

Managing the Information Systems Project

Learning Objectives

- ✓ Explain the process of managing an information systems project.
- ✓ Describe the skills required to be an effective project manager.
- ✓ List project management activities during project initiation, planning, execution, and closedown.
- ✓ Explain critical path scheduling, Gantt charts, and Network diagrams.
- ✓ Explain the utility of commercial project management software tools.

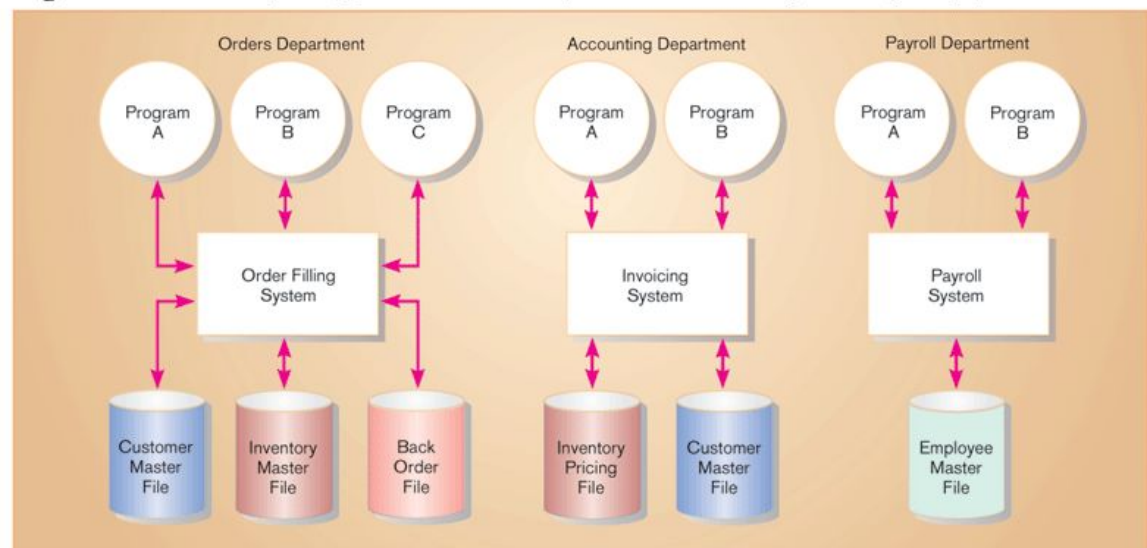
Importance of Project Management

- Project management may be the most important aspect of systems development.
- Effective PM helps ensure
 - Meeting customer expectations
 - Satisfying budget and time constraints
- PM skills are difficult and important to learn.

3

Pine Valley Application Project

Figure 3-1 Three computer applications at Pine Valley Furniture: Order filling, invoicing, and payroll



Source: Hoffer, Prescott, and McFadden, 2002.

4

Deciding on Systems Projects

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

5

Figure 3-2 System Service Request for 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

Pine Valley Furniture System Service Request	
REQUESTED BY	Juanita Lopez
DATE	November 1, 2004
DEPARTMENT	Purchasing, Manufacturing Support
LOCATION	Headquarters, 1-322
CONTACT	Tel: 4-3267 FAX: 4-3270 e-mail: jlopez
TYPE OF REQUEST	
<input checked="" type="checkbox"/> New System	URGENCY
<input type="checkbox"/> System Enhancement	<input type="checkbox"/> Immediate - Operations are impaired or opportunity lost
<input type="checkbox"/> System Error Correction	<input type="checkbox"/> Problems exist, but can be worked around
	<input checked="" type="checkbox"/> Business losses can be tolerated until new system installed
PROBLEM STATEMENT	
Sales growth at PVF has caused greater volume of work for the manufacturing support unit within Purchasing. Further, more concentration on customer service has reduced manufacturing lead times, which puts more pressure on purchasing activities. In addition, cost-cutting measures force Purchasing to be more aggressive in negotiating terms with vendors, improving delivery times, and lowering our investments in inventory. The current modest systems support for Manufacturing/Purchasing is not responsive to these new business conditions. Data are not available, information cannot be summarized, supplier orders cannot be adequately tracked, and commodity buying is not well supported. PVF is spending too much on raw materials and not being responsive to manufacturing needs.	
SERVICE REQUEST	
I request a thorough analysis of our current operations with the intent to design and build a completely new information system. This system should handle all purchasing transactions, support display and reporting of critical purchasing data, and assist purchasing agents in commodity buying.	
IS LIAISON Chris Martin (Tel: 4-6204 FAX: 4-6200 e-mail: cmartin)	
SPONSOR Sal Divario, Director, Purchasing	
----- TO BE COMPLETED BY SYSTEMS PRIORITY BOARD -----	
<input type="checkbox"/> Request approved	Assigned to _____
<input type="checkbox"/> Recommend revision	Start date _____
<input type="checkbox"/> Suggest user development	
<input type="checkbox"/> Reject for reason _____	

