4](#).

effort-driven scheduling A scheduling method in which the work of a task remains

constant regardless of the number of resources assigned to it. As resources are added to a task, the duration decreases, but the total work remains the same and is distributed among the assigned resources. Effort-driven scheduling is turned off by default, but it can be turned on for fixed-unit or fixed-duration tasks. Effort-driven scheduling is always turned on for fixed-work tasks. See [Chapter 6](#).

elapsed duration The uninterrupted span of time that it will take to finish a task, based on a 24-hour day and a 7-day week. Elapsed duration is not limited by project, resource, or task calendars; it is continuous. See [Chapter 4](#).

Entry table The grid on the left side of the default Gantt Chart view. See [Chapter 2](#).

export map The specifications for exporting fields from Project to other file formats, such as a tab-delimited format. Project includes several export maps, which you can use as they are or modify. [Import maps](#) and export maps are sometimes referred to as *data maps*. See [Chapter 19](#).

field The lowest-level information about a task, resource, or assignment. See [Chapter 2](#).

filtering In a view, a way to see or highlight only the task or resource information that meets the criteria you choose. See [Chapter 13](#).

fixed consumption rate A fixed quantity of a material resource to be consumed in the completion of an assignment. See [Chapter 11](#).

fixed cost A set amount of money budgeted for a task. This amount is independent of resource costs and task duration. See [Chapter 10](#).

fixed duration A task type in which the duration value is fixed. If you change the amount of work that you expect a task to require, Project recalculates the resource assignment's peak units for each resource. If you change duration or units, Project recalculates the work. See [Chapter 9](#).

fixed units A task type in which a resource assignment's units value is fixed. If you change the duration of a task, Project recalculates the amount of work scheduled for the task. If you change units or work, Project recalculates the duration. See [Chapter 9](#).

fixed work A task type in which the work value is fixed. If you change the duration of the task, Project recalculates the resource assignment's peak units for each resource. If you change units or work, Project recalculates the duration. See [Chapter 9](#).

flexible constraint A constraint type that gives Project the flexibility to change the start or finish dates (but not the duration) of a task. As Soon As Possible (ASAP) and As Late As Possible (ALAP) are examples of flexible constraints. See [Chapter 9](#).

free slack The amount of time that a task can be delayed without delaying the start date of another task. See [Chapter 10](#).

fully allocated The condition of a resource when the total work of his or her task assignments is exactly equal to his or her work capacity. See [Chapter 12](#).

Gantt Chart view A predefined view in Project consisting of a table (the Entry table, by default) on the left and a graphical bar chart on the right that shows the plan over time. See [Chapter 16](#).

global template A template in Project named Global.mpt that contains the default views, tables, filters, and other items that Project uses. See [Chapter 18](#).

group A way to reorder task or resource information in a table and display summary values for each group. You can specify several levels of groups. (The term *group* is also used to refer to the Resource Group field, which is unrelated.) See [Chapter 13](#).

Group field A resource field in which you can specify a group name (such as a department) with which you want to associate a resource. If you organize resources into groups, you can sort, filter, or group resources by group. See [Chapter 13](#).

hyperlink A link to another file, a specific location in a file, a page on the Internet, or a page on an intranet. See [Chapter 4](#).

import map A set of specifications for importing specific data to fields in Project. Project includes several built-in maps, which you can modify or use as they are. Import maps and export maps are sometimes referred to as *data maps*. See [Chapter 19](#).

inflexible constraint A constraint type that forces a task to begin or end on a certain date. Must Start On (MSO) and Must Finish On (MFO) are both inflexible constraints. See [Chapter 9](#).

inserted plan In Project, a plan that is inserted into another plan, called a *consolidated plan*. An inserted plan is also known as a *subproject*. See [Chapter 20](#).

interim plan A task's start and finish values, saved for later comparison. Each plan in Project can have, at most, 10 interim plans. See [Chapter 14](#).

lag time A delay between tasks that have a task relationship. For example, lag time causes the successor task in a finish-to-start (FS) relationship to begin some time after its predecessor task concludes. See [Chapter 9](#).

lead time An overlap between tasks that have a task relationship. For example, lead time causes the successor task in a finish-to-start (FS) relationship to begin before its predecessor task concludes. In Project, you enter lead time as negative lag time. See [Chapter 9](#).

line manager A manager of a group of resources; also called a *functional manager*. A line manager might also have project management skills and responsibilities, depending on the organization's structure. See [Chapter 20](#).

link A logical relationship between tasks that controls sequence and dependency. In the Gantt Chart and Network Diagram views, links appear as lines between tasks. See [Chapters 4](#) and [9](#).

macro A recorded or programmed set of instructions that carry out a specific action when initiated. Macros in Project use Microsoft Visual Basic for Applications (VBA). See [Chapter 18](#).

manually scheduled task A task for which Project does not set a start or finish date or duration automatically. Such a task can include any type of value you want in most fields. See [Chapter 4](#).

material resources The consumables that are used up as a plan progresses. As with work

resources, you assign material resources to tasks. Unlike work resources, material resources have no effect on the total amount of work scheduled on a task. See [Chapter 11](#).

maximum units The maximum capacity (as entered in the Max. Units field) of a resource to accomplish tasks. If you allocate the resource beyond its capacity, Project alerts you that the resource is overallocated. See [Chapters 5](#) and [6](#).

milestone A significant event that is reached within the plan or imposed upon the plan. In Project, milestones normally are represented as tasks with zero duration. See [Chapter 4](#).

negative slack The amount of time that tasks overlap due to a conflict between task relationships and constraints. See [Chapter 9](#).

Network Diagram view A Project view that focuses on activities and their relationships. Tasks are represented as nodes, and the relationships between tasks are drawn as lines connecting the nodes. See [Chapter 16](#).

Night Shift base calendar A base calendar included with Project designed to accommodate an 11:00 P.M.–8:00 A.M. “graveyard” work shift. See [Chapter 3](#).

noncritical task A task that has slack. Noncritical tasks can finish within their slack time without affecting the plan’s completion date. See [Chapter 10](#).

note The information (including linked or embedded files) that you want to associate with a task, resource, or assignment. See [Chapters 4](#) and [5](#).

ongoing operation An activity that has no planned end date and is repetitive in nature. Examples include accounting, managing human resources, and some manufacturing tasks. See [Chapter 1](#) and [Appendix A](#).

Organizer In Project, a dialog box containing commands you can use to copy views, tables, filters, and other items between the Global.mpt template and other plans or between two different plans. See [Chapter 18](#).

outline A hierarchy of summary tasks and subtasks within Project, usually corresponding to major phases of work. See [Chapter 4](#).

overallocated The condition of resources when they are assigned to do more work than is their normal work capacity. See [Chapter 5](#).

phase A sequence of tasks that represent a major portion of the plan’s work. In Project, phases are represented by summary tasks. See [Chapter 4](#).

plan The Project document type, also referred to as a *schedule*, *project*, or *MPP*. Project plans have an .mpp file extension. See [Chapter 3](#).

planning The first major phase of project management work. Planning includes all the work in developing a schedule up to the point where the tracking of actual work begins. See [Chapter 14](#).

predecessor task A task whose start or end date determines the start or finish of another task or tasks, called *successor tasks*. See [Chapters 4](#) and [9](#).

product scope The quality, features, and functions (often called *specifications*) of the deliverable of the plan. See [Chapter 4](#) and [Appendix A](#).

progress bar A graphical representation on a bar in the Gantt Chart view that shows how much of a task has been completed. See [Chapter 8](#).

project A temporary endeavor undertaken to create a unique product or service. See [Chapter 1](#).

project calendar The base calendar that is used by the entire plan. The project calendar defines normal working and nonworking days and times. See [Chapter 3](#).

project portfolio management (PPM) Project management practiced in a formal, consistent way throughout an organization. See [Appendix C](#).

project scope The work required to produce a deliverable with agreed-upon quality, features, and functions. See [Chapter 4](#) and [Appendix A](#).

project summary task A summary task that contains top-level information such as duration, work, and costs for the entire plan. The project summary task has a task ID of 0 and is displayed through the Show/Hide group of the Format tab. See [Chapter 4](#).

project triangle A popular model of project management in which time, cost, and scope are represented as the three sides of a triangle. A change to one side will affect at least one of the other two sides. There are many variations on this model. See [Appendix A](#).

