A Software Architecture for Extreme-ScaLe
Big-Data AnalyticS in Fog CompuTIng Ecosystems

D6.4 Intermediate Communication and Dissemination Report

Version 1.0

Document Information

Contract Number	825473
Project Website	https://elastic-project.eu/
Contractual Deadline	31 May 2020
Dissemination Level	Public (PU)
Nature	Report (R)
Author(s)	Nikoleta Kiapidou (BSC)
Contributor(s)	Anna Queralt (BSC), David Faura (THA), Cesar Marin (ICE), Zubia Maria Cristina (IKE)
Reviewer	Jürgen Assfalg (FLO)
Keywords	Communication, dissemination, KPIs

Notice: *The ELASTIC project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 825473.*

Change Log

Version	Author	Description of Change
V0.1	Nikoleta Kiapidou (BSC)	Initial draft
V0.2	Nikoleta Kiapidou (BSC)	Contributions from partners on section 7.5
V0.3	Jürgen Assfalg (FLO)	Internal review
V1.0	Nikoleta Kiapidou (BSC)	Final version

Table of contents

1. Executive Summary 4
2. Introduction 4
3. Communication and dissemination objectives and target audiences 4
4. Corporate image 5
4.1 Logo 5
4.2 Templates 6
5. Dissemination and communication channels and tools 6
5.1 Website (https://elastic-project.eu/) 7
5.2 Social media 10
5.2.1 Twitter 10
5.2.2 LinkedIn 11
5.2.3 Social media KPIs 12
5.3 Dissemination and communication pack 13
5.3.1 Leaflet 13
5.3.2 Video 13
5.4 Press 14
5.4.1 News pieces 15
5.5 Events 15
6. Publications 17
7. Related organisations and projects 18
7.1 BDVA 18
7.2 CLASS 18
7.3 LEGaTO 18
7.4 HiPEAC 19
7.5 Open communities and development environments 19
8. Key Performance Indicators 20
9. Conclusions and next actions 23
10. Annex 24

1. Executive Summary

This report summarises the communication and dissemination activities carried out by the ELASTIC project from December 2018 (M1) to May 2020 (M18).

This report includes a complete list of tasks related to the corporate image of the project as well as to its communication channels (website and social media). This document reports also on the dissemination material and any press coverage, events, collaborations and publications of ELASTIC, as well as details on the open communities and development environments.

During the past 18 months of the project, the consortium participated in a total of 10 events disseminating the project. The press coverage was increased and three open access scientific publications were produced. The first project video was also published along with a press release launched with it. With the aim to build a community around the project, the communication and dissemination team posted regular updates on the project's dedicated LinkedIn and Twitter channels.

The communication and dissemination team has successfully carried out several tasks indicated in the D6.1 Communication and dissemination plan.

2. Introduction

The objective of this report is to present a detailed list of the communication and dissemination activities, which took place during the project's 18-month period, as planned in Deliverable D6.1. The activities were carried out in order for ELASTIC to become a point of reference in the field and build a wider community around it.

3. Communication and dissemination objectives and target audiences

The overall goal of ELASTIC WP6 is to maximise the impact of the project, increase awareness and engage key stakeholders. The specific dissemination and communication objectives for the ELASTIC project are the following:

1. Definition of the communication and dissemination strategies with the aim at disseminating the project's results via a public website, social media channels, videos, participation in conferences and presenting papers to scientific journals.
2. Building a dynamic community of researchers and applications designers who engage with the project via the public website and social media channels.
3. Communicate the potential benefits of the ELASTIC research to industry stakeholders and the wider public via targeted events and project dissemination materials.
4. Facilitate cross-fertilisation with other projects working on overlapping areas.

The present report is focused on the above objectives, as they are related to communication and dissemination. The exploitation tasks were described in a separate deliverable D6.3 Initial exploitation report and will be further reported in the upcoming D6.7 Final exploitation report. However, both tasks are closely related.

In order to achieve the objectives above, a number of target audiences and stakeholders were identified in the D6.1 Dissemination and communication plan that are still in force:

1. Big data end users
2. Applications developers
3. Big data/embedded/HPC research community: related EU and international projects (CLASS, LEGaTO), research organizations (PRACE RI, e-IRG, EUDAT, Géant) and other European initiatives (BDVA).
4. Industry stakeholders: tram manufacturers, engineering companies, public transportation, operators, big data sector; IT Providers (Cloud providers, Edge providers, Big data vendors and practitioners)
5. Policy makers: European and national politicians, European Parliament and European Commission, national and local governments.
6. General public

4. Corporate image

In accordance with Deliverable D6.1, a common graphic identity was developed in order to create a recognisable brand associated to the project. This image has been consistently applied by all partners and in all communication and dissemination materials.

A brand guide was developed and serves as a manual to define the usage of the ELASTIC brand including the colours palette, different types of logos, font size, typography, etc. This brand guide is available to download on the intranet for all partners to apply correctly.

4.1 Logo

The logo of the project has been defined and can be instantiated in a more simplified way or in a more complete way to include the project's full name or URL (Figure 1). The short name of the project (ELASTIC) comes from letters taken from the full name, which is "A Software Architecture for **E**xtreme-Sca**L**e Big-Data **A**nalytic**S** in Fog Compu**TI**ng E**c**osystems".

The logo's shape represents the concept of elasticity, as it is indicated by the name of the project and by one of the project's main features. Minimal purple colours were selected in order to provide a clear and distinct identity to the brand. All logos can be downloaded from the ELASTIC branding page.

Figure 1: ELASTIC logo (simple version, version with full project name, version with project website URL)

4.2 Templates

Templates were designed in order to be used in the main dissemination activities of the project (workshops, conferences, training courses, etc.). Presentation (see figure 2), poster and deliverable templates are available in the internal repository of the ELASTIC website (Intranet) and have been shared with all the partners.

