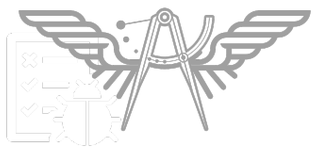
สยามชำนาญกิจ
SIAM CHAMNAN KIT

Effective Software Testing



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Effective Software Testing

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Topics

Software Development Life Cycle
Software quality problem
Test-first vs Test-last vs Test later
Testing strategies
Good testing
Test design
Test techniques

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What problems in your team ?

Think about testing issues !!

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Other's problems

Team silo
Poor communication
Testing is a phase (never enough time !!)
Requirements change but …
Tester not involved early
Don't understand the requirements
Developers don't do their test !!

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Quality vs. Quantity

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Software Delivery

https://martinfowler.com/articles/practical-test-pyramid.html

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Start with Why …

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"Program testing can be used to show the presence of bugs, but never their absence."

Edsger W. Dijkstra, 1970, Notes on Structured Programming

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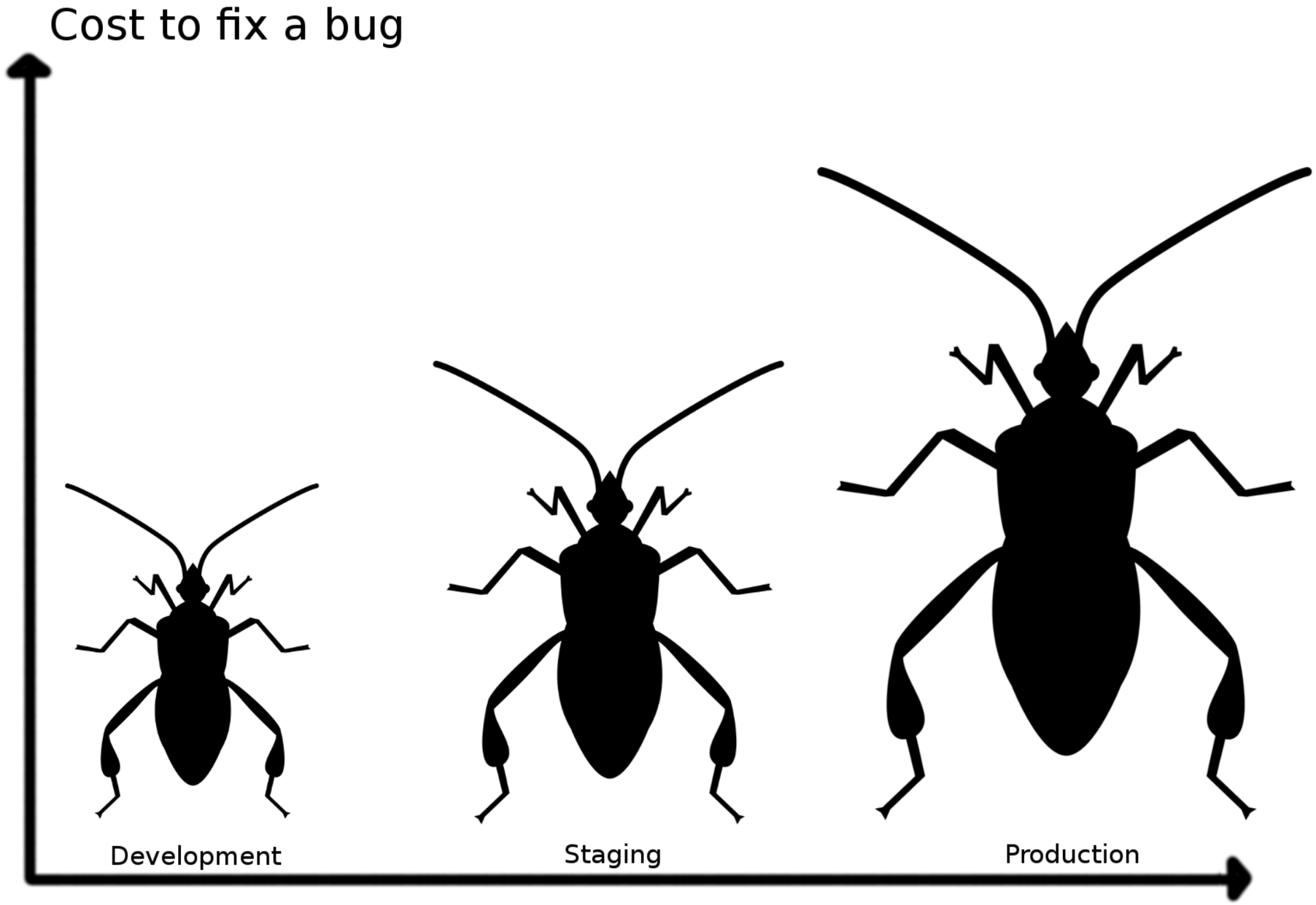

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Every time a developer changing the code !!

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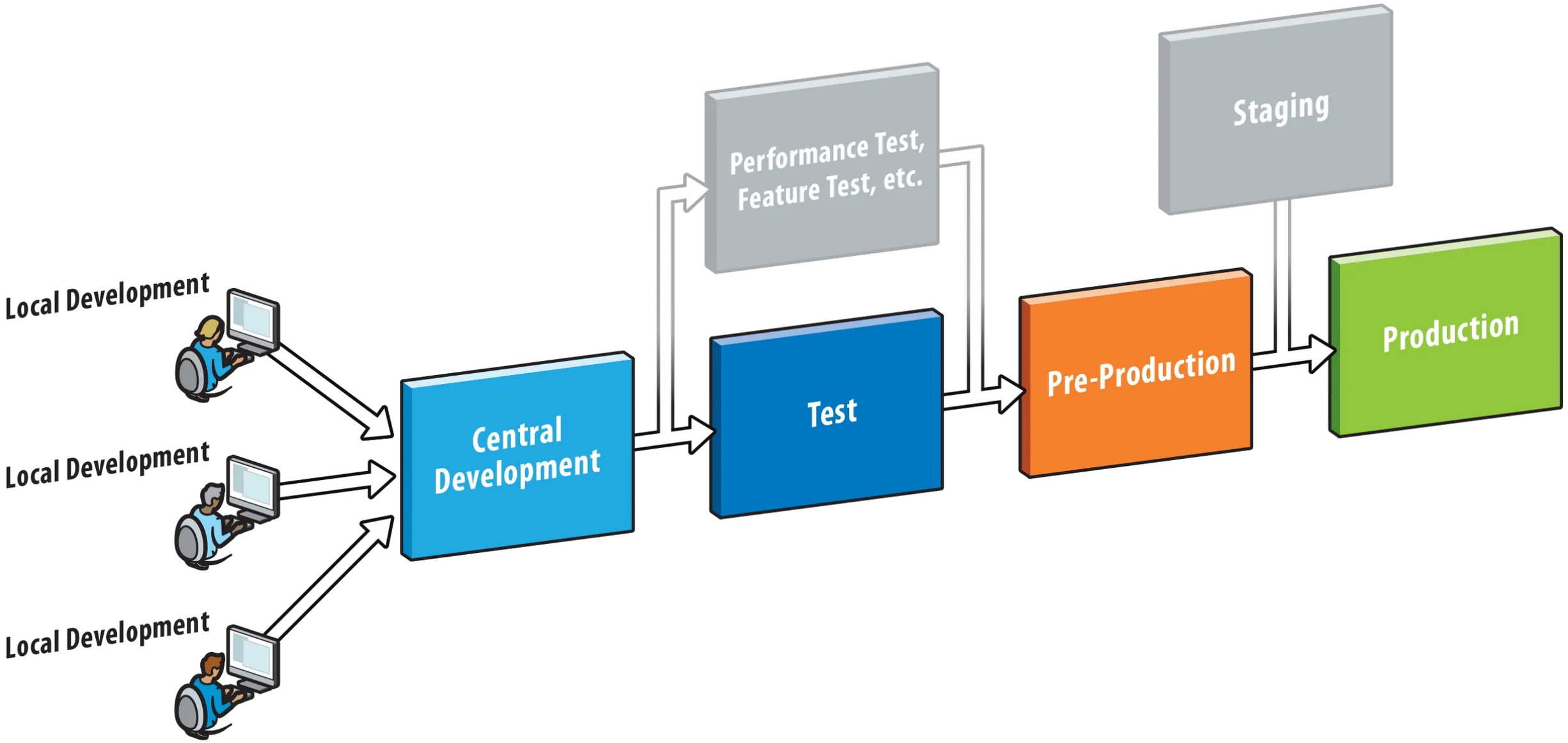
Environments to deliver software



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Why we need to test ?

Help you to **catch bugs**
Boosted confidence
Quality code
Enforce **modularity** of your project
Develop features **faster**
Better documentation

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What kind of test should we write ?

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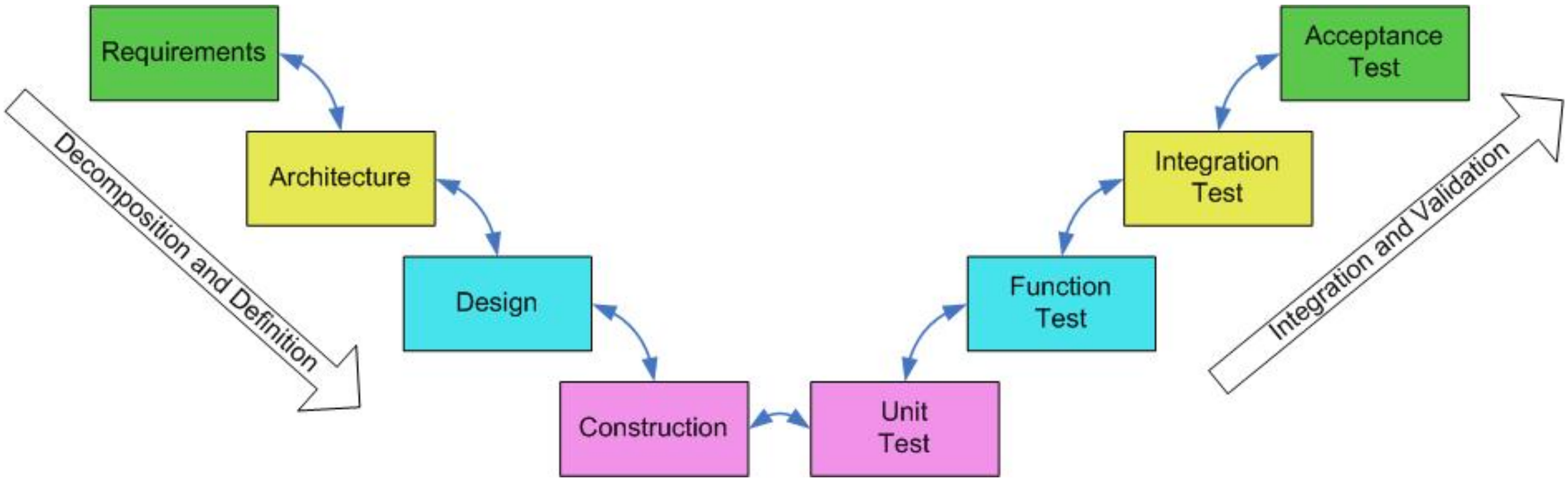
V Model



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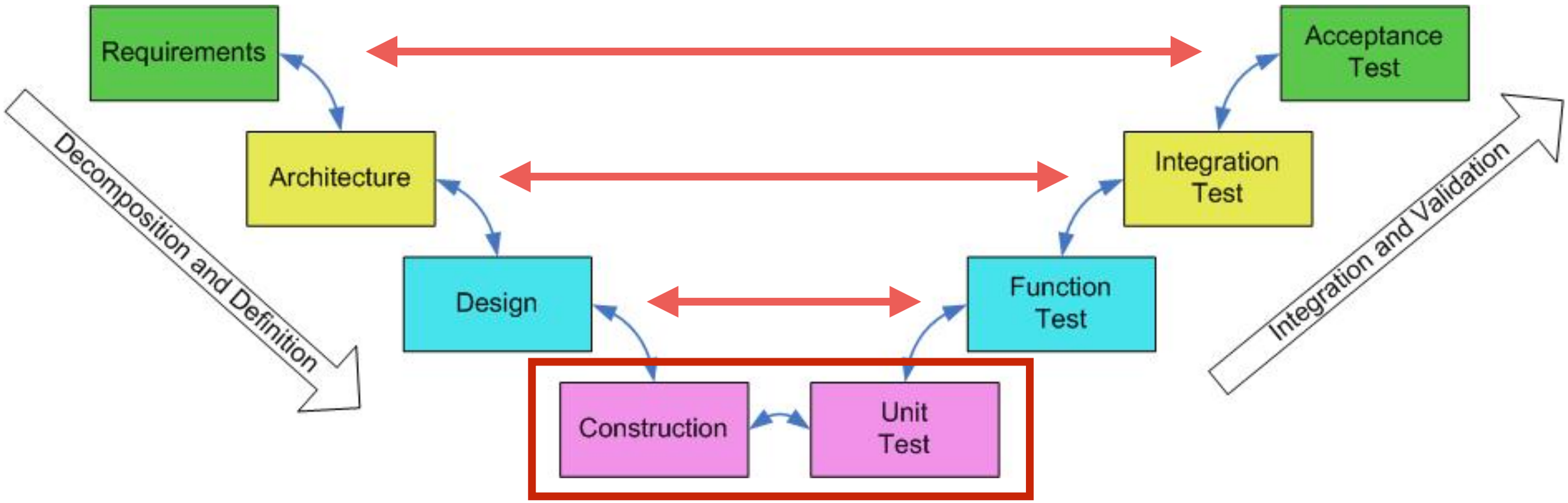
V Model



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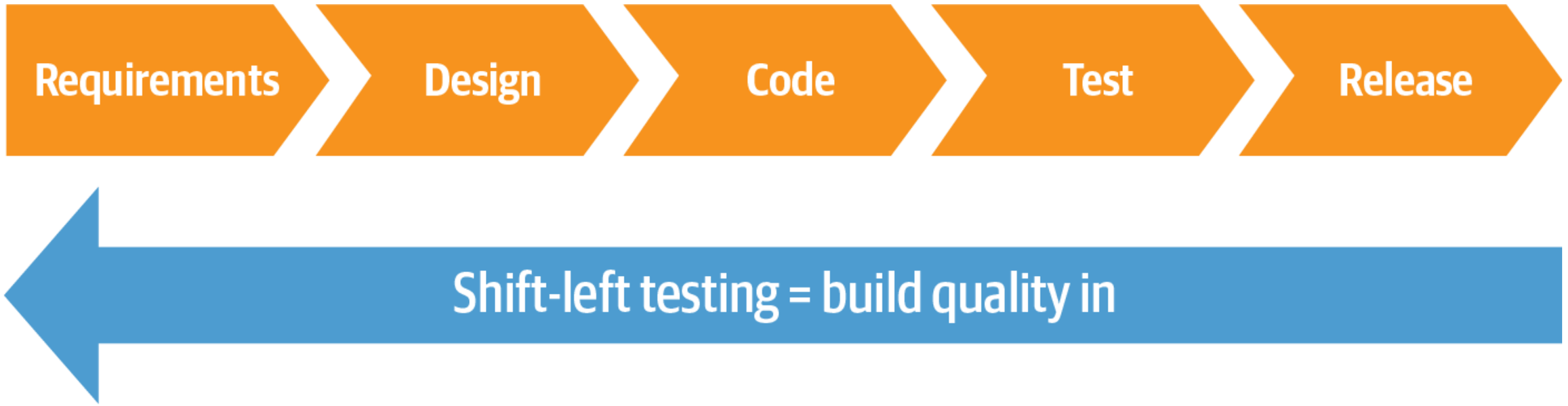
Shift Left Testing



Functional testing	Non-functional testing

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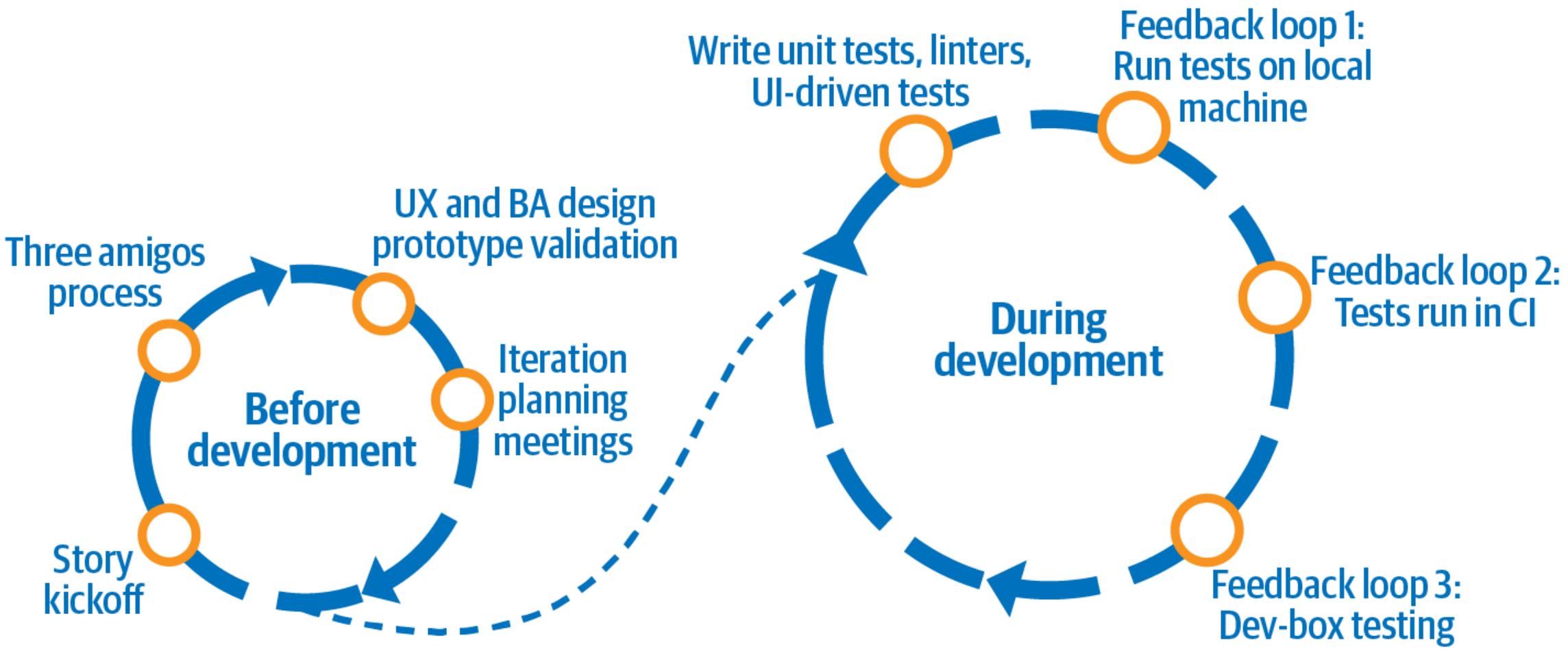
Quality Check ?



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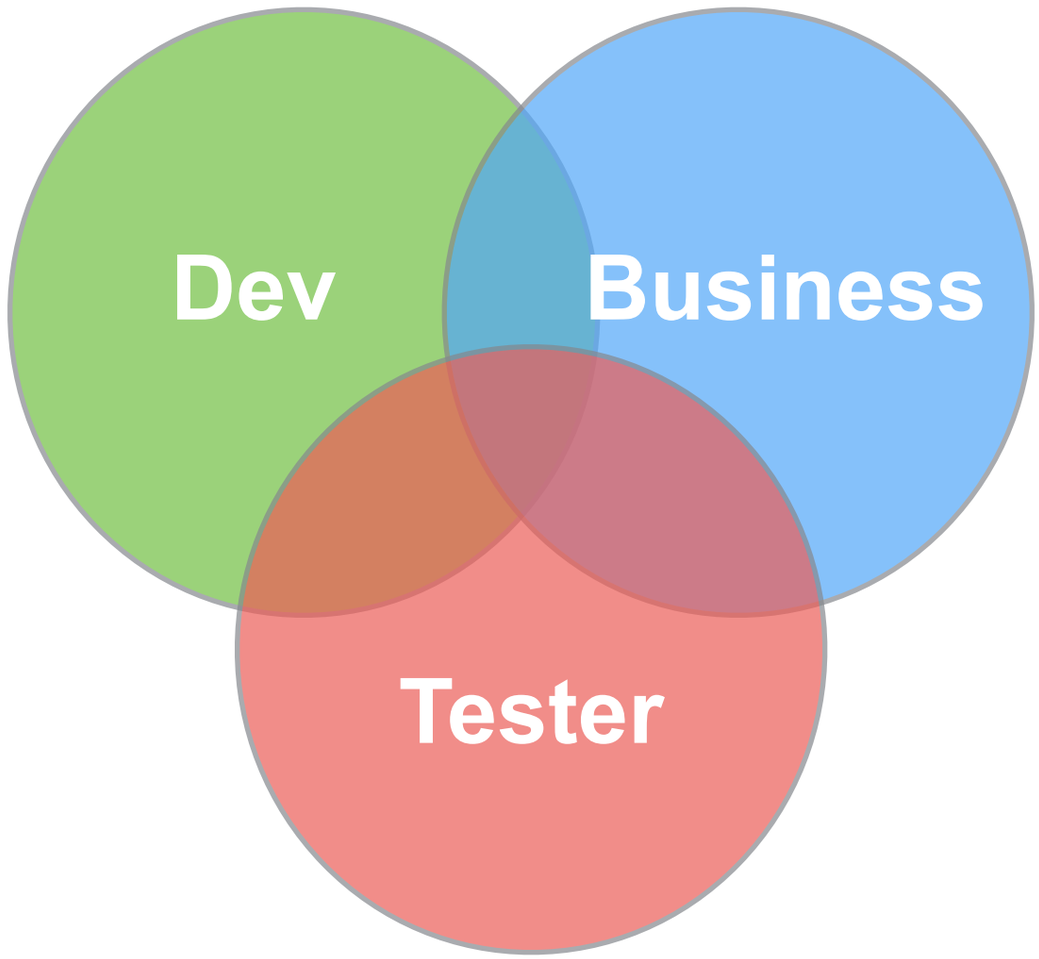
Power of Three



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THINK before coding

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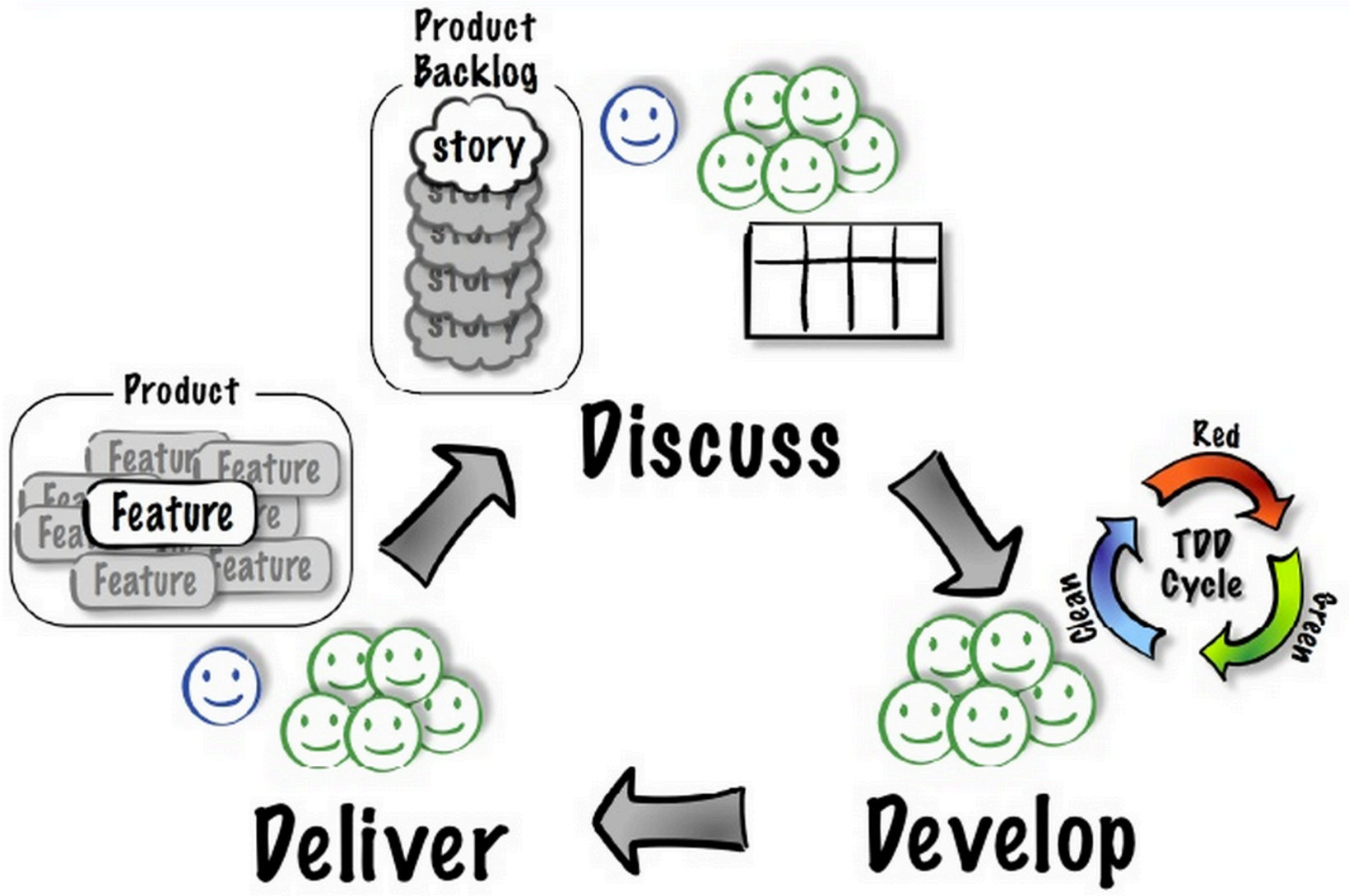
Acceptance Test-Driven Development



(Model developed with Pekka Klärck, Bas Vodde, and Craig Larman.)

