

# **Test automation for a web application**

on the basis of differences  
and most basic and common errors  
found with Open Source software –  
AET in theory and practice

Radek Lawgmin  
Maciej Lawskowski

## About us

### Radek Lawgmin

Radek Lawgmin is a lead senior QA engineer and a product owner in the AET project at Cognifide.

He is interested in process optimization, software test efficiency vs. effectiveness and new technologies.

He has been working in AEM projects at Cognifide for over four years. Before engaged in various e-learning projects.



## About us

### Maciej Laskowski

Maciej Laskowski is a senior software engineer at Cognifide. His interest and experience is focused mainly in the area of system integration, scalability and backend web development.

He has been at Cognifide for over three years. He works as an architect and a technical leader in the Automated Exploratory Tests (AET) project. During shaping AET Maciej has used his AEM expertise to boost scalability.



# About us

## Cognifide - who we are

We are the experts in delivering technologically advanced web applications, built on the basis of a CMS (Adobe AEM, Sitecore).



# About us

## Cognifide - our clients

Our technology powers over 400 websites worldwide and our expertise helps clients to save money whilst improving the author and customer experience every step of the way.



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LINCOLN



novo nordisk



CHIVAS

John Lewis



oticon  
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Investec

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RBS  
The Royal Bank of Scotland

Penguin Random House UK

HSBC

# Workshop

What we will learn today?



# Agenda

Section 1.0 – QA process at Cognifide

Section 2.0 – Introduction to AET

Section 3.0 – AET environment setup

Section 4.0 – Launching tests – exercises

Section 5.0 – Advanced settings – exercises

Section 6.0 – Result analysis, test stabilization

Section 7.0 – AET Roadmap

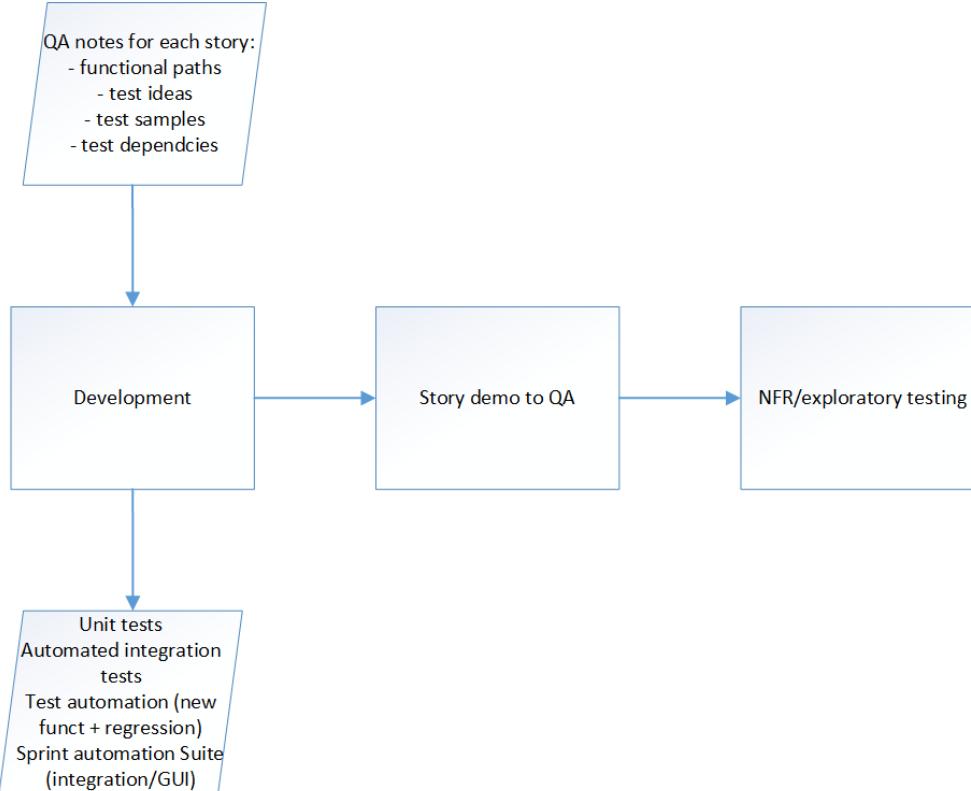
Section 8.0 – Workshop Summary

## Section 1.0

### QA process at Cognifide

# QA process at Cognifide

## How we care about quality – automation strategy



## Section 2.0

### Introduction to AET

# Background

## Cognifide case

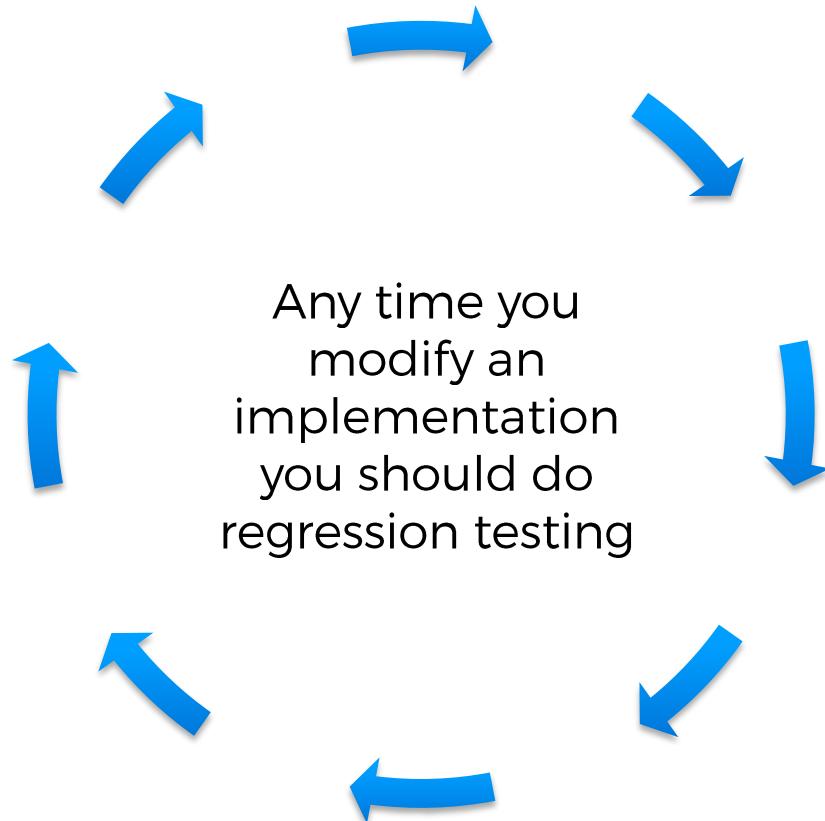
- a few hundred thousand pages to migrate
- missing requirements
- lack of time
- checking functional aspects of a given page is not enough – it does matter how this page looks like!



# Background

## Regression testing

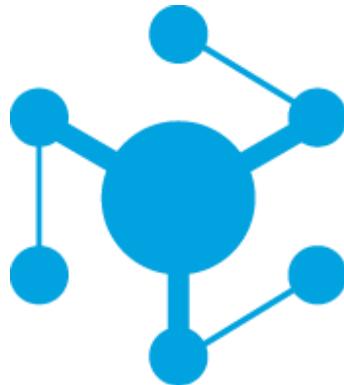
- time consuming
- expensive
- human error aspect



## Background

Problems with regression?

Solution:

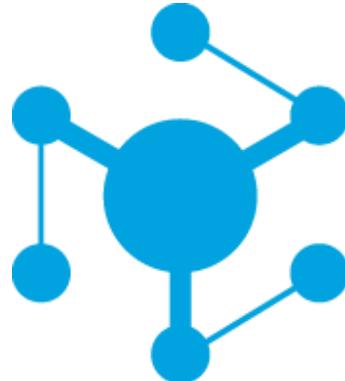


aet

# What is AET?

## Automated Exploratory Testing

- a testing tool developed at Cognifide
- it helps testers to ensure that a **change** in one part of the software has not introduced new defects in other parts of the software
- it helps to assess the **impact or change** of website
- it aids front-end client side layout **regression testing**

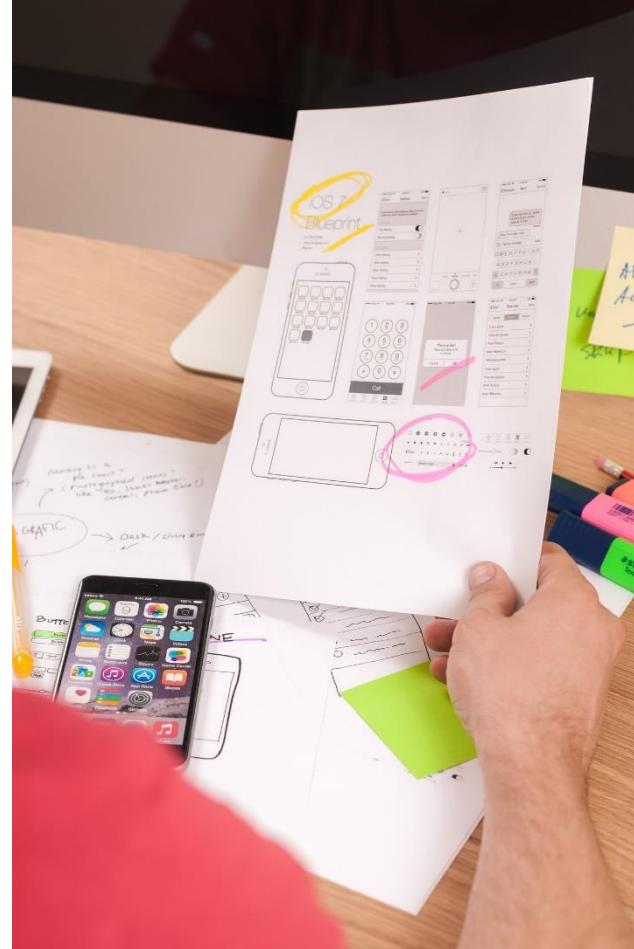


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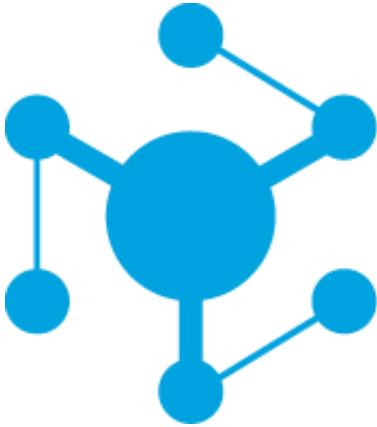
# Test Processing

