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Project Name: 5G AgiLe and fLexible integration of SaTellite And cellulaR (5G-ALLSTAR)

## Deliverable D6.3

## Dissemination activity report Y2

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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 second year period 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.

#### Acknowledgements

We would like to acknowledge the following people for their valuable reviews of this deliverable: You-Jun Choi (KATECH) and Federico Pigni (GEM).







## **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-ALL-STAR accomplishments during the second year period 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 last year, the project partners plan to continue their work according to the initial dissemination and promotion strategy and plan even to increase the number of publications.



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## List of Abbreviations

3GPP	3 <sup>rd</sup> Generation Partnership Project
5GPPP	5G Infrastructure Public Private Part- nership
KPI	Key Performance Indicator
MAC	Medium Access Control
NR	New Radio
РМТ	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 project's knowledge and achievements 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 on the whole world.

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 the 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 conferences 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 second year of the project and discuss new plans and corrective actions.

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### 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, to the most part, consistent with the initial project intentions (see D6.1). A few changes have been introduced after the first year, based on the comments received from the first year review meeting. Those changes are described in the following subchapters. 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.

Project website https://5g-allstar.eu	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.
	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.
Press releases, poster, and leaflets	5G-ALLSTAR prepares and distributes project posters, press re- leases, and leaflets on the project concept and objectives to a broad audience to raise wide public awareness.
Video	5G-ALLSTAR will work on the creation of a video to present the proposed network scenarios and their capabilities towards the public.
Networks and soci- eties	5G-ALLSTAR partners exploit their involvement in various commu- nities at the national and international levels to promote the project concept and objectives (e.g., the European Technology Platform NetWorld2020).
Exhibitions, con- ferences	5G-ALLSTAR partners use their participation to the most popular conferences (e.g., EUCNC, ICC, Globecom, PIMRC, and VTC), ex- hibitions 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.
Industry events	5G-ALLSTAR partners participate in industry events organized by telecom operators (including mobile network operators), to promote the proposed 5G-ALLSTAR network scenarios and technologies.

#### 2.1 Website

A public website was set up at the beginning of the project under the domain <u>https://5g-all-star.eu</u>. 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 de-liverables, 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

Based on the feedback from the first year review meeting, the website was complemented with an open-source web analytics platform, called Matomo, in order to track the number of visitors.

The following figures give an overview of the visits in the reporting period from July 1<sup>st</sup>, 2019 until June 25<sup>th</sup>, 2020. In total 1540 visits were counted, with a majority of visits coming from the United States (544 visits), followed by Italy (144) and Korea (135).



Figure 2-2: Visitor Map for the reporting period Y2

Besides the number of visitors, the number of unique downloads might be an interesting performance indicator. 474 downloads were counted, from which 425 are declared as unique downloads.

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putrillipola llassanoidhe.	<b>1,543</b> visits			Junitellitere blevenscheiset,	4,369 pageviews, 3,182	2 unique pageviews
. the de all states and the states of the st	2 min 16s average visit	t duration		•	<b>0</b> total searches on you keywords	r website, <b>0</b> unique
	<b>53%</b> visits have bounce page)	ed (left the website	after one	hidde and esta and deal	<b>474</b> downloads, <b>425</b> un	ique downloads
Hatrahashi ilikun adarah	<b>3.2</b> actions (page views internal site searches) p	s, downloads, outlin oer visit	ks and		131 outlinks, 123 uniqu	ue outlinks
	0.37s average generati	on time		herblidser lineachilded	<b>41</b> max actions in one v	<i>i</i> isit

Figure 2-3: Visits overview statistics for the reporting period Y2

The following figure reports about the channels that were used to find the website. The majority of visitors (50%) directly accessed the website using its address, 40% of the visitor used search engines to find the website. The amount of accesses from other websites is reported with 9%, and the number of access from social networks is merely 1%.

