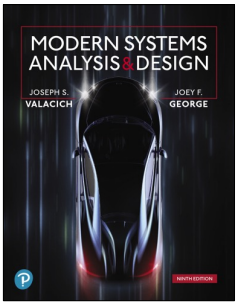
Modern Systems Analysis and Design

Ninth Edition



Chapter 3

Managing the Information Systems Project

1

Learning Objectives

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

3.3 Explain how commercial project management software packages can be used to assist in representing and managing project schedules

2

Introduction

- Project management (PM) is arguably the most important aspect of an information systems development project
- Effective PM helps to ensure that systems development projects:
  - Meet customer expectations
  - Are completed on time and within budget
- Focus has changed to implementation of packaged software or ERP solutions

3

Pine Valley Application Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- Manufactures high-quality wood furniture to retail stores in the U.S.
- Pine Valley (PV) was organized into the following functional areas in 2000:
  - Manufacturing (fabrication, assembling, finishing)
  - Sales
  - Orders
  - Accounting
  - Purchasing
- Pine Valley later used 3 distinct systems as shown on the next slide

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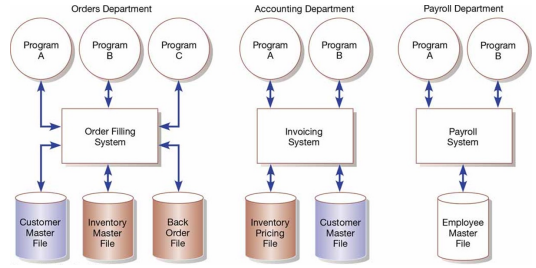
Figure 3-1: Three Computer Applications at PVF: Order Filling, Invoicing, and Payroll



(Hoffer, Jeffrey A.; Venkataraman, Ramesh; Topi, Heikki, Modern **Database Management**, 11th Ed., ©2016, p. 8. Reprinted and electronically reproduced by permission of Pearson Education, Inc., New York, NY)

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Managing the Information Systems Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project manager –** systems analyst with a diverse set of skills—management, leadership, technical, conflict management, and customer relationship—who is responsible for initiating, planning, executing, and closing down a project.
- **Project** – planned undertaking of related activities to reach an objective that has a beginning and an end
- **Deliverable** – end product of an SDLC phase; example follows on the next slide

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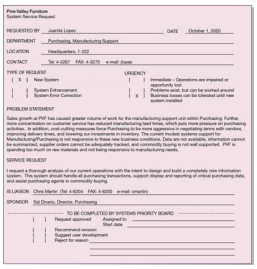
Figure 3-2: System Service Request for the Purchasing Fulfillment System with Name and Contact Information of the Person Requesting the System, a Statement of the Problem, and the Name and Contact Information of the Liaison and Sponsor



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Deciding on Systems Projects

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **System Service Request (SSR)** – standard form for requesting or proposing systems development work within an organization
  - Previous slide is an example
- **Feasibility study** – study that determines whether a requested system makes economic and operational sense for an organization

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Figure 3-4: A Project Manager Juggles Numerous Activities

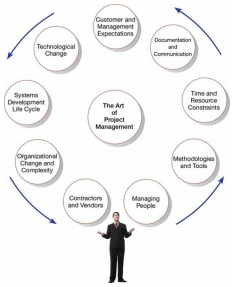

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Table 3-1: Common Activities and Skills of a Project Manager

Activity	Description	Skill
Leadership	Influencing the activities of others toward the attainment of a common goal through the use of intelligence, personality, and abilities	Communications; liaison between management, users, and developers; assigning activities; monitoring progress
Management	Getting projects completed through the effective utilization of resources	Defining and sequencing activities; communicating expectations; assigning resources to activities; monitoring outcomes
Customer relations	Working closely with customers to ensure that project deliverables meet expectations	Interpreting system requests and specifications; site preparation and user training; contact point for customers
Technical problem solving	Designing and sequencing activities to attain project goals	Interpreting system requests and specifications; defining activities and their sequence; making trade-offs between alternative solutions; designing solutions to problems
Conflict management	Managing conflict within a project team to assure that conflict is not too high or too low	Problem solving; smoothing out personality differences; compromising; goal setting
Team management	Managing the project team for effective team performance	Communication within and between teams; peer evaluations; conflict resolution; team building; self-management
Risk and change management	Identifying, assessing, and managing the risks and day-to-day changes that occur during a project	Environmental scanning; risk and opportunity identification and assessment; forecasting; resource redeployment

