

5G ALLSTAR



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Abstract

This deliverable has been created as part of the work in the project Work Package (WP) 6 “Promotion”, and reports on the status of respective actions after the first 12 months of the project. Current activities are analysed in order to track the project’s objectives in terms of scientific publications, workshops/tutorials and interaction with media. If required, corrective actions are identified and implemented.

Keywords

Dissemination, publication, exploitation, standardization, regulation.

Executive Summary

This deliverable reports on the dissemination and promotion strategy and activities of the 5G-ALLSTAR project. Its main intent is to further prepare and plan effective communications in line with the project objectives. As this is a public document, this deliverable is also an important mean for the project to disseminate the 5G-ALLSTAR vision and achievements. The 5G-ALLSTAR accomplishments during the first 12 months of the project were publicly promoted by numerous scientific publications to conferences as well as to highly ranked journals. In addition, panel discussions and workshops were used to promote the project to an even broader audience. Close collaboration to related projects was kept in order to benefit from each other's work. For the following year, the project partners plan to continue their work according to the initial dissemination and promotion strategy without any changes.

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List of Abbreviations

3GPP	3 rd Generation Partnership Project
5GPPP	5G Infrastructure Public Private Partnership
KPI	Key Performance Indicator
MAC	Medium Access Control
NR	New Radio
PMT	Project Management Team

PoC	Proof of Concept
QoS	Quality of Service
RAN	Radio Access Network
SA	System Architecture
SI	Study Item
V2X	Vehicle-to-Everything
WP	Work Package

1 Introduction

5G-ALLSTAR will dedicate part of its activities to spread the knowledge and achievements obtained by the project and make it available to the European and Korean research community. Emphasis will be put on joint European/Korean dissemination activities to best-in-class conferences, journals and other suitable events. The dissemination strategy will be supported through broad-scale open access publishing and self-archiving through the project website. The website will be available at least three years after the project lifetime (i.e., beyond the year 2023). The dissemination of 5G-ALLSTAR results is planned thoroughly to achieve a significant impact in the whole world.

This deliverable D6.1 “Dissemination Plan and project website” provides a coherent and comprehensive description of the dissemination and exploitation activities planned and achieved by the 5G-ALLSTAR consortium during the course of the project. The present document outlines the strategy and planned actions of the 5G-ALLSTAR consortium in order to

- contribute to key and best-in-class conferences and journals,
- organize and contribute to workshops, conference tracks, tutorials, special sessions, summer/winter schools and other dissemination events,
- contribute to key exhibitions and
- influence media perception of 5G satellite technology.

5G-ALLSTAR partners are committed to produce best-in-class technical results and to provide thought leadership in the field of 5G technology and its further evolution. Key international scientific conferences and high-profile journals are identified within this document as candidates for contributions by the 5G-ALLSTAR consortium. The objective is to exploit cross European/Korean synergies in order to maximize the visibility and impact in the scientific community and beyond.

Beyond contributing to scientific conference through paper presentations, the 5G-ALLSTAR consortium will furthermore organize workshops, conference tracks, tutorials, special sessions and other dissemination events.

Finally, the consortium interacts with media representatives in order to disseminate results beyond the scientific and industrial community. The objective is to educate the public on the potential of 5G technology and to facilitate the acceptance of this technology leap.

After restating the dissemination and promotion strategy, this deliverable reports on the achievements during the first 12 months of the project and discuss new plans and corrective actions.

2 Dissemination and promotion strategy

This chapter provides a brief overview of the dissemination strategy for 5G-ALLSTAR. Table 2-1 summarizes the main communication measures. The overall plan is consistent with the initial project intentions (see D6.1) and no changes have been implemented after 12 months. The key technological directions of the 5G-ALLSTAR project are identified and mapped with respect to specific actions that are candidates over the lifetime of the project.