Jadullaton aluduarked	773 direct entries, 50% of visits		138 from websites, 9% of visits
ann dilain Ininadable	616 from search engines, 40% of visits		16 from social networks, 1% of visits
•	<b>0</b> from campaigns, <b>0%</b> of visits		<b>10</b> distinct search engines
	<b>4</b> distinct social networks	Waxaa wax	32 distinct websites
jahri witahihatak	17 distinct keywords		<b>0</b> distinct campaigns

Figure 2-4: Channel type statistics for the reporting period Y2

The visits over time are shown in Figure 2-5. The maximum number of visits per is reported as 17. On average there were approximately 5 visits per day.



Figure 2-5: Visits over time for the reporting period Y2

Based on these results, we will try increase the number of visits by increasing the frequency of updates to the website, e.g., by news posts. In addition, all partners are highly encouraged to promote the 5G-ALLSTAR website on their company websites. Another possible means to further promote the website could be the use of social media channels, and these are introduced in the following section.

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#### 2.2 Interaction with press media, and social media

In the third year of the project, the Korean partners will provide a service demonstration to the public proof-of-concept and publicize the service demonstration on the 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.

Due to the Coronavirus outbreak, many conferences and congresses were changed to virtual events or even cancelled. Nonetheless, we aim at demonstrating the 5G-ALLSTAR technology during the project duration. Other means of promoting the work, for example by publishing short videos, is currently discussed.

Nowadays, social media plays an important role in getting publicity. Which is why, the project created a LinkedIn group, as well as a dedicated Twitter account already in the first year of the project.



Figure 2-6: Screenshot of Twitter page, https://twitter.com/5g\_allstar

The twitter account currently shows 78 tweets and 90 followers, while following 67. It seems to be well perceived give the numerous likes of the tweets.

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Figure 2-7: Screenshot of LinkedIn group page, https://www.linkedin.com/groups/8695018/

The LinkedIn group page currently has 311 members and also aims at informing about latest news regarding the project.

For the last year of the project, the number of posts shall be further increased with the goal to bring more visitors to the 5G-ALLSTAR website. Besides that, a new logo, optimized for both channels will be presented soon.

#### 2.3 Scientific conferences

While there are no conferences explicitly excluded from the consortiums publication targets list, there are numerous venues preferred to disseminate the scientific findings of the project, which are listed below.

Event name	Main topics
ASMS (Advanced Satellite Multimedia Sys- tems Conference) / Signal Processing for Space Communications Workshop (SPSC)	Satellite Communications and broadcast, signal pro- cessing 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 Net- working Conference)	Communication and networking.
European Microwave Week	Radiofrequency, electromagnetics, and antennas

Table 2-2: Identified key conferences

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ICSSC (International Conference on Satellite and Space Communications)	Satellite Communications and broadcast, signal pro- cessing in space
ICTC (International Conference on Information and Communication Technology Convergence)	Information and communication technologies
IEEE Antennas and Propagation International Symposium	Electromagnetics, antennas and propagation
IEEE GLOBECOM	IEEE flagship conference covering all aspects of net- working and communications.
IEEE ICC (International Conference on Com- munications)	IEEE flagship conference covering all aspects of net- working and communications.
IEEE INFOCOM	Communication and networking
IEEE VTC (Vehicular Technologies Confer- ence)	Networking and vehicular aspects.
IEEE WCNC (Wireless Communications and Networking Conference)	New approaches in wireless communications and net- working technology.
MED (Mediterranean Conference on Control and Automation)	Preliminary results about Quality of Experience Control
SPAWC (Signal Processing Advances in Wire- less 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 excellent 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
AGU Radio Science	Radio frequency electromagnetic-propagation and its applications.
ETRI Journal	Information, telecommunications, and electronics.
EURASIP Journal on Advances in Signal Pro- cessing	Algorithms and Signal Processing approaches in general.
EURASIP Journal on Wireless Communications and Networking	General wireless and access network topics, cover- ing 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 Technol- ogy	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, fares, 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 2021 (end of March 2021 in Nanjing, China), PIMRC 2021 (September 2021 in Oulu, Finland), and GLOBECOM 2021 (December 2021 in Madrid, Spain).