Project Web App (PWA) The browser-based interface to Project Server running on-premises, or to Project Online hosted in the cloud. See [Appendix C](#).

recurring task A task that repeats at established intervals. You can create a recurring task that repeats for a fixed number of times or that ends by a specific date. See [Chapter 10](#).

relationship The type of dependency between two tasks, visually indicated by a link line. The types of relationships include finish-to-start (FS), start-to-start (SS), finish-to-finish (FF), and start-to-finish (SF). Also known as a *link*, a *logical relationship*, a *task dependency*, or a *precedence relationship*. See [Chapters 4](#) and [9](#).

report A view-like format that includes a dynamic mix of tables, charts, and textual content, and is highly customizable. Project includes several predefined reports, each focusing on specific aspects of your plan. You can also define your own reports. Another type of report is a visual report, which exports structured data to Microsoft Excel or Visio for graphical representation and analysis. See [Chapters 2](#), [7](#), and [17](#).

resource calendar The working and nonworking days and times of an individual work resource. See [Chapter 5](#).

resource leveling A method of resolving resource overallocation by delaying the start date of an assignment or an entire task or splitting up the work on a task. Project can level resources automatically, or you can do it manually. See [Chapter 12](#).

resource manager A person who oversees resource usage in a plan's activities, specifically to manage the time allocation and costs of resources. A resource manager might also have project management skills and responsibilities, depending on the organization's structure. See [Chapter 15](#).

resource pool In Project, a plan that other plans use for their resource information. Resource pools contain information about resources' task assignments from all plans

(called *sharer plans*) linked to the resource pool. See [Chapter 20](#).

resources People, equipment, and material (and the associated costs of each) needed to complete the work on a plan. See [Chapter 5](#).

ribbon interface A user interface design used by Microsoft Office programs. In the ribbon interface, commands are organized into groups and tabs for quick access. See [Chapters 2](#) and [18](#).

risk An event that decreases the likelihood of completing the plan on time, within budget, and to specification (or, less likely, an opportunity to improve project performance). See [Chapter 4](#).

scheduling formula A representation of how Project calculates work, based on the duration and resource units of an assignment. The scheduling formula is $\text{Duration} \times \text{Assignment Units} = \text{Work}$. See [Chapters 6](#) and [9](#).

scope The products or services to be provided by a project and the work required to deliver it. For planning, it's useful to distinguish between product scope and project scope. Scope is one side of the project triangle model. See [Appendix A](#).

semi-flexible constraint A constraint type that gives Project the flexibility to change the start and finish dates of a task within one date boundary. Start No Earlier Than (SNET), Start No Later Than (SNLT), Finish No Earlier Than (FNET), and Finish No Later Than (FNLT) are all semi-flexible constraints. See [Chapter 9](#).

sequence The chronological order in which tasks occur. A sequence is ordered from left to right in most views that include a timescale, such as the Gantt Chart view. See [Chapter 4](#).

sharer plan A plan that is linked to a resource pool. Sharer plans use resources from a resource pool. See [Chapter 20](#).

shortcut menu A menu that you display by pointing to an item on the screen and then right-clicking. Shortcut menus contain only the commands that apply to the item to which you are pointing. See [Chapter 2](#).

slack The amount of time that a task can be delayed without delaying a successor task (free slack) or the plan end date (total slack). Slack is also known as *float*. See [Chapter 10](#).

sorting A way of ordering task or resource information in a view by the criteria you choose. See [Chapter 13](#).

source program When exchanging data between Project and another program, the program in which the data resided originally. See [Chapter 19](#).

split An interruption in a task, represented in the Gantt bar as a dotted line between segments of a task. You can split a task multiple times. See [Chapter 9](#).

sponsor An individual or organization that both provides financial support and champions the project team within the larger organization. See [Chapter 6](#).

stakeholder A person or organization that might be affected by project activities (those who “have a stake” in its success). These also include the resources working on the plan in addition to others (such as customers) external to the plan's work. See [Chapter 15](#).

Standard base calendar A base calendar included with Project designed to accommodate an 8:00 A.M.–5:00 P.M., Monday-through-Friday work shift. See [Chapter 3](#).

status date The date that you specify (not necessarily the current date) that determines how Project calculates earned value data. See [Chapter 8](#).

subtask A task that is indented below a summary task. Summary tasks and subtasks make up a plan's outline structure. See [Chapter 4](#).

successor task A task whose start or finish is driven by another task or tasks, called *predecessor tasks*. See [Chapters 4, 9, and 10](#).

summary task A task that is made up of and summarizes the subtasks below it. In Project, phases of a plan's work are represented by summary tasks. See [Chapter 4](#).

table A spreadsheet-like presentation of a plan's data, organized in vertical columns and horizontal rows. Each column represents one of the many fields in Project, and each row represents a single task or resource. In a usage view, additional rows represent assignments. See [Chapter 13](#).

task An activity that has a starting and finishing point. A task is the basic building block of a plan. See [Chapter 4](#).

task calendar The base calendar that is used by a single task. A task calendar defines working and nonworking times for a task, regardless of settings in the project calendar. See [Chapter 9](#).

task ID A unique number that Project assigns to each task in a plan. In the Entry table, the task ID appears in the far-left column. See [Chapter 4](#).

task priority A numeric ranking between 0 and 1000 of a task's importance and appropriateness for resource leveling. Tasks with the lowest priority are delayed or split first if necessary. The default value is 500. See [Chapter 12](#).

task type A setting applied to a task that determines how Project schedules the task, based on which of the three scheduling formula values is fixed. The three task types are *fixed duration*, *fixed units*, and *fixed work*. See [Chapter 9](#).

template In Project, a file format that enables you to reuse existing plans as the basis for new plans. Project includes several templates that relate to a variety of industries, and you can create your own templates. See [Chapter 2](#).

throughput metric A measurement of the quantity of a deliverable that can be completed over a specified time period, usually expressed as a ratio. For example, "paint one wall per day" describes a quantity of a deliverable (a painted wall) that can be produced in a given time period (a day). Note that the time period used in a metric is work, not elapsed duration. See [Chapter 14](#).

time The scheduled durations of individual tasks and the overall plan. Time is one side of the project triangle model. See [Appendix A](#).

Timeline view A Project view in which you can display select tasks and milestones against a simple timeline. See [Chapters 7 and 16](#).

timephased field A task, resource, or assignment value that is distributed over time. The

values of timephased fields appear in the timescale grid on the right side of a view, such as the Task Usage or Resource Usage view. See [Chapter 14](#).

timescale The timescale appears in a view, such as the Gantt Chart or Resource Usage view, as a band across the top of the grid and denotes units of time. See [Chapter 2](#).

top-down planning A method of developing a plan by identifying the highest-level phases or summary tasks before breaking them into lower-level components or subtasks. See [Chapter 4](#).

total slack The amount of time that a task can be delayed without delaying the plan's end date. See [Chapter 10](#).

tracking The second major phase of project management work. Tracking includes all the collecting, entering, and analyzing of actual performance values, such as work on tasks and actual durations. See [Chapters 8](#) and [14](#).

underallocated The condition of resources when they are assigned to do less work than their normal work capacity. For example, a full-time resource who has only 25 hours of work assigned in a 40-hour work week is underallocated. See [Chapter 12](#).

units A standard way of measuring the capacity of a resource to work when you assign the resource to a task in Project. Units are one variable in the scheduling formula: $\text{Duration} \times \text{Units} = \text{Work}$. See [Chapter 5](#).

variable consumption rate A quantity of a material resource to be consumed that will change if the duration of the task to which it is assigned changes. See [Chapter 11](#).

variance A deviation from the schedule or budget established by the baseline plan. See [Chapters 14](#) and [15](#).

view A visual representation of the tasks or resources in your plan. The three categories of views are charts, sheets, and forms. Views enable you to enter, organize, and examine information in a variety of formats. See [Chapters 2](#) and [13](#).

work The total scheduled effort for a task, a resource, a resource assignment, or an entire plan. Work is measured in person-hours and might not match the duration of the task. Work is one variable in the scheduling formula: $\text{Duration} \times \text{Units} = \text{Work}$. See [Chapters 4](#) and [6](#).

work breakdown structure (WBS) The identification of every task in a plan that reflects that task's location in the hierarchy of the plan. See [Chapter 16](#).

work resources The people and equipment that do the work of the plan. See [Chapters 5](#) and [11](#).