Figure 2: ELASTIC PowerPoint presentation and poster templates

5. Dissemination and communication channels and tools

In order to efficiently reach the targets for promoting the results and maximising the visibility of the project, a broad spectrum of dissemination and communication channels and tools are used. The public website plays the central role in dissemination as it is the most important channel for communicating the project's information. Social media are also a very useful tool to reach out to society together

with press releases, leaflet, presence in events, etc. The following sections describe in detail the selected channels and tools.

5.1 Website (https://elastic-project.eu/)

During the 18 months of the project, the performance of the ELASTIC website has been satisfactory. The website was launched in late January 2019. It was built with Drupal 8 system and complies with the technical requirements of performance and security. Apart from the normal navigation menu and pages, it also hosts the Intranet (internal repository), which is embedded in the website and is used as a tool for storage and internal communication for all partners.

The website was substantially updated during February and March 2020 in order to include more technical information. In particular, the following pages were created:

- Software Infrastructure page, which contains details on the software architecture created by the ELASTIC partners along with the different layers that are being integrated in this technology
- Use case page, which includes information on the smart mobility use case of the project implemented on the tram network of Florence, as well as brief descriptions of the three use case applications: NGAP and ADAS, Predictive maintenance, and Private/public transport interaction
- Industrial Advisory Board page, which provides some background on the purpose and tasks of the ELASTIC IAB, along with details on the IAB members. These details will be updated as soon as they are received from the members

In May 2020, we created an additional sub-page called Videos, in order to accommodate the first project video along with any videos that will follow.

Reporting period	Sessions	Users	Page views	Avg. Session Duration
M1-M8	1,574	946	5,442	00:04:37
M1-M18	4,564	3,098	11,651	00:03:06

Table 1: Main indicators of the ELASTIC website, M1-M18

The main indicators of the ELASTIC website, as reported in Table 1 above, show that the page has improved its performance during the second reporting period and is accomplishing the project's targets. The total number of sessions during the period M1-M8 is 1,574, while this number reached 4,564 in May 2020 (M18), both measures well above the defined Key Performance Indicator (KPI) of 1,000 sessions per year. The total number of users during the period M1-M8 is 946 reaching 3,098 in M18. The total number of page views also doubled from 5,442 in M8 to 11,651 in M18. The average session duration was decreased during the second reporting period, possibly because some visitors already knew some of the page's content and came to read some additional information. This indicator might change as more people will opt to explore the new technical pages on the website.

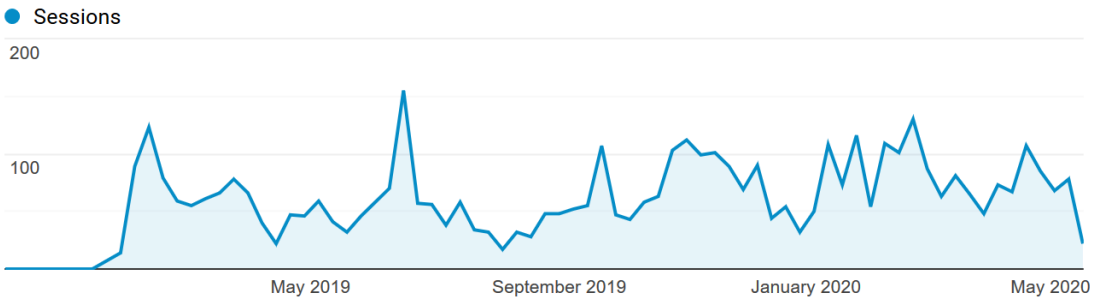


Figure 3: Sessions on the ELASTIC website, M1-M18

Looking at the flow of daily sessions throughout the reporting period (Figure 3), we note several peaks in the number of sessions that can be associated with dissemination activities at the time, such as events, conferences, etc. For example, high number of sessions is observed when the press release was launched and the DATE conference took place in February and March 2019 respectively. June and October 2019 proved also successful months for the ELASTIC website as the project participated in the BDV PPP Summit and HiPEAC Computing System Week, among other events. During November 2019, the website sessions were steadily high due to the different events that ELASTIC partners took part in - in particular, the booths at Big Data London and the Smart City Expo in Barcelona. Finally, March 2020 was also a satisfactory month for the website because of the new technical pages that were created and published during that time.

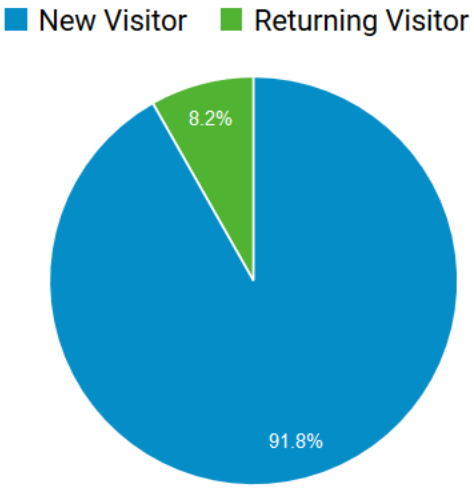


Figure 4: New visitors vs Returning visitors on the ELASTIC website, M1-M18

Most of the visitors of the ELASTIC website are new (a little over 90%), as demonstrated in Figure 4 above. Looking at the top channels for the page (Figure 5 below), we also see that the two top sources remain the direct visits and the organic search, which goes hand in hand with the percentage of new visitors. An interesting change from the M8 reporting is that social media became the third channel, instead of referral.

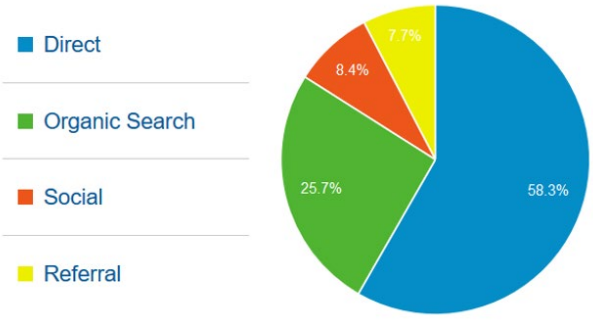


Figure 5: Traffic source channels for the ELASTIC website, M1-M18

Furthermore, the most visited pages of the ELASTIC website are shown in Figure 6 below. Most page views are monitored on the Homepage, while the Objectives, Events, and News pages are also quite visited popular. The Partners and Publications pages are next in popularity. As the new technical pages were recently added, they do not appear with as many visitors yet.

