

WIR SUCHEN **DIE BESTEN!**

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20. – 21.06.2018
Karlsruhe

Nico Orschel

 @NicoOrschel

Testautomatisierung mit
Appium und Selenium für VS-
Entwickler

#etka18

AGENDA

TAKE AWAYS

DIE WELT DES UI TESTING

SELENIUM

APPIUM

ANALYSE VON BENUTZER-OBERFLÄCHEN

FAZIT



TAKE AWAYS ...

- EINSTIEG IN WEB, DESKTOP UND APP TESTING MIT SELENIUM + APPIUM
- APPIUM UND SELENIUM SIND SICH SEHR ÄHNLICH
- CROSS-PLATTFORM UI-TESTS KEIN HEXENWERK (AUCH NICHT MIT C#)
- IDENTIFIKATION VON CONTROL-NAMEN
- (KLEINE) TIPP'S AND TRICKS



WER BIN ?



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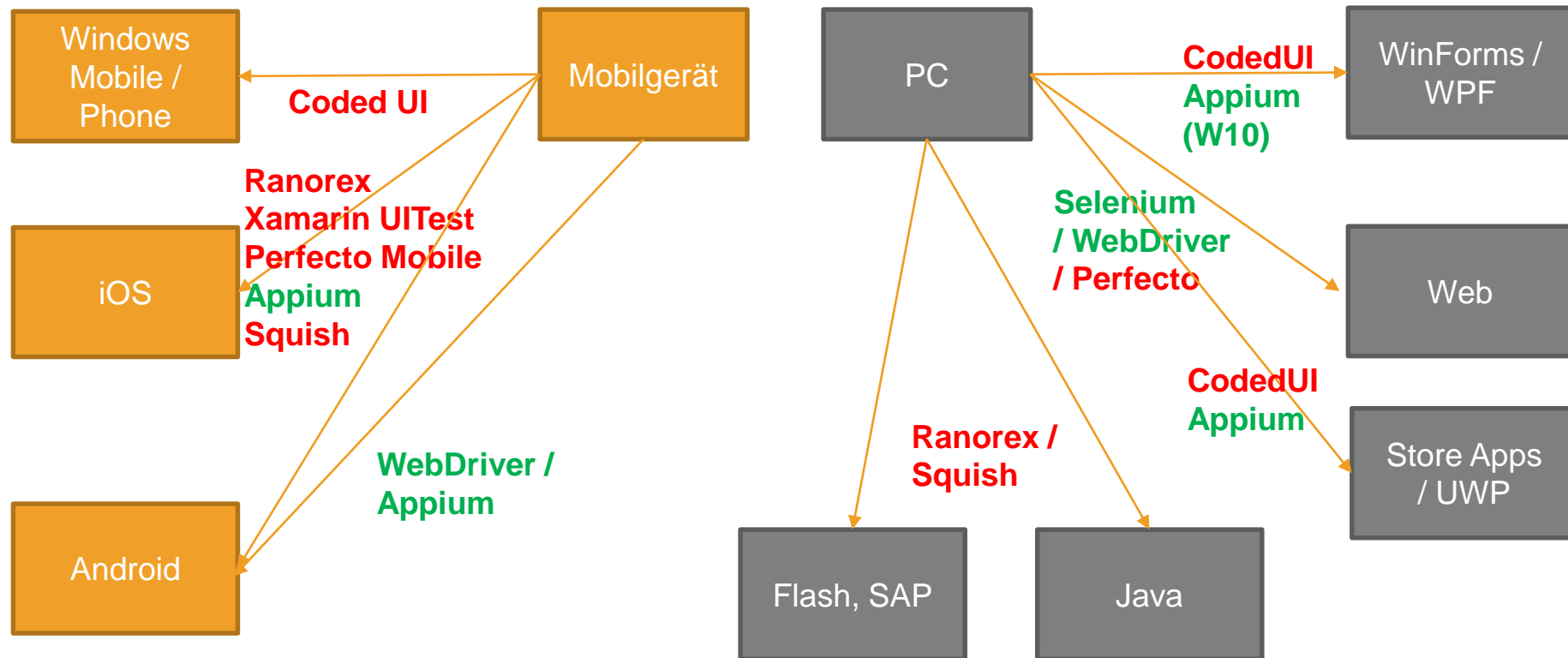


DIE WELT DER UI TESTING TOOLS

AIT GmbH & Co. KG – Ihre Software **effizienter** entwickelt.