Index

Numbers and Symbols

8/80 rule, definition [527](#)

* (asterisk) in task bar names [375](#)

A

Account page (Backstage view) [20](#)

accrual

definition [527](#)

methods [217–218](#)

accruing fixed costs [217](#)

actions indicators [109](#)

active view [14](#)

activities [47](#)

actual costs [279](#)

actuals [157](#)

changing default work values [338](#)

definition [527](#)

entering manually [334](#)

entering task values [168–169](#)

recording per task [334](#)

recording tasks in Tracking table [171](#)

recording tasks in Update Tasks dialog box [171](#)

timephased [335–339](#)

tracking [158–159](#), [335–339](#)

Advance proofs [247](#)

ALAP (As Late As Possible) constraints [188–189](#)

allocations, defined [527](#)

See also [resource allocations](#)

As Late As Possible (ALAP) constraints [188–189](#)

As Soon As Possible (ASAP) constraints [187–189](#)

ASAP (As Soon As Possible) constraints [187–189](#)

assigning resources to tasks [102–104](#)
assignment calculation [201](#)
assignment notes [67](#)
assignment units [102](#)
See also [units](#)
assignment units values [201–202](#)
assignment values, breaking relationship to task values [341](#)
assignments [101](#)
 adjusting in Team Planner view [252–255](#)
 applying predefined contours [245](#)
 applying work contours [243](#)
 changing cost rate tables [239](#)
 changing default start times [243](#)
 cost values [104](#)
 definition [527](#)
 delaying start [242–243](#)
 editing details [107](#)
 editing work per time period [246](#)
 recording work [335](#)
 and resource costs [357](#)
 tracking work [330–335](#)
 tracking timephased actual work [335–339](#)
 unit values [102](#)
 viewing [103–104](#), [107](#)
asterisks (*) in task bar names [375](#)
AutoFilter [302](#), [527](#)
automatically scheduled tasks, definition [527](#)
automating tasks [428](#)

B

Backstage view [19–20](#), [527](#)
bar charts, on Gantt charts [128](#)
bars *See* [task bars](#)

bar styles

changing in Calendar view [392](#)

changing in Gantt chart view [374](#)

base calendars [39–40](#)

applying to tasks [197–198](#)

creating new [197](#)

definition [527](#)

for sharer plans [479](#)

baseline costs [279](#)

baseline plans [159](#)

comparing [160](#)

previously saved, finding [326](#)

baselines

adding additional [329](#)

clearing previously saved [162](#)

comparing with plans [327](#)

definition [527](#)

displaying Gantt bars in Gantt chart view [162](#)

identifying variances [355](#)

multiple [160](#)

previously saved, updating [329](#)

removing [329](#)

saving [159–162](#)

switching in Gantt charts [378](#)

updating [326](#)

values [160](#)

best practices, capturing [518](#)

blank reports [407](#)

book content errors, reporting [xviii](#)

bottom-up planning [57](#), [528](#)

box styles [386–388](#)

boxes

formatting in Network Diagram view [388](#)

styles [386–388](#)

Budget Cost visual report [360–361](#), [362](#)

built-in filters

highlight filters [308](#)

regular filters [304](#)

using [307](#)

built-in groups [298–299](#)

built-in tables [311](#)

built-in views [315](#)

burdened rates [86](#)

Burndown report [352](#)

C

calculated costs [358](#)

calculating work [102](#)

calendars

See also [project calendars](#); [resource calendars](#)

base [39–40](#)

base, applying [197–198](#)

base, creating [197](#)

choosing current date [39](#)

copying to/from global template [424–427](#)

custom work week [42–43](#)

custom working times [41–43](#)

definition [528](#)

nonworking dates [42](#)

nonworking times [42](#)

task [196](#)

Calendar view

changing appearance of items [391](#)

changing bar styles [392](#)

changing week height [392](#)

- definition [528](#)
- callouts, switching from task bars in Timeline view [136](#)
- Cash Flow report [360](#), [362](#)
- cells
 - formatting [130](#), [133](#)
 - removing formatting [134](#)
- certification, Project-related [504](#)
- chart elements, including [412](#)
- chart format, changing [414](#)
- chart layout, changing [412](#)
- chart style, changing [412](#), [414](#)
- charts
 - adding/removing data [412](#)
 - adding to reports [410](#)
 - changing format [414](#)
 - changing layout [412](#)
 - changing style [412](#), [414](#)
 - Field List pane [413–414](#)
 - including chart elements [412](#)
 - including data labels [412](#)
 - selecting information to include [414](#)
- classroom training, integrating this book [521–524](#)
- colors
 - applying to predecessors [180](#)
 - applying to successors [180](#), [182](#)
- columns
 - adding to tables [312](#)
 - pasting text as [448](#)
- combination view [14](#), [23](#)
- comma-delimited text files, exporting project data to [454](#)
- commands [14](#)
 - for specific elements [16](#)

- split buttons [18](#)
- commands (Quick Access Toolbar)
 - adding [434](#), [436](#)
 - removing [436](#)
- commands (ribbon), modifying [437](#)
- communities
 - project management [505](#)
 - Project users [503](#)
 - questions and answers [504](#)
- Comparison reports [407](#)
- completing tasks [165–166](#)
- completion percentages, entering [165–166](#)
- consolidated plans [480–483](#)
 - benefits [480](#)
 - creating [482](#)
 - definition [528](#)
 - displaying summary tasks [483](#)
- consolidated projects *See* [consolidated plans](#)
- constraint balance [498–501](#)
- constraints
 - As Late As Possible (ALAP) [189](#)
 - As Soon As Possible (ASAP) [187](#)
 - categories [187](#)
 - vs. deadlines [214](#)
 - definition [528](#)
 - Finish No Earlier Than [192](#)
 - flexible [187–189](#)
 - hard [187](#)
 - inflexible [187–189](#)
 - moderate [187](#)
 - of projects [495–497](#)
 - scheduling tasks [186](#), [189–191](#)

- semi-flexible [187–188](#)
- soft [187](#)
- start/end dates [192](#)
- Start No Earlier Than [192](#)
- using [191](#), [192](#)
- viewing details [187](#)
- content errors, reporting [xviii](#)
- context menus [15](#)
- contouring, definition [528](#)
- contours
 - applying to assignments [243–245](#)
 - definition [528](#)
 - and fixed-duration tasks [244](#)
- copying
 - elements between plans [424–426](#)
 - Timeline views [143–144](#)
 - views [141–142](#)
- copying reports [141](#)
 - to the Clipboard [144](#)
 - to/from global template [424](#)
- corrections to book content [xviii](#)
- cost constraints [496](#)
- Cost Overview report [352](#)
- cost per resource [116](#), [118](#)
- cost per task [116](#), [118](#)
- cost per use [85](#)
- cost rate tables [237–239](#), [528](#)
- cost rates [241](#)
- cost reporting [350–352](#)
- cost resources
 - adding [92](#)
 - assigning to tasks [114](#)

common types [91](#)

definition [528](#)

resource pools [470](#)

setting up [91–92](#)

and tasks [91](#)

Cost table [358](#), [363](#)

See also [tables](#)

in Resource Sheet view [365](#)

in Resource Usage view [366](#)

in Task Sheet view [282](#), [362](#)

in Task Usage view [361](#)

cost values [104](#)

cost variance analysis [351–352](#)

cost variances [357–361](#)

costs

calculated [358](#)

comparing [280–282](#)

definition [528](#)

displaying details in Resource Usage view [366](#)

distributed over time, displaying [282](#)

scheduled [358](#)

types of [279](#)

viewing [280–283](#)

Costs report, viewing [282](#)

critical paths [222–224](#), [282](#), [528](#)

critical tasks [282](#)

cross-plan links [486–487](#)

See also [dependencies](#)

changing relationship types [487](#)

creating [486](#)

deleting [487](#)

between inserted plans [486](#)

cross-project links See [cross-plan links](#)

current costs [279](#)

custom calendars

- sharing between plans [425–426](#)

- storage location [424](#)

custom fields [310](#)

- copying between plans [424–426](#)

- copying to/from global template [424–427](#)

custom filters [304](#), [306–307](#)

custom groups [299–301](#)

custom highlight filters [308](#)

custom reports [406–408](#), [410](#)

custom tables [311–312](#)

custom views [315–317](#)

customizations

- using the global template [424–427](#)

- resetting to defaults [438](#)

customized plan elements

- copying between plans [424–426](#)

- options for copying to global template [427](#)

- replacing [426](#)

- storage location [424](#)

customized ribbon, sharing with other Project users [435](#)

D

Dashboard report [354](#)

dashboard reports [351](#)

data

- copying to other programs [446–449](#)

- exporting [454–457](#)

- exporting to other file formats [353](#), [458](#)

- pasting from other programs [449](#)

- selecting [448](#)

