

Agile Tour Vienna 2023

Refactoring your E2E tests from an ice-cream cone to a pyramid

Presented by



Roland
Germ



Katrin
Heiderer



Challenges

Often understood but not applied

- Lot of excuses
- Lack of trust
- Lazy developers
- Time spent on rework
- Release pain
- Long test duration
- Powerful tools





The Showcase



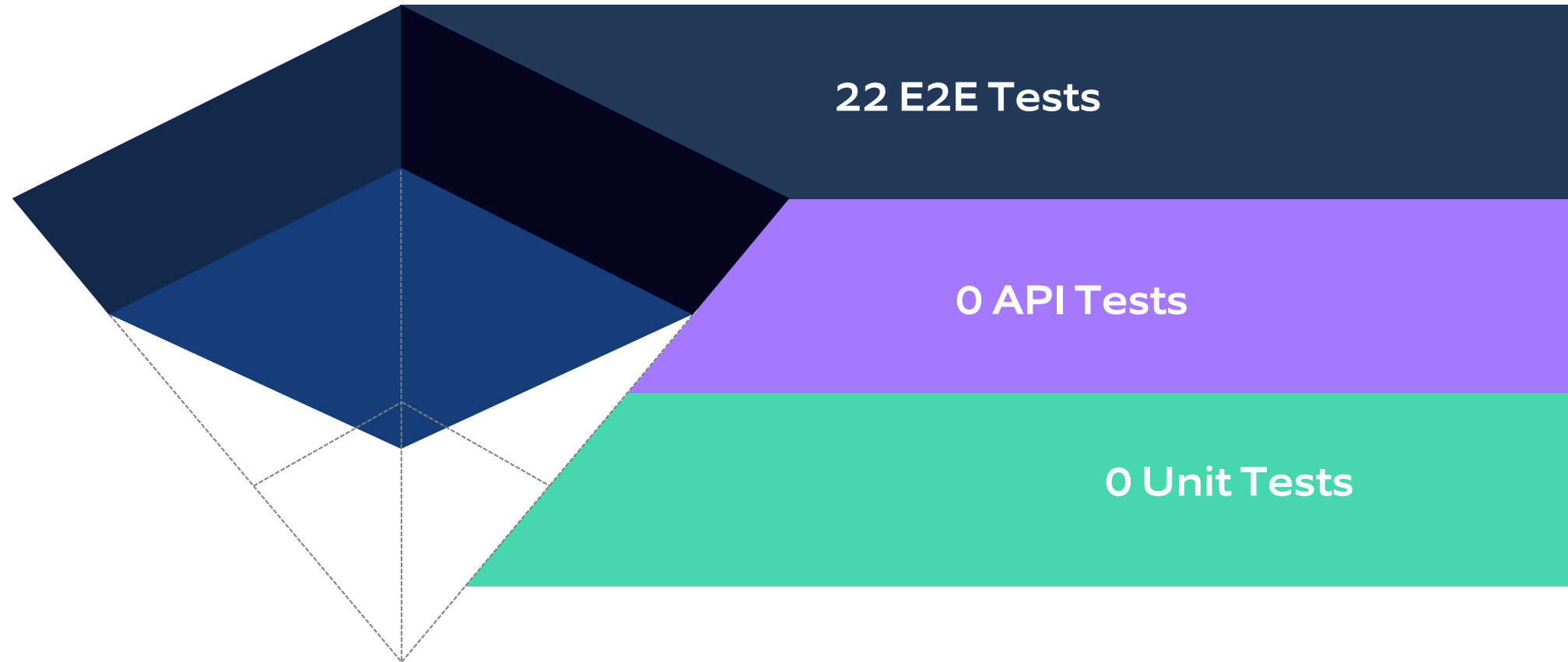
Cypress E2E Test Demonstration

Watch the demo video:

<https://www.youtube.com/watch?v=qAiwCR267aM>

The Starting Point

Testing the Business Logic with E2E Tests





Frontend Introduction and User Journey

Watch the demo video:

<https://www.youtube.com/watch?v=xnzVVWGpEik>



The Business logic

Premium and Tax Calculation

Premium

Base Premium

Vehicle's power multiplied by a percentage based on the coverage

Location Risk Factor

Repair cost differ depending on your state

Bonus Malus Levels

18 different levels depending on the driver's damage history

Tax

Electricity

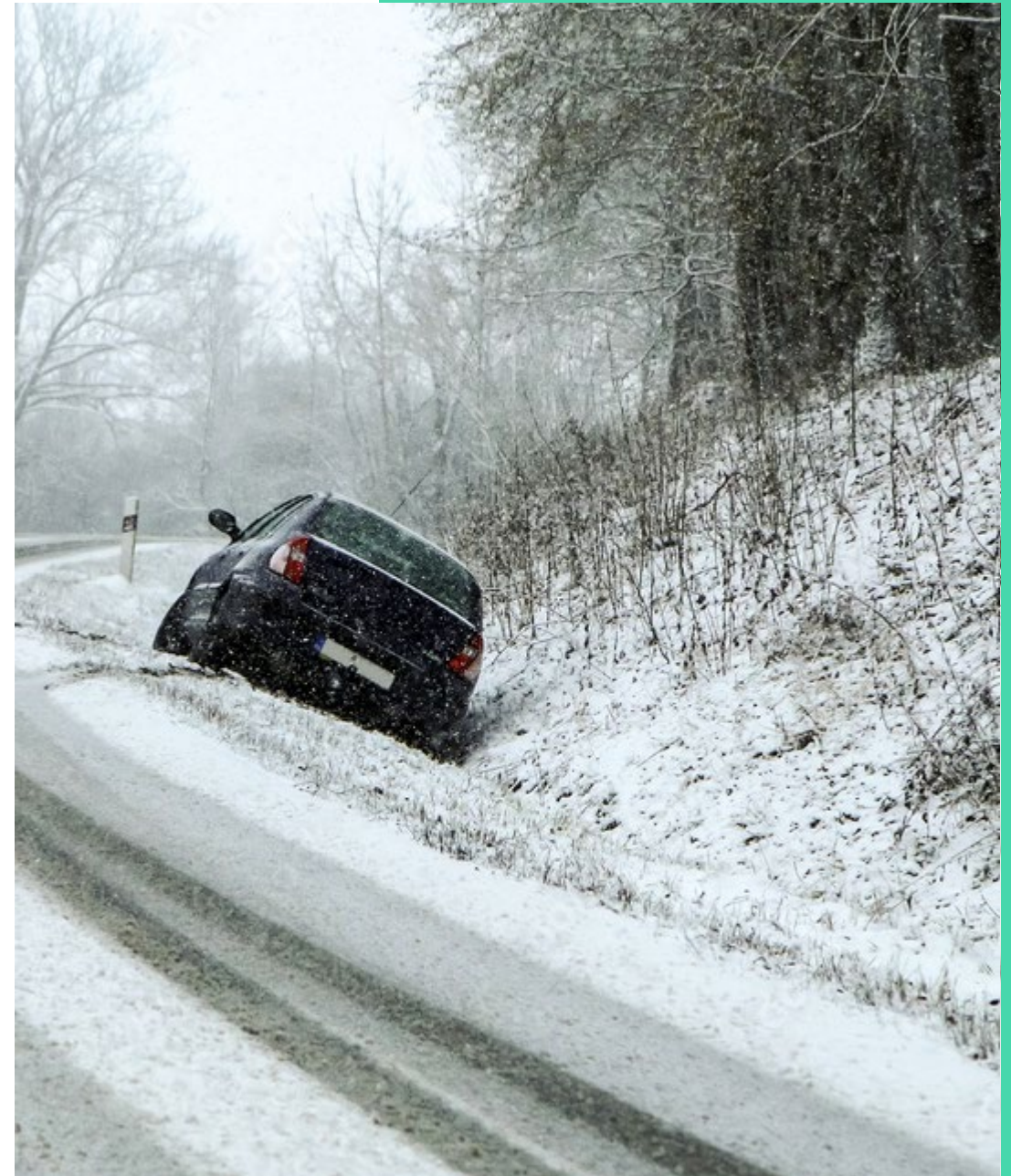
-> No Tax

Hybrid

-> Only Power

Diesel and Gasoline

-> Power and CO2 Emissions



Testcases

Combining the different input types



Tax

	Classification	Edge Cases
Vehicle power	2	3
Vehicle co2 emissions	2	3
Vehicle fuel type	4	4

