# REQUIREMENT COVERAGE

## myth or ultimate goal

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# MYTHBUSTERS™

## is requirement coverage useful?

# take it apart & put it together

definition

approaches to improve

problems

goodies

# defining requirement coverage

"a measure in software testing, indicating how well the testing process aligns with the specified software requirements. […] It ensures functional correctness and boosts confidence in the software's overall reliability and performance."
(Cristiano Caetano)

Source: https://www.linkedin.com/pulse/boosting-quality-combining-usage-requirement-coverage-caetano-mcnzc/

# REQUIREMENT COVERAGE AS A METRIC

$$C = \frac{R_{cov}}{R_{total}} \cdot 100\%$$

covered: tested by at least one test (that passes)

requirement: a unit of specification

# requirement traceability matrix

| | | | TC001 | TC002 | TC003 | TC004 | TC005 | TC006 | TC007 |
|---|---|---|---|---|---|---|---|---|---|
| *Test Cases →* | | | | | | | | | |
| *Requirements ↓* | | | Push test 1 | Push test 2 | Proc. test 1 | Proc. test 2 | Proc. test 3 | Fields test 1 | Fields te |
| **Push features** | | | | | | | | | |
| | **F001** | Pushing scenario changes to Test Cases | ☑ | ☑ | | | | | |
| | **F002** | Configuring the format of the synchronized test cas | | ☑ | | | | | |
| | **F003** | Synchronizing Scenario Outlines | | | | | | | |
| | **F004** | Add new Test Cases to an Area or an Iteration | | | ☒ | | | | |
| | **F005** | Mark Test Cases as Automated | | | | ☑ | | | |
| | **F006** | Setting Test Case state on change | | | | | ☐ | | |
| | **F007** | Update Test Case fields | | | | | | ☑ | ☒ |
| | **F008** | Attach files to Test Cases using tags | | | | | | | |
| **Publish features** | | | | | | | | | |
| | **F009** | Publishing test result files | | | | | | | |
| | **F010** | Support for Azure DevOps Test Plan / Test Suite bas | | | | | | | |
| | **F011** | Customization: Publishing test results to multiple Te | | | | | | | |

# IS IT A GOOD METRIC?






Sources: https://tdwi.org/Blogs/TDWI-Blog/2010/04/Effective-Metrics.aspx, https://www.onstartups.com/tabid/3339/bid/96738/Measuring-What-Matters-How-To-Pick-A-Good-Metric.aspx


# problem #1

covered: tested by at least one test (that passes)


identifies how bad you are

does not help with goodness

comparative

# problem #2


F1


F1'


F2


F3

# THE PROBLEM IS ALWAYS WITH THE REQUIREMENTS

# requirement complexity

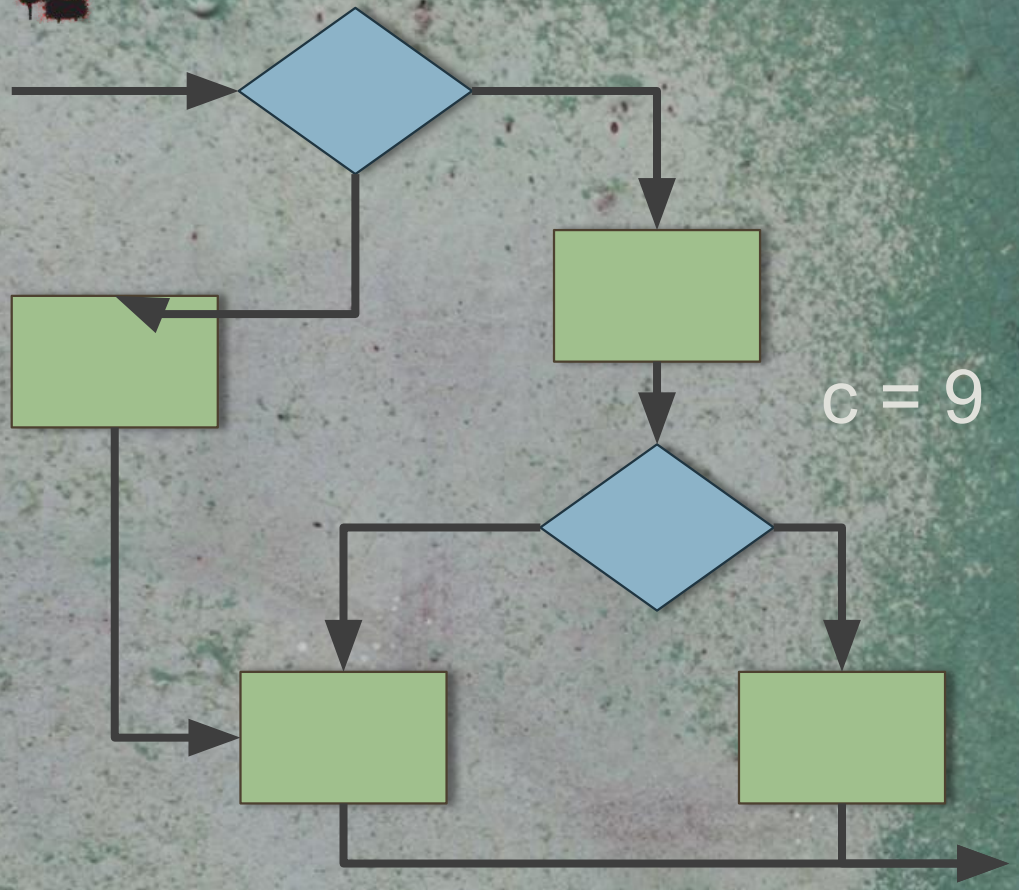
Complexity of a requitement (for today): “how many test case do you need”

