PS kūrimo procesas

Dr. Asta Slotkienė

CMMI-DEV Engineering PAs

- Requirements Development (RD):
  - understanding what stakeholders think they need and **documenting that understanding for the people who will be designing solutions**
- Product Integration (PI):
  - **putting together all the product components** so that the overall product has expected behaviors and characteristics
- Technical Solution (TS):
  - using effective engineering **to build solutions that meet end user needs**
- Verification (VER):
  - **making sure that the solution you ended up with meets your agreement** about the needs
- Validation (VAL):
  - **making sure that the solution actually meets the needs of users** in the service environment

Validation versus Verification

Verification

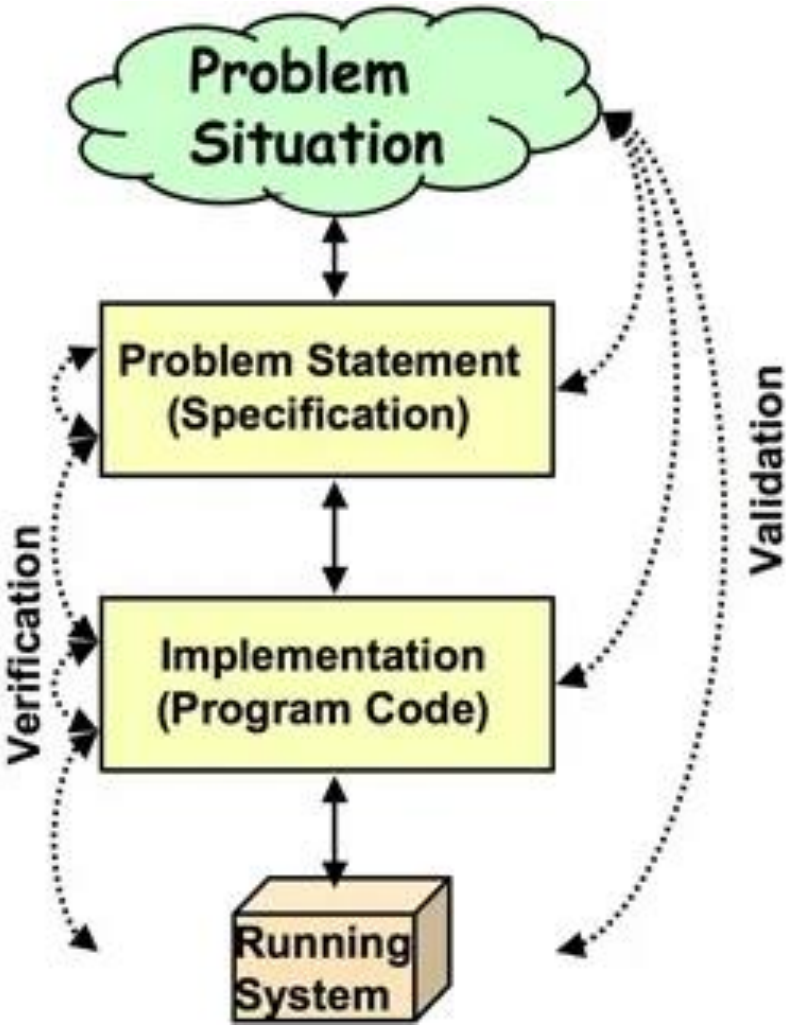
↓

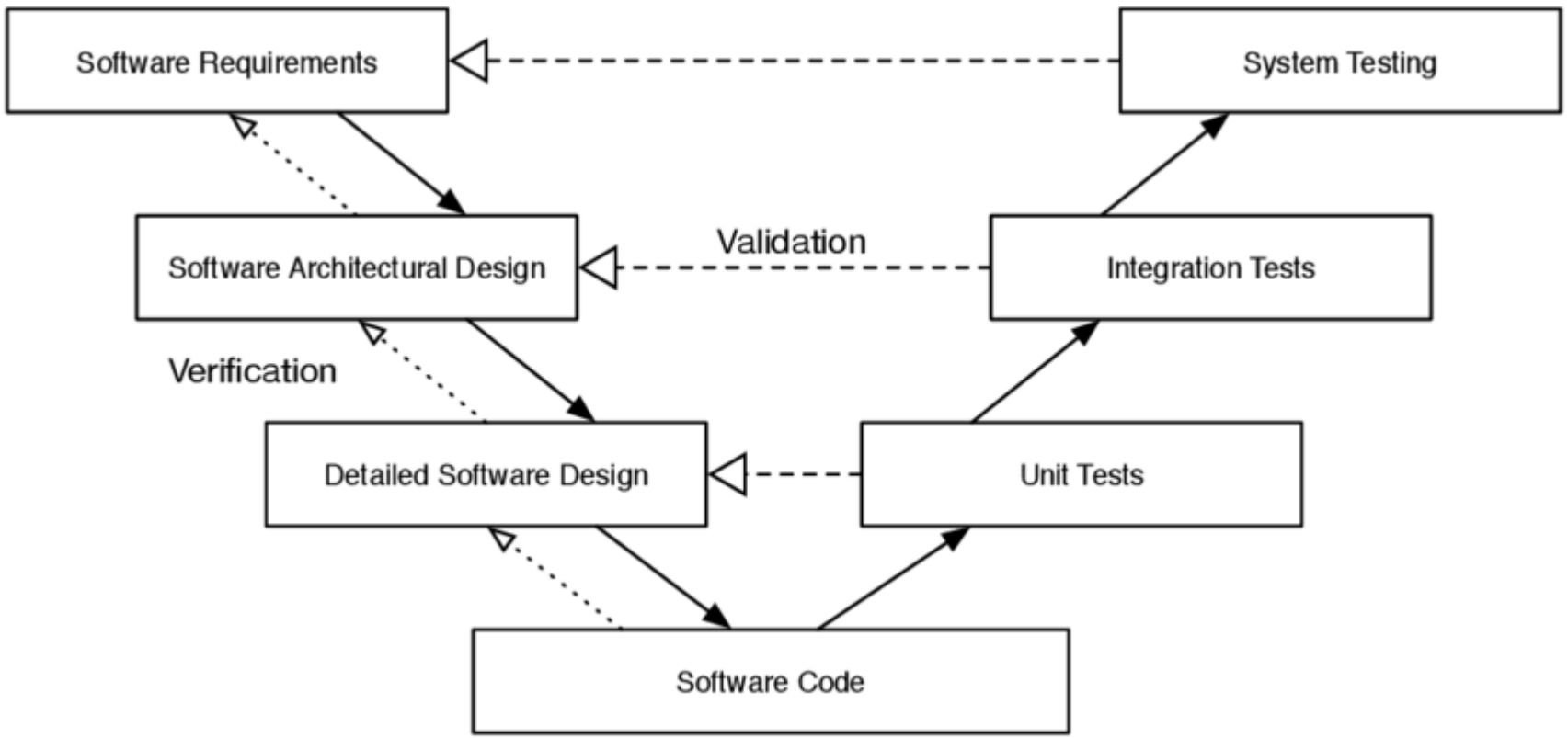
Did we build the right software?