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Project Management

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project Management** – controlled process of initiating, planning, executing, and closing down a project
- Phases of project management:
  - Initiating
  - Planning
  - Executing
  - Closing down

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Initiating the Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project initiation** – first phase of the project management process in which activities are performed to assess the size, scope, and complexity of the project and to establish procedures to support later project activities
- The next slide will show the activities associated with project initiation

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Figure 3-5: Six Project Initiation Activities

Project Initiation

1. Establishing the Project Initiation Team
2. Establishing a Relationship with the Customer
3. Establishing the Project Initiation Plan
4. Establishing Management Procedures
5. Establishing the Project Management Environment and Project Workbook
6. Developing the Project Charter

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Project Workbook

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project Workbook** – online repository for all project-related documents that is used for performing project audits, orienting new team members, communicating with management and customers, identifying future projects, and performing post-project review
- Next slide shows the online project workbook for the Purchasing Fulfillment System

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Figure 3-6: The Project Workbook for the Purchasing Fulfillment System Project Contains Nine Key Elements

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Project Charter

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project Charter** – document prepared for the customer during project invitation that describes what the project will deliver and outlines generally at a high level all work required to complete the project
- The project charter usually contains:
  - Project title and date of authorization
  - Project manager name and contact information
  - Customer name and contact information
  - Projected start and completion dates
  - Key stakeholders, project role, and responsibilities
  - Project objectives and description
  - Key assumptions or approach
  - Signature section for key stakeholders

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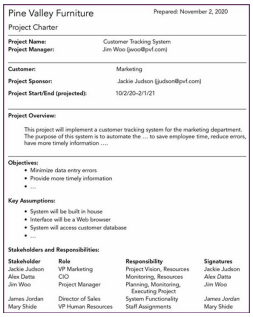
Figure 3-7: Project Charter for a Proposed Information Systems Project



Pine Valley Furniture — Prepared: November 2, 2020

Project Charter

Project Name: Customer Tracking System
Project Manager: Jim Woo (jwoo@pvf.com)

Customer: Marketing
Project Sponsor: Jackie Judson (jjudson@pvf.com)
Project Start/End (projected): 10/2/20–2/1/21

Project Overview:

This project will implement a customer tracking system for the marketing department. The purpose of this system is to automate the … to save employee time, reduce errors, have more timely information ….

Objectives:

- Minimize data entry errors
- Provide more timely information
- …

Key Assumptions:

- System will be built in house
- Interface will be a Web browser
- System will access customer database
- …

Stakeholders and Responsibilities:

Stakeholder	Role	Responsibility	Signatures
Jackie Judson	VP Marketing	Project Vision, Resources	Jackie Judson
Alex Datta	CIO	Monitoring, Resources	Alex Datta
Jim Woo	Project Manager	Planning, Monitoring, Executing Project	Jim Woo
James Jordan	Director of Sales	System Functionality	James Jordan
Mary Shide	VP Human Resources	Staff Assignments	Mary Shide

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Planning the Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project planning** – second phase of the project management process that focuses on defining clear, discrete activities and the work needed to complete each activity within a single project
- **Work breakdown structure** – process of dividing the project into manageable tasks and logically ordering them to ensure a smooth evolution between tasks
- **Gantt chart** – graphical representation of a project that shows each task as a horizontal bar whose length is proportional to its time for completion

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Figure 3-8: Level of Project Planning Detail Should Be High in the Short Term, with Less Detail as Time Goes On