$$C = \frac{\sum_{req} t_{req}}{\sum_{req} c_{req}}$$

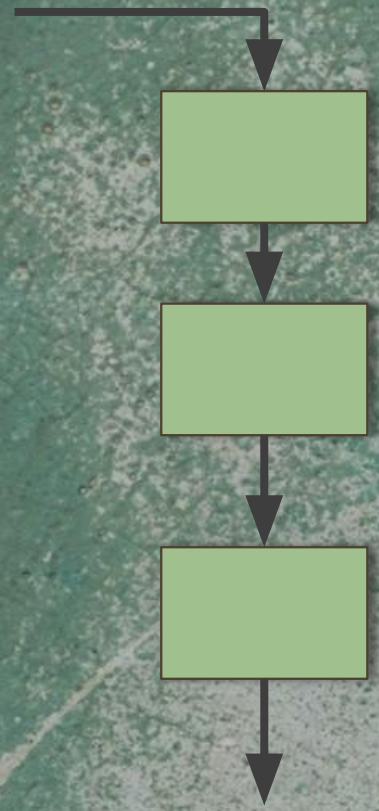
*note:* $\sum_{req} t_{req} \neq t_{all}$

*assumed:* $t_{req} \geq c_{req}$

# model based testing



c = 9



c = 1

Complexity:
model cyclomatic
complexity


# specification by example

Specification by example is a collaborative approach to defining requirements […] based on capturing and illustrating [them] using realistic examples (Wikipedia)

Used by BDD, ATDD, Robot, etc.

Source: https://en.wikipedia.org/wiki/Specification_by_example

# requirement knowledge handover

requirements

abstract

incomplete

misunderstood

# specification by example

requirements

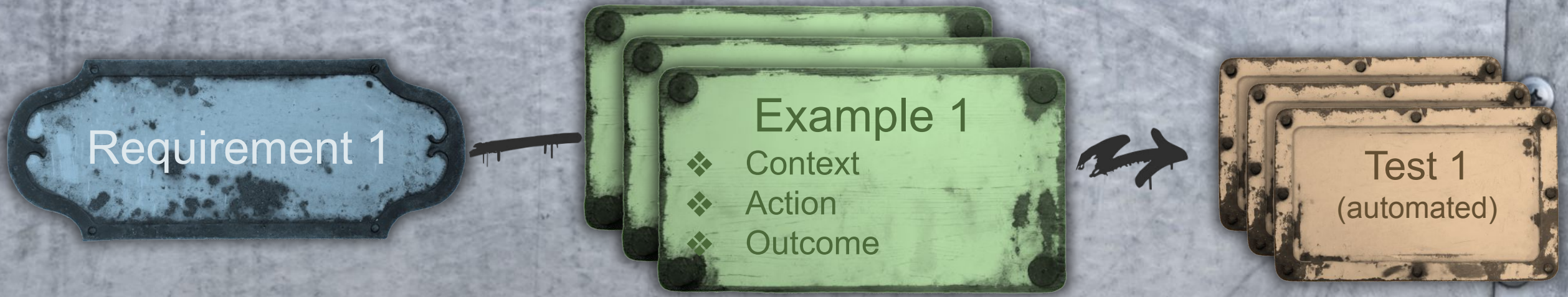
Example 1

- Context
- Action
- Outcome

Test 1
(automated)