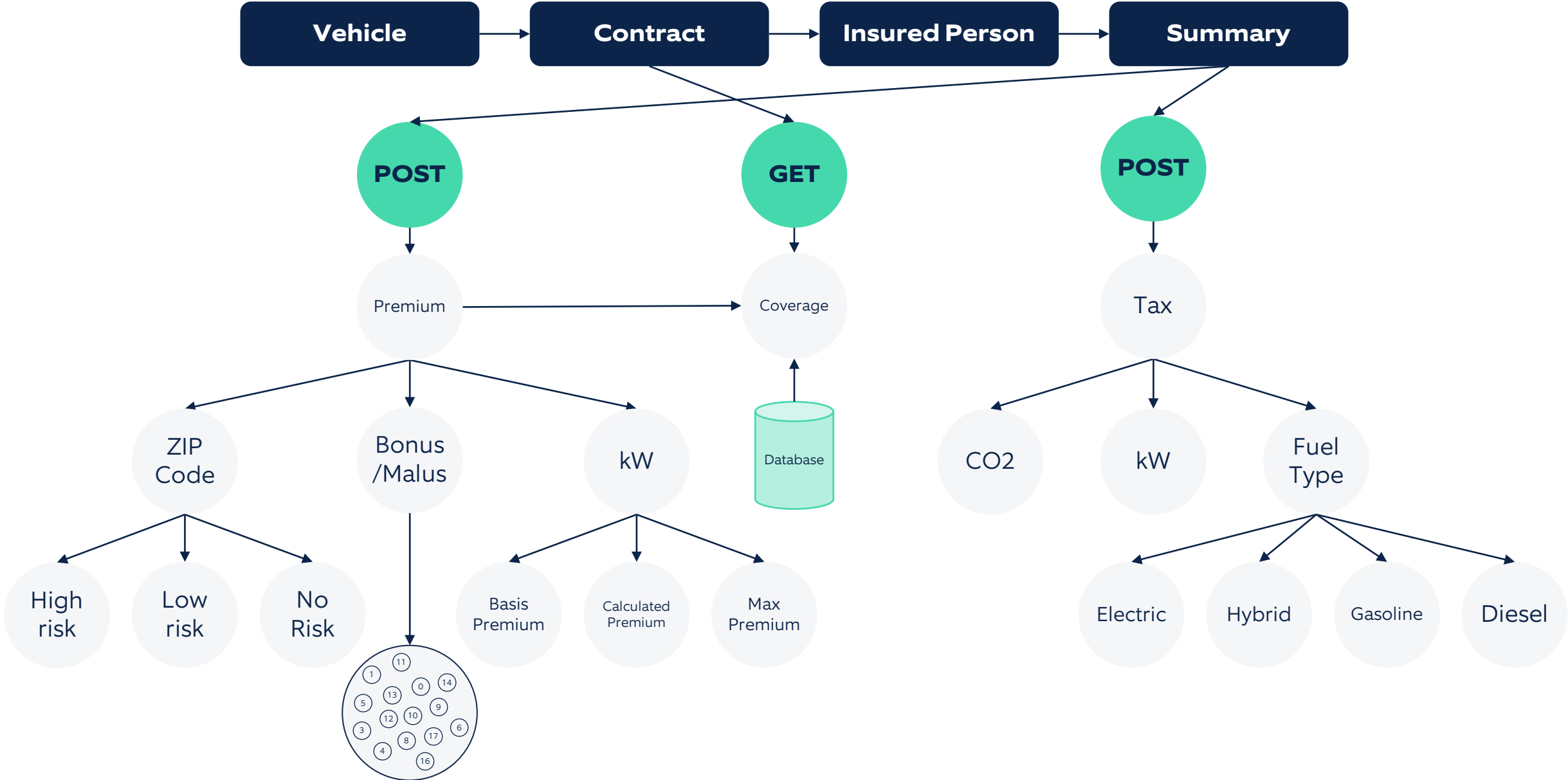
16 - 36

Premium

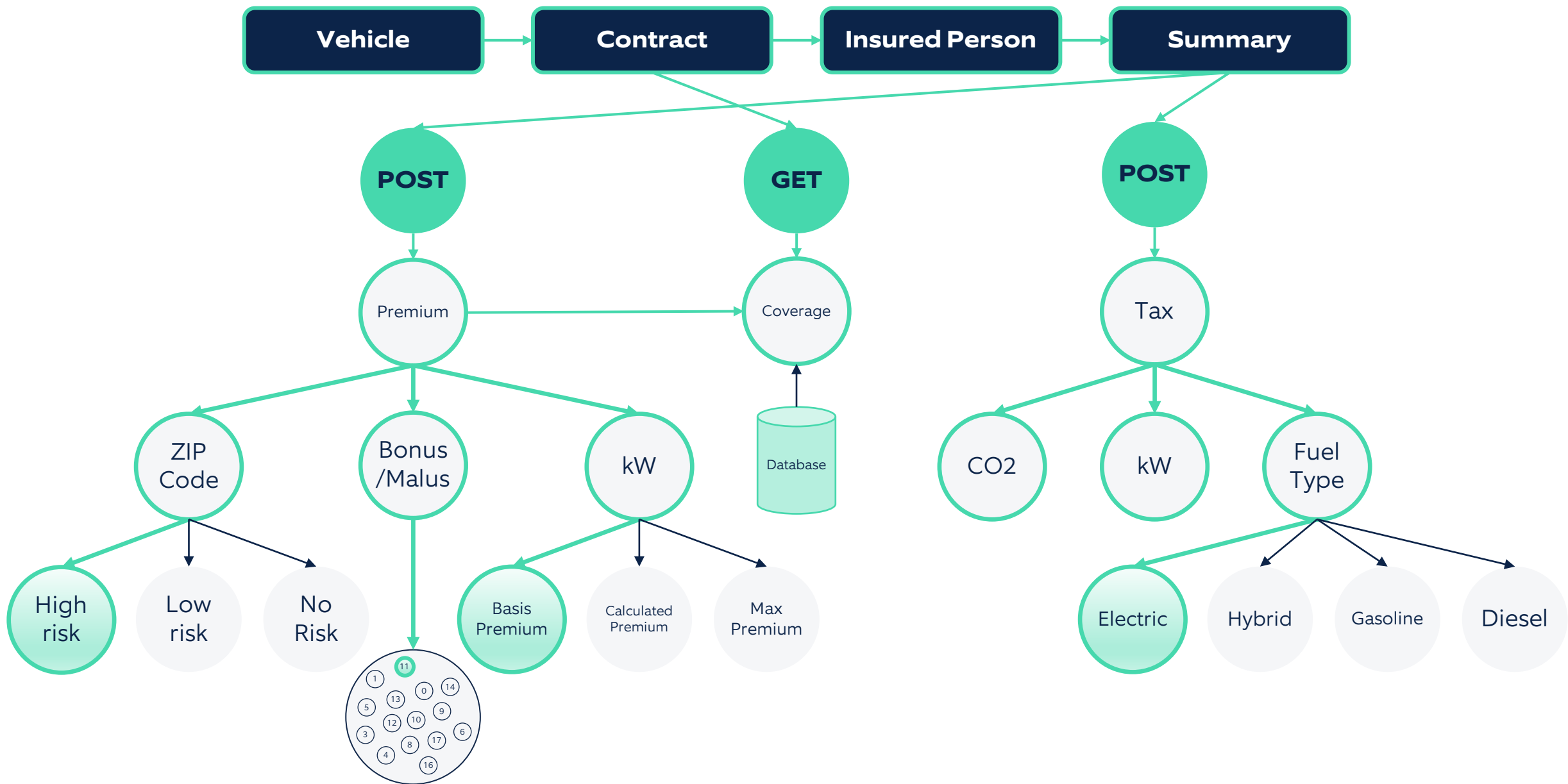
	Classification	Edge Cases
Vehicle power	3	4
Driver bonus-malus level	18	18
Location risk	3	6