System Service Request (SSR) is a form requesting development or maintenance of an information system. It includes the contact person, a problem statement, a service request statement, and liaison contact information

6

Managing the Information Systems Project

- Project
 - A planned undertaking of related activities to reach an objective that has a beginning and an end
- Project management
 - A controlled process of initiating, planning, executing, and closing down a project

7

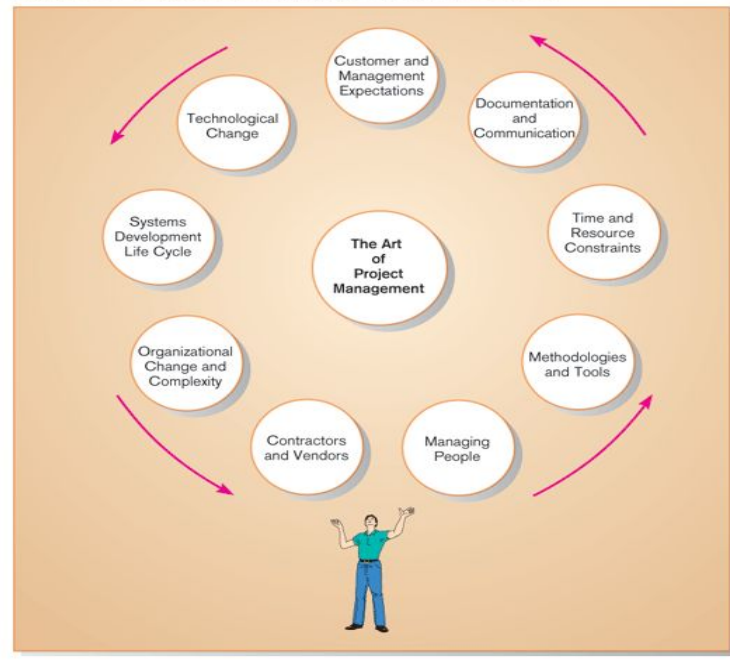
Managing the Information Systems Project (cont.)

- Project manager
 - Systems analyst with management and leadership skills responsible for leading project initiation, planning, execution, and closedown
- Deliverable
 - The end product of an SDLC phase

8

Project Management Activities

Figure 3-4 A project manager juggles numerous activities.



9

Phases of Project Management Process

- Phase 1: Initiation
- Phase 2: Planning
- Phase 3: Execution
- Phase 4: Closedown

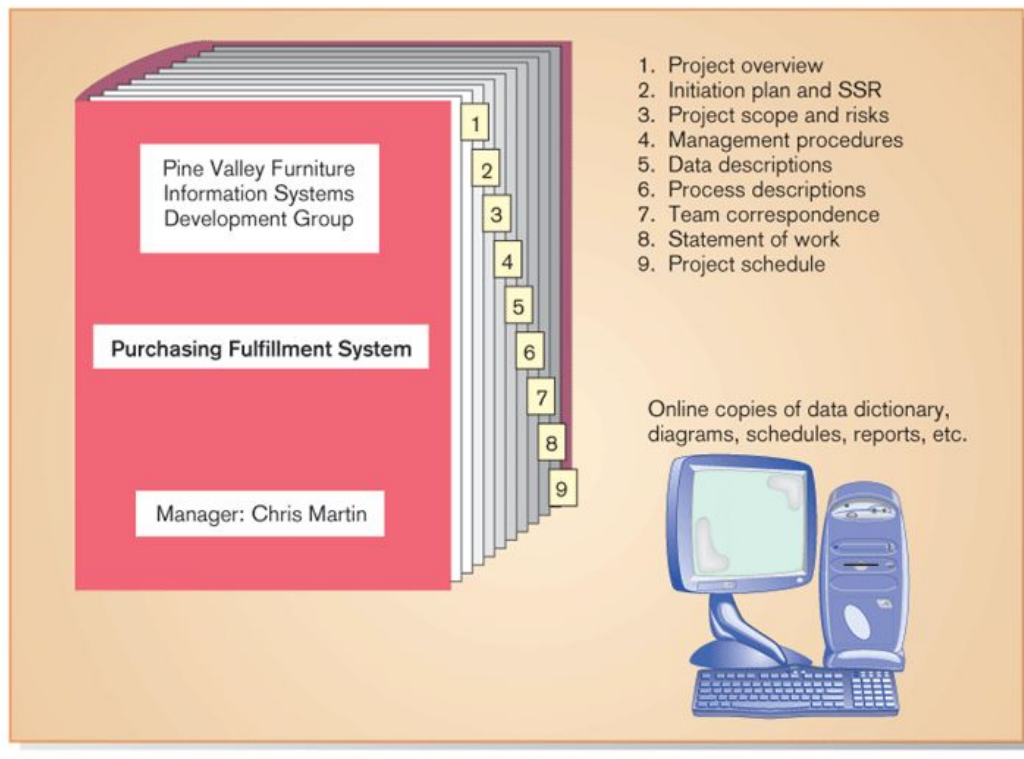
10

PM Phase 1: Project Initiation

- Assess size, scope and complexity, and establish procedures.
- Establish:
 - Initiation team
 - Relationship with customer
 - Project initiation plan
 - Management procedures
 - Project management environment
 - Project workbook

11

Figure 3-6 The project workbook for the Purchase Fulfillment System project contains nine key documents in both hard-copy and electronic form.



