Talking About Quality

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Great user stories ☺

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Great user stories ☺

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Great user stories ☺ ➔ Release ☹

Confusing UI

Poor performance

Reliability issues

WHY???

A Communication Gap

- We didn't know what the customer expected OR
- We didn't talk about how to meet those expectations

Talking About Quality: Stating Expectations

Test Coverage

Defect Counts

→ **A Limited Language**

Security, performance, reliability, availability, usability, configurability, etc.

→ **A Rich Expressive Language**

- Nonfunctional Requirements
- Quality Attributes
- Capabilities
- The “Ilities”

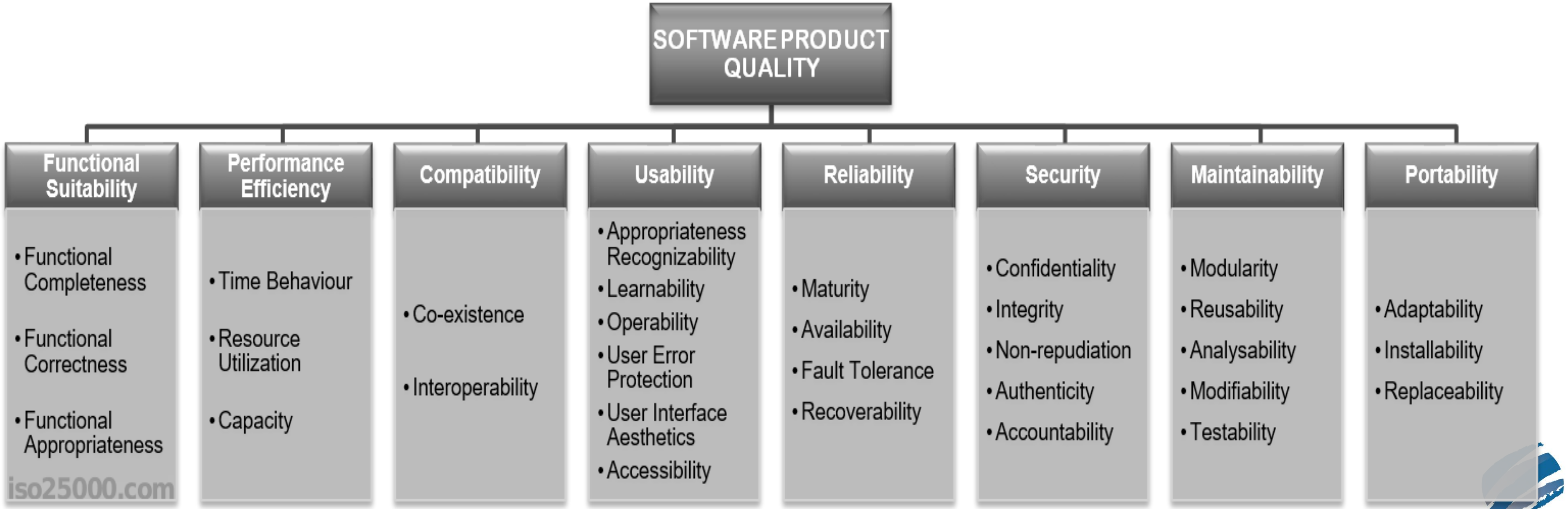
Our Vocabulary: Quality Attributes

Accessibility	How easily people with a range of physical abilities can use the system.
Availability	The extent to which the system’s services are available when and where they are needed.
Installability	How easy it is to correctly install, uninstall, and re-install the application.
Performance	How quickly and predictably the system responds to user inputs or other events
Reliability	How long the system will run before experiencing a failure
Robustness	How well the system responds to unexpected operating conditions