## A typical scenario of use

1. the AET user (Developer or QA) **baselines** a set of components or pages with URLs as an input to the tool.
2. the CMS user **changes** the page component or content.
3. the '*current baseline*' is used to **compare** with the '*new version*' and the change is assessed for one of the 3 possibilities:
  - there are no changes - no involvement required
  - there is a change but the user accepts it, which means she/he re-baselining
  - there is a change and the user does not accept it, so she/he has to fix it
4. AET produces a report



Short demo

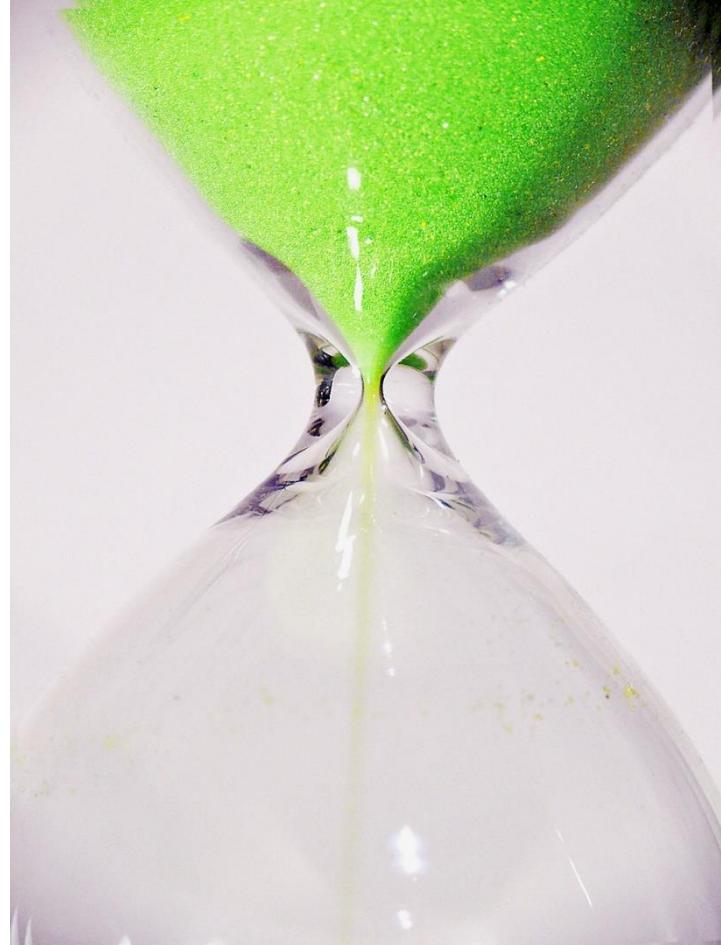


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# What does AET test?

The following features are currently enabled:

- layout comparison (mask/big screen on/off)
- responsiveness (screen width)
- W3C compliance
- JS errors
- status codes
- source code comparison
- accessibility
- Integration with CI tools!



# When you can make use of AET?

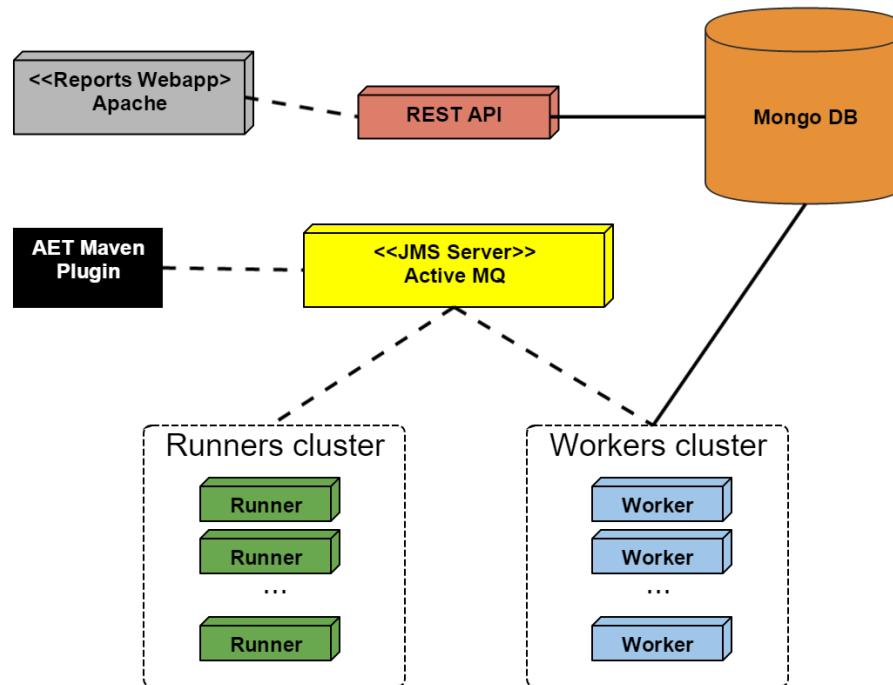
AET can be most useful for:

- testing large websites or large portfolios using common components in a CMS
- unit testing custom components for a CMS project
- regression tests at the end of an Hourly/Daily/Weekly/Per Sprint Completion
- as part of an upgrade or migration of infrastructure / platform migration



# AET architecture

## System components



# AET architecture

## Suite - test - url - case

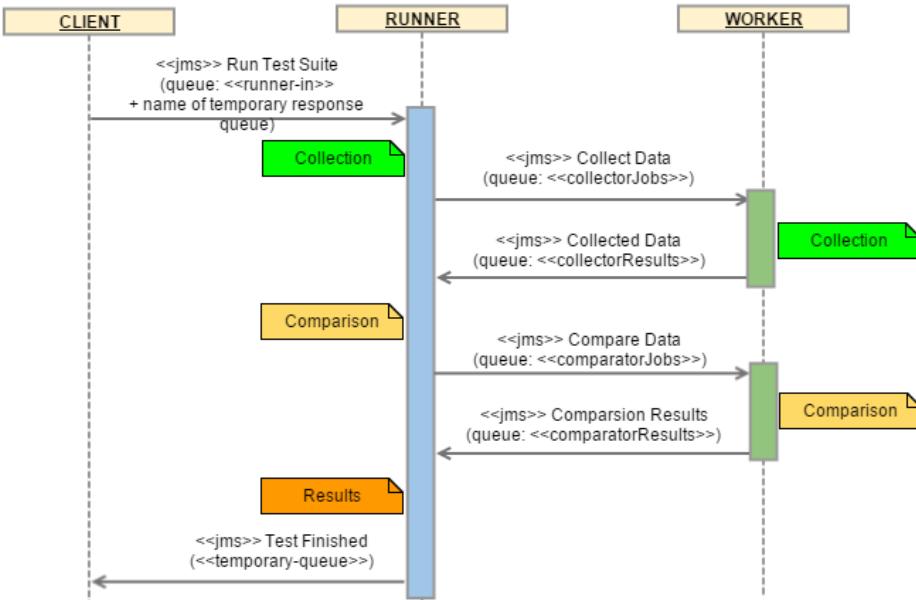
```
<suite name="sample" company="testwarez" project="workshops">
  <test name="my-first-test">
    <collect>
      <open/>
      <sleep duration="1000"/>
      <screen/>
    </collect>
    <compare>
      <screen/>
    </compare>
    <urls>
      <url href="http://cognifide.com"/>
    </urls>
  </test>
</suite>
```

# AET architecture

## Suite - test - url - case

```
<suite name="sample" company="testwarez" project="workshops">
  <test name="my-first-test">
    <collect>
      <open/>
      <sleep duration="1000"/>
      <screen/>
    </collect>
    <compare>
      <screen/>
    </compare>
    <urls>
      <url href="http://cognifide.com"/>
    </urls>
  </test>
</suite>
```

## Test Life Cycle



# AET Reports

**aet**

Total cases: 6 (6 / 0 / 0 / 0) (0 / 2) Project: workshops Suite: exercise1 v8 Last change: 2016-09-22 16:49:35

url:/index.html

LAYOUT FOR DESKTOP ACCESSIBILITY JS-ERRORS SOURCE SOURCE W3C-HTML5 STATUS-CODES

TESTS: 1 (1 / 0 / 0 / 0)

Search...

No filters applied

Pattern collected: Sep 22, 2016 4:49:08 PM  Accept test case

▶ homepage 1

Pattern View

Demo page TestWarez 2016 Home About Contact

# Hello, world!

Learn more »

Heading A

*(Ip) dapibus, neque sed luctu orni erat tellus, nulli diam, sed auctor le o quam id magnis, ac Donec consequt posuerit orbi amet blandit. Quisque quis nisi feugiat ligula utrum efficitur ou non nequam non lorem.*

View details »

Phasellus ut efficitur sem. In maximus neque nec metus vestibulum pellentesque. Integer id nunc felis. Sed in bibendum ex. Praesent massa nunc, fermentum vitae trididunt nec, euismod ut nulla. In eget dui sit amet metus fermentum volutpat ac eu odio.

View details »

Heading B

*Quisque puma lectus, suscipit nec efficitur vitae, egistis ut volt. Males i efficitur feugiat turpis, ac accumsan tellus tempus et. Duis a dolor ante. Sed puma arcu convallis it sagittis quis efficitur ou condimentum non lorem.*

View details »

Heading C

*Quisque puma lectus, suscipit nec efficitur vitae, egistis ut volt. Males i efficitur feugiat turpis, ac accumsan tellus tempus et. Duis a dolor ante. Sed puma arcu convallis it sagittis quis efficitur ou condimentum non lorem.*

View details »

Demo page TestWarez 2016 Home About Contact

# Hello, world!

Learn more »

Heading A

*(Ip) dapibus, neque sed luctu orni erat tellus, nulli diam, sed auctor le o quam id magnis, ac Donec consequt posuerit orbi amet blandit. Quisque quis nisi feugiat ligula utrum efficitur ou non nequam non lorem.*

View details »

Phasellus ut efficitur sem. In maximus neque nec metus vestibulum pellentesque. Integer id nunc felis. Sed in bibendum ex. Praesent massa nunc, fermentum vitae trididunt nec, euismod ut nulla. In eget dui sit amet metus fermentum volutpat ac eu odio.

