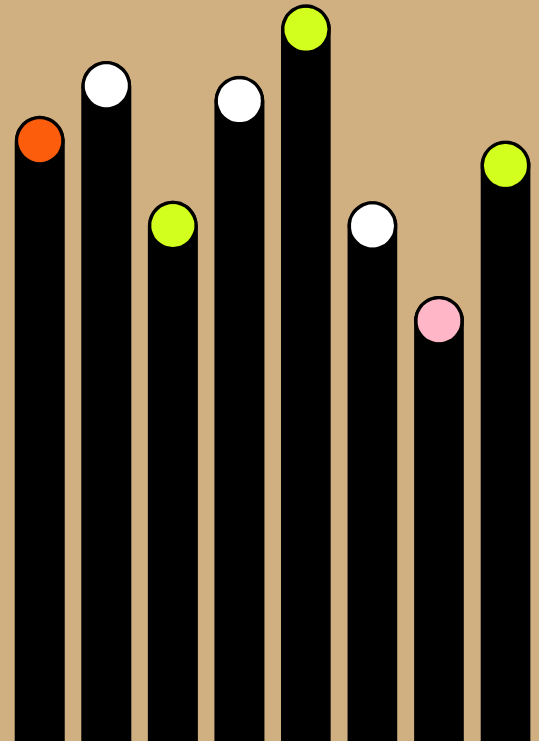


**CAMUNDA**  
**CON** 2023

# Behavior Driven Development (BDD) with Camunda

How we cut our Change Lead Time in half

Laurenz Harnischmacher  
Stefan Post

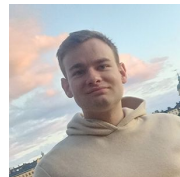




Stefan Post

- Software Engineer since 2013
- Joined Zurich in 2021

*„I would rather lose my code than my tests“*



Laurenz Harnischmacher

- Software Engineer
- Joined Zurich in 2019

*„Is it really necessary for the MVP?  
(minimum viable product)“*

# Where do we work

- **Zurich Group Germany**
  - a multi-line insurance
  - operating for more than 140 years
  - over 4,500 employees
  
- part of the **global operating Zurich Group**
  - active in over 170 countries
  - around 60,000 employees worldwide
  - Farmers Insurance in the US



# How do we use Camunda

- mid 2021 we started to use Camunda 7



- automation of **End2End processes**

Input

Processing

Output

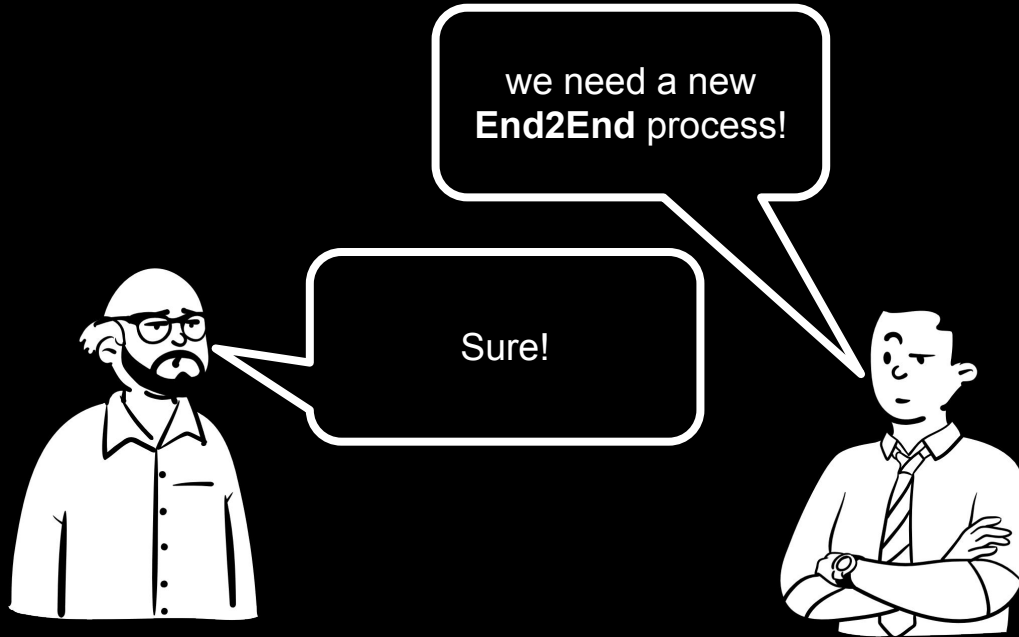
# Agenda

- Initial situation
- What is BDD?
- Improvements with BDD
- How to introduce BDD in your company
- Examples
- Lessons Learned

In a fictional company far far away ...

