

COLLEGE OF
**INFORMATION
TECHNOLOGY
AND COMPUTING**

ELECTIVE 4 (IT 415)

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“

**Often when you think
you're at the end of
something, you're at the
beginning of something
else.”**

Fred Rogers



Topic 4: Managing Information Systems Projects



Objectives

By the end of this topic, students will be able to:

- ▶ Explain the process of managing an information systems project, including project initiation, project planning, project execution, and project closedown.
- ▶ Apply the Gantt charts and network diagrams in doing the schedule project Plans.
- ▶ Explain how commercial project management software packages can be used to assist in representing and managing project schedules.



Overview

1. Managing Information System Project
2. Representing and Scheduling Project Plan
3. Risk Management
4. People Management and Teamwork
5. Project Management Software



Project Management

- ▶ Project management (PM) may be the most important aspect of systems development.



Project Management

Duel with your partner!!



What does
a Project
Manager
DO?



Project Manager's Responsibilities



Project Manager's Skills

Do you have these essential
PM SKILLS?

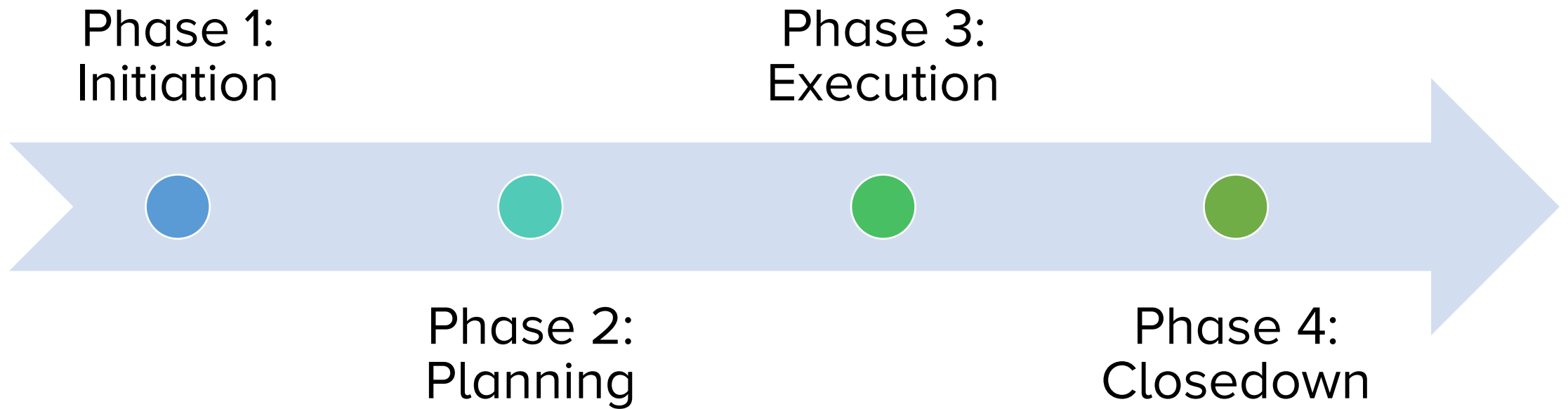
- ✓ Leadership
- ✓ Communication
- ✓ Scheduling
- ✓ Risk Management
- ✓ Cost Management

- ✓ Negotiating
- ✓ Critical Thinking
- ✓ Task Management
- ✓ Quality Management
- ✓ Sense of Humor

Source: <https://www.projectmanager.com/blog/project-management-skills>

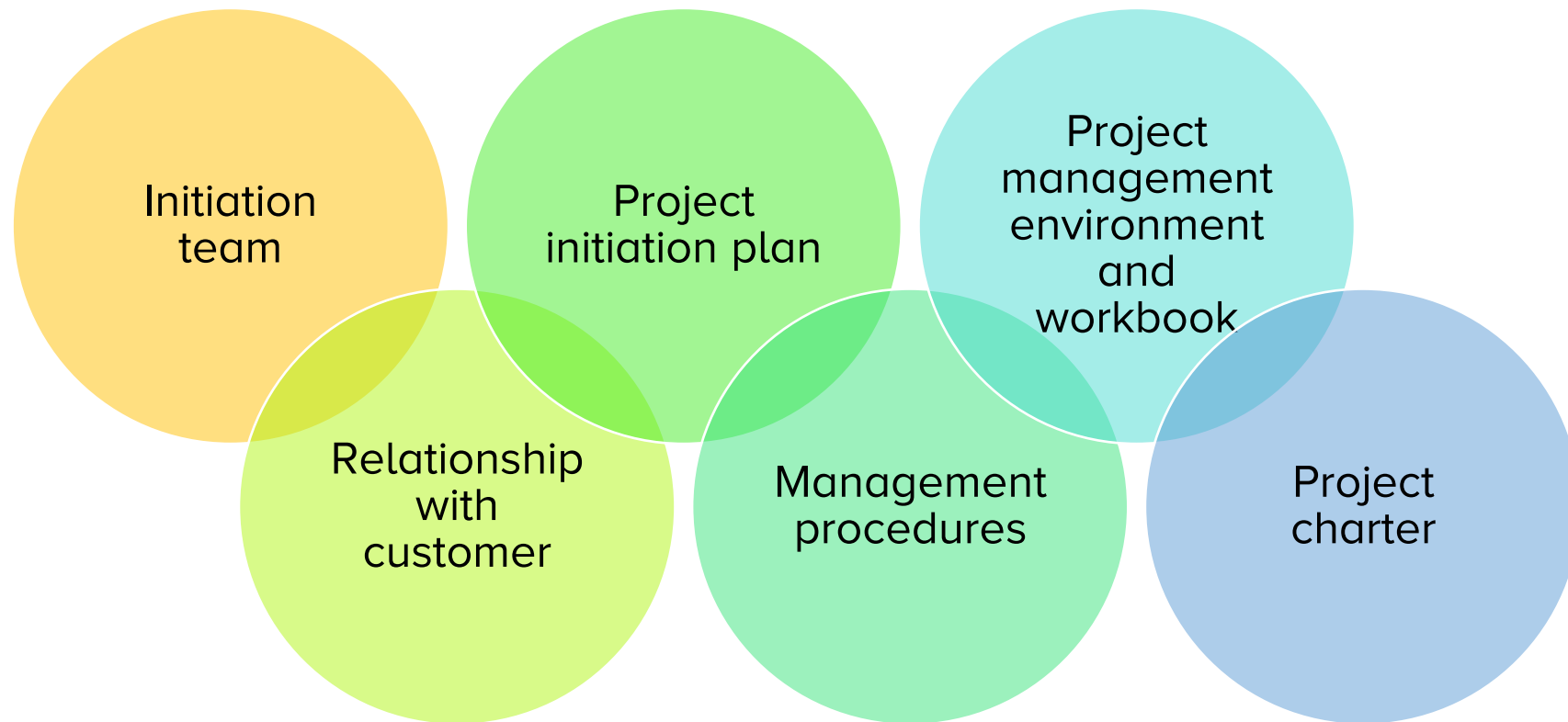


Phases of PM Process



PM Phase 1: Project Initiation

- ▶ Asses sizes, cope and complexity, and establish procedures.



PM Phase 1: Project Initiation

- ▶ The project workbook for the Purchasing Fulfillment System project contains nine key elements



PM Phase 1: Project Initiation

- ▶ A short document for the customer describing project deliverables and outlining the work required to complete the project.