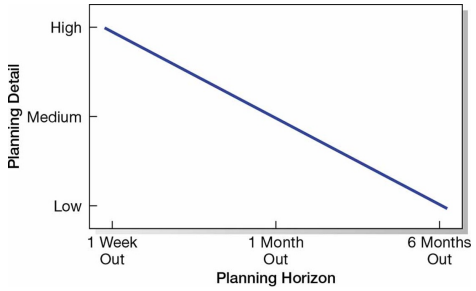

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Figure 3-9: Ten Project Planning Activities

Project Planning

1. Describing Project Scope, Alternatives, and Feasibility
2. Dividing the Project into Manageable Tasks
3. Estimating Resources and Creating a Resource Plan
4. Developing a Preliminary Schedule
5. Developing a Communication Plan
6. Determining Project Standards and Procedures
7. Identifying and Assessing Risk
8. Creating a Preliminary Budget
9. Developing a Project Scope Statement
10. Setting a Baseline Project Plan

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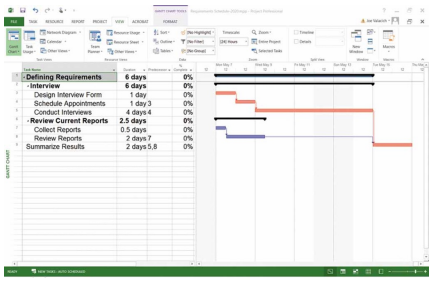
Figure 3-10: Gantt Chart Showing Project Tasks, Duration Times for Those Tasks, and Predecessors



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The Constructive Cost Model

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Constructive cost model (COCOMO) –** automated software estimation model that uses historical project data and current as well as future project characteristics to estimate project costs
- **Network diagram** – diagram that depicts project tasks and their relationships

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Figure 3-11: Trade-Offs Between Program Code Quality vs The Speed of Programming

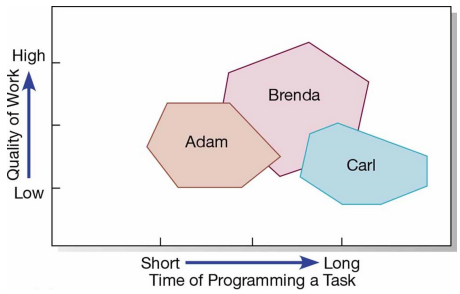

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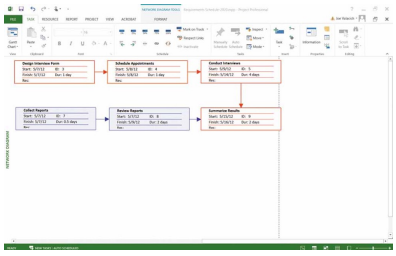
Figure 3-12: A Network Diagram Illustrates Tasks with Rectangles (or Ovals) and the Relationships and Sequences of Those Activities with Arrows



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Developing a Communication Plan

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- Who are the stakeholders for this project?
- What information does each stakeholder need?
- When does the information need to be produced?
- What sources will be used to gather this information?
- Who will collect, store, and verify the accuracy of the info?
- Who will organize and package this info into a document?
- Who is the contact person for each stakeholder?
- What format will be used to package this information?
- What communication medium should be used?

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Figure 3-13: The Project Communication Matrix Provides a High-Level Summary of the Communication Plan

Stakeholder	Document	Format	Team Contact	Date Due
Team Members	Project Status Report	Project Intranet	Juan Kim	First Monday of Month
Management Supervisor	Project Status Report	Hard Copy	Juan Kim	First Monday of Month
User Group	Project Status Report	Hard Copy	James Kim	First Monday of Month
Internal IT Staff	Project Status Report	E-Mail	Jackie James	First Monday of Month
IT Manager	Project Status Report	Hard Copy	Juan Jeremy	First Monday of Month
Contract Programmers	Software Specifications	E-Mail/Project Intranet	Jordan Kim	October 1, 2020
Training Subcontractor	Implementation and Training Plan	Hard Copy	Jordan James	January 7, 2021