In the past, **inconsistent process logic** made **frequent redesign and reimplementation** necessary. The implementation and testing of automated EoL2EoL processes comes to design and

# ... in a time before BDD





# Timeline



developers  
implement  
automated process



finding **vintage cars** are  
not allowed to be  
processed automatically



Another finding  
relevant for the  
automated process

START

developing

testing

developing

testing

testing

End



Week 1

business unit puts  
together idea for  
End2End process

Week 3



Week 4

business unit tests  
new process

Week 7  
Week 10

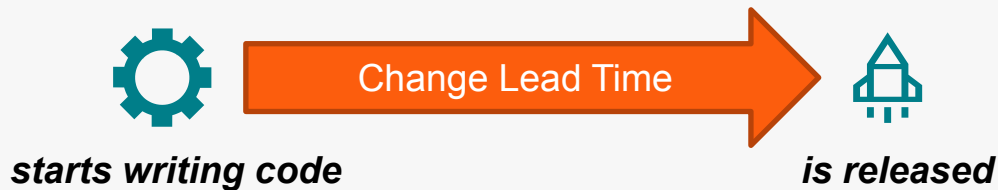
Week 11



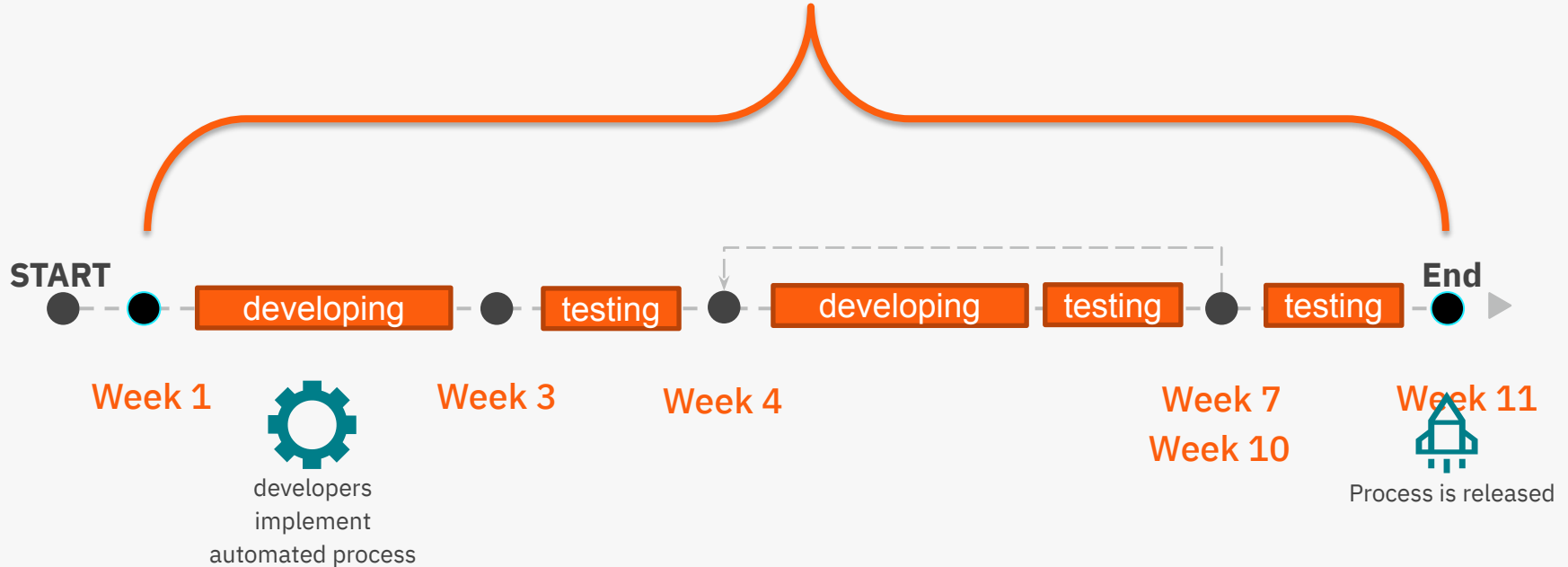
Process is released

# What is Change Lead Time?

- *Change Lead Time tracks the time from the moment a developer **starts writing code** for a feature or a change to the moment that change **is released** to end users.*



