Scheduling and Risks II

1 Scheduling

1.1 Tracking Progress

- Do we understand customer's needs?
- Can we design a system to solve customer's problems or satisfy customer's needs?
- How long will it take to develop the system?
- How much will it cost to develop the system

1.2 Project Scheduling

1. Capturing and Sequencing Activities
2. Assigning resources and establishing durations
3. Verifying the schedule and critical path
4. Conducting a schedule risk analysis
5. Updating the schedule
6. Maintaining a baseline schedule

- Understand how to plan, monitor and control projects using PERT/CPM
  - Program Evaluation and Review Technique
    * A graphic representation of a project's schedule
    * Shows the sequence of tasks
    * Shows which tasks can be performed simultaneously
    * Pert applies a 3-point weighted average duration estimate

$$T_e = (T_o + 4 \times T_m + T_p) \div 6$$

T_e = Expected Duration
T_o = Optimistic Duration
T_m = Most Likely Duration
T_p = Pessimistic Duration

  - Critical path method
    * Analysis of path among milestones
    * Identify minimum amount of time to complete the project
    * Reveals those activities that are most critical to completing the project on time
    * Calculate available time, real time and slack time as well as latest and earliest start time
- Determine the earliest finish, the latest start, the latest finish and slack times for each activity
- Understand the impact of variability in activity times on the project completion time

1.3 Schedule Risks

A schedule is one of the project drivers that is most susceptible to risk

- Schedules comprise multiple inter-dependant activities, each of which usually contain multiple uncertainties
- *Proactive scheduling*: Add time up front to deal with uncertainties
- *Reactive scheduling*: Incorporate a process to react to and absorb disruptions
- Mainly affects the critical path - other disruptions can often be easily absorbed
- Therefore it is important that the critical path is protected

2 Risks

A risk can be measured by its likelihood × the impact

	Very Low 1	Low 10	Medium 100	High 500	Very High 1000
Probable 1	1	10	100	500	1000
Credible 0.1	0.1	1	10	50	100
Remote 0.01	0.01	0.1	1	5	10
Improbable 0.001	0.001	0.01	0.1	0.5	1
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1

A risk is an unwanted event that has negative consequences. Project managers must engage in risk management to understand and control the risks on their project

Distinguish risks from other project events by looking for:

1. Loss associated with the event - risk impact
2. Likelihood the event will happen - risk probability
3. Degree to which we can change the outcome - risk control

There are two major sources of risk

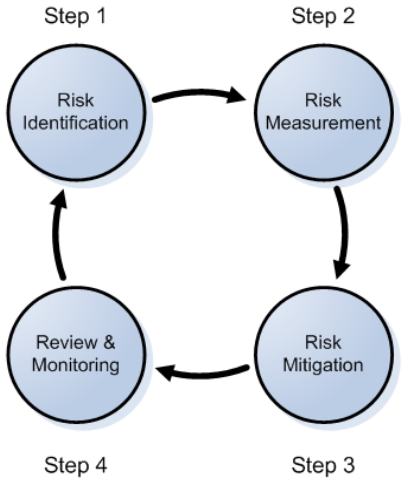
- Generic risk
- Project risk

2.1 Risk management

Risk management is concerned with identifying risks and drawing up plans to minimise their effect on a project

A risk is a probability that some adverse circumstance will occur, they can be typed:

- Project risks affect schedule or resources
- Product risks affect the quality or performance of the software being developed
- Business risks affect the organisation developing or procuring the software



2.2 Risk identification

May be team activities or based on the individual project manager's experience
A checklist of common risks may be used to identify risks in a project

- Technology risks
- People risks
- Organisational risks
- Tools risk
- Requirements risks
- Estimation risks

2.3 Risk analysis

- Asses probability and seriousness of each risk
- Probability may be very low, low, moderate, high or very high
- Risk consequences might be catastrophic, serious, tolerable or insignificant

2.4 Risk mitigation

Consider each risk and develop a strategy to manage that risk:

- Avoidance strategies - the probability that the risk will arise is reduced
- Minimisation strategies - the impact of the risk on the project or product will be reduced
- Contingency plans - if the risk arises, contingency plans are plans to deal with that risk

2.5 Risk monitoring

Assess each identified risks regularly to decide whether it is becoming less or more probable

Risk monitoring tracks progress

- Assess whether a predicted risk occurs
- Assess whether the effects of the risk have changed
- Ensures that risk aversion steps are defined and properly applied
- Collects information that can be used in the future

Each key risk should be discussed at management progress meetings
When problems occur we need to be able to identify why