

A Framework for Tech. Debt

Technical Debt

Introduction

The diagram is a word cloud centered around the concept of code quality. It features several large, bold words in green, pink, and purple, each representing a category of issues:

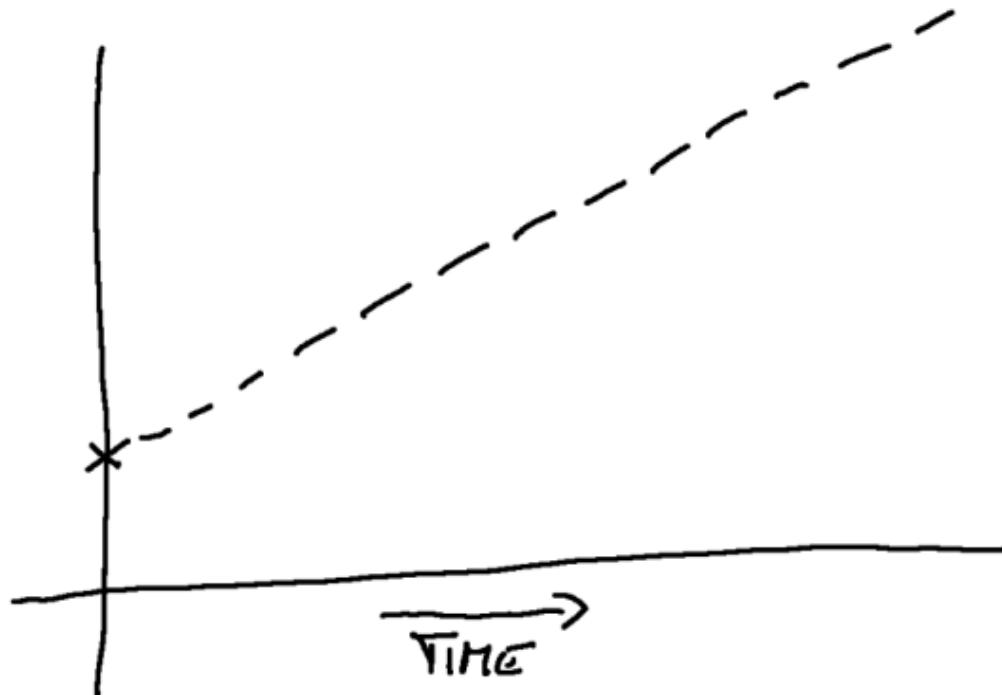
- Missing_Tests** (Pink)
- Duplicated_Code** (Green)
- Code_Complexity** (Pink)
- Legacy_Code** (Green)

Surrounding these central words are numerous smaller, colored words representing specific anti-patterns and debt types. These include:

- Tight_Coupling**, **Deployment_Issues**, **Slow_Builds**, **Workarounds**, **Magic_Numbers** (Purple)
- Architectural_Debt**, **Platform_Debt**, **Performance_Bottlenecks**, **Maintainability_Problems** (Green)
- Poor_Naming**, **Readability_Issues**, **Scalability_Issues**, **Brittle_Code** (Blue)
- Knowledge_Silos** (Purple)
- Design_Debt** (Pink)
- Test_Debt** (Blue)
- Outdated_Dependencies**, **Security_Vulnerabilities** (Orange)
- Technical_Bugs**, **Insufficient_Logging**, **Over_Engineering** (Purple)
- Lack_of_Documentation**, **TODO_Comments** (Blue)
- N+1_Qualities** (Orange)
- Hardcoded_Values** (Blue)
- Infrastructure_Debt** (Purple)
- Dead_Code** (Blue)

Debt

Introduction



Software Rot

Business Risk

Me

👤 2+ Decades in Software Development

💻 Complete Stack

🛠 Staff @ Meister



The Siblings of Meister



Practical Example

You join a project as
senior developer...