# 10 weeks Change Lead Time



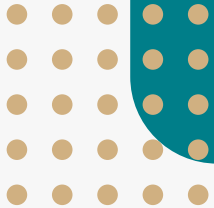
## Situation before BDD

- **Missing/unclear information** in the beginning of development
- **Inconsistent or incomplete** process logic
- Testing **after** completion
  - Problems discovered late in the game
- **Complete** re-testing after a new change

# How we cut our Change Lead Time in half ...

**by introducing**

# **Behavior Driven Development**



# Behavior Driven Development

- *Behavior-driven development (BDD) is an agile software development methodology in which an application is documented and designed around the behavior a user expects to experience when interacting with it.*



# Behavior Driven Development

## Example of a test scenario with Gherkin Syntax

### Scenario: Visit CamundaCon's talk about BDD

**Given** I visit CamundaCon

**When** I join the talk about BDD

**Then** I get entertained

**And** I get knowledge about BDD

**And** I will introduce BDD in my own company

**And** my Change Lead Time will improve

Initial context of the system

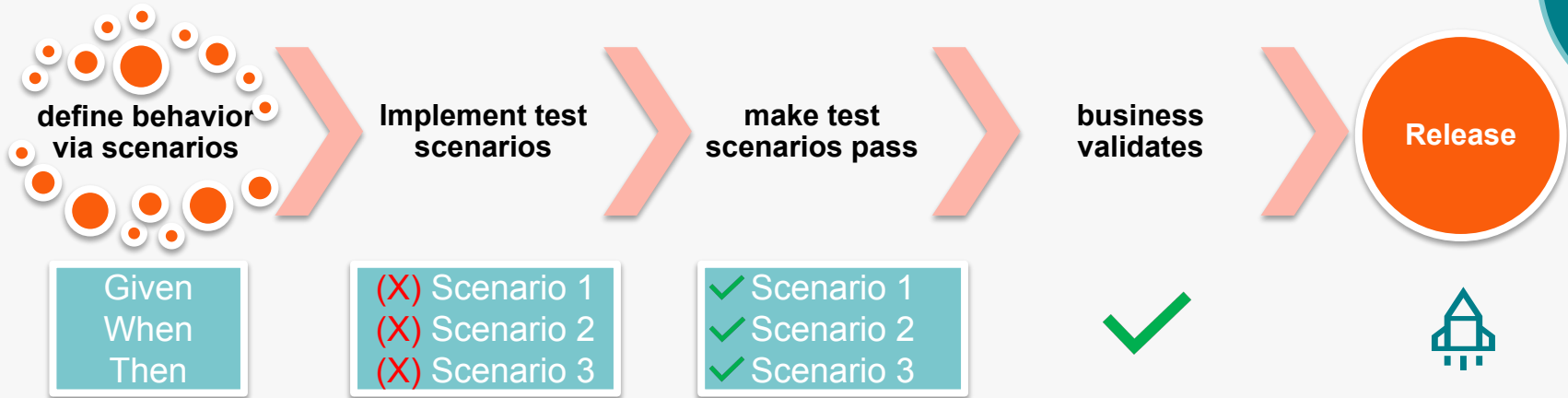
Action(s)

