



How to Link Tasks Using a Master Project Schedule

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Presented By:

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PERFORMANCE SOLUTIONS

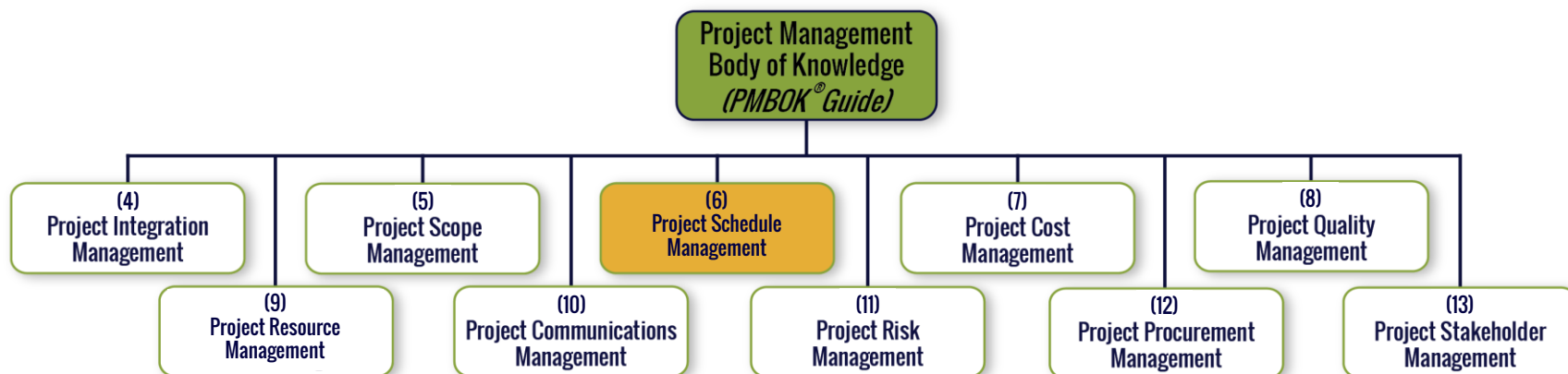
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Objectives

- Describe the importance of sequencing activities when building a project schedule
- Define Precedence Diagramming Method
- Differentiate two methods of linking between projects
- Define master project
- Demonstrate linking activities across two projects using master project and subprojects

Project Schedule Management Knowledge Area



- Processes required to ensure timely project completion
 - Plan Schedule Management
 - Define Activities
 - **Sequence Activities**
 - Estimate Activity Durations
 - Develop Schedule
 - Control Schedule

