Software Development Life Cycle (SDLC)
Software Testing Life Cycle (STLC)

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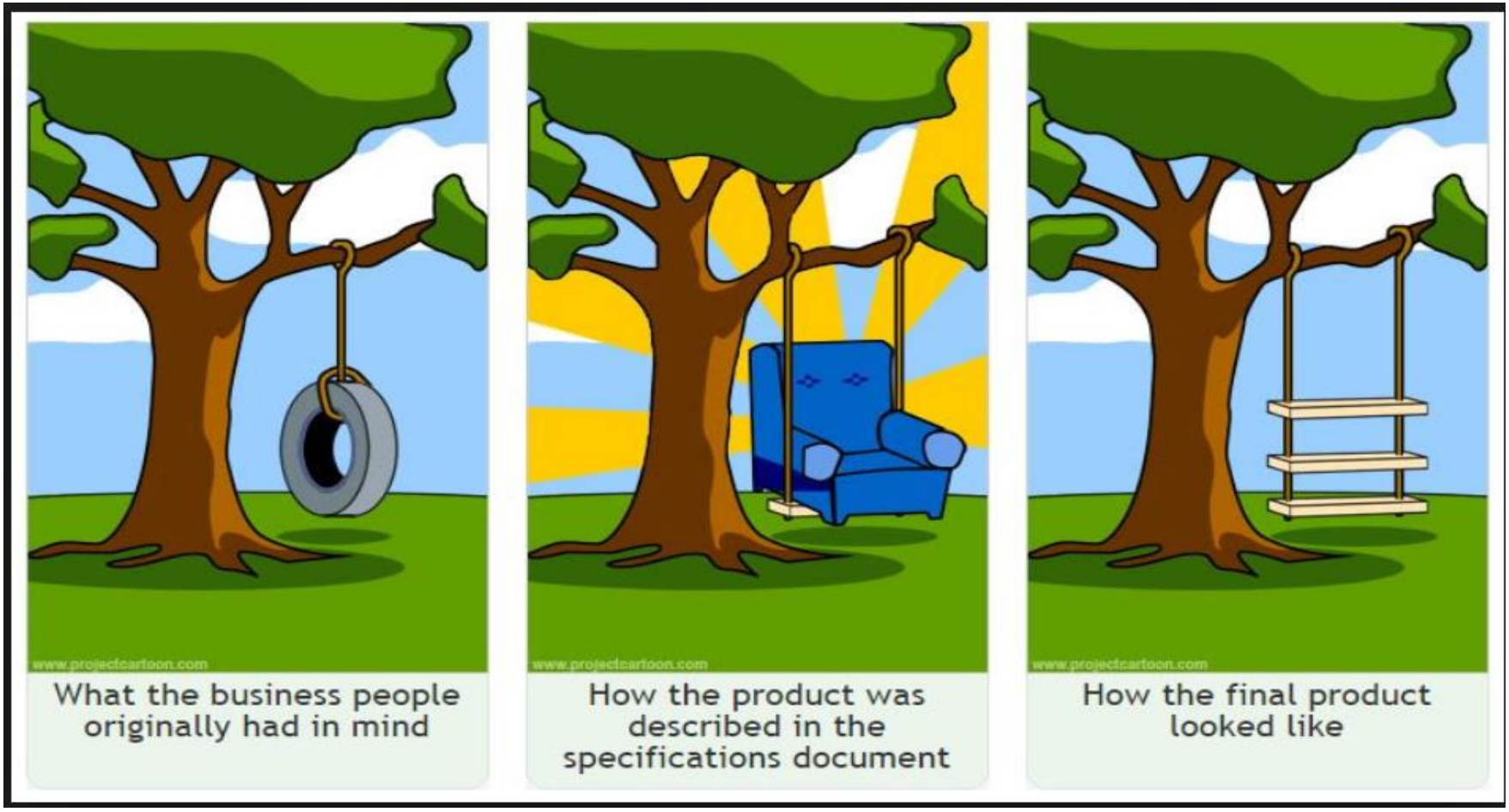
SDLC

Software Development Life Cycle –

A framework that describes the activities performed at each stage of a software development project.


www.projectcartoon.com
What the business people originally had in mind
www.projectcartoon.com
How the product was described in the specifications document
www.projectcartoon.com
How the final product looked like

Phases of SDLC

Each Phase is very important and acts as distinct element in the overall life cycle

Phases of SDLC …cont'd

Without a full analysis of the customer's needs or the requirements for the software or app, necessary functionality and needed features, design and development cannot proceed.

