



**5TH GENERATION END-TO-END NETWORK, EXPERIMENTATION,
SYSTEM INTEGRATION, AND SHOWCASING**

[H2020 - Grant Agreement No. 815178]

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Dissemination, communication and ecosystem engagement activities report (Release B)

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EXECUTIVE SUMMARY

This deliverable documents 5GENESIS dissemination and communication activities, demonstrations and project's interaction with the 5G-PPP and the other 5G-PPP research projects during the second year of the lifetime of 5GENESIS (July 2019 - June 2020).

All communication channels performed activities and interactions are described in detail and evaluated against the goals that were set by the 5GENESIS communication and activities plan, created in the first year of the project lifetime. Statistics, results and impact are analyzed while goals and plans for the activities of the next and last period are presented.

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1. INTRODUCTION

1.1. Purpose of the Document

The scope of D7.3 is to present, analyse and evaluate the dissemination and communication activities, demonstrations, interactions and collaborations with the 5G-PPP Programme and related research project, specifically the ICT-17 projects, of the 5GENESIS project, during the second year of its lifetime (July 2019 – June 2020).

1.2. Structure of the Document

The document is structured into the following sections:

- **Section 1** introduces the purpose of this document, its structure and its target audience.
- **Section 2** presents the dissemination and communication channels of 5GENESIS reporting briefly on the figures achieved in Year 2 of the project.
- **Section 3** presents the means for coordinating, controlling, and monitoring the outreach activities of the project.
- **Section 4** lists all the activities which have been performed by the 5GENESIS consortium partners in Year 2. Results and performance are statistically evaluated against the Year 2 plan and updates are proposed to the plan of action till project conclusion.
- **Section 5**, refers to the collaborations with 5G-PPP, including the Working Groups (WG) and other 5G-PPP projects.
- **Section 6** provides concluding remarks and directions for the rest of the project lifetime.
- Finally, **Annexes 1-3** are used in order to present in detail the monthly statistical dashboards of the 5GENESIS social media and the website, as well as the three issues of the 5GENESIS newsletter published during Year 2.

1.3. Target Audience

Dissemination, demonstration and collaboration activities are performed by all the partners and differ in regard to the nature of the partner as well as the target audience. The industrial partners approach industry sectors and their distributors as well as client networks, whereas the academic and research partners target relevant research institutes and universities. Furthermore, an additional number of activities are targeted to organizations, communities, industry, academia and research institutions, as well as the general public. In specific, the target audience of D7.3 is the following:

- **5GENESIS consortium partners:** all colleagues, students, fellow professors and researchers tightly related to the personnel working on the 5GENESIS consortium.
- **Industry:** any group which has an industrial professional background, technical knowledge and expertise and is working on 5G-related areas. In this group producers, suppliers, vendors and SMEs are involved.
- **Academia and research institutions:** institutions from the ICT sector, higher education institutions like universities and educational centres as well as national, public and private research institutes.

- **Public and private service providers:** This category focuses on any 4G services, verticals, network operators which are already planning or undertaking adaptations for evolving towards 5G and beyond systems.
- **The broadest possible (technical and non-technical) audience:** all potential end users of the 5G products and services as well as the general public.

2. OUTREACH AND VISIBILITY MAXIMISATION TOOLS

The tools, and the dissemination and communication channels used during the first year of 5GENESIS have been maintained unchanged throughout year 2. The network of communication channels and means in which the dissemination and communication activities have been performed are mainly the following ones:

- 5GENESIS logo
- 5GENESIS website
- 5GENESIS social media channels
- 5GENESIS newsletter
- 5GENESIS publications in journals, conferences, workshops, poster sessions
- 5GENESIS workshops, special sessions, panels, invited talks
- 5GENESIS presentations
- 5GENESIS demonstrations
- Other means and channels such as flyers, leaflets, posters, interviews, innovation workshops, webinars, “Info Days” events, booths, poster sessions, award ceremonies, etc.

2.1.1. 5GENESIS Logo

The 5GENESIS logo has not changed in year 2. Below you can find the different kinds of logos, as well as a group of images of various sizes and shapes that are used throughout the project dissemination activities.

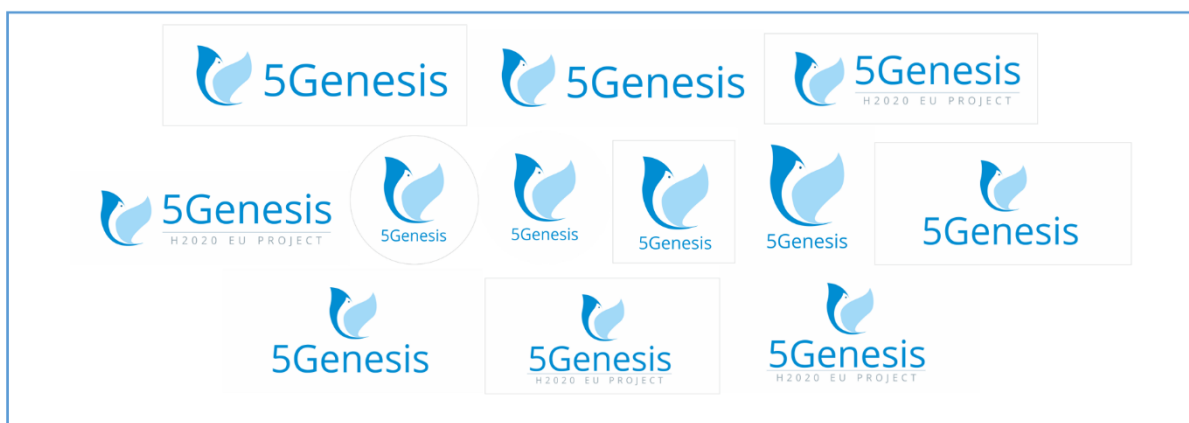


Figure 1. 5GENESIS various logo versions

2.1.2. 5GENESIS Website

The 5GENESIS website (www.5genesis.eu) remains the main means of disseminating and communicating the project’s activities, news and achievements. The 5GENESIS website is constantly updated with news, events, deliverables, and publications. As mentioned in the previous version of the dissemination and communication deliverable (D.7.2), the website’s

lifespan is to run until the end of the project, plus two more years after project completion. The website's main menu remains the same as of year 1. In specific, the main menu is: Home, Platforms, Consortium, Objectives, News, Publications-Dissemination, and Contact.

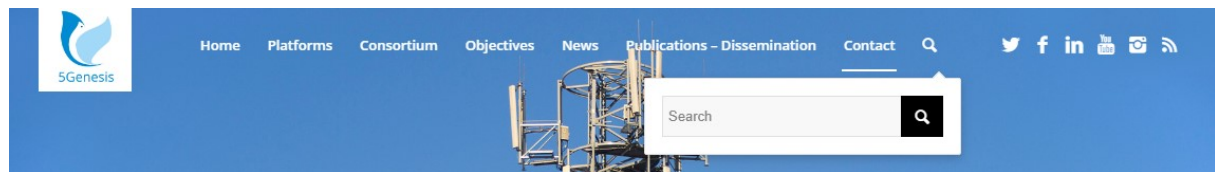


Figure 2. 5GENESIS website: Main Menu, Search tool, Social Media links.

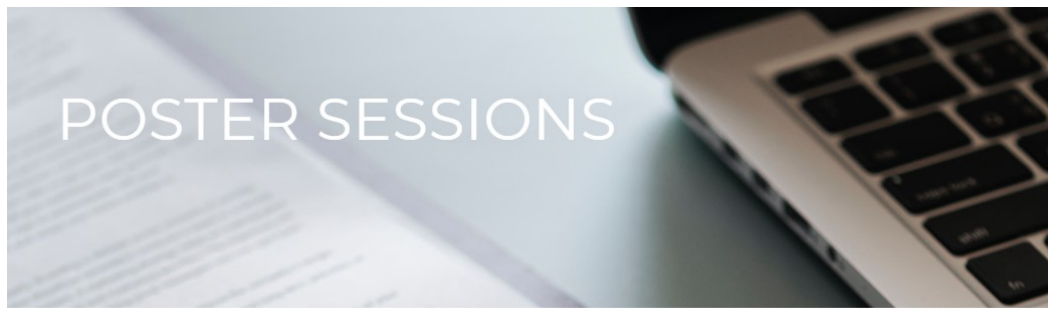
The additional information and pages (submenus) that have been added to the website starting from year 2 are:

- Under the Publications-Dissemination menu item, the **Demonstration activities** menu. The demonstration activities page shows all the demonstration activities in which the 5GENESIS partners have participated throughout the project. Below can be found the image of this webpage showing information of the performed demonstration events, the date and the location in which they took place.

DEMONSTRATION ACTIVITIES	
5GENESIS Partners have been actively present to various demo events, showcasing components of the 5GENESIS facility. You can see the events that they have participated below:	
EVENT	DATE/LOCATION
Fraunhofer Fokus FUSECO Forum	7-8/11/2019, Berlin
ETSI MCX Plugtests	22-27/09/2019, Kuopio
MEC Congress	17-19 Sept. 2019, London
5GENESIS Global 5G Event & EuCNC 2019 Demo	17-21/6/2019, Valencia, Spain
5G Forum	24-25/4/2019, Malaga, Spain
BAPCO-CCE 2019	12-13/3/2019, Coventry, UK
Mobile World Congress 2019	25-28/02/2019, Barcelona, Spain

Figure 3. 5GENESIS website: Demonstration Activities.

- In the Research Papers submenu (which resides in the main menu item Publications-Dissemination), an additional subcategory has been added with the title **White Papers**. This category features all the white papers which are published either by 5GENESIS solely or in cooperation with other projects and entities (e.g., 5G-PPP WGs or projects). The respective links of the white papers as well as the date of publication, are added next to each entry for the viewers to easily find additional information.
- Under the Publications – Dissemination menu item, the **Poster Sessions** submenu has been added. The poster sessions page features all the poster sessions which took part from the project's initiation since the present day.



	Poster Title	Event	Date/Location
1	Improving Apache Spot Using Autoencoders for Network Anomaly Detection (PDF)	EuCNC 2020	17/06/20, Virtual Event
2	A modular small-scale platform for experimentation over mobile networks (PDF)	TMA 2020	10 – 11/06/20, Virtual Event
3	Poster Presentation: A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case (PDF)	MSWIM '19	25-29/11/ 2019, Miami
4	Poster Session Presentation: QoE-based Analysis of Real-Time Adaptive 360-Degree Video Streaming	Wireless of the Students, by the Students, and for the Students Workshop (S3) @ ACM Mobicom 2019	21/10/2019, Los Cabos, Mexico
5	5GENESIS Poster Session	3rd Workshop on Mobile Network Measurement (MNM'19)	17/06/2019, Paris, France
6	5GENESIS Poster Session	EuCNC 2019	18-21/06/2019, Valencia

Figure 4. 5GENESIS website: Paper Sessions.

2.1.2.1. Constantly Updated Website Sections

The 5GENESIS website has specific sections which are constantly updated on a daily/weekly basis as already done during year 1. These website's sections/pages are the following: news, research papers, events, demonstration activities, published articles, newsletters, workshops, presentations, poster sessions, demonstrations and deliverables. Below can be found a detailed description of some of the aforementioned webpages.

- **News:** This section is updated regularly since the project initiation with the project's activities and achievements (indicatively mentioned research papers, publications, deliverables, workshops, presentations, demonstrations as well as interesting news/articles regarding 5G-PPP, interactivity with other research projects, General Assembly (GA) meetings etc.). The structure of the news section page remains the same, with the viewer to be able to click on a news entry in order to read the full post/article. A newsletter subscribe option resides at the right side of the news, prompting new viewers to subscribe for the upcoming newsletters (they are automatically delivered to their registered email). Below the newsletter subscription can be found a twitter feed in order to be informed of the latest 5GENESIS posts.

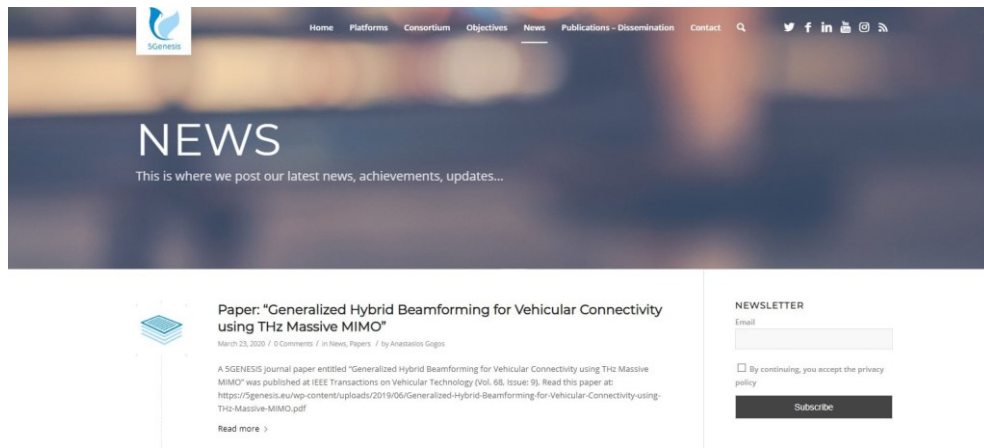


Figure 5. 5GENESIS website: News page

- **Research Papers:** In this page can be found 5GENESIS research papers which have been published in journals, conferences, workshops as well as various white papers. Each one of the aforementioned papers has its date of publication, location of publication as well as its respective links to be accessed.
- **Published Articles:** In this page can be found articles published in newspapers, magazines or various other sources related to project's and partners activities. These articles are available to read online or to download (depending on their format) by accessing their respective link.
- **Presentations:** This page presents a list of presentation activities which the 5GENESIS partners have participated in. Various presentations are taking place in conferences, workshops and other events.
- **Deliverables:** This page aims at presenting the deliverables of the project's lifespan. These deliverables are updated regularly and disseminated accordingly via the website and the social media channels, once issued and submitted to the EC portal.
- **Newsletters:** This page aims at presenting all the newsletter issues which have been released so far. The newsletters are issued quarterly and are published in the website immediately after their release. Then they are communicated via the subscribers mailing list and the social media channels.
- **Workshops:** In this page information in regard to workshops in which 5GENESIS participates, organizes or co-organizes along other projects are provided.
- **Events:** This page presents information regarding various past events in which the 5GENESIS Project partners have been involved. The events are with descending order, starting from the latest events and ending to the first event in which 5GENESIS participated.

2.1.3. 5GENESIS Social Media Channels

5GENESIS is already active since the project's creation in 2018, in various commonly used social media channels such as Twitter, Facebook, LinkedIn, Instagram and YouTube. Since the beginning of the project, these social media channels regularly communicate activities, in which the 5GENESIS partners participated, and achievements succeeded so far. Social media channels play an important role in 5GENESIS dissemination and communication activities as the project's initiatives and achievements are constantly promoted to a wider audience, which 5GENESIS targets at. The social media content which is communicated via the official 5GENESIS social media channels spans from research papers and publications to newsletters, conferences, workshops and other activities related to 5GENESIS. Since September 2018, 5GENESIS targeted posts (promoting specific core activities of the project) by bearing the hashtag "#LearnAbout5GENESIS" in all the social media platforms, differentiating in this way such posts from the other post activities.

The links to the aforementioned 5GENESIS social media channels are the following:

- 5GENESIS Twitter account "@5genesis_h2020": www.twitter.com/5genesis_h2020



Figure 6. 5GENESIS Twitter Channel

- 5GENESIS LinkedIn account “5GENESIS Project”: www.linkedin.com/in/5genesis-h2020/

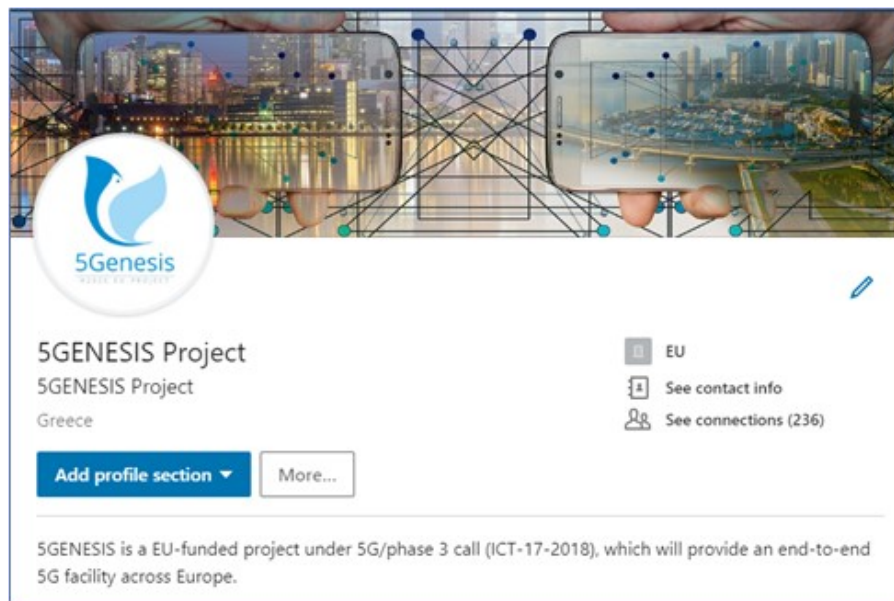


Figure 7. 5GENESIS LinkedIn Account

- 5GENESIS Facebook account “@5genesis”: www.facebook.com/5genesis

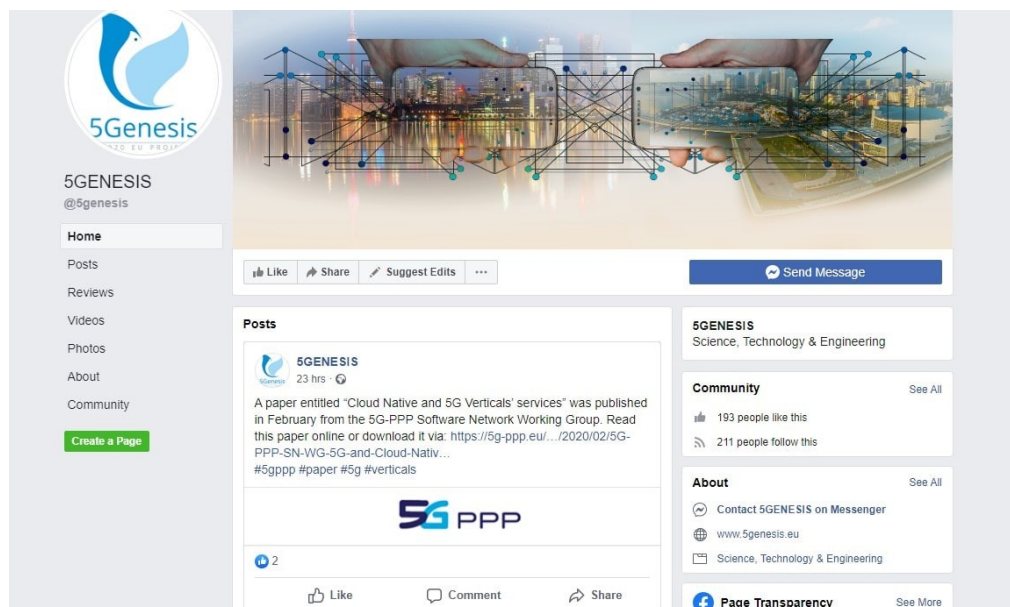


Figure 8. 5GENESIS Facebook Page

- 5GENESIS Instagram account "5genesis_h2020": www.instagram.com/5genesis_h2020/



Figure 9. 5GENESIS Instagram Account

- 5GENESIS YouTube Channel: www.youtube.com/channel/UCrT3GgwTi3nGiHLWmKUkxug

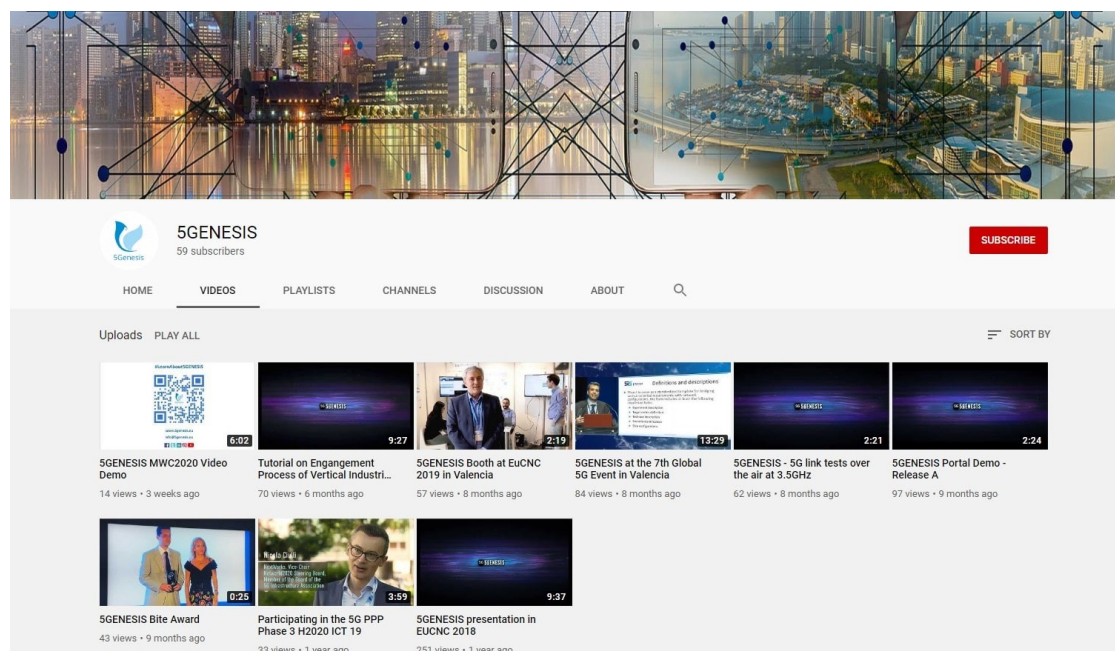


Figure 10. 5GENESIS YouTube Channel

2.1.4. 5GENESIS Newsletter

The 5GENESIS Newsletter is issued quarterly since the beginning of the project in 2018. Each newsletter issue is firstly communicated via e-mail to the project's partners, then to all the mailing list subscribers and finally it is posted at the official website and via 5GENESIS social media channels. In the official website, a new user is able to subscribe to the project's mailing list in order to receive project's news and information regarding the latest newsletter issues. The newsletter content differentiates from issue to issue due to the nature of activities and achievements per period. However, there are permanent sections on each issue such as GA meetings, deliverables and dissemination events. All the newsletter issues published so far can be accessed at a dedicated page at the official website (<https://5genesis.eu/category/newsletter/>), where they can be read online or downloaded.

2.1.5. 5GENESIS Publications

This section presents the various types of publications where 5GENESIS has been involved during year 2 and has been used as the core means of project dissemination and communication activities.

2.1.5.1. Publications in Conferences, Journals and Workshops

5GENESIS published papers in conferences, journals and workshops during the second project year. In total, ten (10) papers have been published in journals and conferences and three (3) papers in workshops where 5GENESIS partners have participated. More details are provided in Sections 4.2.1. and 4.2.2.

2.1.5.2. Other Publications

Additional publications have been made by 5GENESIS partners addressing the general public interest. Through such publications, 5GENESIS aims at presenting the project to a wider and less technical audience, through means of general attention such as newspapers, online media and websites, white papers as well as magazines. Currently, ten (10) articles have been published by various 5GENESIS partners in a number of print and online media and six (6) white papers. More details are provided in Section 4.2.3.

2.1.6. 5GENESIS Workshops, Special Sessions, Panels, Invited Talks

5GENESIS partners have participated and organized or co-organized numerous workshops, special sessions, panel discussions and invited talks since the beginning of the project.

Currently, 5GENESIS has co-organised two (2) workshops, participated in six (6) panels discussions and invited talks, and also participated in eleven (11) other various events such as poster sessions, and business/tech days. Unfortunately, due to the COVID-19 impact the organization of workshops was severely affected since most events were either cancelled or even if they turned into virtual events the workshops activity was cancelled. More details on the above activities are provided in Sections 4.2.4, 4.2.6 and 4.2.7.

2.1.7. 5GENESIS Presentations

During the second year of the project, 5GENESIS partners have made several presentations in conferences, workshops and events, in various countries, addressing the audience with the characteristics, advances, and main achievements of 5GENESIS. Due to COVID-19 impact, several presentations were made remotely to events that turned into virtual ones instead of face to face. Currently, 5GENESIS partners, have participated in 15 presentations promoting the project in various events. Detailed analysis of the presentations is given in Section 4.2.5

2.1.8. 5GENESIS Demonstration in industrial exhibitions and scientific events

The 5GENESIS demonstration plan targets to leverage on all the 5 platforms (Athens, Malaga, Berlin, Limassol, Surrey), so that each one of them can participate at least to one demonstration event before project conclusion. Remote access will be used so that these platforms are reachable from the physical event location. Furthermore, emphasis is given to the portable demonstrator, as the major driver to run real-life demos in exhibitions and demo events so as to draw the attention of potential vertical industries. Moreover, the portable demonstrator aims at the general audience in order to showcase the advances of 5G, focusing on market-related features, like downloading speed and service provision agility. In year 2, 5 demos were presented. More info can be found in Section 4.2.8

2.1.9. Other Means and Channels

5GENESIS uses additional means and channels in order to raise awareness of the project and its activities. The additional means and channels used since year 1 are:

- Flyers and leaflets
- Banners and posters
- 5GENESIS Handbook
- Participation in 'Info Days' events, Innovation, Poster sessions, Business events, and innovation workshops (for the project's members)

2.1.9.1. Flyers and Leaflets

Since the beginning of the project, the leaflet has been constantly kept updated. Below can be found an updated version of it, released in the beginning of 2020. The leaflet aims at promoting the project's vision, introducing the partners, the platforms and the project's cycles.

5th Generation End-to-end Network, Experimentation, System Integration, and Showcasing
A Large-Scale Facility for 5G Experimentation

OUR VISION

5GENESIS aims at offering to the research community, the industry, the SMEs and especially the 5G verticals a Facility and an open set of tools to facilitate 5G and beyond experiments. New 5G use cases and services could be run, new algorithms and novel technologies could be used in the Facility to assess the capability of the European-based R&D innovation to reach and exceed the 5G KPIs. This will be achieved by integrating highly diverse results and technologies from EU, global as well as internal (corporate) R&D projects, to "glue together" the 5G picture and unveil the potential of a truly full-stack, end-to-end 5G Facility, which can leverage the functionalities of five Platforms (see overview).

OUR ROAD MAP

In order to achieve a smooth evolution and a concurrent validation of the Facility, its development is organized into three main integration cycles, each one lasting for 6 months. The scope of each integration cycle is to upgrade each of the five experimentation Platforms with the latest technical achievements and results from all relevant R&D activities as well as to align it with the most current edition of the 5G standards. Each integration cycle will be followed by a 3-month testing phase.

OUR TEAM

The 5GENESIS consortium was swiftly crafted in order to contain all the different expertise and experiences needed to make the 5G Facility a reality. Our consortium is built around the need for bringing together heterogeneous players, with the required expertise and background in 5G technologies and in the target testbeds and vertical sectors. The consortium brings together 29 partners from 12 countries, (Germany, France, UK, Spain, Italy, Ireland, Israel, Greece, Cyprus, Norway, Sweden and Portugal)

The research conducted under the 5GENESIS project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 815178

5th Generation End-to-end Network, Experimentation, System Integration, and Showcasing
A Large-Scale Facility for 5G Experimentation

The 5GENESIS Facility is based on five end-to-end experimental Platforms, distributed across Europe, having complementary features, yet all implementing the full 5G stack. Each one of the five Platforms is associated to one consortium partner, which leads and steers the operations of the Platform, and acts as the main point of contact for verticals and entities external to 5GENESIS that would like to submit a request for experimentation.

THE SURREY PLATFORM
Multiple radio access technologies that can support massive Machine Type Communications (mMTC), including 5G NR and NB-IoT, combined under a flexible Radio Resource Management (RRM) and spectrum sharing platform to showcase massive IoT services. Led by UoL of Surrey. Contact: surrey@5genesis.eu

THE BERLIN PLATFORM
Ultra dense areas covered by various network deployments, ranging from indoor nodes to nomadic outdoor clusters, coordinated via advanced backhauling technologies to showcase immersive service provisioning. Led by Fraunhofer FOKUS. Contact: berlin@5genesis.eu

THE MALAGA PLATFORM
Automated orchestration and management of different network slices over multiple domains, on top of the 5G NR and fully virtualised core network to showcase mission critical services in the lab and in outdoor deployments. Led by UoL of Malaga. Contact: malaga@5genesis.eu

THE ATHENS PLATFORM
An edge-computing enabled shared radio infrastructure, with different ranges and overlapping coverage that are supported by an SD-WAN enabled core, to showcase secure content delivery and low latency applications. Led by NCSS "Demokriton". Contact: athens@5genesis.eu

THE LIMASSOL PLATFORM
Radio interfaces of different characteristics and capabilities, combining terrestrial and satellite communications, integrated to showcase service continuity and ubiquitous access in underserved areas. Led by Space Hellas (Cyprus) Ltd. Contact: limassol@5genesis.eu

STAY TUNED!

<http://5genesis.eu>
[@5genesis_h2020](https://twitter.com/5genesis_h2020)
Latest technical achievements: <http://5genesis.eu/deliverables>

5GENESIS Project
info@5genesis.eu

Figure 11. 5GENESIS Main Leaflet (front and back side)

In parallel, for being able to communicate and promote more effectively and efficiently the different characteristics, specifications, objectives and use cases of each platform, five additional leaflets have been developed since year 1, each one focused on a single platform.

All platform leaflets are constantly updated, and new versions will be released for communicating the latest information and achievements to the public.

2.1.9.2. Banners and Posters

The 5GENESIS Project has created banners and posters for promotion activities in conferences, workshops and other events. Banners and posters are used in order to support the project's achievements since the beginning of the project (for more details one can refer to D7.2).

3. MEANS FOR COORDINATING, MONITORING AND CONTROLLING ACTIVITIES

In order for the 5GENESIS partners to monitor all planned and upcoming activities, appropriate tools are used so as to spot easily any kind of problems that may arise in comparison to the initial plan. These monitoring and control mechanisms are in place since the project's initiation and are constantly reviewed, adapted, and updated to the latest needs of the project and its partners.

3.1.1. BSCW file sharing portal

5GENESIS partners use an online file sharing portal since the beginning of the project in order to share files and collaborate with each other. This file sharing portal has been developed by the Fraunhofer Society and its access link is: [https://bscw.fokus.fraunhofer.de.](https://bscw.fokus.fraunhofer.de/) (access granted only to project partners). The user enters the website and uses a personal username and password in order to connect to the 5GENESIS portal.

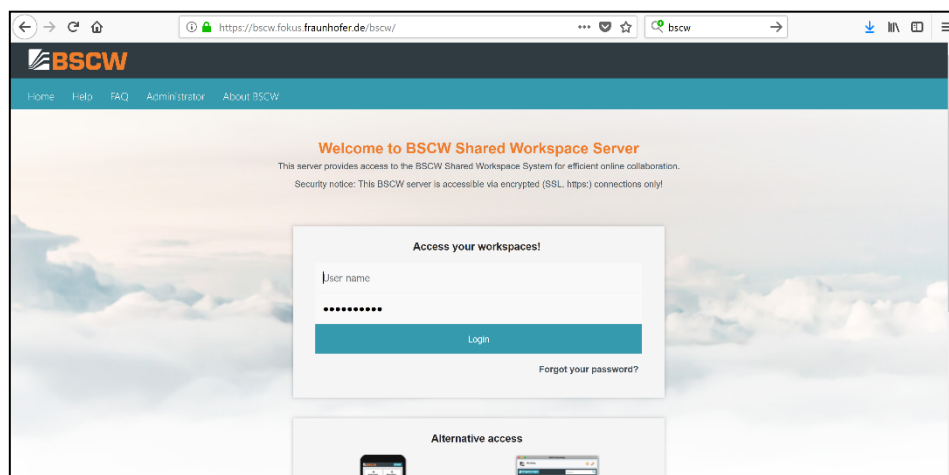


Figure 12. BSCW portal

An inside of the BSCW portal shows various folders with their respective subfolders, which are updated regularly. Each of these folders and subfolders addresses a different need in terms of the project scope, thus prompting the partners to easily find files, folders and information that they are looking for. Below is shown a figure of the 5GENESIS BSCW portal:

- 5-Genesis
 - Portal
 - Portal of 5-Genesis
 - Group Calendar
 - Calendar of 5-Genesis
 - Contact List
 - Contact List of 5-Genesis
 - 5G-PPP
 - Administrative Items
 - Proposal, Consortium Agreement, Grant Agreement, documents from the negotiating partners
 - Documents submitted to EC
 - Collection of final (!) versions of documents as submitted to the EC (e.g. deliverables, reports, etc.)
 - Git-Repository
 - Meetings
 - Venue information; Agendas, etc.
 - Public Documents
 - Documents, which are classified as PUBLIC (e.g. published papers, public presentations, etc.)
 - Telco Minutes
 - Templates
 - Work Packages
 - Working areas for each WP
 - Platform Specific Telco Details [0.1]

Figure 13: Structure of 5GENESIS project repository (BSCW)

3.1.2. WP7 activities and impact tracking file

The activities that the 5GENESIS partners performed or planned to perform are documented in an excel file with the distinctive title “WP7 activities”, residing in the WP7 folder in the BSCW portal. All project’s partners have access to this excel file and it is updated regularly with workshops, research papers, conferences and other activities in which 5GENESIS participated or plans to participate. The WP7 activities excel file contains information of each of the documented activities such as the title of the activity, who is involved, the date and location of the activity as well as additional information regarding it (e.g., an url link). If the status of an activity is pending (e.g. a paper was submitted to a conference but its acceptance is not already known), then it is marked with a red colour, so to easily stress that an update is due once the pending decision on its status will be taken (e.g. accepted, or rejected).

121	37	D. Tsolkas - FOGUS	A metaheuristic approach for minimizing service of	https://2020.ieee-icc.org/	Paper accepted - CGRM track				
122	38	SGENESIS	SGENESIS at FUSECO Forum in Berlin	https://www.iit.demokritos.gr/news-events/miniat-fuseco-forum-in-berlin-germany/	A SGENESIS article at NCSRD website				
123	39	SGENESIS	SGENESIS at the 7th Global 5G Event in Valencia	https://www.iit.demokritos.gr/news-events/miniat-global-5g-event-in-valencia-spain/	A SGENESIS article at NCSRD website				
124	40	SGENESIS	SGENESIS at EUNIC 2019	https://www.iit.demokritos.gr/news-events/miniat-eunic-2019-in-valencia/	A SGENESIS article at NCSRD website				
125	41	Fraunhofer FOKUS	5G in practical tests: Temporary network at the Festival of Lights, Nov 7 2019	http://web.archive.org/http://www.fokus.fraunhofer.de/en/fokus/news/BerlinFestivalOfLight_2019-11	Field Trial at the Festival of Lights 2019 in Berlin, researchers from Fraunhofer FOKUS conducted a field trial as part of the EU project SGENESIS with partners from IWR, Humboldt-Universität zu Berlin, Karlsruher University, NetApp and Simula Research Laboratory at Festival of Lights 2019 in Berlin.				
126	42	SGENESIS	Top 5G Tests at the 5G FORUM in Malaga	SG FORUM Website, 10/01/2020	Malaga's experimental 5G Network will be presented at the 5G Forum 2020 in Malaga (6-7 May), where Prof. Pedro Merino will present the SGENESIS Malaga platform status under the title "SGENESIS Malaga, a 5G platform open to innovation". As per the 5G Forum article, besides the University of Malaga, SGENESIS partners Telefonica, Remerget, Malaga Police and Municipality of Malaga will cooperate in the deployment and testing of the 5G network. More information for the SGENESIS presence in the event is available at: https://www.5gforum.eu/en/top-5g-tests-at-the-Prof.-Pedro-Merino-will-present-the-SGENESIS-Malaga-platform-status-under-the-title-5GENESIS-Malaga-a-5g-platform-open-to				
127	43	UMA	SGENESIS Malaga, a 5G platform open to innovation	SG FORUM, MAY 6 - 7/2020,MALAGA					
128	44	UMI, SRL, UMA, et al.	IEEE International Symposium on Personal, Indoor and Mobile Radio Communications? (Currently on hold b/c of lab access restrictions due to COVID-19 [conference paper])	IEEE Transactions on Network and Service Management? (Currently on hold, see above) [journal]	Initial work towards implementing SGenesis Analytics component. G	progress	UMI, SRL, UMA	3	x
129	45	SRL, UMI, UMA, KAU, et al.	Analytics for 5G Open Experimentation Platforms	IEEE Transactions on Network and Service Management? (Currently on hold, see above) [journal]	Description of SGENESIS monitoring and analytics framework	progress	UMI, SRL, UMA	3	x
130	46	UMI et al.	A Monitoring and Analytics Framework for 5G Management? (Currently on hold, see above) [journal]	No target yet, pending on APEX integration in 5M [journal paper]	Dynamic slice optimisations with the APEX adaptive policy engine at	Planned	UMI et al.	3	x
131	47	SRL	Dynamic slice optimisations with APEX						
132	48	SRL	"Resilient Hybrid SatCom and Terrestrial Networking for Unmanned Aerial Vehicles"	accepted, IEEE INFOCOM/WSN Workshop, 2020	Considers a novel protocol for hybrid satcom and terrestrial communications for UAVs.				
133	49	SRL, KAU	"Preliminary Learning-based Multipath Scheduling for Dynamic Heterogeneous Environments"	accepted, IEEE SAC/SPAC Special Issue on Advances in Artificial Intelligence and Machine Learning for	Considers a novel online learning based protocol for multipath transmission under heterogeneous networks.				
134	50	SRL, KAU	"Coverage and Deployment Analysis of Narrowband Internet of Things in the Wild"	submitted, IEEE Communication Magazine					
135	51	SG, KAU, SRL	"Guidelines for an Energy Efficient Tuning of the NB-IoT Stack"	to be submitted, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications					
136	52	SG-PPP Software Network Working Group			This paper depicts the three phases to evolve from Virtual Network Functions (Vnfs) to Cloud-Native Functions (CNFs). Read more at https://5g-ppp.eu/wp-content/uploads/2020/02/5G-PPP-SN-WG-SG-and-Cloud-Native.pdf				
137	53	Cloud Native and 5G Verticals' services	SGPPP, 02/20						

Figure 14: 5GENESIS WP7 Activities tracking file

3.1.3. 5GENESIS Social Media and Website Statistical Dashboards

INFOLYSiS, T7.1 leader, is responsible for the collection, processing and visualization of the social media and website data. Data from those sources are collected and then processed and visualized with the use of Google Data Studio. The statistical dashboards are issued monthly and are distributed internally at the beginning of each month via email to the 5GENESIS WP7 mailing list. All the monthly statistical dashboard links are maintained in a word document in the BSCW repository, thus making it easier for each partner to access them at any time. The statistical dashboards, as previously stated, are issued monthly but upon request they can be issued for a longer period of time such as quarterly or annually.

More details on annual and monthly 5GENESIS social media and website dashboards are provided in Sections 4.3.2, 4.3.3, and in [Annex 1 – Monthly 5GENESIS Social Media Statistical Dashboards](#) and [Annex 2 – Monthly 5GENESIS Website Statistical Dashboards](#).

3.1.4. WP7 telcos

WP dedicated telcos are another monitoring method of the 5GENESIS activities. These telco meetings take place weekly, biweekly or monthly depending on the activities and the need arising by the partners. Each of the work packages has its respective set of telco dates for the meeting. Meetings regarding WP7 activities take place each month and the partners discuss the progress so far as well as the next steps to be taken towards their planned actions.

3.1.5. WP7 mailing list/emails

5GENESIS has distinctive mailing lists for each of the WPs in order for the partners to be informed of the current status of the WPs of the project, as well as the upcoming activities. Besides the specific mailing lists of each of the WPs, there are general mailing lists which address general topics that may be of interest to all the project's partners. The general mailing list is used in order to communicate in a better way, information which are not relevant to the other WPs. The WP7 mailing list is used in order to coordinate the activities of the partners as well as promote, align and coordinate various dissemination activities, such as an upcoming newsletter issue or a paper co-authored by several partners.

3.1.6. Year 1 EC review meeting and Preparatory meeting

During the reporting period the first review meeting of the project took place successfully in September 2019.

- **EC Review – Year 1 (26/09/2019)**

The 5GENESIS first year review took place at EC premises in Brussels on the 26th of September 2019. The partners presented to independent experts of EC the project's first year achievements and also organized two live demos.



Figure 15. 5GENESIS partners in EC Review in Brussels.

- **Preparatory Review Meeting, Munich (5-6/09/2019)**

The preparatory review meeting of the 5GENESIS Project was held at Intel's premises in Munich, Germany on the 5th and 6th of September 2019. During these two days, fruitful discussions, presentations, rehearsals and demos took place for preparing the presentations and demos to be used for the year 1 project review in Brussels.



Figure 16. 5GENESIS partners in the Preparatory Review Meeting in Munich.

3.1.7. GA Meetings

The 5GENESIS partners, since the project initiation, have organized various GA Meetings in different locations. The GA Meetings of the second year have been organized in: Berlin and Madrid, and following the lock-down due to OVID-19, a third meeting took place as a remote one (virtual). The GA meetings serve as an opportunity to meet among all partners, discuss the project's current and upcoming activities as well as the action plans that need to be taken, and finally to reflect and assess on the current status of the project. In case of need, countermeasures are adopted, and risk assessment are constantly kept updated. In specific, Table 1 summarizes all year 2 5GENESIS GA meetings and further below each one is briefly analyzed.

GA Meetings		
Meeting	Location	Date
Sixth Meeting	Fraunhofer FOKUS, Berlin, Germany	26-28/11/2019
Seventh Meeting	Telefonica/Atos, Madrid, Spain	18-20/01/2020
Eighth Meeting	Virtual Meeting	5-7/05/2020

Table 1. 5GENESIS GA meetings during year 2

- **Sixth GA Meeting in Berlin (26-28 November 2019)**

The 5GENESIS 6th GA meeting took place at the Fraunhofer FOKUS premises in Berlin, Germany, from the 26th to the 28th of November 2019. 5GENESIS partners worked together in order to evaluate the project's progress as well as plan the upcoming activities. The meeting's schedule followed a set of presentations, demos, discussions, various activities and several parallel technical and platform-specific sessions.

Moreover, three ICT-19 projects (5G!Drones, 5G-VICTORI, 5G-HEART) were introduced and presented to 5GENESIS partners with focus on the use cases that will use the 5GENESIS facilities (More information available in Section 5.3.1).



Figure 17. 5GENESIS partners in sixth GA meeting (Berlin, Germany)

- **Seventh GA Meeting in Madrid (18-20 February 2020)**

The 5GENESIS 7th GA meeting was hosted by Telefonica and Atos in Madrid, Spain from the 18th to the 20th of January 2020. 5GENESIS partners worked together in order to evaluate the project's progress as well as to plan the upcoming activities and trials. The meeting's schedule followed a set of presentations focused around WP2-WP7 activities, technical parallel sessions, discussions and various platform specific activities.

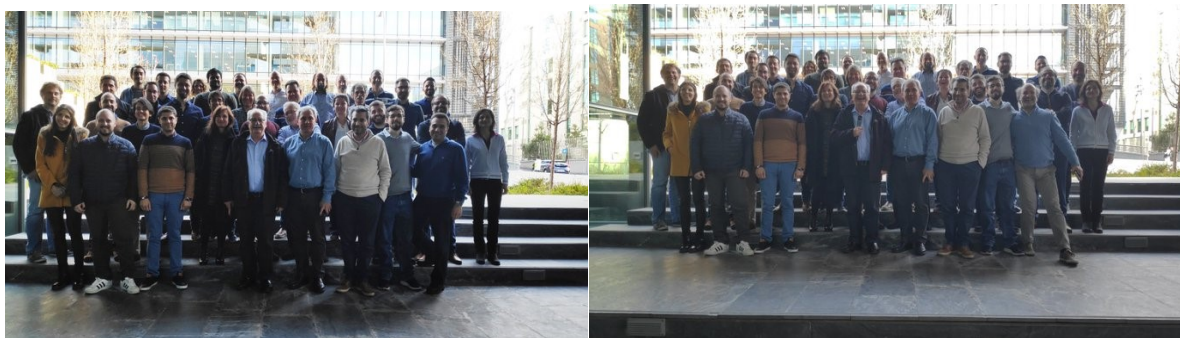


Figure 18. 5GENESIS partners in the seventh GA meeting (Madrid, Spain)

- **Eighth GA Meeting (Virtual Meeting, 5-7/05/2020)**

Due to the COVID-19 impact and safety restrictions that apply worldwide, the 8th 5GENESIS GA went virtual. It run for 3 days (5-7 May 2020) discussing the project progress, trial activities and impact due to COVID-19, upcoming deliverables, demos and goals to be met. All WP activities were under discussion among all involved partners. With this virtual GA meeting we highlighted the moto “We stay online! We stay safe! We keep progressing!”.



Figure 19. 5GENESIS some of the partners participating to the 8th GA meeting (Virtual Meeting)

4. OUTREACH ACTIVITIES IN YEAR 2

This section focuses on year 2 performance and statistics related to the 5GENESIS outreach activities, including also details, information, and references of the activities performed.

4.1. Dissemination and Communication Goals of year 2

As per 5GENESIS communication and dissemination plan (for reference refer to project deliverable D7.1), specific dissemination and communication goals had been set for year 2. The goals set provide an indicative number of publications of scientific results and of practical experiences to the largest scientific and industrial communities, conferences and journals, demonstrations in industrial exhibitions and scientific events.