Title and
authorization
date

Project
manager name
and contact
information

Customer name
and contact
information

Project start
and completion
dates

Key
stakeholders,
roles,
responsibilities

Project
objectives and
description

Key
assumptions

Signatures of
stakeholders



PM Phase 1: Project Initiation

- ▶ A sample Project Charter for a Proposed Information Systems Project.

Pine Valley Furniture

Prepared: November 2, 2017

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): 10/2/17–2/1/18

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	<i>Jackie Judson</i>
Alex Datta	CIO	Monitoring, Resources	<i>Alex Datta</i>
Jim Woo	Project Manager	Planning, Monitoring, Executing Project	<i>Jim Woo</i>
James Jordan	Director of Sales	System Functionality	<i>James Jordan</i>
Mary Shide	VP Human Resources	Staff Assignments	<i>Mary Shide</i>



PM Phase 2: Project Planning

Describe Project Scope, Alternatives, and Feasibility

Determine Project Standards and Procedures

Divide the Project into Manageable Tasks

Identify and Assessing Risk

Estimate Resources and Create Resource Plan

Create a Preliminary Budget

Develop a Preliminary Schedule

Develop a Project Scope Statement

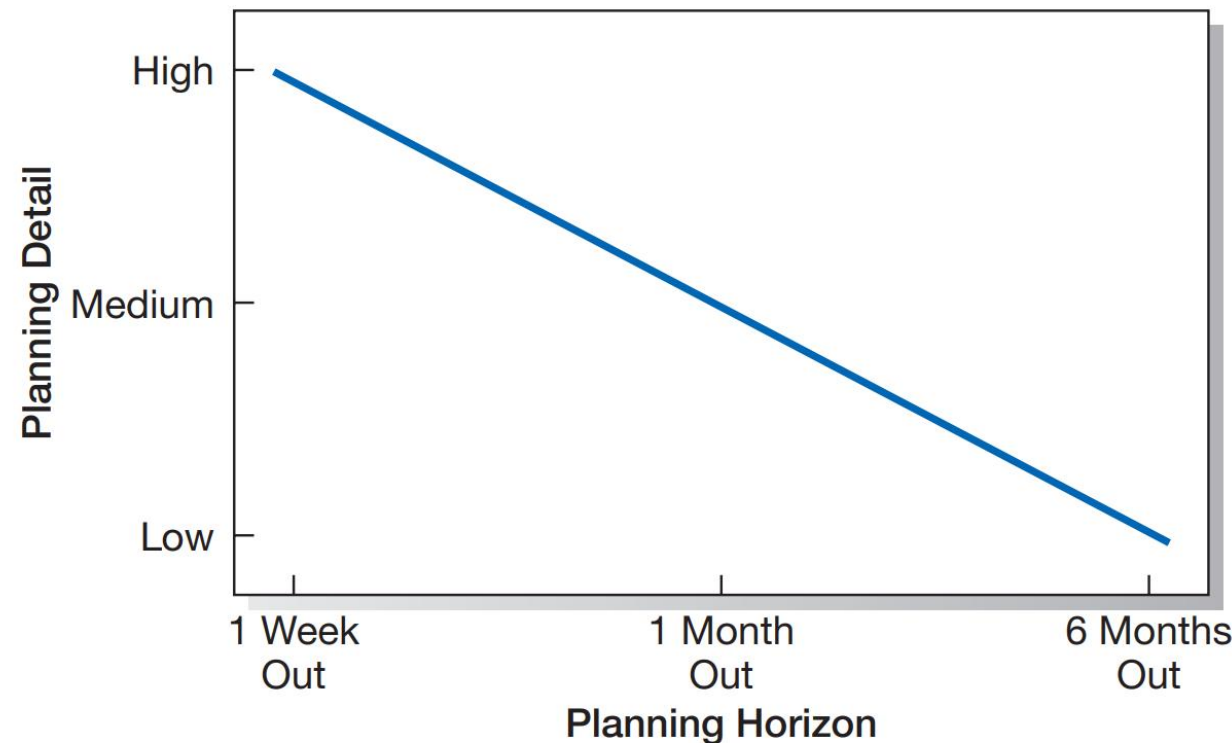
Develop a Communication Plan

Set a Baseline Project Plan



PM Phase 2: Project Planning

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



PM Phase 2: Project Planning

► 1. Project Scope, Alternatives, and Feasibility

- What problem or opportunity 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?



PM Phase 2: Project Planning

▶ 2. Dividing Project into Manageable Tasks

- Work Breakdown Structure (WBS)

