



Keyword-Driven Testing with Robot Framework and Playwright

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```
4 setuptools-65.5.1.vir...
5
6 *** Test Cases ***
7
8 Erfolgreiche Anmeldung
9   [Tags]    positive    smoke
10  CarConfig Öffnen
11  Benutzer Anmelden  admin  @RBTFRMWKO
12  Anmeldung Prüfen
13  [Teardown]  CarConfig Beenden
14
15
16 Fehlerhafte Anmeldung
17  [Tags]    negative    smoke
18  CarConfig Öffnen
19  Benutzer Anmelden  admin  1234567
20  Abgewiesene Anmeldung Prüfen
21  [Teardown]  CarConfig Beenden
22
23
24 *** Keywords ***
```

KEYWORD-DRIVEN TESTING

#AutomationSTAR

KEYWORD-DRIVEN TESTING?

- Test Design Methodology
- Descriptive keywords
- Keyword == Step / Action
- Human Readable
- Easy to learn & understand
- Keywords can be composite
- Procedural Programming

```
5 *** Test Cases ***
6 Default Config
7 Open VSR Dream Car As Customer
8 Configure New Car
9 Select Basic Model      Model 3 (Rassant)
10 Click Next
11 Select Motor           ECotech with Hybrid
12 Click Next
13 Select Special Model   Gomera
14 Click Next
15 Select Accessories     Floor mats
16 ...                     Autopilot Don'tCare
17 ...                     Sports Suspension
18 Click Next
19 Choose Color           Blue
20 Click Next
21 Verify Prices
22 ... finalPrice=26.873,40
23 ... basePrice=17.000,00
24 ... enginePrice=4.999,00
25 ... editionPrice=1.413,00
26
27
28
```



WHAT ARE THE ADVANTAGES OF KDT

- Modular by concept (encourages Keyword creation)
- Basically Clean-Code for Testing
- Bridging the gap between Business & Tech
 - Keyword Layer Concept
- Improves:
 - Readability (short, precise, less funky chars)
 - Reusability (more generic than BDD)
 - Maintainability (Keyword layers)
 - Flexibility (gTAA, exchange of layers)



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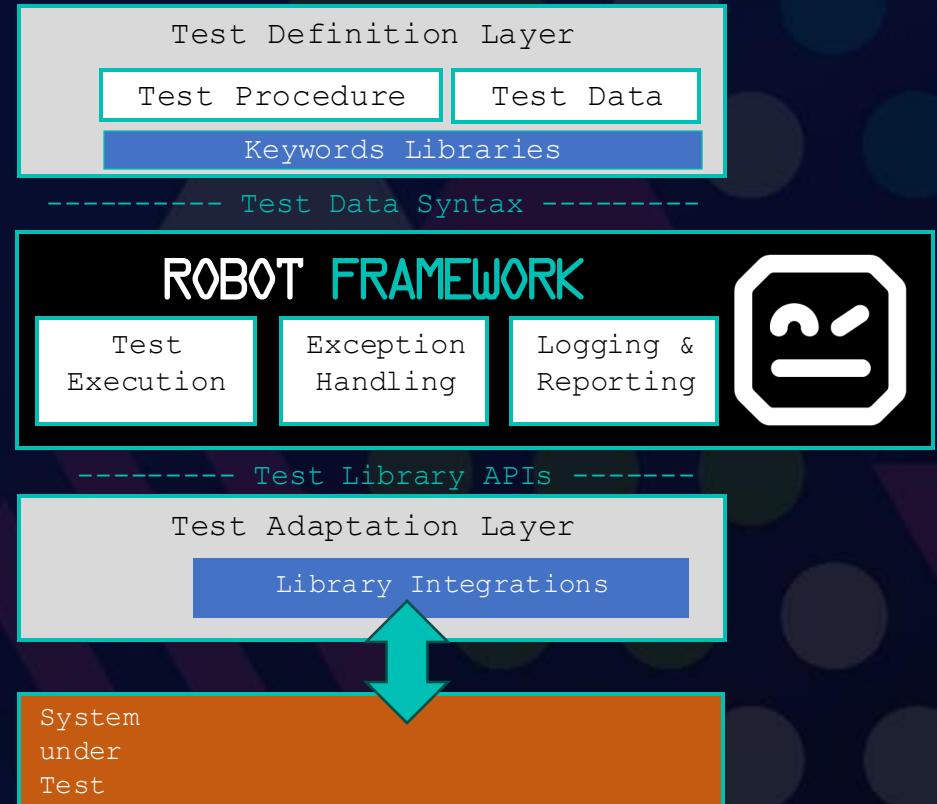
```
4 setuptools-65.5.1.vir...
5 *** Test Cases ***
6 Erfolgreiche Anmeldung
7 [Tags]    positive    smoke
8 CarConfig Öffnen
9 Benutzer Anmelden    admin    @RBTFRMWRK0
10 Anmeldung Prüfen
11 [Teardown]  CarConfig Beenden
12
13
14
15
16 Fehlerhafte Anmeldung
17 [Tags]    negative    smoke
18 CarConfig Öffnen
19 Benutzer Anmelden    admin    1234567
20 Abgewiesene Anmeldung Prüfen
21 [Teardown]  CarConfig Beenden
22
23
24 *** Keywords ***
```

ROBOT FRAMEWORK®

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ROBOT FRAMEWORK®

- Generic Automation Framework
 - Test Automation
 - Robotic Process Automation
- 100% Open-Source (Apache 2.0)
- Keyword-Driven Testing
- Behaviour-Driven Testing
- Technology Independent
 - From Web To Embedded-Testing
- Financed by Robot Framework Foundation



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ROBOT FRAMEWORK FOUNDATION

Robot Framework ry

Non-Profit Organisation

- Registered association (rekisteröity yhdistys)
- located in Finland (Helsinki)
- 74 international Companies as Members
- Founded in 2015 (7 Firmen)
- Finences Development & Community / Eco-system



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> 70 MEMBERS (SOME KNOWN...)



KUKA



KONE

ABB

CISCO

am

OSRAM

F-Secure

ING



SLOVENSKÁ Š
sporiteľňa



München

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ibus



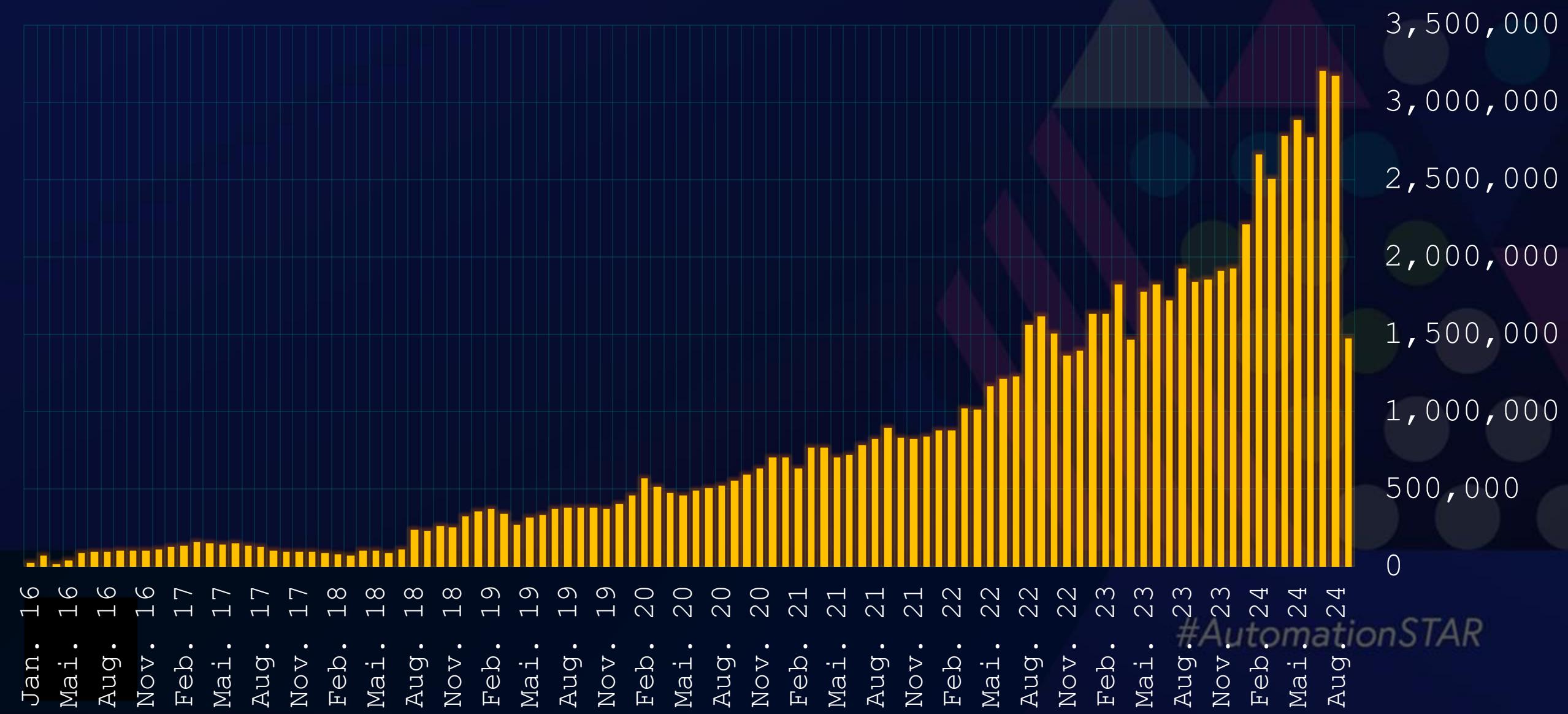
NRW.BANK
Wir fördern Ideen

PROVINZIAL

Nordea

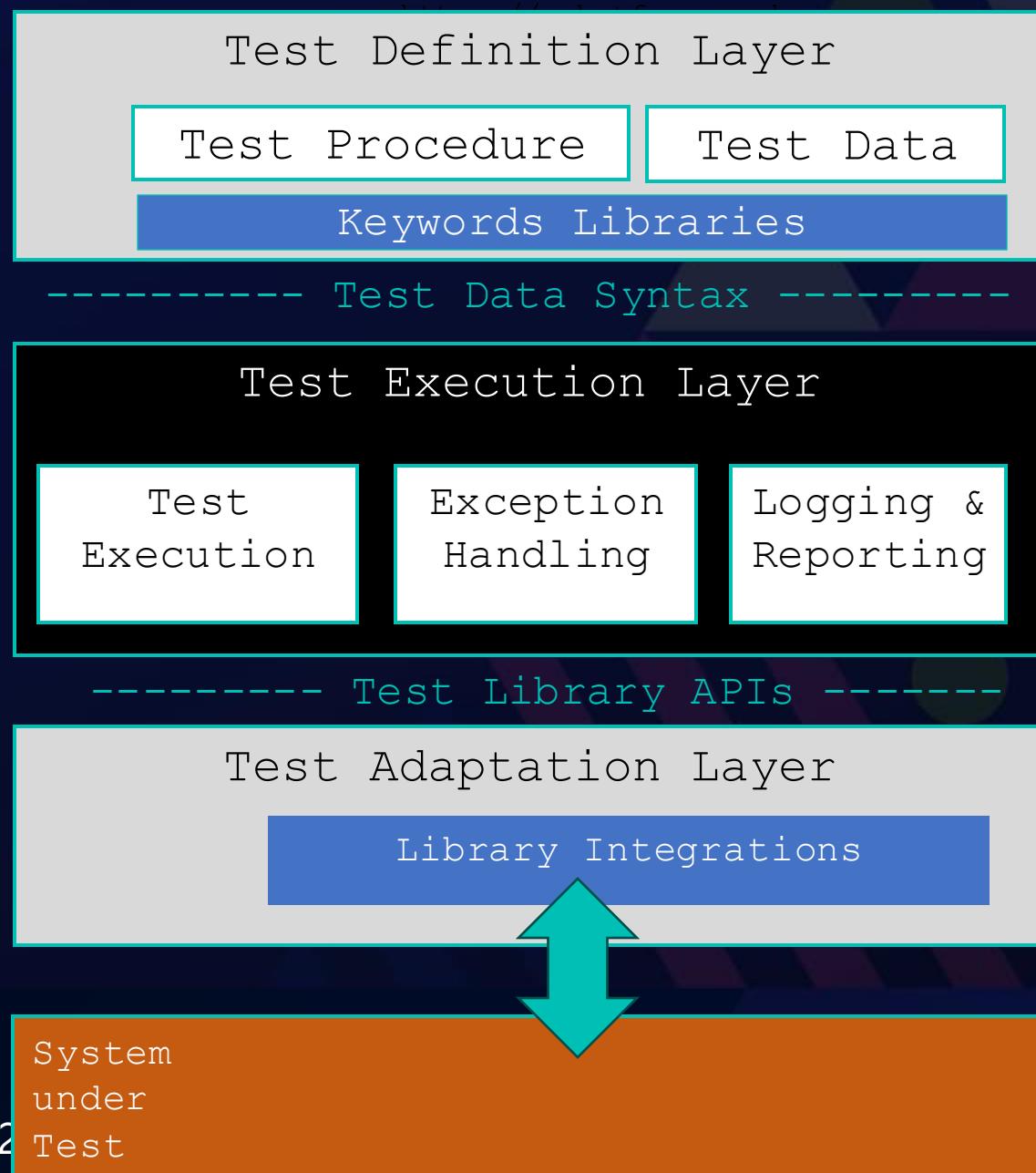
NOKIA

DOWNLOADS/MONAT



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Generic Test Automation Architecture



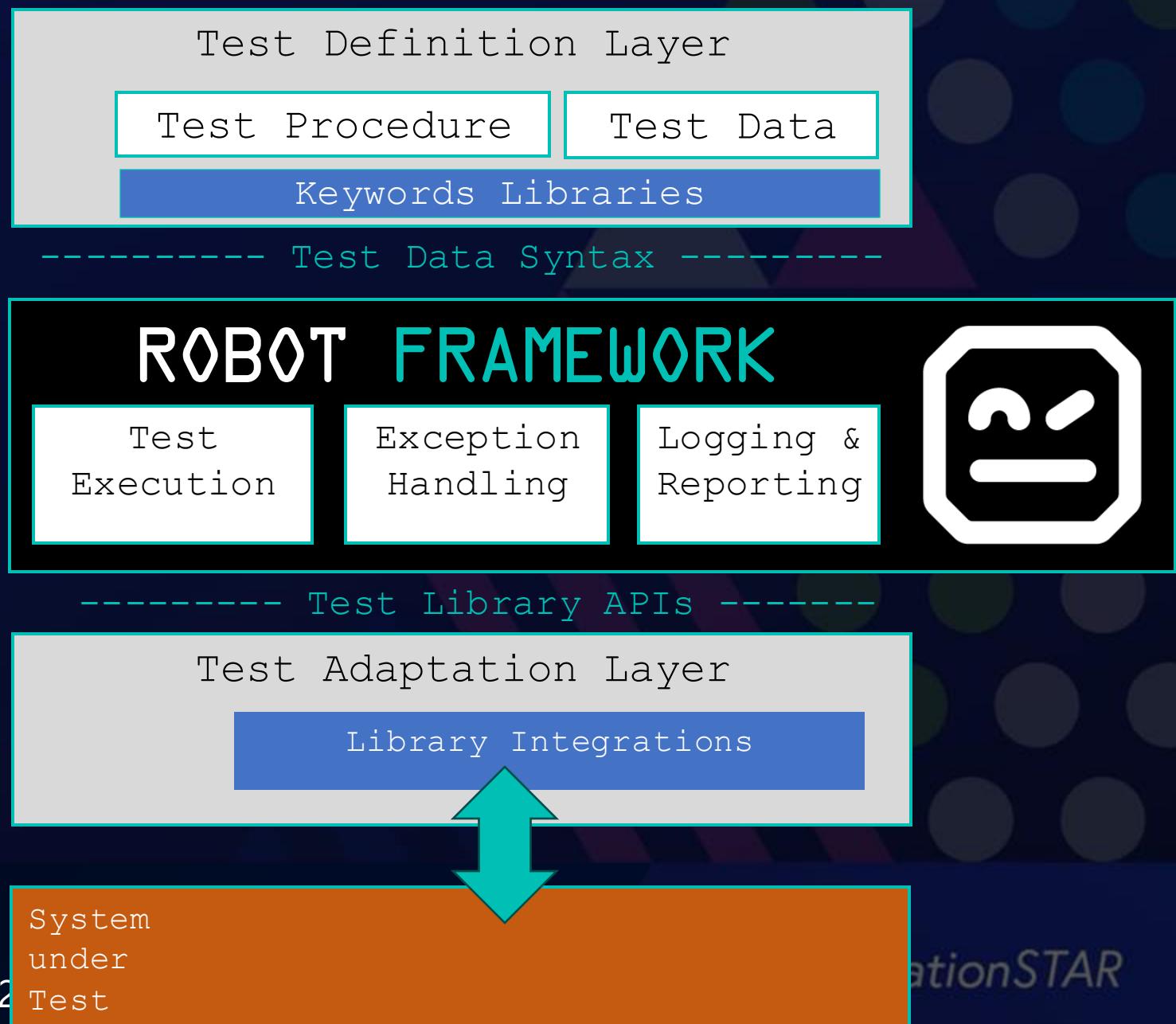
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Generic Test Automation Architecture



Editor & Design