Validation

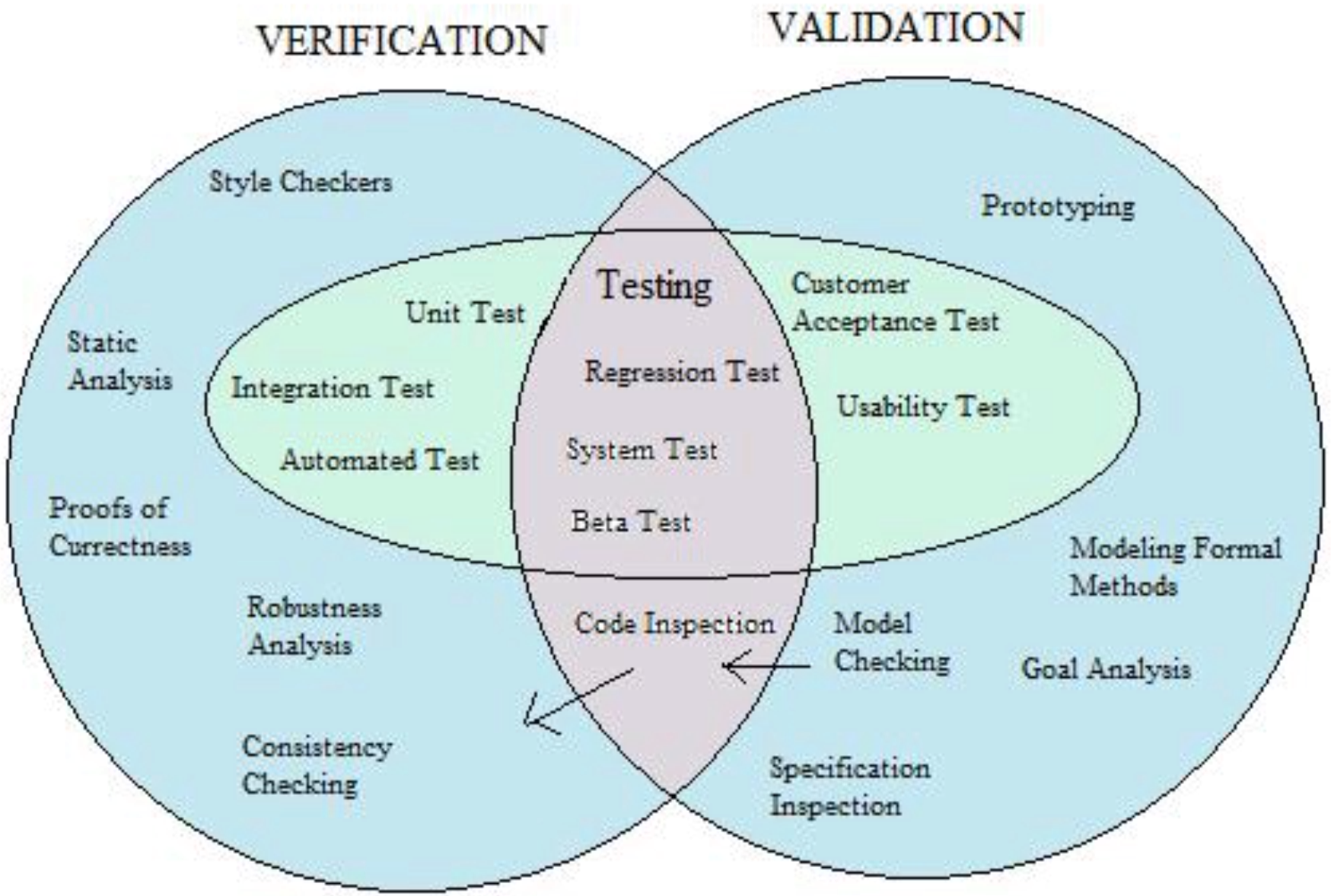
↓

Did we build the software right?




Software Requirements
System Testing
Software Architectural Design
Validation
Integration Tests
Verification
Detailed Software Design
Unit Tests
Software Code

Validation versus Verification



CMMI-DEV ->Verification

- The purpose of Verification is to ensure that selected work products meet their specified requirements.
- The process area involves the following:
  - verification preparation,
  - verification performance
  - identification of corrective action.

Validation definition

- The process of evaluating software during or **at the end of the development process** to determine whether it **satisfies specified** (or implicit) **business requirements.**

- To ensure that the **product actually meets the user's needs**,
- To ensure that the requirements were correct in the first place.

Validation definition

- Confirmation by examination and through provision of objective evidence that the requirements for a specific intended use or application have been fulfilled.