- supported file types for exporting [455](#)
- data categories, adding to/removing from charts [412](#)
- data maps [450](#)
 - See also [export maps](#); [import maps](#)
 - built-in [456](#)
 - defining in the Export Wizard [456–457](#)
- data series, adding to/removing from charts [412](#)
- data templates
 - creating or modifying [389](#)
 - defining [387](#)
- data visualizations [458–461](#)
- date ranges
 - changing for timeline bars [384](#)
 - changing resource availability [234–236](#)
- dates
 - choosing current [39](#)
 - deadlines [214–216](#)
 - setting nonworking [42](#)
- deactivating tasks [283–284](#)
- deadline indicators, changing appearance [374](#)
- deadlines [214–216](#)
 - vs. constraints [214](#)
 - definition [528](#)
- dedicated resource pools [474](#)
- delimited text files, exporting project data to [454](#)
- deliverables, definition [528](#)
- dependencies
 - See also [cross-plan links](#)
 - between plans [483–487](#)
 - definition [529](#)
- Design tool tab (ribbon) [17](#)
- destination programs, definition [529](#)

display settings, adapting procedures for [xvi](#)

document properties [43](#)

downloading practice files [xiv](#)

drawing on Gantt charts [131](#)

drawing precedence of Gantt bars [381](#)

driving predecessors [529](#)

durations

- definition [529](#)

- summary tasks [225–226](#)

- in work calculations [102](#)

E

ebook edition of this book [xv](#)

editing

- custom groups [299–301](#)

- filters [306–307](#)

- tables [311](#)

- views [315–317](#)

effort-driven scheduling [107–111](#)

- best practices [112](#)

- definition [529](#)

- and task types [203](#)

elapsed duration, definition [529](#)

elements, copying to/from global template [424–427](#)

email messages, attaching plans [20](#)

enterprise project management (EPM) [518](#)

Entry table, definition [529](#)

EPM (enterprise project management) [518](#)

equipment resources [82](#)

errata for this book [xviii](#)

errors in this book, reporting [xviii](#)

evaluating project status [170](#)

Excel

opening workbooks in Project [453](#)

pasting data from Project [446](#)

reports [360](#)

Excel charts, exporting data as [459](#)

Excel PivotCharts [460](#)

Excel PivotTables [460](#)

Excel visual reports [460](#)

Excel workbooks, exporting project data to [454](#)

export maps

See also [data maps](#); [import maps](#)

copying between plans [424–426](#)

copying to/from global template [424–427](#)

definition [529](#)

Export page (Backstage view) [20](#)

Export Wizard [456–457](#)

exporting data

as Excel charts [459](#)

to other file formats [353](#), [458](#)

supported file types [455](#)

as Visio diagrams [459](#)

external file formats, changing setting for opening [454](#)

external predecessors

identifying [487](#)

visual indication [484](#)

external successors

identifying [487](#)

visual indication [484](#)

external tasks [484–487](#)

F

feedback information [xviii](#)

Field List pane

for charts [413–414](#)

displaying plan values [408](#)

organizing plan values [408](#)

for tables [415–417](#)

fields

changing appearance in nodes [387](#)

copying between plans [424–426](#)

copying to/from global template [424–427](#)

custom, creating [310](#)

definition [529](#)

displaying in reports [408](#)

filtering in charts [414](#)

filtering in reports [408](#)

filtering in tables [417](#)

grouping in reports [408](#)

grouping in tables [417](#)

including in charts [414](#)

including in tables [417](#)

mapping for export [456–457](#)

outlining in reports [408](#)

reordering in charts [414](#)

sorting in reports [408](#)

sorting in tables [417](#)

file formats

changing settings [454](#)

for saving project plans [454](#)

file types supported for data export [455](#)

files

opening external program files in Project [453](#)

for practice tasks [xiv](#)

setting options [39](#)

filtering

built-in filters, applying [302](#)

- definition [529](#)
- fields in reports [408](#)
- highlighting results [305](#)
- resources [305](#), [307](#)
- tasks [305](#), [307](#)
- filters [302–308](#)
 - AutoFilter [302–303](#)
 - copying to/from global template [424–427](#)
 - highlight [308](#)
 - Slipping Tasks [355](#)
- finish dates [281–282](#)
- Finish No Earlier Than (FNET) constraints [188](#), [192](#)
- Finish No Later Than (FNLT) constraints [188](#)
- finish-to-finish relationships [60](#), [183](#)
- finish-to-start relationships [59–60](#), [183–184](#)
- fixed consumption rates
 - assigning to material resources [248](#)
 - definition [529](#)
- fixed costs [216–218](#), [357](#)
 - accrual methods [218](#)
 - definition [529](#)
- fixed duration
 - definition [529](#)
 - task types [199](#)
- fixed units
 - definition [529](#)
 - task type [199](#)
- fixed work
 - definition [530](#)
 - task type [199](#)
- flexible constraints [187–193](#), [530](#)
- float See [slack](#)

footers [395](#)

formatting

cells [133](#), [134](#)

charts in reports [140](#)

Gantt bars [130](#), [132](#)

Gantt bar shapes [132](#)

Gantt charts [129–130](#)

predecessors [182](#)

successors [182](#)

tables in reports [140](#)

Task Path [182](#)

tasks [69](#)

Format tool tab (ribbon) [17](#)

formulas, calculating work [102](#)

free slack [222](#), [530](#)

fully allocated

definition [530](#)

work resources [266](#)

functional manager [531](#)

G

Gantt bar styles [374–381](#)

changing [374](#)

creating [379](#)

excluding task types [379](#)

modifying text [380](#)

reordering [381](#)

Gantt bars [129](#)

applying color to predecessors [180](#)

applying color to successors [180](#), [182](#)

applying Gantt chart styles [132](#)

baseline, displaying in Gantt chart view [162](#)

changing appearance [374](#), [377](#)

- displaying details [378](#)
- extending progress on [167](#)
- formatting [130](#)
- formatting shapes [132](#)
- removing formatting [132](#)
- reordering [375](#)
- setting progress on [167](#)
- summary tasks [225](#)

Gantt chart bars See [Gantt bars](#)

Gantt Chart view [23](#), [103](#)

- baseline Gantt bars [161](#)
- definition [530](#)
- including in macros [441](#)
- nonworking time [166](#)
- previewing [145](#)
- printing [145](#)

Gantt chart views [128–134](#), [374](#)

- adding bars [375–377](#)
- critical paths [223](#)
- displaying baseline Gantt bars [162](#)
- elements of [128](#)
- formatting elements [378](#)
- free slack [223](#)
- panning from Timeline view [138](#)
- project summary tasks [66](#)
- switching baselines [378](#)
- task relationships [61](#)
- zooming from Timeline view [138](#)

Gantt charts

- bar chart elements [128](#)
- changing timescales [138](#)
- drawing on [131](#)

formatting chart elements [129–130](#)

linking objects [131](#)

link lines [129](#)

scrolling [138](#)

style groups [129](#)

styles [129–130](#)

summary tasks [129](#)

tasks [129](#)

Gantt with Timeline view [23](#)

getting help [xviii](#)

giving feedback [xviii](#)

global template [424–427](#)

definition [530](#)

options for adding new elements [427](#)

graphics, pasting from other programs [449](#)

Group field, definition [530](#)

grouping [296–298](#)

clearing [301](#)

fields in reports [408](#)

resources [298](#), [301](#)

tasks [298](#), [301](#)

in views [298](#)

groups [14](#)

built-in [298](#)

copying to/from global template [424–427](#)

creating on ribbon tabs [437](#)

custom, creating and editing [299](#)

definition [530](#)

viewing [298](#)

H

hard constraints [187](#)

hard finish dates [281](#)

hardware support [xviii](#)

headers [395](#)

Help resources

Office [504](#)

Project [504](#)

project portfolio management (PPM) [520](#)

Project Web App (PWA) [518](#)

SharePoint [512](#)

this book [xviii](#)

Visual Basic Editor [432](#)

highlight filters [305](#), [308](#)

highlighting

applying [305](#)

clearing [308](#)

hyperlinks

adding to tasks [68](#)

definition [530](#)

removing from tasks [69](#)

I

ID numbers [48](#)

images

adding to reports [411](#)

pasting from other programs [449](#)

import maps

See also [data maps](#); [export maps](#)

copying between plans [424–426](#)

copying to/from global template [424–427](#)

definition [530](#)

Import Wizard [450–452](#)

inactivating tasks [283–284](#)

incomplete work, rescheduling [342–343](#)

inflexible constraints [187–193](#), [530](#)

Must Finish On (MFO) [188](#), [191](#)

Must Start On (MSO) [188](#), [191](#)–[192](#)