- Division of project into manageable and logically ordered tasks and subtasks

- Scheduling Diagrams

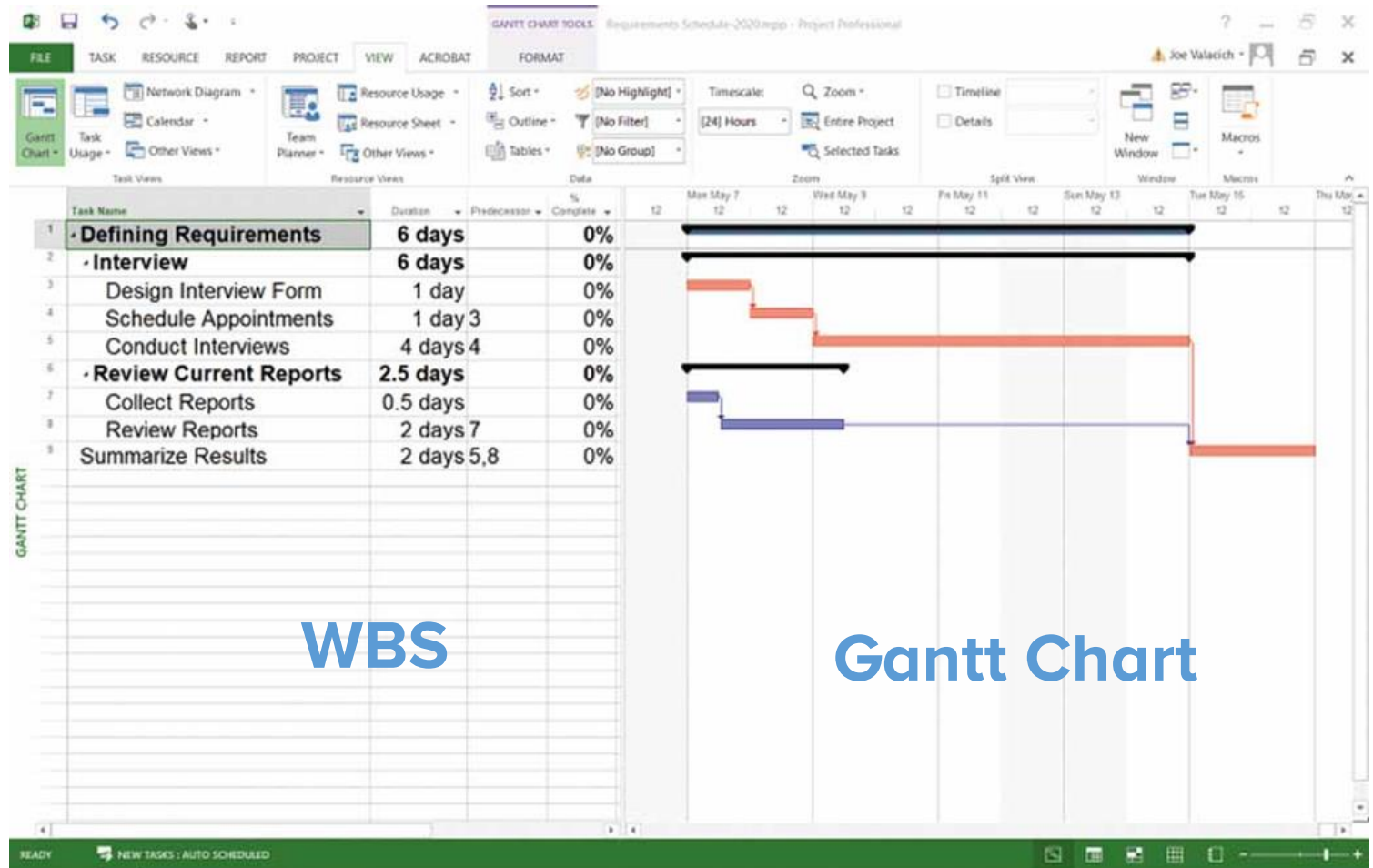
- Gantt chart

- Network diagram



PM Phase 2: Project Planning

► 2. Dividing Project into Manageable Tasks



PM Phase 2: Project Planning

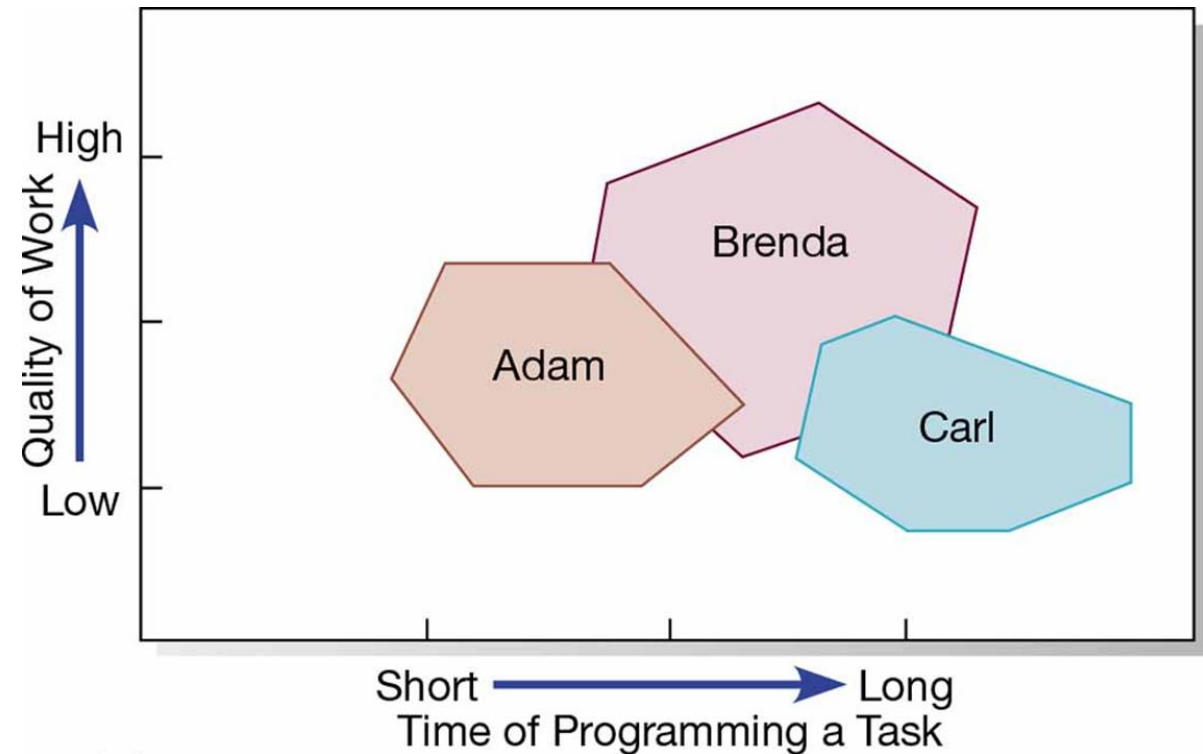
- ▶ **3. Estimating resources and creating a resource plan**
 - **Constructive cost model (C O C O M O)**
 - automated software estimation model that uses historical project data and current as well as future project characteristics to estimate project costs
 - **Network diagram**
 - diagram that depicts project tasks and their relationships



PM Phase 2: Project Planning

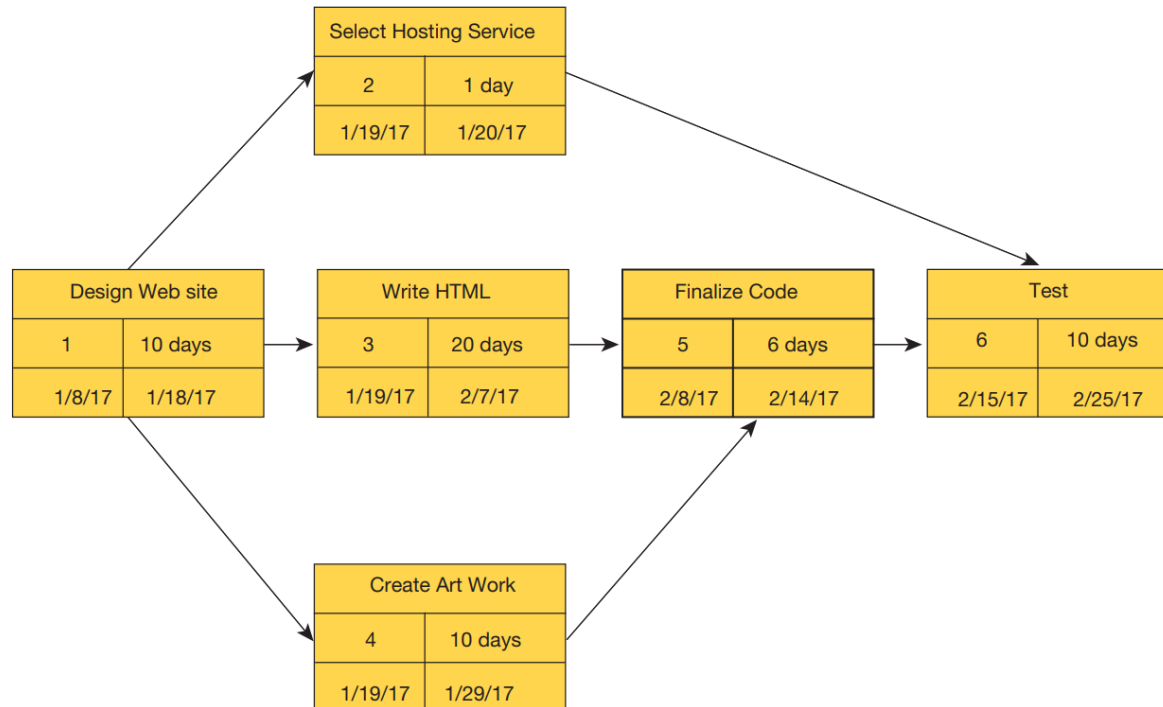
► 3. Estimating resources and creating a resource plan

Trade-offs between the quality of the program code versus the speed of programming



PM Phase 2: Project Planning

► 4. Developing a preliminary schedule



A network diagram illustrates tasks with rectangles (or ovals) and the relationships and sequences of those activities with arrows



PM Phase 2: Project Planning

► 5. Developing a communication plan



- 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?



PM Phase 2: Project Planning

► 5. Developing a 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



PM Phase 2: Project Planning

► 6. Determining project standards and procedures.