```
*** Test Cases ***
Default Config as User
  Open VSR Dream Car
  Login User    customer_c01    password_c01
  Configure New Car
  Select Basic Model      Model 3 (Rassant)
  Select Motor            ECotech with Hybrid
  Select Special Model   Gomera
  Select Accessories     Floor mats
  ...
  ...
  Choose Color           Blue
  Verify Prices
  ...
  finalPrice=26.873,40
  ...
  basePrice=17.000,00
  ...
  enginePrice=4.999,00
  ...
  editionPrice=1.413,00
```



Test Definition Layer

Test Procedure

Test Data

Keywords Libraries

----- Test Data Syntax -----

ROBOT FRAMEWORK

Test
Execution

Exception
Handling

Logging &
Reporting



----- Test Library APIs -----

Test Adaptation Layer

Library Integrations

System
under
Test

Editor



Filter (e.g. text, !exclude, @tag) ⚙

3/5 26.8s ➤

- ✗ AutomationStar 8.2s
- ✗ AutomationStar 8.2s
- ✗ Browser VSR 8.2s
 - ✓ vsr DreamCar 3.3s
 - ✓ Atomic Default Config 3.3s
 - ✗ vsr DreamCar keywords
 - Default Config as User
 - Adding Discount as Sales
- > ✗ vsr TraumAuto keywords 4.9s

*** Test Cases ***

Default Config as User

Open VSR Dream Car

Login User customer_c01 password_c01

Configure New Car

Select Basic Model Model 3 (Rassant)

Select Motor ECOtech with Hybrid

Select Special Model Gomera

Select Accessories Floor mats

... Autopilot Don'tCare

... Sports Suspension

Choose Color Blue

Verify Prices

... finalPrice=26.873,40

... basePrice=17.000,00

... enginePrice=4.999,00

... editionPrice=1.413,00

Adding Discount as Sales

Open VSR Dream Car

💡 Logi|

↳ **Keywords** ***

↳ **Log User**

↳ **Log Variables**

↳ **LocalStorage Get Item**

↳ **LocalStorage Set Item**

↳ **LocalStorage Remove Item**

Keyword (vsr_DreamCar_keyword)

Log User

[Arguments] \${username} \${password}

Fill Text "Username" \${username}

Fill Text "Password" \${password}

Click id=button_login

...



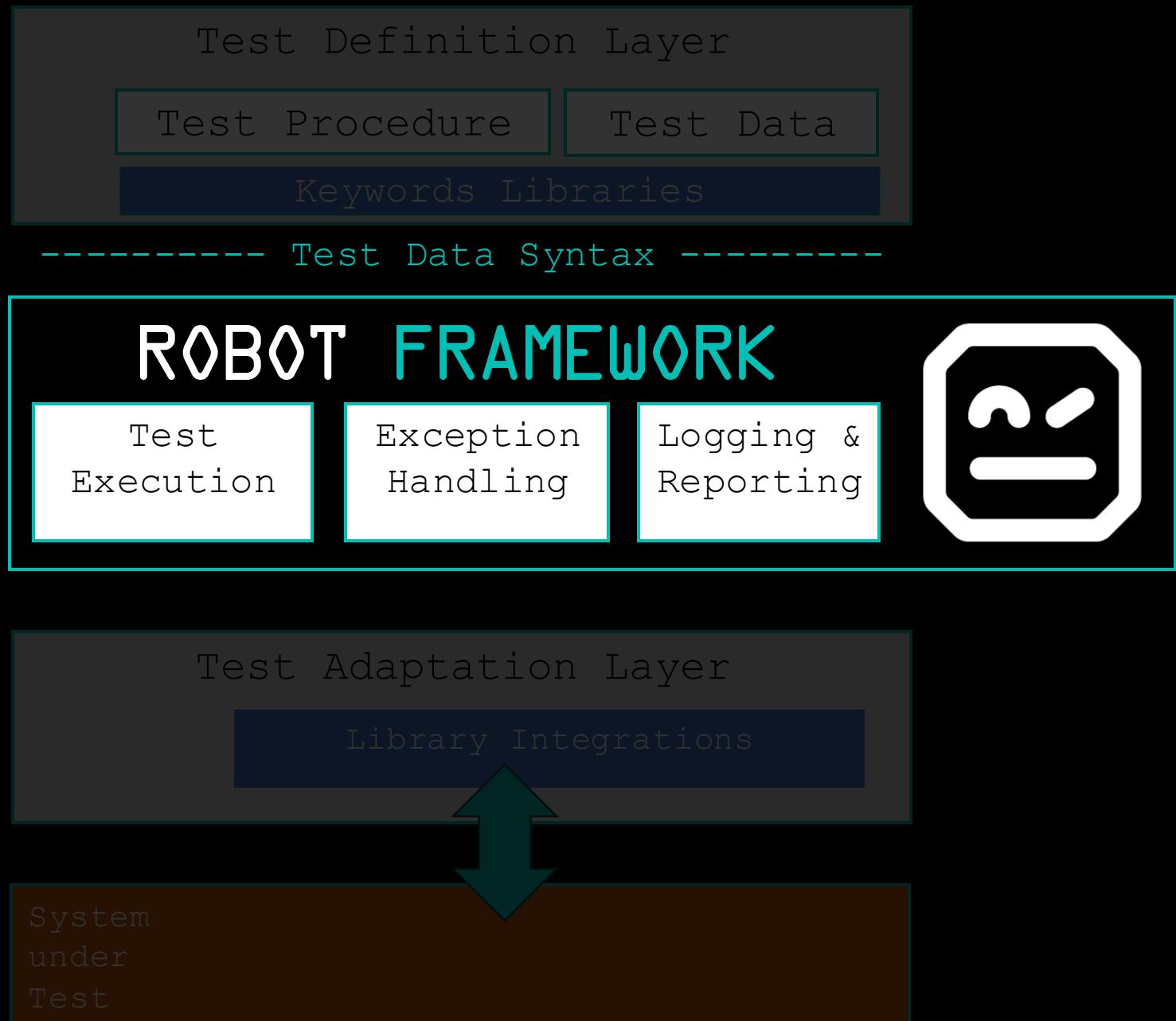
Editor