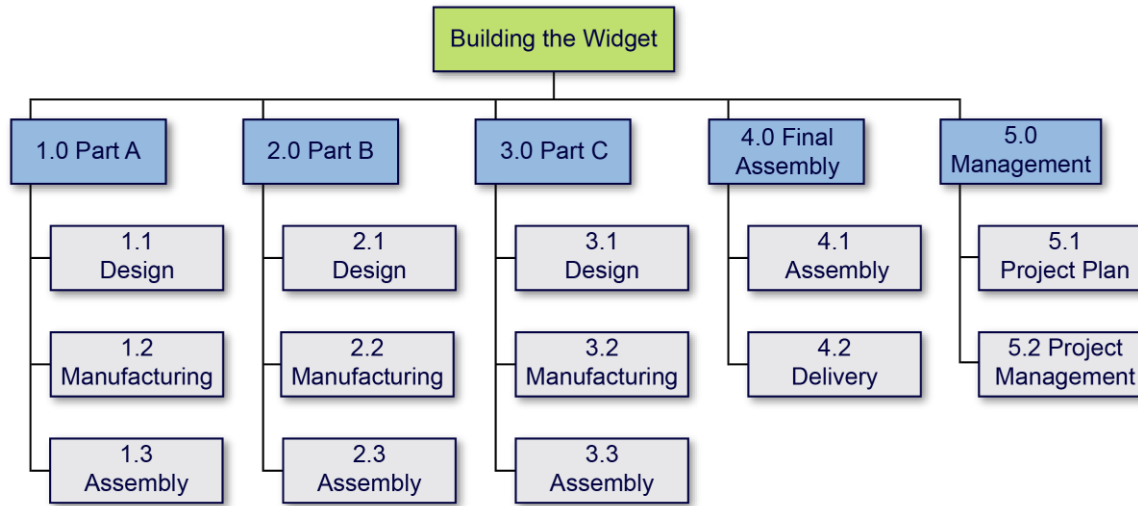
Sequencing Activities

- Sequencing activities and milestones with logic is the foundation of any schedule model
- The method of connection is defined as a relationship
- Every activity and milestone, except the first (with no predecessor) and the last (with no successor), should be connected to at least one predecessor and one successor
- Considered best practice in GAO Schedule Assessment Guide and DCMA 14 point schedule assessment

Graphic adapted from Project Management Institute, *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide)* –Sixth Edition, Project Management Institute Inc., 2017, Page 23

Sequencing Process

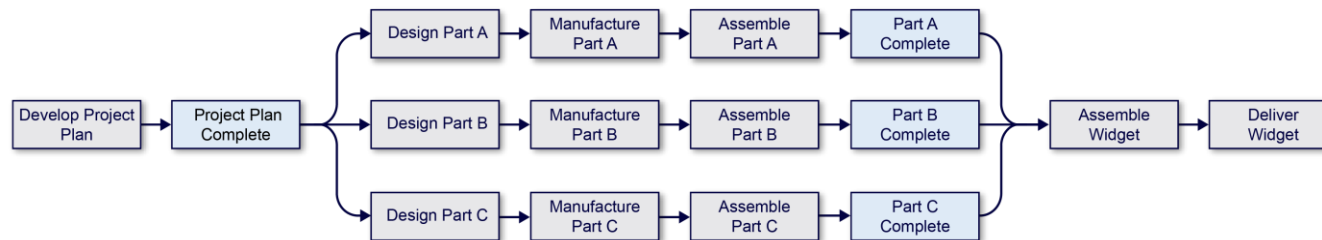
1. WBS



2. Activity List

Activity and Milestone List	
Part A	
Design Part A	
Manufacture Part A	
Assemble Part A	
Part A Complete	
Part B	
Design Part B	
Manufacture Part B	
Assemble Part B	
Part B Complete	
Part C	
Design Part C	
Manufacture Part C	
Assemble Part C	
Part C Complete	
Final Assembly	
Assemble Widget	
Deliver Widget	
Management	
Deliver Project Plan	
Project Plan complete	
Project Management	

3. WBS and Activity List Develops Sequence



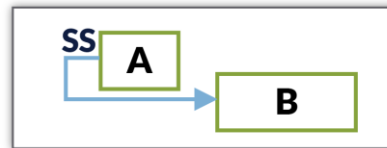
Precedence Diagramming Method (PDM)

- Illustrates assumed work tasks and expected relationships

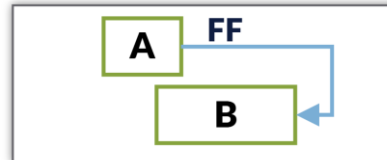
– Finish-to-Start



– Start-to-Start



– Finish-to-Finish



– Start-to-Finish



Use a **network diagram** to accurately reflect a project's event sequence

Graphics adapted from the Project Management Institute, A Guide to the Project Management Body of Knowledge, (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 190.

