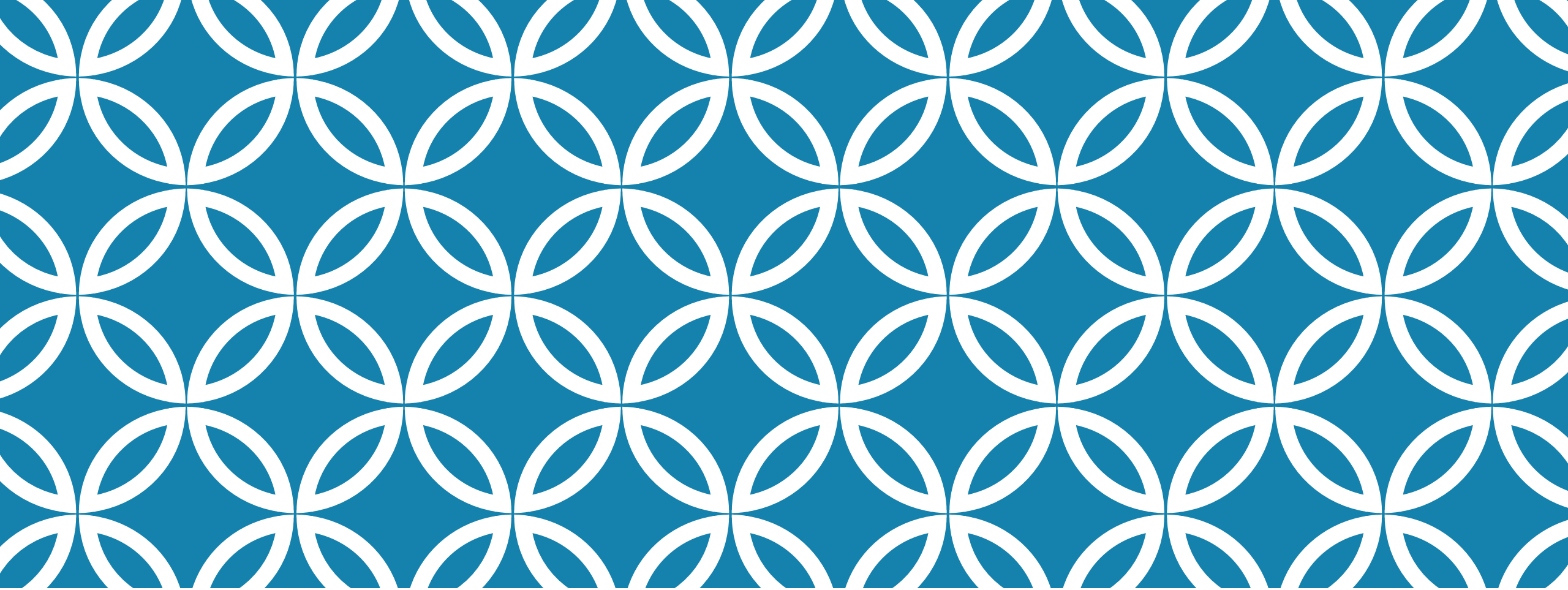


SOFTWARE TEST LIFECYCLE

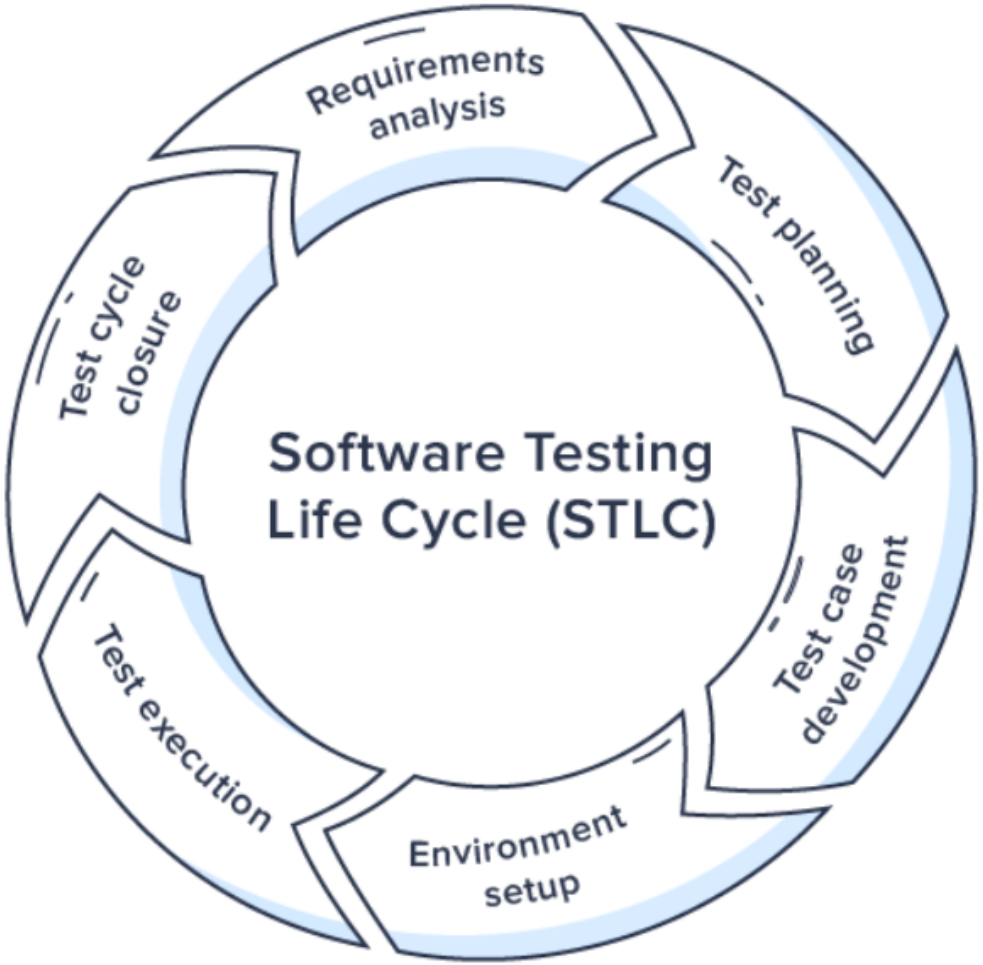
CHAPTER 03

WHAT IS STLC (SOFTWARE TESTING LIFE CYCLE)

- The Software Testing Life Cycle (STLC) is a sequence of specific actions performed during the testing process to ensure that the