12

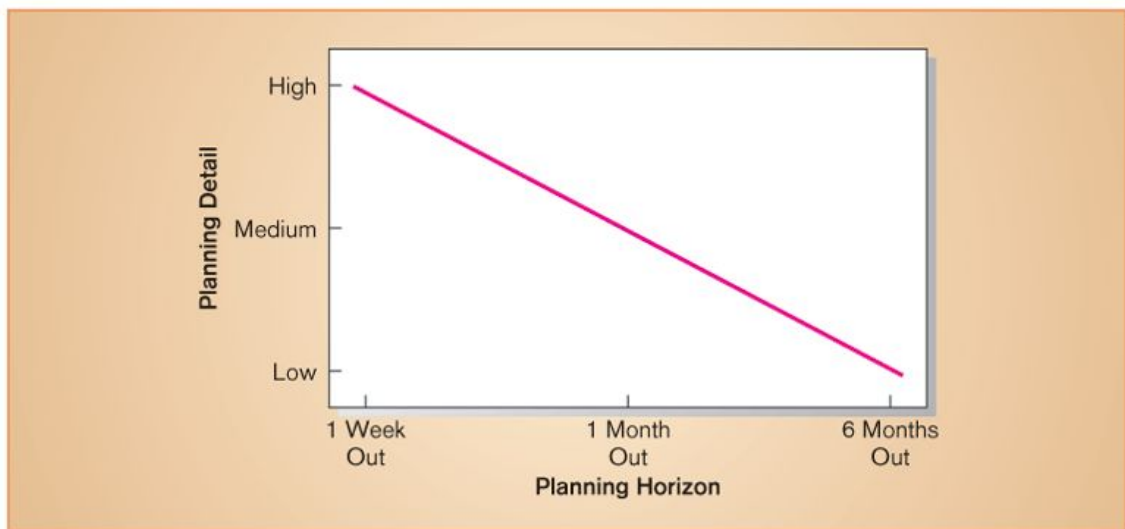
PM Phase 2: Project Planning

- Define clear, discrete activities and the work needed to complete each activity
- Tasks
 - Define project scope, alternatives, feasibility
 - Divide project into tasks
 - Estimate resource requirements
 - Develop preliminary schedule
 - Develop communication plan
 - Determine standards and procedures
 - Risk identification and assessment
 - Create preliminary budget
 - Develop a statement of work
 - Set baseline project plan

13

Planning Detail

Figure 3-7 Level of project planning detail should be high in the short term, with less detail as time goes on.



14

Some Components of Project Planning

- Statement of Work (SOW)
 - “Contract” between the IS staff and the customer regarding deliverables and time estimates for a system development project
- The Baseline Project Plan (BPP)
 - Contains estimates of scope, benefits, schedules, costs, risks, and resource requirements
- Preliminary Budget
 - Cost-benefit analysis outlining planned expenses and revenues

15

Some Components of Project Planning (cont.)

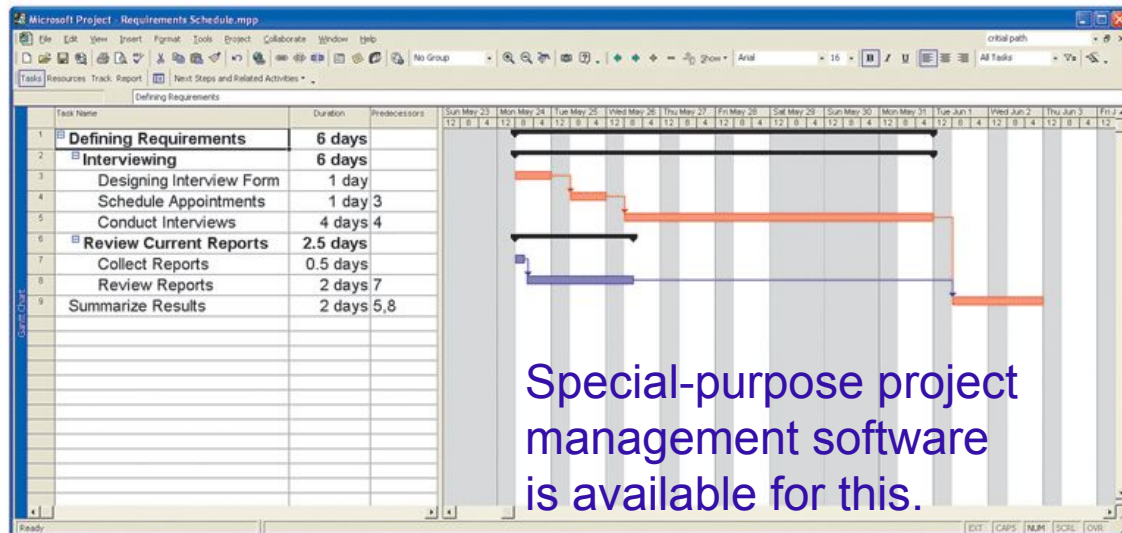
- Work Breakdown Structure (WBS)
 - Division of project into manageable and logically ordered tasks and subtasks
- Scheduling Diagrams
 - Gantt chart: horizontal bars represent task durations
 - Network diagram: boxes and links represent task dependencies