View details »

Heading B

*Quisque puma lectus, suscipit nec efficitur vitae, egistis ut volt. Males i efficitur feugiat turpis, ac accumsan tellus tempus et. Duis a dolor ante. Sed puma arcu convallis it sagittis quis efficitur ou condimentum non lorem.*

View details »

Heading C

*Quisque puma lectus, suscipit nec efficitur vitae, egistis ut volt. Males i efficitur feugiat turpis, ac accumsan tellus tempus et. Duis a dolor ante. Sed puma arcu convallis it sagittis quis efficitur ou condimentum non lorem.*

View details »

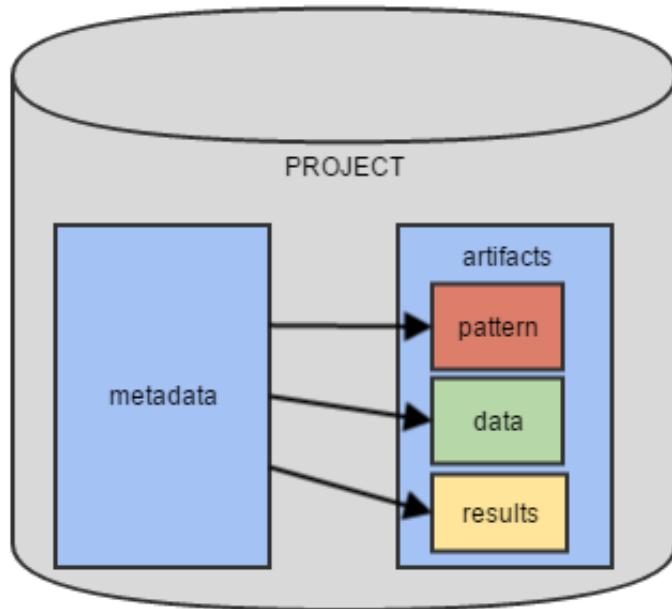
© Company 2016

user-agent: Mozilla/5.0 (X11; Linux x86\_64; rv:38.0) Gecko/20100101 Firefox/38.0

user-agent: Mozilla/5.0 (X11; Linux x86\_64; rv:38.0) Gecko/20100101 Firefox/38.0

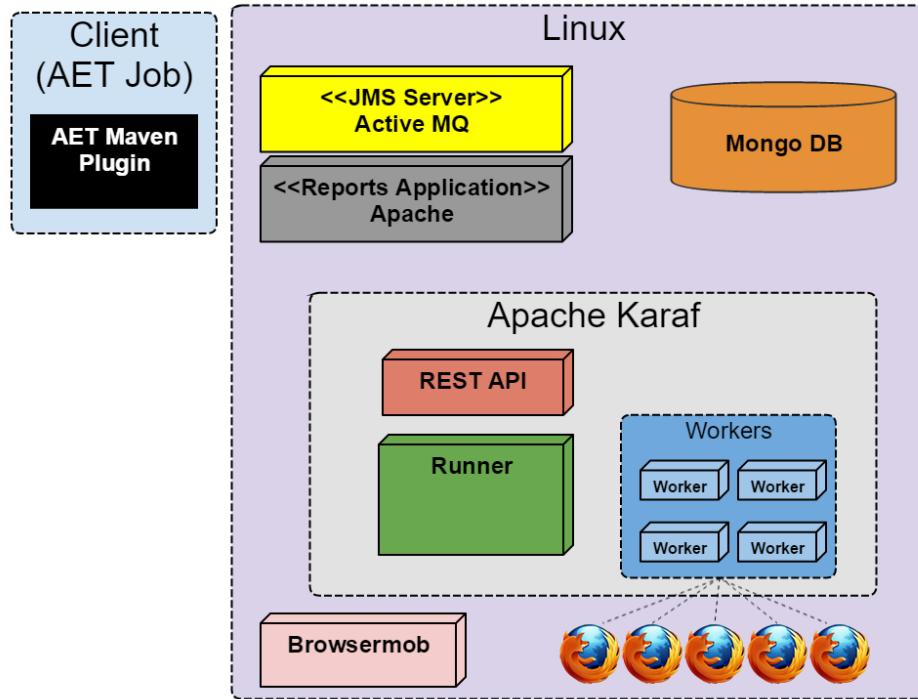
# Data Structure

## Data storage



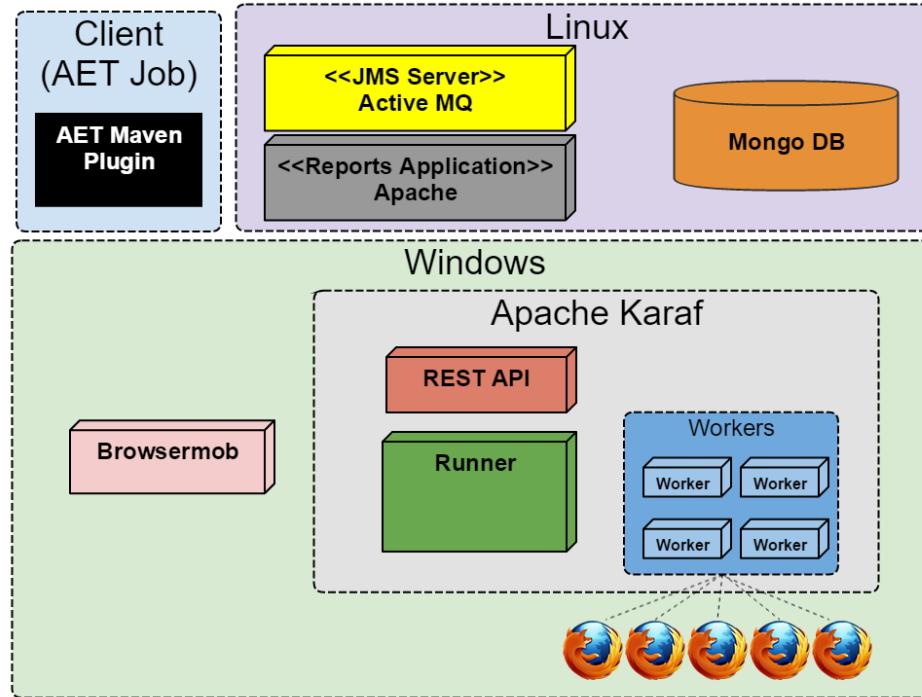
# Deployment variants

## Basic setup



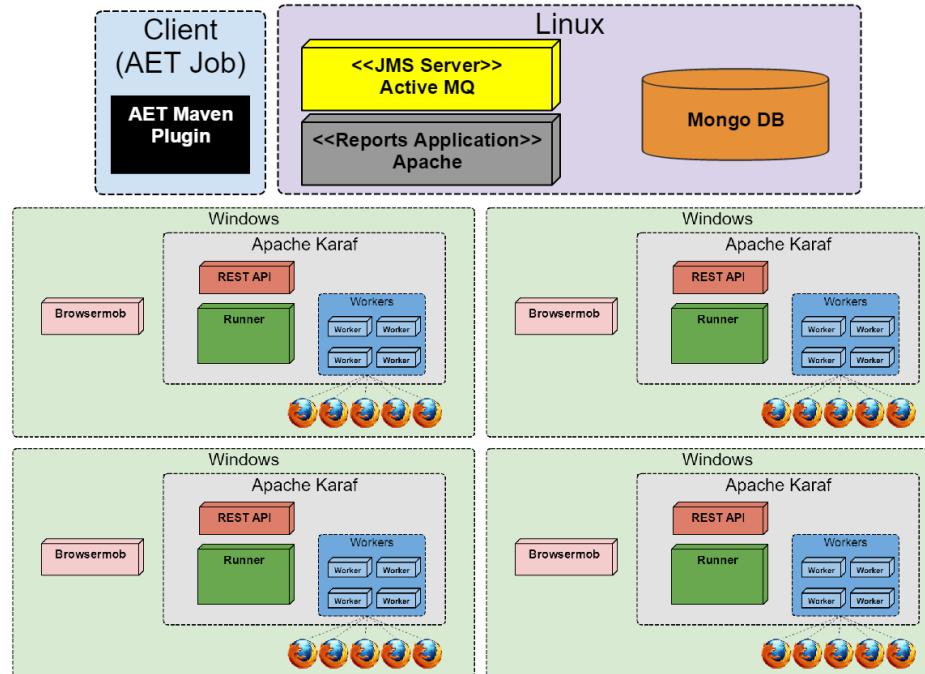
# Deployment variants

## Advanced (production-ready) setup



# Deployment variants

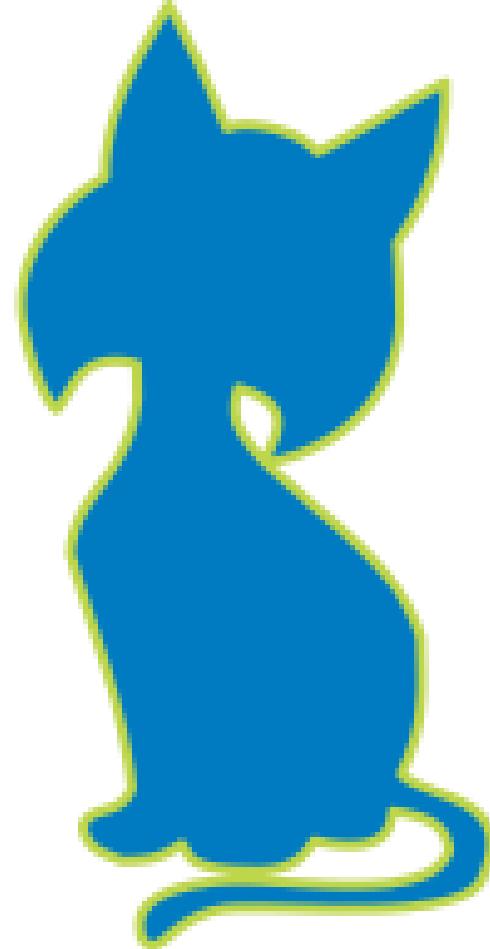
## Scalability



## What AET does not test

The following areas are beyond the scope for AET

- functional testing (including user journeys) = BOBCAT
- cross-browser testing
- how a given page behaves in a given browser
- usability testing
- security
- server-side performance