	Page Title	Page Views	% Page Views
1.	Home | ELASTIC	3,991	34.25%
2.	Objectives | ELASTIC	671	5.76%
3.	Events | ELASTIC	650	5.58%
4.	News and press releases | EL ASTIC	626	5.37%
5.	Partners | ELASTIC	443	3.80%
6.	Publications | ELASTIC	396	3.40%

Figure 6: Most visited pages of the ELASTIC website, M1-M18

As reported also in D6.2 Initial Communication and Dissemination Report, most of the recorded sessions come from European countries. As shown in Figure 7, the majority of sessions are recorded from Spain, Italy, and Portugal, where most of the ELASTIC partners are located (Barcelona Supercomputing Center, Ikerlan, THALES, GEST, the Metropolitan City of Florence and the Instituto Superior De Engenharia Do Porto). Other countries, such as the USA, the UK, France, Germany, Greece, the Netherlands, and Belgium follow.

1.	Spain	1,890	(41.41%)
2.	Italy	465	(10.19%)
3.	United States	397	(8.70%)
4.	Portugal	241	(5.28%)
5.	United Kingdom	233	(5.11%)
6.	France	130	(2.85%)
7.	Germany	125	(2.74%)
8.	Greece	95	(2.08%)
9.	Netherlands	70	(1.53%)
10.	Belgium	73	(1.60%)

Figure 7: Sessions on the ELASTIC website by country (top 9 countries), M1-M18

5.2 Social media

5.2.1 Twitter

The ELASTIC Twitter account is used as a platform to share any dissemination activities of the project and create synergies with other stakeholders in the field both from the academia and industry (Figure 8).

The WP6 Team continues to tweet and retweet on a daily basis not only events and news of the project, but also conferences and activities related to the general field of smart cities, smart mobility, urban mobility, as well as more technical sectors of big data, cloud computing, and edge computing.

The most used hashtags on the ELASTIC Twitter and the ones followed mostly are #bigdata, #bigdataanalytics, #smartcity, #smartmobility, #urbanmobility, #IoT, #cloudcomputing, and #edgetocloud.

Figure 8: ELASTIC Twitter account

The ELASTIC Twitter account has 276 followers mainly from the research community and related European projects; this is an increase of over 300% since the reporting done in D6.2 (56 followers). The number of followers has increased as the project developed more news and technical information and participated in more events. An editorial calendar was created in order to generate news pieces from all the partners and the website was updated with new pages rich in technical information.

A short video was also created by the WP6 team during the lockdown Covid-19 period showing how the project members kept working from home in order to provide creative and positive content at this difficult situation.

This new content created opportunities to populate the ELASTIC Twitter account and engage more followers. Scientific results and publications of the project will bring even more followers to the ELASTIC Twitter profile.

The tweets with the most engagement are related to the ELASTIC news pieces with technical content, as well as participation in high-end events, such as the DATE conference and the Smart City Expo in Barcelona (see examples of popular tweets in Figure 10).

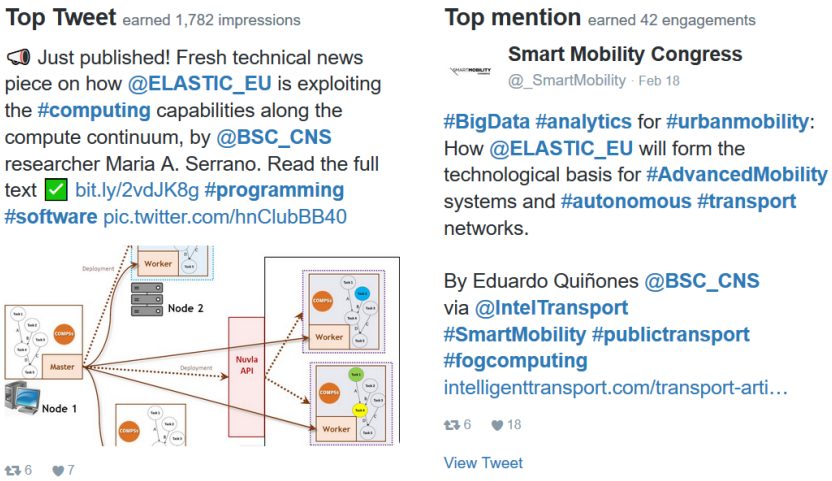


Figure 9: Examples of top tweets on the ELASTIC Twitter

5.2.2 LinkedIn

The ELASTIC LinkedIn page is used as a channel to communicate ELASTIC to a professional and industrial network. The posts are about project news and updates as well as events and developments in the industry of smart city, urban mobility, and big data in more general terms. The visitors of the page have shown interest for the ELASTIC technical news as well as updates in the sector in general. Some of the most engaging LinkedIn posts up to date are the ones during the F2F meeting in Arrasate, Spain, technical news pieces and the short video created for the lockdown period for the project's social media.

The page has 103 members as of May 2020, compared to 24 followers in July 2019. A closer look at the flow of the page views as demonstrated in Figure 10 below, shows that high numbers of views correspond to dissemination activities, and particularly events that ELASTIC members took part in. For example, we see a higher number of views during June 2019 (BDV PPP Summit among other events), November 2019 (Big Data London and Smart City Expo), and January 2020 during the F2F meeting in Arrasate.

The number of page views is indicative of a positive trend and also shows how dissemination activities and performance in the project's media channels go together. The followers are expected to increase more as solid scientific results will be generated towards the second part of the project.

