D8.5		
Version	0.8	
Author	URJC	
Dissemination	PU	
Date	30-12-2019	
Status	FINAL	



# D8.5 ElasTest dissemination plan and activities v2

Project acronym	ELASTEST	
Project title	ElasTest: an elastic platform for testing complex distributed large software systems	
Project duration	01-01-2017 to 31-12-2019	
Project type	H2020-ICT-2016-1. Software Technologies	
Project reference	731535	
Project website	http://elastest.eu/	
Work package	WP8	
WP leader	Malena Donato	
Deliverable nature	Report	
Lead editors	Francisco Gortázar, Malena Donato	
Planned delivery date	30-12-2019	
Actual delivery date	31-12-2109	
Keywords	Software testing, software engineering, open source software	



Funded by the European Union



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## Version history

Version	Date	Author(s)	Description of changes
0.1	20/11/2019	Maria Carbonell Malena Donato	Initial structure revision and edition of sections, introduction, report status, collaboration activities s
0.2	27/11/2019	Penny Mania	Contributions to event sections
0.2	27/11/2019	Andy Edmonds	
0.2	28/11/2019	María Carbonell	Contributions to every section and insertion of partners contributions
0.3	3/12/2019	Malena Donato	Introduction, collaboration activities, tables for KPIs
0.4	10/12/2019	Malena Donato	More details on STAMP collaboration activities, events, digital show
0.5	20/12/2019	Francisco Gortázar	Sections 4 & 5
0.6	23/12/2019	Francisco Gortázar	Section 6
0.7	30/12/2019	Francisco Gortázar	Sections 7 & 8. Fixing numbering of figures and tables.
0.8	31/12/2019	Francisco Gortázar	Fix index. Final review.



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# Glossary of acronyms

Acronym	Definition
5G	Fifth-Generation Mobile Communications System
API	Application Programming Interface
AWS	Amazon Web Services
CERN	European Organization for Nuclear Research
CET	Central European Time
EC	European Commission
EU	European Union
FOSS	Free Open Source Software
GE	Generic Enabler
IT	Information Technologies
KPI	Key Performance Indicator
OS	Open Source
POE	Paid, Owned and Earned
QA	Quality Assurance.
SaaS	Software as a Service
SE4SA	European Cluster on Software Engineering for Services and Applications
SME	Small and Medium-sized Enterprises
SUT	System Under Test



### **1** Executive summary

This document contains a description of plan and activities carried out during the final period of the project (M19-M36), as well as the activities planned during this period. Specifically, we focused on two different activities:

- 1. Dissemination activities, consisting on publications on journals and conferences of the research achievements of the project.
- 2. Communication activities, consisting on activities aimed at raising awareness of the project in the industry, including standardization activities, and build an open source community around the project.

This document describes the core aspects of dissemination, communication, and standardization activities in ElasTest and last editions of this document was written primarily as a guide for ElasTest project partners and as an illustration for the key stakeholders of our intended dissemination and promotion activities.

The document describes the dissemination objectives and reports the results achieved until the end of the project (M36). Section 2 introduces the main concepts that will be used in the document. Section 3 describes the results regarding dissemination. In Section 4, we depict the main materials and channels used for dissemination. Section 5 presents activities and actions for the second revision period based on a set of key performance indicators (KPIs). In Section 6 we depict collaborations with testing associations, open source communities, and other research projects as well as our efforts on contributing to standardization bodies. Finally, in Section 8 we present the conclusions.

## 2 Introduction

This deliverable contains the description of the communication, dissemination and standardization activities carried out in the context of ElasTest during the second reporting period as well as the planning for the subsequent period. It reports how the plan and the general strategy was achieved. It reports on the KPIs around the dissemination activities.

It is important to highlight that this document has been created in synchronization with Task 8.1 (Free open source software community) and Task 8.3 (Exploitation planning) to watch jointly the target stakeholders, value definition, and impact intentions roadmap, in which the dissemination and communication plan has been executed.

When talking about dissemination we are referring to two different activities: dissemination and communication.

The first one, dissemination, refers to the promotion of research work carried out within the project by means of publications on journals, conferences, or workshops, as articles, demos, posters, and in general any other format for communicating research results. In



H2020, the Data Management Plan is optional, and projects can opt out for the plan. However, the ElasTest project opt in for the Data Management Plan, hence special attention has been paid to open publications.

The second one, communication, refers to rising awareness about the project in the industry and open source community. For this, attending industrial events, giving talks, running demos and other activities have been considered. In addition to those, other communication media have been used such as a project website, a blog, a user's mailing list, press releases or videos.

### **3** Results of Dissemination actions

The ElasTest dissemination activities has provided the means to maximize the uptake, impact, and outreach of the project's awareness, whilst initiating the long-term sustainability of the ElasTest platform and community building. We first analyze the dissemination strategy and plan, then we take a look at the communication plan. For both of them we provide specific KPIs (Key Performance Indicators) that help measuring the performance of the project.

#### 3.1 Dissemination

Dissemination activities included in the plan are divided into the following subcategories:

- 1. Collaboration with other research projects
- 2. Publication of results in journals and conferences
- 3. Organization of events

Table 1 describes the plan set out for collaboration with other research projects.

Initiative	Who	What	Status M36
FIWARE	URJC, ATOS,	ElasTest shall use FIWARE for	FIWARE webinar and proposal
	NAEVATEC,	one of its demonstrators	to become early adopters.
	ZHAW	(within Task 7.5) showing the	They see great features, we
		ability of ElasTest to test	are also applying to attend
		FIWARE GEs	with a new DEMO for FIWARE
			summit in 2020.
Vision2020	RELATIONAL	Use it to enhance visibility and	Relational SA, will create a
		gain community users	specific HELIX that will
			promote the results of
			ELASTEST and will try to
			exploit the specific developed
			components among the
			CROWDHELIX members.



Cloud28+		To present ElasTest in a Cloud annual brokerage event	Relational SA, will issue a press release that will summarize the main results and findings of ELASTEST, to the Cloud 28+ platform. Furthermore, RELATIONAL, will try to sell the individual components that were developed during the project's implementation through Cloud 28+. Finally, after the consortium members agree, the whole ELASTEST Solutions could be promoted through Cloud 28+.
IC1402 ArVi	IMDEA	EU COST Action IC1402 ArVi "Runtime Verification Beyond Testing". One of the missions of IC1402 is to foster collaboration between researchers and industrial practitioners. We expect to organize an industry/research workshop based on ElasTest	On November 8, 2018, Cesar Sánchez from IMDEA participated in the Industrial Workshop at the final meeting of COST Action IC1402, gven a presentation about Elastest to a mixed research and industrial audience.
OW2	ATOS	OW2 Technical Board to share the ElasTest results	Presented ElasTest Features to OW2, and we have agreed to continue monitor our tools for later adoption.

Table 1. Plan for collaboration with other research projects

Table 2 describes the objectives regarding the publication of research results in journals and conferences. Note that some journals and conferences are the result of joint work between two or more partners, and those are accounted for each partner participating in the publication. Therefore, the total number of publications is not the sum of all rows.

Partner	Potential Events	Status M36
	1	5 journals
UNIC	Ŧ	5 journais
		8 conferences
FRAUNHOFER	1	1 conference
TUB	1	3 conferences
CNR	2	3 journals
		5 conferences
IMDEA	1	1 journal
		7 conferences



ZHAW	2	2 conferences
IBM	2	1 journal
Papers in journals (total)	10	8
Papers in conferences		19
Publications (total)		27

Table 2. Plans for publication of research results in journals and conferences

Finally, Table 3 describes the objectives regarding organization of events.

Conference/workshop	Status M36
2	1 QA3CWorkshop (CNR+ZHAW)
	2 Tracks in QUATIC conference (URJC)
	1 <sup>st</sup> ElasTest workshop
	(URJC+NAEVATEC+ATOS)
	1 GAUSS Workshop (CNR)
	1 Workshop on testbeds evaluation
	(TUB+FOKUS)
Total	6

Table 3. Plans for organization of events

Note that for some objectives we set out specific objectives per partner, rather that overall objectives, with the aim of making all academic and research institutions within the consortium pursue their own objectives. This does not preclude from partners collaborating and publishing joint works.

These tables depict the plan for dissemination within the project. For specific achievements see Section 4, where results for the two review periods are sketched.