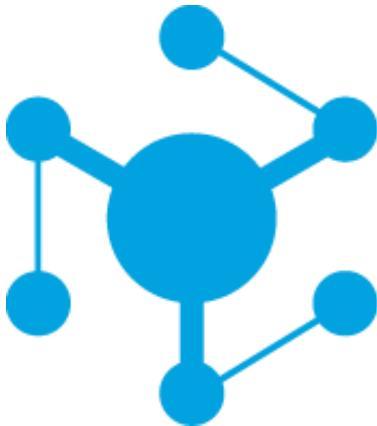


## Section 3.0

### AET environment setup

Online guide and exercises

<https://github.com/Cognifide/TestWarez2016>



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# AET installation on local machines

Make sure your machine meets the following required preconditions

- OS: MS Windows or Linux (Ubuntu/Centos/Fedora/Redhat) or Mac OS X
- VirtualBox 5.0.26
- Vagrant 1.8.4
- ChefDK 0.17.17
- Git client
- Java SE 7
- Maven 3.3.9
- Vim/Notepad++ or other test editor allowing to edit XML files
- Google Chrome



## AET installation on local machines

Clone or download AET repositories from GitHub

repositories are available at:

- <https://github.com/Cognifide/AET>



# AET installation on local machines

## Vagrant configuration

as the Administrator execute the following commands:

```
vagrant plugin install vagrant-omnibus
```

```
vagrant plugin install vagrant-berkshelf
```

```
vagrant plugin install vagrant-hostmanager
```



# AET installation on local machines

## First run

as the Administrator execute the following commands inside the application/vagrant directory:

berks install – to download Chef dependencies from external sources

vagrant up – to create a new virtual machine



# AET installation on local machines

## Prepare your test suite xml file

- configure your first **suite** and name it according to your convenience
- remember about the **Open** module:
  - a special operand for collect phase
  - responsible for opening the web page for a given url and preparing browser environment to perform chain of collections and modifications
  - it allows the user to easily perform actions before page is opened

Each collect phase must contain open module

```
<suite name="warmup" company="testwarez" project="workshops">
  <test name="my-first-test">
    <collect>
      <open/>
      <sleep duration="1000"/>
      <screen/>
    </collect>
    <compare>
      <screen/>
    </compare>
    <urls>
      <url href="http://cognifide.com"/>
    </urls>
  </test>
</suite>
```

# AET installation on local machines

## Run your test

as the Administrator execute the following command:

```
mvn aet:run -DtestSuite=FULL_PATH_TO_TEST_SUITE
```



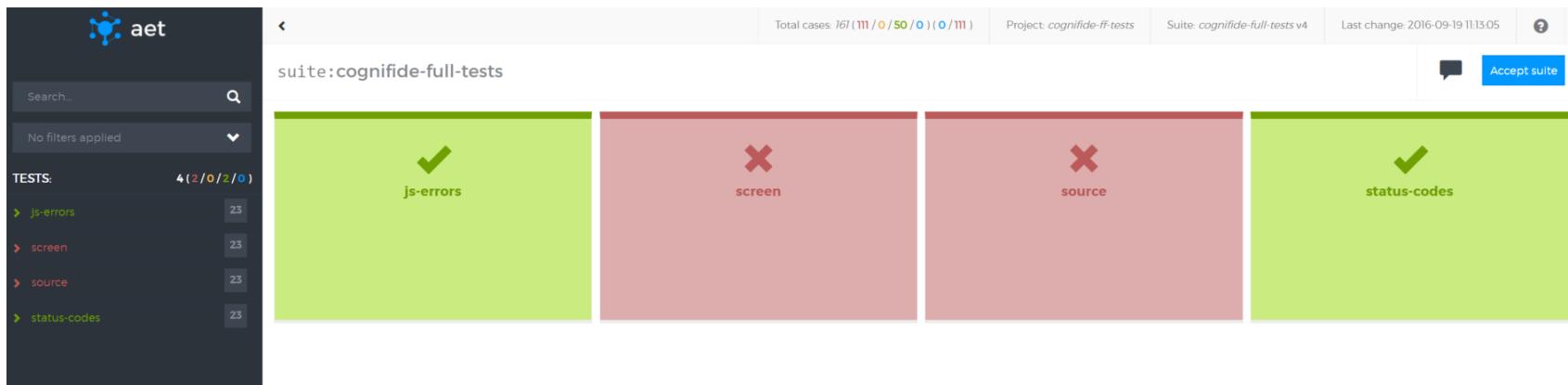
# AET installation on local machines

## Check your report

use your Chrome browser to visit:

<http://localhost:8181/configs/list>

where you can find the list of your reports generated by AET



## Section 4.0

### Launching tests - exercises

# Screenshot comparison

## Usage

- the operation on the screenshots
- screenshots are compared to the patterns that were accepted before

```
<collect>
  ...
  <screen name="desktop"/>
  ...
</collect>
<compare>
  ...
  <screen comparator="layout"/>
  ...
</compare>
```

# Screenshot comparison

## Report

LAYOUT FOR DESKTOP   LAYOUT FOR MOBILE   LAYOUT FOR TABLET   LAYOUT FOR SMARTTV

Settings Show Mask

Pattern

View

Pattern collected: Jun 15, 2016 1:54:47 PM   Accept test case

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Maven Vault Checkout Plugin (vtco) - using Maven for content checkout  
We have created Maven Vault Checkout Plugin to help you upgrade and modify simple content easily and often. Check out how you can use it here.

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Touch UI - dynamic dropdown by AEM Zen Garden  
If you have been following our series of blogs on Touch UI, welcome to the third instalment, where you find us continuing our journey to convert all AEM Zen Garden's dialogs from Classic UI to Touch UI.

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08 September 2016 | Malgorzata Furtak Bobcat meets AEM out Plugin (vtco) - using Maven for content checkout  
Bobcat meets AEM out Plugin (vtco) - using Maven for content checkout. This blog is written from other test automation frameworks, like Checkout Plugin to help you upgrade and modify simple content easily and often. Check out how you can use it here.

02 September 2016 | Sharad Naqvi, Vice President, Analytics, Barclays 5 pitfalls of personalisation and how to Zen avoid them  
We've been talking to Sharad Naqvi, Vice President of Analytics at Barclays, about the trials and tribulations of perfecting the personalisation approach. He kindly agreed to share some of his thoughts with us here...

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# JS comparison

## Usage

- the operation on the collected JavaScript errors
- errors are reported on the basis of the filter configuration that filters out the results returned by the JS Errors Collector (all the errors matched are removed from the report)
- the JS comparison feature does not allow to collect patterns

```
<collect>
  ...
  <js-errors/>
  ...
</collect>
<compare>
  ...
  <js-errors/>
  ...
</compare>
```

# JS comparison

## Report

### JS-ERRORS



No.	Error	Source	Line number
1	ReferenceError: nonExistingVariable is not defined	<a href="http://jas-integration-aet.cognifide.com/sample-site/sanity/comparators/jserrors/failed.jsp">http://jas-integration-aet.cognifide.com/sample-site/sanity/comparators/jserrors/failed.jsp</a>	390

# Source code comparison

## Usage

- the operation on page code
- page code is compared to its pattern that was accepted before and each change is marked:
  - a new chunk is marked with green
  - a removed chunk is marked with red

```
<collect>
  ...
<source/>
  ...
</collect>
<compare>
  ...
<source/>
  ...
</compare>
```

# Source code comparison

## Report

url: /contact-us

< > Accept url

### SOURCE SOURCE

Settings	Show Full Source	Accept test case
# Pattern		# Source
36  <meta name="VlcurrentDateTime" content="636015886886167288">		36  <meta name="VlcurrentDateTime" content="636022625107206288">
204  <div id="bbf64025_4300_4fc5_be1e_7a66f2b840e9" class="map-canvas" style="height: 100%; width: 100%"></div>		204  <div id="814bcf22-0436-425a-840d-518e69ad315c" class="map-canvas" style="height: 100%; width: 100%"></div>
235  <div id="fa43ce6e-58e8-4825-9e42-9458992e0e82" class="map-canvas" style="height: 100%; width: 100%"></div>		235  <div id="93a519af-8462-4dba-a7a8-16b25c04bddf" class="map-canvas" style="height: 100%; width: 100%"></div>
266  <div id="af45e855-c41f-4feb-9630-77f2f0eb569" class="map-canvas" style="height: 100%; width: 100%"></div>		266  <div id="8620c4b0-02c4-4fd1-8bf3-6086843551ac" class="map-canvas" style="height: 100%; width: 100%"></div>
280  <input name="__RequestVerificationToken" type="hidden" value="fFUd4+bKu5Tw33gxvFC7WMRQ9wQ3xQPlghttpODmWtE4- sep5D2rSLZAYeDNL4CDAxPurMyfK6sa2aXp5gdWBW2is477dp0_FzEw6XQTppEEI">		280  <input name="__RequestVerificationToken" type="hidden" value="KsKAvVK8m2Wh2ivsWdq1RH8TiFTDpCJDzCIBQIJH0V15iOQY2zBw2bi7lI8oNSFvd53dDr-t5zQsvXQrKnWv-jT2nvc- LzSDXiUwFHe01">

# W3C compliance

## Usage

- the operation on the pages based on the validation of collected pages against the WC3 standard
- a list of validation and/or warnings are presented in a form of list
- the W3C compliance feature does not allow to collect patterns

```
<collect>
  ...
  <source/>
  ...
</collect>
<compare>
  ...
  <source comparator="w3c-html5"/>
  ...
</compare>
```

