ALMA Common Software

Basic Track

Test Driven Development
Unit testing and TAT

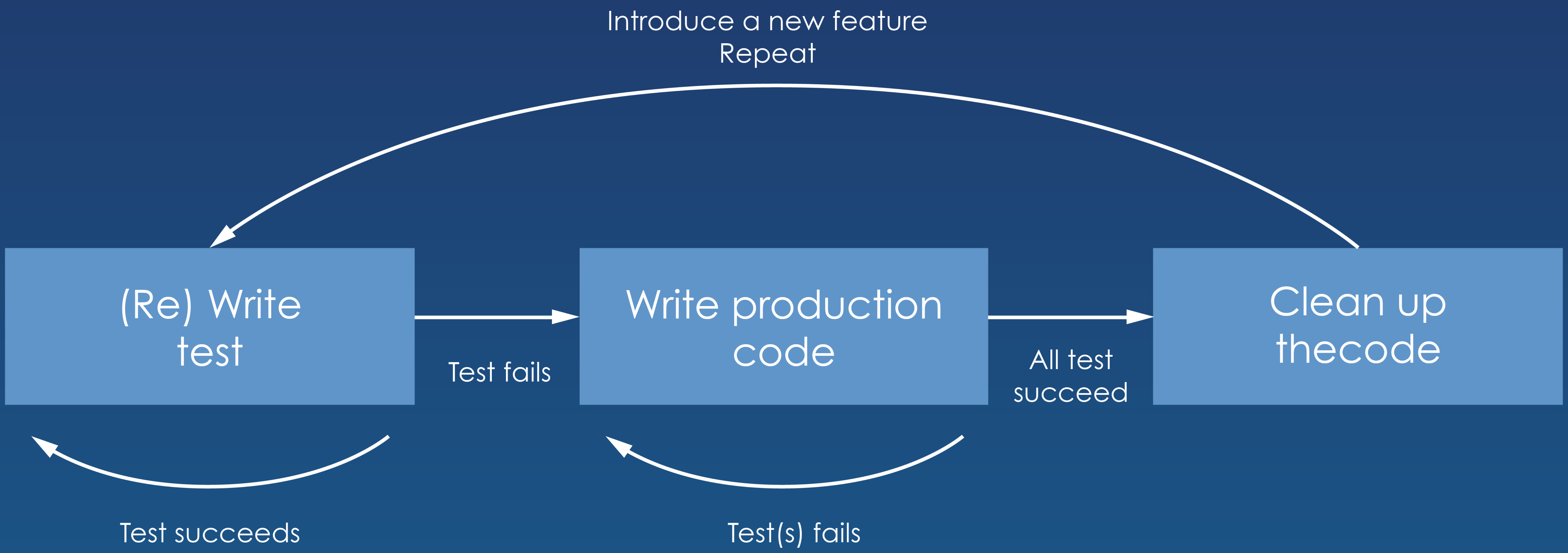
What is it?

In a nutshell

✧ Development process that relies on very short development cycles

✧ Tests written before functionality

Workflow



Introduce a new feature
Repeat

(Re) Write test

Test fails

Write production code

All test succeed

Clean up thecode

Test succeeds

Test(s) fails

How to test?

- Unit testing
    - Atomic code functionality tests
- xUnit code-driven testing framework:
    - CppUnit
    - jUnit
    - PyUnit

What to test? What not to test?

For sure:

- ✧ Interfaces
- ✧ Critical and/or non trivial portions of the code

Avoid testing:

- ✧ Code without added value, such as getters/setters and delegations

Be cautious:

- ✧ Over-testing is a waste of time

xUnit

- Test case: basic unit
- Test suite: set of tests that share the same test conditions
    - setup()
    - tearDown()
- Assertions

ACS TAT

- Automated test driver
- Initializes environment (ACS)
- Pass criteria based on comparing test output against an output template
- Can also run other kind of tests besides xUnit-based ones

Integration Tests

- ✧ Tests the interactions among software modules
- ✧ Tests deployment configuration
- ✧ Integration CDB
- ✧ Hardware configuration, if necessary
- ✧ Individual module unit tests must pass to integrate

Development team

Responsible for:

- ✧ Adding (at least one!) unit test(s) for your component
- ✧ Prepare a test environment
- ✧ Run the test(s) until the work
- ✧ Once tests pass, check in all your code, test code and relevant configurations (TAT files, CDB) to the project configuration server
- ✧ Document your work right away and in parallel with the development!

Advise: When done, take a well deserve coffee break…

Integration and testing team

Responsible for:

- ✧ Continuous (and automatic) integration
- ✧ Quality control during development
- ✧ Build every time changes are detected
- ✧ Identifying compilation and failures against regression tests
- ✧ Facilitating the parties responsible for the failure and more importantly the parties responsible for fixing it
- ✧ Revert to the last working checkpoint in case of a failure

Advise: Use automated tools like Jenkins, the integration team key tool

Questions?

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