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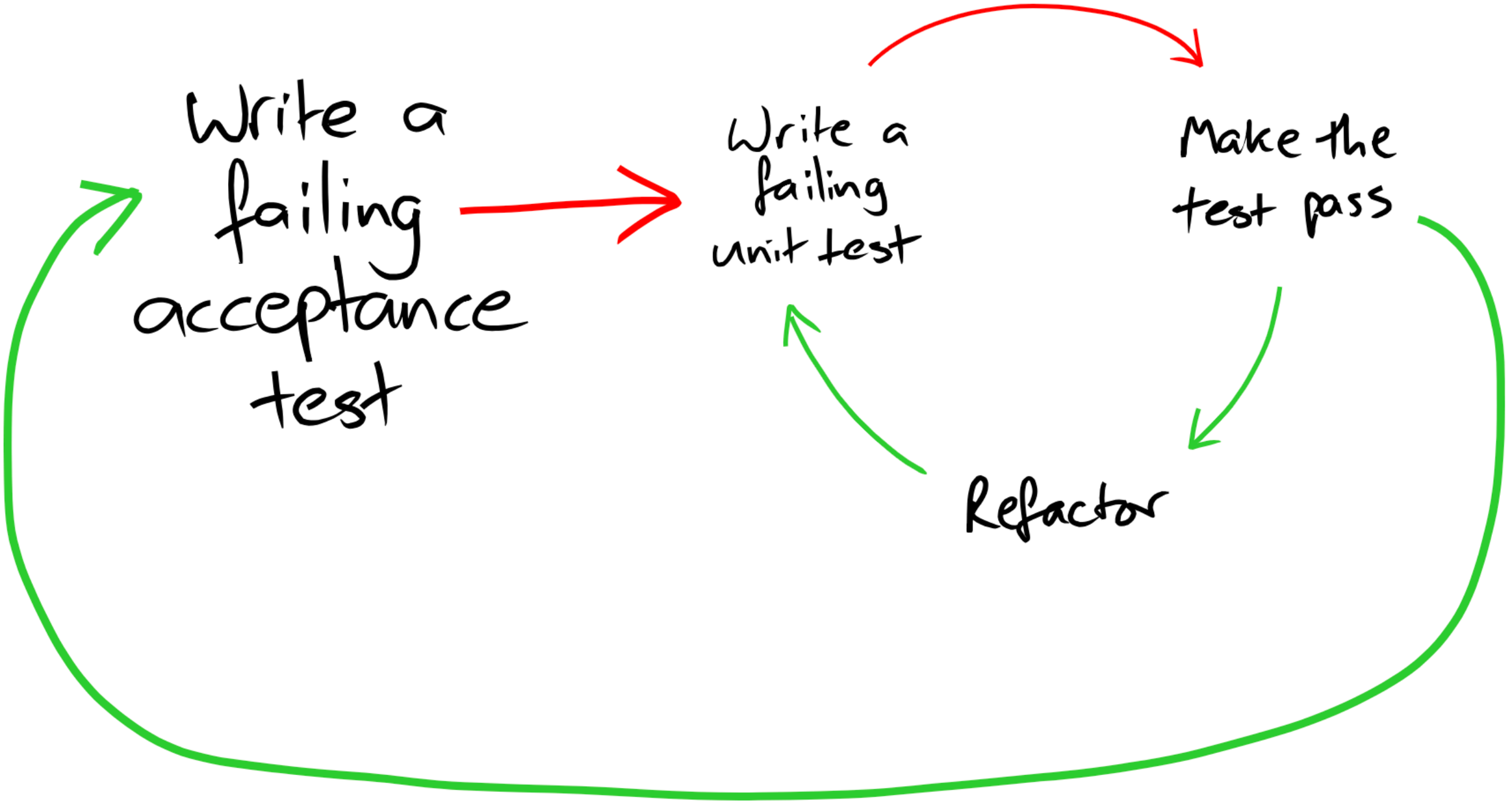
Outside-in develop/test



http://www.growing-object-oriented-software.com/

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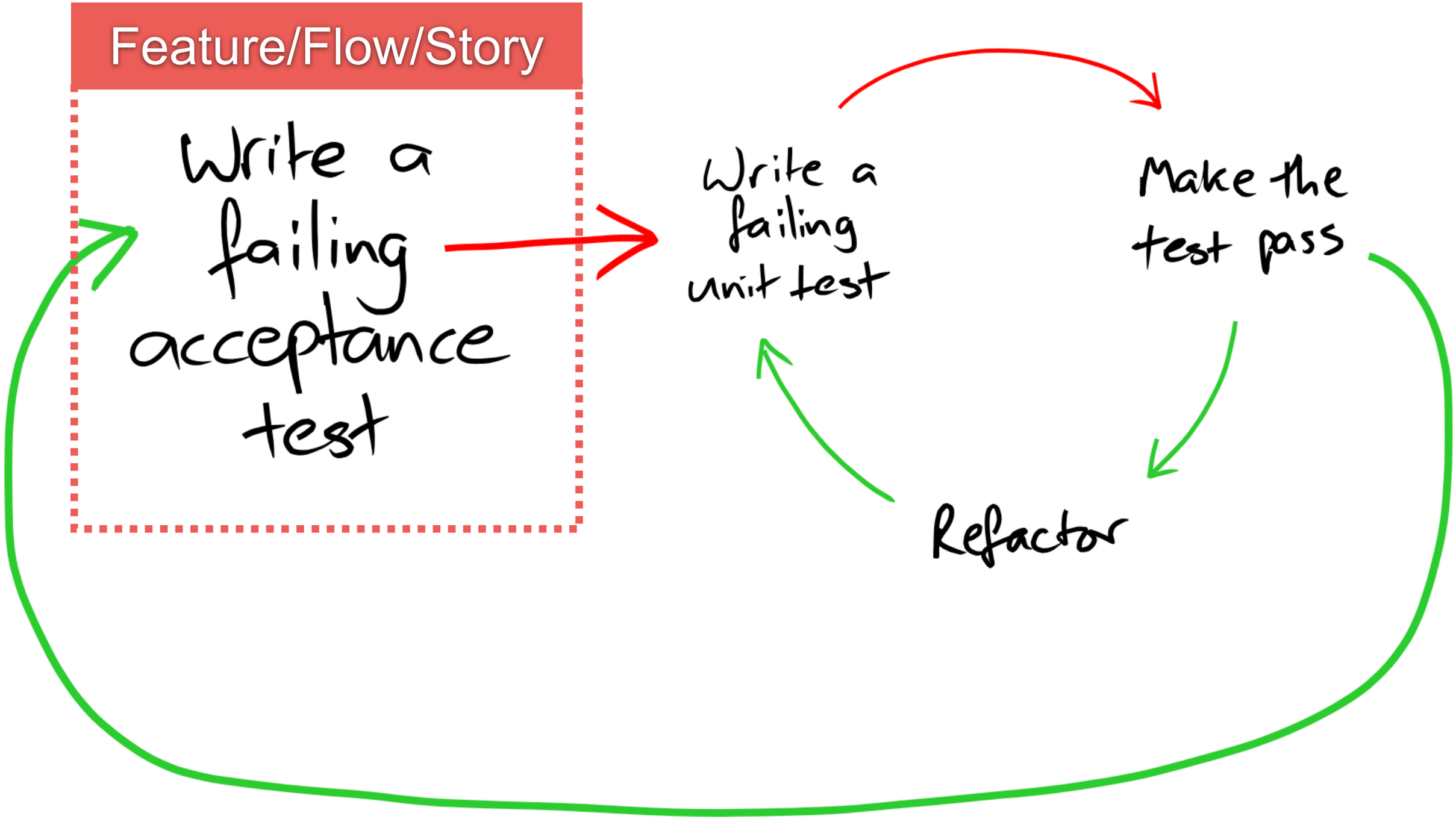
Outside-in develop/test



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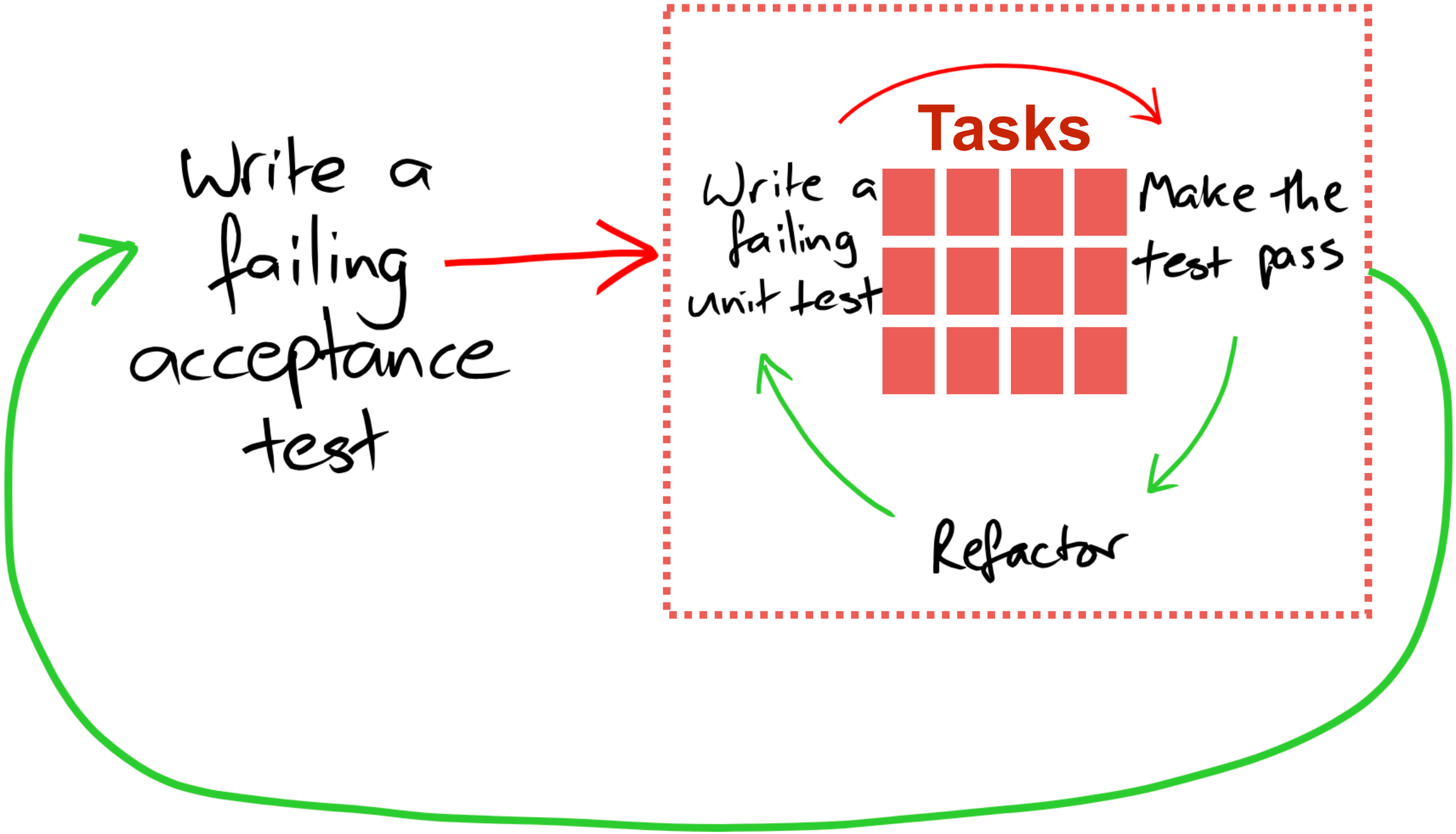
Outside-in develop/test



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Tests Cases

=

Business Criteria

+

Examples (real data)

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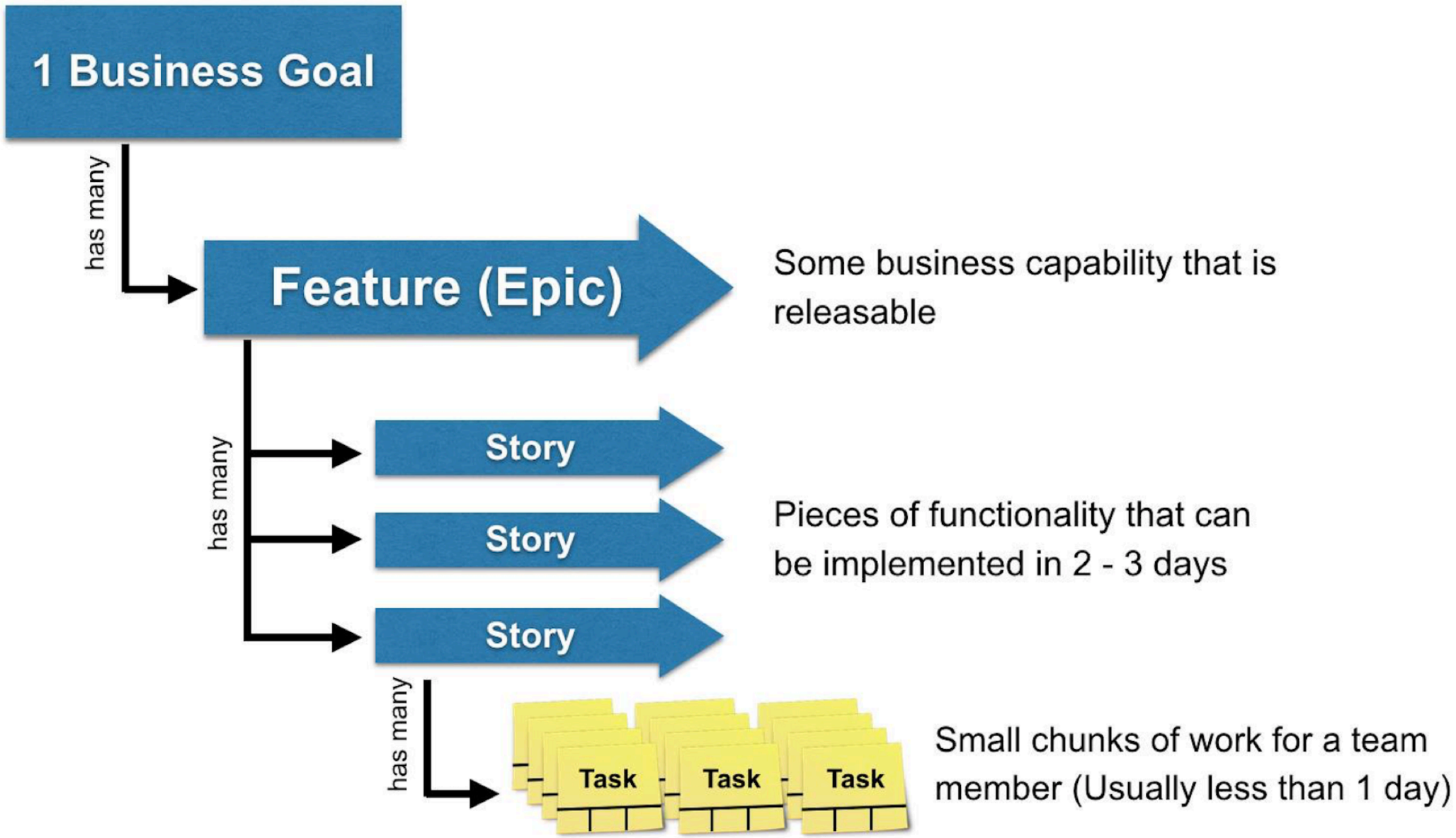
Work break down



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Key success factors

Whole team solve problems
Whole team thinks about **testing**
Whole team **committed to quality**
Everyone **collaborates**
Improve technical **skills**
Better testing process (improvement)

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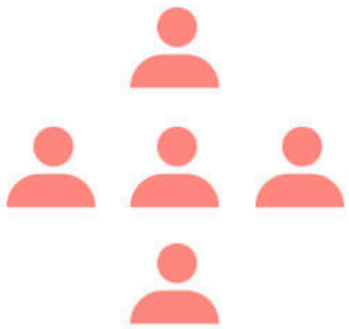
Whole team approach

Functional

Common functional expertise



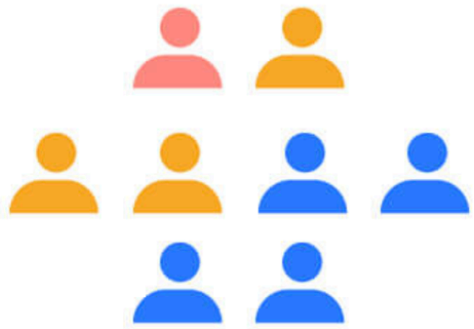
System analysts

Developers

Testers

Cross - Functional

Representatives from the various functions



Development Team

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Iterative and Incremental process

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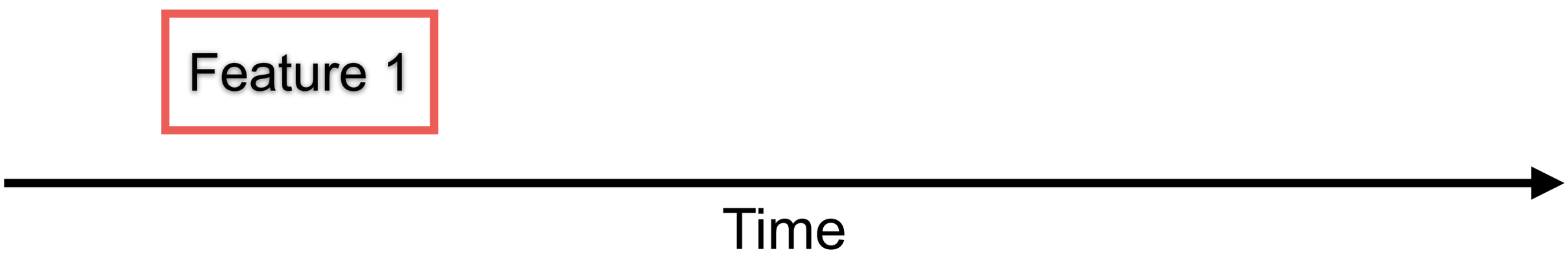
Iterative and incremental process

Feature 1 is Done ?



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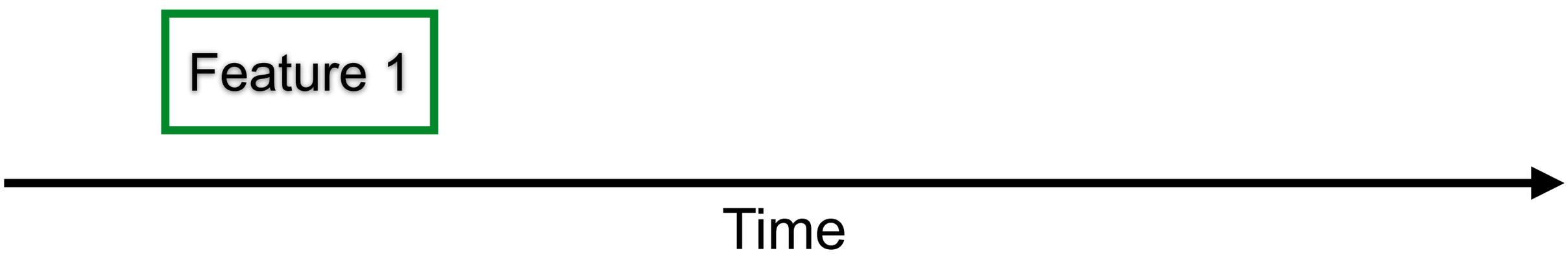
Iterative and incremental process

Done = coded and tested



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Iterative and incremental process

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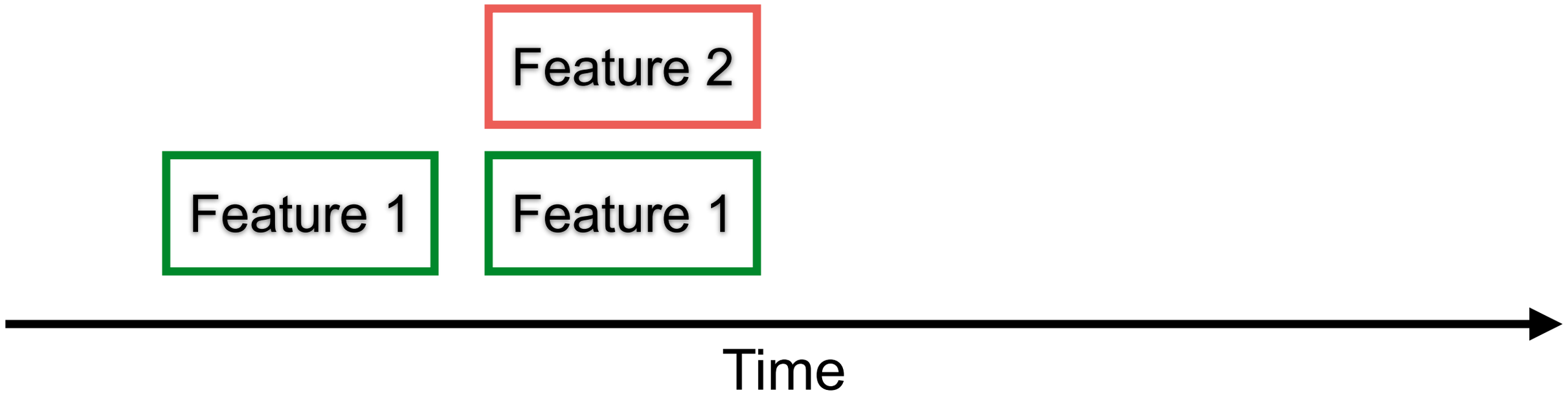

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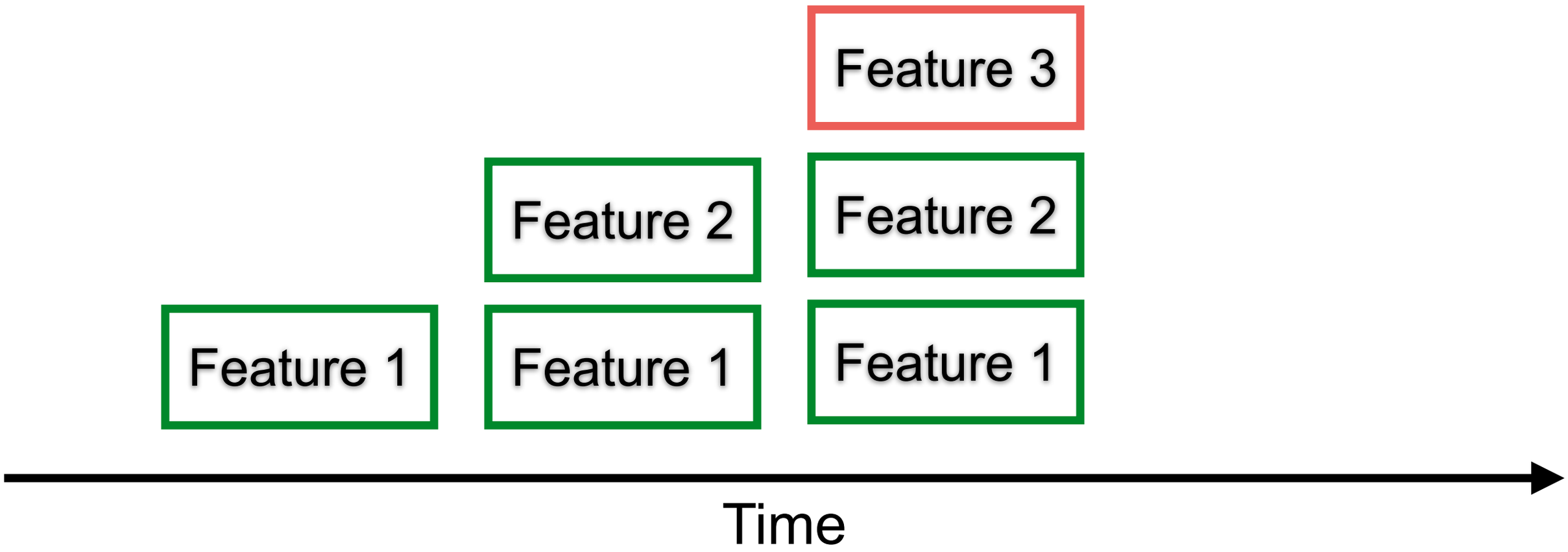
Iterative and incremental process

Done = coded and tested



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Iterative and incremental process

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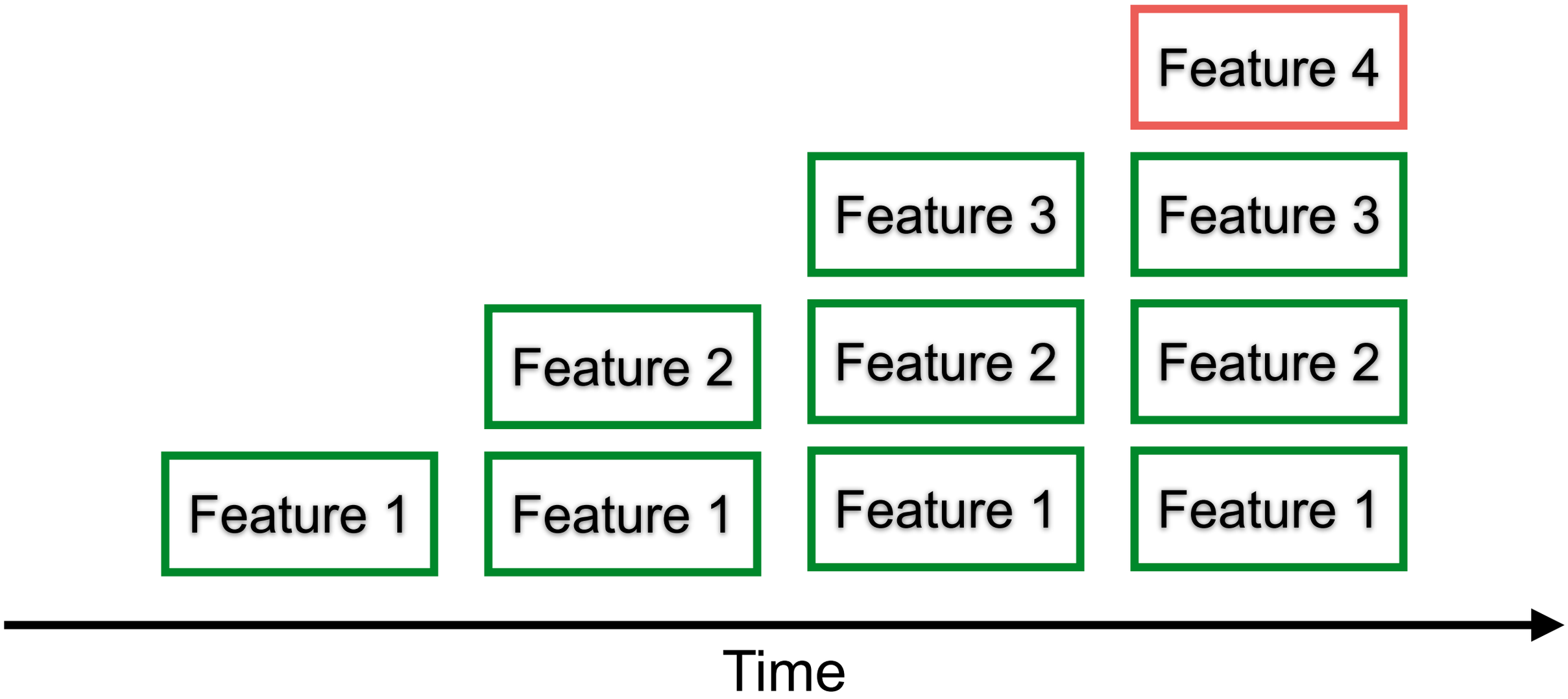

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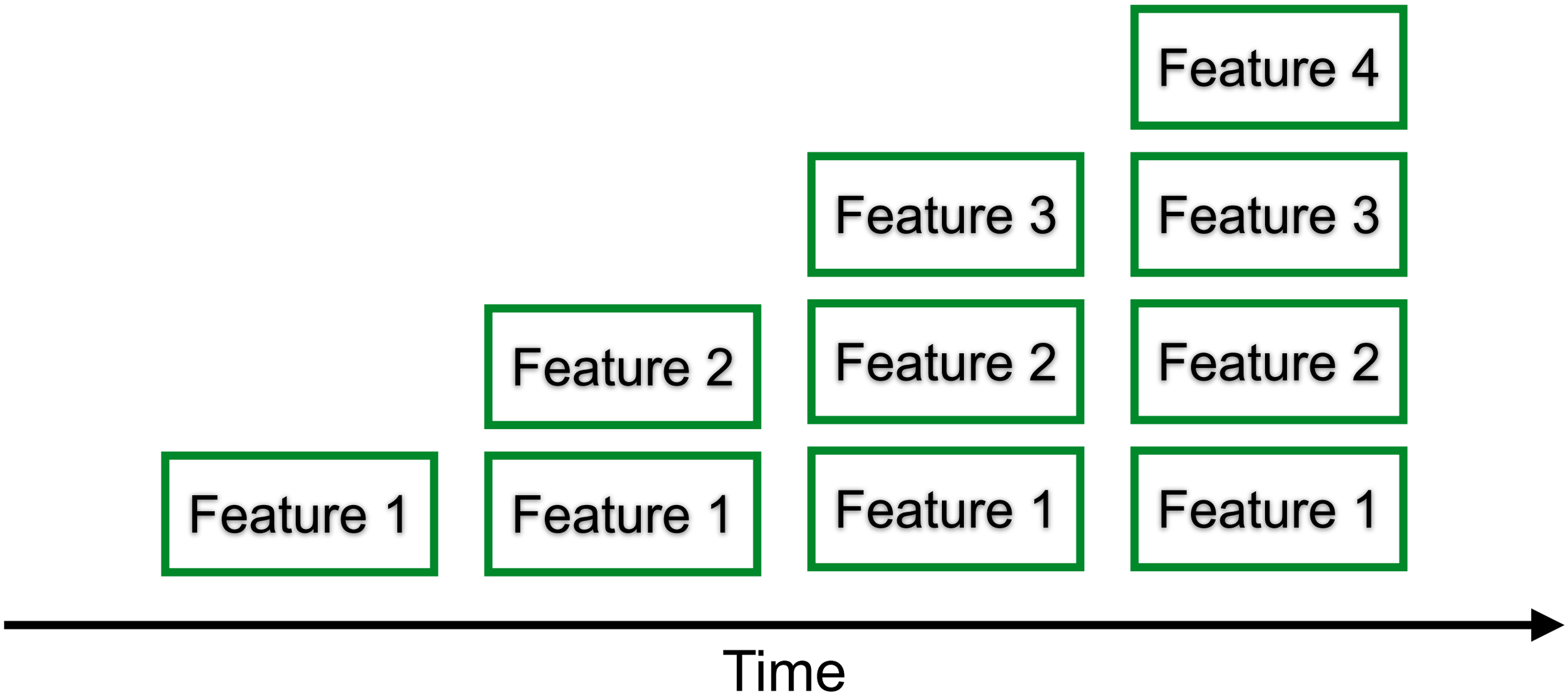
Iterative and incremental process

