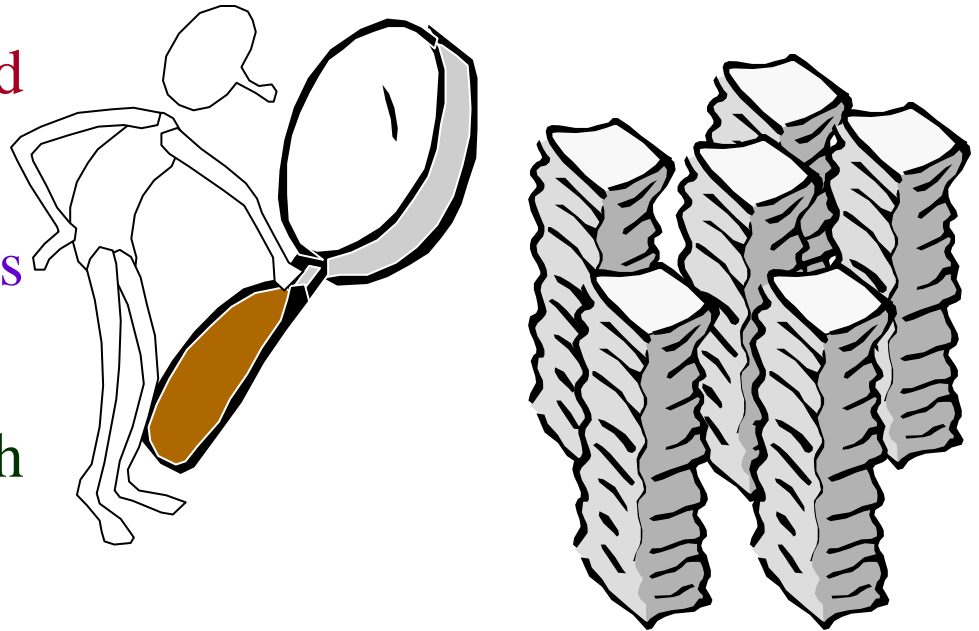# Software Certification

Software Certification

❖ What is certification?

❖ Why should we really need it?

❖ Who should carry out this activity?

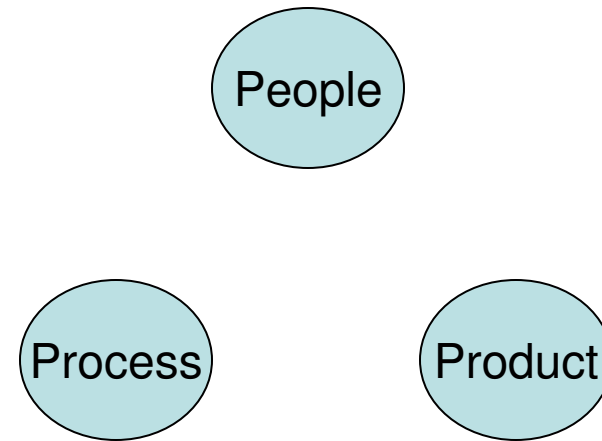❖ Where should we do such type of certification?

Software Certification

To whom should we target

- People

- Process

- Product

People

Process   Product

We have seen many certified developers (Microsoft certified, Cisco certified, JAVA certified), certified processes (like ISO or CMM) 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 is employees initiated improvement process which improves competence in quality assurances methods & techniques.

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:

- o Certified Software Quality Analyst (CSQA)

- o Certified Software Tester (CSTE)

- o 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

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-178B".

➢ 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.
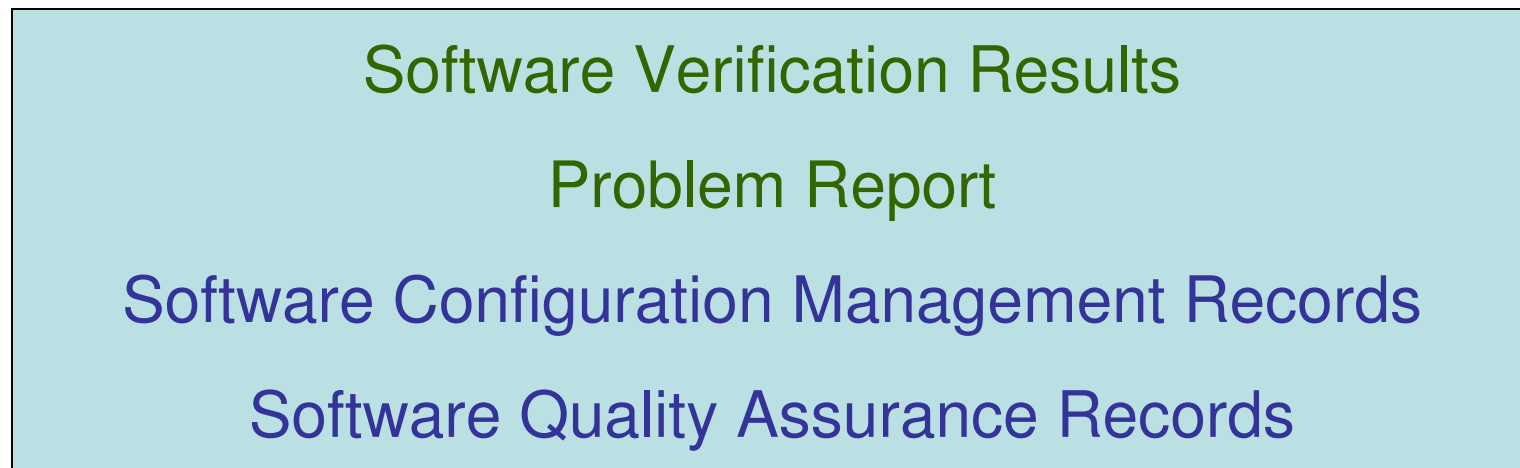
Certification of Products

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

DO-178B level A will:

1. Have largest potential market

2. Require thorough labour intensive preparation of most of the items on the DO-178B support list.

DO-178B Level E would:

1. Require fewer support item and

2. Less taxing on company resources.

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 revolutionalize 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".

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 1998, 2nd ed., UL standard for safety for software in programmable component.

Exercises

10.1 What is software certification? Discuss its importance in the changing scenario of software industry.

10.2 What are different types of certifications? Explain the significance of each type & which one is most important for the end user.

10.3 What is the role of third party certification in component based software engineering? Why are we not able to stabilize the component based software engineering practices.

10.4 Name few person specific certification schemes. Which one is most popular & why?

10.5 Why customer is only interested in product certification? Discuss any product certification techniques with their generic applicability.