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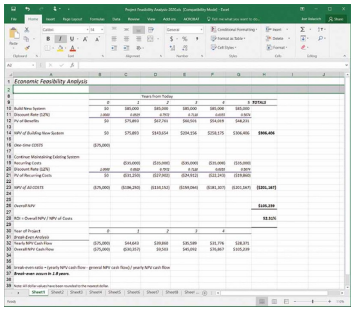
Figure 3-14: Economic Feasibility Analysis



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Executing the Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project execution** – third phase of the project management process, in which the plans created in the prior phase (project initiation and planning) are put into action

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Figure 3-15: Five Project Execution Activities

Project Execution

1. Executing the Baseline Project Plan
2. Monitoring Project Progress against the Baseline Project Plan
3. Managing Changes to the Baseline Project Plan
4. Maintaining the Project Workbook
5. Communicating the Project Status

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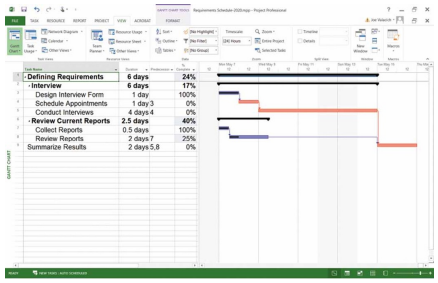
Figure 3-16: Gantt Chart with Tasks 3 and 7 Completed, and Task 8 Partially Completed



(**Source:** Microsoft Corporation)

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Table 3-2: Project Team Communication Methods

Procedure	Formality	Use
Project workbook	High	Inform Permanent record
Meetings	Medium to high	Resolve issues
Seminars and workshops	Low to medium	Inform
Project newsletters	Medium to high	Inform
Status reports	High	Inform
Specification documents	High	Inform Permanent record
Minutes of meetings	High	Inform Permanent record
Bulletin boards	Low	Inform
Memos	Medium to high	Inform
Brown bag lunches	Low	Inform
Hallway discussions	Low	Inform Resolve issues

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Closing Down the Project

3.1 Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown

- **Project closedown** – final phase of the project management process, which focuses on bringing a project to an end

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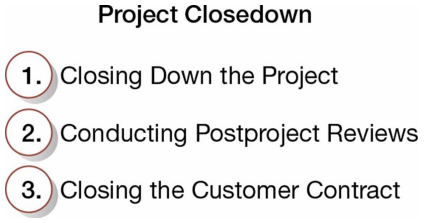
Figure 3-17: Three Project Closedown Activities



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Representing and Scheduling Project Plans

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- Project managers have a variety of techniques for depicting and documenting project plans
  - Graphical or text-based
  - Examples: Gantt charts, network diagrams

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Gantt Charts vs Network Diagrams

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- Gantt charts
  - Show task durations
  - Show time overlap
  - Show slack time in duration
- Network diagrams
  - Show task dependencies
  - Do not show time overlap, but show parallelism
  - Show slack time in boxes

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Figure 3-18(a): Graphical Diagrams That Depict Project Plans—Gantt Chart

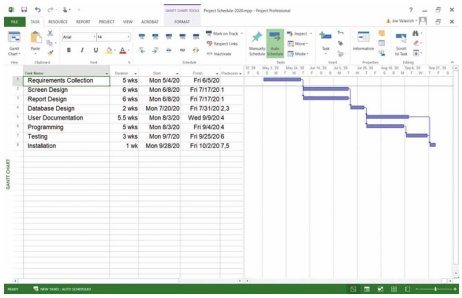

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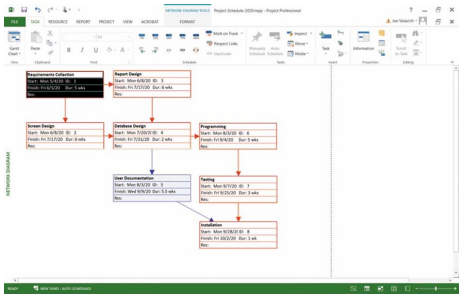
Figure 3-18(b): Graphical Diagrams That Depict Project Plans—Gantt Chart



