



## 5G Solutions for European Citizens

### D9.2B Dissemination and communication plan

#### Document Summary Information

<b>Grant Agreement No</b>	856691	<b>Acronym</b>	5G-SOLUTIONS
<b>Full Title</b>	5G Solutions for European Citizens		
<b>Start Date</b>	01/06/2019	<b>Duration</b>	42 months
<b>Project URL</b>	<a href="https://www.5gsolutionsproject.eu/">https://www.5gsolutionsproject.eu/</a>		
<b>Deliverable</b>	D9.2B		
<b>Work Package</b>	WP9		
<b>Contractual due date</b>	M20	<b>Actual submission date</b>	Revision M29
<b>Nature</b>	Report	<b>Dissemination Level</b>	Public
<b>Lead Beneficiary</b>	CTTC		
<b>Responsible Author</b>	David Pubill (CTTC)		
<b>Contributions from</b>	D. Pubill, S. Kahvazadeh, A. Antonopoulos, Ch. Verikoukis (CTTC)		



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No 856691.

**Revision history (including peer reviewing & quality control)**

Version	Issue Date	% Complete <sup>1</sup>	Changes	Contributor(s)
V1	15/12/2020	0%	Initial Deliverable Structure	D. Pubill (CTTC)
V2	29/12/2020	50%	Initial input for all sections	A. Antonopoulos, S. Kahvazadeh (CTTC)
V3	14/01/2021	80%	Update all sections	S. Kahvazadeh, D. Pubill (CTTC),
V4	21/01/2021	100%	Final revision of all sections	D.Pubill, Ch. Verikoukis (CTTC)
V5	26/01/2021	100%	Internal review of document	A-M Bosneag (LMI)
V6	28/01/2021	100%	Final version	D.Pubill, S. Kahvazadeh, Ch. Verikoukis (CTTC)
V7	22/10/2021	100%	Revision after the Project Officer comments	D. Pubill, S. Kahvazadeh (CTTC)
V8	28/10/2021	100%	Internal review of document	Albert Torres (IRIS), A-M Bosneag (LMI), Christos Skoufis (EBOS)
V9	28/10/2021	100%	Final version	D. Pubill, S. Kahvazadeh (CTTC)

**Disclaimer**

The content of the publication herein is the sole responsibility of the publishers and it does not necessarily represent the views expressed by the European Commission or its services.

While the information contained in the documents is believed to be accurate, the authors(s) or any other participant in the 5G Solutions consortium make no warranty of any kind with regard to this material including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Neither the 5G Solutions Consortium nor any of its members, their officers, employees or agents shall be responsible or liable in negligence or otherwise howsoever in respect of any inaccuracy or omission herein.

Without derogating from the generality of the foregoing neither the 5G Solutions Consortium nor any of its members, their officers, employees or agents shall be liable for any direct or indirect or consequential loss or damage caused by or arising from any information advice or inaccuracy or omission herein.

**Copyright message**

© 5G Solutions Consortium, 2019-2022. This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has

<sup>1</sup> According to 5G Solutions Quality Assurance Process:

1 month after the Task started: Deliverable outline and structure

3 months before Deliverable's Due Date: 50% should be complete

2 months before Deliverable's Due Date: 80% should be complete

1 months before Deliverable's Due Date: close to 100%. At this stage it sent for review by 2 peer reviewers

Submission month: All required changes by Peer Reviewers have been applied, and goes for final review by the Quality Manager, before submitted

been made through appropriate citation, quotation or both. Reproduction is authorised provided the source is acknowledged.

## Table of Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>6</b>
<b>2</b>	<b>Introduction .....</b>	<b>7</b>
2.1	Mapping Projects' Outputs .....	8
2.2	Deliverable Overview and Report Structure .....	10
<b>3</b>	<b>Dissemination Activities .....</b>	<b>11</b>
3.1	Target Audience and Objectives .....	11
3.2	Dissemination Channels .....	11
3.3	Dissemination of publications and white papers .....	12
3.4	Joint dissemination actions and events.....	14
<b>4</b>	<b>Communication Activities .....</b>	<b>25</b>
4.1	Target Audience and Objectives .....	25
4.2	Communication Channels.....	26
4.3	Newsletters .....	32
4.4	Factsheet.....	35
4.5	Project meetings .....	37
4.6	Involvement of SMEs Report .....	40
4.7	Community Building Report .....	41
<b>5</b>	<b>Dissemination and Communication Phases .....</b>	<b>42</b>
<b>6</b>	<b>Metrics and Targets .....</b>	<b>44</b>
<b>7</b>	<b>Conclusions and Next Actions.....</b>	<b>45</b>

## List of Figures

Figure 1: Workshop organized. ....	15
Figure 2: CTTC training.....	16
Figure 3: IEEE MeditCom Conference.....	16
Figure 4: IEEE MeditCom Special Session .....	16
Figure 5: Program of the Special Session .....	17
Figure 6: ICT Conference and Exhibition .....	17
Figure 7: ICT Conference and Exhibition with EBOS representing 5G-SOLUTIONS.....	18
Figure 8: CTTC Demos demonstration.....	19
Figure 9: TIM Demo .....	19
Figure 10: LMI Demo .....	20
Figure 11: LiveU TM Broadcast International Press Release .....	22
Figure 12: Success Stories - LiveU.....	23
Figure 13: 5G-SOLUTIONS Logo .....	26
Figure 14: 5G-SOLUTIONS Website .....	27

Figure 15: 5G-SOLUTIONS Poster .....	28
Figure 16: List of public deliverables in the project's website .....	29
Figure 17: website audience overview .....	30
Figure 18: Location overview .....	30
Figure 19: Mobile overview .....	31
Figure 20: 5G-SOLUTIONS LinkedIn communication channel .....	31
Figure 21: 5G-SOLUTIONS Twitter communication channel .....	32
Figure 22: Newsletter issue #1. December 2019.....	33
Figure 23: Newsletter issue #2. June 2020 .....	33
Figure 24: Newsletter issue #3. December 2020.....	34
Figure 25: Newsletter issue #4. June 2021 .....	34
Figure 26: 5G-SOLUTIONS factsheet.....	36
Figure 27: Kick-off 5G-SOLUTIONS meeting .....	37
Figure 28: 2 <sup>nd</sup> Plenary project meeting.....	38
Figure 29: 3 <sup>rd</sup> Plenary project meeting .....	38
Figure 30: 4 <sup>th</sup> Plenary project meeting .....	39
Figure 31: 6 <sup>th</sup> Plenary project meeting .....	39

## List of Tables

Table 1: Adherence to 5G-SOLUTIONS GA Deliverable & Tasks Descriptions.....	8
Table 2: Target audience groups for dissemination .....	11
Table 3: Dissemination channels.....	12
Table 4: Other events .....	20
Table 5: Target audience groups for communication .....	25
Table 6: Communication objectives .....	26
Table 7: 5G-SOLUTIONS Dissemination and Communication (D&C) .....	42
Table 8: Dissemination and communication outcome, metrics and targets .....	44

## Glossary of terms and abbreviations used

Abbreviation / Term	Description
3GPP	3 <sup>rd</sup> Generation Partnership Project
5G-IA	5G Infrastructure Association
5G-PPP	5G Infrastructure Public Private Partnership

EBU	European Broadcasting Union
ETSI	European Telecommunications Standards Institute
EU	European Union
EuCNC	European Conference on Networks and Communications
EVCA	European Private Equity and Venture Capital Association
ICC	International Conference on Communications
IETF	Internet Engineering Task Force
IoTWC	Internet of Things Solutions World Congress
ITU-T	International Telecommunication Union - Telecommunication Sector
KPI	Key Performance Indicator
MWC	Mobile World Congress
NGMN	Next Generation Mobile Networks
ONF	Open Networking Foundation
R&D	Research and Development
RIA	Research and Innovation Action
SCEWC	Smart City Expo World Congress
SME	Small and medium-sized enterprises
SPAWC	Signal Processing Advances in Wireless Communications
WP	Work Package

# 1 Executive Summary

D9.2B is an interim report associated to the Task 9.1 – “Dissemination and Communication Activities” (led by CTTC), which implements the dissemination and communication of the project goals, software products, reports, results, achievements, and other outputs. In this sense, this deliverable shows the progress made during the first 20 months of the project and updated in month 29. The dissemination and communication plans for the 5G-SOLUTIONS project were defined in the initial D9.2A deliverable.

In D9.2A the target audiences were identified, ranging from public through scientific and academic communities up to specific 5G stakeholders and market actors. In addition, the dissemination and communication channels and actions were defined, while a thorough communication plan was developed, which incorporated innovative methods for sharing information with the public and interested stakeholders, in accordance with the dissemination strategy.

This deliverable shows the progress at this point of the project and sets the basis for the upcoming D9.2C final report, which will detail the dissemination and communication activities until the end of the project.

## 2 Introduction

5G-SOLUTIONS is a flagship ICT-19 RIA project that supports EC's 5G policy by implementing the last phase (i.e., Phase 3b) of the 5G PPP roadmap. The project aims at proving and validating that 5G provides prominent industry verticals with ubiquitous access to a wide range of forward-looking services with significant improvement over 4G, thus bringing the 5G vision closer to realization. This will be achieved through conducting advanced field-trials of novel use cases, directly involving end-users across five significant industry vertical domains in five countries, i.e., Factories of the Future (Belgium, Ireland, and Norway), Smart Energy (Italy), Smart Cities (Ireland and Norway), Smart Ports (Norway) and Media & Entertainment (Greece and Norway). In particular, 5G-SOLUTIONS will provide:

- a) Validation of more than 140 KPIs for around 20 innovative and heterogeneous use cases with 5G performance requirements and that are expected to have a high future commercialization potential. These use cases will be field trialed both separately and concurrently with real end-user actors through ICT-17's 5G-EVE<sup>2</sup> Italy and 5G-VINNI<sup>3</sup> Norway/Greece facilities (with additional private 5G Amarisoft standalone nodes in Belgium, Ireland and Norway) thus validating their conformance to target 5G technological KPIs specified for each use case, as well as their business potential, ethical and social acceptance. The validation will be performed over 3 iterative phases corresponding to upgraded versions of ICT-17 facilities over 3GPP<sup>4</sup> Rel.15, Rel. 16 and beyond.
- b) Technological enablers for facilitating the execution of the field trials in an automated way, including:
  - i) a unified cross-domain service orchestrator enabling multi-domain slicing and 5G service lifecycle automation, ii) an innovative smart KPI visualization system for real-time analysis, presentation, benchmarking and performance validation of reference 5G network KPIs against predefined target values, and iii) intent-based APIs for stimulating innovation and fostering the development, portability and provisioning of new innovative applications by SMEs.
- c) Significant contribution to 5G standardization to several Standards Developing Organizations (SDOs) and open fora, such as 3GPP<sup>5</sup>, ETSI<sup>6</sup>, ITU-T<sup>7</sup>, IETF<sup>8</sup>, ONF<sup>9</sup>, NGMN<sup>10</sup>, EBU<sup>11</sup>, etc.

The technical contributions of 5G-SOLUTIONS are, without doubt, the main priority of the project. However, the dissemination of the developed ideas and the obtained results to a wide audience, ranging from the research community to non-scientific public, is critical for the overall success and the impact of the project on the society. WP9 aims at increasing the visibility of 5G-SOLUTIONS by coordinating the activities related to the dissemination of the results and the communication of the proposed solutions. To that end, a set of tools (website, LinkedIn, and Twitter social media channels) has been created to promote the 5G-SOLUTIONS solutions both to the expert and non-expert audience. This deliverable of WP9 presents the initial dissemination and communication plan and the progress until M29 of the 5G-SOLUTIONS project lifetime.