Expected outcome





# Behavior Driven Development

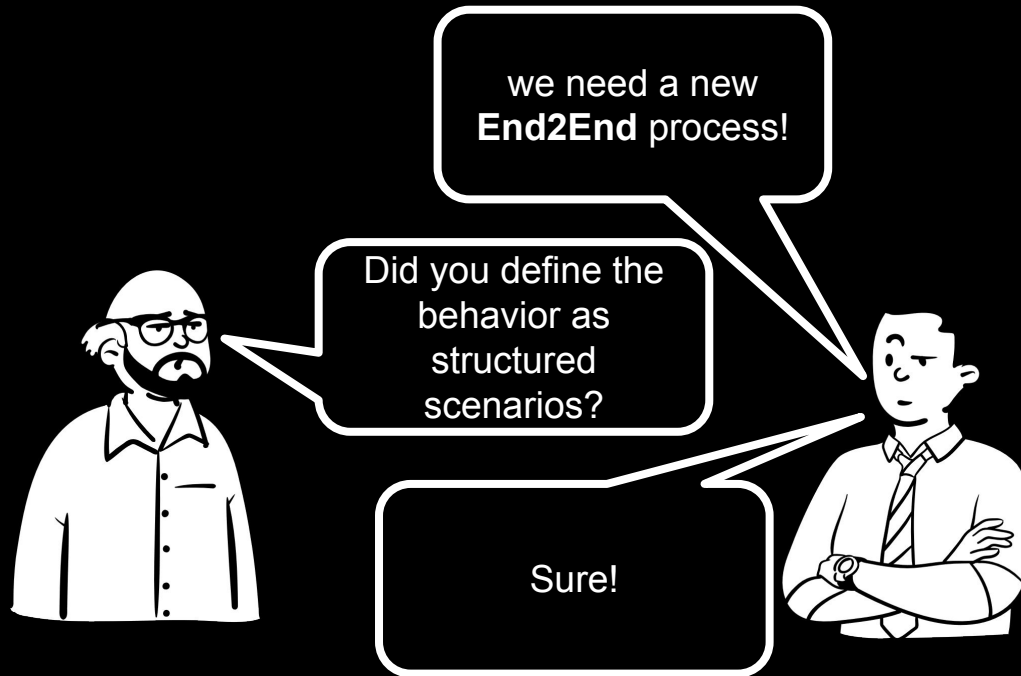


# Situation now (with BDD)

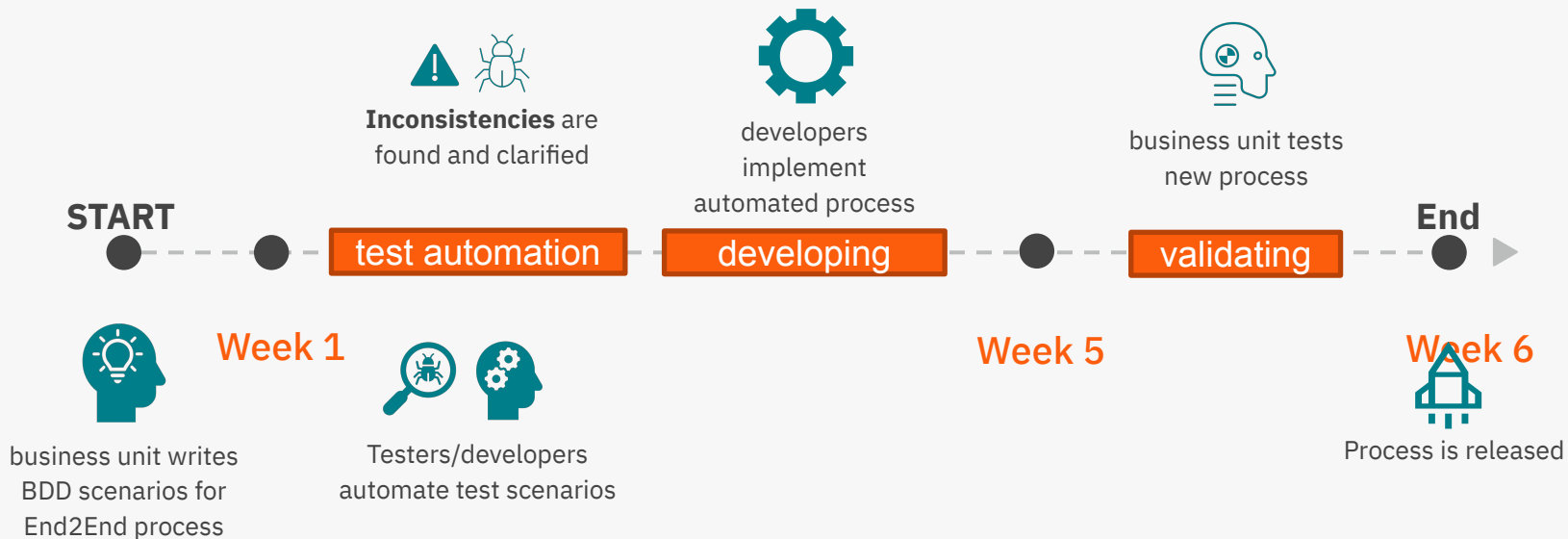
In the present, BDD has broken the cycle of redesigning and reimplementation.

Business experts, testers and developers collectively bring End2End processes into production at unexpected speed.