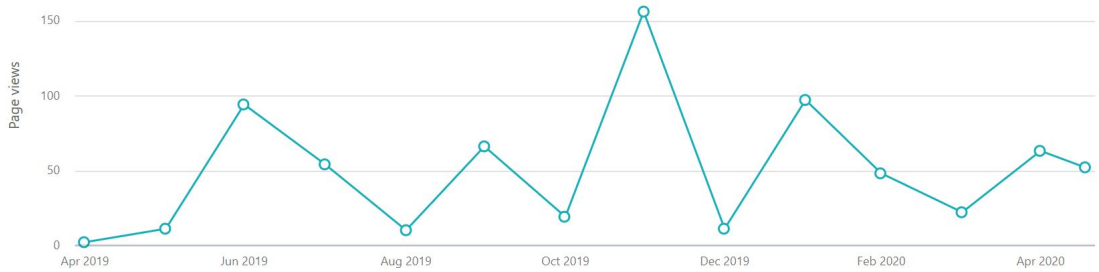


Figure 10: Page views of the ELASTIC LinkedIn page, M1-M18

In addition, the top job functions of our LinkedIn page visitors are related to engineering, research, education, information technology and project management (see Figure 11 below). More technical news pieces, scientific results, as well as the recently added technical webpages on the ELASTIC website are expected to bring more visitors from technical sectors, as the main target audience of our LinkedIn channel.

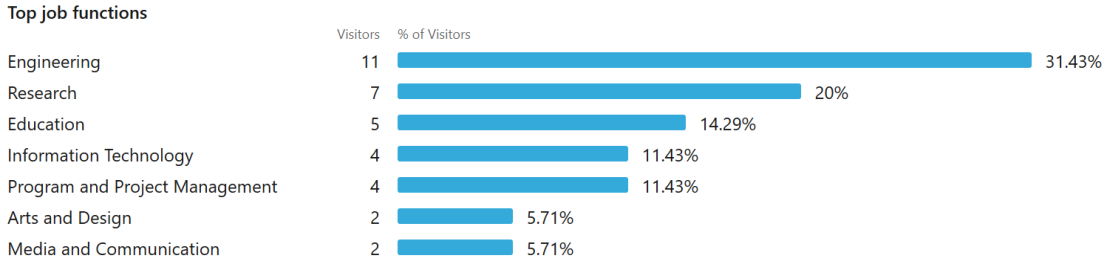


Figure 11: Top industries of the ELASTIC LinkedIn page visitors, M1-M18

5.2.3 Social media KPIs

The performance of the social media accounts of ELASTIC during the first 18 months of the project shows a steady growth in the number of followers and engagement of the users (Table 2). The number of followers for both channels has increased radically, particularly when it comes to Twitter. As Table 2 shows, compared to the first reporting period, the twitter followers increased from 56 to 276, while LinkedIn followers from 24 to 103. The editorial plan that was created to generate more content for the website along with the press clippings, events, publications, the video and the second press release helped to improve the performance of the project's social media.

More followers are still needed for LinkedIn, which will be succeeded by publishing scientific results deriving from the project during the next stage. The IAB that has been established will also help towards further engagement of the social media channels, especially LinkedIn that is more relevant to users from industries. The ELASTIC video will also contribute towards more use engagement on the social media platforms.

KPI	Total M1-M8	Total M1-M18	Total Target (M36)
Number of Twitter followers	56	276	250

KPI	Total M1-M8	Total M1-M18	Total Target (M36)
Number of LinkedIn followers	24	103	150

Table 2: ELASTIC KPIs for the social media channels

5.3 Dissemination and communication pack

5.3.1 Leaflet

The general ELASTIC leaflet provides an overview of ELASTIC: the project's objectives, main feature, partners, and media channels. The format of the leaflet is a double-sided A5 sheet. The design was approved by all partners. It has been printed to be distributed in events or local actions defined by each partner. It is also available to download on the ELASTIC branding page. The leaflet will be updated in the second year of the project in order to include technical content and informed details of how ELASTIC progresses.

Figure 12: ELASTIC leaflet

5.3.2 Video

The first project video was published on 21 May 2020. It was recorded during the first F2F meeting in Florence, Italy. A first version was produced and went through internal evaluation by the WP6 team and the coordinator. A final version was then created based on the initial feedback and it was shared with the consortium to validate before publishing.

The final product was posted on the BSC YouTube channel, which is already established with over 1,200 subscribers. The WP6 team published it also on the project website and social media and disseminated it widely along with the press release that was launched with it. The partners were also encouraged to publish the video on their media platforms and share with interested people, organisations and communities. Because the video was made public just before submitting this report,

the number of views at that point were 140. The full picture of its impact will be reported in the D6.6 Final communication and dissemination report.

Figure 13: Caption from the ELASTIC video

The video starts by featuring the project coordinator, Eduardo Quiñones providing an overview of ELASTIC. It continues by demonstrating the project's objectives in a graphical way and by explaining the smart city use case of real tram vehicles in the city of Florence. It describes the concept of the ELASTIC software architecture and the different software components. It includes scenes from Florence's urban areas, the tram system and tram vehicles, as well as citizens around the tram stations of the city.

5.4 Press

In February 2019, the first ELASTIC press release was produced under the title "ELASTIC to develop a novel software architecture for extreme-scale analytics". It was distributed to technical media to emphasize the need of HPC for smart cities and smart urban mobility. This press release was approved by all partners. The dissemination team encouraged all partners to share the article on their own media channels and translate it, if possible, in their national languages.

A second press release was launched in May 2020 along with the first project video, under the title "ELASTIC software architecture advances urban mobility in Florence". It talked about the progress made in the project with a particular focus being on the use case of the tram network in Florence. This press release was also distributed to technical media channels, while the WP6 team encouraged the consortium to share it as widely as possible. Similarly to the video, the full impact of this press release will be monitored in the final dissemination deliverable.

In addition, media articles were published in technical media promoting the project's technology and use-case in order to increase the press coverage and make the project visible to different target audiences. For example, an Intelligent Transport article, published in February 2020, was addressed to smart city and urban transport stakeholders, while a Cities Today article mentioned the project and was directed to public and private urban stakeholders and local governments. The EC Cordis Wire also published an informative article on the ELASTIC technology boosting the project further. All press clippings can be found on the project's corresponding page.