16

Scheduling Diagrams

Gantt Chart

Figure 3-9 Gantt chart showing project tasks, duration times for those tasks, and predecessors

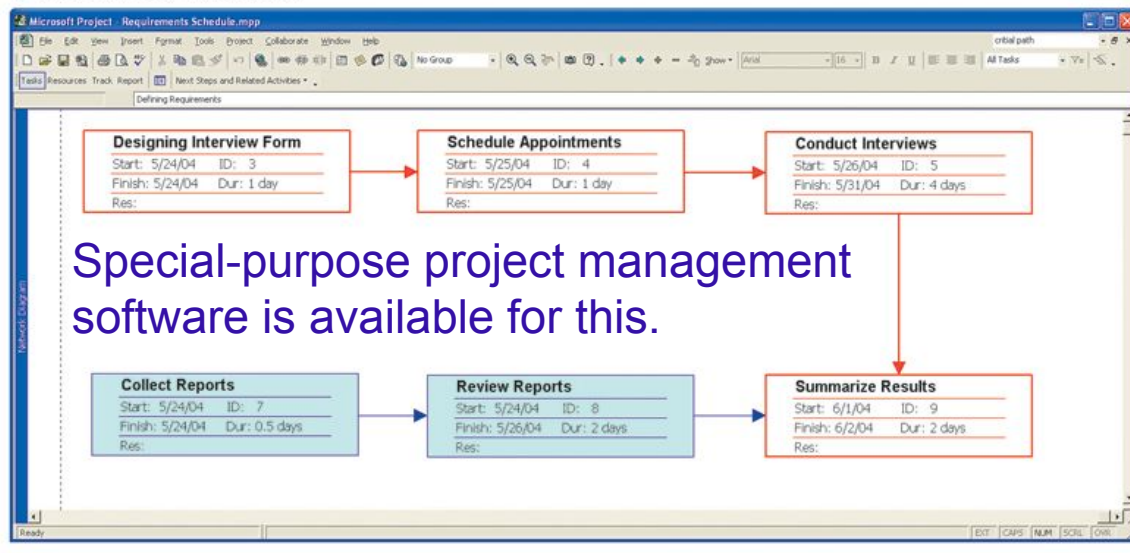


17

Scheduling Diagrams

Network Diagram

Figure 3-11 A network diagram illustrates tasks with rectangles (or ovals) and the relationships and sequences of those activities with arrows.



18

Preliminary Budget

Figure 3-12 A financial cost and benefit analysis for a systems development project

	0	1	2	3	4	5	TOTALS
Build New System	\$0	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000	
Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674	
PV of Benefits	\$0	\$75,893	\$67,761	\$60,501	\$54,019	\$48,231	
NPV of Building New System	\$0	\$75,893	\$143,654	\$204,156	\$258,175	\$306,406	\$306,406
One-time COSTS	(\$75,000)						
Continue Maintaining Existing System							
Recurring Costs		(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	
Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674	
PV of Recurring Costs	\$0	(\$31,250)	(\$27,902)	(\$24,912)	(\$22,243)	(\$19,800)	
NPV of ALL COSTS	(\$75,000)	(\$106,250)	(\$134,152)	(\$159,064)	(\$181,307)	(\$201,167)	(\$201,167)
Overall NPV							\$105,239
ROI = Overall NPV / NPV of Costs							52.31%
Year of Project	0	1	2	3	4		
Break-Even Analysis							
Yearly NPV Cash Flow	(\$75,000)	\$44,643	\$39,860	\$35,589	\$31,776	\$28,371	
Overall NPV Cash Flow	(\$75,000)	(\$30,357)	\$9,503	\$45,092	\$76,667	\$105,239	
Break-Even Ratio = (yearly NPV cash flow - general NPV cash flow) / yearly NPV cash flow							
Break-Even occurs in 1.8 years							

Spreadsheet software is good for this.