UI TESTING (2018 UPDATE)



WEBDRIVER SUPPORT FÜR EDGE



„WEBDRIVER IS AN EMERGING STANDARD THROUGH WHICH WEB DEVELOPERS CAN WRITE TESTS TO AUTOMATE WEB BROWSERS FOR SITE TESTING. IT PROVIDES A PROGRAMMABLE REMOTE CONTROL FOR DEVELOPING COMPLEX USER SCENARIOS AND RUNNING THEM IN AN AUTOMATED FASHION AGAINST YOUR WEBSITE IN A BROWSER. WEBDRIVER IS USED BY TOP WEB PROPERTIES LIKE BING, AZURE, SHAREPOINT, FACEBOOK, GOOGLE, AND OTHERS TO AUTOMATE TESTING THEIR SITES WITHIN A BROWSER”

QUELLE: [HTTPS://BLOGS.WINDOWS.COM/MSEDEGEDEV/2015/07/23/BRINGING-AUTOMATED-TESTING-TO-MICROSOFT-EDGE-THROUGH-WEBDRIVER/](https://blogs.windows.com/msedgedev/2015/07/23/bringing-automated-testing-to-microsoft-edge-through-webdriver/)



CODEDUI VS. APPIUM

“THE CURRENT UI TEST AUTOMATION SOLUTION FOR WINDOWS APP TESTING IS CODEDUI; HOWEVER, CODED UI ONLY WORKS FOR APPS RUNNING ON THE WINDOWS PLATFORM. FOR DEVELOPERS WHO WRITE CROSS-PLATFORM APPS, THIS MEANS THEY HAVE TO WRITE TESTS FOR EACH PLATFORM THEY ARE TARGETING. ADDITIONALLY, THOSE DEVELOPERS WHO WRITE CROSS-PLATFORM APPS WILL HAVE TO WRITE CUSTOM TESTS FOR EACH PLATFORM THEY ARE TARGETING.

WITH APPIUM SUPPORTING MULTIPLE PLATFORMS LIKE ANDROID AND IOS, MICROSOFT ENCOURAGES CUSTOMERS TO USE SELENIUM AND APPIUM FOR FUNCTIONAL UI TESTING.”

QUELLE: [HTTPS://BLOGS.WINDOWS.COM/BUILDINGAPPS/2016/11/16/WINDOWS-APPLICATION-DRIVER-FOR-PC-INTEGRATES-WITH-APPIUM/#DMMXR1JKJ7TQL60I.97](https://blogs.windows.com/buildingapps/2016/11/16/windows-application-driver-for-pc-integrates-with-appium/#DMMXR1JKJ7TQL60I.97)



XAMARIN UITEST VS. APPIUM

“THE FUTURE OF CALABASH

PART OF MAKING SURE WE DELIVER AS MUCH VALUE TO OUR USERS AS WE CAN INVOLVES FREQUENTLY ASKING OURSELVES IF WE ARE WORKING ON THE RIGHT THINGS. CALABASH WAS CREATED TO MAKE MOBILE AUTOMATION LESS PAINFUL, AND THIS REMAINS THE GOAL OF THE FRAMEWORK TODAY.

BUT AS THE LANDSCAPE AND TECHNOLOGIES HAVE EVOLVED, MOBILE AUTOMATION HAS BECOME MORE ACCESSIBLE AND DEVELOPER-FRIENDLY. THE RISING POPULARITY OF THE NATIVE IOS AND ANDROID FRAMEWORKS ALONGSIDE THE STEADY ADOPTION OF APPIUM SIGNALLED THAT IT MAY BE TIME TO REEVALUATE THE ROLE CALABASH PLAYS IN TEST CLOUD. AFTER SPEAKING WITH MANY OF OUR CUSTOMERS, WE BELIEVE WE CAN BEST SERVE OUR USERS BY FOCUSING ON THE EXPERIENCE OF SCALING MOBILE TEST AUTOMATION IN THE CLOUD AND LEVERAGING EXISTING TEST FRAMEWORKS WHICH CONTINUE TO IMPROVE. FOR THIS REASON, WE WILL DISCONTINUE ACTIVE DEVELOPMENT ON CALABASH AT THE END OF THIS MONTH.”

QUELLE: [HTTPS://FORUMS.XAMARIN.COM/DISCUSSION/93584/QUESTION-ABOUT-CALABASH-ANNOUNCEMENT](https://forums.xamarin.com/discussion/93584/question-about-calabash-announcement)



SELENIUM



AIT GmbH & Co. KG – Ihre Software **effizienter** entwickelt.



SELENIUM (IN DER IT)

SELENIUM IST EIN FRAMEWORK FÜR AUTOMATISIERTE SOFTWARETESTS VON WEBANWENDUNGEN^[2], DIE VON EINEM PROGRAMMIERERTEAM DER FIRMA *THOUGHTWORKS* ENTWICKELT UND ALS FREIE SOFTWARE UNTER DER APACHE-2.0-LIZENZ VERÖFFENTLICHT WURDE. ES IST EIN WEIT VERBREITETES TOOL^{[3][4]} UND ZÄHLT ZU DEN BEKANNTESTEN QUELLOFFENEN TESTWERKZEUGEN.