5.4.1 News pieces

As mentioned, the WP6 team also writes news pieces about ELASTIC regarding the events that partners attended, and general news and updates about the project. The aim of these news is to keep the ELASTIC news page updated, drive traffic to the website and share content on the social media channels in order to increase the number of followers and, in fact, to increase its engagement.

During the reporting period, there were ten project-related news pieces written to appear on the ELASTIC news page. These pieces concern ELASTIC presentations at events (such as the DATE 2019 conference and the Big Data London event), and technical details about the project (for example on ELASTIC's data analytics platform and its capabilities along the compute continuum). A new Women in STEM interviews series was also introduced to highlight women working in the project. The first interview was done with BSC researcher and ELASTIC member, Elli Kartsakli, and it was picked up by #WomeninSTEM and #Womeninscience communities on the social media.

An editorial plan has been created with news piece and social media guidelines along with a timetable for all partners to contribute with content regularly. The plan has been applied and helped to attract more visitors to the website as well as more followers and engagement on the project social media channels.

5.5 Events

During this period, consortium partners attended several events in order to present ELASTIC, disseminate the project, and network with colleagues in the field. The consortium attended a total of 10 events, including a keynote, booths at exhibitions, and presentations at conferences, workshops and meetings. The full list of the specific events that ELASTIC partners attended can be found on the project's Events page. Details on the specific number and type of audiences reached can be found in the Annex of this document.

Event highlights include the shared booths with the European project CLASS at the DATE 2019 conference that took place in March 2019 in Florence, Italy and the Smart City Expo World Congress on November 2019 in Barcelona, Spain, as well as the booth at the Big Data London in November 2019 in London. The keynote speech of the project coordinator, Eduardo Quiñones, at the HiPEAC Computing Systems Week in October 2019 in Spain and the talk of SixSq CEO, Marc-Elian Bégin, at an EC industry-related workshop in November 2019 in Brussels, were both significant points of dissemination.

Figure 14: ELASTIC flyers at the joint booth at the Smart City Expo (17-19 November 2019, Barcelona, Spain)

Presentations in national and international key conferences, such as the 8th National Tram Systems Conference in May 2019 in Italy and the 24th International Conference on Reliable Software Technologies in June 2019 in Poland, helped gain visibility in a multi-national environment with industry-based audiences and corresponding projects.

More closed community meetings were also very useful to share the project's vision and disseminate ELASTIC to more specialised audiences and groups, such as the ICLEI board meetings in March 2019 in Italy, and the BDVA meeting in February 2019 in Belgium and SBDVA Summit in June 2019 in Latvia.

Eduardo Quiñones was also invited to give a keynote speech in March 2020 at the Financial Times Hitachi Transformation in Mobility forum in which he would have talked about the ELASTIC technology and its contribution to shaping the urban mobility systems of the future. However, due to the Covid-19 situation, the event was postponed for a later date. Further participation in the form of presentations and demos at more events in the final year of the project will help ELASTIC's visibility and establishment.

Figure 15: ELASTIC booth at Big Data London (13-14 November, London, UK)

6. Publications

There are three ELASTIC scientific articles published so far. All publications are Open Access either via the Gold or Green route. Full details on the ELASTIC publications can be found on the ELASTIC publications page and in the table below. More research articles and conference proceedings will be published as the project develops further and produces more results.

Type	Title	Authors	Journal
Article in Journal	On the Combination of Multi-Cloud and Network Coding for Cost-Efficient Storage in Industrial Applications	G. Peralta, P. Garrido, J. Bilbao, R. Agüero, and P. M. Crespo	Sensors
Article in Journal	Homomorphic Encryption and Network Coding in IoT Architectures: Advantages and Future Challenges	G. Peralta, R. Cid-Fuentes, J. Bilbao, and P. M. Crespo	Electronics
Article in Journal	Fog to cloud and network coded based architecture: Minimizing data download time for smart mobility	G. Peralta, P.Garrido, J. Bilbao, R.Agüero, P. M. Crespo	Simulation Modelling Practice and Theory

A publications guide with details on the EC's open access requirements and ways to comply was created and sent to all partners in order to be informed and follow the appropriate procedures. A copy of this was also saved in the Intranet.

7. Related organisations and projects

7.1 BDVA

ELASTIC is a member of BDVA, and participates in the BDVA newsletter and in events and conferences organised by the Association (see **Error! Reference source not found.** and **Error! Reference source not found.** for detailed information). The team shares the project's news with BDVA in order to be included in their newsletter, interacts with BDVA's social media accounts, and attempts for ELASTIC partners to be involved in BDVA events. For example, ELASTIC was presented at the BDVA Activity group meeting that took place in February 2019 in and the project appeared a few times on the BDVA communication channels, as seen in the Annex of this document.

The ELASTIC technology was also added as an entry to the new BDVA feature called Marketplace, where projects have the opportunity to present their innovative solutions for different industry sectors. ELASTIC's entry includes details on the project's technological novelty, areas of applications, relevant market opportunities, and benefits for potential customers. The full text is available here.

7.2 CLASS

ELASTIC is collaborating with the EU-funded project CLASS, which develops a software for big data analytics in the edge and cloud computation to be tested in a real smart-city case in the City of Modena, Italy. ELASTIC builds on top of CLASS, as it addresses non-functional requirements not addressed in the CLASS project, such as energy-efficiency, security and communications. Furthermore, the use cases differ as ELASTIC is focused on applying its technology on and along a tramway system in Florence, while CLASS is implementing its technology on connected cars in Modena.

The two projects share news and engage actively on their social media accounts and they were also mentioned in a common media article published on Cities Today published in March 2020. In addition, they shared two conference booths and were presented together at the BDVA meeting.

7.3 LEGaTO

ELASTIC is also collaborating with the EU-funded project LEGaTO. LEGaTO addresses the challenge of lacking software-stack support for power- and energy-efficient computing by starting with a Made-in-Europe mature software stack, and optimizing this stack to support energy-efficient computing on a commercial cutting-edge European-developed CPU–GPU–FPGA heterogeneous hardware substrate and FPGA-based Dataflow Engines (DFE).