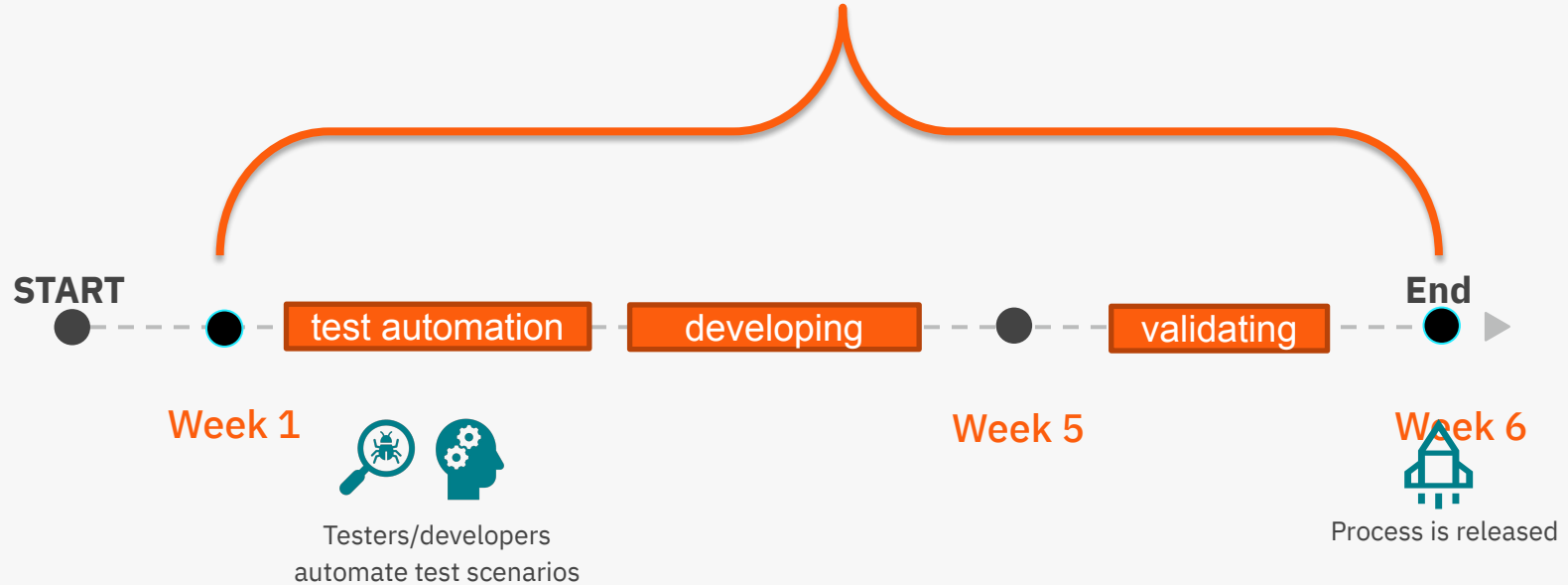
# ... in a time with BDD



# Timeline



# 5 weeks Change Lead Time



# Advantages

# How we cut our Change Lead Time in half

Why does BDD help to reduce Change Lead Time?

**Better requirements + early identification of problems**



**Less and earlier redesign / reimplementation**



**Reduced Change Lead Time**



# Introduce BDD

What is needed?

**¡THREE AMIGOS!**



**Business - Development – Testing**

# Introduce BDD

1

Find  
„Three Amigos“



Business - Development - Testing

# Example




The screenshot displays an IDE with a Gherkin test file and its execution results. The test file is located at `camundaCon2023/src/test/resources/features/features.testConcludeCarInsurance.feature`. It contains three scenarios: a successful new car insurance process, a failed vintage car insurance process, and a failed new car insurance process due to an unreachable backend.

```
1 Feature: CamundaCon2023 example conclude car insurance
2
3 Background:
4   Given Camunda is ready
5
6 Scenario: new car insurance
7   Given the car is a "new car"
8   And the car brand is a "mercedes"
9   And the car model is "CLA 35"
10  When the process is started
11  Then the process is completed
12  And a new contract "was" created for the given brand and model
13  And the customer "was" informed about the new insurance policy
14  And "no" job for a clerk was created
15
16 Scenario: vintage car insurance
17   Given the car is a "vintage car"
18   And the car brand is a "Ford"
19   And the car model is "1958 Fairlane"
20  When the process is started
21  Then the process is completed
22  And a new contract "was not" created for the given brand and model
23  And the customer "was not" informed about the new insurance policy
24  And "a" job for a clerk was created
25
26 Scenario: new car insurance - error during automatic processing
27   Given the car is a "new car"
28   And the car brand is a "mercedes"
29   And the car model is "CLA 35"
30   And the backend for automatic insurance contract creation is not reachable
31  When the process is started
32  Then the process is completed
33  And a new contract "could not have been" created for the given brand and model
34  And the customer "was not" informed about the new insurance policy
35  And "a" job for a clerk was created
```

The Run window shows the execution of these scenarios. The first two scenarios passed, while the third failed. The failure is due to a missing context configuration for the test class.