Done = coded and tested



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Testing is activity

~~Test phase~~

~~Test team~~

~~Tester role~~

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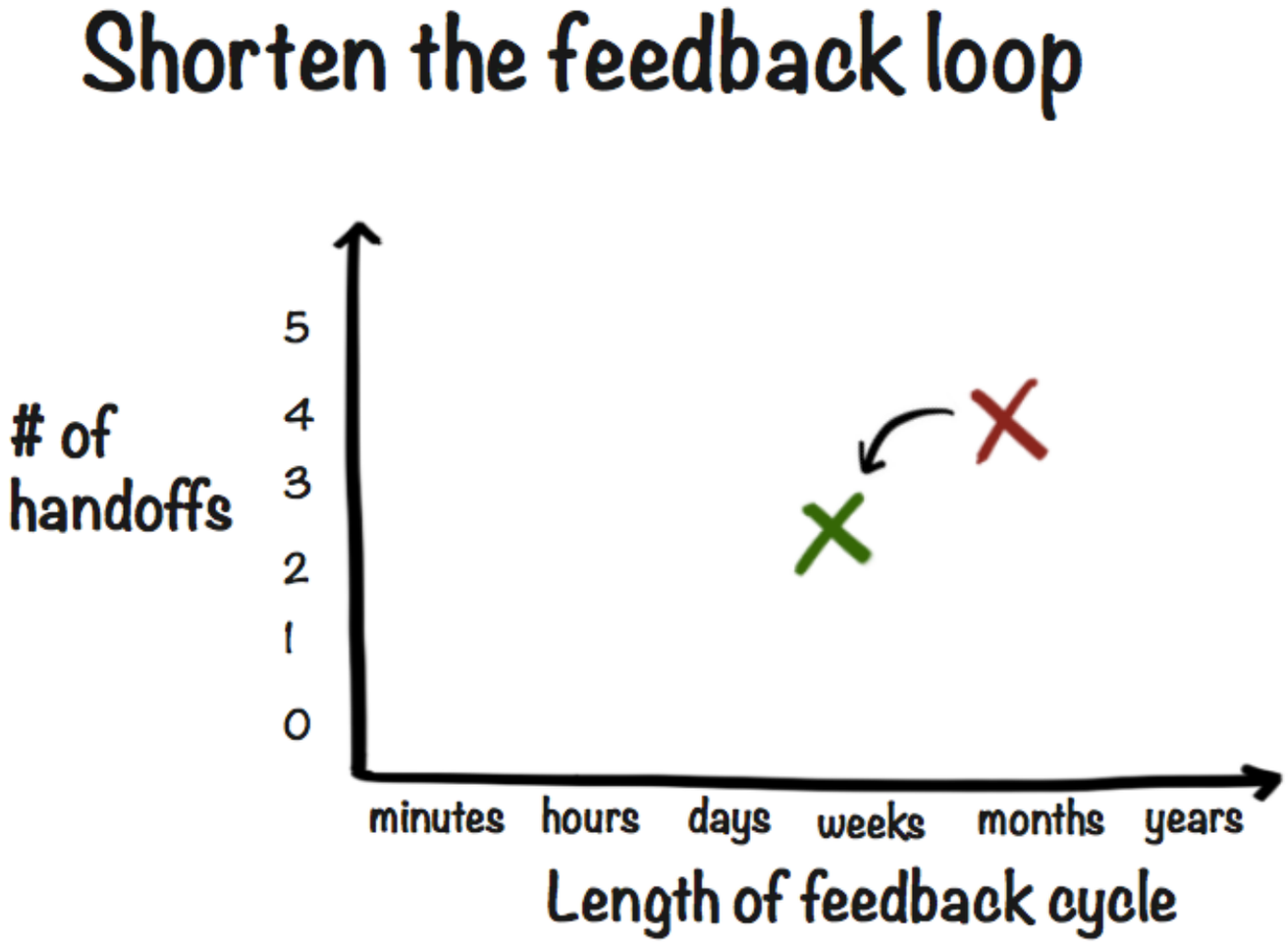
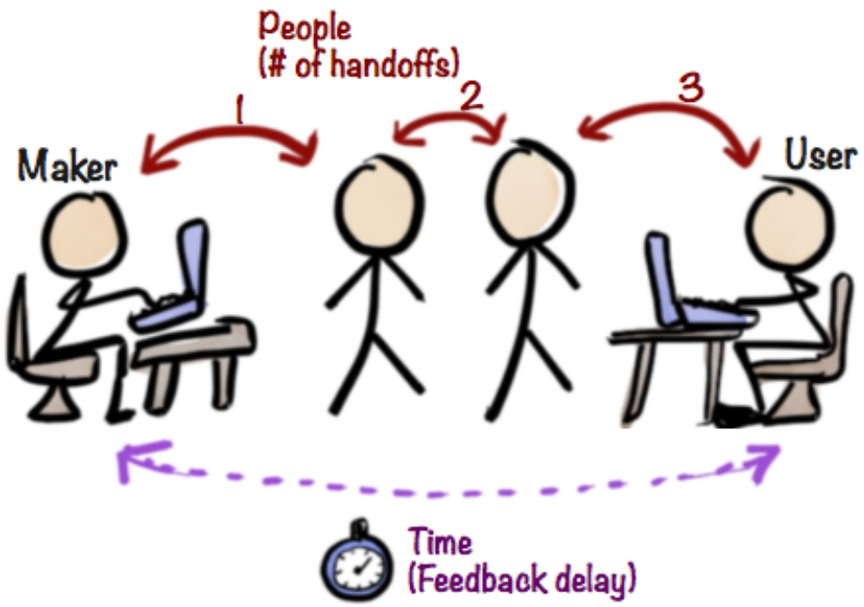
Fast feedback loop





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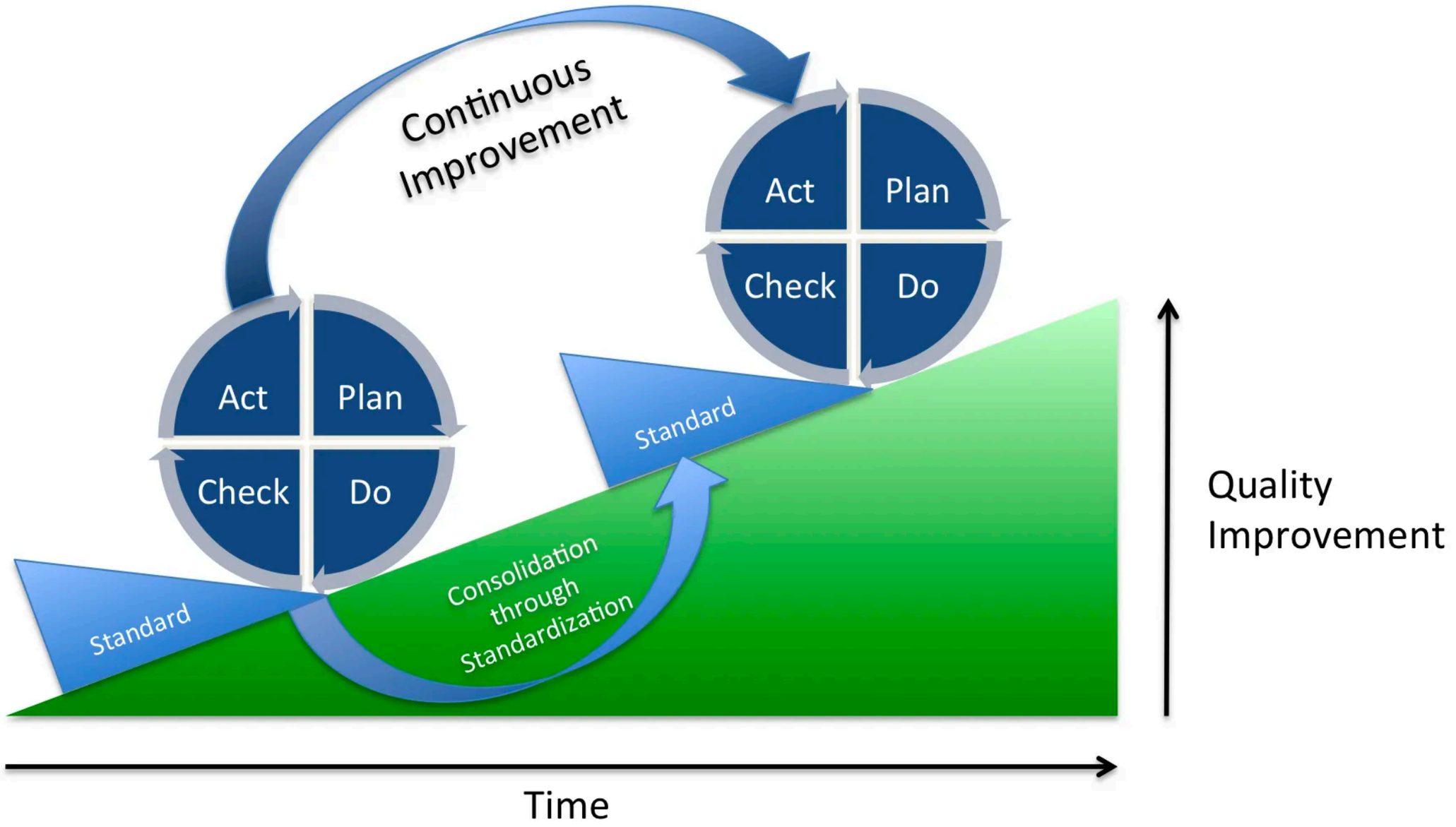
Continuous improvement



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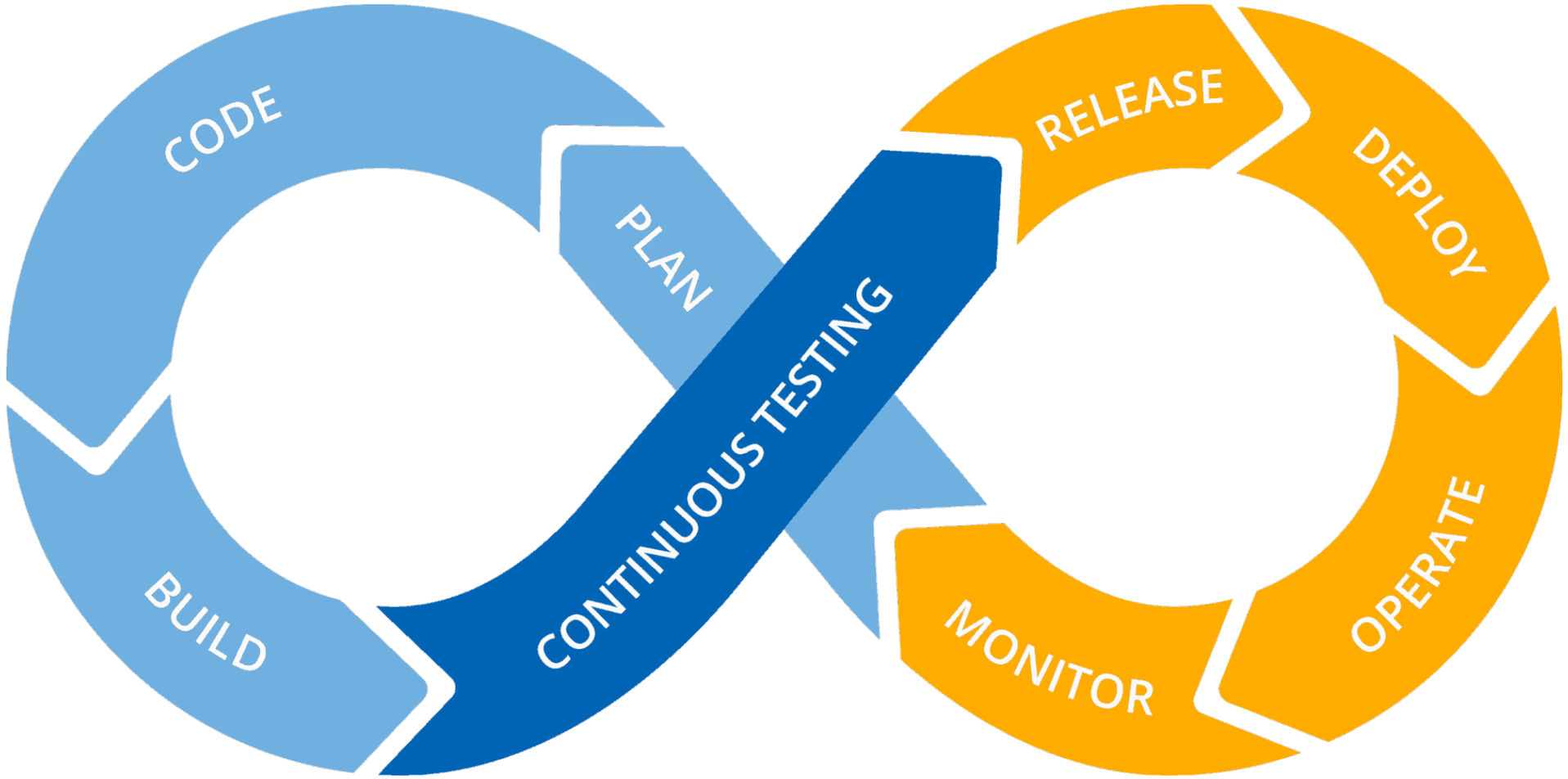
Continuous testing and feedback



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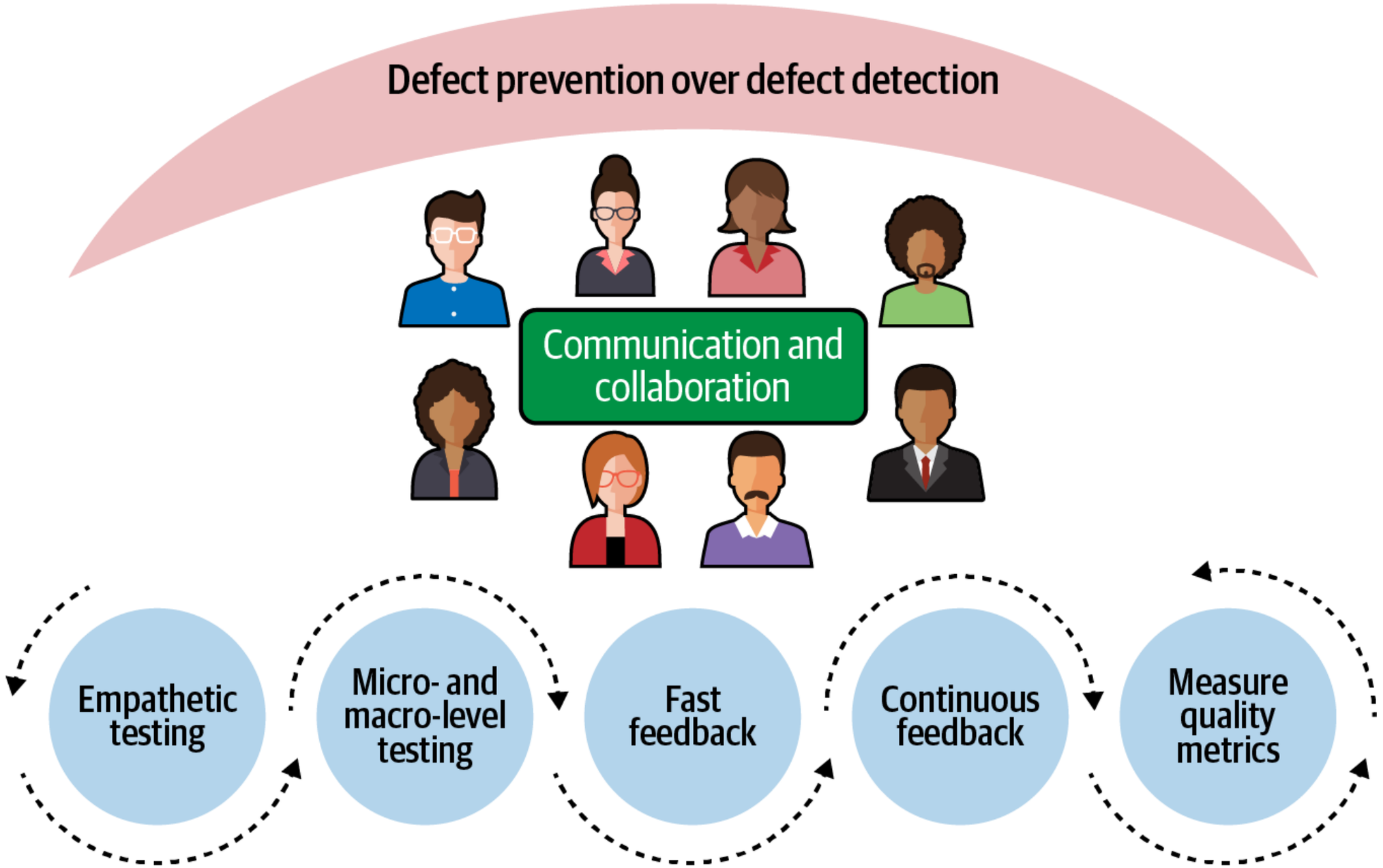
Principles of Testing



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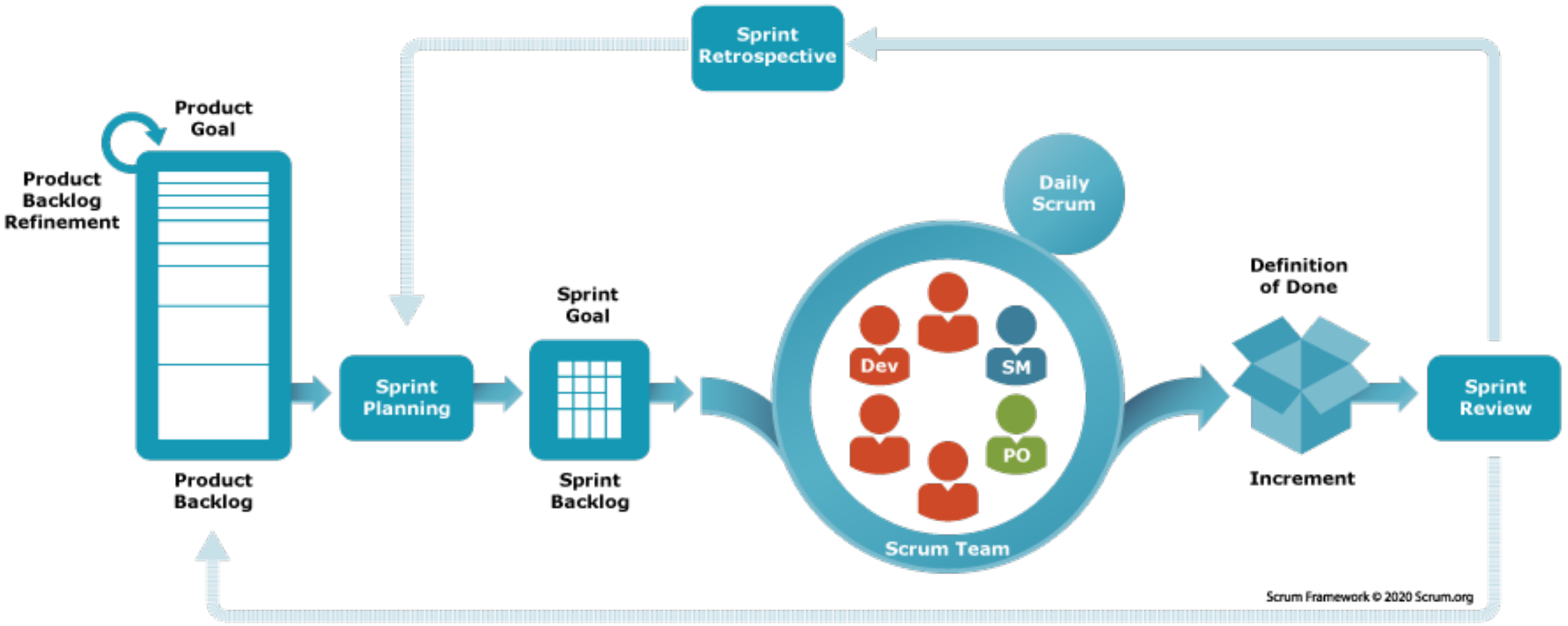
Scrum framework



https://www.scrum.org/resources/what-scrum-module

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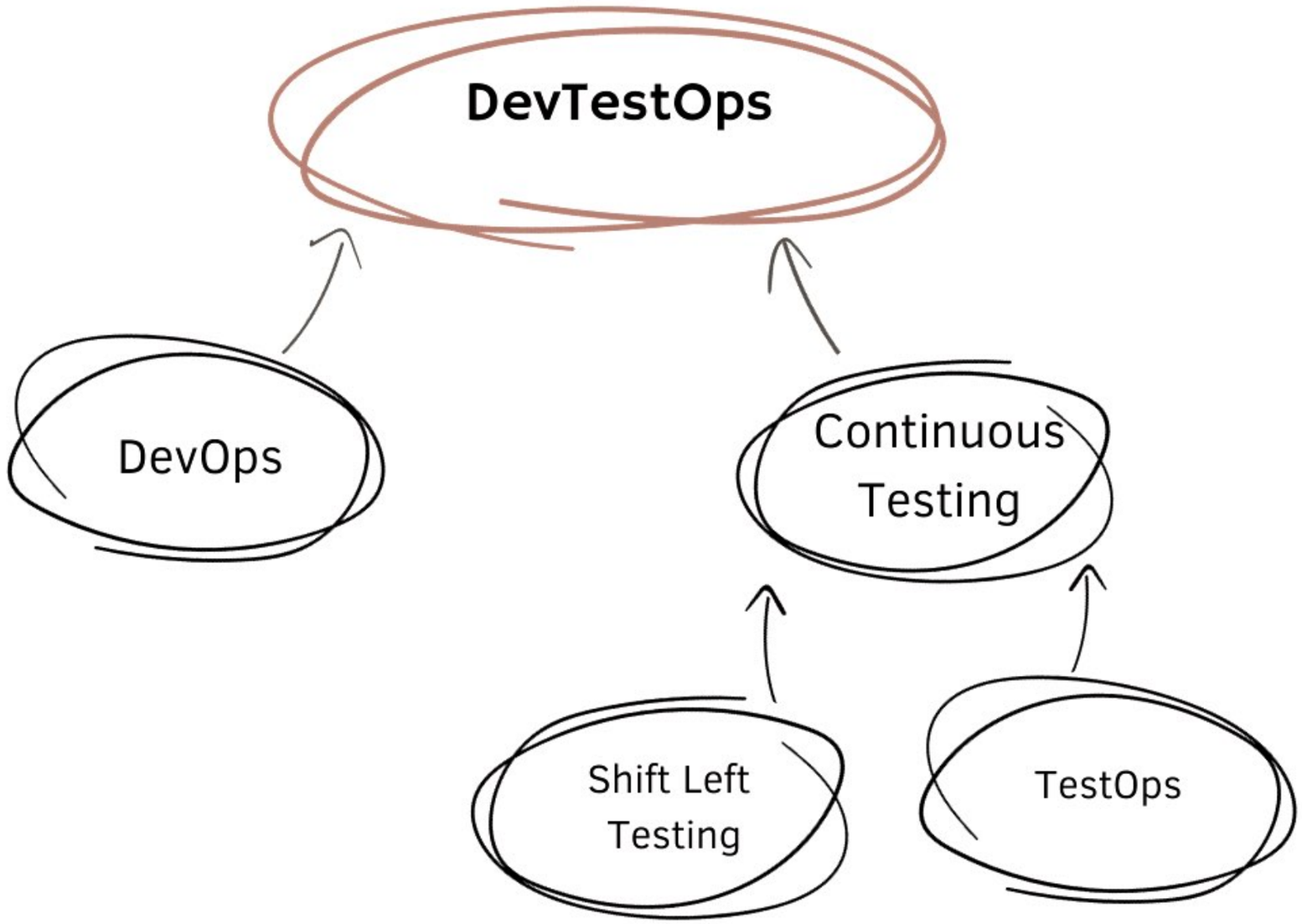
DevOps + Continuous Testing



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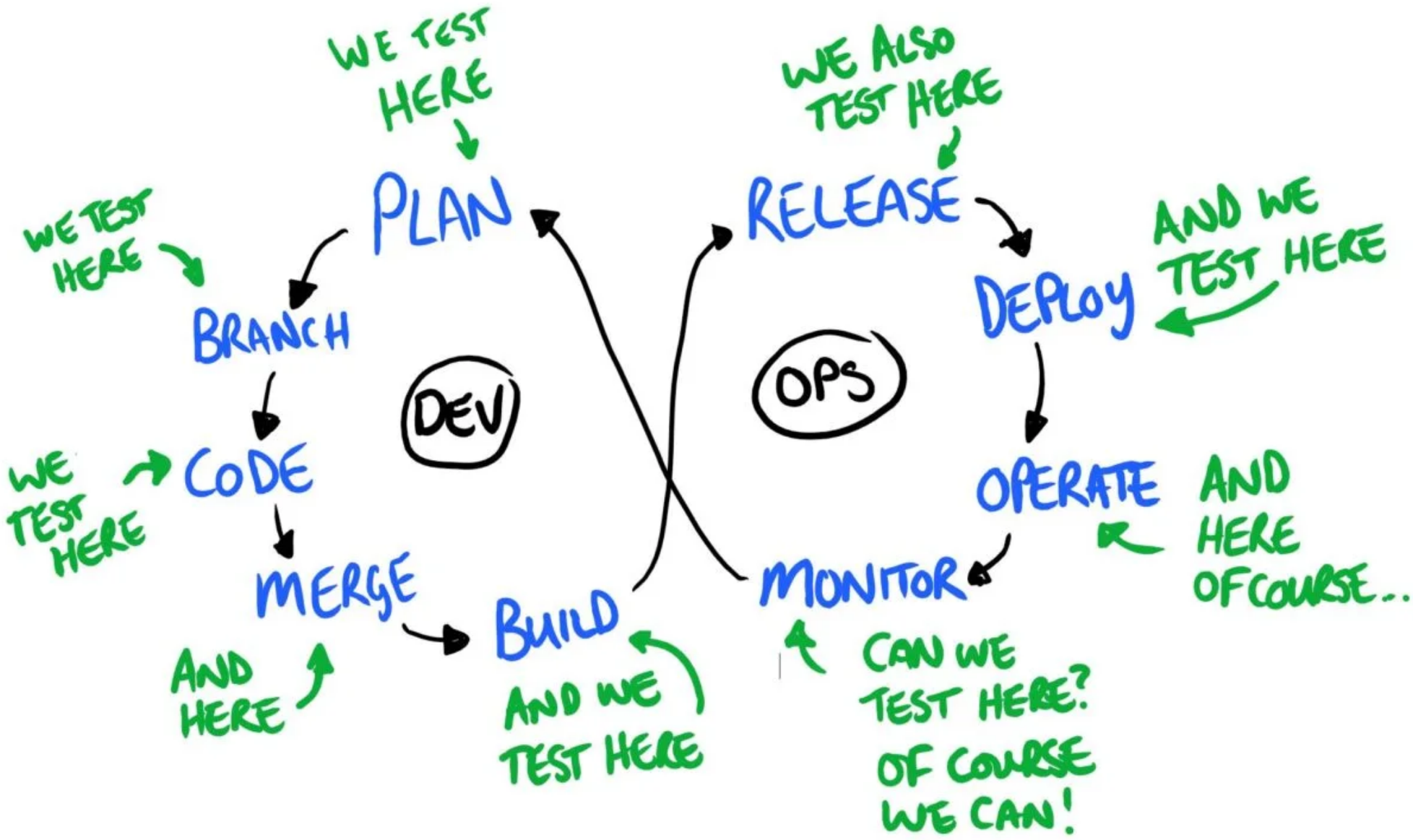
DevTestOps