Some Dialects

FURPS: Functionality, Usability, Reliability,
Performance, Supportability

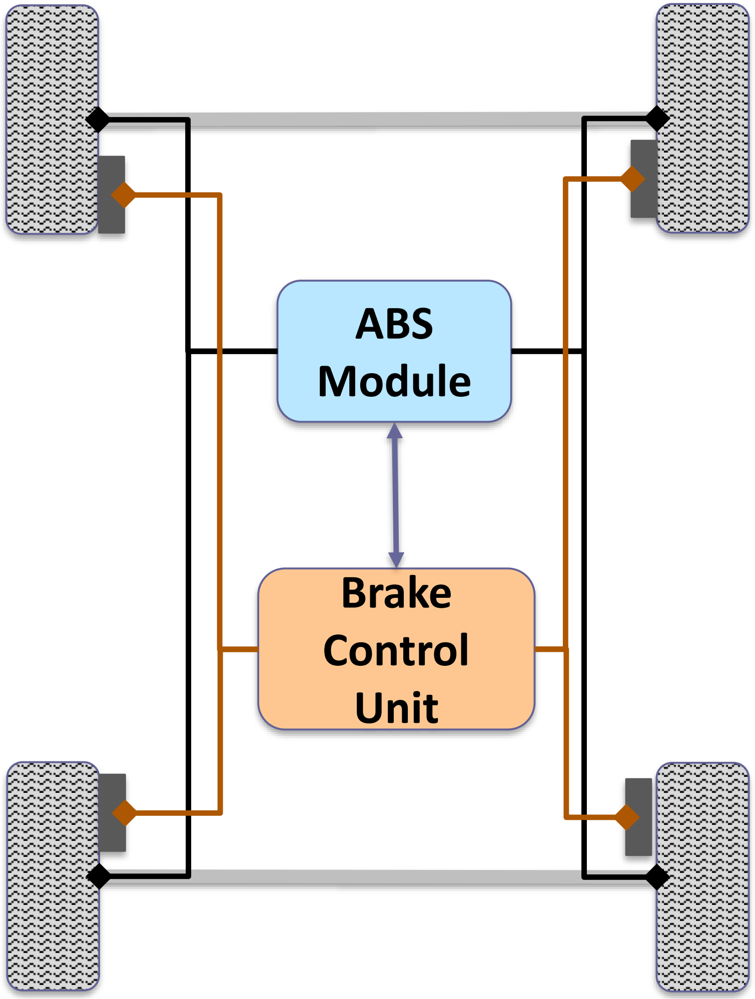
ISO/IEC standard 205010 [ISO2010]



My Current Favorite Quality Attributes List

- Accessibility
- Availability
- Installability
- Manufacturability
- Integrity
- Correctness
- Performance
- Reliability
- Robustness
- Safety
- Security
- Usability
- Interoperability
- Efficiency
- Scalability
- Modifiability
- Portability
- Testability

Example: Anti-Lock Braking System (ABS)



- Accessibility
- Availability
- Installability
- Manufacturability
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- Correctness
- Performance
- Reliability
- Robustness

- Safety
- Security
- Usability
- Interoperability
- Efficiency
- Scalability

Ask the Customer What Matters to Them

- What do you want?
  - → Specific goals
- How will you know when you have it?
  - → Acceptance tests
- What will that do for you?
  - → Understand relative value of different attributes

Precise Language: Get Smart

SMART =

Specific, **M**easurable, **A**chievable, **R**elevant, **T**estable

Performance target:

For <given scenario>,

the query returns results in no more than two seconds.

SMART Examples

- Scalability: The system is able to handle up to 20,000 simultaneous connections without degrading performance of <specific actions>, and can be scaled down to under 1000 connections.
- Reliability: Mean time between failures under <specific conditions> is X days
- Recoverability: System can recover from <type of failure> in less than 5 minutes

What Else Matters to Your Stakeholders?

Some internal quality attributes:

- Modifiability
- Testability
- Portability
- Interoperability with pre-existing internal systems

Defect: Failure to meet external quality attributes:

Technical Debt: Often a failure to meet internal quality attributes

A Communication Gap Inside the Team

- We didn’t know what the customer expected
- **We didn’t talk about how to meet those expectations**

Quality Process – A Vocabulary for Action

- **What** you will do
- **When** you will do it
- **Who** will do it
- **Why** you will do it
- **What** happens if results are not satisfactory