Practical Example

- ✓ check README.md
- ✓ check Gemfile
- ✓ explore some tests
- ✓ explore some code
- ✓ check testsuite passes (in CI )
- ✗ check RuboCop

Practical Example



RuboCop

Practical Example

 check RuboCop

Practical Example

```
$ cat .rubocop_todo.yml
# Offense count: 1
Lint/DuplicateBranch:
  Exclude:
    - app/model/team.rb
# Offense count: 8
Metrics/MethodLength:
  Exclude:
    - app/controllers/teams_controller.rb
    - app/model/team.rb
```

Practical Example



check RuboCop

Practical Example

```
$ wc -l .rubocop_todo.yml
1145 .rubocop_todo.yml # 1145 lines in file
```

Practical Example

How can we get rid of the
TODOs? 

Four Steps Framework

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1. Get the Numbers

A Framework for Tech. Debt

```
# total number of lines
$ wc -l .rubocop_todo.yml
```

A Framework for Tech. Debt

```
$ cat .rubocop_todo.yml
# Offense count: 1
Lint/DuplicateBranch:
  Exclude:
    - app/model/team.rb
```

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```
$ grep 'Offense count:' .rubocop_todo.yml
Offense count: 1
Offense count: 4
Offense count: 2
Offense count: 28
# [...]

# extract number of rules violated
$ grep 'Offense count:' .rubocop_todo.yml | wc -l
```

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```
# extract number of violations
$ grep 'Offense count:' .rubocop_todo.yml | \
    ruby -e 'puts $stdin.readlines.sum { it.split.last.to_i }'
```

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1. Get the Numbers

...and store them away

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Store in Database 😕

Create a File per Day in a
Bucket



A Frameowk for Tech. Debt

```
# lib/tasks/tech_debt.rake
namespace :tech_debt do
  desc 'Record development metrics'
  task metrics: :environment do
    total_lines = `wc -l .rubocop_todo.yml`.strip.split.first.to_i
    File.write("tmp/#{Date.today}.json", { total_lines: }.to_json)
  end
end
```

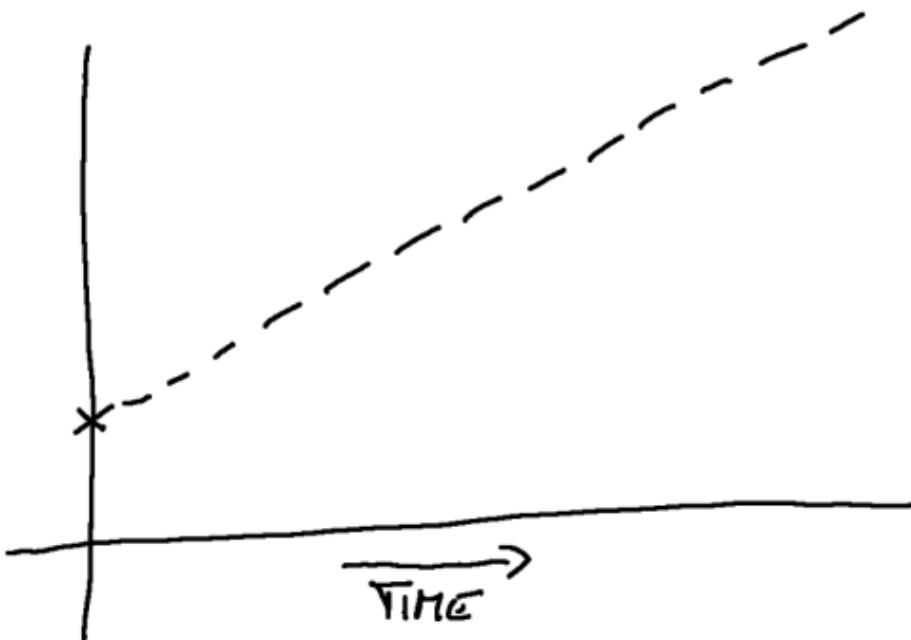
A Framework for Tech. Debt

```
$ cat data/2025-06-23.json
{
  "rubocop": {
    "total_lines_of_todo_file": 1145,
    "number_of_rules_violated": 74,
    "number_of_violations": 2128
  }
}
```