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Manual testing

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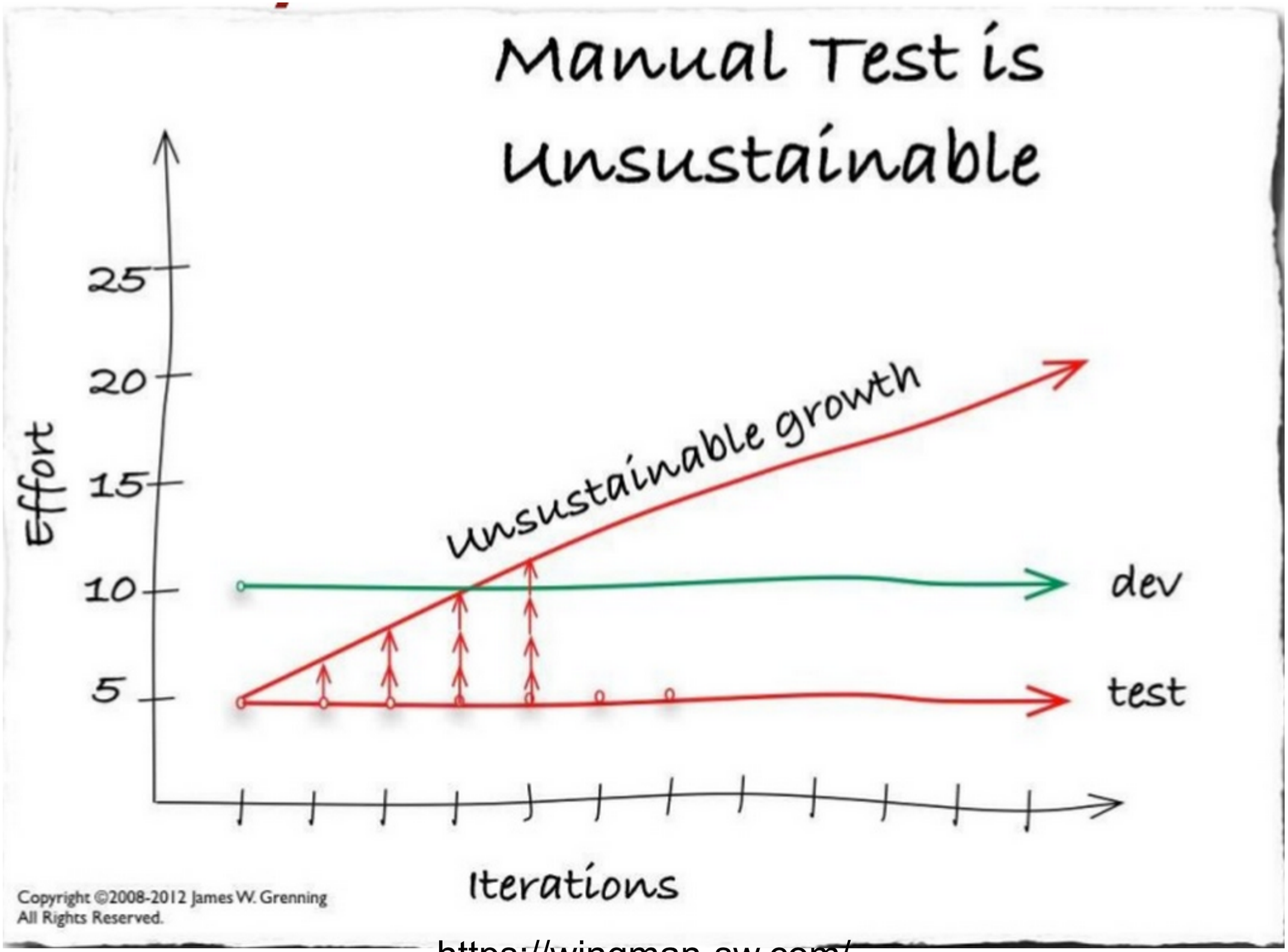

https://wingman-sw.com/

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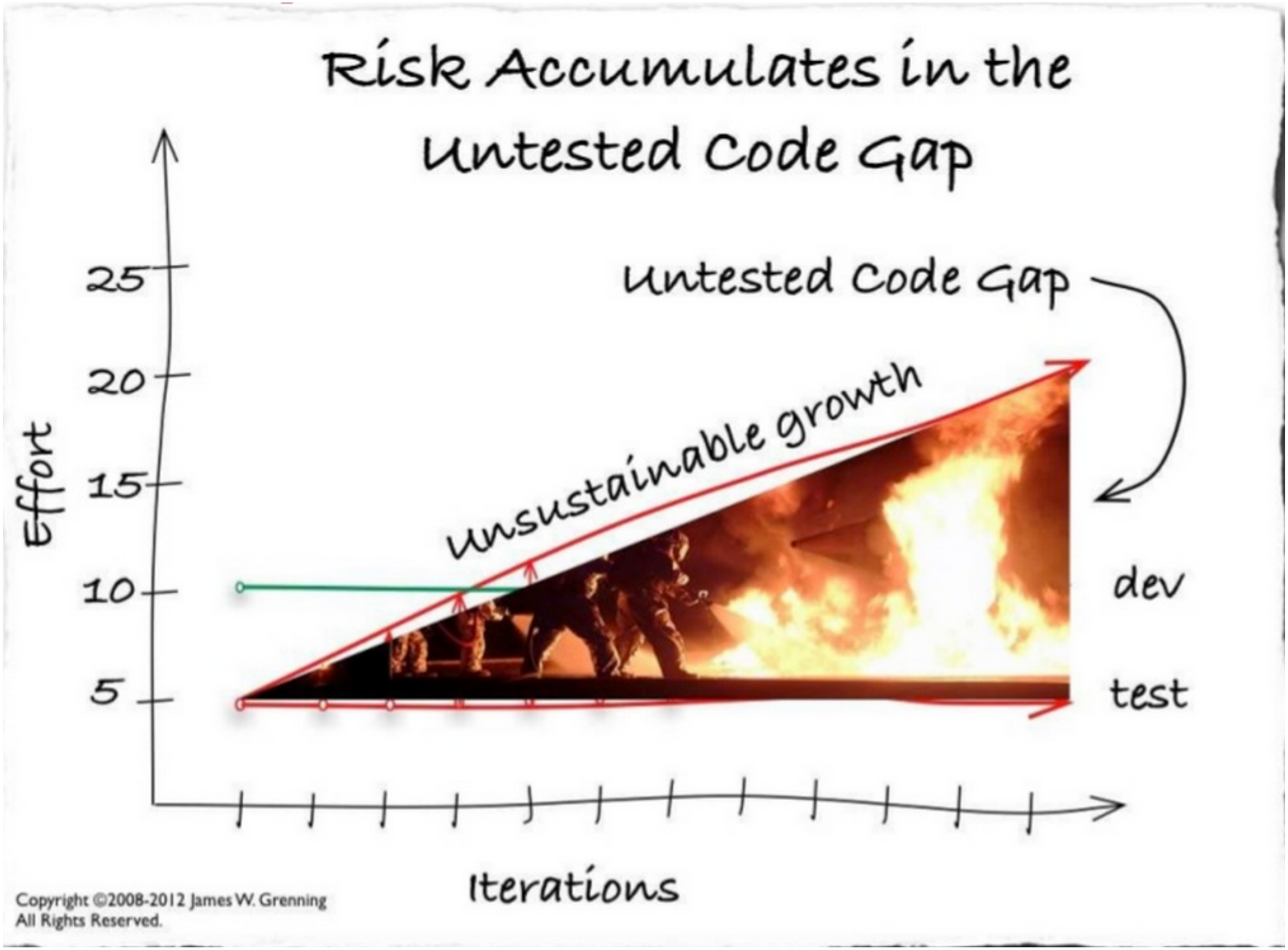

https://wingman-sw.com/

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Regression Testing

Runs after every change to ensure that the change introduces no unintended breaks

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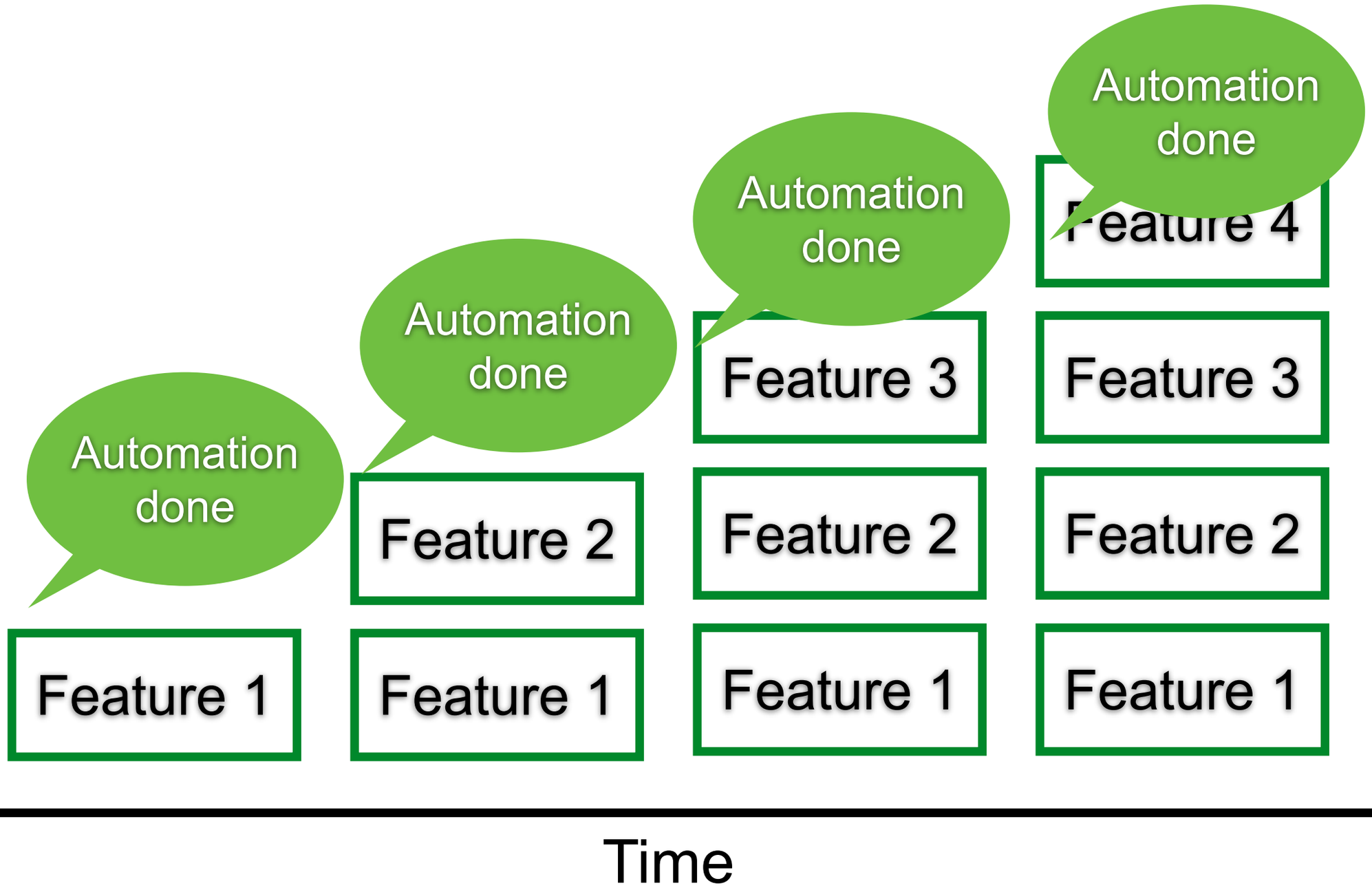
Iterative and incremental process

Done = coded and tested



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Testing pyramid

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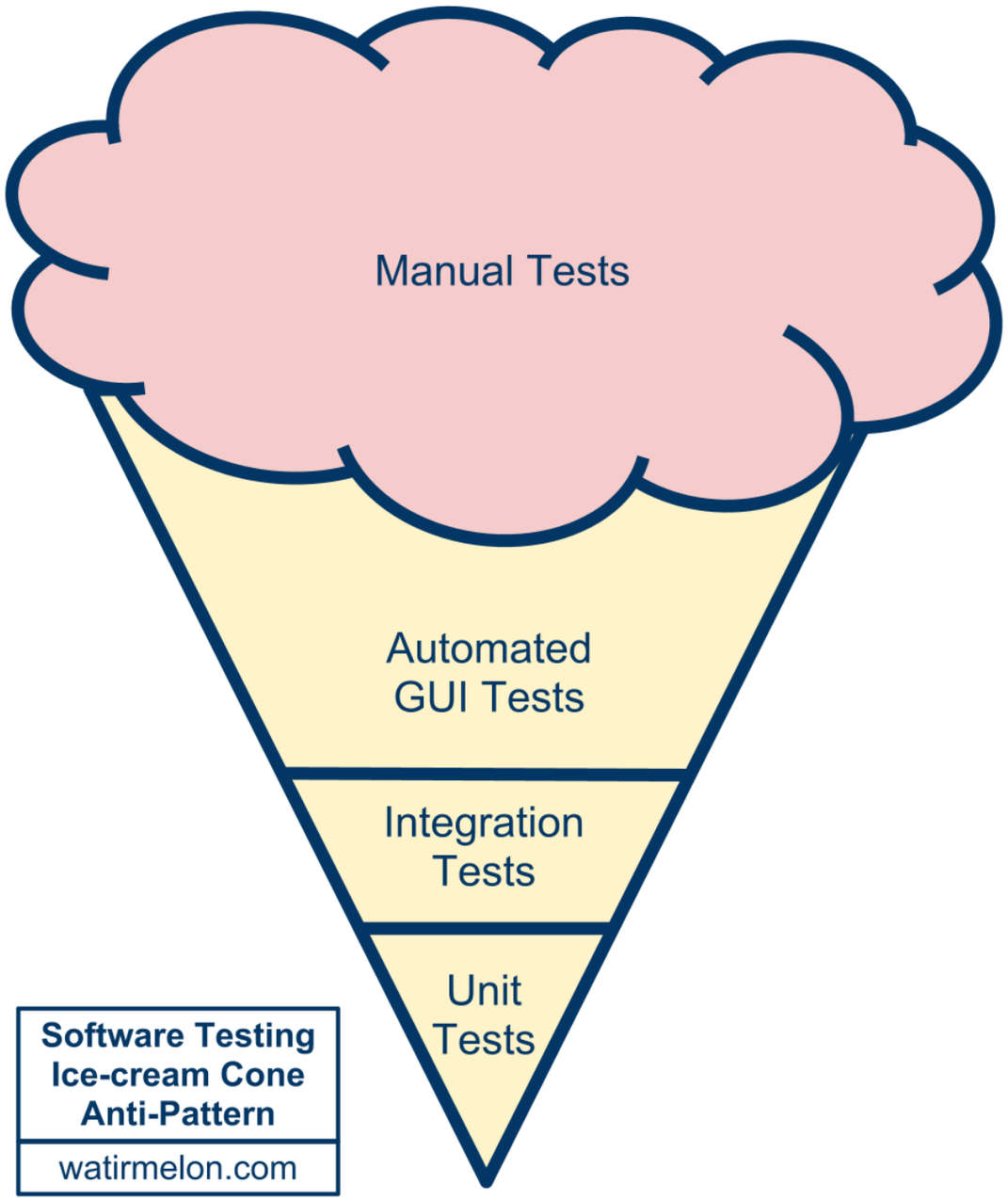
Ice-cream testing



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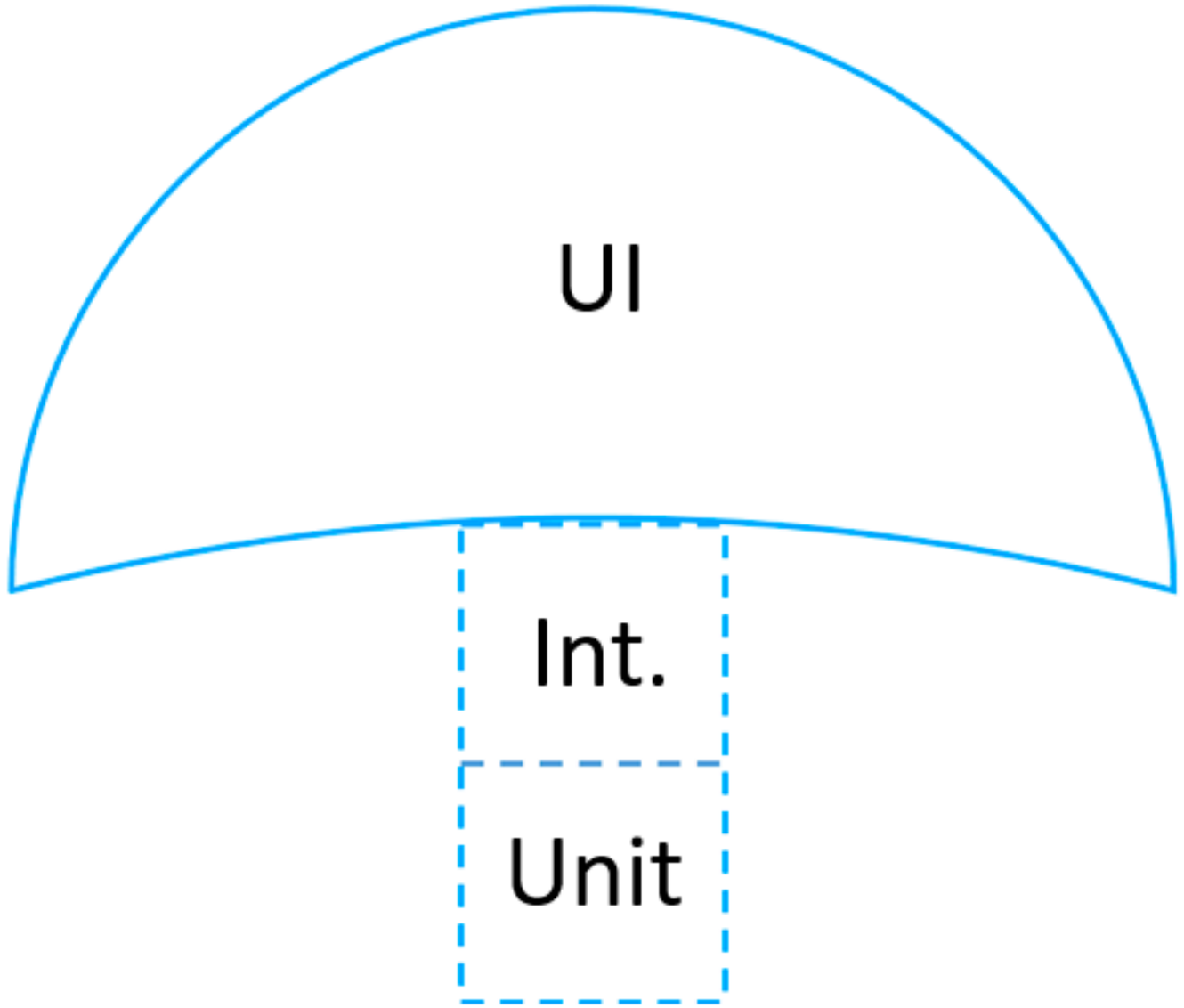
Mashroom testing



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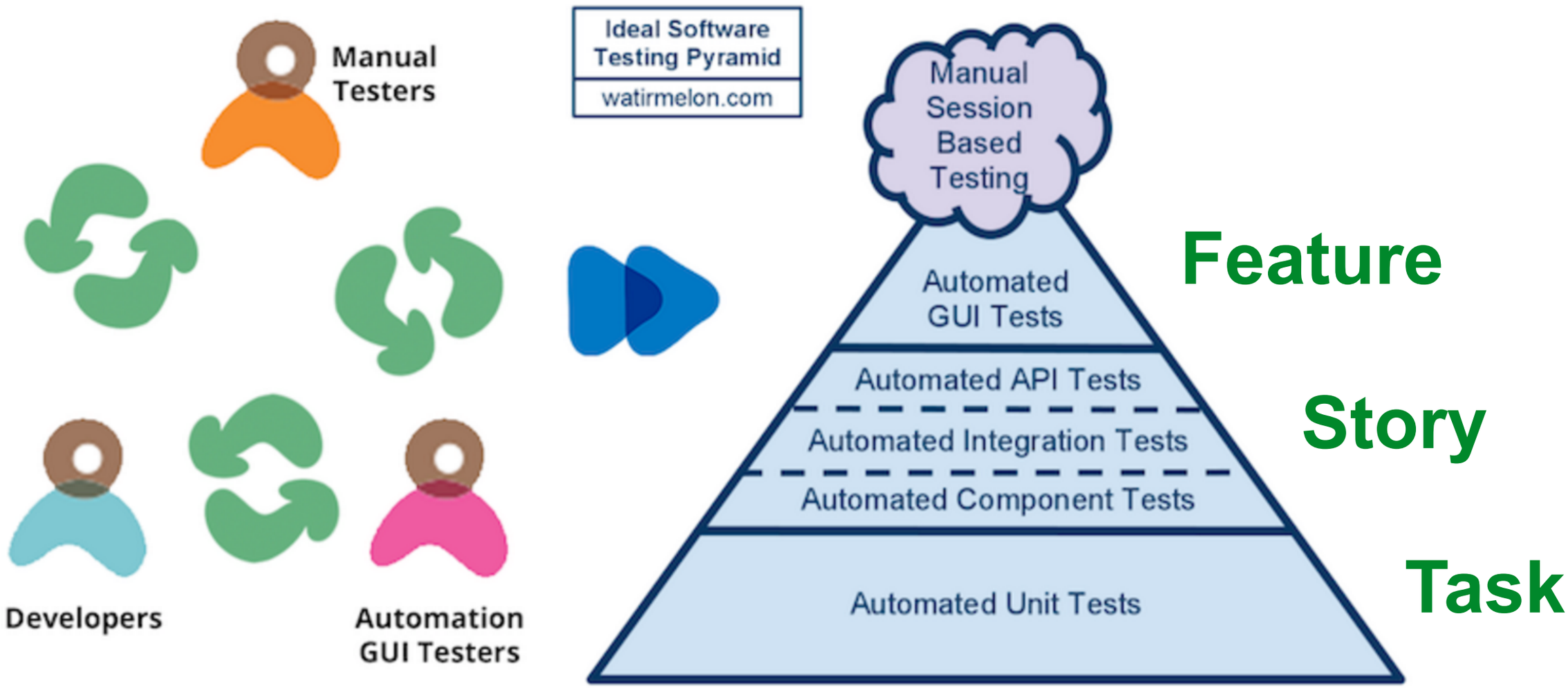
Testing Pyramid



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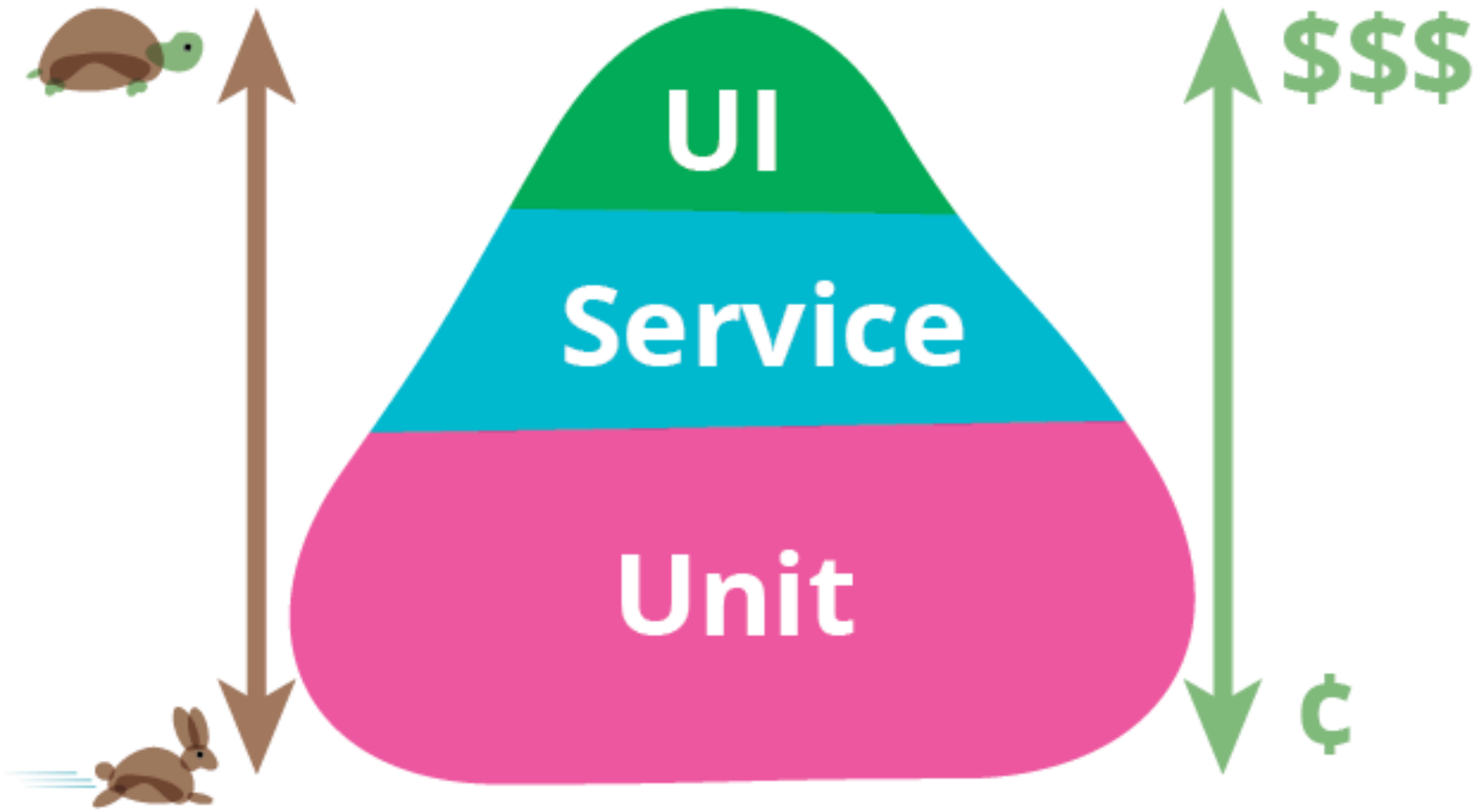
Testing Pyramid



https://martinfowler.com/bliki/TestPyramid.html

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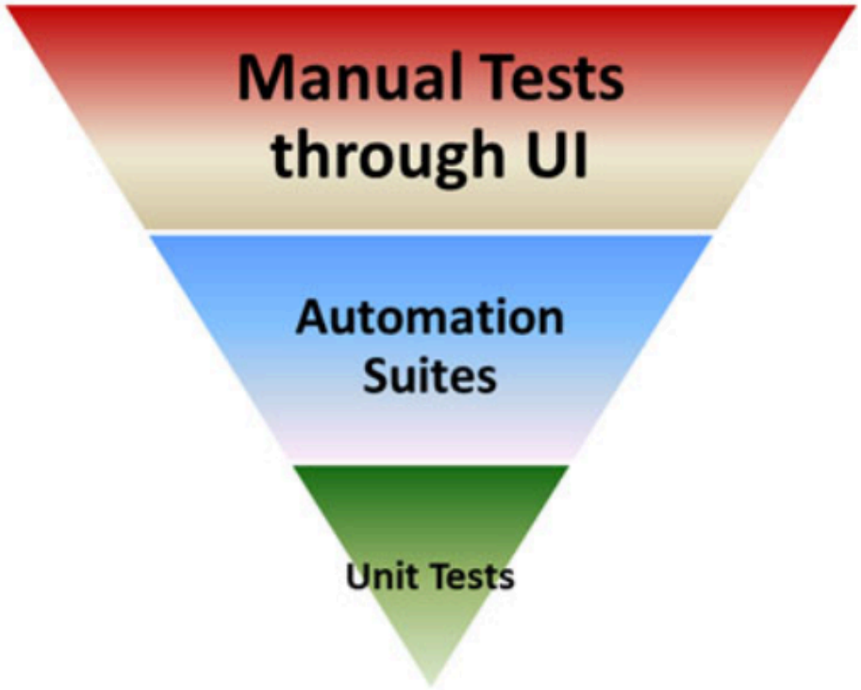
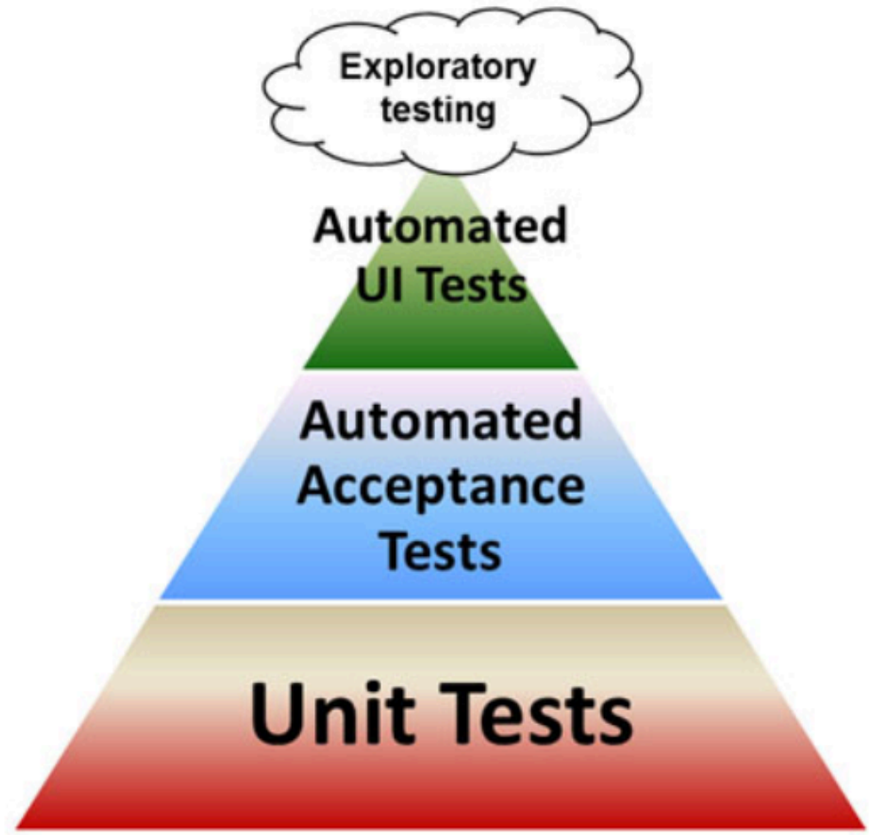
Find vs Prevent



Traditional
(find bugs)



Agile
(prevent bugs)

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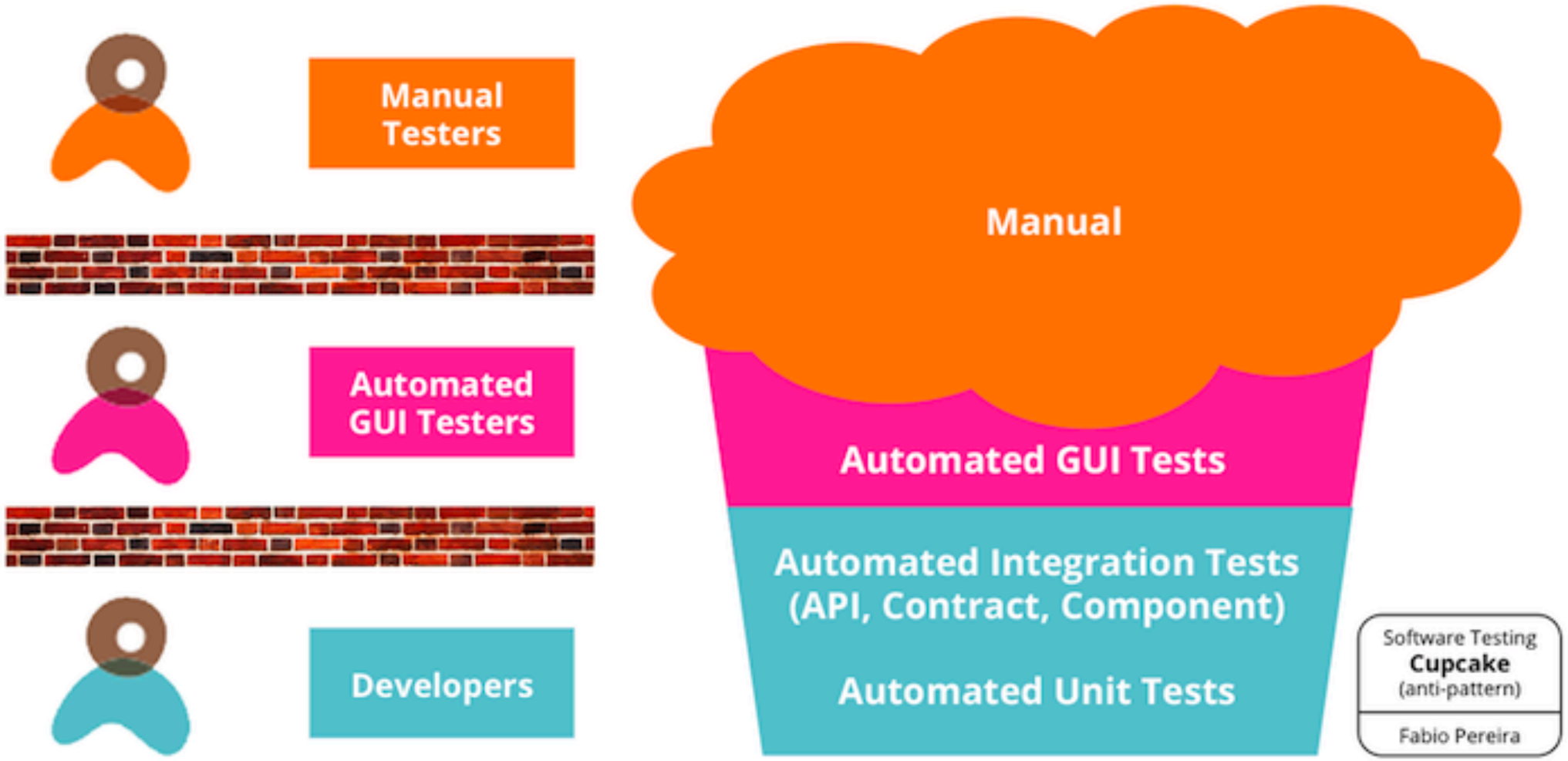
Cupcake testing !!



https://www.thoughtworks.com/insights/blog/introducing-software-testing-cupcake-anti-pattern

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Trophy testing

THE FOUR TYPES OF TESTS

End to End

A helper robot that behaves like a user to click around the app and verify that it functions correctly.