The overall project quantitative goals of Table 2 form the baseline of dissemination and communication activities for the entire lifespan of the project (as already set at the 5GENESIS proposal).

Activity	Metrics to measure impact	Goal	Timing (3 years)
Publications	Number of publications	>50 in total (>25 in journals conferences, workshops)	Workshops: year 1-3 Conferences: year 1-3 Journals: years 2-3 (and after the end of the project)
Demonstrations in industrial/exhibitions and scientific events	Number of presentations	>10	5GENESIS demonstrations at the end of each integration cycle

Table 2. 5GENESIS Overall Dissemination and Communication Goals

As already stated in D7.2, 5GENESIS dissemination activities will differ in intensity based on the time evolution of the project and existing circumstances. In order to better monitor the intensity and set the corresponding goals per time period, the dissemination activities will be divided and carried out in three main annual phases:

- Phase 1: M1-M12.
- Phase 2: M13-M24.
- Phase 3: M25-till and after project end.

The intensity will differ per phase and the set goals should reflect this differentiation. As a result, a split ratio percentage of 20/35/45, approximately, has been used for setting the minimum planned goals per phase (based on the total quantitative figures and the timeline already set in Table 2 for the entire project lifetime).

Following the above split ratio, Table 3 summarizes the year 2 goals set at D7.2 for the period July 2019-June 2020) for 5GENESIS dissemination and communication activities.

Activity	Year 2 Goals
Publications (in Journals/Conferences)	>8 in journals/conferences/workshops (>17 in total)
Publications (in Workshops)	
General Publications (Magazines, Books, Websites, Newspapers)	
Workshops (organized by 5GENESIS, co-organized with other projects, participation)	>8
Presentations (in Conferences, Workshops, InfoDays, Events)	>8
Participation in Conference Panels and Invited Talks	>4
Others (Exhibitions, Business Days, Booths in Conferences, Poster Sessions, Awards)	>8
Demonstrations in industrial/exhibitions and scientific events	>3
Year 2 Total number of targeted activities and articles	>48

Table 3. 5GENESIS Dissemination and Communication Goals of the second year

4.2. Summary of Dissemination and Communication Achievements of year 2

This section focuses on reporting 5GENESIS communication and dissemination activities performed during the second year per type of activity. Table 4 summarizes all the year 2 successfully performed 5GENESIS dissemination and communication activities (per type of activity).

Activity	Y2 Achievements
Publications (in Conferences /Journals)	10
Publications (in Workshops)	3
General Publications in Magazines, Books, Websites, Newspapers, White Papers	16
Workshops (organized by 5GENESIS, co-organized with other projects, participation)	2
Presentations (in Conferences, Workshops, InfoDays, Events)	15
Participation in Conference Panels and Invited Talks	6
Others (Exhibitions, Business Days, Booths in Conferences, Poster Sessions, Awards)	11
Demonstrations in industrial/exhibitions and scientific events	5
Year 2 Total number of activities and articles	68

Table 4. Year 2 Dissemination and Communication activities

4.2.1. Publications in Conferences and Journals – Year 2

During year 2, 5GENESIS partners submitted various papers for publication to conferences and journals. All year 2 publications in conferences and journals are summarized in Table 5 where information on the title of the paper, the event/journal date, the location/Issue number as well as a link for downloading the papers in pdf format is provided.

Publications in Conferences and Journals				
	Title	Event/Journal	Date/Location/issue	Accepted preprint version Download Link and DOI
1	A meta-heuristic approach for minimizing service creation time in slice-enabled networks	IEEE ICC 2020	7-11/06/20, Dublin	https://5genesis.eu/wp-content/uploads/2020/03/ComSoc-A-nature-inspired-meta-heuristic-approach-for-minimizing-service-creation-time-in-slice-enabled-networks.pdf
2	A Deployable Containerized 5G Core Solution for Time Critical Communication in Smart Grid	ICIN 2020	24-27/2/2020, Paris	https://5genesis.eu/wp-content/uploads/2020/06/ICIN-demo-paper.pdf (DOI: 10.1109/ICIN48450.2020.9059397)
3	Peekaboo: Learning-based Multipath Scheduling for Dynamic Heterogeneous Environments	IEEE JSAC Special Issue on Advances in Artificial Intelligence and Machine Learning for Networking	2020	https://5genesis.eu/wp-content/uploads/2020/04/Peekaboo-Learning-based-Multipath-Scheduling-for-Dynamic-heterogeneous-environments.pdf (DOI: 10.1109/JSAC.2020.3000365)
4	What are 3GPP 5G Phase 1 and 2 and What Comes After	SIRS 2019, the 5th Symposium on Signal Processing and Intelligent Recognition System	18-21/12/2019, Trivandrum, India	https://5genesis.eu/wp-content/uploads/2020/03/What-are-3GPP-5G-Phase-1-and-2-and-What-Comes-After.pdf (DOI: https://doi.org/10.1007/978-981-15-4828-4_32)
5	Handover Optimality in Heterogeneous Networks	IEEE 5G World Forum	30.09-02.10.2019, Dresden	https://5genesis.eu/wp-content/uploads/2019/10/Hand-over-optimality-in-heterogeneous-networks.pdf (DOI: 10.1109/5GWF.2019.8911617)

6	A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case	JITEL 2019,XIV Jornadas de Ingeniería Telemática	22-24/10/2019, Zaragoza, Spain	https://5genesis.eu/wp-content/uploads/2019/11/A-Coordination-Framework-for-Experimentation-in-5G-Testbeds.pdf (DOI: 10.1145/3345770.3356742)
7	Improving ultra-reliable low-latency communication in multiplexing with enhanced mobile broadband in grant-free resources	PIMRC 2019, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications	8-11 September 2019, Istanbul, Turkey	https://5genesis.eu/wp-content/uploads/2019/09/Le-2019-Improving-ultra-reliable-low-.pdf (DOI: 10.1109/PIMRC.2019.8904368)
8	ThingsLocate: A ThingSpeak-Based Indoor Positioning Platform for Academic Research on Location-Aware Internet of Things	MDPI Technologies	Vol. 7, Issue 3 Sept. 2019	https://5genesis.eu/wp-content/uploads/2019/09/ThingsLocate_SRL_published.pdf (DOI: 10.3390/technologies7030050)
9	Strategies to meet the configured repetitions in URLLC Uplink grant-free transmission	ISWCS 2019, 16th International Symposium on Wireless Communication Systems	27-30 August 2019, Oulu, Finland	https://5genesis.eu/wp-content/uploads/2019/09/Le-2019-Strategies-to-meet-the-configured-repetitions.pdf (DOI: 10.1109/ISWCS.2019.8877344)
10	How Formal Methods Can Contribute to 5G Networks	From Software Engineering to Formal Methods and Tools, and Back. Lecture Notes in Computer Science	Vol 11865, Oct 2019, Springer, Cham	https://link.springer.com/chapter/10.1007/978-3-030-30985-5_32 (DOI: https://doi.org/10.1007/978-3-030-30985-5_32)

Table 5. Publications in Conferences and Journals

4.2.2. Publications in Workshops and Special Sessions of Conferences– year 2

5GENESIS publications in workshops and special sessions of conferences during year 2 are summarised in Table 6. Information on the workshop name, the title of the paper, the date of the event along with a link for downloading the papers in pdf format is given.

Publications in Workshops/Special Sessions of Conferences					
	Title	Workshop	Event	Date/Location	Accepted preprint version Download Link
1	Resilient Hybrid SatCom and Terrestrial Networking for Unmanned Aerial Vehicles	WISARN Workshop	IEEE INFOCOM	6-9/07/2020, Toronto, Canada	https://5genesis.eu/wp-content/uploads/2020/04/Resilient-Hybrid-SatCom-and-Terrestrial-Networking-for-Unmanned-Aerial-Vehicles.pdf
2	Empirical Analysis of LoRaWAN Adaptive Data Rate for Mobile Internet of Things Applications	Wireless of the Students, by the Students, and for the Students Workshop (S3)	ACM Mobicom 2019	21/10/2019, Los Cabos, Mexico	https://5genesis.eu/wp-content/uploads/2019/09/LoRaWAN_SRL.pdf
3	Evaluation Framework for Real-Time Adaptive 360-Degree Video Streaming over 5G Networks	Wireless of the Students, by the Students, and for the Students Workshop (S3)	ACM Mobicom 2019	October 21, 2019, Los Cabos, Mexico	https://5genesis.eu/wp-content/uploads/2020/01/Evaluation-Framework-for-Real-Time-Adaptive360-Degree-Video-Streaming-over-5G-Networks.pdf

Table 6. Publications in Workshops and Special Sessions of Conferences

4.2.3. General Publications in Magazines, Books, Newspapers, Websites– year 2

5GENESIS year 2 publication of papers and articles in media of general interest such as newspapers, magazines and journals, books and websites or online journals are summarized in Table 7. A link for either visiting the electronic version of the media that hosted the publication or for downloading the publication in pdf format is provided.

Papers/Articles (in magazines/books/newspapers/websites)				
	Title	Media	Date	Link
1	Israeli companies leading global 5G revolution	CTECH	17.06.20	https://www.calcalistech.com/ctech/articles/0,7340,L-3833773,00.html
2	5GForum event	Atos Official Website	04/05/2020	https://atos.net/es/events/5gforum
3	5G is driving the world crazy, but what is it really?	CTECH	17/06/2020	https://www.calcalistech.com/ctech/articles/0,7340,L-3833874,00.html
4	The third edition of the most important Spanish event of 5G technology will be virtual	Atos Official Website (Booklet, ARI, Atos)	7/04/2020	http://booklet.atosresearch.eu/content/atos-participates-most-advanced-tests-5gforum
5	5GForum event	Atos Official Website	04/05/2020	https://atos.net/es/events/5gforum
6	Top 5G tests at the 5G Forum in Malaga	5G FORUM	10/03/2020	https://5genesis.eu/wp-content/uploads/2020/03/TOP-5G-TESTS-AT-THE-5GFORUM-IN-MALAGA-%E2%80%93-5G-FORUM.pdf
7	5GENESIS at FUSECO Forum	National Centre for Scientific Research “Demokritos	15/11/2019	https://5genesis.eu/wp-content/uploads/2020/03/a1.pdf
8	5G in practical test: Temporary network at the Festival of Lights	Fraunhofer Fokus	7/11/2019	https://5genesis.eu/wp-content/uploads/2020/04/Fraunhofer-FOKUS-5G-in-practical-test-Temporary-network-at-the-Festival-of-Lights.pdf
9	Development of a large-scale 5G experimental infrastructure in Limassol	Limassol Newspaper, CY	10/07/2019	https://5genesis.eu/wp-content/uploads/2019/11/1.-Development-of-a-large-scale-5G-experimental-infrastructure-in-Limassol.pdf
10	Digital Cyprus: The need for new services and modern infrastructure	Sigma Live, CY	9/07/2019	https://5genesis.eu/wp-content/uploads/2019/11/2.-Η-ανάγκη-για-νέες-υπηρεσίες-και-σύγχρονες-υποδομές.pdf

Table 7. Papers/Articles in magazines/newspapers/websites

In year 2, 5GENESIS partners, contributed to various white papers, especially in cooperation with 5G-PPP through the WGs that 5GENESIS partners attend. Below can be found a table with all the white papers that were published during the second year of the project's run.

White Papers				
	Target Websites	Title	Date	Link
1	5G-PPP	Business Validation in 5GPPP vertical use cases	June 2020	https://5g-ppp.eu/wp-content/uploads/2020/06/5G_White_paper_Business-validation-v1.0a.pdf
2	5G-PPP	On Board Procedure to 5GPPP Infrastructure Projects	April 2020	https://5genesis.eu/wp-content/uploads/2020/04/On-Board-Procedure-to-5G-PPP-Infrastructure-Projects-1.pdf
3	5G-PPP	Cloud Native and 5G Verticals' services	February 2020	https://5genesis.eu/wp-content/uploads/2020/03/5G-PPP-SN-WG-5G-and-Cloud-Native.pdf
4	5G-PPP	5G network support of vertical industries in the 5G Public-Private Partnership ecosystem	February 2020	https://5genesis.eu/wp-content/uploads/2020/03/Vertical-industries-in-the-5G-PPP.pdf
5	NEM.Net world2020 .5G-PPP	5G Media Slice Definition	September 2019	https://5genesis.eu/wp-content/uploads/2019/10/NEM_Network2020-5GPPP-5G-Media-Slice-White-Paper-V1.pdf
6	5G-PPP Software Network WG	Cloud-Native and Verticals' services	August 2019	https://5genesis.eu/wp-content/uploads/2019/09/5GPPP-Software-Network-WG-White-Paper-2019_FINAL.pdf

Table 8. White Papers

4.2.4. Workshops, Special Sessions and Meetings organized/co-organized- year 2

5GENESIS partners, during the second year of the project's run, organized and co-organized with other EU funded projects several workshops. Unfortunately, due to the COVID-19 impact the organization of workshops was severely affected since most events were either cancelled or even if they turned into virtual events the workshops activity was cancelled. Till now, most of future events are planned as virtual and physical workshops are not planned or scheduled.

Table 9 summarizes the above-mentioned activities and then each activity is described in more details.

Workshops, Special Sessions and Meetings			
	Event	Date/Location	Workshop/Special Session Name
1	5GPPP Technology board meeting	10/10/2019, Malaga	Workshop on key enablers for 5G experimentation
2	IEEE 5G World Forum	30/09 - 2/10/2019, Dresden Germany	2nd workshop on 5G-Trials – From 5G Experiments to Business Validation

Table 9. Workshops and Special Sessions organized/co-organized by 5GENESIS

More information about the above-mentioned activities can be find below

- IEEE 5G World Forum**
 5GENESIS co-organized together with other ICT-17 project coordinators (and not only) the 2nd workshop on 5G-Trials – From 5G Experiments to Business Validation adjunct with IEEE 5G World Forum (<http://sites.ieee.org/wf-5g>). Additional information can be found at: <http://sites.ieee.org/wf-5g/from-5g-experiments-to-business-validation/>



Figure 20. IEEE 5G World Forum

- 5GPPP Technology board meeting**
 Professor Pedro Merino Gomez from UMA hosted the 5G-PPP Technical Workshop on key enablers for 5G Experimentation, which was chaired by Dr. Almudena Diaz (WP3 leader) and Dr. Dimitris Tsolkas (Deputy TM). More info are in Section 5.2.1.



Figure 20. 5GENESIS at University of Malaga

4.2.5. Presentations in Conferences, Workshops, InfoDays, Forums- year 2

In year 2, 5GENESIS partners, participated in various events presenting 5GENESIS results. The presentations were part of various events such as workshops, conferences, events and info days. The table below shows all the presentations during year 2 along their date/location and title of the presentation. Please note that some of these presentations were delivered remotely since the event was turned into a virtual event due to the COVID-19 impact.

5GENESIS Presentations			
	Event	Date/Location	Title
1	5GPPP TB	26-27/5/2020, virtual	Bruno Garcia and Elisa Jimeno, UMA and ATOS respectively, presented the 5GENESIS Experimentation process and open APIs in the e-workshop organized by 5GPPP TB (26-27/5/2020).
2	5GPPP TB	26-27/5/2020, virtual	David Artunedo, Telefonica, presented the current status of the TB white paper on edge computing, mentioning 5GENESIS as one of the core contributing projects, in the e-workshop organized by 5G-PPP TB (26-27/5/2020).
3	5GForum	5-6/05/2020, Virtual Event	5GENESIS Project Presentation by Pedro Merino (UMA)
4	5GForum	5-6/05/2020, Virtual Event	5GENESIS Project Presentation by Oscar Fajardo (Nemergent)
5	MobiWac '19	25-29/11/ 2019, Miami	A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case
6	INFOCOM WORLD	26/11/2019, Athens, Greece	"5GENESIS End-to-End Facility Instantiations"

	CONFERENCE 2019		
7	INFOCOM WORLD CONFERENCE 2019	26/11/2019, Athens, Greece	“5GENESIS: An Experimentation Platform to validate 5G KPIs for various 5G Use Cases and Vertical Industries (“Session C: Modern Innovative Technologies and Broader 5G-related Aspects for Development and Growth with Emphasis set to Vertical Industries)”)
8	Spanish Real Academy for Engineering, Seminar on 5G for media	12/11/2019, Madrid	5GENESIS Presentation
9	Fraunhofer Fokus FUSECO Forum	7-8/11/2019, Berlin	5GENESIS – European 5G Testbeds, Trials, and Best Practices
10	JITEL 2019,XIV Jornadas de Ingeniería Telemática	22-24/10/2019, Zaragoza	A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case
11	Wireless of the Students, by the Students, and for the Students Workshop (S3) @ ACM Mobicom 2019	21/10/2019, Los Cabos, Mexico	Empirical Analysis of LoRaWAN Adaptive Data Rate for Mobile Internet of Things Applications
12	IEEE 5G World Forum	30/09 – 02/10/2019, Dresden	Presentation of the paper “Handover optimality in heterogeneous networks”
13	Ericsson Ireland Tech Day 2019	12/09/2019, Ireland	5GENESIS presentation at the Ericsson Ireland Tech Day
14	ISWCS 2019	27-30/08/2019, Oulu Finland	Strategies to meet the configured repetitions in URLLC Uplink grant-free transmission
15	ICCCN. EoT Workshop: Enabling Internet of Things Ecosystems through the Edge	1/08/2019, Valencia, Spain	Architecture and Use Case for an IoT Deployment with SDN at the Edge and dual Physical and Virtual gateway

Table 8. Presentations in Conferences, Workshops, InfoDays, Events

Hereby, each event is presented in more detail

- **5G-PPP TB (two presentations)**

Bruno Garcia and Elisa Jimeno, UMA and ATOS respectively, presented the 5GENESIS Experimentation process and open APIs in the e-workshop organized by 5G-PPP TB (26-27/5/2020).

Also, David Artunedo, Telefonica, presented the current status of the TB white paper on edge computing, mentioning 5GENESIS as one of the core contributing projects, in the e-workshop organized by 5G-PPP TB (26-27/5/2020).

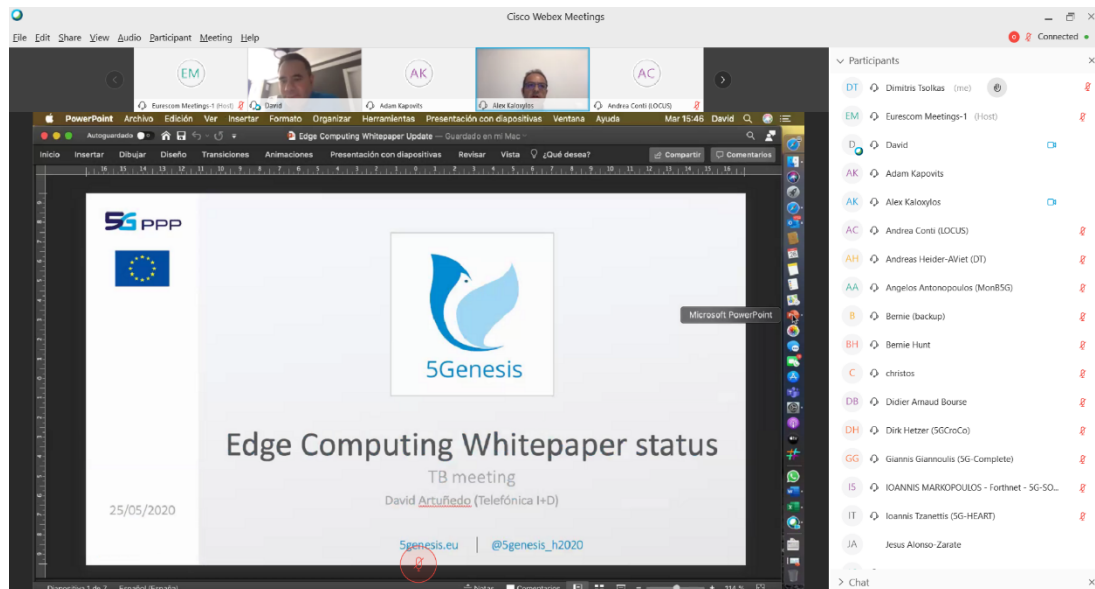


Figure 21. 5G-PPP TB Presentations

- **5G FORUM (two presentations)**

Pedro Merino (UMA) and Oscar Fajardo (NEMERGENT) participated at the 5G FORUM (Virtual Event) with presentations regarding 5GENESIS Project, the Malaga Platform and a demo video.



Figure 22. 5GFORUM Presentations

- **MobiWac '19**

A 5GENESIS Paper entitled “A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case” was presented at MobiWac'19, in 25-29/11/2019, in Miami. The link of the paper is available at 5GENESIS website:

<https://5genesis.eu/wp-content/uploads/2019/11/A-Coordination-Framework-for-Experimentation-in-5G-Testbeds.pdf>



Figure 23. Delia Rico (UMA) presenting 5GENESIS in MobiWac'19

- **INFOCOM WORLD CONFERENCE 2019**

COSMOTE partner presented 5GENESIS at INFOCOM WORLD CONFERENCE 2019 - “5GENESIS End-to-End Facility Instantiations” on Tuesday 26 November 2019 in Athens, Greece. Additional information can be found at:

<https://www.infocomworld.gr/21o-infocom-world-2019/5g-epistimoniki-synantisi-aithoysa-makedonia/>

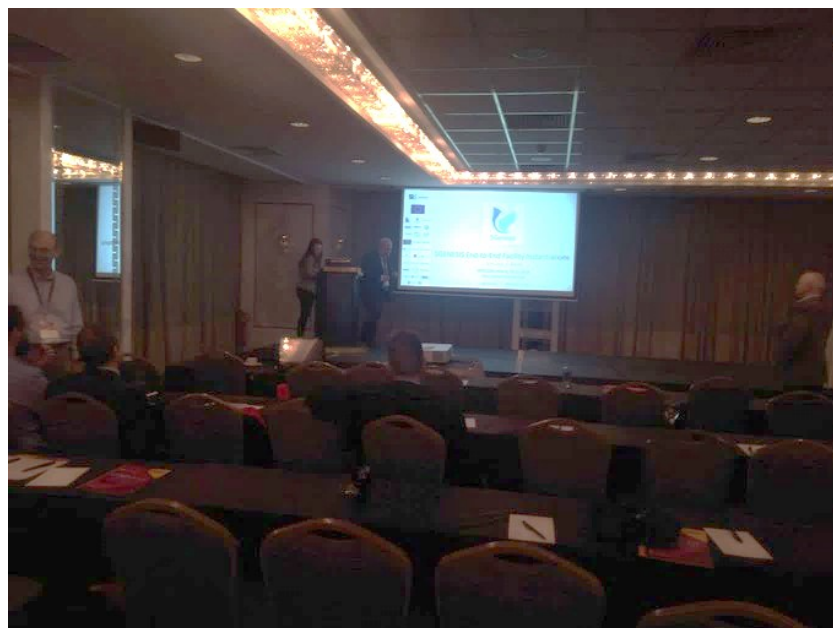


Figure 24. 5GENESIS in INFOCOM WORLD CONFERENCE 2019

- **INFOCOM WORLD CONFERENCE 2019**

Dr. Anastasios Kourtis (NCSR), presented the “5GENESIS: An Experimentation Platform to validate 5G KPIs for various 5G Use Cases and Vertical Industries” at the Session C: Modern Innovative Technologies and Broader 5G-related Aspects for Development and Growth with Emphasis set to Vertical Industries in INFOCOM.



Figure 25. INFOCOM World 2019

- **Spanish Real Academy for Engineering, Seminar on 5G for media**

Prof. Pedro Merino Gómez, Universidad de Málaga, presented 5GENESIS on November 12, 2019 at the Spanish Royal Academy of Engineering in Madrid, Spain.



Figure 26. Spanish Real Academy for Engineering, Seminar on 5G for media

- **Fraunhofer Fokus FUSECO Forum**

5GENESIS coordinator Dr. Harilaos Koumaras (NCSR Demokritos) presented 5GENESIS at the "European 5G Testbeds, Trials, and Best Practices" workshop of the Fraunhofer Fokus FUSECO Forum on Thursday 7 November 2019 in Berlin.



Figure 27. Dr. Harilaos Koumaras (NCSR) presenting 5GENESIS in FUSECO Fokus Forum

- **JITEL 2019, XIV Jornadas de Ingeniería Telemática**

The paper “A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case” was presented at JITEL 2019, XIV Jornadas de Ingeniería Telemática in 22-24/10/2019, in Zaragoza. The link of the paper is available at 5GENESIS website: <https://5genesis.eu/wp-content/uploads/2019/11/A-Coordination-Framework-for-Experimentation-in-5G-Testbeds.pdf>



Figure 28. JITEL 2019

- **Wireless of the Students, by the Students, and for the Students Workshop (S3) @ ACM Mobicom 2019**

The paper “Empirical Analysis of LoRaWAN Adaptive Data Rate for Mobile Internet of Things Applications” was presented in the related workshop that took place at ACM Mobicom 2019 at Los Cabos, Mexico.



Figure 29. ACM Mobicom 2019

- **IEEE 5G World Forum (2 activities)**

5GENESIS co-organized together with other ICT-17 project coordinators (and not only) the 2nd workshop on 5G-Trials – From 5G Experiments to Business Validation adjunct with IEEE 5G World Forum (<http://sites.ieee.org/wf-5g>). Additional information can be found at: <http://sites.ieee.org/wf-5g/from-5g-experiments-to-business-validation/>.

Dr. Valerio Frasca presented the paper “Handover optimality in heterogeneous networks” at the “5G and IoT” track of the conference.



Figure 30. 5GENESIS presentation in IEEE 5G World Forum

- **Ericsson Ireland Tech Day 2019**

LMI partner presented 5GENESIS at the Ericsson Ireland Tech Day 2019 on 12/09/2019. The presentation was focused on the context and goals of the project, as well as on the 5GENESIS architecture and plans for the coming year.



Figure 31. Ericsson Ireland Tech Day 2019

- **ISWCS 2019**

Eurescom conference paper entitled “Strategies to meet the configured repetitions in URLLC Uplink grant-free transmission” was presented at the ISWCS 2019, 16th International Symposium on Wireless Communication Systems, in Oulu, Finland on 27-30/08/2019. Read the paper at this link: <https://5genesis.eu/wp-content/uploads/2019/09/Le-2019-Strategies-to-meet-the-configured-repetitions.pdf>

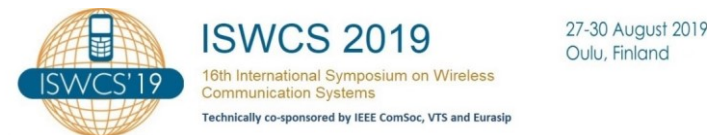


Figure 32. ISWCS 2019

- **ICCCN: EoT Workshop: Enabling Internet of Things Ecosystems through the Edge**

Jara Suárez de Puga (UPV) participated in the EoT Workshop: Enabling Internet of Things Ecosystems through the Edge (ICCCN) in Valencia, Spain, on 1st of August 2019. She participated with a presentation entitled “Architecture and Use Case for an IoT Deployment with SDN at the Edge and dual Physical and Virtual gateway” which provided an overview of the IoT Gateway used in the Limassol platform and its edge capabilities, presenting 5GENESIS, as a Scenario for its application.



Figure 33. ICCCN 2019

4.2.6. Participation in Conference Panels and Invited Talks- year 2

5GENESIS year 2 participation in conference panels, invited talks of conferences and workshops is summarized in Table 9, followed by a detailed analysis per activity.

Conference Panels and Invited Talks			
	Title	Event	Date/Location
1	“OPENRAN, including Interoperability/Interworking with vendor solution”	EUCNC 2020	16/06/20, VIRTUAL EVENT
2	Organization at VTC-Spring 2020 of the panel “The future of Intelligent Transport System”	VTC-Spring 2020	28/05/2020, VIRTUAL EVENT
3	Invited talk: "mmWave communications and 5G networks: challenges, opportunities, and open points"	IMOC 2019, International Microwave and	10-14/11/2019, Aveiro, Portugal

		Optoelectronics Conference	
4	Industrial panel presentation "5GENESIS - An open Facility for experiments in 5G-and-beyond systems"	IMOC 2019, International Microwave and Optoelectronics Conference	10-14/11/2019, Aveiro, Portugal
5	Participation to the panel of the IEEE 5G world forum "From Evolution to Revolution, a roadmap for beyond 5G"	5G World forum	30.09-02.10/2019, Dresden
6	Invited talk: "What's after 5G Phase 1 and 2?" at the panel "From Evolution to Revolution, a roadmap for beyond 5G"	5G World forum	30.09-02.10/2019, Dresden

Table 9. Participation in Panels and Invited Talks

- **EUCNC 2020**

The 5GENESIS Technical Manager, Pedro Merino (UMA), participated in the EuCNC panel "OpenRAN, including Interoperability/Interworking with Vendor solutions" with the presentation entitled "SDR RAN solutions from an experimental and innovation perspective". The panel was moderated by Jorge Pereira (EC) and the participants were:

- Chair: Jorge Pereira (Moderator) (Principal Scientific Officer, European Commission, BE)
- Colin Willcock (Head of Radio Network Standardization, Nokia, DE)
- Pedro Merino (Director of ITIS Software, Univ. Malaga, ES),
- Thomas Magedanz (TU Berlin/ Fraunhofer FOKUS, DE)
- Uwe Herzog (Programme Manager, Eurescom, DE)

Additional event info available at: <https://www.eucnc.eu/panel2/>

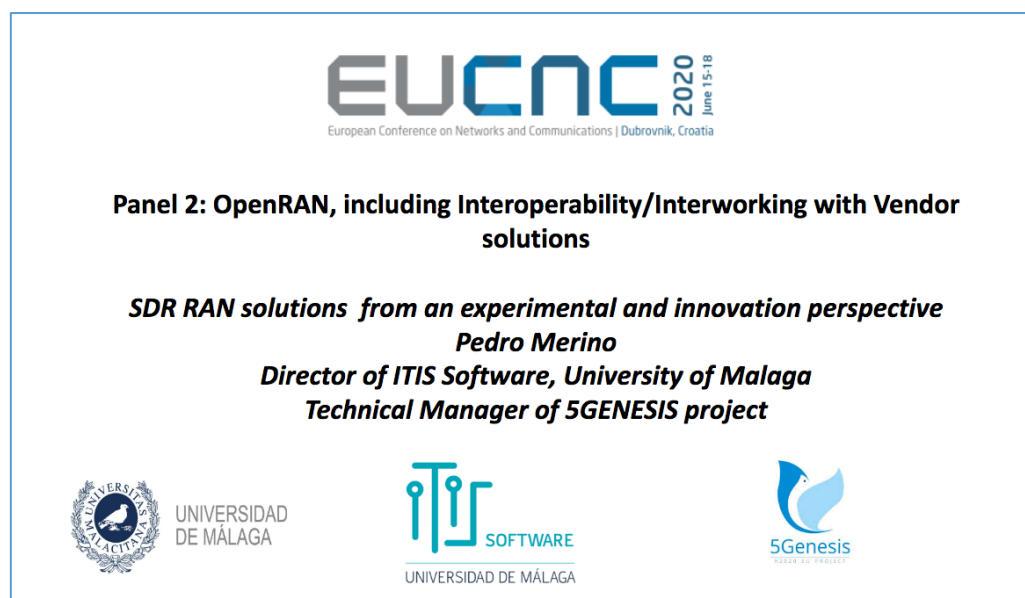


Figure 34. EUCNC 2020

- **VTC-Spring 2020**

Dr. Valerio Frascolla (INT) served as conference industrial program co-chair and organized and run the panel “The future of Intelligent Transport System”. Topics related to 5GENESIS dynamic spectrum management were discussed and a vision of the future of transport system was discussed with the invited 4 panelists.

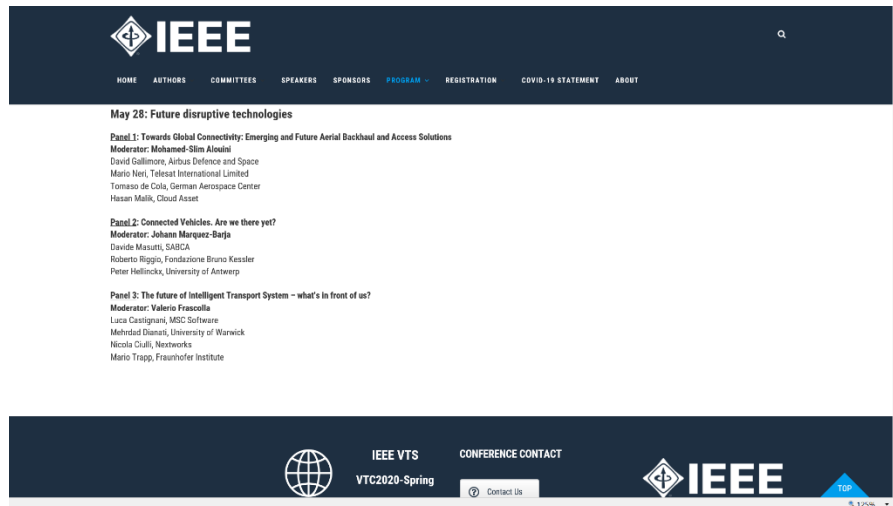


Figure 35. VTC-Spring panel after the conference website

- **IMOC 2019 (2 activities)**

Dr. Valerio Frascolla (INT) was invited and hosted to give the talk “mmWave communications and 5G networks” at the International Microwave and Optoelectronics Conference (IMOC 2019) conference in Aveiro, Portugal, thus disseminating the 5GENESIS EU-funded project research on dynamic spectrum management.



Figure 36. IMOC 2019

Valerio also participated to the industrial panel presenting "5GENESIS - An open Facility for experiments in 5G-and-beyond systems", discussing the importance of open facilities for the broader research landscape. IMOC was held for the first time in Europe, with the aim of establishing itself as a fruitful opportunity for nurturing collaboration activities between the Latin America, especially Brazil, and the European research community. More info at <https://imoc2019.com/>.



Figure 37. Panel presentation at IMOC

- **IEEE 5G World Forum (2 activities)**

Dr. Valerio Frascolla was invited as panelist to the panel of the IEEE 5G world forum workshop "From Evolution to Revolution, a roadmap for beyond 5G".

Dr Valerio Frascolla (INT) had also an invited speech entitled "What's after 5G Phase 1 and 2?" at the Panel "From Evolution to Revolution" in IEEE 5G World Forum in Dresden, on October 1st 2019.



Figure 38. Dr. Valerio Frascolla (INT) at the IEEE 5G World Forum

4.2.7. Other Activities-Events (Exhibitions, Business Days, Booths in Conferences, Interviews, Webinars, Poster Sessions, Awards)- year 2

During Year 2 5GENESIS organized and participated in various events such as exhibitions, forums, and tech days; in many of them poster sessions were used for further enhancing and promoting 5GENESIS presence. All related activities are summarized in Table 10 and then analysed individually.

Other Activities - Events (Exhibitions, Business Days, Booths, Interviews, Webinars, Poster Session, Awards)			
	Activity	Event	Date/Location
1	Improving Apache Spot Using Autoencoders for Network Anomaly Detection (Poster session)	EuCNC2020	17/06/20, Virtual Event
2	A modular small-scale platform for experimentation over mobile networks (Poster session)	TMA 2020	11/6/20, Virtual Event
3	Presentation of OSM Repositories feature in the Technical Steering Committee meeting of OSM	OSM	15/05/20, Virtual Event
4	5GForum Sponsorship	5GFORUM	5-6/05/20, Virtual Event
5	5GENESIS representation in the OSM community	OSM Hackfest	March, 2020, Remote
6	A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case (Poster session)	MSWIM '19	25-29/11/ 2019, Miami
7	QoE-based Analysis of Real-Time Adaptive 360-Degree Video Streaming (Poster session)	Wireless of the Students, by the Students, and for the Students Workshop (S3) @ ACM Mobicom 2019	21/10/2019, Los Cabos, Mexico
8	Extending the MONROE platform towards IoT and 5G networks (Poster session)	ACM IMC 2019	21-23/10/2019, Amsterdam
9	Athonet and Nemergent interoperated their EPC, IMS and eMBMS core solutions with multiple MCX vendors and tested latest 3GPP MCX releases, which fit to the 5GENESIS Malaga use case.	ETSI MCX Plugtests	22-27/09/2019, Kuopio
10	Athonet participated as exhibitor and presenter, showing technology for	MEC Congress (Industry event about edge computing)	17-19 /09/2019, London

	private mobile networks which is also part of the 5GENESIS project		
11	A 5GENESIS presentation at the Ericsson Ireland Tech Day	Ericsson Ireland Tech Day 2019	12/09/2019, Ireland

Table 10. Participation in various Events

- **EUCNC 2020**

Space Hellas, 5GENESIS partner, participated in EuCNC2020 (virtual event) with a poster session entitled “Improving Apache Spot Using Autoencoders for Network Anomaly Detection” on Wednesday 17 June 2020. Additional information available at: https://5genesis.eu/wp-content/uploads/2020/06/1.EuCNC-improving-apache-spot-using-autoencoders_poster.pdf

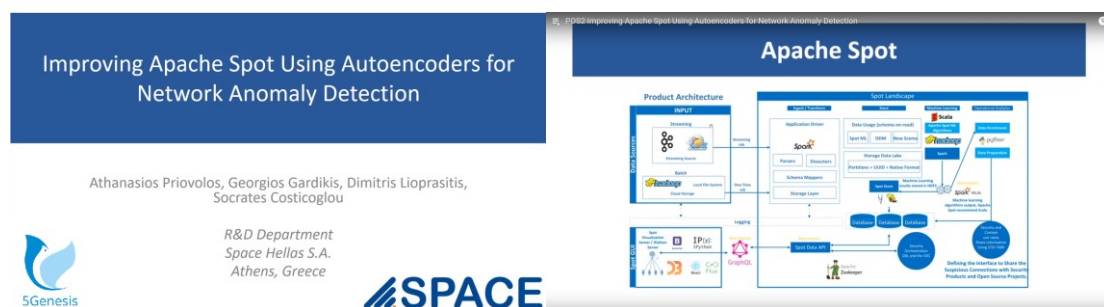


Figure 39. Virtual Poster session presentation at EuCNC 2020

- **TMA 2020**

5GENESIS participated at the TMA 2020 Conference with a poster session entitled “A modular small-scale platform for experimentation over mobile networks.” Additional event info is available at:

https://5genesis.eu/wp-content/uploads/2020/06/2.TMA2020-5GENESIS_portable-platform.pdf



Figure 40. TMA logo

- **OSM**

ATOS, 5GENESIS partner, presented the OSM Repositories feature in the Technical Steering Committee meeting of OSM through which 5GENESIS is contributing to the project. ATOS has worked in the implementation of a VNF Repository that defines the

structure with the set of VNF packages and metadata that will be exposed to OSM users, by HTTP(s) protocol. This new feature will be merged in the next OSM release 7.1 and will be used and tested during the 9th OSM Hackfest that will run remotely during the 1-4 of June 2020.



Figure 41. OSM logo

- **5G FORUM**

5GENESIS was present at the 5G Forum which was held this year virtually due to the coronavirus outbreak. 5GENESIS was among the sponsors for the 2020 event. Read more of the sponsors and the event at: <https://www.5gforum.es/en/sponsors/>



Figure 42. 5G FORUM sponsors

- **OSM Hackfest**

The colleagues from Atos Spain, represented 5GENESIS at the remote OSM Hackfest event held in March 2020.



Figure 43. OSM logo

- **MSWIM '19**

A poster session of the conference paper “A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case” by Delia Rico (UMA) took place at MSWIM 19, in Miami.

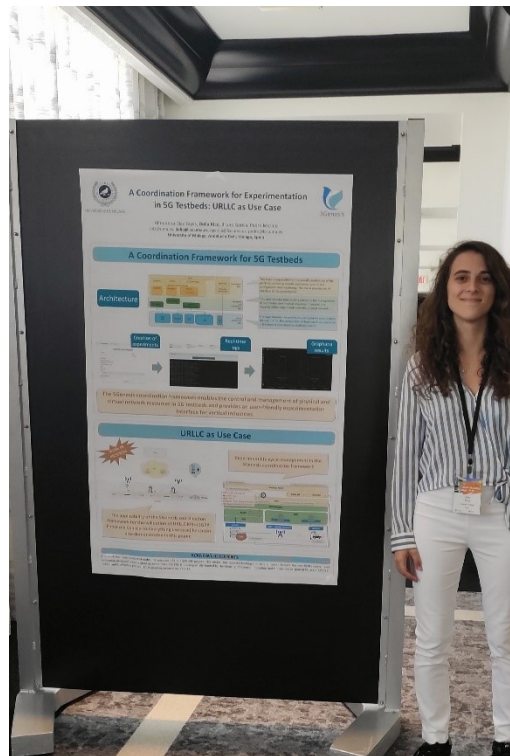


Figure 44. Delia Rico (University of Malaga) at MSWIM'19

- **ACM Mobicom 2019**

A poster session presentation entitled “QoE-based Analysis of Real-Time Adaptive 360-Degree Video Streaming” took place at the ACM Mobicom 2019 in Los Cabos, Mexico.



Figure 45. ACM Mobicom log

- **ACM IMC 2019**

A poster describing the MONROE extensions for supporting IoT and 5G experimentation developed within 5GENESIS was presented at ACM IMC 2019 in Amsterdam. The poster was a joint contribution from 5GENESIS partners KAU and SRL.

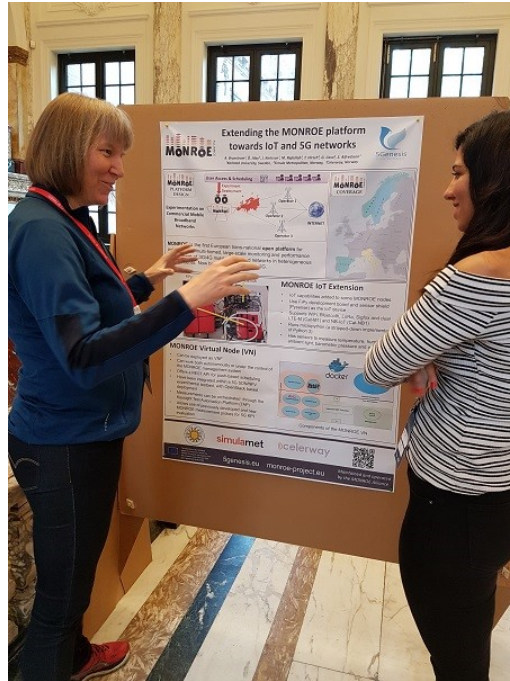


Figure 46. Anna Brunstrom (KAU) presenting poster at ACM IMC 2019

- **ETSI MCX Plugtests**

Athonet and Nemergent interoperated their EPC, IMS and eMBMS core solutions with multiple MCX vendors and tested latest 3GPP MCX releases, which fit to the 5GENESIS Malaga use case.



Figure 47. ACM Mobicom logo

- **MEC Congress**

Athonet demonstrated the 5G and MEC solutions based on the latest 3GPP release in the MEC Congress in London.



Figure 48. Athonet

- **Ericsson Ireland Tech Day 2019**

LMI partner presented 5GENESIS at the Ericsson Ireland Tech Day 2019 on 12/09/2019. The presentation was focused on the context and goals of the project, as well as on the 5GENESIS architecture and plans for the coming year.



Figure 49. LMI at Ericsson Ireland Tech Day 2019

4.2.8. Demonstrations in industrial exhibitions and scientific events- year 2

In year 2, 5GENESIS partners presented the 5GENESIS facility in various demo events. During the Festival of lights 5GENESIS was there with a live demo of setting up a 5G network, as part of the 5GENESIS Berlin platform. The Athens platform was one of the first in EU that managed to achieve and announce performance of about 1Gbps data rate in commercial 5G cell phone. The experimentation facility (Open5GENESIS), which is actually the set of software tools that run on top of the infrastructure, are also released and presented successfully during the 5GFORUM 2020. Moreover a vertical targeted demonstration was provided by KAU at ICIN 2020. Finally, the first release of the 5GENESIS portable demonstrator was presented at TMA 2020 lighting talks session.

