
Case Studies Appendix

This appendix provides structured practice using Project 2013 to help you solidify what you've learned throughout this book. We've organized the material by chapter and recommend that you do each set of exercises immediately after reading the related chapter.

You'll find the following types of practice:

➤ **Hands-on exercise project: The Relocation Project**

Test yourself by creating a schedule with Project 2013 in the Relocation Project exercises. You'll be the project manager responsible for an office move of about 100 co-workers to a new location that you have yet to find.

Hands on for Chapter 9 includes additional exercises to shorten the duration of an Intranet Project.

The solution Project 2013 files to the Relocation Project exercises are part of this download at www.jrosspub.com. Click the link *WAV Download Resource Center* to enter the download site.

➤ **Troubleshooting**

These exercises will help you understand some of the pitfalls people commonly encounter using Project 2013. All of the exercises are based on situations we've encountered over many years of reviewing and certifying Project schedules. The typical troubleshooting situation is one in which the schedule stubbornly refuses to do what the creator expects. The exercises can help you prepare for providing technical support to other Project 2013 users.

➤ **Case studies**

The case studies are provided to give you additional practice in the subject matter of Dynamic Scheduling. They have been updated with material from Microsoft® Project 2013 and moved to the appendix for easy access and a central point of referral. The files have been updated to reflect current dates and the new look of Project 2013.¹

Enjoy!

¹ The names in the case studies are fictitious. Any resemblance to names of existing people or organizations is purely coincidental.

Chapter 2: Getting Started with Project 2013

Chapter Objectives

Objective:

Prepare the project file to facilitate the beginning of a project plan

Project 2013 Objectives:

1. Create a new Project 2013 file
2. Set the Project Properties
3. Set the File Options
4. Set the Project Calendar

Exercise Deliverables:

Project 2013 file finished to continue with the next chapter exercise

Hands on Exercise Project Information:

Relocation Project — Scope Statement

You are put in charge of relocating your office. You have to find a new location and organize the move. The following is the scope statement for the project, signed by your CEO.

Scope Statement for the Relocation Project of DEVOM, Inc.

Project accounting code: MOVE001

The Business Need

DEVOM, Inc. is growing and needs larger facilities to accommodate the expanding workforce.

The Project Objectives

- To be moved and operational in the new location by November 1, 2014
- To stay within the available budget of \$150,000
- To have an 80% satisfaction rate from the personnel for the new work environment

The Project Deliverables and Requirements

- A project plan (including WBS, Network Diagram, Gantt Chart, budget, resource list, and assignments)
- A new rented or leased location that has a maximum capacity of 150 work spaces and should:
 - ▶ Be accessible to disabled people
 - ▶ Have parking facilities for at least 150 cars
 - ▶ Have modern work cubicles and an open workspace
- Contracts with the landlord, the general contractor, and the moving company
- The physical move of people and equipment

The Project Constraints

- The work on the project is to start no earlier than August 4, 2014
- The personnel have to be asked for input as to the location and facilities needed
- The disruption to the normal operations of DEVOM, Inc. should be minimized and may not exceed a loss of 200 person days caused by the project
- Clients will have to be able to contact DEVOM, Inc at any time by phone, fax and e-mail
- The purchase of new materials and equipment shall be budgeted and approved separately
- The new location will be within the boundaries of the city and its suburbs
- The need for expansion is so urgent that the project has priority over normal operations
- Any changes to the project objectives will require the approval of the CEO

The Project Assumptions

- The market will continue to grow at the same rate
- The current furniture can be reused
- The current workstations can be reused
- The current LAN and servers will be replaced

Date:

Your signature:.....

Project Manager, Relocation Project

CEO, DEVOM, Inc.

*Relocation Project
— Create a new
Project 2013 file
and set the project
properties*

You decide to make a project plan and to put the schedule in Project 2013, so fill in the date and sign the scope statement above, to take charge of this project.

1. Create a new Project 2013 file.
2. Set the start date for the project to August 4, 2014.

On the **File** tab, in the **Backstage** View, click on **Info**.

Under **Project Information**, place the mouse over the **Start Date** box, click the down-arrow and set the **Start Date**.

3. Click on **Project Information, Advanced Properties**, and on the **Summary** tab enter the title of the project: Relocation *DEVOM, Inc.*
4. You are the responsible project manager; enter your own name under **Manager**.
5. Enter *DEVOM, Inc.* under **Company**.

6. Formulate one sentence that captures the essence of the relocation project and enter it in the field **Comments**.
7. Click **OK**, to close the dialog.
8. Save the file as *Relocation.mpp*.

Relocation Project
— *Set the File Options*

Continue to work in the file *Relocation.mpp* and enter only the following.

1. On the **File** tab, in the **Backstage View**, on **Options**:

Project Options	Set to
General	Date Format: <i>Jan 28 '09</i> User name: <your name>
Schedule	Hours per day: 8
	Hours per week: 40
	Days per month: 20
	Select the Show scheduling messages checkbox
	Show assignment units as a: <i>Decimal²</i>
	New tasks created: <i>Manually Scheduled</i>
	Duration is entered in: <i>Days</i>
	Work is entered in: <i>Hours</i>
	Default task type: <i>Fixed Duration</i>
	Unselect the New tasks are effort driven checkbox Select the Tasks will always honor their constraint dates checkbox
Calculate project after each edit: Select <i>On</i>	
Advanced	Select the Automatically add new resources and tasks checkbox

Click **OK**, to close the dialog.

Relocation Project
— *Set the Project Calendar*

Continue to work with your file *Relocation.mpp* and enter the following:

1. On the **Project** tab, **Properties** group, click on **Change Working Time**.
 - ▶ Check that the working hours on the **Standard (Project Calendar)** are:
8:00AM to 12:00PM and
1:00PM to 5:00PM
 - ▶ Enter the following national holidays for the months *September*, *October*, and *November* in the **Standard (Project Calendar)**. Since this

² In this project we will use individual and group resources and will therefore use decimals rather than percentages.

project takes place in the US, enter the following national holidays of the United States:

- ▶ *Labor Day, September 1, 2014*
- ▶ *Columbus Day, October 13, 2014*
- ▶ *Veterans Day, November 11, 2014*

2. Now that you've finished with the deliverables, you can compare your file with the solution file *02 Getting Started.mpp*.

Troubleshooting

1. Open the file *02 Wrong Hours per Day.mpp*

2. Correct the Hours per day, setting the file to 8 hours per day without affecting the durations. On the **File** tab, in **Backstage** view, click on **Options**, and on the **Schedule tab** change the hours per day.

Chapter 3: Entering Tasks

Chapter Objectives

Objective:

Capture the work breakdown structure (WBS) with the help of the software to the level of detail tasks, which are the basis for the next planning processes.

Project 2013 Objectives:

1. Enter the WBS
2. Indent Tasks
3. Set the Task Mode

Exercise Deliverables:

Project WBS in Project 2013

Relocation Project — Entering the WBS

Continue to work with your file *Relocation.mpp* or open the file *03 Entering Tasks.mpp*.

1. On the **File** tab, in the **Backstage View**, on **Options**, click on **Schedule**. Check the following:
 - ▶ The **Default task type** is set to **Fixed Duration**.
 - ▶ The option **New tasks are effort-driven** is cleared.
2. On the **Gantt Chart** view, on the **Format** tab, in the **Show/Hide** group, verify that the option **Project Summary Task** is checked.
3. Enter the following WBS into Project 2013 as shown in the next table.³

ID	Task Name	ID	Task Name
1.	REQUIREMENTS	20.	<i>Install electric wiring</i>
2.	<i>Research staff requirements</i>	21.	<i>Paint</i>
3.	<i>Summarize requirements</i>	22.	<i>Drying of paint⁴</i>
4.	<i>Requirement document completed</i>	23.	<i>Install cabinetry</i>
5.	LOCATION	24.	<i>Install LAN</i>
6.	<i>Select the realtor</i>	25.	<i>Lay carpet</i>
7.	<i>Visit the sites</i>	26.	<i>Facility remodeled</i>
8.	Evaluate the sites	27.	MOVE
9.	Meet to select the location	28.	<i>Select mover</i>
10.	<i>Legal review</i>	29.	<i>Pack</i>
11.	<i>Location selected</i>	30.	<i>Move</i>
12.	REMODELING CONTRACT	31.	<i>Unpack</i>

³ Capital letters are used here to indicate which tasks will eventually become summary tasks. Project 2013 displays the summary tasks in bold type to make them stand out by default. This will happen when you indent tasks.

⁴ You might wonder if drying of paint should be entered as a task, because it happens by itself. We use it here only to illustrate the use of an elapsed duration. Alternatively, you could enter it as lag on the dependency between paint and its successor.

ID	Task Name	ID	Task Name
13.	Select the contractor	32.	New location opened
14.	Meet to discuss contract	33.	POST MOVE REVIEW
15.	Revise the schedule	34.	Inspect building and identify open issues
16.	Negotiate the contract	35.	Interview employees and identify open issues
17.	Contractor contracted	36.	Negotiate completion of open issues
18.	REMODELED LOCATION	37.	Complete contractor payments
19.	Relocate walls	38.	Complete lessons learned

Relocation Project — Indent the tasks

1. Select all the detail tasks from the list above (tasks not in uppercase letters).
2. Keep the selection and on the **Task** tab, **Schedule** group, click on **Indent task**. Now the detail tasks are indented and the summary tasks are displayed in **bold type** to make them stand out.

Relocation Project – Set Task Mode

Continue to work with your file Relocation.mpp.

