Chapter 3

Managing the Information Systems (IS) Project

Content

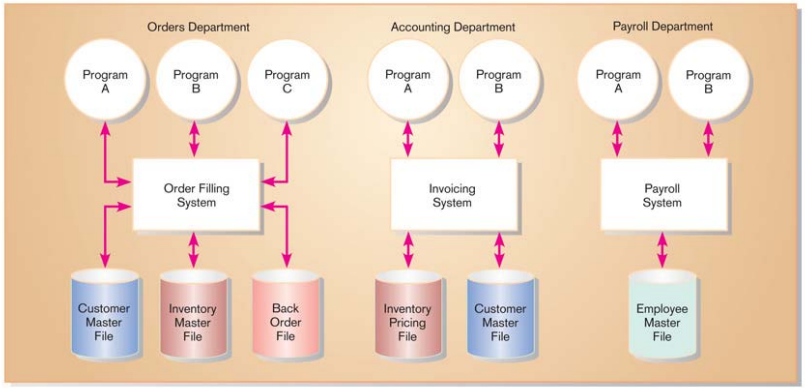
- ✓ *Process of managing IS projects*
- ✓ *Skills* required to be an effective project manager
- ✓ *Skills and activities* of a project manager during project initiation, planning, project execution, and project closedown
- ✓ *Critical path* scheduling and describe the process of creating Gantt chart and Network diagram
- ✓ Commercial project management software packages for representing and managing project schedules

1. Importance of Project Management

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

Pine Valley Furniture (Cont.)

- PVF installed a network server to automate *ordering filling, invoicing, and payroll applications*

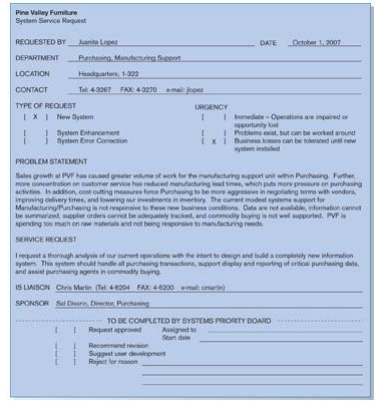


2. Managing the Information Systems (IS) Project

- **Project Manager** may be a *systems analyst* with a diverse set of skills (e.g. management, leadership, technical, conflict management, and customer relationship) who is responsible for *initiating, planning, executing, and closing down* a project
- Project: a planned undertaking of related activities to reach an objective that has a beginning and an end
- Deliverable: an end product of an SDLC phase

System Service Request (SSR)

- A standard form for requesting or proposing systems development work within an organization
- It includes
  - contact person
  - problem statement
  - service request statement
  - liaison contact information


Pine Valley Furniture
System Service Request

REQUESTED BY Juanita Lopez DATE October 1, 2007
DEPARTMENT Purchasing, Manufacturing Support
LOCATION Headquarters, 1-322
CONTACT Tel: 4-3267 FAX: 4-3270 e-mail: jlopez

TYPE OF REQUEST
[X] New System
[ ] System Enhancement
[ ] System Error Correction

URGENCY
[ ] Immediate – Operations are impaired or opportunity lost
[ ] Problems exist, but can be worked around
[X] 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.

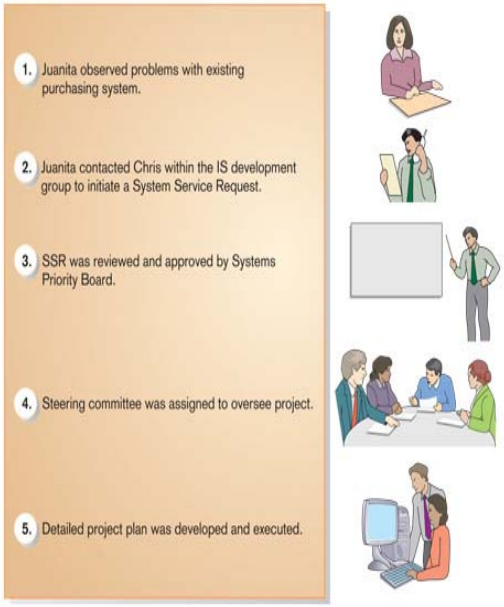
SERVICE REQUEST
I request a thorough analysis of our current operations with the intent to design and build a completely new information system. This system should handle all purchasing transactions, support display and reporting of critical purchasing data, and assist purchasing agents in commodity buying.

