



Chapter 12

Project Management



12.1 Introduction

- “Failure to plan is planning to fail.”
- A good plan is one of the most important attributes of successful teams and projects.
- Projects should be organized systematically.
- Spend some resources on planning. Don’t just “start in” and hope.

12.1 Eight Questions that can be Addressed with a Plan

- What to do first?
- Next?
- How many people?
- What resources?
- How long?
- Time table?
- Deadlines?
- Objectives?

12.2 Creating a Project

Charter

- The Charter defines what your project is and what “completion” means
- Elements include
 - Summary
 - Objectives
 - Deliverables
 - Duration
 - Team members
 - Team Roles
 - Stakeholders
 - Community Partners



12.3 Task Definitions

- Identify the completion tasks to achieve the objectives and outcomes
 - Plan
 - Build
 - Design
 - Deliver
- Assign time to each task (i.e., task A will require 10 man hours to accomplish)
- Add up the man-hours and ponder. You usually discover that the project will take more man hours to complete than you anticipated.
- Then, multiply by 2 to get a realistic estimate for how long the task will take.



12.3 Plans

- Plans should include:
 - Who to hold accountable for progress
 - Needed materials, resources, etc.
 - How to determine if the project is on schedule
 - Manage people and resources
 - Determine the end!
- Too general = vague
- Too specific = no room to maneuver



12.4 Milestones

- Objective -> Task -> Milestone
- Milestones are measurable points along the path to a deliverable.
- For instance, a test might be a milestone. Was it done? Was the data reliable? Did the test answer the question that it was supposed to answer?
 - Yes = project is on schedule
 - No = “Lucy! You’ve got some ‘splainin’ to do!”
- Another milestone might be the completion of a prototype. This is slightly different than a deliverable in that it is not delivered to the customer.



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12.6 Organizing the Tasks

- Determine dependencies and sequencing; Identify “critical paths.”
- For instance, if task B cannot begin until task A is completed, and task C cannot begin until task B is completed, ...
- A critical path is all those tasks which rely on earlier tasks to be completed before they can start.
 - Ex. – prerequisites such as the math curriculum for engineering
- The project cannot be completed sooner than the duration of the longest critical path.
- Critical paths show where to place attention and resources.
- Some tasks can be accelerated by using more people, others cannot
 - Ex. – nine people cannot have the same baby in one month



12.9 Gantt Charts

- Project management charting method
- Horizontal bar chart
- First column is the task name
- Subsequent columns are months/weeks
- Indicate milestones, start dates, end dates in the monthly/weekly column
- Update weekly! When a milestone is not met, update with a “slip.” (Leave the original milestone and show the new milestone with a different symbol.)
- When a milestone is completed, change the symbol to a “completion symbol.” (e.g. a gold star)



12.10 Details, Details

- Allocate time to fix errors. Add some time (20%?) into all your schedules.
- Don't assume things will fit together the first time
- Order parts well in advance to leave time for shipping, errors, or backorders
- Leave time for parts malfunction
- It's OK to finish early. Not so much to deliver late!

12.11 Personnel

Distribution

- Get the right people on the right tasks
- Assign people after developing a draft of the plan
- Balance the work between everyone
- Weekly updates - does everyone understand what they're doing and is everyone still on task?
- Include time in schedules for communication and management.

12.12 Money and

Resources

- Develop a budget - spending other people's money
 - Estimate with high, middle, and lower quality products - offer a range of solutions
- Extra costs
 - Shipping
 - Travel
 - Extra parts such as nails, screws, resistors
 - Material costs and labor
- Have someone be responsible for managing the budgets and financial aspects



12.13 Document As You Go

- Document milestones as they occur
- In other words, when you complete a prototype, write a design report detailing everything about the prototype, including data generated from the prototype.
- This is easier to do when it's fresh.
- Leave time at the end for reviewing, not writing



12.14 Team Roles

- Roles
 - Project Leader or Monitor
 - Procurement
 - Financial Officer
 - Liaison
- Project Management Software

12.14 – Project Leader or Monitor

- Designate a leader, or rotate leaders
- Leader is RESPONSIBLE! When everything goes wrong, this is the person that gets fired.
- Authority and Responsibility go hand in hand. You cannot be responsible for something that you do not have the authority to carry out.
- **AUTHORITY:** Leader makes the decisions.



12.14 - Procurement

- Interfaces with the purchasing system
- Tracks orders
- Executes purchases
- Monitors budgets
- **AUTHORITY to spend money**
- **RESPONSIBILITY to notify Financial Officer if budget overages are imminent.**



12.14 - Financial Officer

- Creates/maintains the budget
- Makes identifying budgetary problems easier
- **AUTHORITY:** changes to the budget (reallocation of resources)
- **RESPONSIBILITY:** keep the project within budget - get more budget



12.14 - Liaison

- Point of contact with the customer.
- **AUTHORITY:** Information flows through this person.
- **RESPONSIBILITY:** direct pertinent information to responsible party
- For example, if excess expenses are incurred, the FO would notify the Liaison who would beg the customer for more money.
- If the customer changes requirements, this information would flow through the Liaison to the Leader and FO.