

Software Quality



Agenda

- Quality Management
- Software Quality
- Validation & Verification
- Reviews & Inspections

Quality Management

- Ensure product achieves required level of quality
- Three principal concerns
 - Organisation – establish a framework of processes and standards
 - Project Planning – develop a quality plan
 - ❖ set quality goals
 - ❖ decide which processes and standards are to be used
 - Project – apply processes and check they are followed

QM Activities

- Check software engineering process
- Check project deliverables
 - consistent with organisational standards and goals
- Quality team should be independent

Quality Planning

- Identify desired product qualities
 - how assessed
- Define quality assessment process
- Identify standards to be applied
 - define new standards if necessary

QM Scope

- Particularly important for large, complex systems
 - documentation is a record of progress
 - supports continuity of development
 - ❖ expect team to evolve
- Smaller systems need less documentation
 - focus on establishing a quality culture

Quality Culture

- Everyone is committed to achieving a high level of product quality
- Teams take responsibility for the quality of their work
- Professionalism of team members

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Software Quality

- Quality, simplistically, means a product should meet its specification
- Software issues
 - requirements are usually incomplete and often inconsistent
 - some quality requirements are difficult to specify unambiguously
- Focus may be ‘fitness for purpose’ rather than specification conformance
 - particularly in agile & lean processes

Fitness for Purpose

- Properly tested
- Sufficiently dependable to be used
- Performance is acceptable for normal use
- Usable
- Well-structured and understandable
- Standards have been followed in the development process

Software “...ilities”

Quality Attributes

Safety	Understandability	Portability
Security	Testability	Usability
Reliability	Adaptability	Reusability
Resilience	Modularity	Efficiency
Robustness	Complexity	Learnability

Process & Product Quality

- Quality of product is influenced by the quality of the production process
 - relationship is complex & poorly understood
 - ❖ individual skills and experience are important
 - ❖ novelty of project may impair product quality
- Some product quality attributes are hard to assess
 - rely on process quality

Reading

- Sommerville
 - sections 24.1 & 24.2
- Wiegers
 - chapter 14
- Larman
 - sections 7.5, 33.5-33.7 & 35.1-35.5