



QA Testing Boot Camp

Chapter 8 – Continuous Verification and Validation

Learning Outcomes

- Understand Verification and Validation (V&V)
- Understand how V&V is applied at all levels of testing
- Apply V&V techniques to the testing cycles

Continuous V & V

2015 - The focus squarely is put on continuous V&V throughout the SDLC to improve quality.

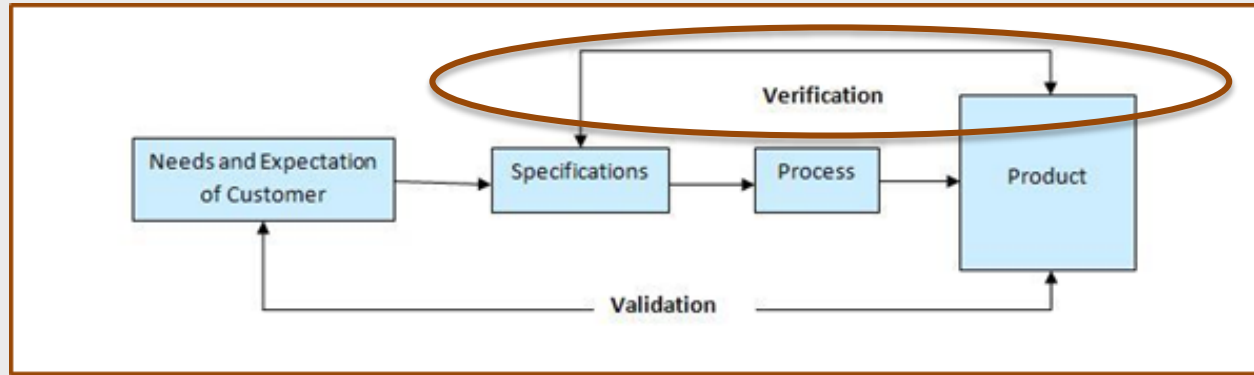
Verification – Are we building the right software?

- Requirements

Validation – Did we build the software right?

- Implementation

Verification in Software Testing



- Designed to deliver ALL functionality as specified
- Begins at inception
- Includes reviews, walkthroughs, inspections, etc. to evaluate artifacts
- Any defects result in a failure of the end product

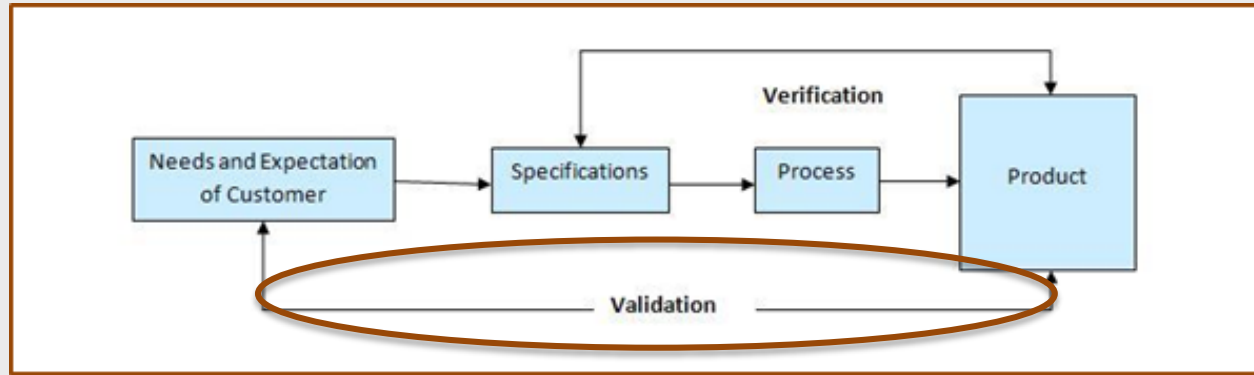
Verification in Software Testing (2)

- **A low level activity performed during development of key artifacts**
- **Demonstrates consistency, completeness, and correctness at each stage of the SDLC**

Verification in Software Testing (3)

- **Advantages**
 - **Lowers the defect rate in later stages**
 - **Helps to understand the proposed system**
 - **Helps to build the product to the customer's specification**

Validation in Software Testing



- Determines if the software meets the stated objectives
- Typically done at the end of the development cycle – after verification activities