Table 2-1: Summary of the main communication measures

<p>Project website https://5g-allstar.eu</p>	<p>5G-ALLSTAR shares its concepts, results and achievements to the audience through its dedicated project website, which was designed and set up in September 2018.</p> <p>The website is the primary tool of communication and promotion of the project to distribute all the information to be shared among the project partners and to the public.</p>
<p>Press releases, poster, and leaflets</p>	<p>5G-ALLSTAR prepares and distribute project posters, press releases and leaflets on the project concept and objectives to a broad audience to raise wide public awareness.</p>
<p>Video</p>	<p>5G-ALLSTAR will work on the creation of a video to present the proposed network scenarios and their capabilities towards the public.</p>
<p>Networks and societies</p>	<p>5G-ALLSTAR partners exploit their involvement in various communities at national and international level in order to promote the project concept and objectives (e.g., the European Technology Platform NetWorld2020).</p>
<p>Exhibitions, conferences</p>	<p>5G-ALLSTAR partners use their participation to the most popular conferences (e.g., EUCNC, ICC, Globecom, PIMRC, and VTC), exhibitions worldwide, e.g. the Mobile World Summit, further events in Korea and Asia, but also other relevant dedicated 5G events, to communicate the progress of the project.</p>
<p>Industry events</p>	<p>5G-ALLSTAR partners participate in industry events organized by telecom operators (including mobile network operators), with the aim to promote the proposed 5G-ALLSTAR network scenarios and technologies.</p>

2.1 Website

A public website was set up at the beginning of the project under the domain <https://5g-allstar.eu>. One of the most important publicly available information about a research project is the list of dissemination activities, which can come in different formats, e.g. white papers and deliverables, amongst which the public ones will be freely downloadable. The website is hosted at the Fraunhofer HHI and it is planned to keep it online at least 3 years after the project end.

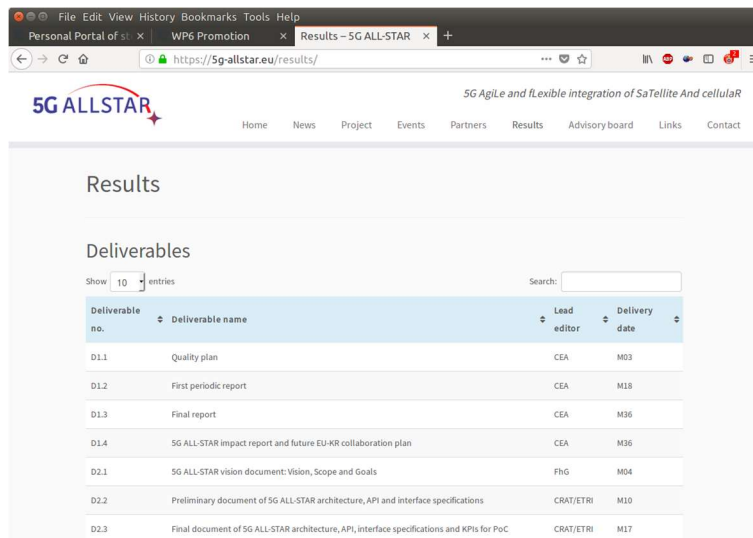


Figure 2-1: 5G-ALLSTAR website - <https://5g-allstar.eu>

2.2 Interaction with press and media

In the third year of the project, the Korean partners will provide a service demonstration to the public proof-of-concept and will publicize the service demonstration on press and media. Furthermore, the Korean partners will also exhibit the 5G-ALLSTAR project technology at MWC or ITS World Congress and will announce this to the press and possibly to the media as well.

2.3 Scientific conferences

While there are no conferences explicitly excluded from the consortiums publication targets list, there are a number of venues that are particularly targeted to disseminate the scientific findings of the project, which are listed below.