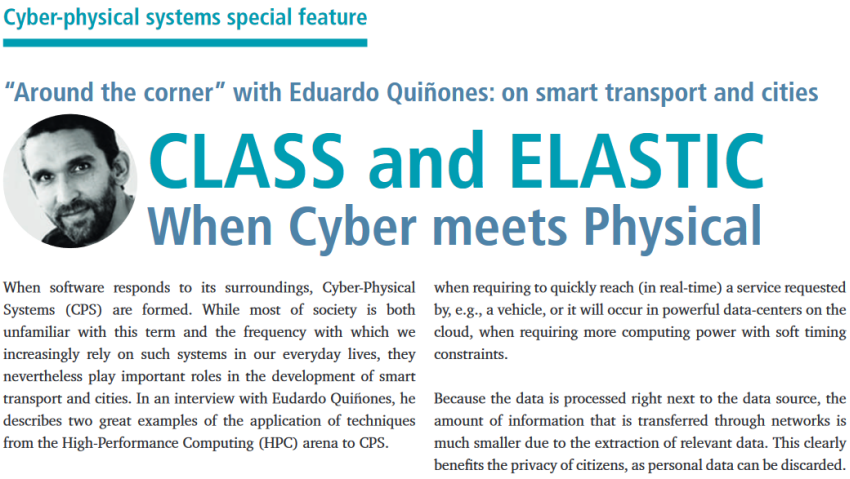
LEGaTO's use case of edge computing is useful for exchanging knowledge with ELASTIC regarding the project's own smart city use case. Two internal meetings between the two projects took place so far to discuss potential synergies, such as

ELASTIC having a presentation at the LEGaTO final dissemination event, LEGaTO joining ELASTIC's booth at the Smart City Expo Word Congress 2020, and Industrial Advisory Board contacts. Potential research/technical collaborations were also discussed in terms of sharing knowledge and practices on the projects' technologies and use cases.

7.4 HiPEAC

ELASTIC collaborates with HiPEAC, the European network of world-class computing systems researchers, industry representatives and students. ELASTIC's coordinator Eduardo Quiñones did a keynote speech at the HiPEAC Computing Systems Week that took place in October 2019 in Spain, where he talked about the benefits of task-based programming models towards the converge of HPC and real-embedded computing domains, also explaining how ELASTIC works towards this direction.

Eduardo Quiñones also gave an interview to the HiPEAC magazine (p.16) where he talked about the ELASTIC and CLASS projects and how their technology is moving forward the research about cyber-physical systems and their applications in real life smart city use cases.



Cyber-physical systems special feature

"Around the corner" with Eduardo Quiñones: on smart transport and cities

CLASS and ELASTIC
When Cyber meets Physical

When software responds to its surroundings, Cyber-Physical Systems (CPS) are formed. While most of society is both unfamiliar with this term and the frequency with which we increasingly rely on such systems in our everyday lives, they nevertheless play important roles in the development of smart transport and cities. In an interview with Eudardo Quiñones, he describes two great examples of the application of techniques from the High-Performance Computing (HPC) arena to CPS.

when requiring to quickly reach (in real-time) a service requested by, e.g., a vehicle, or it will occur in powerful data-centers on the cloud, when requiring more computing power with soft timing constraints.

Because the data is processed right next to the data source, the amount of information that is transferred through networks is much smaller due to the extraction of relevant data. This clearly benefits the privacy of citizens, as personal data can be discarded.

Figure 16: Interview with Eduardo Quiñones in the HiPEAC magazine, May 2020

7.5 Open communities and development environments

The ELASTIC project aims to be actively involved in open communities and development environments by contributing to and taking benefit of their technologies and open-source platforms.

In particular, the different teams plan to publish the project results in open communities and public environments, as follows:

1. BSC:
- OpenFog: OpenFog Reference Architecture (RA)

2. The dataClay team from BSC
(for ELASTIC-specific results):
- GitLab: source code
- DockerHub: docker images

(for more generic results):

- GitHub: source code
- DockerHub: docker images
- PyPI: Python package repository
- Maven: Java library repository
- TestPyPI: Repository for development versions of Python packages
- Sonatype: Repository for development versions of Java libraries

3. Sixsq:
- Distributed Management Task Force (DMTF): cloud management standard called CIMI, that specifies a systematic and consistent way to define web service interfaces (REST)

4. ISEP:
- FIWARE: open and royalty-free API specification to interface among users and system developers

5. ICE:
- NESSI: ICE is an active member

Furthermore, the partners are considering:
- Linux Foundation EDGE: an umbrella organisation that aims to establish an open, interoperable framework for edge computing
- OASIS: a non-profit open-standards body
- Open Edge Computing Initiative: a collective effort driving the business opportunities and technologies surrounding edge computing

8. Key Performance Indicators

All dissemination activities and tasks are carefully monitored through the metrics defined in D6.1 Communication and dissemination plan. The WP6 KPIs' monitoring details (M1-M18) in comparison to the first reporting period (M1-M8) can be seen in Table 5 below:

KPI	Explanation	Total M1-M8	Total M1-M18	Total Target (M36)
Website sessions	Number of sessions registered by Google Analytics	1,574	4,564	1,000 sessions/year
Press releases	Number of press releases	1	2	1 each year
Press clippings	Articles appearing in the press about ELASTIC	7	28	25

KPI	Explanation	Total M1-M8	Total M1-M18	Total Target (M36)
Whitepaper and factsheets	Number of business and scientific whitepapers or factsheets published	0	0	1 business and 1 scientific whitepaper/factsheet
Project videos	Number of project videos	1 in progress	1	3
Events and conferences attended	Keynotes and events organized, including conferences booths, tutorials and workshops (with significant attendance, i.e. above 30 people)	0 keynotes 0 event organised 1 booth in conference 3 conference presentations 2 meeting presentations Total: 6 events attended	1 keynote 0 event organised 3 booths in conferences 4 conference/workshop presentations 2 meeting presentations Total: 10 events attended	2 keynotes 1 event organised/year 2 booths in conferences
Scientific publications	Peer-reviewed journals, conference proceedings, etc. - in green open access. At least 4 per year.	1	3	12
Twitter	Number of followers	56	276	250
LinkedIn	Number of followers	24	103	150
Project posters	Number of posters	1	1	2

Table 3: ELASTIC communication and dissemination KPIs

The monitoring of the ELASTIC dissemination activities as reflected by the corresponding KPIs as well as the future actions that will be taken for each KPI are listed below:

- **Website sessions**
  The number of website sessions has well surpassed the number defined in the KPI. Although the KPI is 1,000 sessions per year, the ELASTIC website has recorded 4,564 sessions during these 18 months. This was due to new technical content that was created specifically to populate the website with news, information about the software architecture and use case as well as new press clippings and more social media engagement.
- **Press releases**
  A second press release was published in late May 2020 to accompany the first project video and promote the smart city use case. A final one will be

produced at the end of the project demonstrating the project's achievements and complete picture.

