Chapter 8 : Software Quality Assurance

ASSIT.PROF. JUTHAWUT CHANTHARAMALEE

CURRICULUM OF COMPUTER SCIENCE

FACULTY OF SCIENCE AND TECHNOLOGY, SUAN DUSIT UNIVERSITY

Four Stages of Software Development

1. Software Requirements Specification

2. Software Design

3. Implementation (Coding & Module Testing)

4. Integration & Testing

Each stage will require some sort of Software Quality Assurance (SQA).

What is SQA?

In respective stages of software development

- The degree to which a system, component, or process meets specified requirements.
- The degree to which a system, component or process meets customer or user needs or expectations.

Software Quality Assurance

SQA encompasses the entire software development process

1. software requirements
2. software design
3. coding
4. source code control
5. code reviews
6. change management
7. configuration management
8. release management

IEEE Std 730-2002 SQAP

IEEE Std 730-2002

The following members of the balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Edward Addy
Franz Philippe Bachmann
Juris Borzovs
Christine Brown-Strysik
Dino Butorac
Susan Carroll
Muralikrishna Chemuturi
Antonio Cicu
Rosemary Coleman
Paul Croll
Guru Dutt Dhingra
Gregory Daich
Taz Daughtrey
Bostjan Derganc
Christof Ebert
Caroline Evans
William Eventoff
David Franklin
Juan Garbajosa
Barry Garner
Gregg Giesler
John Garth Glynn
Lawrence Gunther
Herbert Hecht
Mark Heinrich
John Horch
William Junk
George Kambic
Dwayne Knirk
Sunil Kumar
Thomas M. Kurihara
J. Dennis Lawrence
Jacques Mathot
Ian McChesney
Denis Meredith
Jerome Mersky
James Moore
Robert Mortonson
Dennis Nickle
Susumu Ohno
Gerry Ourada
Lou Pinto
Garry Roedler
Terence Rout
Jaideep Roy
James Ruggieri
James Sanders
Hans Schaefer
David Schultz
Robert W. Shillato
Mitchell Smith
Joyce Statz
Toru Taqkeshita
Richard H. Thayer
Scott Valcourt
Richard Walker
John Walz
John Williams
Paul Wolfgang
Oren Yuen
Janusz Zalewski
Geraldine Zimmerman

Targeted Audience

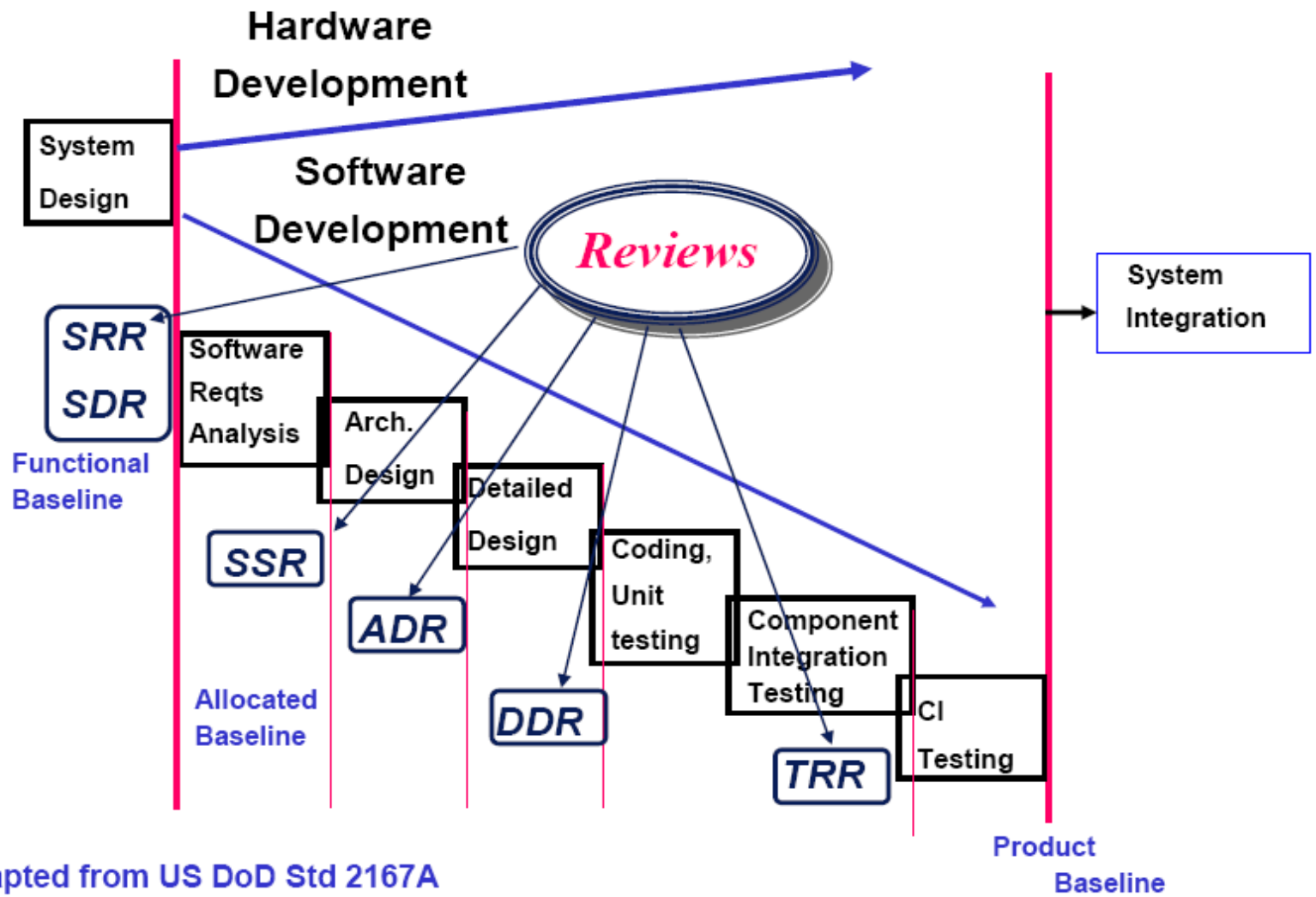
1. **The user**
   - Needs the product to meet the requirements identified in the specification.
   - Cannot afford a 'hands-off' attitude
   - Cannot rely solely on a test to be executed at the end of the software development time period.
   - Needs to obtain a reasonable degree of confidence that the product is in the process of acquiring required attributes during software development.
2. **The supplier (developer)**
   - Needs an established standard against which to plan and to be measured
   - Needs a standard to 'pass down' to subcontractors.
3. **The public**
   - May be affected by the use of the product.