Demonstration Events			
	Title	Event	Date/Location
1	Malaga Platform presentation	5G Forum 2020	7/5/2020, Virtual meeting
2	Berlin Platform presentation	Festival of Lights event 2019	7/11/2019, Berlin

3	COSMOTE Pilot 5G NSA network	Continues COSMOTE tests on 5G infrastructures	Autumn 2019, Athens
4	5GENESIS Portable demo presentation	TMA lighting talks	11/6/2020, virtual meeting
5	A Deployable Containerized 5G Core Solution for Time Critical Communication in Smart Grid	ICIN 2020	24-27/2/2020, Paris

Table 11. Participation in various Events

More information about the aforementioned activities can be find below

- Malaga Platform presentation in 5G Forum**
 In the virtual event of 5GFORUM, UMA presented the capabilities of the Malaga platform targeting the experimentation capabilities, i.e., the part of the platform that was easy to convey through a remote presentation. A related video used is the following:
<https://www.youtube.com/watch?v=er0zE-17ULs>
- Berlin Platform presentation in Festival of Lights event 2019**
 The 5GENESIS Berlin platform¹ was presented in the Festival of Lights event² that took place in Berlin in November 7, 2019, under the scenario, where a 5G network is used to set up a temporary network to connect many devices and provide a high bandwidth for multimedia services. The field trial was conducted by researchers from Fraunhofer FOKUS, iHP, Humboldt-Universität zu Berlin, Karlstad University, NetApp and Simula Research Laboratory. The components of a portable 5G network and their interaction are explained in the following video <https://www.youtube.com/watch?v=DBSs96DgWf0>

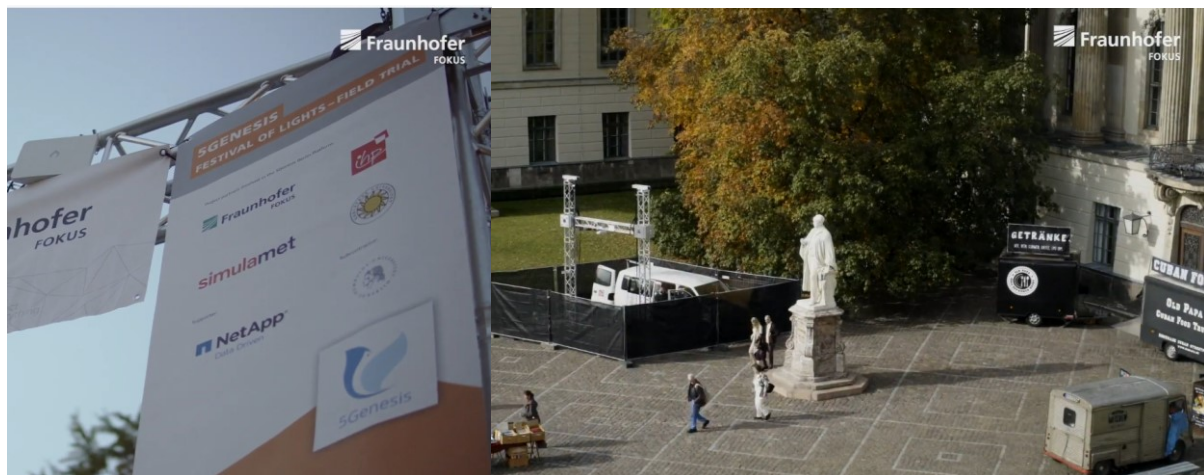


Figure 50. Festival of Lights 2019 demo

¹ <https://5genesis.eu/berlin-platform/>
<https://www.open5gcore.org>

² https://www.fokus.fraunhofer.de/en/fokus/news/BerlinFestivalofLight_2019-11

- Athens platform - COSMOTE Pilot 5G NSA network**

5GENESIS partner COSMOTE has successfully tested its Pilot 5G NSA network, consisting of 5G Nokia Aircscale BTS attached to Athonet vEPC Core. COSMOTE R&D Aircscale System initial configuration uses 2x2 MIMO radio units and 100MHz bandwidth. Measurements to be documented as part of 5GENESIS Deliverable 6.2.

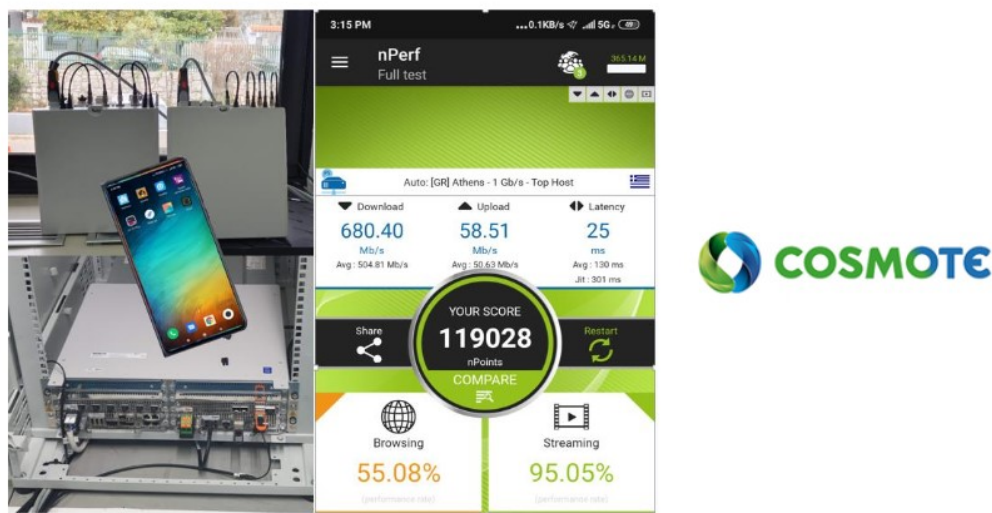


Figure 51. COSMOTE Pilot 5G NSA network testing

- 5GENESIS Portable demo presentation during TMA lighting talks**

The 5GENESIS portable demonstrator was presented during the TMA virtual conference within the lighting talks session by Dimitris Tsolkas. The video is available at: <https://www.youtube.com/watch?v=hq4n6Zlx6GI>.

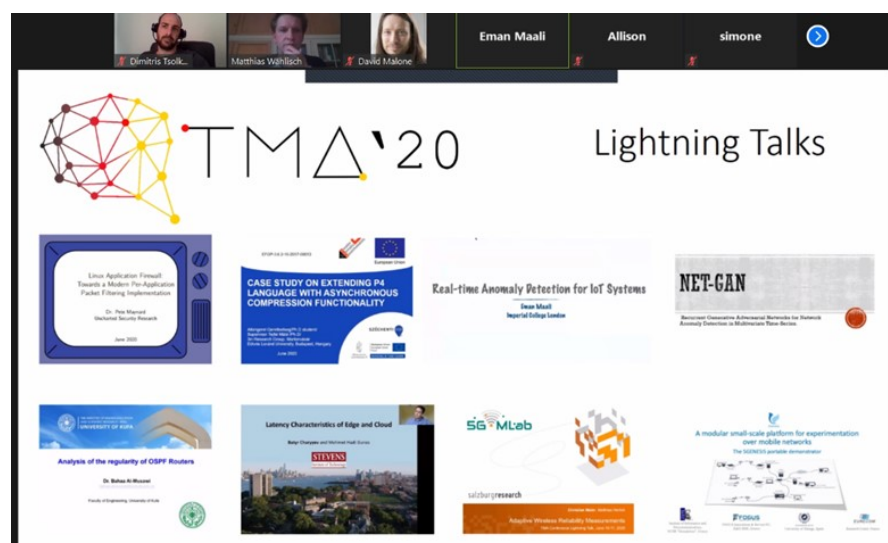


Figure 52. Lighting talks session in TMA 2020

- **Open5GCore demonstration at ICIN 2020**

A demonstration of a smart grid application running over a containerized deployment of the Fraunhofer Open5GCore software used in the Berlin platform was performed by 5GENESIS partner KAU at the 23rd Conference on Innovations in Clouds, Internet and Networks (ICIN 2020) in Paris.



Figure 53. Van-Giang Nguyen (KAU) presenting demo at ICIN 2020

4.3. Evaluation, Statistics and Impact of year 2 Activities

This section provides evaluation of the year 2 dissemination and communication activities and verifies whether the set goals for the second year of the project lifetime have been met successfully. In addition, the dissemination plan and the goals for the rest of the project duration are set.

4.3.1. Quantitative Results and Evaluation of Activities

In the previous section (4.2) a summary of all the dissemination and communication activities was presented for the second year. In specific, in section 4.2, a thorough presentation of each of the activities was presented along with their respective tables indicating additional information per activity (such as event name, activity title, links of the publications and so on).

In table 12 can be found all the activities' goals set for year two as per the dissemination plan, as well as the second year's achievements. **The second year's goals have been met notwithstanding the coronavirus outbreak, which caused various events to be cancelled.** In total, the 5GENESIS year 2 communication and dissemination activities performed count a total of 65 activities while this year's goals were set to 48 activities.

Activity	Year 2 Goals	Y2 Achievements
Publications (in Journals/Conferences)	>8 in journals/conferences/workshops (>17 in total)	10
Publications (in Workshops)		3
General Publications in Magazines, Books, Websites, Newspapers, White Papers		15
Workshops (organized by 5GENESIS, co-organized with other projects, participation)	>8	2
Presentations (in Conferences, Workshops, InfoDays, Events)	>8	16
Participation in Conference Panels and invited Talks	>4	6
Others (Exhibitions, Business Days, Booths in Conferences, Poster Sessions, Awards)	>8	11
Demonstrations in industrial/exhibitions and scientific events	>3	5
Year 2 total number of activities and articles	48	68

Table 12. Dissemination activities and Y2 goals

Similarly, as per the detailed communication plan (D7.1), 5GENESIS website and social media channels have performed well with a constant increase in the number of followers and visitors respectively (65% increase in the number of followers in 5GENESIS social media channels from Y1 to Y2). All the details about the impact of the communication activities during the year 2 are summarized in Table 13.

Activity during Y2 (unless otherwise stated)	Y2 Achievements
Communication channels used	1 website and 5 social media channels
Total Number of News posted in Website (News section)	80 news posted
Total Dissemination Activities reported in Website	13 publications 15 presentations 2 co-organized workshop 10 articles/press releases/interviews 6 white papers 5 panel discussions 11 event activities

Total website visitors	4089 visitors
Total website hits	11917 hits
Total website sessions	5507 sessions
Total Number of Posts in Social Media channels	566 posts/tweets (2.8 posts weekly average per channel)
Total Number of Likes in Social Media channels	5594 likes
Total Number of Followers in Social Media channels (Y1 and Y2) -> 65% increase from Y1 to Y2	1661 Followers (Y1 and Y2) (780 Twitter, 563 LinkedIn, 200 Facebook, 118 Instagram)
YouTube channel	5 videos
YouTube subscribers (Y1 and Y2)	63 subscribers (Y1 and Y2)
YouTube views	310 views
Newsletter issues published	3 issues (+ 1 to be released in 7/2020 for the period 4/2020-6/2020)
Leaflets (Y1 and Y2)	7 versions, 500 printed pieces
Posters (Y1 and Y2)	2 versions
Stickers	500 pieces

Table 13. Communication activities for Y2 (July 2019-May 2020)

The following sections 4.3.2 and 4.3.3 present in detail information regarding the performance of the website as well as the social media channels respectively during the Y2 period July 2019-May 2019 (11-month period, since June 2020 was still in progress when this deliverable was under final editing).

4.3.2. Website Performance Statistics and Dashboards

5GENESIS website statistical dashboards are created, processed and visualized monthly by INF with the use of Google Data Studio and Google Analytics. The statistical dashboards are issued monthly and communicated via e-mail to the WP7 mailing list. In addition, they are added to a respective folder in BSCW for every partner to be able to access for historical reference. Google Data Studio is used in order to graphically represent statistical information regarding the traffic of the website, its visitors (in respect to the GDPR laws) and the sources from which the website is accessed.

The figure below represents the second year's dashboard covering the period of July 2019 to May 2020. Information that can be seen in the figure below is regarding the number of sessions, the average time on page, page views as well as the sources from which someone accessed the website. The website statistical dashboard may also be accessed online at:

<https://datastudio.google.com/u/0/reporting/747cd376-68f1-4ecd-9c6d-aca2ff18d10a/page/EP7X>

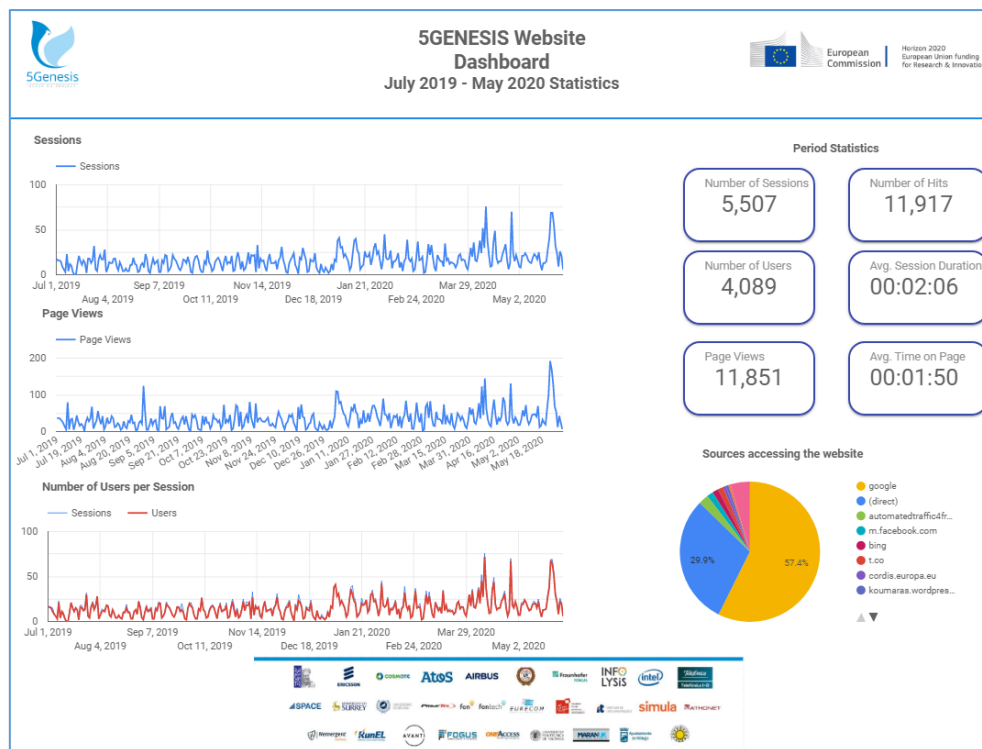


Figure 54. 5GENESIS website Annual Dashboard – Year 2

Google analytics have been enabled for the 5GENESIS website since August 2018. The statistical recordings of the website provide a valuable insight to the website performance, degree of penetration and accessibility impact to the public.

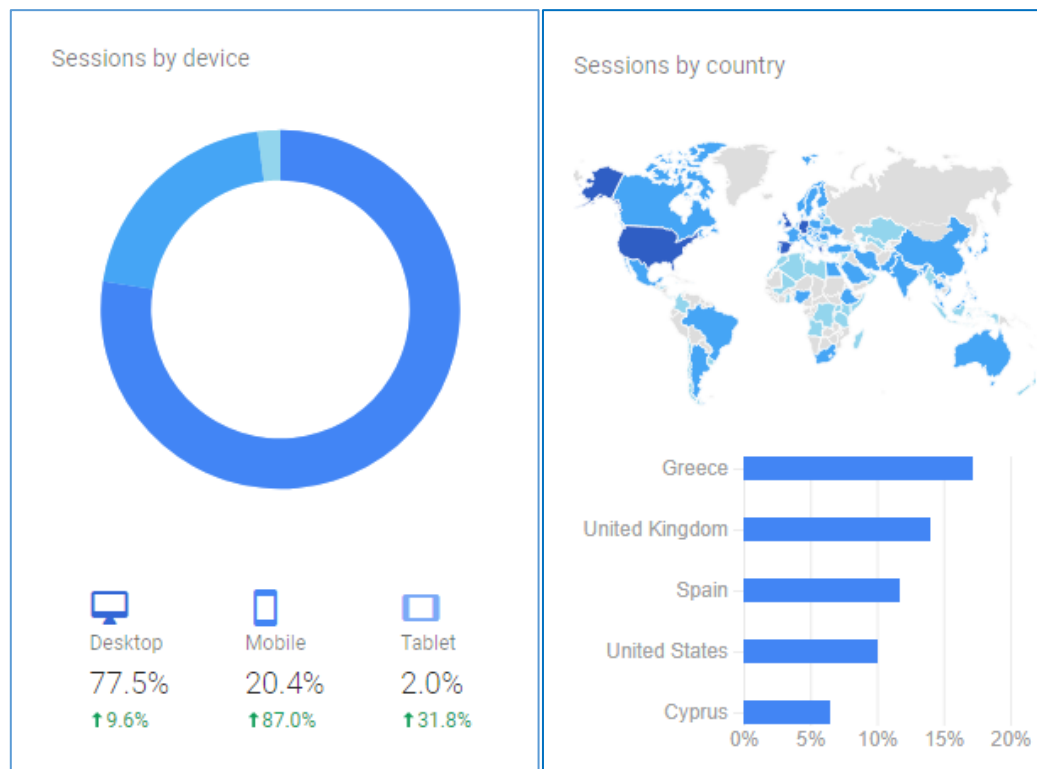
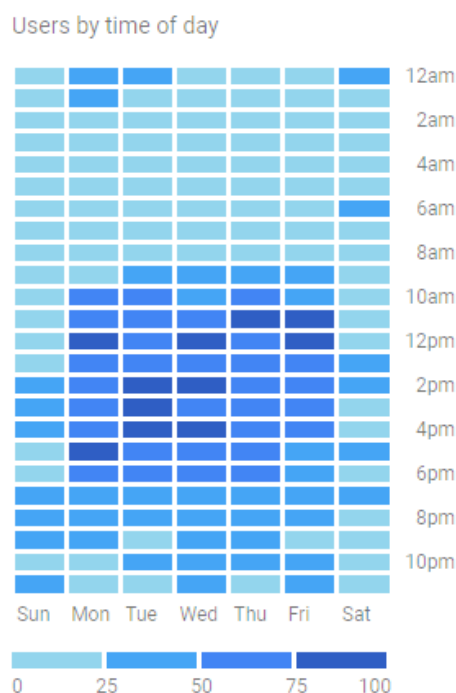


Figure 55. 5GENESIS website's sessions per device and country

The figure above shows information regarding the sessions by device and country. There is a decrease of the desktop users comparing to last year's 85.5 % and there is an increase of the mobile users comparing to last year's 12.6 %. The sessions by country feature Greece, United Kingdom and Spain in the top list, followed by United States and Cyprus.

**Figure 56. 5GENESIS website's users by time of day**

The figure above presents the number of users by time of day. Fewer users access the website earlier in the morning or late at night (indicating this with a light blue color) whereas, from 10 o'clock in the morning until 5 o'clock there is a higher traffic on the website reaching 75 to 100 users (indicating this with a dark blue color).

4.3.3. Social Media Performance Statistics and Dashboards

The Social media statistical dashboards are created and issued monthly with the use of Google Data Studio. These statistical dashboards are communicated with the wp7 mailing list partners and are added to a respective folder in BSCW. The statistical dashboards (whether they are social media or website dashboards) can be issued for a longer period of time such as for 6 months, annual and so on, upon request.

4.3.3.1. 5GENESIS Twitter Annual Dashboards

The table below provides information regarding the total followers and the posts per month for the 11-month period of July 2019 to May 2020.

Twitter											
11-month period											
	1	2	3	4	5	6	7	8	9	10	11
Total Followers (cumulative)	520	554	580	626	663	681	709	733	743	767	780
Posts per Month	9	11	18	15	20	10	16	18	11	15	13

Table 14. Twitter: 11-month period activity

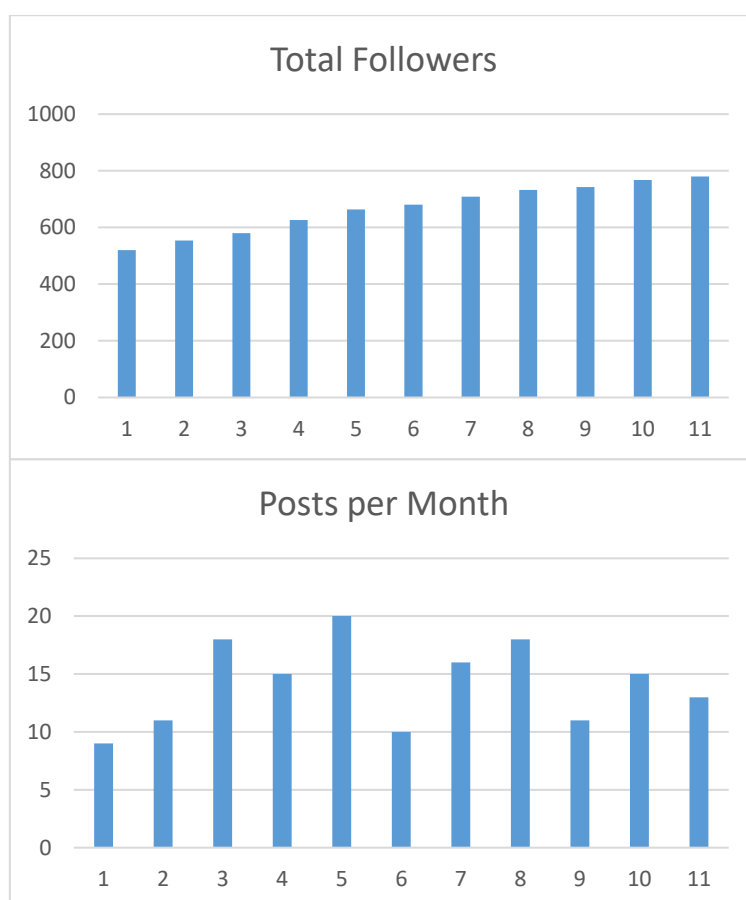


Figure 57. 5GENESIS Twitter 11-month period graphs: Total Followers and Posts per month (11-month period July 2019-May 2020)

The statistical dashboard for the second year (covering July 2019 to May 2020) can be seen in the figure below. For online viewing of the second year's Twitter Statistical Dashboard (two pages) click on the following link: <https://datastudio.google.com/reporting/94409ce9-5b16-4013-824e-eacf0fee2f9c>

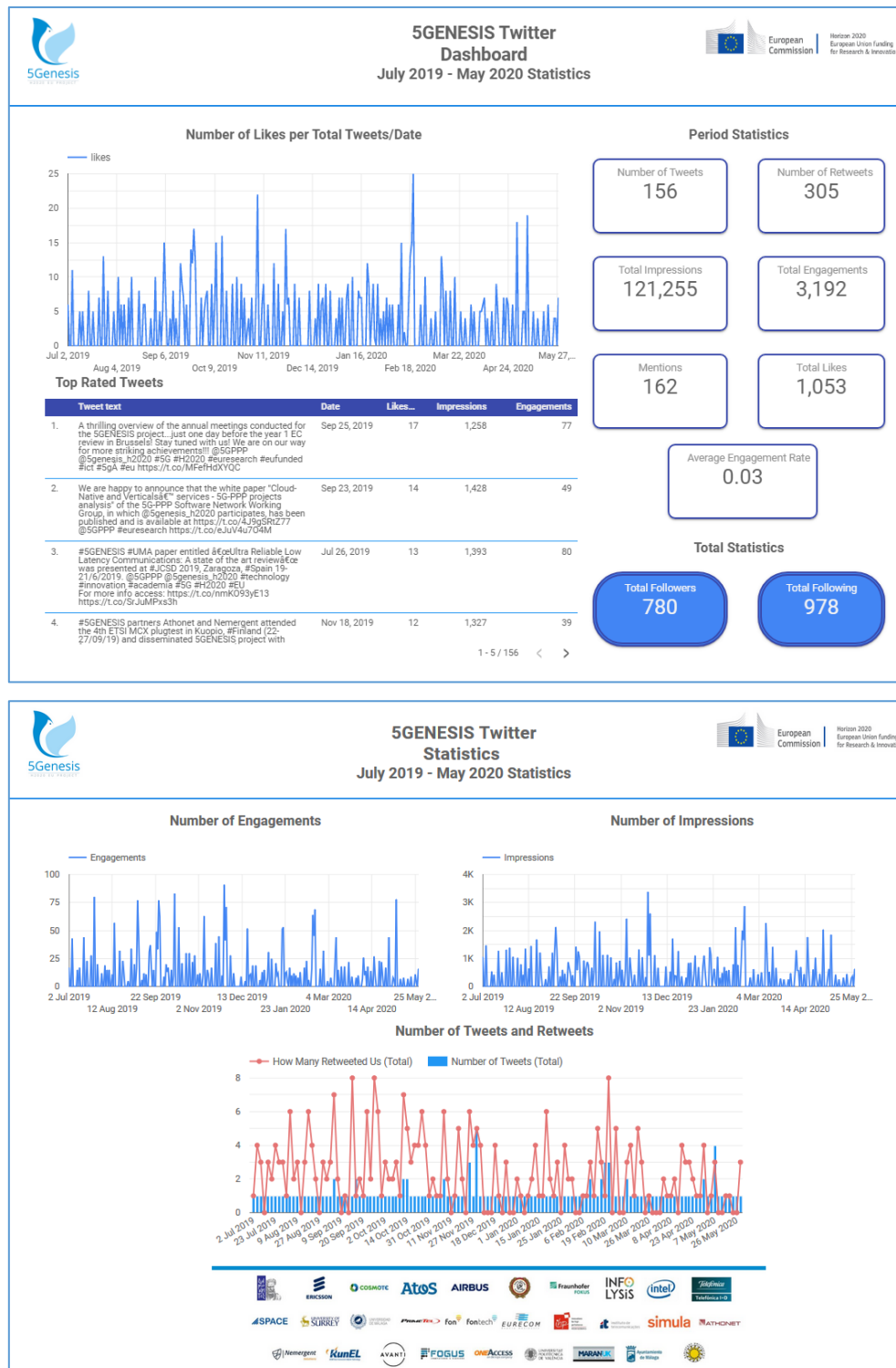


Figure 58. Twitter Annual Dashboard – year 2

In total, for the second year of the project's run, the Twitter channel has been used for communicating 156 tweets and achieving 305 retweets of 5GENESIS tweets, more than 121.000 impressions, with 1053 likes, 162 mentions and 3192 engagements. Similarly, the engagement rate of 3% confirms the active involvement of the 780 followers to the channel's activities.

4.3.3.2. 5GENESIS LinkedIn Annual Dashboards

The statistical dashboards for the second year for LinkedIn have been developed in order to evaluate the activities performed during the period of July 2019 to May 2020. The table below shows the total number of followers and the posts during this period. There is a constant increase in the number of followers whereas the number of posts varies due to the dissemination of various events.

LinkedIn											
11-month period											
	1	2	3	4	5	6	7	8	9	10	11
Total Followers (cumulative)	378	391	420	444	472	485	501	525	539	551	563
Posts per Month	10	11	17	11	16	9	12	19	12	14	12

Table 15. LinkedIn: 11-month period activity

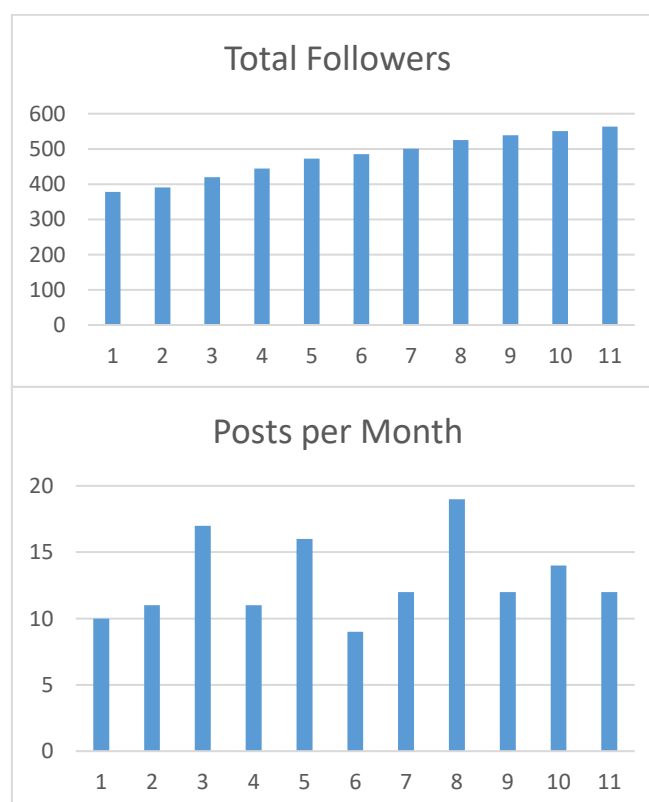


Figure 59. 5GENESIS LinkedIn 11-month period graphs: Total Followers and Posts per month (11-month period July 2019-May 2020)

The figure below shows the second year dashboard for LinkedIn for the period July 2019 to May 2020. For viewing online the LinkedIn annual dashboard one may use the following link: <https://datastudio.google.com/reporting/71563f3b-0bee-4f7a-8e7f-9c38f4c345d7>

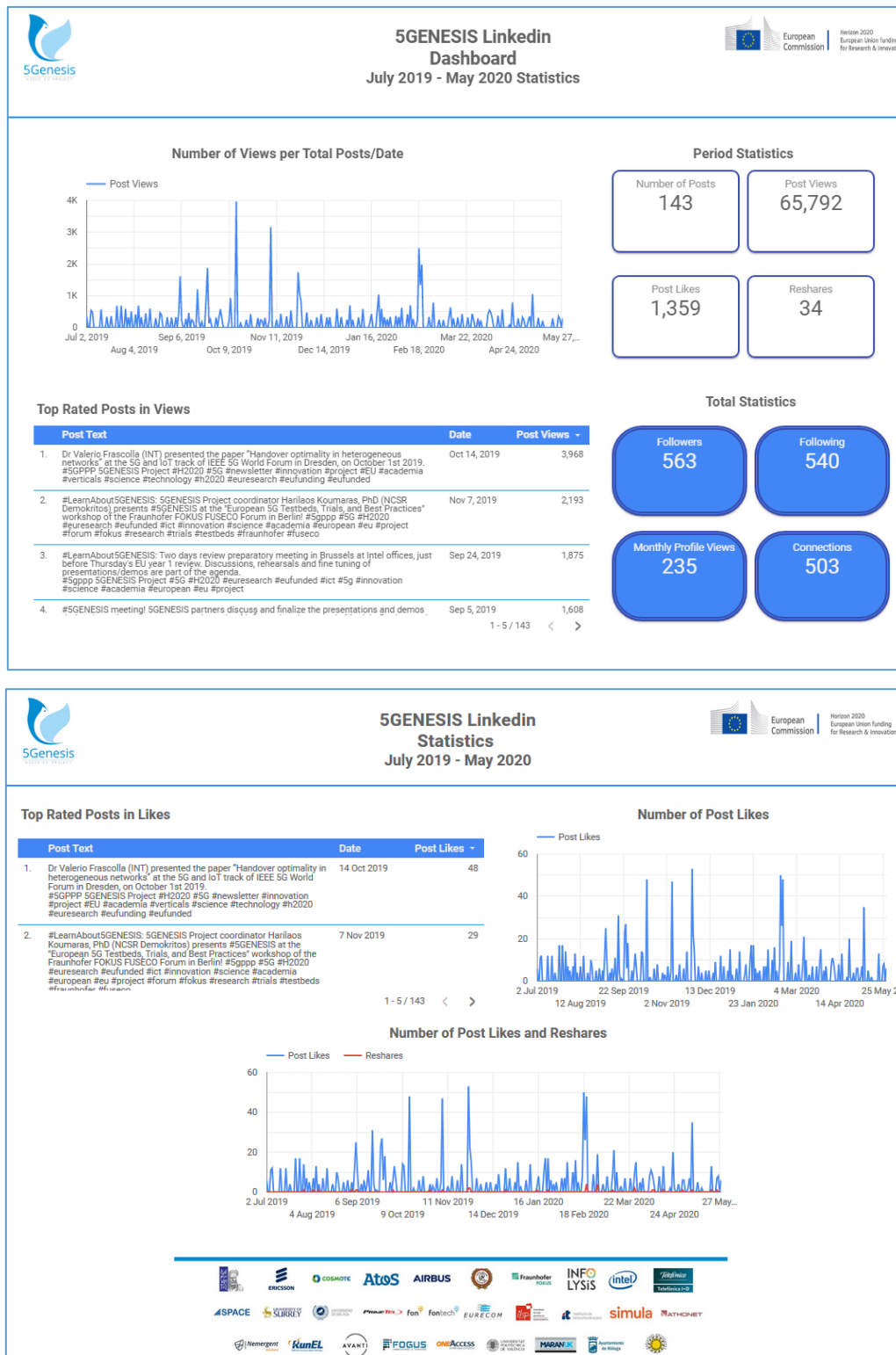


Figure 60. LinkedIn Annual Dashboard – year 2

As per the annual dashboard, for the second year of the project's run, the LinkedIn channel has been used for communicating 143 posts and achieving 34 reshares with a total of more than 65,792 views and 1359 likes, providing up to date information of the project's activities to a network of more than 560 followers.

4.3.3.3. 5GENESIS Facebook Annual Dashboards

Facebook Statistical dashboards for year 2 cover the period of July 2019 to May 2020. The table below shows the total number of followers and posts throughout the second year of the project's run as well as their respective graphs.

Facebook											
11-month period											
	1	2	3	4	5	6	7	8	9	10	11
Total Followers (cumulative)	166	169	171	171	173	174	189	191	150	193	200
Posts per Month	10	13	17	13	16	11	11	19	17	10	10

Table 16. Facebook 11-month period information.

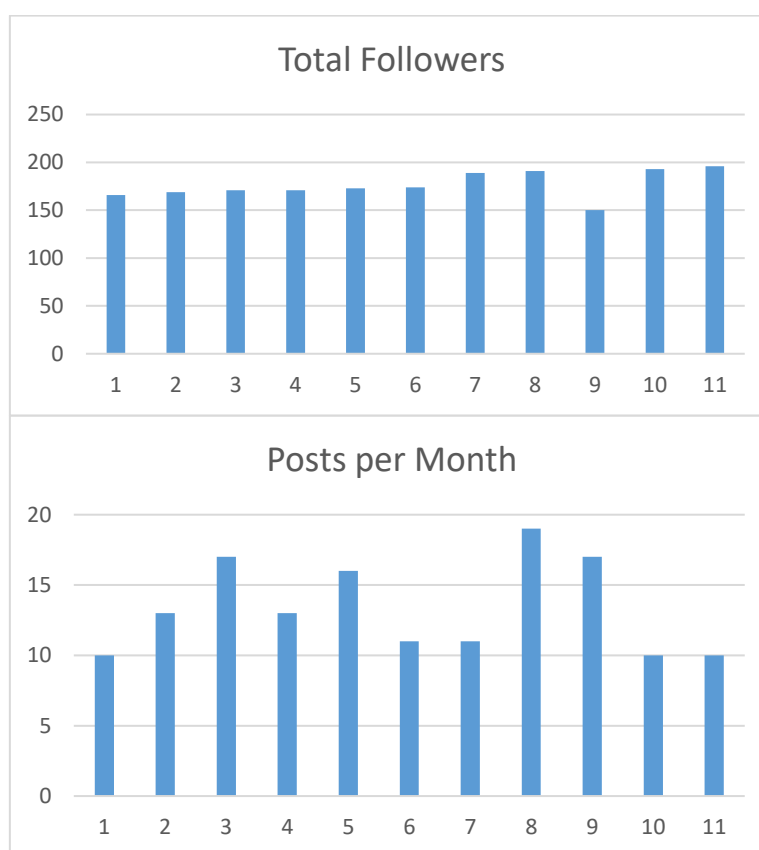


Figure 61. 5GENESIS Facebook 11-month period graphs: Total Followers and Posts per period (11 month period July 2019-May 2020)

The figure below shows the second year's dashboard for Facebook for the period July 2019 to May 2020. For viewing online the LinkedIn annual dashboard one may use the following link: <https://datastudio.google.com/reporting/5b0a5488-ec36-48f9-8c7a-0e19f124e3e5>

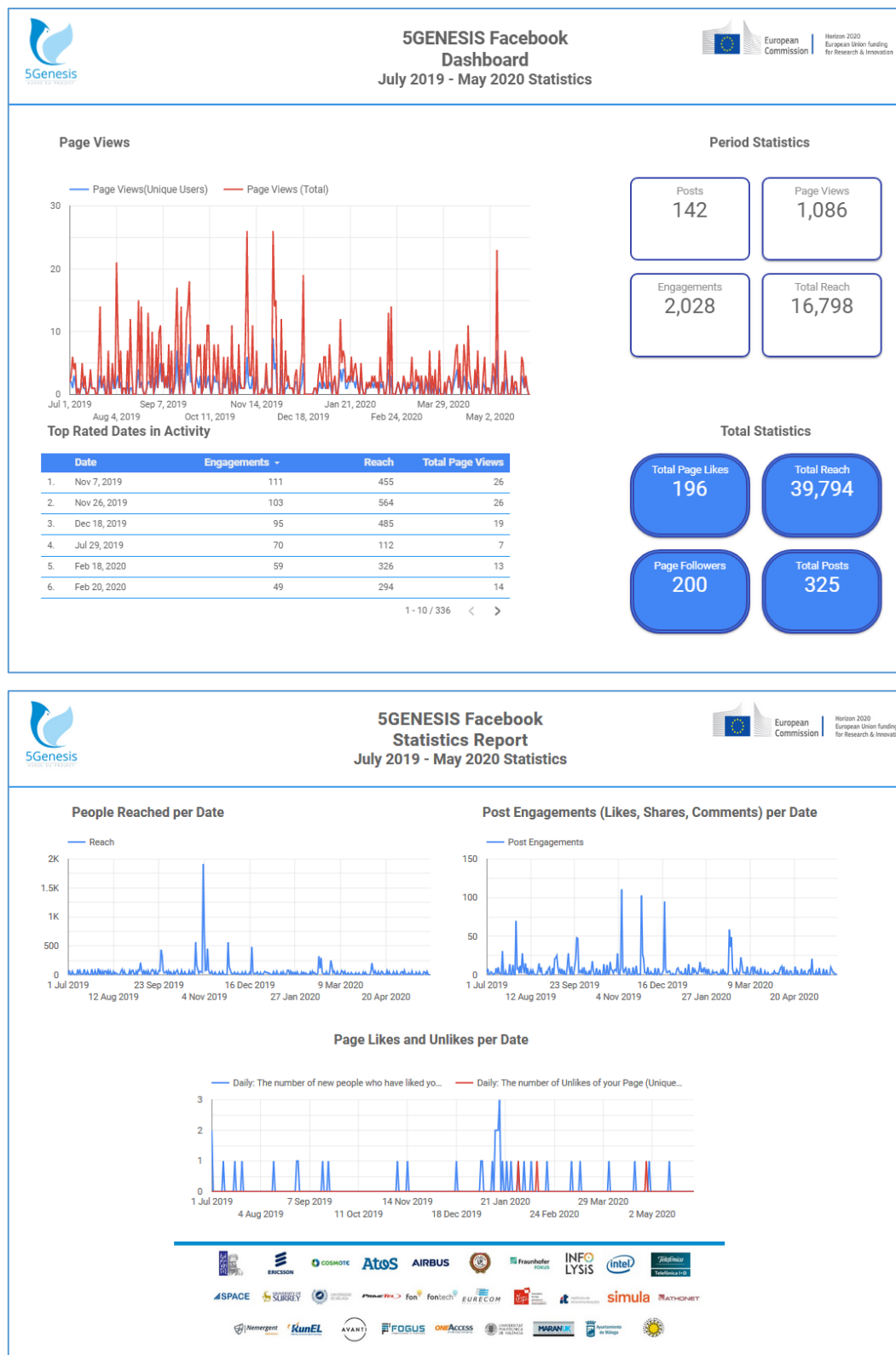


Figure 62. Facebook Annual Dashboard – Year 2

By analysing the numbers and graphs of the Facebook annual dashboard, can be seen that for the second year of the project's run, 142 posts have been made with more than 16700 users been totally reached, achieving 2028 engagements and 1086 page views.

4.3.3.4. 5GENESIS Instagram Annual Dashboards

The Instagram statistical dashboards for year two cover the period of July 2019 to May 2020. This channel differs from the rest of the channels due to its nature focusing on pictures. As this channel runs for a second year, it is shown that the followers and visitors of the channel keep following news from there which is relevant to the project's nature. The table below shows the total number of followers and posts per month covering the second year. Comparing to year 1, the total number of followers has increased and the posts vary due to the activities performed by the project's partners.

Instagram											
12-month period											
	1	2	3	4	5	6	7	8	9	10	11
Total Followers	74	77	82	87	93	94	100	104	102	112	118
Posts per Month	5	10	16	12	15	9	11	16	10	11	10

Table 17. Instagram 11-month period information

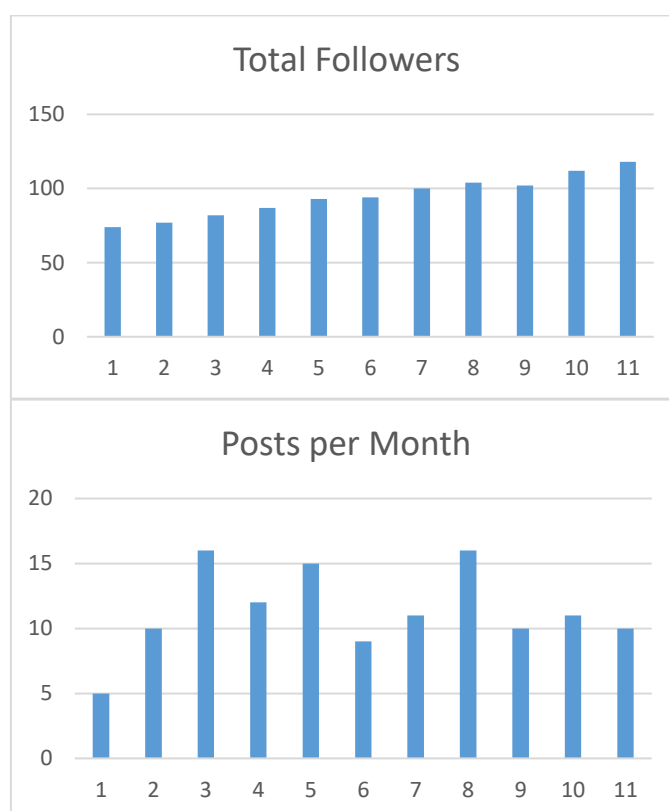


Figure 63. 5GENESIS Instagram 11-month period graphs: Total Followers and Posts per month (11 month period July 2019-May 2020)

The figure below shows the second year dashboard for Instagram for the period July 2019 to May 2020. Online access link for the statistical dashboards of Instagram can be found at:

<https://datastudio.google.com/reporting/9d138851-8e8a-48dc-be7e-69679895ab73>

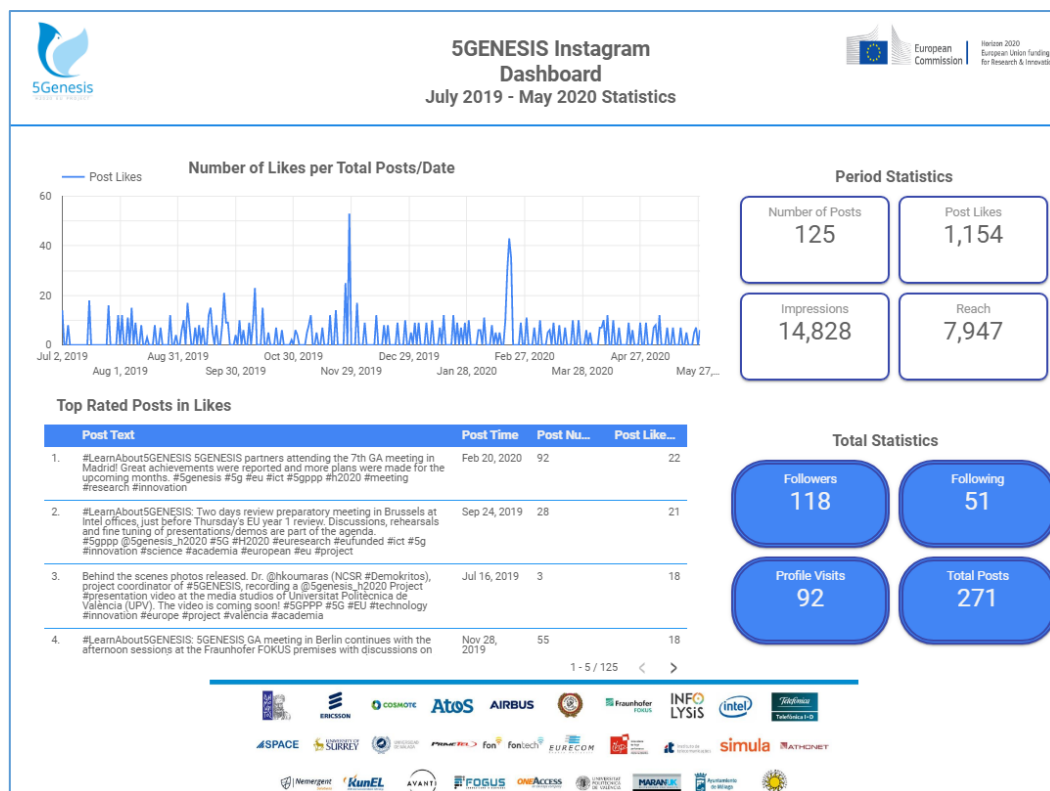


Figure 64. Instagram Annual Dashboard – year 2

In total, for the second year of 5GENESIS run, Instagram has been used for communicating 125 posts and achieving 1154 likes, more than 14000 impressions and reaching 7947 users.

4.3.3.5. 5GENESIS YouTube Annual Dashboards

YouTube channel is up and running since the project's initiation. This channel is continuously updated (i.e., weekly) like the rest of the social media channels as it is used to upload videos relating to demo activities, presentation or any other 5GENESIS related events. The figure below represents the two-year period dashboards covering the period of June 2018 to May 2020. Accumulated information that can be seen in the figure below is related to the number of videos uploaded, the views, shares and subscriptions. In total 10 videos have been uploaded in the 5GENESIS YouTube channel (5 videos in Year 2) and in total 63 users have been subscribed. The total views of 5GENESIS videos are more than 850 for the 2 years of project lifetime (310 views originating from the 5 Y2 new added videos).

For viewing online the YouTube dashboard one may use the following link:

<https://datastudio.google.com/u/0/reporting/5d30da1a-49a4-4a67-bf75-9581885b05f8/page/qGMW>



Figure 65. YouTube Dashboard – years 1 and 2

4.3.4. Dissemination and Communication Goals for the rest of the project

Following the completion of the first two years of the project, and according to the communication strategy and plan already defined at D7.1, we summarize the quantitative goals for the rest of the project lifetime, based on the split ratio percentage of 20/35/45 that is used for setting the minimum planned goals per phase (based on the total quantitative figures and the timeline already set in Table 2 for the entire project lifetime). Following the above split ratio, Table 18 summarizes the targeted goals for 5GENESIS dissemination and communication activities (45% of the total project goals for phase 3 as per the 20/35/45 split ratio percentage) till the end of the project.