- **Press clippings**
  ELASTIC has increased its press impact by publishing self-standing articles published on established smart city and urban mobility media, such as the Intelligent Transport and the Cities Today websites. More news articles will be generated to be shared with similar press channels. The second press released launched in May 2020 also boosted the project's press coverage.
- **Whitepaper and factsheets**
  No whitepaper or factsheet has been produced up to this point, as these will be created towards the end of the project summarising the scientific results, software integration, and use case applications.
- **Project videos**
  The first project video was published in May 2020. It was shot during the first F2F meeting in Florence, Italy and features the project coordinator explaining the project's objectives and smart city use case of real tram vehicles in Florence, as well as details on the ELASTIC software architecture and specific applications. Two more videos are planned for the next stages of the projects to explain further the technology and scientific results.
- **Events and conferences attended**
  The events where ELASTIC experts participated during the reporting period reached 10 in total. Several presentations, demos, and booths were held in international conferences and exhibitions, such as DATE, Smart City Expo, and Big Data London, national conferences such as the National Tram Systems Conference, EC events such as the European Industry Partnerships Lighthouses event, the HiPEAC Computing Systems Week, and others. More events are planned for the following months in order to present the project's results.
- **Scientific publications**
  Three scientific publications have been reported so far. This number will increase as the project produces scientific results. WP6 sent specific guidelines to inform ELASTIC partners about the EC requirements on publications and Open Access.
- **Twitter**
  Twitter followers have been increased drastically during these months. The editorial plan and news pieces published on the website along with the efforts for more press coverage and the updated ELASTIC webpages have helped to engage many more members on Twitter.
- **LinkedIn**
  The number of LinkedIn followers has also increased due to the enriched project website and press impact. The production of technical news pieces, the new ELASTIC webpages with technical details, and the articles on smart city media channels led to more engagement on LinkedIn. More information on the project's IAB will be posted on the website in collaboration with the exploitation task leader Thales, which should be of interest to LinkedIn's professional and industry network.
- **Project posters**
  A generic poster with the overview of the project has been created. A second, updated poster will be created at a later stage once the project has produced more solid scientific results.

9. Conclusions and next actions

ELASTIC communication and dissemination activities show a sound progress during the reporting period from December 2018 (M1) to May 2020 (M18). The main goal was to establish the project as a point of reference in the field of big data analytics and smart city applications and build a strong community around it.

The main communication and dissemination tasks included the participation in key conferences and events (for example, DATE and Smart City Expo), the release of the first project video accompanied by a press release, enrichment of the project website with technical pages and new pieces and the social media profiles with updated technical content, solid press coverage through established media (such as Intelligent Transport and Cities Today, production of more scientific publications, and collaborations with other European projects, communities and organisations (such as CLASS, LEGaTO, BDVA, and HiPEAC).

In addition, dissemination tasks are closely connected with exploitation in this common WP. The BSC leader has been in close collaboration with the Exploitation task leader of THALES. The exploitation tasks are focused on the identification and utilisation of exploitable results, an analysis of the market environment, as well as Intellectual Property Rights (IPR) management activities.

An IAB composed of key industrial figures has been established and the first IAB meeting took place during the project's F2F meeting in Arrasate, Spain in January 2020. The contribution of the IAB members is to build a strong industrial focus in the project as observers of the project's development, multipliers for result dissemination and exploitation, and as advisors for contributions and recommendations from other application domains.

The full exploitation activities will be demonstrated in detail in the Deliverable D6.5 Intermediate exploitation report. The dissemination and exploitation teams will continue to work closely to maximise the project's potential in reaching the research, industry and market communities.

Once the project produces solid scientific results, the team's efforts will be emphasized on disseminating and exploiting these results, increasing the overall impact of the project and making it a key reference in the field.

10. Annex

The ELASTIC dissemination register where all dissemination activities during the period M1-M18 are reported, can be found below:

Partner	Type of Activity	Details	Starting Date	Total Size Audience	Size of audience by type								
					Scientific Community	Industry	Civil Society	General Public	Policy Makers	Media	Investors	Customers	Others
Firenze	Other	Press clipping - MET	27-12-18	10000	1500	1500	2000	3000	500	500	500	500	
BSC	Website	Website users	20-01-19	3,098	1000	1000	300	300	200	200	50	40	8
BSC	Social Media	Twitter followers	01-02-19	276	60	60	30	20	30	30	20	20	6
BSC	Social Media	LinkedIn followers	20-01-19	103	40	40	5	5	5		5	2	1
BSC	Press Release	Press release	06-02-19	84	50	21	8		5				
SixSq	Other	Press clipping - SixSq website	10-02-19	115	50	50					5	5	5
BSC	Participation to an event other than conference / workshop	BDVA Activity group meeting, ELASTIC presentation	27-02-19	60	30	30							
BSC	Other	Press clipping - BDVA	28-02-19	1250	550	550	30	20	35	35	10	10	10
Firenze	Participation to an event other than conference / workshop	ICLEI board meeting, ELASTIC presentation	12-03-19	25			25						
Firenze	Other	Press clipping - MET	20-03-19	10000	1500	1500	2000	3000	500	500	500	500	
BSC	Exhibition	DATE 2019 - Shared booth with CLASS	25-03-19	400	300	70			2		28		
BSC	Other	Flyer	03-04-19	150	100	50							
BSC	Non-Scientific and non-peer	News about DATE 2019	10-04-19	92	50	42							