Info page (Backstage view) [19](#)

inserted plans [480](#)–[483](#)

creating cross-plan links [486](#)

definition [530](#)

displaying details [483](#)

task numbering [481](#)

interim plans

definition [530](#)

saving [328](#)–[329](#)

L

lag time

adding to linked tasks [184](#)–[186](#)

definition [530](#)

Late Tasks report [355](#), [357](#)

Layout tool tab (ribbon) [17](#)

lead time

adding to linked tasks [184](#)–[186](#)

definition [531](#)

legacy file format settings, changing [454](#)

legends, customizing and printing [394](#)

leveling

overallocated resources [273](#)–[280](#)

setting level resources [278](#)

setting options [278](#)

leveling delays [271](#)–[272](#), [279](#)

Leveling Gantt view [279](#)

line managers, definition [531](#)

lines, formatting in Gantt charts [378](#)

link lines

as elements on Gantt charts [129](#)

formatting in Gantt charts [378](#)

linking tasks [59–64](#), [183–186](#)

links

definition [531](#)

identifying in a plan [487](#)

logging bugs [xviii](#)

M

macros

copying between plans [424–426](#)

copying to/from global template [424–427](#)

definition [531](#)

deleting [430](#)

editing [431–433](#)

keyboard shortcuts [429](#)

naming conventions [429](#)

recording [427–430](#)

running [429–430](#)

storage location [428](#)

using in other plans [428](#)

manually scheduled tasks, definition [531](#)

mapping fields for export [456–457](#)

maps

copying between plans [424–426](#)

copying to/from global template [424–427](#)

master projects See [consolidated plans](#)

material labels [247](#)

material resources [79](#), [247–249](#), [531](#)

maximum capacity [82–83](#)

maximum units

definition [531](#)

value [82–83](#), [234](#)

Microsoft Press contact information [xviii](#)

Microsoft SharePoint, using Project with [507–512](#)

milestones

definition [531](#)

formatting dates [382](#)

indicators [132](#)

tasks [55](#)

mistakes, informing Microsoft Press [xviii](#)

moderate constraints [187](#)

modules

copying between plans [424–426](#)

copying to/from global template [424–427](#)

Must Finish On (MFO) constraints [188](#)

Must Start On constraints [192](#)

Must Start On (MSO) constraints [188](#)

N

naming conventions for resource pools [473](#)

negative slack [192](#), [531](#)

Network Diagram nodes, data templates [389](#)

network diagrams [385–387](#)

Network Diagram view [385–387](#)

definition [531](#)

formatting boxes [388](#)

formatting options [386](#)

modifying nodes [389](#)

showing and hiding relationships [388](#)

task relationships [61](#)

new elements, storage location [424](#)

New page (Backstage view) [19](#)

Night Shift base calendar [40](#), [531](#)

nodes [385–387](#)

changing appearance [386](#)

modifying in Network Diagram view [389](#)

noncritical paths, displaying slack [224](#)

noncritical tasks, definition [531](#)

nonworking dates, setting [42](#)

nonworking times

- displaying [166](#)

- setting recurring [42](#)

Notepad, pasting text from Project [447](#)

notes

- definition [531](#)

- project summary tasks [68](#)

- types [67](#)

O

Office Help resources [504](#)

OLAP (Online Analytical Processing) cubes [459](#)

ongoing operations, definition [531](#)

Online Analytical Processing (OLAP) cubes [459](#)

organizational benefits of PPM [518](#)

organizations, project management information [518](#)

organizations, resource workload and availability [518](#)

Organizer [425–427](#)

- accessing [19](#)

- definition [532](#)

- structure [425](#)

outlines

- creating [56–58](#)

- definition [532](#)

- project summary tasks [56](#)

outlining fields in reports [408](#)

overallocations

- definition [532](#)

- finding in Resource Allocation view [269–270](#)

- resolving manually [270–272](#)

work resources [266](#)

P

page footers [395](#)

page headers [395](#)

page layout options for views [393](#)

page setup options for views [393–394](#)

pan and zoom control [138](#)

panning Gantt chart views from Timeline views [138](#)

pay rates

See also [resources](#); [work resources](#)

accruing costs [85](#)

adding automatically [85](#)

burdened rates [86](#)

changing over date ranges [239–240](#)

cost per use [85](#)

cost rate tables [237–239](#)

effective date [240–241](#)

entering [84–86](#), [240–241](#)

entering resource standards [85](#)

formats [84](#), [240–241](#)

managing cost [84–86](#)

for multiple resources [237–240](#)

overtime [85–86](#)

set fees [85](#)

PDF files, exporting plan views as [396](#)

Peak values [201](#)

percentages, completion [165–166](#)

phases

bottom-up planning [57](#)

definition [532](#)

top-down planning [57](#)

pinning plans to Recent Projects list [20](#)

pinning templates to New page (Backstage view) [20](#)

plan baselines

saving [159–161](#)

updating [326–327](#)

plan costs [279–283](#)

See also [plans](#), [sharer plans](#)

fixed costs [216–218](#)

resource costs [118](#), [363–365](#)

task costs [118](#)

plan elements, copying [424–427](#)

plan status, reporting [28–30](#)

plan values, displaying [408](#)

planned costs [114](#)

planning

bottom-up [57](#)

definition [532](#)

top-down [57](#)

plans

See also [plan costs](#); [sharer plans](#)

attaching to email messages [20](#)

checking durations [66](#)

checking status [28–31](#)

comparing to baselines [328](#)

consolidated [480–483](#)

creating [12–13](#), [19](#), [21–22](#), [38](#)

critical paths [222–224](#)

default scheduling mode [65](#)

defined [4](#), [532](#)

dependencies between [483–487](#)

entering properties [44](#)

entering titles [43–44](#)

filtering details [302–308](#)

- finish dates [65](#), [279–283](#)
- grouping details [296–301](#)
- inserted [480–483](#)
- key indicators [115](#)
- linking to resource pools [471](#), [477](#)
- links between *See* [cross-plan links](#)
- opening [12](#), [22](#)
- outlining with summary tasks [56–58](#)
- pinning to Recent Projects list [20](#)
- printing [20](#)
- saving [22](#), [39](#), [328](#)
- sharing customized elements [19](#)
- sorting details [292–294](#)
- start dates [39](#)
- statistics [66–67](#)
- switching between manual/automatic scheduling [64](#)
- top-down focus [226](#)
- tracking as scheduled [163–165](#)
- unlinking from resource pools [478](#)
- updating with actual values [168–169](#)
- viewing properties [43](#)

PMBOK [493](#)

PPM (project portfolio management) [518–520](#)

- benefits of [518](#)
- definition [532](#)
- deployment training [520](#)
- Help resources [520](#)

practice files for this book [xiv](#)

practice tasks [10](#)

- files for [xiv](#)
- timing [524](#)

predecessor tasks [59–63](#), [180–182](#)

- applying color to [180](#)
- for cross-plan links [484–487](#)
- definition [532](#)
- external [484](#)
- identifying in a plan [487](#)
- task chains [181](#)

print options

- modifying [395](#)
- for views [393](#), [395](#)

Print page (Backstage view) [20](#)

print preview

- multipage [145](#)
- for views [393](#)

printing

- plans [20](#)
- reports and views [144–146](#)
- restrictions [146](#)

procedures, adapting to your display [xvi](#)

product scope [49](#), [497](#), [532](#)

product specifications [497](#)

progress, tracking [158–159](#), [325](#)

progress bars, definition [532](#)

Project

- development team blog [504](#)
- Help resources [504](#)
- previous versions [457](#)
- product website [504](#)
- training and certification [504](#)
- user groups [503–504](#)

Project 2016

- accessing [5](#)
- new features [6](#)

- vs. previous versions [6–8](#)
- setting options [19–20](#)
- software support [xviii](#)
- user interface [12–18](#)
- version information [20](#)
- views [14–15](#)
- project at a glance [141](#)
- project calendars [39](#)
 - See also* [calendars](#); [resource calendars](#)
 - custom work weeks [42–43](#)
 - default [40](#)
 - definition [532](#)
 - nonworking dates [42](#)
 - nonworking times [42](#)
 - selecting [42](#)
- project constraints
 - managing [498–501](#)
 - in the project triangle [495–497](#)
- project costs [360](#)
- Project desktop program editions [5](#)
- project management
 - analyzing project performance [350–352](#)
 - bottom-up planning [57](#)
 - collecting actuals from resources [340](#)
 - communicating status [349](#)
 - estimating task durations [52](#)
 - evaluating resource allocation [268](#)
 - finish date and critical tasks [282](#)
 - teaching [525](#)
 - top-down planning [57](#)
- Project Management Institute (PMI) [505](#)
- Project Management Professional (PMP) [505](#)

project-management tools [501](#)