Table 2-2: Identified key conferences

Event name	Main topics
ASMS (Advanced Satellite Multimedia Systems Conference) / Signal Processing for Space Communications Workshop (SPSC)	Satellite Communications and broadcast, signal processing in space
ECC (European Control Conference)	Preliminary results about multi-connectivity, traffic steering algorithms
EUCAP (European Conference on Antennas and Propagation)	Electromagnetics, antennas and propagation
EuCNC (European Communications and Networking Conference)	Communication and networking.
European Microwave Week	Radiofrequency, electromagnetics, and antennas
ICSSC (International Conference on Satellite and Space Communications)	Satellite Communications and broadcast, signal processing in space
IEEE Antennas and Propagation International Symposium	Electromagnetics, antennas and propagation
IEEE GLOBECOM	IEEE flagship conference covering all aspects of networking and communications.
IEEE ICC (International Conference on Communications)	IEEE flagship conference covering all aspects of networking and communications.

IEEE INFOCOM	Communication and networking
IEEE VTC (Vehicular Technologies Conference)	Networking and vehicular aspects.
IEEE WCNC (Wireless Communications and Networking Conference)	New approaches in wireless communications and networking technology.
MED (Mediterranean Conference on Control and Automation)	Preliminary results about Quality of Experience Control
SPAWC (Signal Processing Advances in Wireless Communications)	Signal Processing in Wireless Communication Systems

2.4 Scientific journals

Contributions to scientific journals are a suitable means to disseminate mature and substantial results of the 5G-ALLSTAR consortium with great visibility in the scientific community. A list of targeted journal papers is given in Table 2-3.

Table 2-3: Identified key journals

Publication name	Main topics
EURASIP Journal on Advances in Signal Processing	Algorithms and Signal Processing approaches in general.
EURASIP Journal on Wireless Communications and Networking	General wireless and access network topics, covering PHY to System level.
IEEE Access	Communication and networking aspects.
IEEE Antenna and Wireless Propagation Letters	Electromagnetics, antennas and propagation
IEEE Communication and signal processing magazines	Communication technologies and systems in more tutorial style.
IEEE Communications letters	Communication technologies.
IEEE Communications Magazine	Communications and networking aspects.
IEEE Signal Processing Magazine	Tutorial-style articles on signal processing research and applications, as well as columns and forums on issues of interest
IEEE Transaction on Antennas and Propagation	Electromagnetics, antennas and propagation
IEEE Transactions on Control Systems Technology	Consolidated traffic steering control algorithms
IEEE Transactions on Signal Processing	Algorithms and Signal Processing approaches in general.
IEEE Vehicular Technology Magazine	Networking and vehicular aspects.
IEEE Wireless Transactions	Communication technologies – scientific evaluation of approaches and techniques.

2.5 Organized workshops, special sessions and panels

The 5G-ALLSTAR consortium targets to disseminate at international conferences, international workshops, and EU commission specific events (see for instance EUCNC, ICT days, joint Europe-Korea dedicated workshops, etc.). Besides the dissemination in terms of scientific publications, the organization of workshops, special sessions, industrial seminars and panels at international top ranked conferences, fairs and events (when possible jointly with other H2020 and Korean projects) is envisaged as well.

Possible conferences for the organization of a special session are WCNC 2020 (in Seoul, Korea), PIMRC 2020 and GLOBECOM 2020. The dates and location of the two latter ones are still to be announced.

2.6 Education – teaching, tutorials, workshops, etc.

The teaching activities within the various universities involved in 5G-ALLSTAR project is exploited to make students and other interested people sensitive in the 5G-ALLSTAR topics and main objectives. Specifically, the research group of the consortium CRAT working in 5G-ALLSTAR mainly belongs to the Department of Computer, Control and Management Engineering of the University of Rome Sapienza – which is a CRAT member. A number of seminars and workshops are scheduled and organized in the above-mentioned department within the annual university course “Control Communication and Energy Networks”, held by the Prof. F. Delli Priscoli. The main objectives of the course are perfectly in line with the main objectives of WP4, since it aims at applying control algorithms and techniques to cope with network problems in specific network technologies and it also introduces the problems of routing, cloud management and QoE/QoS evaluation and control. In this respect, the seminars are strictly dedicated to present the research activities carried out in WP4 concerning the algorithms and techniques able to solve the problems of QoS and Traffic Steering designed and developed in 5G-ALLSTAR. The objective is to foster the interest in developing thesis and minor projects in the field of 5G networks and, in general, in network control. The seminars are presented by the CRAT researchers involved in 5G-ALLSTAR project.