#### 3.2 Communication

In the previous version of this deliverable (Deliverable 8.2), presented in the first period, we described the communication channels setup at the beginning of the project. We started communication right after the beginning of the project to raise awareness of the project even if software assets were not available yet. This had a positive impact, and the word of the ElasTest project spread to the point that it was well known in some circles, like Spain IT community, or among Software Engineering researchers. Specifically, we prepared the following media channels for disseminating the status and activities carried out within the project:

• EU Webpage (<u>https://elastest.eu/</u>).



- Community website (<u>https://elastest.io/</u>).
- Twitter channel (<u>https://twitter.com/elastestio/</u>).
- YouTube channel (<u>https://elastest.io/youtube</u>).
- SlideShare (<u>https://www.slideshare.net/elastest</u>).
- Blog (<u>http://elastest.io/blog/</u>)
- Newsletter.
- Press releases.
- User's mailing list (<u>https://elastest.io/support-forum</u>).
- GitHub (<u>https://github.com/elastest/</u>).
- Issue tracker (<u>https://github.com/elastest/elastest/</u>).

During the second period we kept using these channels. However, to boost impact and allow our end users to comment and like our blog posts, we decided to move the blog to Medium. Therefore, currently the ElasTest blog is hosted at <u>https://medium.com/@elastest</u>.

Regarding the communication material, we had the following assets:

- Logo.
- T-Shirts.
- Stickers.
- Business cards.
- Flyers.
- Rollup.
- Whitepapers.
- Document and slide templates.

During the second period we modified the flyers, to include new features developed during this period and the end of the first one.

#### **3.3** The ElasTest strategy & baseline

The original strategy described in Deliverable D8.2 was kept, but the marketing message changed during this second period. It was difficult at the beginning to describe what ElasTest had to offer given the number of different components providing so different capabilities for different contexts (web, IoT, 5G, real-time communication, exploratory testing, among others).

At the beginning we started with the slogan "Ease end-to-end testing", however this did not convey the right picture and was not useful to differentiate ElasTest from any other testing tool. Then the consortium got aware of a term that was gaining momentum among distributed systems: observability. The concept of observability came from control theory, and it basically means understanding the internal behavior of a system



based solely on its external outputs, that is, being able to understand a system by looking at it from the outside without having to modify it in any manner.

Observability is key for understanding how distributed systems behave in production, especially when problems are faced. A distributed system is fundamentally different to a non-distributed one. For starters, a distributed system cannot be debugged, and one have to look at it from the network interactions that happen between the different subsystems involved.

Suddenly, we realized that ElasTest was bringing this observability concept from production to testing environments, thus allowing end-users to understand the behavior of their systems under test based on the information presented by ElasTest. Therefore, we decide to switch from "Easing end-to-end testing" to "Bringing observability to your testing environment", which is completely different from what any other testing tool offers, and complimentary to those. Obviously, ElasTest still provides many tools that ease end-to-end testing, however the main outcome of using ElasTest is the visibility on the system behavior during the testing process.

As stated in the previous document (D8.2), ElasTest presented a separated strategy for communication and dissemination but completely related and dependent for each other. We planned to communicate through our owned media, everything related to the dissemination of our research results.

## 4 Monitoring

In order to monitor progress of dissemination and communication activities, the ElasTest consortium defined a number of Key Performance Indicators (KPIs) to help us keep track of the progress of our strategy. This initial set of indicative KPIs is how success of our communication plan can be measured.

#### 4.1 Key Performance Indicators assessment

The KPIs were subject to modification during the project execution according to feedback, and opportunities considering maximizing value for money in impact activities. We considered two types of KPIs:

- **Real world and traditional PR Communication:** for our planned communication activities in the real world we will be pursuing the following KPIs. They will be monitored and analyzed using internal management and reporting tools.
- Online Communication Evaluation Tools: we included an analytics strategy to collect and analyze data extracted especially from online channels. This data will serve to evaluate performance and progress made on channels, content and quality, both quantitative and qualitative; visitors and audiences; and traffic sources of all types of online and traditional channels.



#### 4.1.1 Communication Target KPI

Communication KPIs concern those channels owned by the project, and the materials that were described in Section 3. The results for these KPIs are shown in Table 4. It is worth noting how well the project is performing in communication when it comes to page visits to our **community website**. The efforts on disseminating project results at different events, both academic and industrial, are paying back as visits to our website.

In addition to the website visits, one of the strategies we applied in the following releases of the project was to reward those subscribers to the **mailing list** with earlier announcements of new releases, or even access to beta releases (a beta release is a pre-release that is not considered final, in the sense that it might contains bugs, but is close to the final version). We encouraged all users to subscribe and ask questions in the mailing list, but with only limited success. For instance, we used dedicated Slack workspaces with companies interested in ElasTest, which made them more comfortable and delivered quick communication when facing problems or in the presence of questions that required several interactions to solve.

Regarding **social media channels**, the project performed well in Twitter, where by month 36 we reached 100% of our KPIs. Again, this is the result of an intensive campaign in Twitter since the very beginning of the project, even before any software was made available. This helped to raise awareness of the project among the followers of the partners that were re-tweeting all tweets in the account.

In the specific case of our YouTube channel, we reached the KPI in terms of views of our videos, although we have slightly less videos that what was originally planned. This is due to the fact that some videos were talks, recorded at the respective events by the organizers, and they belong to them. These videos are mostly publicly available, but we cannot upload them to our YouTube channel nor link them from it because they're not on YouTube. For instance, we recorded the ElasTest workshop held at URJC. The workshop duration was 5 hours, with a break at the middle. The recording is therefore split into two parts available at <a href="https://tv.urjc.es/video/5ba09efdd68b140f548b45b6">https://tv.urjc.es/video/5ba09efdd68b140f548b45b6</a>. In total these videos have 73 views. The talk at Test Bash Brighton was also recorded, and is available at <a href="https://www.ministryoftesting.com/dojo/series/testbash-brighton-2019/lessons/how-to-plan-and-define-your-continuous-deployment-pipeline-patxi-gortazar">https://www.ministryoftesting.com/dojo/series/testbash-brighton-2019/lessons/how-to-plan-and-define-your-continuous-deployment-pipeline-patxi-gortazar</a>. Note that this video is private and watching requires a membership of Ministry of Test.

As we have been communicating about the project at several events, there are many presentations available in our SlideShare account. Specifically, we have 14 presentations, including both a technical and a marketing presentation, which implies around the 75% of the overall target in terms of number of presentations for this social channel. However, the number of views exceeds by more than three times what was expected, with more than 7,700 views, where the KPI was 2,000. This number gives an idea of the interest raised by the project, and the huge impact of the events attended.



Finally, we made an effort at the beginning of the project and also it has been useful during the upcoming months for preparing marketing material and making it available for all the partners in order to help in dissemination activities. Except in the cases where an event provided its own template, all presentations and documents concerning the project had a homogeneous look and were easily identifiable. It is worth noting that we have been publishing a press release after each face to face meeting of the project (held every four months) and major event in the project, hence accounting for 50 unique press releases published in total (most of them in English, with a few in our respective native languages). These press releases have been referenced at different media.

Type of channel /	KPIs	Status M18	Status M36
ElasTest project website	5,000 or more	Pageviews: 16,618 Total Visitors: 5008 Bounce Rate 67.85%	Pageviews: 44.804 Total Visitors: 13.695 Bounce Rate 69.10%
ElasTest communi	ty website and tools		
ElasTest community website and tools	Unique visitors: 5,000	Pageviews: 5,066 Total visitors: 1,551 Bounce Rate: 52.36%	Pageviews: 11.003 Total visitors: 3.825 Bounce Rate: 57.45%
Subscribers to mailing lists	500	52	52
Software repositories in GitHub (with bug- trackers):	5 or more	29 repositories	33 repositories
Training tutorials for common testing activities	5 or more	1 Tutorial 1 SE4SA webinar (March 2018)	2 1 <sup>st</sup> period + 10 tutorial on website
ElasTest social media	a channels		
Twitter	Tweets: 1,000 Followers: 400	Tweets: 443 Following: 490 Followers: 319 Likes: 254	Tweets: 883 Following: 871 Followers: 513 Likes: 777
YouTube channel	Videos: 50 Views: 2,000	Videos: 22 Views: 867	Videos: 40 Views: 2,133
SlideShare	Presentations: 20 Views: 2,000	Presentations: 10 Views: 1,713	Presentations: 14 Views:7,700
StackOverflow	Mentions: 100	Views: 112 views Mentions: 1	Views: 142 Mentions: 2



ElasTest press kit and press results						
Project marketing presentation	1	1	1			
Project logo and branding package	1	1 each	1			
Flyers, posters, t- shirts and rollups	10	1 each	1 each			
Success stories	4	1	3			
Press releases	6	6	50			
White papers	2	1	1			

Table 4. ElasTest communication KPIs

#### 4.1.2 Events attendance targeted KPI

Table 5 shows the KPI for events attendance. Attendance to industrial events is important, as exploitation of the tool will normally come from interest raised within the IT industry. As the numbers show, we accomplished all the specific KPIs. Specifically, we attended a total of 27 industrial events in different countries. We have been invited 13 times to give talks at industrial events and have been showcasing the project results with a booth or a demo at 9 different events. As the ElasTest platform matured, we were in a better position to showcase it, and the numbers increased during the second period.