1. Select the last six tasks, including the POST MOVE REVIEW summary task, and on the **Task** tab, **Tasks** group, click on **Manually Schedule**.
2. Save your Relocation.mpp file for future exercises.
3. Compare your file with the solution file *04 Entering Estimates.mpp*.

Case Study: “My First Time ...”

Norm was feeling proud but tense as he drove home from work: he’d just received his first assignment as a project manager. Norm felt the assignment was recognition of his outstanding technical expertise, and he was eager to get to work.

In the evening, Norm started to break down the work. This project was different from other projects he’d worked on, and though he had some idea about what deliverables and activities would be needed, he was worried about whether he’d be able to identify all of them. He decided that as a leader, he wanted to stay ahead of his team and create a WBS so his team would be impressed. That night he worked very hard and lost some sleep over his WBS. The next day, he introduced it to the team with, “Here is what we are going to do...” His team was quick to point out that he’d forgotten to incorporate the logistics, documentation, and training components in his WBS.

Questions:

1. What do you think about Norm’s decision to create a WBS by himself?
2. What led him to do it by himself?

3. Would you have done it by yourself if you were in his shoes? Why or why not?

Troubleshooting

Open the file *03 My Outline.mpp*.

Explain why the outline does not function as an outline with summary tasks that can be collapsed and expanded.

Chapter 4: Entering Estimates

Chapter Objectives

Objective:

Assign the duration estimates and/or work estimates for each task within the WBS.

Project 2013 Objectives:

1. Enter Work Estimates.
2. Enter Duration Estimates.
3. Set Task Type.
4. Set Effort Driven.

Exercise Deliverables:

Project Tasks with Work and Duration estimates in Project 2013

Relocation Project — Entering Estimates and Task attributes

Continue to work with your file *Relocation.mpp* or open the file *04 Entering Estimates.mpp*.

1. Insert the fields **Type**, **Effort Driven**, **Duration**, and **Work** in the Gantt table in the order they appear in the column headings of the next table.
2. On the **File** tab, in the **Backstage** view, on **Options**, click on **Schedule** and verify that the time unit for **Work is entered in** is set to Hours.
3. Enter the data from the table below into the Relocation project file. The tasks with a zero duration will become milestones. Where no data is provided you don't enter anything; Project 2013 will fill in the default duration of *1 day*? and the default work of *0 hrs*. Leave these as they are; you cannot blank them out.

ID	Task Name	Type	Effort Driven	Duration	Work
1.	REQUIREMENTS	Fixed Duration ⁵	No		
2.	<i>Research staff requirements</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>16h</i>
3.	<i>Summarize requirements</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>16h</i>
4.	Requirement document completed	Fixed Duration	No	0	
5.	LOCATION	Fixed Duration	No		
6.	<i>Select the realtor</i>	<i>Fixed Duration</i>	<i>No</i>	<i>4 d</i>	
7.	<i>Visit the sites</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	

⁵ Notice that you cannot change the **Type** of a summary task; it is set by Project 2013 to **Fixed Duration**. No **Durations** or **Work** numbers are provided for summary tasks because these are calculated by Project 2013 when the summary tasks are in Auto Schedule mode. In Manually Schedule mode you can change the summary task duration to create estimates.

ID	Task Name	Type	Effort Driven	Duration	Work
8.	<i>Evaluate the sites</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	
9.	<i>Meet to select the location</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	
10.	<i>Legal review</i>	<i>Fixed Duration</i>	<i>No</i>	<i>0.5 d</i>	
11.	<i>Location selected</i>	<i>Fixed Duration</i>	<i>No</i>	<i>0 d</i>	
12.	REMODELING CONTRACT	Fixed Duration	No		
13.	<i>Select the contractor</i>	<i>Fixed Duration</i>	<i>No</i>	<i>2 d</i>	
14.	<i>Meet to discuss contract</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	
15.	<i>Revise the schedule</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	
16.	<i>Negotiate the contract</i>	<i>Fixed Duration</i>	<i>No</i>	<i>1 d</i>	
17.	<i>Contractor contracted</i>	<i>Fixed Duration</i>	<i>No</i>	<i>0 d</i>	
18.	REMODELED LOCATION	Fixed Duration	No		
19.	<i>Relocate walls</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>800h</i>
20.	<i>Install electric wiring</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>200h</i>
21.	<i>Paint</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>64h</i>
22.	<i>Drying of paint</i>	<i>Fixed Duration</i>	<i>No</i>	<i>4ed⁶</i>	
23.	<i>Install cabinetry</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>320h</i>
24.	<i>Install LAN</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>480h</i>
25.	<i>Lay carpet</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>480h</i>
26.	<i>Facility remodeled</i>	<i>Fixed Duration</i>	<i>No</i>	<i>0 d</i>	
27.	MOVE	Fixed Duration	No		
28.	<i>Select mover</i>	<i>Fixed Duration</i>	<i>No</i>	<i>2 d</i>	
29.	<i>Pack</i>	<i>Fixed Duration</i>	<i>No</i>	<i>2 d</i>	
30.	<i>Move</i>	<i>Fixed Work</i>	<i>Yes</i>		<i>160h</i>
31.	<i>Unpack</i>	<i>Fixed Duration</i>	<i>No</i>	<i>2 d</i>	
32.	<i>New location opened</i>	<i>Fixed Duration</i>	<i>No</i>	<i>0 d</i>	
33.	POST MOVE REVIEW	Fixed Duration		<i>3 months approx.</i>	
34.	<i>Inspect building and identify open issues</i>	<i>Fixed Duration</i>		<i>tbd</i>	

⁶ Notice the “e” in “4ed”; this is an elapsed duration that continues through the night and weekend.

ID	Task Name	Type	Effort Driven	Duration	Work
35.	<i>Interview employees and identify open issues</i>	<i>Fixed Duration</i>		<i>tbd</i>	
36.	<i>Negotiate completion of open issues</i>	<i>Fixed Duration</i>		<i>tbd</i>	
37.	<i>Complete contractor payments</i>	<i>Fixed Duration</i>		<i>open issues</i>	
38.	<i>Complete lessons learned</i>	<i>Fixed Duration</i>		<i>tbd</i>	

4. Save your Relocation.mpp file for future exercises.
5. Compare your file with the solution file *05 Entering Dependencies.mpp*.

Case Study — Escalated Estimates

Mildevices, Inc. is a manufacturer of military products. The company makes navigation and intelligence products. LCD screens and consoles are some of its major products. Mildevices has engineering and manufacturing staff. There is a project control office with 25 project management staff members, and this office reports directly to the Vice President of Operations. The project control staff supports the engineers in delivering the projects.

Upper management typically initiates a new project. One executive becomes the project sponsor and finds an engineer that she will appoint as the project manager. The project manager puts the budget together with his team, and the budget is submitted for approval by the executives.

Executives typically cut the budget proposed by the engineers, because they are concerned with the bottom line of the company. The engineers find that the cuts are applied arbitrarily and often feel they end up with impossibly tight budgets. As a consequence, they start to increase their estimates in order to end up with reasonable budgets. In subsequent projects, the executives react to this in turn by cutting the proposed budgets even more. The new cuts are done in a way that makes even less sense to the engineers. As a result, the project managers now jack up their estimates even further and hide their padding in the estimates wherever they can. At this stage, the openness and the mutual trust are gone between the executives and project managers.

One of the schedulers in the project office, Debbie, says this about these developments: “The numbers the engineers receive back from senior management are so ridiculously low that they just laugh at them.” Inevitably, she says, budget overruns take place.

Questions:

1. In your opinion, is the estimating done in a professional manner at Mildevices?
2. What type of problem is this? Is it predominantly an organizational problem, a cultural problem, or a financial problem?
3. If a project manager asked you for advice, what would you recommend to break this escalating spiral?
4. If an executive asked you for advice, what would you recommend to break this escalating spiral?

Chapter 5: Entering Dependencies

Chapter Objectives

Objective:

Develop a network that represents a dynamic model of the project.

Project 2013 Objectives:

1. Enter dependencies in a variety of ways to link tasks.

Exercise Deliverables:

Project network diagram in Project 2013.

Relocation Project — Entering Dependencies

Continue to work with your file *Relocation.mpp* or open the file *05 Entering Dependencies.mpp*.

Enter the following dependencies using the **Link button**, on the **Task** tab, on **Schedule** group:

1. The tasks *research staff requirements*, *summarize requirements*, and *requirements document completed* are sequentially dependent upon each other.
2. The tasks of the deliverable *LOCATION* are all sequentially dependent upon each other.
3. The tasks of the deliverable *REMODELING CONTRACT* are all sequentially dependent upon each other. The dependency between *select contractor* and *meet to discuss contract* has a lag of five days; it allows five days to get the participants together to meet.
4. The tasks *relocate walls* through *install cabinetry* of the deliverable *REMODELED LOCATION* are sequentially dependent upon each other.
5. The tasks of the deliverable *MOVE* are all sequentially dependent upon each other.
6. Enter the following dependencies by holding down the **Control** key and clicking to select the tasks and using the **Link** the **Selected Task** tool (**Task** tab, **Schedule** group):
7. In the deliverable *REMODELED LOCATION* the tasks *install cabinetry* and *install LAN* can take place concurrently after the paint dries. *Drying of paint* is the predecessor for both tasks.
8. After the tasks *install cabinetry* and *install LAN* are finished, the carpet can be put in place. *Lay carpet* is the successor for both tasks.
9. After the carpet is laid (*lay carpet*), the milestone *facility remodeled* is accomplished.