https://glossary.istqb.org/en/search/validation

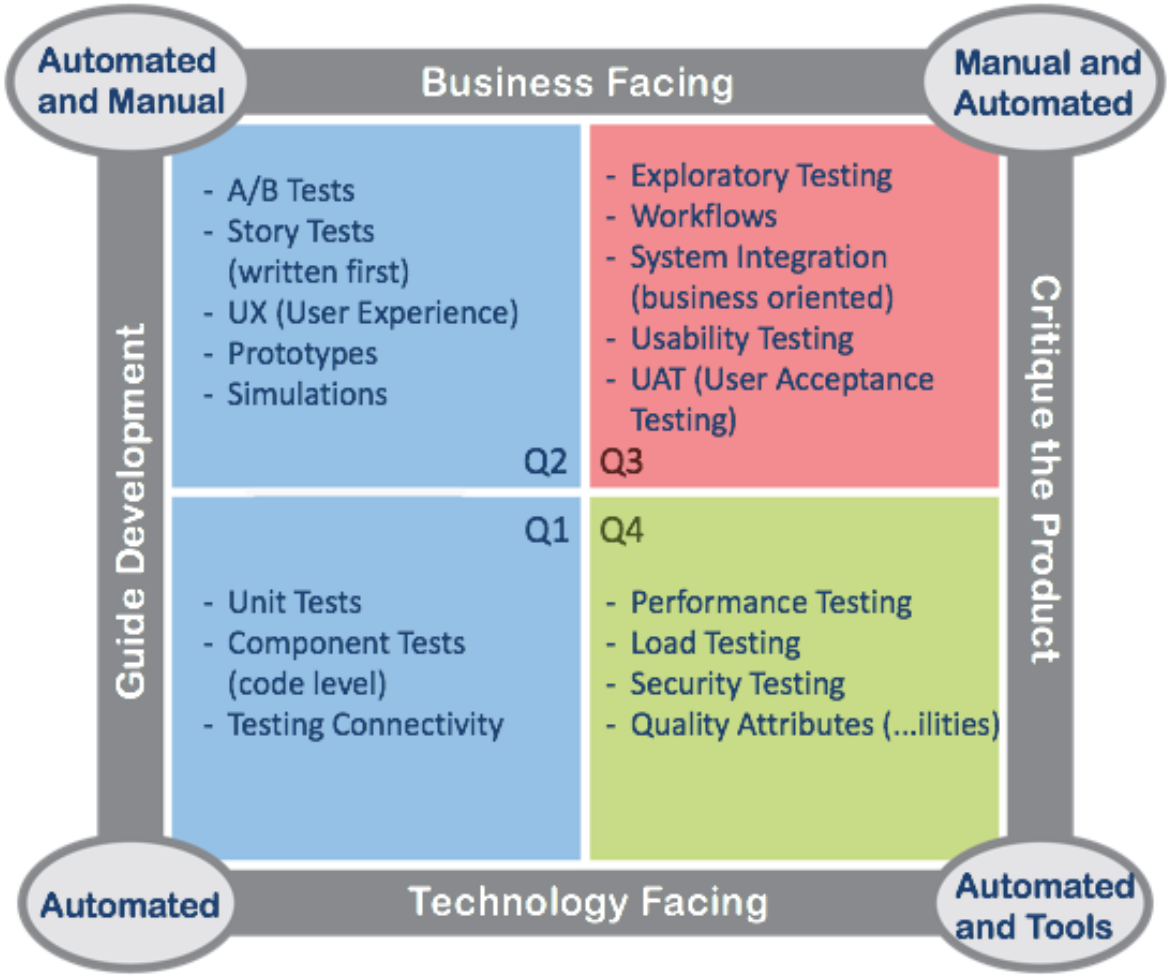
CMMI-DEV -> Validation

- The purpose of Validation is to demonstrate that a product or product component fulfills its intended use when placed in its intended environment.

CMMI-DEV -> Verification and Validation

In Engineering (DEV)	
VER – Verification **VAL – Validation**	
VER SG 1 Preparation for verification is conducted. **VAL SG 1** Prepare for validation is conducted.	**VER SP 1.1** Select Work Products for Verification **VER SP 1.2** Establish the Verification Environment **VER SP 1.3** Establish Verification Procedures and Criteria **VAL SP 1.1** Select Products for Validation **VAL SP 1.2** Establish the Validation Environment **VAL SP 1.3** Establish Validation Procedures and Criteria
VER SG 2 Peer reviews are performed on selected work products.	**VER SP 2.1** Prepare for Peer Reviews **VER SP 2.2** Conduct Peer Reviews **VER SP 2.3** Analyze Peer Review Data
VER SG 3 Selected work products are verified against their specified requirements.	**VER SP 3.1** Perform Verification **VER SP 3.2** Analyze Verification Results
VAL SG 2 The product or product components are validated to ensure they are suitable for use in their intended operating environment.	**VAL SP 2.1** Perform Validation **VAL SP 2.2** Analyze Validation Results

