Software Project Management

Lecture 23

Normalizing schedule

- Review schedule to determine whether the resources you assigned are actually available
- You may reschedule non-critical tasks
  - Schedule all the nc tasks as late as possible
  - Schedule all the nc tasks as early as possible
  - Schedule a subset of nc tasks. As milestone are met, complete rest of the schedule
- Assigning resources
  - Make sure you know the specific availability
  - Assign best available people
  - Use resources efficiently to ensure the smallest gaps in working schedules
  - Redo schedule over and over again

Loading up and leveling out

- The amount of work each member or other resource is assigned is called resource loading
- To compensate for overloaded workers, schedule work should be redistributed from resources with too much responsibility to those not fully booked - this is called resource leveling
- Ask following questions
  - How many hours per day is each resource available?
  - Is an assigned resource is allocated to multiple projects for multiple project managers?
  - Have you factored in time lost to anticipate interruptions?
  - Have you factored in sufficient time for administrative overhead?
  - Have you planned for the time required to acquire additional resources?

Excessive resource loading

- Change scope or add resources
- Give task more time or split it in two
- Move task to a time when more resources are free
- Outsource work
- Negotiate for additional time in schedule with a later completion date and a budget increase
- Reprioritize the goal and scope of the project
- Deliver components of the project in phased approach
- Find resources that are more productive

Controlling Changes to the Project Schedule

- Input to schedule control
  - Project schedule
  - Performance reports
  - Change requests
  - Schedule management plan
- Perform reality checks on schedules
- Allow for contingencies
- Don’t plan for everyone to work at 100% capacity all the time
- Hold progress meetings with stakeholders and be clear and honest in communicating schedule issues

Working with People Issues

- "Strong leadership helps projects succeed more than good PERT charts"
- Project managers should use
  - empowerment
  - incentives
  - discipline
  - negotiation

Using Software to Assist in Time Management

- Software for facilitating communications helps people exchange schedule-related information
- Decision support models help analyze trade-offs that can be made
- Project management software can help in various time management areas

Words of Caution on Using Project Management Software

- Many people misuse project management software because they don't understand important concepts and have not had good training
- You must enter dependencies to have dates adjust automatically and to determine the critical path
- You must enter actual schedule information to compare planned and actual progress

Scheduling - Summary

- Establish and document the scheduling assumptions
- Estimate task duration
  - Review with team
- Determine the critical path and task float
- Determine calendar dates and create “ideal” schedule
- Adjust the individual resource assignments as necessary to optimize schedule
  - Review and adjust with team
- Chart schedule
- Final approval and distribution

The 4 P's

- People: The most important element of any successful project.
- Product: The software to be built.
- Process: The set of stages, tasks and activities for engineering a software product.
- Project: All work required to make the product reality.

Human Resources

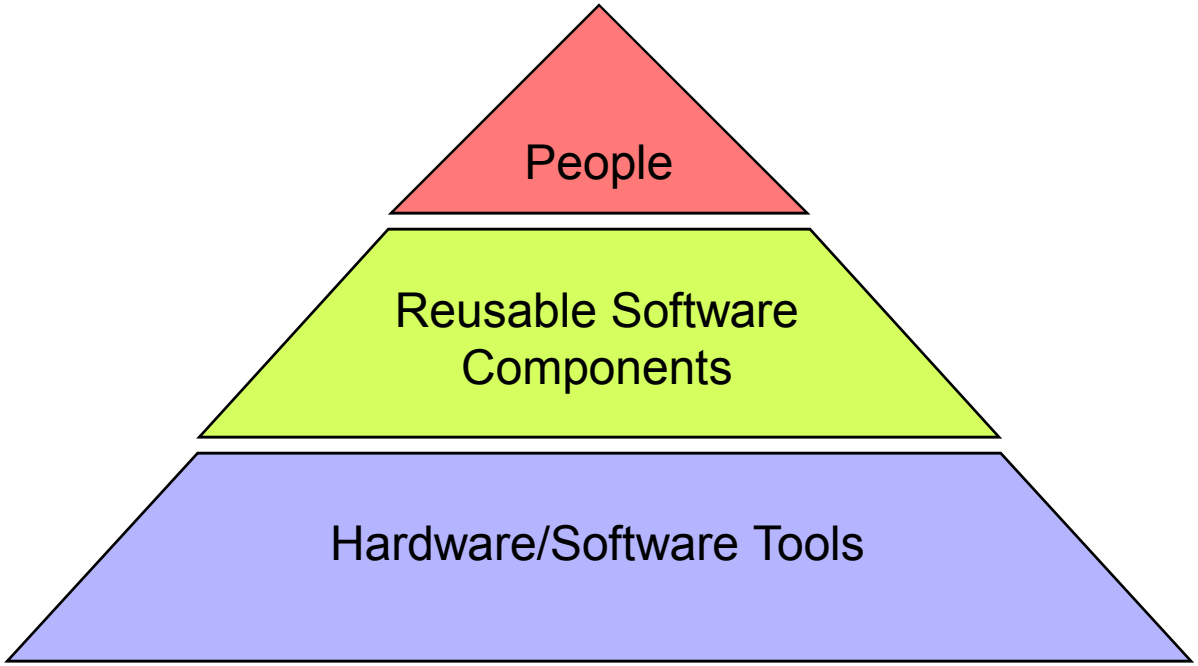
- The only rule I have in management is to ensure I have good people – real good people – and that I grow good people – and that I provide an environment in which good people can produce
- “Great design come from great designers. Software construction is a creative process. Sound methodology can empower and liberate creative mind; it can not inflame or inspire the drudge”. (F.P. Brooks)

Human Resources

People are the organization's most important asset.