Develop Schedule

- Once tasks are sequenced and the activity durations are estimated the schedule is built
- Microsoft Project allows many ways to link the tasks in the schedule
 - Typing the dependencies directly into the Predecessor field
 - Using the Predecessor/Successor table in the task form
 - Manually select tasks, clicking the Link Tasks button in the Task ribbon

Linking Task Across Multiple Projects

- Situations where linking across multiple projects may be needed
 - **Handoffs**
 - One project can't start until another one has completed so the respective start and finish milestones are linked
 - Software development does not start until requirements are complete
 - **Task completion is dependent on task completion in another project**
 - The manufacturing of the cockpit of a plane from one facility is dependent on the manufacturing of the navigation system from another facility
 - Each has a project schedule and these two tasks are linked
 - **Start and Finish of a Program consisting of two or more projects**

Methods of Linking Multiple Projects

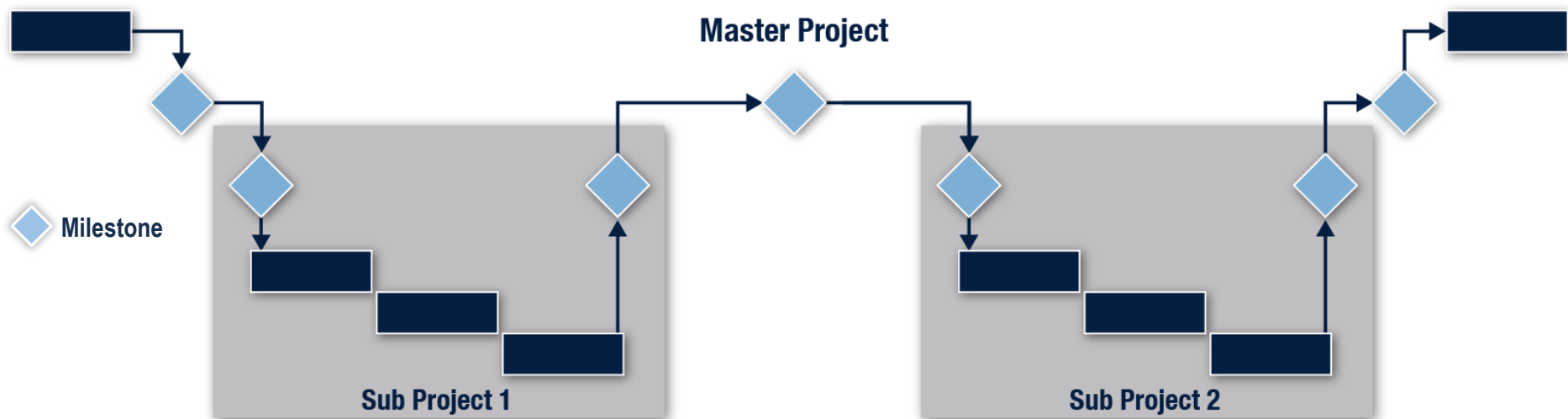
- **Using Task Information dialog**
 - Ensure files are in same directory
 - Double-click task to be linked to open Task Information Dialog
 - Select Predecessor tab
 - Manually type project name/task row number in ID column
- **Directly into the task fields**
 - Manually type project name/task row number in the Predecessors or Successors field
- **Using a master project with subprojects**

Master Projects and Subprojects

- **Master projects**
 - Provide a project framework for the subprojects
 - Connect individual subprojects together
 - Contain the overall project flow and major milestones
- **Subprojects**
 - Detailed component projects individually managed and independently maintained
 - Become component and summary tasks of a master project