IS LIAISON Chris Martin (Tel: 4-6204 FAX: 4-6200 e-mail: cmartin)
SPONSOR Sal Divaro, Director, Purchasing

TO BE COMPLETED BY SYSTEMS PRIORITY BOARD
[ ] Request approved Assigned to
Start date
[ ] Recommend revision
[ ] Suggest user development
[ ] Reject for reason

Feasibility Study

- Determine if the proposed IS makes sense for the organization from an economic and operational standpoint.



Measurement of Project Success

- The resulting information system is acceptable to the customer, if
  - the IS was delivered "on time"
  - the IS was delivered "within budget"
  - the IS development process had a minimal impact on ongoing business operations.

➡ Users' Satisfaction

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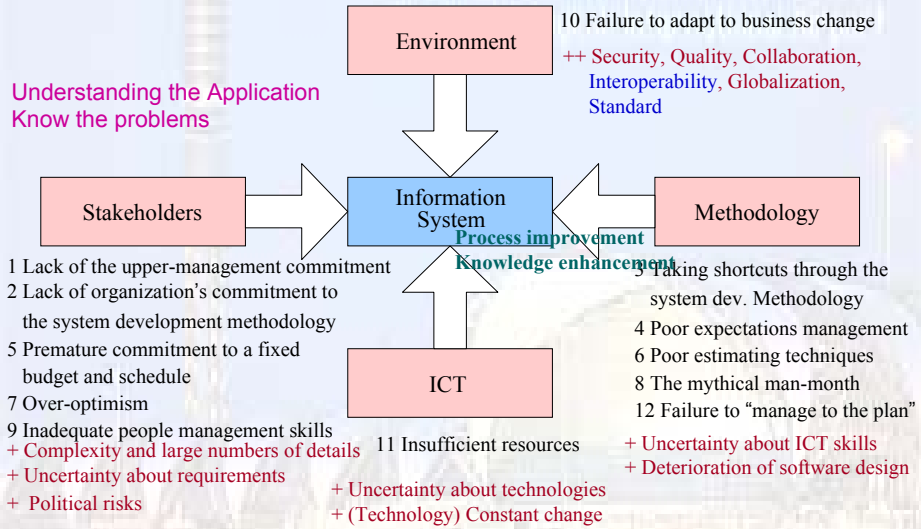
60-75 % of IS project development FAIL

Causes of Failed IS Projects

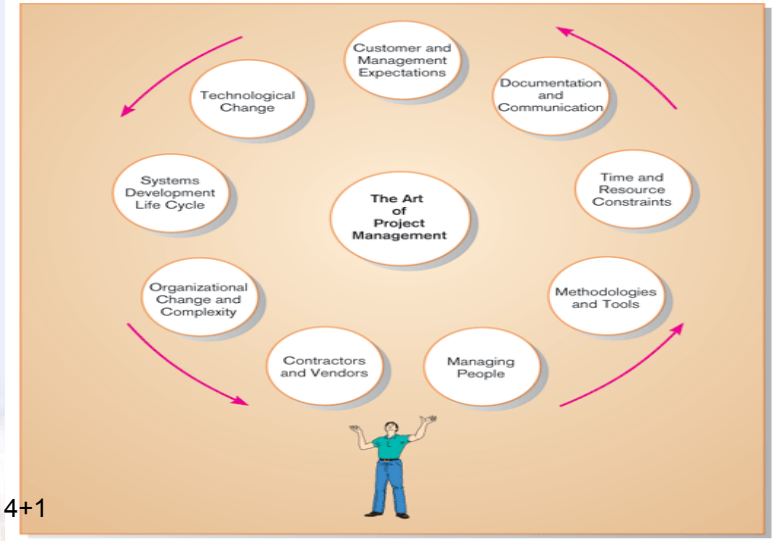
1 Lack of the upper-management commitment
2 Lack of organization's commitment to the system development methodology
3 Taking shortcuts through the system development methodology
4 Poor expectations management →scope/feature creep
5 Premature commitment to a fixed budget and schedule
6 Poor estimating techniques
7 Over-optimism
8 The mythical man-month (Brooks, 1975) งานช้า เพิ่มคน
9 Inadequate people management skills
10 Failure to adapt to business change
11 Insufficient resources
12 Failure to "manage to the plan"