software quality objectives are met. The STLC includes both verification and validation.

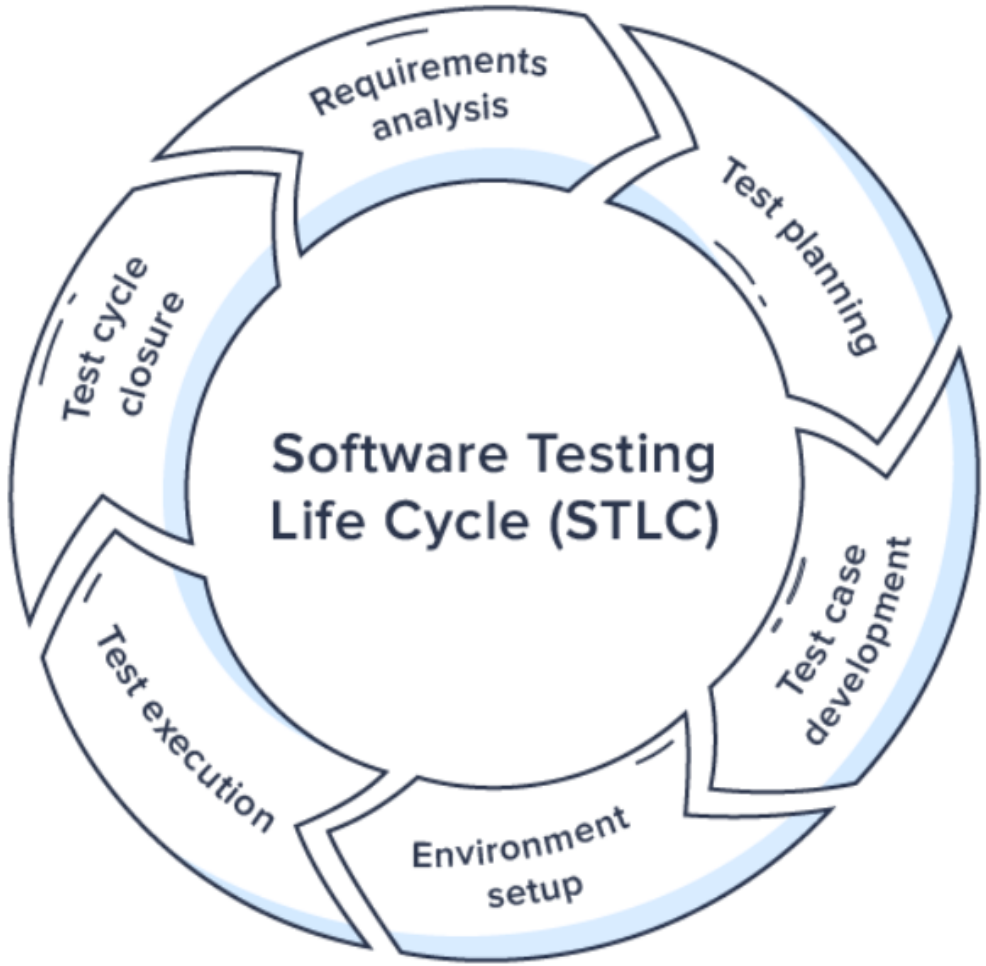
- Contrary to popular belief, software testing is not just a separate activity. It consists of a series of methodological activities to help certify your software product.

