

Chapter 3

Project Management

WHITTEN I BENTLE

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Objectives

- Define the terms *project* and *project management*, and differentiate between project and process management.
- Describe causes of failed information systems and technology projects.
- Describe basic competencies required of project managers.
- Describe basic functions of project management.
- Differentiate between PERT and Gantt as project management tools.
- Describe role of project management software.
- Describe eight activities in project management.

Objectives – cont.

- Define joint project planning and its role in project management.
- Define scope and a write a statement of work to document scope.
- Use a *work breakdown structure* to decompose a project into tasks.
- Estimate tasks' durations and specify intertask dependencies.
- Assign resources and produce a project schedule with a Gantt chart.
- Assign people to tasks and direct the team effort.
- Use critical path analysis to adjust schedule and resource allocations in response to schedule and budget deviations.
- Manage user expectations of a project and adjust project scope.

Projects and Project Managers

Project – a [temporary] sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by specific time, within budget, and according to specification.

Project manager - the person responsible for supervising a systems project from initiation to conclusion

Project Management and Process Management

Project management – the process of scoping, planning, staffing, organizing, directing, and controlling the development of an acceptable system at a minimum cost within a specified time frame.

Process management – the activity of documenting, managing, and continually improving the process of systems development.

Measures of Project Success

- The resulting information system is acceptable to the customers (e.g. users, managers).
- The system was delivered "on time."
- The system was delivered "within budget."
- The system development process had a minimal impact on ongoing business operations.

Causes of Project Failure

- Failure to establish upper-management commitment to the project
- Lack of organization's commitment to the methodology
- Taking shortcuts through or around the methodology
- Poor Project management
 - Feature creep— uncontrolled addition of technical features of a system.
 - Scope creep unexpected and gradual growth of requirements during a system development project.

Causes of Project Failure (continued)

- Premature commitment to a fixed budget and schedule
- Poor estimating techniques
- Over-optimism
- The mythical man-month (Brooks, 1975)
- Inadequate people management skills
- Failure to adapt to business change
- Insufficient resources
- Failure to "manage to the plan"

Project Manager Competencies

- Business awareness
- Business partner orientation
- Commitment to quality
- Initiative
- Information gathering
- Analytical thinking
- Conceptual thinking
- Interpersonal awareness
- Organizational awareness

- Anticipation of impact
- Resourceful use of influence
- Motivating others
- Communication skills
- Developing others
- Monitoring and controlling
- Self-confidence
- Stress management
- Concern for credibility
- Flexibility

Project Management Functions

- Scoping setting the boundaries of the project
- Planning identifying the tasks required to complete the project
- Estimating identifying resources required to complete the project
- Scheduling developing a plan to complete the project
- Organizing making sure members understand their roles and responsibilities
- **Directing** coordinating the project
- Controlling monitoring progress
- Closing assessing success and failure

Project Management Tools & Techniques

PERT chart – a graphical network model used to depict a project's tasks and their interdependencies.

Gantt chart – a bar chart used to depict project tasks and their time requirements.

PERT Chart



Gantt Chart



Microsoft Project Gantt Chart

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Microsoft Project PERT Chart



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Project Management Life Cycle



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Joint Project Planning Strategy

Joint project planning (JPP) – a methodology in which all stakeholders attend an intensive workshop aimed at reaching consensus on project decisions.

Project Management Activities

- 1. Negotiate Scope
- 2. Identify Tasks
- 3. Estimate Task Durations
- 4. Specify Intertask Dependencies
- 5. Assign Resources
- 6. Direct the Team Effort
- 7. Monitor and Control Progress

Activity 1 – Negotiate Scope

Scope – the boundaries of a project – the areas of a business that a project may (or may not) address. Includes answers to five basic questions:

- Product
- Quality
- Time
- Cost
- Resources

Statement of work – a narrative describing the work to be performed as part of a project. Common synonyms include *scope statement*, *project definition*, *project overview*, and *document of understanding*.

Statement of Work

Purpose

Ι.

II.

III.

Background

- A. Problem, opportunity, or directive statement
- B. History leading to project request
- C. Project goal and objectives
- D. Product description

Scope

- A. Stakeholders
- B. Data
- C. Processes
- D. Locations

IV. Project Approach

- A. Route
- B. Deliverables

V. Managerial Approach

- A. Team building considerations
- B. Manager and experience
- C. Training requirements

Notice the use of information system building blocks

(continued)

V.

Statement of Work (continued)

Managerial Approach (continued)

- D. Meeting schedules
- E. Reporting methods and frequency
- F. Conflict management
- G. Scope management

VI. Constraints

- A. Start date
- B. Deadlines
- C. Budget
- D. Technology

VII. Ballpark Estimates

- A. Schedule
- B. Budget

VIII. Conditions of Satisfaction

- A. Success criteria
- **B.** Assumptions
- C. Risks

IX. Appendices

Activity 2 – Identify Tasks

Work breakdown structure (WBS) – a graphical diagram used to depict the hierarchical decomposition of the project into phases, activities, and tasks.