10. You forgot to set the dependencies between the deliverables (phases). Stay in the **Gantt Chart** or switch to the **Network Diagram** to enter these dependencies:

- ▶ The task *evaluate the sites* can start after *summarize requirements* is finished.
- ▶ The task *select the contractor* can start after the milestone *location selected* is accomplished plus 0.5 days, this way the task will start the first hour of the next working day.
- ▶ The task *select mover* can start after *location selected*, plus 0.5 days, this way this task will start the first half hour of the next working day.
- ▶ The task *relocate walls* can start after the milestone *contractor contracted*.
- ▶ The task *pack* can start after the milestone *facility remodeled*.

11. Turn on the **Task Path** to analyze the **Driving Predecessors**.

Answer the following questions about the dependencies in the Relocation Project:

1. Using the **Task Path** feature, what drives the task *Relocate Walls*?
2. How long is this project initially estimated to run?
3. Looking at the Network Diagram, is there a distinctive critical path (the red boxes)?
4. Are there any dependencies on summary tasks?
5. Although all of the summary tasks show row totals, the totals are calculated differently depending on the nature of the fields. How are the totals from the detail tasks reflected in the summary tasks for the fields Durations, Work and Cost?
6. If you are not managing resources with Project 2013, at this point do you have a valid schedule?
7. Save your *Relocation.mpp* file for future exercises.
8. Compare your file with the solution file *06 Entering Constraints and Deadlines.mpp*.

Case Study: CoalPower

CoalPower power station has approached you to do a 3-day introductory workshop on Project 2013. CoalPower is a first-time client and it seems this 3-day contract will be its only need for training and consulting for a while, even though the organization is large and has multiple plants. The key players at CoalPower are:

- ▶ **Andy** is the plant manager. You find out that you and he share a similar cultural heritage, and that this provides an easy basis for conversation

with him. Andy sits in on the first part of the on-site workshop you're conducting. He is only interested in the big picture: what can Project 2013 do for the organization. Andy is concerned about the frequent delays in the engineering projects, as you found out when you talked one-on-one during a lunch break.

- **Norm** manages the engineers who manage repair, maintenance and construction projects in the power station. They also design the modifications that are needed. You have had difficulties negotiating with Norm. He told you, only after you had closed your consulting contract, that you would have to travel an extra 250 miles to get to the project site.
- **Dave and Harry** manage major maintenance projects like the replacement of the \$2M turbine condensers. Replacing these condensers will stop operations in the entire plant. They have been planning their projects mostly off the tops of their heads. Norm is getting increasingly anxious about this and has told them, "If you get sick, nobody knows what to do or how to do it. I need to see a detailed plan of your projects!"
- **Art** is the technical drawing expert. He designs most of the small modifications and creates the technical drawings. Art is overworked and has, at any given time, 50 projects on his plate. Norm often criticizes Art for not delivering drawings when Norm wants them.

Questions

Dave and Harry are struggling with the whole concept of scheduling and what benefits it will provide to them:

1. Do you expect them to be motivated to use the tool? Why?
2. How will they benefit from scheduling their projects with Project 2013?
3. What do you think of Norm's approach of forcing them to schedule their projects?
4. How important are dependencies in their schedule?
5. Art approaches you during one of the breaks to talk one-on-one:
 - a. What is his main concern in scheduling his projects?
 - b. How should he model his many projects in Project 2013? Address in particular whether he should use dependencies in his schedule:
 - ▶ Between the tasks within one project
 - ▶ Between his projects
 - c. How will Art benefit from modeling his projects in Project 2013?

Chapter 6: Entering Deadlines, Constraints, and Task Calendars

Chapter Objectives

Objective:

Include the constraints and deadlines of the dynamic model that represents the project.

Project 2013 Objectives:

1. Enter Constraints.
2. Enter Deadlines.
3. Enter Task Calendars.

Exercise Deliverables:

Project network diagram with deadlines and constraints in Project 2013.

Relocation Project — Entering Constraints and Deadlines

Continue to work with your file *Relocation.mpp* or open the file *06 Entering Constraints and Deadlines.mpp*.

1. Set deadlines on the following milestones:

ID	Milestone	Deadline Date
11	<i>Location selected</i>	<i>August 15, 2014</i>
17	<i>Contractor contracted</i>	<i>August 29, 2014</i>
26	<i>Facility remodeled</i>	<i>October 24, 2014</i>
32	<i>New location opened</i>	<i>October 31, 2014</i>

2. The CEO, Mr. Salin, is out of the country until *August 25, 2014*. Also the task *pack* should be scheduled *As Late As Possible*, otherwise the equipment may be packed days before the actual move takes place over the weekend. You want the employees to be packed as late as possible on the Friday before the weekend. Enter the following constraints:

ID	Task	Constraint
9	<i>Meet to select the location</i>	<i>Start No Earlier Than August 25, 2014</i>
29	<i>Pack</i>	<i>As Late As Possible</i>

Relocation Project — Task Calendars

1. You realize that due to the project requirement that disruption to normal company operations be minimal, the move will have to take place over the weekend. For the task *Move*, set all the weekdays to nonworking days and the weekend days to working days, so the move will take place on a weekend.
2. Use the **Change Working Time** to create a new calendar called *Weekends*. Establish a working time of 8 hours per day for Saturday and Sunday.
3. Assign this new calendar to the task *Move*.
4. Save your *Relocation.mpp* file for future exercises.

5. Compare your file with the solution file *07 Entering Resources.mpp*.

Chapter 7: Entering Resources

Chapter Objectives

Objective:

List all resources that will be involved in the execution of the project tasks.

Project 2013 Objectives:

1. Enter Resources and their details.
2. Enter Budget Resources.

Exercise Deliverables:

Resource sheet with all resources and their details in Project 2013.

Relocation Project — Entering Resources

Continue to work with your file *Relocation.mpp* or open the file *07 Entering Resources.mpp*.

This table shows the resources needed for the relocation project. Notice that there are generic resources in the list, like *movers*. You found their rates by telephoning around. There is no **Cost/Use** for these resources.

Resource Name	Type	Material Label	Position	Function	Max. Units	Std. Rate	Accrue at
<i>you</i> ⁷	Work		<i>project manager</i>	<i>manager</i>	1	\$75/h	<i>Prorated</i>
<i>Nelson Salin</i>	Work		CEO	<i>manager</i>	1	\$150/h	<i>Prorated</i>
<i>John Falgon</i>	Work		<i>employee representative</i>	<i>employee</i>	1	\$30/h	<i>Prorated</i>
<i>Nancy Hilcrest</i>	Work		<i>planner</i>	<i>employee</i>	1	\$35/h	<i>Prorated</i>
<i>Pierre Roach</i>	Work		<i>lawyer</i>	<i>external</i>	1	\$75/h	<i>Prorated</i>
<i>the employees</i>	Work		<i>employees</i>	<i>employee</i>	75	\$25/h	<i>Prorated</i>
<i>the contractor</i>	Work		<i>contractor</i>	<i>external</i>	50	\$30/h	<i>End</i>
<i>the realtor</i>	Work		<i>realtor</i>	<i>external</i>	1	\$35/h	<i>End</i>
<i>the movers</i>	Work		<i>movers</i>	<i>external</i>	40	\$25/h	<i>End</i>
<i>the LAN consultants</i>	Work		<i>LAN consultants</i>	<i>external</i>	20	\$75/h	<i>End</i>
<i>Moving Van</i>	Cost						<i>End</i>
<i>Lunch for Team during Move</i>	Cost						<i>Start</i>

⁷ Fill in your own name instead of “you”.

Resource Name	Type	Material Label	Position	Function	Max. Units	Std. Rate	Accrue at
<i>boxes</i>	<i>Material</i>	<i>Boxes</i>		<i>material</i>		\$2	<i>Start</i>

1. Customize the table for the Resource Sheet view as shown in the table above. The fields Position and Function are not standard fields in Project 2013. You can use the fields **Text1** and **Text2** and permanently rename them Position and Function respectively using the **Custom Field** feature, available in the **Project** tab, **Properties** group.
2. Enter the resources. Use the **Fill Down** feature for the columns *Function* and *Accrue at*.
3. Sort the list of resources with resource *Name* as the first sorting key. Select the option to permanently renumber the resources.
4. You've resisted pressure to work longer hours, and with the rest of the team will keep regular working hours.
5. *Nancy Hilcrest* will go on a 1-week holiday in the third full week of August 2014. Create the exception for Nancy's calendar with the **Change Working Time** feature.
6. You realize that the task *Move* needs to be executed during the weekend (you have already created a specific calendar and assigned it to the task in Chapter 6). But the resources *Movers* use the standard calendar, so they won't be able to work on weekends and you are creating a conflict. To solve this, just assign the right calendar to the *Movers*.
7. Save your *Relocation.mpp* file for future exercises.
8. Compare your file with the solution file *08 Entering Assignments.mpp*. Make sure you select to compare the resource information as well by selecting the **Resource Table** named **Entry**.

Relocation Project — Budget Resources

1. Open the file *07 Budget Resources 1.mpp*.
2. In the Resource Sheet view add the resource *Labor* and make it a cost type resource.
3. Double-click on the *Labor* resource and on the **General** tab of the **Resource Information** dialog box, select the **Budget** box and click on **OK**.
4. Go to the **Gantt Chart** view and using the **Assign Resources** Dialog box, assign the *Labor* resource to the **Project Summary Task**. Note that if you try to assign the *Labor* resource to any other summary or detail task you will not be able to.