For more information on W3C refer to:

[https://validator.w3.org/docs/help.html#validation\\_basics](https://validator.w3.org/docs/help.html#validation_basics)

# W3C compliance

## Report

SOURCE W3C-HTML5

Validation errors count: 5

Validation warnings count: 1

No.	Validation Output
1	Line 388, column 1 Saw "<" when expecting an attribute name. Probable cause: Missing ">" immediately before. <pre>script&gt; &lt;erorTag &lt; /body&gt;</pre>
2	Line 388, column 3 A slash was not immediately followed by ">". <pre>erorTag &lt;/b ody&gt; &lt;</pre>
3	Line 388, column 7 Element "erortag" not allowed as child of element "body" in this context. (Suppressing further errors from this subtree.) <pre>erorTag &lt;/body&gt; &lt;/htm</pre>
4	Line 389, column 7 End tag for "html" seen, but there were unclosed elements. <pre>&lt;/body&gt; &lt;/html&gt;</pre>
5	Line 388, column 7 Unclosed element "erortag". <pre>erorTag &lt;/body&gt; &lt;/htm</pre>
6	Line 388, column 7 Attribute "<" is not serializable as XML 1.0. <pre>erorTag &lt;/body&gt; &lt;/htm</pre>

# Status codes

## Usage

- status response codes for the resource HTTP request are processed
- the collected status codes are processed only when they are from within the range defined in the Filter Range
- status Codes feature does not allow to collect patterns

```
<collect>
  ...
  <status-codes/>
  ...
</collect>
<compare>
  ...
  <status-codes/>
  ...
</compare>
```

For a detailed list of codes please refer to the Hypertext Transfer Protocol documentation at:

<http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html>

# Status codes

## Report

### STATUS-CODES



No.	Status Code	URL
All gathered status codes:		
1	301	<a href="http://cognifide.com/contact-us">http://cognifide.com/contact-us</a>
2	200	<a href="http://www.cognifide.com/contact-us">http://www.cognifide.com/contact-us</a>
3	200	<a href="https://s.ytimg.com/yts/jsbin/www-embed-player-vflQLak8g/www-embed-player.js">https://s.ytimg.com/yts/jsbin/www-embed-player-vflQLak8g/www-embed-player.js</a>
4	200	<a href="https://s.ytimg.com/yts/jsbin/player-en_US-vflkXleCa/base.js">https://s.ytimg.com/yts/jsbin/player-en_US-vflkXleCa/base.js</a>
5	200	<a href="http://www.cognifide.com/%7E/media/cognifide2014/Sustainability/January%202016%20Amends/shutterstock_66595252.jpg?h=133&amp;la=en&amp;w=2000&amp;hash=86F48BD8E632EB44BF2E5198786C6B34B76408E9">http://www.cognifide.com/%7E/media/cognifide2014/Sustainability/January%202016%20Amends/shutterstock_66595252.jpg?h=133&amp;la=en&amp;w=2000&amp;hash=86F48BD8E632EB44BF2E5198786C6B34B76408E9</a>
6	200	<a href="http://www.cognifide.com/%7E/media/Cognifide2015/shared/contacts/contacts.jpg?h=386&amp;la=en&amp;w=580&amp;hash=7D95DF972B1B20C67CB79CD6958982BBD26C065C">http://www.cognifide.com/%7E/media/Cognifide2015/shared/contacts/contacts.jpg?h=386&amp;la=en&amp;w=580&amp;hash=7D95DF972B1B20C67CB79CD6958982BBD26C065C</a>

# Accessibility

## Usage

- the operation on page code based on the validation of collected pages against one of the three conformance levels of the **WCAG 2.0 standard**
- it analyzes the results collected and validates it against the `html_CodeSniffer` library
- the accessibility feature does not allow to collect patterns

```
<collect>
  ...
  <accessibility standard="WCAG2AAA" />
  ...
</collect>
<compare>
  ...
  <accessibility/>
  ...
</compare>
```

For more details please refer to:

[http://squizlabs.github.io/HTML\\_CodeSniffer/](http://squizlabs.github.io/HTML_CodeSniffer/)

# Accessibility

## Report

ACCESSIBILITY

Validation errors count: 6

Validation warnings count: 0

Validation notices count: 0

No.	Validation Output
1	<p>Line 22, column 5: This button element does not have a name available to an accessibility API. Valid names are: title attribute, element content.</p> <pre>&lt;button class="navbar-toggle" type="button" data-toggle="collapse"...ot;&gt;&lt;/span&gt;     &lt;span class="icon-bar"&gt;&lt;/span&gt; &lt;/button&gt;</pre> <p>WCAC2A.Principle4.Criterion4_1_4_1_2.H91.Button.Name</p>
2	<p>Line 252, column 26: This select element does not have a name available to an accessibility API. Valid names are: label element, title attribute.</p> <pre>&lt;select multiple="" class="form-control"&gt;     &lt;option&gt;1&lt;/...&lt;option&gt;4&lt;/option&gt;     &lt;option&gt;5&lt;/option&gt; &lt;/select&gt;</pre> <p>WCAC2A.Principle4.Criterion4_1_4_1_2.H91.Select.Name</p>
3	<p>Line 252, column 26: This form field should be labelled in some way. Use the label element (either with a "for" attribute or wrapped around the form field), or "title", "aria-label" or "aria-labelledby" attributes as appropriate.</p> <pre>&lt;select multiple="" class="form-control"&gt;     &lt;option&gt;1&lt;/...&lt;option&gt;4&lt;/option&gt;     &lt;option&gt;5&lt;/option&gt; &lt;/select&gt;</pre> <p>WCAC2A.Principle1.Criterion1_3_1_3_1.F68</p>

## Section 6.0

### Advanced settings - exercises part I

# Modifier

- a module responsible for converting the target before the data collection process is performed e.g.:
  - hiding a visible element
  - modifying a requested header
  - adding a new cookie



# Hide Modifier

## Background

- there are some dynamic elements on pages that look different each time the user visits the page e.g.:
  - news/article lists
  - animations
  - clock/data
  - exchange rates
  - weather forecast
  - advertisements
  - etc.



## Hide Modifier

- responsible for **hiding an element** on a page so it is not processed by the tool
- hiding is done by setting css visibility property to hidden
- the user can hide many elements by defining many <hide> nodes.
- if xpath covers more than one element then all the elements that match defined xpath will be hidden



# Hide Modifier

## Sample use

```
<collect>
  ...
  <open/>
  ...
  <hide xpath="//*[@id='logo']"/>
  ...
  <screen/>
  ...
</collect>
```



# Hide Modifier

## Important information

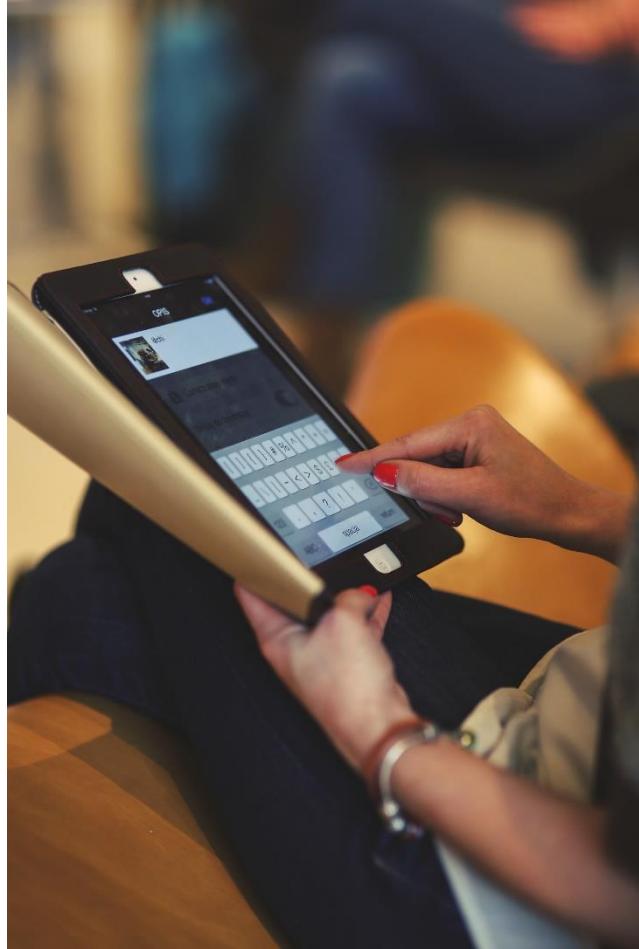
- the modifier must be declared after the open module in the test site XML definition



# Resolution Modifier

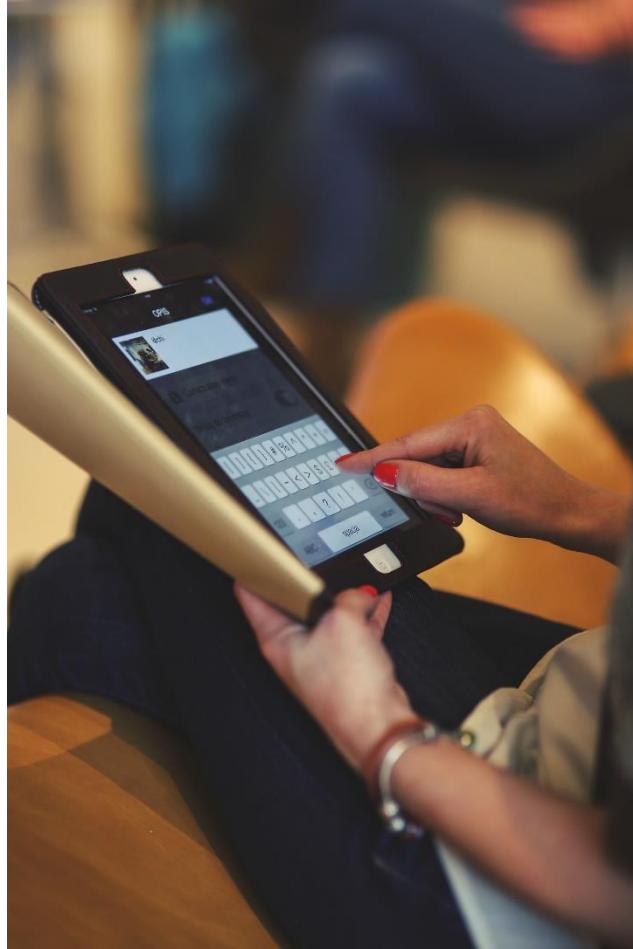
## Background

- there are problems of making the same code work across multiple screen resolutions (inc. responsiveness) and checking it whenever a single change is introduced