#### 2.6 Education – teaching, tutorials, workshops, etc.

The teaching activities within the various universities involved in the 5G-ALLSTAR project are used to introduce students and interested faculty members to the 5G-ALLSTAR topics and primary objectives. Specifically, the research group of the consortium CRAT working in 5G-ALL-STAR mainly belongs to the Department of Computer, Control and Management Engineering of the University of Rome Sapienza. Many seminars and workshops are scheduled and organized in the department mentioned above 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

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it also introduces the problems of routing, cloud management and QoE/QoS evaluation and control. In this respect, the seminars are strictly dedicated to presenting the research activities carried out in WP4 concerning the algorithms and techniques to solve the problems of QoS and Traffic Steering designed and developed in 5G-ALLSTAR. The objective is to foster an interest in developing theses 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 the 5G-ALLSTAR project.

Educational training and provision of new skill sets to industry experts and researchers are among the project's top priorities. 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 also be published on 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 the 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

# 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:	Published (already in Y1 report as presented)
DOI:	Not available

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

Author list:	Ke Guan, Danping He, Bo Ai, Bile Peng, Andrej Hrovat, Junhyeong Kim, Zhangdui Zhong, Thomas Kurner
Event title:	2019 IEEE International Conference on Communications Work- shops (ICC Workshops)
Publication type:	Full paper
Status:	Published (already in Y1 report as presented)
DOI:	10.1109/ICCW.2019.8757021

# 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:	Published (already in Y1 report as presented)
DOI:	10.1109/VTCFall.2019.8891407

#### 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:	Published (already in Y1 report as submitted)
DOI:	arXiv:2004.00368

#### Air Interface Challenges and Solutions for future 6G

Author list:	Benoit Miscopein, Jean-Baptiste Doré, Emilio Strinati, Dimitri Kténas, Sergio Barbarossa
Event title:	1st 6G Wireless Summit



	Publication type:	Full paper
	Status:	Published
	DOI:	HAL Id : cea-01986524, version 2
A St	udy on Frequency I	Planning of MN System for 5G Vehicular Communications
	Author list:	Junnyeong Kim, Sung-Woo Choi, Gosan Non, Heesang Chung, Ilgyu Kim
	Event title:	2019 International Conference on Information and Communication Technology Convergence (ICTC)
	Publication type:	Full paper
	Status:	Published
	DOI:	10.1109/ICTC46691.2019.8939787
Millii	meter-Wave Channe Author list:	el Characterization for Vehicle-to-Infrastructure Communication Lina Wu, Danping He, Ke Guan, Bo Ai, Junhyeong Kim, Heesang Chung
	Event title:	2020 14th European Conference on Antennas and Propagation (EuCAP)
	Publication type:	Full paper
	Status:	Presented
	DOI:	Not available yet
5G-A	LLSTAR: An Integi	rated Satellite-Cellular System for 5G and Beyond
	Author list:	Junhyeong Kim, Guido Ćasati, Antonio Pietrabissa, Alessandro Giuseppi, Emilio Calvanese Strinati, Nicolas Cassiau, Gosan Noh,

Heesang Chung, Ilgyu Kim, Marjorie Thary, Jean-Michel Houssin,
Federico Pigni, Sylvain Colombero, Pierre Dal Zotto, Leszek
Raschkowski, Stephan Jaeckel

- Event title: 2020 IEEE Wireless Communications and Networking Conference (WCNC) Workshop
- Publication type: Full paper
- Status: Published
- DOI: 10.1109/WCNCW48565.2020.9124751

#### Satellite and terrestrial multi-connectivity for 5G: making spectrum sharing possible

Author list:	Nicolas Cassiau, Gosan Noh, Stephan Jaeckel, Leszek Raschkow- ski, Jean-Michel Houssin, Laurent Combelles, Marjorie Thary, Junhyeong Kim, Jean-Baptiste Doré, Marc Laugeois
Event title:	2020 IEEE Wireless Communications and Networking Conference (WCNC) Workshop
Publication type:	Full paper
Status:	Published
DOI:	10.1109/WCNCW48565.2020.9124728