19

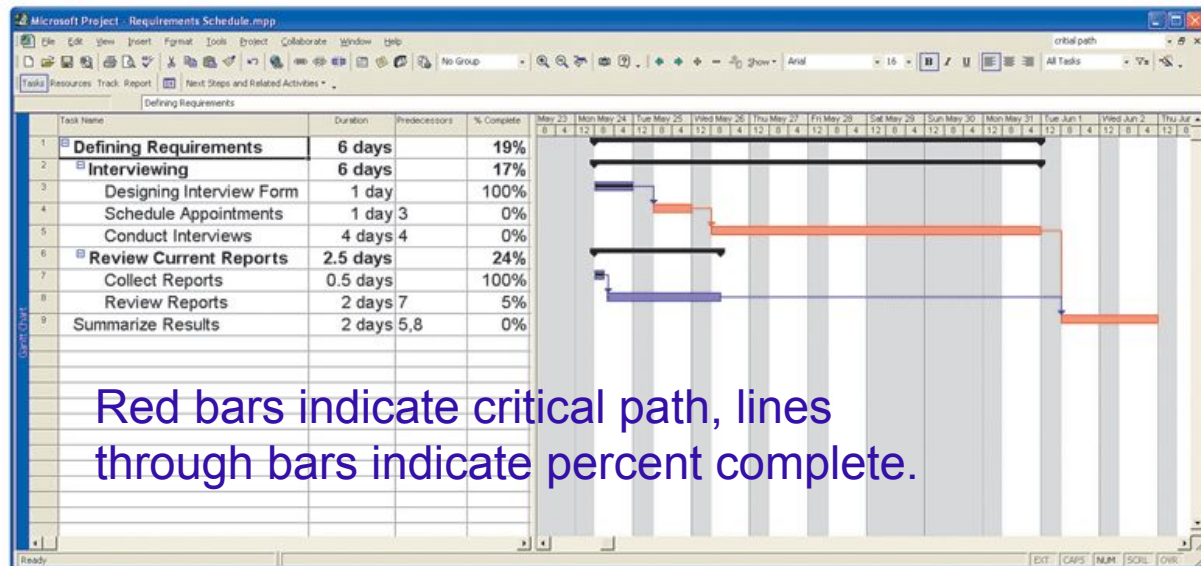
PM Phase 3: Project Execution

- Plans created in prior phases are put into action.
- Actions
 - Execute baseline project plan
 - Monitor progress against baseline plan
 - Manage changes in baseline plan
 - Maintain project workbook
 - Communicate project status

20

Monitoring Progress with a Gantt Chart

Figure 3-14 Gantt chart with tasks 3 and 7 completed



21

Communication Methods

- Project workbook
- Meetings
- Seminars and workshops
- Newsletters
- Status reports
- Specification documents
- Minutes of meetings
- Bulletin boards
- Memos
- Brown bag lunches
- Hallway discussions

22

PM Phase 4: Project Closedown

- Bring the project to an end.
- Actions
 - Close down the project.
 - Conduct post-project reviews.
 - Close the customer contract.

23

Representing and Scheduling Project Plans

- Gantt Charts
- Network Diagrams
- PERT Calculations
- Critical Path Scheduling
- Project Management Software

24

Gantt Charts vs. 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.

25

Gantt Charts vs. Network Diagrams (cont.)

Figure 3-16a Graphical diagrams that depict project plans - A Gantt chart

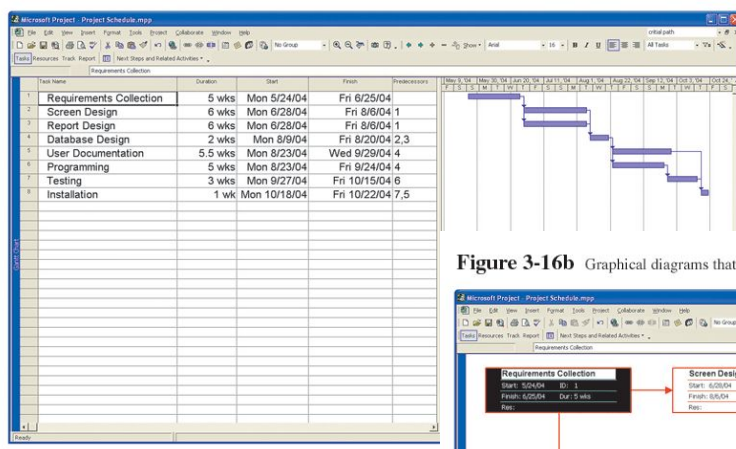
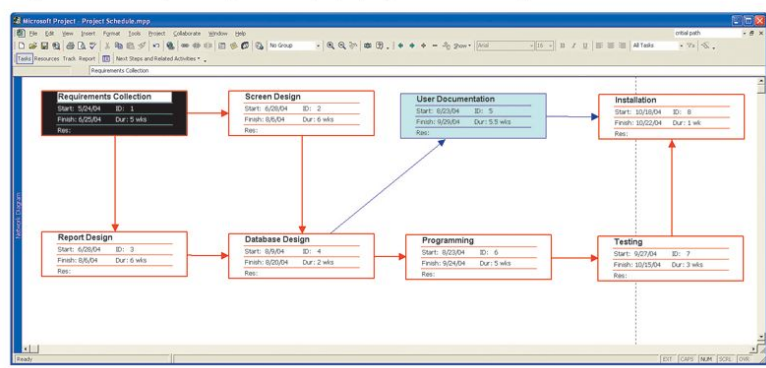