Participation in industrial conferences and events	KPIs	Status M18	Status M36
Attendance to industrial events	20	10	27
Events targeted			
Demos and booths at industrial events	5	2	9
Invited talks to industrial events	7	4	13

Table 5. Industrial conferences and events.

#### 4.1.3 KPI per partner and events

The Description of the Action for the project established originally (i.e., in the proposal) a set of specific events that some partners with previous experience attending those events could leverage to disseminate the project results. The project has successfully delivered its results in many of these events proposed (see Table 6).

Partner	Potential Event	Status M18	Status M36
URJC	NetFutures or ICT events.	Already participated in NetFutures (May 2017)	Exhibit booth proposal rejected



		We've sent a proposal for	Invited and presented to		
		an exhibit booth at ICT	Test Academy 2019		
		2018			
NAEVATEC	FIWARE Summit		Already participated in		
	and Smart City		both with a Demo and a		
	Expo World		booth on ElasTest		
	Congress				
IBM	IBM InterConnect	Presented to "Enabling	The project tool was		
	and IBM Insight	Rapid Testing Through	presented to IBM teams		
	conferences	Service Delivery and	and industry audiences		
		Composition"	under presentation		
			format in internal events		
			and external also.		
ZHAW	OpenStack,	Will present in	A workshop was		
	Docker and	"11th IEEE/ACM	organized by ZHAW and		
	CloudFoundry	International Conference	CNR about "QA3C:		
	user groups	on Utility and Cloud	workshop on cloud		
		Computing (UCC 2018)" &	testing, reliability, chaos		
		"Enabling Rapid Testing	engineering etc" in this		
		Through Service Delivery	event		
		and Composition" and			
		USENIX Workshop on Hot			
		Topics in Edge Computing			
FRAUNHOFER	AUNHOFER FUSECO Forum Presented at FUSECO		Demo of ElasTest 5G		
	Workshops each	workshop	vertical at FUSECO Forum		
	year		2019		
RELATIONAL	EuroSTART	Not yet.	Presentation and Demo		
	Software Testing	Presented at Agile Days	of ElasTest in Voxxed		
	Conference,	Greece	Days Thessaloniki 2018,		
	Fintech Crowd		Nov.		
	Hackathom /				
	Forum				

Table 6. KPIs for potential interesting industrial events

#### 4.1.4 Publications

The project was very specific on KPIs for research partners. Table 7 shows the KPIs for the different partners and the level of accomplishment by month 36. All the partners were publishing their research results in conferences and was expected that at the end of the project some of those works published in conferences will be extended and published in impact journals. It is important to note that many of the publications are joint work between two or more partners. Specifically, URJC and CNR have a joint paper under review, and another one about to be published. URJC, CNR and IMDEA also have a joint work in progress that is expected to be sent by January. The partners of the consortium are finding good synergies that are expected to raise even further the number of publications.



Partner	Journals /	Status M18	Status M36
	Conf.		
URJC	1 journal	1 high impact journal	8 Conference papers
	/	1 about to be submitted (with	5 Journal magazines
	2 conf.	CNR)	
		1 under review (with CNR)	
		2 minor impact journals	
		1 book chapter	
		2 journal magazines	
		8 conference papers	
FRAUNHOFER	1/2	1 conference paper	
TUB	1	3 conference papers	1 Conference paper
CNR	2	1 high impact journal	3 Conference paper
		1 journal submitted	2 journal magazines
		3 conference papers	4 Workshops
IMDEA	1	4 conference papers	5 Conference papers
ZHAW	2	2 conference papers	2 Conference papers
IBM	2	1 conference paper	1 journal magazine
Papers in high	10	2	
impact journals	(TOTAL)		

Table 7. Publications KPIs for the project
--

## **5** Organized Events

In the original plan, CNR, with its huge experience on organizing events in the past, had a specific target of leading the organization of 2 events around the research topics of the project. During the second period, a total of four events were organized:

- The workshop QA3C (Quality Assurance in the context of Cloud Computing), was organized and connected to UCC18 conference, which is coordinated by ZHAW and CNR.
- The track Quality Aspects of Cloud-based Platforms and Services of the QUATIC conference, was organized by URJC in 2018 and 2019.
- The GAUSS workshop was organized by CNR in 2019, were URJC was invited to give a keynote about ElasTest.
- The 1<sup>st</sup> ElasTest workshop was organized in September 2018 by URJC, with the help of NAEVATEC and ATOS.

In addition to those presented above, the ElasTest project was also presented in two consecutive editions of the ATOS event ARI Digital.



#### 5.1 ElasTest event at the University Rey Juan Carlos

Due to its strong focus on the project, and industrial nature, the ElasTest workshop held in September 13<sup>th</sup>, 2018 at URJC premises, requires special attention. The workshop duration was 5 hours, and Francisco Gortázar and Micael Gallego were covering different topics of software testing were ElasTest excels. The registration to the event was organized through Eventbrite, and the agenda is shown in Figure 1.

Elasiest: Presente y jue. 13 de septiembre d	Ventas terminadas	Detalles
Descripción		Fecha Y Hora
"ElasTest: Presente y Futuro" es un evento donde da funcionalidades ofrecidas por la plataforma de códig facilitar el desarrollo y ejecución de tests de sistema distribuidas complejas. Además, nos gustaria conoc enfrentan los desarrolladores y testers en este ámbi	rremos a conocer las go abierto ElasTest para a de aplicaciones er los retos a los que se to, para poder orientar	jue. 13 de septiembre de 2018 10:00 – 15:00 CEST Añadir al calendario
el futuro desarrollo de ElasTest a cubrir sus necesida los puntos enumerados en la agenda, habrá una peq	ides. Tras cada uno de ueña discusión para	Ubicación
conocer la opinión de los asistentes.		Universidad Rey Juan Carlos
Tras la sesión se invitará a comer a los asistentes.		syn Galle Tullpan Aula Magna del Aulario III
Se podrá asistir al evento de forma presencial o teler	mática.	28933 Móstoles
Agenda		ver mapa
10:00 Presentación de ElasTest 10:20 Integración con Jenkins 10:40 Análisis de ejecución de tests 11:00 Navegadores web <b>11:20 Pausa para café</b> 11:50 Security Testing 12:10 Testing manual con TestLink 12:30 Orquestación de tests 12:50 Ejecución en cluster 13:10 Debate 13:45 Conclusiones y cierre <b>14:00 Comida</b>		
Localización		
Campus de Móstoles de la Universidad Rey Juan Car Aula Magna del Aulario III C/ Tulipán s/n. Móstoles (Madrid) (Aparcamiento gratuito, Metro cercano)	los	
Instrucciones en Google Maps		
Unos días antes del evento se enviarán por correo el instrucciones para poder asistir de forma telemática	ectrónico las I.	

Figure 1. Eventbrite webpage for the 1st ElasTest Workshop

During the workshop, we interleaved questions, gave the audience a minute to answer them in real-time (see Figure 2), and then we discussed the results of the voting. This way the workshop was more dynamic, and we could get feedback useful for the project. The attendance was pretty good, with more than 20 participants from the industry.

The workshop was available in streaming and recorded by URJC and is available at tv.urjc.es (see Figure 3). The last part of the agenda consisted of an open discussion of topics selected by the attendants (see Figure 4).





Figure 2. Francisco Gortázar and Micael Gallego at URJC presenting ElasTest in the 1st ElasTest workshop.



Figure 3. The video recorded includes slides and presenters.



Figure 4. Attendants voted which topics to discuss.



