



Funded by the
European Union

Extending WebDriver: A cloud approach

Boni García

boni.garcia@urjc.es

<http://elastest.io>

11th International Conference on the Quality of Information
and Communications Technology (QUATIC 2018)
September 6th 2018 | Coimbra, Portugal

Table of contents



1. Introduction
2. Background
3. ElasTest: platform for end-to-end testing
4. User Impersonation as a Service
5. Demo
6. Conclusions and future work

1. Introduction



- Large distributed heterogeneous systems are more and more common (e.g. microservices architectures, cloud native apps, etc.)
- Testing this kind of software is complex, especially to verify the system as a whole

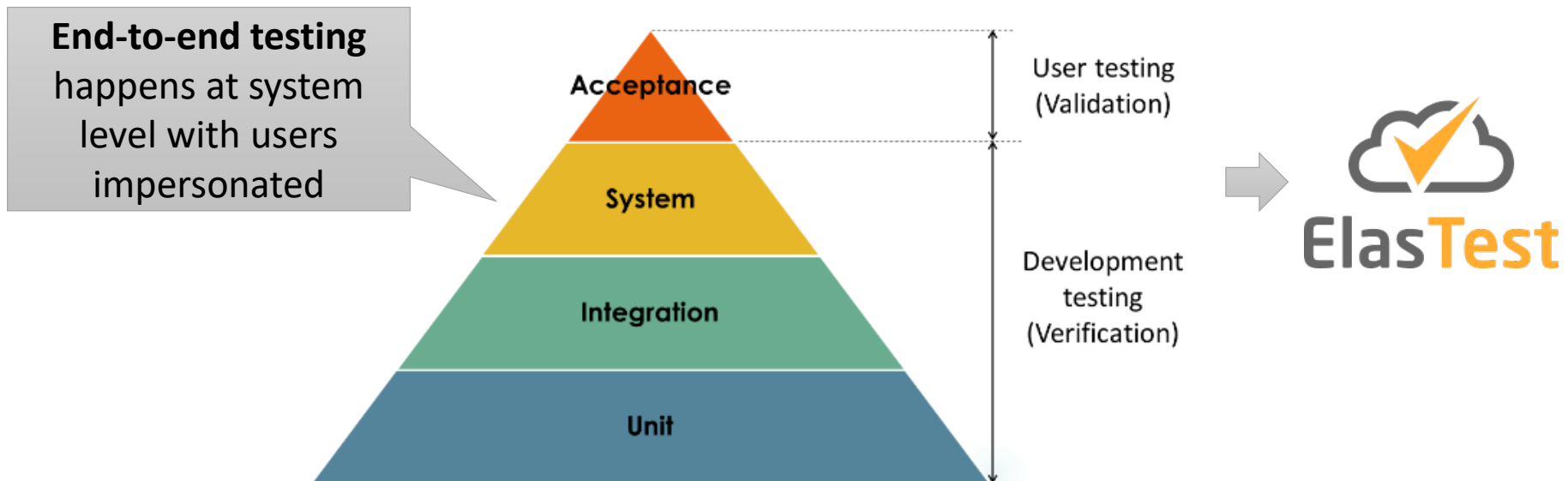


Table of contents



1. Introduction
- 2. Background**
3. ElasTest: platform for end-to-end testing
4. User Impersonation as a Service
5. Demo
6. Conclusions and future work

2. Background



- The main mechanism used in the current state-of-the-art for the functional testing of web and mobile applications consists on impersonating a user through some kind of GUI automation
- **Selenium** is the most popular solution:

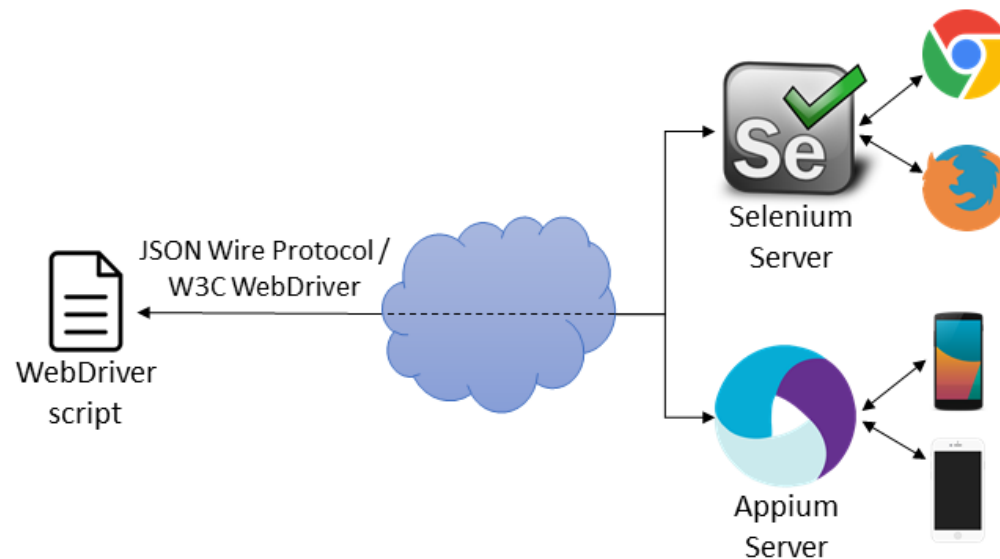


Table of contents



1. Introduction
2. Background
- 3. ElasTest: platform for end-to-end testing**
4. User Impersonation as a Service
5. Demo
6. Conclusions and future work

3. ElasTest: platform for end-to-end testing



- ElasTest is an open source platform aimed to ease the end-to-end testing activities for different types of distributed applications and services
- ElasTest manages the full testing lifecycle, deploying and monitoring the System Under Test (SUT), executing the end-to-end tests and exposing the results to testers



<http://elastest.io/>

3. ElasTest: platform for end-to-end testing



- ElasTest architecture:

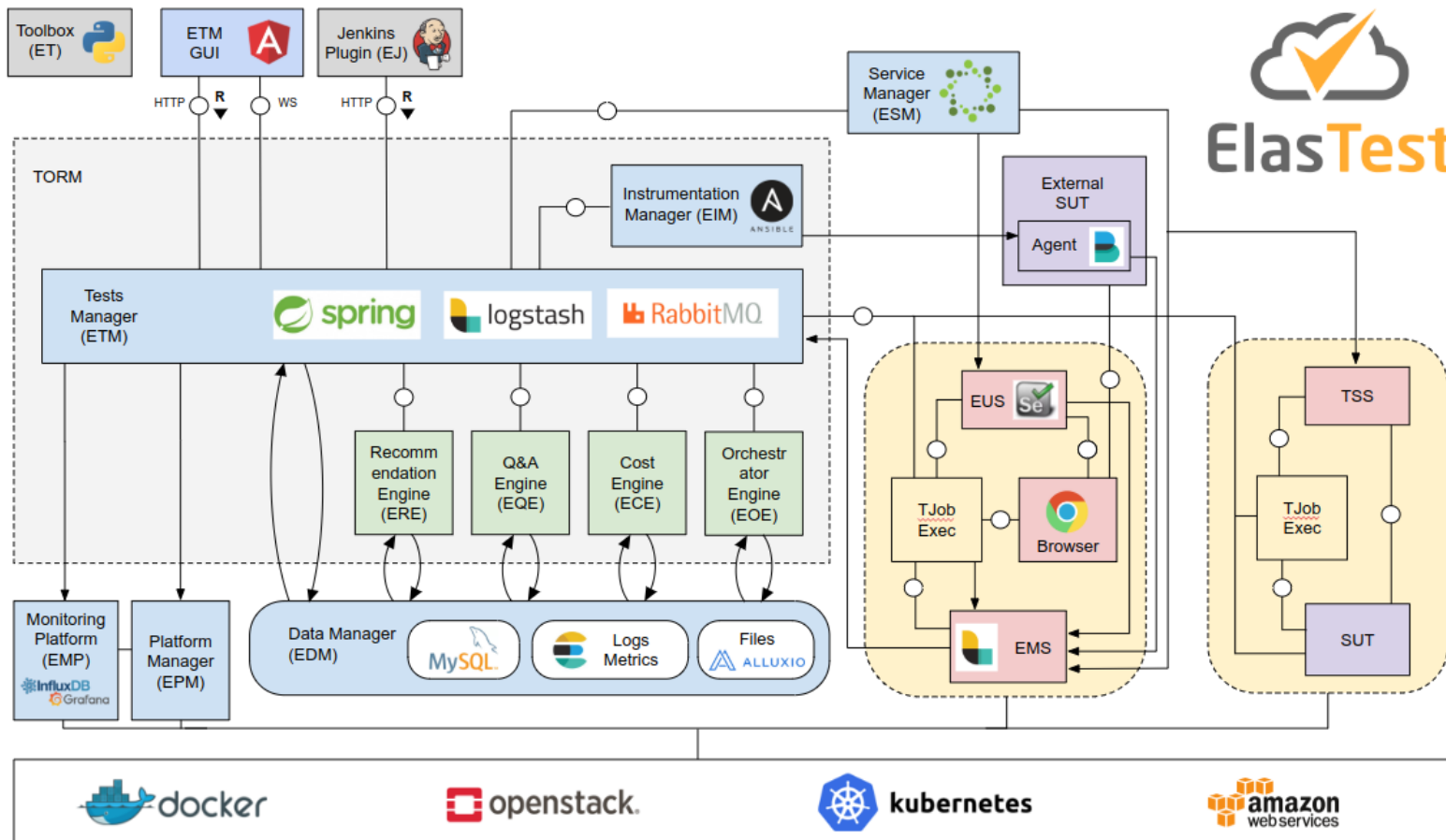


Table of contents



1. Introduction
2. Background
3. ElasTest: platform for end-to-end testing
- 4. User Impersonation as a Service**
5. Demo
6. Conclusions and future work