- The STLC is a high-quality strategy directly associated with and part of the Software Development Life Cycle (SDLC), which in turn is a framework with 6 core principles:

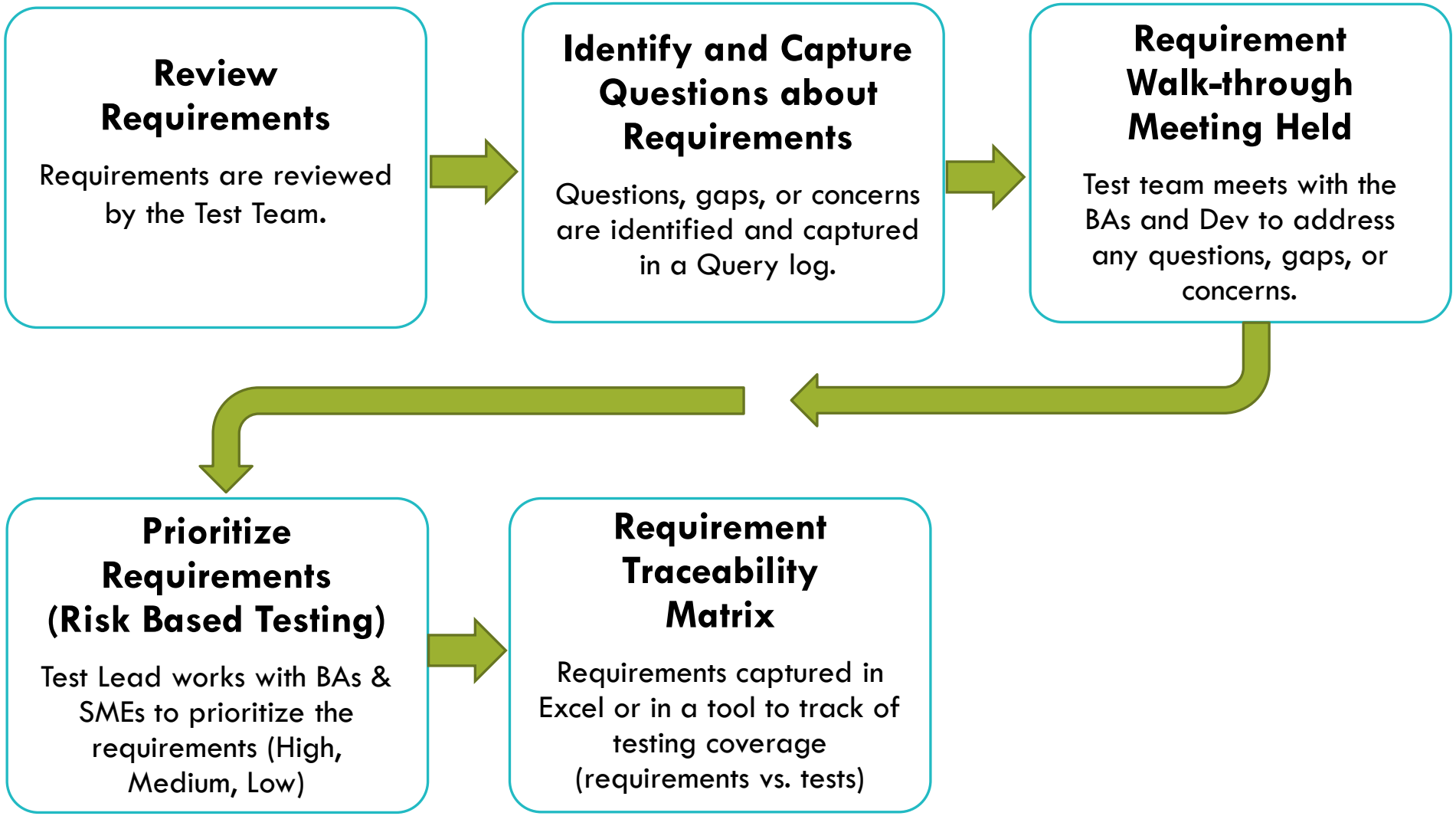


WHAT IS STLC (SOFTWARE TESTING LIFE CYCLE)