Quality Gate

Team Operating Agreement

Acceptance Test

Standard Practice

Design Rules

Definition of Done

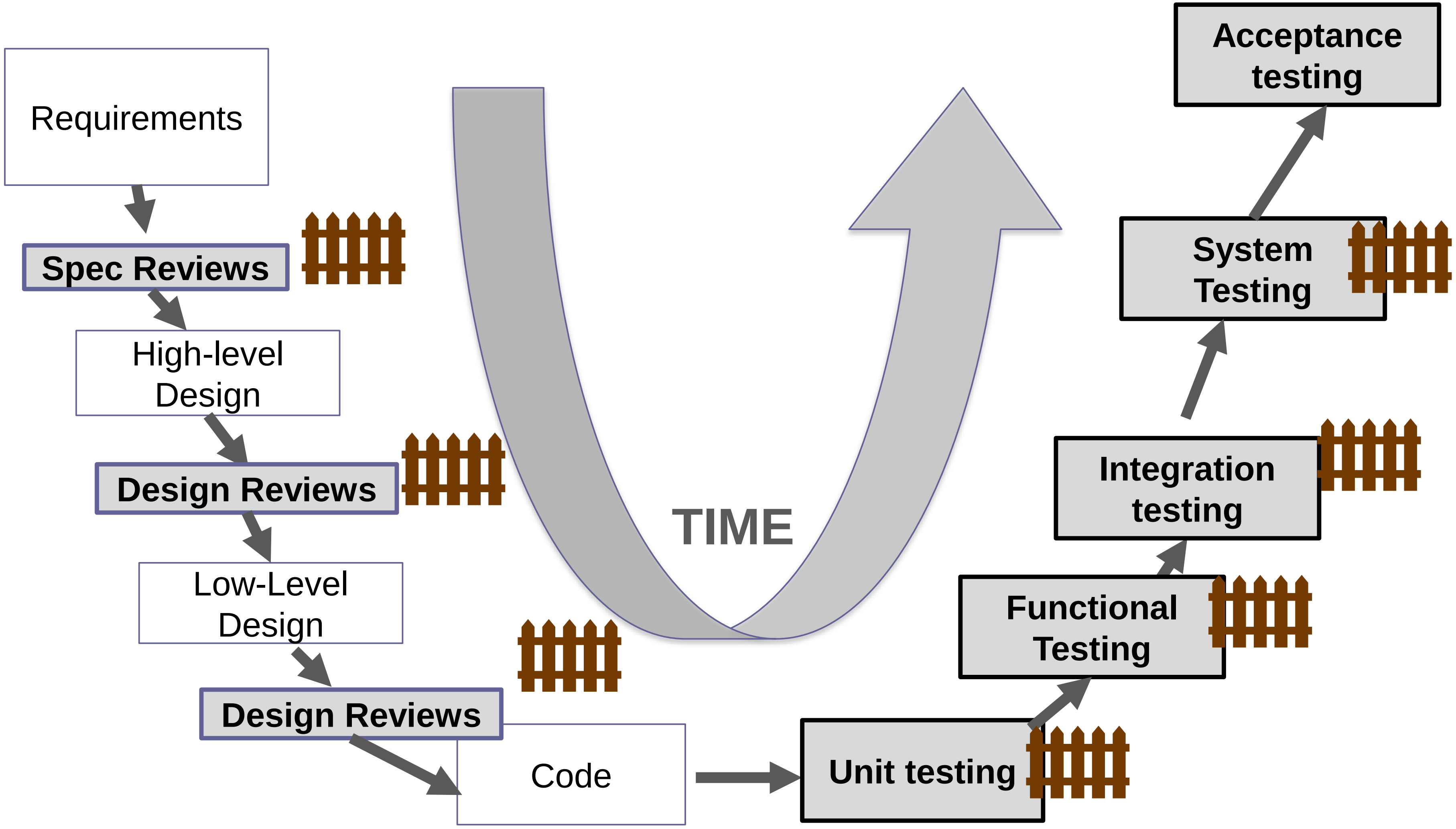
Release Criteria

Test Strategy

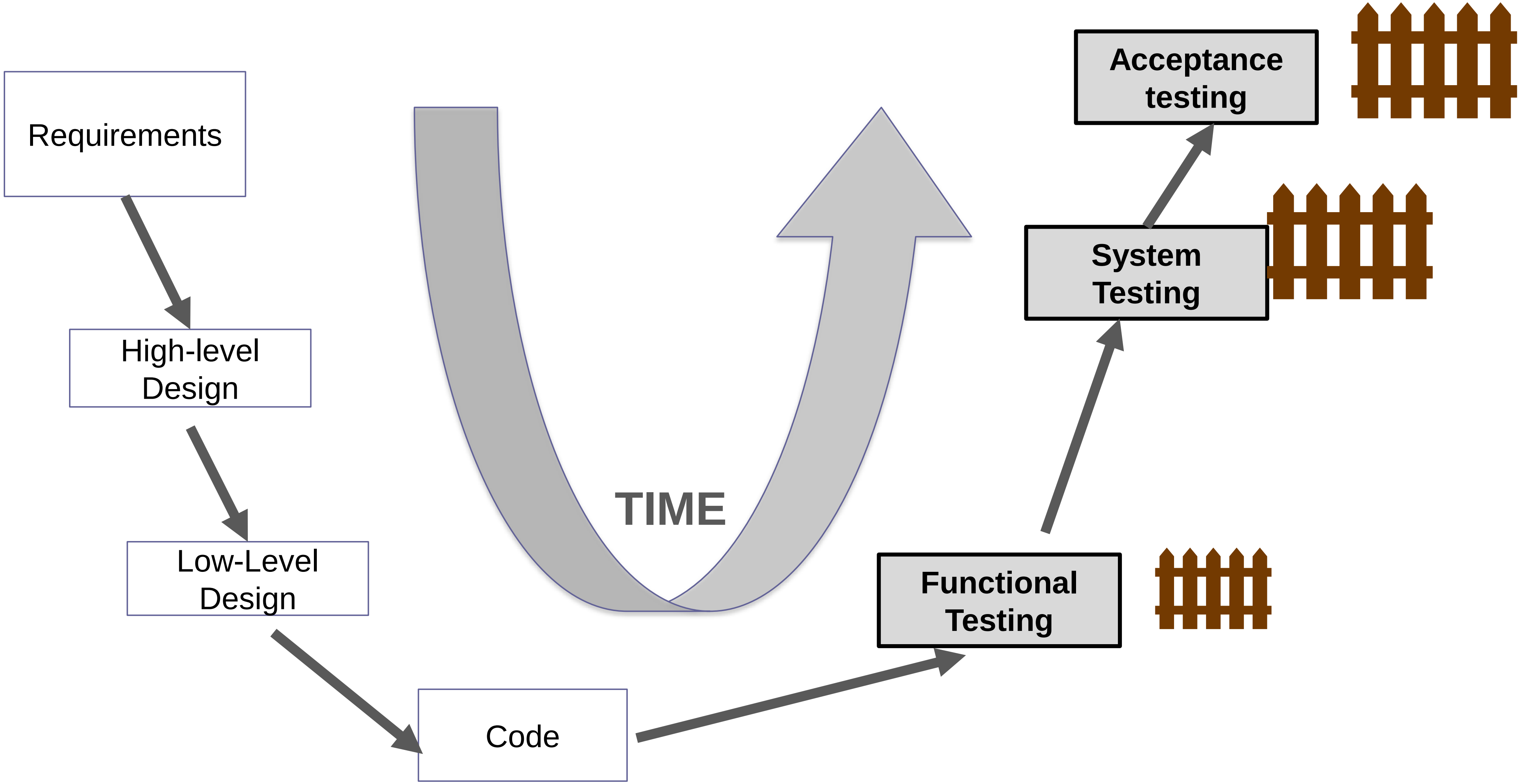
Coding Standard

Spike

Waterfall Quality Gates: The Dreaded V-Model