```
19      ...     basePrice=17.000,00
20      ...     enginePrice=4.999,00
21      ...     editionPrice=1.413,00
22
23
24 > Adding Discount as Sales
25   Open VSR Dream Car
26   Logi|  
27   ⚡ Login User                               Keyword (vsr_DreamCar_keywords)
28   ⚡ Log Variables
29   ⚡ LocalStorage Get Item
30   ⚡ LocalStorage Set Item
31   ⚡ LocalStorage Remove Item
32 *-- Keywords ***
33 Login User
34   [Arguments]    ${username}    ${password}
35   Fill Text      "Username"    ${username}
36   Fill Text      "Password"    ${password}
37   Click          id=button_login
38
39 Open VSR Dream Car
40   New Browser    ${BROWSER}    headless=${HEADLESS}
41   IF    ${TRACING}  New Context    tracing=trace_${TEST_NAME}.zi
42   New Page       https://vsr.testbench.com/login
```



Execution

```
rener@Salsa:~/Source/RF-Schulung/AutomationStar$ 02_RobotFiles * 14:33:57
robot -d results .
```



Keyword Libraries

```
class Interaction(LibraryComponent):
    @keyword(tags=("Setter", "PageContent"))
    def click(self, selector: str, button: MouseButton = MouseButton.left):
        """Simulates mouse click on the element found by ``selector``. -.
        self.click_with_options(selector, button)

    @keyword(tags=("Setter", "PageContent"))
    def click_with_options(
            self,
            selector: str,
            button: MouseButton = MouseButton.left,
            *modifiers: KeyboardModifier,
            clickCount: int = 1,
            delay: Optional[timedelta] = None,
            force: bool = False,
            noWaitAfter: bool = False,
            position_x: Optional[float] = None,
            position_y: Optional[float] = None,
            trial: bool = False,
        ):
        """Simulates mouse click on the element found by ``selector``. -.
        selector = self.presenter_mode(selector, self.strict_mode)
        with self.playwright.grpc_channel() as stub:
            options = {
                "button": button.name,
                "clickCount": clickCount,
                "force": force,
                "noWaitAfter": noWaitAfter,
                "trial": trial,
            }
            if delay:
                options["delay"] = self.get_timeout(delay)
        # Without the != None @ being falsy causes issues
        if position_x is not None and position_y is not None:
            positions: Dict[str, object] = {"x": position_x, "y": position_y}
```

Test Definition Layer

Test Procedure

Test Data

Keywords Libraries

----- Test Data Syntax -----

ROBOT FRAMEWORK

Test Execution

Exception Handling

Logging & Reporting



----- Test Library APIs -----



RF BROWSER



Playwright

System Under Test

Other libraries



ROBOSAPIENS



Editor

```
43 class Interaction(LibraryComponent):
292     @keyword(tags=("Setter", "PageContent"))
293     def click(self, selector: str, button: MouseButton = MouseButton.left,
294             >         """Simulates mouse click on the element found by ``selector``.
318             self.click_with_options(selector, button)
319
320     @keyword(tags=("Setter", "PageContent"))
321     def click_with_options(
322         self,
323         selector: str,
324         button: MouseButton = MouseButton.left,
325         *modifiers: KeyboardModifier,
326         clickCount: int = 1,
327         delay: Optional[timedelta] = None,
328         force: bool = False,
329         noWaitAfter: bool = False,
330         position_x: Optional[float] = None,
331         position_y: Optional[float] = None,
332         trial: bool = False,
333     ):
334         """Simulates mouse click on the element found by ``selector``.
369         selector = self.presenter_mode(selector, self.strict_mode)
370         with self.playwright.grpc_channel() as stub:
371             options = {
372                 "button": button.name,
373                 "clickCount": clickCount,
374                 "force": force,
375                 "noWaitAfter": noWaitAfter,
376                 "trial": trial,
377             }
378             if delay:
379                 options["delay"] = self.get_timeout(delay)
```

```
*** Keywords ***
Login User
    [Arguments]    ${username}    ${password}
    Fill Text    "Username"    ${username}
    Fill Text    "Password"    ${password}
    Click      id=button_login

→ Open VSR Dream Car
    New Browser    ${BROWSER}    headless=${HEADLESS}
    IF      ${TRACING}    New Context    tracing=trace_${TRACING}
    New Page    https://vsr.testbench.com/login
```

The diagram illustrates the relationship between different API testing tools:

- Browser** (represented by a large orange box) is connected to **Library APIs**.
- Library APIs** (represented by a teal box) is connected to **Other libraries**.
- Other libraries** (represented by a grey box) contains the following tools:
 - appium** (with a blue circular icon)
 - Selenium** (with a green checkmark icon)
 - REST** (with a white and blue icon)
 - POSTMAN** (with a red circle icon)
 - SoapUI** (with a black diamond icon)
 - eggplant** (with a purple eggplant icon)
 - ROBOSAPIENS** (with a grey robot head icon)

SPECIFICATION FILE SYNTAX

SPACE MATTERS

```
Tutorial > TestCases > 03_Browser_Tests > 02_Case

1 *** Settings ***
2 Metadata      Conference      Description
3
4 Resource      00_technical_keywords.resource
5
6
7 *** Variables ***
8 space = -> http://car
9 Value
10
11 *** Test Cases ***
12 Configure Car with Pass
13 [Setup]    Open Web Page    ${TEST_URL}
14 Login User    admin        @RBTFRMWRK@
15 Click New_Car
16 Select Base Model    Minigolf
17 Select Special Model   Jazz
18 Select Accessories    ABS      Außenspiegel
19 Verify Total Price    16,619.00   €

20
```

1 Space is a valid character
>=2 Spaces are separators

Recommendation 4 Spaces

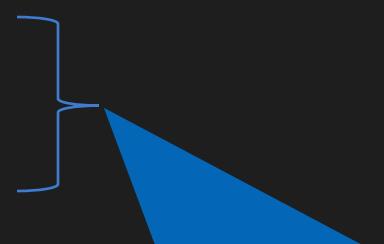
RBCN22

Fußmatten lenkrad Radio
René Rohner (imbus AG)

*.ROBOT / *.RESOURCE - SECTIONS

*** SETTINGS ***

```
Tutorial > TestCases > 03_Browser_Tests > 02_CarConfig.robot > ...
1  *** Settings ***
2  Metadata    Conference    RoboCon
3
4  Resource    00_technical_keywords.resource
5
6  Type        Value
7  *** Variables ***
8  ${TEST_URL}  http://car.keyword-driven.de
9
10
11 *** Test Cases ***
12 Configure Car with Pass
13     [Setup]  Open Web Page  ${TEST_URL}
14     Login User  admin  @RBTFRMWRK@
15     Click New_Car
16     Select Base Model  Minigolf
17     Select Special Model  Jazz
18     Select Accessories  ABS  Außenspiegel
19     Verify Total Price  05-Oct-2022  16,619.00  €
          Fußmatten  lenkrad  Radio
          René Rohner (imbus AG)
```



Configuration of a Suite:

- Library
- Resource
- Metadata
- Etc.

*.ROBOT / *.RESOURCE - SECTIONS

*** VARIABLES ***

Tutorial > TestCases > 03_Browser_Tests > 02_CarConfig.robot > ...