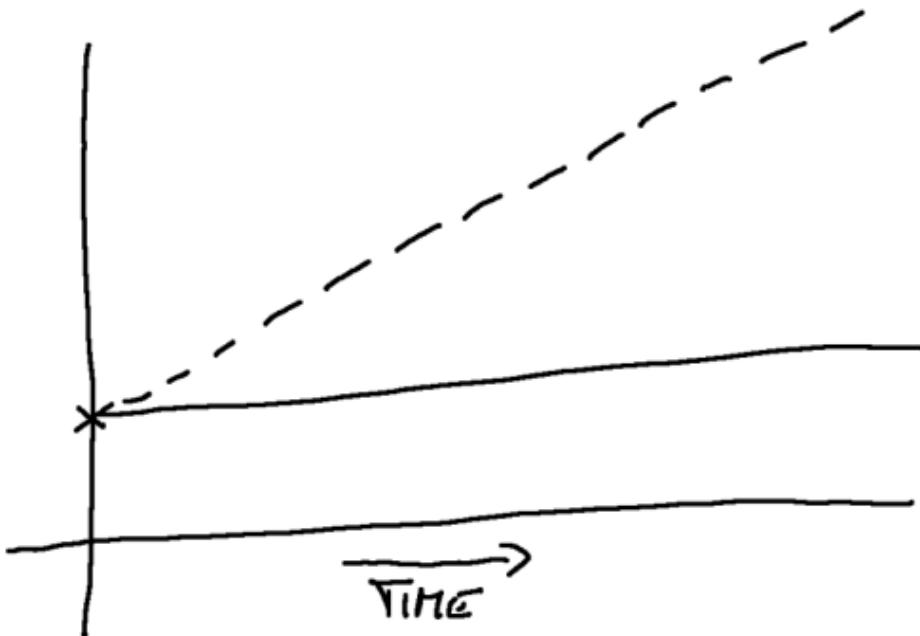
A Framework for Tech. Debt

1. Get the Numbers 
2. Visualize Numbers 

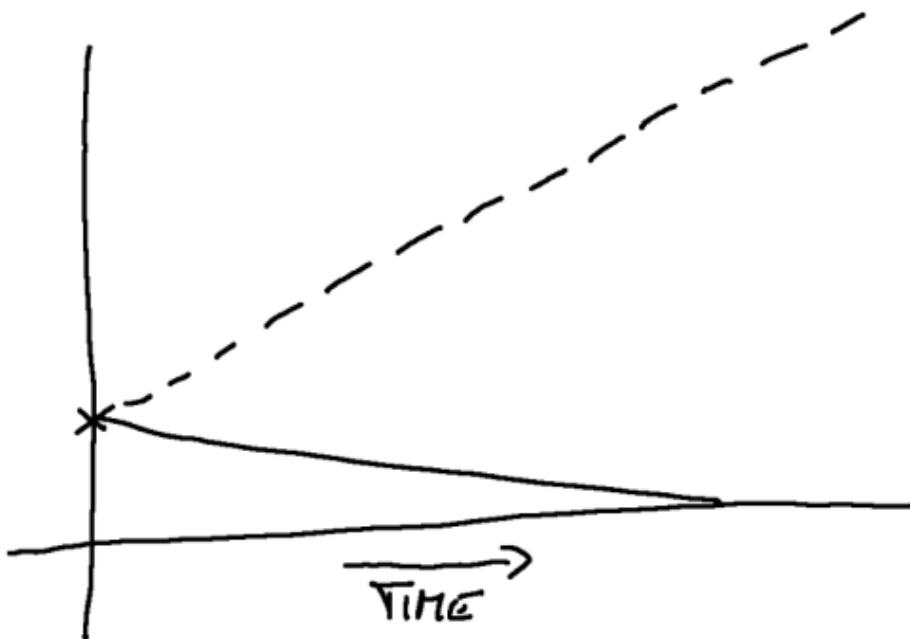
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A Framework for Tech. Debt



A Framework for Tech. Debt



A Framework for Tech. Debt

1. Get the Numbers 
2. Visualize Numbers 
3. Create a Vision 

Vision for RuboCop



Good Practice

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Benefits 💪

- * Ruby Practice & Learning
- * Readability
- * Consistency
- * Collaboration
- * Maintainability
- * Code Complexity
- * Performance
- * Security



