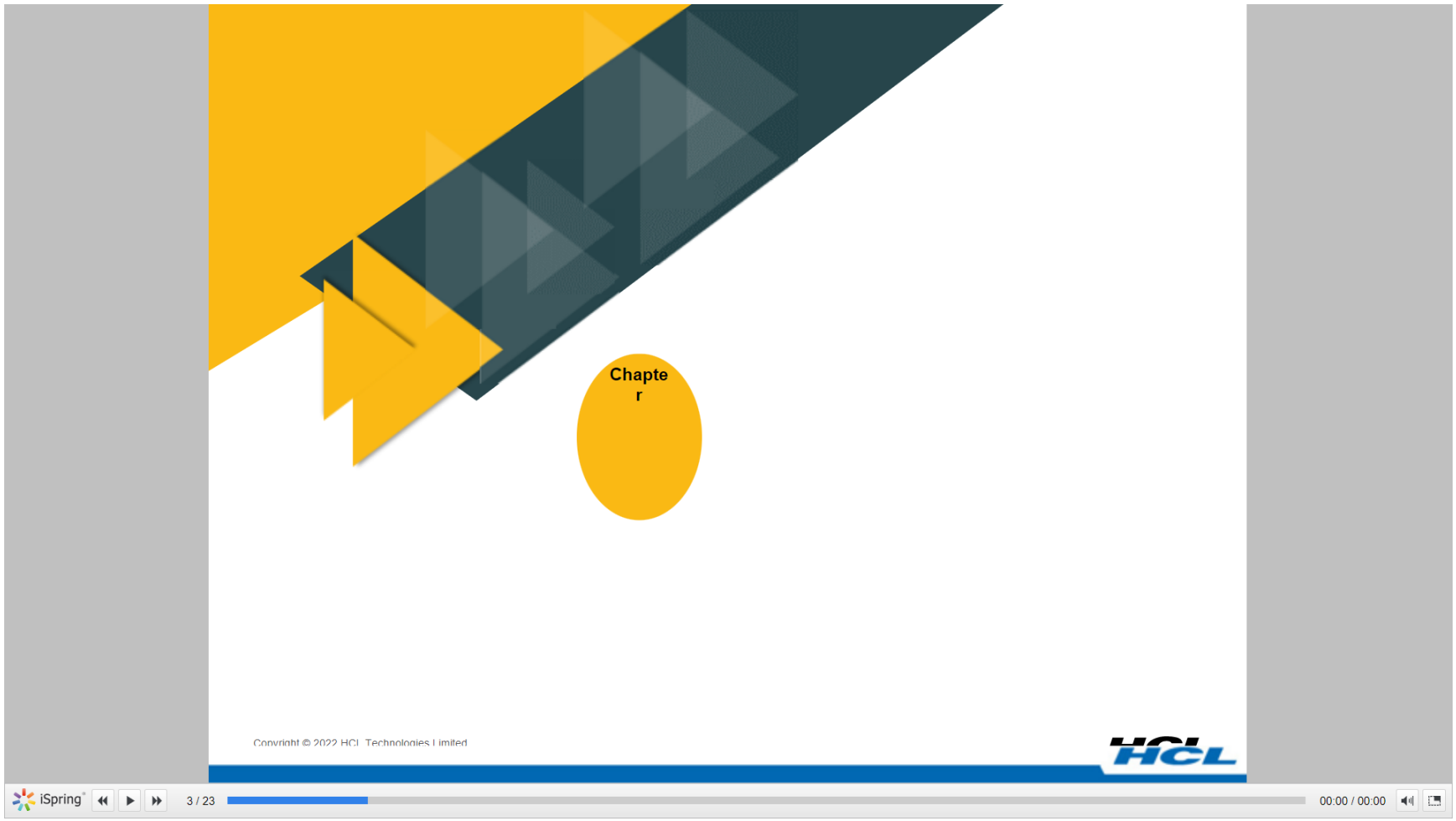
Test Estimation

HCL

Agenda

- Introduction
- Objectives
- Challenges of Estimation & Issues
- Introduction to Estimation Models
- Test Estimation Model - Overview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Discussion Point

Instructions & Duration

Why Estimation?

Why Estimation?