5. Go to the **Resource Usage** view and insert the column **Budget Cost**.
6. Right-click on the right side of the screen and select **Detail Styles**. From the available fields show the **Budget Cost** field and click **OK**.
7. Using the Zoom slider, zoom in or out until the timescale is showing months on the middlescale. You can then enter the monthly budget into the proper months.
8. Enter a *Labor* budget of \$30,000 for August, September, October, and November of 2014. You should be able to see the total budget of \$120,000 in the **Budget Cost** column (field).
9. If you don't allocate cost to your resources you can set this up so that your *Labor* resource is a work type resource. How would you associate your labor resources to the *Labor* budget? Think about using a custom resource field for this purpose. For example in the Resource Sheet view you might choose to make the custom field *Text3* a field that contains Budget Type. For all the work resources and the Labor Budget resources you would select *Labor* as the Budget Type. In the Resource Usage or Task Usage View you could group by Budget Type. This would yield a comparison of budget costs on Labor to actual costs on Labor.
10. Compare your file with the solution file *07 Budget Resources 2.mpp*.

Troubleshooting

Create a new project file and try entering the resource *Smith, Harry*. Why does Project 2013 not allow you to do that?

Chapter 8: Entering Assignments

Chapter Objectives

Objective:
Assign resources to project tasks.

Project 2013 Objectives:

1. Assign Resources.
2. Change Assignments.

Exercise Deliverables:

Resource-loaded project schedule in Project 2013.

Relocation Project — Entering Assignments

Continue to work with your file *Relocation.mpp* or open the file *08 Entering Assignments.mpp*.

- Enter the assignments as shown in the next table. First, add the fields **Type**, **Effort Driven**, **Duration**, and **Work** to the **Gantt Chart** view in such a way that the view matches the *Task Fields* column headings in the next table. Note that you cannot add the *Assignment Fields* shown in the table; you have to enter the assignment information in the **Assign Resources** dialog or in the **Task Form**.
- Remember that Project 2013 uses the formula $Duration * Units = Work$ and will calculate for each detail task the third value that is not provided in the next table.
- Think about the easiest way to enter each assignment; decide whether you should use the **Assign Resources** dialog, the **Task Form**, or the **Team Planner**. The **Task Form** is best when you want to assign multiple resources with specific numbers for units and/or work.
- Only the **Fixed Work** tasks are **Effort Driven**.

TASK FIELDS – Gantt Chart View					ASSIGNMENT FIELDS – Assign Resources Dialog Box	
Task Name	Type	Effort Driven	Dur.	Work	Resource Names	Units
REQUIREMENTS	Fixed Duration	No				
research staff requirements	Fixed Work	Yes		16h	You	0.5
summarize requirements	Fixed Work	Yes		16h	Hilcrest	0.5

TASK FIELDS – Gantt Chart View					ASSIGNMENT FIELDS – Assign Resources Dialog Box	
Task Name	Type	Effort Driven	Dur.	Work	Resource Names	Units
LOCATION	<i>Fixed Duration</i>	No				
<i>select the realtor</i>	<i>Fixed Duration</i>	No	<i>4 d</i>		<i>You</i>	<i>0.5</i>
<i>visit the sites</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>Falgon Hilcrest the realtor You</i>	<i>1 1 1 1</i>
<i>evaluate the sites</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>Falgon Hilcrest the realtor You</i>	<i>1 1 0.5 1</i>
<i>meet to select the location</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>Falgon Hilcrest Salin you</i>	<i>1 1 1 1</i>
<i>legal review</i>	<i>Fixed Duration</i>	No	<i>0.5 d</i>		<i>Roach</i>	<i>1</i>
REMODELING CONTRACT	<i>Fixed Duration</i>	No				
<i>select the contractor</i>	<i>Fixed Duration</i>	No	<i>2 d</i>		<i>You</i>	<i>1</i>
<i>meet to discuss contract</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>the contractor Hilcrest You</i>	<i>1 1 1</i>
<i>revise the schedule</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>You</i>	<i>1</i>
<i>negotiate the contract</i>	<i>Fixed Duration</i>	No	<i>1 d</i>		<i>You</i>	<i>1</i>
REMODELED LOCATION	<i>Fixed Duration</i>	No				
<i>relocate walls</i>	<i>Fixed Work</i>	Yes		<i>800h</i>	<i>the contractor</i>	<i>10</i>
<i>install electric wiring</i>	<i>Fixed Work</i>	Yes		<i>200h</i>	<i>the contractor</i>	<i>5</i>

TASK FIELDS – Gantt Chart View					ASSIGNMENT FIELDS – Assign Resources Dialog Box	
Task Name	Type	Effort Driven	Dur.	Work	Resource Names	Units
<i>paint</i>	<i>Fixed Work</i>	Yes		64h	<i>the contractor</i>	4
<i>drying of paint</i>	<i>Fixed Duration</i>	No	4 d			
<i>install cabinetry</i>	<i>Fixed Work</i>	Yes		320h	<i>the contractor</i>	8
<i>install LAN</i>	<i>Fixed Work</i>	Yes		480h	<i>the LAN consultants</i>	5
<i>lay carpet</i>	<i>Fixed Work</i>	Yes		480h	<i>the contractor</i>	6
<i>MOVE</i>	<i>Fixed Duration</i>	No				
<i>select mover</i>	<i>Fixed Duration</i>	No	2 d		<i>You</i>	1
<i>pack</i>	<i>Fixed Duration</i>	No	2 d		<i>the employees boxes, Moving Van[\$320]</i>	35 400
<i>move</i>	<i>Fixed Work</i>	Yes		160h	<i>the movers, Lunch [\$210]</i>	10
<i>unpack</i>	<i>Fixed Duration</i>	No	2 d		<i>the employees</i>	35

- Save your Relocation.mpp file for future exercises.
- Compare your file with the solution file *09 Optimizing — Time 1.mpp*. Notice that the project is missing its October 31st deadline. We will need to optimize the schedule in the next chapter.

Relocation Project — Changing Assignments

Continue to work with your file *Relocation.mpp* or open the file *09 Optimizing — Time 1.mpp*.

How should you go about making the following changes to the assignments? You may need to change the **Type** of the task first.

The task *install LAN* currently has a duration of 12 days, 5 consultants working on it and 60 days of work (or 480 hrs of effort).

1. You would like to know how long the task *install LAN* would take if there were 10 *LAN consultants* instead of 5 while keeping the work the same.
 - ▶ What task type do you need before you make this change?
 - ▶ You should get a duration of 6 days. Keep this change.
2. You want to know how many consultants are needed if you want the task *install LAN* done in 3 days while keeping the work the same.
 - ▶ What task type do you need before you make this change?
 - ▶ You should find that 20 *LAN consultants* are needed. Keep this change.
3. You think you over-estimated the work in the *install LAN* task; you will need only 30 days (240 hours) of work instead of 60 days (480 hours) of work and you want to keep the duration to 3 days.
 - ▶ What is the number of consultants needed now?
 - ▶ What task type do you need before you make this change?
 - ▶ You should find that 10 consultants are needed. Keep this change.
4. You want to keep the number of consultants to 10, but you want to change the duration from 3 to 12 days.
 - ▶ How much work is now on the task?
 - ▶ What task type do you need before you make this change?
 - ▶ You should end up with 120 days or 960 hours of work. Keep this change.
5. You want to bring the number of consultants down to 5 while keeping the 12-day duration.
 - ▶ How much work is now on the task?
 - ▶ What task type do you need before you make this change?

This brings us back to where we were at the start of this exercise after exploring several scenarios.

Chapter 9: Optimizing the Schedule

Chapter Objectives

Objective:

Analyze the project and come up with proposals to optimize duration, costs and resources in order to fulfill the project objectives.

Project 2013 Objectives:

1. Understanding the Gantt Chart.
2. Shorten the Duration.
3. Lower the Cost.
4. Solve Over-allocation by assigning Available Resources.
5. Solve Over-allocation using Resource Leveling.

Exercise Deliverables:

Various project optimization proposals in Project 2013.

Relocation Project — Understanding the Gantt Chart

Open the file *09 Opt-Time1.mpp*.

1. Display the field **Total Slack** in the spreadsheet of the **Gantt Chart**.
2. Is the total slack expressed in calendar days, business days, or person days?
3. Why does the negative slack change from task 14 *meet to discuss contract* to task 15 *revise the schedule*? Hint: Task 14 *meet to discuss contract* has a lag of five days with its predecessor task 13 *select the contractor*, also Nancy is on holiday in the third full week in August:
4. Why does the negative slack change in the middle of task 21 *paint* and task 24 *install LAN*? Hint: there is a task with an elapsed duration between them and the other task had an original slack of seven days.
5. Why does the negative slack change from task 26 *facility remodeled* to task 30 *move*? Hint: there is a deadline on task 26 and task 29 *pack* is scheduled As Late as Possible.
6. Why does the negative slack change from task 30 *move* to task 31 *unpack*? Hint: the movers only work on the weekend.

Relocation Project — Shorten the Duration

In this exercise, you'll use the optimizing for time approach.

Open the file *09 Opt-Time1.mpp*.

Currently, the forecasted finish date is November 18, but your CEO insists that the office be moved by November 1.

1. Display the critical path in your schedule. Make sure you understand all the total slack numbers on each task (described in the previous exercise, **Relocation Project—Understanding the Gantt Chart**).

2. The objective of this exercise is to bring down the duration (time) of the project as much as is reasonably possible. Use the methods discussed in Chapter 9 to get ideas. Come up with your own ways to bring down the duration of the project as much as you can. Try them out and see how much time they save. Try to:
 - ▶ Make the project end date as early as possible, or
 - ▶ If you have a hard constraint on the project end milestone, make the **Total Slack** on the project end milestone *new location opened* positive and as large as possible.
3. Try your ideas out and see if they work. If you keep a change, make a note of it, in order to compare your measures against the solution.