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# Characterization for High-Speed Railway Channel enabling Smart Rail Mobility at 22.6 GHz

Author list:	Lei Ma, Ke Guan, Dong Yan, Danping He, Bo Ai, Junhyeong Kim, Heesang Chung
Event title:	2020 IEEE Wireless Communications and Networking Conference (WCNC)
Publication type:	Full paper
Status:	Published
DOI:	10.1109/WCNC45663.2020.9120474

#### Management and Orchestration Architecture for Integrated Access of Satellite and Terrestrial in 5G

Author list:	Taesang Choi, Seok Ho Won, Alessandro Giuseppi, Antonio Pietrabissa, Sungoh Kwon
Event title:	International Conference on Information Networking, ICOIN 2020
Publication type:	Full paper
Status:	Published
DOI:	10.1109/icoin48656.2020.9016484

#### User-aware centralized resource allocation in heterogeneous networks

Author list:	Antonio Ornatelli, Alessandro Giuseppi, Vincenzo Suraci, Andrea Tortorelli
Event title:	2020 28th Mediterranean Conference on Control and Automation
Publication type:	Full paper
Status:	Accepted
DOI:	Not available yet

#### Network selection in 5G networks based on Markov Games and Friend-Or-Foe Reinforcement Learning

Author list:	A. Giuseppi, E. De Santis, F. Delli Priscoli, S. H. Won, T. Choi, A. Pietrabissa
Event title:	Wireless Communications and Networking Conference (WCNC) 2020
Publication type:	Full paper
Status:	Published
DOI:	10.1109/WCNCW48565.2020.9124723

#### Traffic steering and network selection in 5G networks based on Reinforcement Learning

Author list:	Alessandro Giuseppi, Antonio Pietrabissa, Francesco Liberati, Roberto Germanà, and Francesco Delli Priscoli
Event title:	European Control Conference 2020
Publication type:	Full paper



- Status: Abstract submitted
- DOI: Not available yet

#### A 5G-NR Satellite Extension for the QuaDRiGa Channel Model

Author list:	Stephan Jaeckel, Leszek Raschkowski, Lars Thiele
Event title:	IEEE 93rd Vehicular Technology Conference: VTC2021-Spring
Publication type:	Full paper
Status:	Submitted
DOI:	Not available yet

#### 3.2 Scientific journal publications

#### 6G: The Next Frontier: From Holographic Messaging to Artificial Intelligence Using Subterahertz and Visible Light Communication

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 is- sue on 6G
Publication type:	Full paper
Status:	Published (already in Y1 report as accepted, note that the title slightly changed)
DOI:	10.1109/MVT.2019.2921162

#### Capacity-constrained wardrop equilibria and application to multi-connectivity in 5G networks

Author list:	Alessandro Giuseppi, Francesco Delli Priscoli, Antonio Pietrabissa
Event title:	Journal of the Franklin Institute
Publication type:	Full paper
Status:	Submitted
DOI:	Not yet available

#### Chance-Constrained Control With Lexicographic Deep Reinforcement Learning

Author list:	Alessandro Giuseppi, Antonio Pietrabissa
Event title:	IEEE Control System Letters
Publication type:	Full paper
Status:	Published
DOI:	10.1109/LCSYS.2020.2979635

#### Wardrop equilibrium in discrete-time selfish routing with time-varying bounded delays

Author list:	Alessandro Giuseppi, Antonio Pietrabissa
Event title:	IEEE Transactions on Automatic Control
Publication type:	Full paper



Status:	Published		
DOI:	10.1109/TAC.2020.2981906		

#### **Outage Analysis for Terrestrial-Satellite Spectrum Sharing**

Author list:	Gosan Noh, Heesang Chung, Ilgyu Kim
Event title:	IEEE Communications Letters
Publication type:	Full paper
Status:	Accepted for publication
DOI:	Not available yet