COULD YOU GIVE
AN EXAMPLE?
example mapping
(matt wynne)
feature mapping
(john f. smart)

# examples and complexity




connected to requirements

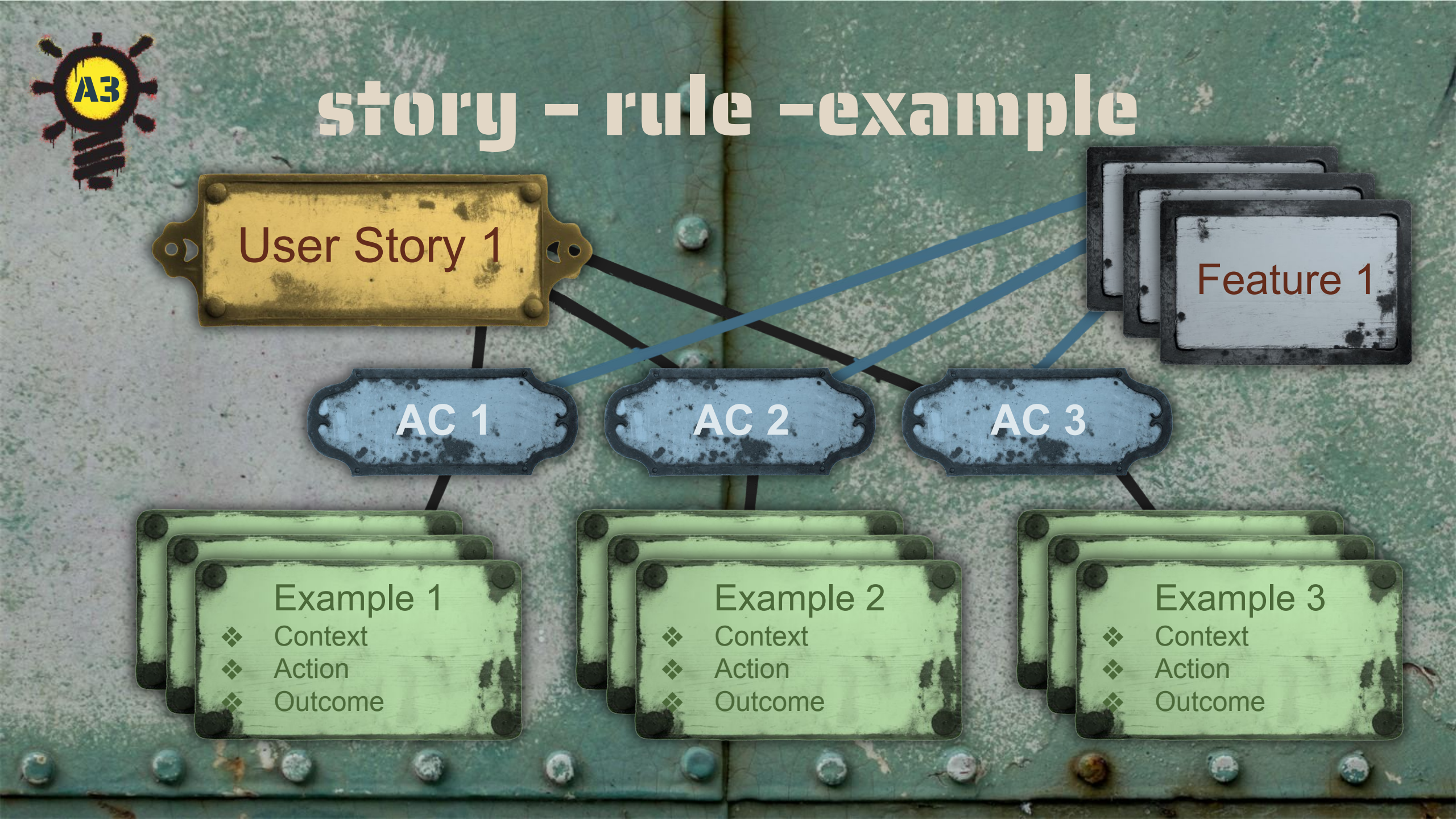
focused

available early

Complexity: number of key examples

# WHAT SHOULD BE THE "REQUIREMENT" REALLY?

# story - rule -example



# What should be the “requirement” really?

=

acceptance criteria
(rule)