Project Online [5](#)

online resources [520](#)

supporting Project Web App (PWA) [518](#)

Project Overview report [351](#)

Project partners [520](#)

project plans

exporting data [458](#)

including information in charts [414](#)

including information in tables [417](#)

opening with multiple versions of Project [457](#)

project portfolio management (PPM) [518–520](#)

benefits of [518](#)

definition [532](#)

deployment training [520](#)

Help resources [520](#)

Project Professional [5](#)

project scope [49](#), [497](#), [532](#)

Project Server [5](#)

online resources [520](#)

supporting Project Web App (PWA) [518](#)

Project Standard [5](#)

Project Statistics dialog box, opening [354](#)

project summary tasks [56](#), [66–67](#)

of consolidated plans [483](#)

cost values [358–359](#)

definition [532](#)

Project tab (ribbon) [17](#)

project triangle [495](#), [532](#)

Project Web App (PWA) [5](#)

definition [532](#)

Help resources [518](#)

using Project with [513–518](#)

supporting technologies [518](#)

projects

attributes of [494](#)

costs, types of [279](#)

defined [9](#)

defining [494](#)

definition [532](#)

evaluating status [170](#)

managing constraints [498–501](#)

PMBOK definition [493](#)

properties

changing [39](#)

entering [44](#)

viewing [43](#)

prorated fixed costs [217](#)

PWA (Project Web App) [5](#)

definition [532](#)

Help resources [518](#)

supporting technologies [518](#)

using Project with [513](#)

Q

Quick Access Toolbar [13](#)

customizing [433–434](#)

resetting to defaults [437](#)

R

read-only resource pools

opening [475](#)

updating [478](#)

recording actuals [169](#)

recording macros [427–430](#)

recording work as scheduled

through a specific date [164](#)

through the current date [165](#)

through the status date [165](#)

recurring tasks [218–222](#), [533](#)

relationships [533](#)

See also [task relationships](#)

remaining costs [279](#)

renumbering resources and tasks [294](#)

reordering Gantt bar styles [381](#)

repetitive activities, recording as macros [427–430](#)

report label [14](#)

Report tab (ribbon) [17](#)

reports [28–30](#)

Budget Cost [360–362](#)

Burndown [352](#)

Cash Flow [360](#), [362](#)

adding charts [410](#)

copying *See* [copying reports](#)

cost-centric [352](#)

Cost Overview [352](#)

creating custom [406–408](#), [410](#)

customizing [139–140](#)

Dashboard [354](#)

definition [533](#)

displaying [31](#), [140](#)

displaying with views [31](#)

filtering fields [408](#)

grouping fields [408](#)

adding images [411](#)

Late Tasks [355](#), [357](#)

outlining fields [408](#)

- page setup options [146–147](#)
- printing [144–146](#)
- Project Overview [351](#)
- project status [350–353](#)
- Resource Cost Overview [365–366](#)
- adding shapes [411](#)
- sharing [141](#)
- Slipping Tasks [355–357](#)
- sorting fields [408](#)
- applying styles to tables and charts [140–141](#)
- adding tables [410](#)
- Task Cost Overview [359](#), [362](#)
- adding text boxes [410–411](#)
- vs. views [409](#)
- visual [360](#)
- rescheduling incomplete work [342–343](#)
- resetting to defaults
 - Quick Access Toolbar [437](#)
 - ribbon [438](#)
- Resource Allocation view [267](#)
- resource allocations
 - editing [271–273](#)
 - evaluating [268](#)
 - examining over time [266–270](#)
 - finding overallocations [269–270](#)
 - resolving overallocations manually [270–272](#)
- resource assignments [101](#)
 - adding/removing [107–111](#)
 - grouping by task [118](#)
- resource availability [518](#)
- resource calendars [87–88](#)
 - See also* [calendars](#); [project calendars](#)

- applying to multiple resources [91](#)
- assigning different base calendars [91](#)
- definition [533](#)
- exceptions [87–88](#)
- managing multiple [88](#)
- modifying defaults [89–90](#)
- Standard base calendars [87](#)
- resource capacity, viewing [250–252](#)
- resource-centric views [314](#)
- Resource Cost Overview report [365–366](#)
- resource costs
 - derivation [357](#)
 - examining [362–365](#)
 - sorting [363](#)
 - variances [364](#)
- resource fields *See* [fields](#)
- Resource Forms [476–477](#)
- Resource Graph view [251](#)
- resource groups [294–295](#)
- resource leveling [273–276](#), [533](#)
- resource managers, definition [533](#)
- resource overallocations
 - adding leveling delays [272](#)
 - editing assignment-level work [272](#)
 - finding [269–270](#)
 - leveling [273–279](#)
 - resolving manually [270–272](#)
- resource pools
 - allocation details [476](#)
 - base calendars [479](#)
 - changing working times [479](#)
 - for consolidated plans [482](#)

- dedicated [474](#)
- definition [470](#), [533](#)
- managing links to sharer plans [477–478](#)
- naming conventions [473](#)
- opening options [475](#)
- synchronizing with sharer plans [476–477](#)
- updating read-only pools [478](#)
- viewing resource usage details [478](#)

Resource tab [17](#)

Resource Usage view [25](#)

- in combination with Resource Form [476](#)

- pane content [251](#), [268–269](#)

- recording timephased actuals [341](#)

resource workload [518](#)

resources

- See also* [pay rates](#); [work resources](#)

- assigning to multiple plans [473](#)

- assigning to recurring tasks [221](#)

- assigning to tasks [102–106](#)

- changing availability over date ranges [234–236](#)

- checking plan costs [118](#)

- cost [79](#), [91–92](#)

- cost rate tables [238](#)

- cost values [104](#)

- cost variances [364](#)

- customizing availability [235–236](#)

- definition [533](#)

- equipment [82](#)

- filtering/clearing filters [305](#), [307](#), [308](#)

- grouping/ungrouping [298](#), [301](#)

- highlighting using filters [308](#)

- importing from address books [81](#)

leveling constantly [276](#)
material [79](#)
maximum capacity [250](#)
maximum units value [234](#)
notes [92–94](#)
project management [503–505](#)
renumbering [294](#)
sorting [292](#), [294–295](#)
sorting by cost amounts [365](#)
sorting by cost variances [364](#)
types [79](#)
viewing [25–26](#)
viewing costs [116](#)
work [79–86](#)

ribbon [14](#)

collapsing/expanding [17](#)
commands [17](#)
customizing [433](#), [435](#), [437](#)
resetting to defaults [438](#)
sharing customizations with other Project users [435](#)
tabs [16–18](#)

ribbon interface, definition [533](#)

ribbon tabs [16–18](#)

See also individual tab names

customizing content [437](#)

resetting to defaults [438](#)

right-click menus [15](#)

risks, definition [533](#)

S

saving

interim plans [328](#)

and naming plans [22](#)

- project plans [39](#)
- schedule variance [354–356](#)
- scheduled costs [279](#), [358](#)
- schedules, sharing [141](#)
- scheduling
 - assigning additional task resources [112–113](#)
 - automatic [107](#)
 - effort-driven [107–111](#), [203](#)
 - removing task resources [113](#)
 - split tasks [195](#)
 - summary tasks [226](#)
- scheduling formulas, definition [533](#)
- scheduling tasks
 - automatically [48](#), [51](#)
 - calculating durations [54](#)
 - constraints [189–190](#)
 - elapsed durations [54](#)
 - manually [48](#), [51](#)
 - predecessor/successor relationships [61](#)
 - spanning working/nonworking times [54](#)
 - split [195](#)
 - summaries [56](#)
 - switching between manual/automatic [63](#), [64](#)
 - using constraints [186–193](#)
 - using task types [199–202](#)
 - viewing details using Task Inspector [204](#)
- scope
 - constraints [497](#)
 - creep [500](#)
 - definition [534](#)
- ScreenTips [14](#)
- security settings