## Characterization for the Vehicle-to-Infrastructure Channel in Urban and Highway Scenarios at the Terahertz Band

Author list:	Haofan Yi, Ke Guan, Danping He, Bo Ai, Jianwu Dou, Junhyeong Kim
Event title:	IEEE Access
Publication type:	Full paper
Status:	Published
DOI:	10.1109/ACCESS.2019.2953890

## Efficient Groupcast Schemes for Vehicle Platooning in V2V Network

Author list:	Junhyeong Kim, Youngnam Han, Ilgyu Kim
Event title:	IEEE Access
Publication type:	Full paper
Status:	Published
DOI:	10.1109/ACCESS.2019.2955791

#### Channel Characterization for Satellite Link and Terrestrial Link of Vehicular Communication in the mmWave Band

Author list:	Dong Yan, Haofan Yi, Danping He, Ke Guan, Bo Ai, Zhangdui Zhong, Junhyeong Kim
Event title:	IEEE Access
Publication type:	Full paper
Status:	Published
DOI:	10.1109/ACCESS.2019.2956821

#### Channel Characterization for Vehicle-to-Infrastructure Communications in Millimeter-Wave Band

Author list:	Dong Yan, Ke Guan, Danping He, Bo Ai, Zan Li, Junhyeong Kim, Heesang Chung, Zhangdui Zhong
Event title:	IEEE Access
Publication type:	Full paper
Status:	Published



#### DOI: 10.1109/ACCESS.2020.2977208

# Satellite-Terrestrial Channel Characterization in High-Speed Railway Environment at 22.6 GHz

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#### 6G in the Sky: On-Demand Intelligence at the Edge of 3D Networks

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Publication type:	Full paper
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DOI:	Not yet available

#### 3.3 Book chapters

None

#### 3.4 Special sessions

#### Panel Discussion at GLOBECOM 2019 – December 2019, Waikoloa, USA

Dr. Emilio Calvanese Strinati animated a seminar on "when clouds meet 6G: the academic, industrial and standard perspectives." This tutorial was an opportunity to introduce the strategy of 5G-ALLSTAR for the allocation of the resources in beyond 5G networks.

#### Special Interest Session at ITS World Congress 2019, 25th October, Singapore

Dr. You-Jun Choi gave a technical presentation on "Introduction on 5G Agile and fLexible integration on SaTellite And cellular (5G-ALLSTAR)" at ITS World Congress 2019, 25th Oct, Singapore. This technical presentation gave him the opportunity to show how the 5G-ALLSTAR project can contribute to explain the role of satellite communications in creating a seamless and affordable connectivity fabric for both infrastructure and vehicles.

#### 3.5 Workshops and tutorials

#### Keynote at Lipari Summer School 2019 – July 2019, Lipari, Italy

Dr. Emilio Calvanese Strinati gave a keynote speech on "Intelligent Edge Cloud for beyond 5G." This talk allowed him to introduce the multi-connectivity concepts developed in 5G-ALLSTAR and the beyond 5G vision of the project.

#### Tutorial at GLOBECOM 2019 – 9-13 December 2019, Waikoloa, USA

Dr. Emilio Calvanese Strinati gave a ketnote speech on "6G The Next Frontier: Vision, Roadmaps and Technologies" (<u>http://korea-eu2019.org/</u>). This speech gave him the opportunity to present the vision of the 5G-ALLSTAR project in terms, among others, of multi-connectivity and quality of experience for the user.

#### TNO 5G Satcom Workshop 1st October 2019, The Hague, The Netherlands

Nicolas Chuberre from Thales Alenia Space participated in the TNO 5G Satcom Workshop to promote the work of 5G-ALLSTAR.

