Project Management: A Managerial Approach 5th Ed.

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Ch 1.1 Project Definition
Definition used by PMI:

A temporary endeavor undertaken to create a unique product or service

Ch.1.0 Introduction:
Three Project Objectives

- Performance
- Cost
- Time

Ch. 5.0: Reasons for Project Planning

- Establish directions for project team
- Support objectives of parent organization
- Make allowance for risk
- Put controls on the planned work
Ch. 5.1: Expected Outcome of Project Launch Meeting

- Establish technical scope
- Participants accept performance responsibility
- Tentative overall schedules and budgets
- Creation of a Risk Management Group

Ch. 5.1: Project Plan Elements

- Overview
- Objectives
- General approach
- Contractual aspects
- Schedules
- Resources
- Personnel
- Evaluation methods
- Potential problems

Ch. 5.3: Even Planning Process

a) Make list of activities of similar importance in sequential order → Level 1
b) Break each level 1 process into sub-processes as under a) → Level 2
c) Continue to lower process levels until no further breaking is possible

Ch. 5.4: Steps in Designing a WBS

- List task breakdown in succeedingly finer levels
- Construct a responsibility matrix
- Establish pricing control
- Schedule milestones
- Identify problems
- Generate Project Master Schedule
Developing a Project Budget

- Three major elements
  - Forecast what will be needed
    - Labor and material
  - How much will it cost?
  - When will it be needed?
- Thus, the budget reflects the project plan, time-phased, in dollars

Why Budgeting for Projects is Tougher

- By definition, projects are unique, non-recurring efforts
- So there’s often little history, little tradition to rely on
- Further, projects can last for years
  - More uncertainty, more risk

Two Major Approaches to Budgeting

- Top-Down
- Bottom-Up
- Each has advantages . . . And disadvantages as well

Scheduling

- Scheduling Defined
- Gantt Charts
- Network Techniques: PERT and CPM
- Determining Task Durations
  - Probability and Simulation
- Some Examples
Scheduling Defined

- The conversion of a project action plan into an operating timetable
- Serves as the basis for monitoring and controlling the project
- A major tool for the management of projects

Some Benefits of Successful Scheduling

- Illustrates interdependence of all tasks
- Identifies times when resources must be available
- Facilitates communication throughout the project
- Determines critical activities/critical path
- Affects client expectations through establishment of activities, milestones, and completion dates

A Process for Scheduling

1. Think
2. List activities
3. Arrange activities considering precedence and relationships
4. Develop Gantt charts and PERT/CPM networks
5. Determine critical activities/critical path
6. Crash and adjust as necessary

Gantt Charts

- Advantages
  - Easy to understand
  - Easy to show progress and status
  - Easy to maintain
  - Most popular view to communicate project status to client and/or senior management
- Disadvantages
  - Can be superficial
  - Not always easy to see precedence, relationships
### PERT/CPM Network Charts

#### Advantages
- Allows visualization of task relationships
- Facilitates calculation of critical path
- Clarifies impact of decisions on downstream activities

#### Disadvantages
- Complex, not easy to comprehend at a glance
- Charts don’t readily depict durations, dates, progress

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### Look at a Simple Network, for a Simple Project

<table>
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<tr>
<th>Activity</th>
<th>Duration (weeks)</th>
<th>Predecessor</th>
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<tr>
<td>A</td>
<td>14</td>
<td>Start</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>Start</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>A,B</td>
</tr>
<tr>
<td>D</td>
<td>7</td>
<td>B</td>
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<tr>
<td>E</td>
<td>4</td>
<td>C,D</td>
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<tr>
<td>F</td>
<td>10</td>
<td>E</td>
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### A Simple Network (AON)

Start

A 14
C 3
E 4
F 10
B 3
D 7
Finish

Calculate:
- Critical Path
- Project Duration

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### The Critical Path

Start

A 14
C 3
E 4
F 10
B 3
D 7
Finish

ES = 0
EF = 14
ES = 14
EF = 17
ES = 17
EF = 21
ES = 21
EF = 31
ES = 0
EF = 3
ES = 3
EF = 10

= Critical Path
Determining Slack

- How much slack is there
- Where is it?
- How do you know?
- Why might you care?

Determine Slack (cont’d)

<table>
<thead>
<tr>
<th></th>
<th>ES</th>
<th>EF</th>
<th>LS</th>
<th>LF</th>
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<tr>
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<tr>
<td>Finish</td>
<td>14</td>
<td>17</td>
<td>21</td>
<td>31</td>
</tr>
</tbody>
</table>

Slack = LS - ES
CP = 0 Slack, where ES = LS

Work Back...

What does all this mean?
Resource Loading

- Resource loading: types and quantities of resources, spread by schedule across specific time periods
  - One project, or many
  - Identifies and reduces excess demands on a firm's resources
Monitoring and Information Systems

- Project monitoring defined
- The plan-monitor-control cycle
- Designing the monitoring system
- Behavioral aspects of monitoring
- Earned value analysis
- Earned value examples

Project Monitoring Defined

- Collecting, recording, and reporting information concerning any and all aspects of project performance that the project manager or others wish to know

Another Earned Value Example

- A 10-day project, today is day 7

<table>
<thead>
<tr>
<th>Activity</th>
<th>Predecessor</th>
<th>Duration (Days)</th>
<th>Budget ($)</th>
<th>Actual Cost ($)</th>
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Case: Earned Value at Texas Instruments
Project Control Defined

- CONTROL: The act of reducing the difference between plan and reality
  - The last element in the plan-implement-monitor-control cycle
  - Uses the information from the monitoring process to get and keep a project on track

Purpose of Control

- To make the actual meet the plan
  - The Process
    1. Identify key performance areas
    2. Set standards
    3. Measure performance
    4. Compare
    5. Take corrective action

Critical Ratio

- Critical ratio = \(\frac{\text{actual progress \times budgeted cost}}{\text{scheduled progress \times actual cost}}\)
  - I.e., CSI = SPI \(\times\) CPI, as in Chapter 10
  - Indices and ratios greater than 1.0 are favorable

Critical Ratio Control Limits, Figure 11-8
THE END

Q & A?