Relocation Project — Ideas for Shortening the Duration

In this exercise you'll use the optimizing for time approach. To illustrate how a schedule can be optimized, we'll explain a complete optimization that will cut the project duration down to almost half the original duration. A similar reduction can be achieved in many projects by applying all of the techniques discussed in chapter 9.

Open the file *09 Opt-Time2.mpp*.

The current duration of the project is 74 days.

When the tasks are sorted by duration, you can see that the tasks *drying of paint*, *install LAN*, *relocate walls*, and *lay carpet* are some of the longest tasks. All of these tasks are critical and seem to be a good starting point for finding time in the schedule.

Enter the following changes to shorten the relocation project:

1. Create an overlap in the dependency on *relocate walls*, so that *install electric wiring* is done mostly in parallel with relocating the walls. Overlap *relocate walls* and *install electric wiring* with a Finish-to-Finish plus 1 day dependency. The electricians can start on a wall as soon as the carpenters have it up. What is the duration of the project now?
2. Remove the dependency between *lay carpet* and *install cabinetry* and remove the dependency between *lay carpet* and *install LAN*. Instead, make *lay carpet* dependent on *drying of paint*. Create new dependencies from *install cabinetry* and *install LAN* to *facility remodeled* to get rid of the loose ends in the network. You can *lay carpet* in parallel with *installing cabinets* and *installing the LAN*. What is the duration of the project now?
3. Notice that the critical path is fragmented at this point. We have to make sure that we continue making changes to critical tasks only. Make the necessary changes to the schedule in such a way that you see most of the critical path in the schedule again. Change the type of dependency between

install electric wiring and *paint* to Finish-to-Finish plus 1 day. The painters can start on a wall as soon as the electricians finish it. What is the duration of the project now? Hint: Managing the thresholds can help to keep an eye on critical tasks that have a slack related to task calendars or lags.

4. Change the type of dependency between *paint* and *drying of paint* to Finish-to-Finish plus 1 day. The paint starts drying as soon as the first wall is painted. What is the duration of the project now?
5. Change the type of dependency between *facility remodeled* and *pack* to Finish-to-Finish. The packing should ideally be ready when the facility is ready. What is the duration of the project now?
6. Remove the dependency between *location selected* and *select the contractor*, and make *select the contractor* dependent on *evaluate the sites*. Create a new dependency between *location selected* and *meet to discuss contract*. You can select the contractor when you have an idea which location will be chosen. What is the duration of the project now?
7. Get rid of the Start No Earlier Than constraint on task 9 *meet to select the location* and arrange for a conference call or internet meeting with the CEO, who is abroad. What is the duration of the project now? Notice that Task 14 was split because of Nancy's availability, since the duration of this task is changing you may want to consider to change the type of this task to fixed work.
8. Overlap *summarize requirements* and *research staff requirements*, Finish-to-Finish plus 1 day. You can start summarizing as soon as you receive some completed questionnaires. What is the duration of the project now?
9. Get rid of the 5 days lag on the dependency between task 13 *select the contractor* and task 14 *meet to discuss contract*. Make sure that you give advance notice of 5 days to the participants you expect at the meeting, so the 5-day time frame for calling the meeting is not needed anymore. What is the duration of the project now?
10. Change the task *install LAN* into a summary task by adding the following subtasks: *install LAN cables* (Auto Schedule Mode, 160h of Fixed Work, predecessor *relocate walls*), *install LAN hardware* (Auto Schedule Mode, 160h of Fixed Work, predecessor *install LAN cables*), and *install LAN operating system* (Auto Schedule Mode, 160h of Fixed Work, predecessor *install LAN hardware*, successor *facility remodeled*).

Remove the dependencies between *drying of paint* and *install LAN* and between *install LAN* and *facility remodeled*. Keep the resource units at 5 units for all subtasks; remove the *LAN consultants* from the summary task.

The result is a more refined schedule. What is the duration of the project now?

11. Increase the resource units of the *contractor* for the task *lay carpet* from 6 to 12. This decreases the duration of *lay carpet* to 5 days, which is now done entirely in parallel with *install cabinetry*. What is the duration of the project now?
12. You decide to ask the *LAN consultants* to work with 8 consultants instead of 5. Change all assignments of the *LAN consultants* to 8 units on the subtasks of *install LAN*. This will reduce the duration of the subtasks to 2.5 days. What is the duration of the project now?

Please answer the following questions:

1. Check the duration of the project. We have reduced it from 74 to 36 days. This is **less than half** of the original duration and most changes are quite defensible. You have seen here an example of how you can find time in your project schedule if you create a dynamic model of your project in the first place. Could you apply similar methods to your own project schedule?
2. Were trade-offs made against the scope or quality of this project? What are they? Would you undo some proposed changes? Why?
3. If you arrived at a different final duration, find the differences between your file and the solution file *09 Opt-Time3.mpp*.

Relocation Project — Lowering the Cost

In this exercise, you'll use the optimizing for time and cost approach. Open the file *09 Opt-TimeCost1.mpp*.

Currently, the forecasted finish date is November 18 and a total cost of \$138,210. The CEO insists that the office be moved by November 1 within the available budget of \$120,000 plus a reserve of \$30,000 totaling \$150,000.

1. The objective now is to bring down the cost of the project while maintaining or decreasing the duration. Use the methods that were discussed in Chapter 9 to get ideas. Come up with your own ways to bring down the cost of the project as far as you can. Try them out and see how much money they save.
2. Log each change and the total cost of the project after each change you keep.
3. Compare your results against the ideas that we will discuss in the next exercise.

Relocation Project — Ideas for Lowering the Cost

In this exercise you'll use the optimizing for time and cost approach.

Open the file *09 Opt-TimeCost2.mpp*.

The current duration of the project is 74 days.

You found some new resources:

Name	Type	Position	Function	Max. Units	Std. Rate	Accrue at
<i>Carpeteers</i>	<i>Work</i>	<i>Contractor</i>	<i>external</i>	20	\$140/d	<i>End</i>
<i>Cablers</i>	<i>Work</i>	<i>Contractor</i>	<i>external</i>	5	\$40/h	<i>End</i>
<i>Students</i>	<i>Work</i>	<i>Contractor</i>	<i>external</i>	5	\$80/d	<i>End</i>

You find a specialized carpet company *Carpeteers* that is willing to do the job on task 25 *lay carpet*. Create this new resource. *Carpeteers* estimates the work will take 30 person days (240 hours), and they will do it with 10 employees.

- What is the current cost of the project?
What is the current cost for the task *lay carpet*?
What is the current duration of the project?
- Reassign the task to *Carpeteers*.
What is the new forecasted cost for *lay carpet*?
How much did we save on this task?
- What is the new total cost of the project?
- What is the new total duration of the project?
- What consequences does this change have for the scope and quality of the project? Why?
- Would you keep the reassignment to *Carpeteers*?

Enter the following additional changes to lower the cost of the relocation project:

- Inactivate the task *revise the schedule*; it is a nice-to-have task. Add a new dependency to keep the original logic. How much is the total cost now?
- Inactivate the task *select the realtor* and hire the one you know. Is there a possible trade-off in doing this? How much is the total cost now?
- Inactivate the task *select the contractor* and hire the one you know. Add a new dependency to keep the original logic. Is there a possible trade-off in doing this? How much is the total cost now?
- Make the task *install LAN* a summary task by adding the following subtasks: *install LAN cables* (*Auto Schedule Mode*, 160h of Fixed Work, predecessor

relocate walls), install LAN hardware (Auto Schedule Mode, 160h of Fixed Work, predecessor install LAN cables), and install LAN operating system (Auto Schedule Mode, 160h of Fixed Work, predecessor install LAN hardware, successor lay carpet).

Keep the resource units at 5 units for all subtasks; remove the LAN consultants from the summary task. Remove the dependencies between drying of paint and install LAN as well as the dependency between install LAN and Lay Carpet. You ask the LAN consultants to use cheaper resources to do the cabling. They offer you specialized *cablers*, as shown in the table at the beginning of the question. Reassign the task *install LAN cables* to the cheaper resources *cablers*. How much is the total cost now?

5. You ask the contractor to come up with sharper estimates to save cost. He offers to provide students who can help the carpenters relocate walls. He proposes to replace half of *the contractor* with *students* per the table. Are there possible trade-offs on time, scope, or quality? How much is the total cost now?
6. In your search to reduce cost you decide that the 35 employees should pack all their stuff in 1 day instead of 2 days. Are there possible trade-offs on time, scope or quality? How much is the total cost now?

Please answer the following questions:

1. The cost should now be \$104,410.00, down from \$138,210.00. If you found a different answer, compare it with the solution file *09 Opt-TimeCost3.mpp*. Make sure you insert column **Cost** before comparing.
2. What is the forecasted duration for the project now?
3. Are there trade-offs in the scope or quality? What are they? Will you keep the proposed changes? Why?

Relocation Project — Solve Over-allocations by Assigning Available Resources

In this exercise, you'll use the optimizing for time, cost and resources approach and level the workloads manually. Open the file *09 Opt-TimeCostResources1.mpp*.

1. Determine the period basis that identifies over-allocations by hours, days, weeks, or months. (Use the **Leveling Options** feature to determine the calculations basis of *day by day*, *week by week*, etc. Be sure to keep the **Manual** leveling calculation selected and avoid any leveling—just accept the settings)
2. Which view do you recommend for checking the over-allocations? (You could use Resource Sheet, Resource Graph, Team Planner, Resource Allocation, and others.)