- The team must decide which tools to use
- Discuss how the standard SDLC might be modified
- Identify SDLC methods will be used
- Agreed the documentation styles (e.g., type fonts and margins for user manuals),
- Explain how team members will report the status of their assigned activities, and terminology.



PM Phase 2: Project Planning

► 7. Identifying and assessing risk.



- New Technology
- Prospective user's resistance
- Availability of resources
- Competitive reactions
- Team member inexperience



PM Phase 2: Project Planning

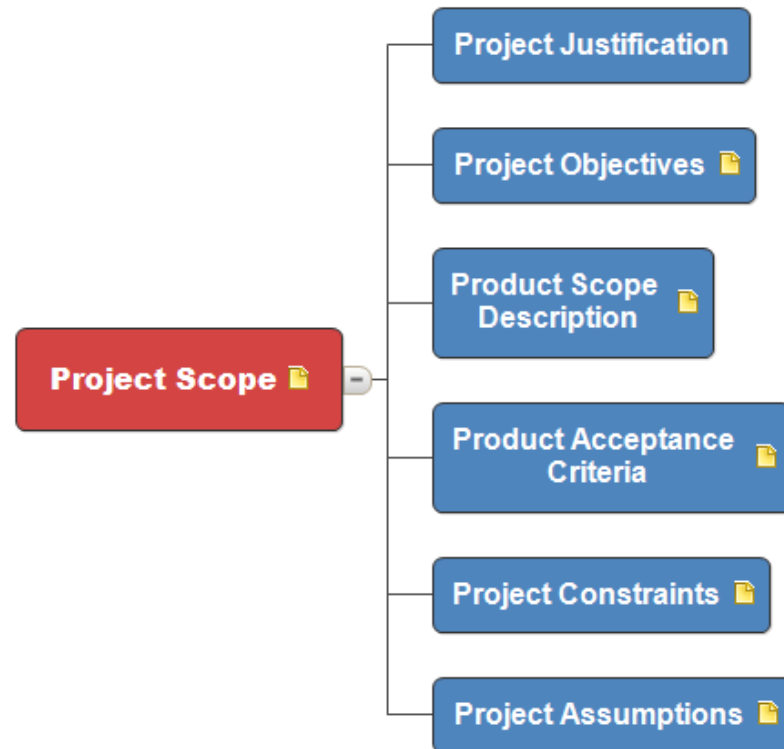
► 8. Creating a preliminary budget.

8		Years from Today					
9		0	1	2	3	4	5 TOTALS
10	Build New System	\$0	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000
11	Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674
12	PV of Benefits	\$0	\$75,893	\$67,761	\$60,501	\$54,019	\$48,231
13							
14	NPV of Building New System	\$0	\$75,893	\$143,654	\$204,156	\$258,175	\$306,406
15							
16	One-time COSTS	(\$75,000)					
17							
18	Continue Maintaining Existing System						
19	Recurring Costs		(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)
20	Discount Rate (12%)	1.0000	0.8929	0.7972	0.7118	0.6355	0.5674
21	PV of Recurring Costs	\$0	(\$31,250)	(\$27,902)	(\$24,912)	(\$22,243)	(\$19,860)
22							
23	NPV of All COSTS	(\$75,000)	(\$106,250)	(\$134,152)	(\$159,064)	(\$181,307)	(\$201,167)
24							
25							
26	Overall NPV						\$105,239
27							
28	ROI = Overall NPV / NPV of Costs						52.31%
29							
30	Year of Project	0	1	2	3	4	
31	Break-Even Analysis						
32	Yearly NPV Cash Flow	(\$75,000)	\$44,643	\$39,860	\$35,589	\$31,776	\$28,371
33	Overall NPV Cash Flow	(\$75,000)	(\$30,357)	\$9,503	\$45,092	\$76,867	\$105,239
34							
35							
36	break-even ratio = (yearly NPV cash flow - general NPV cash flow) / yearly NPV cash flow						
37	Break-even occurs in 1.8 years.						
38							
39	Note: All dollar values have been rounded to the nearest dollar.						



PM Phase 2: Project Planning

► 9. Developing a Project Scope Statement.



Project Scope Statement Example			
Project Name	IVR Project		
Project Sponsor	Dave Sponsor	Project Manager	Alice Michaels
Date of Project Approval	08 March 2015	Last Revision Date	08 March 2015
Scope Description	<p>IN SCOPE:</p> <ul style="list-style-type: none">- An IVR system to handle and direct sales calls.- Setup of the IVR system ready to handle all sales enquiries- Training for the sales team on how to use the system- An administration system so the IVR system can be configured by the sales team <p>OUT OF SCOPE:</p> <ul style="list-style-type: none">- Support for any other team other than sales- The ability to route complex sales enquiries, such as partnerships etc.		
Project Deliverables	<ul style="list-style-type: none">- A customer facing IVR system- An IVR configuration system- A training manual for new and existing sales team members		
Acceptance Criteria	The project will be accepted when it is agreed by the sale team that the deliverables meet their needs (deliverables signed off). The project will also be considered a success if post launch testing shows that customer satisfaction is over 5 points higher than where it is now.		
Constraints	The sales team are not dedicated to this project, and must fit this around their day-to-day sales jobs.		
Assumptions	A sales team & full project team will be available to co-create the WBS		



PM Phase 2: Project Planning

► 10. Setting a Baseline Project Plan.

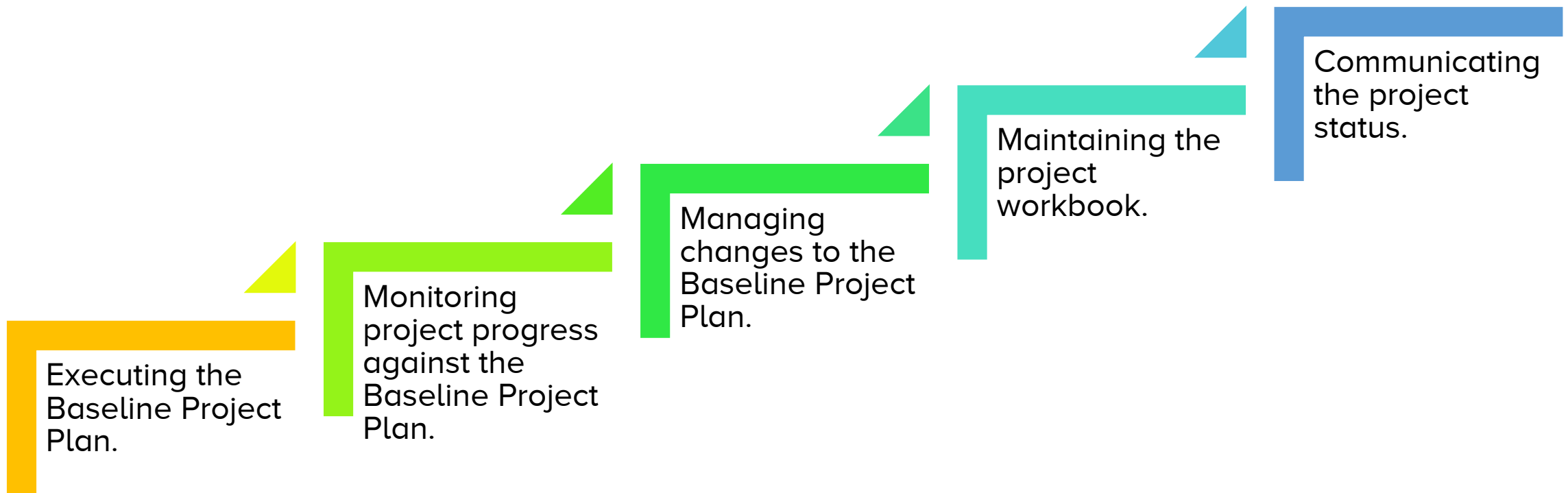
- A **Baseline Project Plan** provides an estimate of the project's tasks and resource requirements and is used to guide the next project phase—execution.