Causes of Failed IS Projects



Project Management Activities

Figure 3-4 A project manager juggles numerous activities.



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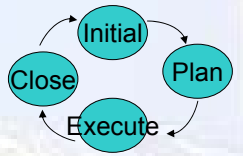
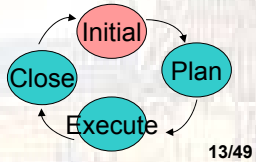
Project Management Process

- Four phases of project management process:
  - Initiating the Project
  - Planning the Project
  - Executing the Project
  - Closing down the Project



2.1 Initiating a Project

- Project initiation: the 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



Six Project Initiation Activities

1 Initiation **team**
- Organize project team members to assist in accomplishing project initiation

2 Relationship with the **customer**

3 Project initiation **plan**
- Define activities required to organize team

4 Management **procedures**
- Develop team communication and reporting procedures

5 Project management **environment & project workbook**
- Collect and organize tools that will be used to manage project

6 **Project charter**

Team (supplement)

- Effective team player
  - Personal issue (difference)
  - Team demand
  - Sharing team & individual strength and difference
- Collaboration
  - Empower team: for collective capacity
  - Work together for mutual gain
  - Sharing responsibility for success and failure
- High performance team
  - Collaborative system, structure, incentive, rewards

Project Workbook

- An online or hard-copy repository for all project correspondence, inputs, outputs, deliverables, procedures, and standards that are used

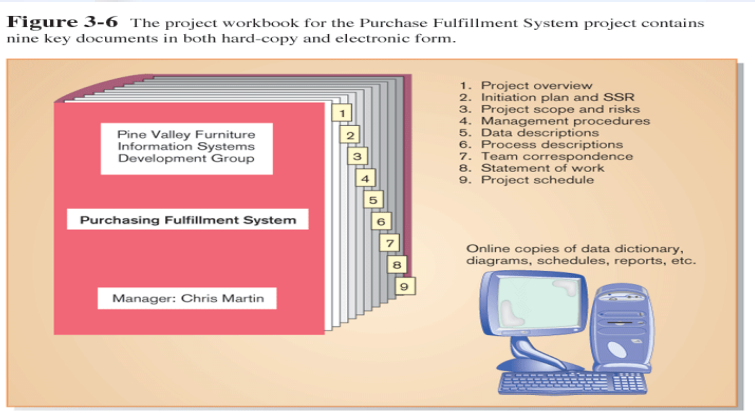


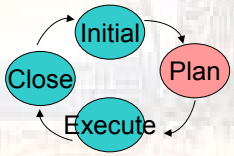
Figure 3-6 The project workbook for the Purchase Fulfillment System project contains nine key documents in both hard-copy and electronic form.

Project Charter

- Short & high-level document prepared for both internal and external stakeholders
- It formally announces the establishment of the project
- It briefly describes its objectives, key assumptions, and stakeholders

2.2 Planning the Project

- Project planning: the 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.