Educational training and provision of new skill sets to industry experts and researchers are among the top priorities of the project. These objectives are achieved through suitable invited talks in the academic community, in research institutes, through the organization of workshops, special sessions and webinars on selected topics. Pedagogical case studies are developed to facilitate comprehension of both the theory and practice behind the entrepreneurship and management related to emerging technologies.

The 5G-ALLSTAR consortium targets at conducting or contributing to webinars. Broad EU industrial and research community, among existing relevant contacts of the 5G-ALLSTAR consortium partners, and among community attending 5GPPP concertation meetings will be invited to those webinars. Invitations will be also published in the 5G-ALLSTAR website and in the newsletter. More specifically, webinars will be organized after the first year, having the objective to present the project results. The content of webinars and dates will be published through the project portal and via social media linked to the project.

3 Achieved contributions

3.1 Scientific conference publications

Channel Characteristics in Rural Railway Environment at 28 GHz

Author list: Longhe Wang, Bo Ai, Ke Guan, Danping He, Zhangdui Zhong, Junhyeong Kim

Event title: 2018 16th International Conference on Intelligent Transportation Systems Telecommunications (ITST)

Publication type: Full paper

Status: Published

DOI: 10.1109/ITST.2018.8566834

Realistic Channel Characterization for 5G Millimeter-wave Railway Communications

Author list: Ke Guan, Danping He, Bo Ai, Andrej Hrovatz, Junhyeong Kim, Zhangdui Zhong, Thomas Kurner

Event title: 2018 IEEE Global Communications Conference (GLOBECOM)

Publication type: Full paper

Status: Published

DOI: 10.1109/GLOCOMW.2018.8644076

Current Development of Vector Tracking Loops for Stand-Alone GNSS Receivers in Urban Canyons

Author list: Hung Pham-Viet, Sungoh Kwon, Seok Ho Won

Event title: KICS Winter Conference 2019

Publication type: Full paper

Status: Presented

DOI: Not available yet

Millimeter-Wave Communications for Smart Rail Mobility: From Channel Modeling to Prototyping

Author list: Ke Guan, Danping He, Bo Ai, Bile Peng, Andrej Hrovatz, Junhyeong Kim, Zhangdui Zhong, Thomas Kurner

Event title: IEEE ICC 2019

Publication type: Full paper

Status: Presented

DOI: Not available yet

5G-ALLSTAR: An Integrated Satellite/Cellular System for 5G and Beyond

Author list: Junhyeong Kim, Guido Casati, Federico Lisi, Antonio Pietrabissa, Emilio Calvanese Strinati, Nicolas Cassiau, Gosan Noh, Ilgyu Kim, Marjorie Thary, Jean-Michel Houssin, Federico Pigni, Sylvain Colombero, and Pierre Dal Zotto

Event title: 2019 IEEE Global Communications Conference (GLOBECOM)
Publication type: Full paper
Status: Submitted
DOI: Not available yet

A Spatially Consistent Geometric D2D Small-Scale Fading Model for Multiple Frequencies

Author list: Stephan Jaeckel, Leszek Raschkowski, Frank Burkhardt and Lars Thiele
Event title: IEEE VTC Fall '19
Publication type: Full paper
Status: Submitted
DOI: Not available yet

Multi-Connectivity in 5G terrestrial-Satellite Networks: the 5G- ALLSTAR Solution

Author list: Federico Lisi, Giacinto Losquadro, Francesco Delli Priscoli, Antonio Ornatelli, Manuel Donsante
Event title: 25th Ka and Broadband Communications Conference
Publication type: Full paper
Status: Abstract submitted
DOI: Not available yet