W.S. Humphrey

- Project Resources:



Resourcing

- Acquire and staff project with appropriate competencies:
  - Internally
  - through recruitment
  - through a just-in-time training program
- Identify key roles and necessary skills
- Assign Key Project Roles
- Develop a Staffing Plan
- Establish Reporting Relationships - Structure
  - How is the development team organized?
  - How does the development team interact with supporting entities such as configuration management, quality assurance and verification & validation?
  - Where are the points of contact & what are the lines of communication?

Project Roles

- Programmers (system engineers)
  - Technical lead, architect, programmer, Sr. programmer
- Quality Assurance (QA) engineers (testers)
  - QA Manager, QA Lead, QA staff
- DBAs
  - DB Administrator, DB Programmer, DB Modeler
- CM engineers (build engineers)
- Network engineers, System Administrators
- Analysts (business analysts)
- UI Designers
- Information Architects
- Documentation writers (editors, documentation specialist)
- Project manager
- Other
  - Security specialist, consultants, trainer

Management & Technical Roles

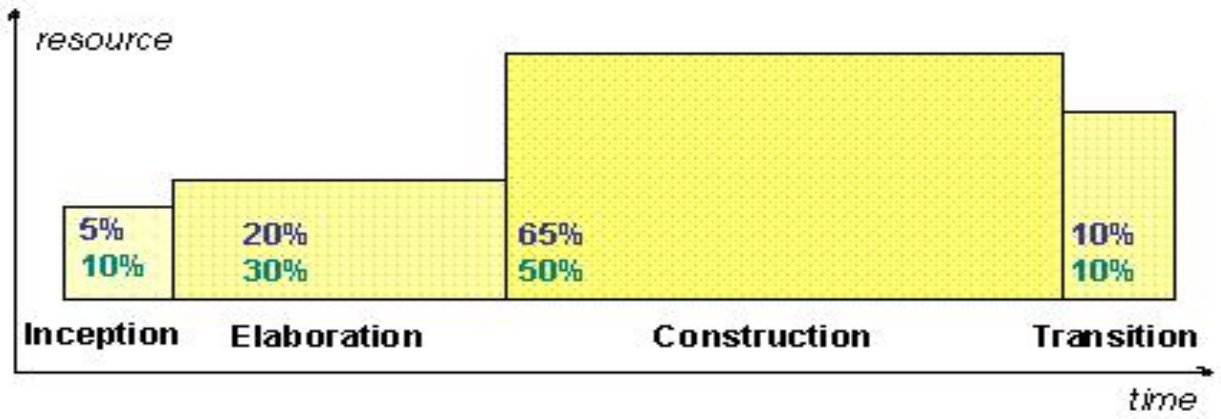
- Software projects need both managerial leadership and technical leadership
- On a small project (5 or 6 people)
  - One person may do both jobs
- On a medium size project (10 or 20 people)
  - Generally two people are required
- On a large project (>25 people)
  - The project manager will likely have supporting staff members
  - The software architect will likely have a staff of team leaders
- You need to decide which roles necessary for your project
- Depends on what you're building
    - How big is it?
    - Is it UI intensive? Data intensive?
    - Are you installing/managing hardware?
    - Do you need to run an operations center?
    - Is it in-house, contract, COTS, etc?
- Depends on your budget

Staffing Management Plan

- Part of Software Development Plan
- Includes
  - What roles needed, how many, when, who
  - Resource assignments
  - Timing: Start/stop dates
  - Cost/salary targets (if hiring)
- Project Directory
  - Simply a list of those involved with contact info.
- Team size: often dictated by budget as often as any other factor

Staffing Profile

- Projects do not typically have a ‘static team size’
- Who and how many varies as needed



Legend:
Actual Effort (% of project total)
Schedule (% of project total)

Staffing the Project

- Hire Effectively:
  - Acquire the most talented people, even at a higher cost
  - Often better to use fewer but better skilled people
  - Hire people they recommend (per Demarco and Lister, good programmers tend to cluster
- Role Matching:
  - Thoughtfully Match people and their skills to tasks
- Career Development:
  - Help people in career progression to “self-actualize”
- Teamwork:
  - Select people who will work well together
- Misfit Elimination:
  - Replace problem team members quickly

Q&A