BASELINE PROJECT PLAN REPORT	
1.0 Introduction	<p>A. Project Overview—Provides an executive summary that specifies the project's scope, feasibility, justification, resource requirements, and schedules. Additionally, a brief statement of the problem, the environment in which the system is to be implemented, and constraints that affect the project are provided.</p> <p>B. Recommendation—Provides a summary of important findings from the planning process and recommendations for subsequent activities.</p>
2.0 System Description	<p>A. Alternatives—Provides a brief presentation of alternative system configurations.</p> <p>B. System Description—Provides a description of the selected configuration and a narrative of input information, tasks performed, and resultant information.</p>
3.0 Feasibility Assessment	<p>A. Economic Analysis—Provides an economic justification for the system using cost-benefit analysis.</p> <p>B. Technical Analysis—Provides a discussion of relevant technical risk factors and an overall risk rating of the project.</p> <p>C. Operational Analysis—Provides an analysis of how the proposed system solves business problems or takes advantage of business opportunities in addition to an assessment of how current day-to-day activities will be changed by the system.</p> <p>D. Legal and Contractual Analysis—Provides a description of any legal or contractual risks related to the project (e.g., copyright or nondisclosure issues, data capture or transferring, and so on).</p> <p>E. Political Analysis—Provides a description of how key stakeholders within the organization view the proposed system.</p> <p>F. Schedules, Time Line, and Resource Analysis—Provides a description of potential time frame and completion date scenarios using various resource allocation schemes.</p>
4.0 Management Issues	<p>A. Team Configuration and Management—Provides a description of the team member roles and reporting relationships.</p> <p>B. Communication Plan—Provides a description of the communication procedures to be followed by management, team members, and the customer.</p> <p>C. Project Standards and Procedures—Provides a description of how deliverables will be evaluated and accepted by the customer.</p> <p>D. Other Project-Specific Topics—Provides a description of any other relevant issues related to the project uncovered during planning.</p>



PM Phase 3: Project Execution

- ▶ Plans created in prior phases are put into action.



PM Phase 3: Project Execution

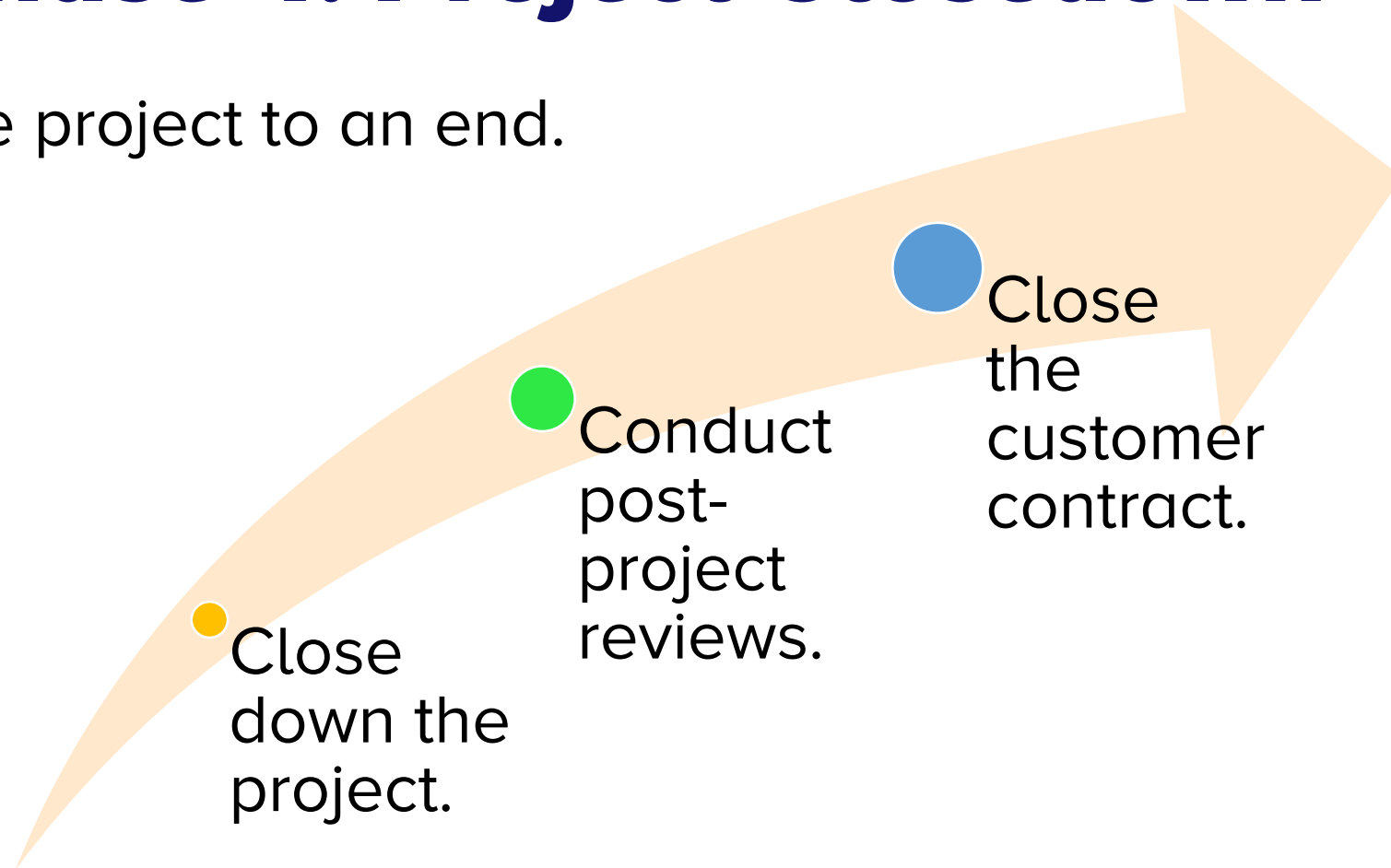
► Project Team Communication Methods.