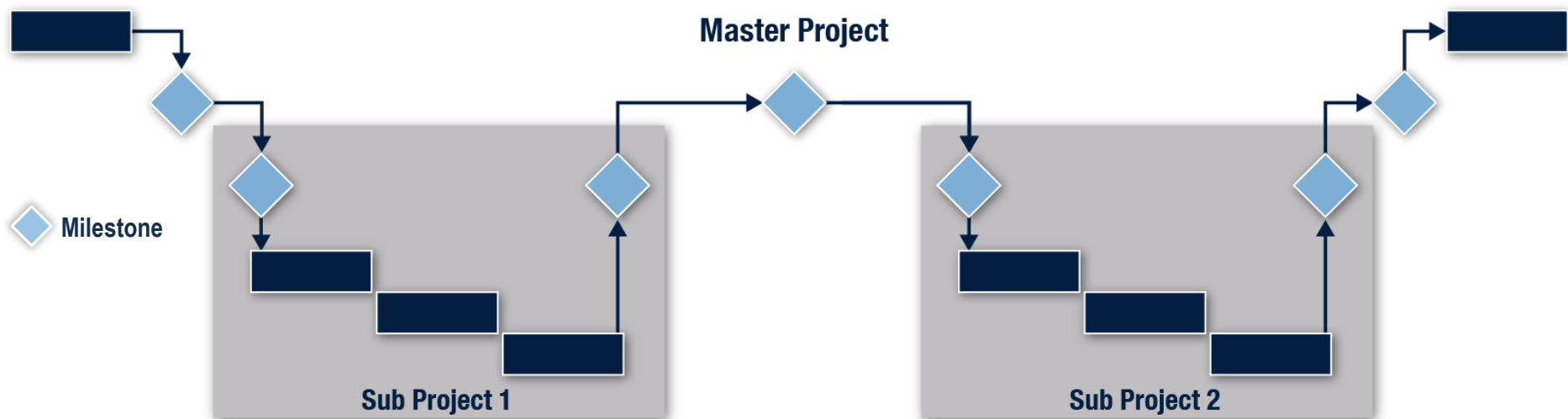
Recommended Subproject Link Methods

- Always use milestones in the master project to link tasks in two or more subprojects
 - Subprojects are easier to maintain without affecting the master project
 - Keeps subproject transition in front of the program manager



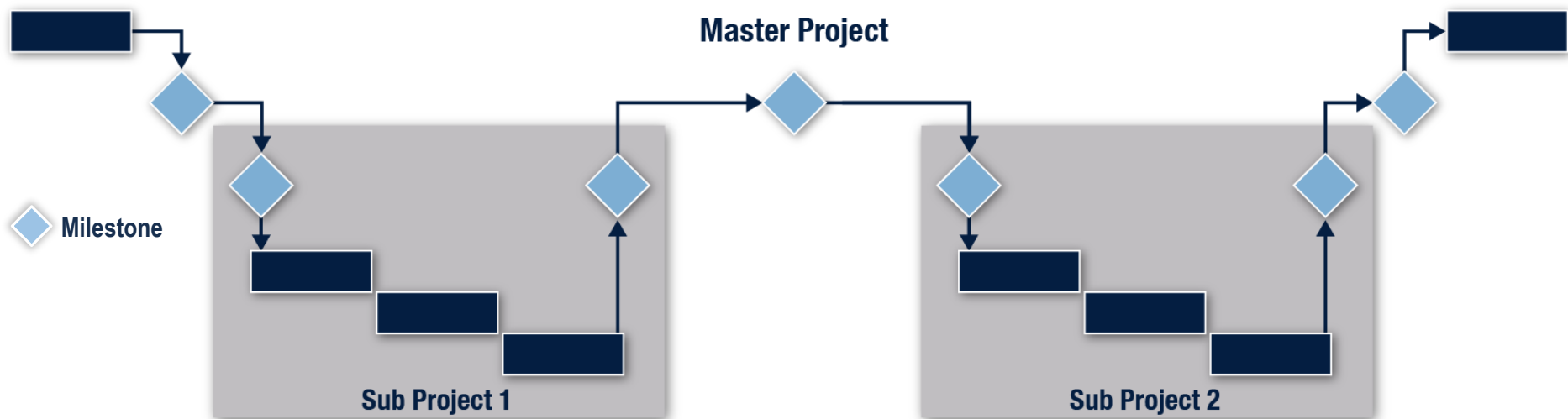
Master Project Contents

- Meetings and major milestones for project
- Contractual deliverables
- Non-contractual deliverables
- Handoffs between subprojects
- Program LOE tasks



Subproject Contents

- Major milestones “owned” by the subproject
- Contractual deliverables “owned” by the subproject
- Non-contractual deliverables “owned” by the subproject
- Milestones for handoffs to other subprojects or the master
- Technical tasks
- Project LOE tasks