3.2 Scientific journal publications

A Comprehensive Study on mmWave-based Mobile Hotspot Network System for High-Speed Train Communications

Author list: Junhyeong Kim, Mathis Schmieder, Michael Peter, Heesang Chung, Sung-Woo Choi, Ilgyu Kim, and Younghan Han
Event title: IEEE Transactions on Vehicular Technology
Publication type: Full paper
Status: Published
DOI: 10.1109/TVT.2018.2865700

6G: The Next Frontier

Author list: Emilio Calvanese Strinati, Sergio Barbarossa, José Luis Gonzalez-Jimenez, Dimitri Kténas, Nicolas Cassiau, Luc Maret, Cédric Dehos
Event title: IEEE Vehicular Technology Communication Magazine, Special issue on 6G
Publication type: Full paper
Status: Accepted
DOI: Not yet available

3.3 Book chapters

None

3.4 Special sessions

Panel discussion at IEEE DySPAN 2018 – October 2018, Seoul, Korea

ETRI participated in the panel discussion “Dynamic Spectrum Management: the 5G Verticals view,” and made a short presentation on spectrum sharing issues, with special emphasis on the 5G cellular-satellite integration. During the following panel discussion, several spectrum sharing-related topics were actively discussed among the panellists as well as with the audience. It was a good opportunity to highlight the importance of the 5G-ALLSTAR project.

3.5 Workshops and tutorials

During the period M3-M18, CRAT has organized several seminars and classroom events at the University of Rome “La Sapienza”. The seminars were part of the “Control Communication and Energy Networks” course within the Control Engineering Master program. The 5G-ALLSTAR vision, the project as well as initial results goals were presented. In the same course, some seminars were also focused on presenting the main WP4 research activities. The classroom lessons were part of the course of “Control of Autonomous Multi-Agent Systems”, within the Master in Control Engineering, and presented potential the traffic scheduling approaches that are being studied in WP4.

Presentation at TAICS-TTA 5G Joint Workshop – April 2019, Taipei, Taiwan

TAICS and TTA held a joint workshop on “Beyond 5G” (<https://www.taics.org.tw/index.php/events/show/id/63c7c3adabff10379580292336a59708>). ETRI made a presentation on “Realizing High Mobility Applications towards Beyond 5G”, which is highly related to the work ongoing in the 5G-ALLSTAR project. There were many discussions on the 5G and beyond 5G with special emphasis on the 3GPP Release 17 items among the participating Taiwanese and Korean organizations encompassing industry, academia, and national laboratories.

Tutorial at EUCNC – 18th June 2019, Valencia, Spain

Dr. Emilio Calvanese Strinati held a tutorial on “When Clouds meet 6G: the academic, industrial and standard perspective” (<https://www.eucnc.eu/tutorials/tutorial-2/>). This talk gave him the opportunity to present the concept of 5G-ALLSTAR to a very diverse audience, including academic, research and industry.

3.6 Exhibitions

None

3.7 Interaction with press and media

Visit of the Korean Ambassador in France at CEA-Leti premises

An overview of the 5G-ALLSTAR concept and goals was provided to the Korean ambassador in France during a visit in the CEA-Leti premises, on June 12th, 2019.

Talk in the radio program “La méthode scientifique”, April 10th, 2019.

Dr Emilio Calvanese Strinati was one of the two speakers in the radio program “5G, et pour quelques gigas de plus” (in English: *5G, and for a few more Gigas*) on the French National radio *France Culture*, in the show “La méthode scientifique”. This daily show has an average audience of hundreds of thousands people. The podcast of the program is available at <https://www.franceculture.fr/emissions/la-methode-scientifique/la-methode-scientifique-emission-du-mercredi-10-avril-2019>.