Agile siūlomas testavimo procesas (workflow)

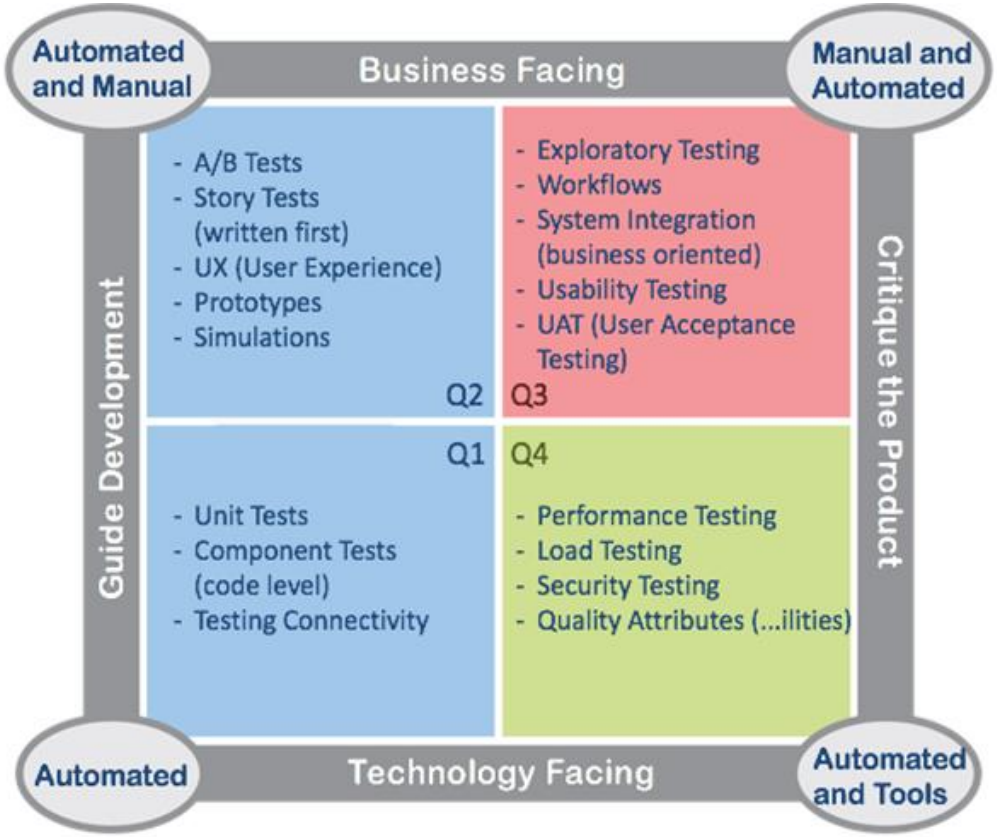


https://www.scaledagileframework.com/agile-testing/

Agile siūlomas testavimo procesas (workflow)

Q1 – Contains unit and component tests.

- **To confirm that the system works as agreed,**
- Tests are written to run before and after code changes.
- In software, this is largely the home of **Test-Driven Development** (TDD).