- STLC is a fundamental part of the Software Development Life Cycle (SDLC) but STLC consists of only the testing phases.
- STLC starts as soon as requirements are defined or software requirement document is shared by stakeholders. STLC yields a step-by-step process to ensure quality software.
- In the initial stages of STLC, while the software product or the application is being developed, the testing team analyzes and defines the scope of testing, entry and exit criteria, and also test cases.



1. REQUIREMENT ANALYSIS



2. TEST PLANNING

The Test Plan is defined

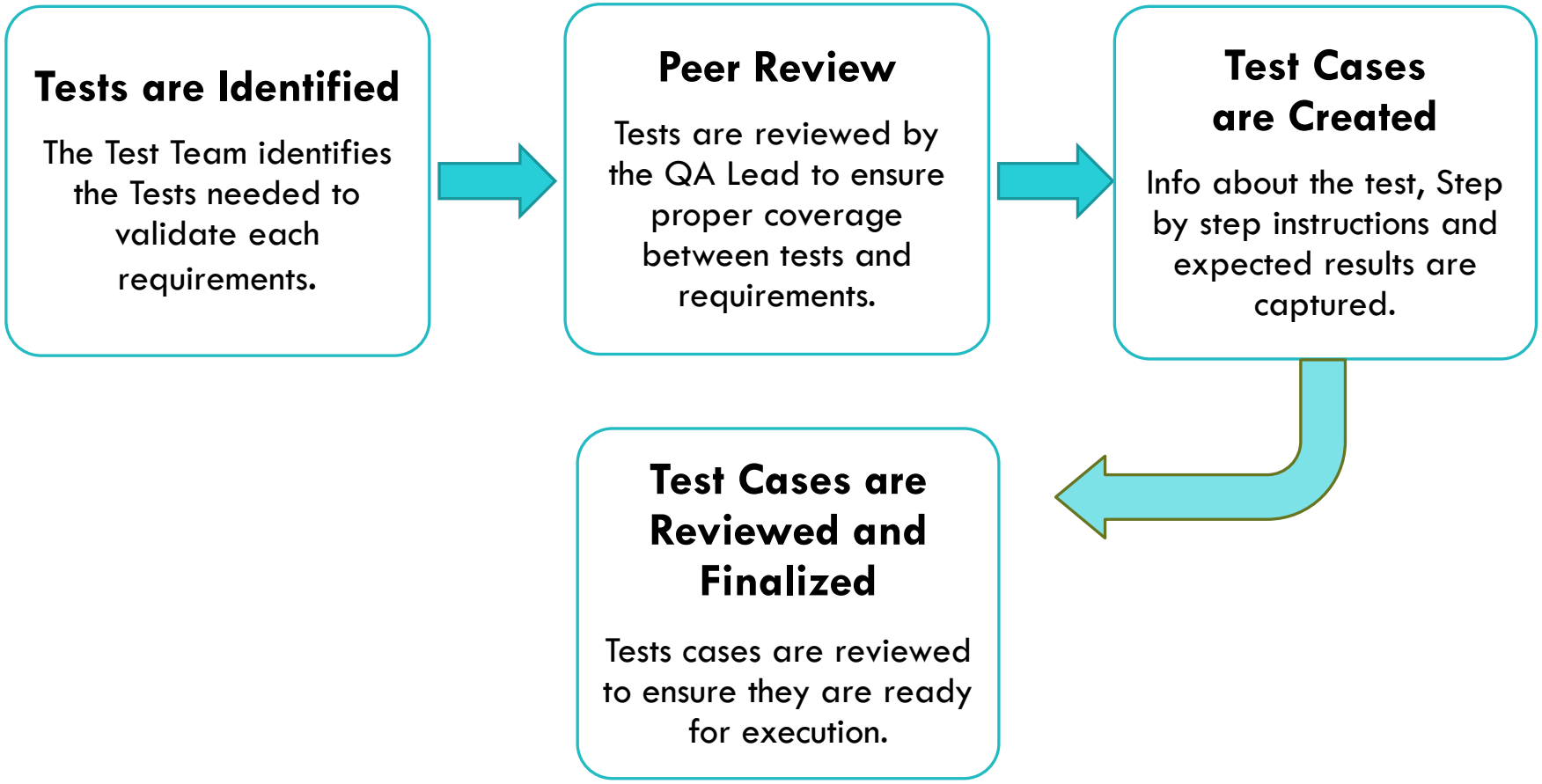
The Test Lead defines the testing strategy for the project and captures it in a document called the Test Plan.