3. In a *day by day* basis, you find that *Nancy Hilcrest* and yourself are over-allocated. Try to solve the over-allocations by finding other resources who are available and can perform the work.
4. Using the **Team Planner** view, assign the tasks with over-allocation problems to other resources. You can reassign *Visit the Sites* task (assigned to *Nancy Hilcrest*) to *Nelson Salin*, and *Select the Contractor* task (assigned to *You*) to *Nelson Salin* as well.
5. Compare your file with the solution file *09 Opt-TimeCostResources2.mpp*.

Relocation Project — Solve Over- allocation Using Resource Leveling

In this exercise you'll try the optimizing for time, cost and resources approach and level the workloads automatically. Open the file *09 Opt-TimeCostResources3.mpp*.

What is the current duration of the project?

1. Use resource leveling to resolve all the over-allocations. Which view do you recommend for analyzing the results of workload leveling? Which field does Project 2013 change when leveling? Which tasks were delayed? By how much? (You can use the Leveling Gantt, Resource Allocation, and others.)
2. Has Project 2013 increased the duration of the project? Why?
3. Are there any trade-offs in scope or quality? Would you keep the solution proposed by Project 2013? Why?
4. Compare your file with the solution file *09 Opt-TimeCostResources4.mpp*. Use the **Leveling Gantt** view or make sure you insert the column **Leveling Delay** before comparing.

Intranet Project — Shorten the Duration

In this exercise, you will use the optimizing for time, cost, and resources approach using the Resource-Critical Path (RCP). Open the file *09 Opt-TimeCostResources5-Intranet.mpp*.⁸

1. How many resources do you need by month?
2. Would you level this schedule manually? Why?
3. What is the current duration of the project?
4. Level the workloads automatically. What is the duration now?
5. Check the critical path in the schedule. Does it make sense?
6. Mark the RCP by entering **Yes** in the field **Marked** for each resource-critical task.

⁸ We will use a different project here with a different scenario; in the previous exercise workload leveling did not affect the project end date. In other words, the critical path was identical to the Resource-Critical Path.

7. In the **Gantt Chart** view, on the **Format** tab, **Bar Styles** group, uncheck the **Critical Tasks** checkbox, choose **Format, Bar Styles**, and change the settings to show a blue bar for all **Normal** tasks (critical and noncritical) and a red task bar for all **Normal, Marked** tasks. You should now see red task bars for all tasks on the RCP in the schedule.
8. Compare your file *09 Opt-TimeCostResources6-Intranet.mpp*; the files should look the same.
9. The objective now is to bring down the duration of the project as much as possible (time), while maintaining or lowering the cost and keeping the workload reasonable (resources). Bring down the duration by shortening the RCP. Log each change and the resulting total duration of the project for each change you decide to keep. Make a few changes before you find the new RCP.
10. Compare your results against the ideas that we will discuss in the next exercise.

Intranet Project — Ideas for Shortening the Duration

In this exercise, you'll use the Optimizing for Time, Cost, and Resources approach using the Resource-Critical Path (RCP).

Open the file *09 Opt-TimeCostResources6-Intranet.mpp*.

What is the current duration and cost of this project schedule?

The challenge is to find methods to decrease the duration of the project that don't increase cost and don't cause new work overloads. You have to focus on the resource-critical tasks on the RCP. The following changes are examples of such measures. Enter these changes into the schedule:

1. We should be able to take the project manager off the RCP. In general, a project manager should never be on the critical path, except perhaps in very small projects where he does tasks as a resource as well.
 - ▶ Remove the dependency between task 9 *Define specific functionality* and task 10 *Develop project plan*.
 - ▶ Give the task 10 *Develop project plan* a new predecessor: task 3 *Define user requirements*.
 - ▶ Give task 9 *Define specific functionality* a new successor: task 11 *System designed*.
 - ▶ Level the workloads again. Determine the new RCP. What are the duration and cost of the project now? Is task 10 still resource-critical? Are there new work overloads?
2. On task 50 *Communicate roll out plan to users*, notice that the *Roll-out manager* is working only 50%. Increase this to 100% while keeping the work

on the task the same. Level the workloads in the schedule again. What is the duration and cost of the project now?

3. You see that the longest resource-critical tasks are tasks 36 *Develop web pages* and 37 *Develop any custom functionality*. They take 20 days in the current schedule. If you can find an extra web designer for task 37 *Develop any custom functionality*, you can schedule those two tasks in parallel. You ask the resource manager for an extra designer and you get one for that one task.
 - ▶ Create a new resource *Web Designer 2*, with the same rate as the first designer and replace *Web Designer* with *Web Designer 2* to task 37 *Develop any custom functionality*.
 - ▶ Set a new dependency between task 35 *Determine development tool* and 37 *Develop any custom functionality*.
 - ▶ Are there new work overloads? Level the workloads again. Determine the new RCP. What are the duration and cost of the project now? Are tasks 36 and 37 still resource-critical?

Please answer the following questions:

1. We started with a schedule of 70 days that was not leveled. We leveled and ended up with 114 days. We shortened the schedule to 90 days without increasing the cost and without (new) work overloads. Does the current RCP make sense? Why?
2. Compare your file with the solution file *09 Opt-TimeCostResources7-Intranet.mpp*.

Case Study — Multinational IT

The client is the IT department of a large multinational company. Recently, the organization made the corporate decision to switch from using Project Workbench to using Project 2013 for all of its projects. The project managers still work very much as they did when they used Project Workbench; they like to enter actual hours worked and remaining hours. The organization has a separate time sheet system that reports actual hours worked by project or by category over many projects (e.g., “maintenance”).

Managers in the IT department are using the Project 2013 schedules as checklists. Many of them become frustrated using the scheduling features of Project 2013 and revert to using Excel instead. When this was acknowledged, the client decided to organize basic training in Project 2013 using a local training provider. Since the training, one year ago, the situation has not improved much, and many people are still using Excel. The ones who use Project 2013 are not taking advantage of all the features of the application.

In interviews with several users you find that they experience the following problems:

- Double data entry of actual hours into the time sheet system and into the project scheduler.
- IT executives impose tight deadlines and use cost-payback arguments to successfully defend these challenging project deadlines. Your clients, the IT project managers, tell you, “*We have not been able to prove that these deadlines are not feasible.*”
- The organization has a matrix structure; many resources are working part-time on the project and are shared across several projects. There are many over-allocations, so many in fact that the project managers were advised by Project Workbench consultants to use Auto Schedule (automatic workload leveling), after which they should try to shorten the schedule.
- The organization experiences ripple effects between projects; a change in one project can have impacts on other schedules.
- Most projects are independent and do not have cross-project dependencies.
- The training did not teach participants how to apply Project 2013 to their own real life projects.

There is a need for more guidance so that project managers begin using the more beneficial features of Project 2013.

Questions

1. Which feature of Project 2013 should be used to address the ripple effect across projects?
2. What optimization method do you recommend in this situation? Why?
3. Will they be able to prove that the imposed deadlines are not feasible?
4. What would you recommend in order to:
 - ▶ Get more project managers to use Project 2013?
 - ▶ Get project managers to use more features of Project 2013?

Troubleshooting

1. Open the file *09 Sure Critical.mpp*.

Why are only tasks 3, 4, 5, and 6 shown as critical and not tasks 1 and 2?

2. Open the file *09 Why Overload.mpp*.

Why is the resource “You” over-allocated in the week of August 24th; this resource is only showing 40 hrs of work for the entire week?

Chapter 10: Updating the Schedule

Chapter Objectives

Objective:

Update the project tasks and try out options for optimizing the entire project.

Project 2013 Objectives:

1. Update Tasks.
2. Optimize for Time and Cost.

Exercise Deliverables:

Project 2013 file with updated status and optimizations.

Relocation Project – Updating Tasks

Open the file *10 Updating the Schedule 1.mpp*.

1. Change to the **Tracking Gantt** view and **Tracking** table, hide the **Physical % Complete** field.
2. Set the baseline for the entire project.
3. Set the **Status Date** and the **Current Date** to *September 19, 2014* and create a gridline for the status date in the Gantt timescale. (Line to Change: Status Date, Type: Continuous Line, Color: Red)
4. Set the following options in **File** tab, **Options, Schedule**:
 - ▶ Check **Updating Task status updates resource status**
 - ▶ Check **Actual costs are always calculated by Project**
5. Switch the task **Type** to **Fixed Units** and non **Effort-Driven** for all tasks.
6. Enter the status of the project by updating the tasks. As of *September 19, 2014* the situation is: All the tasks until *Remodeled Location* are done and ran as scheduled. (This update includes the *Select Mover* task.)
7. The contractor started late, because he finished his previous contract late. He supplied the following update:

Task	Started	Actual Duration	Remaining Duration
<i>relocate walls</i>	<i>15 Sept.</i>	<i>2d</i>	<i>15 d</i>

8. The rest of the tasks have not started yet. Check whether the remaining durations are scheduled before the status date. Reschedule these after the status date. Also check if there are actual durations after the status date and reschedule these before the status date.
9. Describe the status of the project in your own words.
10. Compare your file with the solution file *10 Updating the Schedule 2.mpp*.

*Relocation Project
– Optimizing for
Time and Cost
Again*

Open the file *10 Updating the Schedule 2.mpp*.

1. You find this schedule too risky; you need to meet the new deadline date of November 14, 2014 and on top of that, you need a time buffer to meet the project deadline. You decide to explore whether working overtime offers solutions. The overtime rates are:

Name	Std. Rate	Overtime Rate
<i>The employees</i>	<i>\$ 25/h</i>	<i>\$ 50/h</i>
<i>The contractor</i>	<i>\$ 30/h</i>	<i>\$ 50/h</i>
<i>The LAN consultants</i>	<i>\$ 75/h</i>	<i>\$ 100/h</i>
<i>The Realtor</i>	<i>\$ 35/h</i>	<i>\$ 45/h</i>

2. What is the cost of the project now?
3. Which people would you ask to work overtime first in order to meet the November 14th deadline? Why?
4. You want to explore whether overtime by the contractor can solve the schedule conflict. How many overtime person days do you propose on which tasks to meet the deadline?
5. How much does your project cost if you pay the overtime rates?
6. Could you negotiate to pay regular rates instead?
7. How would you enter the overtime work if you pay the regular standard rate?
8. Are you able to apply fast track to any tasks? Which ones?
9. Compare your file with the solution file *10 Updating the Schedule 3.mpp*.