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Representing Project Plans

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- **Resources** – any person, group of people, piece of equipment, or material used in accomplishing an activity
- **Critical path scheduling** – scheduling technique whose order and duration of a sequence of task activities directly affect the completion date of a project
- **PERT (Program Evaluation Review Technique)** – technique that uses optimistic, pessimistic, and realistic time estimates to calculate the expected time for a particular task

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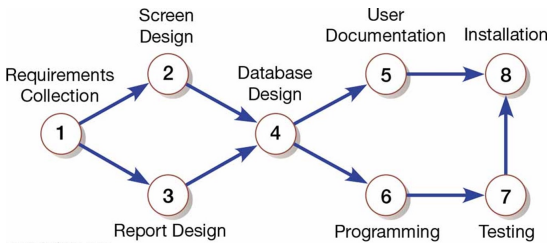
Figure 3-20: Network Diagram Showing Activities (Represented by Circles) and Sequences of Those Activities (Represented by Arrows)



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Estimated Task Duration

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- The PERT technique uses optimistic (*o*), pessimistic (*p*), and realistic (*r*) time estimates to determine expected task duration.
- Formula for Estimated Time:

$$ET = \frac{(o + 4r + p)}{6}$$

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Figure 3-21: Estimated Time Calculations for the SPTS Project

ACTIVITY	TIME ESTIMATE (in weeks) *o*	*r*	*p*	EXPECTED TIME (ET) $\frac{o + 4r + p}{6}$
1. Requirements Collection	1	5	9	5
2. Screen Design	5	6	7	6
3. Report Design	3	6	9	6
4. Database Design	1	2	3	2
5. User Documentation	2	6	7	5.5
6. Programming	4	5	6	5
7. Testing	1	3	5	3
8. Installation	1	1	1	1

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Figure 3-22: Sequences of Activities Within the SPTS Project

ACTIVITY	PRECEDING ACTIVITY
1. Requirements Collection	—
2. Screen Design	1
3. Report Design	1
4. Database Design	2,3
5. User Documentation	4
6. Programming	4
7. Testing	6
8. Installation	5,7

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Critical Path Scheduling

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- A scheduling technique whose order and duration of a sequence of task activities directly affect the completion
- **Critical path** – shortest time in which a project can be completed
- **Slack time** – amount of time that an activity can be delayed without delaying the project

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Figure 3-23: Gantt Chart That Illustrates the Sequence and Duration of Each Activity of the SPTS Project

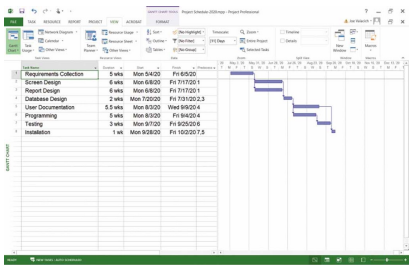

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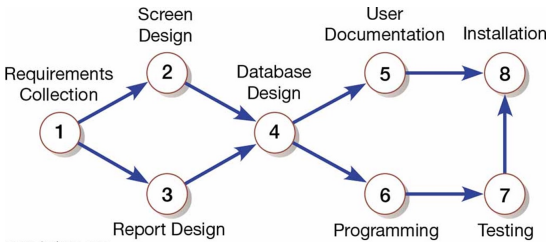
Figure 3-24: A Network Diagram That Illustrates the Activities (Circles) and the Sequence (Arrows) of Those Activities



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Determining the Critical Path

3.2 Describe how to represent and schedule project plans using Gantt charts and network diagrams

- Calculate the earliest possible completion time for each activity by summing the activity times in the longest path to the activity giving the expected project time
- Calculate the latest possible completion time for each activity by subtracting the activity times in the path following the activity from the total expected time giving the slack time for activities
- Critical path contains no activities with slack time