Activity	Year 3 Goals
Publications (in Journals/Conferences)	>11 in journals/conferences/workshops (>22 in total)
Publications (in Workshops)	
General Publications (Magazines, Books, Websites, Newspapers)	
Workshops (organized by 5GENESIS, co-organized with other projects, participation)	>11
Presentations (in Conferences, Workshops, InfoDays, Events)	>11
Participation in Conference Panels and Invited Talks	>5
Others (Exhibitions, Business Days, Booths in Conferences, Poster Sessions, Awards)	>11
Demonstrations in industrial/exhibitions and scientific events	>5
Total Activities for the rest of the project	>65

Table 18. 5GENESIS communication and dissemination goals for the rest of the project

Based on the successful results achieved during years 1 and 2, without any deviations or problems (except for specific activities affected by COVID-19 pandemic – please refer to Section 4.3.4.1.), there is no need to modify or update the already presented communication-dissemination plan and strategy of 5GENESIS (D7.1). However, worth mentioning is the need for increasing the project’s publication activities since more project achievements will be available for formal documentation and dissemination to the stakeholders and 5G business, academic and scientific target audiences. In addition, 5GENESIS presence in conferences will become more intense with more workshops organized and co-organized (to counter-balance for the cancelled ones due to COVID-19), presentations and demonstrations.

4.3.4.1. 5GENESIS cancelled Dissemination Activities due to COVID-19

5GENESIS planned activities, such as workshops, presentations, and booths, have been affected by the COVID-19 outbreak. For the period February-June 2020, 5GENESIS had planned to participate in several events which were either cancelled or became virtual due to COVID-19 pandemic (and specific activities such as workshops were cancelled from the virtual event). As a result, several 5GENESIS dissemination activities were cancelled either because the corresponding event was cancelled or because the event went virtual and the specific activities could not be performed any more. The table below summarizes a list of such cancelled events and activities.

5GENESIS cancelled Dissemination Activities due to COVID-19	
Mobile World Congress 2020 (MWC2020), 24-27/02/2020, Barcelona	Booth, Demo, Videos Communication material (leaflets, stickers)
IoT Week 2020, 1-5/06/2020, Dublin	Workshop, presentations
TMA PhD school	Talk and Hands-on Exercise
EuCNC 2020, 15-18/06/2020, Dubrovnik	Booth, Demos, Videos, Presentations, Panel Discussions, Communication material (leaflets, stickers)
IEEE NetSoft 2020, 29/06 - 03/07/2020, Ghent	5GVertEx Workshop

Table 19. 5GENESIS cancelled dissemination activities due to COVID-19

In specific, in some of these events, appropriate preparations and actions have taken place, as detailed below.

- **Mobile World Congress 2020 (MWC2020)**

5GENESIS should have been present with a booth at the MWC 2020. At the same booth the other two ICT-17 projects 5G-EVE and 5G-VINNI and also 5G-PPP should also have been present. Several demonstrations, presentations and videos would have showed off and communication material in electronic and printed format would be distributed. Videos prepared for MWC2020 have been made available through the 5GENESIS YouTube channel.

- **Workshop organization within IoT-WEEK 2020**

UPV organized a workshop for the IoT-Week (<https://iotweek.org/>) under the track “More connected than ever: the raise of 5G & IoT Networks”. In this workshop, 5GENESIS partners should have presented relevant work with regard to the integration, use cases and validation

of IoT technologies within 5G deployments under analysis in Surrey and Limassol platforms (i.e. the ones that consider IoT and mMTC services). In particular, the session should have turned around the integration and testing of LoRaWAN and WiFi within the 5G architecture, as well as the testing and measurements of NB-IoT. The topics that should have been discussed are:

- “LoRa and 5G Solution for Coverage in Underserved Rural Areas, the Limassol Use Case”, presented by UPV.
- “Guidelines for an Energy-Efficient Tuning of the NB-IoT Stack”, presented by KAU.
- “WiFi Network with a 5G Deployment based on WiFi Slice Management”, presented by FON.
- “Coverage and Deployment Analysis of Narrowband Internet of Things in the Wild”, presented by SRL.

- **Invited tutorial and hands-on exercise at TMA PhD School 2020**

The 10th TMA PhD School was planned to take place on June 8th –10th 2020 in Berlin, Germany, but was cancelled due to the pandemic. The TMA PhD School includes a set of invited 2 hour lecture slots that normally also include some hand-on exercises or demos, poster sessions for the students and an informal interactive session and social events where students and lecturers have the opportunity to interact informally. The 2020 TMA PhD School intended to look at the intersection between network measurements and machine learning, with a hands-on flavour where students would have the opportunity to get some practical experience playing with a tool or a testbed. Anna Brunstrom from KAU and 5GENESIS was one of the invited speakers with a planned tutorial on experimental research for 5G networks. The tutorial was planned to include an overview of 5G and its KPIs, a description of the 5GENESIS experimentation framework and its components for monitoring and analytics as well as a demonstration of how to run measurements in 5GENESIS and the opportunity to use the 5GENESIS Analytics tools to examine some of the collected performance and infrastructure monitoring data.

- **EuCNC 2020**

5GENESIS project planned to attend with a booth at the EuCNC2020. Several demonstrations, presentations and videos should have been shown and communication material in electronic and printed format would have been distributed. Most of these activities were cancelled early enough so that no further actions are to be taken. Eventually the event turned virtual with specific number of activities in the agenda in which 5GENESIS participated with panel participation, presentation and poster session.

- **5GVertEx Workshop, IEEE NetSoft 2020**

5GENESIS prepared the 1st Workshop on 5G Verticals and Experimentation (5GVertEx) which would be held in conjunction with the IEEE NetSoft2020 at Ghent, Belgium at 29/06 – 3/07/2020. The Call for Papers deadline was on 14/02/2020. Part of the event went virtual and major activities were cancelled including this workshop.

(<https://medianetlab.gr/events/workshops/5g-vertex/>).

5. 5GENESIS IN 5GIA-EC PROGRAMME

5.1. Purpose and Objectives

Most 5GENESIS consortium partners are participating in several 5G-PPP organized activities (5GIA+EC). The purpose is to align, impact and synergize with the 5G-PPP Working Groups (WG). This stream of activities is very important to ensure that the outcomes of the 5GENESIS project are aligned with what is happening in the surrounding international research ecosystem, and that the main achievements, especially the technical ones, get proper visibility in the research community and impact on the society in the broad sense.

5.2. Contributions to 5G-PPP

Since the beginning of the project, most of the 5GENESIS consortium partners have been actively participating (and will continue to do so) in the 5G-PPP organized activities.

Ongoing monitoring activity is being performed by the partners following the most important 5G-PPP WGs, and – when the case – contributions from the 5GENESIS project are discussed in the telcos or at the face-to-face workshops organized by the 5G-PPP association or even communicated through 5G-PPP communication channels (5G-PPP website, newsletter, newsflash, social media) and published in the form of white papers.

The 5GENESIS project has appointed several partners to contribute to 5G-PPP WGs as described in the table below:

Working Group	Main representative	Main representative Company / Organisation	Second representative	Second representative Company / Organisation
5G-PPP Steering board	Dr. Harilaos Koumaras	NCSR Demokritos	Dr. Anastasios Kourtis	NCSR Demokritos
5G-PPP Technical Board	Prof. Pedro Merino Gomez	University of Malaga	Dr. Dimitris Tsolkas	Fogus
5G-PPP Comms	Dr. Valerio Frasca	INTEL	Dr. Jesus Gutierrez Teran	IHP
Pre-Standardization WG	David Artuñedo Guillen	Telefonica	Arthur Lallet	Airbus DS SLC
Spectrum WG	Prof. Eckhard Grass	IHP	Antonio Morgado	IT Portugal

5G Architecture WG	Dr. Jesus Gutierrez Teran	IHP	David Artuñedo Guillen Arthur Lallet	Telefonica Airbus DS SLC
SDN / NFV WG	Dr. Alejandro Fornés Leal	Polytechnic University of Valencia	David Artuñedo Guillen	Telefonica
Vision and Societal Challenges WG	Dr. Valerio Frasca	INTEL	Dr. Jesus Gutierrez Teran	IHP
Security WG	Dr. Georgios Gardikis	Space Hellas	Arthur Lallet	Airbus DS SLC
SME WG	Eneko Atxutegi	Nemergent	Vaios Koumaras	INFOLYSiS P.C.
Trials WG	Prof. Pedro Merino Gomez	University of Malaga	David Artuñedo Guillen	Telefonica
IMT-2020 Evaluation Group	Dr. Fotis Lazarakis	NCSR DEMOKRITOS	Dr. Valerio Frasca	INTEL
Test, Measurement and KPI Validation (TMV)	Alberto Florez Pages	Telefonica	Almudena Diaz Zayas	University of Malaga

Table 20. 5GENESIS representatives per 5G-PPP Working Group

5.2.1. 5GENESIS in 5G-PPP Steering board and Technology Board

5GENESIS has an active role in the 5G-PPP SB and TB. Dr. Harilaos Koumaras (PC), Prof. Pedro Merino Gomez (TM), and Dr. Dimitris Tsolkas (TMD), are the main 5GENESIS representatives. During the reporting period, the project participated in all the events and meeting of SB and TB and provided several inputs. In addition, 5GENESIS contributed to whitepapers led by 5G-IA and 5G-PPP (one related to ICT-17 ICT-19 projects interaction, and one related to edge computing), also the project hosted the physical TB meeting in Malaga (Oct. 2019) and organized a workshop on the key enablers for 5G experimentation. Finally, in the 5G-PPP eWorkshop that took place virtually on May the 25th the Open5GENESIS capabilities (APIs and portal) were presented and discussed.

- **SB meetings**

During the second year of the 5GENESIS project, the project coordinator Dr. Harilaos Koumaras participated in all the meetings (both the physical and the remote ones) of the 5G-PPP SB. The key activities performed during the reporting period were the progress monitoring of the WGs activities, as well as the synchronization and smooth collaboration of ICT-17 and ICT-19 projects at 5G-PPP level. This activity led together with the TB to the

publication of some 5G-PPP material related to onboarding third-party VNFs on the ICT-17 platforms for experimentation.

In parallel, a core activity of the 5G-PPP SB was the preparation of the 5G-IA booth at the Mobile World Congress (MWC) 2020 in collaboration with the ICT-17 project, where demonstrations and communication material were planned to be available onsite. Unfortunately, the COVID-19 crisis cancelled all the plans and the prepared material will be re-used and updated for the next MWC.

- **TB activities**

- **TB meetings.** During year 2 of 5GENESIS a series of 5GPPP TB phone conferences took place.
- **TB Key achievements document.** Responding to 5G-PPP TB request for gathering the current achievements of 5G-PPP phase 2 and 3 projects, 5GENESIS shared the following points, which actually, compose the major achievements of the project so far.
 - "1. Definition and implementation of the 5GENESIS functional architecture for experimentation on 5G infrastructures. That architecture encompasses automation in the experimentation process, openness on VNF on-boarding procedures, and flexibility in KPIs monitoring.*
 - 2. The definition of an experimentation methodology to validate 5G KPIs. It is based on structuring the required information in experiment descriptors and defining targeted test cases. It is partially, described in the related 5GPPP white paper: "On Board Procedure to 5G PPP Infrastructure Projects".*
 - 3. The Open 5GENESIS software, i.e., several software components that have been publicly released and are constantly kept updated, to enable experimentation on 5G infrastructures. This is a key contribution to 5GPP TMV WG, towards a testing kit for verticals.*
 - 4. The set of results on 5G KPIs validation, provided through experimentation on commercial 5G NSA equipment and by using 5G spectrum."*
- **PPP Phase 2 and Phase 3 Projects Trials & Pilots – Summary Table.** TB decided to produce a summary Table including the Phase 2 Projects Trials & Pilots to be developed, with information on use cases and timings. The information in the Table is expected to be consistent with the information related to Projects Trials & Pilots captured in the PPP Verticals Cartography (<https://www.global5g.org/cartography>). 5GENESIS support this action and has provided the requested info.

5.2.1.1. Session/workshop on key enablers in 5G experimentation

This session was oriented towards the identification of key enablers that improve the usability of 5G facilities that are being developed around Europe and provide to verticals more efficient and sustainable experimentation procedures. The session should ease and promote the exchange of the experiences between verticals, testbed operators and technology providers.

The session included the following topics:

- Lessons learned and insights from the first year of work on 5G facilities development and usage in the context of ICT-17 projects.

- ICT-17 projects presentations on the openness level of their facilities and the experimentation procedures developed so far.
- Verticals feedback with respect to the work done in ICT-17 projects to speed up the experimentation plans in 5G facilities.
- Potential experimentation requirements and directions from verticals to use 5G facilities in the context of ICT-19 projects.



Figure 66. Prof Almudena Diaz and Dr. Dimitris Tsolkas during the workshop on key enablers in 5G experimentation

5.2.1.2. Participation in the 5G-PPP TB e-Workshop, May 2020

5GENESIS actively participated in the 5G-PPP TB workshop which took place virtually on May 26-27, 2020. Two presentation were provided there, one on the open APIs and the capabilities of the 5GENESIS facility portal, (the presentation was provided by Bruno Garcia (UMA) and Elisa Jimeno (ATOS)) and one on the 5G-PPP TB white paper on edge computing that David Artunedo leads on behalf of 5GENESIS.

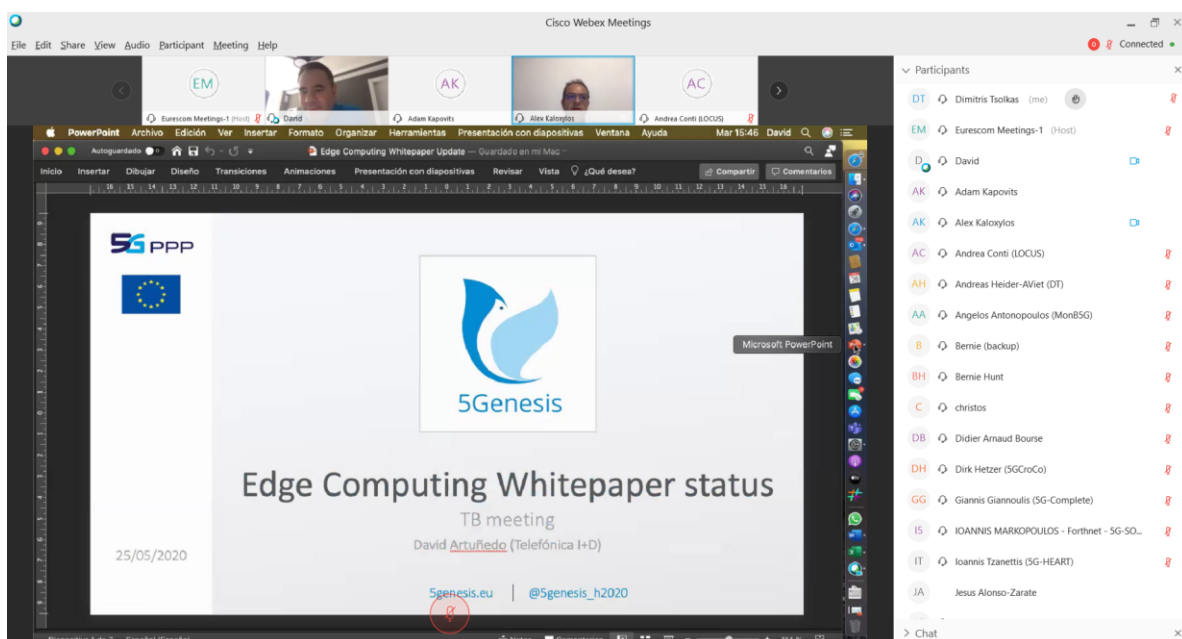


Figure 67. David Artunedo presenting the status of the white paper on edge computing, during the 5G-PPP TB virtual workshop

5.2.1.3. Contributing to the white paper on “Onboarding capabilities of ICT-17 projects”

5GENESIS had an excellent collaboration with the 5GVINNI and 5GEVE projects and managed to converge on a single compact document with vital information related to the exposure capabilities of the facilities that the projects provide as well as to the steps that a vertical should follow prior using the facilities. The white paper that emerge from this collaboration can be found online in the webpage of 5G-PPP (<https://5g-ppp.eu/wp-content/uploads/2020/04/On-Board-Procedure-to-5G-PPP-Infrastructure-Projects-1.pdf>).

5.2.1.4. Coordinating the preparation of TB Whitepaper on “The role of Edge Computing in 5G”

In October 2019, the 5G-TB organized a Technical Workshop in Málaga, held at the Ada Byron building in the University of Málaga campus. One of the keynotes sessions proposed by 5GENESIS was “The role of Edge Computing in 5G”, moderated by David Artuñedo, standardization Manager of 5GENESIS. The session counted with the collaboration off several project representatives, and the topic got a lot of interests. As part of the action points of the Technical workshop, Mr Didier Arnaud Bourse proposed to create a Whitepaper on the topic, to be elevated at the TB for approval.

The whitepaper was approved in January 2020, and Alexandros Kaloxyllos (Executive Director of 5G-IA) asked David Artuñedo to lead the development of the Whitepaper. The Whitepaper kick off meeting took place in February 14th, and several 5G-PPP WGs were invited to contribute. The following representatives of 5G-PPP WGs are participating in the whitepaper edition:

- Stephanie Parker (Pre-Standardization WG)
- Hakon Longsethagen (Vision and Societal Changes WG)
- Carles Anton (Trials WG)
- Pascal Bisson (Security WG)
- Bessem Sayadi (Software Networks WG)

The latest status of the whitepaper was presented by David Artuñedo during last Technical Board meeting on May 26th 2020. The whitepaper continues developing and the target date for release is September 2020.

5.2.2. 5G-PPP Comms

One 5GENESIS representant person, Dr. Valerio Frascolla, has been constantly attending all the calls of the WG on Communication, led by Jacques Magen. Scopes of the WG is to align and share the latest news among 5G-PPP-related projects on all sort of dissemination activities: workshops panels, special session organized by a project, journal and special session driven b a project of the 5G-PPP family. Such calls have been instrumental to align the dissemination activities of 5GENESIS with all that was at the same time happening in the ecosystem, and allowed 5GENESIS to reach the broadest possible audience, thanks to the service provided by the COMM WG, e.g. sharing through mails main dissemination and communication activities resulting out of a project activity.

5.2.3. Interactions with the 5G-PPP WGs

5.2.3.1. Pre-Standardization WG

This WG has a strong focus on working with Verticals as input to 3GPP. During the reporting period, the WG updated and published the action Plan from the 2nd 5G Vertical User Workshop: <https://www.global5g.org/sites/default/files/Action%20Plan%20from%202nd%20vertical%20user%20workshop.pdf>.

5GENESIS has actively contributed to the following items:

- Report on the achieved SDO impact
- Shared with the WG about the intended and planned impact to be achieved by 5GENESIS on standards
- Suggestions to the WG to facilitate the 5GENESIS impact to SDO

In addition, two webinars were organised by the WG that the project attended. The first webinar called “3GPP Progress so far: Industry Verticals and Releases 16 and 17” was organized on the 5th of May 2020. The second webinar was on ‘5G for industry verticals, standardisation and deployment challenges’ and took place on the 18th of June 2020. It was co-hosted with the EU 5G Observatory and a sub-set of 3GPP MRPs and is looked at spectrum sharing, service continuity and private networks from the perspective of diverse verticals, including automotive (5GAA), manufacturing (5G-ACIA), broadcasting and media (5G-MAG) and public safety (PSCE).

5.2.3.2. Spectrum WG

The main activity of this WG is related to the request from the BEREC (Body of European Regulators for Electronic Communications) asking for new topics that should be taken into consideration in the regulation of 5G.

5GENESIS (IT) provided contributions and suggested the following items:

- To issue 5G licenses with limited time and geography scopes (e.g. 1 hour, 1 km²)
- To issue 5G licenses allowing that same spectrum might be used both for access and backhaul.
- To identify unlicensed bands where selected 5G services can be offered.

5.2.3.3. Architecture WG

5GENESIS participated to the 8th **Workshop** of this WG which was held at EuCNC 2019 in Valencia, Spain, entitled “5GArch 2019: International Workshop on 5G Architecture”. The workshop included presentations related to the third release of the **5G Architecture White Paper v3.0** (https://5g-ppp.eu/wp-content/uploads/2019/07/5G-PPP-5G-Architecture-White-Paper_v3.0_PublicConsultation.pdf). The main contributions of this White Paper stemmed from Phase 2 projects.

The main representative of 5GENESIS in this WG, Dr. Jesús Gutiérrez (IHP), acted as the chapter 4 editor of the White Paper. He presented the work of several of the 5G-PPP Phase 2 projects (including, a brief mention to 5GENESIS) in the area of Core and Transport networks.

5.2.3.4. Software Networks WG

During the second year of 5GENESIS, the 5G-PPP Software Networks Working Group focused on analyzing how 5G-PPP projects interpret Cloud-Native design patterns and which are its adoption barriers, effort which was reflected in a **white paper titled “Cloud Native and Verticals’ services”**.

5GENESIS contributed to the whitepaper on “Cloud Native and Verticals’ services”, released in September: https://5g-ppp.eu/wp-content/uploads/2019/09/5GPPP-Software-Network-WG-White-Paper-2019_FINAL.pdf. This whitepaper had direct impact in appointing a liaison member from ETSI Industry Specific Group (ISG) to CNCF (Cloud Native Computing Foundation). Besides, a homonymous abstract of the latter originally prepared for MWC 2020 aimed at summarizing the three phases required to evolve from Virtual Network Functions (VNFs) to Cloud-Native Functions (CNFs): <https://5g-ppp.eu/wp-content/uploads/2020/02/5G-PPP-SN-WG-5G-and-Cloud-Native.pdf>

The ETSI NFV group just published its Release 4 specification, in which there is a strong influence from the WG on the key aspects depicted in the “Cloud Native and Verticals’ services” white paper related with containers and its orchestration.

The WG has a shared Excel with software outcomes from all projects so participants can link their respective mature, documented and/or tested open-source software outputs with the other of projects, allowing their reuse.

The WG also had plans to organize a **workshop** at EUCNC2020 (Half day) entitled “From cloud ready to cloud native transformation: Operations and Performances, third edition” bringing together the insights from 14 different ICT-17, ICT-18, ICT-19 and ICT-20 projects. At this workshop, 5GENESIS would have participated with the talk: “Management and Orchestration of 5G Slicing in a Cloud Domain”. Since this workshop was canceled, the WG is discussing to reuse the material by either organizing an open online workshop towards the end of the year or consider another physical location.

The SB has reviewed the work on the WG work and achievements during the SB meeting in Brussels 21 Jan 2020.

5GENESIS proposed to the WG to focus on defining a common framework and criteria to compare the software performance and results of the heterogeneous project’s platforms, describing the type of workload, use cases and problems that each project addresses and classifies its technologies to be comparable.

Currently, the WG is preparing a white paper jointly with other 5G-PPP WGs regarding the Role of Edge computing in 5G. A first version of this white paper is almost prepared so the review process will start soon. And finally, the WG is deciding whether preparing a white paper related to software performance of the heterogeneous project’s platforms would be of high interest as an activity for the current year, not just at a WG level but also for the rest of the 5G-PPP community.

5.2.3.5. Vision and Societal Challenges WG

A 5GENESIS representative, Dr. Valerio Frascolla, attended all meetings and calls of the sub-WGs:

- Pre-structuring model (PSM), led by Didier Bourse,
- Horizon Europe Vision, led by Arturo Azcorra,
- Member State 5G programs, led by Carles Anton.

Relevant information discussed during the calls, and input from the 5GENESIS perspective, were exchanged between the participants of the sub-WGs calls and the project partners during WP7 calls. That way a fruitful and timely exchange of important information was guaranteed from both sides.

5.2.3.6. Security WG

A physical meeting was hosted at Orange Garden in Chatillon France on the 22nd of November 2019. A 5GENESIS presentation was made with the two identified security topics which are the “Security Analytics platform” and the “Security of the mission critical services (MCS)”. 5GENESIS provided the deliverables information where the description of these topics can be found.

The goal of this WG is now to produce whitepapers and to organize workshops on the following topics:

- Access control,
- SDN/NFV and Slicing,
- 5G Attack referential,
- Vertical Security Needs,
- and Edge computing.

The agreed work plan for 2020 is the following:

- Get the reporting from Phase 2 and 3 projects
- Produce at least a whitepaper
- Organize at least a workshop and a webinar

5GENESIS is actively taking part in the WG based on the defined goals and work plan.

5.2.3.7. SME WG

During the reporting period, the WG has worked on the organization of two main workshops, one on "New 5G business models and opportunities for SMEs" EIB workshop in Brussels on 19 February 2020 and one follow-up that was planned for EuCNC 2020, together with a related booth. Additionally, the WG dealt with following aspects:

- The focus on ICT-41 project calls where the target is to have a 50% SME participation (in terms of BUDGET, NOT member number).
- The promotion of SMES with the new update of the SME web page “[Find your SME](#)” and the [SME brochure](#). A success stories work is also scheduled. There are plans for adding an advanced search engine for SMEs page on the Networld2020 web site. In

parallel the WG also plans to promote SMEs in events and fairs like MWC, EuCNC, ICT, etc.

- The SME WG, with support from Full5G, is planning to develop a "European Strategy" for SMEs developing 5G-related products and solutions, which would take advantage of the EU SME strategy currently being initiated.
- An introduction to a new SME association named EANGTI (European Association of Next Generation Telecommunications Innovators) has been made and there is potential interest for some SME WG members to participate.
- Several surveys regarding the impact of COVID-19 on SMEs have been made. A study performed by OECD on the impact of COVID-19 on SMEs was presented (cf. https://read.oecd-ilibrary.org/view/?ref=119_119680-di6h3ggi4x&title=Covid-19_SME_Policy_Responses). Martel ran a survey at the beginning of the COVID-19 confinement period and published the results. 156 responses were received (The results analysis can be found hereby: <https://www.martel-innovate.com/remote-collaboration-survey/>).

5.2.3.8. Trials WG

The group had been working on the Cartography and it is now complete. The WG is working on ICT-19 Platforms Cartography (Features/Capabilities, Verticals, KPI, etc.) and Verticals Trials & Pilots (ICT-19, Phase 2 and ICT-18 Projects) based/targeted on ICT-19 Platforms & Nodes. During the reporting period, new ICT-19 projects have joined the WG.

5.2.3.9. IMT-2020 Evaluation Group

IMT-2020 5G-PPP Evaluation Group officially initiated its work in January 2018 based on the cooperation of Phase II 5G projects. Phase III projects have been invited to cover possible gaps beyond July 2019 until the end of the evaluation process.

5GENESIS contributed to the evaluation process as follows:

- Participation to "ITU-R WP5D Evaluation Workshop", Geneva, December 10 and 11, 2019 (participant: Fotis Lazarakis, NCSRDI). The main objectives of the workshop were to review the final submissions of the proposed RITs/SRITs for IMT-2020 as well as to review the evaluation results reported by the IEGs (Independent Evaluation Groups) at this stage.
- Analytical evaluation of User Plane latency for 5G NR (New Radio) and LTE (Rel.15) regarding 3GPP submission. The contribution has been included to the final version of 5G-IA Evaluation Report which was submitted in February 2020 as a regular input to ITU-R WP5D meeting #34, organized in Geneva. The report was also posted at ITU's web site). The 5G PPP Evaluation Group is interacting with ITU-R and IEGs in order to assist the procedure until the final decision on the submitted RITs/SRITs.

During the conference call on the 10th of March 2020, there was an agreement that the 5G-IA Evaluation Group will remain in stand-by mode until the ITU-R evaluation process has been finalized. Therefore, it was agreed that no further contributions or phone calls would be organized until further notice.

5.2.3.10. Test, Measurement and KPI Validation (TMV)

New ICT19 projects have been presented to the TMV WG. The presentation of different experimentation methodologies from the ICT17 projects has been made: past experiences from previous 5GPPP Phase II projects and new definitions. The needed alignment and the interfaces definition with ICT19 projects have started.

5GENESIS has shared the D6.1 (Trials and experimentation - cycle 1) and the D2.3 (Initial planning of tests and experimentation) deliverables with the TMV WG, which represents the 5GENESIS methodology and test cases that have been specified.

5GENESIS also shared with them the agents that the project has developed to run the test cases. Finally, we are part of the Vertical task force which is currently working on the definition of KPIs.

5.3. Interaction with other projects

5.3.1. 5GENESIS interaction with other projects

5.3.1.1. 5G!DRONES

5G!Drones aim is to trial several UAV use-cases covering eMBB, URLLC, and mMTC 5G services, and to validate 5G KPIs for supporting such challenging use-cases. The project will drive the UAV verticals and 5G networks to a win-win position, on one hand by showing that 5G is able to guarantee UAV vertical KPIs, and on the other hand by demonstrating that 5G can support challenging use-cases that put pressure on network resources, such as low-latency and reliable communication, massive number of connections and high bandwidth requirements, simultaneously. 5G!Drones will build on top of the 5G facilities provided by the ICT-17 projects and a number of support sites, while identifying and developing the missing components to trial UAV use-cases.

For the realization of the 5G!Drones platform on top of 5GENESIS, a key challenge thus becomes to properly project both concepts in a common and revised 5G!DRONES-Enhanced 5GENESIS architecture, optimized for 5G-assisted UAV experiments that encapsulates and reuses the existing capabilities. An initial gap analysis has identified components that are similar in both architectures and the work has now evolved to a concrete architecture that is depicted below in Figure 68.



Finally, in May 2020 a feasibility trial flight of a Drone with C2 channel being transmitted over 5G/5GENESIS platform was successfully performed. The trial has been captured and is available as video at the YouTube channel of 5G!Drones project, where 5GENESIS is also acknowledged (The video is available online [here](#)).

5.3.1.2. 5GHEART

The ICT-19 5G-HEART project will be trialling various transport use cases on the 5GENESIS Surrey platform. As such, 5G-HEART has been closely interacting with 5GENESIS to ensure full synchronisation between the capabilities of its Surrey node and the target use cases³ of 5G-HEART. Based on this interaction two trial showcase events have been scheduled to occur in Q2 2021 and Q3 2022.

5.3.1.3. 5G VICTORY

5G-VICTORI proposes the extension of the ICT-17 5GENESIS infrastructure towards railway venues with the provision of 5G equipment and enhancements to the existing components to accommodate the 5G-VICTORI use cases. The Fraunhofer FOKUS site in 5GENESIS is being equipped with state-of-the-art technologies consisting of sophisticated and high performance DCs, indoor and outdoor deployments of edge/transport and access components for internal testing and validation of experiments in urban ultra-dense areas. One of the key aspects of the 5GENESIS blueprint architecture is the ability to accommodate the access to the Berlin Platform and the definition and execution of experiments, which vertical industries could trigger as part of the trials to be carried out in 5G-VICTORI. The alignment between the two projects has been already defined with regard of the common equipment, which involves 5G access and transport solutions, the equipment connecting central and edge sites, cloud infrastructure and MANO servers, 5G core, edge computing, and monitoring, analytics and KPI evaluation support for the assessment of infrastructure-related KPIs.

At the demo sites, 5G-VICTORI will make use of the 5GENESIS know-how and available existing assets to extend the 5G connectivity to railway stations. The Open5GCore 5G Core Network used in 5GENESIS will be deployed in a railway station at the office area, where the user plane functions will enable lower latency and better throughput for data connections to support the locally deployed services. Besides this, a full edge computing deployment based on that used in 5GENESIS will be collocated in the office area encompassing the shared compute and storage resources. 5G-VICTORI will make use of V-Band small cells for extending the wireless backhaul connectivity to support remote 5G access networks and connectivity to moving rolling stock, which are based on an upgrade of 60 GHz mmWave solutions developed during 5GENESIS. Additionally, 5G NR equipment being tested in the framework of the 5GENESIS project will be used to provide connectivity to end-users at the railway stations. The full-chain monitoring and analytics framework developed in the context of 5GENESIS will be used in 5G-VICTORI to validate the proper function of the network components, and will oversee the collection and analysis of data and ensure a correct assessment of the KPIs. Finally, the Berlin facility will be able to create and adapt the interfaces for the support of the aggregation of measurements to enable 5G network KPI evaluation making use of the 5GENESIS KPI evaluation framework.

³ The reader can refer to the following deliverables of the 5GHEART project: D4.1, Transport vertical trial requirements definition and execution plan, October 2019; D2.2: User Requirements Specification, Network KPIs Definition and Analysis, February 2020; D4.2: Initial Solution and Verification of Transport Use Case Trials, May 2020.

5.3.1.4. INSPIRE-5Gplus

Project INSPIRE-5Gplus deals with all security issues that are related with 5G. It provides an architectural framework based on ETSI ZSM and several security enablers that are leveraged by AI/ML mechanisms and algorithms. In this frame NCSR is participating by offering its 5G facility for deployment, integration and testing of the developed framework. One of the INSPIRE-5Gplus work packages is specifically focused on the deployment and configuration of required infrastructure, integration of the proposed use cases. The topic where the liaison with 5GENESIS seems to be of relevance is the methodology of experimental process and the templates 5GENESIS uses to specify and describe experiments leveraging the 5GENESIS Open Experimentation Framework. As a first approach, a presentation of 5GENESIS architecture and methodology was performed and an example test case descriptor was provided. The next step will be to decide if the methodology is applicable for the use cases proposed by INSPIRE-5Gplus and the next action items involved in the implementation.

5.3.2. 5GENESIS interaction with US-EMPOWER

Pedro Merino, TM and leader of Malaga platform, presented the 5GENESIS project in the EU-US meeting organized by EMPOWER project in 5GTONIC premises in Madrid. From the US side, the two representatives were Ivan Seskar, the Chief Technologist at WINLAB, Rutgers University responsible for experimental systems and prototyping projects, and currently the program director for the COSMOS project responsible for the New York City NSF PAWR deployment, and Abhimanyu (Manu) Gosain, Senior Technical Program Director for PAWR and Director of Industry Engagement for Institute of Wireless Internet of Things at Northeastern University. One output of the meeting was the agreement to make specific collaboration 5GENESIS - COSMOS, that is for instance now materialized in the joint call for papers for special issue on "5G Mission Critical Applications" in the journal Sensors (<https://5g-ppp.eu/5genesis-call-for-contributions-to-sensors-special-issue-on-5g-mission-critical-applications/>)



Figure 69. Prof. Pedro Merino during the meeting with EMPOWER project representatives

5.4. Contributions to the EC Innovation radar

5GENESIS has successfully submitted an innovation to the EC Innovation Radar. The innovation has been described by partners in the 5GENESIS project, namely Karlstads Universitet (KAU), L.M. Ericsson Limited (LMI), and SIMULA Research Laboratory AS (SRL).

- **Innovation Title:** Monitoring and Analytics Framework;
- **Market Maturity of the Innovation:** 'Exploring' (based on the method described by EC Innovation Radar⁴;
- **Market Creation Potential of the innovation:** Addresses needs of existing markets.

Based on the plans of the EC Innovation Radar team, in the near future the above information about this innovation on the European Commission's Innovation Radar platform will be published⁵. The names of the beneficiary organisations in the project, identified by Innovation Radar as a 'key innovator' for this innovation, will also be published. Details of the EU-funded project the innovation was developed within will also appear on the platform (project acronym, project title, project description and project end-date). The information will be accessible to the public via this platform from the 20th of July 2020, joining the 3600+ EU-funded innovations already showcased on the platform.

5.5. First Release of the Open5GENESIS suite

The experimentation framework of 5GENESIS has reached the Release A, during the reporting period. The Release A used for executing the second cycle of experimentation in 5GENESIS. For the Release A, the consortium took the strategic decision to open source the 5GENESIS experimentation layer, launching the “Open 5GENESIS Suite” open source project at GitHub ([Link](#)), where all the components of the 5GENESIS experimentation layers (Rel. A) have been opensourced under Apache license.

The suite includes all the components of the 5GENESIS experimentation layer, which can be used by any third-party 5G platform in order to making them capable of supporting 5G experimentation. The released components include:

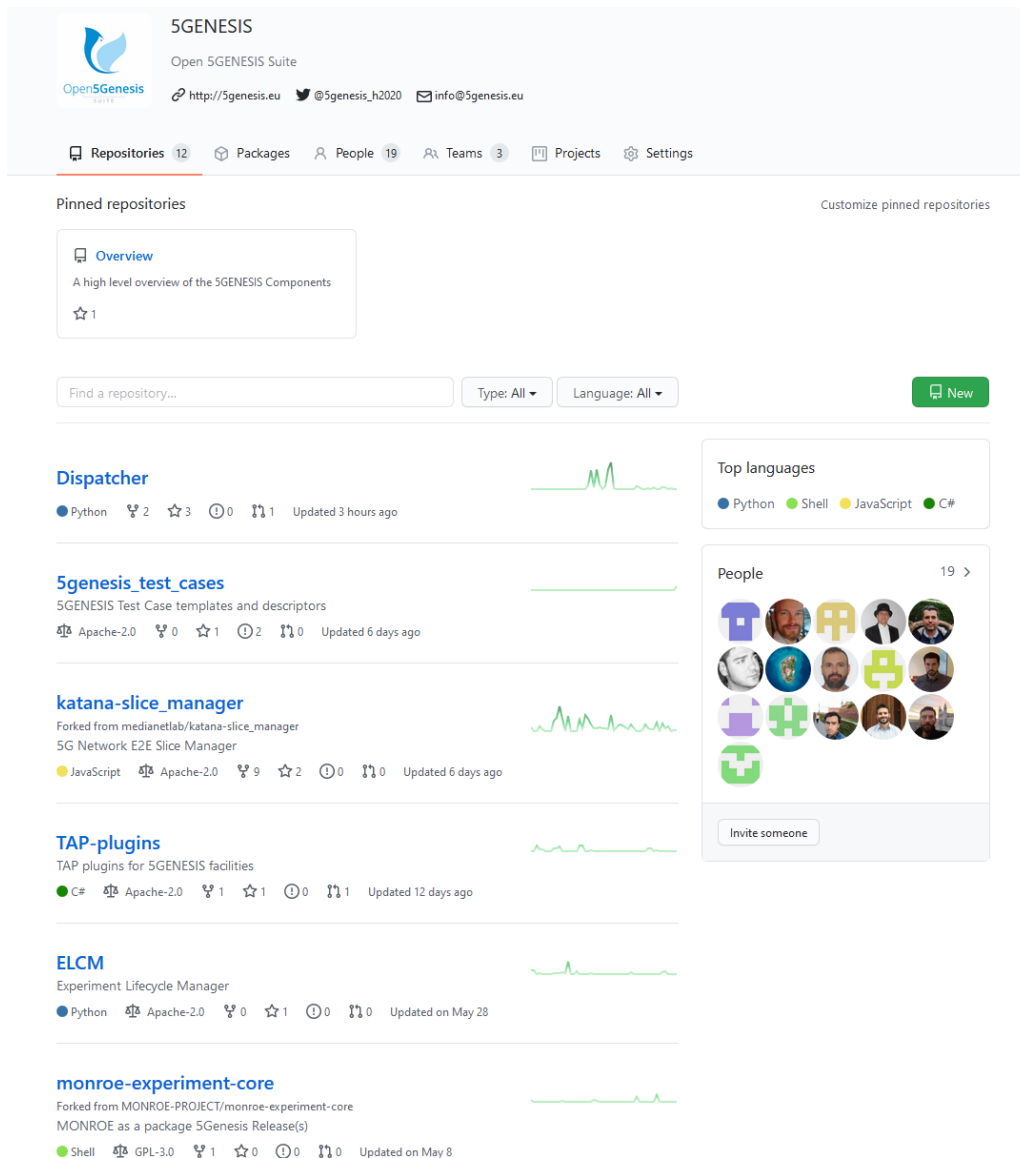
- 5GENESIS ELCM
- 5GENESIS Dispatcher
- 5GENESIS Test cases
- Katana Slice Manager
- Open-TAP Plugins
- Monroe Experiment core
- Remote ping agent
- Remote iPerf agent
- Analytics
- Portal

5GENESIS workplan also foresees the Release B of the experimentation layer in order to support the last and final cycle of experiment. All the work to be performed towards the release B by

⁴ https://ec.europa.eu/jrc/sites/jrcsh/files/booklet-a4_innovation_radar.pdf

⁵ <https://www.innoradar.eu/>

5GENESIS consortium is already done publicly at the GitHub repository, allowing third-party developers to be engaged and contribute.



5GENESIS
Open 5GENESIS Suite
<http://5genesis.eu> @5genesis_h2020 info@5genesis.eu

Repositories 12 Packages People 19 Teams 3 Projects Settings

Pinned repositories Customize pinned repositories

Overview
A high level overview of the 5GENESIS Components
★ 1

Find a repository... Type: All Language: All [New](#)

Dispatcher
Python 2 3 0 1 Updated 3 hours ago

5genesis_test_cases
5GENESIS Test Case templates and descriptors
Apache-2.0 0 1 2 0 Updated 6 days ago

katana-slice_manager
Forked from medianetlab/katana-slice_manager
5G Network E2E Slice Manager
JavaScript Apache-2.0 9 2 0 0 Updated 6 days ago

TAP-plugins
TAP plugins for 5GENESIS facilities
C# Apache-2.0 1 1 0 1 Updated 12 days ago

ELCM
Experiment Lifecycle Manager
Python Apache-2.0 0 1 0 0 Updated on May 28

monroe-experiment-core
Forked from MONROE-PROJECT/monroe-experiment-core
MONROE as a package 5Genesis Release(s)
Shell GPL-3.0 1 0 0 0 Updated on May 8

Top languages
Python Shell JavaScript C#

People 19 >
Invite someone

Figure 70. Open 5GENESIS Suite at GitHub



Figure 71. Open 5GENESIS Suite Logo

6. CONCLUSION

In this deliverable, 5GENESIS outreach activities as well as interactions with 5G-PPP and other projects, that took place during the second year of the project (July 2019-June 2020), have been presented, analyzed and evaluated. Overall, the project has achieved the targets set for the first year and managed to achieve an adequate number of outreach activities and publication reports. Key takeaways for the activities in the second year are the following:

- An accurate and continues monitoring procedure of all the activities was provided.
- The individual targets that were planned for each outreach activity and tool were fulfilled, with only one exception, i.e., the number of workshops that the project eventually organized, due to the cancelation of many events in the period of COVID-19 crisis (second half of the reporting period).
- In addition to the publications and the presentations that took place in the reporting period the project released the Open5GENESIS software, as an effort to contribute in the developers' community and other projects.
- Active interaction with three ICT-19 projects and one ICT-20 project started during the second year of the project.
- Notable contribution was provided, and active roles were taken in the framework of 5G-PPP, including the participation in WGs, the preparation of white papers and the host of the 5G-PPP TB physical meeting in October 2019.

ANNEX 1 – MONTHLY 5GENESIS SOCIAL MEDIA STATISTICAL DASHBOARDS

The 5GENESIS social media statistical dashboards are issued and distributed internally on a monthly basis, via the WP7 mailing list to all the WP7 members, forming a vital mechanism of the project for monitoring their monthly performance and impact to the public.

Twitter Monthly Statistical Dashboards

In the following sections, the monthly statistical dashboards of Twitter, referring to the second year of the project, are provided.

