Planning a Project

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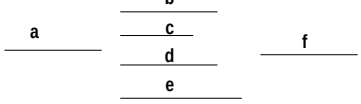
Project Schedule

- Definition
  - list of work to be done
  - who will do it
  - when they will do it
- Units
  - phases - analysis
  - steps - write domain level use cases
  - activities - have meeting with domain expert

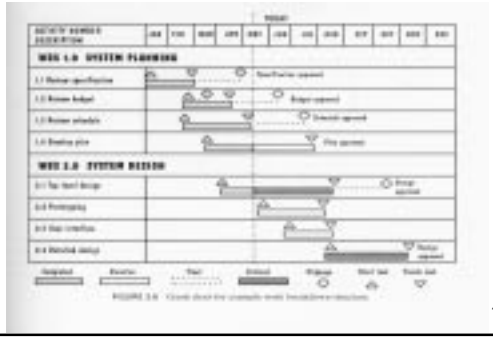
Activities

- Some may be concurrent; other sequential
  - critical path



- Can not start f until b, c, d and e are finished. So a, e and f is the critical path.
- If e is delayed then completion will be delayed
- Roles doing b, c,d will be slack (maybe)

Schedule



Estimation

- A schedule is based on time estimates
- Estimate the time required for each activity
- Plot the activities taking into account
  - who will do what
  - when they are available
  - sequential nature of activities
- Have to know how long a task takes

Problems with estimates

- Changing techniques often so that historical data is not available
- Requirements that change often or are fuzzy
- Insufficient analysis of the requirements before making an estimate
- Lack of macro-organization in company

Influences on estimates

- Technical complexity
- Context within which the software will be sited
- Experience with the domain
- Project size
- Experience with tools/language

Personnel

- Roles
  - analyst
  - architect
  - developer
- Attributes
  - experience
  - training
  - interests
  - personality

Personality Types

Meetings

- Cost money
- Are productive only if managed well
  - company culture
  - materials ahead of time
- Are productive if issues lists are used to track decisions
- Are held when needed, not every Monday

Project Organization

- Responsibility/Authority
- Project manager role
- Lead “techie”
- Some companies have parallel tech/manager tracks

Levels within levels

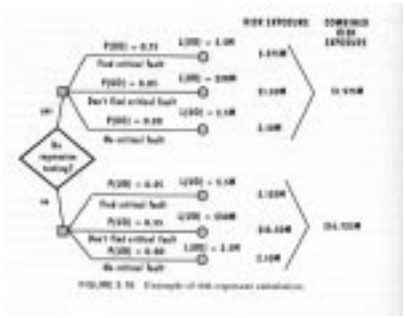
- Roles
  - Product Manager
  - Project Manager
  - Workstream leaders
  - Team leaders

Risk

- Risk is a problem waiting to happen
  - product risk - consider during feasibility study
  - project risk - consider during planning
  - requirement risk - consider during scheuling
- Attributes
  - probability - how likely is it the risk will occur
  - loss - what is lost if risk becomes a problem
  - mitigation action - reduces probability or loss

Risk Management Steps

Risk Exposure



Risk Items

- Personnel shortfalls
- Unrealistic schedules/budgets
- Wrong functionality
- Wrong user interface
- Gold plating
- Volatile requirements
- Bad consultants
- Bad products
- Performance shortfalls
- Pushing the envelope

Project Plan

- Project scope
- Project schedule
- Team organization
- Technical description
- Project standards and procedures
- Quality assurance
- Configuration management plan
- Documentation plan
- Data management
- Resource management
- Test plan
- Training plan
- Security plan
- Risk Management
- Maintenance plan

Merging Models and Plans

- Process models must be tailored to realities
- Alpha APX project
  - vision enrollment - share vision
    - architecture
  - commitment delegation
    - "empower" team members
    - identify appropriate rewards
  - inspection support - public, frequent examination
  - acknowledgement learning - investigate failures

SEI and Process Models

- Software Engineering Institute
  - An FFRDC
  - Devoted to research in software engineering
  - Origins in military software
- Capability Maturity Model
  - http://www.sei.cmu.edu
  - How well does a company manage the process of process?

CMM

- Levels
  - Initial
  - Repeatable
  - Defined
  - Managed
  - Optimizing
- Process Improvement
  - move through the levels

Process Improvement

- First, know where we are - a baseline
  - How long does it take to …
- Then,
  - analyze the data to determine areas for improvement
  - make plans for change
  - track numbers
  - revise plans

Conclusion

- Project planning requires a mixture of several disciplines
- Estimation requires data and knowledge
- Project plans and processes can be risk-driven
- The process model is adapted to the actual circumstances surrounding a project

Quizz

- Define the concept of risk
  - How does it differ between the product planning phase and the project planning phase?
  - Give an example of a risk at each of these two points in the product development process.