#### 5.2 QUATIC Track on Quality Aspects of Cloud-based Platforms and Services

The project coordinator was invited the organization committee of the QUATIC conference to organize a track around the challenges of testing large distributed cloud systems. This track was completely aligned with the ElasTest project, and was running during 2018 and 2019. During 2018, the track was co-chair by Hui Song, from SINTEF in Norway, and Francisco Gortázar, from URJC in Spain. The first year, the track had 7 submission out of which 4 were finally accepted for presentation at the conference. During 2019, we had 3 submissions and we accepted 1.

#### 5.3 ElasTest at the ARI Digital Show 2018

ElasTest was presented at the Atos Research & Innovation Digital Show 2018 edition. This is an event organized by the R&D department of Atos Spain that seeks to publicize some of the innovations and solutions developed through research projects funded by the European Commission for different sectors with the use of various advanced technologies.Atos Research & Innovation (ARI) is the center of research and development of new technologies and a key reference for the entire Atos group. Thanks to its great experience in research, development and innovation projects, ARI is able to bring new solutions and innovative elements to the clients' business.

ElasTest was elected to be there among the key promising projects. The digital show was held on 27<sup>th</sup> of November 2018, and Malena Donato from the R&D department of Atos presented ElasTest to external stakeholders, commercial partners, and students, etc.

The agenda is seen here:





At	tos Research and Innovation Digital Show 2018	
10:30	Bienvenida y registro	
11:00	Atos Research and Innovation: A la vanguardia de la Innovación Europea, por Nuria Rodriguez, ARI Marketing and Communications Head	LEPS
11:20	Elastest: Llevando la observación a los entornos de prueba. Conoce qué hace tu software y por qué, por Maleta Donato, Business and Innovation Consultant en ARI	0
11:35	CEDUS: La ciudad como plataforma y su impacto en la movilidad, por Esther Garrido, Business Development Consultant en ARI	Aries
12:05	Seguridad Transfronteriza: • ABC4EU: Control móvil en Fronteras Europeas, por Ross Little, Project Manager en ARI • ARIES: Que tu elD esté contigo, por Javier Presa, Project Manager en ARI • LEPS: Servicios transfronterizos conflables y seguros con capacidad de identificación electrónica, por Juan Carlos Pérez, Research Analyst en ARI	ABC
12-35	AutoMat: MarketPlace para la creación servicios innovadores a través del BigData generado por vehículos, y Cross-CPP como evolución del MarketPlace con variedad de fuentes de datos como Edificios Inteligentes y Casas Automatizadas, por Germán Herrero. All Cramevet Market Head	
1340		3
Linu	Sesion de QNA	EO4wildlife
13:20	Comida	
14:20	EO4wildlife: Copernicus al servicios de la protección y conservación de la fauna marina, por José Lorenzo, ARI Environment Market Head, y Juan Alonso, Project Manager en ARI	AutoMat
15:00	Panorama H2020: Un paseo por las oportunidades de colaboración y co-creación disponibles. Proyecto H2020 - VICINITY, un ejemplo concreto de oportunidades, por Carmen Perea, Business Development Consultant en ARI	C ElasTest
15.30	Talento y Oportunidades en Atos, por Susana Azores, Talent Sourcing, Acquisition & Universities Head en Atos	
15:40	Fim NOVIEMBRE 27 Paseo Doce Estrellas, 2 - Sala BTIC Madrid, España	Atos

Figure 5. Atos Digital Show2018 agenda

#### 5.4 ElasTest at the ARI Digital Show 2019

The new edition of the Digital show also ElasTest was elected to be there among the key promising projects. The digital show was held on 10<sup>th</sup> January 2019, and Malena Donato from the R&D department of Atos presented ElasTest to commercial partners, key alliances, commercial force, other business units to facilitate transferring the outcomes, and students, etc. The picture below shows the presenter asking a question to all participants:





Figure 6. Atos Digital Show 2019 ElasTest presentation



Figure 7. Atos Digital Show 2019 ElasTest presentation and public

### 6 Activities and key achievements

In this section we describe the material, channels and tools we used in dissemination and promotion activities.

#### 6.1 Media channels

The consortium has been running several media channels to reach the different stakeholders.



#### 6.1.1 Blog

In the beginning ElasTest has been sharing its entries via online through the project websites. The consideration of migrating the blog to Medium, was given by the Commission during the first review meeting. The fact that this web is more appealing and can engage much more our audience and also impact other ones, determined us to establish this channel as the main one to publish posts. The result is that today, the blog content is shared and distributed under MEDIUM, as below there is the link to access:

https://medium.com/@elastest/

```
https://writingcooperative.com/advantages-of-blogging-on-medium-
8c85a503d2c0?gi=afee62cf1a0a
```



#### 6.1.2 Twitter

The Twitter account for the project has been @elastestio (see Figure 8).

- Back in December 2017 @elastestio account had 130 followers, it follows 250 people, it has 188 tweets, and 66 likes.
- Back in June 2018, @elastestio account had 339 followers, it follows 553 people, it has 482 tweets, and 349 likes.
- Today, end of November 2019, @elastestio has 514 followers, it follows more than 800 accounts, it has 884 tweets and 523 likes.





Figure 8. ElasTest twitter account

#### 6.1.3 YouTube channel

As part of project's media channels, a YouTube channel for ElasTest [6] was opened (see). This channel contains videos that demonstrate the project in action. In addition, if the participation of any partner of the project in an event is recorded, the videos are also linked from the project's YouTube channel. This makes easier for anyone to find video recordings related to the project.

ElasTest's YouTube channel currently hosts 40 videos, and four playback lists. Those videos hosted at the ElasTest channel sum up 2,133 watching minutes, with an average view duration of 1:36 minutes, 19 likes, 39 shares, and 34 subscribers (see Figure 9 and Figure 10). The most prominent video is the one recorded for the demo submitted to ICSE 2018, with 881 views and 6 likes. This video was linked from the ICSE website, hence the numbers. The second most popular is a demo of the EUS component that provides browsers as a service with 103 views, followed closely by the webinar run in the context of the Software Engineering for Software and Applications (SE4SA) EC cluster, where the project is included.





=	🕒 Studio		Q. Search across your channel					CREAT	re 🤿 🚳
		Channel videos Uploads Live							
	Your channel ElasTest	<ul> <li>Filter</li> <li>Video</li> </ul>		Visibility	Restrictions	Date	Views (	Comments	Likes (vs. dislikes)
::	Dashboard Videos	ElisText 5.01 When the testing In this demo, we s FullTeaching appli	gets tough, the tough get ElasTest - ICSE 20 how how ElasTest can be used to test the ication. FullTeaching is an open-source	Public	None	Feb 1, 2018 Published	881	0	100.0% 6 likes
=	Playlists	Demo ETM: runni On this video we s test exercising the	ing jobs howcase how a system under test (S⊌T) an a system can be run within ElasTest. The video	Public	None	Sep 11, 2017 Published	101	0	100.0% 1 like
	Comments	Demo EUS: brown The EUS compone the platform. Curre	sers for automatic and manual tests nt provides a browser as a service feature within ently, several versions of Chrome and Firefox ar	Public	None	Sep 11, 2017 Published	103	0	-
\$	Subtitles	ICSE 2018 Demo In this demo, we s Full Teaching appli	how how ElasTest can be used to test the ication. FullTeaching is an open-source	O Unlisted	None	Nov 21, 2017 Uploaded	98	0	100.0% 3 likes
۵	Audio library	ElasTest SE4SA V On March 20th, we After presenting th	Webinar e gave a Webinar on the status of the project. he most promising results of our current	Public	None	Apr 18, 2018 Published	95	0	100.0% 1 like
¢	Settings	ElasTest Proof of This is a small Pol could be. The appl	f Concept C we built to show our vision of what ElasTest lication complies and runs an end-to-end test	Public	None	<b>Jun 9, 2017</b> Published	72	0	-

Figure 9. ElasTest YouTube channel





#### 6.1.4 Newsletter

Instead of sending the newsletter we used medium and the subscribers received directly the post. Below, a table with the consequent releases through the online blog-MEDIUM is showed:

Date	Partner	Title	Likes
August 7-2018	URJC	Introducing ElasTest	53
August 7-2018	URJC	Project meeting in Berlin	52
August 7-2018	URJC	ElasTest at NetFutures event	52
August 7-2018	URJC	Contributing to ElasTest	53