Business Drivers

- Estimation is one of the major driving factor for the business
- Estimation techniques varies by organization to organization, client needs and service
- Business moving towards fixed bid / managed services
- Business demands different techniques for development, Testing, Production support

Estimation Drivers

- Estimating the Test Size is a challenge
- Skill sets and other attributes varies from development
- Defect Management plays vital role in Test Execution
- Very few estimation models available for testing services

Golden Rules of Estimation

- Require all estimates to be justified. Gut feeling is not an adequate justification
- Require all Assumptions documented and validated
- Don't use methods or tools blindly. Try estimating previous (completed) projects to validate and tune the methods
- Educate your estimators. Knowing how to do something doesn't mean you know how long it will take
- Verify the Estimates with Actuals periodically and Re-Estimate

Challenges & Market Analysis

Project phase	Uncertainty (percent)
Feasibility	+100/–50
Requirements	+50/–25
Design	+20/–10
Coding	+10/–5
Testing	+5

- Estimated value is over / under estimated
- Re-Estimation is mandatory in all the phases

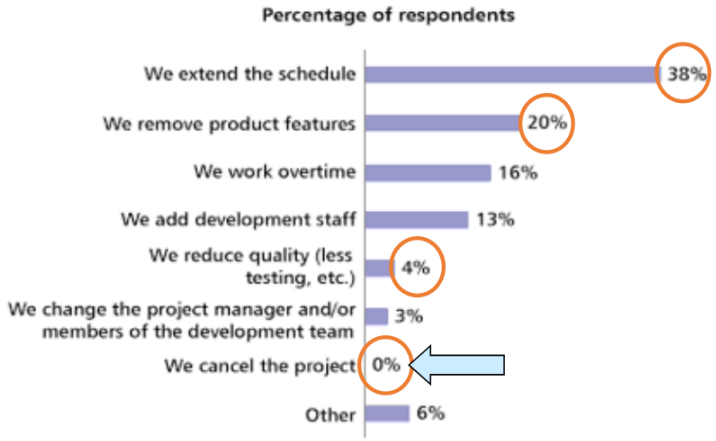
- Example : Assume that the estimated effort is 100 persons months during design stage. Due to uncertainty, the probable estimated range could be between 90 and 120 person months (+20/-10%)

- Are we able to estimate 95% accurate?

*Source : The Limitations of Estimation by Linda M. Laird

Schedule Problem?
Extend it– new trend

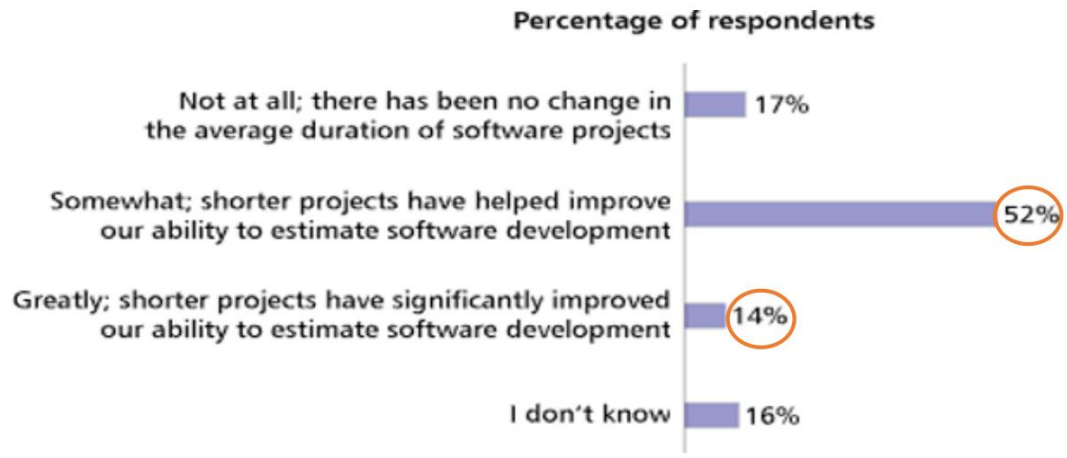
- In 2002, the most common remedy for schedule problems was overtime.
- In 2008, a Cutter Consortium survey has revealed that: when projects run into scheduling problems, the two most common remedies are extending the schedule and reducing functionality, with overtime relegated to third place, followed by adding staff. …
- To a large degree, the shift away from adding overtime indicates a positive change in culture. Organizational behavior is improving!"



Source : Cutter Consortium late 2008

Short Projects and Estimation Advantages

- Previous Cutter Consortium research has consistently shown the move toward more manageable agile software projects (short, evolutionary, customer-driven)
- Bennatan examined this phenomenon in 2008 survey and found a clear preference toward smaller projects and the estimation advantages they provide



Source : Cutter Consortium late 2008

Project Failures

- A recent study of 100 companies found the average company completes only 37% of major IT projects on time, while only 42% finish on budget

- The Standish Group International, “Chaos Report” highlighted IT project failures:

- 16% projects completed successfully
- 53% projects overrun
- 31% projects canceled before completion
- Cost Overrun was 189%
- Schedule overrun was 222%

- 8600+ Projects
- 370+ respondents
- Total 40000 Projects in 10 years

- Standish Group calculated these failed and struggling projects cost U.S. companies and government agencies $145 billion annually