162 - 432

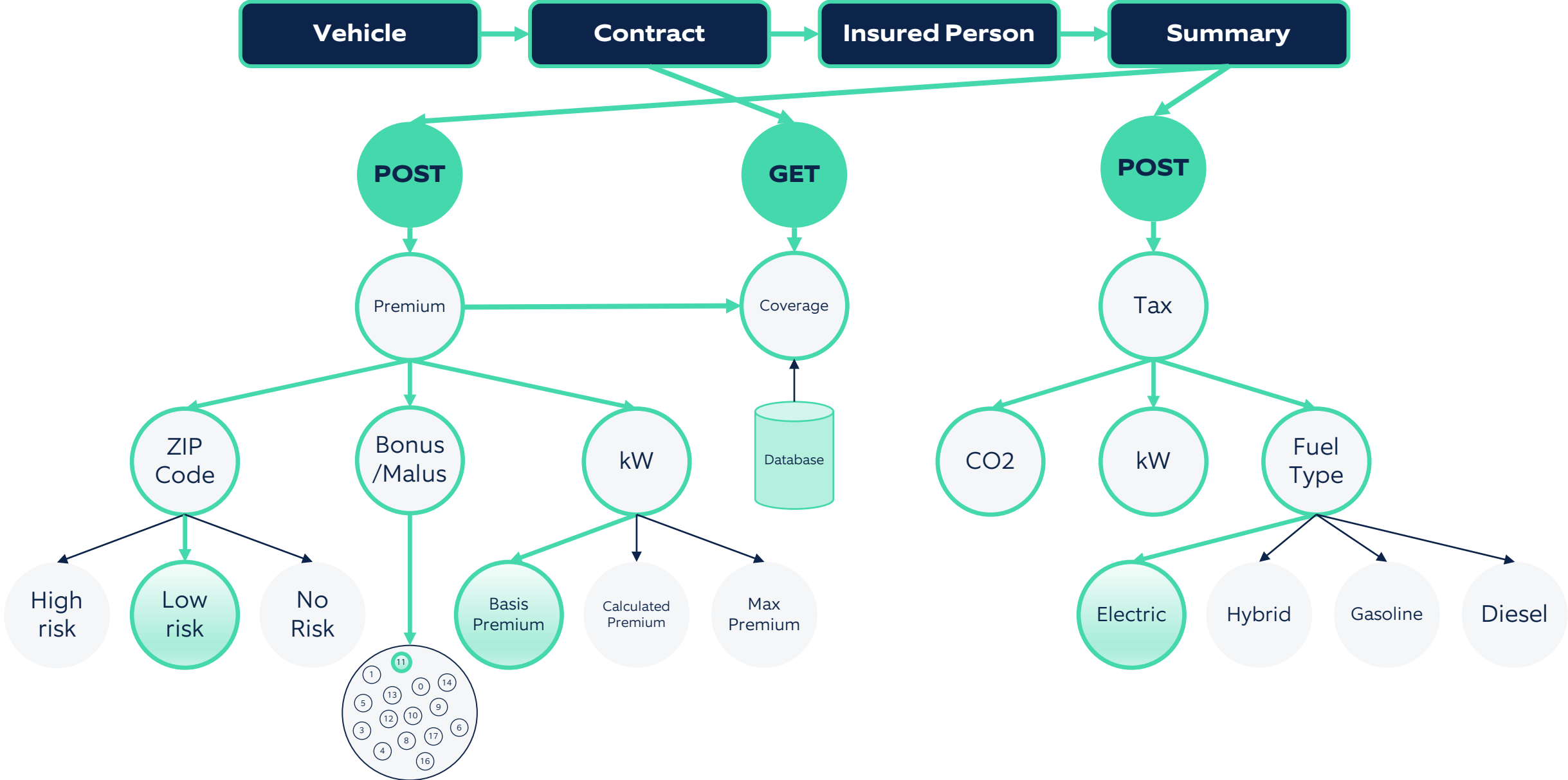
Software Architecture



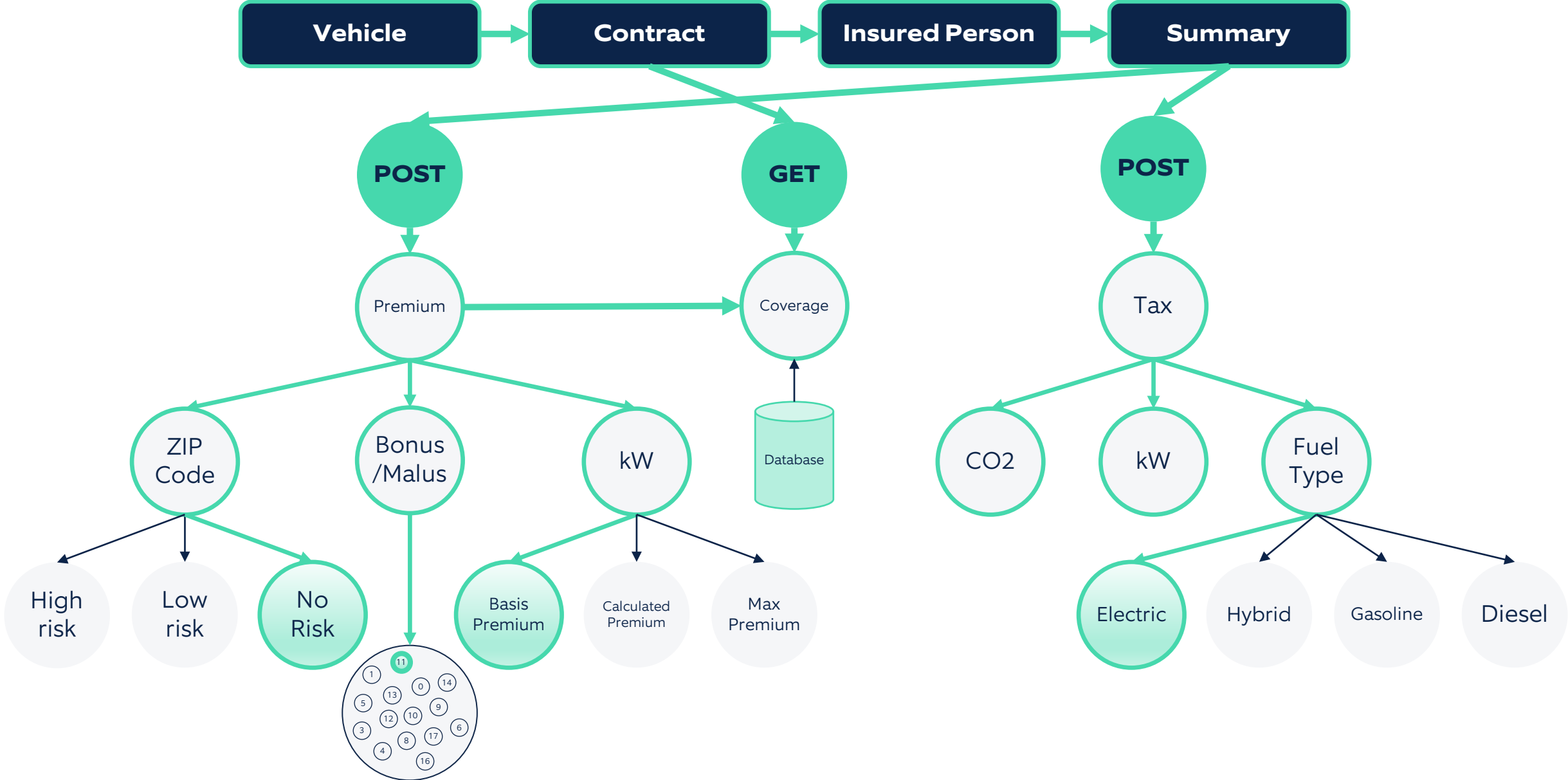
E2E Test Case 1



E2E Test Case 2