August 7-2018	URJC	ExpoQA	51
August 7-2018	URJC	ElasTest awarded at ExpoQA	52
August 7-2018	URJC	Challenges and opportunities for software testing in the cloud	52
August 7-2018	URJC	Third face to face meeting	53
August 7-2018	URJC	ElasTest at ICSOFT 2017	52
August 7-2018	URJC	ElasTest architecture and components	52
August 7-2018	URJC and Fraunhofer FOKUS	ElasTest demo at Berlin 5G Week	52
August 7-2018	TUB	ElasTest as CI/CD for future 5G software- enabled networks	53
August 7-2018	IMDEA	Research in monitoring with ElasTest	53
August 7-2018	URJC	ElasTest beta release	15
August 7-2018	ATOS Worldline and ATOS	Eating our own dog food	53
August 7-2018	Naeva Tec	WebRTC Quality of Experience and testing	53
August 7-2018	URJC	Quality aspects on cloud- based platforms and services	52
August 7-2018	URJC	ElasTest webinar	53
August 7-2018	ZHAW	ElasTest makes testing productive	51
August 7-2018	URJC	Fith face to face meeting	52
August 7-2018	URJC	ElasTest Release Notes v0.9.1	53
August 7-2018	IBM	Say it in plain English	46
September 12- 2018	URJC	1st ElasTest Workshop: present and future	55
October 17- 2018	RELATIONAL	Big data services are needed in testing as well	55



October 31- 2018	CNR	ElasTest goes on show at ICSE and at STF	58
November 8- 2018	URJC	ElasTest 1.0.0-beta3 released!	58
November 16- 2018	Fraunhofer FOKUS	ElasTest at the Berlin 5G Week	56
November 23- 2018	URJC	Compare multiple configurations with ease	57
February 5- 2019	URJC	ElasTest 1.0.0-beta7 just released!!	107
February 8- 2019	URJC	ElasTest and STAMP	56
February 15- 2019	URJC	ElasTest 1.0.0	61
February 22- 2019	URJC	ElasTest 1.0.1	57
February 28- 2019	URJC	Upcoming Kubernetes support in ElasTest	60
March 7-2019	URJC	ElasTest 1.2.0	58
March 25-2018	URJC	ElasTest 1.3.0	58
April 15-2018	URJC	ElasTest 1.4.1	58
May 24-2019	URJC	ElasTest 1.5.0	59
July 30-2019	ZHAW	Making ElasTest OSBA Compliant	156
September 11- 2019	URJC	Take your testing to another level with ElasTest: the use case of Atos Worldline	1
October 2- 2019	URJC	Amplyfying the value of your tests	51
October 16- 2019	URJC	ElasTest 2.0.0	3
November 14- 2019	URJC	ElasTest 2.1.0	2
November 15- 2019	URJC	Relational featuring ElasTest at Agile Greece Summit	1



December 20 2019	URJC	Release 2.2.0	1
December 27 2019	NAEVATEC	ElasTest & FIWARE	0

Table 8 Blog post in medium delivered as the newsletter to the ElasTest contact list.

Visitors of the ElasTest website can subscribe to the ElasTest newsletter. This newsletter delivered directly to the inbox of those subscribed the blog posts of the week every Friday at 12pm CET. Currently, there are 45 subscribers to the newsletter.

#### 6.2 Publications in papers

The Description of the Action of the project has set specific KPIs for research partners in the form of paper publications, and conferences or events organized (see **¡Error! No se encuentra el origen de la referencia.**). Additionally, at the beginning of the project we prepared a manual setting out the rules for publication in the new open research program of Horizon 2020 [8]. Specifically, this manual (available at the project's Google Drive folder)

- Describes the obligations regarding open access and open data within H2020, and,
- Describes the procedure for publishing open access and open data publications within the ElasTest project.

For this last issue, we decided to publish all open access publications in Zenodo, an Open Aire repository hosted by CERN that is guaranteed to put everything published in Zenodo available in an alternative repository in the improbably case that it is closed. ElasTest has a so-called community of the same name (ElasTest consortium, 2017), where all the open publications related to the project are aggregated (see **¡Error! No se encuentra el origen de la referencia.**).

PUBLICATION TYPE	Status M36
Journal publications	8
Conference publications	19
Workshops papers	3
Thesis publications	5
Posters	1
Books	1
Book chapters	1
TOTAL	37

Figure 11. ElasTest total of publications



#### 6.3 Website statistics

In the following figures provide a summary of the metrics derived by the <u>www.elastest.io</u> website during the whole duration of the project (M1-M36). The project had a global impact, with visitors all around the globe. Most of the visits come from US, Ireland and Spain, other EU countries follows, but there are also non-EU countries like Brazil or India (Figure 13). Most visits reach the home page, but there are also many visits to the documentation page. We payed special attention to properly document the usage of the platform, with demos and tutorials for the most common tasks, and technical documentation for the whole platform.



Figure 12. Audience overview (M1-M36)

Country	Users	% Users
1. III Ireland	4,364	31.60%
2. 🔤 Spain	3,874	28.05%
3. 📑 United States	1,783	12.91%
4. 🔤 Germany	390	2.82%
5. 태풍 United Kingdom	278	2.01%
6. 📰 India	257	1.86%
7. Il Italy	254	1.84%
8. III France	249	1.80%
9. 🔯 Brazil	232	1.68%
10. 🔚 Greece	206	1.49%







Figure 14. Acquisition overview





Page Title	Pageviews	% Pageviews
1. ElasTest Home	17,858	39.79%
2. Elastest Documentation - What is ElasTest?	4,286	9.55%
3. ElasTest Project	2,168	4.83%
4. Elastest Documentation - Try ElasTest	2,134	4.75%
5. ElasTest Community	1,075	2.40%
6. Elastest Blog	944	2.10%
7. Elastest Documentation - Your first test with ElasTest	785	1.75%
8. Elastest Documentation - Run unit tests	781	1.74%
9. Elastest Documentation - Releases	657	1.46%
10. Elastest Documentation - Run end2end tests	555	1.24%

Figure 16. Pages visited





In the following figures, a summary of the metrics derived by the <u>www.elastest.eu</u> website is shown for the whole duration of the project (M1-M36). This webpage references the elastest.io webpage, and we upload here the deliverables from the first period, as well as financial information of the project (funding, call, etc). Most of the visits to this webpage are expected to end up looking at the elastest.io webpage if there are interested in the project.







view

	Country	Users	% Users
1.	💳 Spain	1,281	33.01%
2.	United States	641	16.52%
З.	🥅 Germany	256	6.60%
4.	副語 United Kingdom	204	5.26%
5.	Italy	179	4.61%
6.	Greece	153	3.94%
7.	France	140	3.61%
8.	S Brazil	101	2.60%
9.	🚾 India	94	2.42%
10	. 🚝 China	61	1.57%



Figure 19.ElasTest Demographic profile









Page Title	Pageviews	% Pageviews
1. ElasTest Home	5,153	46.79%
2. ElasTest Project	1,991	18.08%
3. ElasTest Members	1,463	13.28%
4. ElasTest Deliverables	1,116	10.13%
5. ElasTest Community	590	5.36%
6. ElasTest Contact	325	2.95%
7. ElasTest Communication Material	250	2.27%
8. ElasTest Risk management	69	0.63%
9. (not set)	32	0.29%

Figure 22. Pages visited

## 7 Collaborations & contributions

This section describes collaborations with other research projects and initiatives, collaboration with external organizations and collaboration with external open sources software projects (see Table 9).

Initiative	Who	What	Status M18	Status M36
FIWARE	URJC,	ElasTest shall use	Yes, ATOS as	FIWARE webinar and
	ATOS,	FIWARE for one of	founder member	proposal to become
	NAEVATEC	its demonstrators	plans to	early adopters. They see
		(within Task 7.5)	showcase the	great features, we are
		showing the	testing	also applying to attend
		ability of ElasTest	outcomes to	with a new DEMO for
		to test FIWARE	FIWARE.	FIWARE summit in
		GEs	Also, ATOS is	2020.
		3 ElasTest	responsible for	
		partners already	the testing task	
		belong to FIWARE	and plans to	
			invite FIWARE	
			representatives	
			to a workshop in	
			Madrid (Sep	
			2018)	
Vision2020	RELATIONA	Use it to enhance	Exploring	
	L	visibility and gain	options and	
		community users	opportunities	
			and to be	
			confirmed.	
Cloud28+		To present	Exploring	
		ElasTest in an	options and	



		Cloud annual	opportunities	
		brokerage event	and to be	
			confirmed.	
IC1402 ArVi	IMDEA	EU COST Action	The COST Action	On November 8, 2018,
		IC1402 ArVi	ArVi is coming to	Cesar Sánchez from
		"Runtime	an end soon and	IMDEA participated in
		Verification	all (large) events	the Industrial Workshop
		Beyond Testing".	have been	at the final meeting of
		One of the	planned already.	COST Action IC1402,
		missions of	One person from	given a presentation
		IC1402 is to foster	IMDEA will go	about Elastest to a
		collaboration	for an invited	mixed research and
		between	talk about	industrial audience.
		researchers and	Elastest in the	
		industrial	final meeting in	
		practitioners. We	November2018.	
		expect to		
		organize an		
		industry/research		
		workshop based		
		on ElasTest		
OW2	ATOS	OW2 Technical	Yes, ATOS will	Presented ElasTest
		Board to share	present the	Features to OW2 (as
		the ElasTest	results to the	part of STAMP project),
		results	OW2 technical	and we have agreed to
			board. ATOS has	continue monitor our
			already	tools for their adoption
			contacted the	and usage.
			OW2 members	
			who are part of	
			the STAMP	
			where ATOS is	
			also involved.	