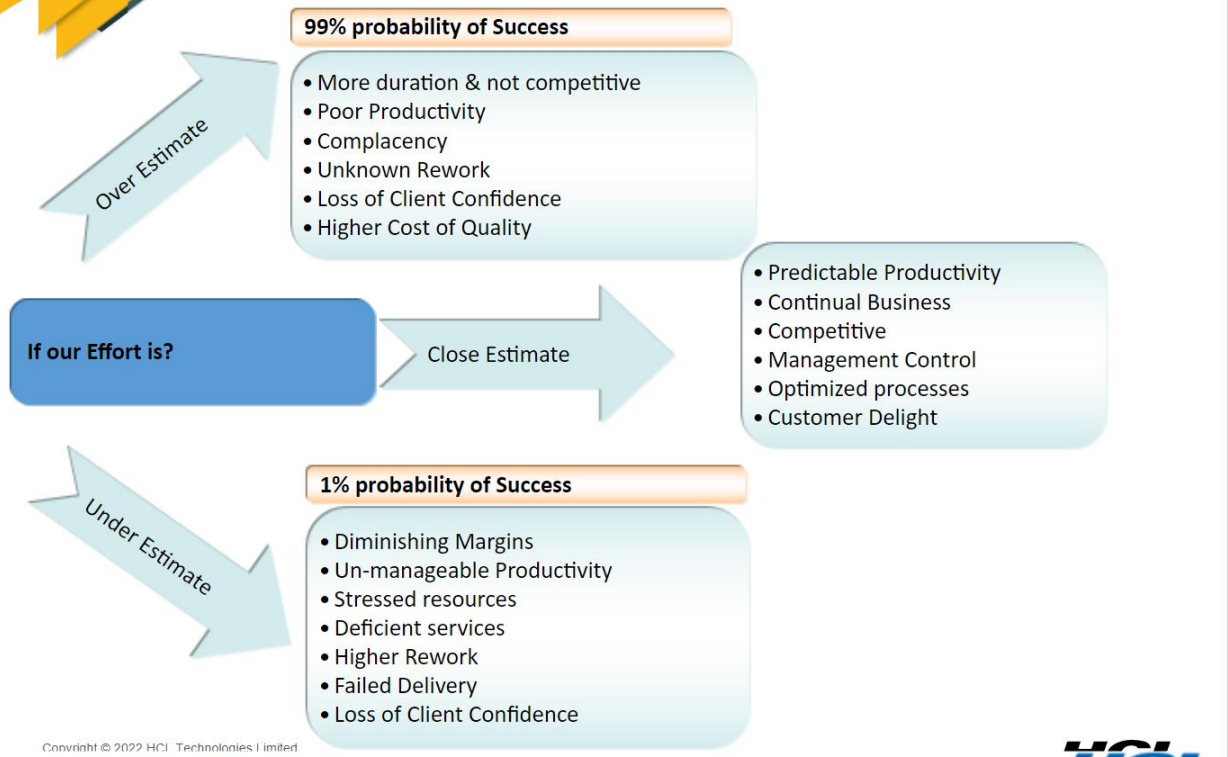
Primary Causes of Software Failures

- Project Objectives Not Fully Specified
- Bad Planning and Estimating

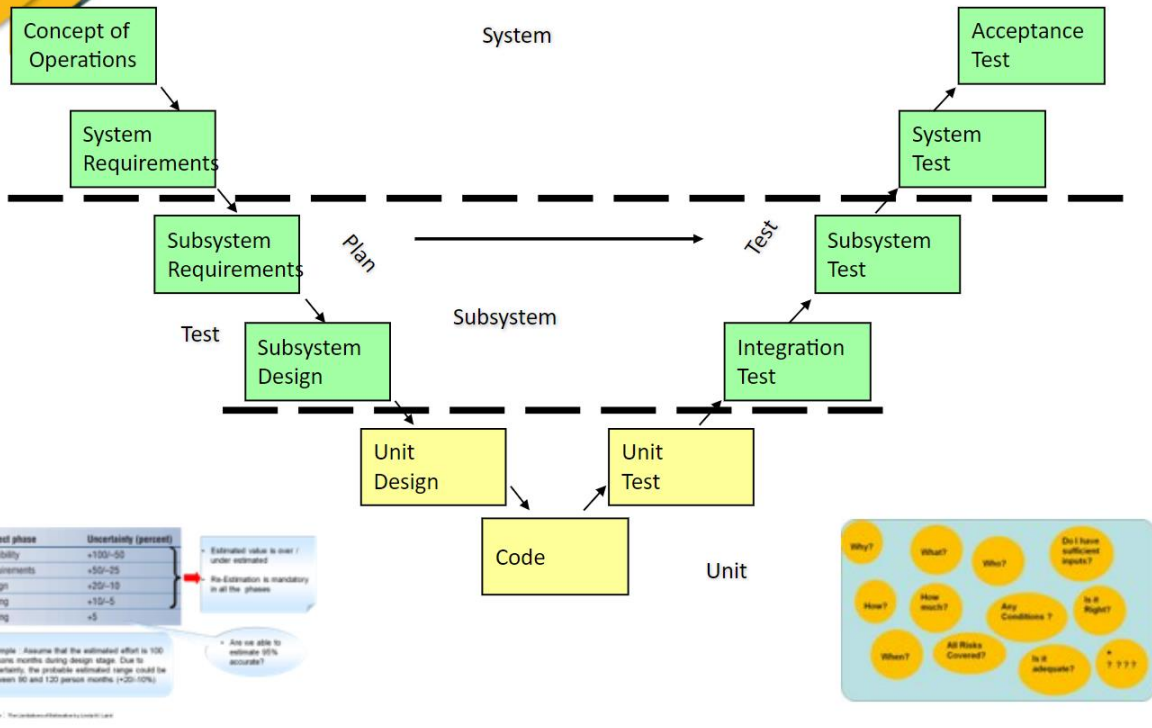
Other factors

- Technology New to the Organization
- Inadequate/No Project Management Methodology
- Insufficient Senior Staff on the Team
- Poor Performance by Suppliers of Hardware/Software
- Other Efficiency Problems

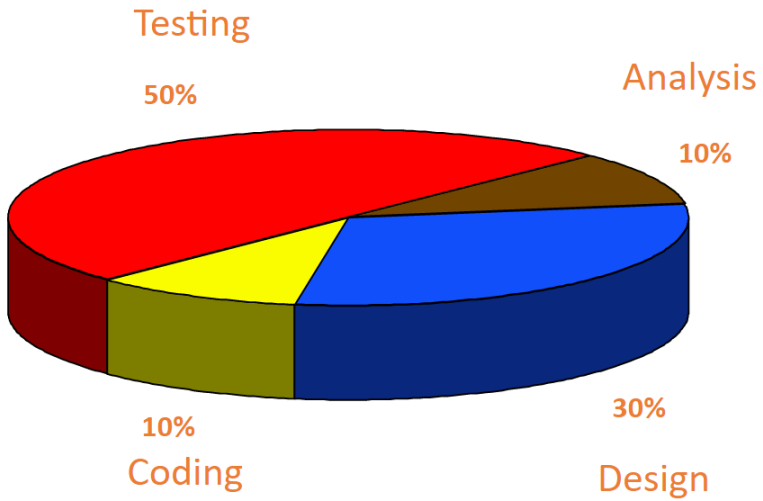
Why we need near accurate Estimate?



How much you should know before Estimating



Testing Effort

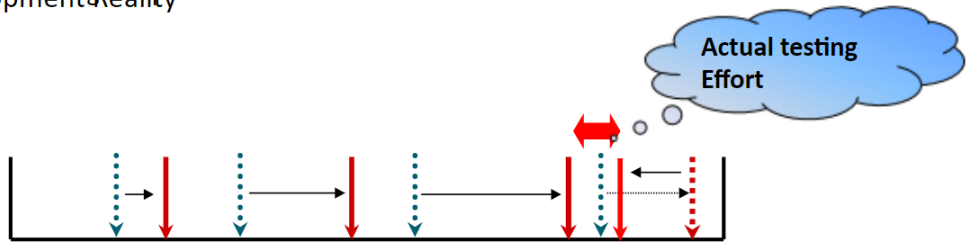


Source: B.W.Boehm
Software Engg. Economics

Typical Development

Software Development Plan

Software Development Reality



Industry Practices

Estimation Models in Software Industry (1965 to .....)

Size Estimation

- Lines of Code
- IFPUG 4.0 Function Point [Allen Albrecht]
- Fast FPA
- Mark II FPA [Mark Symons]
- Feature Point Method [Capers Jones]
- Bang Metrics [Tom De Marco]
- Use Case Points
- Object Points
- Test Points
- Full Function Points
- Enhancement Function Points

Effort Estimation

- COCOMO 81 (Barry Boehme)
- SLIM Model (Putnam)
- Mark II Estimation
- Halstead Metrics
- COCOMO 2.0

Analogous Models

- Guess(timate)
- Expert Opinion
- Bottom-UP

Normalization Methods

- Work Breakdown Structures
- Delphi Wide band

Estimation Models Used in HCL

- FP
- Complexity Point
- Work Breakdown Structures
- T Estimation Model

What is required for Test Estimation?

Test Specifications

Test team

Test Environments

Assumptions, Risks, Dependencies

- Standards
- Productivity
- Complexity
- Prev Exp.
- Capability
- Support Team
- Dedicated Env
- Test Tools
- Risks
- downtime
- Co-ordination
- Defect Analysis

Test Estimation Model

Test Estimates
- Size
- Effort
- Cost
- Schedule

Continued in Part II