Without accurate design work beforehand, the software cannot be developed.

Without skilled developers on the project, development will be slow or fraught with problems.

Without being able to accurately test software or an app, bugs could slip through that would compromise operability and stability.

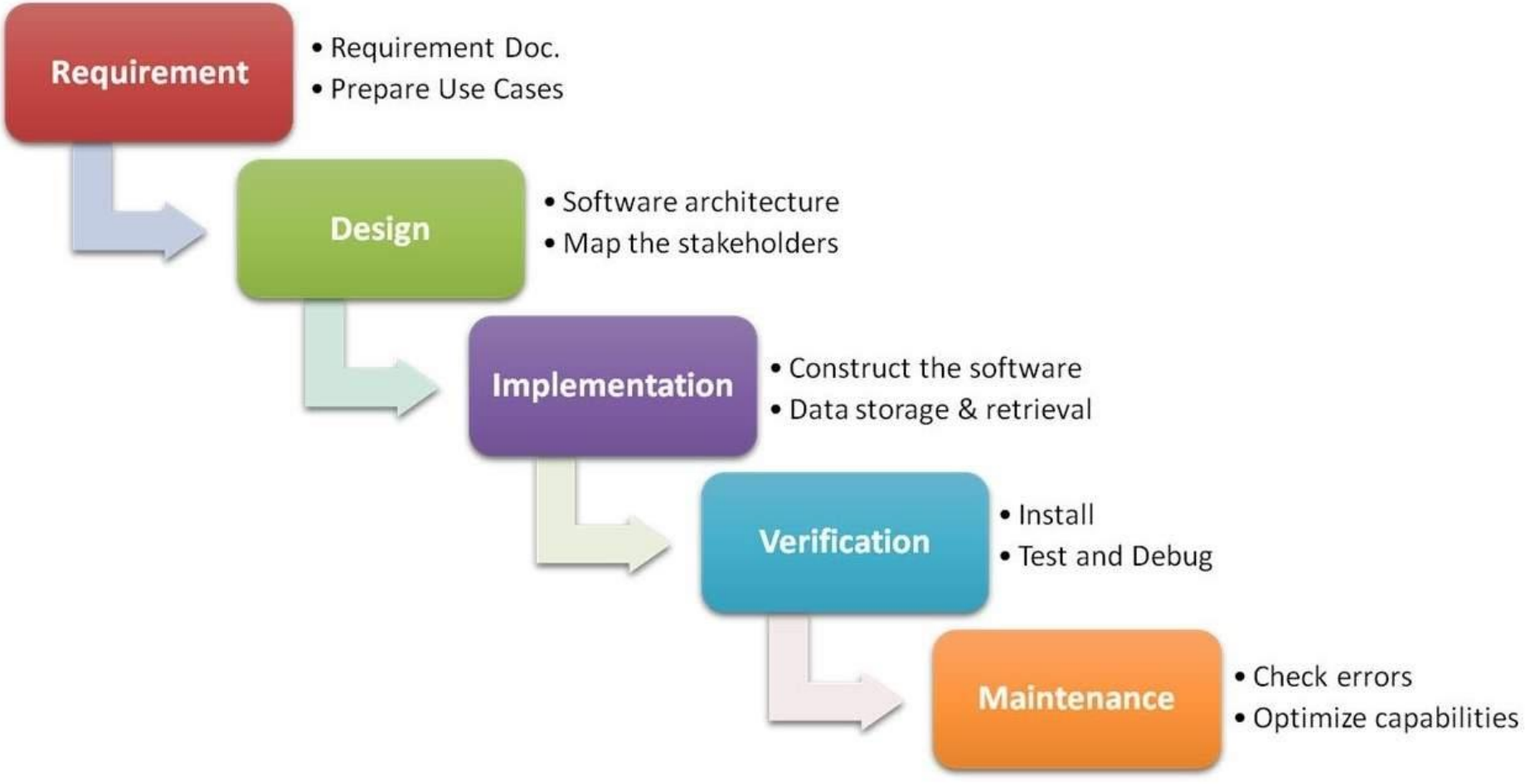
Hence It's all interconnected.