Vision for RuboCop



Good Practice



Less Problems

Vision for RuboCop



Good Practice



Less Problems

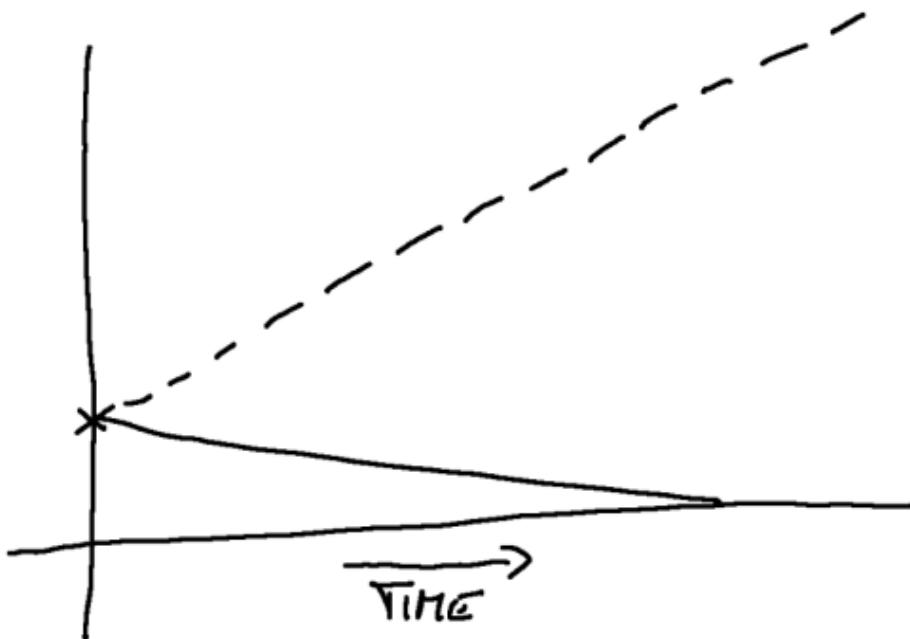


Easy Changes

A Framework for Tech. Debt

1. Get the Numbers 
2. Visualize Numbers 
3. Create a Vision 
4. Make Steps Towards the Vision 

A Framework for Tech. Debt

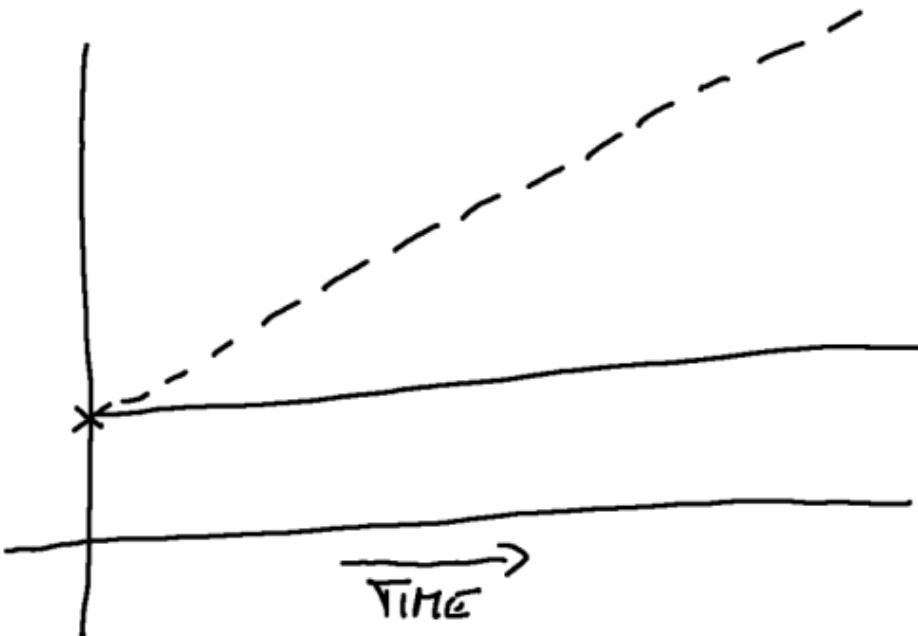


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Extend our Playbook:

-  On Additions: Accept No Violations.
-  On Changes: Refactor When Possible.