Test Results	Duration	Command
Cucumber	2sec 308ms	C:\Users\L.HARNISCHMACHER\.jdk\temurin-17.0.6\bin\java.exe ...
CamundaCon2023 example conclude car insurance	2sec 308ms	Testing started at 15:23 ...
new car insurance	1sec 305ms	15:23:38.902 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating CacheAwareContextLoaderDelegate from class [org.springframework.test.context.cache
the customer "was" informed about the new insurance policy	13ms	15:23:38.914 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating TestContextBootstrapper using constructor [public org.springframework.test.context.support
"no" job for a clerk was created	0ms	15:23:38.925 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating TestContextBootstrapper for test class [cucumber.CucumberSpringConfiguration] from
		15:23:38.934 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstrapper - Neither @ContextConfiguration nor @ContextHierarchy found for test class
		15:23:38.936 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - Did not detect default resource location for test class [cucumber.CucumberSpringC
		15:23:38.937 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - Did not detect default resource location for test class [cucumber.CucumberSpringC
		15:23:38.937 [main] INFO org.springframework.test.context.support.AbstractContextLoader - Could not detect default resource locations for test class [cucumber.CucumberSpringC

# Example

1 FAILED	2 PASSED	
67 % passed 3 executed	19 seconds ago last run	10 seconds duration
 Windows 10	 OpenJDK 64-Bit Server VM 17.0.6+10	 cucumber-jvm 7.13.0

Search with text or @tags

You can search with plain text or [Cucumber Tag Expressions](#) to filter the output

failed passed

file:///C:/Users/L.HARNISCHMACHER/LH\_Document/Repositories/privat/howWeCutOurChangeLeadTimeForBpaInHalfWithBdd/camundaCon2023/src/test/resources/features/features.testConcludeCarInsurance.feature

**Feature:** CamundaCon2023 example conclude car insurance

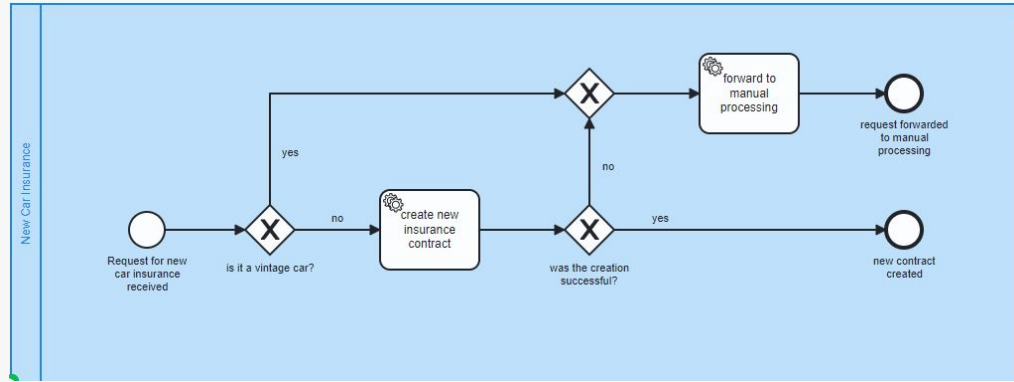
## Background:

- Given Camunda is ready

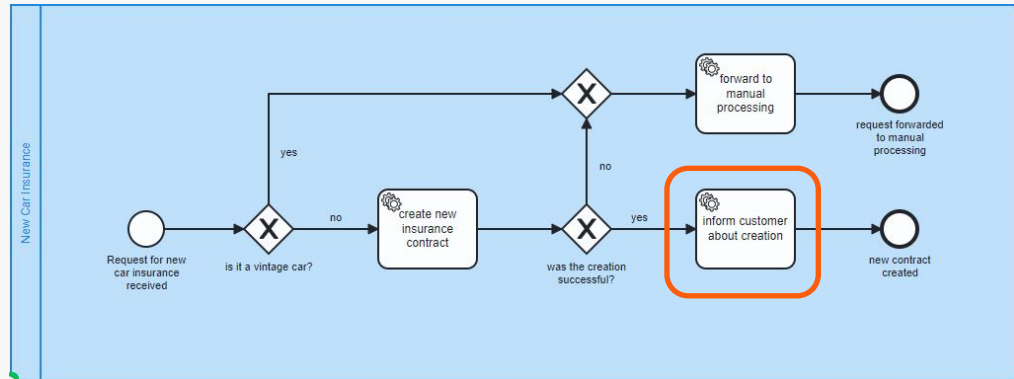
**Scenario:** new car insurance

- Given the car is a "new car"
- And the car brand is a "mercedes"
- And the car model is "CLA 35"
- When the process is started
- Then the process is completed
- And a new contract "was" created for the given brand and model
- And the customer "was" informed about the new insurance policy

# Example



develop missing logic



# Example

The screenshot displays an IDE window with the following content:

```
camundaCon2023 | src | test | resources | features | features.testConcludeCarInsurance.feature | Feature: features.testConcludeCarInsurance | Git | 1
```