<sup>2</sup> <https://www.5g-eve.eu/>

<sup>3</sup> <https://www.5g-vinni.eu/>

<sup>4</sup> <https://en.wikipedia.org/wiki/3GPP>

<sup>5</sup> <https://www.3gpp.org/>

<sup>6</sup> <https://www.etsi.org/>

<sup>7</sup> <https://www.itu.int/en/ITU-T/Pages/default.aspx>

<sup>8</sup> <https://www.ietf.org/>

<sup>9</sup> <https://www.opennetworking.org/>

<sup>10</sup> <https://www.ngmn.org/home.html>

<sup>11</sup> <https://www.ebu.ch>

## 2.1 Mapping Projects' Outputs

The purpose of this section, and more specific, Table 1 below, is to map 5G-SOLUTIONS Grant Agreement commitments, both within the formal Deliverable and Task description, against the project's respective outputs and work performed.

Table 1: Adherence to 5G-SOLUTIONS GA Deliverable & Tasks Descriptions

5G-SOLUTIONS Task		Respective Document Chapter(s)	Justification
Task 9.1 - Dissemination and communication activities	<i>Implement the dissemination of the project goals, software products, reports, results, achievements, and other outputs. The target audiences will be identified, ranging from general public through scientific and academic communities up to specific 5G stakeholders and market actors. The dissemination and communication channels and actions as defined in Section 2.2.1 will serve as a baseline to achieve the goals in this task.</i>	Sections 3, 4	<i>The target audience for the dissemination and communication activities have been identified, along with the respective channels.</i>
	<b>Dissemination of publications and white papers:</b> <i>Along the project, the 5G-SOLUTIONS partners will be involved in the preparation and publication of articles in scientific journals, peer-reviewed conferences, and books. The approved publications will be available in the internal document repository of the consortium, and those with appropriate copyright permissions will be publicly available through the project's website.</i>	Section 3	<i>D9.2B lists the publications and white papers during the first 18 months and D9.2C will list all the publications and white papers published in the context of 5G-SOLUTIONS</i>
	<b>Joint dissemination actions and events:</b> <i>The project's intermediate results will also be presented in form of white papers, presentations and online demos in various conferences and industrial/commercial exhibitions (e.g. MWC, Global 5G events, ITS Congress, EuCNC) with the purpose of commercially exploiting 5G-SOLUTIONS results and identifying new partners for collaboration in the EU market. At the end of the project, the task leader will organize the final project workshop gathering both local and international participants. To further amplify the potential of the initiative, the following options will be considered: (i) joint organisation with other relevant 5G- PPP projects, (ii) co-hosting in the framework of other well-established events, (iii) organisation of a dialogue session with other</i>	Section 3	<i>D9.2B enumerates the dissemination actions carried out during the first 18 months of the project and D9.2C will include all the dissemination actions carried out.</i>



	5G stakeholders, (iv) cooperation of 5G-SOLUTIONS stakeholders with 5G-PPP Working Groups and mapping of results.		
	<p><b>Communication media:</b> Ensure the creation and constant update of all web-based communication means, including the project's website (from M1 by EBOS), as outlined in Section 2.2.1.2. Participants will also ensure visibility of the project activities through a number of traditional and electronic dissemination material edited electronically and sent out to a large pool of stakeholders (Table 2.5) on a quarterly basis. Implement the communication plan of the project and its associated activities and create a set of documents and tools, which can be shared with consortium partners in order to communicate the project's goals and outcomes. Relevant activities include: (i) create and publish visual representations (infographics) of information, data or knowledge intended to present complex information quickly and clearly; (ii) provide effective support to dissemination and exploitation activities, whilst ensuring effective and appropriate communication towards various stakeholders, (iii) foster community building and realize impact on industry and research in Europe and worldwide, (iv) gather feedback from relevant stakeholders through networking activities, and (v) monitor and evaluate communication and dissemination activities.</p>	Section 4	The website has been set up. D9.2B shows figures about the impact of the website. In addition, the dissemination material created in the framework of the project is shown. Future activities will be reported in D9.2C.
	<p><b>Development of the communication plan:</b> Development of the communication plan, which will incorporate innovative methods for sharing information with the public and interested stakeholders, in accordance with the dissemination strategy.</p>	Section 5	Definition of the dissemination and communication phases. The activities carried out are described throughout D9.2B and the complete list will be provided in D9.2C.
<b>5G-SOLUTIONS Deliverable</b>			
<p><b>D9.2B: Dissemination and communication plan (Current deliverable M20)</b></p> <p>Interim report containing the dissemination and communication plans and activities implemented.</p>			

## 2.2 Deliverable Overview and Report Structure

The structure of the deliverable is as follows. First, in Section 3, we present the dissemination activities of the project. Then, Section 4 describes the communication activities. Section 5 provides details about the time plan of the dissemination and communication phases, while Section 6 lists the metrics of interest and the targets for these activities and the degree of meeting these target values until M29 of the project. Finally, Section 7 includes the conclusions and next actions for this Task.

### 3 Dissemination Activities

This section outlines how the project will establish and organise the dissemination actions to promote the project and the adoption of its outcomes beyond its lifetime.

#### 3.1 Target Audience and Objectives

The general objectives of the joint 5G-SOLUTIONS dissemination strategy are to disclose project results that can be used by the target audience to progress their own work, i.e., to build upon the knowledge generated by 5G-SOLUTIONS, fertilising the advancement of technology, science, industry, and policy. 5G-SOLUTIONS has identified a number of target audiences, which are listed in Table 2. The specific joint dissemination activities are tailored to the needs and profile of the target audience for dissemination.

Table 2: Target audience groups for dissemination

Target audience	Description	Dissemination Objectives
<b>Academia</b>	Institutions primarily for education and early research	Consideration of results in updated curricula, advanced courses, and new R&D initiatives
<b>Public R&amp;D</b>	Institutions with innovation-oriented R&D and technology transfer (e.g. EU Investment Bank, Start-Up Europe, EC Digital Innovation Hubs)	Adoption of results in technology transfer and new R&D initiatives with industry
<b>Industry R&amp;D / R&amp;I</b>	Private companies that maintain R&D groups for new products and services, e.g. telecom vendors, such as Ericsson, Nokia and vertical stakeholders	Adoption of results in product and service roadmaps and planning of new products, services, and future R&D initiatives
<b>Government</b>	Governmental agencies mainly concerned with policy setting (e.g. Chamber of Commerce, Regional Development Units)	Consideration of results in policy development
<b>IT experts from SMEs</b>	Developers of new services and applications, typically for vertical industry requirements	Adoption of results for development and deployment of new 5G-enabled applications
<b>Public/Private associations</b>	Initiatives that leverage public and private resources and funds for joint undertakings (e.g. EIT Digital, European Private Equity and Venture Capital Association (EVCA))	Consideration of results in the planning of joint undertakings

#### 3.2 Dissemination Channels

A major element for dissemination relates to the joint and coordinated participation in any relevant activities of the 5G-PPP<sup>12</sup> and the 5G Infrastructure Association (5G-IA). 5G-SOLUTIONS contributes to the brochures and other material coordinated at 5G-PPP level, such as the “*European 5G Annual Journal*”<sup>13</sup>, the 5G-PPP projects brochure<sup>14</sup> and other material including videos<sup>15</sup>, as requested by the 5G-IA and/or the coordinating support action of the 5G-PPP.

<sup>12</sup> <https://5g-ppp.eu/>

<sup>13</sup> 2018 edition at <https://bscw.5g-ppp.eu/pub/bscw.cgi/d257916/Euro%205G%20Annual%20Journal%202018-v1.1.pdf>

<sup>14</sup> Current edition available at <https://5g-ppp.eu/flayer-brochure/>

<sup>15</sup> Project videos at <https://5g-ppp.eu/5g-ppp-phase-3-videos-now-available/>

Furthermore, 5G-SOLUTIONS has identified channels for the dissemination of the project's results to scientific, technology and industry communities. The specific activities will be tailored to the needs, clients and events that will be used for dissemination. More specifically, the target audience and the dissemination channels are being actively monitored and selected to achieve the highest possible impact. Table 3 provides an outline of the target audience and channels.

Table 3: Dissemination channels

Target audience	Channels
<b>Universities, Public R&amp;D, Industry R&amp;D through Scientific journals</b>	<ul style="list-style-type: none"> <li>• IEEE Proceedings, Internet Computing, Pervasive Computing, Vehicular Technology Magazine, Transactions on Wireless Communications, Access, Transactions on Network and Service Management, Transactions on Communications, and Journal on Selected Areas in Communications.</li> <li>• IEEE Network and Communications Magazines, IEEE/ACM Transactions on Networking, ACM Computer Communication Review.</li> <li>• Wireless Networks – Springer, Elsevier Computer Networks and Journal of Network and Computer Applications.</li> </ul>
<b>Universities, Public R&amp;D, Industry R&amp;D through R&amp;D Conferences</b>	<ul style="list-style-type: none"> <li>• ICC - International Conference on Communications.</li> <li>• ACM SIGCOMM MobiHoc.</li> <li>• IEEE GLOBECOM, DySPAN, NetSoft.</li> <li>• IEEE 5G Summit 2020-2022.</li> <li>• SPAWC – Signal Processing Advances in Wireless Communications.</li> <li>• Technology, Knowledge and Society.</li> <li>• International Conference on Wireless Networks and Mobile Communications.</li> </ul>
<b>Government, Industry R&amp;D, IT experts through Industrial Exhibitions and Business Conferences</b>	<ul style="list-style-type: none"> <li>• EuCNC<sup>16</sup> 2020-2022, Global-5G Europe 2020-2022, MWC 2020-2022.</li> <li>• CTTC, acting as the project's Dissemination &amp; Communication Manager, will arrange a dedicated event for the project results, inviting chief R&amp;D and CIOs from relevant institutions in the sector. In addition, CTTC expects to arrange a 5G specific workshop with major telecom vendors and telecom associations in Europe to distribute the project's results.</li> </ul>
<b>Government, Public R&amp;D, Public/Private associations, Industry R&amp;D, Universities through Online Media</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.telecoms.com">www.telecoms.com</a>, <a href="http://www.networkworld.com">www.networkworld.com</a>, <a href="http://www.techworld.com">www.techworld.com</a>, <a href="http://www.infoworld.com">www.infoworld.com</a>, <a href="http://www.itworld.com">www.itworld.com</a>, <a href="http://www.techworld.com">www.techworld.com</a></li> <li>• Webinars/showcasing events (at least 6)</li> <li>• Online repository for sharing project's results</li> </ul>

### 3.3 Dissemination of publications and white papers

All the activities, publications, events, etc. listed in this deliverable are taken from a public excel file for the consortium where the partners are adding their dissemination and communication activities.