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

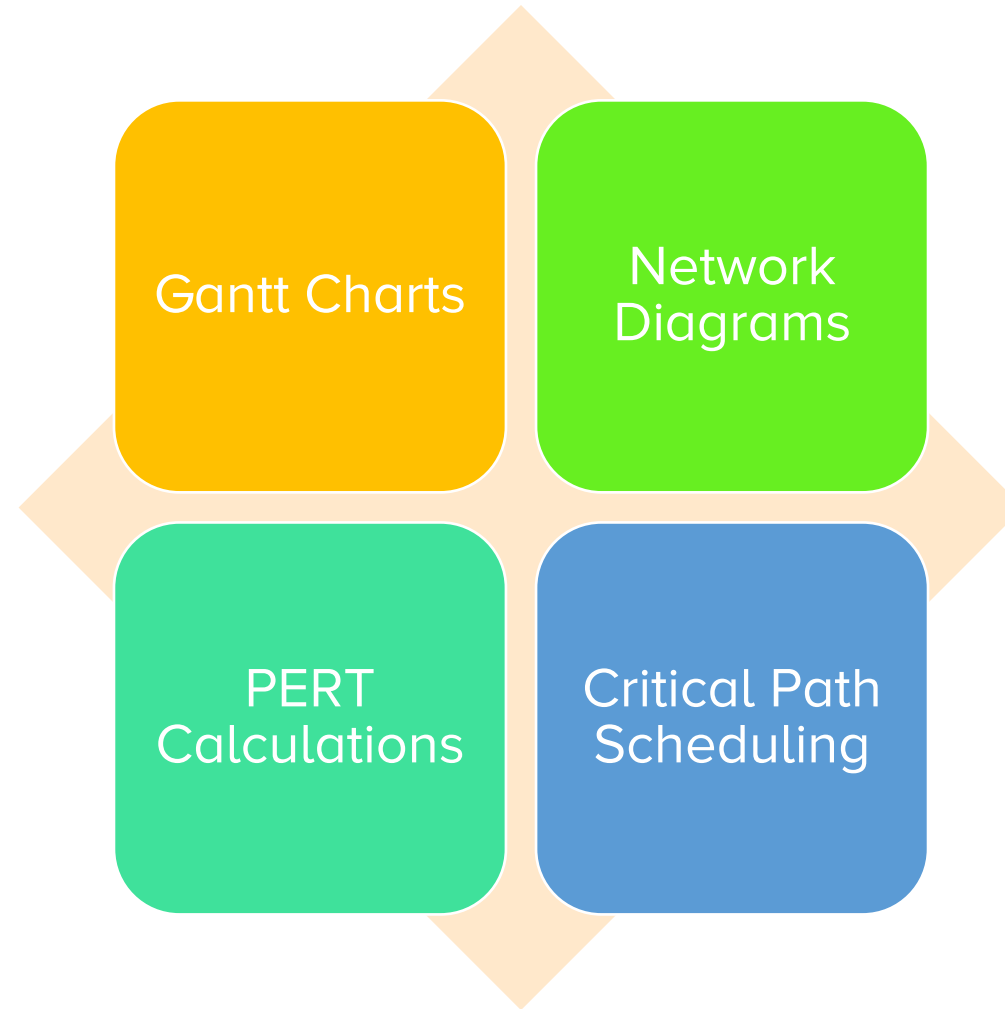


PM Phase 4: Project Closedown

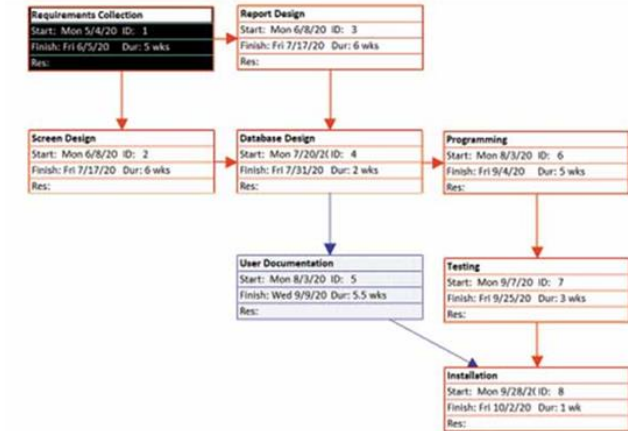
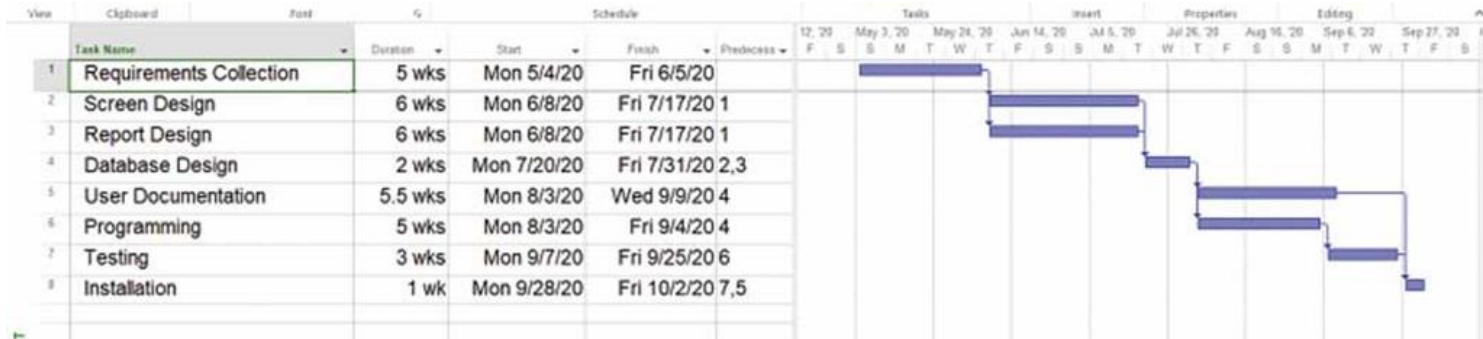
► Bring the project to an end.



Representing and Scheduling Project Plans



Gantt Chart vs Network Diagrams



	Gantt Chart	Network Diagram
Task Duration	Yes	Yes
Task Overlap	Start / End Time	Parallelism
Slack Time	Duration	Yes



Gantt Chart

S.No.	Task Name	Duration	Start	Finish
1	Team Formation	4 days	Tue 2/14/17	Fri 2/17/17
2	Finalize Project Plan / Charter / Kick Off	6 days	Sat 2/18/17	Fri 2/24/17
3	Analysis Phase	11 days	Sat 2/25/17	Fri 3/10/17
4	Design Phase	6 days	Sat 3/11/17	Fri 3/17/17
5	Development Phase	20 days	Sat 3/18/17	Thu 4/13/17
6	Testing and Debugging Phase	16 days	Sat 4/1/17	Fri 4/21/17
7	Project Summary Report and Close Out	11 days	Sat 4/22/17	Fri 5/5/17