Quelle: <https://de.wikipedia.org/wiki/Selenium>



SELENIUM (IN DER IT) - ANGEPASST



SELENIUM IST EIN FRAMEWORK FÜR BROWSERAUTOMATISIERUNG, DIE VON EINEM PROGRAMMIERERTEAM DER FIRMA *THOUGHTWORKS* ENTWICKELT UND ALS FREIE SOFTWARE UNTER DER APACHE-2.0-LIZENZ VERÖFFENTLICHT WURDE. ES IST EIN WEIT VERBREITETES TOOL ^{[3][4]} UND ZÄHLT ZU DEN BEKANNTESTEN QUELLOFFENEN TESTWERKZEUGEN.

Quelle: <https://de.wikipedia.org/wiki/Selenium>



SELENIUM

STÄRKEN:

- SUPPORT FÜR ALLE MODERNEN BROWSER (CHROME, FIREFOX, EDGE)
- OPEN SOURCE
- .NET WRAPPER VORHANDEN



BESTANDTEILE



SELENIUM WEBDRIVER

- LANGUAGE BINDINGS (C#, JAVA, ...)
- NATIVE BROWSER ANSTEUERUNG

SELENIUM IDE

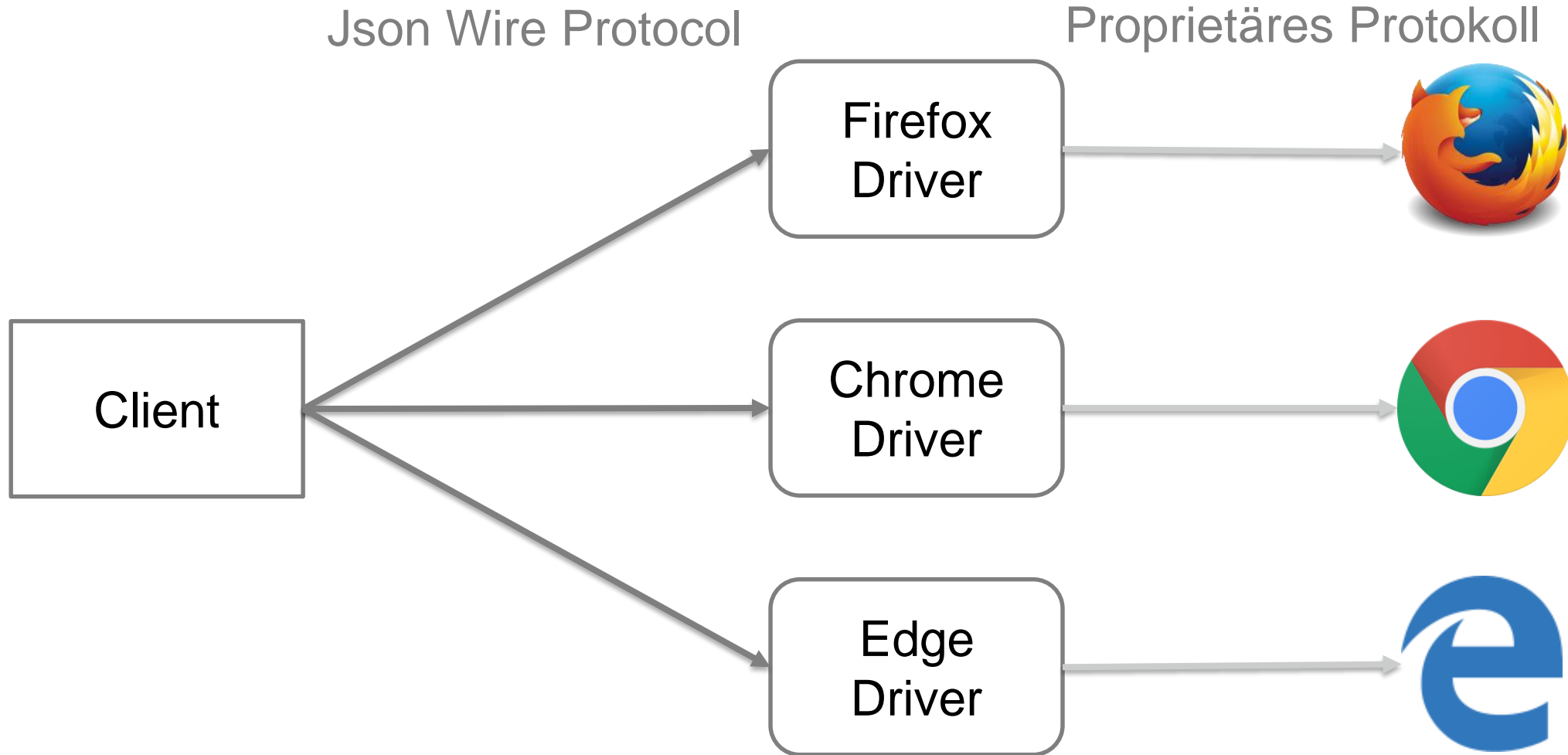
- BROWSER PLUGIN FÜR FIREFOX
- RECORDER

SELENIUM GRID

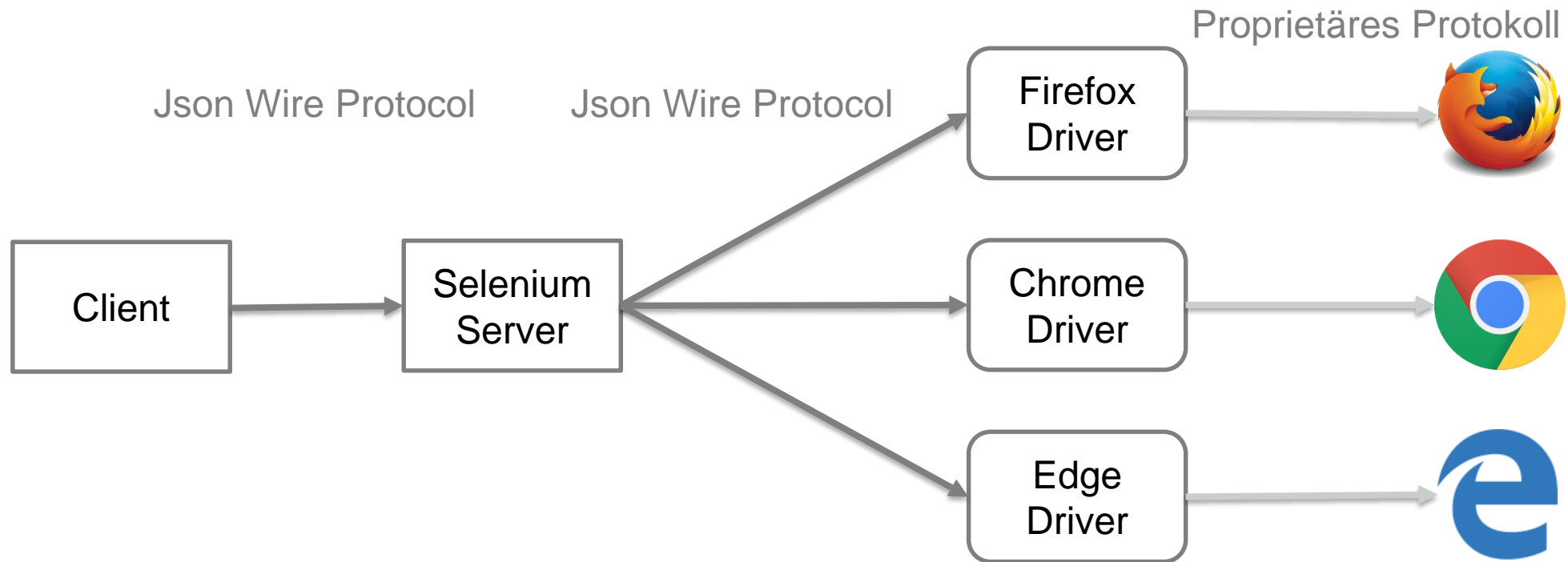
- SERVER ZUR AUSFÜHRUNG / STEUERUNG AUF MEHREN SERVERN



SELENIUM HOW-TO



SELENIUM SERVER HOW-TO



BEISPIEL: JSON WIRE PROTOCOL



```
{
  "sessionId": "a433343ec6e678b1bc17a93bbbf6aea7",
  "Status": 0,
  "Value": { "AcceptSslCerts": true,
    "ApplicationCacheEnabled": false,
    "BrowserConnectionEnabled": false,
    "BrowserName": "chrome",
    "Chrome": { "UserDataDir":
      "/var/folders/p6/1l1grbcs4jv_k7675qv4716m0000gn/T/.org.chromium.Chromium.wEZRL6" },
    "CssSelectorsEnabled": true,
    "DatabaseEnabled": false,
    "HandlesAlerts": true,
    "JavascriptEnabled": true,
    "LocationContextEnabled": true,
    "NativeEvents": true,
    "Platform": "Mac OS X",
    "Rotatable": false,
    "TakesHeapSnapshot": true,
    "TakesScreenshot": true,
    "Version": "38.0.2125.111",
    "WebStorageEnabled": true } }
}
```

Mehr Informationen:

<https://github.com/SeleniumHQ/selenium/wiki/JsonWireProtocol>

Quelle: <https://app.codegrid.net/entry/selenium-1>



DEMO

DEMO SELENIUM



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ADVANCED - PROTRACTOR



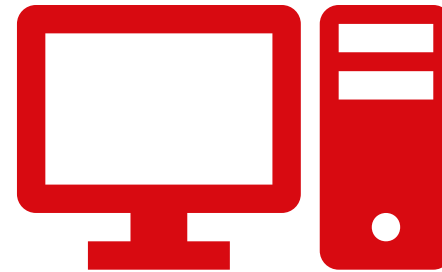
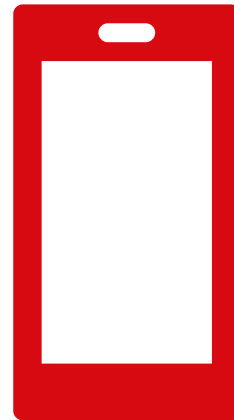
STÄRKEN:

- BASIERT AUF WEBDRIVER ENGINE
- BERÜCKSICHTIGT UND ABSTRAHIERT ANGULAR SUCHSTRATEGIEN
- TESTEN WIE ENDNUTZER (AUSFÜHRUNG IN RICHTIGEN BROWSER)



DEMO

APPIUM



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APPIUM

APPIUM IS AN OPEN-SOURCE TOOL FOR AUTOMATING NATIVE, MOBILE WEB, AND HYBRID APPLICATIONS ON IOS AND ANDROID PLATFORMS. ...

IMPORTANTLY, APPIUM IS “CROSS-PLATFORM”: IT ALLOWS YOU TO WRITE TESTS AGAINST MULTIPLE PLATFORMS (IOS, ANDROID, WINDOWS), USING THE SAME API. THIS ENABLES CODE REUSE BETWEEN IOS, ANDROID, AND WINDOWS TESTSUITES.

Quelle: <http://appium.io/introduction.html?lang=en>



APPIUM

STÄRKEN:

(FAST) ALLES VON SELENIUM

SELENIUM API FÜR MOBILE APPS UND PC APPLICATIONS

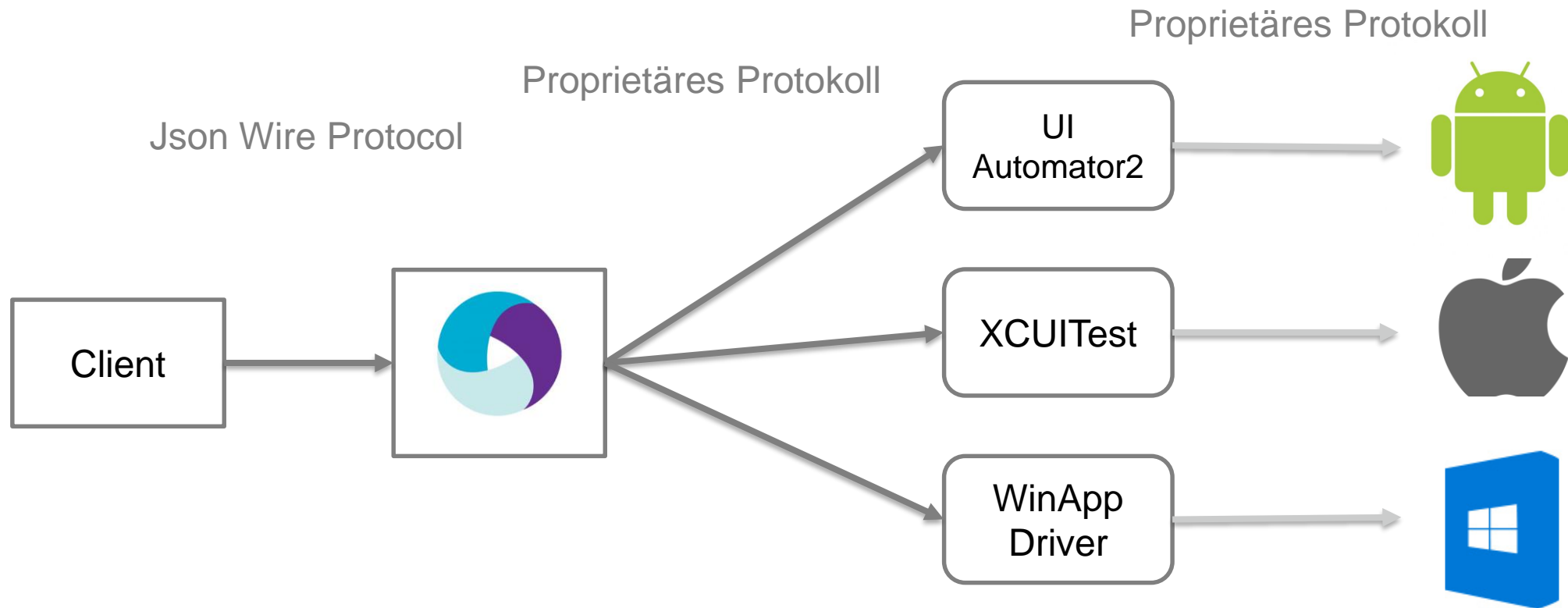
ABSTRAKTION FÜR PROPRIETÄRE NATIVE UI AUTOMATION
FRAMEWORKS

DOWNLOAD:

- <http://www.appium.io>



APPIUM SERVER HOW-TO



MOBILE

DEMO APPIUM



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„KLASSISCHE“ WINDOWS PROGRAMME

DEMO APPIUM



ADVANCED TOPICS

ANALYSE VON UI CONTROLS

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WINDOWS: UISPY (INSPECT)

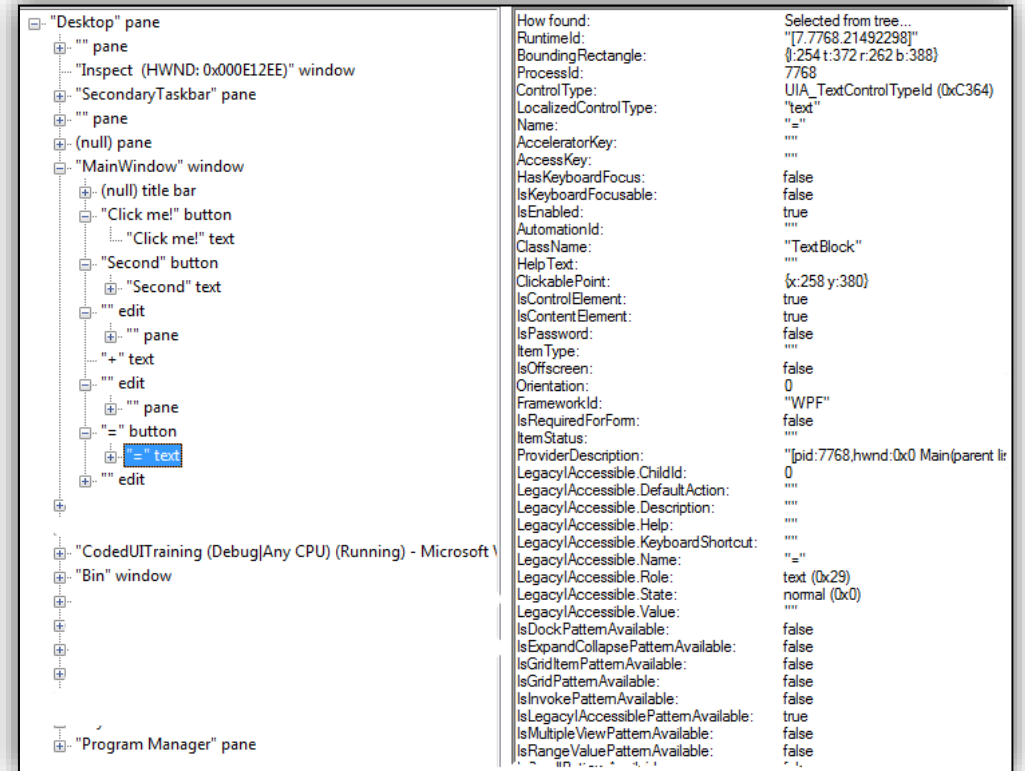
DOWNLOAD:

WINDOWS SDK

[HTTP://MSDN.MICROSOFT.COM/EN-US/WINDOWS/DESKTOP/BG162891.ASPX](http://msdn.microsoft.com/en-us/windows/desktop/bg162891.aspx)

EXECUTABLE: "C:\PROGRAM FILES (X86)\WINDOWS KITS\8.1\BIN\X64\INSPECT.EXE

"



The screenshot shows the Windows Inspect tool interface. On the left is a tree view of the UI hierarchy. The selected element is a text control with the text "=". The right pane displays the following properties:

How found:	Selected from tree ...
RuntimeId:	"[7.7768.21492298]"
BoundingRectangle:	{254 t:372 r:262 b:388}
ProcessId:	7768
Control Type:	UIA_TextControlTypeId (0xC364)
LocalizedControlType:	"text"
Name:	"="
AcceleratorKey:	""
AccessKey:	""
HasKeyboardFocus:	false
IsKeyboardFocusable:	false
IsEnabled:	true
AutomationId:	""
ClassName:	"TextBlock"
Help Text:	""
ClickablePoint:	{x:258 y:380}
IsControlElement:	true
IsContentElement:	true
IsPassword:	false
Item Type:	""
IsOffscreen:	false
Orientation:	0
FrameworkId:	"WPF"
IsRequiredForForm:	false
ItemStatus:	""
ProviderDescription:	"[pid:7768,hwnd:0x0 Main(parent lr
LegacyIAccessible.ChildId:	0
LegacyIAccessible.DefaultAction:	""
LegacyIAccessible.Description:	""
LegacyIAccessible.Help:	""
LegacyIAccessible.KeyboardShortcut:	""
LegacyIAccessible.Name:	"="
LegacyIAccessible.Role:	text (0x29)
LegacyIAccessible.State:	normal (0x0)
LegacyIAccessible.Value:	""
IsDockPatternAvailable:	false
IsExpandCollapsePatternAvailable:	false
IsGridItemPatternAvailable:	false
IsGridPatternAvailable:	false
IsInvokePatternAvailable:	false
IsLegacyIAccessiblePatternAvailable:	true
IsMultipleViewPatternAvailable:	false
IsRangeValuePatternAvailable:	false



WINDOWS: UI ACCESSIBILITY CHECKER



- ERLEICHTERT DAS ENTDECKEN VON PROBLEMEN MIT DER ZUGÄNGLICHKEIT
- VERIFIZIERUNG VON MSAA UND UIA
- ERWEITERBAR DURCH PLUG-INS
- DOWNLOAD:
 - [Windows SDK](#)
 - <http://acccheck.codeplex.com/>
- EXECUTABLE: C:\PROGRAM FILES (X86)\WINDOWS KITS\8.1\BIN\X64\ACCCHECKER\ACCCHECKUI.EXE