This section highlights published Articles and White Papers until M29 of 5G-SOLUTIONS project. The published Journals, Conferences and White Papers by consortium are as follows:

- CTTC published in **6 Journals** of IEEE:

<sup>16</sup> <https://www.eucnc.eu/>

1. P.-V. Mekikis, K. Ramantas, A. Antonopoulos, E. Kartsakli, L. Sanabria-Russo, J. Serra, D. Pubill, C. Verikoukis ***NFV-enabled Experimental Platform for 5G Tactile Internet Support in Industrial Environments***, IEEE Transactions on Industrial Informatics, Vol.16, Issue 3, pp:1895-1903, March 2020.
  2. Sarrigiannis, K. Ramantas, E. Kartsakli, P.-V. Mekikis, A. Antonopoulos, C. Verikoukis, ***Online VNF Lifecycle Management in a MEC-enabled 5G IoT Architecture***, IEEE Internet of Things Journal, Vol.7, Issue 5, pp. 4183-4194, May 2020.
  3. H.Chergui. and Ch. Verikoukis ***"Offline SLA-Constrained Deep Learning for 5G Networks Reliable and Dynamic End-to-End Slicing"***, in IEEE JSAC, Vol 38, Issue 2, pp. 350-360, February 2020.
  4. H.Chergui and Ch. Verikoukis, ***"Big Data for 5G Intelligent Network Slicing Management"***, to appear in IEEE Network Magazine, Vol.34 , Issue 4, pp. 56-61, July/August 2020.
  5. Antonopoulos, ***Bankruptcy Problem in Network Sharing: Fundamentals, Applications and Challenges***, IEEE Wireless Communications Magazine, 2020
  6. B. Ojaghi, F. Adelantado, A. Antonopoulos and C. Verikoukis, ***SlicedRAN: Service-Aware Network Slicing Framework for 5G Radio Access Networks***, in IEEE Systems Journal, 2021
- CTTC published **3 papers in conferences and 1 conference paper collaborating** with Forthnet, Telecom Italia, LiveU, Telenor, A2T, IRIS, IBM on IEEE:
    1. L. Sanabria-Russo, L. Righi, D. Pubill, J. Serra, F. Granelli, C. Verikoukis, ***LTE as a Service: leveraging NFV for realising dynamic 5G network slicing***, in Proceedings of IEEE Global Communications Conference (IEEE GLOBECOM), 9-13 December 2019, Waikoloa, HI (USA).
    2. G. Kollias, A. Antonopoulos, ***"Joint Consideration of Content Popularity and Size in Device-to-Device Caching Scenarios"*** IEEE ICC, 7-11 June 2020, Dublin, Ireland.
    3. H.Chergui and Ch.Verikoukis, ***"OPEX-Limited 5G RAN Slicing: an Over-Dataset Constrained Deep Learning Approach"*** IEEE ICC, 7-11 June 2020, Dublin, Ireland.
    4. I. Markopoulos, A. Di Giglio, B. Altman, H. Losenthagen, A. Antonopoulos, C. Verikoukis, S. Canale, M. Grandi, S. Zemouri, ***"5G-SOLUTIONS Analysis of Living Labs and KPIs Definition Methodology"*** in Proceedings of European Conference on Networks and Communications (EuCNC), 16-17 June 2020, Dubrovnik, Croatia.
  - CRAT published **3 conference papers** on IEEE:
    1. A. Di Giorgio, A. Giuseppi, R. Germanà, F. Liberati, ***Decentralised Model Predictive Control of Electric hicles Charging*** , in Proceedings of IEEE International Conference on Systems Man, and Cybernetics (IEEE SMC), 6-9 October 2019, Bari, Italy
    2. R. Germanà, F. Liberati and A. Di Giorgio, ***"Decentralized Model Predictive Control of Plug-in Electric Vehicles Charging based on the Alternating Direction Method of Multipliers,"*** 2020 28th Mediterranean Conference on Control and Automation (MED), 16-18 September 2020, Saint-Raphaël, Nice, France.
    3. Roberto Germanà', Emanuele De Santis, Francesco Liberati, Alessandro Di Giorgio, ***On the Participation of Charging Point Operators to the Frequency Regulation Service using Plug-in Electric Vehicles and 5G Communications***, 21ST International Conference on Environment and Electrical Engineering (EEEIC2021), 7-10 Sept 2021, Bari, Italy
  - UOP published **1 conference paper and 1 conference paper collaborating** with LiveU and FNET as following:
    1. Trantzas K., Tranoris C., Denazis S, ***Defining a management function based architecture for 5G network slicing***, 2021 4th International Workshop on Advances in Slicing for Softwarized Infrastructures, IEEE Netsoft June 2021

2. Giannopoulos D., Papaioannou P., Tranoris C., Denazis S., **Monitoring as a Service over a 5G Network Slice**, 2021 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit): Network Softwarisation (NET)
  3. Giannopoulos D., Papaioannou P., Ntzogani, Tranoris C., Denazis S., **A holistic approach for 5G Network Slice Monitoring**, 2021 IEEE International Mediterranean Conference on Communications and Networking (MeditCom) - Main Track, 7-10 September 2021, Athens, Greece
  4. Papaioannou P., Giannopoulos D., Tranoris C., Denazis S., Altman B., Rahav R., Markopoulos I., **Measuring 5G KPIs for the Media Vertical**, 2021 IEEE International Mediterranean Conference on Communications and Networking (MeditCom) - Special Session: 5G Solutions for Verticals and European Citizens, 7-10 September 2021, Athens, Greece
- IBM published **2 conferences collaborating** with CTTC:
    1. "Ramy Mohamed, Sofiane Zemourri, Chrisots Verikoukis, **Towards a Cloud-Native 5G Service Chaining for IoT and Video Analytics in Smart Campus**, Conference on Cloud and Internet of Things (CIoT) (CIoT) 2021.
    2. Ramy Mohamed, Sofiane Zemourri, Chrisots Verikoukis, **Performance Evaluation and Comparison between SA and NSA 5G Networks in Indoor Environment**, 2021 IEEE International Mediterranean Conference on Communications and Networking (MeditCom).
  - LiveU published **1 Technical Articles/Policy Briefs**:
    1. **A new Horizon**, by Baruch Altman <https://www.tvbeurope.com/business/tvbeurope-march-2020-issue-now-available>

### 3.4 Joint dissemination actions and events

This section summarizes actions and events so far:

The organized **Events** can be summarized as:

- ARES2T participated in **1 conference organization, 2 workshops, 1 industrial workshop events**:
  1. IoTThings Week / Italia5G: "**Nuovi mercati e nuovi mestieri, le opportunità delle reti ad altissima velocità**" Speaker: Yuri Chianese, 2020.
  2. IoTThings Insights "**5G networks and SME involvement: technological validation and commercial sustainability in the key sectors**" - Speaker: Yuri Chianese, 2020.
  3. Infocom World "**5G SOLUTIONS – A European 5G platform available to SME**" - Speaker: Yuri Chianese, 2020.
  4. 16th IEEE International Conference on the Design of Reliable Communication Networks, DRCN 2020 SPEAKER: ELENA VITELARU as **Industrial Panel Speaker**, 2020.
- ARES2T with collaboration of AppArt, Forthnet, and PIU organized **1 workshop event**:
  1. Infocom World "**5G SOLUTIONS – A European 5G platform available to SME**" - Speakers: Kostis Tzanettis, Ioannis Markopoulos, Yuri Chianese, Maurizio Cecchi, 2020 as illustrated in Figure 1: Workshop .



Figure 1: Workshop organized.

- ARES2T (organizer) with collaboration of PIU, TIM, ENEL and IREN participated in **2 workshop** events:
  1. Iothings Week, **5G SOLUTIONS, your business on 5G** - Speakers: Yuri Chianese, Andrea di Giglio, Elena Vitelaru, Giovanni Coppola, Antonino Biondi, Maurizio Cecchi.
  2. IOTHINGS WORLD "**5G SOLUTIONS Workshop**" - Speakers: Yuri Chianese, Andrea di Giglio, Gianluca Serale, Maurizio Cecchi
- TNOR with collaboration of NTNU, and YARA organized **1 workshop** events:
  1. Workshop with iKUBEN (Norwegian National Centre of Excellence) - "**5G for the Future - workshop with Telenor, NTNU and SINTEF**", 2020.
- TIM organized **3 industrial workshop** events in the following international conferences:
  1. Design of Reliable Communication Networks (DRCN) 2020, 24-27 March 2020, Milan, Italy
    - Andrea Di Giglio (TIM), **5G: new industrial revolution or just better performance?**
  2. Optical Network Design and Modelling (ONDM) 2020, 18-21 May, Castelldefels, Spain
    - Andrea Di Giglio (TIM), **5G: new industrial revolution or only higher bandwidth?**
  3. Optical Network Design and Modelling (ONDM) 2021
    - Andrea Di Giglio (TIM), **New generation networks: How will 5G change networks, our life, and our bank account?**
- AppArt organized **1 special session** as follows:
  1. Virtual Workshop of the 5GPPP Technology Board - presentation on Verticals' KPI testing and validation by Kostis Tzanettis
- CTTC organized **1 Training course** where LMI also delivered **2 training sessions** on slicing in 5G, as well as Machine Learning-based solutions in 5G:
  1. The IEEE ComSoc Autumn School 2019 on **Network Slicing and Data-Driven Communication** technically sponsored by 5G-SOLUTIONS was organized in Castelldefels, Spain (see Figure 2: CTTC training).





Figure 2: CTTC training

- CTTC organized **1 conference** and with collaboration of TIM and TNOR **1 special session** as followings:
  - IEEE international Mediterranean Conference on Communications and Networking 2021 (MeditCom2021) (see Figure 3).
  - 5G Solutions for Verticals and European Citizens**, IEEE International Mediterranean Conference on Communications and Networking (MEDITCOM), September 2021, Athens, Greece (see Figure 4 and the program in Figure 5)

[IEEE.org](https://www.ieee.org) | [IEEE Xplore Digital Library](https://www.ieee.org/xpl/digitalLibrary) | [IEEE Standards](https://www.ieee.org/standards) | [IEEE Spectrum](https://www.ieee.org/spectrum) | [More Sites](#)



**IEEE International Mediterranean Conference on Communications and Networking**  
7-10 September 2021 // Hybrid: In-Person and Virtual Conference

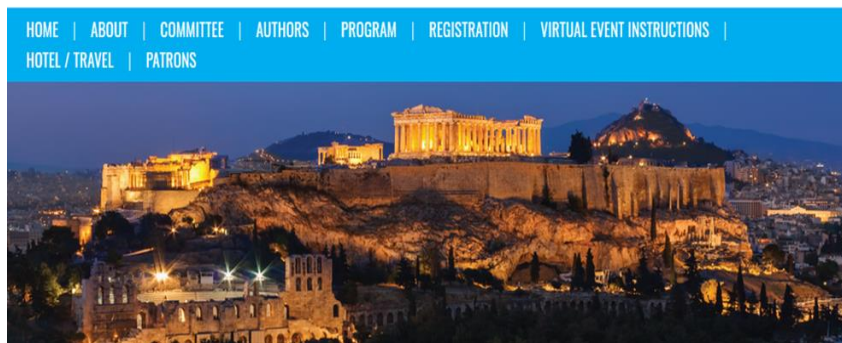


Figure 3: IEEE MeditCom Conference



**IEEE International Mediterranean Conference on Communications and Networking**  
5-8 July 2021 // Athens, Greece

### Special Session Proposal

Project	5G-Solutions ( <a href="https://www.5gsolutionsproject.eu/">https://www.5gsolutionsproject.eu/</a> )
Special Session Title	5G Solutions for Verticals and European Citizens
Structure	1h30min-2h, 4-6 papers and/or a keynote speaker
Organizers	Sarang Kahvazadeh, CTTC, <a href="mailto:sarang.kahvazadeh@cttc.es">sarang.kahvazadeh@cttc.es</a> David Pubill, CTTC, <a href="mailto:david.pubill@cttc.es">david.pubill@cttc.es</a> Håkon Lønsethagen, TNOR, <a href="mailto:hakon.lonsethagen@telenor.com">hakon.lonsethagen@telenor.com</a> Andrea Di Giglio, TIM, <a href="mailto:andrea.digiglio@telecomitalia.it">andrea.digiglio@telecomitalia.it</a>

Figure 4: IEEE MeditCom Special Session



## Special Session 1 (Virtual)

5G Solutions for Verticals and European Citizens

**Date/Time:** Tuesday, Sept 7th, from 4:15 PM – 6:00 PM Athens time (UTC+3)

**Chairs:** Andrea Di Giglio (Telecom Italia, Italy), Sarang Kahvazadeh (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain), Håkon Lønsethagen (Telenor, Norway), David Pubill (CTTC, Spain), Anna Tzanakaki (National and Kapodistrian University of Athens, Greece)

### 1) Performance Evaluation and Comparison between SA and NSA 5G Networks in Indoor Environment

Ramy Amer (Trinity College Dublin, Ireland); Sofiane Zemouri (IIX, IBM, Ireland); Christos Verikoukis (CTTC & UB, Spain)

### 2) 5G Vertical Application Enablers Implementation Challenges and Perspectives

Dimitrios Fragkos and Georgios Makropoulos (NCSR Demokritos, Greece); Panteleimon Sarantos (National Centre of Scientific Research, Greece); Harilaos Koumaras (NCSR Demokritos, Greece); Anastasios-Stavros Charismiadis (National And Kapodistrian University of Athens, Greece); Dimitris Tsolkas (Fogus Innovations and Services, Greece)

### 3) Slicing enabled 5G experimentation platform for Robotics vertical industry

Suvidha Sudhakar Mhatre (Iquadrat Informatica, Spain); Renxi Qiu (Bedfordshire University, United Kingdom (Great Britain)); Kostas Ramantas (Iquadrat Informatica, Greece); Christos Verikoukis (CTTC & UB, Spain)

### 4) Measuring 5G KPIs for the Media Vertical

Panagiotis Papaioannou, Dimitris Giannopoulos, Christos Tranoris and Spyros Denazis (University of Patras, Greece); Baruch Altman and Ran Rahav (LiveU, Israel); Ioannis Markopoulos (FORTHNET, Greece)

### 5) Business Value and Social Acceptance for the Validation of 5G Technology

Luigi Briguglio (CyberEthics Lab., Italy); Per Nesse (Telenor Research and Innovation, Norway); Andrea Di Giglio (Telecom Italia, Italy); Ioannis Markopoulos (FORTHNET, Greece); Carmela Occhipinti (CyberEthics Lab., Italy); Patrick Durkin (Inlecom, Belgium)

### 6) A KPI Visualization System for Use Case validation of the 5G network

Kostis Tzanettis (5Apart AE New Technologies Computer and Telecommunications, Greece)

Figure 5: Program of the Special Session

- EBOS sponsored **1 conference**:
  1. 11th ICT Conference & Exhibition – Tech Revolution. EBOS sponsorship and participation (see Figure 6 and Figure 7).



