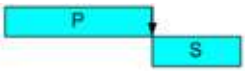
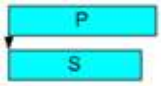
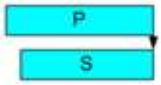
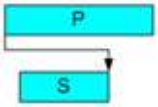
Understanding Task Dependencies in Project Management

Dependencies are the relationships among tasks which determine the order in which activities need to be performed. There are four (4) types of dependency relationships.

Types of dependencies

Finish to Start		Predecessor must finish before Successor can start. [Land must be purchased before road building can start]
Start to Start		Predecessor must start before Successor can start. [Road excavating must start before Asphalt can be laid]
Finish to Finish		Predecessor must finish before Successor can finish. [Laying Asphalt must be complete before line painting can be completed]
Start to Finish		Predecessor must start before Successor can finish. [Road excavating must start before line painting can be completed]

Dependencies are the relationships of the preceding tasks to the succeeding tasks. Tasks may have multiple preceding tasks and multiple succeeding tasks. The most common dependency relationship is a finish-to-start relationship. Task P (predecessor) must be finished before task S (successor) can start. The least common relationship is the start-to-finish relationship. Project Insight, project management software, supports all four dependency relationships.

Product Development Activity List

Work Package	WBSID	Activity	Predecessor	Duration in Weeks	Resource Type
Focus Group	1.1.1.1	Identify Focus Group Targets	....		
Focus Group	1.1.1.2	Prepare Focus Group Objectives	1.1.1.1		
Focus Group	1.1.1.3	Perform Focus Group	1.1.1.2		
Surveys	1.1.2	Perform Survey	1.1.1.3		
Research Analysis	1.1.3	Perform Analysis	1.1.2		
Market Research Findings	1.1.4	Create Market Research Findings	1.1.3		
Research Evaluation	1.2.1.1.1	Review Market Research Findings	1.1.4		
Research Evaluation	1.2.1.1.2	Develop Design Options	1.2.1.1.1		
Research Evaluation	1.2.1.1.3	Present Design Options	1.2.1.2.1		
Design Document	1.2.1.2.1	Draft Design Document	1.2.1.1.2		
Design Document	1.2.1.2.2	Design Document Review	1.2.1.1.3, 1.2.1.2.1		
Design Document	1.2.1.2.3	Final Design Document	1.2.1.2.2		
Concept Models	1.2.2	Develop Concept Model	1.2.1.2.1		
Design Selection	1.2.3	Review Concepts	1.2.1.2.2, 1.2.2		
Bill of Materials	1.3.1	Create Initial Bill of Materials	1.2.1.2.3		
Initial Prototype	1.3.2.1	Develop Initial Prototype	1.3.1		
Initial Prototype	1.3.2.2	Revise Initial Prototype	1.3.3		
Prototype Testing	1.3.3	Test Prototype	1.3.2.1		
Production Design	1.4.1	Design Production Process	1.3.2.1		
Production Testing	1.4.2	Design Production Testing Process	1.3.2.1		
Production QA design	1.4.3	Design Quality Assurance Tests	1.3.2.1		
Marketing Strategy	1.5.1	Develop Marketing Strategy	1.1.3		
Marketing Plan	1.5.2.1	Develop Initial Marketing Plan	1.5.1		
Marketing Plan	1.5.2.2	Final Marketing Plan	1.5.2.1		
Brochures	1.5.3.1	Create Brochures	1.5.2.2		
Advertising	1.5.3.2	Create Ads	1.5.2.2		
Commercials	1.5.3.3	Create Commercials	1.5.3.1, 1.5.3.2		
Production Plan Sign-off	1.4.4	Production Plan Sign-off	1.3.2.2, 1.4.1, 1.4.2, 1.4.3		
Production Devel. Sign-off	1.3.4	Production Devel. Sign-off	1.5.3.3, 1.4.4		
Project Management	1.6	Project Management Activities	....	LOE	

The chart above shows how a Product Development Activity List may look after the project team determines the task relationships. In our example, only finish-to-start relationships were used.

It is always easier to arrange all tasks in terms of a finish-to-start relationship and an 'as soon as possible' constraint. This dependency type is the easiest relationship for others to understand and will usually result in a longer than normal schedule. This gives the schedule more 'slack.' You may then utilize the other relationships as ways to shrink the duration of the overall schedule. If you use finish-to-start and as soon as possible, you will be able to change the schedule in Project Insight, project management software, with just a couple of mouse clicks.