Twitter Statistical Dashboards July 2019

July 2019 Link:

<https://datastudio.google.com/reporting/1bqmDJmwo3EFd1B-RdBqZbVt7cWiZ5pbV>

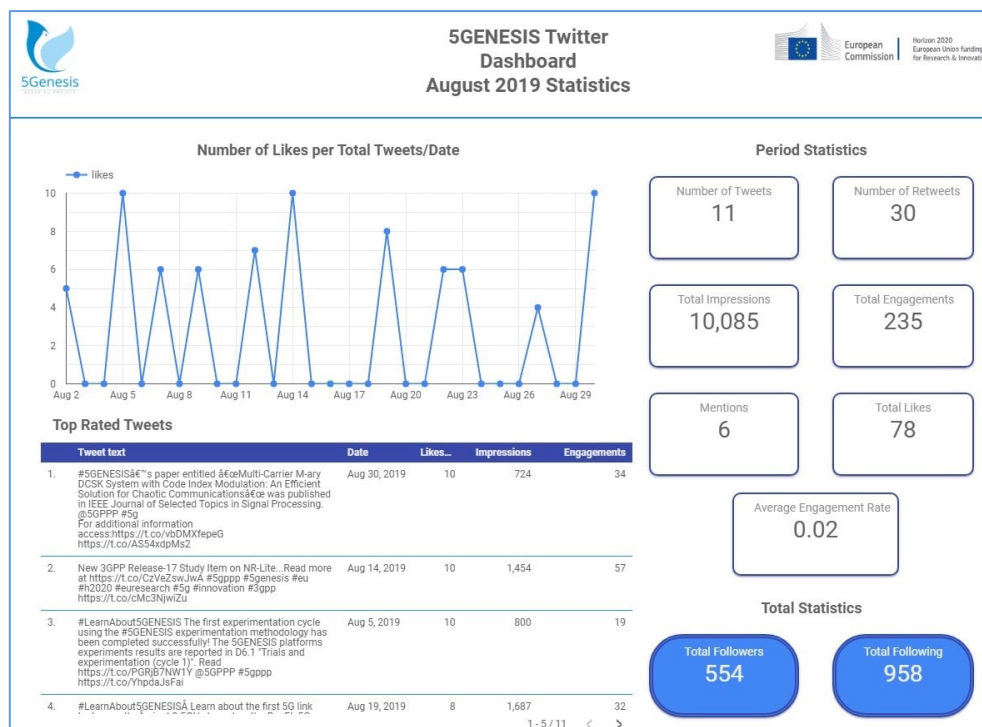


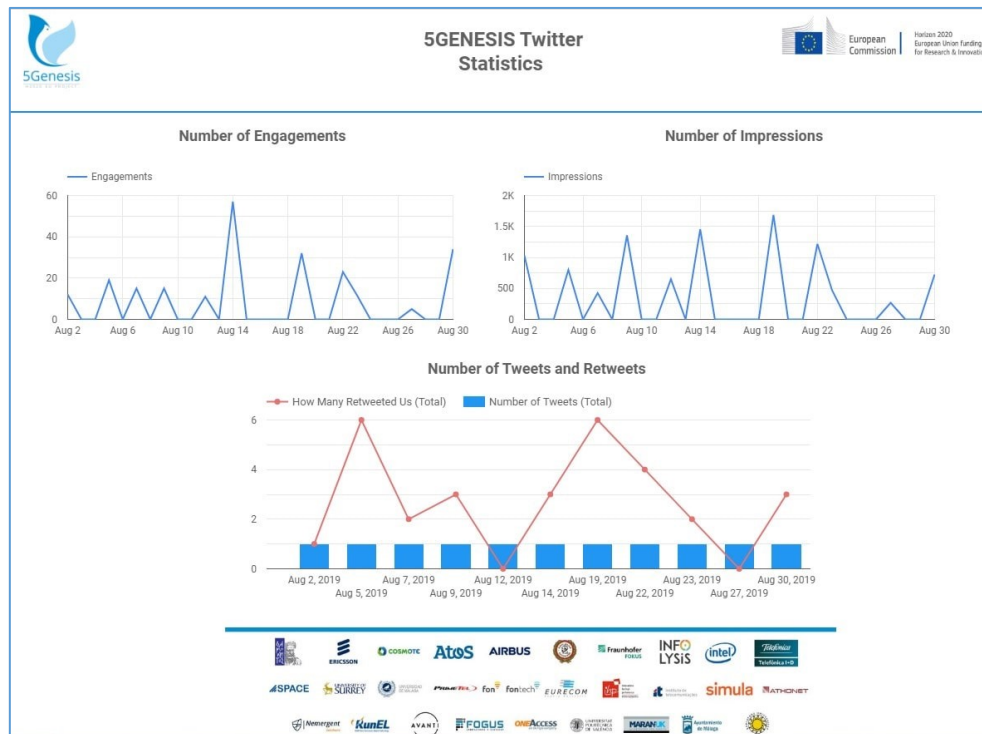


Twitter Statistical Dashboards August 2019

August 2019 Link:

https://datastudio.google.com/reporting/1UiaTsrxyiX-qW_dkPXLNRNknGPJura0

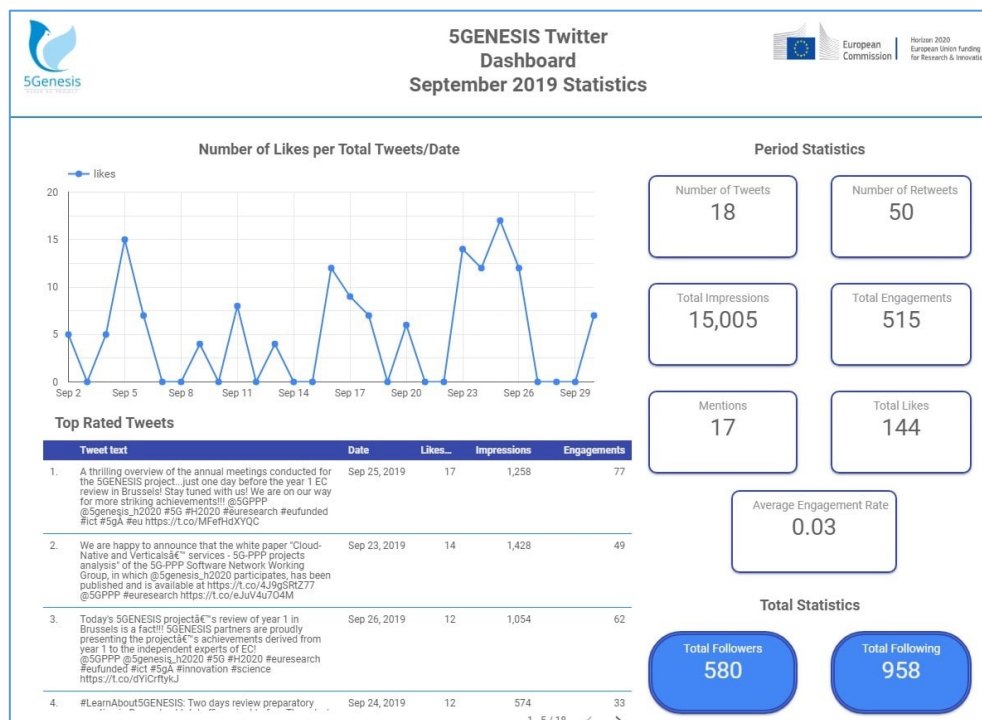


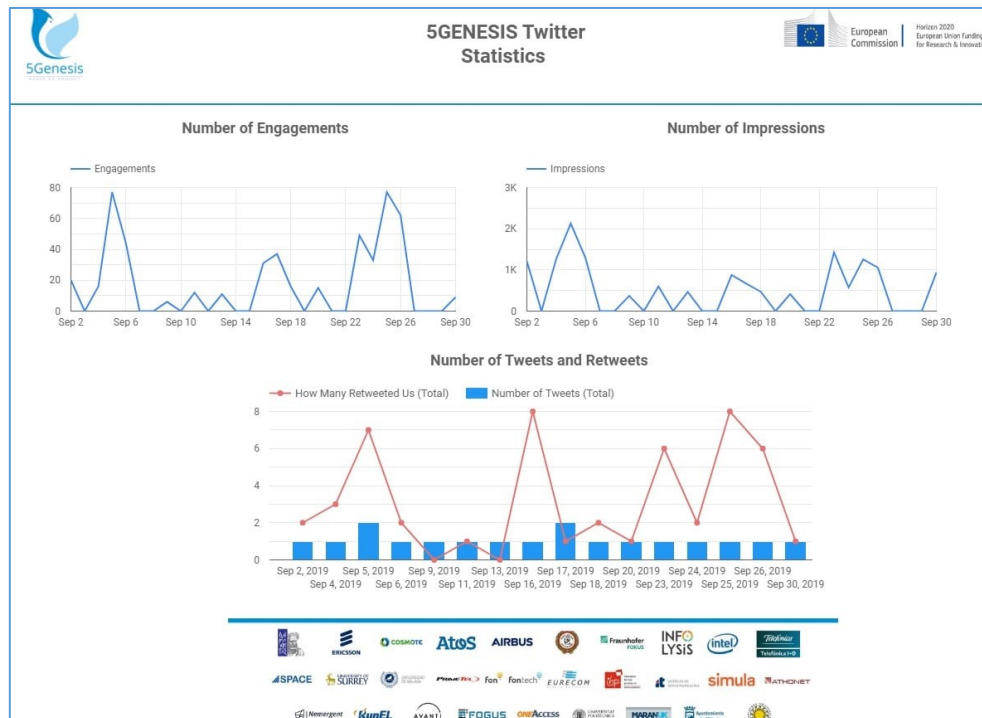


Twitter Statistical Dashboards September 2019

September 2019 Link:

<https://datastudio.google.com/reporting/1IHSEXYng0wmPFmCZNMhI8I3AQ2vmEVFn>

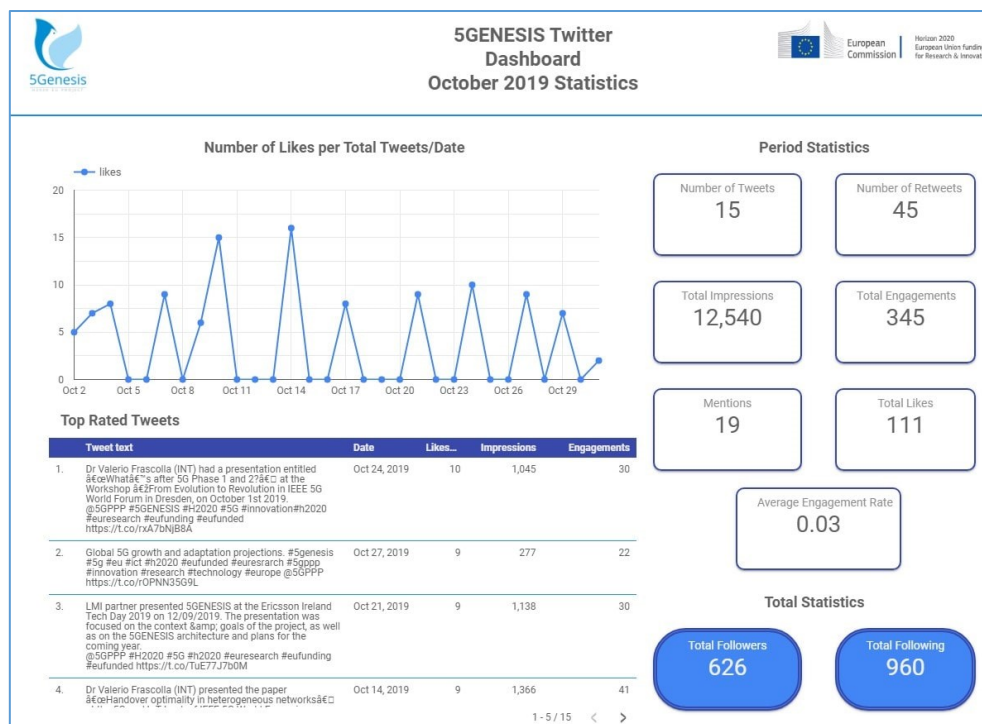


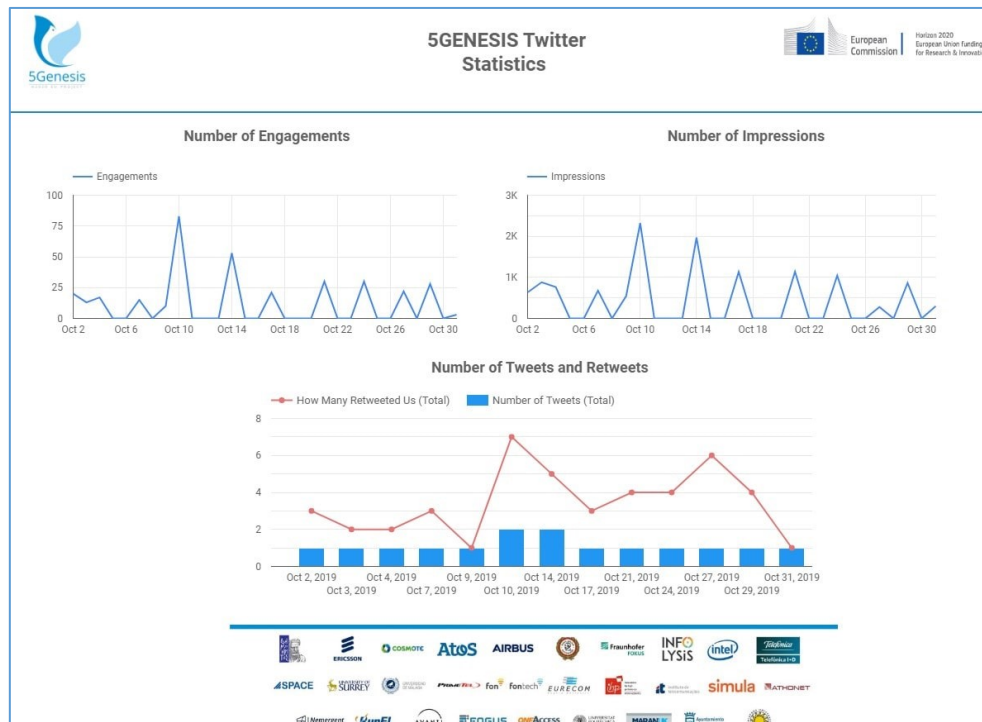


Twitter Statistical Dashboards October 2019

October 2019 Link:

<https://datastudio.google.com/reporting/2614cd12-2d8e-4b42-b51a-c8572761edd5>

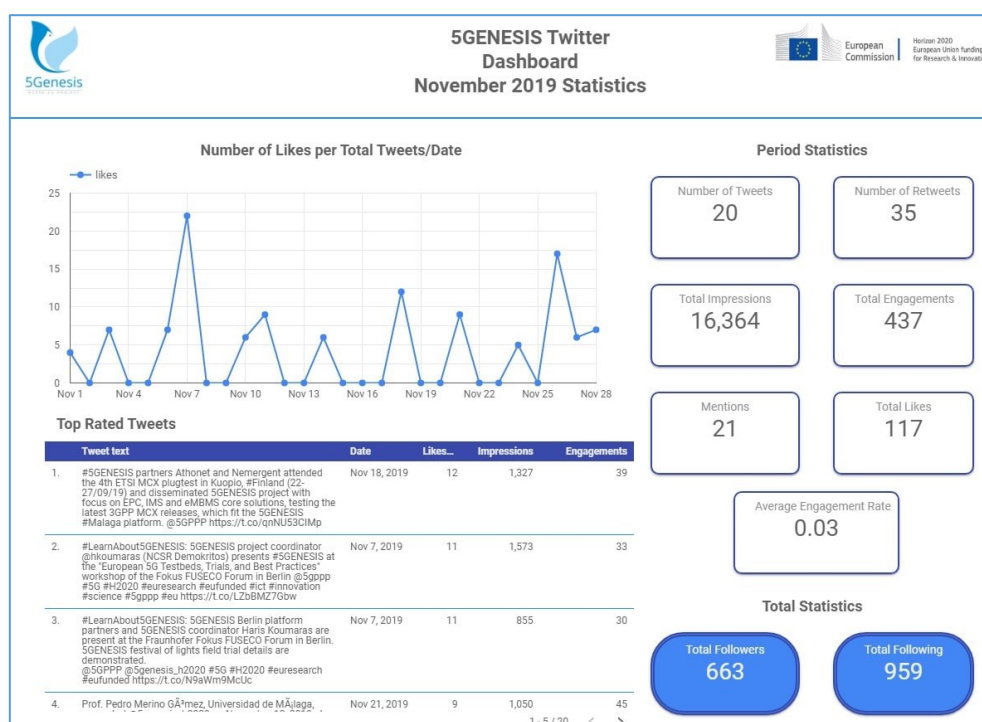


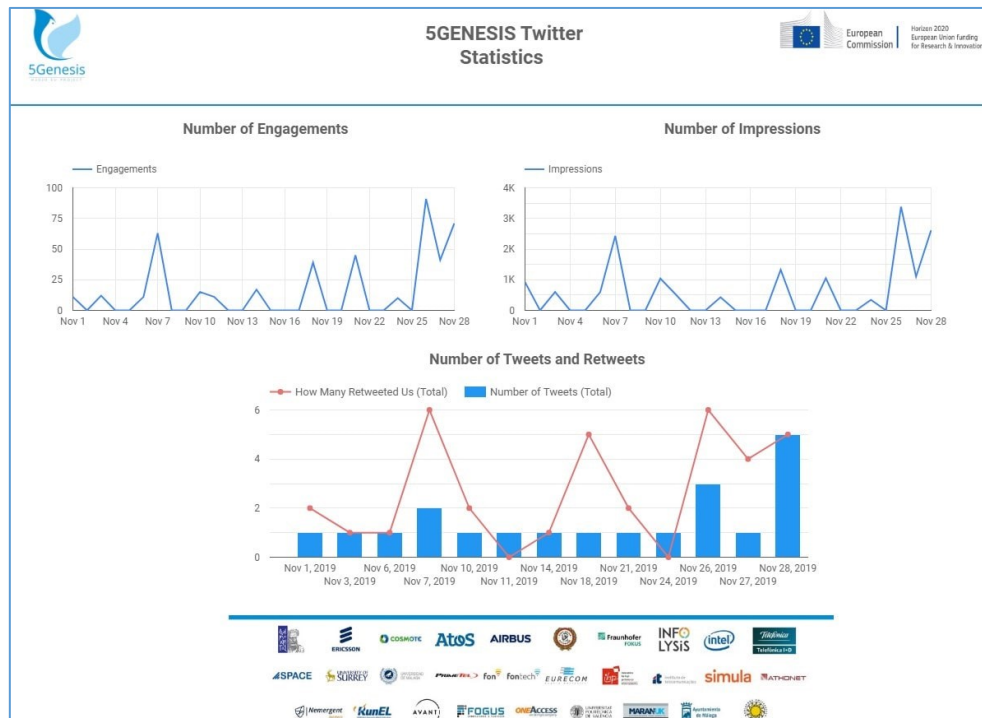


Twitter Statistical Dashboards November 2019

November 2019 Link:

<https://datastudio.google.com/reporting/4dbad961-73c0-4173-9fc0-94ec84c65f5b>

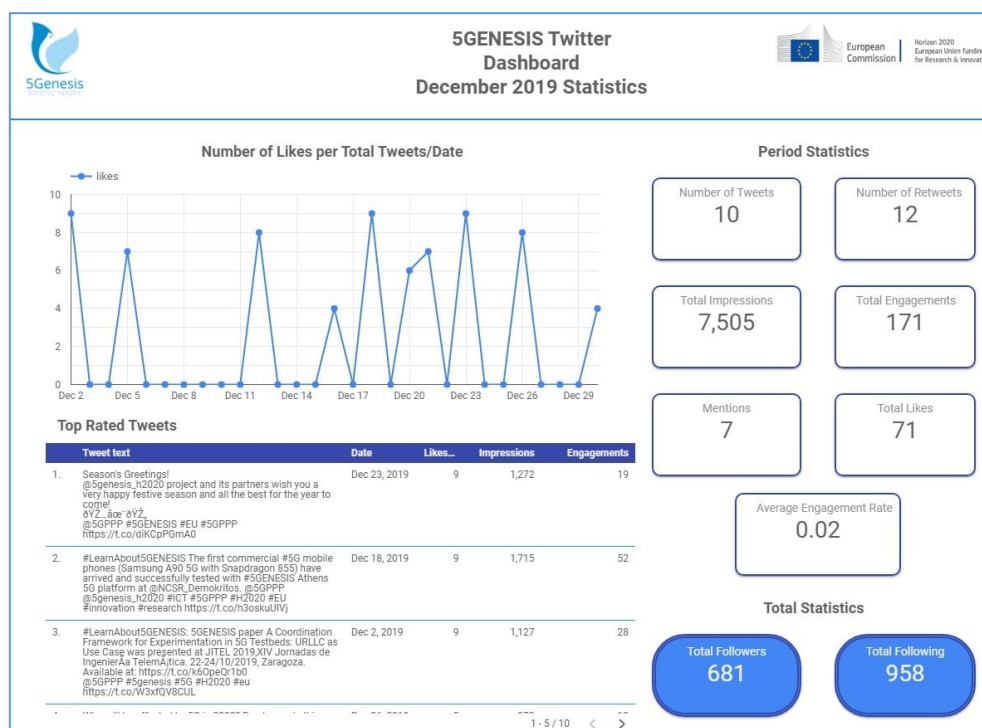


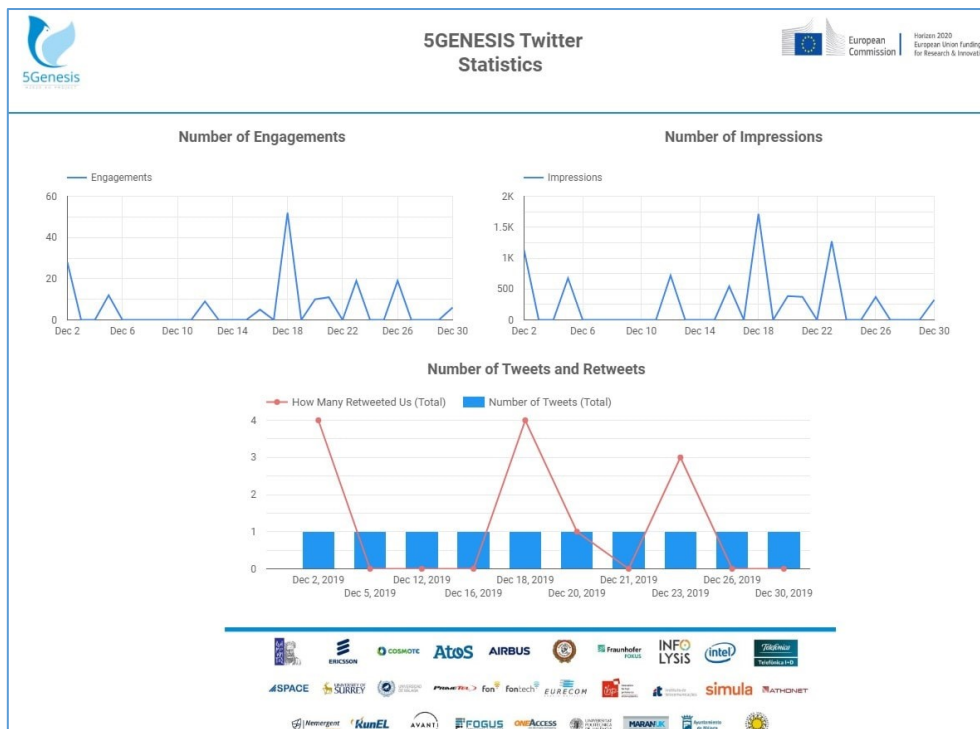


Twitter Statistical Dashboards December 2019

December 2019 Link:

<https://datastudio.google.com/reporting/2acf1abe-6bdf-4bab-9db6-587d3df0b1a1>

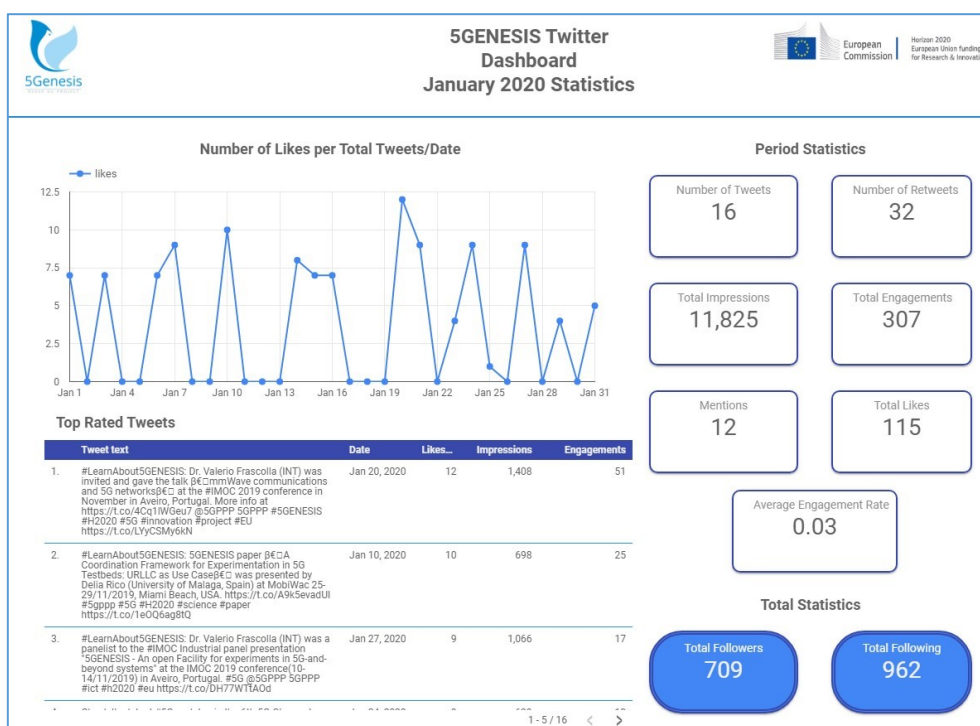


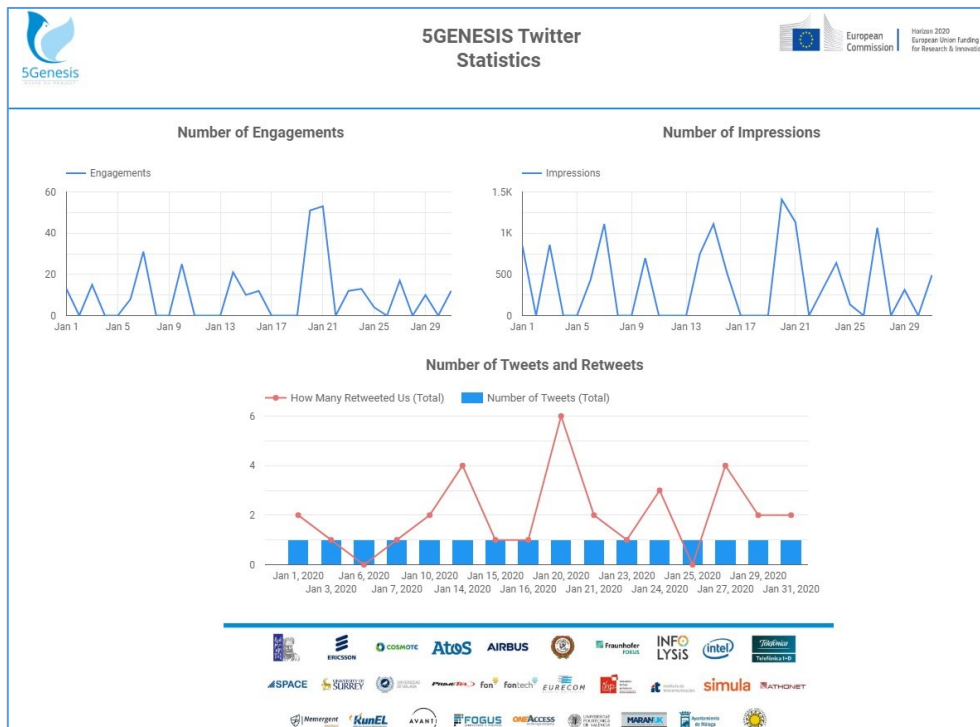


Twitter Statistical Dashboards January 2020

January 2020 Link:

<https://datastudio.google.com/reporting/c0fcb26b-e33f-4ec6-957b-b456080f1538>

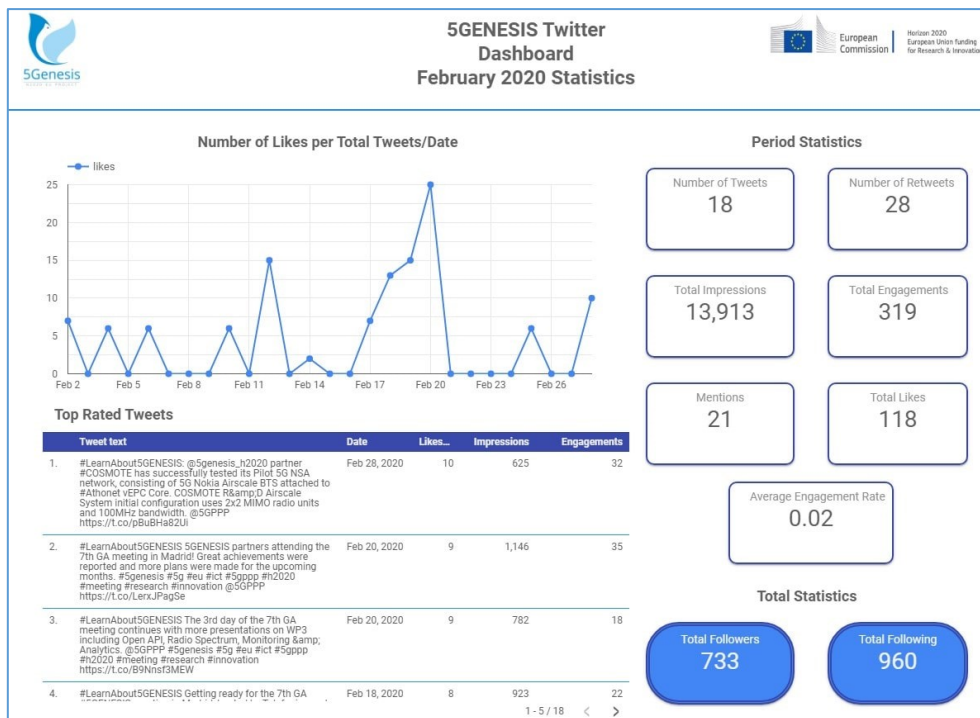


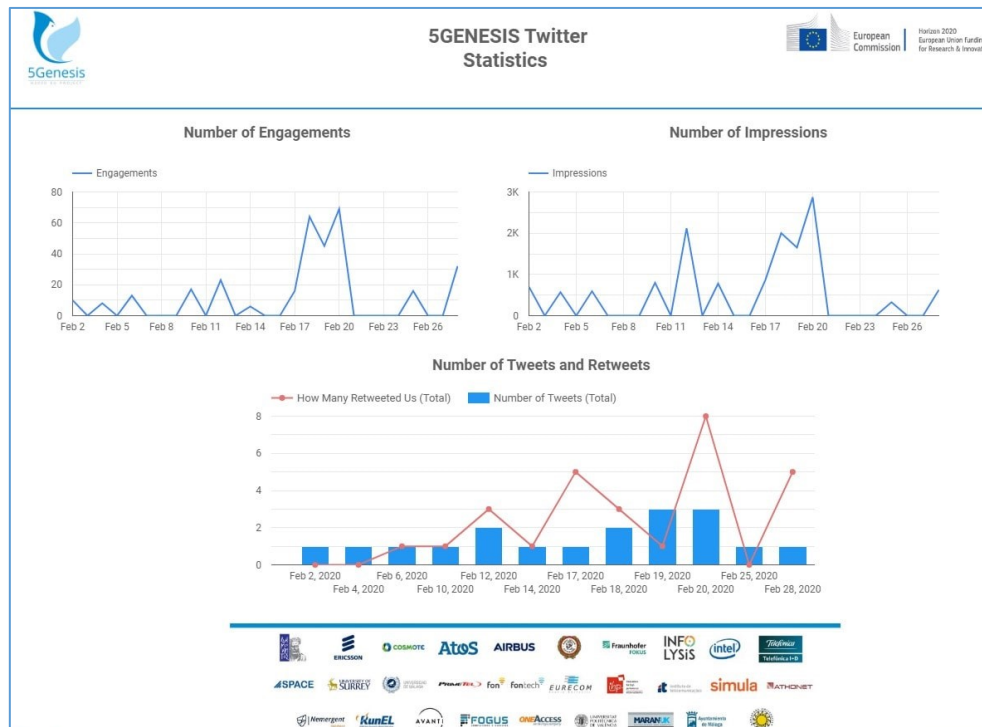


Twitter Statistical Dashboards February 2020

February 2020 Link:

<https://datastudio.google.com/reporting/f4ba39f7-42dc-46ec-b886-1a4af045f944>

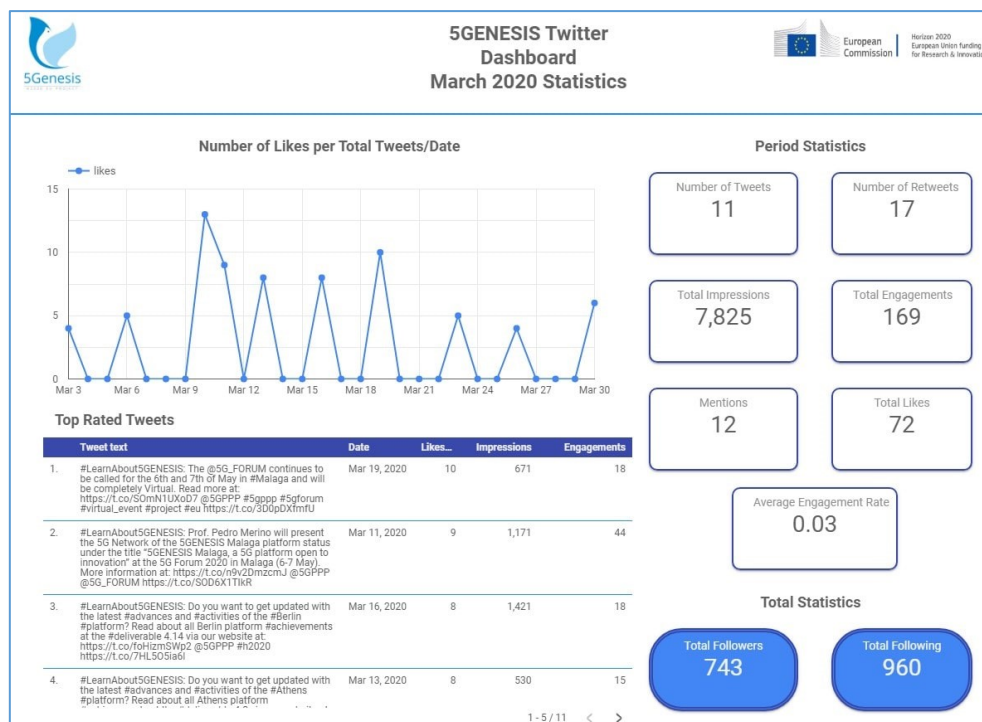




Twitter Statistical Dashboards March 2020

March 2020 Link:

<https://datastudio.google.com/reporting/4371a9b3-1a15-46fa-bd77-fad583f7f3eb>

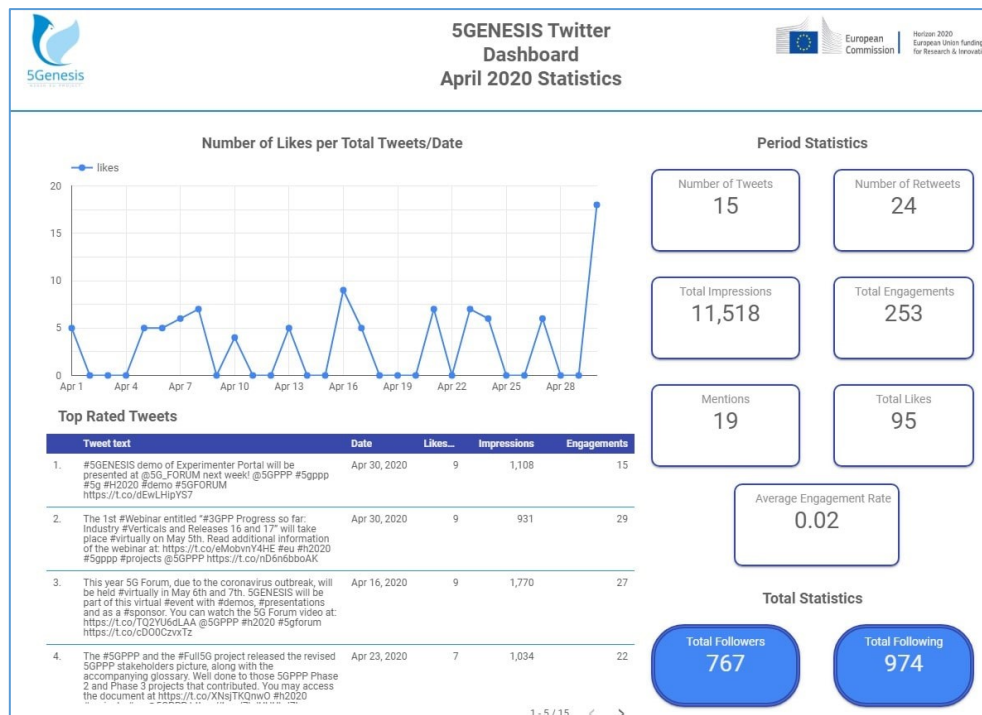


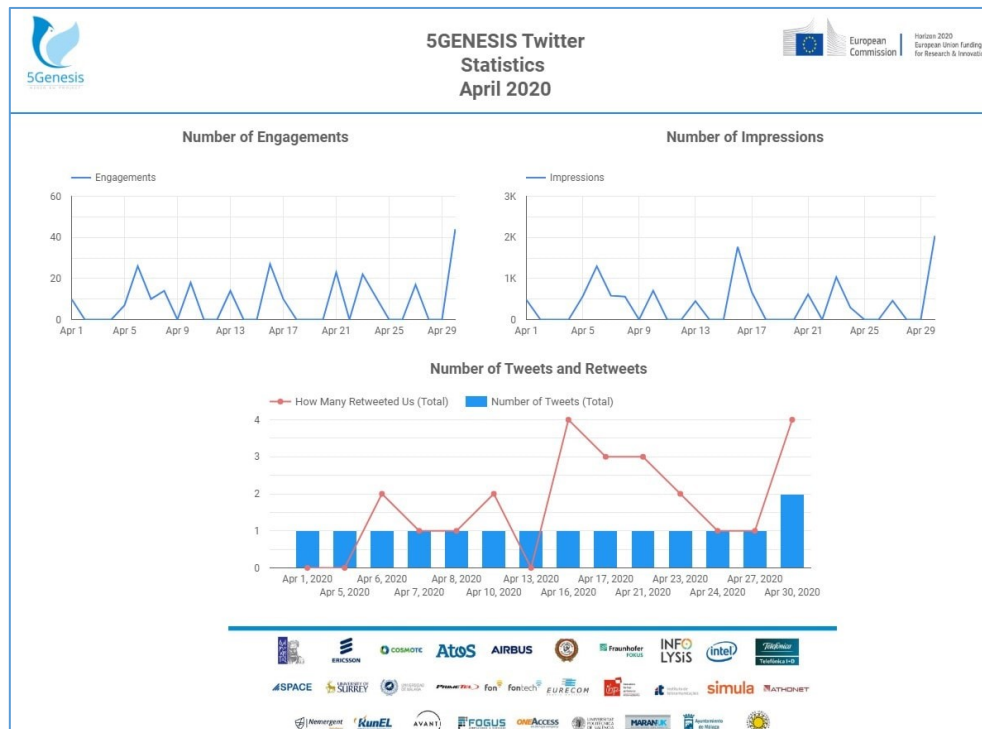


Twitter Statistical Dashboards April 2020

April 2020 Link:

<https://datastudio.google.com/reporting/e8bde432-f591-4e7b-bcd2-057102aec186>

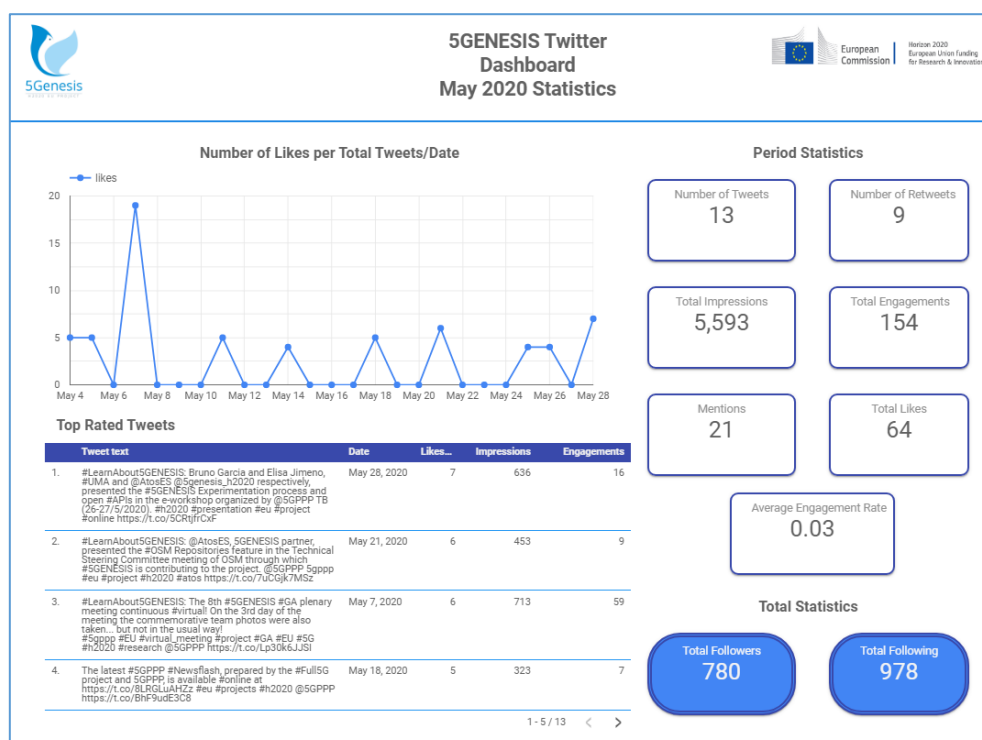


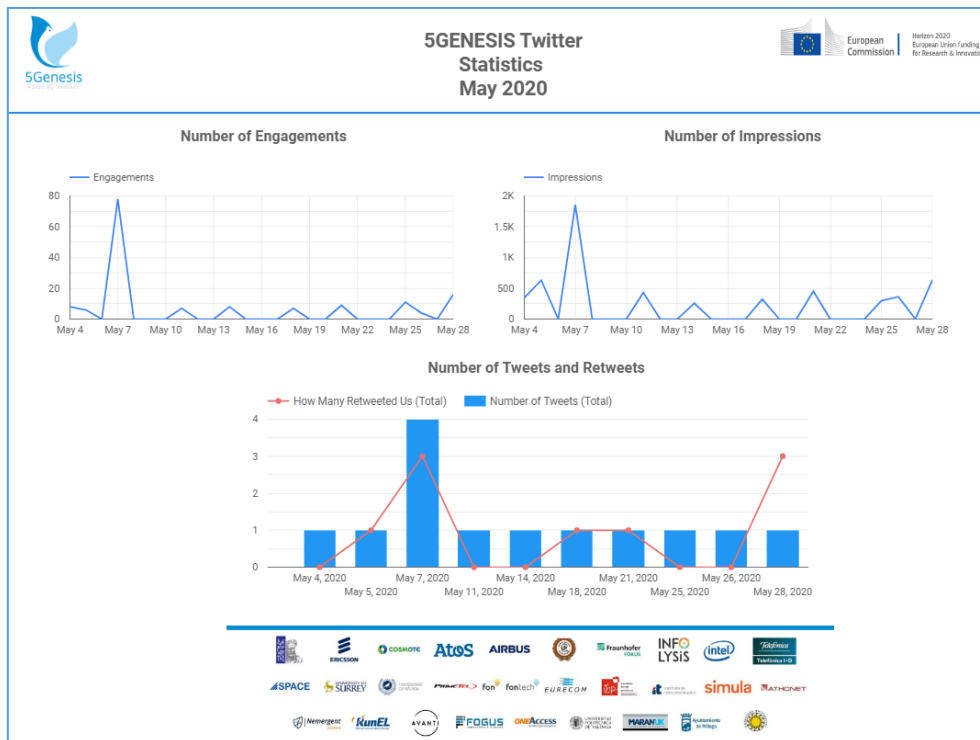


Twitter Statistical Dashboards May 2020

May 2020 Link:

<https://datastudio.google.com/reporting/2518c6d8-11b4-4faf-a044-87a9621005ce>





LinkedIn Monthly Statistical Dashboards

In the next sections, the monthly statistical dashboards of LinkedIn for the second year of the project, along with their urls, are provided.