Sometimes called “functional testing” or e2e.

Integration

Verify that several units work together in harmony.

Unit

Verify that individual, isolated parts work as expected.

Static

Catch typos and type errors as you write the code.

https://kentcdodds.com/blog/the-testing-trophy-and-testing-classifications

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Understand
What and Why to test ?

Discussion is very important

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Remember !!

Test pyramid is a tool
To talk about automation tasks
How to prioritize and help to do automation ?
Way to make **visible to the whole team**

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Where to start ?

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What are the
biggest obstacles ?

Time/Tools/System/People

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What should be careful ?

Automating end-to-end tests

User Interface are slow

Working with database

Working with external system

Automated every paths

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Thinking about automation

Incremental testing
Easy to test
Testable
Fast customer feedback

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Know your System Architecture

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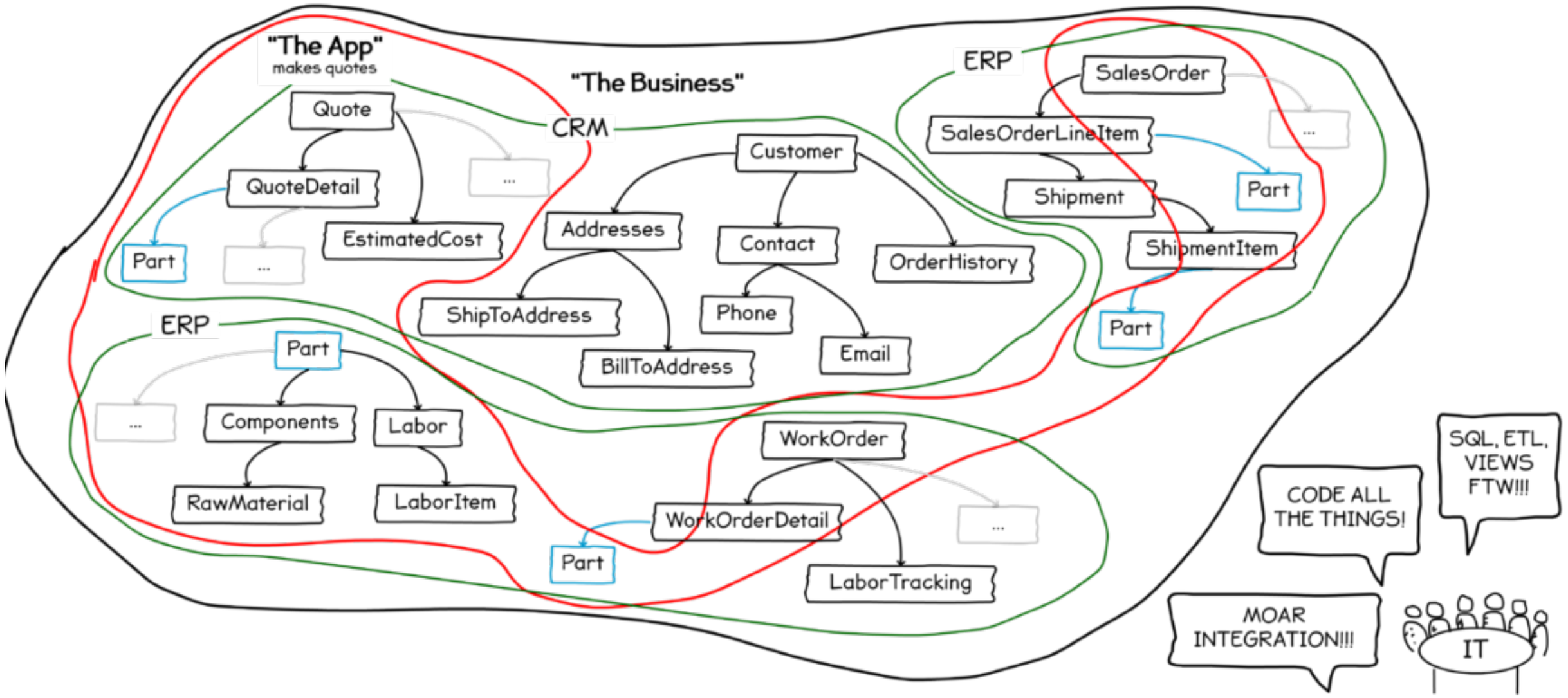
System impacts !!

Know your systems



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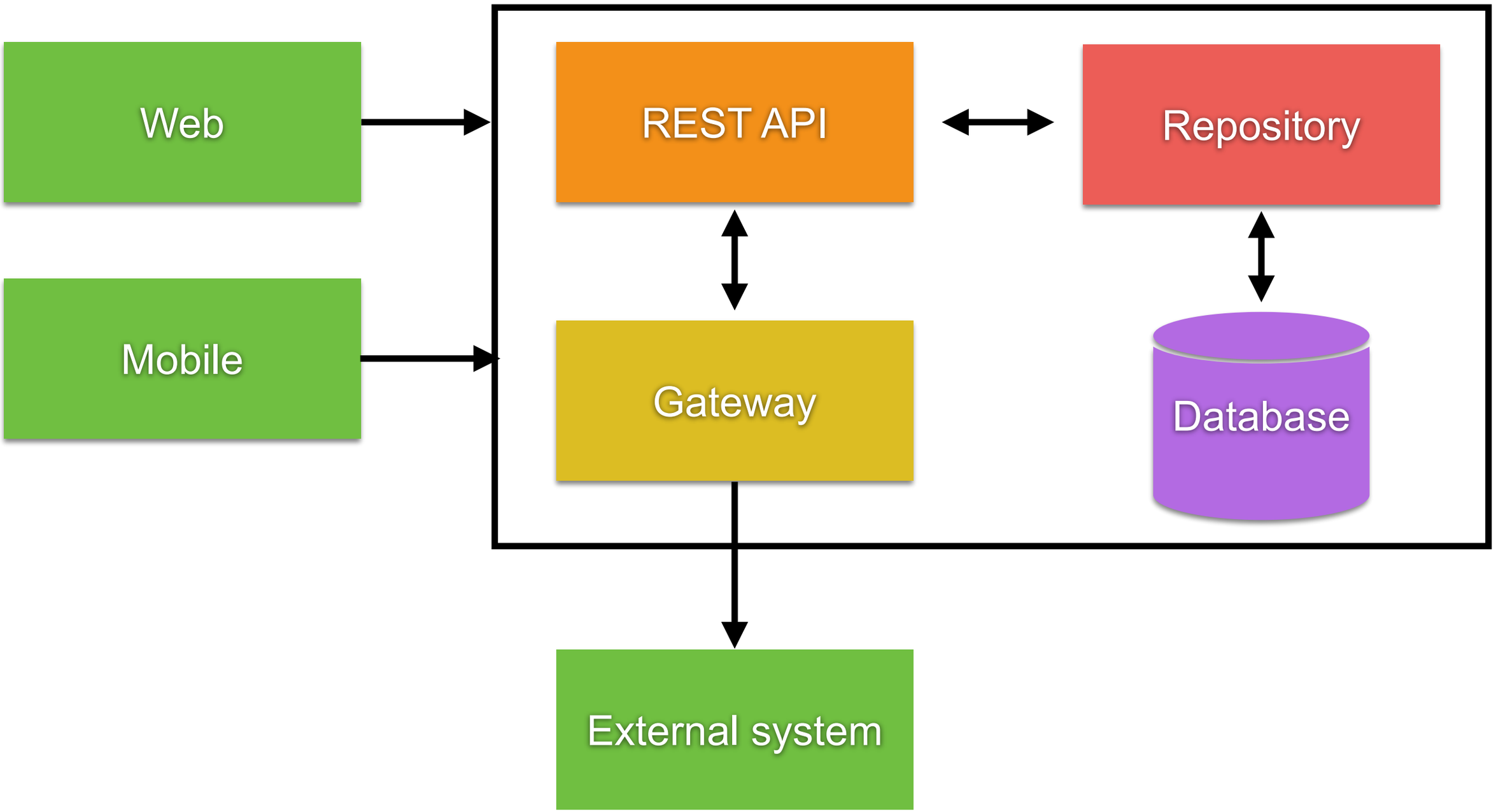
Simple Architecture



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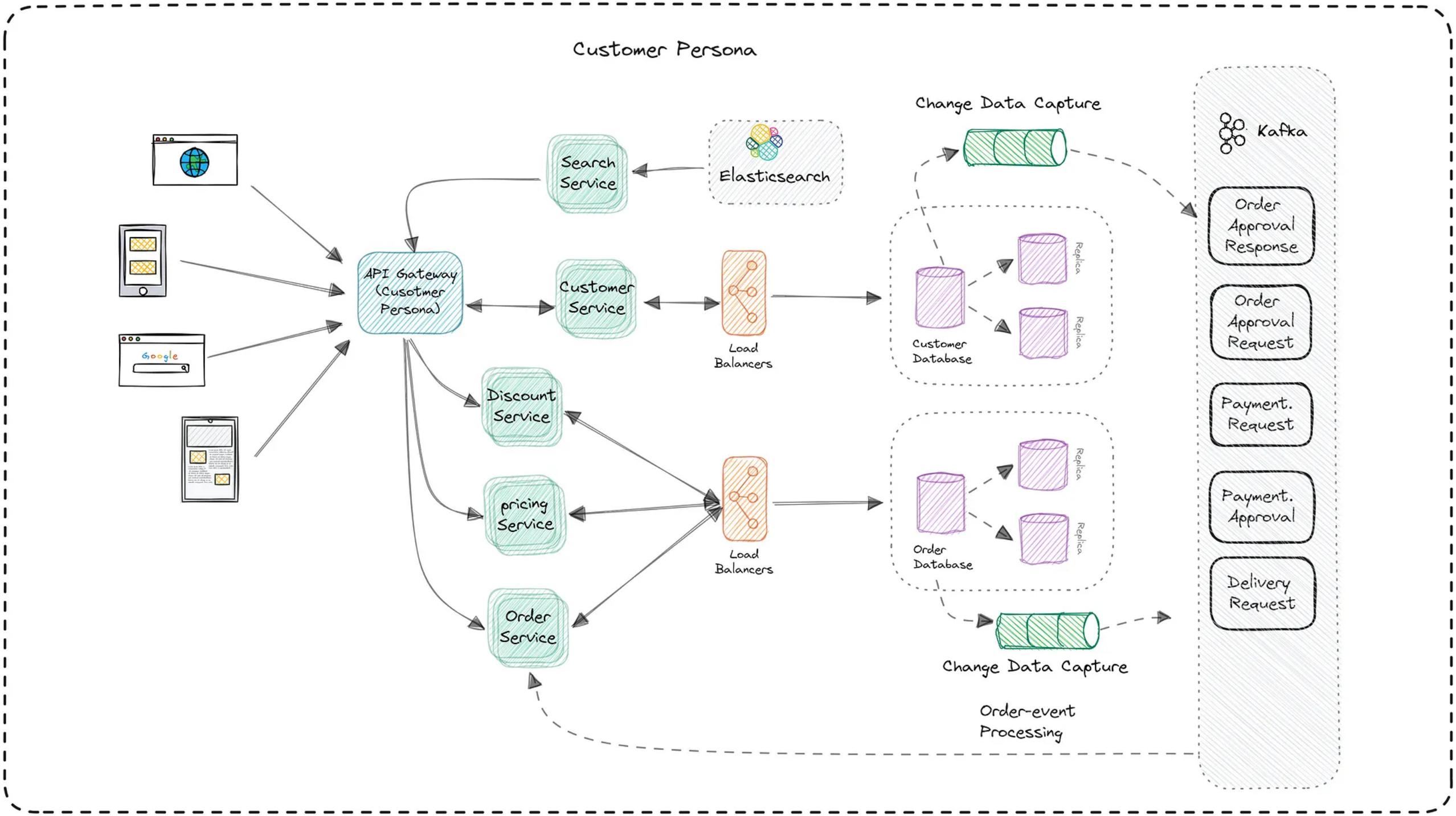
Food Delivery (Customer)



https://medium.com/@systemdesignbychk/system-design-a-deep-dive-into-the-food-ordering-system-f84ae6375ce3

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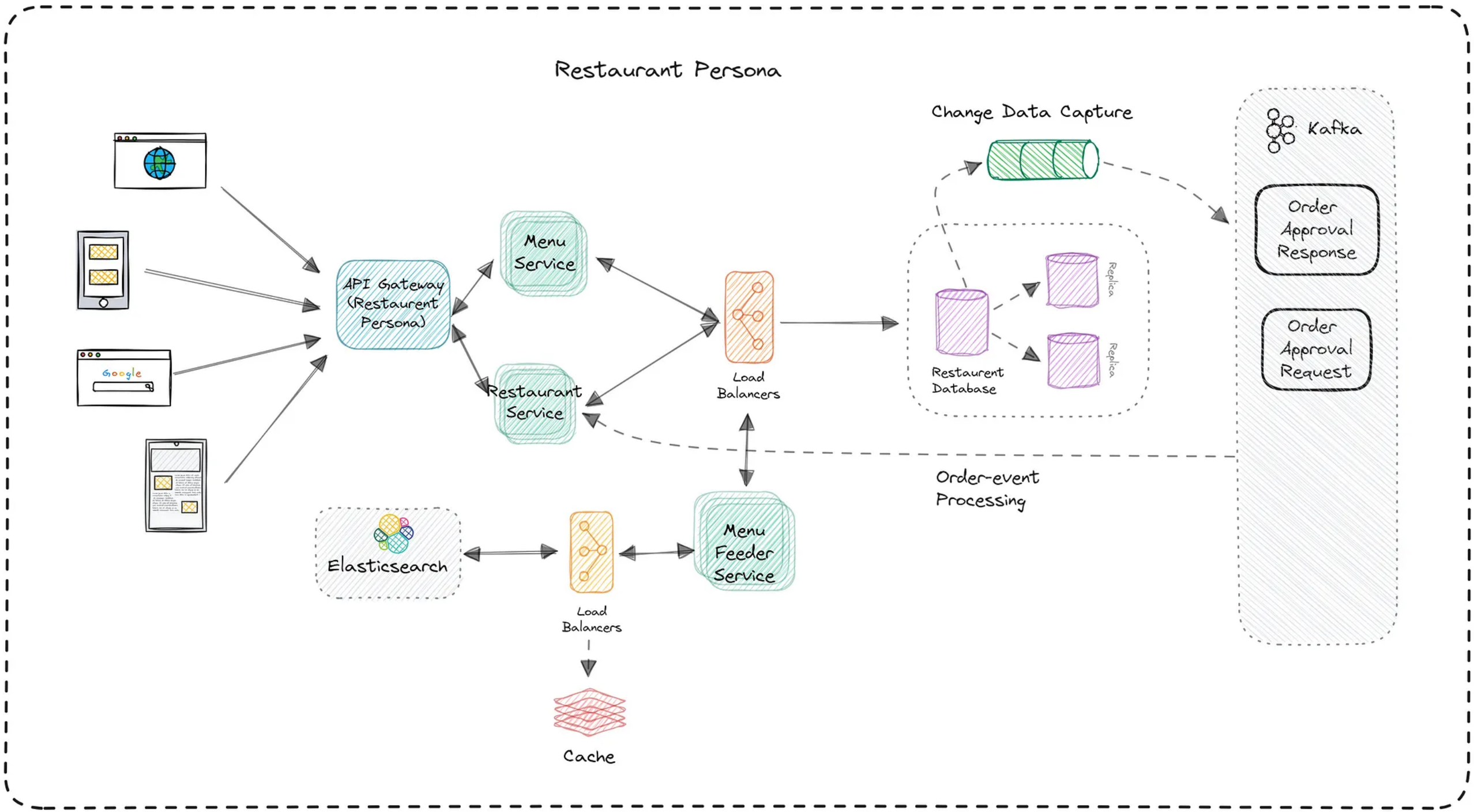
Food Delivery (Restaurant)



https://medium.com/@systemdesignbychk/system-design-a-deep-dive-into-the-food-ordering-system-f84ae6375ce3

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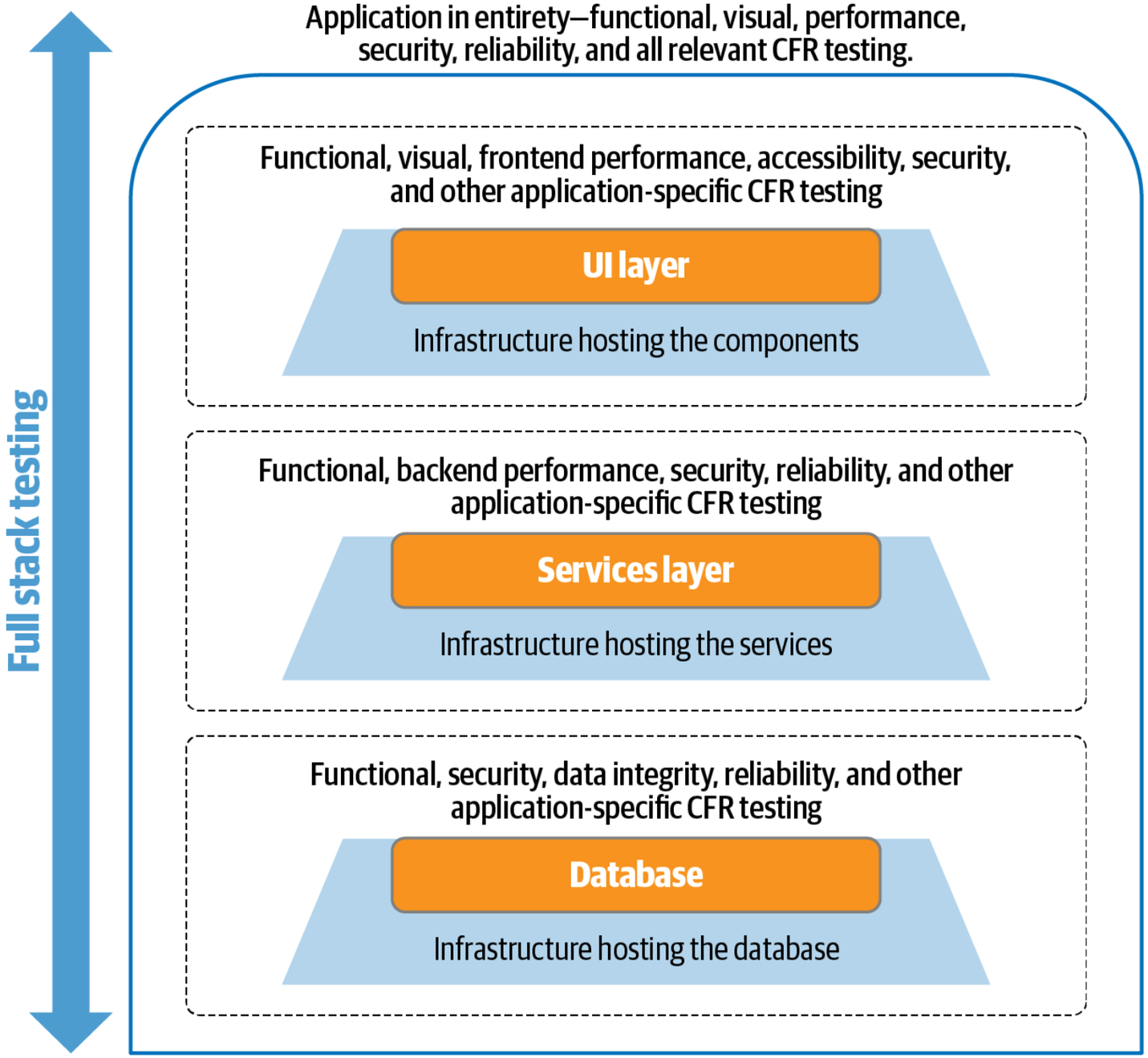
Full Stack Testing



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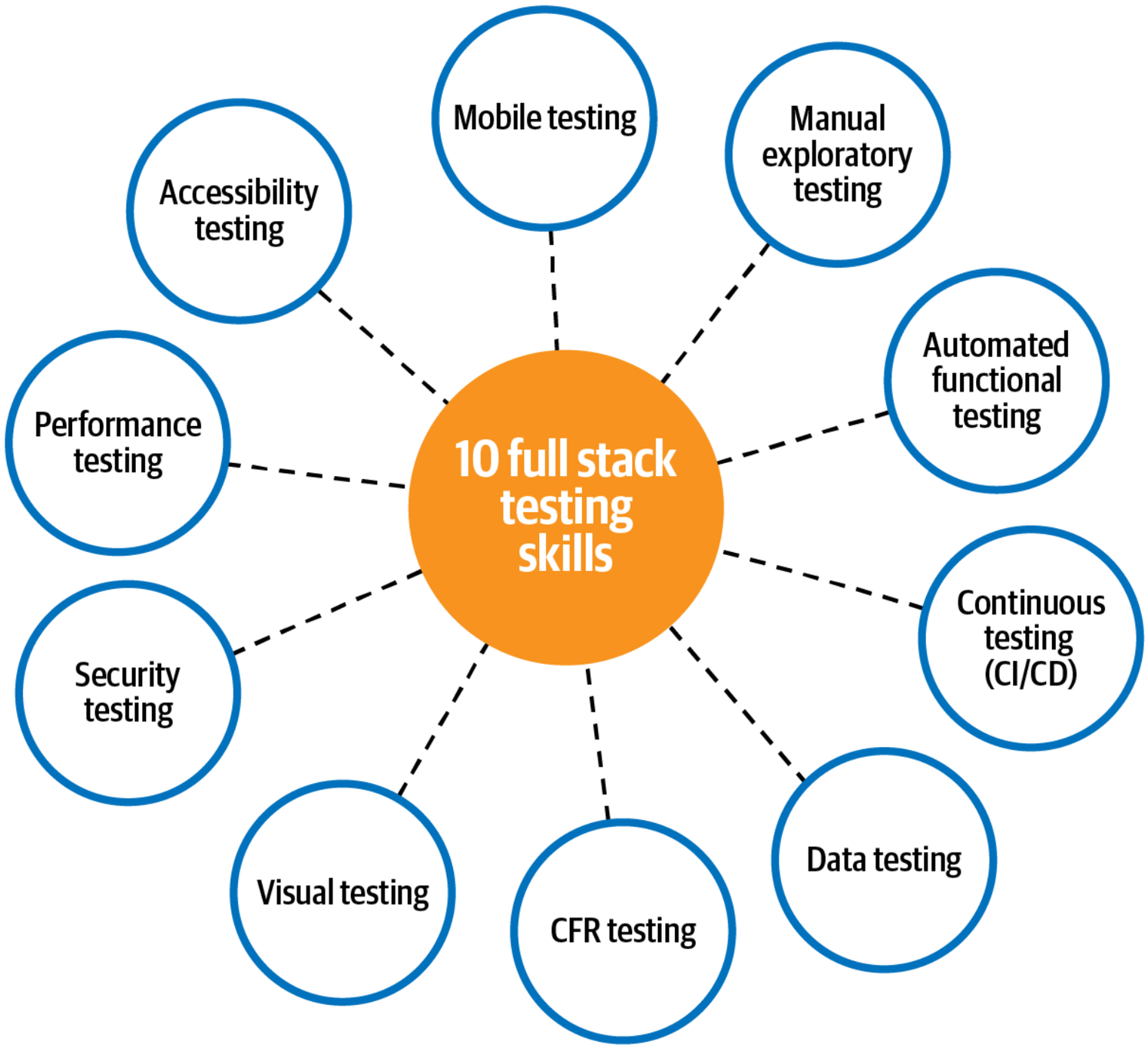
Full Stack Testing Skills



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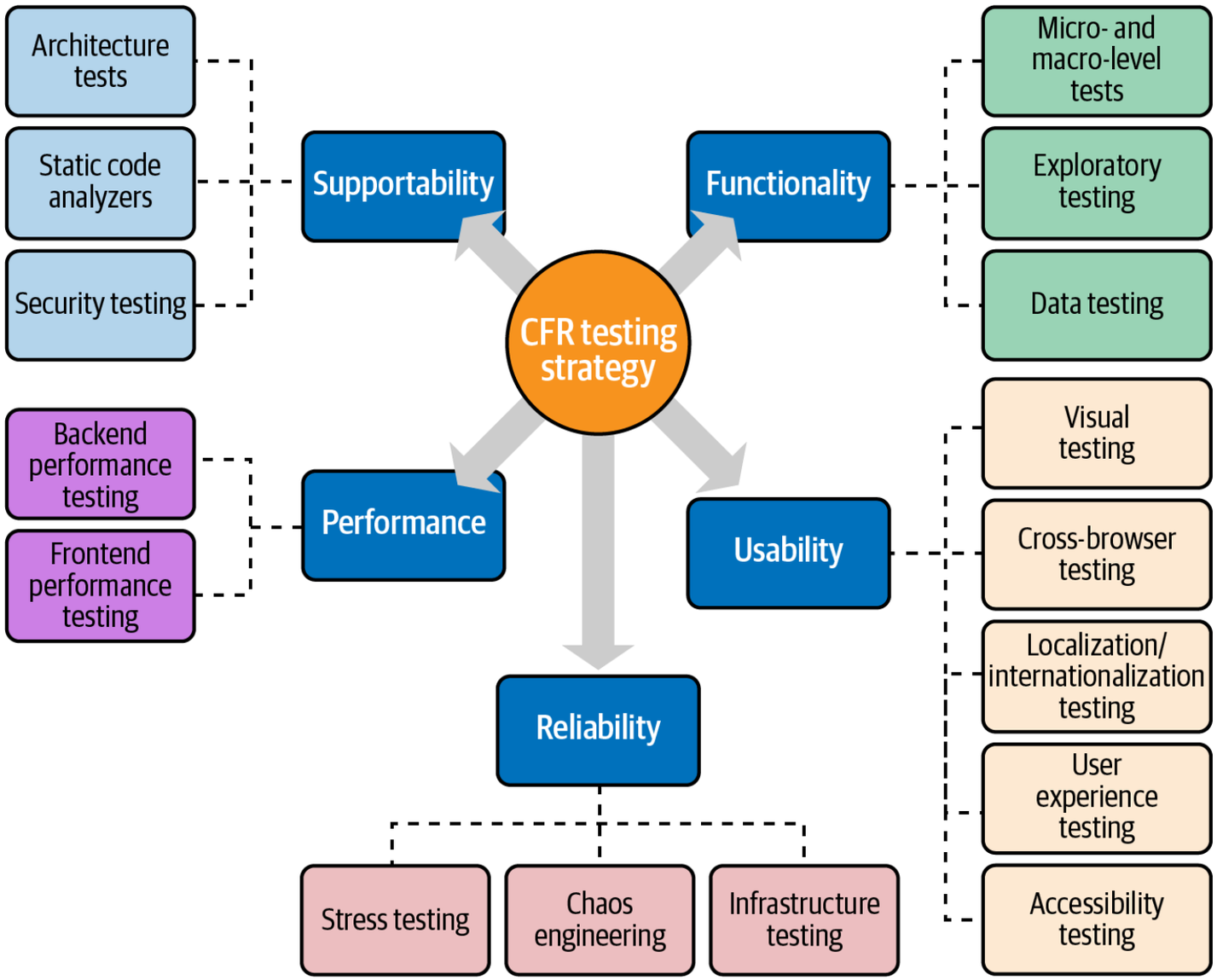
CFR testing