```
1  *** Settings ***
2  Metadata    Conference    RoboCon
3
4  Resource    00_technical_keywords
5
6
7  *** Variables ***
8  ${TEST_URL}    http://car.keyword-driven.de
9
10
11 *** Test Cases ***
12 Configure Car with Pass
13     [Setup]    Open Web Page    ${TEST_URL}
14     Login User    admin    @RBTFRMWRK@
15     Click New_Car
16     Select Base Model    Minigolf
17     Select Special Model    Jazz
18     Select Accessories    ABS    Außenspiegel
19     Verify Total Price    05-Oct-2022    16,619.00    €
          Fußmatten    lenkrad    Radio
          René Rohner (imbus AG)
```

Variables of test suite

- Values that are used often
- Values that configures test cases

Type

Name

Value

*.ROBOT / *.RESOURCE - SECTIONS

*** TEST CASES ***

Test Case Name

```
11 *** Test Cases ***
12 Configure Car with Pass
13 [Setup] Open Web Page ${TEST_URL}
14 Login User admin @RBTFRMWRK@
15 Click New_Car
16 Select Base Model Minigolf
17 Select Special Model Jazz
18 Select Accessories ABS Außenspiegel Fußmatten lenkrad Radio
19 Verify Total Price 16,619.00 €
20 Set Car Name My New Car
21 Save New_Car
```

Keyword call

Test Cases Section

- Test cases
- Test case specification

Keyword argument values

*.ROBOT / *.RESOURCE - SECTIONS

*** KEYWORDS ***

```
9  
10  
11 *** Test Cases ***  
12 Configure Car with Pass  
13 [Setup] Open Web Page ${TEST_URL}  
14 Login User admin @RBTFRMWRK@  
15 Click New_Car  
16 Select Base Model Minigolf  
17 Select Special Model Jazz  
18 Select Accessories ABS Außenspiegel  
19 Verify Total Price 16,619.00 €  
20 Set Car Name My New Car  
21 Save New_Car  
22  
23  
24 *** Keywords ***  
25 Login User  
26 [Arguments] ${user} ${password}  
27 Set Username ${user}  
28 Set Password ${password}  
29 Click Login Btn
```

called Keywords

Keyword name

Keyword arguments

Keyword Section

- Local keywords
- Keywords specification

KEYWORD LAYER FROM TECHNOLOGY TO BUSINESS LAYER

```
23 *** Keywords ***
24 Start CarConfig as Administrator
25     [Tags]    business
26     Open CarConfigurator
27     Login User    admin    @RBTFRMWRK@
28
29 Login User
30     [Tags]    functional
31     [Arguments]  ${user}    ${pwd}
32     Type Username    ${user}
33     Type Password    ${pwd}
34     Click Login Button
35
36 Type Username
37     [Documentation]  Types the given \${username} into the user
38     [Tags]    technical
39     [Arguments]  ${username}
40     Type Text    id=input_username    ${username}
41
```

```
722     @keyword(tags=("PageContent",))
723     def type_text(
724         self,
725         selector: str,
726         txt: str,
727         delay: timedelta = timedelta(microseconds=0),
728         clear: bool = True,
729         log_response: bool = True,
730         strict: bool = True,
731     ):
732         selector = self.presenter_mode(selector, str)
733         with self.playwright.grpc_channel() as stub:
734             delay_ms = self.get_timeout(delay)
735             response = stub.TypeText(
736                 Request().TypeText(
737                     selector=selector,
738                     text=txt,
```

ROBOT FRAMEWORKS SUPERPOWER

Eco System and Keyword Libraries

765 projects for "robotframework" @ PyPi.org

Vast variety of readymade keyword libraries:

- SeleniumLibrary
- Browser Library
- DatabaseLibrary
- RequestsLibrary
- SSHLibrary
- DocTest Library



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#AutomationSTAR

TUTORIAL ENVIRONMENT



- Kubernetes Based
- Served via Web
- Free to use (50h)
- Free for Open Source





Gitpod

POP-UP DEV-ENV

http://bit.ly/robocon-de

02_CarConfig.robot – robocor

Simple Browser

https://6080-imbus-robocondetutoria-2am69929b8b.ws-eu67.gitpod.io

Thu 29 Sep, 21:04

CarConfigurator

Liste Basismodell Edition Zusatzausstattung Zusammenfassung Logout

Basismodell Neues Auto

Mingolf

Preis Basismodell: 15,000.00€ Vorausgesetztes Gesamtpreis: 15,000.00€

Select Options By "Basismodell" >> ... >> select text Mingolf

Elements Console Sources Network Performance

Robot Framework Layout: U.S. Ports: 3100, 5900, 6080, 45773, 37373, 37759

prepare: bash
install System: bash
Command: bash
RobotCode: Run Tests

```

*** Variables ***
${TEST_DOCUMENTATION}: 'Tutorial > TestCases > 03_Browser_Tests > 02_CarConfig.robot'
${TEST_URL}: 'http://car.keyword-driven.de' ${TEST_URL} = 'http://car.keyword-driven.de/config/basemodel'
${TEST_NAME}: 'Configure Car with Pass'
@{TEST_TAGS}: []

*** Test Cases ***
Configure Car with Pass
[Setup] Open Web Page ${TEST_URL} ${TEST_URL} = 'http://car.keyword-driven.de/config/basemodel'
Login User admin @RBTFRMWRK@
Click New_Car
Select Base Model Minigolf
Select Special Model Jazz
Select Accessories ABS Außenspiegel Fußmatten lenk
Verify Total Price 17,453.00 €
Set Car Name My New Car
Save New_Car

*** Keywords ***
Login User
[Arguments] ${user} ${password}
Set Username ${user}
Set Password ${password}
Click Login Btn

Select Base Model
[Arguments] ${basemodel}
Wait For Elements State ${select_CarBaseModel}
Select Options By ${select_CarBaseModel} text ${basemodel}

Select Accessories
[Arguments] @accessory_list
Go To Accessories
FOR ${acc} IN @accessory_list
  Select Accessory ${acc}
END

```

PROBLEMS OUTPUT DEBUG CONSOLE PORTS TERMINAL

Failed Keywords
 Uncaught Failed Ke...
 Failed Test
 Failed Suite
 02_CarConfig.ro... 14
 02_CarConfig.ro... 29

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The screenshot shows a developer's environment with multiple windows open:

- Left Window (Robot Framework Test Script):** A code editor displaying a Robot Framework test script. The script includes variables, test cases, keywords, and a call stack. A red breakpoint marker is visible in the call stack.
- Middle Window (Browser Screenshot):** A screenshot of a car configurator application titled "CarConfigurator". It shows a "Basismodell" configuration page for a "Minigolf" model. The page displays a small image of a red Mini Cooper car, some descriptive text, and two buttons: "Preis Basismodell: 15,000.00€" and "Vorläufiger Gesamtpreis: 15,000.00€". The browser's developer tools are open, showing the DOM structure of the page.
- Bottom Window (Terminal):** A terminal window with several tabs open, including "prepare: bash", "install System: bash", "Command: bash", and "RobotCode: Run Tests".

The status bar at the bottom indicates "Running tests..." and shows file paths like "02_CarConfig.robot" and "00_technical_keywords.resource".

```
*** Variables ***
${TEST_DOCUMENTATION}: 'Tutorial > TestCases > 03_Browser_Tests > 02_CarConfig.robot'
${TEST_NAME}: 'Configure Car with Pass'
@{TEST_TAGS}: []

*** Test Cases ***
Configure Car with Pass
    [Setup]  Open Web Page  ${TEST_URL}  ${TEST_URL} = 'http://car.keyword-driven.de'
    Login User  admin  @RBTFRMWRK@
    Click New_Car
    Select Base Model  Minigolf
    Select Special Model  Jazz
    Select Accessories  ABS  Außenspiegel  Fußmatten  lenk
    Verify Total Price  17,453.00  €
    Set Car Name  My New Car
    Save New_Car

*** Keywords ***
Login User
    [Arguments]  ${user}  ${password}
    Set Username  ${user}
    Set Password  ${password}
    Click Login Btn

Select Base Model
    [Arguments]  ${basemodel}
    Wait For Elements State  ${select_CarBaseModel}
    Select Options By  ${select_CarBaseModel}  text  ${basemodel}

Select Accessories
    [Arguments]  @{accessory_list}
    Go To Accessories
    FOR  ${acc}  IN  @{accessory_list}
        |  Select Accessory  ${acc}
    END
```



> Suite
> Global



▽ WATCH

▽ CALL STACK Paused on step

Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.Tutor
Robocon-De-Tutorial.U

```
11 *** Test Cases ***
12 Configure Car with Pass
13 [Setup] Open Web Page ${TEST_URL} ${TEST_URL} = 'http://
● 14 Login User admin @RBTFRMWRK@
15 Click New_Car
16 Select Base Model Minigolf
17 Select Special Model Jazz
18 Select Accessories ABS Außenspiegel Fußmatten lenk
19 Verify Total Price 17,453.00 €
20 Set Car Name My New Car
21 Save New_Car
22
23
24 *** Keywords ***
25 Login User
26 [Arguments] ${user} ${password}
27 Set Username ${user}
28 Set Password ${password}
● 29 Click Login Btn
30
31 Select Base Model
32 [Arguments] ${basemodel}
33 Wait For Elements State ${select_CarBaseModel}
34 Select Options By ${select_CarBaseModel} text ${basem
35
36 Select Accessories
37 [Arguments] @{accessory_list}
38 Go To Accessories
```

Applications CarConfigurator - Chro... Thu 29 Sep, 21:04 gitpod

CarConfigurator Not secure | car.keyword-driven.de/config/basemodel

Liste Basismodell Edition Zusatzausstattung Zusammenfassung Logout

Basismodell

Neues Auto

Minigolf >



Preis Basismodell: 15,000.00€ Vorläufiger Gesamtpreis: 15,000.00€

Select Options By "Basismodell" >> . . . >> select text Minigolf

Elements Console Sources Network Performance

```
<!DOCTYPE html>
<html lang="en">
  <head>_</head>
  <body>
    :before
    <app-root _nghost-c0 ng-version="7.2.7">
      <router-outlet _ngcontent-c0></router-outlet>
      <app-baseModel-Configurator _nghost-c7 class="ng-star-inserted">
        <app-navigation-line _ngcontent-c7 _nghost-c5>..</app-navigation-line>
        <!-->
        <!-->
        <div _ngcontent-c7 class="pageStyle alignCenter ng-star-inserted">
          <div _ngcontent-c7 class="content">..</div>
          <div _ngcontent-c7 class="displayFlexStyleRow">..</div> flex
          <div _ngcontent-c7 class="extraPaddingRight extraPaddingLeft">
            <!-->
            <!-->
            
            <div _ngcontent-c7 class="clearElement">
              <div _ngcontent-c7 class="divStyle boxShadow roundedEdges floatRight exposedVerticallyTop paddingSmallAllOver">..</div>
            ...
            <div _ngcontent-c7 class="divStyle boxShadow roundedEdges floatRight exposedVerticallyTop paddingSmallAllOver">..</div> == $0
            </div>
            </div>
            </div>
            <!-->
          </app-baseModel-Configurator>
...
arElement div.divStyle.boxShadow.roundedEdges.floatRight.exposedVerticallyTop.paddingSmallAllOver ...
Styles Computed Layout Event Listeners DOM Breakpoints Properties Accessibility
Filter :hov .cls +, □
element.style {
}
.floatRight {
  float: right;
}
.roundedEdges {
  border-radius: 6px;
}
.exposedVerticallyTop {
  margin-top: 20px;
}
.paddingSmallAllOver {
  padding: 5px;
}
.divStyle {
  background-color: #e6e6e6;
}
```