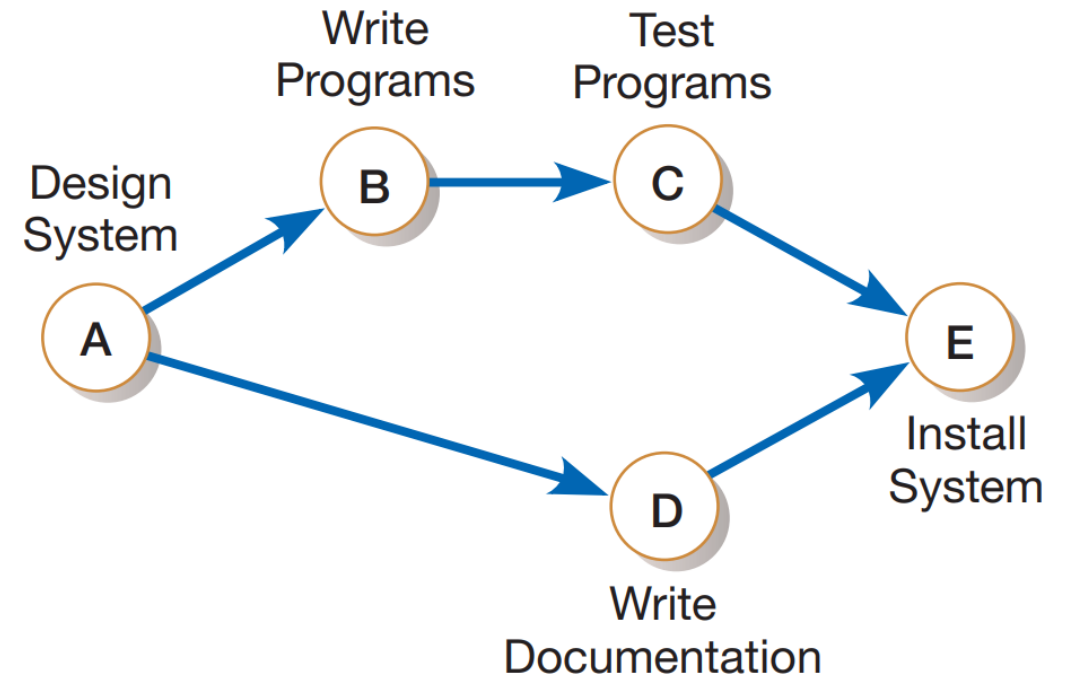
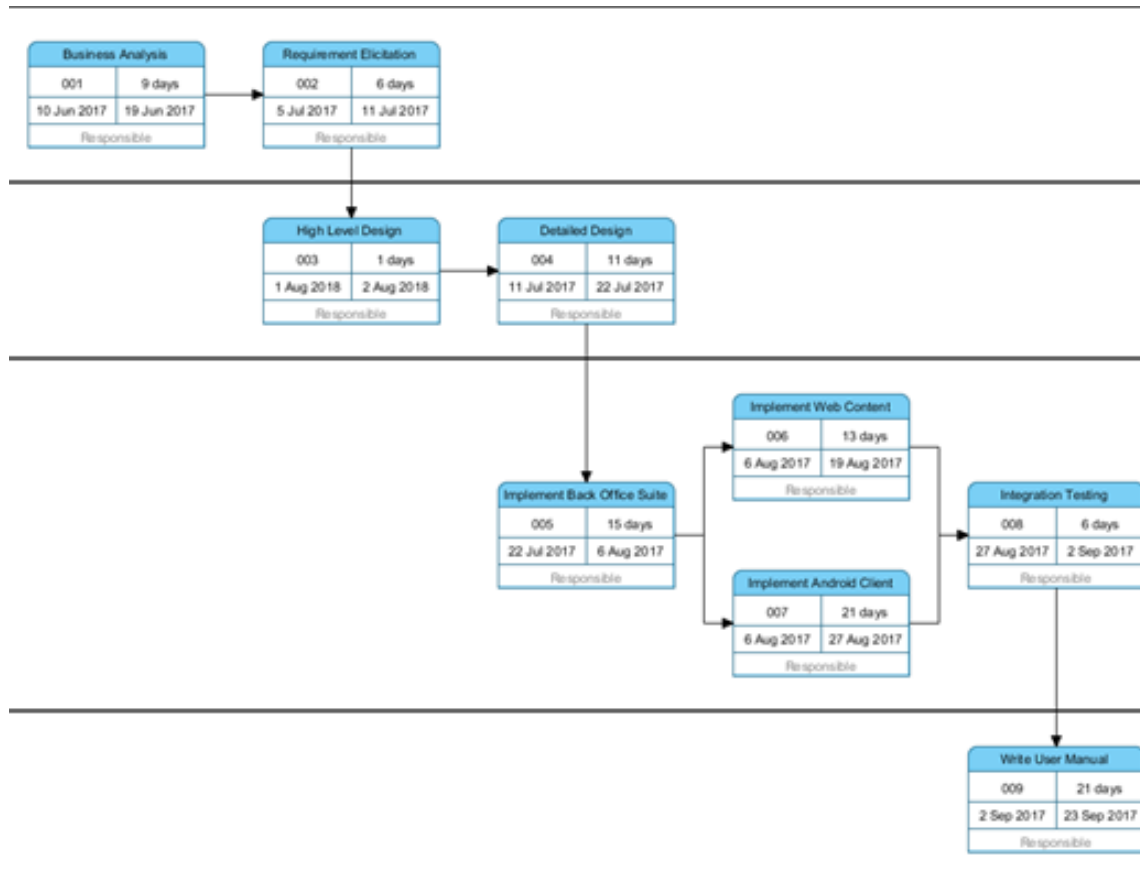
Work Breakdown



Tasks over time



Network Diagrams



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:
$$ET = (o + 4r + p)/6$$



Example of PERT Analysis

- ▶ Estimated time calculations for the SPTS project.

ACTIVITY	TIME ESTIMATE (in weeks)			EXPECTED TIME (ET) $\frac{o + 4r + p}{6}$
	<i>o</i>	<i>r</i>	<i>p</i>	
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



Critical Path Scheduling

- ▶ A scheduling technique, used when
 - order and duration of a sequence of task activities directly affects the completion date of a project
 - used to identify the set of tasks where any delay will cause a delay in the complete 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.



Critical Path Example (dependencies between tasks)

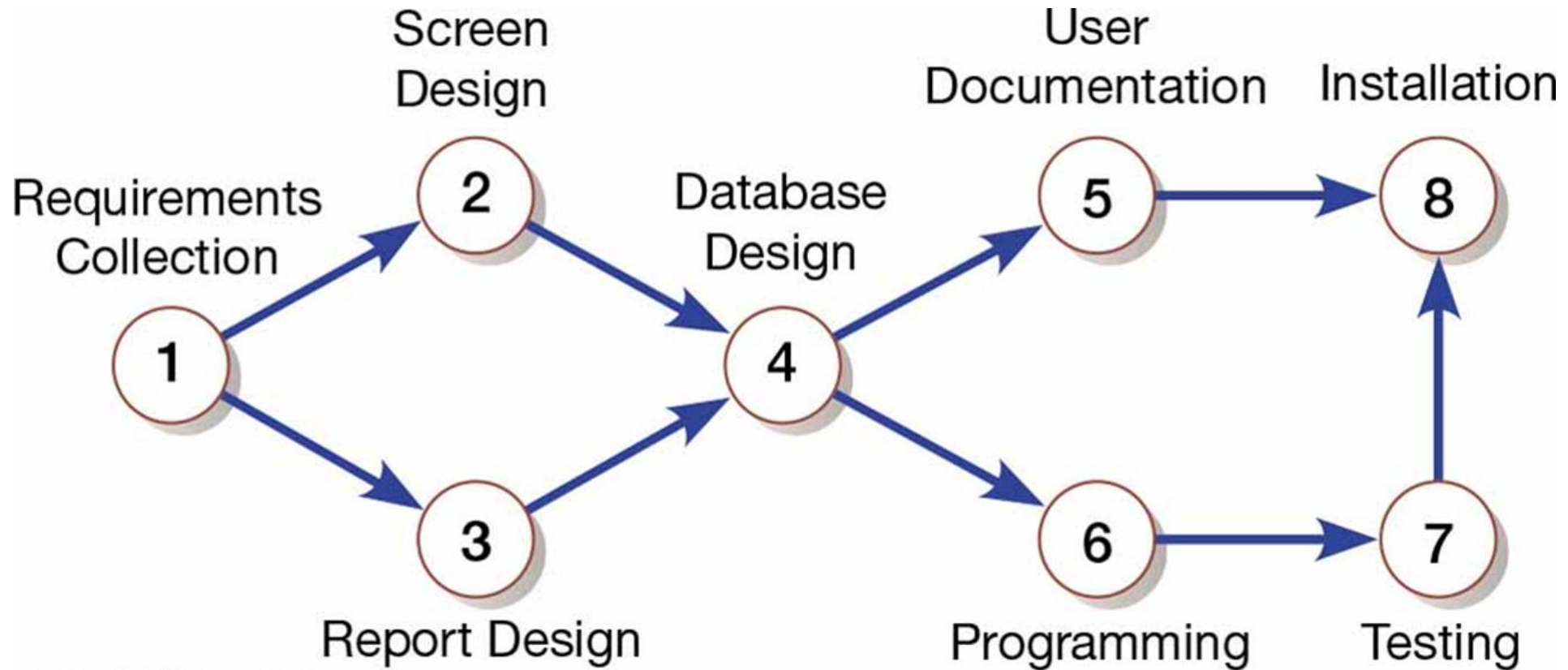
ACTIVITY	PRECEDING ACTIVITY
1. Requirements Collection	—
2. Screen Design	1
3. Report Design	1
4. Database Design	2,3
5. User Documentation	4
6. Programming	4
7. Testing	6
8. Installation	5,7

► PRECEDING ACTIVITIES

- indicate the activities that must be completed before the specified activity can begin.