Milestone – an event signifying the completion of a major project task or deliverable.



Activity 3 – Estimate Task Durations

- Elapsed time takes into consideration:
 - Efficiency no worker performs at 100% efficiency
 - Coffee breaks, lunch, e-mail, etc.
 - Estimates of 75% efficiency are common
 - Interruptions
 - Phone calls, visitors, etc.
 - 10-50%

Activity 3 – Estimate Task Durations (continued)

- 1. Estimate the minimum amount of time it would take to perform the task the **optimistic duration** (OD).
- 2. Estimate the maximum amount of time it would take to perform the task the **pessimistic duration** (PD).
- 3. Estimate the **expected duration** (ED) that will be needed to perform the task.
- 4. Calculate a weighted average of the **most likely duration** (D) as follows:



Activity 4 – Specify Intertask Dependencies

- Finish-to-start (FS)—The finish of one task triggers the start of another task.
- Start-to-start (SS)—The start of one task triggers the start of another task.
- Finish-to-finish (FF)—Two tasks must finish at the same time.
- Start-to-finish (SF)—The start of one task signifies the finish of another task.

Entering Intertask Dependencies



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Scheduling Strategies

Forward scheduling – a project scheduling approach that establishes a project start date and then schedules tasks forward from the start date.

Reverse scheduling – a project scheduling strategy that establishes a project deadline and then schedules tasks backward from the finish date.

A Project Schedule in Calendar View

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Activity 5 – Assign Resources

- People includes all system owners, users, analysts, designers, builders, external agents, and clerical help involved in the project in any way.
- **Services** includes services such as a quality review that may be charged on a per use basis.
- Facilities and equipment includes all rooms and technology that will be needed to complete the project.
- **Supplies and materials** everything from pencils, paper, notebooks to toner cartridges, and so on.
- Money includes a translation of all of the above into budgeted dollars!

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Defining Project Resources

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3	-	Steering Body	System Owner	5%	\$1,200.00/hr	\$0.00/hr	Prorated	Administrative
4		Chief Information Officer	System Owner	5%	\$100.00/hr	\$0.00/hr	Prorated	Administrative
5		Management Representative	System User	120%	\$60.00/hr	\$0.00/hr	Prorated	Administrative
6		Auditor	System User	10%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
7	-	Business Analyst	System User	50%	\$45.00/hr	\$0.00/hr	Prorated	Standard
8		User Representative(s)	System User	340%	\$30.00/hr	\$45.00/hr	Prorated	Standard
9		Other User(s)	System User	100%	\$30.00/hr	\$45.00/hr	Prorated	Standard
10		Project manager	System Analyst	25%	\$60.00/hr	\$0.00/hr	Prorated	Administrative
11		JAD Facilitator	System Analyst	30%	\$150.00/hr	\$200.00/hr	Prorated	Contract
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13		Process Analyst	System Analyst	20%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
14		Object Analyst	System Analyst	10%	\$60.00/hr	\$0.00/hr	Prorated	Administrative
15		Interface Analyst	System Analyst	10%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
16		Technical Consultant	System Designer	5%	\$50.00/hr	\$100.00/hr	Prorated	Contract
17		Database Designer	System Designer	25%	\$75.00/hr	\$0.00/hr	Prorated	Administrative
18		Network Designer	System Designer	10%	\$75.00/hr	\$0.00/hr	Prorated	Administrative
19		System Architect	System Designer	25%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
20		Software Engineer	System Designer	10%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
21		Interface Designer	System Designer	25%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
22		Test Analyst	System Designer	25%	\$50.00/hr	\$0.00/hr	Prorated	Administrative
23		Systems Programmer	System Builder	20%	\$60.00/hr	\$0.00/hr	Prorated	Administrative
24		Application Programmer	System Builder	250%	\$45.00/hr	\$60.00/hr	Prorated	Contract
25		Database Programmer	System Builder	100%	\$55.00/hr	\$65.00/hr	Prorated	Contract
26		Interface Programmer	System Builder	125%	\$50.00/hr	\$60.00/hr	Prorated	Contract
27		Network Technician	System Builder	5%	\$60.00/hr	\$0.00/hr	Prorated	Standard
28		Technical Writer	System Builder	45%	\$40.00/hr	\$0.00/hr	Prorated	Standard
29		Trainer	System Builder	45%	\$40.00/hr	\$0.00/hr	Prorated	Administrative
30		Capacity Analyst	System Builder	10%	\$55.00/hr	\$0.00/hr	Prorated	Administrative

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Assigning Project Resources

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Assigning People to Tasks

- Recruit talented, highly motivated people
- Select the appropriate person for each task
- Promote team harmony
- Plan for the future
- Keep the team size small

Resource Leveling

Resource leveling – a strategy for correcting resource over-allocations.