Figure 3-16b Graphical diagrams that depict project plans - A network diagram



26

Estimating Task Duration

- PERT: Program Evaluation Review Technique
- Technique that uses optimistic (o), pessimistic (p), and realistic (r) time estimates to determine expected task duration
- Formula for Estimated Time:
 - $ET = (o + 4r + p)/6$

27

Example PERT Analysis

Figure 3-19 Estimated time calculations for the SPTS project

ACTIVITY	TIME ESTIMATE (in weeks)			EXPECTED TIME (ET) $\frac{o + 4r + p}{6}$
	o	r	p	
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	3	6	7	5.5
6. Programming	4	5	6	5
7. Testing	1	3	5	3
8. Installation	1	1	1	1

28

Critical Path Scheduling

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

29

Critical Path Example (dependencies between tasks)

Figure 3-20

Sequence of Activities within the SPTS project

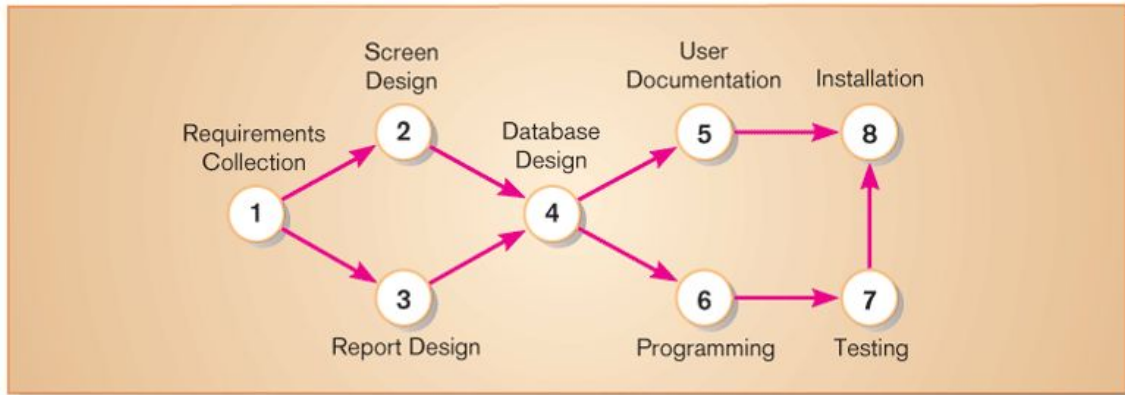
ACTIVITY	PRECEDING ACTIVITY
1. Requirements Collection	—
2. Screen Design	1
3. Report Design	1
4. Database Design	2,3
5. User Documentation	4
6. Programming	4
7. Testing	6
8. Installation	5,7

PRECEDING ACTIVITIES indicate the activities that must be completed before the specified activity can begin (see Fig. 3.19 for time estimates).

Critical Path Example

Figure 3-22

A network diagram that illustrates the activities (circles) and the sequence (arrows) of those activities



Network diagram provides graphical illustration of dependencies between activities (see previous slide).

31

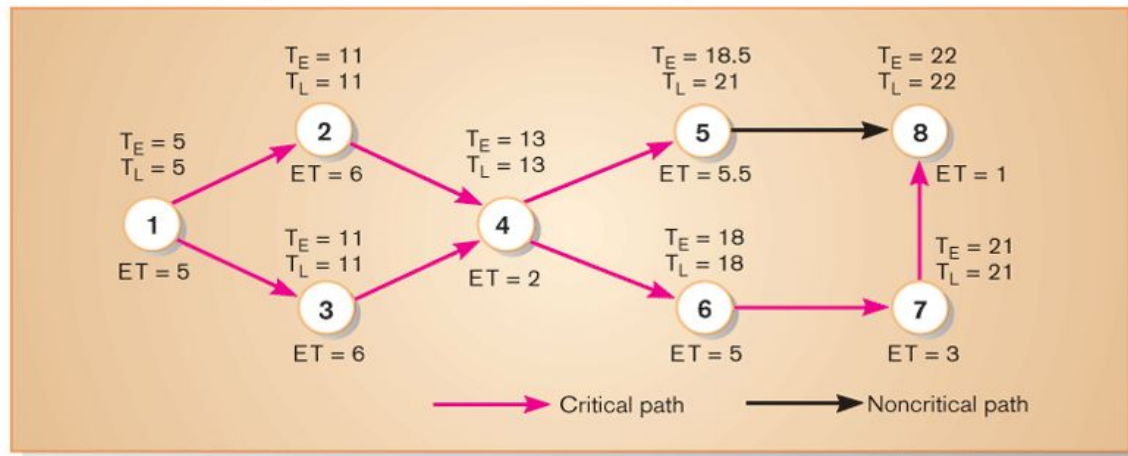
Determining the Critical Path

- Calculate the earliest possible completion time for each activity by summing the activity times in the longest path to the activity. This gives total 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. This gives slack time for activities.
- Critical path – contains no activities with slack time.