Test Effort Estimation

The Test Lead determines the level of effort which will be required to successfully complete the testing

3. TEST CASE DEVELOPMENT

Once the requirement walk through is completed test preparation can begin



4. TEST ENVIRONMENT SETUP

Once the application has been developed the Test Environment can be setup

Test Environment Setup

The development team will setup the test environment where testing will take place.

Acceptance Test Performed by QA

QA Team performs an acceptance test to ensure the application is ready for formal testing to begin.

5. TEST EXECUTION

Once the Test Environment Setup and Test Preparation is completed, Test Execution can begin.

Test Execution

Test Cases are executed and actual results are captured. A Test either passes or fails.

Defect Reporting

If a test case fails because of a problem, the problem is reported as a defect.

Defect Resolution

Defects are resolved and then reassigned back to test team for retesting.

Regression Testing

Testing done to ensure that defects were not introduced from the fixing of defects.

User Acceptance Testing

Testing performed by the business before accepting the application

6. TEST CYCLE CLOSURE

Once Test Execution is complete
Test Cycle Closure can begin

CHANGES IN STANDARD STLC CYCLE

The example above is a sort of perfect scenario for the software testing lifecycle. But sometimes there are situations when variations in STLC are unavoidable.

1. **Agile Development**

In an Agile environment, the testing process may not follow the standard STLC sequence, which is designed for Waterfall development. Agile development emphasizes flexibility, iteration, and quick feedback, so testing is often done in parallel with development rather than in sequential stages. Test planning, case development, and execution may all happen simultaneously with development sprints, and the cycle may be more fluid and iterative.

CHANGES IN STANDARD STLC CYCLE

2. **Emergency Patches**

In some cases, a software application may require an emergency patch or hotfix to fix a critical issue. In such cases, the standard STLC sequence may need to be compressed or bypassed to quickly deliver the fix.

3. **Legacy Systems**

In an organization with legacy systems, the STLC sequence may not be followed strictly due to the technical constraints of the older systems. The environment setup phase, in particular, may be difficult or impossible to complete, as the legacy systems may not be compatible with modern testing tools and techniques. In such cases, the testing team may need to rely on manual testing or older testing tools, which may require a different approach to the testing process as a whole. Outsourced Testing

ALTERNATIVE TO A SEQUENTIAL STLC

Parallel testing is some kind of opposite to sequential testing. Parallel testing is an automated test process that allows developers and testers to run multiple tests against various real device variations and browser configurations at the same time. Parallel testing aims to address time constraints by spreading tests equally throughout the resources available.

Benefits of parallel testing:

Speed. Parallel testing allows you to divide your time investment by the number of environments;

Cost-efficiency. Maintenance is no longer a hassle: you simply lease the necessary testing environment, which is always up to date. Moreover, cloud-based testing grids enable you to run tests at high concurrency, lowering the cost per test significantly;

Better coverage. You can test your application on as many platform-device-browser combinations as possible to ensure that no bugs are left;

Improved testing practices. You can test more by testing at high speeds. This allows your QA team to improve their testing practices and find bugs faster.

SUMMARY

1. REQUIREMENT ANALYSIS

- Review requirements
- Identify and capture questions about the requirements
- Meet with the SMEs and Dev to address questions, determine what is in-scope and out-of-scope for testing, and identify requirement priorities.
- The RTM is created.

2. TEST PLANNING

- The Test Plan is defined.
- Testing Effort is re-visited.

3. TEST CASE DEVELOPMENT

- Identify Tests needed to verify requirements.
- The QA Lead reviews tests identified to ensure nothing was missed.
- Test cases are created.
- Test cases are reviewed to ensure they are ready for execution.

4. TEST ENVIRONMENT READINESS

- The Test Environment is setup by the developers
- QA performs an acceptance test before formal testing begins.

5. TEST EXECUTION

- Tests are executed
- Testing results are captured
- Report defects and retest once resolved
- Retest failed and blocked tests
- Perform Regression Testing
- User Acceptance Testing is done by the business.

6. TEST CYCLE CLOSURE

- The test execution summary report is created and presented to the stake holders for sign off
- Lesson learned meeting held