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“We don’t need to fix
everything.”

A Framework for Tech. Debt

1. Get the Numbers 
2. Visualize Numbers 
3. Create a Vision 
4. Make Steps Towards the Vision 

Impact on Communication

Technical Debt for Developers

Software Rot for Technical and Non-Technical People

Business Risk for Non-Technical People

Applications of the Framework



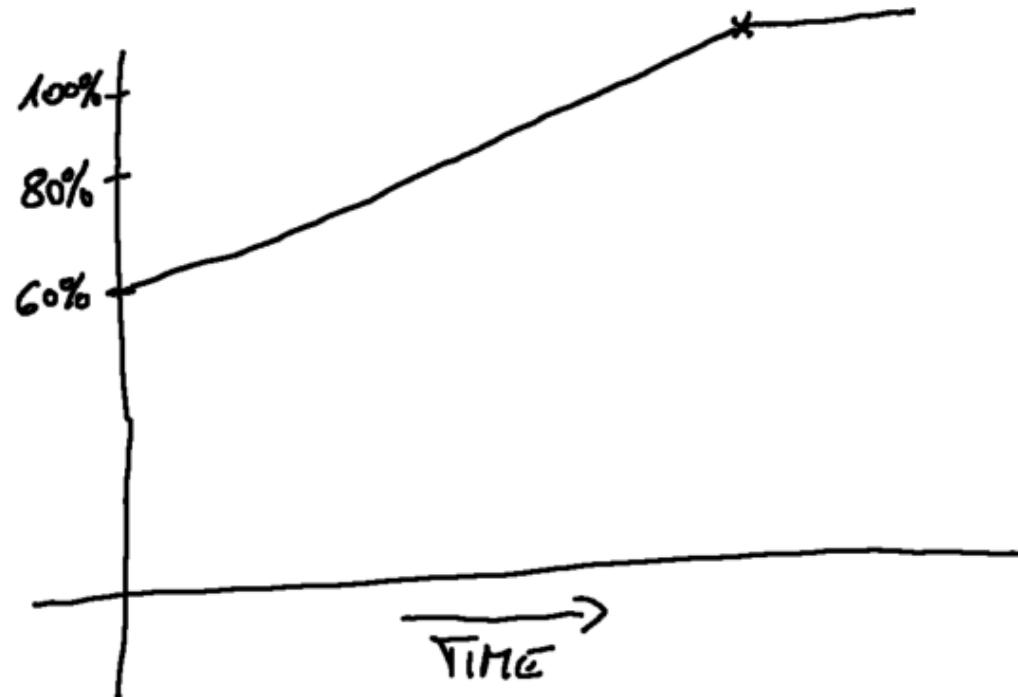
... but there's so many
kinds of Tech. Debt

