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Manual functional test development specifics to optimize medical products verification process

Exclusively for TT SDC 2023 attendees

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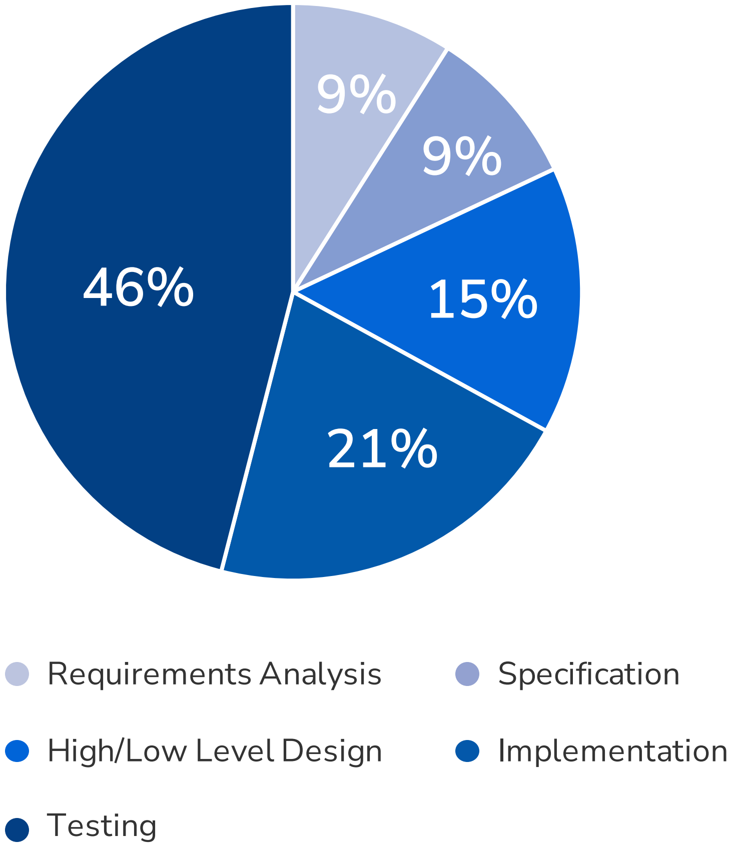
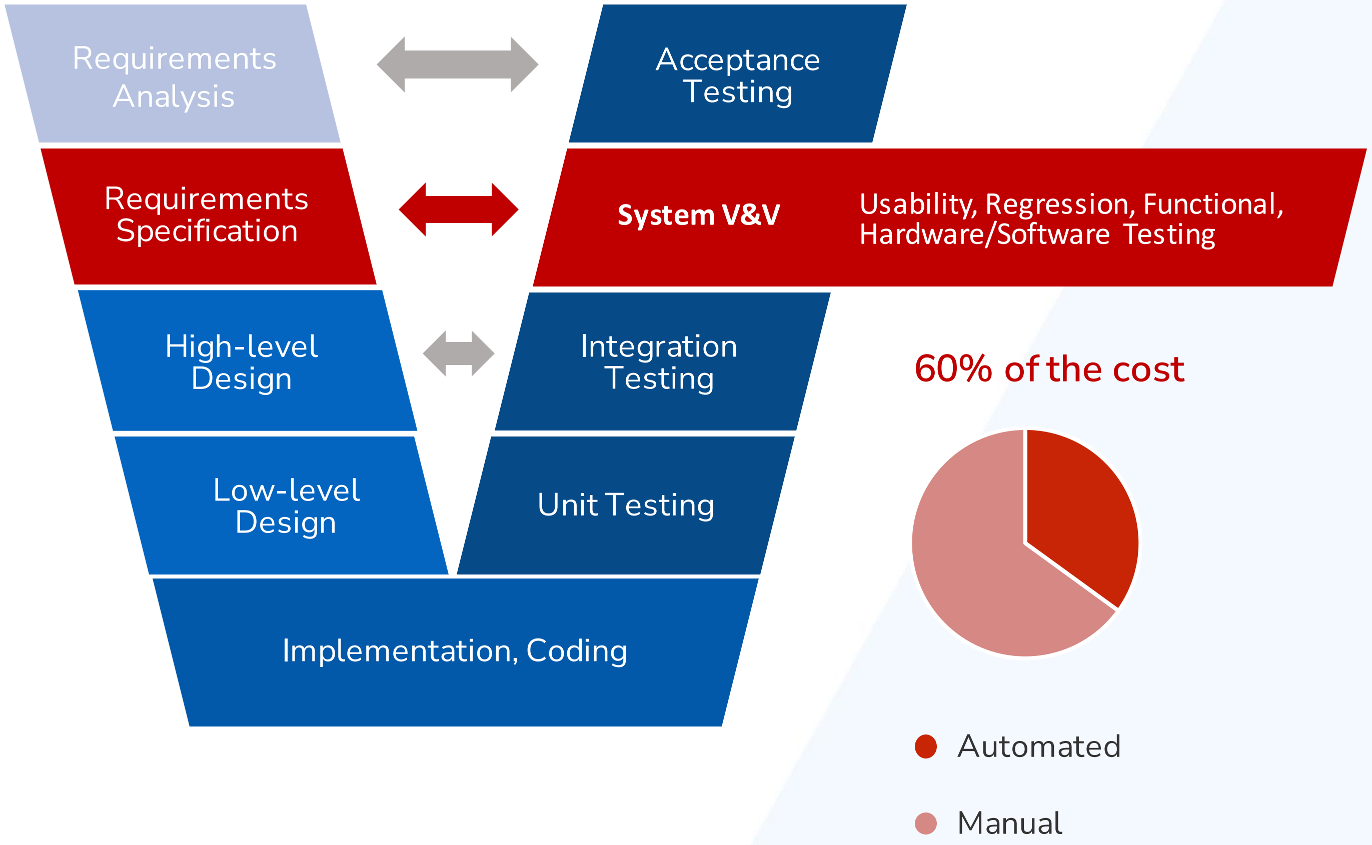
Disclaiming ambiguity