Table 9. Collaborations with research projects, organizations, and open source communities

#### 7.1 Contributions to testing associations

Table 10 shows the contributions of the project to the testing association ITA-STQB (Italian chapter of the International Software Testing Qualification Board). Specifically, on June 13<sup>th</sup> Antonia Bertolino and Francisco Gortázar gave a talk about ElasTest at the Software Testing Forum in Milan, organized by this association. We expect the interactions with this association to foster new adopters and companies interested in the project.



Partner	Initiative	What	Status M18	Status M36
CNR	ITA-STQB International Software Testing Qualifications Board	Interactions to adopt/test ElasTest	Ongoing conversations Talk at the Software Testing Forum, Milan, June, 2018	

Table 10. Contributions to testing associations

#### 7.1.1 Contributions to FOSS communities

Testers are interested in tools and, very particularly, in open source tools as it can be illustrated by the success of FOSS tools and communities such as the ones of Jenkins, Selenium, JUnit, JMeter etc. ElasTest plans to contribute to FOSS communities and to create synergies with them. For this, a specific set of KPIs was defined at the beginning of the project based on the goals of the project and the experience of the partners. Table 11 summarizes these KPIs and our commitment to them. So far, we have been able to integrate ElasTest with the Jenkins Continuous Integration server, hence opening the door for presenting ElasTest in the Jenkins World Conference to raise awareness of the project in the context of this open source community. It is worth noting that Jenkins shares more than 50% of the market of Continuous Integration tools. Other open source communities worth to be explored are OpenStack, on top of which we want to make ElasTest run, although this integration is not yet ready. There is some progress in FIWARE, as three of the partners are involved (URJC is not present in the current ongoing project FINEXT but was involved in FIWARE leading a GE with NAEVATEC). We expect to leverage this strategic position in next FIWARE events. Initially we expected relevant synergies with OpenBaton, but FRAUNHOFER opted for leveraging their Open5GCore solution for the 5G demonstrator, hence we are pivoting towards Open5GCore, and are building relevant integrations with this open source platform for orchestrating 5G technologies.

Through ZHAW we plan to reach the Docker and CloudFoundry communities, which might have common interests at the time of assessing the quality of large applications on top of these. Finally, given URJC and NAEVATEC experience in building WebRTC videoconferencing applications, and the support of WebRTC within ElasTest we expect synergies with the GStreamer community (on which the KMS media server maintained by NAEVATEC is based) and the OpenWebRTC community. Indeed, some people from the community already noticed there's a new project aimed at testing WebRTC applications (ElasTest), as Dr. Alex Gouaillard pointed out in Stackoverflow<sup>1</sup>. So far, the most prominent project (closed-source and offered as a service) was TestRTC. Now we already have ElasTest and KITE (this one promoted by Google).

<sup>&</sup>lt;sup>1</sup> https://stackoverflow.com/a/47805881

#### D8.5 ElasTest dissemination plan and activities v2



Partner	Name of	Contributions	How?	Status M18	Status M36
	project				
URJC	Jenkins	Expected relevant synergies with this community.	Talking about Jenkins integration at several industrial events. Submitting a work and attending Jenkins World Conference	TalkonPanelSistemas101DayswherepeoplefromCloudBeesparticipatedonline.Talkonline.TalkCodemotion2018We plan to submittheworktoJenkinsWorld2019	Jenkins World 2019 submission was missed, and the focus on Kubernetes made more relevant the integration with JenkinsX, actually undergoing development.
ZHAW	OpenStack	Expected relevant synergies with this community. ZHAW leads the Swiss Open Stack user group.	Provide talks on how ElasTest uses OpenStack for the delivery of test results	No actions were taken	Since the project focused in Kubernetes, no actions were taken (although the platform supports OpenStack natively).
NAEVATEC	FIWARE	Expected relevant synergies with FIWARE - testing FIWARE technologies	Provide talks how to integrate ElasTest as part of the quality assurance process	Already gave some talks at different FIWARE events: FIWARE SUMMIT 2017 Utrech, FIWARE TECH SUMMIT 2017 Málaga, FIWARE GLOBAL SUMMIT 2018 Porto	We have presented ElasTest in a technical webinar to the FIWARE foundation. We are in conversations and FIWARE are Elastest early adopters. We have been showcashing ElasTest technology based on FIWARE generic enablers. We are also in favour of continuing this cooperation and for 2020 we plan to go to the FIWARE event with ElasTest demo based on OpenVidu.
FRAUNHOFE R	Open Baton	Expected relevant synergies with this community as one of our demonstrators (Task 7.2) is	Leveraging Open Baton as a deployer within ElasTest for 5G infrastructures.	Open Baton has been discarded in favor of Open5GCore, which the set of tools FRAUNHOFER is	-



		based on testing it and owns this community.		leading for building 5G enabled infrastructures.	
ZHAW	Docker	Expected relevant synergies with this community as we plan Docket to be our reference container for all activities in WP3.	Provide talks on how ElasTest uses Docker for the delivery of test results	No talks as ZHAW moved away from managing docker group	A paper has been submitted.
ZHAW	CloudFoun dry	Expected relevant synergies with this community as a mechanism for service orchestration in ElasTest.	Provide talks on how ElasTest could use CloudFoundry for the delivery of test results, how it uses the Open Service Broker API. Provide implementation of that API.	No talks, however the ET implementation of OSBA was communicated to the OSBA group [10]	-
URJC & NAEVATEC	GStreamer and OpenWebR TC	Expected relevant synergies with these communities as ElasTest may become its reference testing platform.	Provide Kurento/OpenVi du WebRTC tests in ElasTest, make the results publicly available, disseminate it through the Kurento/OpenVi du mailing lists. Provide talks on relevant conferences and meetups.	Working on scheduling a session on WebRTC testing at WebRTC Meetup either for July of after the Summer. Migration of WebRTC tests from Jenkins to ElasTest has just started.	Participation in three WebRTC Meetups, and collaboration with one of such participants to bring their capabilities to Kurento and test them with ElasTest.

 Table 11. Some planned activities in relation to external FOSS projects and communities

#### 7.1.2 Project collaboration

Since the beginning we have been collaborating with other projects. We joined the EU cluster Software Engineering for Services and Applications, led by Elisabetta Di Nitto, and in which context the ElasTest webinar was conducted. Within this cluster, the project coordinator has been working in close collaboration with other projects, the



cluster lead and Commissioner Odysseas Pyrovolakis defining the challenges for next work program in the context of Software Engineering.

In addition to this we directly contacted the projects that are from the same call such as COEMS, CROSSMINER, DECIDE, OPENREQ, Q-RAPIDS, and STAMP to find synergies for collaboration.

#### 7.1.3 Collaboration with Stamp

ElasTest and STAMP projects are both funded under the topic "ICT-10-2016: Software Technologies", back in 2016. ElasTest and Stamp project teams have detected possible synergies between their respective tools. They identified use cases where Stamp services can be deployed in ElasTest. The final benefit would be for developers to understand how the different software pieces are working together and where to dive in the code to improve their project while chasing hidden bugs. ElasTest is focused on providing tools to understand what is going on in the code when something fails in the application, while Stamp offers tools to improve the quality of test cases. Using Stamp tools within ElasTest will provide more information about how a DevOps team is performing on test technologies. There have been many intensive cooperation activities where we both showcased our tools.