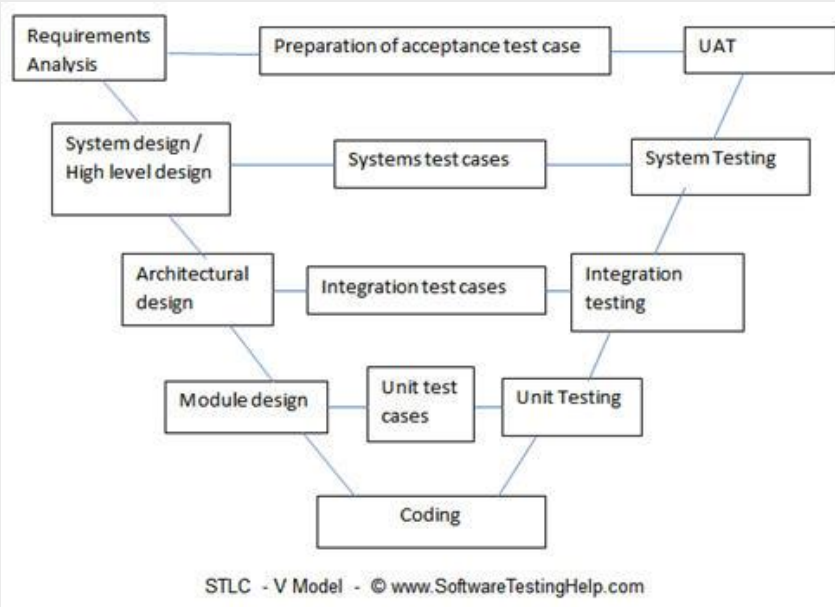
Validation in Software Testing (2)

- A high-level activity
- After the product is produced
- Ensures integration into the target environment
- Determines the correctness of the software
- Note: A product can pass verification (the right software) yet fail validation (not built right)
 - Often the result of a **problem in the SRS**

Validation in Software Testing (3)

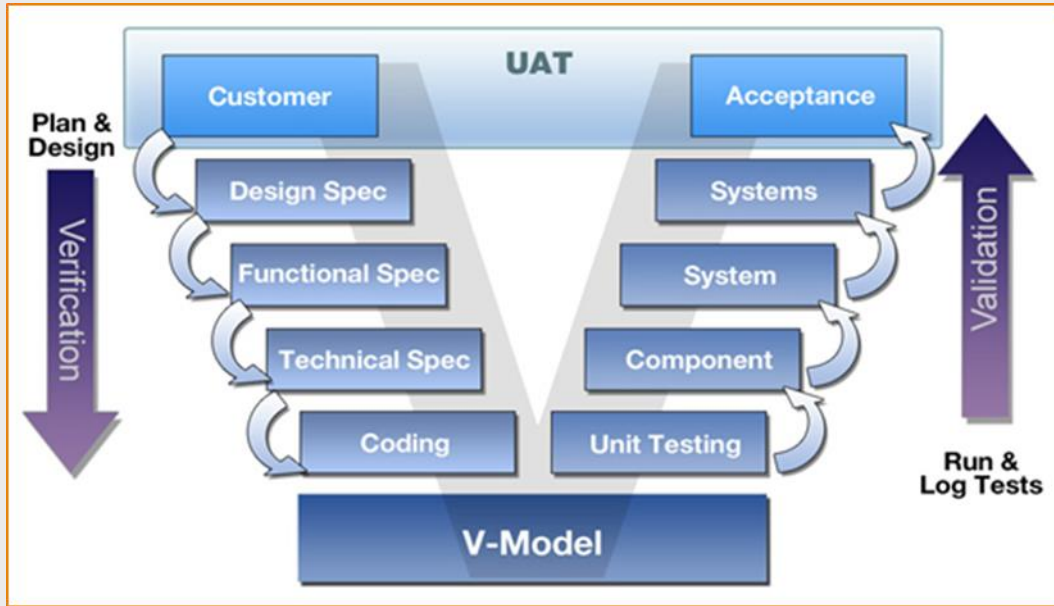
- **Advantages**
 - **Identifies possible defects that may have been missed previously**
 - **Due to errors in the specification or misunderstandings**
 - **Feature Testing, Integration Testing, System Testing, Load Testing, Compatibility Testing, Stress Testing**
 - **Done by testers with defects documented in a defect (bug) report**

V-Model



- Down Left/Up Right
- Horizontal validation

Continuous V & V



- Applying V & V at all levels
- V&V and Testing are not separate phases but integrated within the SDLC
- Probability of quality increases when defects are found early
- Reduces the cost of rework and refactoring

Summary

Defined Verification and Validation

Built upon the V&V paradigm to apply the concepts throughout the SDLC at every phase – Called Continuous V&V

Helps to ensure a quality software product that is based on the user's requirements.



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