SDLC Methodologies

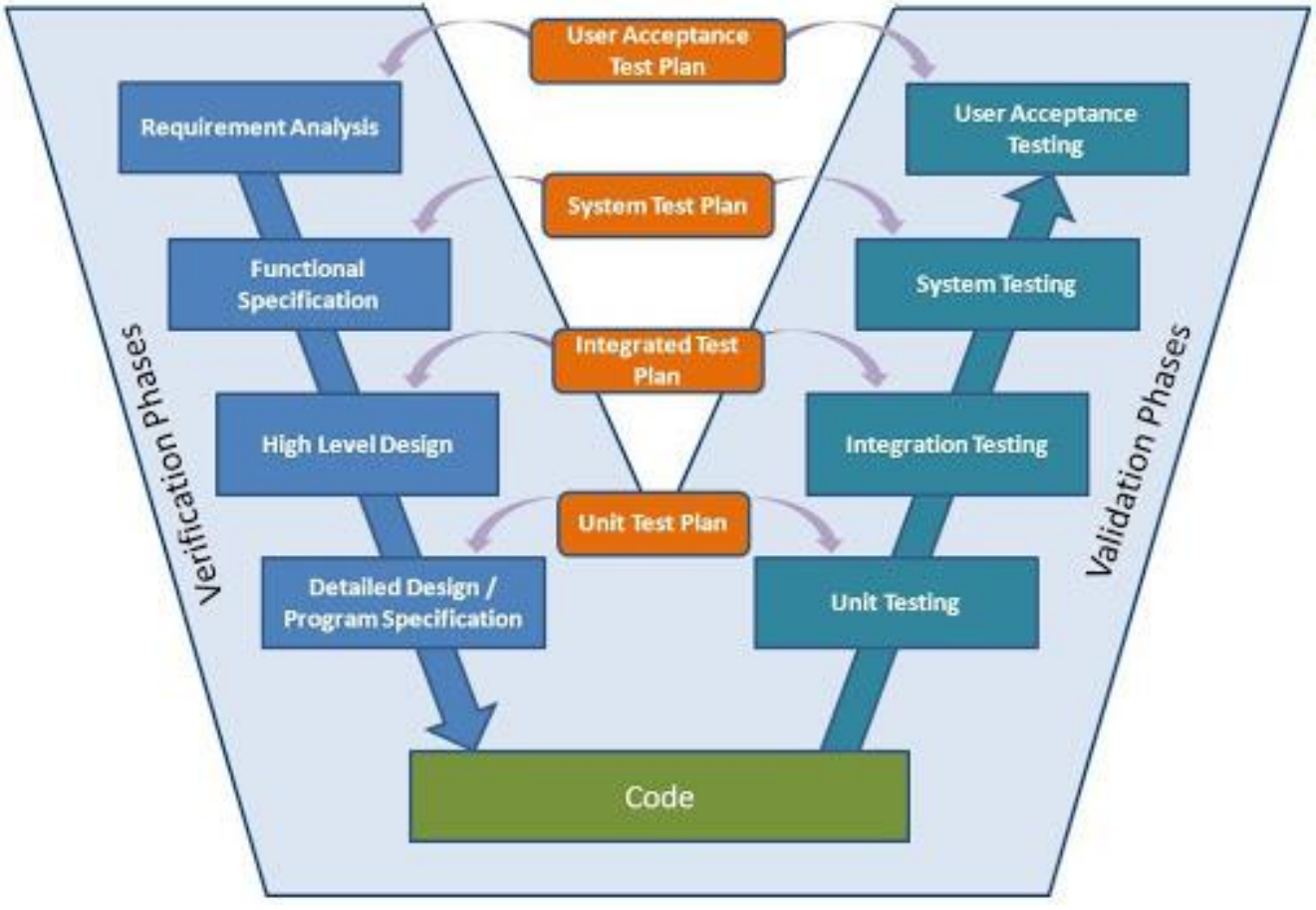
- Following are the most important and popular SDLC models followed in the industry −
  - Waterfall Model
  - V-Model
  - Iterative Model
  - Agile Model
- Other related methodologies are Spiral Model, Big Bang Model