Linking Tasks Using a Master Project Demo

- Create master project
- Insert subprojects
- Create milestones
- Link master project milestones with subproject tasks or milestones

Insert a Subproject Into a Master Project

- **Step 1:** Select the **Project** tab
- **Step 2:** Select the task where the subproject will be inserted
- **Step 3:** Select **Subproject** in the **Insert** group

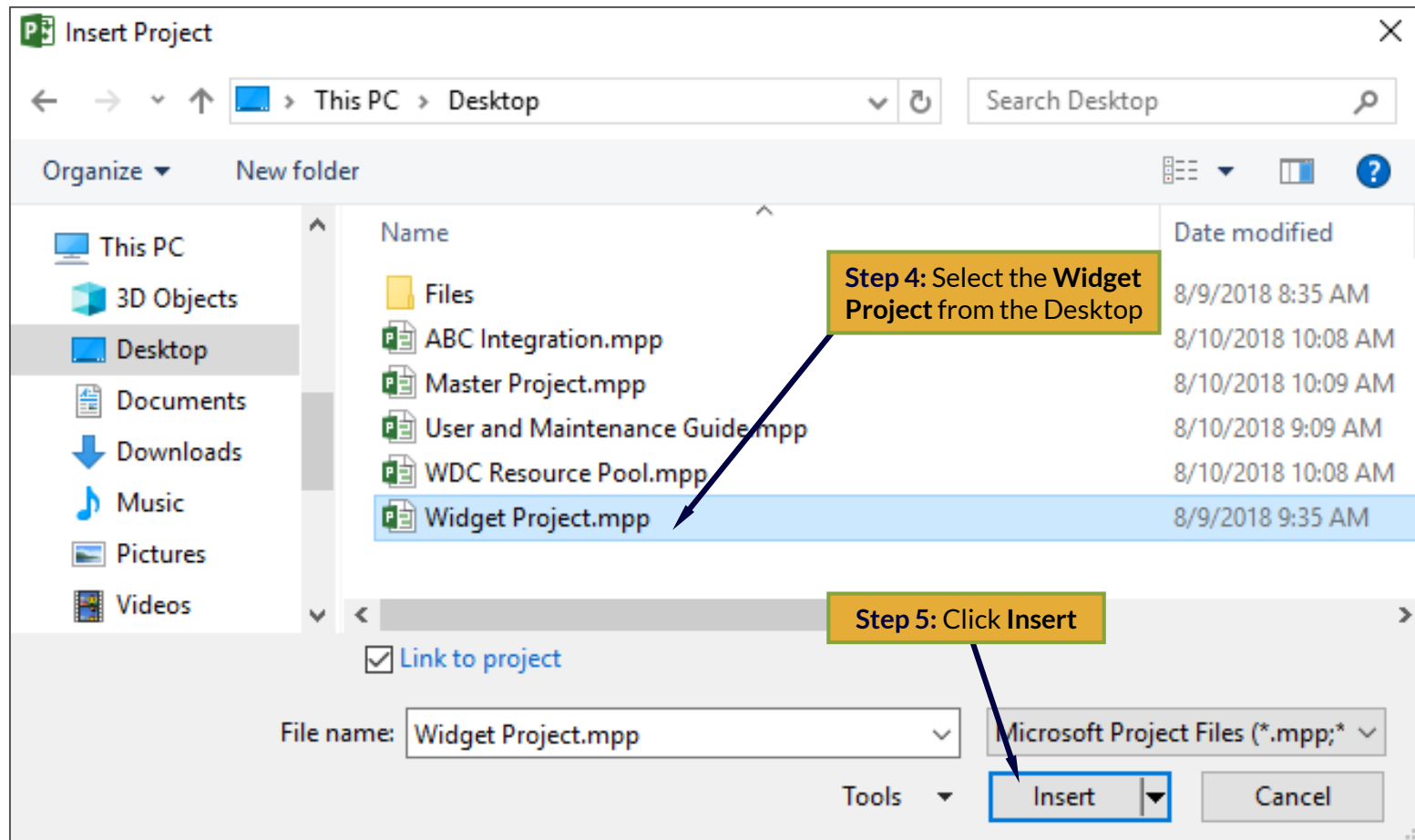
The screenshot shows the Microsoft Project interface with the **Project** tab selected in the ribbon. The **Subproject** button in the **Insert** group is highlighted. A task is selected in the task table, and the **Task Name** cell is active. Three callout boxes provide step-by-step instructions:

- Step 1:** Select the **Project** tab
- Step 2:** Select the task where the subproject will be inserted
- Step 3:** Select **Subproject** in the **Insert** group

Task Mode	Task Name	Duration	Start	Finish	W	T	F	S	S

Insert Subproject

- **Step 4:** Select a schedule to be inserted
- **Step 5:** Click **Insert**



Project Schedule Inserted

- The inserted project file becomes a summary task

The screenshot displays the Microsoft Project Professional interface. The ribbon includes File, Task, Resource, Report, Project, View, Developer, and Format. The Project ribbon is active, showing options like Project Information, Custom Fields, Links Between Projects, WBS, Change Working Time, Calculate Project, Set Baseline, and Move Project. The timeline view shows a task named 'Building the Widget' with a duration of 39 days, starting on Mon 8/6/18 and finishing on Thu 9/27/18. The task is highlighted with a green box, and a callout box points to it with the text 'Information indicates the task is an inserted project file'. Another callout box points to the task's duration with the text 'Inserted project becomes a summary task'.

Task ID	Task Name	Duration	Start	Finish
1	Building the Widget	39 days	Mon 8/6/18	Thu 9/27/18

Add Remaining Schedules

- Insert the remaining schedules as subprojects

The screenshot shows the Microsoft Project Professional interface. The ribbon is set to the 'Project' tab, with the 'Subproject' group selected. The ribbon includes options like 'Store', 'My Add-ins', 'Project Information', 'Custom Fields', 'Links Between Projects', 'WBS', 'Change Working Time', 'Calculate Project', 'Set Baseline', and 'Move Project'. The timeline view shows a start date of 'Mon 8/6/18' and a task name 'Add tasks with dates to the timeline'. The task list table below shows three tasks:

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter	4th Quarter		
							Jul	Aug	Sep	Oct
1	Subproject	▶ Building the Widget	36.13 days	Mon 8/6/18	Wed 9/26/18					
2	Subproject	▶ User and Maintenance Guide	50 days	Mon 8/6/18	Mon 10/15/18					
3	Subproject	▶ ABC Integration	43 days	Mon 8/6/18	Thu 10/4/18					

A callout box with a green border and the text 'Insert the schedules' points to the 'Subproject' icon in the ribbon.

Enter the Milestones into the Master Project

- Enter milestones above subprojects

GANTT CHART

	i	Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾	3rd Quarter			4th Quarter	
							Jul	Aug	Sep	Oct	Nov
1		→	Project Management Plan Completed	0 days	Mon 8/6/18	Mon 8/6/18		◆ 8/6			
2		→	Preliminary Design Completed	0 days	Mon 8/6/18	Mon 8/6/18		◆ 8/6			
3		→	Management Review	0 days	Mon 8/6/18	Mon 8/6/18		◆ 8/6			
4		→	Widget Delivered	0 days	Mon 8/6/18	Mon 8/6/18		◆ 8/6			
5		→	User and Maintenance Guide Delivered	0 days	Mon 8/6/18	Mon 8/6/18		◆ 8/6			
6	📄	→	▶ Building the Widget	36.13 days	Mon 8/6/18	Wed 9/26/18					
7	📄	→	▶ User and Maintenance Guide	50 days	Mon 8/6/18	Mon 10/15/18					
8	📄	→	▶ ABC Integration	43 days	Mon 8/6/18	Thu 10/4/18					

Note: A callout box points to the 'User and Maintenance Guide Delivered' milestone with the text: "Add milestones to the master project".