Chapter 11: Reporting

Chapter Objectives

Objective:

Demonstrate the ease of Project 2013 to generate reports addressed to the different levels over the organization to fulfill different purposes and needs of the project.

Project 2013 Objectives:

1. Prepare Visual Reports.
2. Prepare an Executive Overview.
3. Report on Cost by Function.
4. Print the Gantt Chart.

Exercise Deliverables:

Various report and print views in Project 2013 and Excel.

Relocation Project — Visual Reports

This exercise will introduce you to a type of Visual Report. If you would like additional practice creating visual reports we suggest that you locate a text on Microsoft Office Excel or Pivot Tables.

Open the file *11 Reporting 1.mpp*.

1. In the **Visual Reports – Create Report** dialog box, select the *Excel Report... Resource Remaining Work Report*.
2. We want to see the custom fields of the resources (Position and Function). Click **Edit Template**, under **Select Custom Fields**, **Add Position and Function** to **Selected Custom Fields**, and click **Edit Template**.
3. Set level of usage data to include to **Weeks** and click on the **View** button. A report will be created in Microsoft Excel.
4. What is the status on the remaining work of the resources? There are different options to show the information in this kind of reports. In this case, instead of seeing the actual work and remaining work and its sum, the stakeholders want to review the relative work executed in the project. Follow the next steps to modify the report:
 - ▶ On Excel, on the **Design** tab, **Type** group, click **Change Chart type**, and select **Bar, 100% Stacked Bar** (the 3rd from left-right).
 - ▶ On the Pivot Table Field List panel, uncheck **Remaining Work**, and check **Work**.
5. In the same report, we need to include the table with the detailed information of the work in case the stakeholders need more detail, they will be able to see it. In addition, we want to show the custom field information of each resource that is treated as a **Property Field**.

- ▶ At the bottom change to the **Resource Summary** worksheet by clicking on it.
 - ▶ In the Pivot Table, over the **Resources** list, right click and select **Show Properties in Report**, and click **Function**. Repeat the same to show **Position**.
6. Compare your file with the solution file *11 ResourceRemainingWorkReport_Sol.xlsx*.

Relocation Project
 — Reporting
 an Executive
 Overview

Open the file *11 Reporting 1.mpp*. We will create three similar custom reports that provide executives with a high-level overview of the project.

1. **Tracking Gantt** with Milestones:

- ▶ In the **Tracking Gantt** view, create a new task table named *Executive Overview* and apply it. Use the columns **ID**, **Name**, **Duration** and **Cost**.
- ▶ Create a new filter, *Executive Overview*, to display milestones and their summary tasks and apply it.
- ▶ Save the view as *Executive Overview*. Make sure that when you apply the view *Executive Overview*, the corresponding table and filter are both applied.
- ▶ Hide the question marks in the duration column by choosing **File** Tab, **Options**, on **Schedule**, clear the option **Show that scheduled tasks have estimated duration**.
- ▶ Apply the following formatting on the timescale: **View** tab, **Zoom** group, **Timescale** dropdown list, **Timescale...**:

Timescale Settings	Middle Tier	Bottom Tier
<i>Units</i>	<i>Months</i>	<i>Week</i>
<i>Label</i>	<i>Jan '09</i>	<i>W1, W2, W3,..(From Start)</i>
<i>Count</i>	<i>1</i>	<i>1</i>
<i>Align</i>	<i>Center</i>	<i>Center</i>
<i>Size</i>	<i>95%</i>	<i>95%</i>

- ▶ Format the **Header**, **Footer**, and **Legend** of the **Gantt Chart** in the **Page Setup** as follows:

Page Tab	Section	Set to	Font
Page	Scaling	Fit to: 1 pages wide by 1 tall	
Header	Center	&[View] &[Project Title]	Segoe UI, Bold, 20
Footer	Left	&[Manager] &[Company]	Segoe UI, Regular, 8
	Right	&[Date]	Segoe UI, Regular, 8
Legend	Legend on	None	

2. Timeline view:

- ▶ Select all the deliverables and milestones and click **Add to Timeline** (Task tab, Properties group)
- ▶ On the Timeline view, Zoom out/in so all the timeline appears complete.
- ▶ On the **Format** tab, **Show/Hide** group, apply the following fixes:
 - ▶ **Date format:** Jan'28
 - ▶ **Text Lines:** 2
- ▶ Format the **Header, Footer, and Legend** of the **Timeline** in the **Page Setup** as follows:

Page Tab	Section	Set to	Font
Page	Scaling	Fit to: 1 pages wide by 1 tall	
Header	Center	&[View] &[Project Title]	Segoe UI, Bold, 20
Footer	Left	&[Manager] &[Company]	Segoe UI, Regular, 8
	Right	&[Date]	Segoe UI, Regular, 8

- ▶ Save the Timeline view with the name *Executive Overview Timeline*.

3. Milestones Report:

- ▶ The Milestones report may not meet the requirements for a Dynamic Scheduling approach so we need to tweak some settings. We will create two filters, *Executive Past Due Milestones* and *Executive UP NEXT milestones*.
- ▶ Create the *Executive Past Due Milestones* filter:

And/Or	Field Name	Test	Value(s)
	Active	Equals	Yes
And	Milestone	Equals	Yes
And	% Complete	Equals	100%
And	Start	Is greater than	[Baseline Start]
Or			
	Active	Equals	Yes
And	Milestone	Equals	
And	% Complete	Equals	100%
And	Deadline	Is less than	[Start]

- ▶ Create the *Executive UP NEXT* Milestones filter:

And/Or	Field Name	Test	Value(s)
	Active	Equals	Yes
And	Milestone	Equals	Yes
And	% Complete	Does not Equal	100%

- ▶ Go to **Report** tab, **View Reports** group, **In Progress** downward button, click **Milestone Report**.
- ▶ Click on the empty table of **LATE MILESTONES**, and in the **Field List** panel, change the **Filter** to **Executive Past Due Milestones**.
- ▶ Click on the empty table of **MILESTONES UP NEXT**, and in the **Field List** panel, change the **Filter** to **Executive UP NEXT Milestones**.
- ▶ Click on the *Remaining tasks* graph, and in the **Field List** panel, under **Select Category**, click **Edit**. Update the information with the following information:

Units:	Weeks
Date Format:	Jan 25, Feb1, ...
Count:	1
Start:	Aug 4 '14
Finish:	Dec 1 '14

- ▶ On the **Design** tab, **Page Setup** group, click **Page Breaks**. Reaccommodate the graphic elements so all the components fit in one page.

- ▶ Format the **Header**, **Footer**, and **Legend** of the **Gantt Chart** in the **Page Setup** as follows:

Page Tab	Section	Set to	Font
Header	Center	&[View] &[Project Title]	Segoe UI, Bold, 20
Footer	Left	&[Manager] &[Company]	Segoe UI, Regular, 8
	Right	&[Date]	Segoe UI, Regular, 8

- ▶ Rename your report with the name *Executive Overview Report*.
4. You now have three different reports you can use for executive level. Which one is better? Why?
 5. Compare your file with the views *Executive Overview*, *Executive Overview Timeline*, and *Executive Overview Report* in the solution file *11 Reporting 2.mpp*.

Relocation Project
— **Reporting Cost**
by Function

Open the file *11 Reporting 2.mpp*.

1. Switch to the **Resource Sheet** view.
2. Create and apply a new resource table *Cost by Function* that shows the fields **ID**, **Name**, **Position**, **Function**, and **Cost**. Remember that the Position and Function fields corresponds to Text 1 and Text 2 field.
3. Create and apply a grouping *Cost by Function* so that you can easily read the total cost by function category of the project.
4. Save the view with the name *Cost by Function*. The view should apply the corresponding table and grouping.
5. Set the **Page Setup** settings to the following:

Tab	Section	Set to
Page	Orientation	Portrait
	Scaling	Fit to: 1 page wide by 1 tall
Margins	top, bottom, left, right	0.7 inch or 1.8 cm
	Borders Around	every page
Header	Center Segoe UI, Bold, 16	&[View] &[Project Title]
Footer	Left	&[Manager] &[Company]
	Center	none; delete the default entry
	Right	&[Date]

6. Compare your file with the solution file *11 Reporting 3.mpp*.

**Relocation Project
— Printing the
Gantt Chart**

With the tasks, estimates, dependencies, and constraints completed, we now have entered all the data needed to print a Gantt Chart. Open the file *11 Reporting 1.mpp*.

1. Format the timescale of the Gantt Chart in the following way:

	Middle Tier	Bottom Tier
Units	Months	Week
Label	Jan '09	W1, W2, W3,..(From Start)
Count	1	1
Align	Center	Center
Size	95 %	95%

2. Format the **header**, **footer**, and **legend** of the Gantt Chart in the following way:

Page Tab	Section	Set to	Font
Header	Center	&[View] &[Project Title]	Segoe UI, Bold, 16
Footer	Left	&[Manager] &[Company]	Segoe UI, Regular, 8
	Right	&[Date]	Segoe UI, Regular, 8
Legend	Legend on	None	

3. Do a print preview to see the report.

4. Compare your file with (a printout of) the solution file *11 Reporting 4.mpp*.

Chapter 12: Earned Value Management

Chapter Objectives

Objective:

Demonstrate Earned Value relevance over the entire project.