- checking [430](#)
- effect on macros [430](#)
- for file formats [452](#)
- for opening and saving files [452](#)
- semi-flexible constraints [187–193](#)
 - definition [534](#)
 - Finish No Earlier Than (FNET) [188](#)
 - Finish No Later Than (FNLT) [188](#)
 - Start No Earlier Than (SNET) [188](#), [190](#), [192](#)
 - Start No Later Than (SNLT) [188](#), [190](#)
- sequences [59](#), [534](#)
- shapes
 - adding to reports [411](#)
 - Gantt bars, formatting [132](#)
- Share page (Backstage view) [20](#)
- shared resources, viewing usage [478](#)
- SharePoint
 - Help resources [512](#)
 - using Project with [507–512](#)
 - synchronization options [20](#)
 - synchronizing project tasks [511](#)
 - tracking project tasks [510](#)
- sharer plans [471](#)
 - See also* [plan costs](#); [plans](#)
 - base calendars [479](#)
 - benefits [471](#)
 - definition [534](#)
 - effect of deleting [479](#)
 - linking to resource pools [471](#), [477](#)
 - managing resource pool links [478](#)
 - synchronizing with resource pools [477](#)
 - unlinking from resource pools [478–479](#)

- updating with resource pool changes [476](#)
- updating working times in resource pool [479](#)
- sharing elements between plans [424–426](#)
- sheet views [25](#)
- shortcut menus [15](#), [534](#)
- slack
 - changing threshold [224](#)
 - definition [534](#)
 - displaying for noncritical tasks [224](#)
 - types of [222](#)
- slipped tasks, identifying [354–356](#)
- Slipping Tasks filter [355](#)
- Slipping Tasks report [355–357](#)
- soft constraints [187](#)
- soft finish date [281](#)
- software support [xviii](#)
- Sort By dialog box [294](#)
- sort order [293–294](#)
- sorting
 - definition [534](#)
 - fields in reports [408](#)
 - using multiple criteria [295](#)
 - renumbering lists [294](#)
 - resetting order [296](#)
 - resources [292](#), [294–296](#)
 - tasks [295–296](#)
- source programs, definition [534](#)
- split buttons [18](#)
- split tasks
 - definition [534](#)
 - rejoining [195](#)
 - rescheduling second segment [195](#)

- splitting tasks [194–195](#)
- split views [14](#), [23](#)
 - displaying [27](#)
 - Task Form with Gantt chart [26](#)
- sponsors, definition [534](#)
- stakeholders, definition [534](#)
- Standard base calendar [40](#)
 - definition [534](#)
 - for resource calendars [87](#)
- Start No Earlier Than (SNET) constraints [188](#), [190](#), [192](#)
- Start No Later Than (SNLT) constraints [188](#), [190](#)
- Start screen [12](#)
- start-to-finish relationships [60](#), [183](#)
- start-to-start relationships [60](#), [183](#)
- status bar [15](#)
- status date, definition [534](#)
- styles
 - applying to charts in reports [140](#)
 - applying to Gantt bars [132](#)
 - applying to tables in reports [141](#)
 - for presentations [129](#)
 - for scheduled tasks [129](#)
 - Gantt charts [129–130](#)
- subprojects See [inserted plans](#)
- subtasks, definition [534](#)
- successor tasks [59–63](#), [180–182](#)
 - applying color to [180](#), [182](#)
 - for cross-plan links [484–487](#)
 - definition [534](#)
 - external [484](#)
 - identifying in a plan [487](#)
 - start/end dates [191](#)

summary tasks

See also [task durations](#); [tasks](#)

changing appearance [374](#)

default scheduling mode [56](#)

definition [535](#)

demoting to tasks [58](#)

displaying for projects [66](#)

editing durations [56](#)

inserting in task lists [58](#)

linking [62](#)

outlining plans [56](#)

scheduling manually [224–226](#)

scheduling manually vs. automatically [226](#)

support information [xviii](#)

T

tab-delimited text files, exporting project data to [454](#)

tab-delimited text, pasting into other programs [447](#)

table fields, reordering [416–417](#)

tables [25](#), [308–309](#)

See also [Cost table](#)

active, identifying [295](#)

adding columns [312](#)

adding to reports [410](#)

built-in [311](#)

changing design [417](#)

changing layout [417](#)

copying between plans [424–426](#)

copying data to another program [446](#)

copying to/from global template [424–427](#)

creating custom fields [310](#)

definition [535](#)

Field List pane [415–417](#)

- field order [416](#)
- in reports, applying styles [141](#)
- in reports, formatting [141](#)
- selecting information to include [417](#)
- sorting [292](#), [295](#)
- task relationships [61](#)
- Variance [357](#)
- tabs (ribbon) [16–17](#)
 - See also* individual tab names
 - collapsing and expanding [17](#)
 - creating [437](#)
 - resetting to defaults [438](#)
- tabular data
 - copying to other programs [449](#)
 - pasting from other programs [449](#)
 - selecting [448](#)
- task assignments [101](#)
 - grouping by resource [118](#)
 - viewing cost values [104](#)
- task bars
 - asterisks in names [375](#)
 - excluding names from legends [375](#)
 - switching to callouts in Timeline view [136](#)
- task boxes
 - modifying in Network Diagram view [389](#)
 - styles [386–388](#)
- task calendars, definition [535](#)
- task-centric views [103](#)
 - action indicators [109](#)
 - specifying [314](#)
- task chains [181](#)
- task completion

extending progress on Gantt bars [167](#)

recording percentage [166](#)

setting progress on Gantt bars [167](#)

task constraints

See also specific constraint types

applying [193](#)

categories [187–189](#)

effects on scheduling [189–191](#)

flexible [187–189](#)

inflexible [187–189](#)

removing [193](#)

semi-flexible [187–188](#)

types [188–189](#)

using [191–192](#)

Task Cost Overview report [359](#), [362](#)

task costs [357–361](#)

filtering [361](#)

reporting [359](#)

variances, displaying [361](#)

task dependencies [59–60](#), [183](#)

task duration

See also [summary tasks](#); [tasks](#)

abbreviations [51–52](#)

elapsed [52](#)

entering [54](#)

estimating [52–53](#)

fixed [244](#)

in work calculations [102](#)

values [50](#)

in work calculations [102](#)

task fields *See* [fields](#)

Task Form

details [104](#)

viewing/editing assignment details [107](#)

task IDs, definition [535](#)

Task Inspector [204–205](#)

task links, adjusting relationships [183–185](#)

task lists

inserting new summary tasks [58](#)

inserting new tasks [49](#)

product scope [49](#)

project scope [49](#)

task notes [67](#)

Task Path formatting [180–182](#)

task priorities, definition [535](#)

task relationships [180](#), [183–186](#)

adding lag time [184–186](#)

adding lead time [184](#), [186](#)

changing types [185–186](#)

finish-to-finish (FF) [183](#)

finish-to-start (FS) [183](#)

seeing using Task Path [180–182](#)

showing or hiding in views [388](#)

start-to-finish (SF) [183](#)

start-to-start (SS) [183](#)

Task Sheet view [25](#), [103](#)

Task tab [17–18](#)

task types

changing [200](#), [203–204](#)

default [199](#)

definition [535](#)

and effort-driven scheduling [203](#)

excluding from Gantt bar styles [379](#)

fixed duration [199](#)

fixed work [199](#)

formatting text in Gantt charts [378](#)

scheduling using [199–202](#)

viewing [203–204](#)

Task Usage view [26–27](#), [103](#), [330](#), [341](#)

task values, breaking relationship to assignment values [341](#)

task variances [354](#)

See also [task costs](#)

tasks

See also [summary tasks](#), [task duration](#)

actual work values [330](#)

adding hyperlinks [68](#)

adding notes [68](#)

adding/removing resources [107–112](#)

adding to Timeline view [135–137](#)

adjusting working time [196–198](#)

applying base calendar [197–198](#)

assigning [254](#)

assigning cost resources [114](#)

assigning material resources [249](#)

assigning to resources [102–107](#), [106](#)

automatic scheduling [107–111](#)

calculating costs [102](#)

calculating work value [199](#)

changing to critical [224](#)

checking plan costs [118](#)

clearing filtering [308](#)

clearing grouping [301](#)

cost resources [91](#), [114](#)

critical paths [222](#), [282](#)

definition [535](#)

deleting [49](#)

dependencies [59–60](#), [183](#)
displaying relationships [180–182](#)
displaying schedule details [204](#)
displaying slack [224](#)
editing work values [244](#)
effort-driven scheduling [107–111](#), [113](#)
entering actual values [168–169](#)
entering completion percentages [165–166](#)
entering milestones [55](#)
entering names [48](#)
filtering [305](#), [307](#)
fixed costs [357](#)
fixed-duration and contours [244](#)
formatting predecessors [182](#)
formatting successors [182](#)
grouping [298](#), [301](#)
highlighting using filters [308](#)
ID number [48](#)
inactivating [283–284](#)
inserting in task lists [49](#)
interrupting [194–195](#)
leveling delay [271–272](#)
linking [59–64](#), [183–186](#)
marking as milestones [55](#)
maximum Gantt bar rows [379](#)
naming [48](#)
notes [67–68](#)
permanently renumbering [294](#)
predecessors [59–63](#), [180–182](#)
promoting to summary tasks [58](#)
reassigning [252](#), [255](#)
recording actuals [171](#), [334–335](#)