# Resolution Modifier

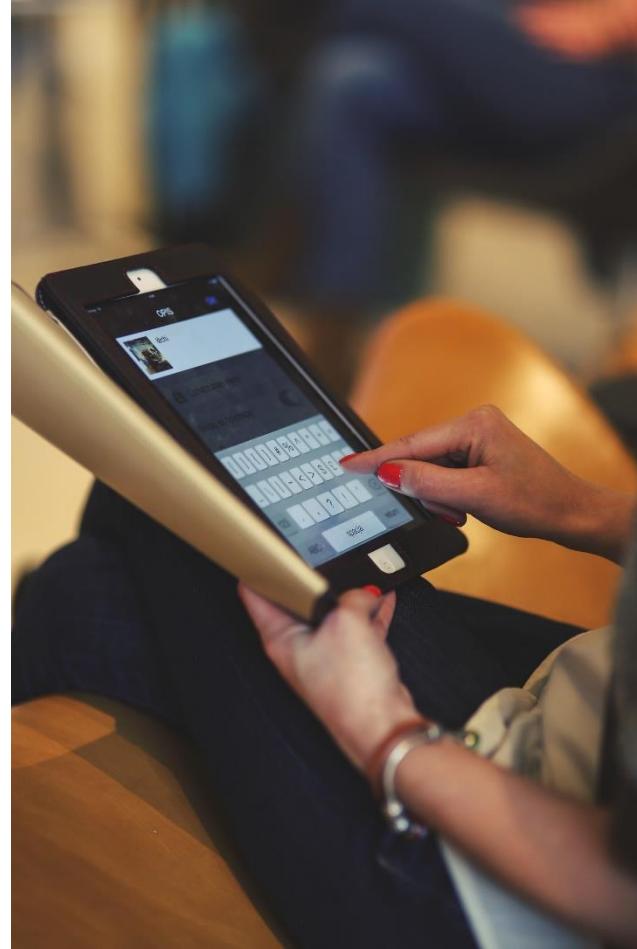
- responsible for changing browser screen size and thus simulating running the page on different viewports



# Resolution Modifier

## Sample usage

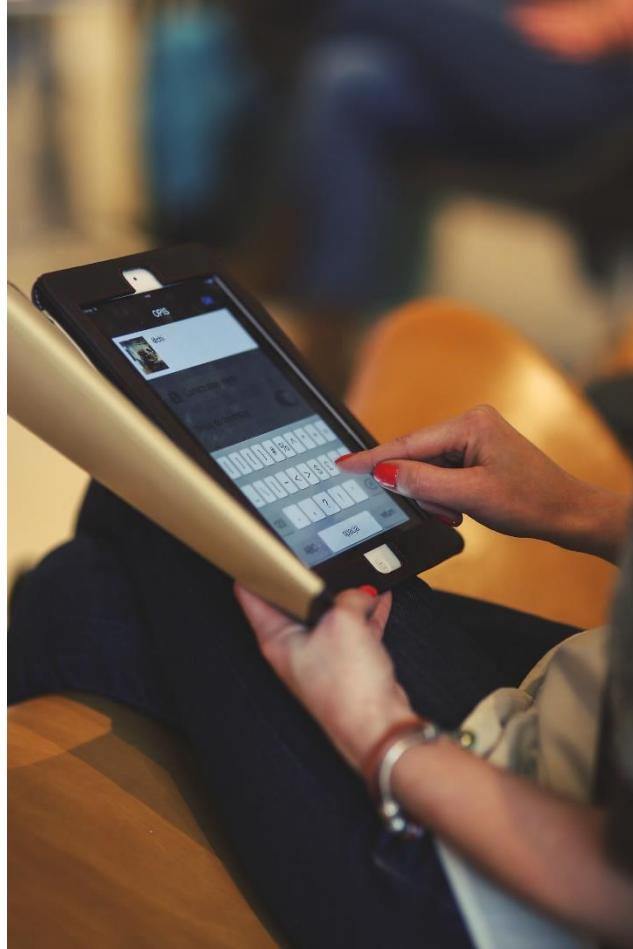
```
<collect>
  ...
  <resolution width="200" height="300"/>
  <screen/>
  ...
</collect>
```



# Resolution Modifier

## Important information

- you cannot maximize the window and specify the dimension at the same time
- if you specify the height parameter you have to also specify the width parameter and vice versa
- the **final resolution of screenshots may be different** when the scrollbar is displayed
- the default width of the Firefox Scrollbar is equal to 33px



# Sleep vs. Wait For Page Loaded Modifier

## Background

- very often there are page resources that need much time to load and it is impossible to test a page without waiting for them e.g.:
  - AJAX loaded elements
  - JavaScript loaded elements
  - heavy assets
  - etc.



# Sleep vs. Wait For Page Loaded Modifier

## Sleep Modifier

- responsible for ceasing test execution temporarily
- useful in situations when page resources need much time to load



# Sleep vs. Wait For Page Loaded Modifier

## Sleep Modifier – sample usage

```
<collect>
  ...
<open>
  ...
<sleep duration="3000"/>
  ...
</collect>
```



# Sleep vs. Wait For Page Loaded Modifier

## Sleep Modifier – Important information

- the sleep duration cannot be longer than 30000 ms (30 s)
- two consecutive sleep modifiers are not allowed
- the total sleep duration (sum of all sleeps) in test collection phase cannot be longer than 120000 ms (2 min)



# Sleep vs. Wait For Page Loaded Modifier

## Wait For Page Loaded Modifier

- it waits until the whole page is loaded (all DOM elements are loaded)
- it does not wait for dynamically loaded elements by e.g. JavaScript) or fixed amount of time is up



# Sleep vs. Wait For Page Loaded Modifier

## Wait For Page Loaded Modifier - sample usage

```
<collect>
  ...
  <open/>
  ...
  <wait-for-page-loaded/>
  ...
</collect>
```



# Sleep vs. Wait For Page Loaded Modifier

## Wait For Page Loaded Modifier

- the timeout for waiting is 10000 ms
- the page is checked every 1000 ms



# Sleep vs. Wait For Page Loaded Modifier

So what is difference between

Sleep Modifier

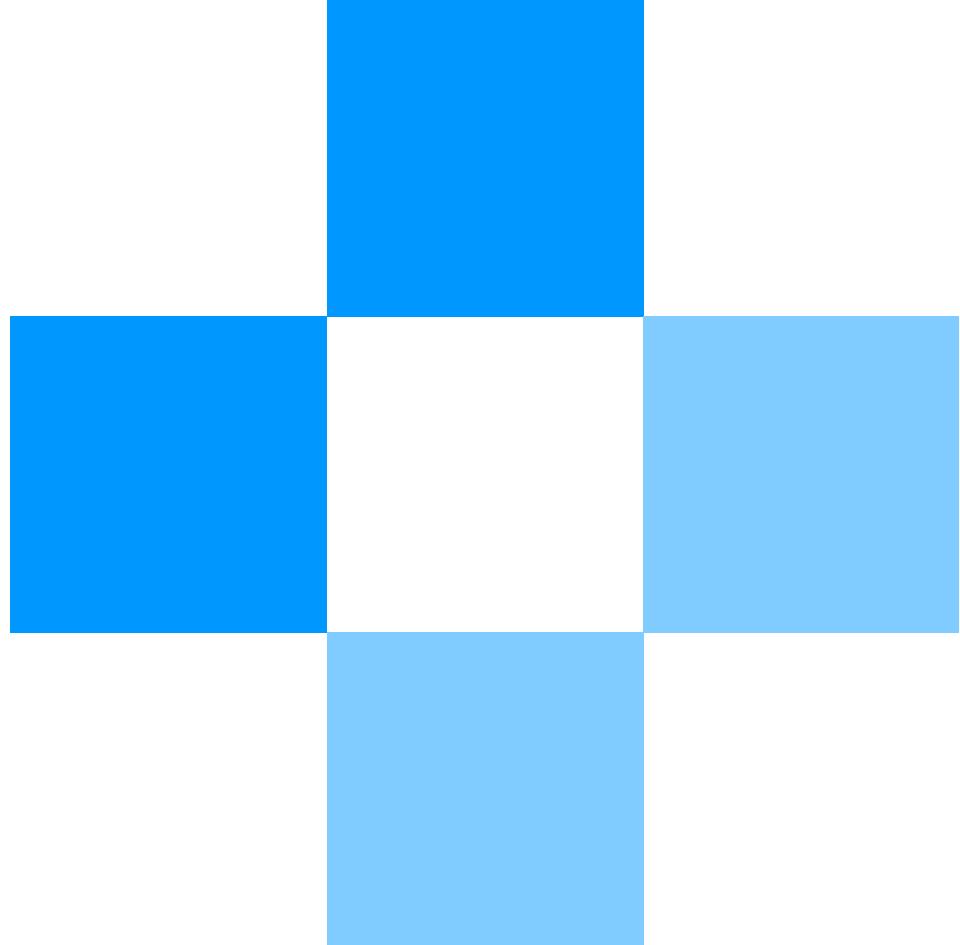
and

Wait For Page Loaded Modifier?