Ten Project Management 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

Ten Project Management Activities

1 Describe project scope, alternatives, and feasibility

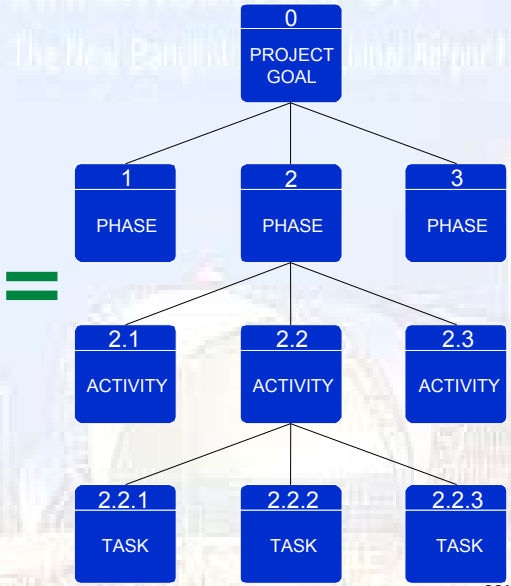
- What problems or opportunities does the project address?
- What are the quantifiable results to be achieved?
- What needs to be done?
- How will success be measured?
- How will we know when we are finished?

2 Divide the project into manageable tasks

- Work Breakdown Structure (WBS)
  - The process of dividing the project into manageable tasks
- The characteristics of a **task**
  - Can be done by one person or a well-defined group
  - Has a single and identifiable deliverable
  - Has a known method or technique
  - Has well-accepted predecessor and successor steps
  - Is measurable so that percent completed can be determined

Work Breakdown Structure

1 Phase 1 of the project …
2 Phase 2 of the project …
2.1 Activity 1 of Phase 2
…
2.2 Activity 2 of Phase 2
2.2.1 Task 1 of Activity 2.2 in Phase 2
2.2.2 Task 2 of Activity 2.2 in Phase 2
2.2.3 Task 3 of Activity 2.2 in Phase 2
2.3 Activity 3 of Phase 2
…
3 Phase 3 of the project …

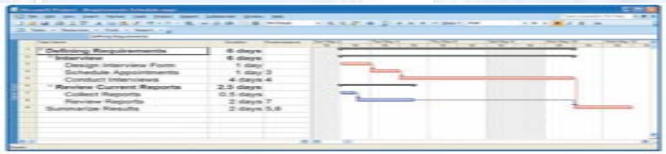


3 Estimate resources and create a resource plan

- **Constructive Cost Model** (**COCOMO**): a widely used method which uses parameters that are derived from prior projects of differing complexity
- **COCOMO** uses these different parameters to predict human resource requirements for basic, intermediate, and very complex systems

4 Develop a preliminary schedule

- Gantt chart: a graphical representation of a project that shows each task as a horizontal bar whose length is proportional to its time for completion



- Network diagram: depicts project tasks and their interrelationships

5 Develop a communication plan

- Who are the stakeholders for this project?
- What information does each stakeholder need?
- When, and at what interval, does this information need to be produced?
- What sources will be used to gather and generate this information?
- Who will collect, store, and verify the accuracy of this information?

Cont.

5 Develop a communication plan (Cont.)

- Who will organize and package this information into a document?
- Who will be the contact person for each stakeholder should any questions arise?
- What format will be used to package this information?
- What communication medium will be most effective for delivering this information to the stakeholder?

6 Determine project standards and procedures

- During this activity, you will specify how various deliverables are produced and tested by you and your project team

7 Identify and assess risk

- The goal of this activity is to identify sources of project risk and to estimate the consequences of those risks

8 Create a preliminary budget

- A preliminary budget outlines the planned expenses and revenues associated with your project

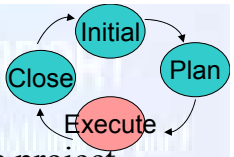
9 Develop a Project Scope Statement (PSS)

- Developed primarily for the customer
- Outlines work that will be done and clearly describes what the project will deliver
- Provides a clear understanding of project size, duration, and outcomes

10 Setting a Baseline Project Plan (BPP)

- Provides an estimate of the project's tasks and resource requirements and is used to guide the next project phase - execution

2.3 Executing the Project



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

1 Executing the Baseline Project

- Initiate the execution of project activities,
- acquire and assign resources,
- orient and train new team members,
- keep the project on schedule, and
- ensure the quality of project deliverables