Link Between Master and Subprojects

- **Step 1:** Expand each of the subprojects
- **Step 2:** Select a milestone in the first subproject
- **Step 3:** Use <Ctrl> and select the milestone in the master project
- **Step 4:** Click the **Link Tasks** icon in the **Schedule** group

The screenshot displays the Microsoft Project Professional interface with the 'Gantt Chart Tools' ribbon active. The 'Schedule' group contains the 'Link Tasks' icon, which is highlighted by a yellow callout box. The task list shows a hierarchy of tasks, with 'Building the Widget' expanded to show sub-tasks like 'Part A', 'Part B', 'Part C', and 'Final Assembly'. The 'Deliver Project Plan' task is selected, and a yellow callout box points to it. Another yellow callout box points to the 'Link Tasks' icon. A third yellow callout box points to the 'Building the Widget' task. A fourth yellow callout box points to the 'Deliver Project Plan' task. The task list table is as follows:

Task Mode	Task Name	Duration	Start	Finish	Jul	Aug	Sep	Oct
	Project Management Plan Completed	0 days	Mon 8/6/18	Mon 8/6/18		8/6		
	Preliminary Design Completed	0 days	Mon 8/6/18	Mon 8/6/18		8/6		
	Management Review	0 days	Mon 8/6/18	Mon 8/6/18		8/6		
4	Widget Delivered	0 days	Mon 8/6/18	Mon 8/6/18		8/6		
5	User and Maintenance Guide Delivered	0 days	Mon 8/6/18	Mon 8/6/18		8/6		
6	Building the Widget	36.13 days	Mon 8/6/18	Mon 10/15/18				
1	▶ Part A	21.13 days	Wed 8/8/18	Wed 9/12/18				
6	▶ Part B	25.13 days	Tue 8/7/18	Tue 9/11/18				
11	▶ Part C	21 days	Wed 8/8/18	Wed 9/12/18				
	▶ Final Assembly	9 days	Thu 9/13/18	Wed 9/20/18				
	▶ Project Plan	2 days	Mon 8/6/18	Tue 8/7/18				
	Project Plan	2 days	Mon 8/6/18	Tue 8/7/18				
	Deliver Project Plan	0 days	Tue 8/7/18	Tue 8/7/18				
7	▶ User and Maintenance Guide	50 days	Mon 8/6/18	Mon 10/15/18				

Step 1: Expand each of the subprojects

Step 2: Select the milestone in the subproject

Step 4: Click the Link Tasks icon in the Schedule group

Step 3: Hold the <Ctrl> key and select the milestone in the master project

Link Between Master and Next Subprojects

- **Step 1:** Select the master project milestone
- **Step 2:** Hold <Ctrl>, select the milestone in the second subproject
- **Step 3:** Click the **Link Tasks** icon in the **Schedule** group

Step 1: Select the master project milestone

Step 2: Hold the <Ctrl> key and select the milestone in the second subproject

Step 3: Click the **Link Tasks** icon in the **Schedule** group

Task ID	Task Name	Duration	Start	Finish
2	Project Management Plan Completed	0 days	Tue 8/7/18	Tue 8/7/18
4	Preliminary Design Completed	0 days	Mon 8/6/18	Mon 8/6/18
5	Management Review	0 days	Mon 8/6/18	Mon 8/6/18
6	Widget Delivered	0 days	Mon 8/6/18	Mon 8/6/18
	User and Maintenance Guide Delivered	0 days	Mon 8/6/18	Mon 8/6/18
	Building the Widget	36.13 days	Mon 8/6/18	Wed 9/20/18
	User and Maintenance Guide	52 days	Mon 8/6/18	Wed 10/10/18
	Develop User and Maintenance Guide	36.5 days	Mon 8/6/18	Wed 9/26/18
1	Guide Started	0 days	Tue 8/7/18	Tue 8/7/18
3	Draft User Guide	20 days	Wed 8/8/18	Wed 9/5/18
4	Draft Maintenance Guide	5 days	Thu 9/6/18	Wed 9/12/18

