



ILLINOIS INSTITUTE
OF TECHNOLOGY

Transforming Lives. Inventing the Future.

www.iit.edu

SOFTWARE QUALITY MANAGEMENT

CSP587

Prof. Dennis Hood
Computer Science

Reading

- Audits
- Reading
 - Ch. 6 – Audits
- Objectives
 - Appreciate the purpose and value of audits
 - Understand the variety of audit processes which can be utilized to address the variety of software engineering work products
 - Examine the mechanisms of the different audit processes with the goal of maximizing the effectiveness of each

Topics for Discussion

- State the objective of audits in measurable terms.
- Explain why audits cannot prove that a software system is perfect.
- Discuss the effectiveness and efficiency of different audit approaches.
- Discuss the role of:
 - Discipline,
 - Management,
 - Culture,
 - Training, and
 - Tool support.



Week 7

Audits

Audits – Formal Reviews

- Development work products and/ or processes assessed against well-defined requirements / standards
 - Verify compliance to standards
 - Assess compliance against a model such as CMMI – e.g., which potential supplier is best by the given standard
 - Assess development progress vs. planned
- Can be conducted by internal or external entities
 - Internal is available and familiar
 - External is objective and expert

Ex: PMI Quality Audit

- Called for by the project manager
- Structured, independent process to determine if project activities comply with organizational and project policies
 - Identify all good and best practices being implemented
 - Identify all nonconformities, gaps, and shortcomings
 - Share good practices from similar projects / industry
 - Proactively offer assistance to improve productivity
 - Highlight contributions of each audit in org's lessons learned repository

Types of Audits

- Internal (first-party)
 - Verification of compliance / performance
 - Data gathering for certification
- Second-party
 - An audit of a supplier and/or partner with respect to standards / requirements
 - Conducted by a representative of the partner
- Third-party
 - Conducted by an independent organization

Maintaining Control

- Project assessment and control process
 - Assess project feasibility
 - Determine project status
 - Direct execution of the plan to ensure adherence to schedule and budget, etc.
- Decision management process
 - Provides a structured, analytical framework for objectively identifying alternatives and selecting the best course of action
 - Must record the decision, rationale, and assumptions
 - Must track and evaluate results for future decisions

Steps of a Software Audit

- Choose audit team members
 - Training and/or certification?
- Develop audit plan
 - Agree to scope, process, schedule, etc.
 - Initial meeting / questionnaire
- Review questionnaire responses
- Conduct site visits
- Document findings
- Develop presentation (graphical representation)

CMMI Audit Process

- Software Capability Evaluation (SCE) – verification of supplier compliance
- Process and product quality assurance
- SCAMPI assessment method
 - Process improvement

Corrective Actions

- Responses to deficiencies identified during audits
- Also preventive actions, reported incidents, and customer complaints
- Steps
 - Document deficiency and action to be taken
 - Analyze and validate the problem
 - Classify issue and conduct trend analysis
 - Develop and implement solution
 - Verify resolution
 - Document