**Project**

```
1 Feature: CamundaCon2023 example conclude car insurance
2
3 Background:
4   Given Camunda is ready
5
6 Scenario: new car insurance
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16 Scenario: vintage car insurance
17   Given the car is a "vintage car"
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19   And the car model is "1958 Fairlane"
20  When the process is started
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32  Then the process is completed
33  And a new contract "could not have been" created for the given brand and model
34  And the customer "was not" informed about the new insurance policy
35  And "a" job for a clerk was created
```

**Run:** Feature: features.testConcludeCarInsurance

Running: Scenarios 3 of <...>

Running tests... (1s 799ms)

- ✓ Cucumber
  - ✓ CamundaCon2023 example conclude car insurance
    - ✓ new car insurance - error during automatic processing

# Example

3 PASSED

100 % passed

3 executed

14 seconds ago

last run

11 seconds

duration



Windows 10



OpenJDK 64-Bit Server VM 17.0.6+10



cucumber-jvm 7.13.0

Search with text or @tags

You can search with plain text or [Cucumber Tag Expressions](#) to filter the output

✓ file:///C:/Users/LHARNISCHMACHER/LH\_Document/Repositories/privat/howWeCutOurChangeLeadTimeForBpaInHalfWithBdd/camundaCon2023/src/test/resources/features/features.testConcludeCarInsurance.feature

**Feature:** CamundaCon2023 example conclude car insurance

## Background:

- ✓ **Given** Camunda is ready

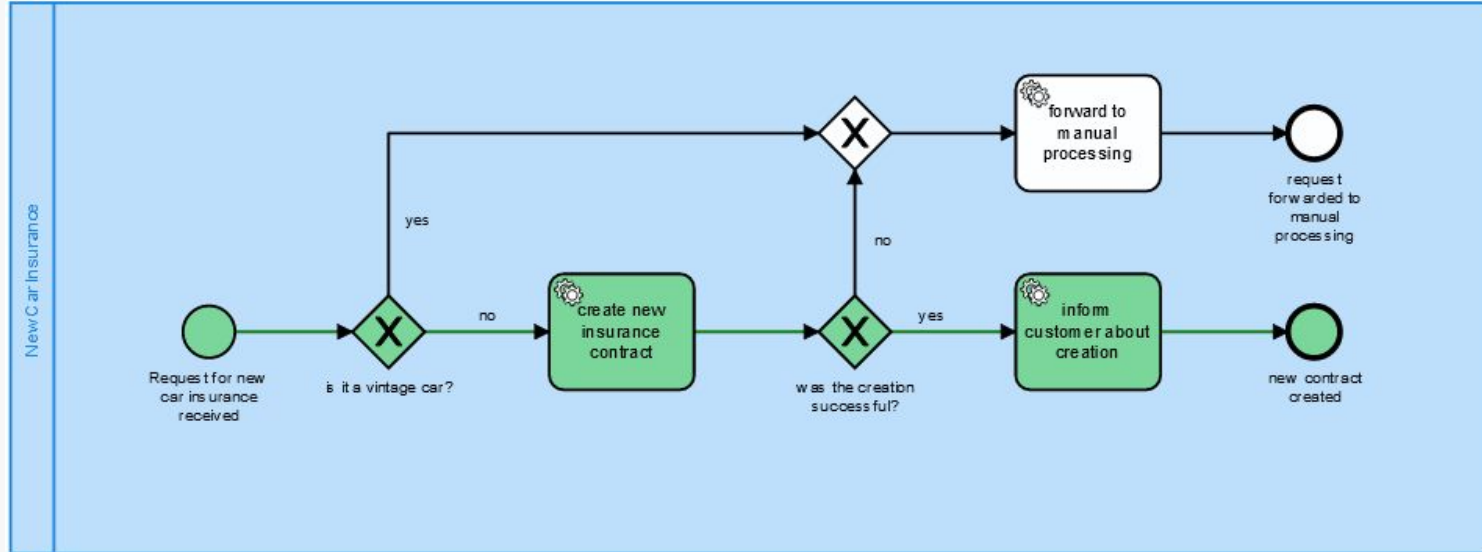
## Scenario: new car insurance

- ✓ **Given** the car is a "new car"
- ✓ **And** the car brand is a "mercedes"
- ✓ **And** the car model is "CLA 35"
- ✓ **When** the process is started
- ✓ **Then** the process is completed
- ✓ **And** a new contract "was" created for the given brand and model
- ✓ **And** the customer "was" informed about the new insurance policy
- ✓ **And** "no" job for a clerk was created