4 Plan to the 5G-ALLSTAR demonstration proposal

In May 2021, 5G-ALLSTAR will demonstrate the key multi-connectivity functionalities deployed in both the European and the Korean platforms. In this aim, a joint EU-KR platform will be set up, based on an intercontinental link between the two platforms. Highlighting the value of the 5G-ALLSTAR concept through this platform will take place in a key event. The French tennis tournament Roland Garros has been identified as a good opportunity in this regard: it takes place in May and it proposes booths for advanced technology demonstrations during the two-week tournament. The management team of 5G-ALLSTAR has already started discussions with the authorities concerned.

5 Collaboration with other H2020 projects

5.1 5GCHAMPION

The feasibility of operating the 5G NR technology via satellites has been initiated in the H2020 5GCHAMPION project and is further developed and demonstrated in 5G-ALLSTAR with a satellite in orbit as part of the project. ETRI's and CEA's experiences in the joint 5GCHAMPION coordination laid the groundwork for the 5G-ALLSTAR project. CEA and ETRI both work on improving the dissemination plan and create new business opportunities through the preparation of joint collaboration activity reports and selected exchanges.

From 2016-06-01 to 2018-06-30

Project Coordinator: CEA-LETI and ETRI

5.2 Sat5G

The project vision is to develop a cost effective "plug and play" satellite communications solution for 5G to enable phone conferences and network vendors to accelerate 5G deployment across all geographies and at the same time create new and growing market opportunities for industry stakeholders in satellite communications.

The six principal project objectives are:

- Leverage relevant on going 5G and satellite research activities to assess and define solutions integrating satellite into the 5G network architecture;
- Develop the commercial value propositions for satellite based network solutions for 5G;
- Define and develop key technical enablers for the identified research challenges;
- Validate key technical enablers in a lab test environment;
- Demonstrate selected features and use cases;
- Contribute to the standardisation at 3rd Generation Partnership Project (3GPP) and European Telecommunications Standards Institute (ETSI) of the features enabling the integration of sitcom solutions in 5G.

Thales Alenia Space is leading this research project, and a member of 5G-ALLSTAR.

Start date: June 2017, duration: 30 months

Technical Manager: Nicolas Chuberre – Thales Alenia Space France

5.3 SPEED-5G

SPEED-5G is a 5GPPP project, which aimed at achieving a significantly better exploitation of heterogeneous wireless technologies. To complete the mentioned goal, SPEED-5G developed new techniques for optimizing spectrum utilization. As a result, SPEED-5G provided solutions answering the request for a thousand-fold increase in mobile traffic volume over a decade and for efficiently supporting very different classes of traffic and services.

The project started on 1 July 2015 and ran until 30 June 2018. It has been performed by a consortium of ten organisations, led by University of Surrey, UK. CEA-LETI was a member of SPEED5G.

Project Coordinator: Klaus Moessner, University of Surrey, email: k.moessner@surrey.ac.uk

6 Corrective actions

In the first year of the project, the 5G-ALLSTAR partners have always kept in mind the need to disseminate the results of the research carried out in the project. This involvement has led to numerous scientific articles, talks and teaching activities. During the second year of the project, the partners' investment in dissemination will be maintained at the highest possible level.

7 Conclusions

The present document restates the strategy on how to address the dissemination of project results with the objective to

- Drive the 5G technology development forward and show thought leadership in the scientific, industrial and media community,
- Exploit key events to showcase the 5G-ALLSTAR consortium results, in particular proof-of-concept equipment and to thus maximize the project visibility and overall impact.

The strategy and plan outlined in combination with the efficient cross-region collaboration between Europe and Korea is expected to manifest in the highest level of visibility and impact of the project results and outcomes.

The deliverable also reports on the dissemination and promotion activities during the first 12 months of the project in terms of scientific publications and other means, e.g. workshops and panel discussions. Given the amount of activities, no corrective actions were defined for the following year of the project.

The project dissemination according to the described strategy is declared on track, also concerning the challenging goal to demonstrate an intercontinental link using technology developed by the project partners, which has been further refined.