32

Critical Path Calculation

Figure 3-23 A network diagram for the SPTS project showing estimated times for each activity and the earliest and latest expected completion time for each activity



Early and late time calculations are determined and critical path established. (Note: Activity #5 can begin late without affecting project completion time).

33

Critical Path Calculation (cont.)

Figure 3-24 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	✓

Note the slack time in Activity #5.

34

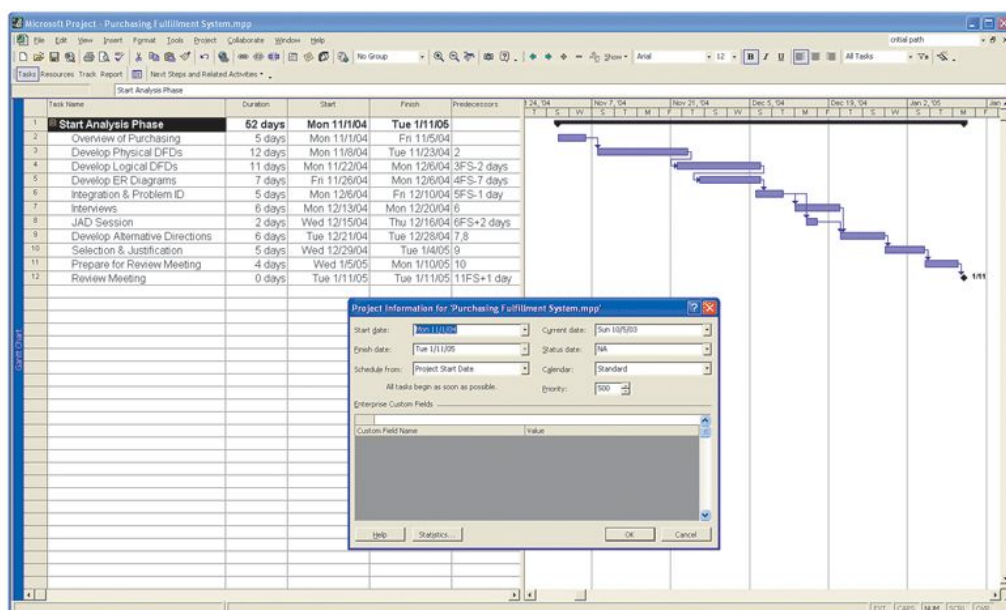
Using Project Management Software

- Many powerful software tools exist for assisting with project management.
- Example: Microsoft Project can help with
 - Entering project start date.
 - Establishing tasks and task dependencies.
 - Viewing project information as Gantt or Network diagrams.

35

Project Start Date

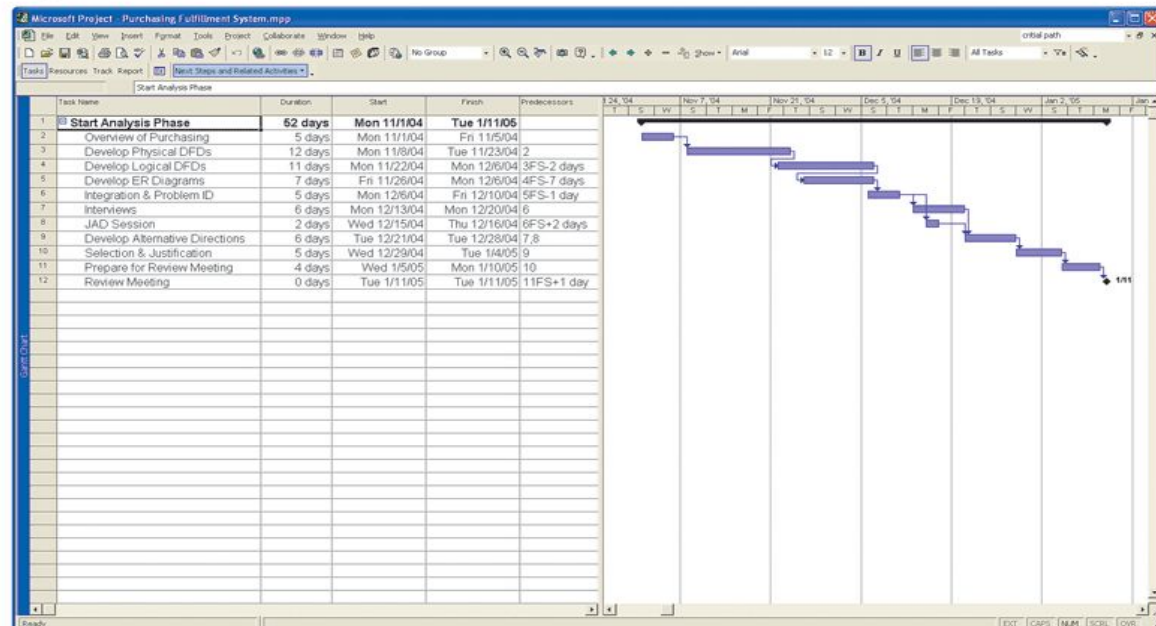
Figure 3-25 Establishing a project starting date in Microsoft Project for Windows