Figure 6: ICT Conference and Exhibition



Figure 7: ICT Conference and Exhibition with EBOS representing 5G-SOLUTIONS

2 **White Papers** were published:

- ILS in collaboration with TNOR and FNET published 1 white paper:
  - **Business Validation in 5G PPP Vertical Use Cases**, 2020.
- FNET in collaboration with WIT and APPART published 1 paper:
  - **Service performance measurement methods over 5G experimental networks**, 5G-PPP TMV, 2021
- FNET in collaboration with LMI, TNOR, CTTC and TIM contributed to 1 white paper:
  - 5G-PPP Architecture working group, **“View on 5G Architecture, Version 4.0”**, [https://5g-ppp.eu/wp-content/uploads/2021/08/Architecture-WP-v4.0\\_forPublicConsultation.pdf](https://5g-ppp.eu/wp-content/uploads/2021/08/Architecture-WP-v4.0_forPublicConsultation.pdf)

Demos and show casing are as follows:

- CTTC organized **4 demos** as illustrated in Figure 8:
  - 5G-SOLUTIONS was presented in IoT Solutions World Congress (**IoTSWC**) 2019 in Barcelona, Spain.
  - 5G-SOLUTIONS was presented in Smart City Expo World Congress (**SCEWC**) 2019 in Barcelona, Spain.
  - Initial results on dynamic network slicing in the framework of the 5G-SOLUTIONS project was presented in the **ETSI IoT Week 2019** in Sophia Antipolis, France.
  - 5G-SOLUTIONS was presented in the **Researcher's night 2019** organized by CosmoCaixa in Barcelona, Spain.



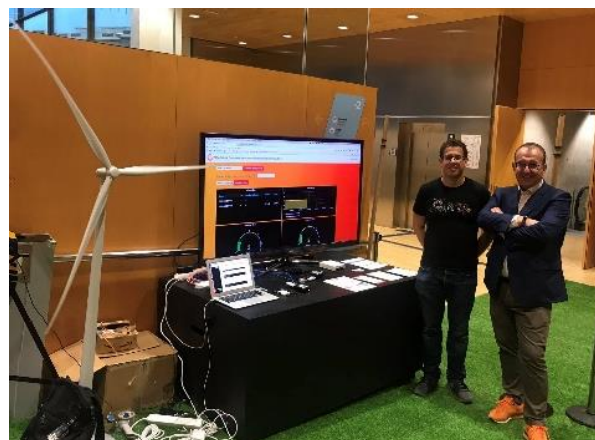
IoTSWC 2019



SCEWC 2019



ETSI IoT Week 2019



CosmoCaixa 2019

Figure 8: CTTC Demos demonstration

- TIM with collaboration of EBOS, CTTC, and FNET organized 1 demo in the European Conference on Networks and Communications (EUCNC) 2019 in Valencia, Spain as shown in Figure 9.



Figure 9: TIM Demo



- LMI organized **2 demos** in Ericsson Ireland Tech Day 2019 and 2020. Figure 10 shows LMI demo on **Tech Day 2019**. Tech Day 2020 was a virtual event with a high level of attendance from many Ericsson companies in different countries.



Figure 10: LMI Demo

- UoP with collaboration with LiveU and Nokia organized **1 demo virtually** due to the COVID-19 pandemic:
  - Providing Real-Time, High-Quality User and Machine Generated Content over a 5G Network**, IEEE MEDITCOM 2021
- NURO did **1 showcasing** in Hannover Messe 2020.

Other events where partners of the consortium have participated so far are shown in Table 4:

Table 4: Other events

Event Type	Title	Partners	Date
Workshop participation	Technical Committee workshop of 5G-PPP	TNOR, FNET	October 2019
Webcast	Discover Techniques and the End-to-End System of 5G Networks	NURO	March 2020
Webinar	Webinar On Verticals Onboarding, Testing and Monitoring In 5G-VINNI	NURO	March 2020
Panel	Industrial Panel DRCN 2020 - 5G: new industrial revolution or just better performance?	TIM /A2T	March 2020
Podcast	Inveti.re platform. Podcast in economics, followed in Italy	TIM	November 2020
Speech & Roundtable	Roundtable ITALIA 5G with GSMA, ANUTEI, ANIE, ANITEC-ASSINFORM	A2T	May 2020
Web TV	Euronext web TV: Launching Advanced 5G validation trials across multiple vertical industries	TIM	May 2021
Webinar	Organized by Cluster of Photonics Secpho: "5G para la industria 5.0"	IRIS	November 2020
Workshop participation	Virtual Workshop of the Tech Board	IRIS	December 2020
Webinar	Demystifying 5G in Manufacturing	ILS, TIM	September 2021

Due to the COVID-19 pandemic the number of face-to-face events has been reduced. However, virtual events brought in the advantage of a wider scope audience.

**Press Release and Fact Sheets** can be summarized as:

- LiveU provides Press Releases as Success Stories as follows:
  1. Multiple magazines articles (printed and online): TV Technology, Business Insider, etc. that can be found:
    - <https://www.tvbeurope.com/media-delivery/liveu-extends-collaboration-in-5g-test-projects>
    - <http://tmbroadcast.com/index.php/liveu-increases-collaboration-pan-european-eu-5g-initiatives/>
    - <https://www.tvtechnology.com/the-wire-blog/5g-hevc-eu>
    - <https://www.panoramaaudiovisual.com/2020/02/04/liveu-participa-nuevos-proyectos-paneuropeos-5g/>
    - <https://www.broadcastbeat.com/liveu-collaborates-on-two-additional-pan-european-eu-5g-projects/>
    - <https://www.4rfv.com/ARD713PMBDNE/601/liveu-collaborates-on-two-additional-paneuropean-eu-5g-projects.htm>
    - <https://markets.businessinsider.com/news/stocks/liveu-collaborates-on-two-additional-pan-european-eu-5g-projects-1028875648>
    - <https://theiabm.org/wp-content/uploads/2020/09/Journal-114-2020-web-version.pdf>
  2. TM Broadcast International, #80, that is illustrated in Figure 11 and can be found on:
    - <https://issuu.com/daromedia/docs/tmbroadcastmagazine80>



Figure 11: LiveU TM Broadcast International Press Release

3. MediaKWest #37 JUIN JUILLET 2020 can be seen in:
  - <https://mediakwest.com/>
4. New game-changing product launch (LU800), CEO statement and multiple PRs.
  - <https://www.liveu.tv/products/field-units/lu800>
5. Broadcasts Rencontre avec Baruch Altman, LiveU, à l'orée de la vague 5G can be seen in:
  - <https://mediakwest.com/rencontre-avec-baruch-altman-liveu-a-loree-de-la-vague-5g/>
6. 5G for media and entertainment: from theory to practical use cases in IABM Journal 3rd quarter 2020 #114 (The International Trade Association for the Broadcast & Media Industry) that can be found on:
  - <https://theiabm.org/wp-content/uploads/2020/09/Journal-114-2020-web-version.pdf>
7. TM Broadcast International, #86, Baruch Altman "what 5G means for media and entertainment" page 54 can be seen in:
  - <https://issuu.com/daromedia/docs/tmbroadcastinternational86?fr=sOWE0YjM2ODg0OQ>
8. LiveU, February 2020. News, Success Stories - LiveU collaborates in two additional pan-European EU 5G projects which is shown in Figure 12 and can be found in:
  - <https://issuu.com/daromedia/docs/tmbroadcastinternational78?fr=sZjA1MTM2ODg0OQ>



Figure 12: Success Stories - LiveU

- EBOS did Press Releases as follows:
  1. EBOS Technologies Ltd leading innovations for 5G and beyond technologies in Business web magazine (GR Version) that is shown in:
    - <https://inbusinessnews.reporter.com.cy/business/ict918/article/247079/i-ebos-technologies-ltd-protagnistei-stis-kainotomes-technologes-5g>
- AppArt participation in 5G-SOLUTIONS project in case of Press Release that can be seen in:
  - <http://www.sepe.gr/gr/information/press-releases/article/16119000/appart-and-5g-solutions-project-in-the-area-of-5g-technologies/>
- Yara did Testing 5G network in logistics operations at Herøya which was illustrated in:
  - <https://eng.heroya-industripark.no/latest-news/testing-5g-network-in-logistics-operations-at-heroeya>
- TNOR with collaboration of NTNU got success story in Co-creation of smart sustainable cities - the 5G Solution project as shown below:
  - <https://www.eurescom.eu/fileadmin/documents/message/Eurescom-message-Winter-2020.pdf>

**Promotional videos.** 2 videos have been prepared to promote the project and Living Lab 4 activities. Both can be found on the website of the project (<https://5gsolutionsproject.eu/dissemination/videos/>) and were shared on social media



## 4 Communication Activities

### 4.1 Target Audience and Objectives

The following Table 5 provides an outline of the target audience of the joint 5G-SOLUTIONS communication strategy and sets out the communications objectives to maximise the 5G-SOLUTIONS project's exposure.