# GOODIES

# the single source of truth

Requirement

Test

mapping

ALM

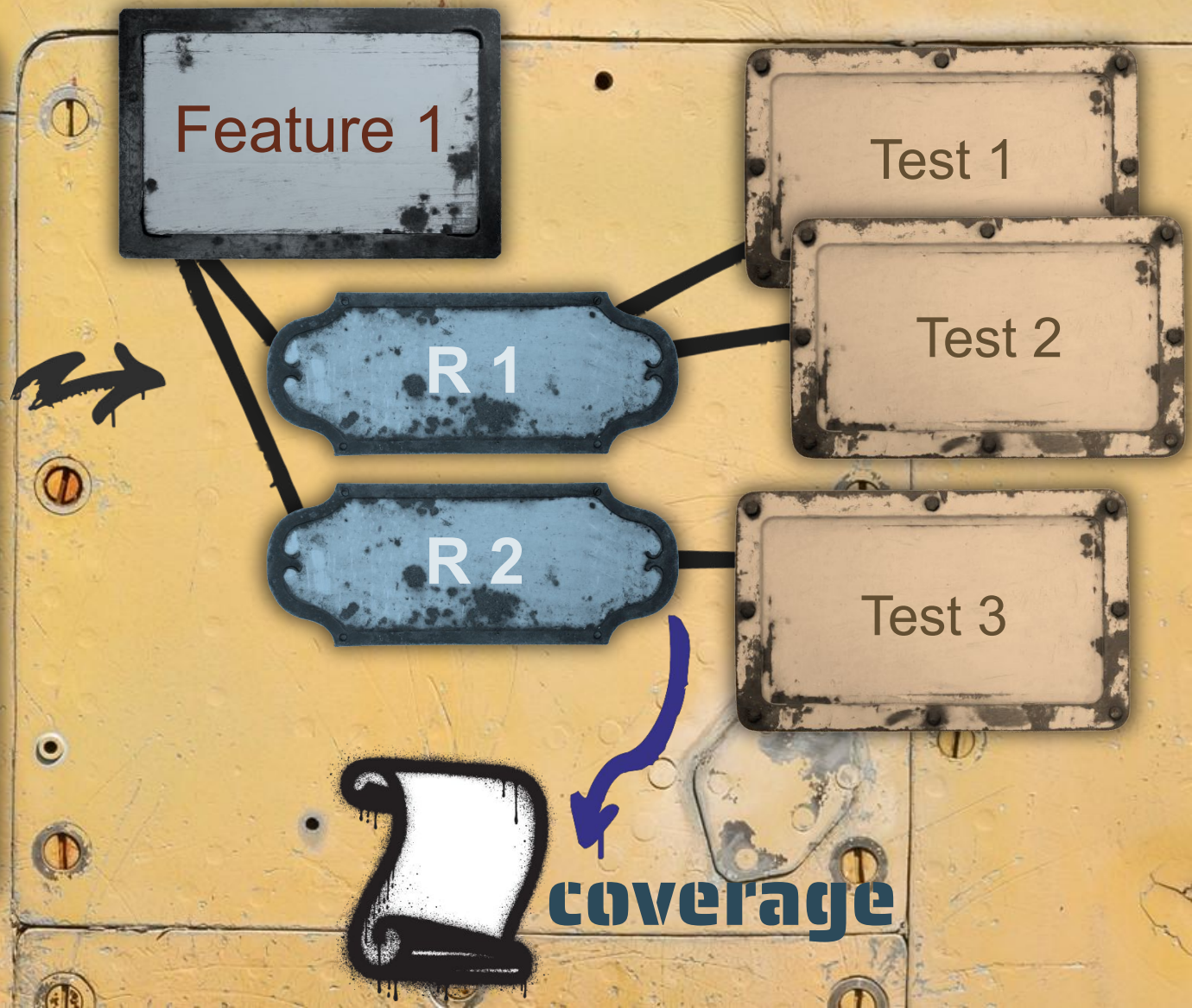
GIT

EXCEL

Logo source: Wikipedia

# tests as source of truth?

```
@feature:1234
Feature: Feature 1

@req:567
Rule: Requirement 1

Detailed description of the requirement using
_Markdown_.

Scenario: Example based test 1
[...]

Scenario: Example based test 2
[...]

@req:568
Rule: Requirement 2