SDLC COST BREAKDOWN
(incl. Operations and Maintenance)



SDLC V-MODEL



Manual vs. Automated

Manual testing

- ☑ More time consuming
- ☑ Not reusable
- ☑ Prone to human errors
- ☑ Less popular amongst engineers
- ☑ Requires additional management effort

Best for exploratory testing, ad-hoc testing, usability testing, low-volume regression testing in short-term projects. Requires investment in resources.

Automated testing

- ☑ More expensive in development and maintenance
- ☑ Takes more efforts to set up
- ☑ Limited by its test scenario and test environment
- ☑ Sensitive to bugs in coding

Best for high-volume regression testing, stress and performance testing. Requires investment in tools.

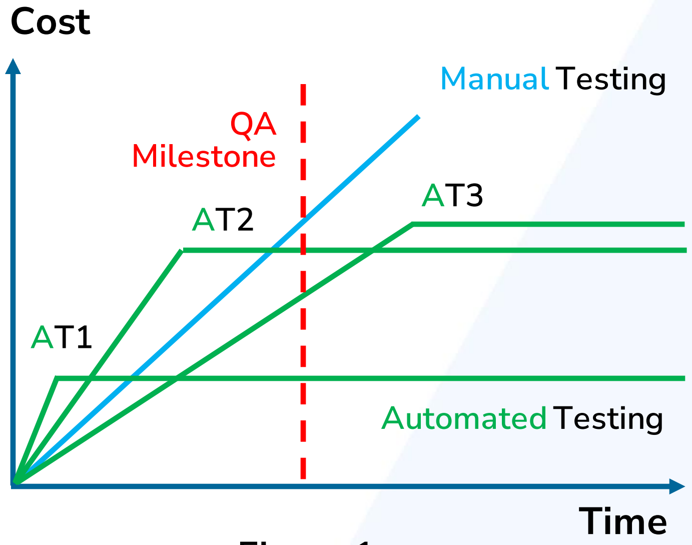


Figure 1.

1. Theory. Test development approaches

Opposing approaches

TEST DEVELOPMENT FOR A WHOLE FUNCTIONAL SECTION OF REQUIRMENTS

- ☑ Bulky documents
- ☑ Long time to execute
- ☑ Confusing scripts
- ☑ Hard to keep up to date