E2E Test Case 3





Refactoring Live-Demo



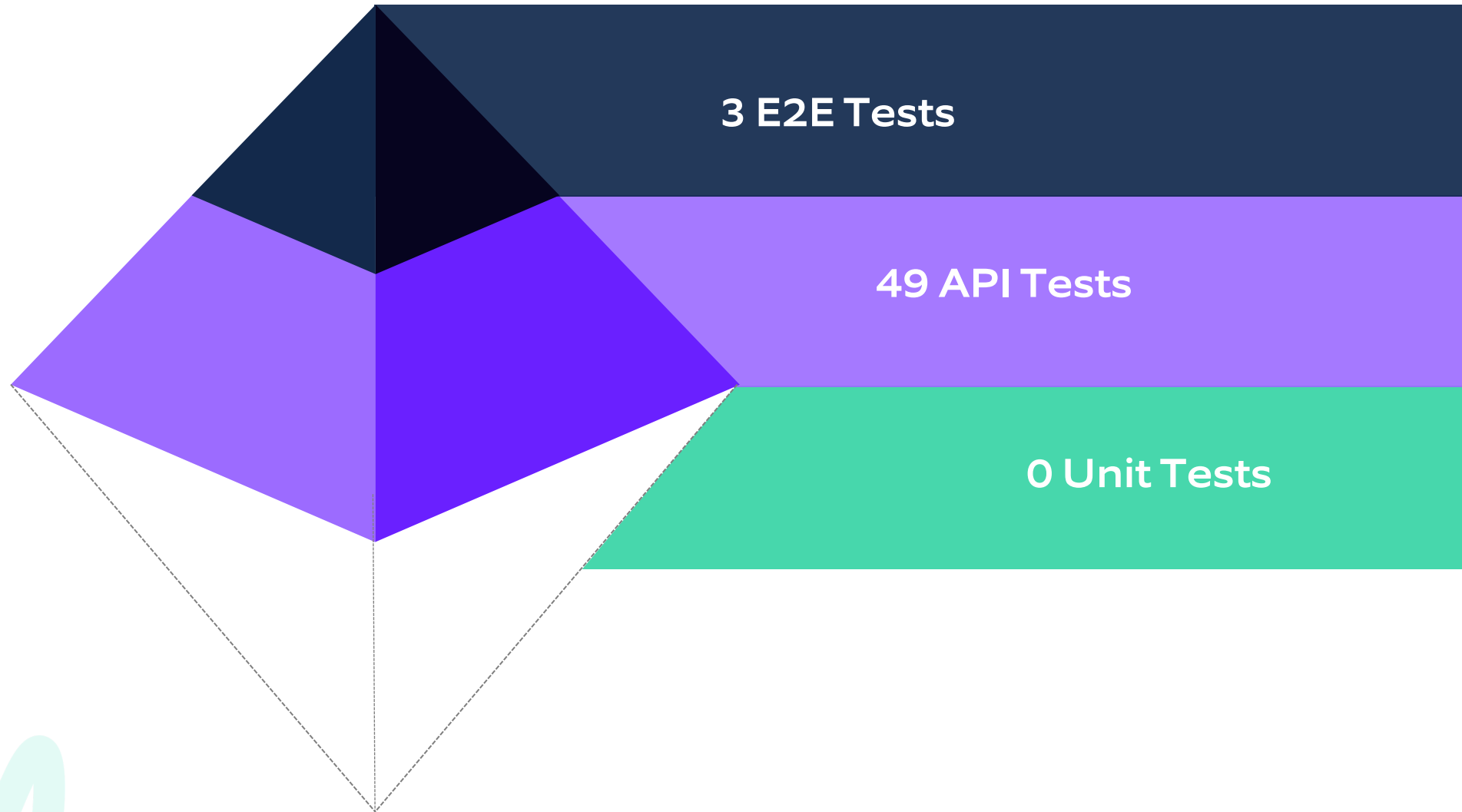
Refactoring UI Tests to API Tests

Watch the demo video:

<https://www.youtube.com/watch?v=tHgCsgAVov0>

After Refactoring the UI Test

Testing the Business Logic with E2E Tests





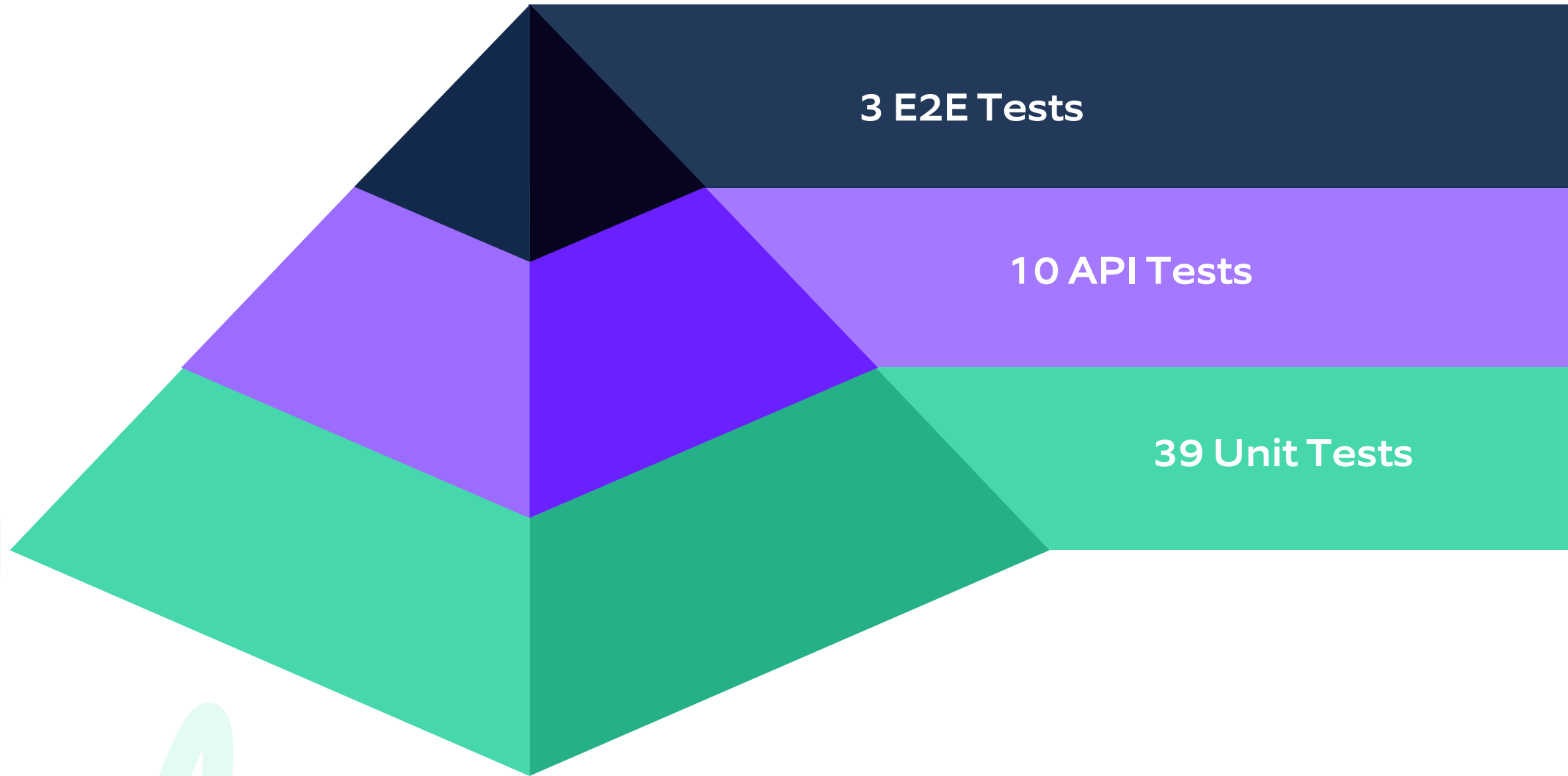