Scenario: Example based test 3
[...]
```



# requirement traceability

Requirement traceability “ensures completeness of requirements, facilitates change management, helps with testing and validation, improves communication and collaboration, and enhances project management.” (Catherine Beaton)

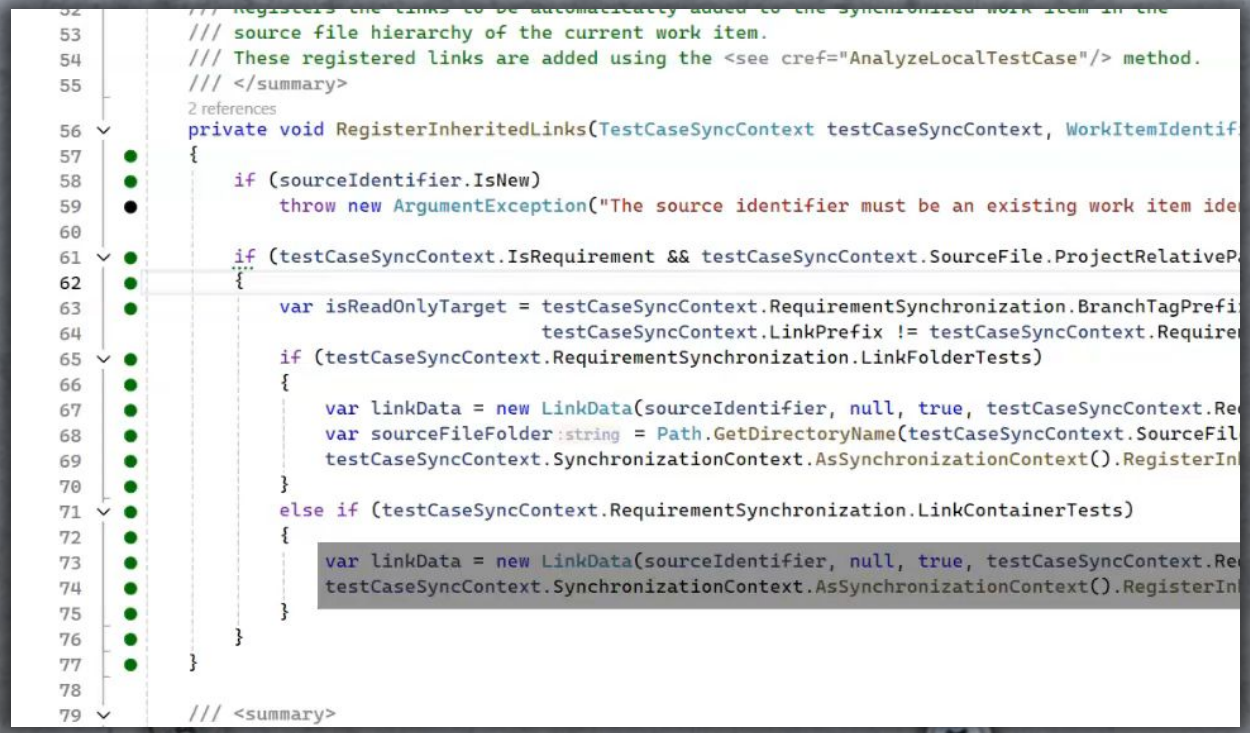
Source: https://www.requiment.com/the-importance-of-requirements-traceability/