```
30
31 Select Base Model
32     [Arguments]    ${basemodel}
33     Wait For Elements State    ${select_CarBaseModel}
34     Select Options By    ${select_CarBaseModel}    text    ${basem
35
36 Select Accessories
37     [Arguments]    @{accessory_list}
38     Go To Accessories
39     FOR    ${acc}    IN    @{accessory_list}
40     |     Select Accessory    ${acc}
41     END
42
```

Select Options By "Basismodell" >> ... >>

PROBLEMS OUTPUT DEBUG CONSOLE PORTS TERMINAL

=====
Robocon-De-Tutorial
=====

=====
Robocon-De-Tutorial.Tutorial
=====

=====
Robocon-De-Tutorial.Tutorial.TestCases
=====

=====
Robocon-De-Tutorial.Tutorial.TestCases.03 Browser Tests
=====

=====
Robocon-De-Tutorial.Tutorial.TestCases.03 Browser Tests.02 CarConfig
=====

=====
Configure Car with Pass

....□

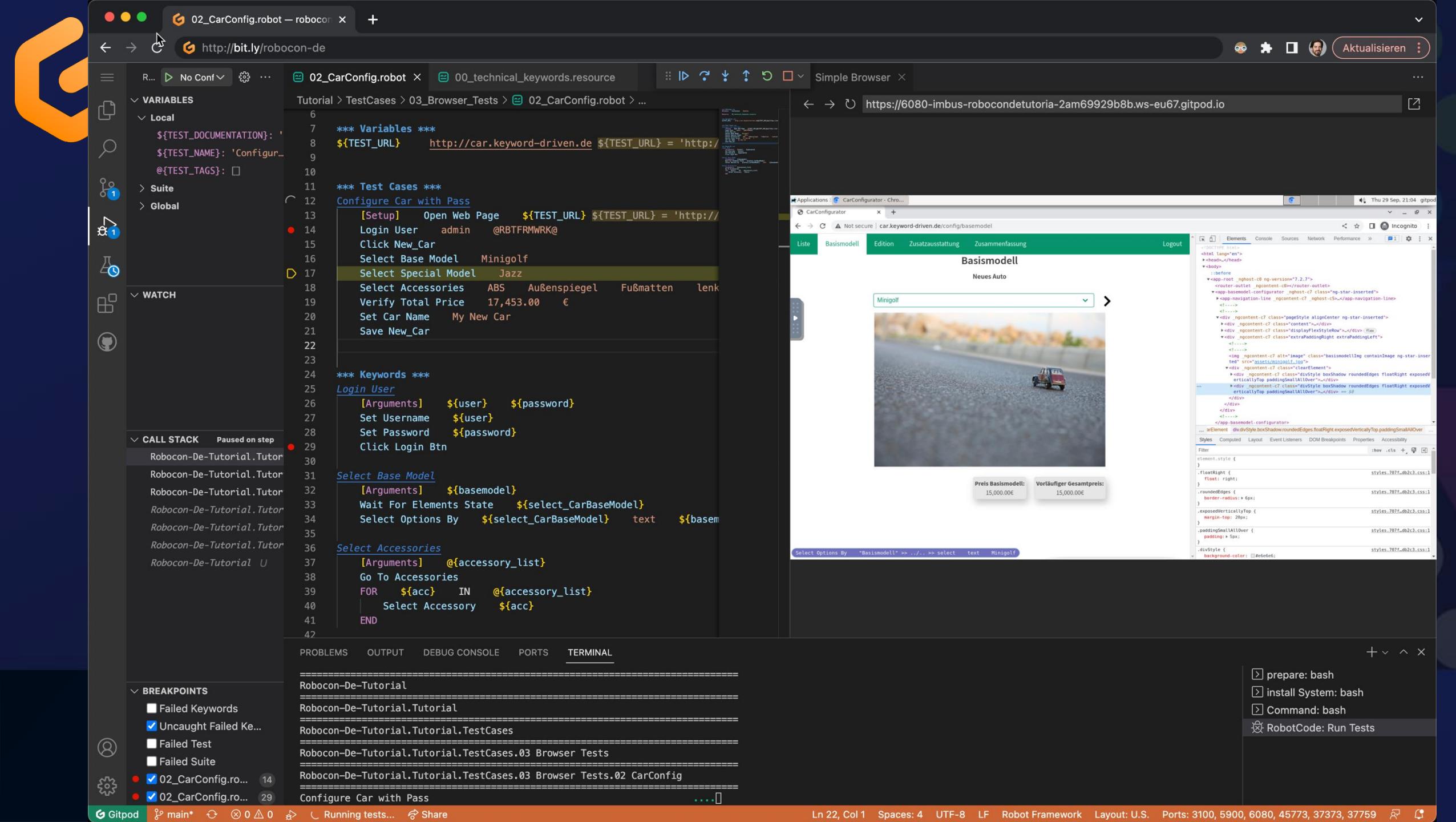


Running tests...



Share

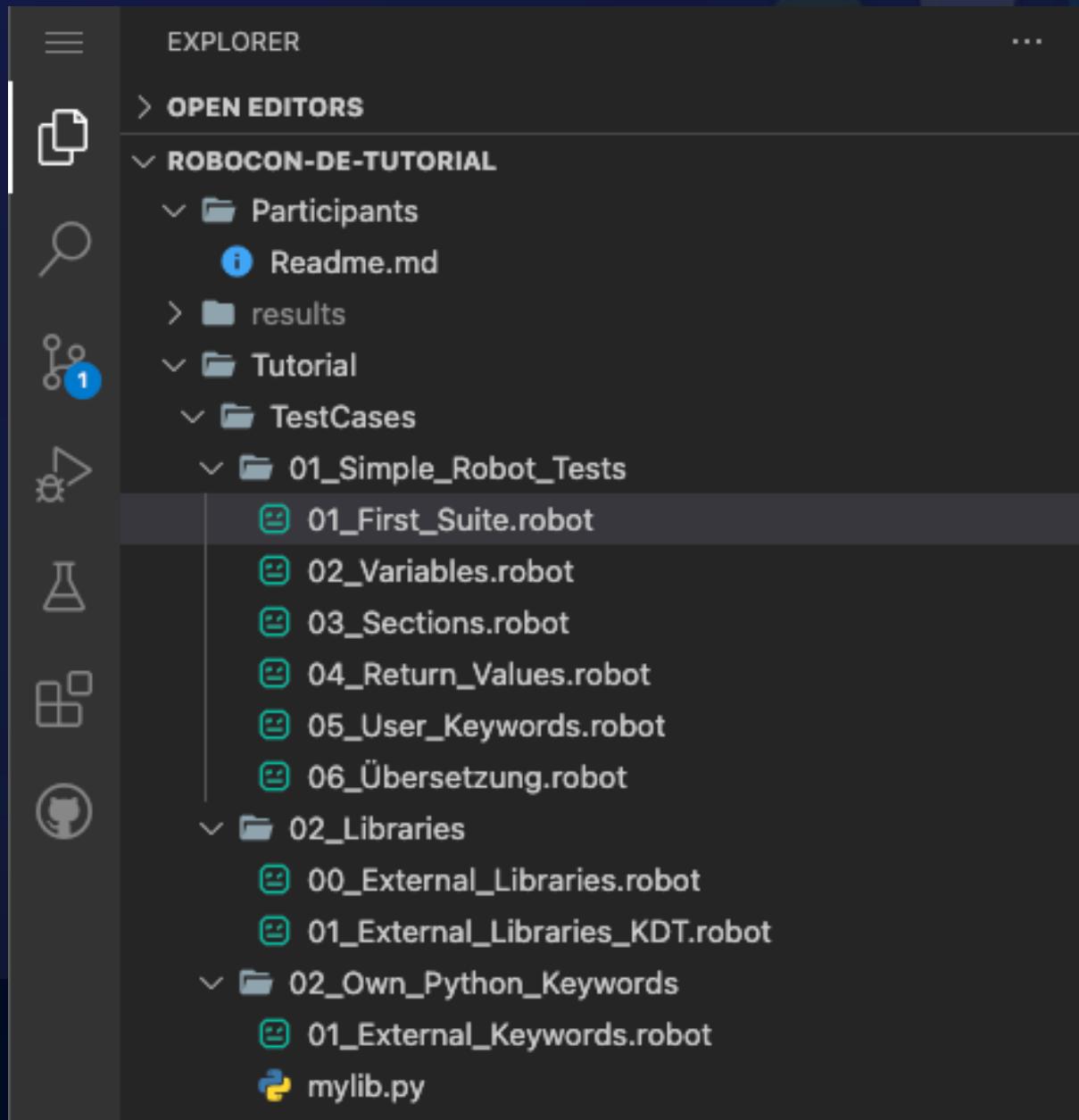
Ln 22, Col 1 Spaces: 4



FILE TREE

Participant folder
& exercise.robot
to try it yourself

Tutorial folder
for prepared examples

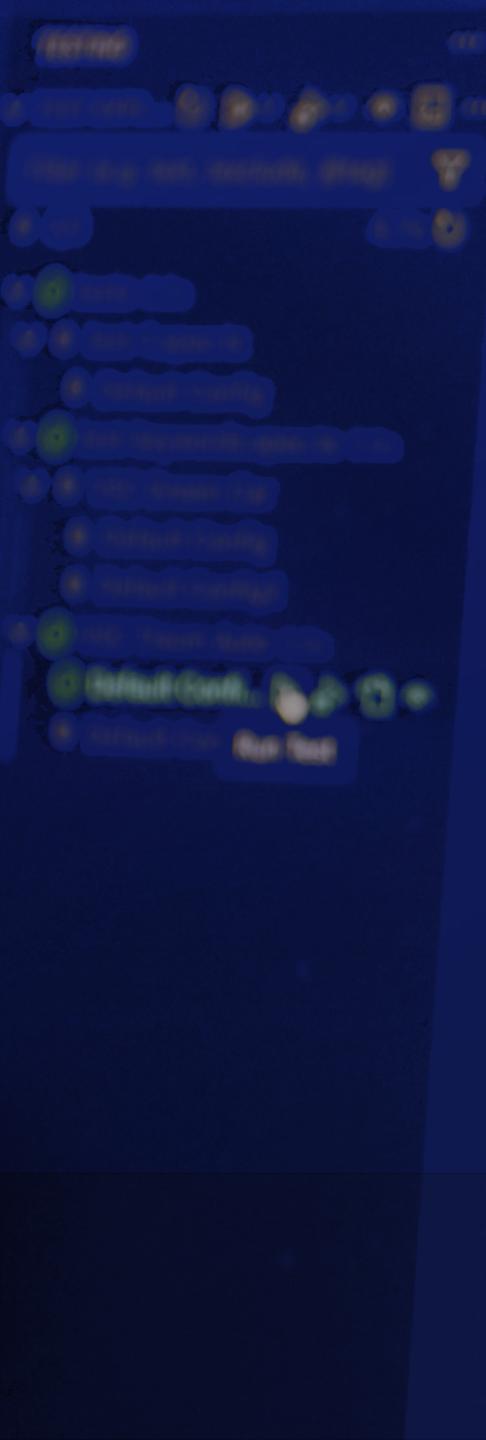


NOW
HAND
S-ON
RBT



Robotframework.org

#AutomationSTAR
René Rohner (imbus AG)



PLAYWRIGHT