36

Entering Tasks

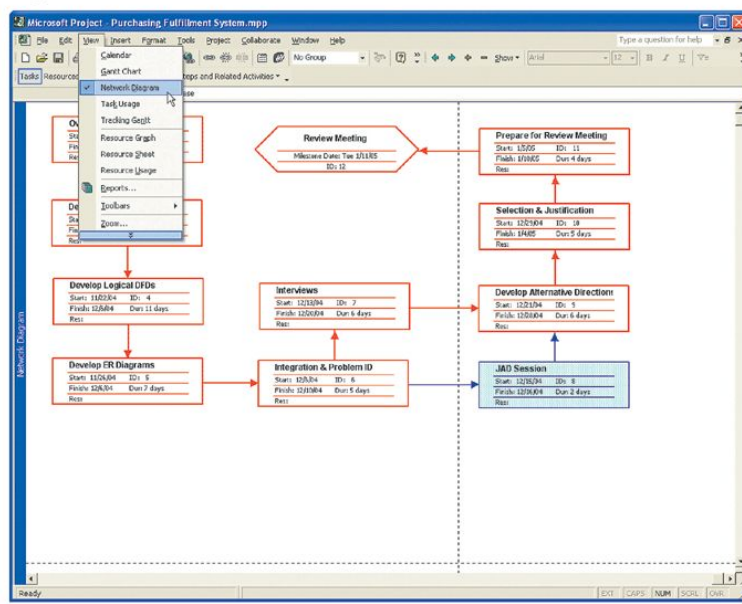
Figure 3-26 Entering tasks and assigning task relationships in Microsoft Project for Windows



37

Viewing Network Diagram

Figure 3-27 Viewing project information as a network diagram in Microsoft Project for Windows



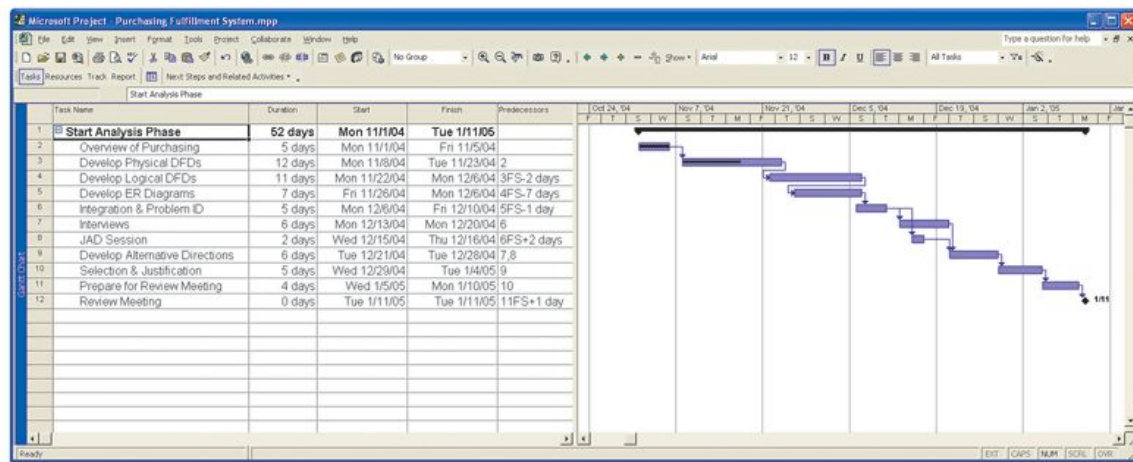
Hexagon shape indicates a milestone.

Red boxes and arrows indicate critical path (no slack).

38

Viewing Gantt Chart

Figure 3-28 Gantt chart showing progress of activities (right frame) versus planned activities (left frame)



Black line at top indicates a summary activity (composed of subtasks).
Diamond shape indicates a milestone.

39

Summary

- In this chapter you learned how to:
 - ✓ Explain the process of managing an information systems project.
 - ✓ Describe the skills required to be an effective project manager.
 - ✓ List project management activities during project initiation, planning, execution, and closedown.
 - ✓ Explain critical path scheduling, Gantt charts, and Network diagrams.
 - ✓ Explain the utility of commercial project management software tools.

40