Two techniques for resource leveling:

- task delaying
- task splitting

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Task Splitting and Task Delaying

- Critical path the sequence of dependent tasks that determines the earliest possible completion date of the project.
 - Tasks on the critical path cannot be delayed without delaying the entire project completion time. Critical tasks can only be split.
- Slack time the amount of time that a task can be delayed without causing a delay in the completion date of the entire project.
 - Tasks that have slack time can be delayed to achieve resource leveling

Activity 6 – Direct the Team Effort

- Supervision resources
 - The Deadline: A Novel about Project Management
 - The People Side of Systems
 - The One Minute Manager
 - The One Minute Manager
 Meets the Monkey
- Stages of Team Maturity (see figure to the right)



10 Hints for Project Leadership

- 1. Be Consistent.
- 2. Provide Support.
- 3. Don't Make Promises You Can't Keep.
- 4. Praise in Public; Criticize in Private.
- 5. Be Aware of Morale Danger Points.
- 6. Set Realistic Deadlines.
- 7. Set Perceivable Targets.
- 8. Explain and Show, Rather Than Do.
- 9. Don't Rely on Just Status Reports.
- 10. Encourage a Good Team Spirit.

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Activity 7 – Monitor and Control Progress

- Progress reporting
- Change management
- Expectations management
- Schedule adjustments—critical path analysis (CPA)

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Sample Outline for Progress Report

Cover Page

- A. Project name or identification
- B. Project manager
- C. Date or report

Summary of progress

- A. Schedule analysis
- B. Budget analysis
- C. Scope analysis

(changes that may have an impact on future progress)

- D. Process analysis
- (problems encountered with strategy or methodology)

(continued)

E. Gantt progress chart(s)

III. Activity analysis

- A. Tasks completed since last report
- B. Current tasks and deliverables
- C. Short term future tasks and deliverables

V.

Sample Outline for a Progress Report (continued)

IV. Previous problems and issues

- A. Action item and status
- B. New or revised action items
 - 1. Recommendation
 - 2. Assignment of responsibility
 - 3. Deadline

New problems and issues

- A. Problems (actual or anticipated)
- B. Issues

(actual or anticipated)

- C. Possible solutions
 - 1. Recommendation
 - 2. Assignment of responsibility
 - 3. Deadline

VI. Attachments

(include relevant printouts from project management software)

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Progress Reporting on a Gantt Chart

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Change Management

Change management – a formal strategy in which a process is established to facilitate changes that occur during a project.

Changes can be the result of various events and factors including:

- An omission in defining initial scope
- A misunderstanding of the initial scope
- An external event such as government regulations that create new requirements
- Organizational changes
- Availability of better technology
- Shifts in planned technology that force changes to the business organization, culture, and/or processes
- Management's desire to have the system do more
- Reduced funding for project or imposition of an earlier deadline.



Lunar Project Expectations Management

PRIORITIES → ↓MEASURES OF SUCCESS	Max or Min	Constrain	Accept
Cost • \$20 billion (estimated)			X
• Dec 31, 1969 (deadline)		x	
Scope and/or Quality Land a man on the moon Get him back safely 	X		

Typical, Initial Expectations for a Project

PRIORITIES → ↓MEASURES OF SUCCESS	Max or Min	Constrain	Accept
Cost		X	
Schedule			X
Scope and/or Quality	X		
44			

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Adjusting Expectations

PRIORITIES ->	Max or Min	Constrain	Accept
Cost Adjusted budget		X+	
Schedule Adjusted deadline 		budget	X- Extend deadline
Scope and/or Quality Adjusted scope 	X+ Accept expanded requirements		

3-4

Changing Priorities

	Max or Min	Constrain	Accept
↓MEASURES OF SUCCESS			
Cost	X - Ste	ep 1 X	
Schedule			X
Scope and/or Quality	X Step	• 2 ► X	
6			

Schedule Adjustments -Critical Path Analysis

- 1. Using intertask dependencies, determine every possible path through the project.
- 2. For each path, sum the durations of all tasks in the path.
- 3. The path with the longest total duration is the critical path.
 - The critical path is the sequence of tasks with the largest sum of most likely durations. The critical path determines the earliest completion date of the project.
 - The slack time for any non-critical task is the amount of delay that can be tolerated between starting and completion time of a task without causing a delay in the entire project.

Critical Path Analysis



Activity 8 – Assess Project Results and Experiences

- Did the final product meet or exceed user expectations?
 - Why or why not?
- Did the project come in on schedule?
 Why or why not?
- Did the project come in under budget?
 Why or why not?