```
@step
async openVSRDreamCar_As_Customer() {
    await this.openVSRDreamCar();
    await this.loginUser('avengers_c01', 'password_c01');

}

@step
async configureNewCar() {
    await this.page.getByRole('button', { name: 'New car' }).click(); - 389ms
}

@step
async clickNext() {
    await this.page.locator(...)
```

#AutomationSTAR

PLAYWRIGHT & PLAYWRIGHT TEST

enables reliable end-to-end testing for modern web apps.

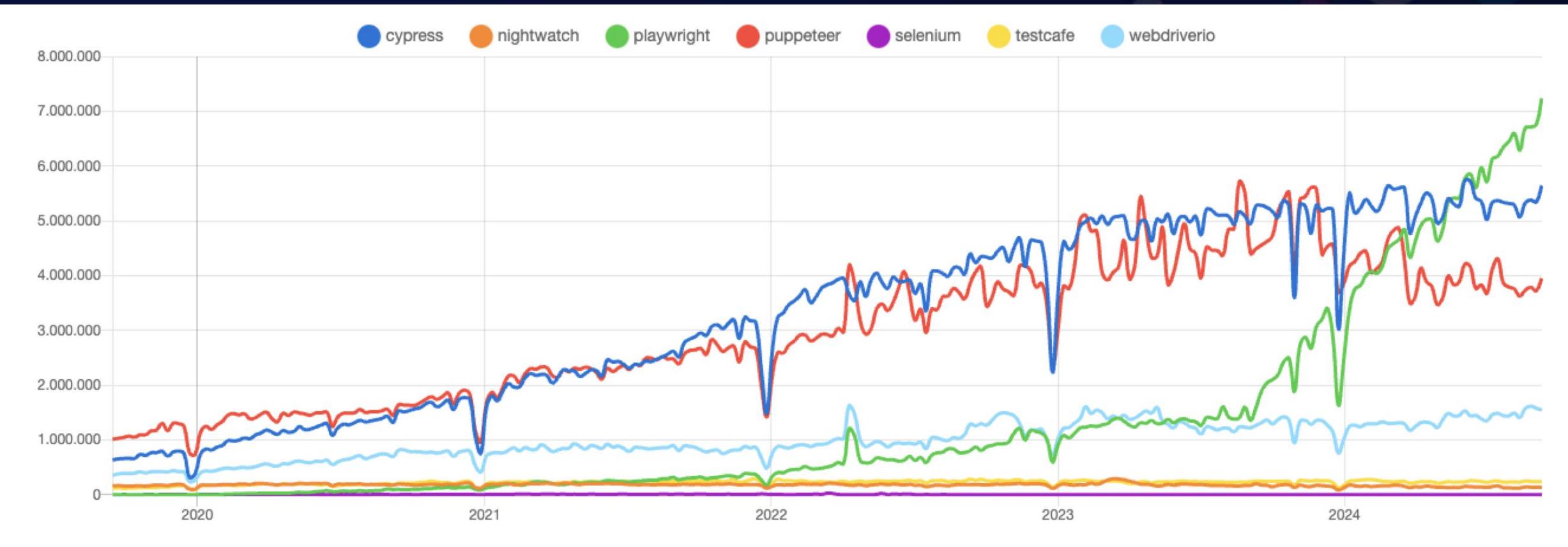
- Any browser • Any platform • One API
- Resilient • No flaky tests
- No trade-offs • No limits
- Full isolation • Fast execution
- Powerful Tooling

Browser automation API (+Test)
Release 2020
Fork of Puppeteer (Google)
Developed by Microsoft
Chromium, Firefox, Webkit
NodeJS (+ some more)



#AutomationSTAR

PLAYWRIGHT & PLAYWRIGHT TEST



#AutomationSTAR

PLAYWRIGHT & PLAYWRIGHT TEST

Why we @ Robot Framework Browser use Playwright API?

- Really fast & modern alternative to Selenium
- Open API for adaptation
- Real solution for ShadowDOM (WebComponents)
- Awesome Selectors (catenation)
- Browser, Context, Page
- We wanted to do some TypeScript



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PLAYWRIGHT TEST VS ROBOT FRAMEWORK

Test Design

```
test('Default Config', async ({ page }) => {
  const vsr = new VSR(page);
  await vsr.openVSRDreamCar_As_Customer();
  await vsr.configureNewCar();
  await vsr.selectBasicModel('Model 3 (Rassant)');
  await vsr.selectMotor('EC0tech with Hybrid');
  await vsr.selectSpecialModel('Gomera');
  await vsr.selectAccessories([
    'Floor mats',
    'Autopilot Don\'tCare',
    'Sports Suspension'
  ]);
  await vsr.chooseColor('Blue');
  await vsr.verifyPrices({
    finalPrice: '26.873,40',
    basePrice: '17.000,00',
    enginePrice: '4.999,00',
    editionPrice: '1.413,00'
  });
});
```



*** Test Cases ***

Default Config as User	
Open VSR Dream Car	
Login User	avengers_c01
Configure New Car	password_c01
Select Basic Model	Model 3 (Rassant)
Select Motor	EC0tech with Hybrid
Select Special Model	Gomera
Select Accessories	Floor mats
...	Autopilot Don'tCare
...	Sports Suspension
Choose Color	Blue
Verify Prices	
...	finalPrice=26.873,40
...	basePrice=17.000,00
...	enginePrice=4.999,00
...	editionPrice=1.413,00

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PLAYWRIGHT TEST vs ROBOT FRAMEWORK

Test Steps

```
@step
async loginUser(username: string, password: string) {
    await this.page.getLabel('Username', { exact: true }).fill(username);
    await this.page.getLabel('Password', { exact: true }).fill(password);
    await this.page.getRole('button', { name: "Log In" }).click();
}

@step
async configureNewCar() {
    await this.page.getRole('button', { name: 'New car' }).click();
}

@step
async selectBasicModel(modelName: string) {
    await this.page.locator('#select_basemodel').click();
    await this.page.getText(modelName).click();
}
```

Login User

```
[Arguments] ${username} ${password}
Fill Text "Username" ${username}
Fill Text "Password" ${password}
Click id=button_login
```

Configure New Car

```
Click button:has-text("New car")
```

Select Basic Model

```
[Arguments] ${model}
Click id=select_basemodel
Click "${model}"
```



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#AutomationSTAR

PLAYWRIGHT TEST vs ROBOT FRAMEWORK

Execution Reports

Failing Config

test-keywords.spec.ts:30 10.0s

chromium

⌚ Run

Errors

Test timeout of 10000ms exceeded.

Error: locator.check: Test timeout of 10000ms exceeded.
Call log:
 - waiting for getByLabel('NOT EXISTING')