Rapid Application Development and Prototyping Models.

Waterfall Model



V Model


User Acceptance Test Plan
Requirement Analysis
User Acceptance Testing
System Test Plan
Functional Specification
System Testing
Integrated Test Plan
High Level Design
Integration Testing
Unit Test Plan
Detailed Design / Program Specification
Unit Testing
Code
Verification Phases
Validation Phases

Agile

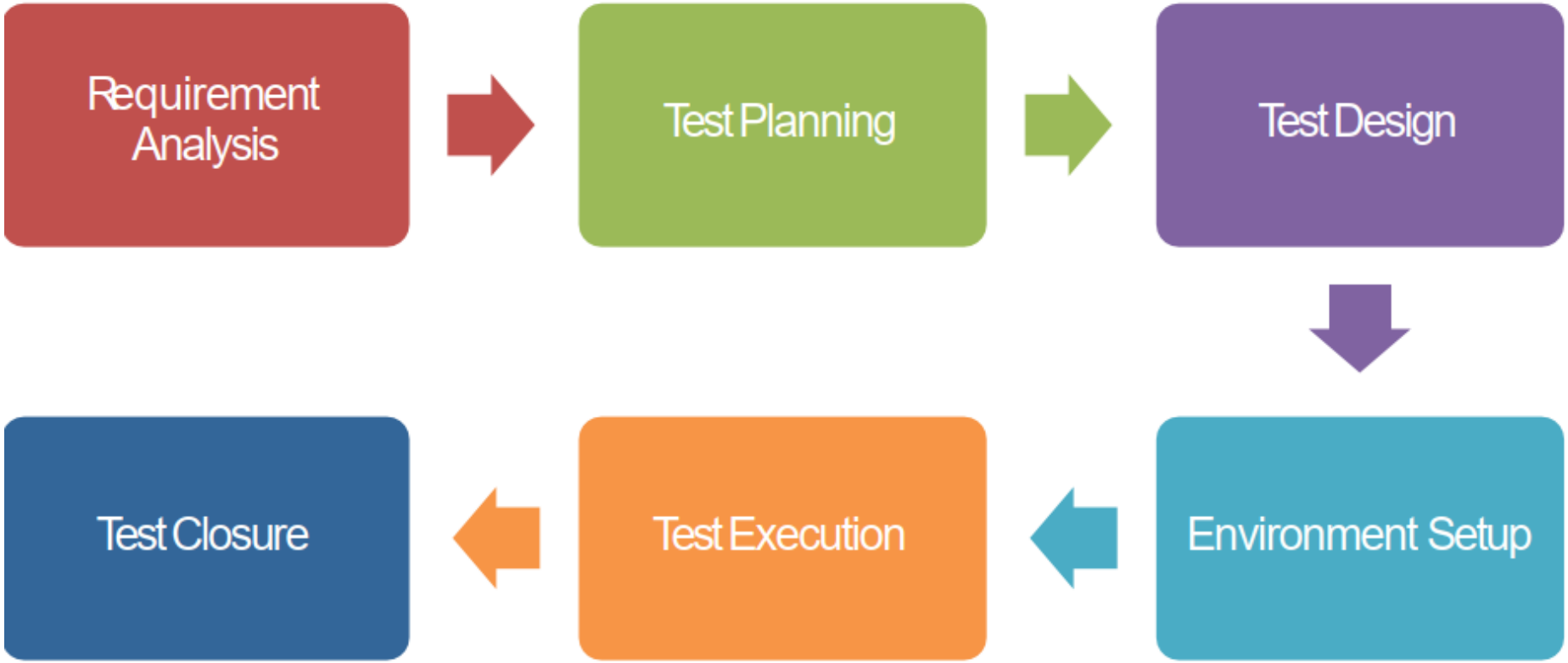

Agile Methodology
Review
Test
Build
Design
Plan
Sprint 1
Launch
Review
Test
Build
Design
Plan
Sprint 2
Launch
Review
Test
Build
Design
Plan
Sprint 3
Launch