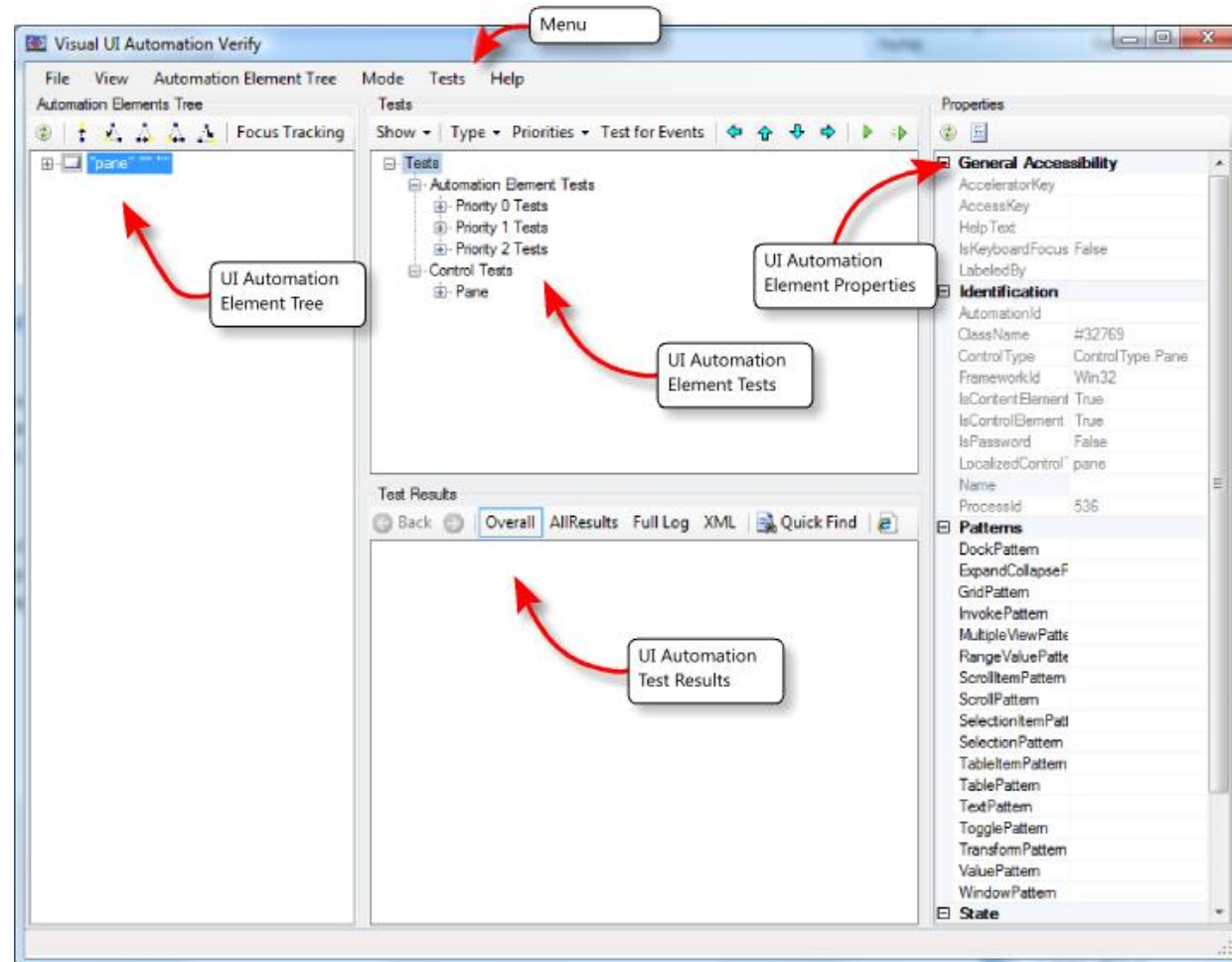
WINDOWS: UIAVERIFY

UIA VERIFY IS A TEST AUTOMATION FRAMEWORK THAT FEATURES THE USER INTERFACE AUTOMATION TEST LIBRARY (UIA TEST LIBRARY) AND VISUAL UI AUTOMATION VERIFY (VISUAL UIA VERIFY), THE GRAPHICAL USER INTERFACE TOOL.

DOWNLOAD

- Windows SDK
- <http://uiautomationverify.codeplex.com/>

EXECUTABLE: C:\PROGRAM FILES (X86)\WINDOWS KITS\8.1\BIN\X64\UIAVERIFY\VISUALUIAVERIFYNATIVE.EXE



ANDROID SDK: UI AUTOMATOR VIEWER



The screenshot displays the UI Automator Viewer interface. On the left, a simulated Android phone shows a 'Conference Session' form with fields for Name, Notes, and Done, and buttons for Save, Delete, Cancel, and Speak. The 'Save' button is highlighted with a red box. In the center, a tree view shows the UI hierarchy, with the 'Button:Save' node selected. On the right, a detailed view of the selected 'Button:Save' node is shown.

Node Detail

index	0
text	Save
resource-id	
class	android.widget.Button
package	Todo.Android
content-desc	
checkable	false
checked	false
clickable	true
enabled	true
focusable	true
focused	false
scrollable	false
long-clickable	false
password	false
selected	false
bounds	[37,535][684,623]



IOS / ANDROID: APPIUM VIEWER



Appium

Nicos 2. Fire 63% 19:39

Name
Notes
Done AUS

Save
Delete
Cancel
Speak

App Source

```
<android.widget.FrameLayout>
  <android.view.View resource-id="android:id/decor_content_parent">
    <android.widget.FrameLayout resource-id="android:id/action_bar_container">
      <android.widget.FrameLayout resource-id="android:id/content">
        <android.widget.LinearLayout>
          <android.view.View>
            <android.view.View>
              <android.view.View>
                <android.view.View content-desc="EditName_Container">
                  <android.widget.EditText content-desc="EditName">
                <android.view.View content-desc="EditNotes_Container">
                  <android.widget.EditText content-desc="EditNotes">
                <android.view.View>
                <android.view.View>
                <android.view.View>
                <android.view.View>
                  <android.widget.Button>
                <android.view.View>
                  <android.widget.Button>
                <android.view.View>
                  <android.widget.Button>
                <android.view.View>
```

Selected Element

Tap Send Keys Clear

Find By	Selector
accessibility id	EditName
xpath	//android.widget.EditText[@content-desc="EditName"]

Attribute	Value
index	0
text	
class	android.widget.EditText
package	Todo.Android
content-desc	EditName
checkable	false
checked	false
clickable	true
enabled	true
focusable	true
focused	false
scrollable	false
long-clickable	true
password	false
selected	false
bounds	[20,125][580,165]
resource-id	



WEB: BROWSER DEVELOPER TOOLS (F12)



The screenshot shows a web browser window displaying the AIT GmbH website. The browser's developer tools are open, showing the 'Elements' tab. The DOM tree is expanded to show a navigation menu item with the class 'navi0i'. The 'Styles' pane on the right shows the CSS rules for this element, including a hover effect. The console is also visible at the bottom of the developer tools.

[F12] Taste in Chrome, Edge, IE, Firefox, ...



FAZIT

- SELENIUM / APPIUM ÖKOSYSTEM NIMMT ÄHNLICH WIE GIT MASSIV AN FAHRT AUF
- BREITE UNTERSTÜTZUNG IN DER COMMUNITY UND BEI INFRASTRUKTUR PLATTFORMEN (XAMARIN TESTCLOUD, PERFECTO MOBILE, ...)
- API RECHT ÄHNLICH ÜBER ALLE PLATTFORMEN
- TEILWEISE LEIDER NOCH „EIGENWILLIG“ ABER ES WIRD ...



WAS BRAUCHT IHR NOCH...



VIELEN DANK



WIR UNTERSTÜTZEN SIE



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