```
116 |   await this.page.locator('#arrow_next').click();
117 |   for (const accessory of accessories) {
> 118 |     await this.page.getByLabel(accessory).check(); ^
119 |
120 |   }
121 | }
```

at VSR.selectAccessories (/Users/rener/Source/Playwright/tests/test-keywords.spec.ts:118:45)
at /Users/rener/Source/Playwright/tests/test-keywords.spec.ts:59:14
at /Users/rener/Source/Playwright/tests/test-keywords.spec.ts:37:5



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PLAYWRIGHT TEST vs ROBOT FRAMEWORK

Execution Reports

Test Steps		
>	✓ Before Hooks	51ms
>	✓ VSR.openVSRDreamCar_As_Customer — test-keywords.spec.ts:58	1.6s
>	✓ VSR.configureNewCar — test-keywords.spec.ts:58	841ms
>	✓ VSR.selectBasicModel — test-keywords.spec.ts:58	1.0s
>	✓ VSR.selectMotor — test-keywords.spec.ts:58	333ms
>	✓ VSR.selectSpecialModel — test-keywords.spec.ts:58	83ms
✗	VSR.selectAccessories — test-keywords.spec.ts:58	6.1s
✓	locator.click(#arrow_next) — test-keywords.spec.ts:116	49ms
✓	locator.getLabel('Floor mats').check — test-keywords.spec.ts:118	33ms
✗	locator.getLabel('NOT EXISTING').check — test-keywords.spec.ts:118	6.0s
>	✓ After Hooks	5ms
>	✓ Worker Cleanup	21ms



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PLAYWRIGHT TEST VS ROBOT FRAMEWORK

Execution Reports



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PLAY

Execution

AutomationStar Log

Generated
20240930 19:31:46 UTC+02:00
1 minute 50 seconds ago

Test Statistics

Total Statistics	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
All Tests	4	2	2	0	00:00:21	
Statistics by Tag	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
No Tags						
Statistics by Suite	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
AutomationStar	4	2	2	0	00:00:24	
AutomationStar.Browser VSR	4	2	2	0	00:00:24	
AutomationStar.Browser VSR.vsr DreamCar	1	1	0	0	00:00:07	
AutomationStar.Browser VSR.vsr DreamCar keywords	2	1	1	0	00:00:13	
AutomationStar.Browser VSR.vsr Gherkin BDD	1	0	1	0	00:00:04	

Test Execution Log

- SUITE AutomationStar	00:00:24.223
Full Name:	AutomationStar
Source:	/Users/rener/Source/RF-Schulung/AutomationStar
Start / End / Elapsed:	20240930 19:31:22.375 / 20240930 19:31:46.598 / 00:00:24.223
Status:	4 tests total, 2 passed, 2 failed, 0 skipped
- SUITE Browser VSR	00:00:24.209
Full Name:	AutomationStar.Browser VSR
Source:	/Users/rener/Source/RF-Schulung/AutomationStar/Browser_VSR
Start / End / Elapsed:	20240930 19:31:22.388 / 20240930 19:31:46.597 / 00:00:24.209
Status:	4 tests total, 2 passed, 2 failed, 0 skipped
+ SUITE vsr DreamCar	00:00:07.403
- SUITE vsr DreamCar keywords	00:00:13.019
Full Name:	AutomationStar.Browser VSR.vsr DreamCar keywords
Source:	/Users/rener/Source/RF-Schulung/AutomationStar/Browser_VSR/vsr_DreamCar_keywords.robot
Start / End / Elapsed:	20240930 19:31:29.794 / 20240930 19:31:42.813 / 00:00:13.019
Status:	2 tests total, 1 passed, 1 failed, 0 skipped
+ TEST Default Config as User	00:00:03.144
- TEST Failing Config as User	00:00:08.582

PLAY

Execution

Start / End / Elapsed:	20240930 19:31:37.344 / 20240930 19:31:42.798 / 00:00:05.454	
Status:	FAIL	
Message:	Error: locator.waitFor: Timeout 5000ms exceeded. Call log: [2m- waiting for locator("text="NOT EXISTING")][22m]	
Tip: Use "Set Browser Timeout" for increasing the timeout or double check your locator as the targeted element(s) couldn't be found.		
+ KEYWORD	Open VSR Dream Car	00:00:01.507
+ KEYWORD	Login User avengers_c01 password_c01	00:00:00.081
+ KEYWORD	Configure New Car	00:00:00.327
+ KEYWORD	Select Basic Model Model 3 (Rassant)	00:00:00.945
+ KEYWORD	Select Motor ECOTech with Hybrid	00:00:00.199
+ KEYWORD	Select Special Model Gomera	00:00:00.066
- KEYWORD	Select Accessories Floor mats NOT EXISTING Sports Suspension	00:00:05.454
Start / End / Elapsed:	20240930 19:31:37.344 / 20240930 19:31:42.798 / 00:00:05.454	
+ KEYWORD	Click Next	00:00:00.340
- FOR	\${accessory} IN @{accessories}	00:00:05.113
Start / End / Elapsed:	20240930 19:31:37.685 / 20240930 19:31:42.798 / 00:00:05.113	
+ ITERATION	\${accessory} = Floor mats	00:00:00.026
- ITERATION	\${accessory} = NOT EXISTING	00:00:05.087
Start / End / Elapsed:	20240930 19:31:37.711 / 20240930 19:31:42.798 / 00:00:05.087	
- KEYWORD	Browser.Check Checkbox "\${accessory}"	00:00:05.086
Documentation:	Checks the checkbox or selects radio button found by selector.	
Tags:	PageContent, Setter	
Start / End / Elapsed:	20240930 19:31:37.711 / 20240930 19:31:42.797 / 00:00:05.086	
19:31:42.793	INFO	
19:31:42.793	INFO	See also file:///Users/rener/Source/RF-Schulung/AutomationStar/results/playwright-log.txt for additional details.
19:31:42.794	FAIL	Error: locator.waitFor: Timeout 5000ms exceeded. Call log: [2m- waiting for locator("text="NOT EXISTING")][22m]
Tip: Use "Set Browser Timeout" for increasing the timeout or double check your locator as the targeted element(s) couldn't be found.		
+ KEYWORD	Choose Color Blue	00:00:00.000
+ KEYWORD	Verify Prices finalPrice=26.873,40 basePrice=17.000,00 enginePrice=4.999,00 editionPrice=1.413,00	00:00:00.000
+ SUITE	vsr Gherkin BDD	00:00:03.781



re

+ KEYWORD Select Model E-GT-Estate with Hybrid

+ KEYWORD Select Special Model Gomera

- KEYWORD Select Accessories Floor mats NOT EXISTING Sports Suspension

Start / End / Elapsed: 20240930 19:31:37.344 / 20240930 19:31:42.798 / 00:00:05.454

+ KEYWORD Click Next

- FOR \${accessory} IN @{accessories}

Start / End / Elapsed: 20240930 19:31:37.685 / 20240930 19:31:42.798 / 00:00:05.113

+ ITERATION \${accessory} = Floor mats

- ITERATION \${accessory} = NOT EXISTING

Start / End / Elapsed: 20240930 19:31:37.711 / 20240930 19:31:42.798 / 00:00:05.087