Applications of the Framework

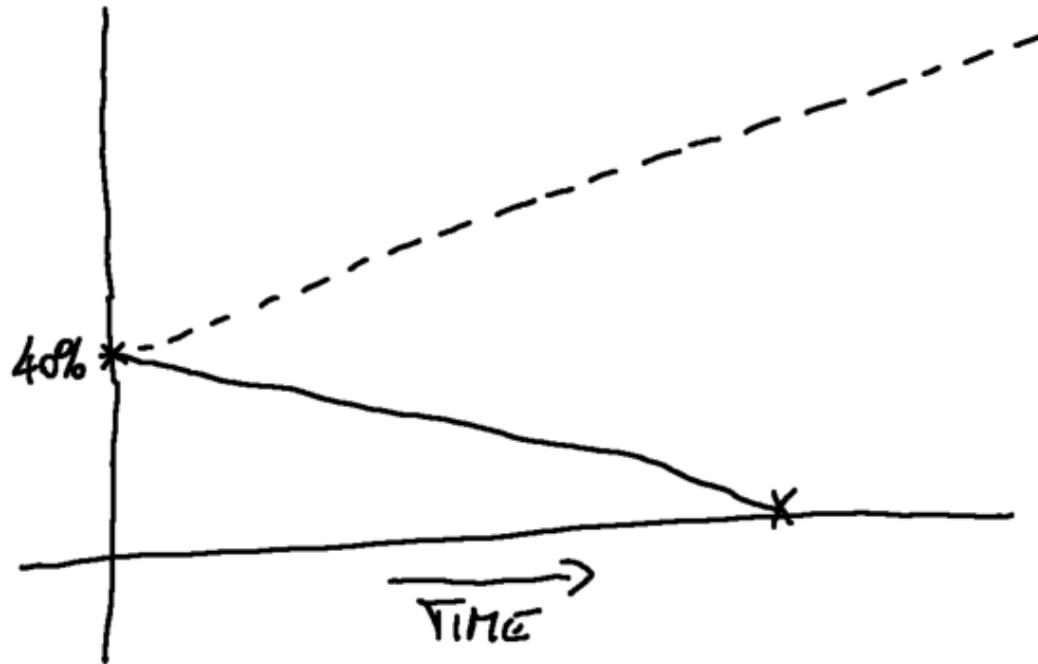


Low Test Coverage

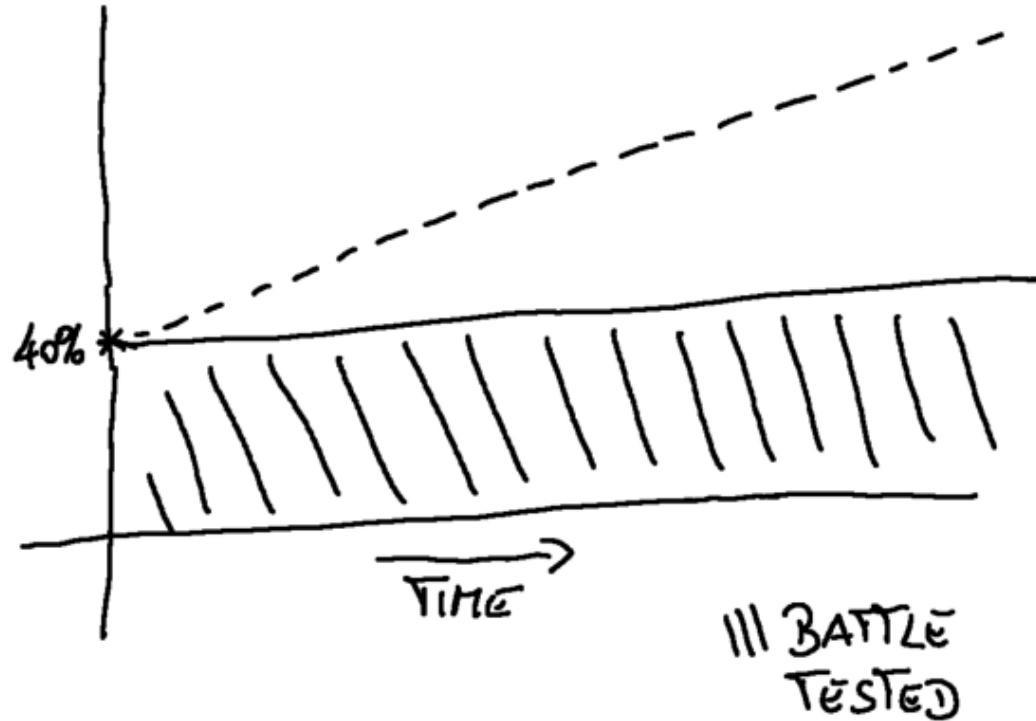
Applications of the Framework



Applications of the Framework



Applications of the Framework



Applications of the Framework



RubyGem
Dependencies?

Applications of the Framework

```
# List installed gems with newer versions available
$ bundle outdated --help
$ bundle outdated --filter-major --only-explicit | wc -l
```

Applications of the Framework



Replace a Service?

Applications of the Framework

```
$ grep LegacyService::Client | wc -l
```

Strong Coupling
& Low Cohesion?

Applications of the Framework

```
$ packwerk # check for violations
$ packwerk update-todo
```

A Framework for Tech. Debt

1. Get the Numbers 
2. Visualize Numbers 
3. Create a Vision 
4. Make Steps Towards the Vision 

<https://github.com/unused/a-framework-for-tech-debt/>