Partner	Type of Activity	Details	Starting Date	Total Size Audience	Size of audience by type								
					Scientific Community	Industry	Civil Society	General Public	Policy Makers	Media	Investors	Customers	Others
	reviewed publication												
THALES	Participation to a conference	8th National Tram Systems Conference, ELASTIC presentation	29-05-19	220		140	20	6	2		50	2	
BSC	Non-Scientific and non-peer reviewed publication	News piece about Rosa Badia's presentation at EHPCSW 2019	11-06-19	12	8	2	2						
ISEP	Participation to a conference	24th International Conference on Reliable Software Technologies, ELASTIC presentation	14-06-19	40	20		20						
SixSq	Other	Press clipping - SixSq	18-06-19	74	30	30					5	5	4
Firenze	Other	Press clipping - Florence TV	20-06-19	378	50	50	100	100	50	20			8
BSC	Participation to a conference	BDV PPP Summit 2019, ELASTIC presentation	26-06-19	40	25	15							
BSC	Non-Scientific and non-peer reviewed publication	News piece about tram use case	01-07-19	113	60	40	13						
BSC	Other	Press clipping - BDVA	01-07-19	1250	550	550	30	20	35	35	10	10	10
BSC	Other	Brand guide	19-07-19	30	20	10							
BSC	Other	Press clipping - BDVA	20-08-19	1250	550	550	30	20	35	35	10	10	10
BSC	Other	Press clipping - El Pais	20-09-19	500000	100000	100000	100000	50000	50000	10000	50000	30000	10000
BSC	Participation to a conference	Keynote speech at HiPEAC CSW Autumn 2019	30-10-19	40	30	10							
SixSq	Participation to a workshop	EC event in Brussels, ELASTIC presentation	05-11-19	20		10			10				
ICE	Exhibition	Big Data London, ELASTIC booth	13-11-19	160	40	60			20		20	20	
BSC	Exhibition	Smart City Expo, ELASTIC booth with CLASS project	19-11-19	400	100	100	50	50	50	50	50		

Partner	Type of Activity	Details	Starting Date	Total Size Audience	Size of audience by type								
					Scientific Community	Industry	Civil Society	General Public	Policy Makers	Media	Investors	Customers	Others
BSC	Non-Scientific and non-peer reviewed publication	News piece about ELASTIC's presence at Big Data London	27-11-19	46	20	26							
ICE	Non-Scientific and non-peer reviewed publication	Technical news piece	17-12-19	74	30	44							
BSC	Other	Press clipping - BDVA	10-12-19	1250	550	550	30	20	35	35	10	10	10
All	Other	F2F Meeting in Arrasate, Spain	30-01-20	27	12	13			2				
BSC	Other	Press clipping - BDVA	20-01-20	1250	550	550	30	20	35	35	10	10	10
BSC	Other	Press clipping - Intelligent Transport	13-02-20	10000	2000	5500	500	500	500	500	200	200	100
BSC	Other	Press clipping - The Silicon review	14-02-20	10000	2000	5500	500	500	500	500	200	200	100
BSC	Other	Press clipping - Leading Smart City Solutions in Catalonia	19-02-20	10000	2000	5500	500	500	500	500	200	200	100
BSC	Non-Scientific and non-peer reviewed publication	Technical news piece	24-02-20	10	5	5							
BSC	Other	Press clipping - Cities Today	02-03-20	20000	4000	4000	4000	1000	4000	1000	1000	1000	
BSC	Participation to a conference	Keynote at FT Transformation in Mobility event (Postponed due to COVID-19)	26-03-20	N/A									
BSC	Other	Press clipping - BDVA	05-03-20	1250	550	550	30	20	35	35	10	10	10
BSC	Other	Press clipping - BDVA	16-03-20	1250	550	550	30	20	35	35	10	10	10
BSC	Other	Press clipping - TechXplore	20-03-20	2000	500	500	200	200	200	100	100	100	100
BSC	Other	Press clipping - Cordis	26-03-20	500	150	50	50		150	100			
BSC	Other	Press clipping - News Break	26-03-20	1000	300	500				100	50	50	

Partner	Type of Activity	Details	Starting Date	Total Size Audience	Size of audience by type								
					Scientific Community	Industry	Civil Society	General Public	Policy Makers	Media	Investors	Customers	Others
BSC	Non-Scientific and non-peer reviewed publication	News piece about project updates during the pandemic	14-04-20	41	20	21							
BSC	Non-Scientific and non-peer reviewed publication	News piece: Women in STEM interview	22-04-20	58	38	20							
BSC	Other	Social media video for project work during the lockdown	27-04-20	200	100	100							
BSC	Other	Press clipping - HiPEAC Magazine	05-05-20	2000	500	500	300	100	200	100	100	100	100
ISEP	Non-Scientific and non-peer reviewed publication	Technical news piece	15-05-20	17	10	7							
BSC	Video/Film	1st project video	21-05-20	140	50	50	10	5	5	5	5	5	5
BSC	Press release	Press release	21-05-20	75	20	20	5	5	5	5	5	5	5
BSC	Other	Press clipping - Embedded Computing Design	21-05-20	25000	5000	11250	1000	1500	1500	1500	1450	1450	500
BSC	Other	Press clipping - HPC Wire	21-05-20	25000	5000	11250	1000	1500	1500	1500	1450	1450	500
BSC	Other	Press clipping - Enterprise AI	21-05-20	10000	2000	5500	500	500	500	500	200	200	100
BSC	Other	Press clipping - The Smart City Journal	22-05-20	2000	500	500	200	200	200	100	100	100	100
BSC	Other	Press clipping - Cordis	22-05-20	100	50	50							
BSC	Other	Press clipping - Datanami	22-05-20	2000	500	500	200	200	200	100	100	100	100
BSC	Other	Press clipping - TechXplore	25-05-20	2000	500	500	200	200	200	100	100	100	100