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Software Engineering Project Management & Planning (pt 2)

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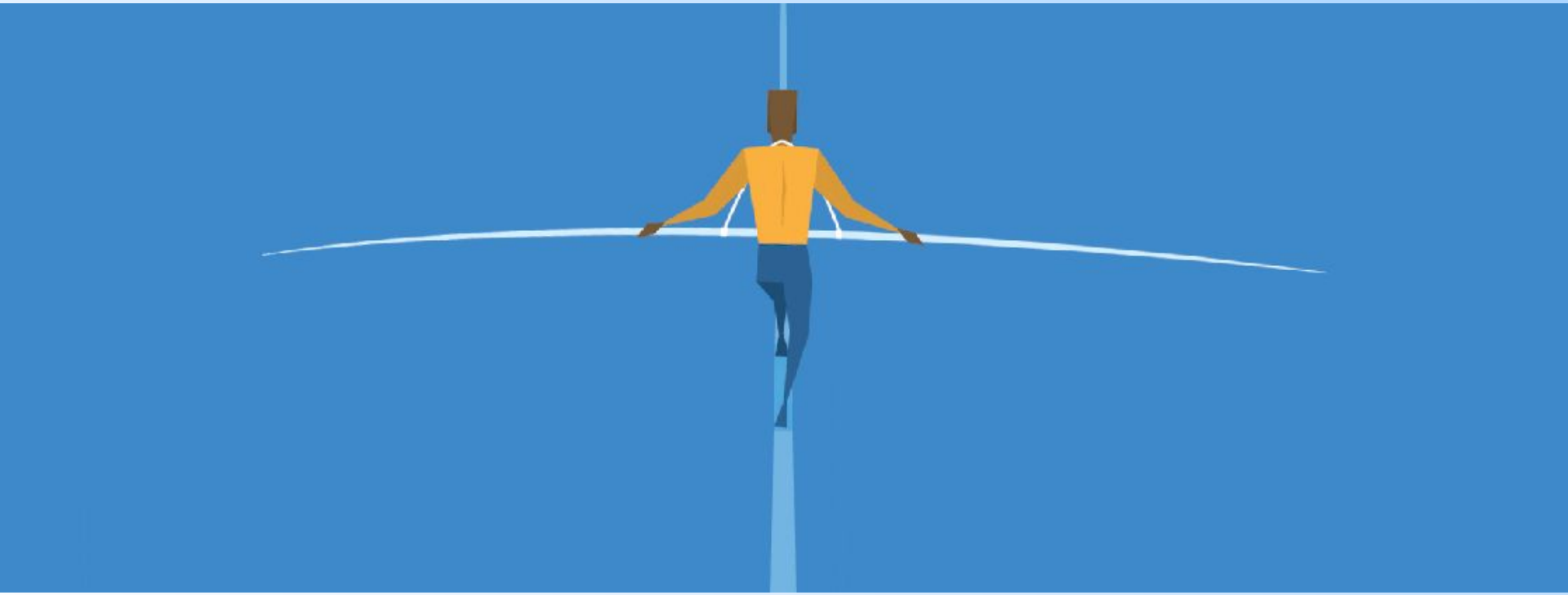
Adapted from materials provided by Byron DeVries, Jagadeesh Nandigam