Cross Functional Requirement



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Test Strategies

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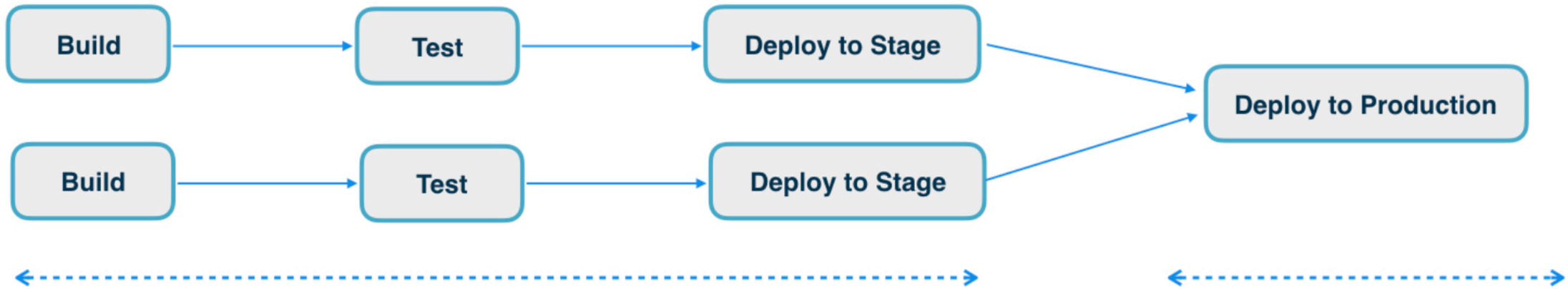
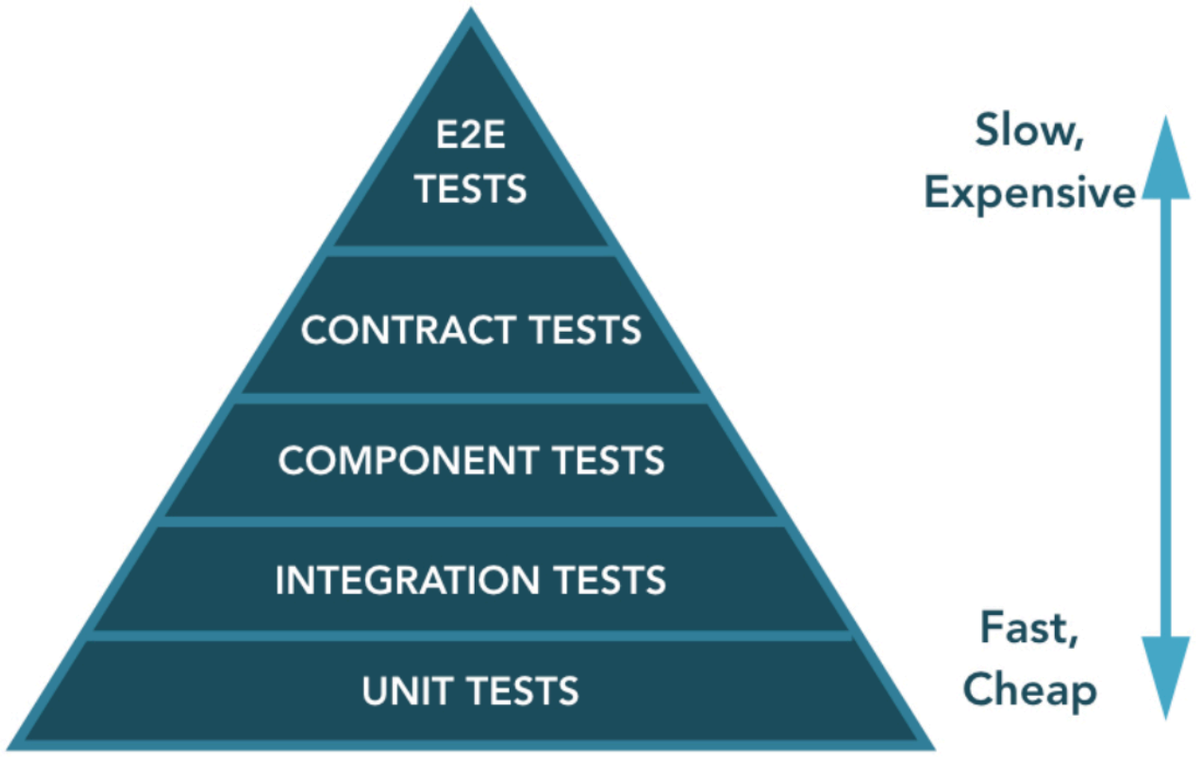
Test strategy





Monitoring
Distributed Tracing
Fault-injection Testing

Canary Deployments
Blue-Green Deployments
A/B Testing

https://martinfowler.com/articles/microservice-testing/

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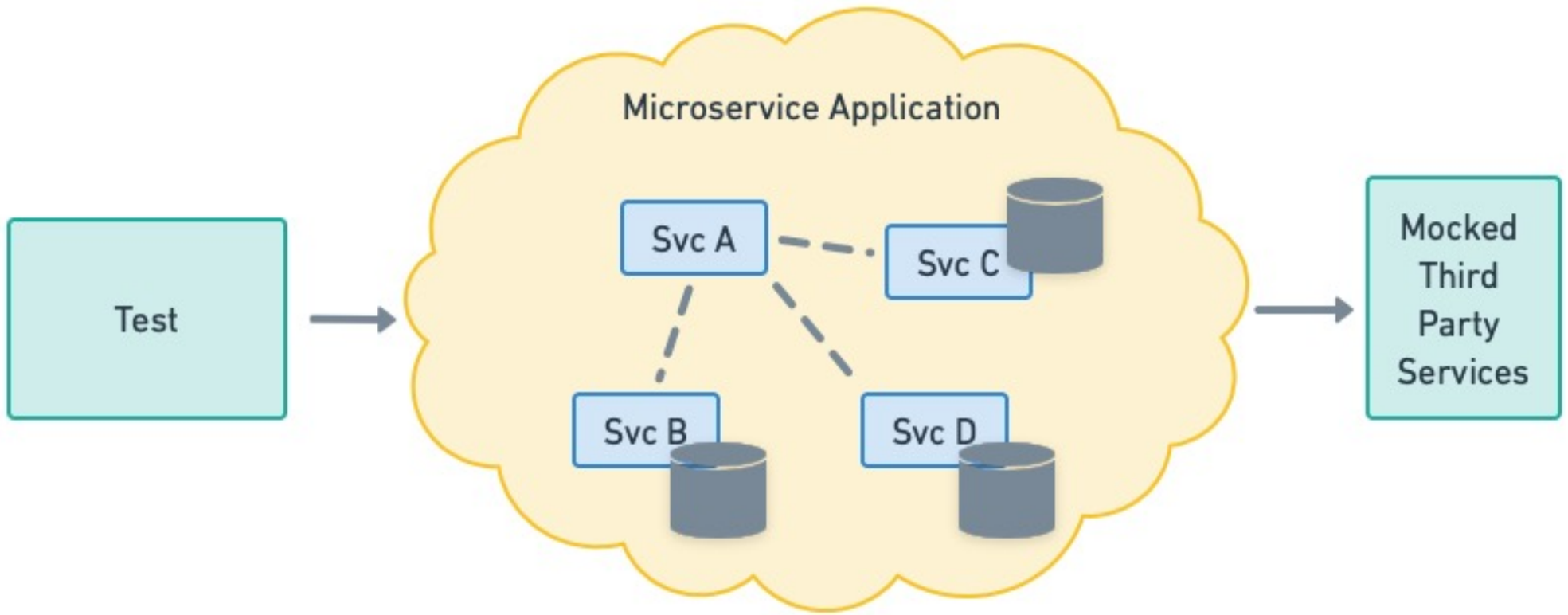
End-to-End testing



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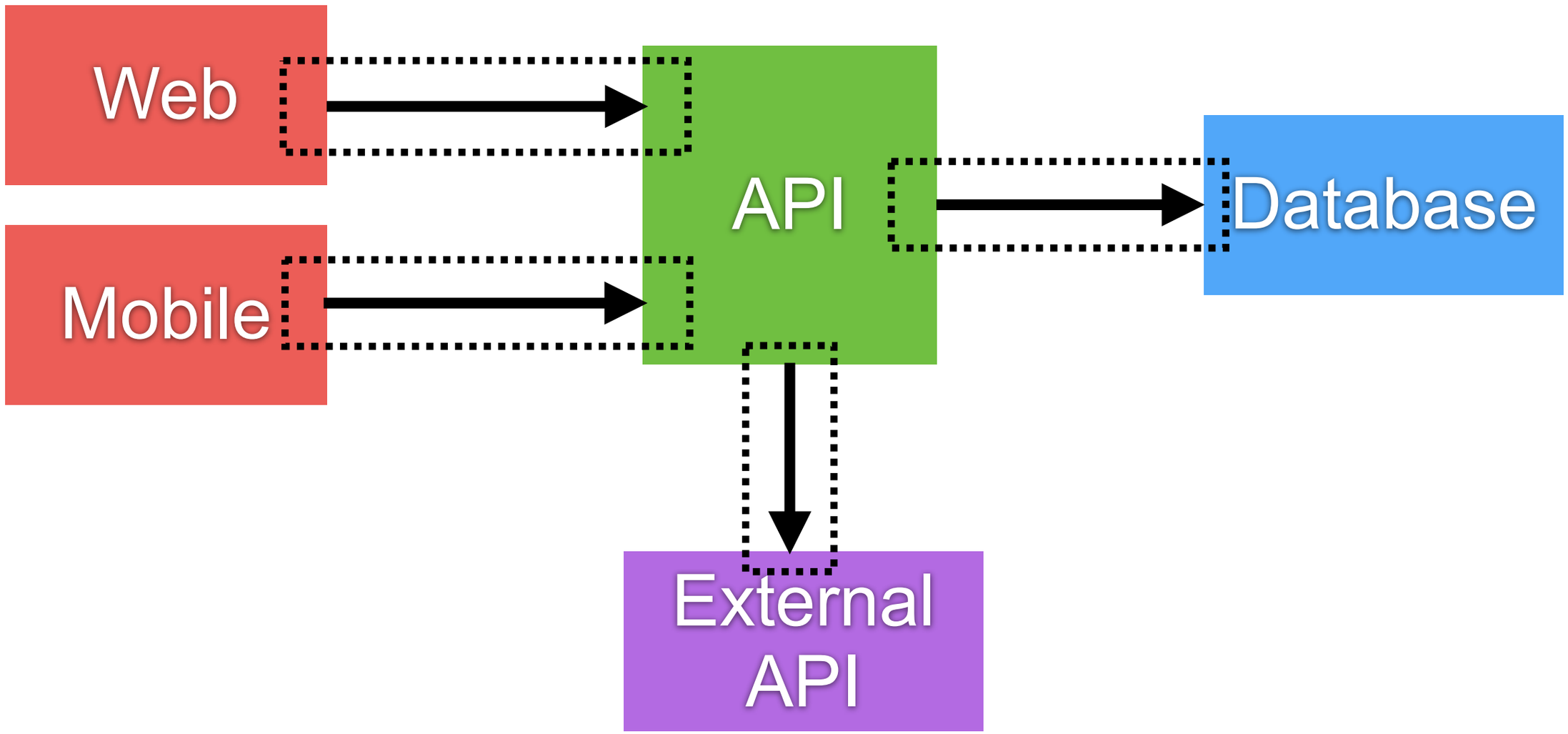
Integration testing



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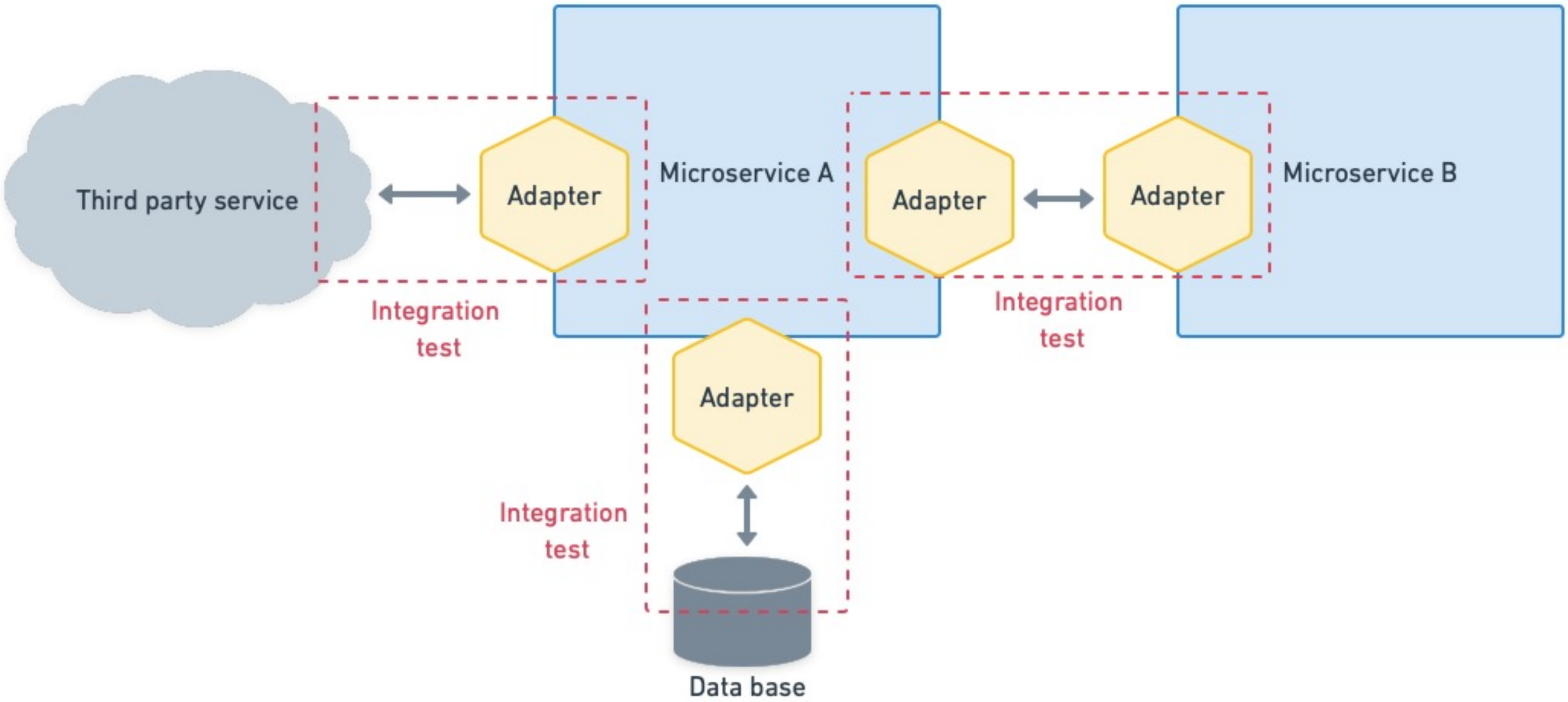
Integration testing



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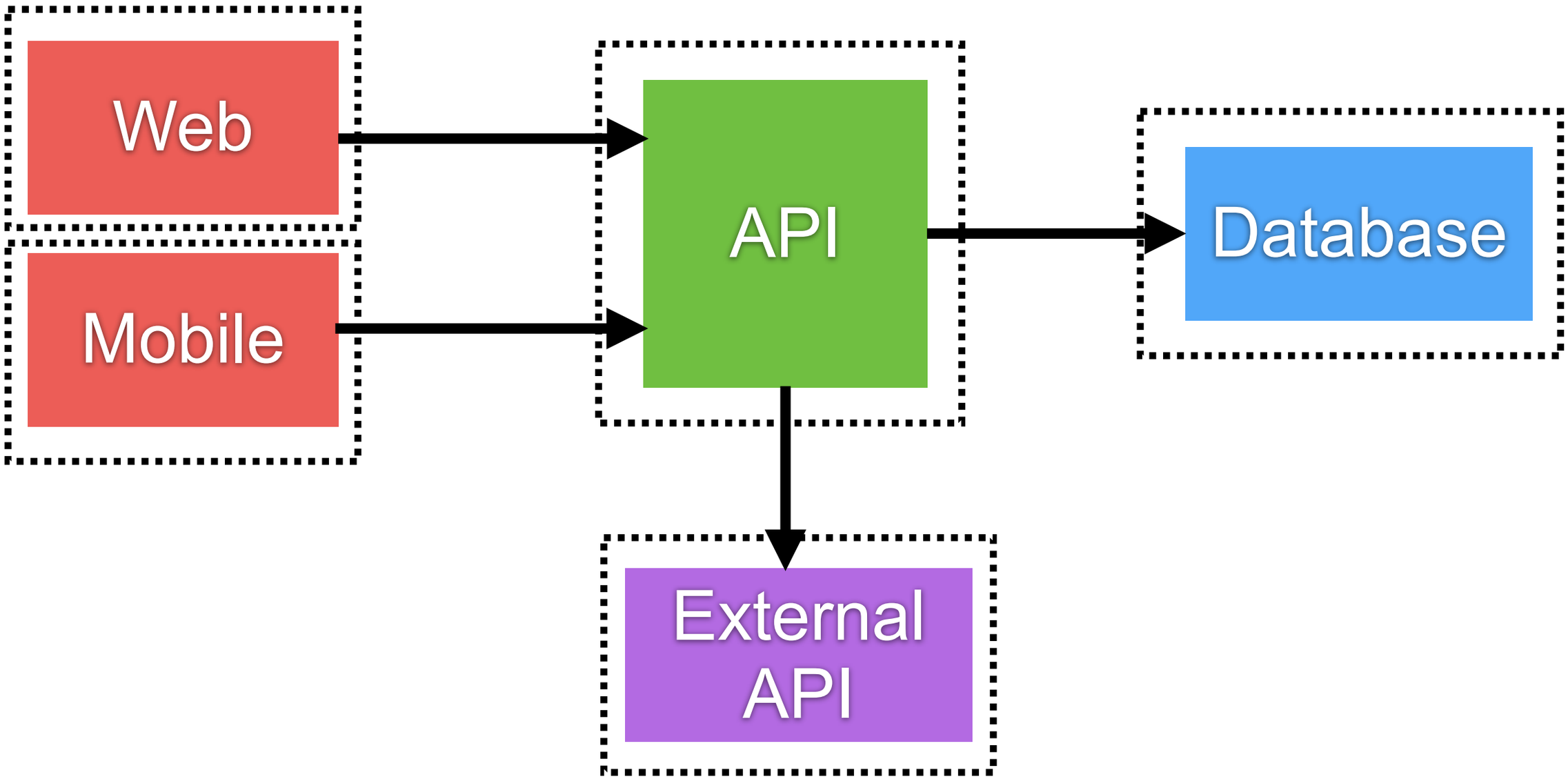
Service component testing



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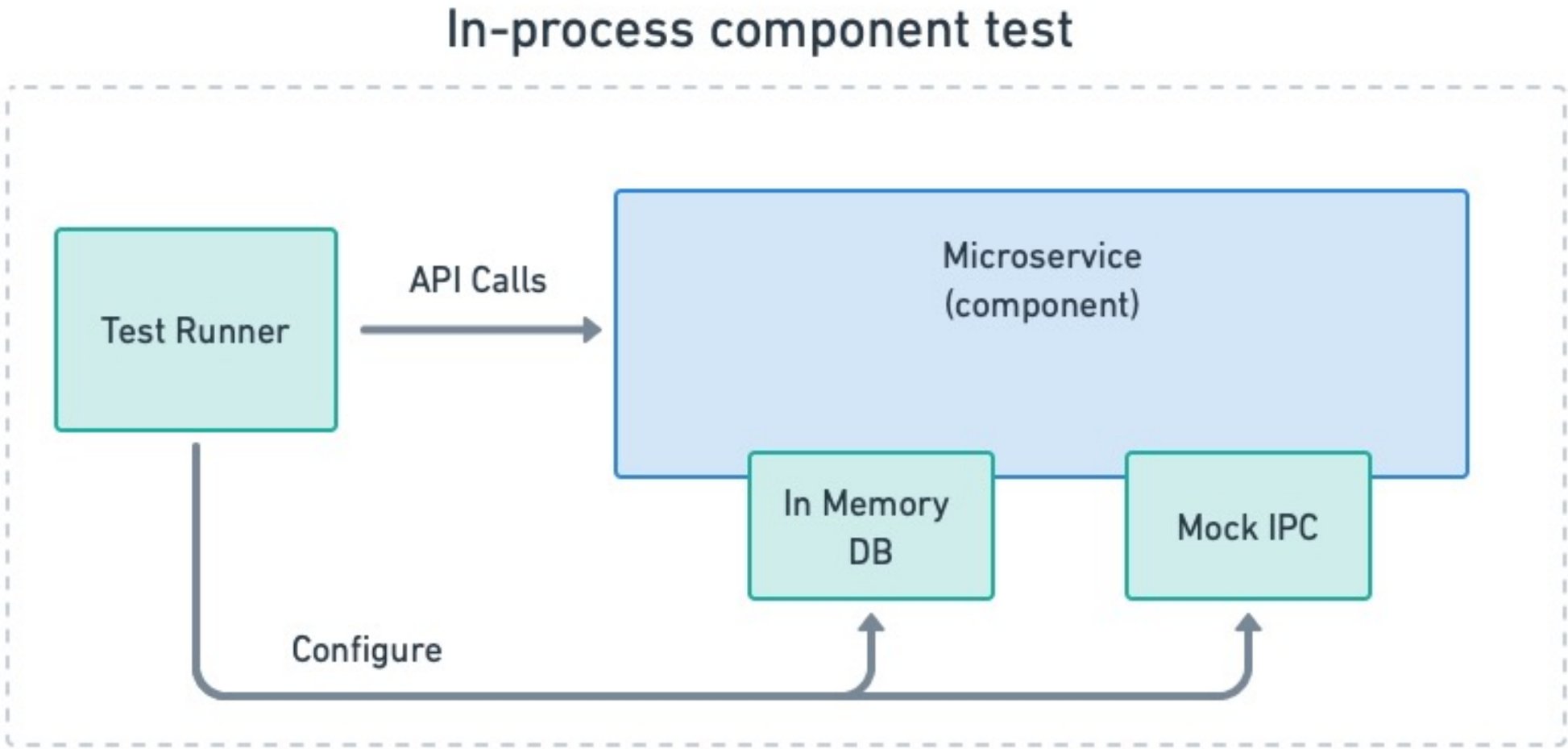
Service component testing



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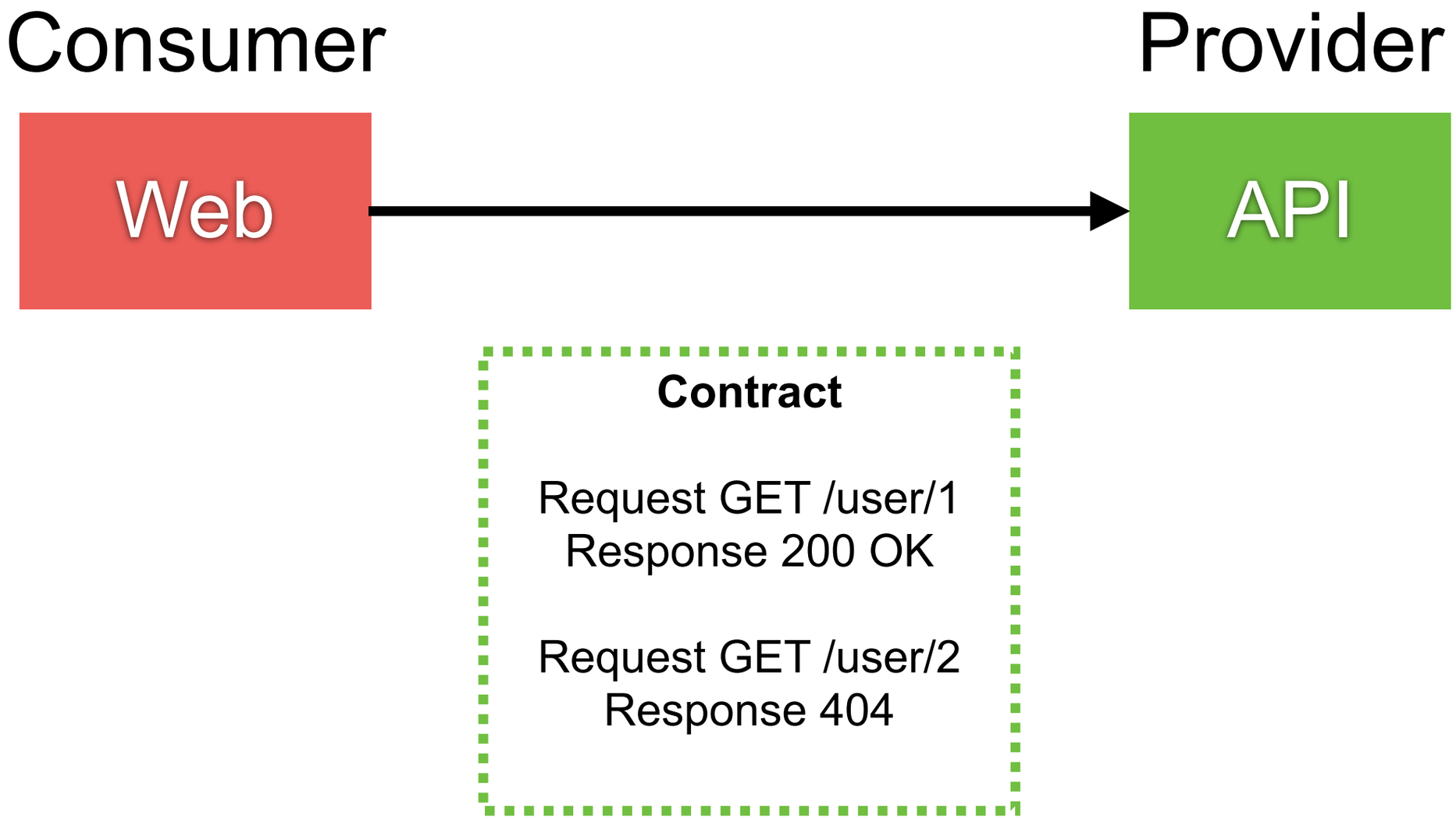
Contract testing



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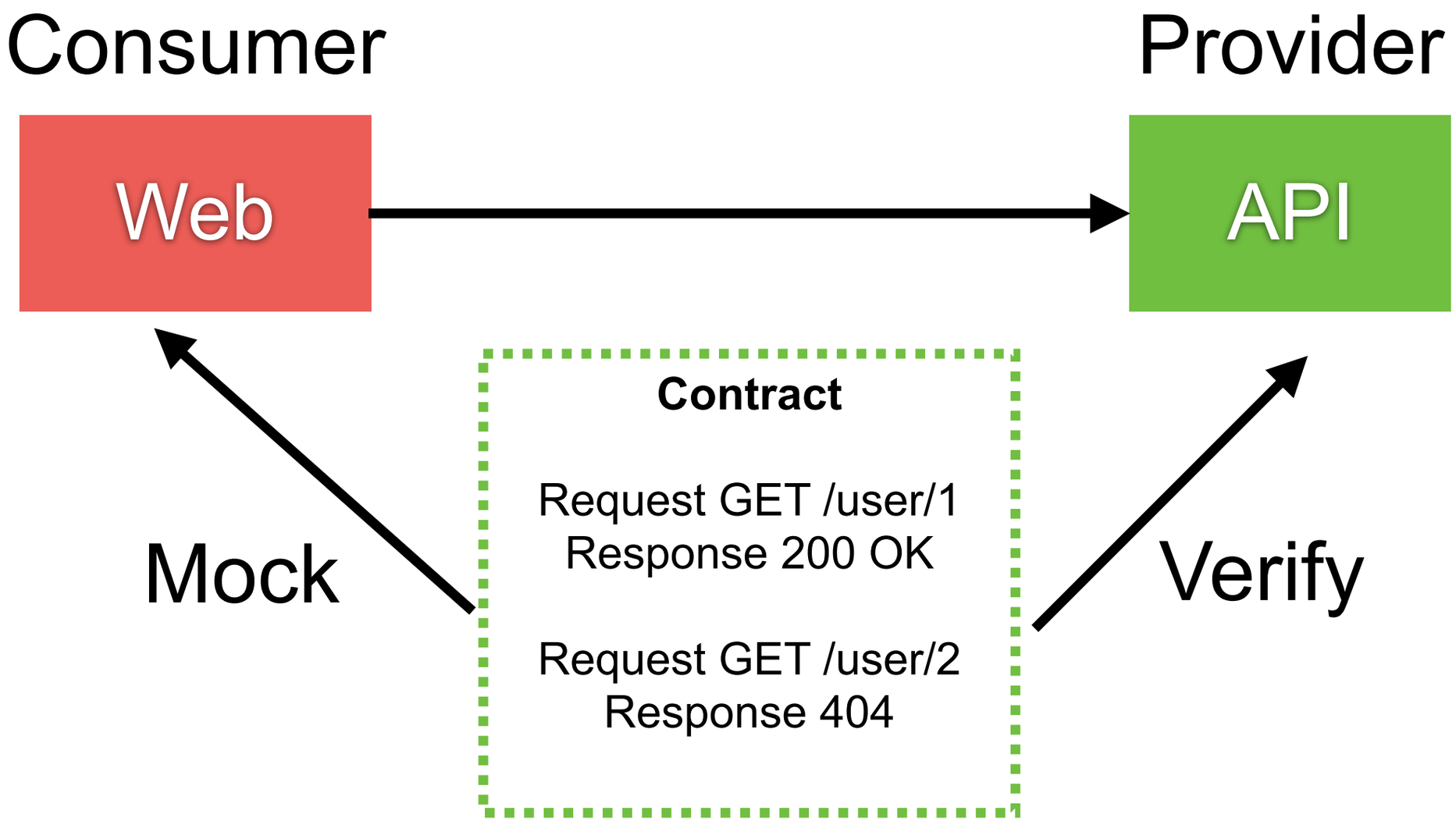
Contract testing



