
What's Different About Software

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ASQ Bodies of Knowledge

CSQE

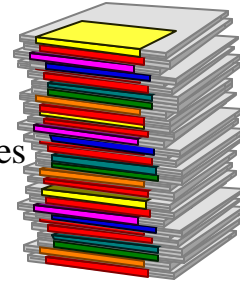
- Software Quality Management
- Software Processes
- Software Project Management
- Software Metrics
- Software Testing and Verification
- Software Audits
- Configuration Management

CQE

- Management and Leadership
- Quality Systems Development, Implementation, and Verification
- Planning, Controlling, and Assuring Product and Process Quality
- Reliability and Risk Management
- Problem Solving and Quality Improvement
- Quantitative Methods

Software Characteristics

- Invented versus Manufactured
- Increasing Software Complexity
- Software Development Life Cycles
- Delivered Product is Invisible
- Software Testing Problems
- Change Management Issues
- Quality is Designed and Built In



Software Issues

- Early State of Computer Science
- Poor Requirements Definitions
- Software Standards are not Enforced or Followed
- Development Training Skips Planning and Measurement
- Software Development is Private
- “Cowboy Culture”
- QA Considered a Necessary Evil
- QEs are Outsiders to Development
- Quality is Added at the End

Software Complexity

- Many Hardware Platforms
- Bigger and Faster Systems
- Graphical User Interfaces
- Multi Processing Environments
- Higher Level Languages
- Layers of Software
- Interfaces with Other Software
- Software Libraries

Software Development Life Cycle Models

- Waterfall
- Prototyping
- Spiral
- Decomposition/Integration
- Cleanroom
- Fourth Generation Techniques
- Object-Oriented
- Hybrid Models

Black Box Software Testing Paradigms*

- Domain driven
- Stress driven
- Specification driven
- Risk driven
- Random / statistical
- Function
- Regression
- Scenario / use case /
transaction flow
- User testing
- Exploratory

* James Bach and Cem Kaner, *Black Box Testing Paradigms*, USPDI and STAR 1999.

Size Of The Testing Problem

- Input one value in a 10 character field
- 26 UC, 26 LC, 10 Numbers
- Gives 62^{10} combinations
- How long at 1,000,000 per second?

What is your domain size?

Configuration Management

- Version control
- Naming
- Library control
- Release process
- Change control
- Patching

Take Aways

- Software Quality Is Designed
and Built In
- Software Is Complex
- Good Software Quality Comes
From Disciplined Processes