Project 2013 Objectives:

1. Update the progress of tasks.
2. Apply Earned Value Management (EVM).
3. Analyze the performance of the project based on EVM methodology.

Exercise Deliverables:

Earned Value Visual Report in Project 2013 and Excel 2013.

Relocation Project — Earned Value Management

Open the file *12 EVM 1.mpp*.

1. Set the current view so you are able to see the **Tracking Gantt View**, the **Earned Value** table.
2. On the **View** tab, **Data** group, click **Outline**, and select **Level 1**.
3. What is the overall status of the Relocation Project?
4. How would you describe the performance of the *Remodeled Location* deliverable according to this report?
5. Take a look at the Earned Value Visual Report for this Project. It is an Excel Chart and Table called *Earned Value Over Time*. Does this reflect your conclusions from the previous EVM analysis you did with the Earned Value Table? Does the Earned Value Over Time Visual Report add any new information?
6. Take a look at the **Earned Value Report. Report** tab, **View Reports** group, click **Costs** button and select **Earned Value Report**. Does this reflect your conclusions from the previous EVM analysis you did with the Earned Value Table? Do you need to change something?
7. Update the Project considering the following data:
 - ▶ **Status date:** *Oct 3 '14*.
 - ▶ Task *19 Relocate Walls* has run as scheduled (**Task** tab, **Schedule**, **Mark on Track**)
8. Now, what is the overall status of the Relocation Project and what is the performance of the *Remodeled Location* deliverable?
9. Compare your file with the solution file *12 EVM 2.mpp*.

Troubleshooting

Open the file *12 EVM 2.mpp*.

1. Switch to table **Earned Value Schedule Indicators**.
2. Open details of the deliverable *Remodeled Location*. What tasks have trouble? Why?
3. Go to the **Resource Sheet** and review the **Accrue at** definition for the *contractor* personnel. Is it recommendable to **Accrue at** the *End* ? Why yes or why not?
4. Do you think that subdividing the task into more detailed elements would help to prevent having such big deviations from one week to another?

Chapter 13: Evaluating the Project

Chapter Objectives

Objective:

Analyze your experience on a completed project in terms of the accomplishment of the objectives and benefits that were defined when the project was approved.

Project 2013 Objectives:

1. Compare baselines.
2. Use the Compare Projects feature.
3. Create templates for future projects.

Exercise Deliverables:

Compared projects in Project 2013
Template in Project 2013

Compare Baselines

After analyzing the impact in the performance of the contractor in task 19 *Relocate walls*, you applied some optimization techniques and came up with a new solution that allows you to open the location before November 14, the last approved delivery date and within budget with an estimated total of \$139,210. Since the changes returned a very different schedule, a new baseline was authorized for all tasks except 19 *Relocate Walls*.

Open the file *13 Evaluating 1.mpp*.

1. Go to the **Tracking Gantt** view and **Tracking** table. You can now compare the actual information against the active baseline.
2. In this schedule baselines 1 and 2 had already been defined, so go to the **Multiple Baselines Gantt** view to compare the different baselines in order to evaluate the performance of your project.

Compare Projects

Keep the *13 Evaluating 2.mpp* file open. Also open the file *13 Evaluating 3.mpp*, that is a previous version of the schedule.

1. From *13 Evaluating 2.mpp* file, go to **Reports** tab, **Project** group, and click **Compare Projects**. Choose *13 Evaluating 3* file and select **Entry**, for **Task Table**.
2. Take a look to the available windows and analyze the differences between the two files for each field to answer the following questions. Hint, you can use the autofilter and the **Compare Projects** tab to navigate.
 - ▶ Are there new tasks?
 - ▶ What tasks changed durations?
 - ▶ What tasks changed Costs?
 - ▶ What tasks changed in Work?
 - ▶ Are there new resources?

3. Save the Comparison Report as *Relocation Analysis.mpp*.
4. Compare your file with the solution file *13 Evaluating 3.mpp*.

Create Templates

Open the file *13 Evaluating Template 1.mpp*.

1. On the **Format** tab, **Drawings** group, **Drawing** drop down list, select **Text box**.
2. Put the text box over the chart area and type: *This is a Template*.
3. Save the file as template, select *all fields* under **Select for type of data to remove from the template** except **Resource Rates**, and name it *Relocation Template*, so the file will be: *Relocation Template.mpt*.
4. Compare your file with the solution file *13 Evaluating Template 2.mpt*.

Appendix 1: Consolidated Schedules

Chapter Objectives

Objective:

Manage consolidated schedules with Project 2013.

Project 2013 Objectives:

1. Create a central resource pool from scratch or from an existing schedule.
2. Insert subprojects into a consolidated schedule.
3. Explain what a cross-project link is and why it is used.
4. Level resources across projects.
5. Baseline a consolidated schedule.

Exercise Deliverables:

Resource pool in Project 2013

Consolidated Schedule in Project 2013

Case Study Information: Resource Pool

You are the manager for a major event and have to organize the tasks and resource assignments.

Open the *A1 Consolidated Schedule Resources01.mpp* file (blank project).

1. Go to the **Resource** sheet view and type the following data:

Resource Name	Type	Std. Rate
<i>Alejandro Acevedo</i>	Work	\$75.00/hr
<i>Francisco Ambriz</i>		\$50.00/hr
<i>Julio Díaz</i>		\$70.00/hr
<i>Mario Landa</i>		\$30.00/hr
You (type your name)		\$110.00/hr

2. Save your file and keep it opened.

You have identified the preliminary tasks of the event and now need to assign resources from the pool. In the **Gantt Chart** view type the following:

WBS	Task	Duration	Predecessor	Resource Names
1	SHIPPING EVENT MATERIALS			
1.1	Ship materials	01 d		Alejandro Acevedo
1.2	Ship any necessary supporting equipment	02 d	1.1	Francisco Ambriz
2	Manage day of Event	05 d		
3	Market Event Success	02 d		
4	Event Complete	0d		

You realize that the tasks *Manage Day of Event* and *Market Event Success* require activities like manage vendors and speakers, select sites, and prepare contracts, etc., so you decide to turn both tasks into subprojects. Now you have a Program to manage.

As a program manager, you assign the project managers and tell them to use your resource list as a pool so they have to create their plans using your file.

Now you need to act as the project managers for the subprojects *A1 Event_Manage.mpp* and *A1 Marketing Event Success.mpp*. Each file has a scheduled plan without the resources assigned. You are going to use the *A1 Event_Consolidated.mpp* file resources, using the **Resource Pool** feature.

1. Open the file *A1 Event_Manage.mpp* files.
2. In the **Resource** tab, **Assignments** group, click **Resource Pool**, and select **Share Resources**. Set the options to use the resources from *A1 Event_Consolidated.mpp*.
3. Make the following assignments:

Task Name	Resource Name
<i>Review equipment</i>	<i>Alejandro Acevedo</i>
<i>Manage setup</i>	<i>Francisco Ambriz</i>
<i>Manage registration</i>	<i>Julio Diaz</i>
<i>Manage vendors</i>	<i>Mario Landa</i>
<i>Manage speakers</i>	<i>Alejandro Acevedo</i>
<i>Manage teardown</i>	<i>Francisco Ambriz</i>
<i>Route leads to sales</i>	<i>Mario Landa</i>

4. Set the project baseline.
5. Open the file *A1 Event_Marketing.mpp* files.
6. In the **Resource** tab, **Assignments** group, click **Resource Pool**, and select **Share Resources**. Set the options to use the resources from *A1 Event_Consolidated.mpp*.
7. Make the following assignments:

Task Name	Resource Name
<i>Finalize contracts</i>	<i>Alejandro Acevedo, Francisco Ambriz, Julio Diaz</i>
<i>Event debrief with speakers</i>	<i>Alejandro Acevedo, Francisco Ambriz, Julio Diaz, Mario Landa</i>
<i>Event debrief with event team</i>	<i>Julio Diaz</i>

8. Set the project baseline.
-

Consolidated Schedule

1. In the *A1 Event_Consolidated.mpp* file, substitute task *Manage Day of Event* with the inserted subproject *A1 Event_Manage*, and
2. Substitute task *Market Event Success* with the inserted subproject *A1 Event_Marketing*.
3. Move to the **Tracking Gantt** view.

Cross-Project Links

1. In the *A1 Event_Consolidated.mpp* file, expand the details of the inserted projects.
2. Link the following tasks across projects:

Task	To Task	Type
<i>Ship any necessary supporting equipment</i>	<i>Review equipment</i>	FS
<i>Manage vendors</i>	<i>Finalize contracts</i>	FS
<i>Day of Event Complete</i>	<i>Event Complete</i>	FS
<i>Complete</i>	<i>Event Complete</i>	FS

3. Notice that some over-allocations exist.

Level Resources Across Projects

1. Continue to work in the *A1 Event_Consolidated.mpp* file.
2. On the **Resource** tab, **Level** group, select **Level Resource** feature for all the resources assigned. Note that there are no more over-allocations, but your finish date has changed and task *Manage Speakers* has been delayed.
3. Insert the **Priority** column.
4. For task **Manage Day of Event**, change the priority to 600 and click Level All again. Now the task *Finalize contracts* is delayed.
5. Compare your file with the *A1 EventSol_Consolidated* file.

Baseline a Consolidated Schedule

1. Set the baseline for your entire program file. Hint, you must select all the tasks in the master project to save the baseline of both the master project and the subprojects.
2. Save the master project and the subprojects.