recording remaining work [334–335](#)
recurring [218–221](#)
rejoining [195](#)
relationships [59–61](#), [180–186](#)
removing deadline dates [216](#)
removing formats [69](#)
removing hyperlinks [69](#)
removing notes [69](#)
rescheduling [252](#), [342–343](#)
scheduled [252](#)
scheduled and baseline values [160](#)
scheduling [254](#)
scheduling automatically [48](#), [51](#), [64](#)
scheduling manually [48](#), [51](#), [54](#), [63](#)
scheduling modes [48](#)
scheduling using constraints [186–193](#)
scheduling using task types [199–202](#)
sequences [59](#)
setting deadline dates [215–216](#)
slipped, identifying [354–356](#)
sorting [292](#), [295](#)
spanning working/nonworking times [54](#)
splitting [194–195](#), [245](#)
successors [59–63](#), [180–182](#), [191](#)
switching between manual/automatic scheduling [64](#)
synchronizing with SharePoint [511](#)
tracking actual work [330–335](#)
tracking progress in SharePoint [510](#)
tracking remaining work [330–335](#)
tracking timephased actual work [335–339](#)
unassigning resources [102](#), [113](#)
unlinking [63](#)

unscheduled [252](#)

viewing assigned resources [26](#)

viewing cost details [116](#)

viewing scheduling values [105](#)

and work resources [91](#)

teaching project management [525](#)

Team Planner view, adjusting tasks in [252–255](#)

Tell Me [6](#), [13](#)

templates

creating from existing plans [22](#)

definition [535](#)

installed with Project [21](#)

online [21](#)

pinning to New page (Backstage view) [20](#)

sources of [21](#)

viewing available [21](#)

for visual reports [461](#)

within your organization [21](#)

text

copying to other programs [447](#)

formatting in Gantt charts [378](#)

pasting as multiple columns [448](#)

text boxes, adding to reports [410–411](#)

text styles

changing in Timeline view [383](#)

for timeline items [382](#)

time, definition [535](#)

time constraints [495–496](#)

timeline bars

adding to Timeline views [384](#)

changing date range [384](#)

deleting [384](#)

- formatting text [382](#)
- moving tasks between [384](#)
- timeline dates, setting [384](#)
- Timeline views [24](#), [134–135](#), [138](#)
 - adding tasks [135–137](#)
 - adding timeline bars [384](#)
 - checking finish dates [66](#)
 - copying [141](#), [143–144](#)
 - definition [535](#)
 - displaying/hiding [28](#), [135](#)
 - formatting items [383](#), [384](#)
 - formatting task bars [383](#)
 - formatting text [382](#)
 - moving tasks between bars [384](#)
 - panning a Gantt chart view [138](#)
 - switching task bars to callouts [136](#)
 - text styles [383](#)
 - updates [6](#)
 - zooming a Gantt chart view [138](#)
- timephased actuals
 - recording in Resource Usage view [341](#)
 - recording in Task Usage view [341](#)
 - tracking [335–339](#)
- timephased fields [335](#), [535](#)
- timephased grid
 - editing values [245](#), [337](#)
 - entering actuals [338–339](#)
 - navigating [337](#)
- timescales
 - adjusting [26–27](#)
 - adjusting in Gantt chart view [134](#)
 - changing [138](#)

- definition [535](#)
- timing of practice tasks [524](#)
- Tool tabs [17](#)
- top-down focus [226](#)
- top-down planning [57](#), [535](#)
- total slack [222](#), [536](#)
- touch input, enabling [18](#)
- tracking
 - actuals [158–159](#)
 - definition [536](#)
 - overview [157](#)
 - timephased actuals [335–339](#)
- Tracking Gantt view [354](#), [357](#)
- tracking progress [158–159](#)
 - through current date [165](#)
 - levels of detail [158](#)
 - through a specific date [164](#)
 - through status date [165](#)
 - on tasks [164](#)
- Tracking table, recording task values [171](#)
- trade-off triangle See [project triangle](#)
- training focus of book levels [521–523](#)
- training, Project-related [504](#)
- triangle of triple constraints [495](#)
- Trust Center, legacy format settings [454](#)
- 24 Hours base calendar [40](#)
- Twitter address for Microsoft Press [xviii](#)

U

- underallocated, definition [536](#)
- underallocated work resources [266](#)
- units
 - See also [work resources](#)

assignment [102](#)

definition [536](#)

in work calculations [102](#)

units value [234](#)

Update Tasks dialog box, recording task values [171](#)

user groups, Project users [503–504](#)

V

values, entering actuals for tasks [168–169](#)

variable consumption rate, definition [536](#)

variable-rate quantities, assigning to material resources [248–249](#)

Variance table, displaying in Task Sheet view [357](#)

variances [350](#)

baselines [355](#)

cost over time [361](#)

definition [536](#)

scheduled vs. baseline [163](#)

tasks [354](#)

work [361](#)

VBA (Visual Basic for Applications) [427](#)

copying macros [424–427](#)

editing code [431–433](#)

view label [14](#)

view shortcuts [15](#)

View tab [17](#)

views

active [14](#)

adjusting timescales [27](#)

combination [14](#)

comparison with reports [409](#)

copying [141–144](#)

copying between plans [424–426](#)

copying to/from global template [424–427](#)

- creating [313–317](#)
- defining [316–317](#)
- definition [536](#)
- displaying combination [27](#)
- displaying reports simultaneously [31](#)
- displaying split [27](#)
- editing [315–317](#)
- Gantt chart [128–134](#)
- Gantt Chart [23](#)
- Gantt with Timeline [23](#), [128](#)
- multipage [145](#)
- page layout options [393](#)
- page setup options [393–394](#)
- panes [313](#)
- printing [144–146](#)
- print options [393](#)
- project at a glance [141](#)
- report [14](#)
- resource-centric [314](#)
- Resource Usage [25](#)
- sheet [25](#)
- split [14](#), [26](#)
- switching between [27](#)
- switching to another table [27](#)
- task-centric [103](#), [314](#)
- Task Sheet [25](#)
- Task Usage [26](#)
- Timeline [24](#)
- using [23–25](#)

Visio

- exporting Project data as diagrams [459](#)
- reports [360](#)

- visual reports [460](#)
- Visio PivotDiagrams [460](#)
- Visual Basic Editor [431–433](#)
- Visual Basic for Applications (VBA) [427](#)
 - copying macros [424–427](#)
 - editing code [431](#)
- visual report templates [461](#)
- visual reports [360](#), [458–461](#)
 - built-in [459](#)
 - creating [461](#)
 - Excel [460](#)
 - in Excel and Visio [458–461](#)
 - Visio [460](#)

W

- week height, changing in Calendar view [392](#)
- Windows Snipping Tool [141](#)
- Word, pasting data from Project [446](#)
- WordPad, pasting text from Project [447](#)
- work, definition [536](#)
- Work Breakdown Structure (WBS)
 - adding WBS codes to views [387](#)
 - definition [536](#)
- work contours
 - applying to assignments [243](#)
 - predefined, applying to assignments [245](#)
- work packages [47](#)
- work resources [79–81](#)
 - See also* [pay rates](#); [resources](#); [units](#)
 - adjusting capacity [83](#)
 - assigning to tasks [102–107](#), [112](#)
 - availability [80](#)
 - calculating assignment costs [84](#)

- cost [80](#)
- definition [536](#)
- deleting [81](#)
- displaying units [83](#)
- entering maximum capacity [82–83](#)
- entering names [81](#)
- entering pay rates [84–86](#)
- entering values [83](#)
- fully allocated [266](#)
- inserting in resource lists [81](#)
- managing costs [84–86](#)
- maximum capacity [82–83](#)
- maximum units [82–83](#)
- obtaining cost information [86](#)
- overallocated [266](#)
- removing from tasks [113](#)
- resource pools [470](#)
- setting up [80–81](#)
 - and tasks [91](#)
- underallocated [266](#)
- work values, editing at task levels [244](#)
- work week, setting custom [42–43](#)
- working times
 - adjusting for tasks [196–198](#)
 - customizing [41](#)
 - making adjustments to [41](#)

X

- XML files, saving project plans as [454](#)
- XPS files, exporting plan views as [396](#)

Z

- Zoom Slider [15](#)

zooming Gantt chart views from Timeline views [138](#)

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