During December 2018, ElasTest promoted the STAMP testing campaign by supporting communication and testing activities though the promotion of the STAMP beta testing campaign. Both projects have found synergies for cooperation, and ElasTest proudly supported STAMP project in their beta-testing campaign that was done during 2019. The STAMP project launched a campaign to offer their innovative tools, so everyone was able to test them. The tools for testing were: DESCARTES & DSpot! The STAMP beta testing campaign was announced in the following link: <u>https://www.stamp-project.eu/view/main/betatesting/</u> To try <u>DSpot</u> and <u>Descartes</u> testing tools. In this scenario, ElasTest promoted in their social networks, blog posts, and website the present campaign and supported the adoption and promotion and of course testing all these tools.

The aim of STAMP project was developing tools and methodologies for enriching and amplifying testing in software systems. The test amplification techniques allowed users to transform existing test assets to detect regression bugs before production and drive down the cost of software testing. STAMP aimed to automatically transform testing assets that are manually written by human developers to improve testing effectiveness. At the same time, added value to human labor and eventually reducing the number of bugs in software production while limiting the risks associated with code updates. The STAMP software contributed to detect more bugs in your java applications. Trying the open source toolset will amplify your testing efforts automatically. STAMP acts along your CI/CD pipeline, reducing errors and eliminating failures while you deploy new services to production.

In September 2019, the ElasTest consortium invited STAMP to present their tools at the ElasTest face-to-face meeting in Madrid. Yosu Gorronogoitia, from STAMP, attended during our first day, where ElasTest was demoed, Yosu presented their own tools, and a discussion of possible demos involving both projects were discussed. In the end, it was agreed that both projects would collaborate to implement a demo consisting of visualizing results of their DESCARTES tool within ElasTest. In October 2019, the Project Coordinator, Francisco Gortázar, attended the STAMP General Assembly Meeting in Madrid, and demoed the integration performed, by running an



ElasTest TJob that was indeed using the DESCARTES Stamp tool and visualizing the results found. The picture below shows the moment when ElasTest was demoing the results of the collaboration, during 9<sup>th</sup> October 2019 in Atos premises in Madrid:



Figure 23.Elastest presentation seeking cooperation with STAMP

#### 7.1.4 Collaboration with FIWARE

We have presented the testing tools and our project to the FIWARE foundation and Technical Steering committee. We have provided all the tools and necessary inputs for them to evaluate Elastest and use these testing tools for their own technology.

In fact, let's stop for a moment of what FIWARE is, according to the website:

"The FIWARE Community is an independent Open Community whose members are commited to materialise the FIWARE mission, that is: **"to build an open sustainable ecosystem around public, royalty-free and implementation-driven software platform standards that will ease the development of new Smart Applications in multiple sectors"**. The FIWARE Community is not only formed by contributors to the technology (the FIWARE platform) but also those who contribute in building the FIWARE ecosystem and making it sustainable over time. As such, individuals and organizations committing relevant resources in FIWARE Lab activities or activities of the FIWARE Accelerator, FIWARE Mundus or FIWARE iHubs programmes are also considered members of the FIWARE community".<sup>2</sup>

<sup>&</sup>lt;sup>2</sup> <u>https://www.fiware.org/about-us/</u>



The webinar was held during 14<sup>th</sup> of October and some key features were showcased. Specifically, the agenda included:

- 10 min ElasTest presentation
- 25 ElasTest demo
- 10 min Q&A

The main outcomes of the meeting were:

- FIWARE members see great features, but they were concerned about the cost of setting up ElasTest, maintaining it, probably doing some specific integrations, and migrating tests to ElasTest. The ElasTest Project Coordinator stated the importance of quality for a successful user experience and stressed the fact that migration of tests is a responsibility of each partner, as ElasTest consortium don't know the nature of these tests.
- We are also applying to attend with a new DEMO for FIWARE summit in 2020.
- NAEVATEC went to the FIWARE summit 2019 and presented a DEMO based on Elastest using FIWARE.

#### 7.1.5 FIWARE summit

The FIWARE summit 2019 was devoted to smart cities. NAEVATEC had a booth for Kurento at this summit, and ElasTest as a platform for testing Kurento enabled applications was presented. The following picture shows the ElasTest leaflets that NAEVATEC brought to the event.



Figure 24. ElasTest at FIWARE summit.

#### 7.2 Standardization

ElasTest is interested in standardization, and we will contribute in standardization bodies in the area of testing or the related technological domains of ElasTest, if possible. In the area of software testing, there have been well-meaning attempts to create different standards. However, these attempts have failed. They never caught the attention of wide developer audiences. On the other hand, they generated significant



opposition. This illustrates that software testing is a very complex discipline. This supports the ElasTest vision: software testing is a discipline of human skills and software tools. Testers are interested in tools and, very particularly, in open source tools.

Despite this opposition if the testing community against standards, the ElasTest project have collected a set of bodies that could be targeted. Table 12 shows different bodies where some partners from ElasTest will attempt to contribute and monitor all activities such as RTCWeb WG or NFV.

Partner	Name	Working	Positioning	Status M18	Status M36
	of	Group	and		
	body		contributions		
URJC & NAEVATE C	IETF	RTCWeb WG	Monitoring of activities and, if appropriate, specific contributions related to testing of WebRTC applications using information generated in the demonstrator for multimedia communication services (Task 7.5).	No contributions yet, monitoring current testing practices of WebRTC applications. Expected synergies once the WebRTC demonstrator is fully working in ElasTest.	URJC & NAEVATEC are no longer part of this group.
TUB & FRAUNHO FER	ETSI	NFV	Monitoring of activities and, if appropriate, specific contributions related to testing of NFV systems using information generated in the demonstrator for telco infrastructures and networks (Task 7.2).	No contributions yet but internal information model of ElasTest Platform Manager got inspired by those specifications.	Contact was made by URJC with Diego López, from Telefónica, at FUSECO Forum 2018. Main benefits of using ElasTest to validate OpenMANO were sketched. URJC invited Diego to a proposal for cloud computing, were ElasTest was involved as a validator for the tools developed within the proposal. However, at the moment the proposal was far from their focus.



CNR	OMG	UML Testing profile	Monitoring of activities and, if appropriate, specific contribution in the topic of non- functional testing.	Not central to project scope, should target other standardization groups	ISTQB was contacted and ElasTest was presented in Milan in June 2018.
ZHAW	OSBA	OSBA	Contribution of an implementation of the service manager. This will include an OpenAPI definition of the specification, which is lacking.	Maintaining a watch on new upcoming standards that are relevant to ElasTest. Tentative Milestone 2	A paper has been published describing the approach of ElasTest on service delivery and discovery using OpenAPI.

Table 12. Planned activities in relation to standardization

## 8 Conclusion

We've been working during the second period on publishing all our research and innovation work carried out during the first period. The number of publications of the consortium is above the expected KPIs in general, and there is an important number of joint publications, which highlight the good collaboration environment. Some research works are ongoing, and some partners will continue collaborating in the future.

On the industrial side, we have collaborated with communities and companies, and we attended numerous industrial events in order to make these communities aware of ElasTest. As a result, close collaborations between the ElasTest consortium and some companies was established. This close collaboration included weekly meetings, and dedicated slack channels were support was given when necessary.

The consortium dedicated efforts also on its own communication channels to disseminate further ElasTest, and the numbers of our website, Twitter handle and YouTube channel are good proof of the work carried out in this regard.

## 9 Annex – Dissemination activities

The list of accepted scientific publications at the time of this writing within the ElasTest project is summarized in the following table.