Table 5: Target audience groups for communication

Target Group	Description	Interest in the project
<b>A - Industry, SMEs and Entrepreneurs</b>	Stakeholders from industry, network operators, SMEs and entrepreneurs, operating in the 5G infrastructure domain (e.g. EU Telecom Network Operators, 5G Automotive Association, ICT WG of Enterprise EU, 5G ACIA).	<ul style="list-style-type: none"> <li>Utilisation of project's results in operations and in their R&amp;D activities for new service and product development.</li> <li>Amplify innovation in 5G infrastructure by blending 5G-SOLUTIONS results with in-house artefacts.</li> </ul>
<b>B - 5G PPP infrastructure Programme Stakeholders</b>	Participants, project partners and relevant stakeholders active in the 5G PPP infrastructure (e.g. 5G Trials WG, WG on Verticals of 5G-IA managed by TIM).	<ul style="list-style-type: none"> <li>Identification of common topics.</li> <li>Synergies and collaborations for results promotion.</li> <li>Enhancing innovation through results combination.</li> <li>Co-organisation of events.</li> </ul>
<b>C – Technology Clusters</b>	European initiatives and clusters, research communities, associations, (e.g. ETNO NetWorld2020, Digital Business Innovation, Digital Agenda, Innovation Union, 5G-ACIA, etc.).	<ul style="list-style-type: none"> <li>Inclusion of project's results to collaborative research activities (roadmap, white papers, etc.).</li> <li>Dissemination of project's results to their members and stakeholders.</li> <li>Participation in project's events for knowledge exchange.</li> </ul>
<b>D – Researchers and Academics</b>	Researchers and academics working in universities, research centres, R&D departments of industry.	<ul style="list-style-type: none"> <li>Advancing research post-project.</li> <li>Training personnel &amp; students.</li> <li>Porting results to real-life industry cases through the re-use of results.</li> </ul>
<b>E – Policy Makers</b>	Policy-makers at any level (e.g. Europe of Regions, EC Directorate for Communication, European Radio Spectrum Policy Group).	<ul style="list-style-type: none"> <li>Evaluation of the project's techno-economic and regulatory aspects.</li> <li>Definition of future research and innovation directions based on project's acquired knowledge.</li> </ul>
<b>F – Standards bodies and fora</b>	Standards bodies and industry fora (e.g. 3GPP, ETSI, IETF, NGMN, IEEE).	<ul style="list-style-type: none"> <li>Development of roadmaps for standards development.</li> <li>Pre-standardisation workshop.</li> <li>Input for standardisation activities.</li> </ul>
<b>G – General Public</b>	General public and anyone interested in the project.	<ul style="list-style-type: none"> <li>Understand the value of European research.</li> <li>Stimulate innovation in unexpected groups of society.</li> </ul>

Based on the target audience groups identified above and their expected interest in the project, the objectives of the joint communication strategy and their relation to the target audience groups are identified in Table 6.

Table 6: Communication objectives

Objectives Description	Target groups						
	A	B	C	D	E	F	G
Provide a clear view of the project goals and its results, including the 5G-PPP perspective.	●	●	●	●	●	●	●
Create an active community of interested stakeholders and potential users and collect knowledge and requirements considered by the project's activities.	●	●	●	●	●	●	
Prepare the ground for the exploitation of project's results towards the industry.	●	●				●	
Create awareness of the project among the full range of stakeholders impacted by the results.	●	●	●	●		●	
Establish liaisons with other projects and initiatives for knowledge and innovation transfer.		●	●	●	●	●	
Support the dissemination and exploitation of results (including the 5G PPP programme results) by formulating adapted key messages and prepare adapted communication material.	●		●	●		●	
Recognition of the results (including the 5G-PPP programme results) among the research communities, standardisation bodies, potential users, policy-maker institutions.		●	●	●	●	●	

## 4.2 Communication Channels

The integrated approach to communication adopted by 5G-SOLUTIONS, combines a mix of traditional and disruptive communication channels as listed below:

- **Logo and Templates:** A common template and logo (Figure 13) supporting the identity creation/branding of the project has been produced and will be used in all project presentations and publications.



Figure 13: 5G-SOLUTIONS Logo

- **Online presence:** A modern, dynamic, and user-friendly 5G-SOLUTIONS website has been designed and maintained by EBOS with the contribution of CEL (M1), acting as a web portal for public dissemination of project information and results. The web portal will be regularly updated and will employ state-of-the-art **social media mechanisms** (e.g. Blogs, LinkedIn, Facebook, Twitter) to announce new information concerning the project, its results, upcoming events, etc. and to engage the target audience groups. In this context, CEL analysed and defined some style guides to develop and maintain the graphical identity

(definition of fonts, images positioning, colours, styles, etc.) of the project, that will be used throughout the whole project website at any refinement. The initial page of the website is depicted in Figure 14. A detailed description and analysis of the project's website is described in D9.1, "Online project presence" which has already been submitted at M1 of the Project.

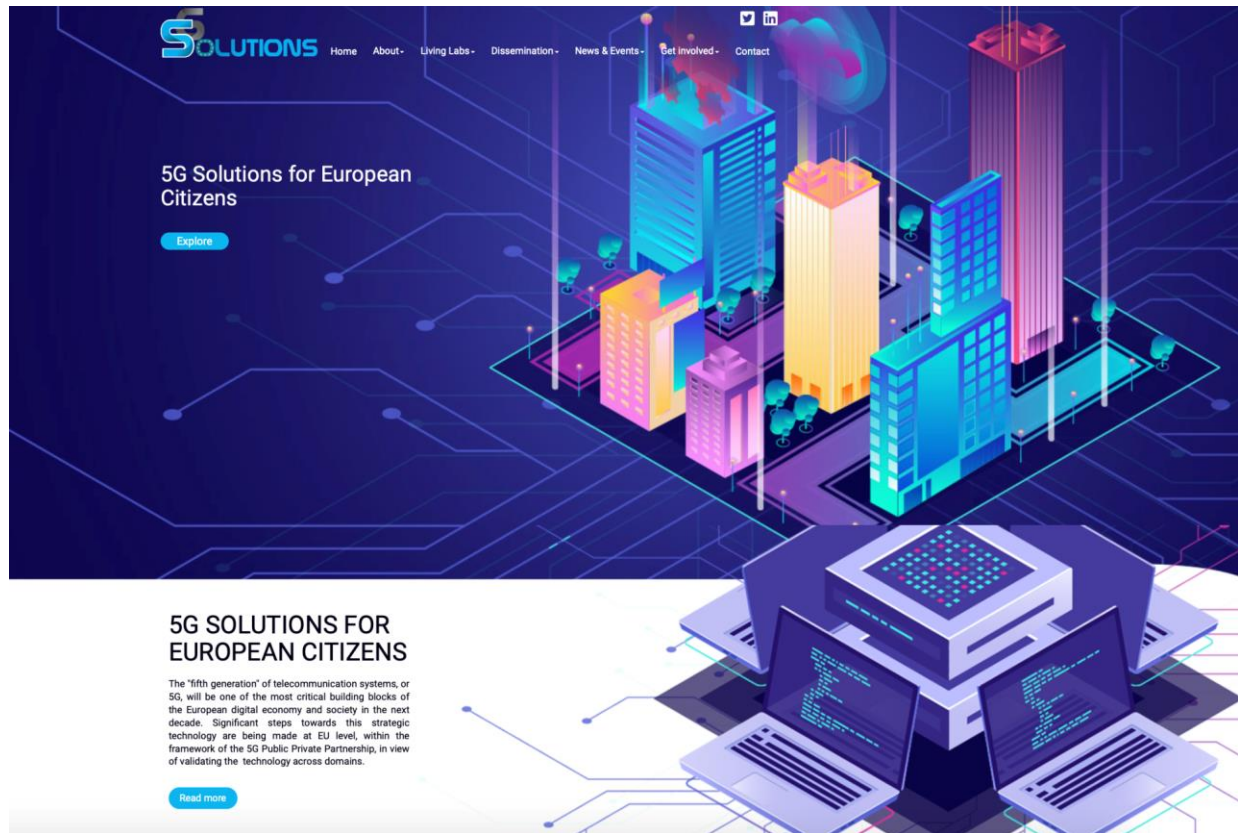


Figure 14: 5G-SOLUTIONS Website

- **Interaction with peer projects, within the scope of the 5G-PPP**, including participation and contribution to EC concentration and cluster meetings.
- **Event organization:** The project participates in the organisation of established conferences and workshops. In this context project consortium members have organised special sessions, panels, and workshops in top conferences. In consent and in cooperation with other projects of the 5G-PPP, the project will contribute to the **organisation of a targeted initiative for all stakeholders of the 5G infrastructure** business, scientific and research community.
- **Industrial Workshops:** The objective is to organise 4 industrial workshops (2 hosted by TIM, 1 by CTTC and 1 by TNOR) and 1 pre-standardisation workshop (hosted by IRT) organised jointly with other 5G-PPP projects, to draw a complete picture of the achievements in Europe.
- **Showcasing:** The 5G-SOLUTIONS consortium has **plans to use and** showcase its results **in at least 2 public events** (e.g. Patra carnivals in 2021 & 2022). This is expected to generate the largest industrial and societal impact on the various involved stakeholders, hence paving the way to a faster adoption of 5G technologies.
- **White papers** in conjunction with the European Technology Platform Network2020 and industry fora.
- **Promotional material:** Layout and printing of flyers, posters, other materials as needed including but not limited to brochures, A4-format information folder, poster, A5-format double sided distribution leaflet and a 5G-SOLUTIONS project PowerPoint presentation template. A project poster has been already designed and printed by EBOS (Figure 15), with the graphical support of CEL and exposed at the EuCNC 2019.

(Check Section 3 for the list of events attended)