- KEYWORD Browser.Check Checkbox "\${accessory}"

Documentation: Checks the checkbox or selects radio button found by selector.

Tags: PageContent, Setter

Start / End / Elapsed: 20240930 19:31:37.711 / 20240930 19:31:42.797 / 00:00:05.086

19:31:42.793 INFO

19:31:42.793 INFO See also file:///Users/rener/Source/RF-Schulung/AutomationStar/results/playwright-log.txt for additional details.

19:31:42.794 FAIL Error: locator.waitFor: Timeout 5000ms exceeded.
Call log:
[2m- waiting for locator('text="NOT EXISTING"')] [22m]

Tip: Use "Set Browser Timeout" for increasing the timeout or double check your locator as the targeted element(s) found.

+ KEYWORD Choose Color Blue

+ KEYWORD Verify Prices finalPrice=26.873,40 basePrice=17.000,00 enginePrice=4.999,00 editionPrice=1.413,00

PLAYWRIGHT TEST vs ROBOT FRAMEWORK

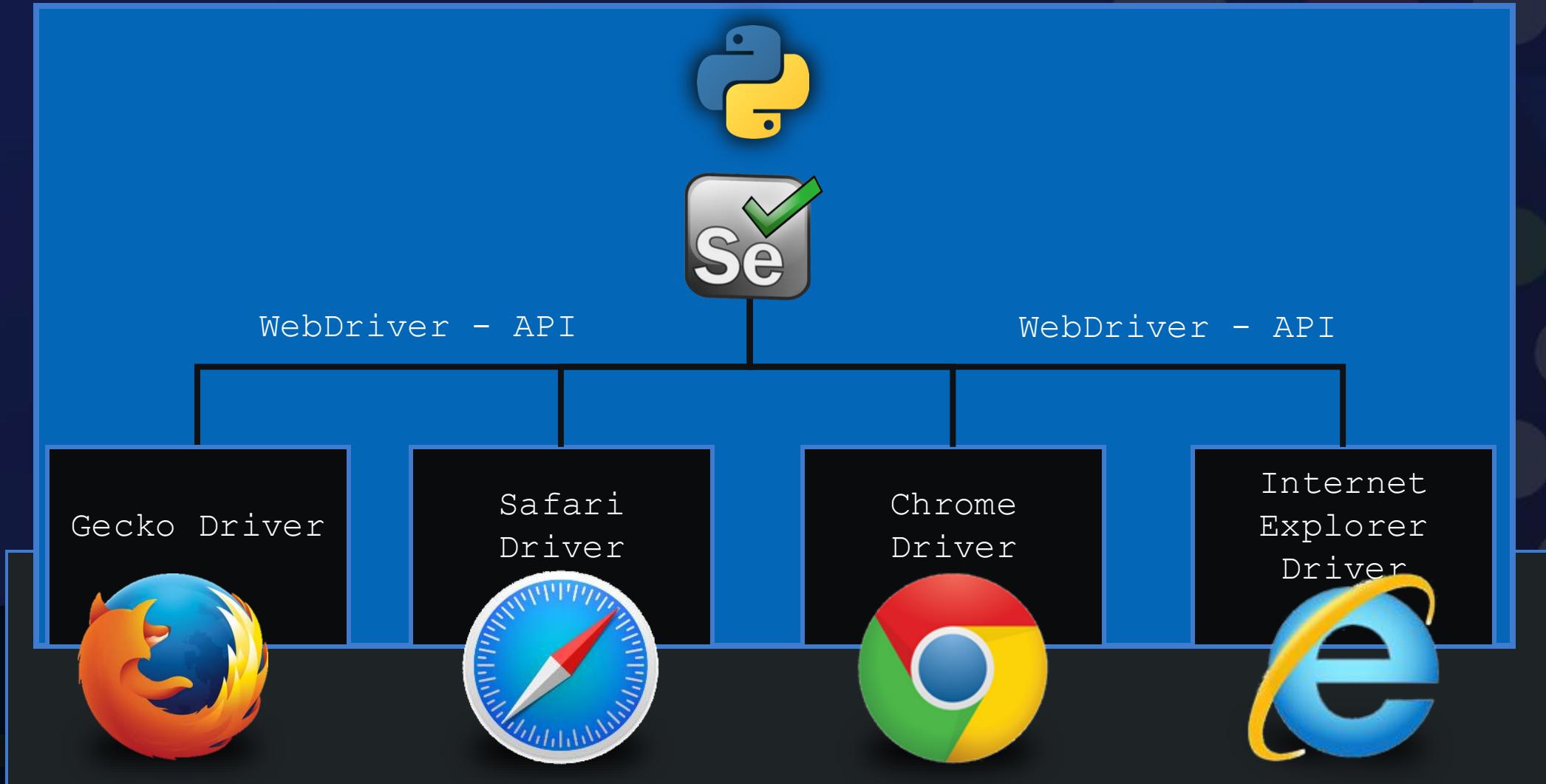
Traces are mindbowing awesome!

The screenshot displays the Playwright Trace Viewer interface. On the left, a timeline shows the sequence of actions taken during a test run, including 'Before Hooks' (819ms), 'VSR.openVSRDreamCar_As_Customer' (3.9s), 'VSR.configureNewCar' (829ms), 'VSR.selectBasicModel' (1.1s), 'VSR.selectMotor' (331ms), 'VSR.selectSpecialModel' (82ms), 'VSR.selectAccessories' (3.7s), and 'VSR.selectNOT_EXISTING' (3.6s). The main area shows a screenshot of a web application for configuring a car. The application has tabs for 'List', 'Basemodel', 'Engine', 'Package', 'Extras', 'Color', and 'Summary'. The 'Extras' tab is active, showing options like 'Autopilot Don't Care', 'Winter tires (instead of summer tires)', 'Leather steering wheel', 'Sound System OverDrive', 'Sports Suspension', and 'Intelligent lighting system'. A checkbox for 'Floor mats' is checked. The total price for extras is 46.00 €. Below the screenshot, the browser's developer tools Elements tab is open, showing the DOM structure of the 'Floor mats' checkbox and its label. The right side of the developer tools shows the CSS styles for the selected element.

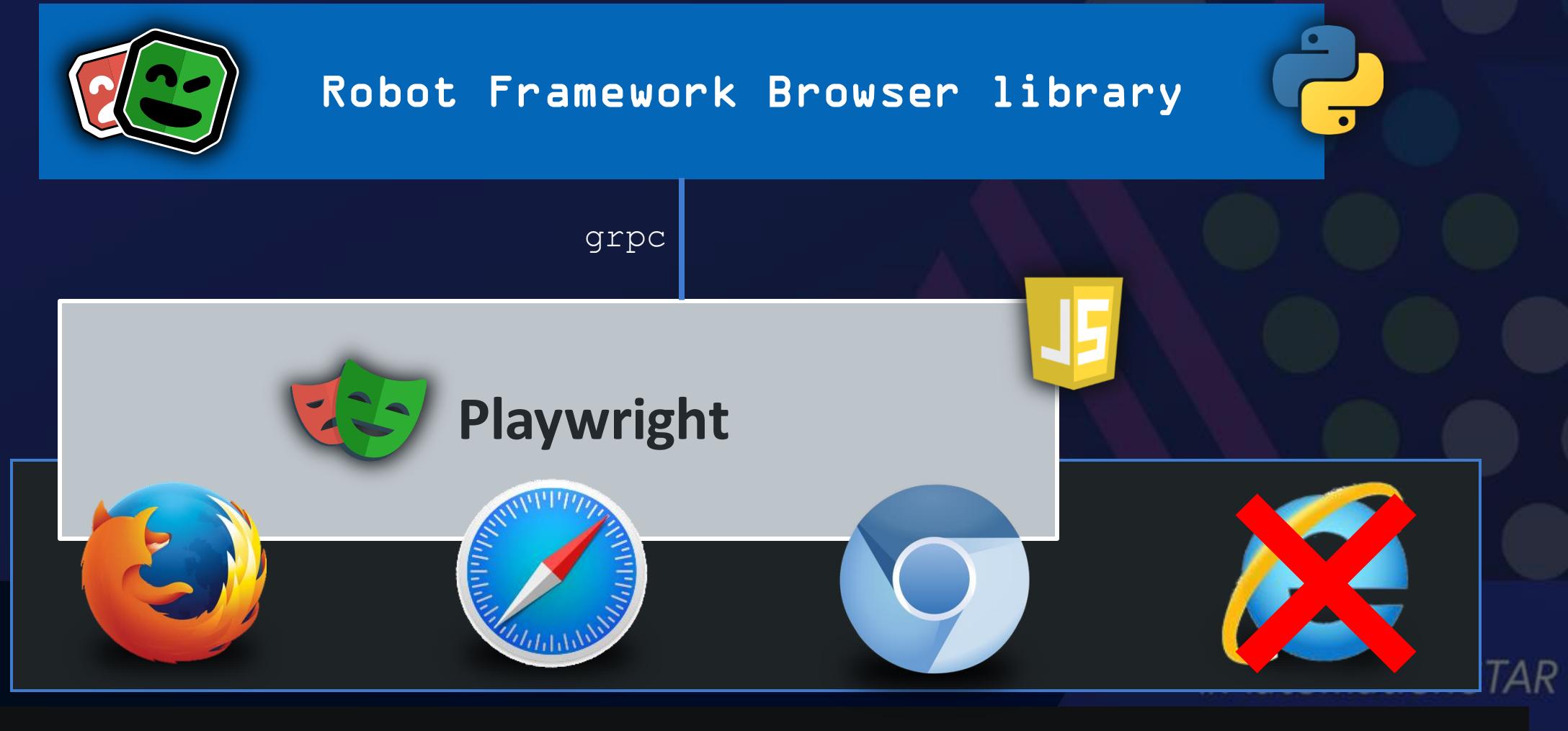


mationSTAR

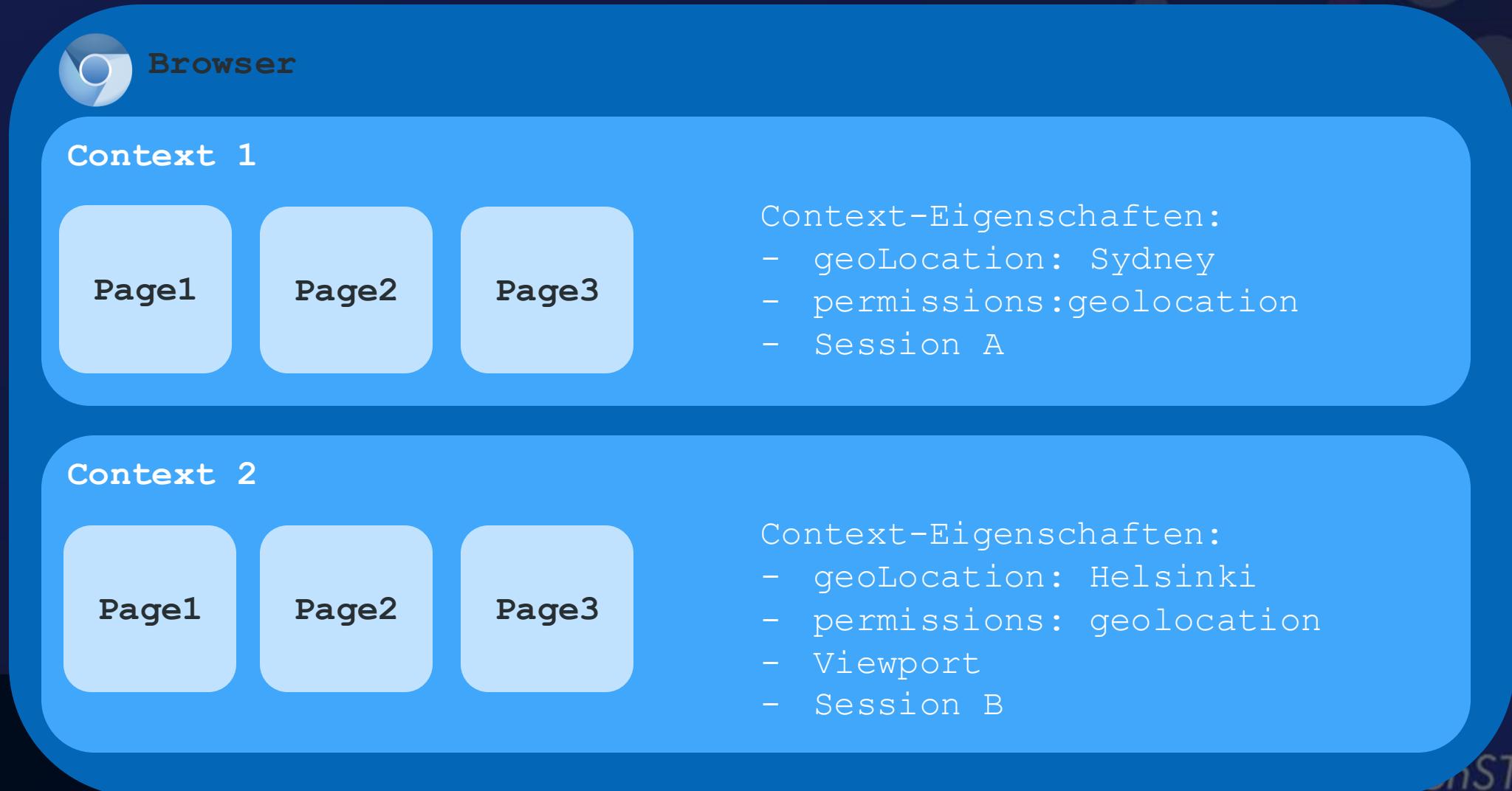
SELENIUM LIBRARY / WEBDRIVER (TECHNOLOGIE STACK)



BROWSER LIBRARY (PLAYWRIGHT) (TECHNOLOGIE STACK)



BROWSER, CONTEXT, PAGE



NOW
HAND
S-ON
RBT



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#AutomationSTAR
René Rohner (imbus AG)

TESTING

TEST EXPLORER

Filter (e.g. text, !exclude, @tag)

3/5 26.8s

AutomationStar 6.3s

AutomationStar 6.3s

Browser VSR 6.3s

vsr DreamCar 3.3s

Atomic Default Config 3.3s

vsr DreamCar keywords

Default Config... > ⚡️ 🎁

Adding Discount as Sales

vsr TraumAuto keywords 3...

AutomationStar 6.3s

AutomationStar 6.3s

Browser VSR 6.3s

vsr DreamCar 3.3s

Atomic Default Config 3.3s

vsr DreamCar keywords

Default Config... > ⚡️ 🎁

Adding Discount as Sales

vsr TraumAuto keywords 3...

vsr_DreamCar_keywords.robot 4 ● vsr_DreamCar.robot vsr_TraumAuto_keywords.robot

*** Keywords ***

Select Accessories

[Arguments] @{accessories}

Click Next

FOR \${accessory} IN @{accessories}

Check Checkbox "\${accessory}"

END

Choose Color

[Arguments] \${color}

Click Next

Check Checkbox "\${color}"

Verify Prices

[Arguments]

Click Next

Get Text id= \${None}, args: List[str] | None = \${None}, channel: str | None = \${None}, chromiumSandbox: bool = \${False}, devtools: bool = \${False}, downloadsPath: str | None = \${None}, env: Dict | None = \${None}, executablePath: str | None = \${None}, firefoxUserPrefs: Dict[str, str] | None = \${None}, headless: bool = \${True}, handleSIGUP: bool = \${False}, handleSIGWIN: bool = \${True}, handleSIGTERM: bool = \${True}, handleSIGINT: bool = \${True}, handleSIGQUIT: bool = \${True}, handleSIGPOLL: bool = \${True}, handleSIGPOLLIN: bool = \${True}, handleSIGPOLLHUP: bool = \${True}, handleSIGPOLLNVAL: bool = \${True}, handleSIGPOLLERR: bool = \${True}, handleSIGPOLLINHUP: bool = \${True}, handleSIGPOLLINNVAL: bool = \${True}, handleSIGPOLLERRHUP: bool = \${True}, handleSIGPOLLERRNVAL: bool = \${True}, proxy: Proxy | None = \${None}, reuse_existing: bool = \${True}, slowMo: timedelta = 0:00:00, timeout: timedelta = 0:00:30)

Open VSR Dream Car

New Browser

chromium

firefox

webkit

SupportedBrowsers

*** Variables ***

\${BROWSER} chr

browser=

headless=

True

headless=

False

args=

channel=

chromiumSandbox=

devtools=

downloadsPath=

env=

executablePath=

OUTPUT DEBUG CONSOLE

Log: /Users/rener/Source/RF-Schulung/AutomationStar/results/log.html

Report: /Users/rener/Source/RF-Schulung/AutomationStar/results/report.html

RTS COMMENTS

#AutomationSTAR

zsh

RobotCode...

DREAM TEAM WEB AUTOMATION

YES
WE'RE
OPEN
SRC



Visual Studio Code



Robot Code

----- Test Data Syntax -----

ROBOT FRAMEWORK

Test Execution

Exception Handling

Logging & Reporting



----- Test Library APIs -----



RF BROWSER



Playwright

Adaptation Layer



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#AutomationSTAR
System Under Test



NOW
IT'S
DEMO
TIME

#AutomationSTAR

RE-VISIT THE ADVANTAGES

- **Readability:** Making tests understandable to all stakeholders.
- **Maintainability:** Simplifying updates and reducing the cost of changes.
- **Reusability:** Encouraging the use of common components to prevent duplication.
- **Modularity:** Structuring tests in a way that isolates functionalities.
- **Collaboration:** Enhancing communication across different team roles.



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#AutomationSTAR

ROBOT FRAMEWORK WEBINAR

by



renerohner

Snooz82



Questions?

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