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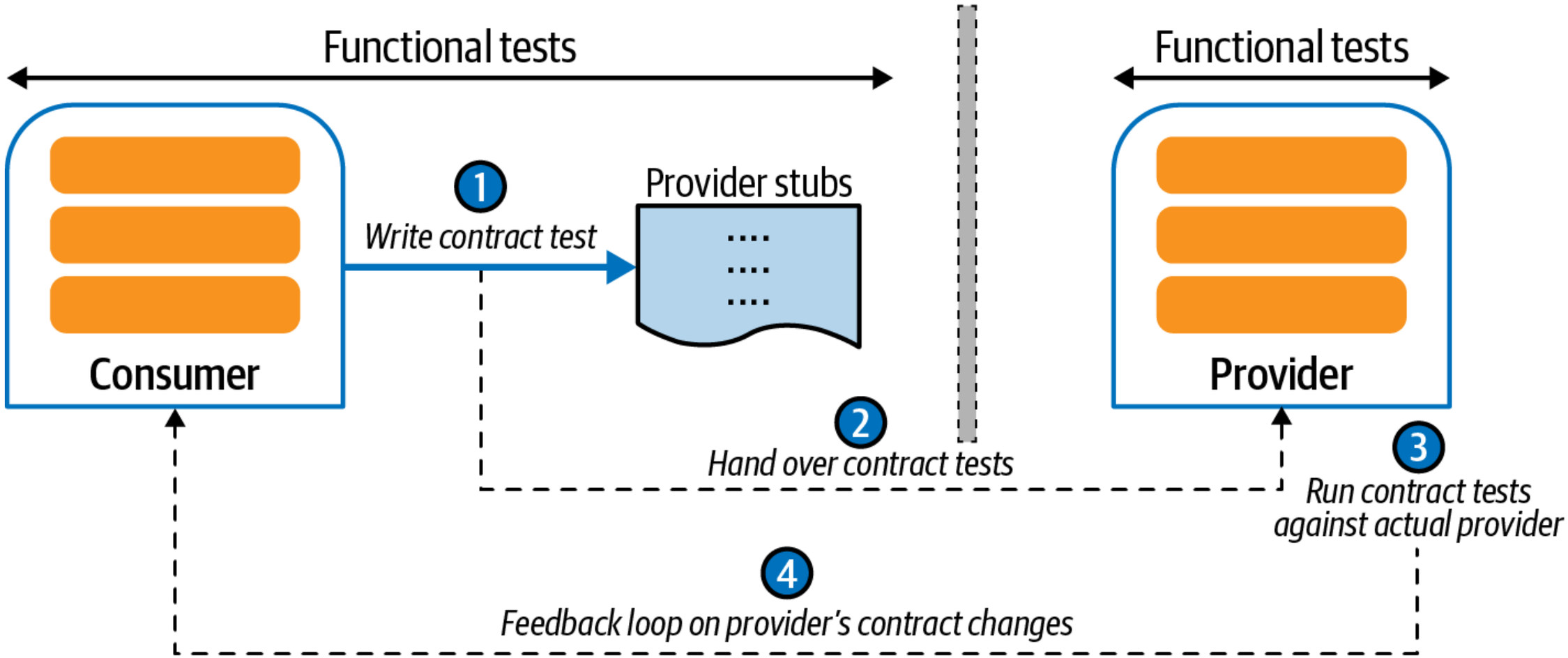
Contract testing



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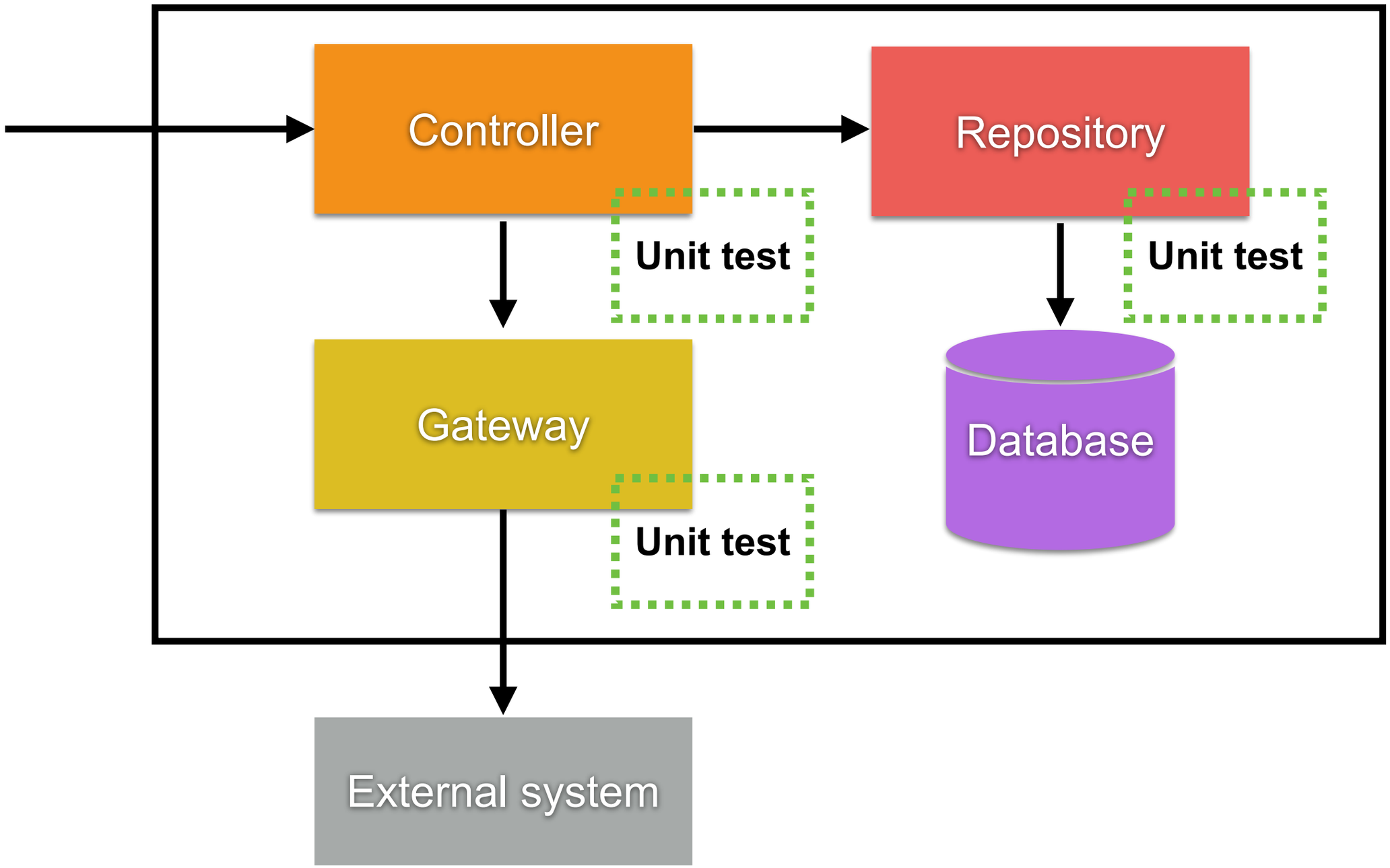
Unit testing



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Test Double

Dummy	Stub	Spy	Mock	Fake

http://xunitpatterns.com/Test%20Double.html

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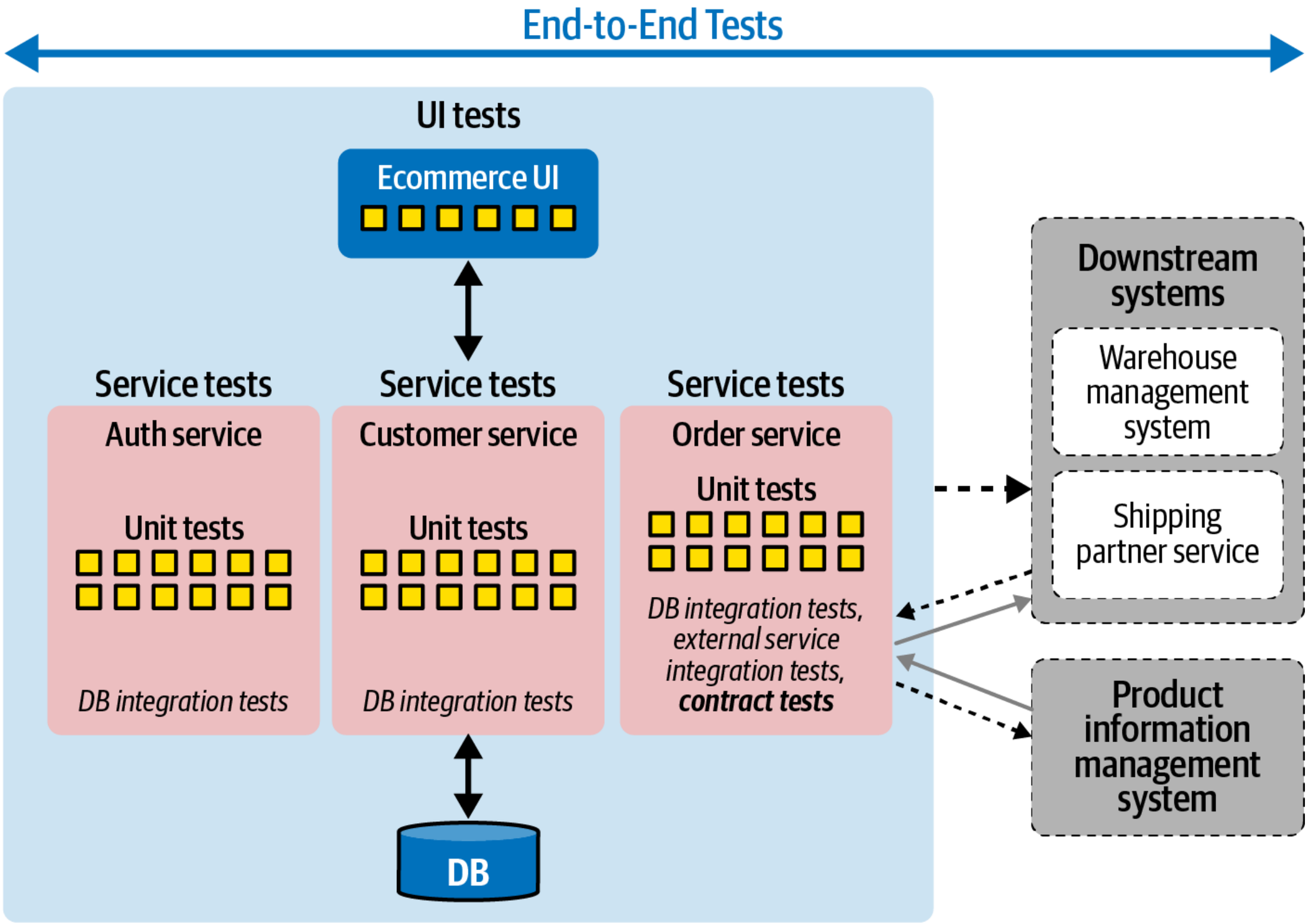

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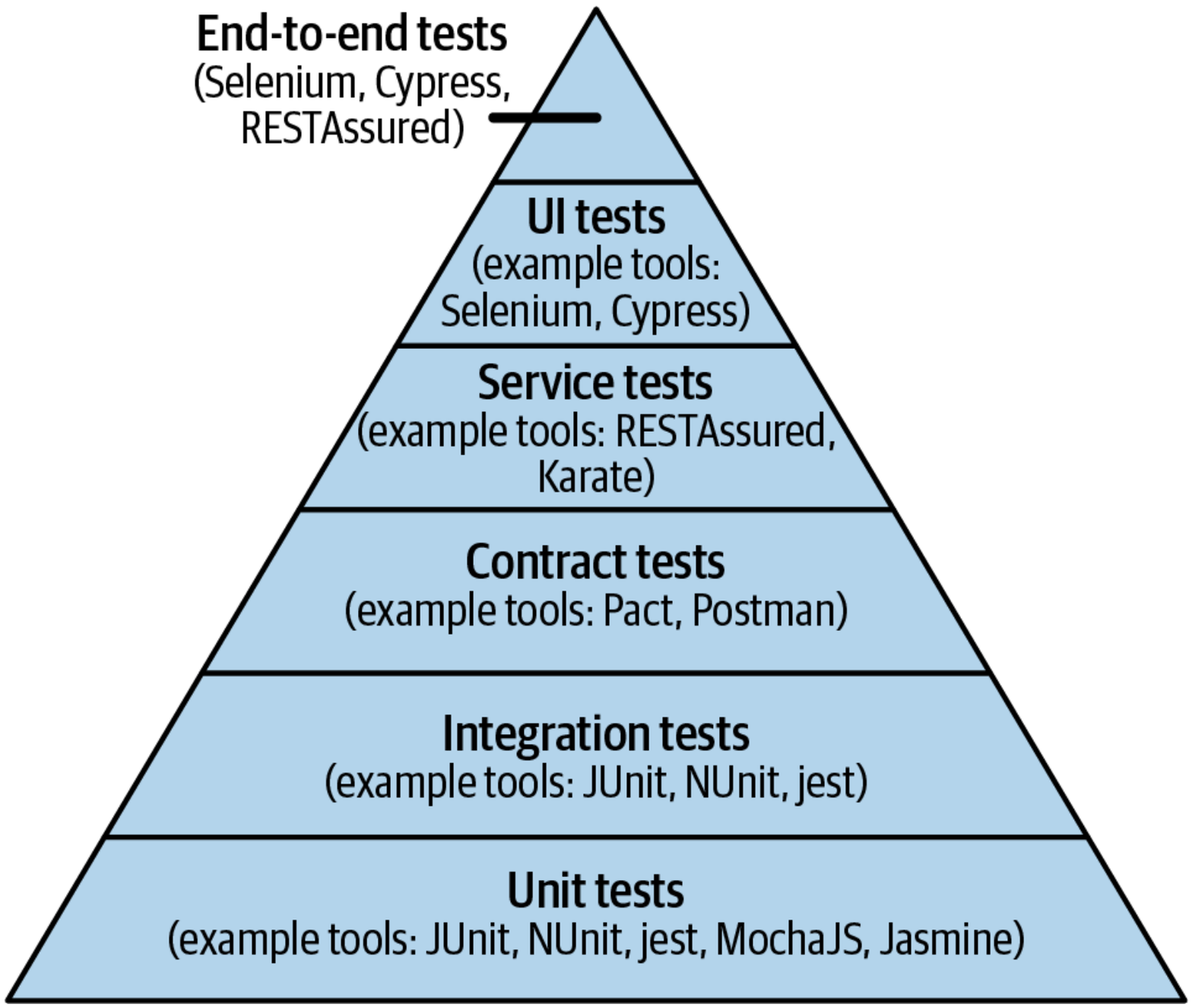
Example Testing Tools



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Test design

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Economy of Test Design

Easy to understand
Easy to maintain
Readable by the business
One purpose per test
Repeatable

Poor test practices reduce the benefits

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Good Test

F.I.R.S.T + U

Fast	Isolate	Repeat
Self-verify	Timely	Understand

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Respect your tests

Don’t ignore it if it fails
Fix the code or fix the test
Always refactor or improve

100% of regression tests must pass all the time

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Regression testing

Complete
Selective or Partial

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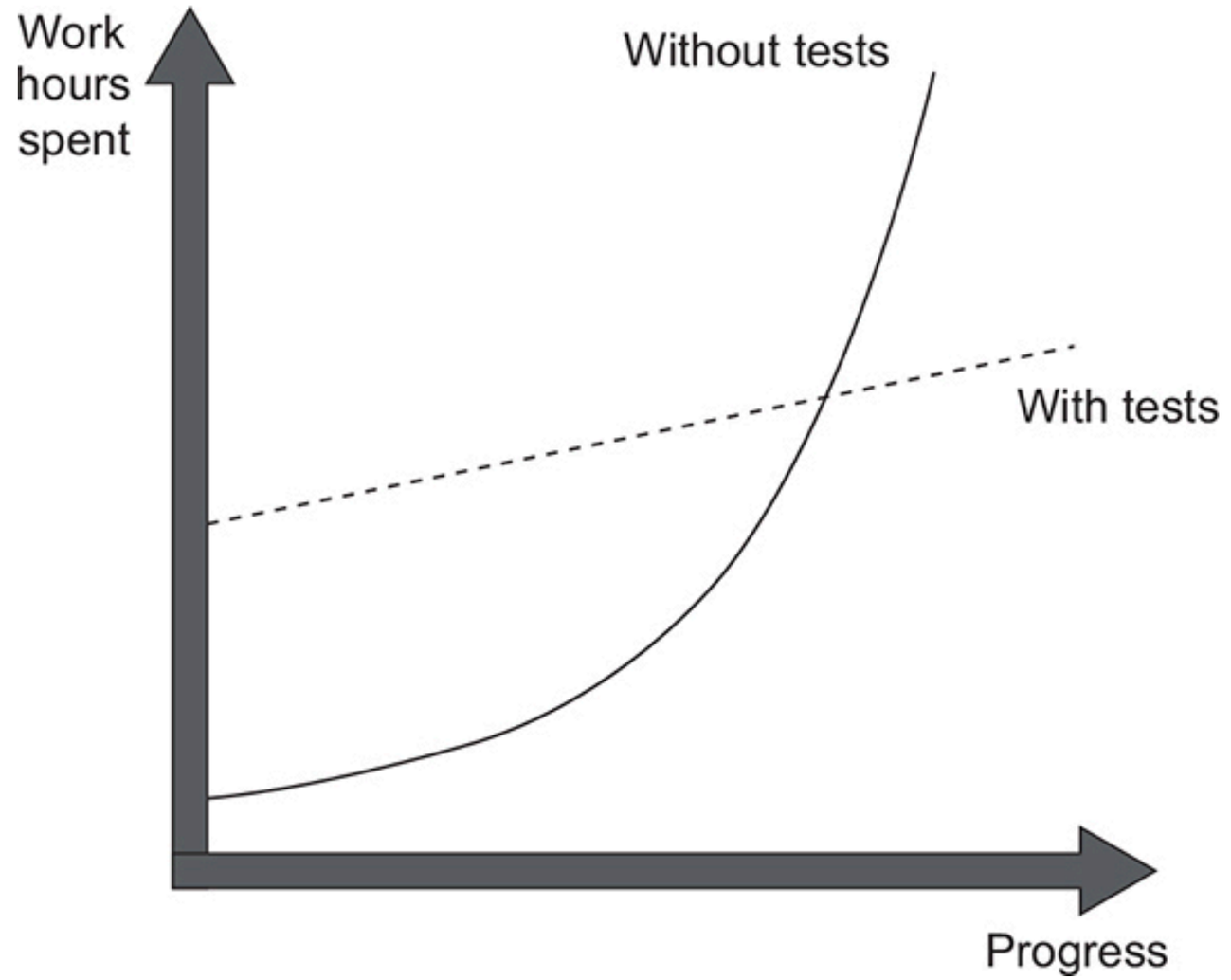
Reduce work hours with tests



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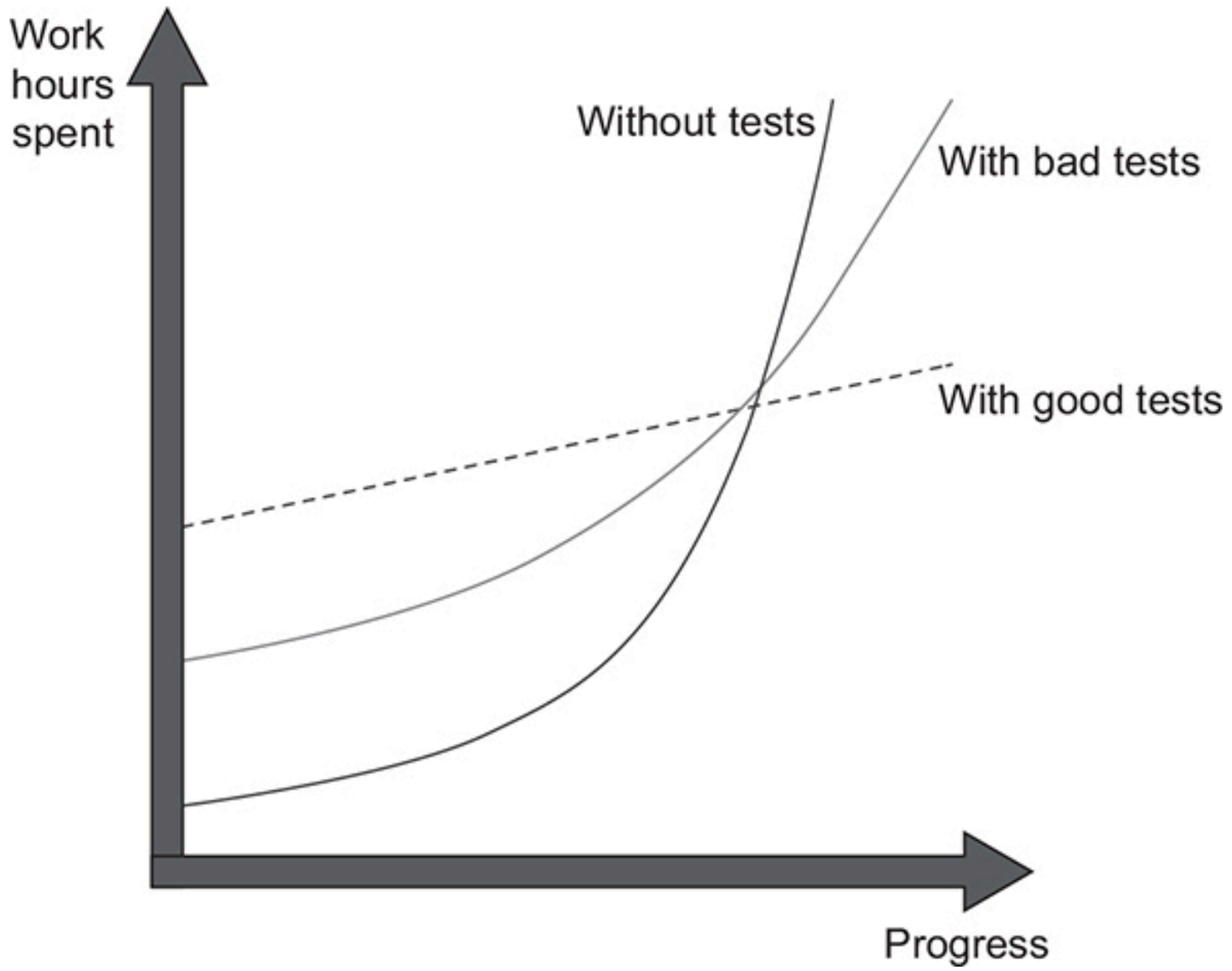
Good vs Bad tests



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Test data !!

Avoid database/external system access

Setup/ tear down test data

Use production-like data

Need to control your data test

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Start with simple

Use feedback to improve

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Workshop

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Register workshop !!

As a new user,

I want to create an account with
User name and password

So that only I can access my information

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Design your Test cases ?

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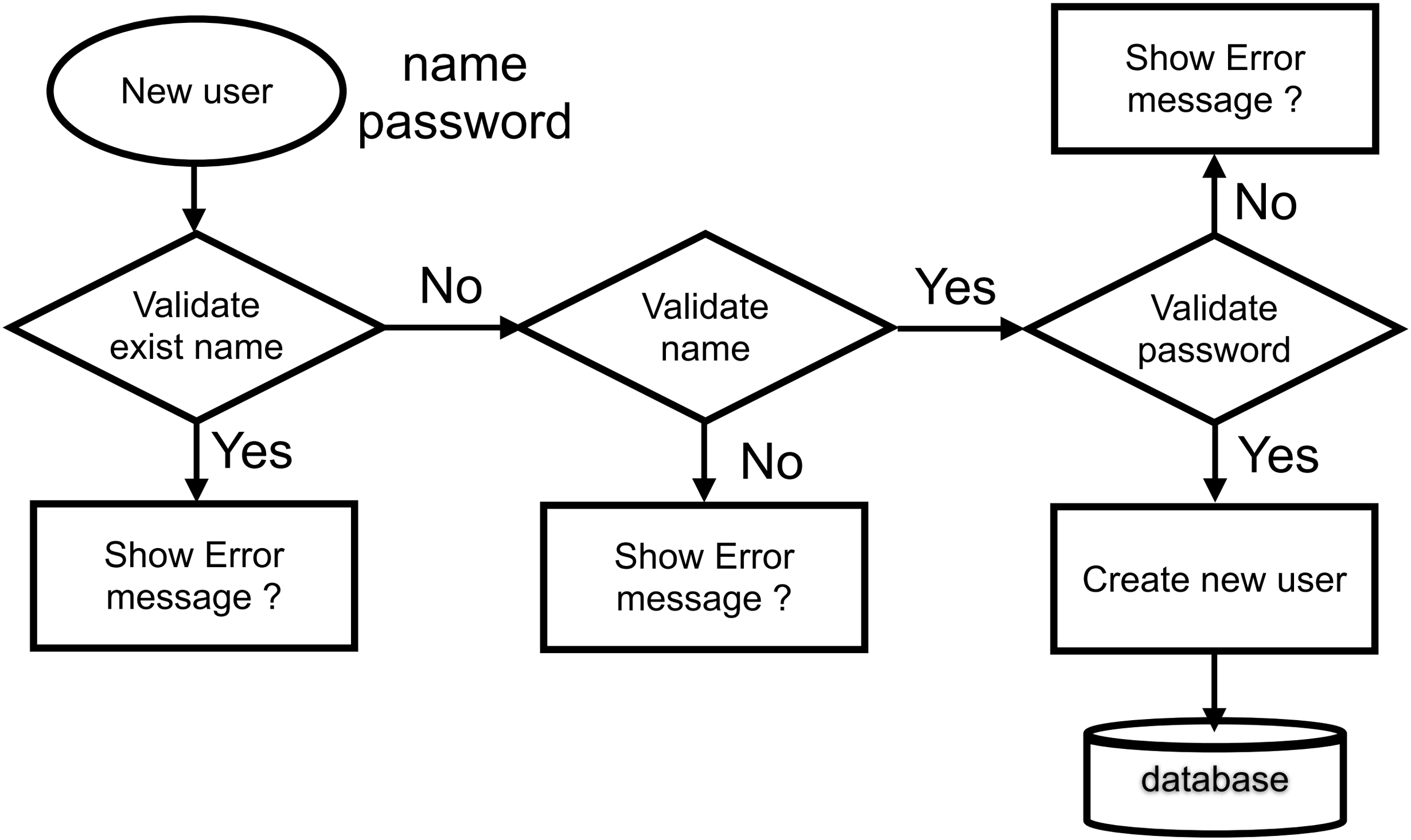
Flow ?