STLC

STLC

- STLC stands for Software Testing Life Cycle.
- STLC is a sequence of different activities performed by the testing team to ensure the quality of the software or the product.
- STLC is an integral part of Software Development Life Cycle (SDLC). But, STLC deals only with the testing phases.

STLC Phases



Requirement Analysis

- During this phase, test team studies the requirements from a testing point of view to identify the testable requirements.
- The QA team may interact with various stakeholders (Client, Business Analyst, Technical Leads, System Architects etc) to understand the requirements in detail.
- Requirements could be either Functional (defining what the software must do) or Non Functional (defining system performance /security availability)

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Activities

- Gather details about testing priorities and focus.
- Prepare Requirement Traceability Matrix (RTM)
- Automation feasibility analysis (if required).

Deliverables

- RTM
- Automation feasibility report. (if applicable)

Test Planning

This Phase will determine effort and cost estimates for the project and would prepare and finalize the Test Plan. In this phase, Test Strategy is also determined.

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Activities

- Preparation of test plan/strategy document for various types of testing
- Test tool selection
- Test effort estimation
- Resource planning and determining roles and responsibilities.
- Training requirement

Deliverables

- Test Plan /strategy document.
- Effort estimation document.

Test Plan

- Test Requirements & Deliverables
- Project Scope
- Assumptions & Dependencies
- Test environments
- Test Estimates(Cost and Effort)
- Test Strategy
  - List of user types
  - List of Modules and functionalities under each module with priorities
  - Testing Types
  - Test Approach
  - Risk Analysis
- Resource Requirements
  - Hardware
  - Software
  - Staffing/Responsibilities
- Test Schedule

Sample Test Plan

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Test Design

- This phase involves the creation, verification and rework of test cases & test scripts. Test Data is identified/created and is reviewed and then reworked as well.

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Activities

- Create test cases, automation scripts (if applicable)
- Review and baseline test cases and scripts
- Create test data (If Test Environment is available)

Deliverables

- Test cases/scripts
- Test data

Test Environment Setup

- Test environment decides the software and hardware conditions under which a work product is tested.
- Test environment set-up is one of the critical aspects of testing process
- Can be done in parallel with Test Case Development Stage.

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Different types of environments

Development

- Used by developers
- No client data

Testing

- Used by QA engineers
- No client data

Staging

- Used by QA engineers and/or clients for UAT
- Limited production data

Production

- Used by clients (live)
- Full production data

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Activities

- Environment set-up and prepare hardware and software requirement list for the Test Environment.
- Setup test Environment and test data
- Perform smoke test on the build

Deliverables

- Environment ready with test data set up
- Smoke Test Results.

Test Execution

- During this phase, the testers will carry out the testing based on the test plans and the test cases prepared. Bugs will be reported back to the development team for correction and retesting will be performed.

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Activities:

- Execute tests as per plan
- Document test results, and log defects for failed cases
- Map defects to test cases in RTM
- Retest the Defect fixes
- Track the defects to closure

Deliverables

- Completed RTM with the execution status
- Test cases updated with results
- Defect reports

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Test Closure

- Discuss and analyze testing artifacts to identify strategies that have to be implemented in the future, taking lessons from the current test cycle.
- Reports will be created for various Stakeholders

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Activities

- Prepare test metrics for Quality and Test coverage etc.
- Document the learning out of the project
- Prepare Test closure report
- Test result analysis to find out the defect distribution by type and severity.

Deliverables

- Quality reports
- Test metrics

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Q & A