2 Monitor project progress against the Baseline Project Plan (BPP)

3 Manage changes to the BPP

- A slipped completion date for an activity
- A bungled activity that must be redone
- The identification of a new activity that becomes evident later in the project
- An unforeseen change in personnel due to sickness, resignation, or termination

4 Maintain the Project Workbook

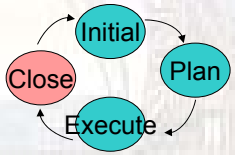
5 Communicate the project status

- Meetings
- Meeting minutes
- Bulletin boards
- Specification documents
- Hallway discussions
- Project workbook

Status reports
Seminars & workshops
Memos
Brown bag lunches
Newsletters

2.4 Closing Down the Project

- Project Closedown: the final phase of the project management process that focuses on bringing a project to an end
- Three project closedown activities
  - Closing down the project
  - Conducting post-project reviews
  - Closing the customer contract



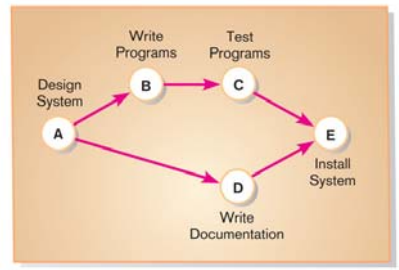
3. Representing and Scheduling Project Plans

- Key differences between 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

3.1 Representing Project Plans

- **Resources** – any person, group of people, piece of equipment, or material used in accomplishing an activity
- **Critical Path Scheduling** – a scheduling technique whose order and duration of a sequence of task activities directly affect the completion date of a project
- **Critical Path** – a sequence of task activities whose order and durations directly affect the completion date of a project.

- Networking diagramming is a critical path scheduling technique and used when tasks:
  - Are well-defined and have a clear beginning and end point
  - Can be worked on independently of other tasks
  - Are ordered
  - Serve the purpose of the project



3.2 Calculating Expected Time Durations using PERT

- **PERT** (**Program Evaluation Review Technique**) – a technique that uses optimistic, pessimistic, and realistic time estimates to calculate the expected time for a particular task.

Calculating Expected Time Durations using PERT (Cont.)

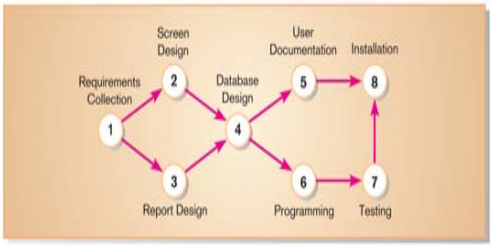
- Formula for Estimated Time:
  - $ET = (o + 4r + p)/6$
- Where
  - ET = expected time for the completion of an activity.
  - o = optimistic completion time for an activity.
  - r = realistic completion time for an activity.
  - p = pessimistic completion time for an activity.

3.3 Constructing a Gantt Chart and Network Diagram for PVF (self study)

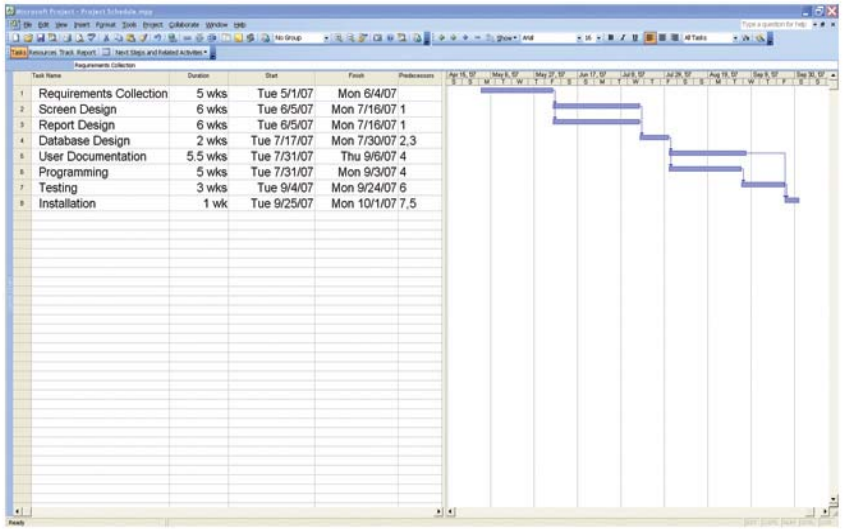
- Here are the steps Pine Valley Furniture (PVF) followed:
  - Identify each activity to be completed in the project
  - Determine time estimates and calculate the expected completion time for each activity
  - Determine the sequence of activities and precedence relationships among all activities by constructing a Gantt chart and network diagram
  - Determine the critical path