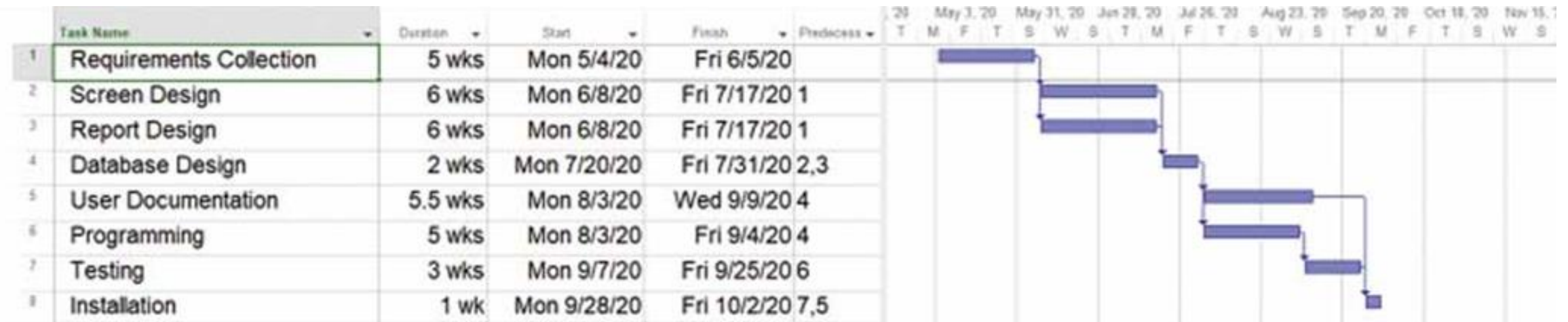
Critical Path Example (cont.)



Network diagram shows dependencies



Critical Path Example (cont.)



Gantt chart that illustrates the sequence and duration each activity of the SPTS project.



Expected Completion Time

▶ Earliest Expected Completion Time (T_E):

- The earliest time an activity can be completed.
- Sum the estimated time for each activity from left to right. If a node has two incoming arrows, take the largest predecessor completion time.

▶ Latest Expected Completion Time (T_L):

- ▶ The latest time an activity can be completed w/o delaying the project.
- ▶ Start at the last task and work right-to-left, subtracting the expected times of the predecessor tasks.

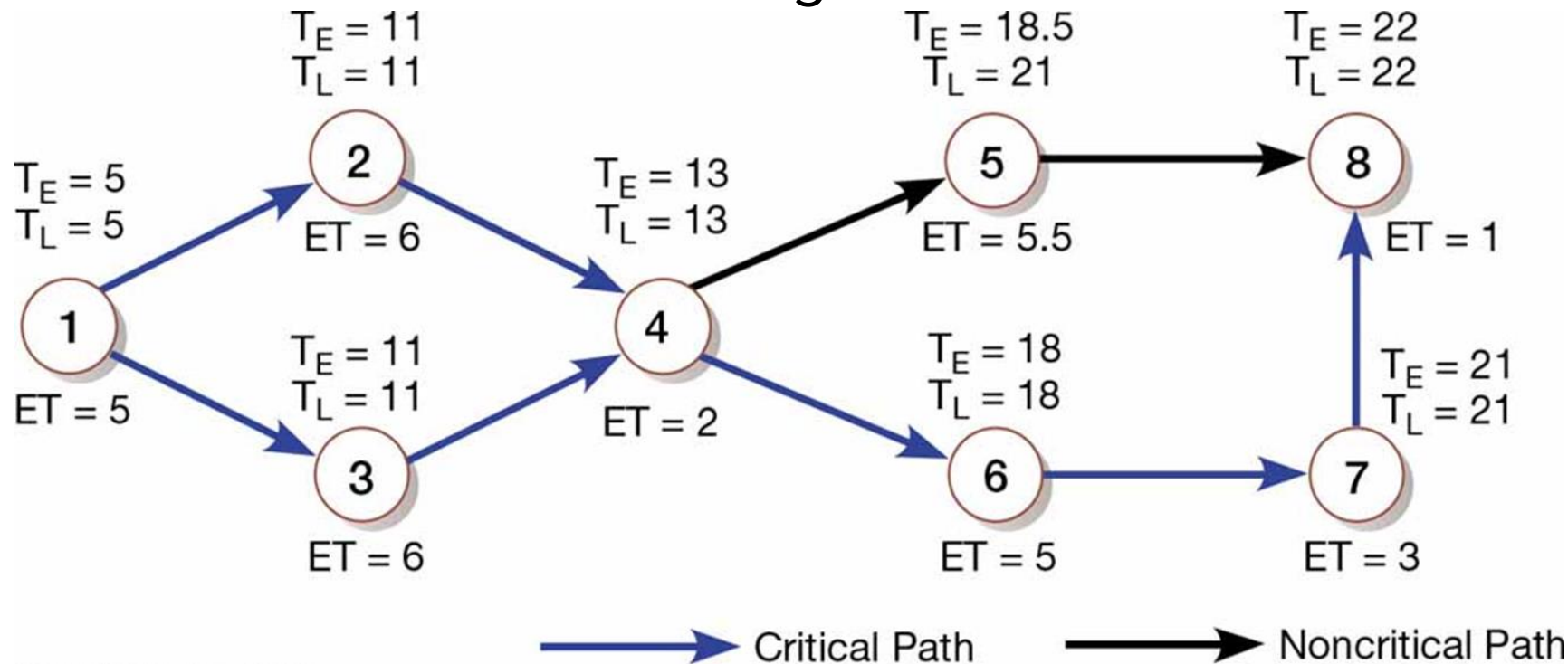
▶ Slack time = $T_L - T_E$

- ▶ All activities with a slack time of zero are on the critical path.



Critical Path Calculation (Example)

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



Critical Path Calculation (cont.)

- ▶ 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	✓



Using Project Management Software

- ▶ Many powerful software tools exist for assisting with project management.



Project



OpenProject



wrike



asana

odoo





Lab Exercise 2

Write your answers on A4 paper (doc/docx format), with a font size of 12 pts and any serif fonts (i.e. Times New Roman). There is a 1inch margin on all sides.

► A project has been defined to contain the following list of activities along with their required times for completion.

- Draw a network diagram for the activities.
- Calculate the earliest expected completion time.
- Show the critical path.
- What would happen if activity 6 were revised to take six weeks instead of two weeks?

Activity No.	Immediate Activity	Time (weeks)	Predecessors
1	Collect requirements	3	
2	Analyze processes	2	1
3	Analyze data	2	2
4	Design processes	6	2
5	Design data	3	3
6	Design screens	2	3,4
7	Design reports	4	4,5
8	Program	5	6,7
9	Test and document	7	7
10	Install	2	8,9

Deadline: **October 10, 2021**

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