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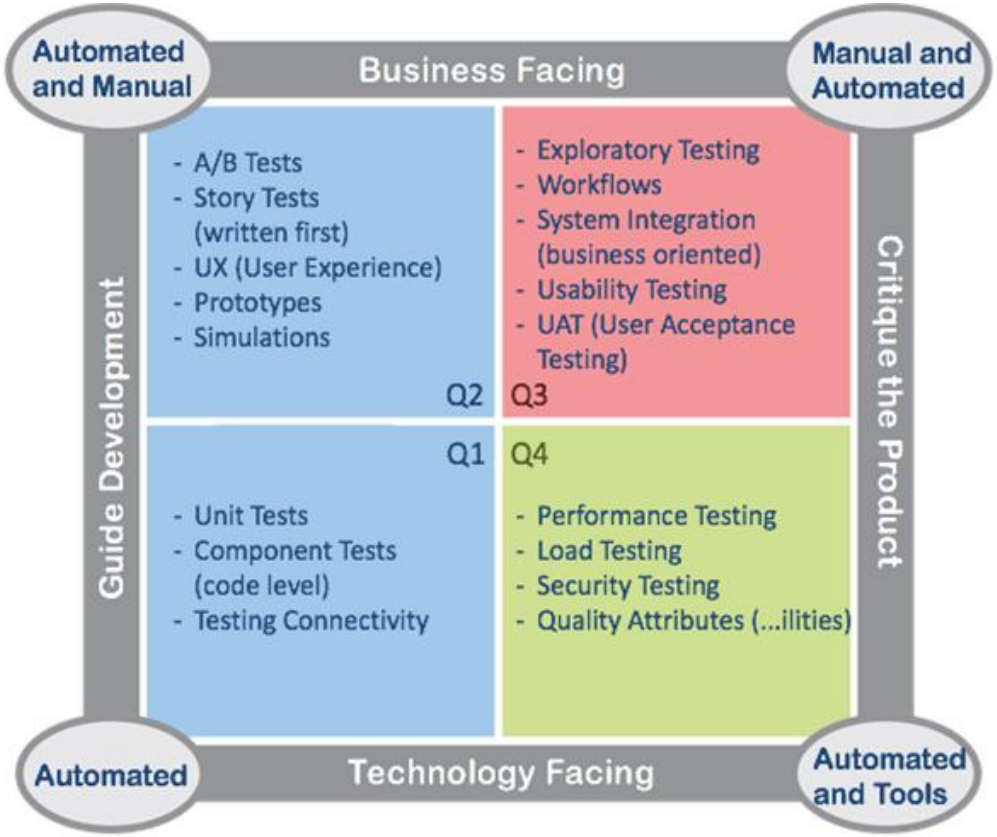
Agile siūlomas testavimo procesas (workflow)

Q2

- Contains functional tests:
  - user acceptance tests)for stories, features, and capabilities, **to validate that they work the way the Product Owner (or Customer/user) intended.**
- Feature-level and capability-level **acceptance tests confirm the aggregate behavior of many user stories**.



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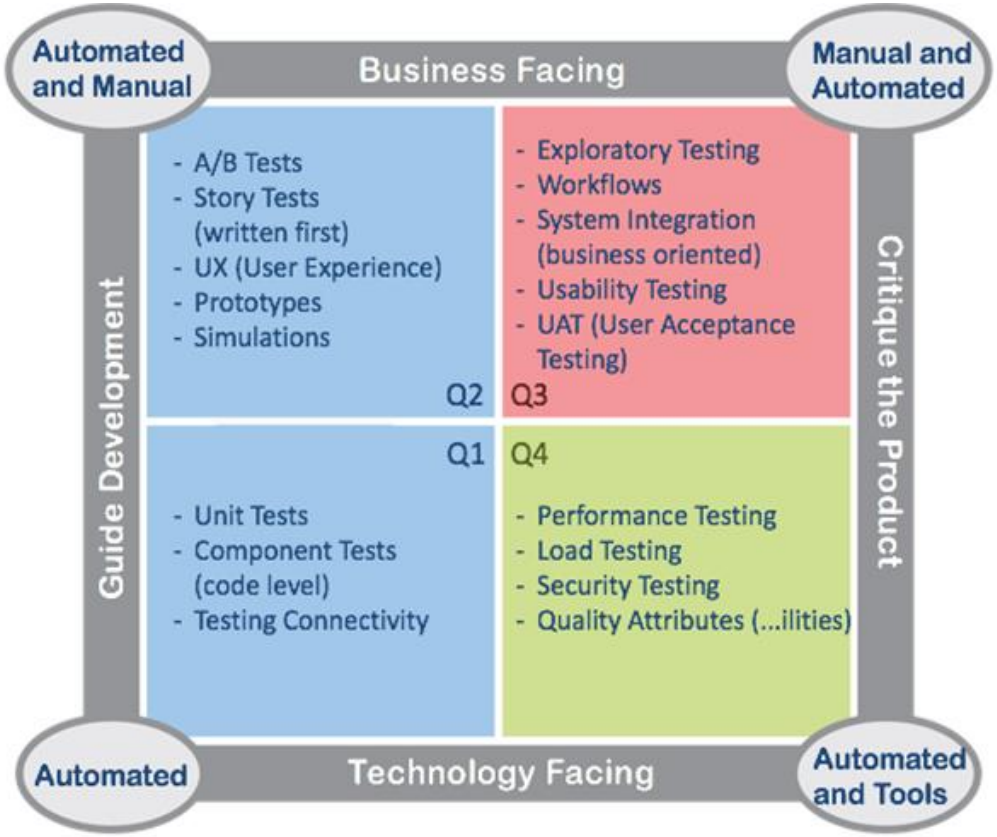
Agile siūlomas testavimo procesas (workflow)