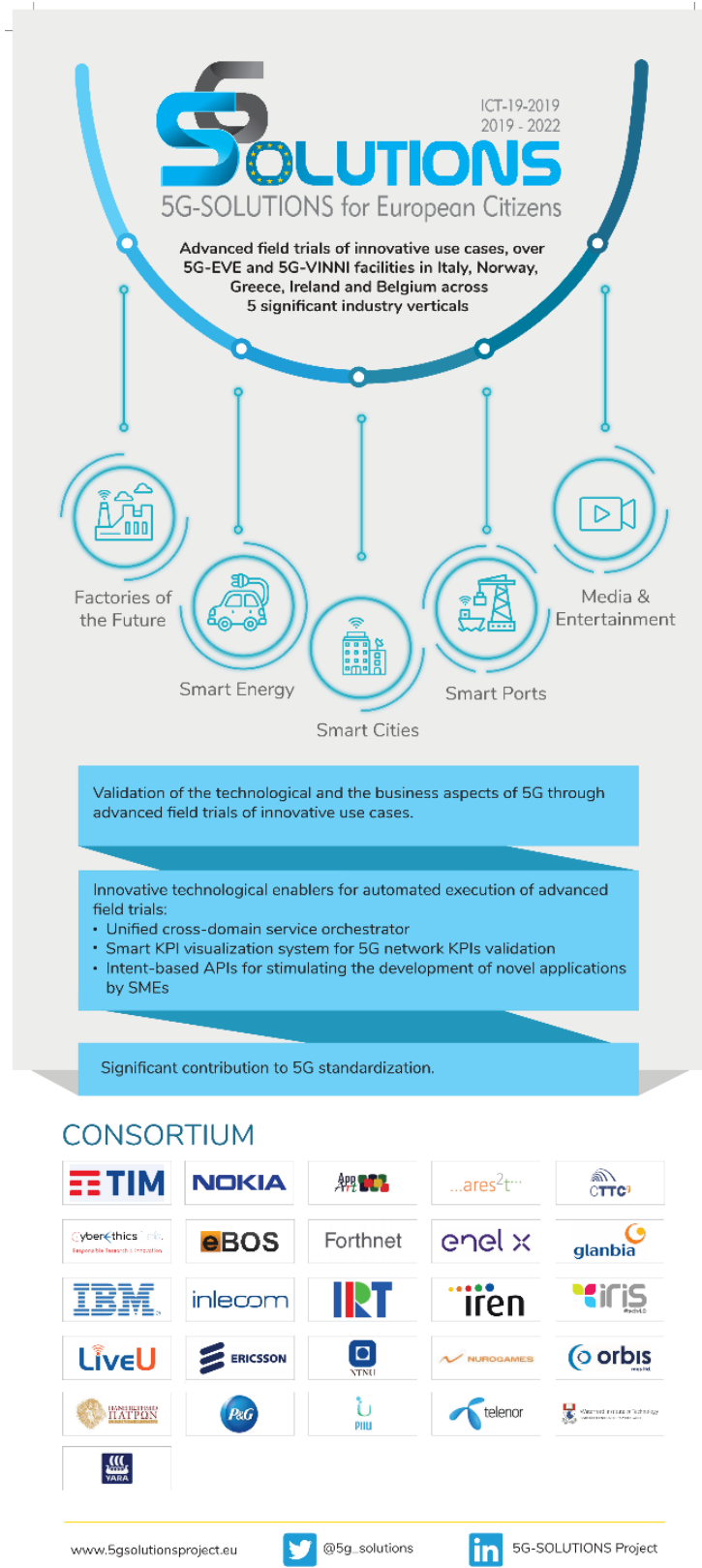
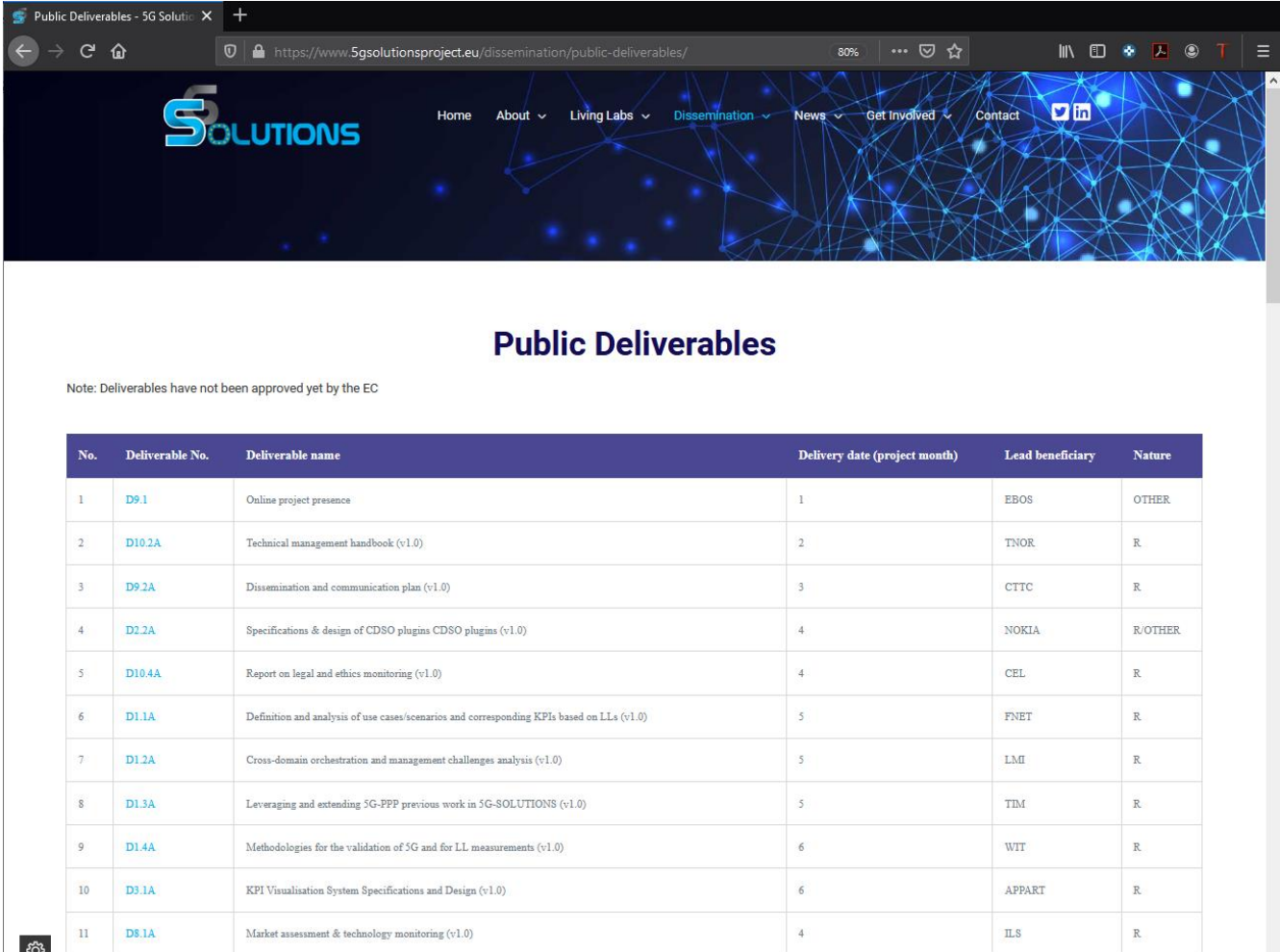


Figure 15: 5G-SOLUTIONS Poster

- **Project documentation:** Deliverables, technical reports, posters, and presentations will be made publicly available in the project's website and through social media channels (as an example see Figure 16 for the list of public deliverables in the project's website)



No.	Deliverable No.	Deliverable name	Delivery date (project month)	Lead beneficiary	Nature
1	D9.1	Online project presence	1	EBOS	OTHER
2	D10.2A	Technical management handbook (v1.0)	2	TNOR	R
3	D9.2A	Dissemination and communication plan (v1.0)	3	CTTC	R
4	D2.2A	Specifications & design of CDSO plugins CDSO plugins (v1.0)	4	NOKIA	R/OTHER
5	D10.4A	Report on legal and ethics monitoring (v1.0)	4	CEL	R
6	D1.1A	Definition and analysis of use cases/scenarios and corresponding KPIs based on LLs (v1.0)	5	FNET	R
7	D1.2A	Cross-domain orchestration and management challenges analysis (v1.0)	5	LMI	R
8	D1.3A	Leveraging and extending 5G-PPP previous work in 5G-SOLUTIONS (v1.0)	5	TIM	R
9	D1.4A	Methodologies for the validation of 5G and for LL measurements (v1.0)	6	WIT	R
10	D3.1A	KPI Visualisation System Specifications and Design (v1.0)	6	APPART	R
11	D8.1A	Market assessment & technology monitoring (v1.0)	4	ILS	R

Figure 16: List of public deliverables in the project's website

- **Newsletters:** Two electronic newsletters per year will be released presenting the main achievements.
- **Call for Ideas:** An event for third parties (SMEs and spin-off of research institutes) who are willing to contribute to the project with new ideas to address other use cases will be organized. The best ideas to exploit 5G-SOLUTIONS results will be selected. Specific attention will be given to IPR issues. This initiative will start in M24.
- **Horizon Results Platform:** The results of the project could be potentially presented and exposed to thousands of people through the Horizon Results Platform, which is a platform to encourage third party exploitation of R&I results.

Figure 17, Figure 18 and Figure 19 illustrate the analytics results of the project's website overviews over the first half of the 5G-SOLUTIONS project. There is a clear correlation between the website hits and our social media posts. There is an impact on the website when any 5G-Solutions activity is shared in the media.

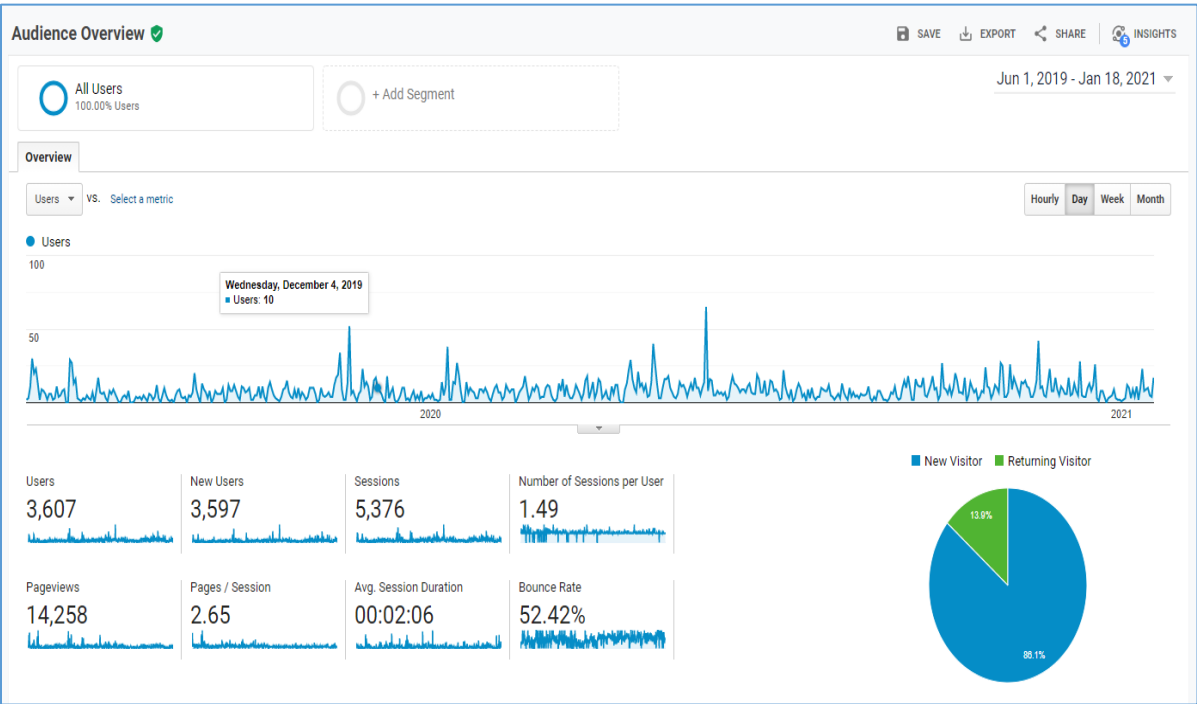


Figure 17: website audience overview



Figure 18: Location overview



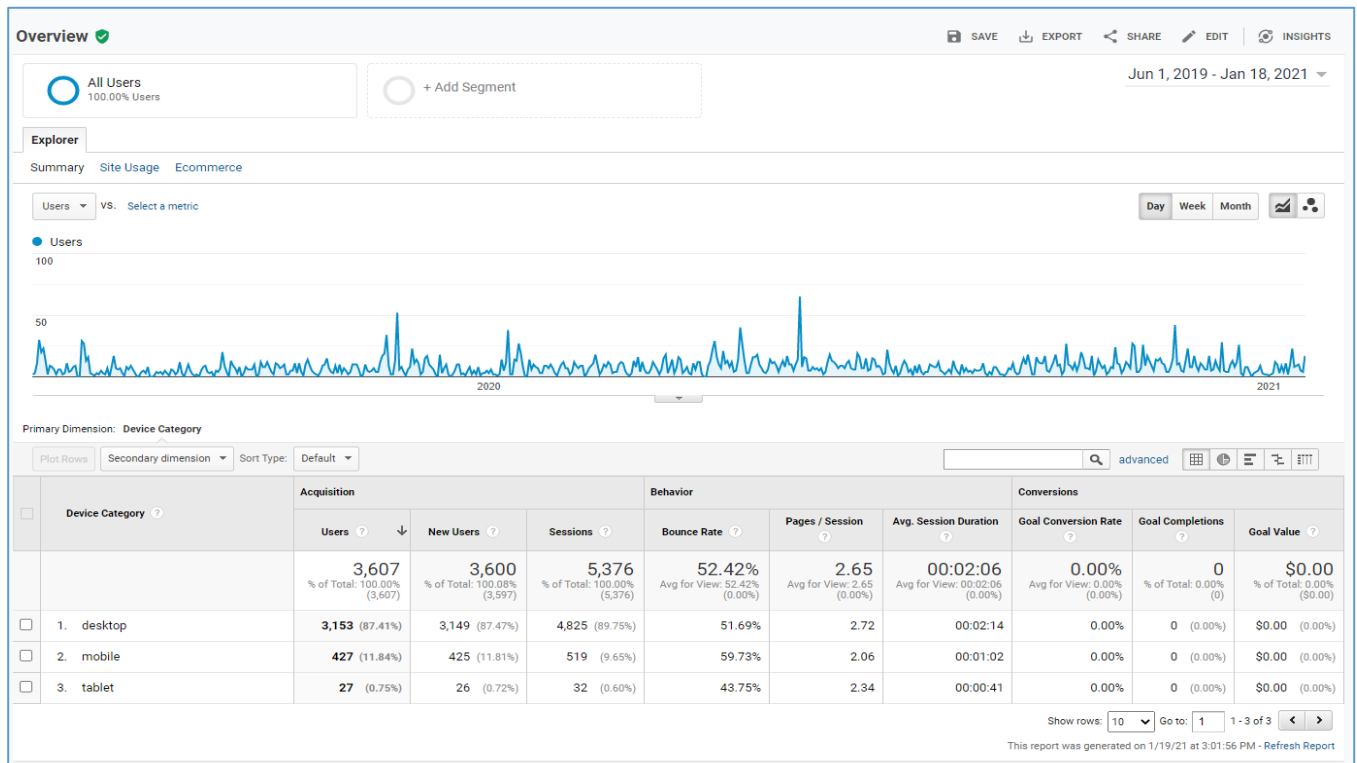


Figure 19: Mobile overview

5G-SOLUTIONS project is also communicating through created LinkedIn (<https://www.linkedin.com/in/5gsolutions-project>) and Twitter ([https://twitter.com/5g\\_solutions](https://twitter.com/5g_solutions)) social media channels that are shown in Figure 20 and Figure 21. At the time of writing this deliverable the LinkedIn account has 150 connections and more than 500 people are following our Twitter channel.