## Section 5.0

### Advanced settings - exercises part II



# Cookie Modifier

## Background

- in order to check certain behaviour of a page the user needs to provide certain pieces of information e.g.:
  - cookie disclaimer
  - localization
  - authorization
  - personalization



## Cookie Modifier

- allows to **modify cookies** for a given page by adding or removing some cookies



# Cookie Modifier

## Sample usage

```
<collect>
  ...
  <modify-cookie action="add"
    cookie-name="sample-cookie"
    cookie-value="sample-cookie-value"/>

  <modify-cookie action="remove"
    cookie-name="another-cookie"/>
  ...
<open/>
  ...
</collect>
```



# Cookie Modifier

## Important information

- the modifier must be declared after the open module but before the Cookie Collector in the test site XML definition



# Header Modifier

## Background

- in order to check given behaviour of a page the user needs to define the operating parameters of an HTTP transaction e.g.:
  - basic authorization
  - user agent
  - geolocalization

non incalzendo però un prezzo, che haueva da regnare in  
dei S. honti et habebat un anno, et l'ha regnato da 7 no-  
cento, et sconsiglio d'aver da tempo a' costi così, et non  
eut neppi morte ne poteva.

ma ancora che detta regola uedesse Christo in serua in  
700 - 700 millesimi, con quel prezzo, che galate, qual'era  
di appartenere a' costi, et che, que' medesimi uideva  
d'essere ascendente, da' venti.

Dico poi che posto decimo nell'anno S. Crisostomo, obbligato  
a' costi suon, l'incubo di Regno di Christo, nel 700 millesimi,  
nato Regno come diceva l'aposto Petrus, e Ridoreva il  
Libero non a' mali, in vicenda de' mali, uiva che libo per  
mea, e consapevole dell'inaltezza nei se' millesimi, giusta  
per la Chiesa piena felicità nel 700 millesimi.

Diego, che cominciato il 700 millesimi, è cominciato di nona il  
domingo, e uorso il duce lo Gentile, che il Costo oggi è maggiore  
che qua' volta, fatto numeroso servizio nostro al invadere  
la Grecia, ma se' l'aposto Petrus de' Celi, et domenica est, et  
in breve tempo succederà per il Giudicio universale, e dice che  
non Pachomio succederà, non fior per il Giudice, se ga evane  
renunciati più per ballo.

In die, da' venti di Giugno Christo, ga intreto, hanne cosi fatto  
tale de' costi, et fior deve camminare del giorno, et non per 700  
millesimi, nel quale si significava, che ce' intreto Dio, Li-  
bero non a' mali, e per il Regno, mentre che dove siamo nelle  
peccata. Dicono che cosa risguarda l'afro della redite.  
Per intreto fior il 700 millesimi, riscriviamo al Regno.

Quo è 700 millesimi dal 700. Comandi, nel suo loro, nel tempo che mi  
son battuto a' servito, fino al'ult'etate, essendo lungo  
setento con duecento, se molte, e con approssimazione d'alcuna si  
erano de' molti presenti, d'ogni sorte. Che già mi uorrei farlo:  
non di' nulla conoscenza.

Int' 700 millesimi, e' dicono tanti agiati e' quelli altri. Ma non so  
sempre di fior 700 millesimi, non facendone al 700 millesimi.

Int' 700 millesimi, nel amore, ce' dicono 700 millesimi.

Che' l'aposto Petrus fuit in galera in fede habbit.

Jesu Christo, prefissi Noi, li, Maria eff.

Int' 700 millesimi, che l'aposto Petrus fuit in galera.

Int' 700 millesimi, e' dicono 700 millesimi.

Non è mai stato per questo motivo, per questo  
che l'aposto Petrus fuit in galera, nella scola di S. Teodosio; nella fine del mese di Augo-

# Header Modifier

- responsible for injecting additional headers to a page before it is the subject of testing

non incalzando però un preluso, che hausce de Regnare in  
dei S. honti et habebit un'etate, et s'ha già in Dio e no-  
cento, et tocconegli d'anno 1000, la prima ad oculis eys, et non  
erit nepp' mors nec dolor.

ma è ancora che della salma ti uedrai Christo inservire in  
1000 e 700 milenariorum, in quel paese, che Galles, quod ista-  
bi appartenente eam curva in Galles, que matribus sed et si  
dicitur descendere, ut ueniet?

Dic ego qui de poto d'elmo nell'urne S. Petri, abuenisse  
Regni suorum. L'uscide il Regno di Christo, nel 7 milenio,  
natio Regia come dicea l'apostolo. e Ridoncuso il  
Libero non è male, la sincerità del male, uoce che libra per-  
metta a omnia pietà, e uiu in sei milenariorum, pertice  
per la Chiesa piena felicità nel 7<sup>mo</sup> milenario.

S. Petrus, sic uenit il 16<sup>mo</sup> Natale, et anniversario di natale il  
S. Petrus, e uocare à d'oro la Gente, che il Pugno foge, e manca  
delle pietre calles, fatto numeroso exercito uenendo al invader  
la Grecia, ma se lo sp. deuincere de Grecia et decimogt. eys, et  
in breve tempo succederà per il Giudicio universale, e dico che  
non Petrus resusciterà, non fero per il Petrus, se ga evans  
renescere pietas per ballopi.

In die, in ueritate di Gesù Christo, ga intrezzo, hanne cosi fatto  
che il Petrus, et altri sacerdoti universali del mondo, ceano per i  
geni compagno del Corpo, ma che poi non si godessero le non nel 7<sup>mo</sup>  
milenario nel quale si uisceravano, che ce intrezzo Petrus.  
Petrus poi, stava, per il Corpo, mentre il Corpo uiamo nelle  
peccati. Dicendo, voi sara' resuscitato l'afro del Corpo, e  
per intrezzo per il 7<sup>mo</sup> milenario, resuscitato al Corpo.  
Questo è stato in invito dal S. Petrus, nel suo tempo che mi  
son trattenero i sacerdoti, fino al ult' edizione, essendo lungo  
sesto con auersione de molti, e con opposizione d'aluni, si  
erano de molti presenti d'ogni sorte. Che glie mi uorrei frega:  
nuto di mala conoscenza:

Int' il de gama superi, dicondi tam aqua e piuma alet. Vgl non so  
Signore di gto nò sette, non haudense al d'auocato.

Int' 2 en odio, nel amore, ce signore di gto nò sette.

Cuius Petrus, et Damasus fuit in ipso scelere in fida subdit.

S. Petrus, et S. Peter, et S. Petrus eff.

Ad. 1. de Episcopis ante me. Regni.

Pre. 1. Ant. 6. 17. a. Christi. Cea me. 80.  
169<sup>mo</sup> mavello. Porro ce p. Angelo Petrus Bon. Reg. Petrus. Mario.  
Vic. Generali. Propt. coram oratione, in misericordia. Pet. Gabriel Ghisi, va:  
et D. Bartolomeo. (Cura. Pet. 6. bis. 9. an. 6. 169<sup>mo</sup>. Incarnatus. Et. Et  
v. Carissimi, ut dicitur. S. Petrus, uocata. Deum, q. p. ferme uocare  
et. excepit. q. fuit. Nam.

Int' an' ist' uel uocante com' uocat' nos, q. p. ferme uocare.  
Pet. Non co' in morte. E che l. Trinitate uocata formata, per Regist' me  
Pet. Ap. alijs, nella Scola d'et. Petrus; nella fine del meso di Augo

# Header Modifier

## Sample usage

```
<collect>
    ...
    <header key="Authorization" value="Basic
emVuT2FyZXVuOnozbkdAckQZbiE="/>
    ...
    <open/>
    ...
</collect>
```

non intendendo per un giorno, che la voce da Regnare in  
polo a cominciare in qualsiasi. Che furono le trentamila  
dei S. Tommasi e furon tanti con altri, est di 3000 in 3000 no  
mili puro niente meno. Dopo, ma come fu fatto. E' di-  
cendo che questo Deum non ha cognitio ad orbis eorum, et non  
erat neq; Mors, nec deo potest.  
Pone dunque che della salute nostra Christo invoca in  
toto il Millennium, con quel passo. Pote Galileo cogliere  
che appartenesse a me curva in Dio, que' mormoni ubidivisi  
et credentes, et non venisse.  
Dice poi che fato dicente nelle Sante Simeone, Amerino,  
Acchille, Gennaro, i Regni di Cristo, nel mondo:  
nascit Regno come diceva Iustini Fletriano - e Diconoche il  
Libano non a mare, che s'incontra da mare, uno che libra per-  
metta, e curva perda, esse in malo ne sei Millennium, perche  
per la Chiesa presta felicitate nel 700 Millennium.  
S. Ignazio dice che fato dicente il 700 Nostro, et credentes di nono il  
Decimo, e venire a sedur le Gentili, che li porti gloria, e Marci  
dei Gran Capitan, fatto numero diverso, venire a invader  
la Grecia, ma se in 700 decimales del Cielo et invaderet egi, et  
in orella tempo succederet per il Giubileo universale, e dice che  
ent' Altimonti accende, non fero per il Giubilo de' qui erano  
venuti ma per le altre.  
Significo che l'intero S. Ignazio Christo ga insegnato, tanto cosa facta  
che Dio vuole, et per cosa chiedetevi dell'utru, et anco per i  
segni temporali del Cielo, ora che già non si governano le navi nel 700  
Millennium, non avete se cogliete, che ea regnante Dio lo  
regno poi l'Asia, e per il Cielo mentre al suo Lasso nella  
fornace. Dicendo che sarà riacquistato l'effigie della saggezza  
per intero regno il Dio 700 millennium, riacquistato al Cielo.  
Cosa è di un incesto del Cielo, nel tutto loro nel campo che  
in trattenimento d'animi, uno all'altro, e sono questi scatti  
scatenati con curiosità de nobis, con gloria? E' di alcuna gli  
curiosi de molti presenti d'ogni sortes. E' che già mi scrive di cogni-  
re di tante cose conoscenze.  
Avrei da farne augi' d'andare tam aquid a quam alter. E' che non so  
dove di Dio no sento, non havendone alzate notizie.  
Int' in diei, real amore, et alzate gitt' offerte.  
E' che fatti a Domine fuit, ing' il Cielo et in terra habet.  
Profeta Tu. Professore Pro. A. C. Maria eff.  
Ad. d. Episcopio Can. L'anno Domi.