LinkedIn Statistical Dashboards July 2019

July 2019 Link:

<https://datastudio.google.com/reporting/1112A2oiwQbktJv1TDInEHinQMC8j0f0u>

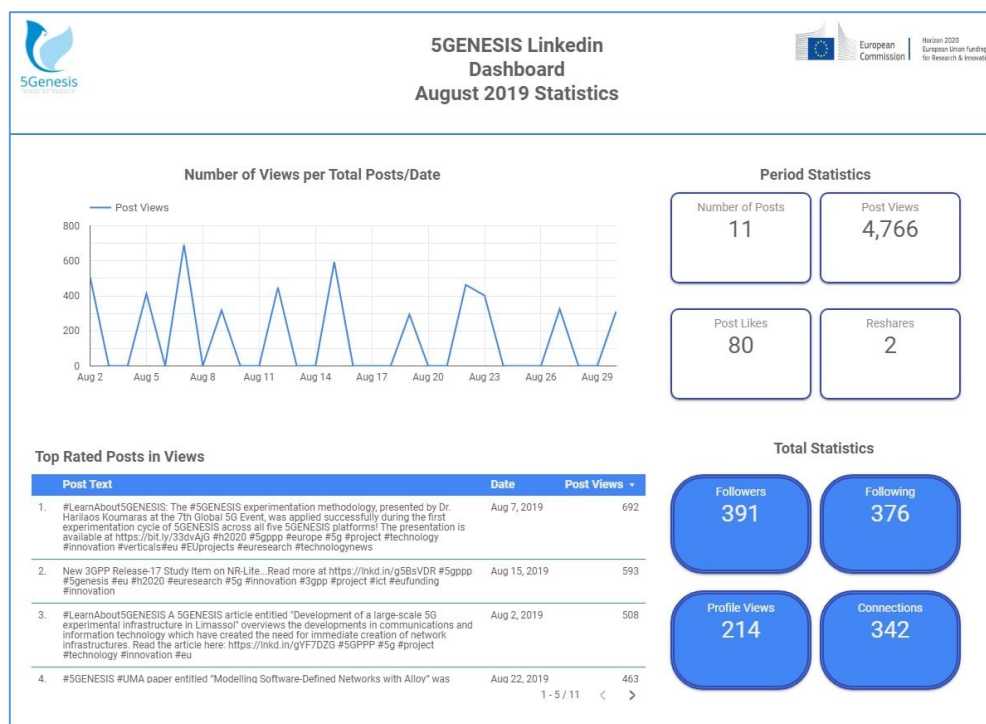




LinkedIn Statistical Dashboards August 2019

August 2019 Link:

<https://datastudio.google.com/reporting/1VT8NIVsh2s6CzaB9AneEi8DHdhFmFMOk>

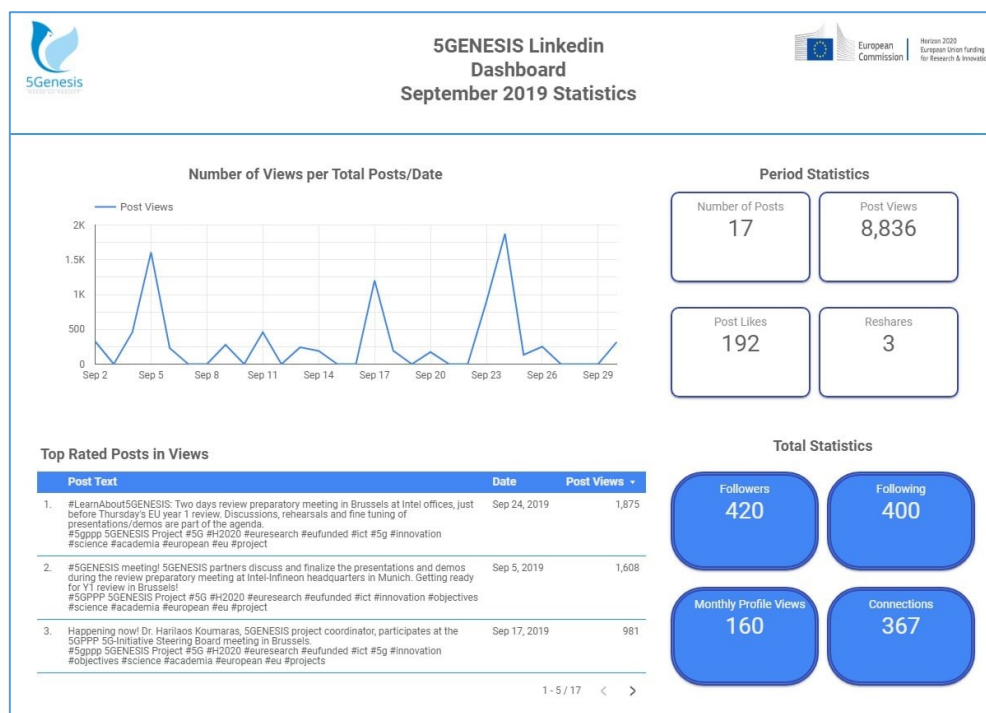


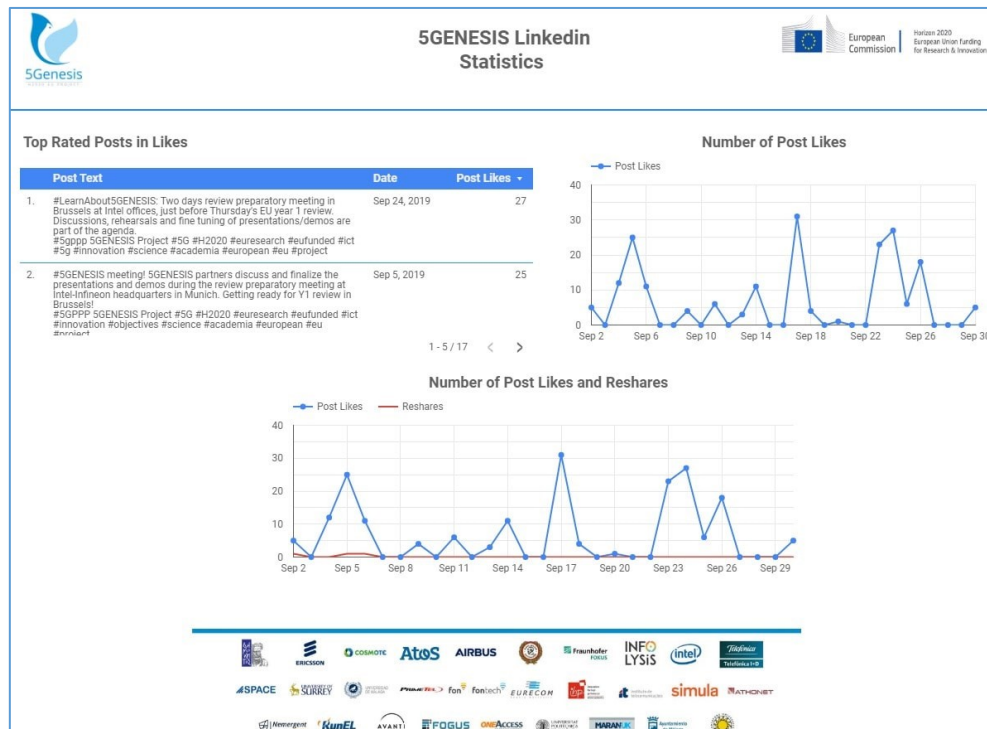


LinkedIn Statistical Dashboards September 2019

September 2019 Link:

https://datastudio.google.com/reporting/13uZwCxAYUmm3pVITW-7rg_IWowtyevm



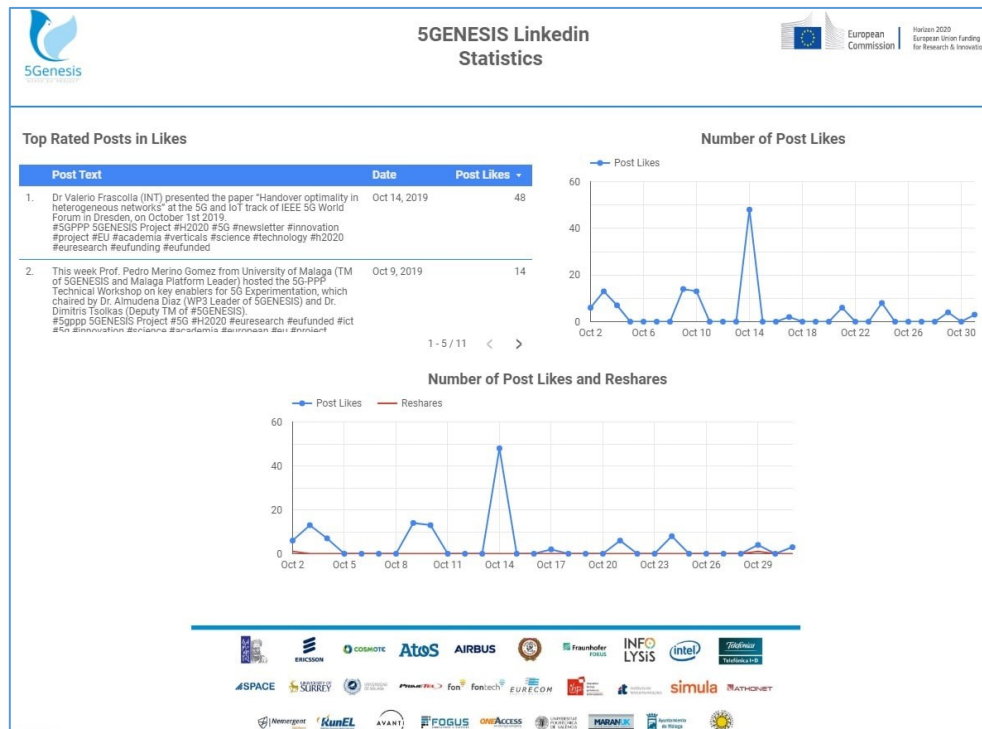


LinkedIn Statistical Dashboards October 2019

October 2019 Link:

<https://datastudio.google.com/reporting/7a6d1d8e-1feb-48b7-974b-d63e0fc0541a>

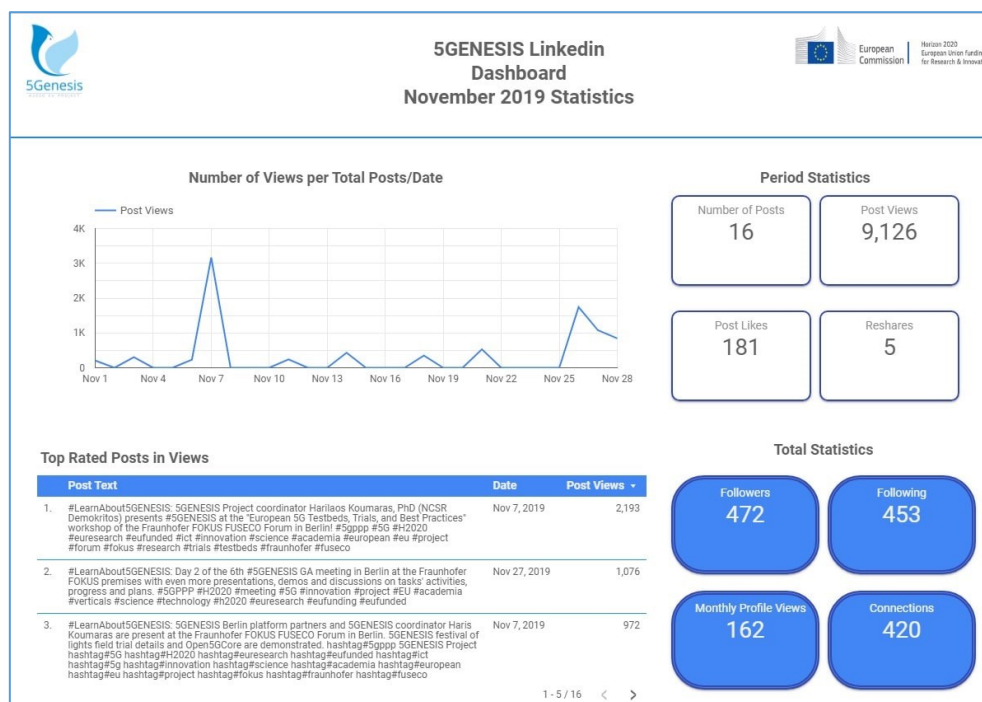




LinkedIn Statistical Dashboards November 2019

November 2019 Link:

<https://datastudio.google.com/reporting/86fd236a-ae67-452f-af25-2cd75e57aa5c>

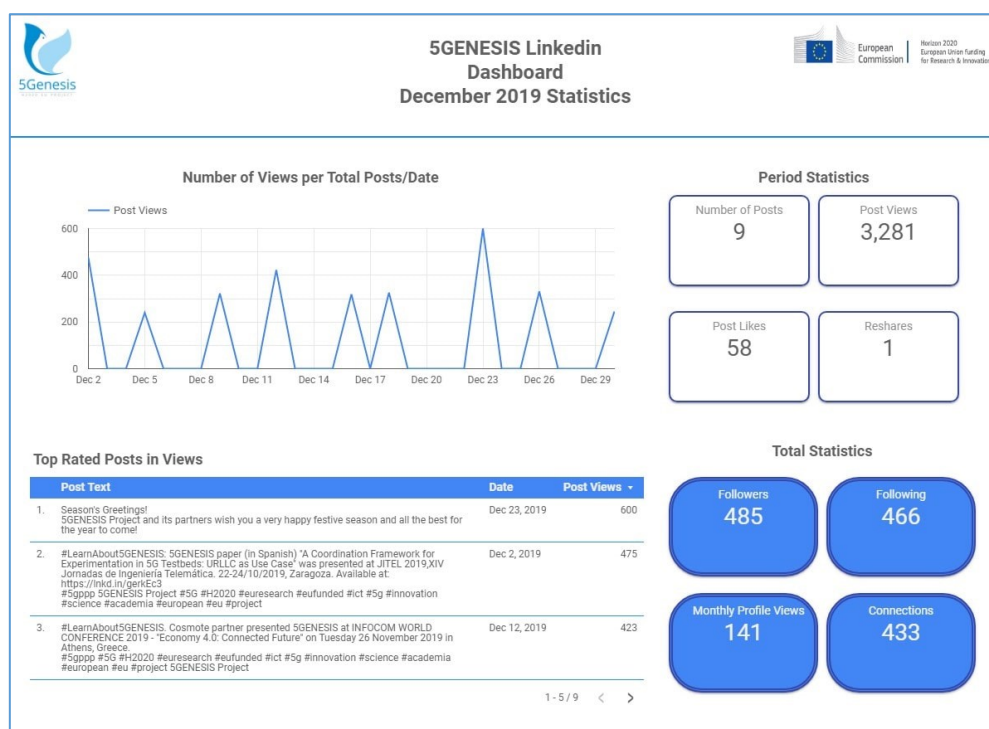


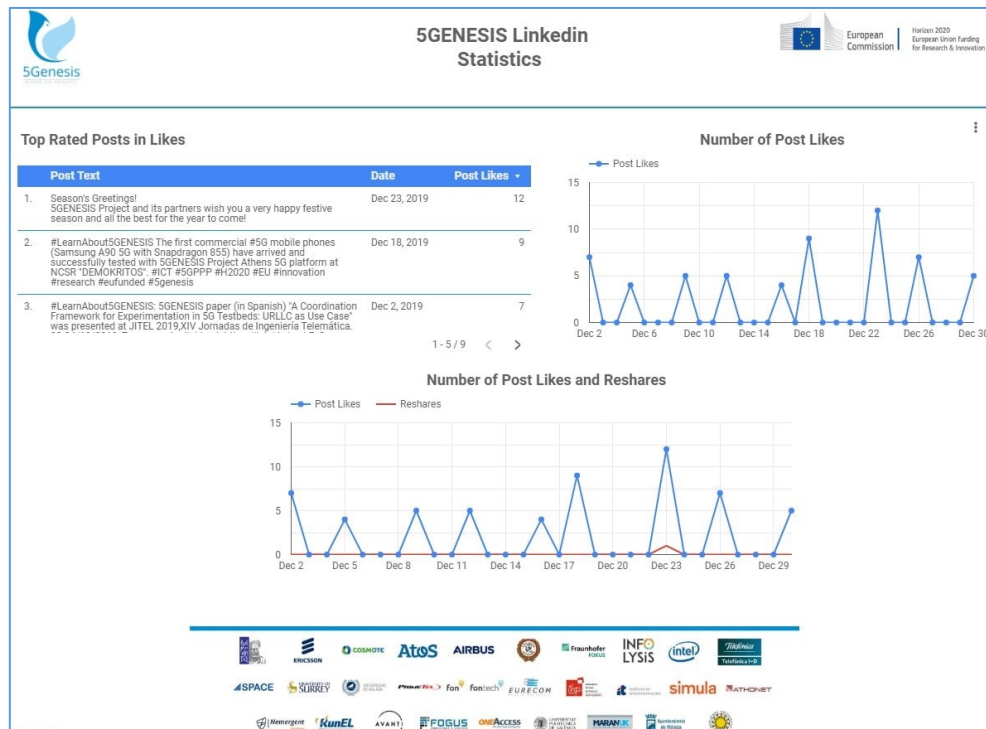


LinkedIn Statistical Dashboards December 2019

December 2019 Link:

<https://datastudio.google.com/reporting/671105b5-bc4e-463e-b01d-1c6734aaee2a>

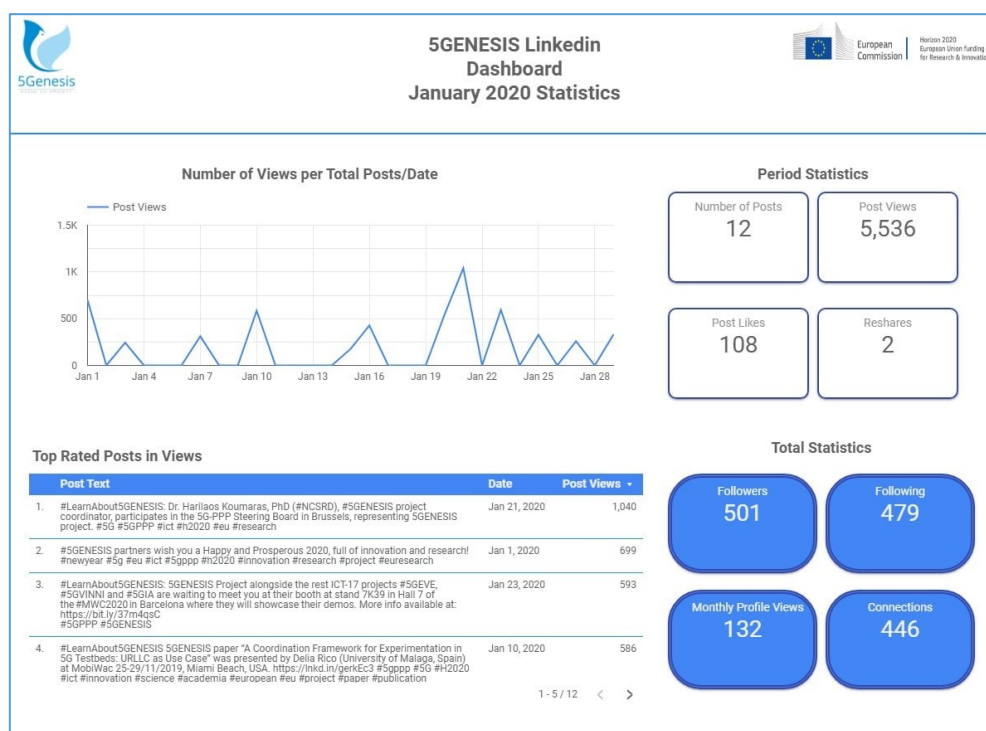




LinkedIn Statistical Dashboards January 2020

January 2020 Link:

<https://datastudio.google.com/reporting/0e95f817-0f53-42d8-88eb-c385446010f4>

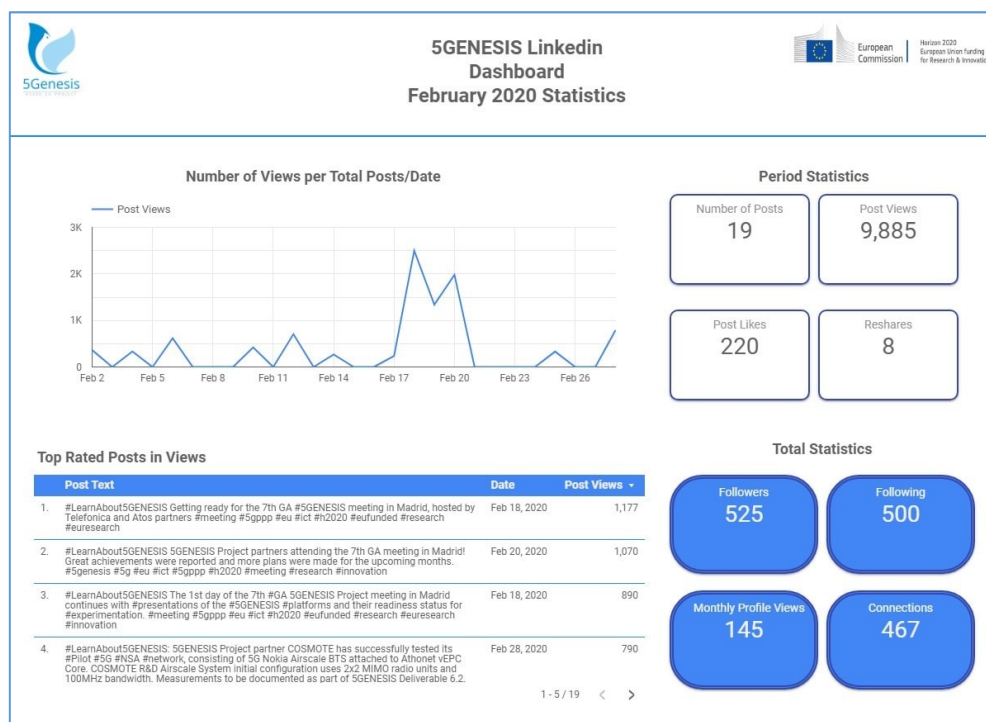




LinkedIn Statistical Dashboards February 2020

February 2020 Link:

<https://datastudio.google.com/reporting/45ca5835-4853-4c3b-8bc0-2fc38cdf76c5>





LinkedIn Statistical Dashboards March 2020

March 2020 Link:

<https://datastudio.google.com/reporting/2e153133-24d6-4aff-8999-ab3d68957341>





LinkedIn Statistical Dashboards April 2020

April 2020 Link:

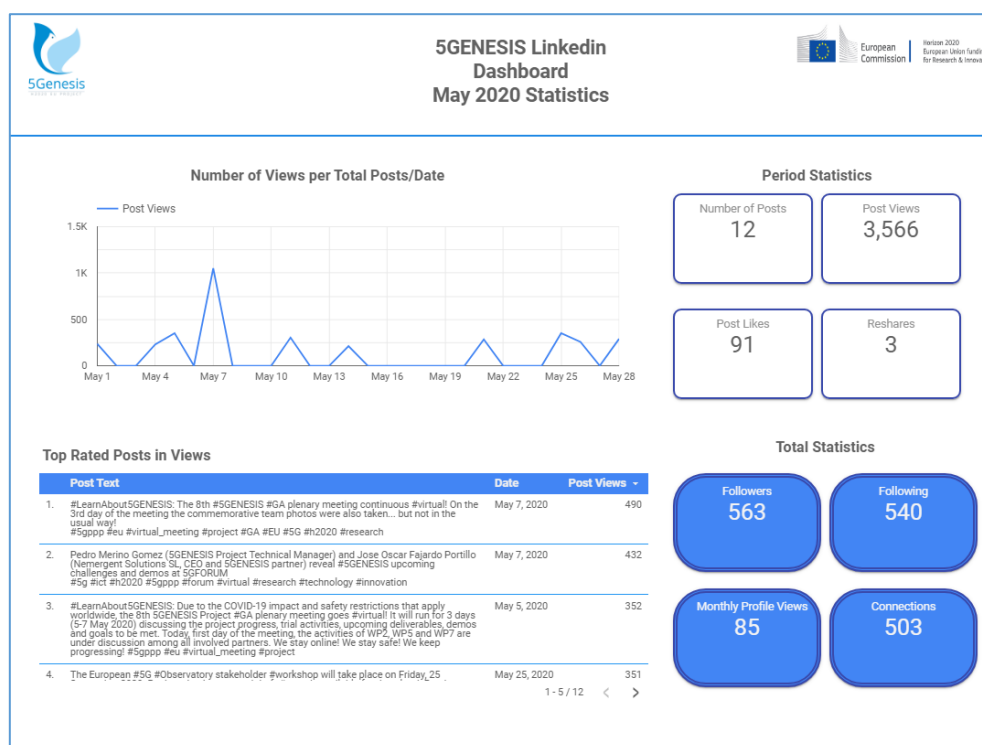
<https://datastudio.google.com/reporting/a49279a7-8706-462e-bd4a-4e3b71e252b3>

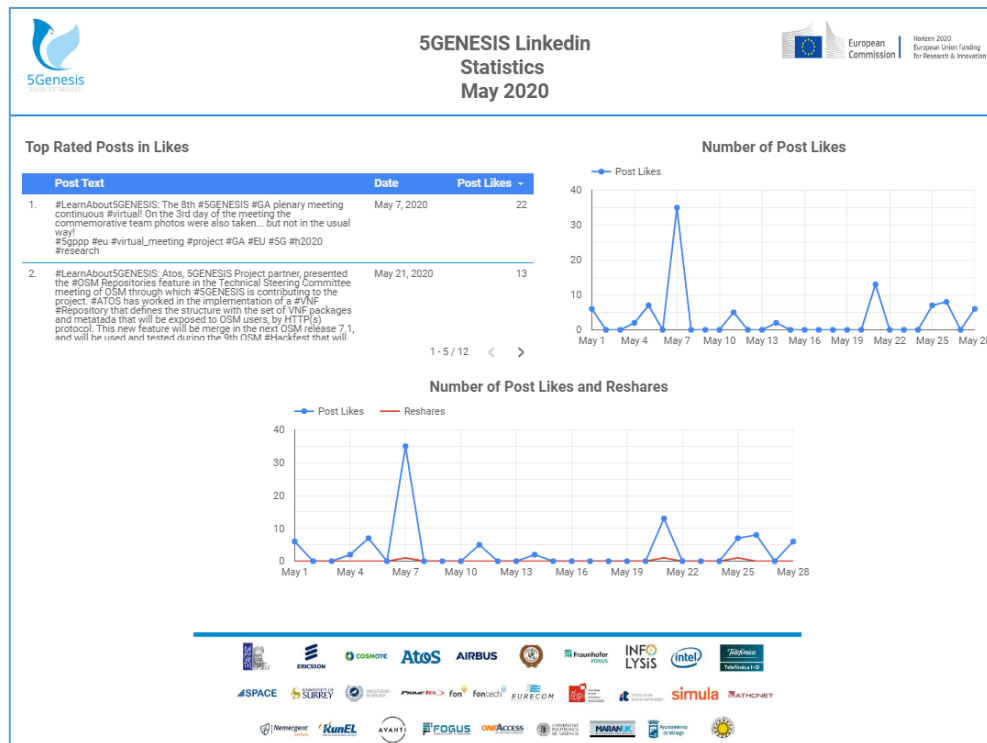




LinkedIn Statistical Dashboards May 2020

May 2020 Link: <https://datastudio.google.com/reporting/ca9d9d13-bb03-447f-ad1c-3df8e62e9750>





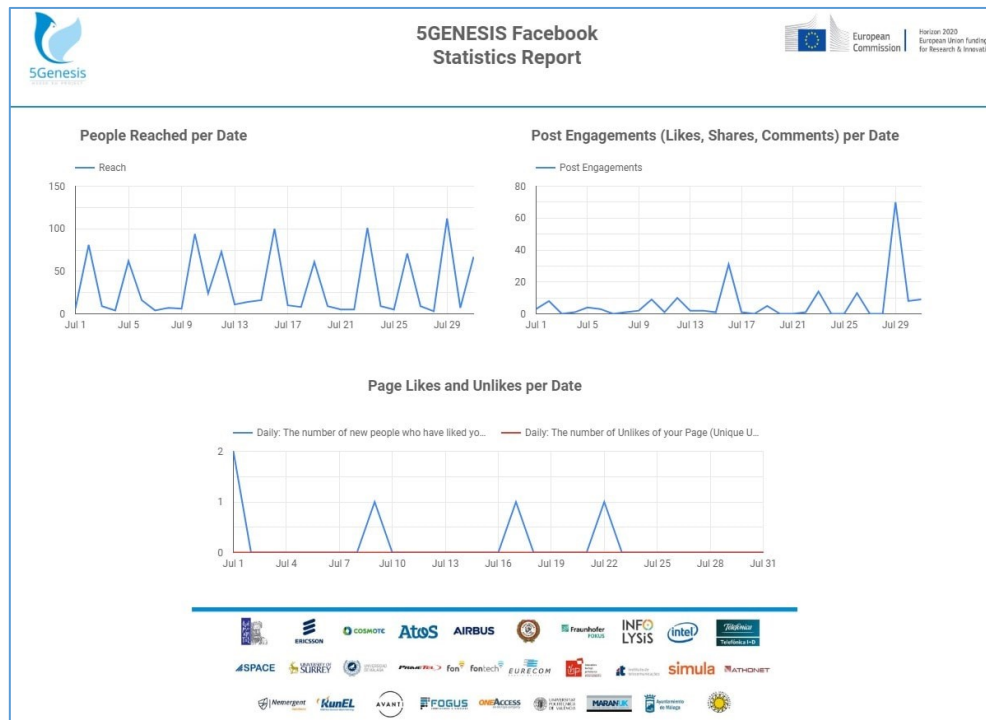
Facebook Monthly Statistical Dashboards

In the following sections the monthly statistical dashboards of Facebook, for the second year of the project, with their urls, are available.

Facebook Statistical Dashboards July 2019

July 2019 Link: <https://datastudio.google.com/reporting/19yS3TCj9CDM6uOxcRW-Dn4pwax3DPOcq>



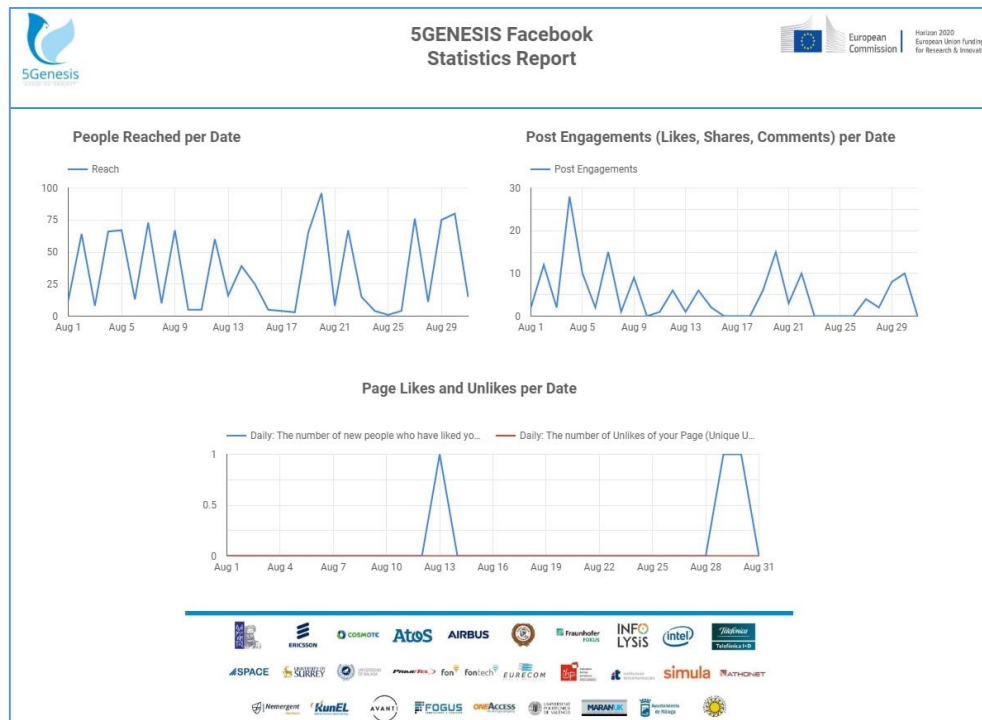


Facebook Statistical Dashboards August 2019

August 2019 Link:

https://datastudio.google.com/reporting/1L4M3zPIU-npGAQeE_rVID2db6iS4yOhU

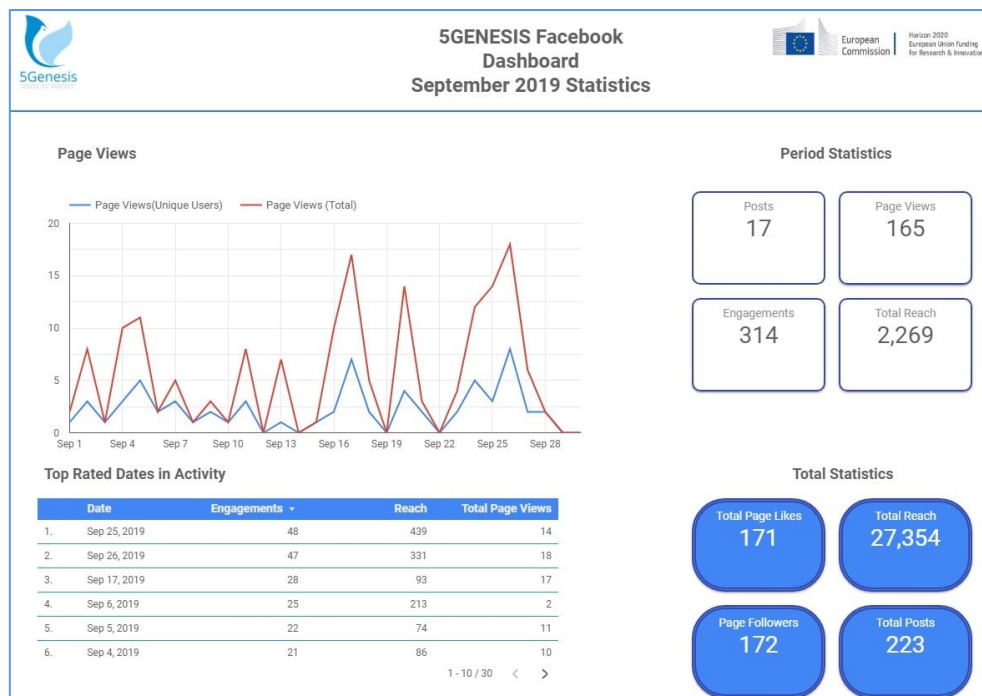


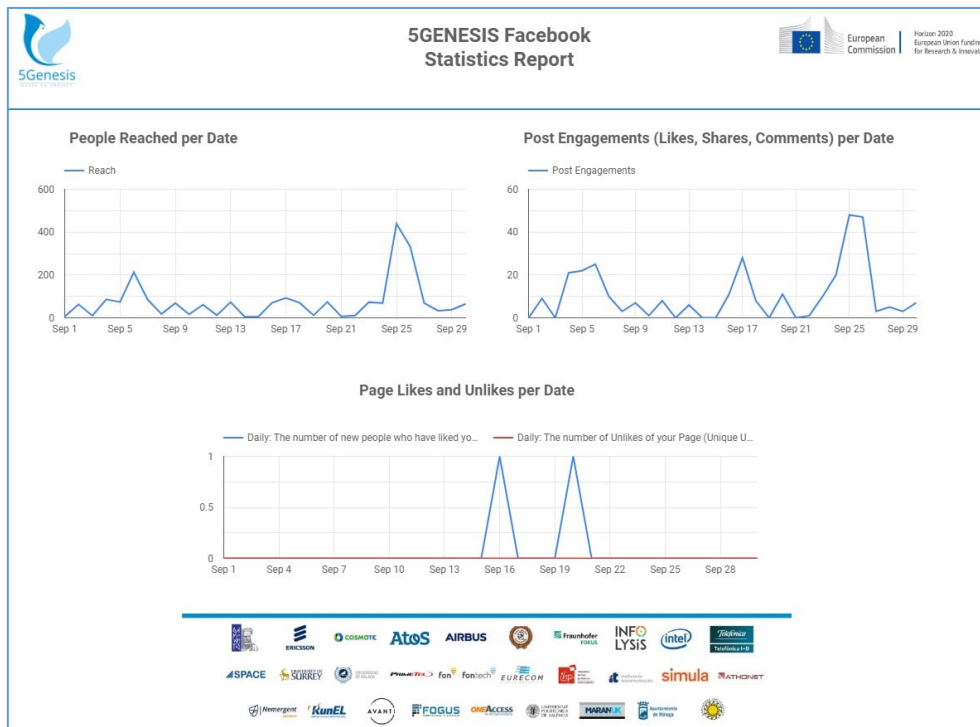


Facebook Statistical Dashboards September 2019

September 2019 Link:

<https://datastudio.google.com/reporting/1tLjr8016X6qQQfRul8rizqinHPMdmg0v>



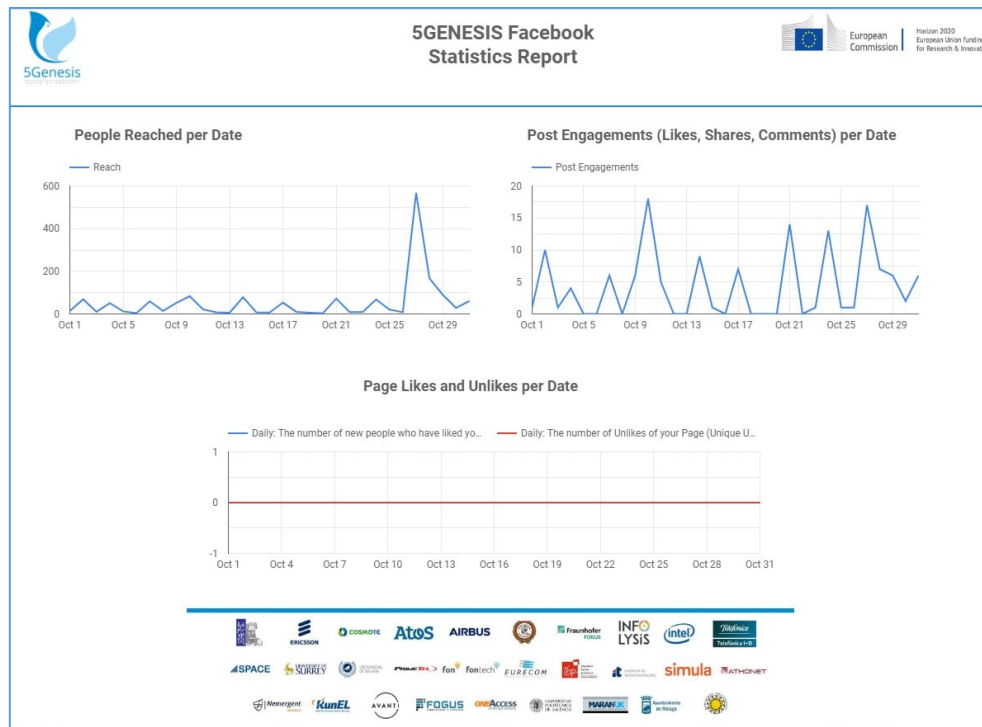


Facebook Statistical Dashboards October 2019

October 2019 Link:

<https://datastudio.google.com/reporting/6aba9333-c4c8-4fbe-9c2f-715446cb5463>

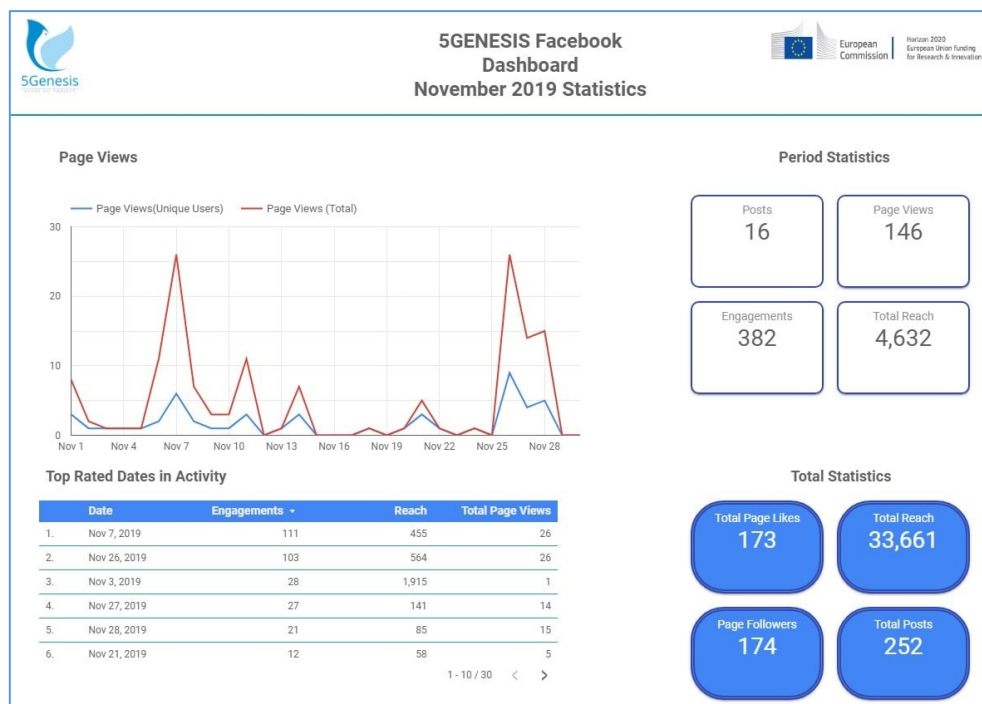




Facebook Statistical Dashboards November 2019

November 2019 Link:

<https://datastudio.google.com/reporting/3ef5737f-1abc-4dbd-a50e-647ebe54e81e>



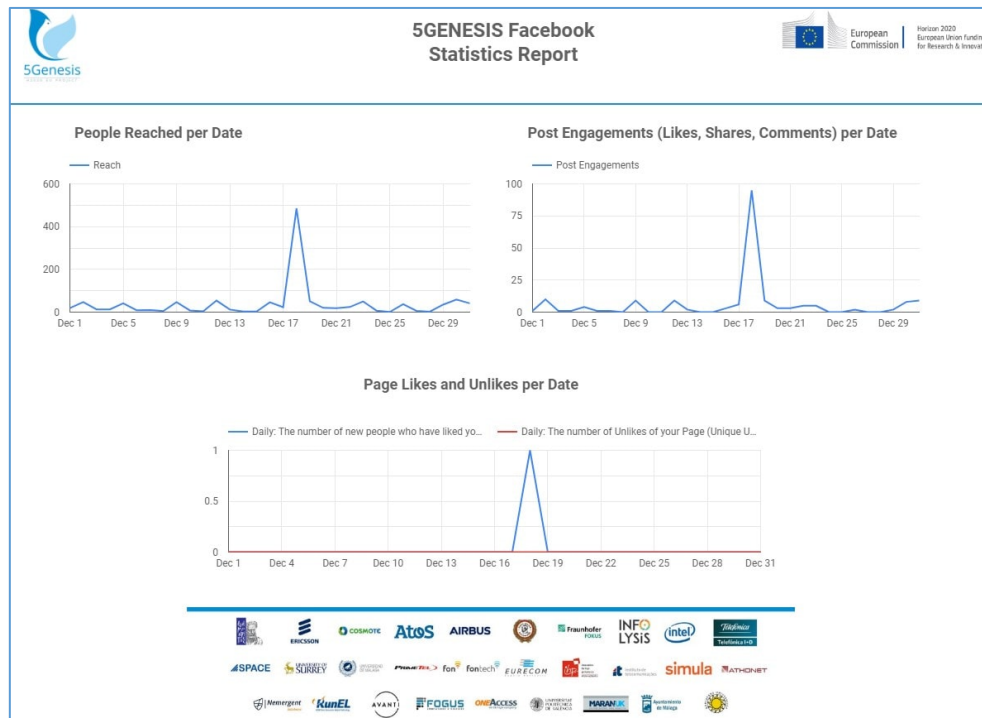


Facebook Statistical Dashboards December 2019

December 2019 Link:

<https://datastudio.google.com/reporting/261a88d7-5660-4510-84e9-5f8495578a7c>

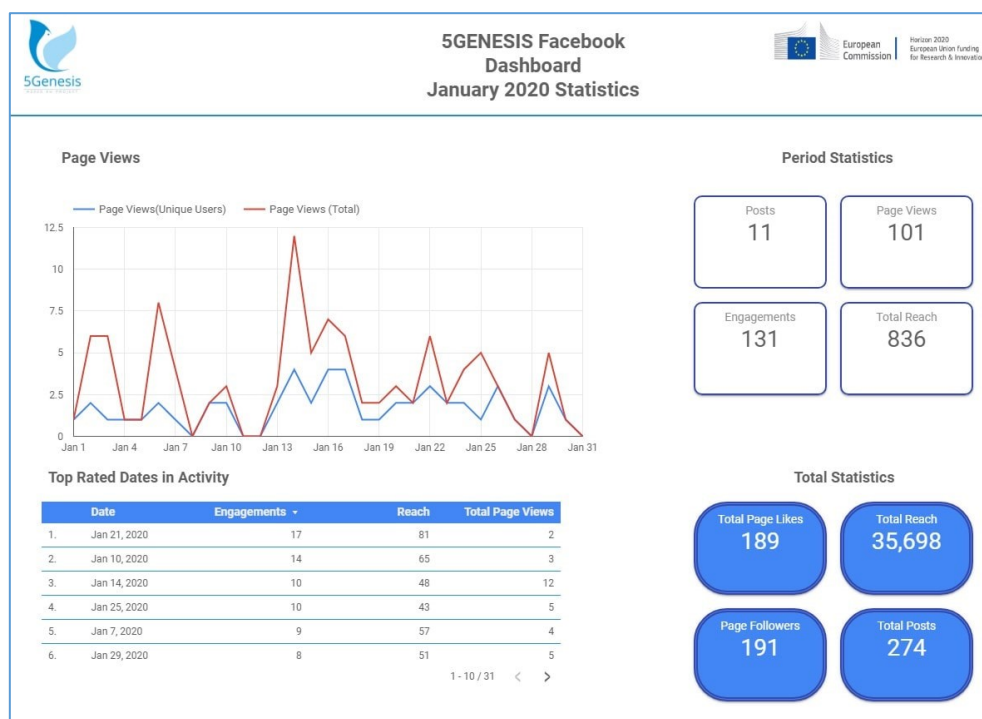


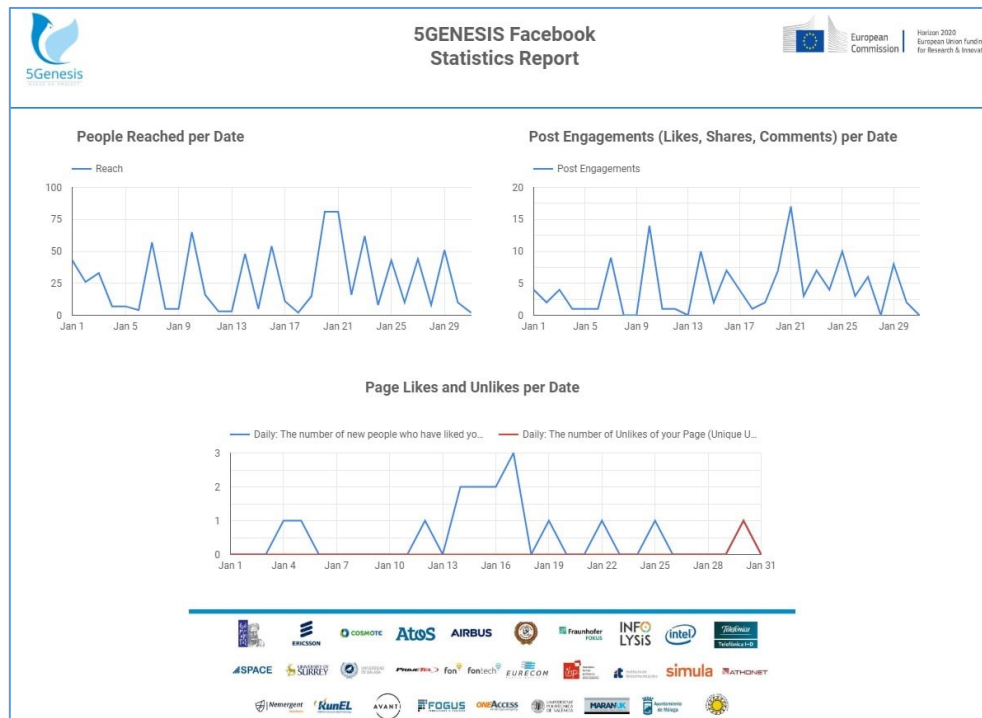


Facebook Statistical Dashboards January 2020

January 2020 Link:

<https://datastudio.google.com/reporting/2de13bc5-dd7d-440a-8ad5-d7e142ec42c4>



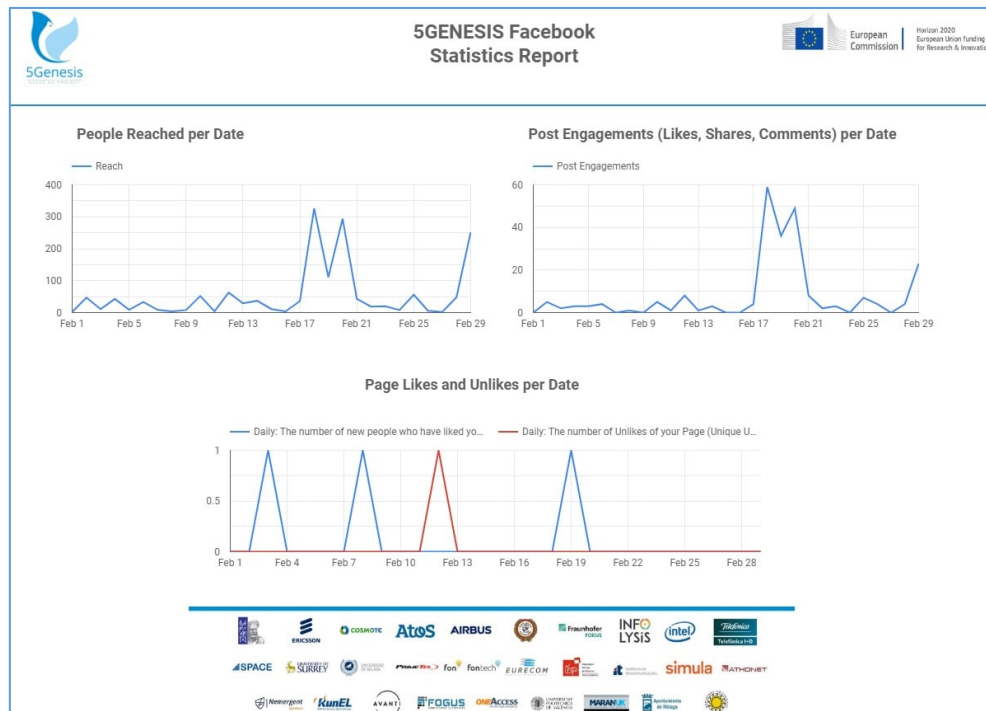


Facebook Statistical Dashboards February 2020

February 2020 Link:

<https://datastudio.google.com/reporting/ca3834e3-3105-4105-961d-e9073d1d0d2c>

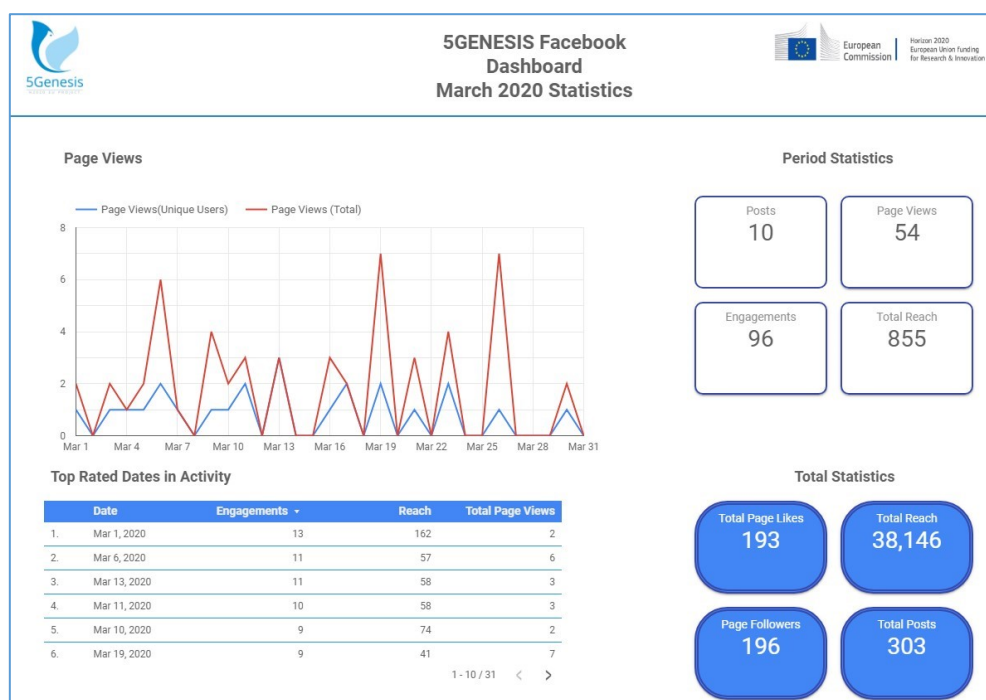


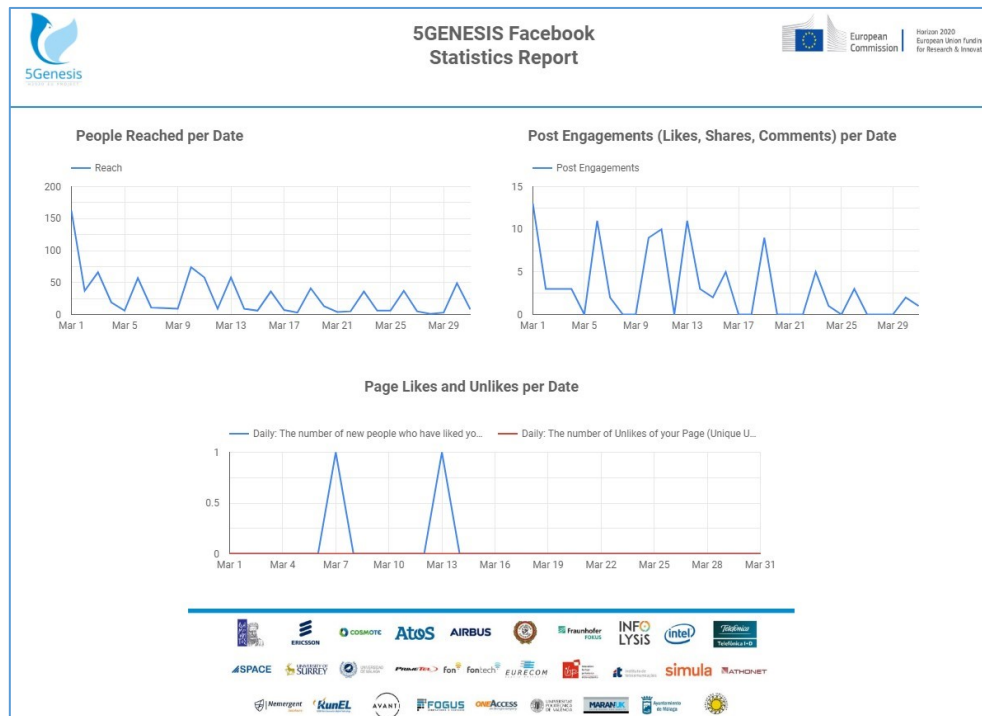


Facebook Statistical Dashboards March 2020

March 2020 Link:

<https://datastudio.google.com/reporting/5d54157f-b5ba-45e1-b5ab-6fb394a67244>





Facebook Statistical Dashboards April 2020

April 2020 Link:

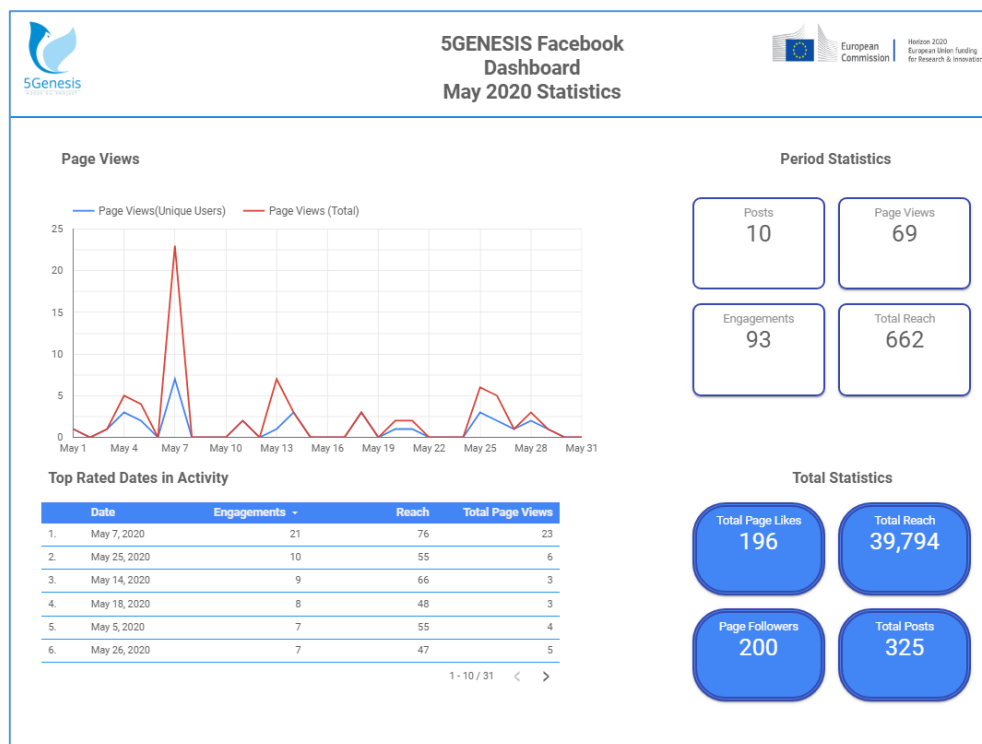
<https://datastudio.google.com/reporting/07343d3a-c74e-4c88-bee9-552a3650a94b>





Facebook Statistical Dashboards May 2020

May 2020 Link: <https://datastudio.google.com/reporting/c4063dcb-7f9b-41fd-a949-9b9c552493ce>





In the following sections the monthly statistical dashboards of Instagram referring to the second year of the project are provided along with their urls.

July 2019 Link:



5Genesis Instagram Dashboard

July 2019 Statistics



European Commission

Horizon 2020
European Union funding
for Research & Innovation

Number of Likes per Total Posts/Date



Date	Post Likes
Jul 2	14
Jul 3	0
Jul 4	0
Jul 5	8
Jul 6	0
Jul 7	0
Jul 8	0
Jul 9	0
Jul 10	0
Jul 11	0
Jul 12	0
Jul 13	0
Jul 14	0
Jul 15	16
Jul 16	16
Jul 17	0
Jul 18	0
Jul 19	0
Jul 20	0
Jul 21	0
Jul 22	0
Jul 23	0
Jul 24	0
Jul 25	0
Jul 26	15
Jul 27	0
Jul 28	0
Jul 29	11

Period Statistics

Number of Posts	5
Post Likes	68
Impressions	819
Reach	337

Top Rated Posts in Likes

Post Text	Post Time	Post Likes
1. Behind the scenes photos released. Dr. @hikoumaras (NCSR #Demokritos), project coordinator of #5GENESIS, recording a @5genesis_h2020 Project #presentation video at the media studios of Universitat Politècnica de València (UPV). The video is coming soon! #5GPPP #5G #EU #technology #innovation #europe #project #valencia #academia	Jul 16, 2019	18
2. #5GENESIS #UMA paper entitled "Ultra Reliable Low Latency Communications: A state of the art review" was presented at #JCSD 2019, Zaragoza, #Spain, 19-21/6/2019. #5GPPP @5genesis_h2020 #technology #innovation #academia #5G #H2020 #EU #science For more info access: https://5genesis.eu/research/papers/	Jul 26, 2019	16
3. Karlstad #University as part of the 3rd #workshop on Mobile Network Measurement (MNM19) that organized at TMA Conference 2019 in #Paris, also participated with a 5GENESIS Project poster at the poster session of the event. #project #europe #eu #innovation #5gppp #academia #science #5genesis #5g #h2020	Jul 2, 2019	14
4. 5GENESIS UMA paper entitled "Optimizing the deployment of Virtual Network Functions in 5G networks with Model Based Testing" was presented at JCSD 2019, Zaragoza, Spain 19-21/6/2019 #5GPPP #5GENESIS #5G	Jul 31, 2019	12

Total Statistics

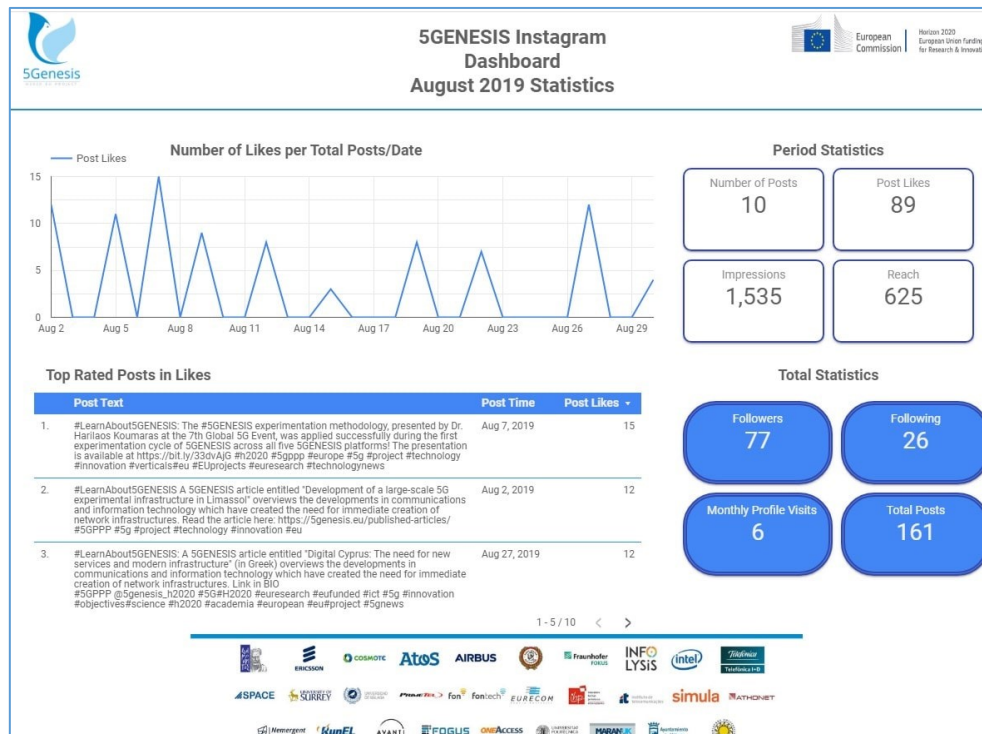
Followers	74
Following	25
Monthly Profile Visits	11
Total Posts	150

1 - 5 / 5 < >



August 2019 Link:

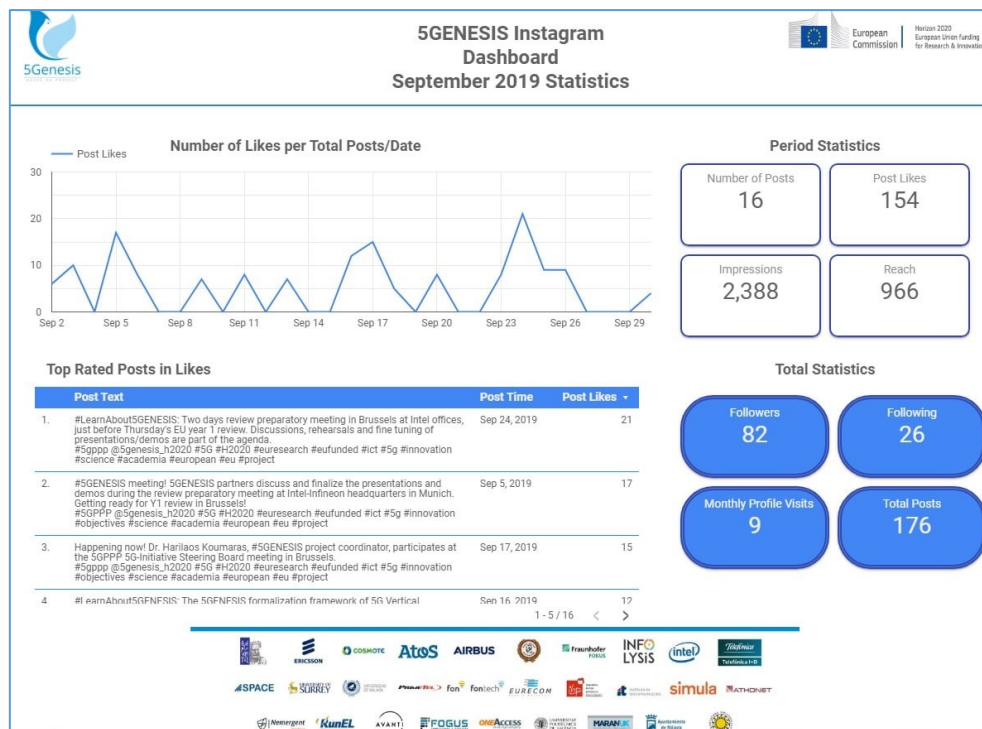
<https://datastudio.google.com/reporting/15kfbsrpky8grrFESCqO50fbKBiOe7uij>



Instagram Statistical Dashboards September 2019

September 2019 Link:

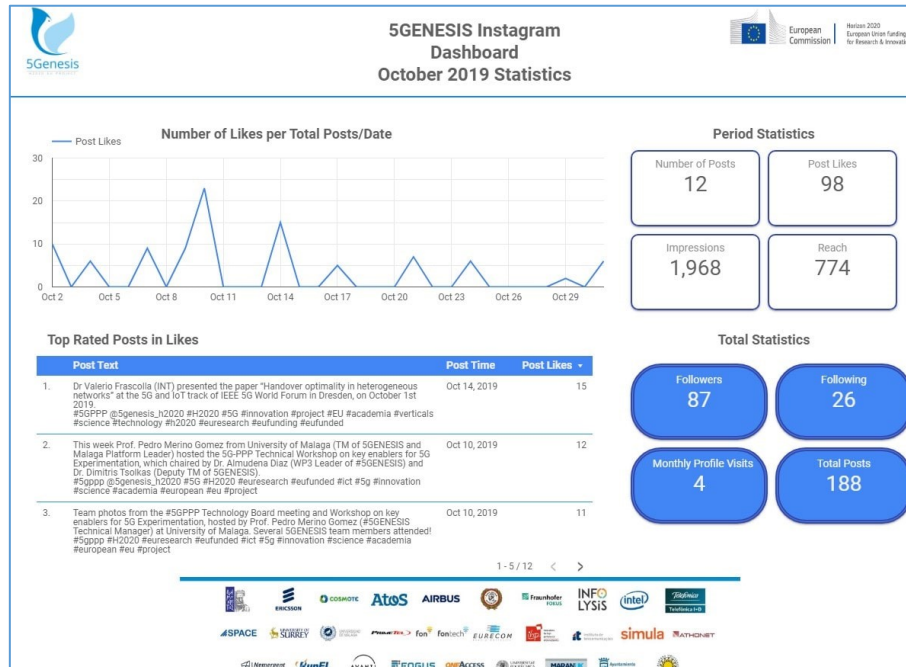
<https://datastudio.google.com/reporting/1Z9icouK-fq-bFSIYKswNp5dmapNf7UT>



Instagram Statistical Dashboards October 2019

October 2019 Link:

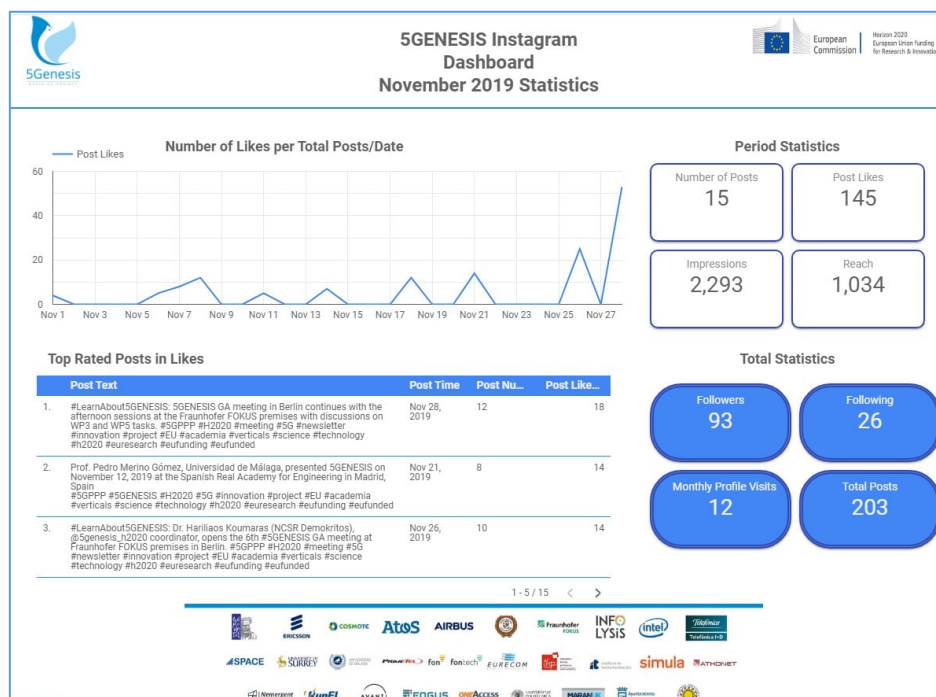
<https://datastudio.google.com/reporting/4d9664d0-0c60-441b-8f03-372703a7f9c1>



Instagram Statistical Dashboards November 2019

November 2019 Link:

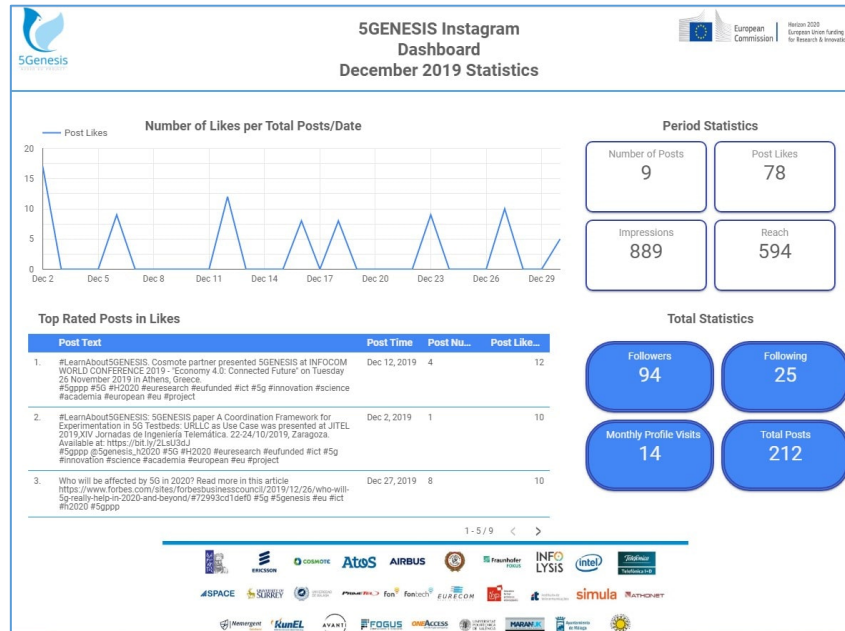
<https://datastudio.google.com/reporting/c4c3c37c-5b12-4efa-9e71-33fda1d4c1d8>



Instagram Statistical Dashboards December 2019

December 2019 Link:

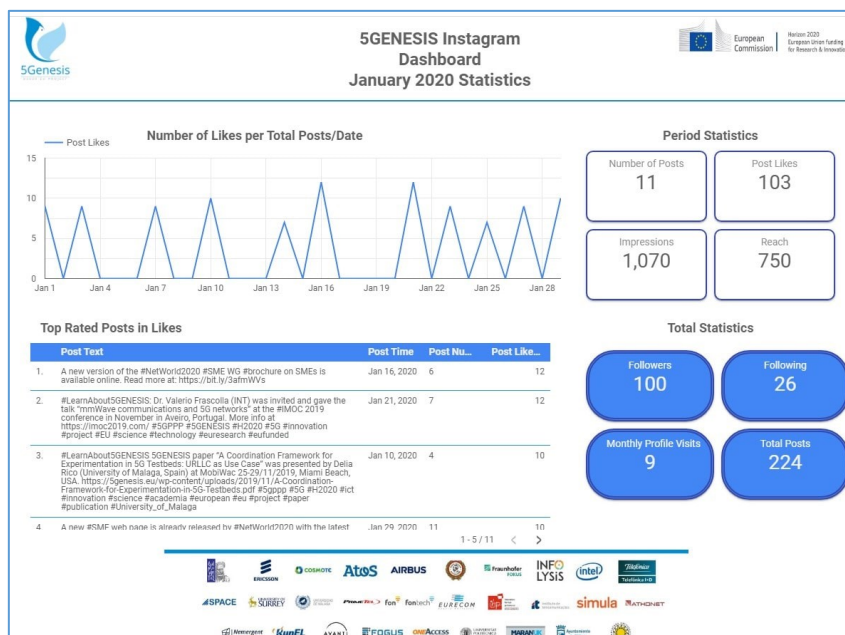
<https://datastudio.google.com/reporting/95a953e4-86bd-4c00-b8d6-1ecbcf3a3ba2>



Instagram Statistical Dashboards January 2020

January 2020 Link:

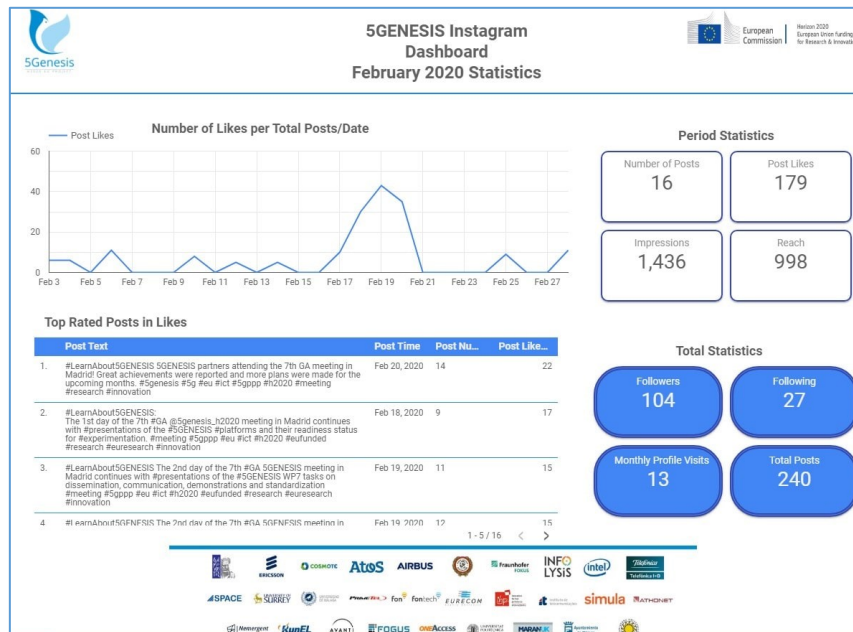
<https://datastudio.google.com/reporting/daf023cc-5421-4399-a062-1268785434da>



Instagram Statistical Dashboards February 2020

February 2020 Link:

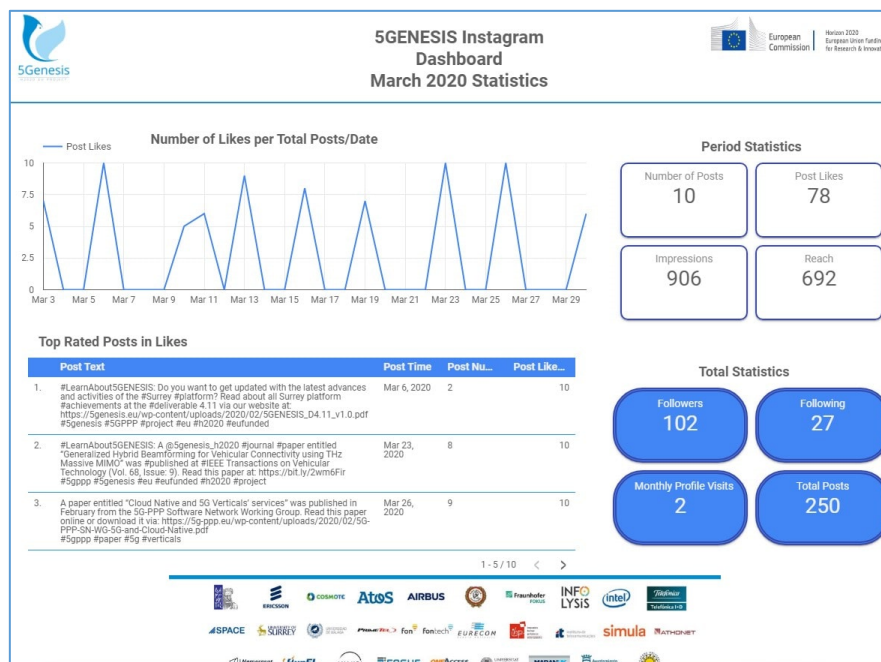
<https://datastudio.google.com/reporting/f397145d-7933-43f8-8193-1b8b29337e61>



Instagram Statistical Dashboards March 2020

March 2020 Link:

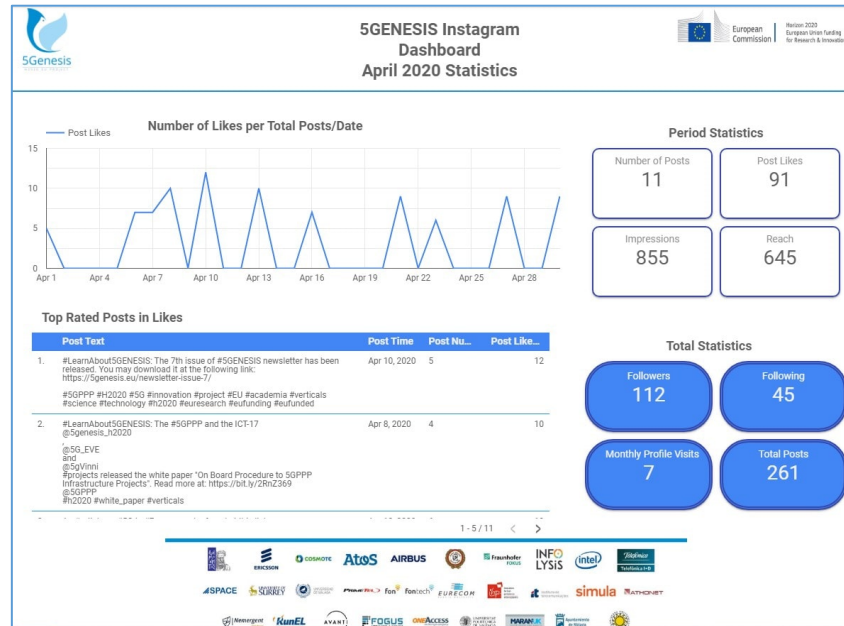
<https://datastudio.google.com/reporting/662f5d1a-6379-4311-9192-aad2d4ea0e98>



Instagram Statistical Dashboards April 2020

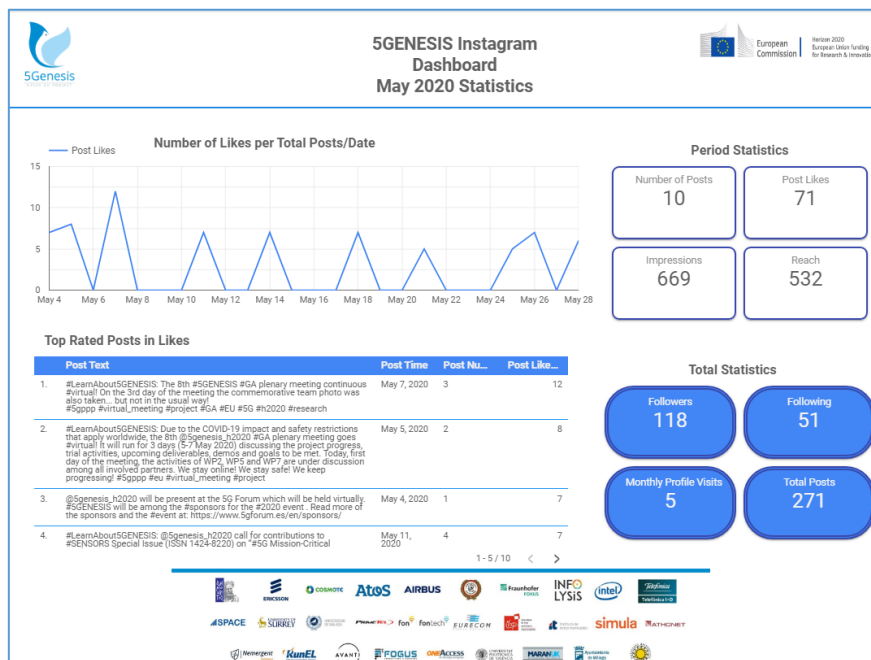
April 2020 Link:

<https://datastudio.google.com/reporting/220d5af4-2d0d-4c8e-bb18-71b6c6b46975>



Instagram Statistical Dashboards May 2020

May 2020 Link: <https://datastudio.google.com/reporting/dd212470-e88e-4bfa-aea1-f79e3aa6e0c3>



ANNEX 2 – MONTHLY 5GENESIS WEBSITE STATISTICAL DASHBOARDS

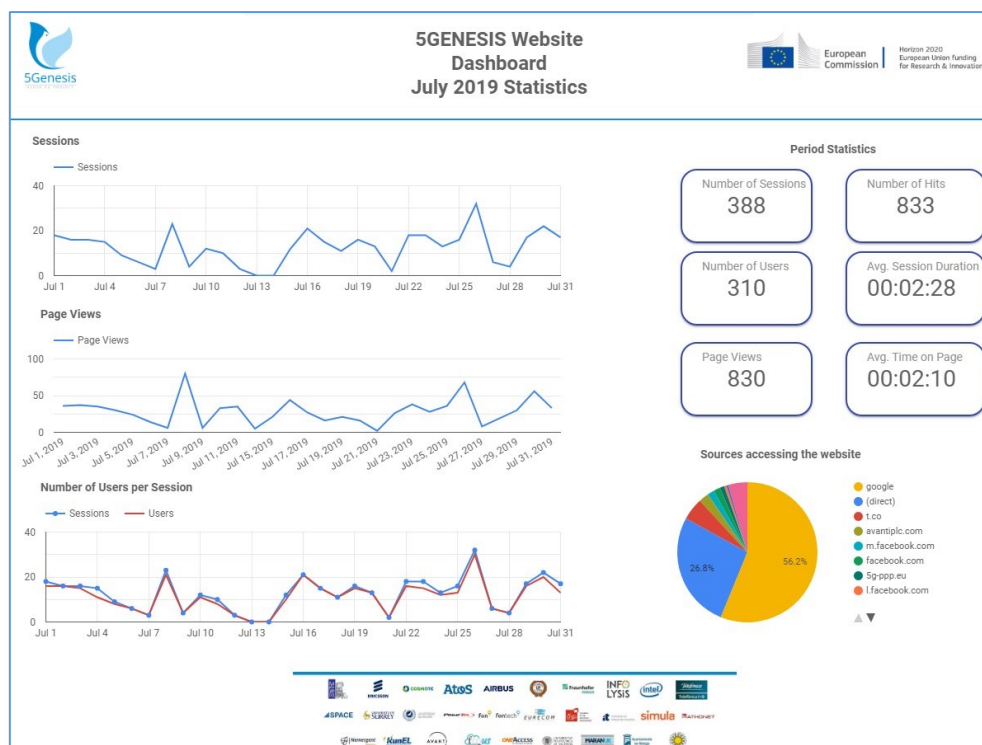
Website Statistical Dashboards

In the following sections the monthly statistical dashboards of 5GENESIS website, referring to the second year of the project, are provided. The 5GENESIS website statistical dashboards are issued and distributed internally on a monthly basis to all the WP7 members, via the WP7 mailing list, and are used for monitoring the performance and impact that the website has to its audience.

Website Statistical Dashboards July 2019

July 2019 Link:

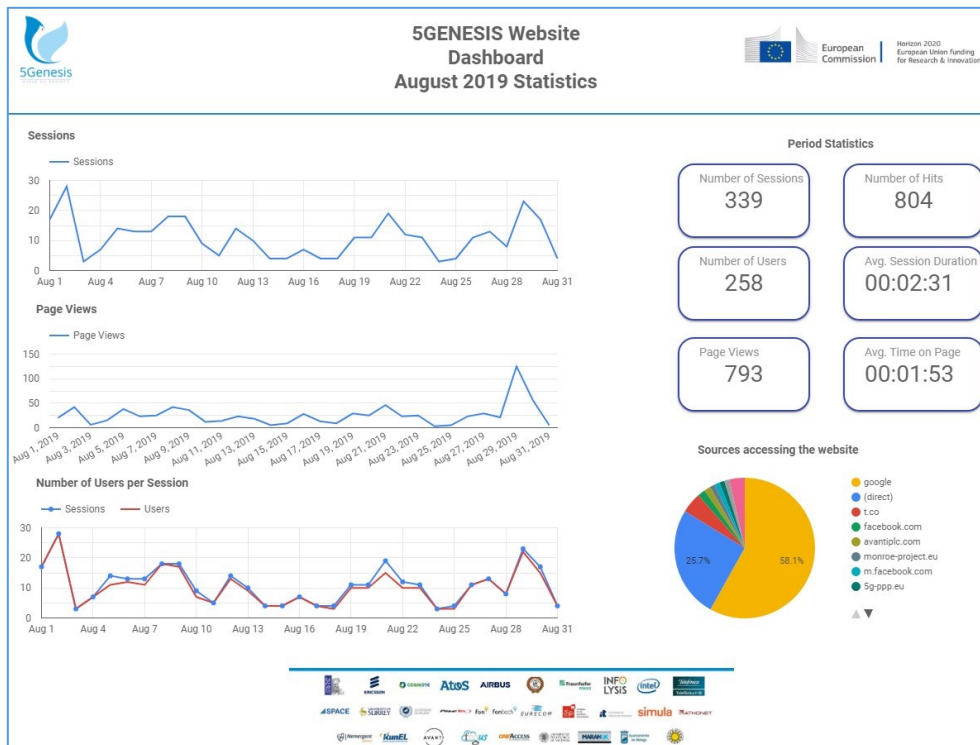
<https://datastudio.google.com/reporting/1pp4OM05SUE9sNMuSbpGASohJM9Qn3qH>



Website Statistical Dashboards August 2019

August 2019 Link:

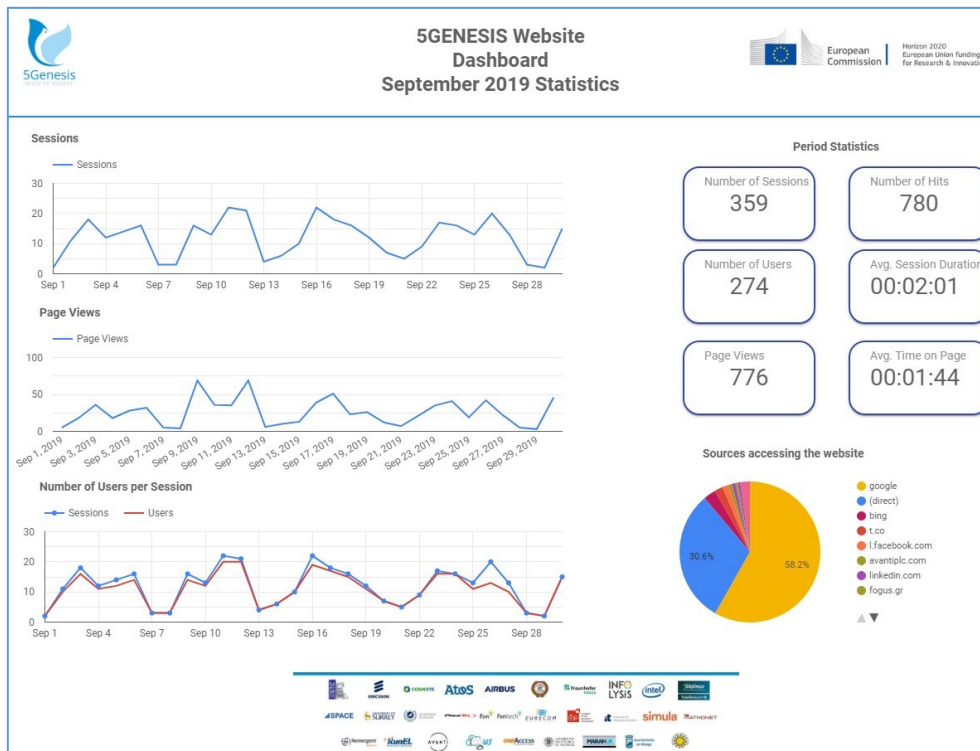
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Website Statistical Dashboards September 2019

September 2019 Link:

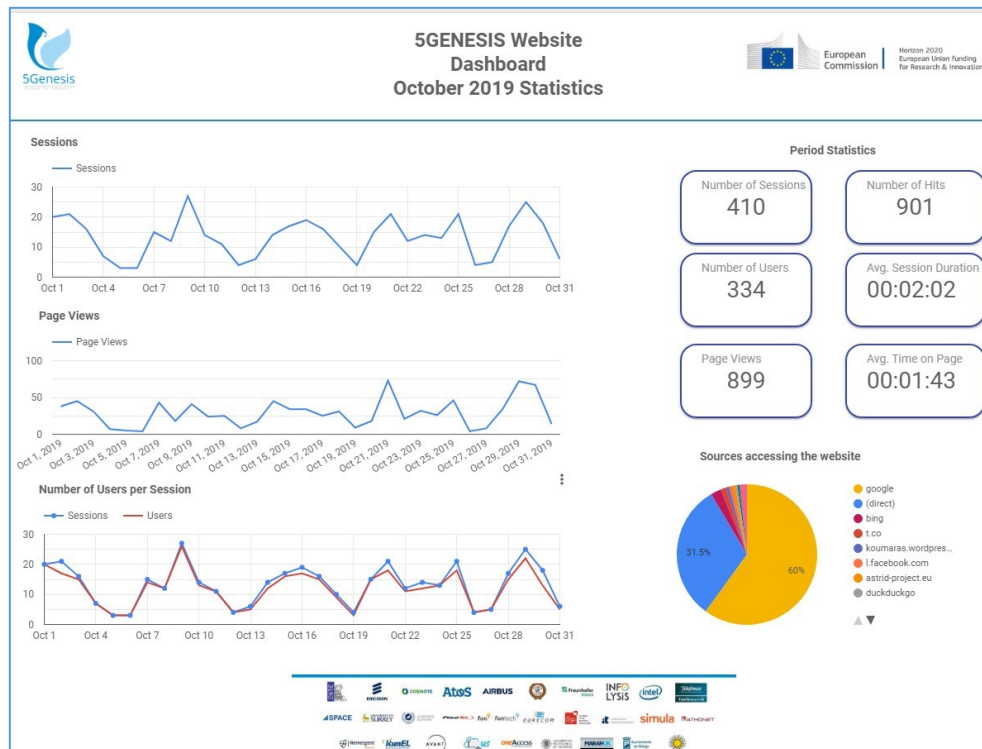
https://datastudio.google.com/reporting/1aep04BYGXioeog-WB_YhIP4qfLKh0eSS



Website Statistical Dashboards October 2019

October 2019 Link:

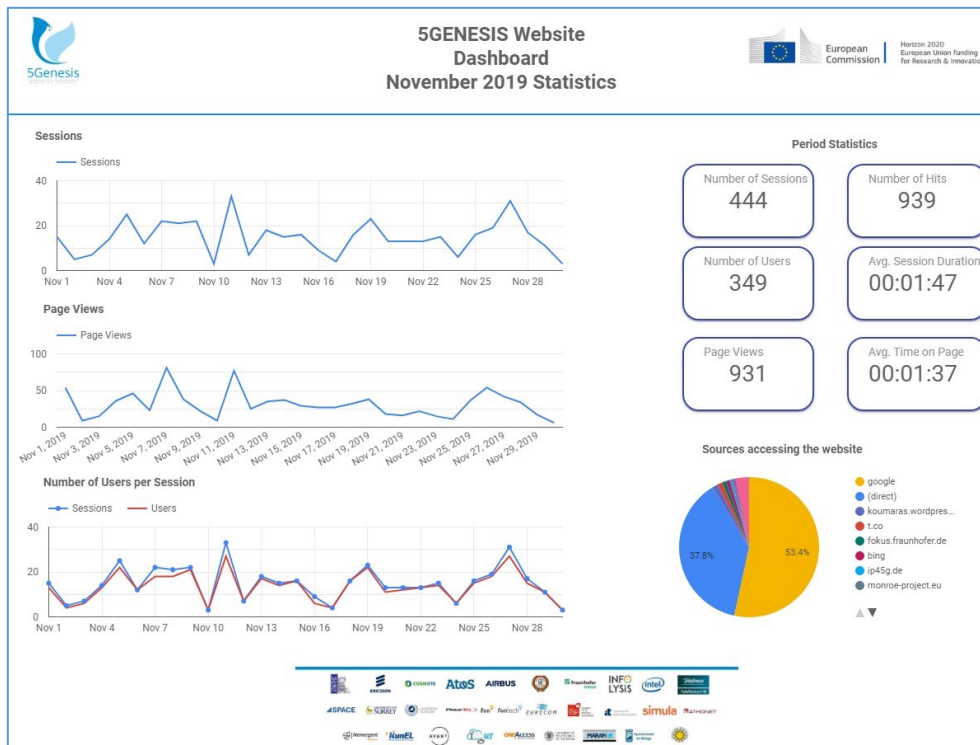
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Website Statistical Dashboards November 2019

