Elements of the Project Plan

• Cost
  – Development Cost

• Performance / Scope
  – Functionality
  – Size of the project

• Schedule
  – Time to complete the project
The Project Triangle

- Schedule
- Cost
- Performance
The Project Triangle

- Changing one element effects the others
- Most projects have one fixed side
- You cannot hold all three sides fixed
- Goal – optimize the triangle by looking for trade offs
Project Optimization Graph

Cost

Performance Curves

High
Goal
Low

Time
Project Planning Approaches

• Dictorial

  Schedule / Cost / Performance
  - Dictated from above
  - No Buy In from the team
  - Tends to fail almost immediately
  - Expectations don’t match reality
Project Planning Approaches

• Group Consensus
  Schedule / Cost / Performance
  – Defined by group think
  – Good Team Buy In
  – Poor Management Buy In
  – Schedules tend to be long and expensive
  – Projects either get cancelled or go Dictorial
Project Planning Approaches

• Diplomatic

Only most important aspects of project set by management

Team optimizes Schedule / Cost / Performance to fit in development window

– Good Team and Management Buy In
– Establishes clear expectations
– Optimizes for best overall result
Project Planning Approach

• The best plan is one created by the team
  – Managerial input
  – Technical input
  – Market Forces
  – Financial constraints
  – Manufacturing requirements
Project Planning Approach

Effort per Week

Schedule

Final
Project Planning Approach

• Project Manager Sets Multiple “Hard” Milestones

• Defined point in the project
  – Meaningful Stage / Outcome
  – Clearly defined deliverables
  – Clearly defined responsibility
  – Immovable date
  – Review attended by management
Project Planning Approach

- Project Manager Sets Multiple “Hard” Milestones

![Graph showing effort per week across HM1, HM2, HM3, and Final stages.]
Project Planning Approach

“Once your plan is complete
the only thing you can be sure of is
the plan you created is
The One Thing that won’t happen.”

• Review Often
• Modify as needed
Negative Effects on Schedule

• Specification Changes
• Faulty Estimates
  – Overly optimistic or pessimistic
  – Unscheduled demands
  – External delays
• Changing Resources
  – Loss of people, money, tools
• Technical Issues
Building the Plan

1. Develop Work Breakdown Schedule
   • Outline of tasks
   • Start with major Task Elements
   • Add detailed tasks
     • Do not get too detailed
     • Do not get too broad
Work Breakdown Structure

1.0 Define Specifications
   1.1 Power System
      1.1.1 Battery Life
      1.1.2 Measure Current Draw
   1.2 Display System

2.0 Order Materials
   2.1 Prototype
   2.2 Final Assemblies

3.0 Build Prototype
   3.1 Complete drawings
Building the Plan

GANTT Chart

2. Define length of each task
Building the Plan

3. Define Dependencies
   • Linking Tasks
   • Relationship of one task to another
     • Finish to Start
     • Start to Start
     • Finish to Finish
     • Start to Finish
     • Lead and Lag times
GANTT Chart - Finish to Start

- Most Common Dependency
- One task must finish before another can start

You cannot roof the house until it is built
Task #1

Task #2

- Task #2 cannot start until Task #1 Starts

Leveling the concrete cannot start until you start to pour the foundation.
GANTT Chart - Finish to Finish

- Task #2 cannot finish until Task #1 finishes

Inspect house wiring cannot finish until all of the wiring is completed.
GANTT Chart - Start to Finish

- Task #1 must start before you finish Task #2

Used for Just in Time Scheduling
• Lag shows delays in projects that do not use resources

Waiting for supplies to arrive.
• LEAD allows you to show dependency while overlapping tasks
4. **Assign Resources**
   - People, Facilities, Tools
   - Every task needs a person assigned

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**Building the Plan**

**Task #1**
- **Date**: [ ]
- **Assigned**: Joe

**Task #2**
- **Date**: [ ]
- **Assigned**: Mary
Building the Plan

5. Review for Over Allocation
   • One person doing multiple things at the same time
Building the Plan

1. Develop Work Breakdown Schedule
2. Define length for each task
3. Define Dependencies
4. Assign Resources
5. Review for Over Allocation
Update the Plan

- Review Often
- Adjust Resources as needed
- Insert Tasks as needed
- Track Progress
Update Progress

Task #1
100%

Task #2
50%
Going Forward with your TA

- Build your plans
- Define scope clearly
- Show tasks to solve Risk elements
- Define Hard Milestones
- Show timeline and resources
- Update the plans regularly