4. User Impersonation as a Service

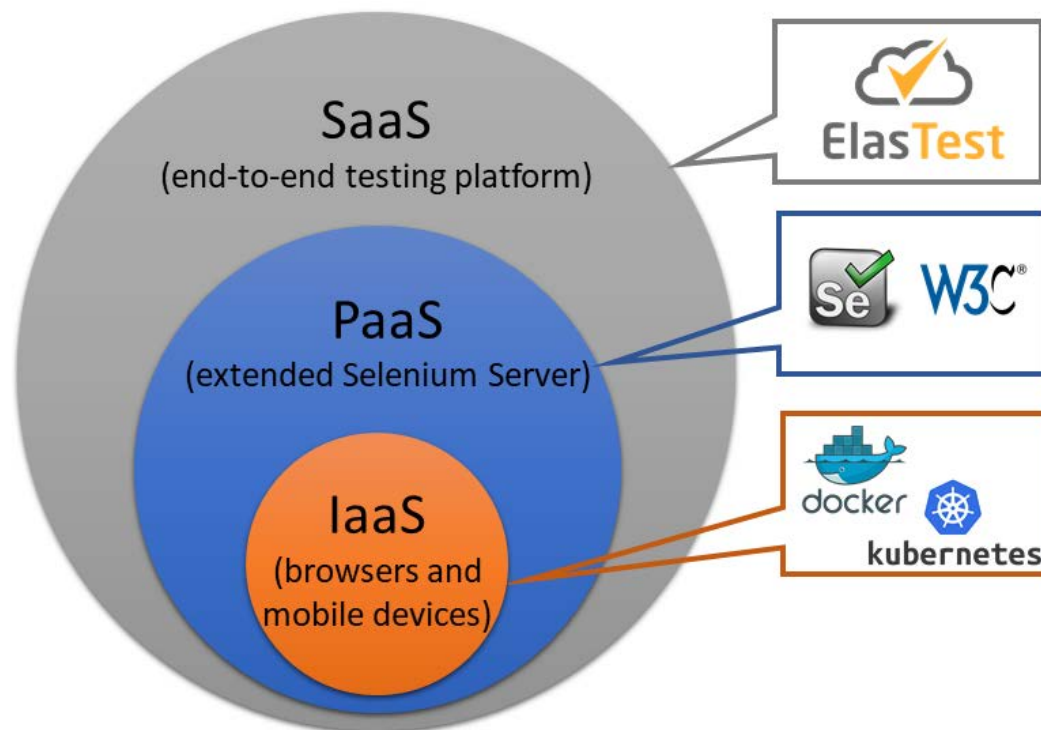


- ElasTest implements an User Impersonation as a service capability (UlaaS) that provides Software as a Service (SaaS) extending the W3C WebDriver with advanced capabilities:
 1. Evaluation of the perceived Quality of Experience (QoE) of users on real-time multimedia applications (WebRTC)
 2. Equivalent automation capability for sensors and smart devices for Internet of Things (IoT)

4. User Impersonation as a Service



- Our concept of UlaaS has been implemented as a layered approach following the NIST definition of cloud computing (SaaS, PaaS, and IaaS)



4. User Impersonation as a Service



- Extension to W3C WebDriver recommendation by ElasTest User Impersonation Service:

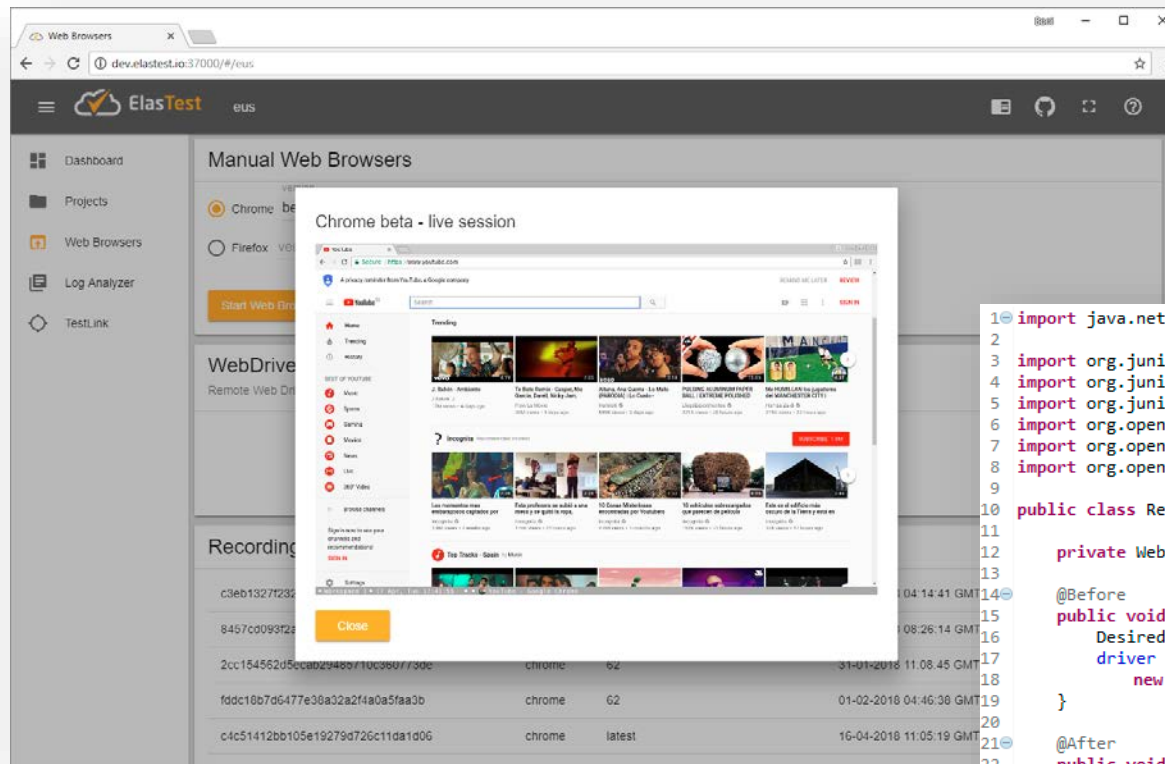
Method	Path	Description
Event subscription		
POST	/session/{sessionId}/element/{elementId}/event	Subscribe to a given event within an element
GET	/session/{sessionId}/event/{subscriptionId}	Read the value of event for a given subscription
DELETE	/session/{sessionId}/event/{subscriptionId}	Remove a subscription
Recordings		
GET	/session/{sessionId}/vnc	Get remote session
DELETE	/session/{sessionId}/vnc	Delete remote session
Media capabilities		
POST	/session/{sessionId}/usermedia	Set user media for WebRTC
GET	/session/{sessionId}/stats	Read the WebRTC stats
POST	/session/{sessionId}/element/{elementId}/latency	Measure end-to-end latency of a WebRTC session
POST	/session/{sessionId}/element/{elementId}/quality	Measure quality of a WebRTC session

Table of contents



1. Introduction
2. Background
3. ElasTest: platform for end-to-end testing
4. User Impersonation as a Service
- 5. Demo**
6. Conclusions and future work

5. Demo



```
1 import java.net.URL;
2
3 import org.junit.After;
4 import org.junit.Before;
5 import org.junit.Test;
6 import org.openqa.selenium.WebDriver;
7 import org.openqa.selenium.remote.DesiredCapabilities;
8 import org.openqa.selenium.remote.RemoteWebDriver;
9
10 public class RemoteTest {
11
12     private WebDriver driver;
13
14     @Before
15     public void setup() throws Exception {
16         DesiredCapabilities capabilities = DesiredCapabilities.chrome();
17         driver = new RemoteWebDriver(
18             new URL("http://dev.elastest.io:34362/eus/v1/"), capabilities);
19     }
20
21     @After
22     public void teardown() {
23         if (driver != null) {
24             driver.quit();
25         }
26     }
27
28     @Test
29     public void test() {
30         // My test logic
31     }
32 }
33 }
```

Table of contents



1. Introduction
2. Background
3. ElasTest: platform for end-to-end testing
4. User Impersonation as a Service
5. Demo
6. **Conclusions and future work**

6. Conclusions and future work



- ElasTest is an open source platform aimed to ease end-to-end tests for heterogenous large distributed systems
- ElasTest implements a User Impersonation as a Service (UlaaS) extending the W3C WebDriver recommendation
- Existing test codebases with Selenium and Appium are completely compatible with ElasTest
- Some features are still under development, such as measurement of the end-users' perceived QoE or support for IoT devices