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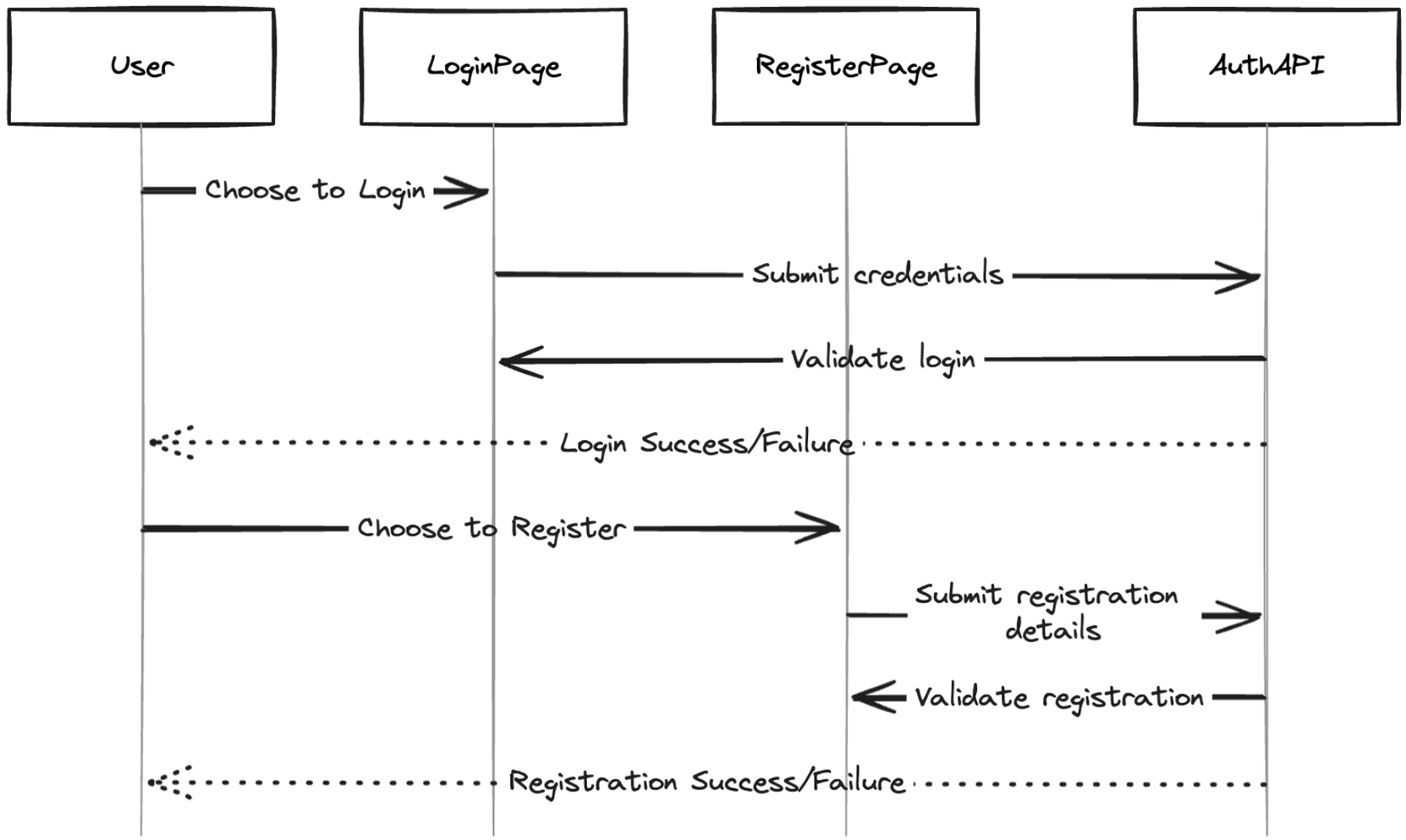
Generate Flow with AI



https://excalidraw.com/

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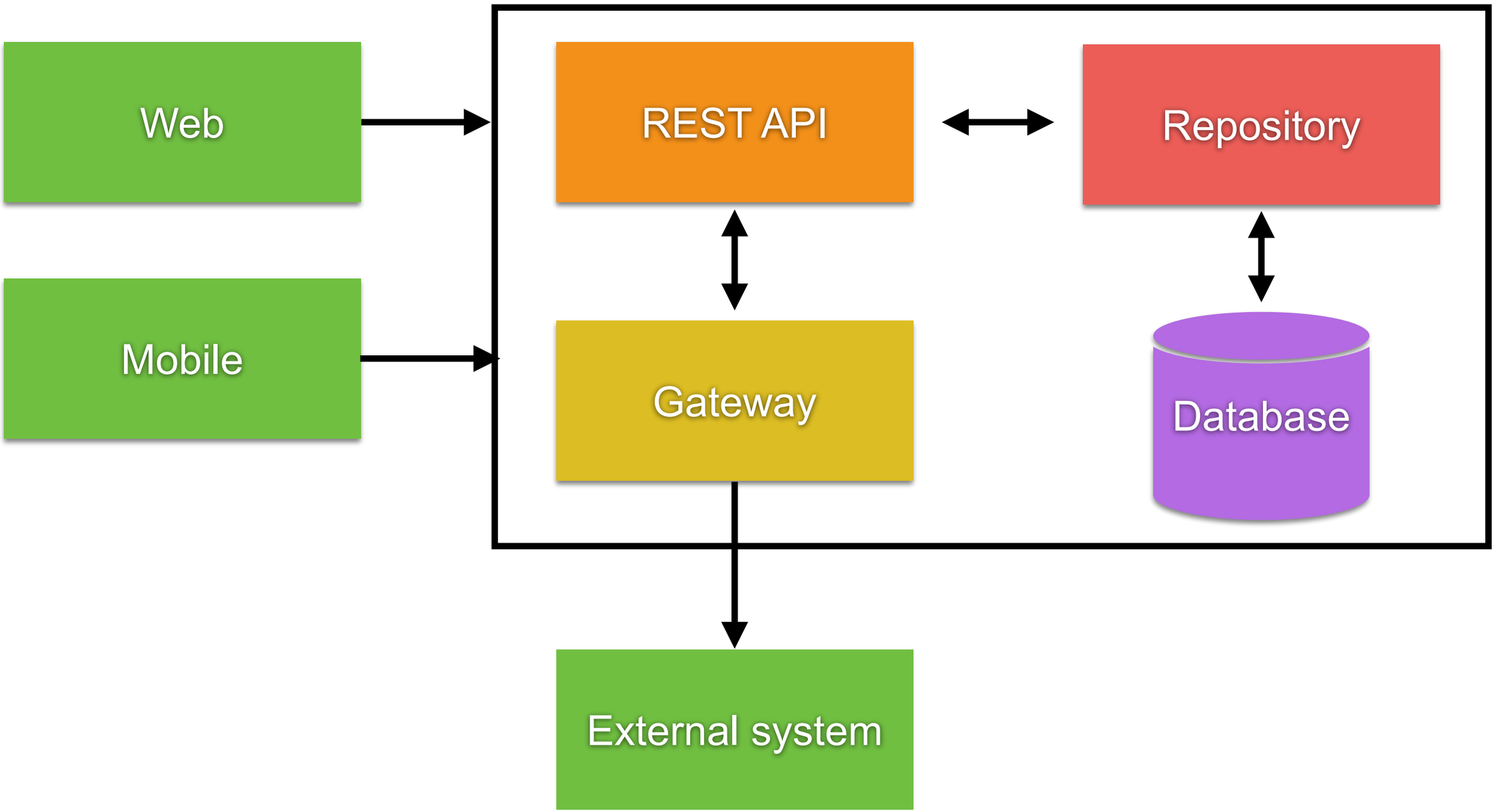
Architecture



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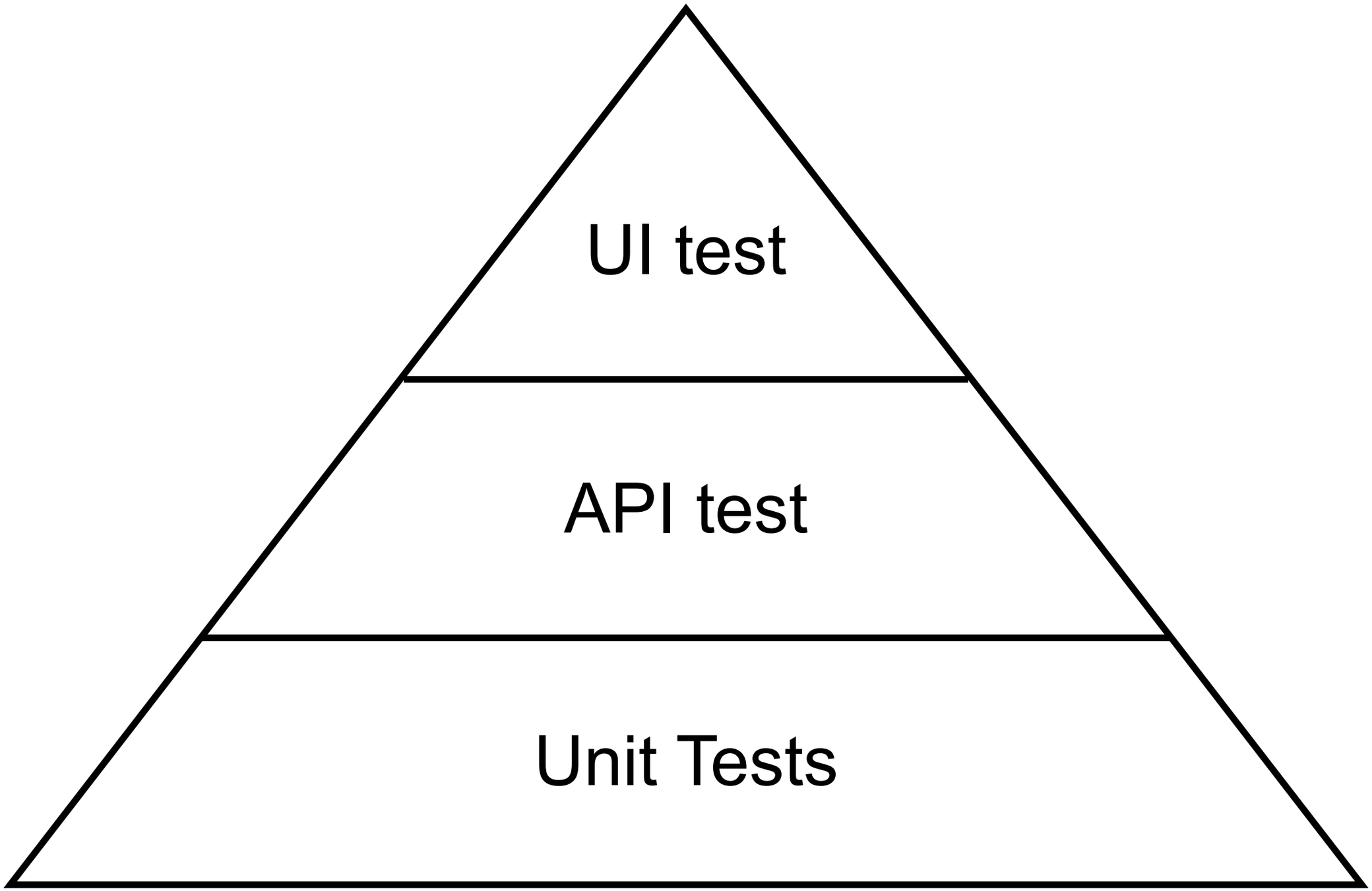
Test cases with Test Level ?



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Testing Tools

External testing

Internal testing

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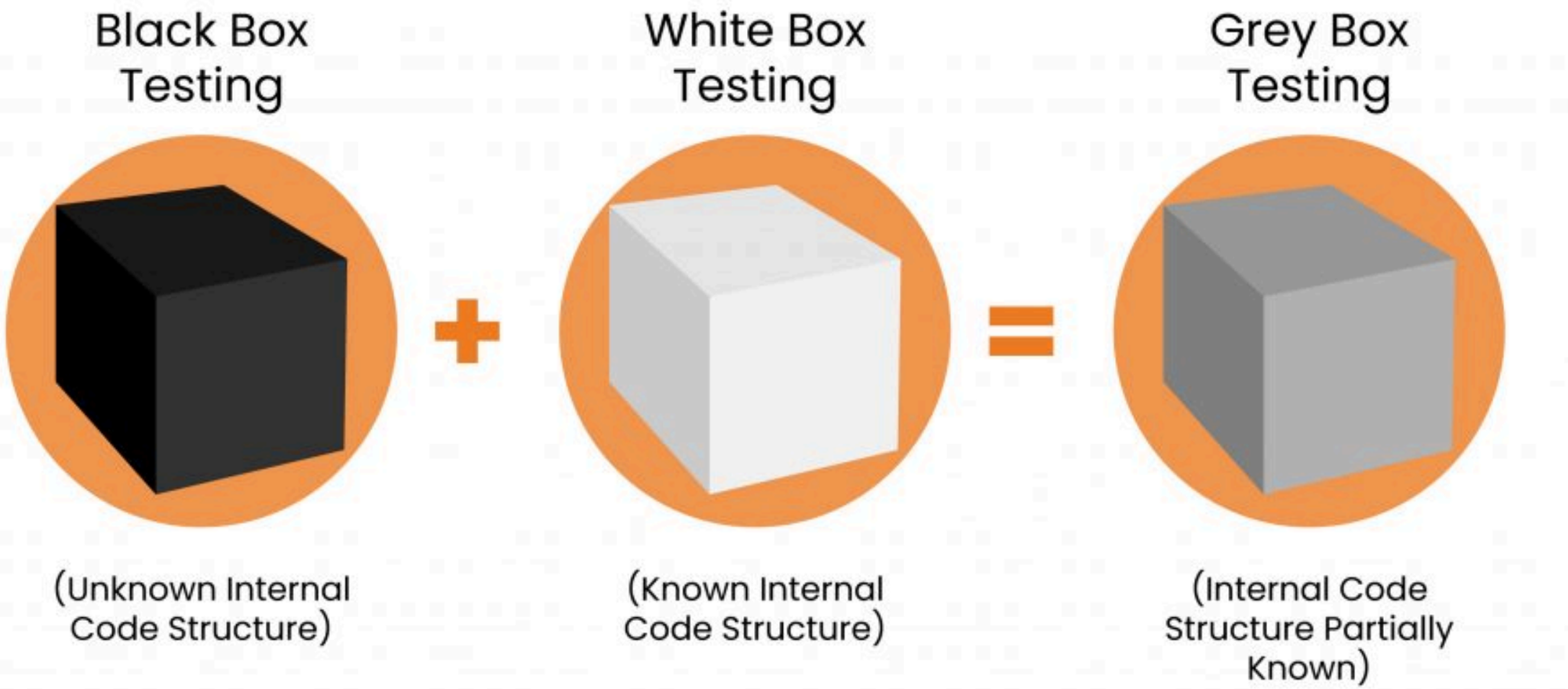
Types of Testing Methods



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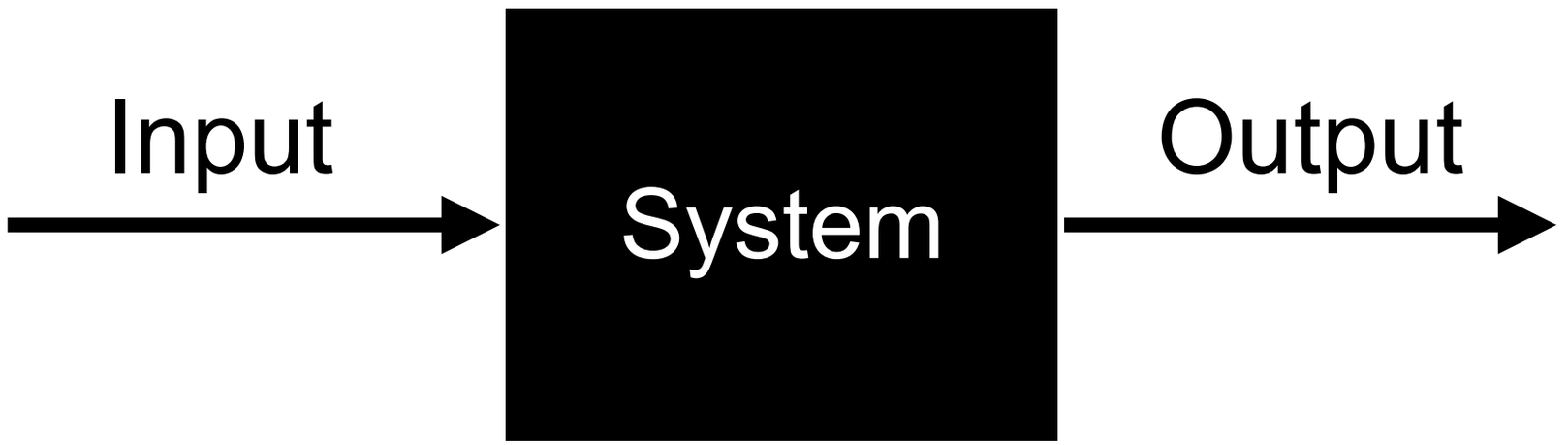
External Testing

Black box testing



End-to-end testing

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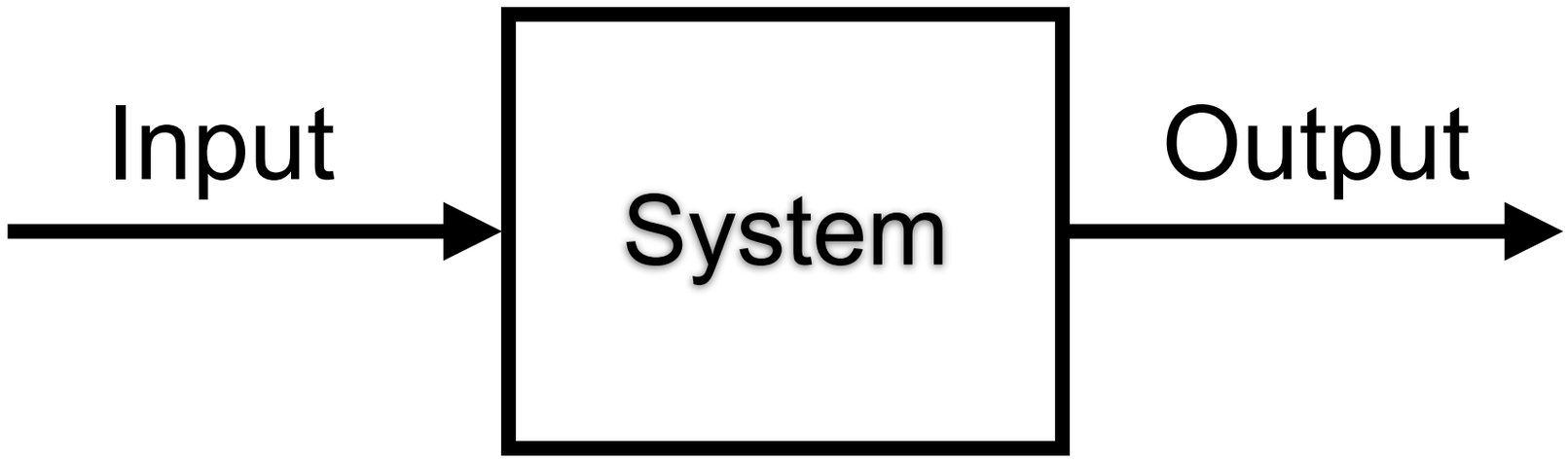
Internal Testing

White box testing



Unit, Integration,
Contract, component testing

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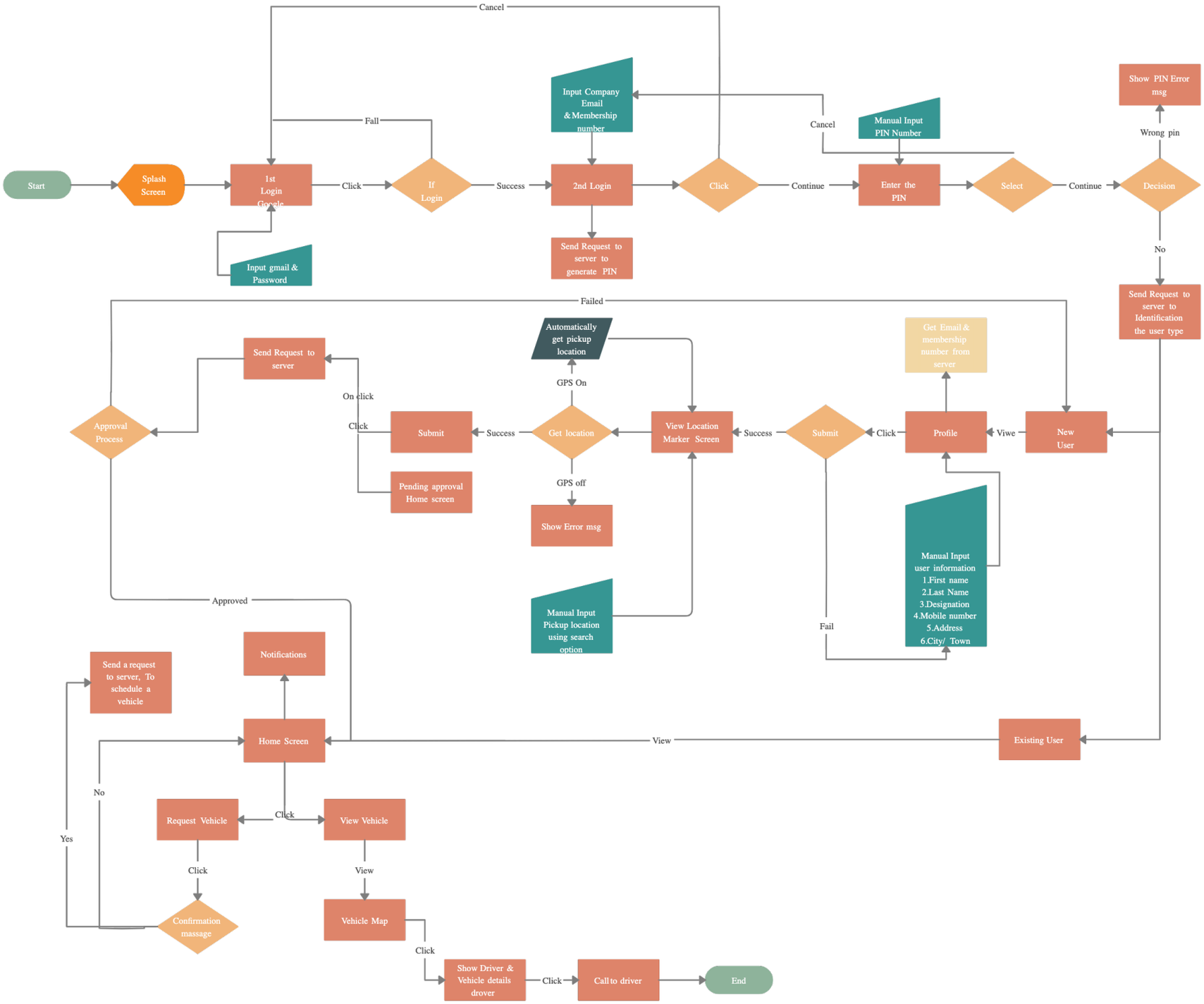
Internal Testing



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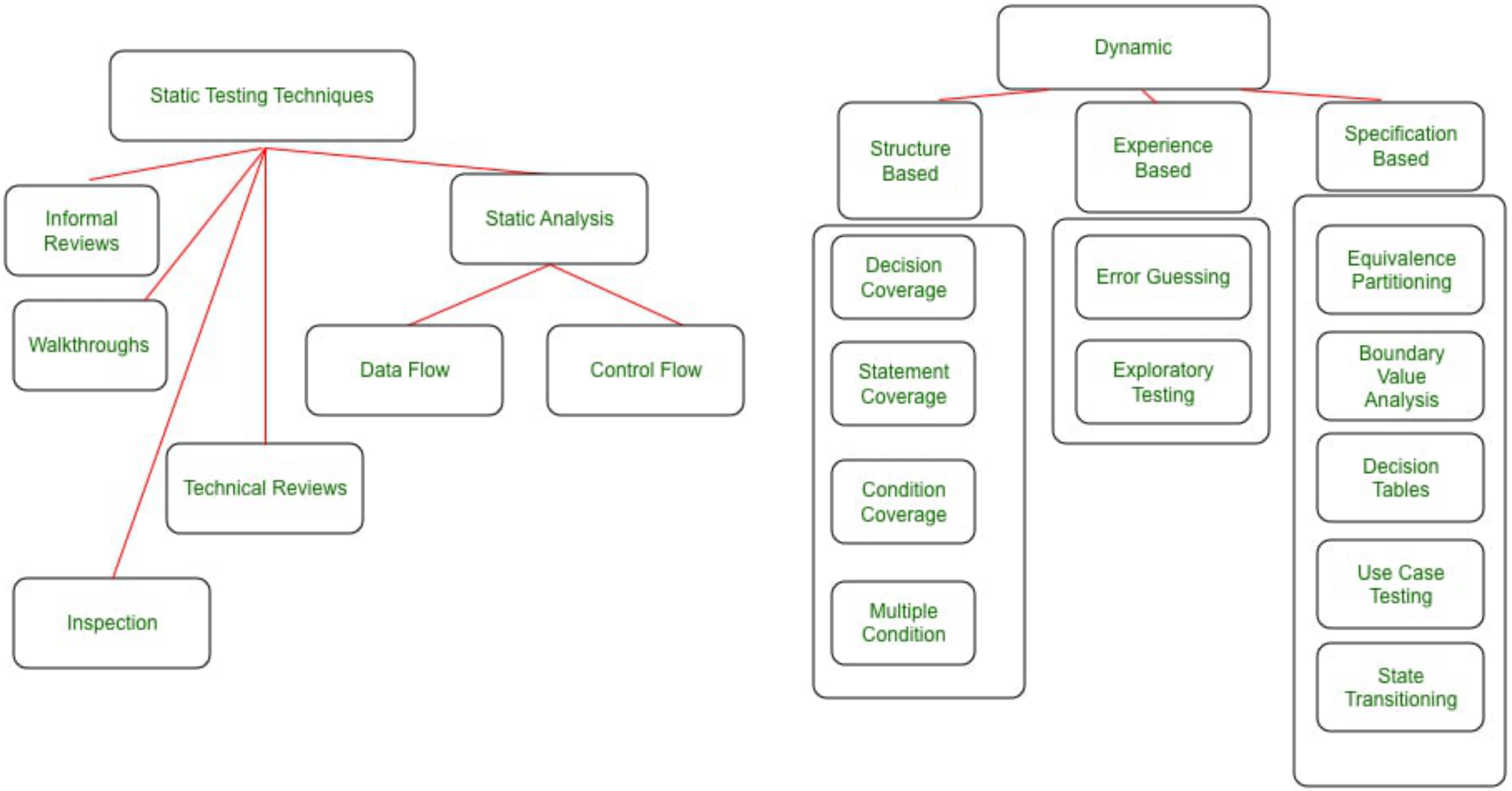
Testing Techniques



https://www.geeksforgeeks.org/software-testing-techniques/

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Let’s start your journey

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Q/A

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Software Testing Life Cycle

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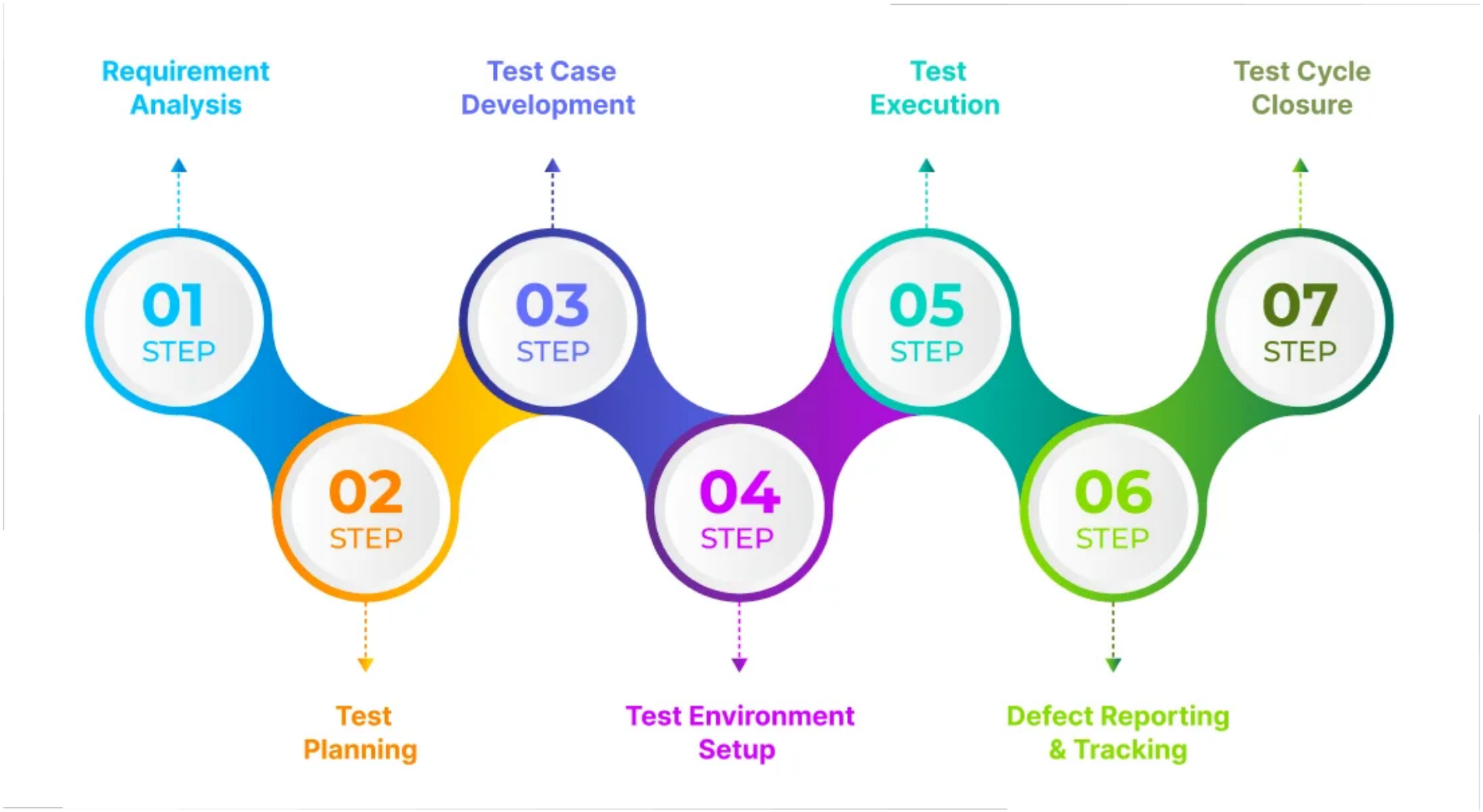
Software Testing Life Cycle



https://www.inexture.com/phases-of-software-testing-life-cycle/

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Software Testing Life Cycle

Improve quality
Reduce cost
Enhance efficiency (avoid rework)
Ensure comprehensive testing
Facilitate continuos improvement

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Effective Test Case Design

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Effective Test Case Design

Focus on clarify
Completeness
Maintainability

Requirement coverage and early detection

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Approach ?

Understand requirements
Identify **test scenarios**
Apply **test techniques**
Prioritize test cases

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Identify Test Scenarios ?

Break down features into specific, distinct behaviors or conditions

Think about all the different of **user's interact** with the feature

Happy paths

Unhappy paths

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Apply Test Techniques

Utilize test design techniques to ensure comprehensive coverage

Boundary Value Analysis (BVA)	Equivalence Partitioning (EP)
Decision table	State transition

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Workshop

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