Danger #1: Not Enough Gates



Requirements

High-level Design

Low-Level Design

Code

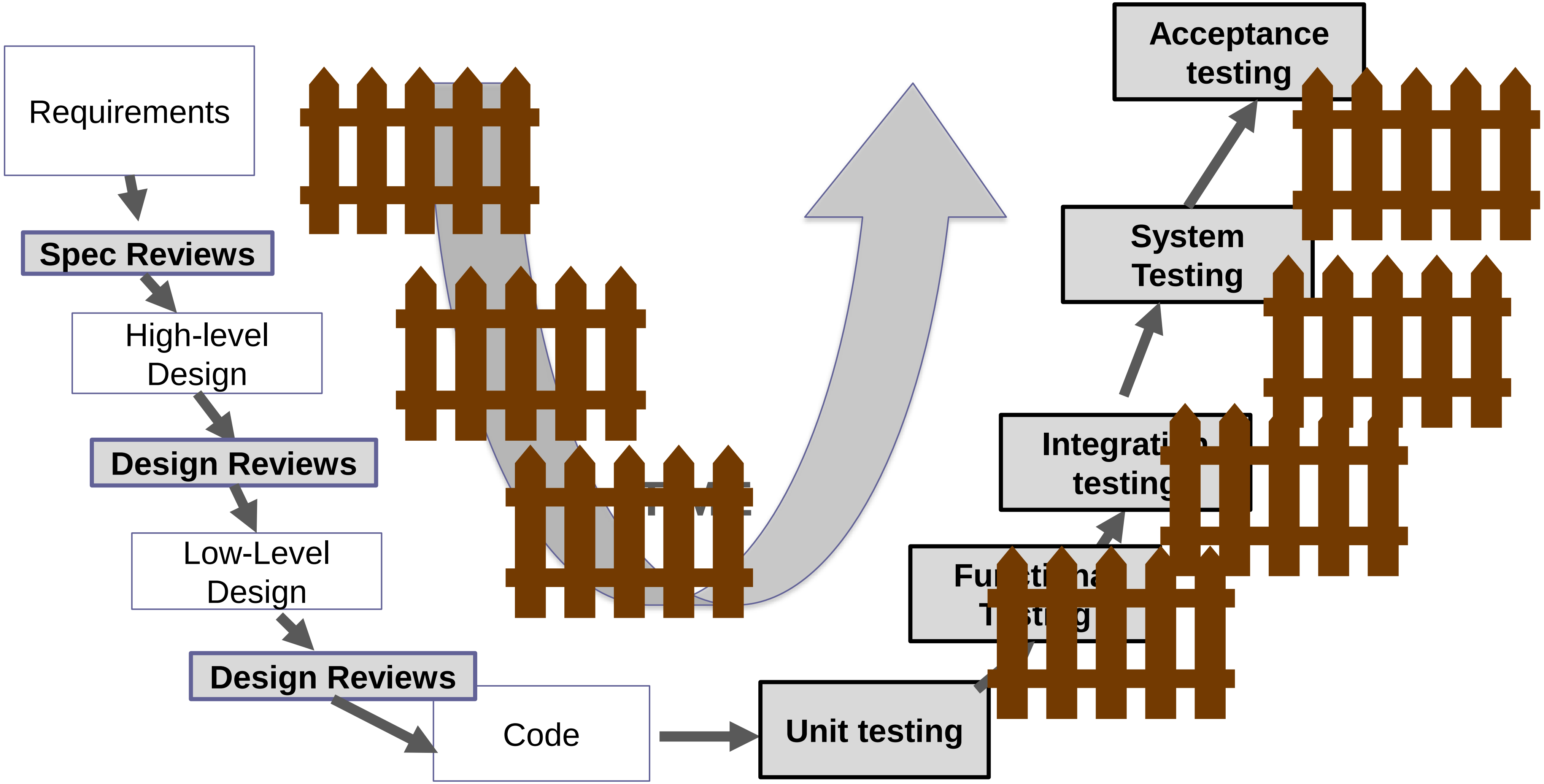
Functional Testing

System Testing

Acceptance testing

TIME

Danger #2: Excessively Large Gates



Requirements

Spec Reviews