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	3	6	7	5.5
6. Programming	4	5	6	5
7. Testing	1	3	5	3
8. Installation	1	1	1	1

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



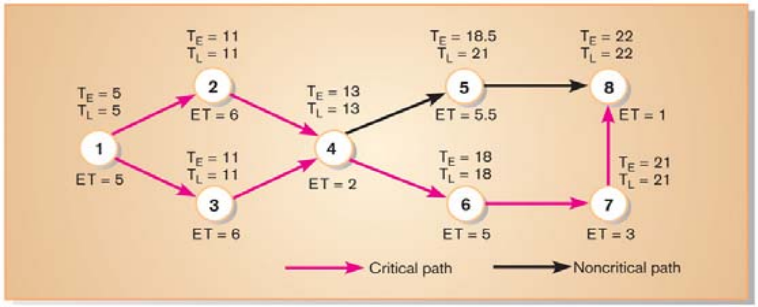
Gantt Chart



	Task Name	Duration	Start	Finish	Predecessors
1	Requirements Collection	5 wks	Tue 5/1/07	Mon 6/4/07	
2	Screen Design	6 wks	Tue 6/5/07	Mon 7/16/07	1
3	Report Design	6 wks	Tue 6/5/07	Mon 7/16/07	1
4	Database Design	2 wks	Tue 7/17/07	Mon 7/30/07	2,3
5	User Documentation	5.5 wks	Tue 7/31/07	Thu 9/6/07	4
6	Programming	5 wks	Tue 7/31/07	Mon 9/3/07	4
7	Testing	3 wks	Tue 9/4/07	Mon 9/24/07	6
8	Installation	1 wk	Tue 9/25/07	Mon 10/1/07	7,5

Determining the Critical Path for PVF

- 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.
- Slack time: the amount of time that an activity can be delayed without delaying the project.



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	✓

4. Using Project Management Software

- Many powerful software tools exist for assisting with project management.
- For example, Microsoft Project can help with
  - Establishing a project starting or ending date.
  - Entering tasks and assigning task relationships.
  - Selecting a scheduling method to review project reports.

Using Project Management Software (Cont.)

- Microsoft Project Gantt Charts:
  - Black line at top indicates a summary activity (composed of subtasks).
  - Diamond shape indicates a milestone.
- Microsoft Project Network Diagrams:
  - Hexagon shape indicates a milestone.
  - Red boxes and arrows indicate critical path (no slack).

Summary

- ✓ Process of managing IS projects
- ✓ Skills required to be an effective project manager
- ✓ Skills and activities of a project manager during project initiation, project execution, and project closedown
- ✓ Critical path scheduling and describe the process of creating Gantt chart and Network diagram
- ✓ Commercial project management software packages for representing and managing project schedules

Questions & Answers

Quiz

1 The focus of _____ is to assure that systems development projects meet customer expectations and are delivered within budget and time constraints.

2 Establishing a relationship with the customer is a _____ activity.

3 _____ is the process of dividing the project into manageable tasks and logically ordering them to ensure a smooth evolution between tasks.

4 A _____ depicts project tasks and their interrelationships.

Exercise

1 Discuss the reasons why organizations undertake IS projects

2 List & describe the common skills & activities of a project manager. Which skill do you think is most important? Why?

3 What are some sources of risk in an SA&D project, & how does project manager cope with risk?

4 Self-study: OOSAD project management, pp.82-88