Refactoring API Tests to Unit Tests

Watch the demo video:

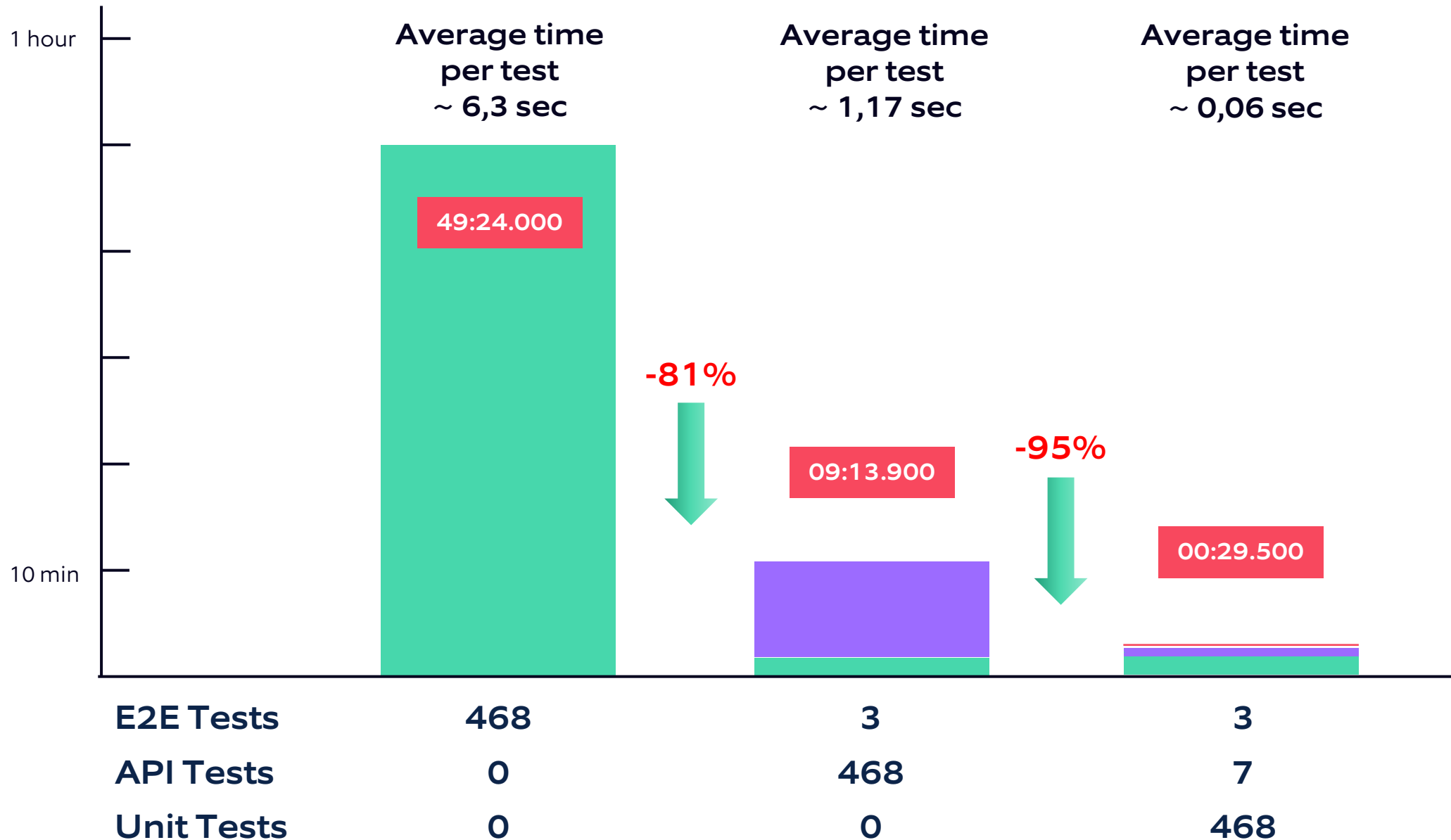
<https://www.youtube.com/watch?v=hFCnneE5md4>