Content of SQAP - Software Quality Assurance Plan[1)]

1. Purpose
2. Reference documents
3. Management
4. Documentation
5. Standards, practices, convention, and metrics
6. Software Reviews
7. Tests
8. Problem reporting and corrective actions
9. Tools, techniques, and methodologies
10. Media control
11. Supplier control
12. Records collection, maintenance, and retention
13. Training
14. Risk management
15. Glossary
16. SQAP change procedure and history

[1)] Underlined sections will be included in our project's SQAP

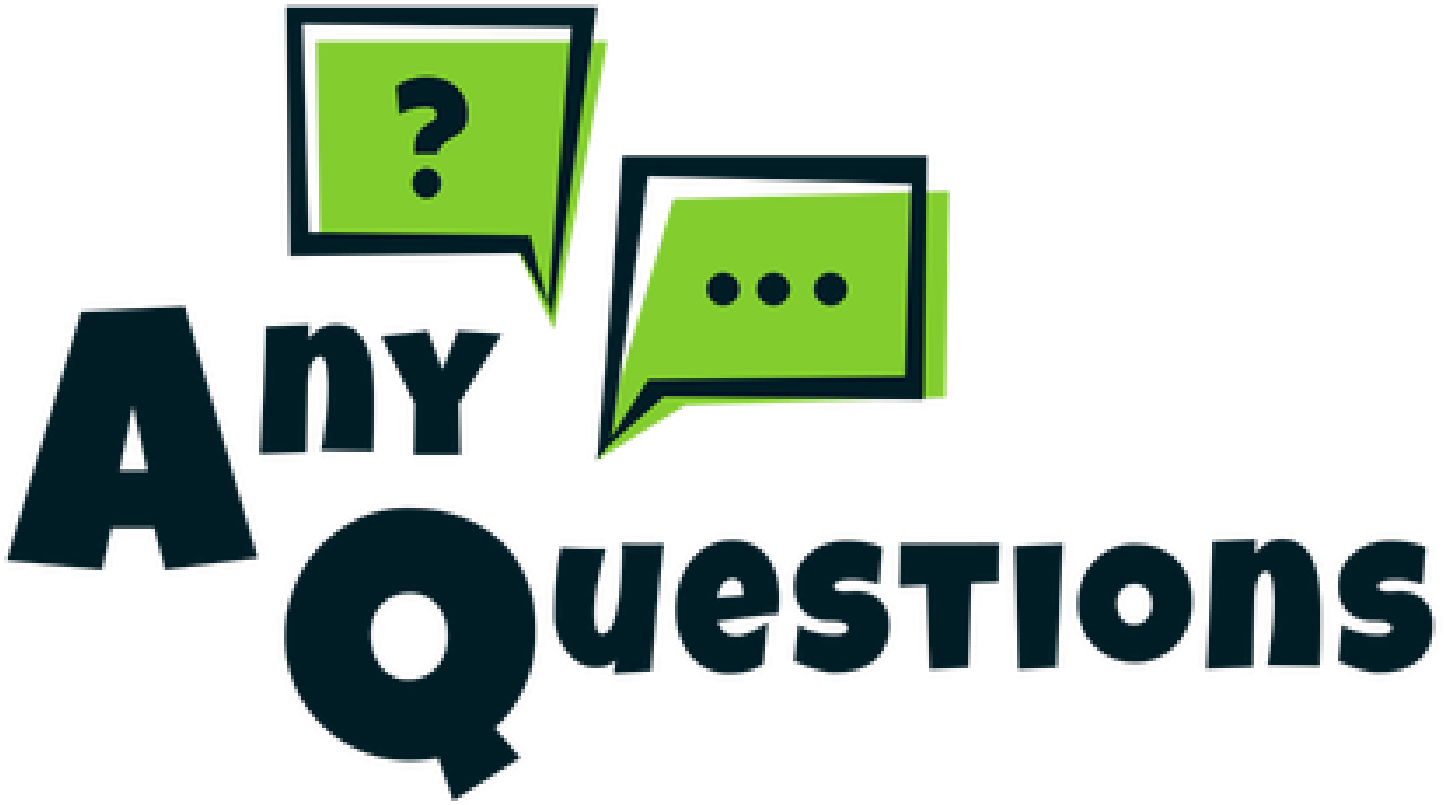
Reviews in Project Life Cycle



Adapted from US DoD Std 2167A

Testing

1. Unit Testing
   - individual components are tested for correctness.
2. Integration Testing
   - units that have already been tested are combined into a component and the interface between them is tested. Identifies problems that occur when units are combined.


Any Questions