

Chapter 3

Software certification



Declaration

- These slides are made for UIT, BU students only. I am not holding any copy write of it as I had collected these study materials from different books and websites etc. I have not mentioned those to avoid complexity.



Topics as per Syllabus

Software certification:

Requirement of certification, Types, Certification of: Product, Process, Person, Third party certification.



Software certification

- To whom should we target
 - People
 - Process
 - Product
- We have seen many certified developers (Microsoft certified, Cisco certified, JAVA certified), certified processes (like ISO (International Organization for Standardization) or CMM (Capability Maturity Model)) and certified products.
- There is no clarity about the procedure of software certification.



Requirement of Certification

Adam Kalawa of Parasoft has given his views on certification like:

“I strongly oppose certification of software developers. I fear that it will bring more harm than good to the software industry. It may further hurt software quality by shifting the blame for bad software. The campaign for certification assumes that unqualified developers cause software problem and that we can improve software quality by ensuring that all developers have the golden stamp of approval. However, improving quality requires improving the production process and integrating in to it practices that reduce the opportunity for introducing defects into the product”



Requirement of Certification

- How often will developers require certification to keep pace with new technologies?
- How will any certification address the issues like fundamentals of computer science, analytical & logical reasoning, programming aptitude & positive attitude?
- Process certification alone cannot guarantee high quality product.
- Whether we go for certified developers or certified processes?
- **Can independent certification agency provide a fair playing field for each software industry??**



Types of Certification

- People
 - Industry specific
- Process
 - Industry specific
- Product
 - For the customer directly and helps to select a particular product



Certification of Persons

- The individual obtaining certification receives the following values:
 - Recognition by peers
 - Increased confidence in personal capabilities
 - Recognition by software industry for professional achievement
 - Improvement in processes
 - Competences maintained through recertification



Certification of Persons

- Professional level of competence in the principles & practices of software quality assurance in the software industry can be achieved by acquiring the designation of:
 - Certified Software Quality Analyst (CSQA)
 - Certified Software Tester (CSTE)
 - Certified Software Project Manager (CSPM)
- Some company specific certifications are also very popular like Microsoft Office Specialist (MOS) certifications in Word, Excel and PowerPoint.
- MOS is far best known computer skills certification for administrator.



Certification of Processes

- The most popular process certification approaches are:
 - ISO 9000
 - SEI-CMM (Software Engineering Institute - Capability Maturity Model)
- One should always be suspicious about the quality of end product, however, certification reduces the possibility of poor quality products.
- Any type of process certification helps to produce good quality and stable software product.



Certification of Products

- This is what is required for the customer.
- There is no universally accepted product certification scheme.
- Aviation industry has a popular certification “RTCA DO- 78B”.
- The targeted certification level is either A, B, C, D, or E.
- These levels describe the consequences of a potential failure of the software : catastrophic, hazardous severe, major, minor or no effect.



Certification of Products

■ DO-178B Records

- Software Development Plan
- Software Verification Plan
- Software Configuration Management Plan
- Software Quality Assurance Plan
- Software Requirements Standards
- Software Design Document
- Software Verification Test Cases & Products



Certification of Products

- DO-178B Documents
 - Software Verification Results
 - Problem Report
 - Software Configuration Management Records
 - Software Quality Assurance Records
- DO-178B certification process is most demanding at higher levels.



Certification of Products

- We don't have product certification in most of the areas. RTOS (real time operating system) is the real-time operating system certification & marked as "LinuxOS-178".
- The establishment of independent agencies is a viable option.



Third Party Certification for Component base Software Engineering

- Weyukar has rightly said “For Component based Software Development (CBO) to revolutionize software development, developers must be able to produce software significantly cheaper and faster than they otherwise could, even as the resulting software meets the same sort of high reliability standards while being easy to maintain”.
- Third Party Certification for Component base Software Engineering Bill council has also given his views as “Currently, there is a little evidences that component based software engineering (CBSE) is revolutionizing software development, and lots of reasons to believe otherwise. I believe the primary reason is that the community is not showing how to develop trusted components”.

Third Party Certification for Component base Software Engineering



- Contractor:
 - Gives the standard
 - Directs any variations in specification
 - Define patterns
 - Allowable tolerances
 - Fix the date of delivery
- Third party certification is a method to ensure software components conform to well defined standards, based on this certification, trusted assemblies of components can be constructed
- Third party certification is based on UL (Underwriters Laboratories) 1998, 2nd ed., UL standard or safety for software in programmable component.

End of Chapter 3

Questions?