Contents



Chapter 3 Objectives

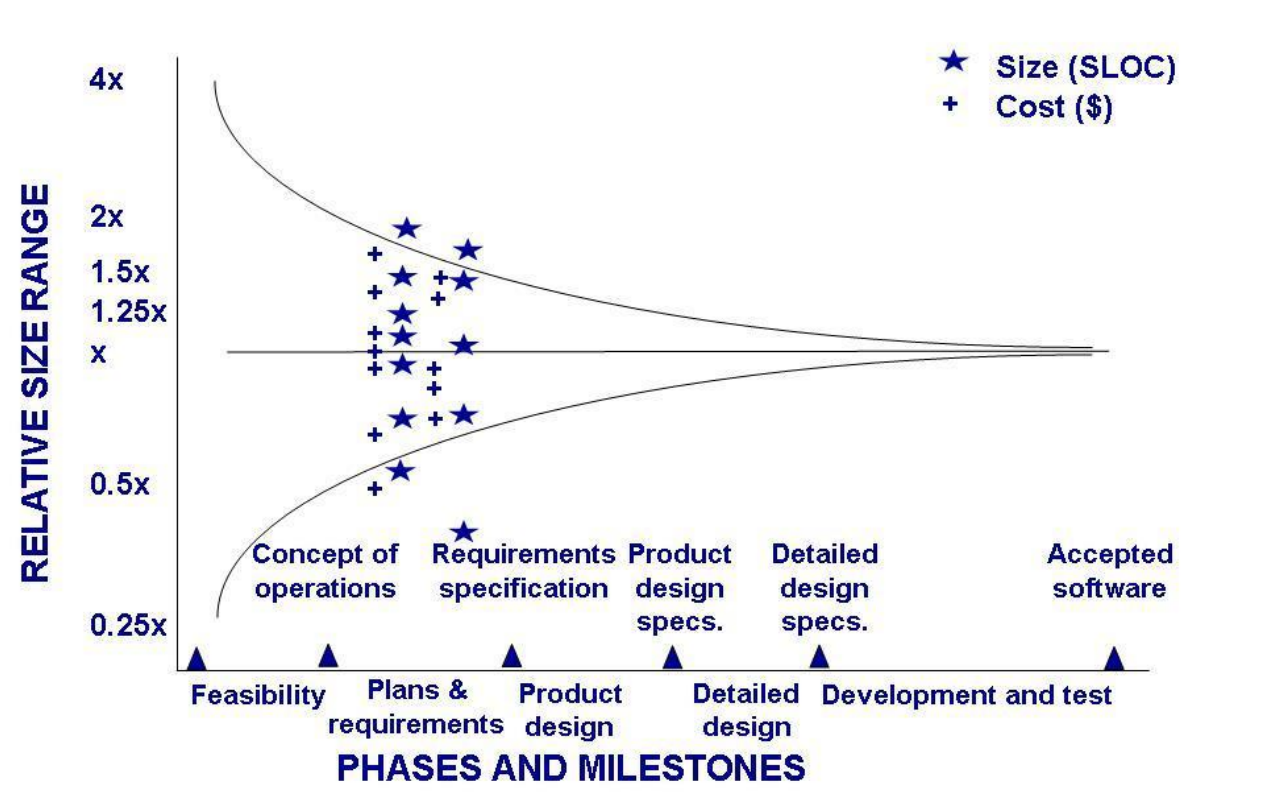
- Effort and schedule estimation
- Risk management
- Using process modeling with project planning

3.3 Effort Estimation

- Estimating project costs is one of the crucial aspects of project planning and management
- Estimating cost has to be done as early as possible during the project life cycle
- Type of costs
  - facilities: hardware, space, furniture, telephone, etc
  - software tools for designing software
  - staff (effort): the biggest component of cost

3.3 Effort Estimation
Estimation Should be Done Repeatedly

- Uncertainty early in the project can affect the accuracy of cost and size estimations



Effort Estimation

What would be a reason for inaccurate estimates?

3.3 Effort Estimation
Sidebar 3.3 Causes of Inaccurate Estimates

Key causes

- Frequent request for **change by users**
- **Overlooked tasks**
- User's **lack of understanding** of the requirements
- **Insufficient analysis** when developing estimates
- **Lack of coordination** of system development, technical services, operations, data administration, and other functions during development
- **Lack of an adequate method or guidelines** for estimating

3.4 Risk Management
What is a Risk?

- Risk is an unwanted event that has negative consequences
- Distinguish risks from other project events
  - ***Risk impact***: the loss associated with the event
  - ***Risk probability***: the likelihood that the event will occur
- Quantify the effect of risks
  - *Risk exposure* = (risk probability) x (risk impact)
- Risk sources: generic and project-specific

3.4 Risk Management
What is a Risk?

Probability \ Impact	Negligible	Marginal	Critical	Catastrophic
Certain	High	High	Extreme	Extreme
Likely	Moderate	High	High	Extreme
Possible	Low	Moderate	High	Extreme
Unlikely	Low	Low	Moderate	Extreme
Rare	Low	Low	Moderate	High

3.4 Risk Management
Risk Management Activities

- Three strategies for risk reduction
  - *Avoiding the risk*: change requirements for performance or functionality
  - *Transferring the risk*: transfer to other system, or buy insurance
  - *Assuming the risk*: accept and control it
- Cost of reducing risk
  - *Risk leverage* = (risk exposure before reduction – (risk exposure after reduction) / (cost of risk reduction)

Risks

What are typical risks in a software project?

3.4 Risk Management
Sidebar 3.4 Boehm's Top Ten Risk Items

- Personnel shortfalls
- Unrealistic schedules and budgets
- Developing the wrong functions
- Developing the wrong user interfaces
- Gold-plating
- Continuing stream of requirements changes
- Shortfalls in externally-performed tasks
- Shortfalls in externally-furnished components
- Real-time performance shortfalls
- Straining computer science capabilities