DEVELOPING TESTS FOR ATOMIC REQUIREMENTS

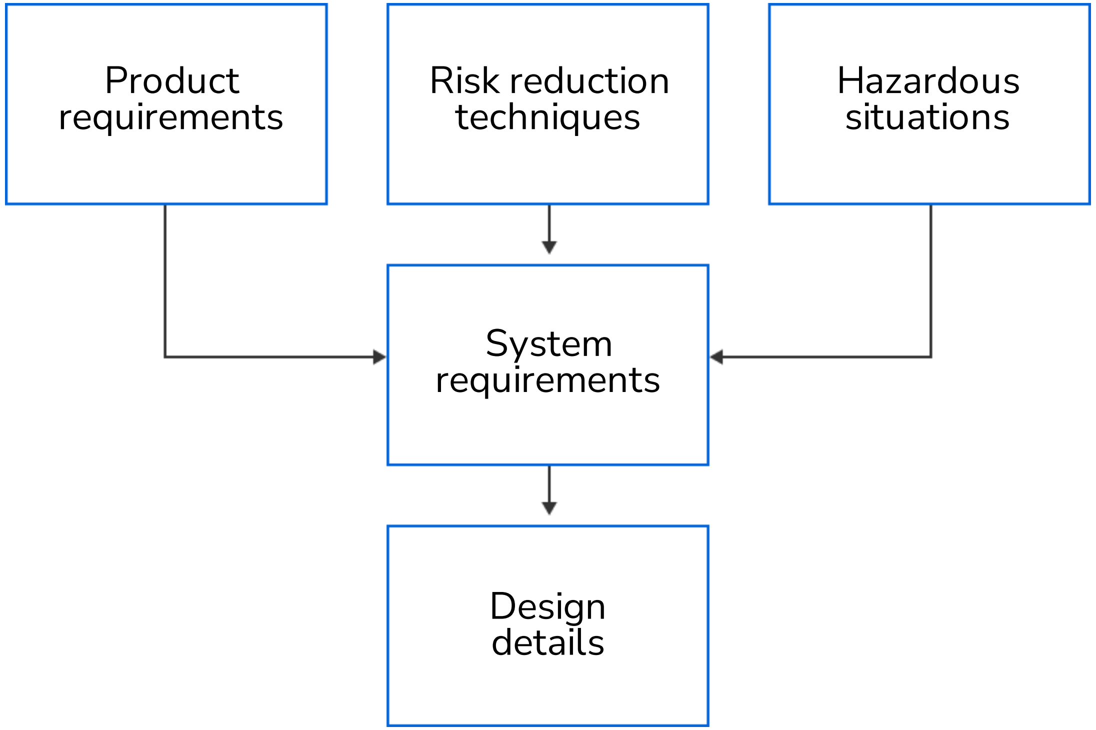
- ☑ General wordings
- ☑ Higher level of engineers
- ☑ Exploratory testing
- ☑ Deep product knowledge

? Does the developed test check what it should check? Why?

? As the engineer executing this test, would I like to do it? Why?