# Workshop organized at European Conference on Ambient Intelligence – 13-15 November 2019, Rome, Italy

Dr. Emilio Calvanese Strinati organized a workshop on "Edge Machine Learning for Smart IoT Environments" at the European Conference on Ambient Intelligence. Dr. Emilio Calvanese Strinati served as the workshop chair of the workshop; this workshop gave him the opportunity to make a link between the concepts developed in 5G-ALL-STAR and the requirements of the IoT environments.

#### Keynotes at 2019 Korea-EU Joint R&D Conference – 27<sup>th</sup> November 2019, Seoul, Korea

Dr. Emilio Calvanese Strinati gave a ketnote speech on "6G The Next Frontier: Vision, Roadmaps and Technologies" (<u>http://korea-eu2019.org/</u>). This speech gave him the opportunity to present the vision of the 5G-ALLSTAR project in terms, among other, of multi-connectivity and quality of experience for the user.

#### Workshop organized at ICOIN 2020 – 7th January 2020, Barcelona, Spain

Dr. Ilgyu Kim organized a workshop on "Evolutional Technologies & Ecosystems for 5G and Beyond 5G (B5G 2020)" at the 34th International Conference on Information Networking (ICOIN 2020). Dr. Ilgyu Kim served as the session chair of the workshop and this workshop gave him the opportunity to emphasize the importance of satellite communications and its integration with cellular systems as key enabling technologies for 5G and beyond 5G, which is the key research topics in 5G-ALLSTAR project. Dr. Taesang Choi also participated in the workshop and presented a paper entitled "Management and Orchestration Architecture for Integrated Access of Satellite and Terrestrial in 5G" to audiences from academia and industry.

# Workshop organized at IEEE WCNC 2020 – 25th May 2020, Seoul, Korea (Virtual Conference)

Dr. Emilio Calvanese Strinati and Dr. Ilgyu Kim organized a workshop on "Evolutional Technologies & Ecosystems for Beyond 5G and 6G (WDN-5G&6G)" at the 2020 IEEE Wireless Communications and Networking Conference (WCNC). Dr. Ilgyu Kim served as the session chair of the workshop and this workshop offered an opportunity for academic and industrial researchers to discuss on evolutional technologies and killer ecosystems for the realization of 5G and B5G. During the workshop, a total of 10 papers were presented, and three of them were presentations by 5G-ALLSTAR members (Alessandro Giuseppi, Nicolas Cassiau, Junhyeong Kim) on the research outcomes of 5G-ALLSTAR project, which gave the project a very valuable opportunity to promote recent research activities and outcomes.



# *Tutorial at IEEE Consumer Communications & Networking Conference – January 2020, Las Vegas, USA*

Dr. Emilio Calvanese Strinati gave a tutorial on "6G The Next Frontier: Academic, industrial and standard perspective". This tutorial gave him the opportunity to show how the 5G-ALLSTAR project can contribute to the 6th generation of mobile communication networks.

# Seminars and classroom events at the University of Rome "La Sapienza" from January until June 2020, Rome, Italy

During the period M18-M24, CRAT has organized several seminars and classroom events at, some of which were made available on a streaming platform (google meet) due to Italy's lockdown. The seminars were part of the "Control Communication and Energy Networks" and the "Control of Autonomous and Multi-Agent Systems" courses of the Control Engineering Master program, reporting the main results of the project and WP4 activities and algorithms.

#### 3.6 Exhibitions

None

#### 3.7 Interaction with press and media

None

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## 4 Plan to the 5G-ALLSTAR demonstration proposal

Instead of taking place at the Roland Garros tennis tournament as preferred location initially, the 5G-ALLSTAR proof-of-concept demonstration will be shown at the Leti Innovation Days on CEA Grenoble premises in June 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.

## 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 second 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 last 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 thus to 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 second year of the project in terms of scientific publications and other means, e.g. workshops and panel discussions. Given the amount of activities, no major corrective actions were defined for the last year of the project.

The project dissemination, according to the described strategy, is declared on track. The challenging goal to demonstrate an intercontinental link using technology developed by the project partners was affected by the Coronavirus outbreak. However, the team is still optimistic in delivering a successful event.