High-level Design

Design Reviews

Low-Level Design

Design Reviews

Code

Unit testing

Fu ti na T sti g

Integrati testing

System Testing

Acceptance testing

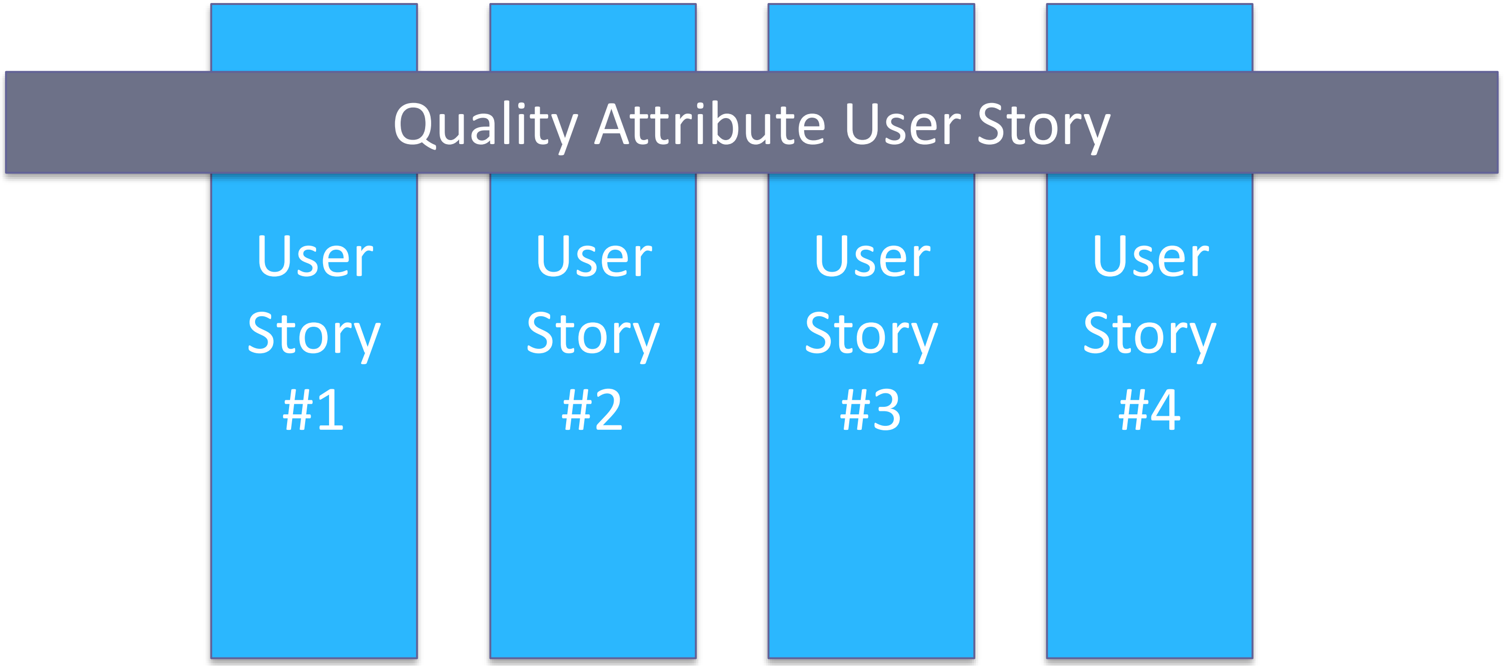
User Stories for Quality Attributes

1) As a user, I want the site to be available 99.999% of the time
2) As a user, I want to run your software on Windows 7 and Windows 10.
3) As the CTO, I want the system to use our existing orders database.

Do these user stories:

- Capture the user's point of view?
- Split work into small, independent sections?