2. Medical software testing specifics

Stratigic task



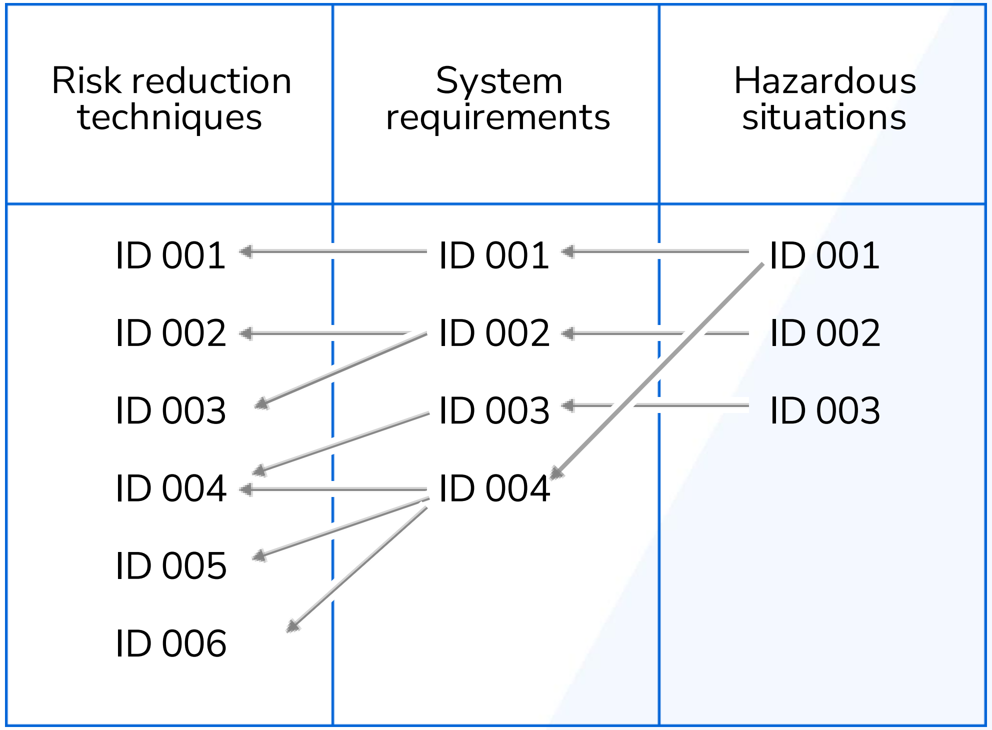
Product requirements

Risk reduction techniques

Hazardous situations

System requirements

Design details



Risk reduction techniques

System requirements

Hazardous situations

3. Test coverage analysis

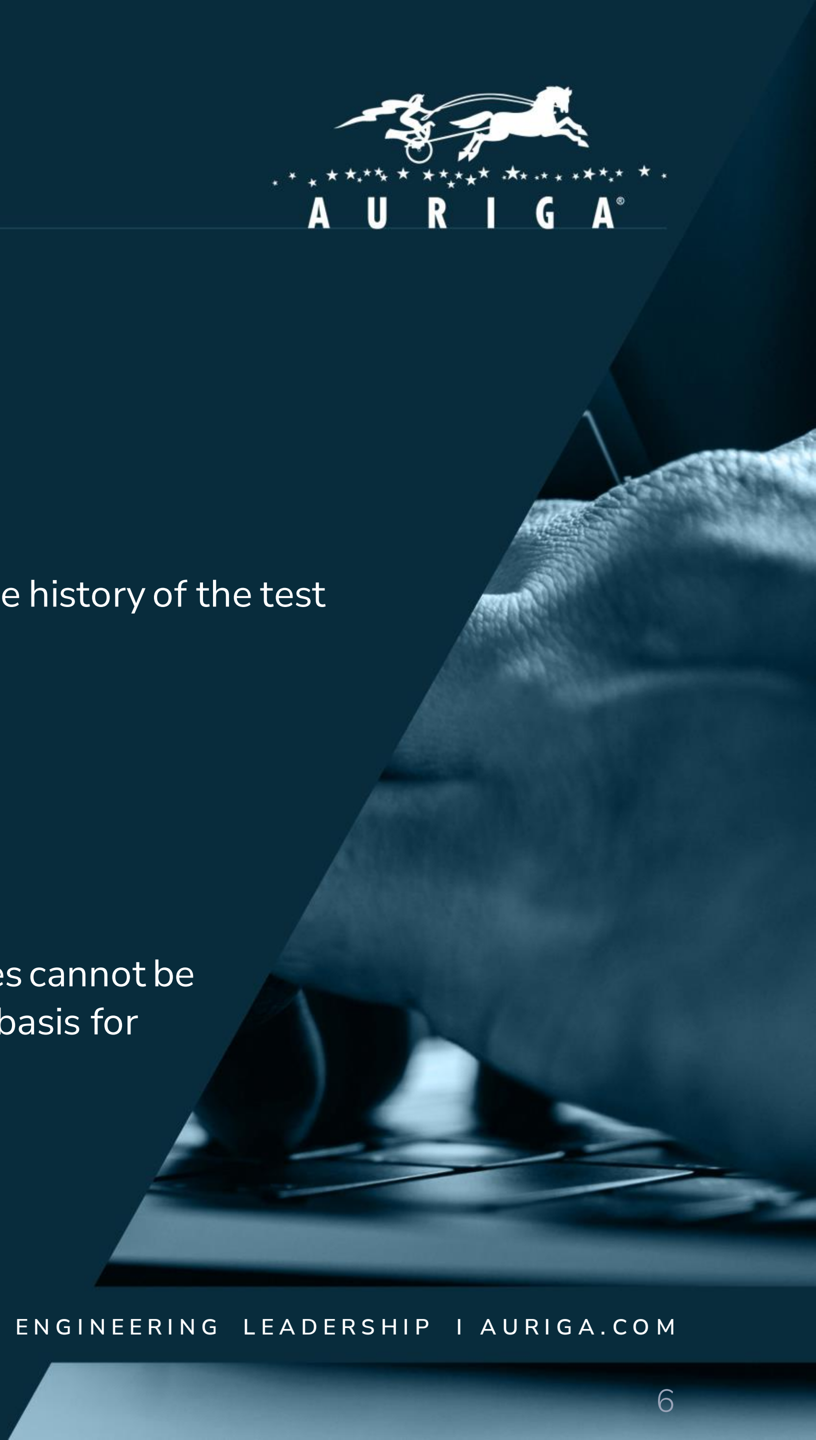
Basic postulates

Test must cover what it is being traced to. If a requirement is not thoroughly tested for some specific reason, this should be explicitly reflected and rationalized.

It is necessary to analyze the history of the test

Test should NOT cover other requirements just because they look similar - in most cases, there is a formal criterion why it should or should not be covered.

Tests from previous releases cannot be used as a 100% legitimate basis for developing new ones



4. Hints and tips of test development

Hints and tips

- Using real software for test development
- Using hardcoded inputs
- The visual part: test readability
- Test name
- Short description
- Pre-condition
- System load
- Separating verification sources
- Isolating verifications per step
- Composition rules
- Expected result
- During the review

Stay in touch

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