

Quality Management

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What is Quality?

- Developer: Compliance to requirements
- Users: Fitness for use

Quality Attributes

- Functionality
- Usability
- Reliability
- Performance
- Supportability

Problems with Software Quality

- Some quality characteristics cannot be specified unambiguously
- Requirements usually are not perfect
- Changes

Approaches to Quality

- Product vs Process
- Conformance vs Fitness

Cost of Quality

- Prevention cost
- Appraisal cost
- Internal failure cost
- External failure cost

Prevention Cost

- Quality planning
- Formal technical review
- Test equipment
- Training

Appraisal Cost

- In-process inspection
- Inter-process inspection
- Equipment calibration and maintenance
- Testing

Internal Failure Cost

- Rework
- Repair
- Failure mode analysis

External Failure Cost

- Complaint resolution
- Product return and replacement
- Help line support
- Warranty work

In search of quality

- Quality Assurance
- Quality Control
- Quality Improvement

Quality Assurance

- Define how the quality can be achieved
- Define how the organization knows that the software has the required quality

Quality Assurance

- Product standards
 - Software
 - Document
 - Documentation
 - Coding
- Process standards
 - Specification process
 - Design process
 - Validation process

Product & Process standard

Product standard	Process standard
Requirement document structure	Submission of document to CM
Design review form	Design review conduct
Method header format	Version release process
Programming style	Project plan approval process
Project plan format	Change control process
Change request form	Test recording process

Quality Standards

	Conformance	Improvement
Product	ISO 9126	Best Practice
Process	ISO 9000-3 SQA TQS	CMMI SPICE Bootstrap

SQA Approaches

- Formal Technical Review (FTR)
- Statistical Software Quality Assurance
- Six Sigma
- ISO 9000

Software review

- Specification
- Design
- Code
- Process model
- Test plan
- Configuration management procedure
- Process standard
- User manual

Difficulties and Risks in QA

- Easy to forget to test some aspects
- Conflict between achieving software quality and delivering product
- Different people, different abilities and knowledge about to quality

Quality Control

- Monitoring the development process to ensure that the quality assurance procedures and standards being followed.

Thai Quality Software (TQS)

- มาตรฐานคุณภาพซอฟต์แวร์ไทย โดย สมาคมอุตสาหกรรมซอฟต์แวร์ไทย
- Create in 2544 (2001) by Association of Thai Software Industry (ATSI)
- Based on ISO/IEC 12207
- ISO 12207—Process standard
- CMMI—Assessing model
- TQS—Implementation plan