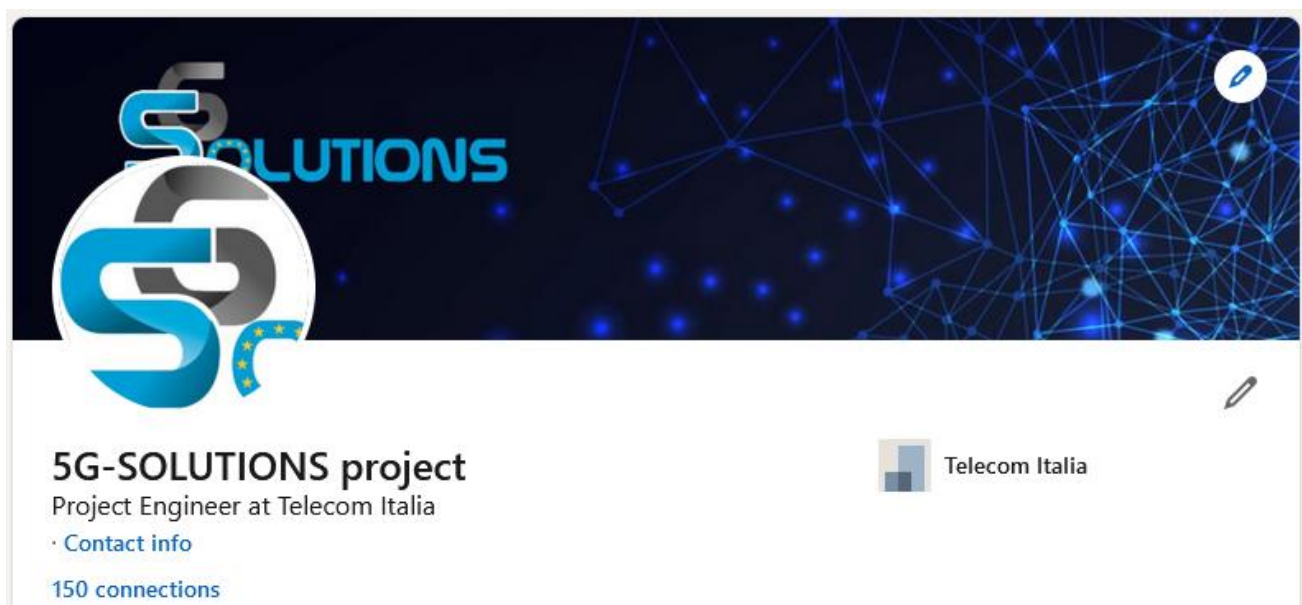


Figure 20: 5G-SOLUTIONS LinkedIn communication channel



Figure 21: 5G-SOLUTIONS Twitter communication channel

### 4.3 Newsletters

So far 5G-SOLUTIONS has published four Newsletters. The first one was released in December 2019, the second one in June 2020, third one in December 2020 and the fourth one in June 2021. All newsletters are illustrated in Figure 22, Figure 23, Figure 24 and Figure 25 respectively and accessible from the website of the project: <https://5gsolutionsproject.eu/news-n-events/newsletter/>





Figure 22: Newsletter issue #1. December 2019



Figure 23: Newsletter issue #2. June 2020



Figure 24: Newsletter issue #3. December 2020



Figure 25: Newsletter issue #4. June 2021

## 4.4 Factsheet

Figure 26 shows the project factsheet which is useful dissemination material for events such as international fairs. In general terms it describes the project objectives, living labs and the consortium.



## 5G-SOLUTIONS for European Citizens

The "fifth generation" of telecommunication systems, or 5G, will be one of the most critical building blocks of the European digital economy and society in the next decade. Significant steps towards this strategic technology are being made at EU level, within the framework of the 5G Public Private Partnership, in view of validating the technology across domains.



Project Start: 01/06/2019  
 Budget: 14.286.350 €  
 Instrument: ICT-19-2019  
 Duration: 36 Months  
 Partners: 26

### OBJECTIVES

**1. Innovation with vertical industry expert users**

To develop realistic, advanced and business relevant innovative use case scenarios in five key vertical industries.

**2. Technology development and readiness**

To interface with key ICT-17 facilities and develop technological enablers for the validation of the use cases along with an end-to-end Orchestration and Slice Management in the supporting technologies.

**3. Technological validation**

To demonstrate the potential and the user value of advanced 5G solutions through extensive technological validation in field trials directly involving end-users in Living Labs.

**4. Business validation and innovation**

To develop and validate the business models of the LLs use cases, whilst ensuring long-term social acceptance and economic sustainability, extending beyond the lifespan of the project through a joint commercialisation plan.

**5. Contribution to standardisation, open source and communities**

To provide significant contribution to relevant 5G standardisation bodies, to relevant open source communities, to relevant industry standardisation and user/technology communities.

**6. Dissemination and outreach**

To disseminate and exploit the project's results, to maximise the project's visibility and facilitate dissemination and communication activities, and to contribute to the objectives of the European 5G-PPP Programme.

### LIVING LABS

Advanced field trials of innovative use cases, over 5G-VINNI and 5G EVE facilities in Italy, Norway, Greece, Ireland and Belgium across 5 significant industry verticals



Factories of the Future



Smart Energy



Smart Cities



Smart Ports



Media & Entertainment

### CONSORTIUM

Coordinator	Partners									
										
										
										
										

### PROJECT CONTACTS

**Project Coordinator:**  
 Andrea Di Giglio (TIM)  
[andrea.digiglio@telecomitalia.it](mailto:andrea.digiglio@telecomitalia.it)

**Technical Manager:**  
 Hakon Lonsethagen (TNDOR)  
[hakon.lonsethagen@telenor.com](mailto:hakon.lonsethagen@telenor.com)

**Quality assurance & Risk Manager:**  
 Christos Skoufis (EBOS)  
[christoss@ebos.com.cy](mailto:christoss@ebos.com.cy)

**Innovation Manager:**  
 Dr. Pat O'Sullivan (ILS)  
[patosullivan@inlecomsystems.com](mailto:patosullivan@inlecomsystems.com)

**Commercialisation Manager:**  
 Patrick Durkin (ILS)  
[patrick.durkin@inlecomsystems.com](mailto:patrick.durkin@inlecomsystems.com)

**Dissemination & Communication Manager:**  
 Dr. Christos Verikoukis (CTTC)  
[cveri@cttc.es](mailto:cveri@cttc.es)

**Legal & Ethics Manager:**  
 Carmela Occhipinti (CEL)  
[c.occhipinti@cyberethicslab.com](mailto:c.occhipinti@cyberethicslab.com)

### ONLINE LINKS

-  [www.5gsolutionsproject.eu](http://www.5gsolutionsproject.eu)
-  [@5g\\_solutions](https://twitter.com/5g_solutions)
-  [5gsolutions-project](https://www.linkedin.com/company/5gsolutions-project)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856691

Figure 26: 5G-SOLUTIONS factsheet

© 5G Solutions, 2021

Page | 36



## 4.5 Project meetings

### 1. Consortium meetings (more info can be found on project website<sup>17</sup>):

- a) The 5G-SOLUTIONS F2F kick-off meeting was held on June 4-5, 2019, at the headquarters of TIM in Turin, Italy. The kick-off-meeting of the project brought together the project's 26 partners, including major telecom operators, industry vendors, academic and vertical industry actors, from 7 European and 2 associated countries. The consortium is united by the common objective to accelerate the uptake of 5G services across Europe by demonstrating and validating the 5G network technological performance (KPIs) and business aspects in extensive field trials involving 20 innovative use cases across five prominent vertical sectors: Factories of the Future, Smart Energy, Smart Cities, Smart Ports, Media & Entertainment. Field trials will also be further clustered into Living Labs for multi-Living Lab multi-vertical concurrent validation. To achieve this, the necessary technological enablers will be designed and developed within the framework of the project. All field trials will be executed over the ICT-17 5G-EVE facilities in Rome/Turin (Italy) and 5G-VINNI facilities in Trondheim (Norway) and Patra (Greece) in an automated way and engaging end-user actors in Living Labs.



Figure 27: Kick-off 5G-SOLUTIONS meeting

- b) The second Plenary project meeting was held on November 26<sup>th</sup>-27<sup>th</sup>, 2019 organized by Apart in Athens, Greece. Discussion topics were mostly focused on:
  - Patent Overview – General Process and methodology to be followed
  - Process towards standardization
  - Seminar for Ethics
  - Updated on the UCs and the technical WPs
  - Parallel workshops for the LLs
  - Coordination of research items and activities
  - Quality and risk management

<sup>17</sup> <https://5gsolutionsproject.eu/news-n-events/>



Figure 28: 2<sup>nd</sup> Plenary project meeting

c) Due to the COVID-19 pandemic the 3rd regular meeting of the project was held online by TIM and was spread in 8 sessions:

- 27 April 2020 (Morning and afternoon)
- 5 April 2020 (Morning and afternoon)
- 6 April 2020 (Morning and afternoon)
- 11 April 2020 (Morning and afternoon).

Discussion topics were mostly focused on:

- UC actual trails status and plans
- COVID-19: risk analysis review and discuss a common strategy
- COVID-19: review of activity (dissemination, standardization, SMEs involvement, community building)
- Updated activities per WP
- Project review rehearsal
- Results of the project review, and how to continue.



Figure 29: 3<sup>rd</sup> Plenary project meeting

d) The 4<sup>th</sup> regular project meeting was held also online over a virtual (web) environment on September 9<sup>th</sup>-10<sup>th</sup> 2020 hosted by EBOS. The aim of the project meeting was to discuss the progress made so far, including mitigation measures for compensating against delays and impacts

on the use case scenarios due to COVID-19. Specific emphasis was given on the first testing cycle of project trials, orchestration and target key performance indicators.



Figure 30: 4<sup>th</sup> Plenary project meeting

- e) The 5th regular project meeting was held also online on January 11th, 2021, organised by Telecom Italia. The aim of the project meeting was to discuss the progress made so far, especially on the UCs regarding the testing cycle 1. Due to COVID-19 impact to the project, an extension was also discussed as a mitigation action. There was also an emphasis on the participation of the project in 5G-PPP activities.
- f) The 6th Plenary meeting was held also online on September 29th-30th, 2021, organised by Telecom Italia, took place via a teleconference with the participation of all consortium partners. The focus of the meeting was on the analysis of the status of the use cases and the recommendations that we received after last project review. The status of each use case has been detailed presented and analysed and next steps have been identified to be implemented during the testing cycle 2.



Figure 31: 6<sup>th</sup> Plenary project meeting



## 2. Review meetings:

- a) The first 5G-SOLUTIONS project review meeting was successfully held on May 7<sup>th</sup>, 2020. Due to the COVID-19, the project review was held online with an overall very positive assessment.
- b) The second 5G-SOLUTIONS project review meeting was successfully held on February 11<sup>th</sup>, 2021. Due to the COVID-19, the project review was held online with an overall very positive assessment.