Partners Involved	Type of publication	Title	Authors	Title of journal or conference	Year	Publisher
URJC	Magazine	WebRTC Testing: Challenges and Practical Solutions	Boni García, Francisco Gortázar, Luis López- Fernández, Micael Gallego, and Miguel París	IEEE Communications Standards	2017	IEEE
URJC	Magazine	Kurento: the Swiss Army Knife of WebRTC Media Servers	Boni García, Luis López-Fernández, Micael Gallego, Francisco Gortázar	IEEE Communications Standards	2017	IEEE
URJC	Conference	WebRTC Testing: State of the Art	Boni García, Micael Gallego, Francisco Gortázar, and Eduardo Jiménez	12th International Conference on Software Technologies (ICSOFT)	2017	SCITEPRESS
CNR	Journal	An assessment of operational coverage as both an adequacy and a selection criterion for operational profile-based testing	Breno Miranda, Antonia Bertolino	Software Quality Journal	2017	Springer
URJC, TUB	Conference	NUBOMEDIA: The First Open Source WebRTC PaaS	Boni García, Luis López, Francisco Gortázar, Micael Gallego and Giuseppe Antonio Carella	2017 ACM on Multimedia Conference	2017	IEEE
URJC, TUB, FOKUS	Conference	ElasTest – An Open Source Project for Testing Distributed Applications with Failure Injection	Francisco Gortázar, Micael Gallego, Boni García, Giuseppe Antonio Carella, Michael Pauls, and Ilie-Daniel Gheorghe-Pop	Conference on Network Function Virtualization and Software Defined Networks	2017	IEEE
URJC	Conference	User Impersonation as a Service in End- to-End Testing	Boni García, Francisco Gortázar, Micael Gallego, and Eduardo Jiménez	6th International Conference on Model-Driven Engineering and Software Development (MODELWARD), Special Session on domAin specific Model-based AppRoaches to vErificaTion and validaTiOn (AMARETTO)	2018	SCITEPRESS



CNR	Conference	FAST Approaches to Scalable Similarity- based Test Case Prioritization	Breno Miranda, Emilio Cruciani, Roberto Verdecchia, Antonia Bertolino	40th International Conference on Software Engineering, May 27 - 3 June 2018, Gothenburg, Sweden	2018	ACM
CNR, URJC	Conference	When the testing gets tough, the tough get ElasTest	Antonia Bertolino, Antonello Calabrò, Guglielmo De Angelis, Micael Gallego, Boni García, Francisco Gortázar	40th International Conference on Software Engineering, May 27 - 3 June 2018, Gothenburg, Sweden	2018	ACM

The list of **attended events** at the time of this writing within the ElasTest project is summarized in the following table.

Partners Involved	Date	Type of action	Detailed Action	Event, Conference, Workshop	Торіс	Audience	Attendees	Venue
TUB 5G	24-28 April 2017	Participate	Networking about ElasTest	<u>OPNFV Plugfest -</u> <u>Danube Release</u>	Software testing	Industry & Academia	Michael Pauls	Paris, France
URJC	13-15 June, 2017	Participation to a conference	One presentation on testing and one workshop on leveraging containers for testing	<u>EXPOQA 2017</u>	Software testing	Testers and business people	Francisco Gortázar and Micael Gallego	Madrid, Spain
CNR	June 28	Summer School (June 2017) - Tarot 2017 in Naples	One lecture on cloud testing	<u>TAROT 2017</u>	Software testing	PhD Students	Antonia Bertolino	Naples, Italy
URJC	24-26 July, 2017	Participation to a conference	One presentation on testing	<u>ICSOFT 2017</u>	Software technologies	Professionals and researchers on software development and technologies	Boni García	Madrid, Spain
URJC	24-26 July, 2017	Exhibition and participation on panel	Exhibition with a booth in the European Project Space	ICSOFT 2017	Software technologies	Professionals and researchers on software	Boni García	Madrid, Spain





						development and technologies		
Relational	Friday, September 22nd 2017	Sponsorship	Disseminate marketing material	<u>Agile Summit</u> <u>Greece</u>	Software development	Developers and testers	Penny Mania	Athens, Greece
TUB 5G	11-13 Oct, 2017	Presentation	Presentation on "An open playground for prototyping and testing complex 5G software-based networks"	Layer123 SDN NFV World Congress 2017	Software Testing, Telco 5G, Cloud Computing	Industrial	Michael Pauls	The Hague, Netherlands
FOKUS	14 October 2017	Workshop on 5G testbed evaluations	One workshop on testing using Open5GCore	<u>GWS2017</u>	Telco 5G	Both academia and industrial	Ilie Daniel Gheorghe Pop	Cape Town, South Africa
URJC/TUB 5G	6-8 November 2017	ElasTest Demonstration	We demonstrate ElasTest in the context of 5G	IEEE SDN/NVF	Telco 5G	Industrial	Francisco Gortázar	Berlin, Germany
URJC	9-10 November 2017	Participate	Networking about ElasTest	FUSECO	Telco 5G	Industrial	Francisco Gortázar	Berlin, Germany
URJC	24-25 November 2017	Participation to a conference	One workshop on testing using Jenkins pipelines	<u>Codemotion</u> <u>Spain</u>	Software testing	Testers & Developers	Francisco Gortázar	Madrid, Spain
URJC	29-30 November 2017	Participation to a workshop	Talk about leveraging containers in Cl and ElasTest advantages when doing so	<u>VLCTesting</u>	Software testing	Testers	Francisco Gortázar and Micael Gallego	Valencia, Spain
URJC	20 March, 2018	Participation to a webinar	Talk about ElasTest	SE4SA Cluster	Testing, adopting and re- using project results	SE4SA Cluster, collaborators and students.	Francisco Gortázar	Online



URJC	22-24 January, 2018	Participation to a conference	Presentation of paper about ElasTest and user impersonation service	AMARETTO 2018	Software testing	Academic	Boni García	Funchal, Portugal
ZHAW	26 April 2018	Meetup	Presentation and demo regarding EMP (Sentinel)		Monitoring framework	Industry & Academia	Piyush Harsh	Zurich, Switzerland
ZHAW	15-17 March 2018	Invited speaker in IEEE Conference	Gave a talk on research trends in cloud computing including a few slides on testing in the cloud	<u>RAIT 2018</u>	Cloud computing	Academia	Piyush Harsh	Dhanbad, India
URJC/CNR	30 may- 1June 2018	Demo	Gave a well-attended demo within the technical program	ICSE 2018	Software Engineering	Academia & Industry	Francisco Gortázar, Guglielmo De Angelis	Gothemburg, Sweden
CNR	30 may- 1June 2018	Research Paper	Presentation of paper on test prioritization technique that is going to be included in ElasTest Orchestrator	ICSE 2018	Software Engineering	Academia & Industry	Antonia Bertolino	Gothemburg, Sweden
URJC/CNR	13 June 2018	Technical paper	Presentation of talk on ElasTest	STF 2018	Software testing	Industry	Francisco Gortázar, Antonia Bertolino	Milano, Italy

The list of **articles or press releases** at the time of this writing within the ElasTest project is summarized in the following table.

Name of article/Press release/White paper	Date	Comment
Investigadores del grupo code de la Universidad Rey Juan Carlos coordinan el proyecto europeo ElasTest	08/02/2017	
ElasTest: an elastic platform for testing complex distributed large software systems		Not a press release, just information on EC website

New EU funded project: Elastest		Project information on IMDEA website
ElasTest is Digital Partnership in Action	26/04/2017	Blog article written by Relational's CEO - Posted on Relational website and disseminated to our international data base via email, announced on Relational Linkedin page
Introducing ELASTEST	28/04/2017	Blog article written by URJC – Patxi
Face to face meeting in Berlin	08/05/2017	Blog article written by URJC - Patxi
ElasTest will participate in NetFutures event	23/05/2017	Blog article written by URJC – Patxi
El equipo del proyecto europeo ElasTest, coordinado por la URJC, se reune en Berlín	24/05/2017	Press release
Naevatec participates in EU funded project Elastest	18/05/2017	Project information on NAEVATEC website
Micael Gallego, codirector del grupo CodeURJC, premiado en el congreso internacional ExpoQA	22/06/2017	Micael Gallego, ElasTest Technical Leader, awarded in ExpoQA
ELASTEST - Press release June 2017	29/06/2017	Press release.
ElasTest: a cloud-based test platform for testing large complex distributed software systems	23/06/2017	News about ElasTest in ISTI-CNR web site



ElasTest: A Cloud-based Platform for Testing Large Complex Distributed Software Systems	03/07/2017	News published in the Events page of ERCIM News
ElasTest: a cloud-based test platform for testing large complex distributed software systems	03/07/2017	News about ElasTest in CNR web site
ElasTest news/press release in Spanish	07/08/2017	News about ElasTest and ATOS role in IT user
ElasTest news/press release in Spanish in twitter	01/08/2017	News about ElasTest and ATOS role in twitter ATOS ES account
ElasTest news/press release in Spanish in ATOS website	02/08/2017	News about ElasTest and ATOS role in ATOS website
ElasTest: a cloud-based testing service platform for testing complex distributed large software systems	12/07/2017	Press release international distribution by Relational
El consorcio Europeo ElasTest se reúne en la URJC	9/5/2018	Press release by URJC
Nueva reunión del proyecto Europeo ElasTest en Madrid	07/05/2018	Press release by Naevatec (both ENG and ESP)

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