Q3

- Contains system-level acceptance tests **to validate** that the **behavior of the whole system meets usability and functionality requirements**, including scenarios that are often encountered during system use.
  - They involve users and testers engaged in real or simulated deployment scenarios, these tests are often manual.
- **They're frequently the final system validation** before delivery of the system to the end-user.



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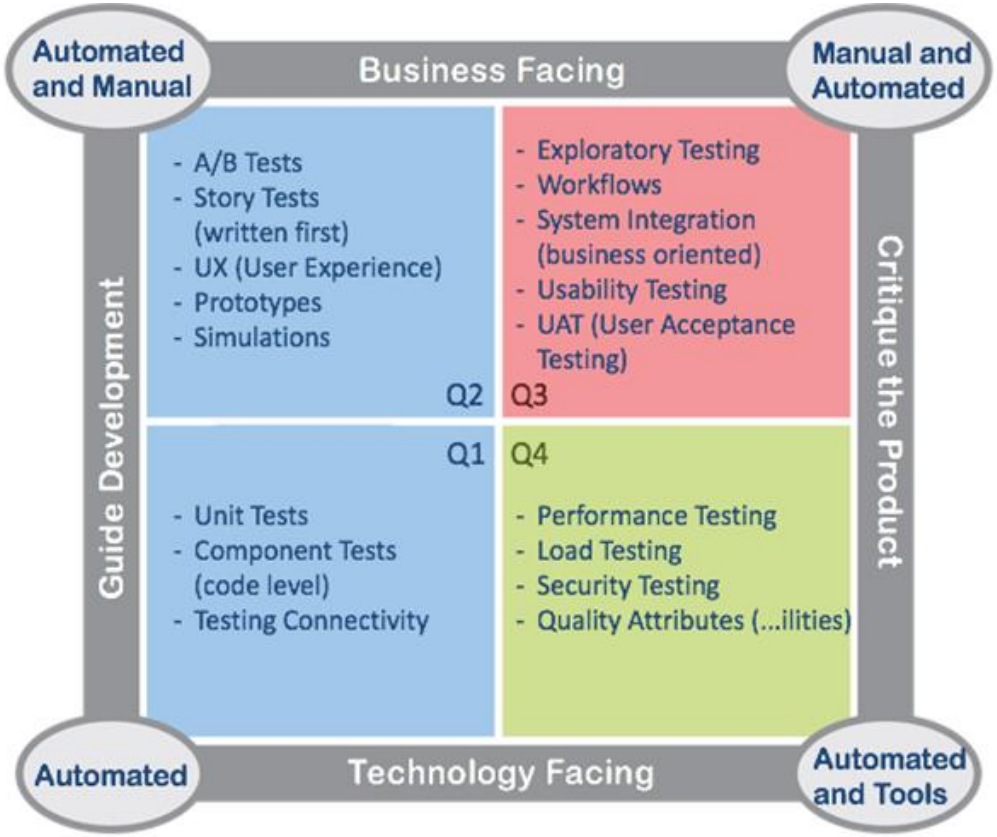
Agile siūlomas testavimo procesas (workflow)

Q4

- Contains system qualities testing **to verify the system meets its Nonfunctional Requirements** (NFRs),
  - Typically, they're supported by a suite of automated testing tools (such as load and performance) designed specifically for this purpose.
- Since any system changes can violate conformance with NFRs, **they must be run continuously,** or at least whenever it's practical.



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