# coverage heatmap

Requirement

Test

Code




requirements of code

requirements on UI

requirements vs API

requirements of users

# FINISHING

# requirement coverage

## metric

formula matrix

## approaches to improve

model based testing

spec by example

acceptance criteria

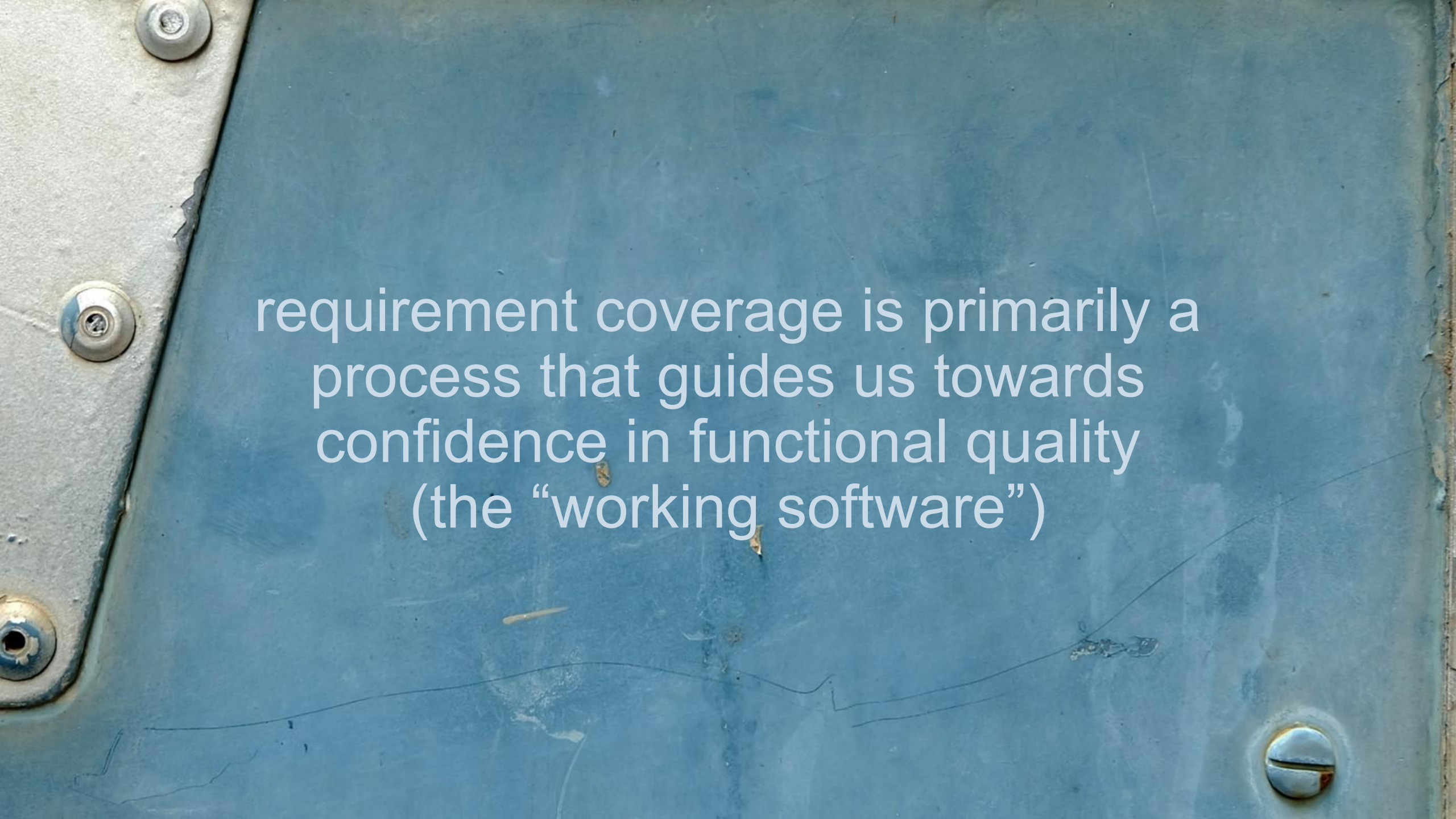
## problems

strategic comparative

## goodies

tests as source of truth

coverage heatmap


requirement coverage is primarily a
process that guides us towards
confidence in functional quality
(the “working software”)

# THANK YOU

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specsolutions
given.when.then.

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