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Figure 3-25: A Network Diagram for the SPTS Project Showing Estimated Times for Each Activity and the Earliest and Latest Expected Completion Time for Each Activity

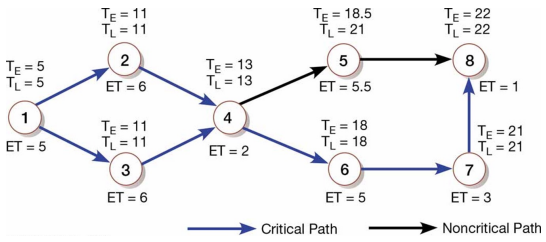

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Figure 3-26: Activity Slack Time Calculations for the SPTS Project; All Activities Except Number 5 Are on the Critical Path

ACTIVITY	T_E	T_L	SLACK $T_L - T_E$	ON CRITICAL PATH
1	5	5	0	✓
2	11	11	0	✓
3	11	11	0	✓
4	13	13	0	✓
5	18.5	21	2.5	
6	18	18	0	✓
7	21	21	0	✓
8	22	22	0	✓

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Using Project Management Software

3.3 Explain how commercial project management software packages can be used to assist in representing and managing project schedules

- Many powerful software tools exist for assisting with project management
- Microsoft Project is an example that can be used to:
  - Establish a project starting or ending date
  - Enter tasks and assign task relationships
  - Select a scheduling method to review project reports

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Figure 3-27: Establishing a Project Starting Date in Microsoft Project

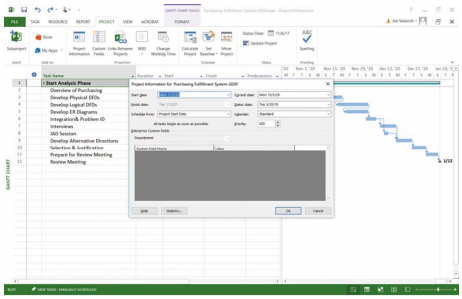

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Figure 3-28: Entering Tasks and Assigning Task Relationships in Microsoft Project

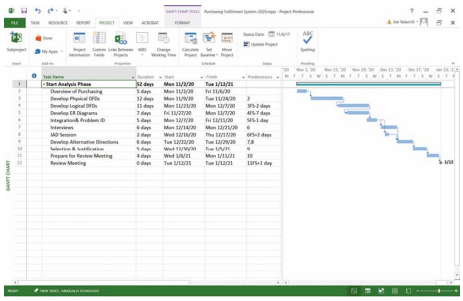

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Figure 3-29: Viewing Project Information as a Network Diagram in Microsoft Project

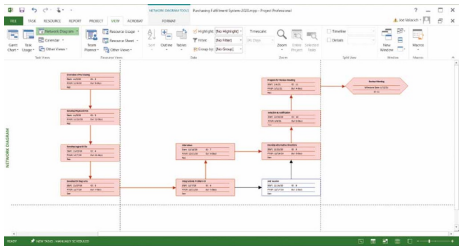

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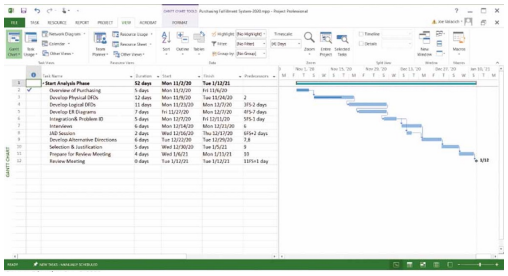
Figure 3-30: Gantt Chart Showing Progress of Activities (Right Frame) Versus Planned Activities (Left Frame)



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Summary

- In this chapter you learned to:
  - Explain the process of managing an information systems project, including initiation, project planning, project execution, and project closedown
  - Describe how to represent and schedule project plans using Gantt charts and network diagrams
  - Explain how commercial project management software packages can be used to assist in representing and managing project schedules

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