Sie ist Aug 6<sup>th</sup> a.m. Abend Ccc m 80.  
Pd 7<sup>th</sup> mavelle horre at Angelo Diedo Pd 8<sup>th</sup> Baja Mexico.  
Por general Braga, com. de abrige, in meo. de Por Gabriel Ghisi, da 1  
cada quinella, (that is, of his year br. 140). Incurvado Ccc 2<sup>nd</sup>  
1. Curvado, mi dolo to swage, & service Decem, of porcine carcas  
dai. swage Cc, fruit of Tom.  
Incurvado, vel in curvato, con una base red o portentous  
de son co. in swage Cc. The last, which from me, for report  
that the alpaca, the lana di Tropic, is woven nella fine del nese di lungo

# Header Modifier

## Important information

- it must be declared before the open module in the test suite XML definition and the proxy must be used

non incalzando però un preludio, che haueva de regnare in  
dei S. honti et habebat un filo, et l'ha de far in Dio e no-  
cento, et sconçorci d'anno per la pugna ad oculi eoy, et non  
moia ancora che della scelta uedeva Christo seruo in  
1000 e 700 millesimi, in quel paese. Poi Gabriele quidam  
bis appartenente ream curva in Cibis, que madonna sedebat  
et descendente, in venetijs.  
Diego qui ha fatto discorsi nell' amore S. Petri, obbligato  
Rochus fiume. L' insieme il Regno di Christo, nel 7 millesimo  
anno, segno come diceva l' agno felicissimo. E Ridoreca il  
Libero non è male, in vicenda de male, uero che libo per  
mea e conuocata esse in mei millesimi, pertanto  
per la Chiesa piena felicità nel 7 millesimo.  
Diego. Si è terminato il 7 millesimo anno. E' cominciato di nuovo il  
7 millesimo, e uerba di Dio si senti, che il Signore oggi è messo  
della sua salutis fatto numerosi bendy uenienti al suadere  
la pietas, ma si senti denunce de Cibo et denuncie dei, et  
in breve tempo succederà per il Giudicio universale, e dice che  
non ridurrà nessuno, non ferio per il Giudice se ga evan-  
niciati miseri per ballopi.  
In die, da uenetijs si spie a Christo, e ha intreto, han così fatto  
tutte le Cittate, et fuc detto ammendato del giorno, et ancora par-  
sene compagno del Signo, ma che poi non si godessero le uite nel 7 mil-  
lesimo, nel quale si uisificava, che ce intreto Dio. Li  
disse a Dio, signore, per il Signo, mentre il Signo ciascuno nelle  
chiesate prendea una cassa risuonata l' offerto delle uolte.  
Per intreto fuce il Dio 7 millesimo, risciacquato al Signo.  
Tutto è finito, non invento nulla. Conditi, nel cito loro, nel tempo che mi  
son battemesse il servizio, fino al uero destino, essendo lungo  
senecte con auersione de molte, e con appassione d' alcuna. Vi  
erano de molti presenti d' ogni sorte. Che glie mi uerme frega:  
nuto di mala conoscenza.  
Int' i de fanno auerbi conditi tanti aquo e piuma altri. Ma non so  
Signore di furo li detto, non invento al di uostre.  
Int' i en odio, nel amore, ce signore, Signore.  
Cibi, bebe, e dimensurati, pur impo' scelgete in fido arbitrio.  
*Soforo Fr. Soforino Nov. 16. Maria eff.*  
Anno 7 millesimo anno 7 millesimo.  
Pre 10. Anno 7 millesimo anno 7 millesimo.  
700 millesimi. Poco tempo dopo nato Diego Bon, e' Signore di Montefeltro.  
Vic' generali Graft, cosa d' uerbo, in mezzo a San Gabriele Ghisi, va  
et don Gabriele, (che fui) et fui, et fui, et fui. 1000 millesimi. Incaricato da' Re  
di Gerusalemme, cui don Gabriele aveva ueramente donato, di porre in sicurezza  
la sacra sepoltura, fatta di Dam.  
Int' i anciati, nel qual tempore con uerbo fui, e fui, e fui.  
Poi don co' un magistrato, e che l' uerbo uerbo, per negozi  
dell' Alifei, nella Scuola di S. Teodosio; nella fine del mese di Augo-

# Click Modifier

## Background

- in order to check certain behaviour of a page the user needs to click a given element on this page e.g.:
  - accordion component
  - tabs component
  - expandable menu (dropdown list)
  - lightbox



## Click Modifier

- allows to perform the click action on a page element



# Click Modifier

## Sample usage

```
<collect>
  <open/>
  ...
  <click
    xpath="/*[@id='menu']"
    timeout="3000"/>
  ...
<screen/>
  ...
</collect>
```



# Click Modifier

## Important information

- note that when element is not found (e.g. by improper xpath value) warning will be logged but test will be passed to the next steps
- the modifier it must be declared after open module in test suite XML definition
- the element to be clicked **must be visible** at the moment of performing the click action



## Section 6.0

Result analysis, test stabilization

## Result analysis and test stabilization

- what are the problems that you come across?
- what conclusions can we draw?



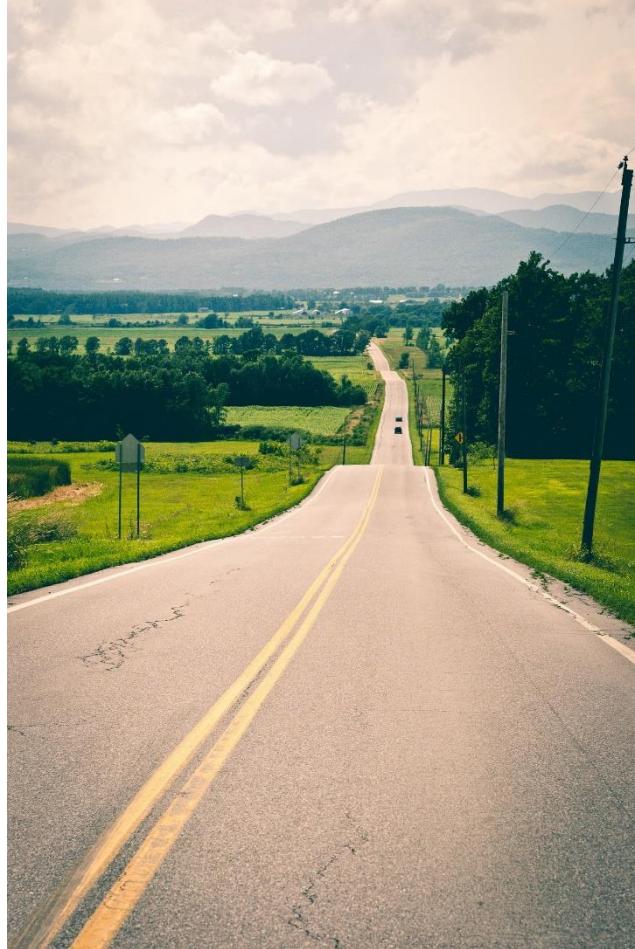
## Section 7.0

### AET roadmap

# AET roadmap

## What's next?

- stabilization
- UX improvements for the report
- Selenium grid
- expand the range of browsers supported
- light and more scalable architecture
- ...

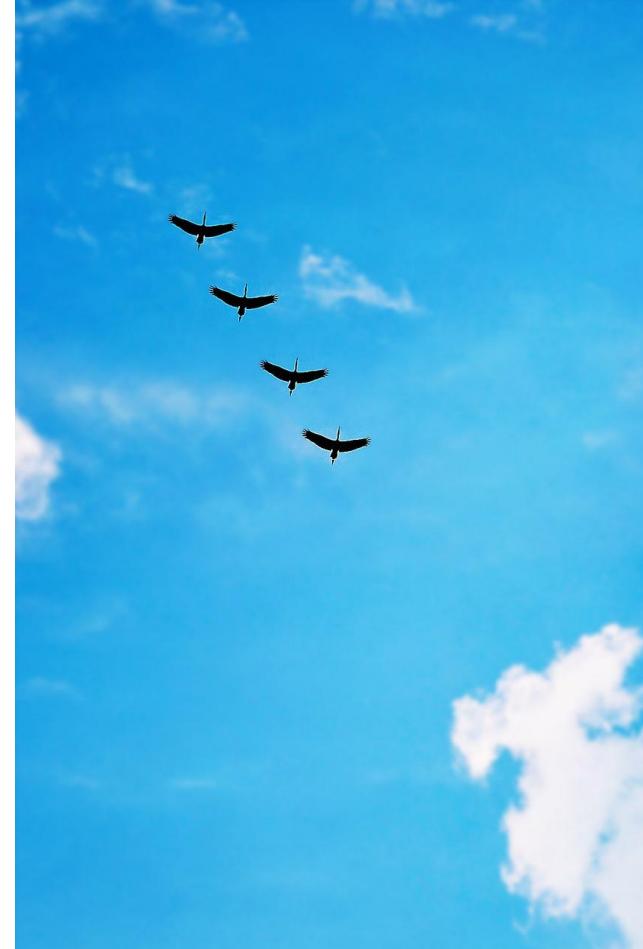


## **Section 8.0**

### Workshop summary

## Workshop summary

What you should have learned from this workshop



Q & A

# Thank you!

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# References

<https://github.com/Cognifide/AET>

<http://www.cognifide.com>

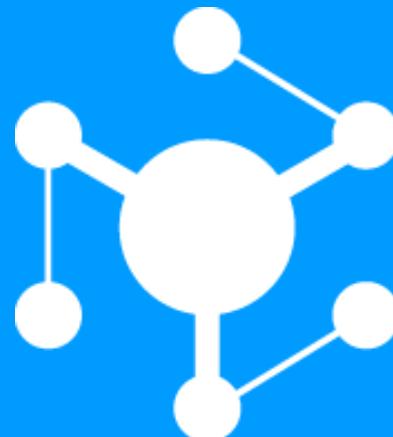
[https://validator.w3.org/docs/help.html#validation\\_basics](https://validator.w3.org/docs/help.html#validation_basics)

<http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html>

[http://squizlabs.github.io/HTML\\_CodeSniffer/](http://squizlabs.github.io/HTML_CodeSniffer/)

<https://github.com/Cognifide/bobcat>

For support contact:  
aet@cognifide.com



aet