November 2019 Link:

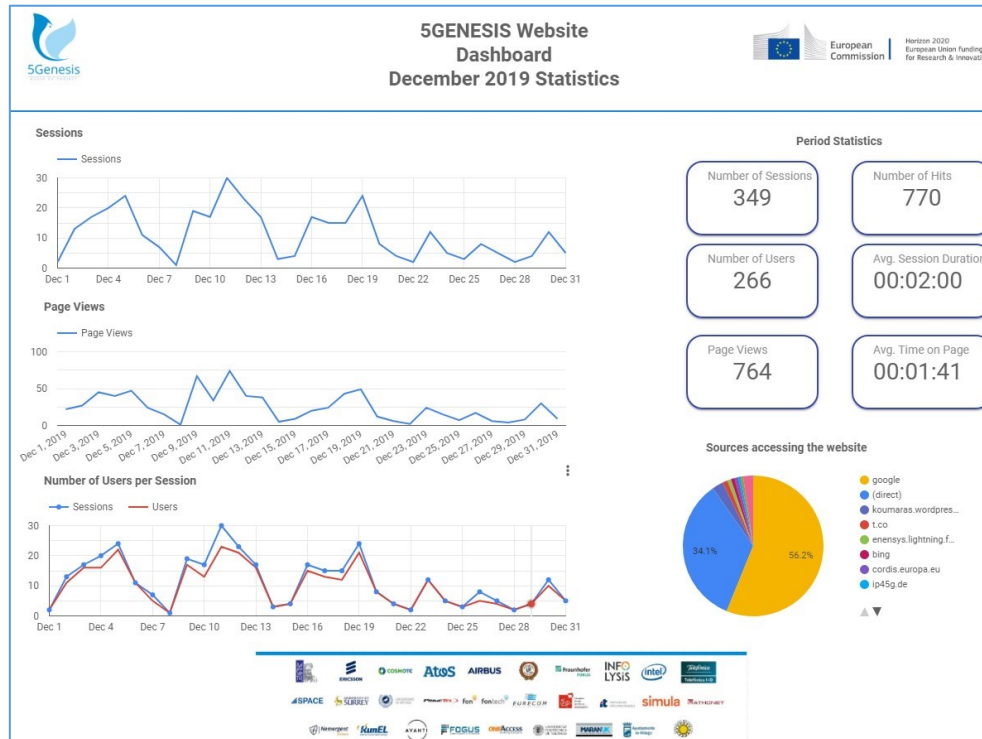
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Website Statistical Dashboards December 2019

December 2019 Link:

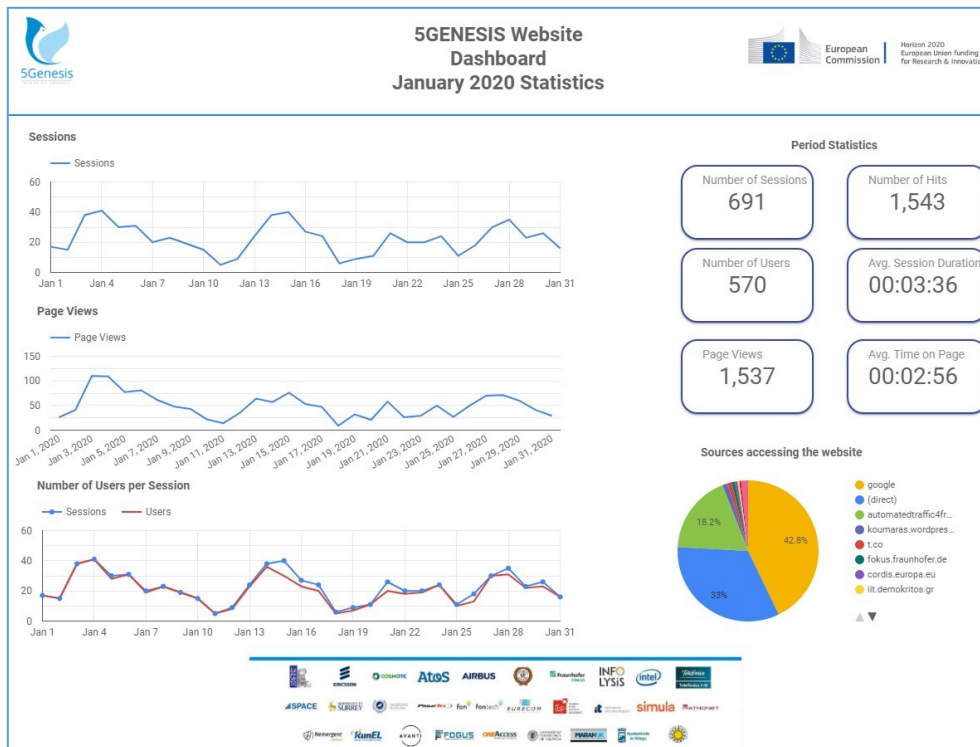
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Website Statistical Dashboards January 2020

January 2020 Link:

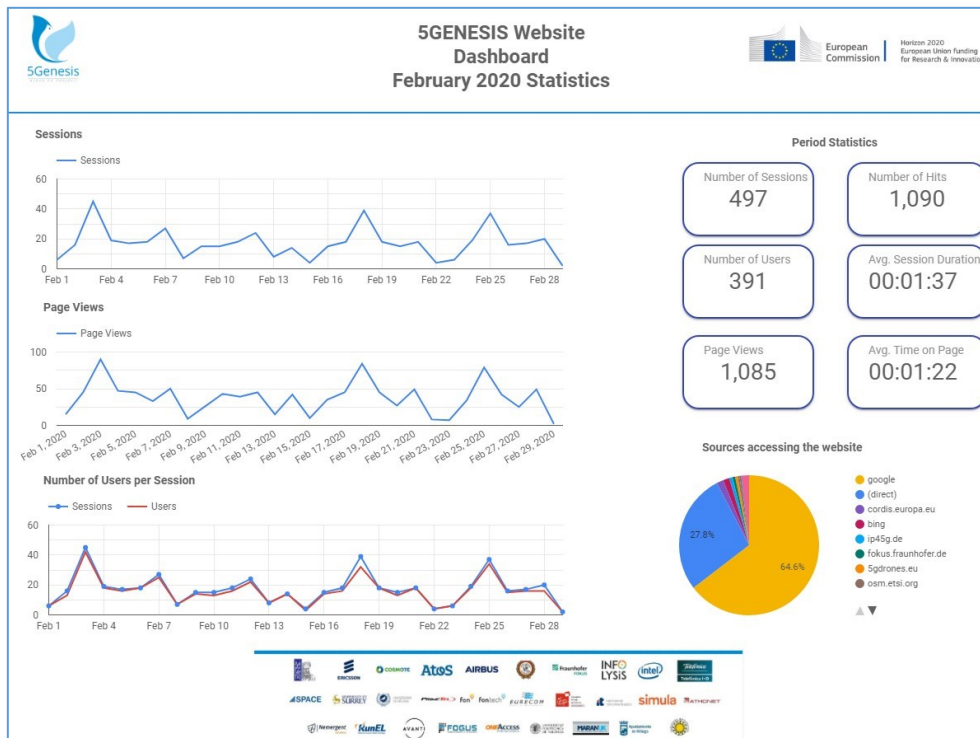
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Website Statistical Dashboards February 2020

February 2020 Link:

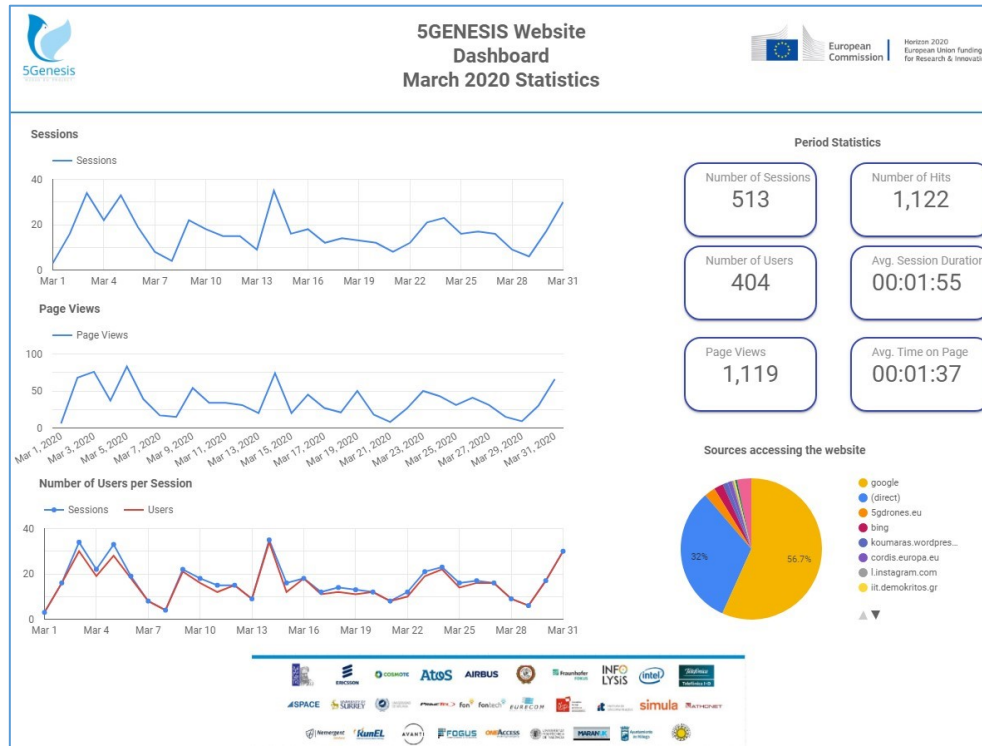
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Website Statistical Dashboards March 2020

March 2020 Link:

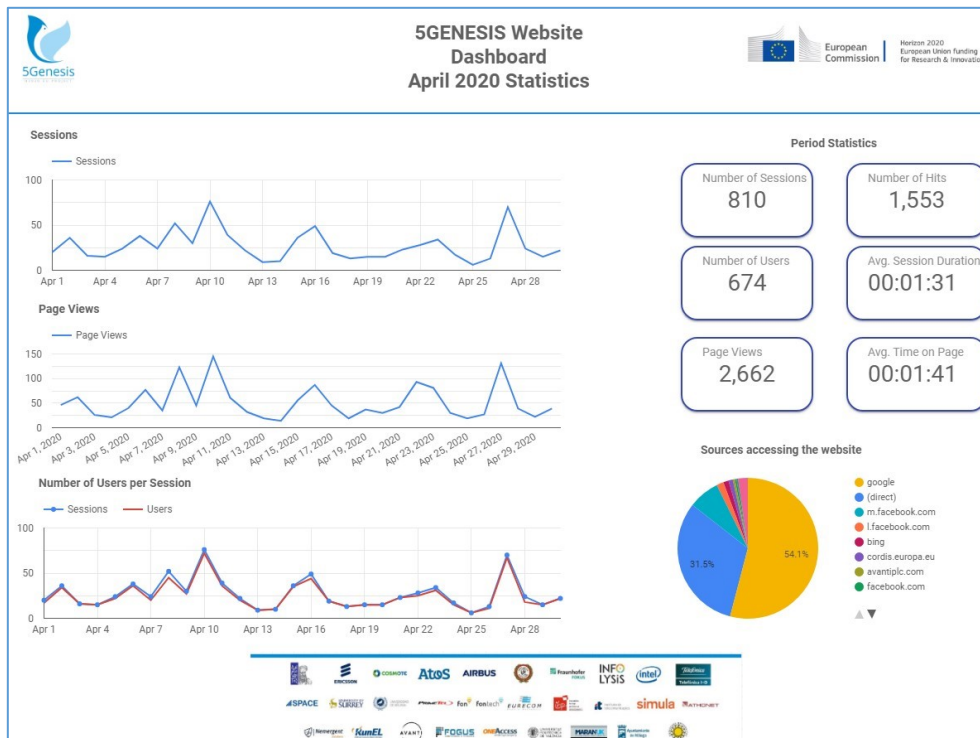
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Website Statistical Dashboards April 2020

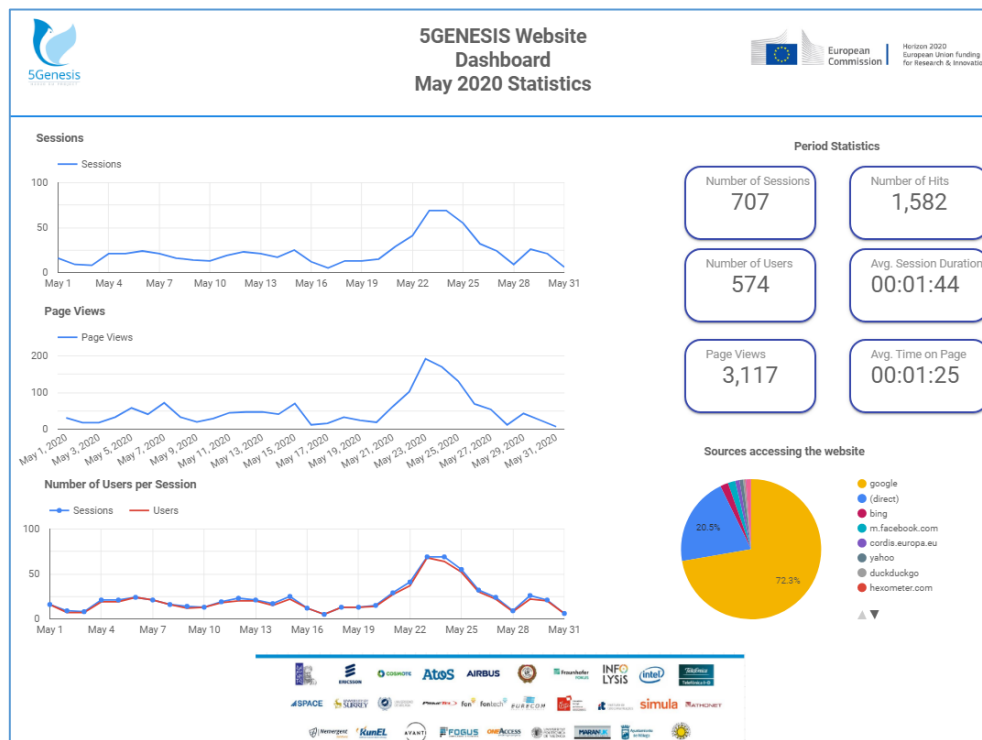
April 2020 Link:

<https://datastudio.google.com/reporting/6aecb33f-f67d-4c87-899a-a7c8967a7009>



Website Statistical Dashboards May 2020

May 2020 Link: <https://datastudio.google.com/reporting/430963c8-2630-4cf2-aaaa-c305f004f537>



ANNEX 3 – QUARTERLY ISSUES OF 5GENESIS NEWSLETTER

Newsletter Issue 5 (July – September 2019)

Available online at the 5GENESIS website at: https://5genesis.eu/wp-content/uploads/2019/10/5GENESIS-Newsletter_Issue_5.pdf

5GENESIS Newsletter
July-September 2019 - Issue 5

5GENESIS website: www.5genesis.eu/

INSIDE THIS ISSUE

1. 5GENESIS Overview
2. Dissemination and Communication Channels
3. Dissemination and Communication Activities
4. General Assembly Meetings

5GENESIS Project Overview

The fifth issue of the 5GENESIS newsletter presents the project activities and achievements during the period July - September 2019. This issue focuses on the latest 5GENESIS dissemination and communication activities, the deliverables that have been published as well as the details of the preparatory review meeting, which took place at the Intel premises in Munich, Germany, in September 2019.

5GENESIS activities in numbers:

- Three Conference/Journal Papers
- One White Paper
- One Presentation
- Two Articles in Newspapers and Online Sources
- One Experiment
- Seven Deliverables
- Two meetings

Communication Channels

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Dissemination and Communication Activities

Dissemination and Communication Activities of 5GENESIS during July - September 2019, cover a great number of initiatives such as publications, participation in conferences and workshops, presentations, demonstrations, additional dissemination events and preparation/planning of upcoming events.

Papers in Conferences – Journals

PIMRC 2019 (8-11/09/2019)

Eurescom conference paper entitled “Improving ultra-reliable low-latency communication in multiplexing with enhanced mobile broadband in grant-free resources” was presented at the PIMRC 2019, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications in Istanbul, Turkey on 8-11/09/2019. Read the paper [here](#)

MDPI Technologies, Vol. 7, Issue 3 (09/2019)

A 5GENESIS journal paper entitled “ThingsLocate: A ThingSpeak-Based Indoor Positioning Platform for Academic Research on Location-Aware Internet of Things” published in MDPI Technologies. This paper proposes a new indoor positioning platform, called ThingsLocate, by building upon the popular and flexible ThingSpeak cloud service for IoT, leveraging its data input and data processing capabilities and its native support for cloud execution of Matlab code. Read the paper [here](#)

ISWCS 2019 (27-30/08/2019)

Eurescom conference paper entitled “Strategies to meet the configured repetitions in URLLC Uplink grant-free transmission” was presented at the ISWCS 2019, 16th International Symposium on Wireless Communication Systems, in Oulu, Finland on 27-30/08/2019. Read the paper [here](#)



White Papers

5G-PPP Software Network Working Group

A white paper entitled “Cloud-Native and Verticals’ services - 5G-PPP projects analysis” was released in August from the 5GPPP Software Network Working Group in which 5GENESIS actively participates. This white paper is a follow-up of 2018 Cloud-Native transformation white paper and analyzes how 5G-PPP projects interpret Cloud-Native design patterns and identify adoption barriers. Read the paper [here](#)

Presentations

Jara Suárez de Puga (UPV) participated in the EoT Workshop: Enabling Internet of Things Ecosystems through the Edge (ICCCN) in Valencia, Spain, on 1st of August 2019. She participated with a presentation entitled “Architecture and Use Case for an IoT Deployment with SDN at the Edge and dual Physical and Virtual gateway” which provided an overview of the IoT Gateway used in the Limassol platform and its edge capabilities, presenting 5GENESIS, as a Scenario for its application.



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Magazines/Newspapers

Limassol Newspaper, CY (10/07/2019)

A 5GENESIS article (in Greek) entitled "Development of a large-scale 5G experimental infrastructure in Limassol" published in Limassol Newspaper and overviews the network evolution in Cyprus. Read more on the article [here](#)

Sigma Live, CY (09/07/2019)

5GENESIS article (in Greek) entitled "Digital Cyprus: The need for new services and modern infrastructure" (in Greek) overviews the developments in communications and information technology. Read more on the article [here](#)

5GENESIS Experiment Results - First Experimentation Cycle

During the first experimentation cycle of 5GENESIS, the 5G protocol stack of precommercial 5G NR equipment surpassed the target of 1 Gbps for the downlink rate, **reaching the peak rate of 1.4 Gbps!**


Upcoming Events

ACM Mobicom 2019 (21/10/2019, Los Cabos, Mexico)

A 5GENESIS paper entitled "Empirical Analysis of LoRaWAN Adaptive Data Rate for Mobile Internet of Things Applications" is presented at S3 Workshop at the ACM Mobicom 2019 in Los Cabos, Mexico in the 21st of October 2019.

IEEE 5G World Forum (30/09 – 2/10/2019, Dresden, Germany)

5GENESIS co-organizes with the rest ICT-17 projects the "2nd workshop on 5G-Trials - From 5G Experiments to Business Validation" in the IEEE 5G World Forum in Dresden, Germany.





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Deliverables



Seven deliverables have been published in the period July - September 2019 referring to management and orchestration, monitoring and analytics, API, Network Functions, Access Components and User Equipment as well as the Security Framework of the 5GENESIS project.

- **D3.1** Management and orchestration: This deliverable focuses on the definition, design and configuration of the MANO architecture to manage the end-to-end services in the 5GENESIS infrastructure.
- **D3.3** Slice management: This deliverable focuses on the design and implementation of the Slice Manager component that will be available in each island/platform. The Slice Manager is responsible for the operation and management of the slice lifecycle within the infrastructure.
- **D3.5** Monitoring and analytics: This deliverable focuses on design and implementation of a unified monitoring framework for all 5GENESIS testbeds.
- **D3.7** Open API, service-level functions and interfaces for verticals: This deliverable focuses on the design and implementation of the 5GENESIS openness framework
- **D3.9** Core Network Functions: This deliverable focuses on 5G core network functions developed to support the use cases of the project.
- **D3.11** Access Components and User Equipment: This deliverable focuses on the design and development of the 5G gNB (5G Base Stations) for the needs of 5GENESIS platforms, including the Physical and MAC (Layer-1 and Layer 2) layers, as well as its interfaces, structure and processing.
- **D3.13** Security Framework: This deliverable introduces the 5GENESIS security analytics engine.

Upcoming 5GENESIS deliverables (October - December 2019)

- **D1.3** Legal aspects and data management (Release B)
- **D4.2** The Athens Platform (Release B)
- **D4.5** The Malaga Platform (Release B)
- **D4.8** The Limassol Platform (Release B)
- **D4.11** The Surrey Platform (Release B)
- **D4.14** The Berlin Platform (Release B)
- **D4.17** Portable 5G Demonstrator (Release B)
- **D5.1** System-level tests and verification (Release A)
- **D7.9** Innovation and exploitation activities (Release B)

If you wish to learn more about 5GENESIS deliverables you may visit 5GENESIS website on the corresponding Deliverables page <http://www.5genesis.eu/deliverables/>

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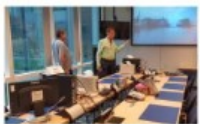
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Meetings

EC Review - Year 1, Brussels

The 5GENESIS first year review took place at EC premises in Brussels on the 26th of September 2019. The partners presented to the independent experts of EC the project's first year achievements and also organized two live demos.







5G PPP 5G-Initiative Steering Board Meeting, Brussels



Dr. Harilaos Koumaras (NCSR), coordinator of 5GENESIS Project, participated at the 5G PPP 5G-Initiative Steering Board meeting in Brussels in 18 September 2019.

Preparatory Review Meeting, Munich

The preparatory review meeting of the 5GENESIS Project was held at Intel's premises in Munich, Germany on the 5th and 6th of September 2019. In this meeting, 5GENESIS partners worked together for preparing the presentations and demos to be used for Year 1 project review in Brussels. During these two days, fruitful discussions, presentations, rehearsals and demos took place in order to prepare the partners for the review day!








5GENESIS meeting in Munich

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Platforms Contact Information


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5GENESIS Malaga Platform: malaga@5genesis.eu











5GENESIS Limassol Platform: limassol@5genesis.eu










5GENESIS Berlin Platform: berlin@5genesis.eu

5GENESIS Surrey Platform: surrey@5genesis.eu



Newsletter Issue 6 (October – December 2019)

Available online at the 5GENESIS website at:

https://5genesis.eu/wp-content/uploads/2020/01/5GENESIS-Newsletter_Issue_6.pdf






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5GENESIS Newsletter
October-December 2019 - Issue 6

5GENESIS website: www.5genesis.eu/

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1. 5GENESIS Overview
2. Dissemination and Communication Activities
3. Deliverables
4. General Assembly Meetings



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5GENESIS Project Overview

The sixth issue of the 5GENESIS newsletter presents the project activities and achievements during the period October - December 2019. This issue focuses on the latest 5GENESIS dissemination and communication activities (presentations, publications in journals/workshops/conferences, workshops and more), the deliverables that have been published as well as the details of the sixth GA meeting, which took place at the Fraunhofer FOKUS premises in Berlin, Germany, in November 2019.

5GENESIS activities in numbers:

- One Paper in Workshop
- Three Publications in Conferences
- Two Workshops
- Seven Presentations
- Three Trials/Tests/Demonstrations
- Two Panel Discussions - Invited Talks
- Nine Deliverables
- Two meetings

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Dissemination and Communication Activities

Dissemination and Communication Activities of 5GENESIS during October - December 2019, cover a great number of initiatives such as publications, participation in conferences and workshops, presentations, demonstrations and panels.

Papers in Workshops

ACM Mobicom 2019 (21/10/2019, Los Cabos Mexico)

A 5GENESIS paper entitled “Empirical Analysis of LoRaWAN Adaptive Data Rate for Mobile Internet of Things Applications” was presented at S3 Workshop at the ACM Mobicom 2019 in Los Cabos, Mexico in the 21st of October 2019. The link of the paper is available at 5GENESIS website: https://5genesis.eu/wp-content/uploads/2019/09/LoRaWAN_SRL.pdf



Publications in Conferences

MobiWac '19 (25-29/11/2019, Miami)

A 5GENESIS Paper entitled “A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case” was presented at MobiWac'19, in 25-29/11/2019, in Miami. The link of the paper is available at 5GENESIS website: <https://5genesis.eu/wp-content/uploads/2019/11/A-Coordination-Framework-for-Experimentation-in-5G-Testbeds.pdf>



Delia Riteo (UMA) at MobiWac '19

IEEE 5G World Forum (30.09-02.10/2019, Dresden, Germany)

Dr Valerio Frascolla (INT) presented the paper “Handover optimality in heterogeneous networks” at the 5G and IoT track of IEEE 5G World Forum in Dresden, on October 1st 2019. The link of the paper is available at 5GENESIS website: <https://5genesis.eu/wp-content/uploads/2019/10/Handover-optimality-in-heterogeneous-networks.pdf>



Dr. Valerio Frascolla (INT) at IEEE 5G World Forum, Dresden

JITEL 2019, XIV Jornadas de Ingeniería Telemática (22-24/10/2019, Zaragoza)

A 5GENESIS Paper entitled “A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case” was presented at JITEL 2019, XIV Jornadas de Ingeniería Telemática in 22-24/10/2019, in Zaragoza. The link of the paper is available at 5GENESIS website: <https://5genesis.eu/wp-content/uploads/2019/11/A-Coordination-Framework-for-Experimentation-in-5G-Testbeds.pdf>



Barbara Valera (UMA) at the JITEL 2019




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Workshops and Special Sessions

5GPPP Technical Workshop, University of Malaga (10/10/2019)

Professor Pedro Merino Gomez from UMA hosted the 5GPPP Technical Workshop on key enablers for 5G Experimentation, which chaired by Dr. Almudena Diaz (WP3 leader) and Dr. Dimitris Tsolkas (Deputy TM).

IEEE 5G World Forum (30/09 – 2/10/2019, Dresden, Germany)

5GENESIS Project co-organized together with the rest ICT-17 project coordinators (and not only) the 2nd workshop on 5G-Trials - From 5G Experiments to Business Validation adjunct with IEEE 5G World Forum (<http://sites.ieee.org/wf-5g>). Additional information can be found at: <http://sites.ieee.org/wf-5g/from-5g-experiments-to-business-validation/>



Pr. Pedro Merino Gomez (left) and Dr. Dimitris Tsolkas (right) at the 5GPPP Technical Workshop.

Presentations

MSWIM '19 (25 - 29/11/2019, Miami)

A presentation and a poster session of the conference paper "A Coordination Framework for Experimentation in 5G Testbeds: URLLC as Use Case" was made by Delia Rico (UMA) at MSWIM 19, in Miami.

INFOCOM (26/11/2019, Athens)

- Dr. Anastasios Kourtis (NCSR), presented the "5GENESIS: An Experimentation Platform to validate 5G KPIs for various 5G Use Cases and Vertical Industries" at the Session C: Modern Innovative Technologies and Broader 5G-related Aspects for Development and Growth with Emphasis set to Vertical Industries in INFOCOM.
- Cosmote partner presented 5GENESIS at INFOCOM WORLD CONFERENCE 2019 - "Economy 4.0: Connected Future" on Tuesday 26 November 2019 in Athens, Greece.

Additional information can be found at: <https://www.infocomworld.gr/21o-infocom-world-2019/5g-epistimoniki-synantisi-aithovsa-makedonia/>

IEEE 5G WORLD FORUM
The flagship event of the IEEE Future Networks Initiative



Delia Rico (University of Malaga) at MSWIM '19




COSMOTE presentation at INFOCOM.




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Spanish Royal Academy of Engineering (12/11/2019, Madrid)

Prof. Pedro Merino Gómez, Universidad de Málaga, presented 5GENESIS on November 12, 2019 at the Spanish Royal Academy of Engineering in Madrid, Spain.

Fraunhofer Fokus FUSECO Forum (7-8/11/2019, Berlin)

5GENESIS coordinator Dr. Harilaos Koumaras (NCSR Demokritos) presented 5GENESIS at the "European 5G Testbeds, Trials, and Best Practices" workshop of the Fraunhofer Fokus FUSECO Forum on Thursday 7 November 2019 in Berlin.

IEEE 5G World Forum (30/09 – 2/10/2019, Dresden, Germany)

Dr Valerio Frascolla (INT) had a presentation entitled "What's after 5G Phase 1 and 2?" at the Workshop "From Evolution to Revolution" in IEEE 5G World Forum in Dresden, on October 1st 2019.

Ericsson Ireland Tech Day 2019 (12/09/2019, Ireland)

LMI partner presented 5GENESIS at the Ericsson Ireland Tech Day 2019 on 12/09/2019. The presentation was focused on the context & goals of the project, as well as on the 5GENESIS architecture and plans for the coming year.

Trials-Tests-Demonstrations

Fraunhofer Fokus FUSECO Forum (7-8/11/2019, Berlin)

5GENESIS Berlin platform partners and 5GENESIS coordinator Dr. Harilaos Koumaras (NCSR) are present at the Fraunhofer Fokus FUSECO Forum in Berlin. 5GENESIS festival of lights field trial details and Open5GCore are demonstrated.

ETSI MCX Plugtests (22-27/09/2019), Kuopio

Athonet and Nemerget interoperated their EPC, IMS and eMBMS core solutions with multiple MCX vendors and tested latest 3GPP MCX releases, which fit to the 5GENESIS Malaga use case.



Prof. Pedro Merino Gómez at the Spanish Royal Academy of Engineering.



Dr. Harilaos Koumaras at the Fraunhofer Fokus FUSECO Forum.



Dr. Valerio Frascolla at IEEE 5G World Forum.



LMI at the Ericsson Ireland Tech Day 2019.



5GENESIS Partners at the Fraunhofer Fokus FUSECO Forum.






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MEC Congress (17-19 Sept. 2019), London

Athonet demonstrated the 5G and MEC solutions based on the latest 3GPP release in MEC Congress in London.

Panel Discussions – Invited Talks

IMOC 2019 (10-14/11/2019, Aveiro, Portugal)

Dr. Valerio Frascolla (INT) was invited and hosted to give the talk “mmWave communications and 5G networks” at the International Microwave and Optoelectronics Conference (IMOC 2019) conference in Aveiro, Portugal, thus disseminating the 5GENESIS EU-funded project research on dynamic spectrum management. Valerio also participated to the industrial panel discussing the importance of open facilities for the broader research landscape. IMOC was held for the first time in Europe, with the aim of establishing itself as a fruitful opportunity for nurturing collaboration activities between the Latin America, especially Brazil, and the European research community. More info at <https://imoc2019.com/>

IEEE 5G World Forum (30/09 – 2/10/2019, Dresden, Germany)

Dr. Valerio Frascolla (INT) participated at the panel “Evolution and revolution of networking and technology beyond 5G” at IEEE 5G World Forum in Dresden.

Upcoming Events

MWC 2020 (24-27/02/2020, Barcelona)

5GENESIS Project will be present with a booth at the MWC 2020 which will be held in Barcelona in February. At the same booth the rest two ICT-17 projects 5G-EVE and 5G-VINNI will be also present. Several demonstrations and presentations will take place.

Deliverables (period October 2019 – January 2020)

D1.3 Legal aspects and data management (Release B): This deliverable identifies all the ethics and legal framework (rules, legislations etc.) which apply to the project execution and its results. This will be carried out both at national and international level, particularly focusing on data protection (e.g. GDPR) and handling aspects during the experiments.

D4.2 The Athens Platform (Release B): This deliverable provides a summary of each of the components/sites that will form the Athens Platform.





Prof. Brambilla (left) chairing the session and Dr. Frascolla (right) giving the invited talk at IMOC2019





24-27 February 2020





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D4.5 The Malaga Platform (Release B): This deliverable provides a summary of each of the components/sites that will form the Malaga Platform.

D4.8 The Limassol Platform (Release B): This deliverable provides a summary of each of the components/sites that will form the Limassol Platform.

D4.11 The Surrey Platform (Release B): This deliverable provides a summary of each of the components/sites that will form the Surrey Platform.

D4.14 The Berlin Platform (Release B): This deliverable provides a summary of each of the components/sites that will form the Berlin Platform.

D4.17 Portable 5G Demonstrator (Release B): In this deliverable, a summary of each of the components/sites that will form the portable demonstrator of the 5GENESIS is provided.

D5.1 System-level tests and verification (Release A): Midterm and final report with detailed documentation and analysis of the results from the system-level tests and the verification trials

D7.9 Innovation and exploitation activities (Release B): Report of the first two quarters of activities of the innovation program run within the consortium. A plan of the activities till project end will be created.

Upcoming 5GENESIS deliverables

D6.2 Trials and experimentation (cycle 2) : This deliverable will include the trials and experimentation results on the 5GENESIS platform that has resulted from the second integration cycle, emphasizing on the 5G KPI validation through the described use cases.

If you wish to learn more about 5GENESIS deliverables you may visit 5GENESIS website on the corresponding Deliverables page <http://www.5genesis.eu/deliverables/>



Deliverables



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Meetings

5GPPP Technical Meeting, University of Malaga (10/10/2019)

Prof. Pedro Merino Gomez from UMA (TM) hosted the Technology Board meeting on key enablers for 5G Experimentation, which chaired by Dr. Almudena Diaz (WP3 leader) and Dr. Dimitris Tsolkas (Deputy TM).

5GENESIS 6th GA Meeting

The 5GENESIS 6th GA meeting took place at the Fraunhofer FOKUS premises in Berlin, Germany from the 26th to the 28th of November 2019. 5GENESIS partners worked together in order to evaluate the project's progress as well as plan the upcoming activities. The meeting's schedule followed a set of presentations, demos, discussions and various activities. Moreover, three ICT-19 Projects (5GIDrones, 5G-VICTORI, 5G-HEART) were introduced and presented to 5GENESIS partners with focus on the use cases that will use the 5GENESIS facilities.

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5GENESIS Limassol Platform: limassol@5genesis.eu

5GENESIS Berlin Platform: berlin@5genesis.eu

5GENESIS Surrey Platform: surrey@5genesis.eu

ASPACE
SURREY
COGNITE
Atos
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INFO LYSIS
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Newsletter Issue 7 (January – March 2020)

Available online at the 5GENESIS website at:

https://5genesis.eu/wp-content/uploads/2020/04/5GENESIS-Newsletter_Issue_7.pdf



The cover page of the 5GENESIS Newsletter Issue 7 (January - March 2020) features a background image of a modern building facade. At the top left, there are logos for 5Genesis, the European Commission, and Horizon 2020. A white box on the right contains the title "5GENESIS Newsletter" and the issue information "January - March 2020 - Issue 7". Below this, a white box provides the 5GENESIS website: www.5genesis.eu/.

INSIDE THIS ISSUE

1. 5GENESIS Overview
2. Dissemination and Communication Activities
3. Deliverables
4. General Assembly Meetings

5GENESIS Project Overview

The seventh issue of the 5GENESIS newsletter presents the project activities and achievements during the period January - March 2020. This issue focuses on the latest 5GENESIS dissemination and communication activities (presentations, publications, articles, trials and more), the deliverables that have been published as well as the details of the seventh GA meeting, which was hosted by Telefonica and Atos in Madrid, Spain in February 2020.

5GENESIS activities in numbers:

- One Presentation
- One conference paper and one accepted paper
- Three online articles
- Two white papers
- One video
- Three upcoming events
- Two Trials
- 5GENESIS platforms (Release B) deliverables
- One GA meeting

Communication Channels

Icons for Facebook, Twitter, LinkedIn, Instagram, and YouTube are shown, along with the website <http://www.5genesis.eu> and email info@5genesis.eu.

A QR code is located below the "INSIDE THIS ISSUE" list. At the bottom of the page, a row of logos represents the 5GENESIS consortium members, including Ericsson, EDSHORE, Atos, Airbus, Fraunhofer IPA, INFO LYSIS, Intel, and others.




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Dissemination and Communication Activities

Dissemination and Communication activities of 5GENESIS during January - March 2020, cover a great number of initiatives such as publications, participation in conferences and workshops, presentations, demonstrations and panels. Besides these activities, additional activities that took place at the end of 2019 are also presented.

Conference Papers- Presentations

5th Symposium on Signal Processing and Intelligent Recognition System (18-21/12/2019, Trivandrum, India)

Dr. Valerio Frascolla (INT) presented the paper "What are 3GPP 5G Phase 1 and 2 and What Comes After" at SIRS 2019, the 5th Symposium on Signal Processing and Intelligent Recognition System, Dec 2019, at Trivandrum, India. The paper is available here: <https://5genesis.eu/wp-content/uploads/2020/03/What-are-3GPP-5G-Phase-1-and-2-and-What-Comes-After.pdf>



Accepted Papers

The 5GENESIS Paper by Dr Tsolkas (FOGUS) entitled "A metaheuristic approach for minimizing service creation time in slice-enabled networks" was accepted in IEEE International Conference of Communications which will be held from 7 to 11/06/2020 in Dublin, Ireland. Read the paper online via this link: https://5genesis.eu/wp-content/uploads/2020/03/ComSoc-A-nature-inspired-meta-heuristic-approach-for-minimizing-service-creation-time-in-slice-enabled-networks_.pdf

Read more on the conference here: <https://icc2020.ieee-icc.org>



Online Articles

5G FORUM (10/03/2020)

Malaga's experimental 5G Network will be presented at the 5G Forum 2020 in Malaga (6-7 May), where Prof. Pedro Merino will present the 5GENESIS Malaga platform status under the title "5GENESIS Malaga, a 5G platform open to innovation". As per the 5G Forum article, besides the University of Malaga, 5GENESIS partners Telefonica, Nemergent, Malaga Police and Municipality of Malaga will cooperate in the deployment and testing of the 5G network. More information for the 5GENESIS presence in the event is available at: <https://www.5gforum.es/en/top-5g-tests-at-the-5gforum-in-malaga/>



FUSECO Forum – 5GENESIS and National Centre for Scientific Research "Demokritos" (15/11/2019)

An online article in regards to 5GENESIS and FUSECO Forum in Berlin on 15-11-2019 can be found at the Demokritos' website. Read more at: <https://5genesis.eu/wp-content/uploads/2020/03/a1.pdf>





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5GENESIS Berlin Platform - Fraunhofer Fokus (07/11/2019)

An article entitled “5G in practical test: Temporary network at the Festival of Lights” can be found at the Fraunhofer Fokus website. This article focuses on the field trial at the Festival of Lights 2019 in Berlin. Researchers from Fraunhofer FOKUS conducted a field trial as part of the EU project 5GENESIS with partners from IHP, Humboldt-Universität zu Berlin, Karlsruher University, NetApp and Simula Research Laboratory. Read more at:
https://www.fokus.fraunhofer.de/en/fokus/news/BerlinFestivalofLight_2019-11



White Papers

5G-PPP ICT-17 projects brochure

The three research projects 5G-EVE, 5GENESIS and 5G-VINNI released a brochure with useful information about their activities. In this brochure you may find the key capabilities of the 5G trial platforms, the provided services, the corresponding locations per project and the timeline of the trials. You may also find information about the involved stakeholders (i.e., operators, vendors, vertical industries, universities and research institutes, SMEs and public stakeholders). Additionally, you will find information about which vertical related EU funded projects they also support. You may access it at the 5G-PPP website: <https://5g-ppp.eu/wp-content/uploads/2020/03/Vertical-industries-in-the-5G-PPP.pdf>



5G-PPP 5G Architecture White Paper (ver. 3)

The 5G-PPP 5G Architecture Working Group published a white paper (version 3) on the consolidated European view on 5G architecture. The work has continued from version 2 with the 5G PPP Phase II and Phase III projects with special focus on understanding the requirements from vertical industries involved in the projects and then driving the required enhancements of the 5GArchitecture able to meet their requirements. The results of the Working Group are now captured in this Version 3.0, which presents the consolidated European view on the architecture design. Additional information can be found at: https://5g-ppp.eu/wp-content/uploads/2020/02/5G-PPP-5G-Architecture-White-Paper_final.pdf



Video

5GENESIS MWC 2020 Video – 5G Equipment

5GENESIS released a video in regards to its participation at MWC 2020 referring to the 5G equipment of 5GENESIS experimental platforms. Since MWC 2020 was cancelled due to Coronavirus outbreak, the video was made available through the 5GENESIS YouTube channel. You can watch the video following this link:
<https://www.youtube.com/watch?v=gJPedj9NrU&t=29s>






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Upcoming Events

5G FORUM (6-7/05/2020) – Virtual with 5G

5GENESIS Partners will participate in the 5G Forum which will take place in Malaga from 6th to 7th May 2020. The event, due to the coronavirus outbreak, will be completely Virtual with #5G, with the speakers and attendees intervening and participating from their usual places of work via the Internet. More info available at: <https://www.5gforum.es/en/5gforum-of-malaga-will-be-totally-virtual-and-with-5g/?fbclid=IwAR3GCRpb-PjuiSn1ijWxz0x8FsXshzP1D0mbDv8vvyxfA1RfzFnGnKlCmE>



EuCNC 2020 Goes Virtual!
(Dubrovnik, Croatia, 15-18/06/2020)

Due to the world COVID-19 pandemic, the Steering Committee of EuCNC 2020 has decided to change the format of the conference to an on-line virtual one, instead of the usual face-to-face physical one in Dubrovnik. Read all the details at <https://www.eucnc.eu/2020/04/06/eucnc-2020-goes-virtual/>



1st Workshop on 5G Verticals and Experimentation (5GVertEx) (Ghent, Belgium at 29/06 – 3/07/2020)

5GENESIS co-organizes the 1st Workshop on 5G Verticals and Experimentation (5GVertEx) which will be held in conjunction with the IEEE NetSoft 2020 at Ghent, Belgium at 29/06 - 3/07/2020. Call for papers deadline was on 14/02/2020.
Read more in regards to the workshop at: <https://medianetlab.gr/events/workshops/5g-vertex/>








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5G Trials

COSMOTE Pilot tests

5GENESIS partner COSMOTE has successfully tested its Pilot 5G NSA network, consisting of 5G Nokia Airscale BTS attached to Athonet vEPC Core. COSMOTE R&D Airscale System initial configuration uses 2x2 MIMO radio units and 100MHz bandwidth.





COSMOTE Pilot network test images

5GENESIS Berlin platform - Field Trial at the Festival of Lights 2019 in Berlin

Whether disaster relief, sports event or festival: 5G can be used to set up a temporary network to connect many devices and provide a high bandwidth for multimedia services. In order to test such a setup, researchers from Fraunhofer FOKUS conducted a field trial as part of the EU project 5GENESIS with partners from HP, Humboldt-Universität zu Berlin, Karlstad University, NetApp and Simula Research Laboratory at Festival of Lights 2019 in Berlin. The components of a portable 5G network and their interaction are explained in the following video.

<https://www.youtube.com/watch?v=DBSs96DgWf0>

More information:


<https://5genesis.eu/berlin-platform/>

<https://www.open5gcore.org>

https://www.fokus.fraunhofer.de/en/fokus/news/BerlinFestivalofLight_2019-11







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Deliverables

All public 5GENESIS platform deliverables (Release B) that were released at the beginning of 2020 are available for downloading at our website.

Upcoming 5GENESIS deliverables

D5.3 Documentation and supporting material for 5G stakeholders: Midterm report on a complete guide for the provided facility in a multi-perspective approach including technical description and user's manual.

D6.2 Trials and experimentation (cycle 2): This deliverable will include the trials and experimentation results on the 5GENESIS platform that has resulted from the second integration cycle, emphasizing on the 5G KPI validation through the described use cases.


D7.3 Dissemination, communication and ecosystem engagement activities: This deliverable is based on dissemination, communication and ecosystem engagement activities, including 5G PPP contributions and synergies with other research projects.

D7.6 Standardisation and regulation: This deliverable will elaborate on the achieved results w.r.t standards and regulatory bodies engagements, and it will be released in an annual basis.

If you wish to learn more about 5GENESIS deliverables you may visit 5GENESIS website on the corresponding Deliverables page <http://www.5genesis.eu/deliverables/>



Deliverables






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Meetings

5GENESIS 7th GA Meeting

The 5GENESIS 7th GA meeting was hosted by Telefonica and Atos partners in Madrid, Spain from the 18th to the 20th of February 2020. 5GENESIS partners worked together in order to evaluate the project's progress as well as to plan the upcoming activities and trials. The meeting's agenda followed a set of presentations in regards to all WPs activities, parallel technical sessions, discussions and demos.








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Communication Channels

<http://www.5genesis.eu>
info@5genesis.eu

Platforms Contact Information
 5GENESIS Athens Platform: athens@5genesis.eu
 5GENESIS Malaga Platform: malaga@5genesis.eu
 5GENESIS Limassol Platform: limassol@5genesis.eu
 5GENESIS Berlin Platform: berlin@5genesis.eu
 5GENESIS Surrey Platform: surrey@5genesis.eu



Newsletter Issue 8 (April – June 2020)

At the time that this deliverable was submitted, the newsletter Issue 8 was under its final review and it was planned for publication by the middle of July 2020. After that date the Issue 8 will be accessible online through the 5GENESIS website at:

<https://5genesis.eu/category/newsletter/>