## Scenario: vintage car insurance

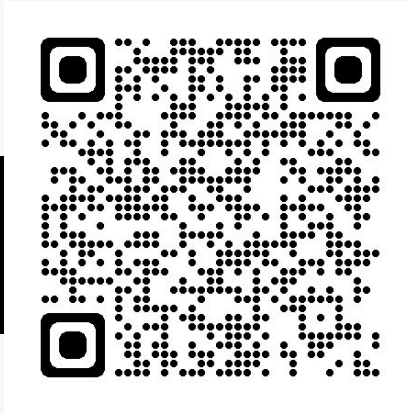
- ✓ **Given** the car is a "vintage car"
- ✓ **And** the car brand is a "Ford"
- ✓ **And** the car model is "1958 Fairlane"
- ✓ **When** the process is started
- ✓ **Then** the process is completed
- ✓ **And** a new contract "was not" created for the given brand and model
- ✓ **And** the customer "was not" informed about the new insurance policy
- ✓ **And** "a" job for a clerk was created

# Example



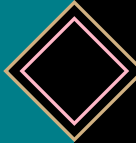
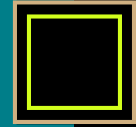


# Link to our example repo



<https://github.com/LaurenzH/howWeCutOurChangeLeadTimeForBpaInHalfWithBdd.git>

Provide templates and examples of test scenarios




# Lessons Learned

# Provide templates and examples of test scenarios

	A	B	C	D	E	F
1	Scenario:	name of the test scenario				
2		Given	Camunda is ready			
3		Keyword	Testschritt			
4		Keyword	Testschritt			
5		Keyword	Testschritt			
6		When	the process is started			
7		Then	the process is completed			
8		Keyword	Testschritt			
9		Keyword	Testschritt			
10		Given	Testschritt			
11		When				
12		Then				
13		And				
		Keyword				

Les  
Lea



## Provide templates and examples of test scenarios

Scenario: vintage car insurance

Given the car is a "vintage car"  
And the car brand is a "Ford"  
And the car model is "1958 Fairlane"

When the process is started


Then the process is completed

And a new contract "was not" created for the given brand and model

And the customer "was not" informed about the new insurance policy

And "a" job for a clerk was created





## Provide templates and examples of test scenarios

Scenario: vintage car insurance

Given the car is a "vintage car"

And the car brand is a "Ford"

And the car model is "1958 Fairlane"


When the process is started


Then the process is completed

And a new contract "was not" created for the given brand and model

And the costumer "was not" informed about the new insurance policy

And "a" job for a clerk was created





## Provide templates and examples of test scenarios

Scenario: vintage car insurance

Given the car is a "vintage car"

And the car brand is a "Ford"

And the car model is "1958 Fairlane"


When the process is started


Then the process is completed

And a new contract "was not" created for the given brand and model

And the costumer "was not" informed about the new insurance policy

And "a" job for a clerk was created





Provide templates and examples of test scenarios



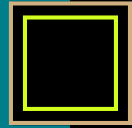
Reuse existing test steps where possible

# Lessons Learned





Provide templates and examples of test scenarios



Reuse existing test steps where possible

# Lessons Learned

```
Scenario: Mercedes
```

```
Given the car brand is a "mercedes"
```

```
Scenario: Ford
```

```
Given the car brand is a "ford"
```

```
Scenario: Tesla
```

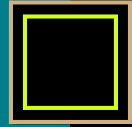
```
Given the car brand is a "tesla"
```







Provide templates and examples of test scenarios



Reuse existing test steps where possible

# Lessons Learned

```
Scenario: Mercedes
```

```
Given the car brand is a "mercedes"
```

```
Scenario: Ford
```

```
Given the car brand is a "ford"
```

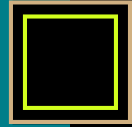
```
Scenario: Tesla
```

```
Given the car brand is a "tesla"
```

# Lessons Learned



Provide templates and examples of test scenarios



Reuse existing test steps where possible



Test behavior, not a model



Mock the backends



Start small

May the BDD force be with you

Questions?

CCON  
2023



# Potential Questions

- Are all test scenarios developed/automated prior to development?
  - Answer: to be honest, not all are developed before. An often used practice is to work with 2 developers on a feature where one writes the automated tests and one writes the code/models. Problems found during test-writing might be a hint for missing/unclear test steps
- How does automating the test cases prior to development work if you do not know the process model?
- Does BDD have benefits if you do not automate the test scenarios?
- How long did it take the business to adapt the new requirements (BDD test scenarios)?