## 4.6 Involvement of SMEs Report

The main activities so far were initially dedicated to improving the SME Involvement framework with the objective of maximising the impact of the 5G-SOLUTIONS project, also considering the difficulties in receiving ideas from SMEs and start-up accelerators by Applied Research to Technologies' (A2T) team. The marketing campaign organized has been centred around opportunities such as funding from 5G-SOLUTIONS Consortium, networking with industrial stakeholders, early visibility to 5G vertical features and visibility in SME events. The framework consolidation consisted in:

1. Designing and agreeing a common **SME Involvement framework** among Partners proposing to organize SME Involvement events including A2T, APPART, EBOS, PIU and probably CTTC.
2. Preparing the **SME Participation Terms and Conditions** to be published on the Call for Ideas submission portal.
3. Selecting, preparing, and publishing the **Call for Ideas** that has been opened on YouNoodle portal<sup>[1]</sup> at the following link [https://platform.younoodle.com/competition/5g\\_call\\_for\\_ideas](https://platform.younoodle.com/competition/5g_call_for_ideas)
4. Designing, preparing, and submitting the deliverable **"D9.3A-Information package for external SMEs to facilitate the design of new applications"** (due 2020, May 31<sup>st</sup> – M12 and submitted 1 month in advance).
5. Planning events dedicated to SME involvement and after the COVID-19 Crisis in March-June, redefining the SME Involvement event approach from physical meetings to online workshops to be hosted in relevant conferences in at least 3 different countries.
6. Starting the research of potential external conference organizers, defining agreements with Innovability in Italy (owner of the online initiatives dedicated to SMEs such as ITALIA 5G, IOENERGY, AUTOTEQ 5G) and Smart Press in Greece (owner of the format Infocom World focused on communication technologies such as 5G and Fiber).
7. Launching the SME Involvement events execution, which have been held in English and promoted across multiple countries to encourage international participation. The status of event management is:
  1. A2T prepared and organized with the support of PIU a first event on Innovability on June 29<sup>th</sup>, 2020 during the event **IoTThings Insights** with a sponsored workshop "5G Networks and SME Involvement: Technological Validation and Commercial Sustainability in the Key Sectors" (<http://www.innovability.eu/insights/#5g>) to this event participated TIM, A2T, PIU and other 3 Italian start-ups which submitted their ideas.
  2. APPART prepared and organized the second event with the direct involvement and support of A2T and PIU. This event was planned during Infocom World on November 5<sup>th</sup>, 2020 with a sponsored workshop "5G SOLUTIONS – A European 5G platform available to SME" (<https://www.infocomworld.gr/22o-infocom-world-2020/programma-workshops/>). The partners that participated to this event were: FORTHNET, APPART, A2T, PIU and other 2 start-ups (1 from Greece and 1 from Italy) which submitted their ideas.

In the month of December, a SME Involvement strategy review has been initiated by A2T with the goal of better engaging SMEs, considering the continuous need for 2021 to organize online events required by COVID-19 pandemic situation and the learnings acquired during the first two events organized in 2020.



## 4.7 Community Building Report

Within the 5G-PPP framework, the most relevant 5G-PPP working groups for 5G-SOLUTIONS have been identified and contact persons inside the project have been defined to keep a strong link with the different 5G-PPP initiatives. In particular, a tight connection with the other 5G-PPP projects has been created thanks to the participation in joint workshops and booths, which lead to the organization of other similar events in the future.

The partners responsible for the 5GPPP WG are the following:

1. Steering Board (TIM).
2. Technical Board (TNOR).
3. SMEs Involvement WG (PIIU).
4. Pre-standardization WG (IRT and TIM).
5. Test, Measurement and KPIs Validation WG (EBOS).
6. Vision and Societal Challenges (VSC) WG (TNOR).
7. Trials WG (PIIU).
8. International activities SG of Trials WG (LiveU).
9. Software Networks and 5G WG(TNOR).
10. Task Force on mapping the vertical KPIs to network KPIs (FORTH).
11. Business Validation Models and Ecosystem SG (Telenor), SG is part of VSC WG.

PIIU is the main contributor to the activities related to the 5GPPP Working Groups participating in all WGs mentioned in Task 9.3. PIIU organized the first strategic discussion with the External Advisory Board (EAB): the result was presented to the EC during the first technical review. A specific questionnaire for the Members of the EAB has been prepared.

The interactions with the EAB are expected to be in the following areas:

1. Collection of requirements.
2. Technical and strategic meetings to discuss design matters and use cases.
3. Presentation of main results validation from the trials.

## 5 Dissemination and Communication Phases

Dissemination and communication activities are being carried out in four phases following experience acquired in related projects, other works, regulations, and best practices learned in the past. Each of these phases has its own objectives and target audience groups and will perform the activities using the best-suited channels. These D&C phases will be discussed and aligned with other projects of the 5G-PPP programme to achieve an optimum mix of dissemination and communication for 5G-SOLUTIONS and the 5G-PPP programme at large. Table 7 presents the four 5G-SOLUTIONS dissemination phases in detail.

Table 7: 5G-SOLUTIONS Dissemination and Communication (D&C)

Type of information	Target audience	Channels	Goals
<b>D&amp;C Phase 1 (Create awareness) M1-M12</b> <b>Objective:</b> To create awareness about the project's objectives and expected results for as many 5G Stakeholders as possible, leveraging the awareness that has already been created around the 5G-PPP programme.			
<ul style="list-style-type: none"> <li>• Presentation of 5G-SOLUTIONS</li> <li>• Objectives and expected results of 5G-SOLUTIONS</li> </ul>	<ul style="list-style-type: none"> <li>• Industry, technological, research and academia</li> <li>• Potential end-users</li> <li>• International Stakeholders identified</li> </ul>	<ul style="list-style-type: none"> <li>• Conferences, workshops</li> <li>• Brochures, roll-ups, posters</li> <li>• Website</li> <li>• Social media channels</li> </ul>	<ul style="list-style-type: none"> <li>• General visibility</li> <li>• Attract potential customers, investors and collaborators</li> </ul>
<b>D&amp;C Phase 2 (Accelerate potential impact) M13-M26</b> <b>Objective:</b> To kick-start and boost the potential impact of the project through the elaboration of the use cases, leveraging the achieved awareness of D&C Phase 1 to reach out to target stakeholder groups.			
<ul style="list-style-type: none"> <li>• Presenting elaborated use cases of 5G-SOLUTIONS</li> <li>• Demonstration of usage and results</li> </ul>	<ul style="list-style-type: none"> <li>• Potential end-users</li> <li>• Specific technological, research and academic communities</li> <li>• 5G vendors and application developers</li> </ul>	<ul style="list-style-type: none"> <li>• Conferences, workshops</li> <li>• Publications in journals</li> <li>• Special sessions in major congresses/exhibitions</li> <li>• Website</li> <li>• Social media channels</li> </ul>	<ul style="list-style-type: none"> <li>• Exposing synergies with other 5G-PPP projects</li> <li>• Providing visibility</li> <li>• Informing EC authorities</li> <li>• Attracting potential collaborators</li> </ul>
<b>D&amp;C Phase 3 (Results) M27-M33</b> <b>Objective:</b> To leverage general awareness, to emphasise the use of the 5G-SOLUTIONS offerings and results, and to attract users and customers of the project's partners, thus increasing the impact through external collaboration.			
<ul style="list-style-type: none"> <li>• Presenting elaborated use cases of 5G-SOLUTIONS</li> <li>• Demonstration of usage and results</li> </ul>	<ul style="list-style-type: none"> <li>• Potential end-users</li> <li>• Potential developers in ICT companies</li> <li>• Specific technological, research and academic communities</li> </ul>	<ul style="list-style-type: none"> <li>• Conferences, workshops</li> <li>• Publications in journals</li> <li>• Special sessions in major congresses/exhibitions</li> <li>• Website</li> <li>• Social media channels</li> </ul>	<ul style="list-style-type: none"> <li>• Attracting potential investors</li> <li>• Attracting potential customers</li> </ul>
<b>D&amp;C Phase 4 (Valorisation) M34-M42 and beyond</b> <b>Objective:</b> To demonstrate the usefulness of the results to internal and external users and customers and to attract investors. To consolidate and publish the final scientific and business findings of the project in national/international journals and online media.			
<ul style="list-style-type: none"> <li>• Final results of 5G-SOLUTIONS</li> <li>• User oriented demonstration</li> </ul>	<ul style="list-style-type: none"> <li>• Potential end-users</li> <li>• Potential developers in ICT companies</li> <li>• Specific technological, research and academic</li> </ul>	<ul style="list-style-type: none"> <li>• Website</li> <li>• Publications in journals</li> <li>• Industry focused events</li> <li>• Client demonstrations and demos in major 5G</li> </ul>	<ul style="list-style-type: none"> <li>• Attracting potential customers</li> <li>• Attracting investors</li> <li>• Informing the EC Authorities</li> </ul>

	communities.	events	<ul style="list-style-type: none"><li>• Demonstrating results to existing customers</li></ul>
--	--------------	--------	---

## 6 Metrics and Targets

Table 8 lists the metrics and their corresponding target values and the degree of meeting these target values, this helps to measure the outcome and effectiveness of the dissemination and communication activities until October 2021 (M29). Deliverable D9.2C will report on the final degree of meeting these target values.

Table 8: Dissemination and communication outcome, metrics and targets

Metrics	Targets	Until October 2021
<b>Dissemination Activities</b>		
Scientific articles	>12	17
Conference presentations	>20	11
Technical articles & policy briefs	>10	1
Industrial workshops	4	3
Supporting events (Conferences/Workshops/Special Sessions)	3	13
Number of people participating in consultations and industrial workshops	100	>400
Webinars/showcasing events	6	3
Demos in Fairs/Exhibitions/EU-related events	9	11
Showcasing events with end users	2	4
Number of webinar and supporting events participants	300	400
<b>Communication Activities</b>		
Press Releases	>3	8
White papers, success stories, factsheets	>9	11
Newsletters	2/year	4
Number of white papers downloads	>1000	N/A
Promotional Videos	2	2
Unique Web Visits	>5000	6748
Blog posts, tweets including editorials and clippings	>3000	>100
Media coverage (editorials and clippings)	100	14
Size of the community (incl. Twitter followers, mailing list subscribers, bloggers)	>1000	682

## 7 Conclusions and Next Actions

This deliverable (D9.2B) provides updated information about the dissemination and communication activities carried out until M29 of the 5G-SOLUTIONS project and presented in the initial D9.2A deliverable. Regarding the dissemination activities, we have provided the list of journals, papers in international conferences and technical articles published by the partners of the consortium. The project partners have also participated in conferences and workshops giving high-quality talks. Moreover, the consortium has organized workshops, industrial panels, conferences, a special session, and a training course. Several white papers also have been published and some demos have been presented in recognized international fairs where the main objectives of 5G-SOLUTIONS were presented. 5G-SOLUTIONS has been also active in the media thanks to many Press Releases.

So far, some promotional material has been developed: poster, factsheet, and promotional videos. At the beginning of the project a modern, dynamic, and user-friendly website was designed and being updated with all the dissemination activities carried out during the project. LinkedIn and Twitter social media channels have been created to keep the Community updated with the last progress of the project. So far four newsletters have been published summarizing the dissemination activities.

Besides the target audience and the channels for the dissemination activities, we have also provided a time plan for these activities, which includes 4 phases. The goal of the 1<sup>st</sup> phase (M1-M12) is to create awareness about 5G-SOLUTIONS, while the 2<sup>nd</sup> phase (M13-M26) is expected to accelerate the potential impact of the project. The core results will be disseminated and communicated during the 3<sup>rd</sup> phase of the project (M27-M33), while the 4<sup>th</sup> phase (M34-M42 and beyond) will guarantee the valorisation of the project's outcome. During the 1<sup>st</sup> phase of dissemination and communication, our main goal has been to create awareness about the project's objectives and expected results for as many 5G Stakeholders as possible, leveraging the awareness that has already been created around the 5G-PPP programme.

Finally, D9.2B has also updated the current state of the quantified targets for the dissemination and communication activities. The last deliverable of this series (i.e., D9.2C) will list the dissemination and communication activities carried out throughout the 5G-SOLUTIONS project.