External Task Representations

- Schedule dates in both the master and the subproject are impacted

Task Name	Duration	Start	Finish	Predecessors
Project Management Plan Completed			7/18	C:\Users\jbongiovani\Desktop\Widget Project.mpp\21
Preliminary Design Completed			8/6/18	
Management Review			8/6/18	
Widget Delivered	0 days	Mon 8/6/18	Mon 8/6/18	
User and Maintenance Guide Delivered	0 days	Mon 8/6/18	Mon 8/6/18	
Building the Widget	36.13 days	Mon 8/6/18	Wed 9/26/18	
User and Maintenance Guide	52 days	Mon 8/6/18	Wed 10/17/18	
Develop User and Maintenance Guide	36.5 days	Mon 8/6/18	Wed 9/26/18	
Guide Started	0 days	Tue 8/7/18	Tue 8/7/18	C:\Users\jbongiovani\Desktop\Master Project.mpp\2
Draft User Guide	20 days	Wed 8/8/18	Wed 9/5/18	3
Draft Maintenance Guide	5 days	Thu 9/6/18	Wed 9/12/18	4
Create First Draft	5 days	Thu 9/13/18	Wed 9/19/18	5
Review First Draft	2 days	Thu 9/20/18	Fri 9/21/18	6
Preliminary Design Completed	0 days	Mon 8/6/18	Mon 8/6/18	
Create Final Draft	2.5 days	Mon 9/24/18	Wed 9/26/18	7,8
Print and Reproduce User and Maintenance Guide	15.5 days	Wed 9/26/18	Wed 10/17/18	
ABC Integration	43 days	Mon 8/6/18	Thu 10/4/18	

Project Management Plan Completed milestone scheduled to complete based on Widget schedule

Links between projects show source file

Start User and Maintenance Guide starts on 8/7/2018

View External Links

- **Step 1:** Select the **Project** tab
- **Step 2:** Select **Links Between Projects** in the **Properties** group

The screenshot shows the Microsoft Project interface. The 'Project' tab is selected in the ribbon. In the 'Properties' group, the 'Links Between Projects' button is highlighted. Two callout boxes provide instructions: 'Step 1: Select the Project tab' and 'Step 2: Select Links Between Projects in the Properties group'. Below the ribbon, a task list is visible with columns for Task Name, Duration, and Start. The task 'Project Management Plan Completed' is highlighted.

	Task Mode	Task Name	Duration	Start
2	→	Project Management Plan Completed	0 days	Tue 8/7/18
4	→	Preliminary Design Completed	0 days	Mon 8/6/18
5	→	Management Review	0 days	Mon 8/6/18
6	→	Widget Delivered	0 days	Mon 8/6/18
7	→	User and Maintenance Guide Delivered	0 days	Mon 8/6/18
8	→	▶ Building the Widget	36.13 days	Mon 8/6/18
9	→	▸ User and Maintenance Guide	52 days	Mon 8/6/18
1	→	▸ Develop User and Maintenance Guide	36.5 days	Mon 8/6/18

Links Between Projects Dialog

- The **Links Between Projects** dialog displays details regarding external links in the project

External Predecessors tab displays the tasks in other schedules that are predecessors to tasks in this schedule

External Successors tab displays the tasks in other schedules that are successors to tasks in this schedule

The Predecessor task name, the date for the task, and file name that contains the task will all be displayed

ID	Task	Type	Date	% Comp	Differences
2	Project Management Plan Co Deliver Project Plan	FS	Tue 8/7/18		

ID	Task	Type	Date	% Comp	Differences
2	Project Management Plan Co Guide Started	FS	Tue 8/7/18	0%	None

Summary

- Insert subprojects into the master project
- Add milestones to the master project
- Link the master milestones with the subproject tasks and/or milestones in the order of the desired sequence
- Repeat process as many times as needed

Questions?

M P you G

Thank You!

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