The Final Distribution

Testing the Business Logic with Unit Tests



Test Duration





**Pyramid is your
best choice**





Final Purpose of our Layers

E2E Tests

- Only one UI happy path
- Additional flows
- UI Validation

API Tests

- Tests for each endpoint
- All contract exceptions

Unit Tests

- Covers complete business logic



Comparison of Test Automation Distributions



Lead Time

Ice-Cream



High

Diamond



Medium

Pyramid



Fast



Dealing with Failures

Complicated,
Failures are hard to
analyze

Less Complicated,
Failures located on API
level

Less Effort,
Failure points to
occurrence

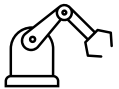


Maintainability

Fragile test - small
changes lead to
changes in the tests

Focus on testing the
integration aspects

Enables more
sophisticated UI tests



Refactoring

-

Manual efforts

Reuse of test code



Implications of Agile Teams

Separation of test and
dev activities
Async activities on same
features

Promotes collaboration
BDD as a practice
becomes possible

Shift left of test and QA
activities
Quality becomes a team
issue

Connect

We look forward to a personal exchange!



Roland Germ

Technical Agile Coach

roland.germ@nagarro.com

<https://www.linkedin.com/in/roland-germ-a996b186/>



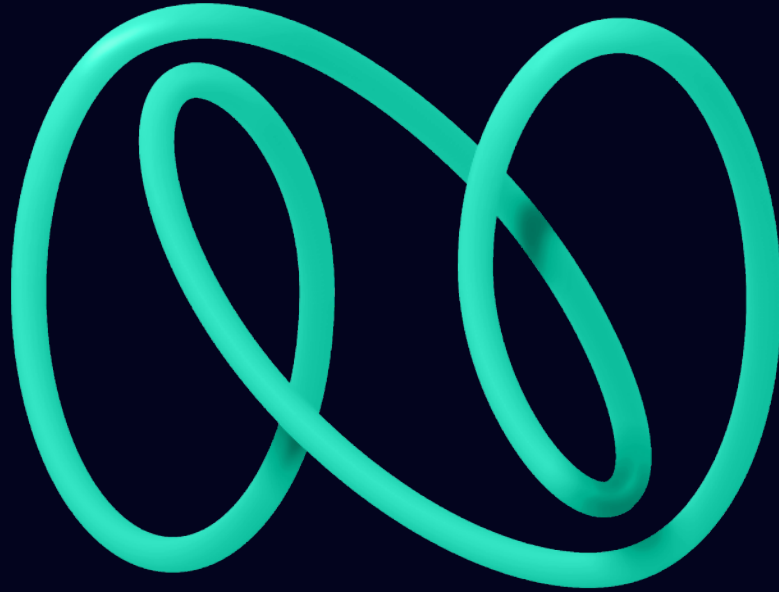
Katrin Heiderer

Technical Agile Coach

katrin.heiderer@nagarro.com

<https://www.linkedin.com/in/katrin-heiderer-465529235/>

**Thank
you!**





**Prepare now
to reach your
destination
safely.**

Reach out to us aqt@nagarro.com