Alternatives for Crosscutting User Stories


Quality Attribute User Story

User Story #1

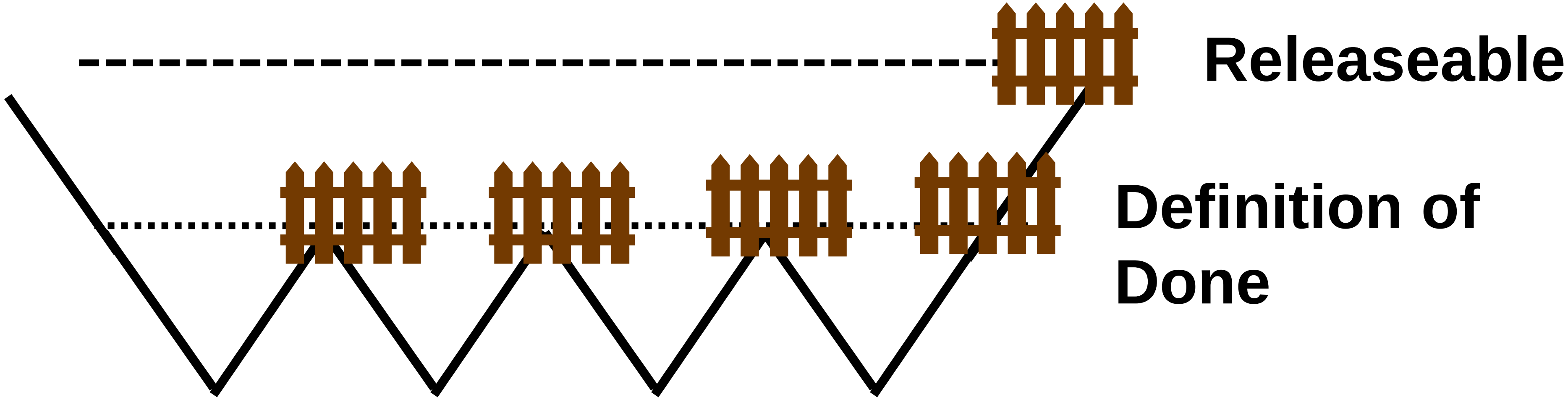
User Story #2

User Story #3

User Story #4

- Acceptance test
- Definition of Done
- Spike
- Standard Practice
- And more…

Agile Quality Gates



Agile quality gates can be stated as :

- Story acceptance criteria OR
- Definition of Done OR
- Release Criteria

Standard Practices

- Coding standards
- Design standards
- Version control procedures
- Etc.

Standard practices can be defined in:

- Team Operating Agreement
- Quality Plan

Example: ABS Team Quality Attribute Review

Quality Attribute	Our Plan For This Project
Correctness	Covered by existing user stories: 522-577.
Integrity	Definition of Done: All data logging stories must have acceptance criteria regarding data overflow.
Manufacturability	User story: As a manufacturing engineer, I can automate installation of the firmware onto the chip.
Performance	Definition of Done: All stories must pass a test which covers expected response time and allowable range for each category of event. We need to write this test.

Spike

Sometimes we don’t know how to achieve quality:

What does our customer mean by “usable”?

How can we measure “good enough“?

Will this design choice give us fast enough performance?

Don’t be afraid to spike!

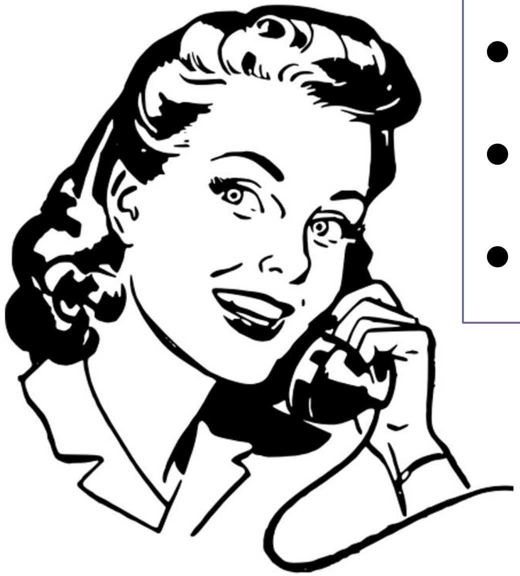
Create hypothesis

Run experiment in a timebox

Assess results

Decide what to do next

Talk About Quality to Bridge Those Communication Gaps



What do stakeholders expect?

- Quality attribute list
- The three questions
- SMART nonfunctional requirements

How will we meet the expectations?

- Quality gates: Acceptance criteria, Definition of done, release criteria
- Standard operating procedures
- Spikes

Q & A

Want to know more?
Read the paper or
visit my website: http://kiberle.com/