



Satellite and Terrestrial Network for 5G

D6.4

Dissemination Plan

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List of Acronyms

CEPT	European Conference of Postal and Telecommunications Administrations
ECC PT1	Electronic Communications Committee (of CEPT) - Project Team 1
EU	European Union
ESA	European Space Agency
ETP	European Technology Platform
ETSI	The European Telecommunications Standards Institute
EuCNC	European Conference on Networks and Communications
H2020	Horizon 2020
IEEE	The Institute of Electrical and Electronics Engineers
IoT	Internet of Things
ITU-R	International Telecommunication Union - Radiocommunication Sector
KPI	Key Performance Indicator
MWC	Mobile World Congress
NEM	Networked and Electronic Media (an ETP)
NFV	Network Function Virtualization
QoS	Quality of Service
R&D	Research and Development
SaT5G	Satellite and Terrestrial Network for 5G
SDN	Software Defined Networks
SJR	Scimago Journal & Country Rank
WG	Working Group
WP	Work Package
WRC	World Radiocommunication Conference
3GPP	The 3rd Generation Partnership Project
5G	5 th Generation Mobile Networks
5G-PPP	The 5G Infrastructure Public Private Partnership

Executive Summary

This document describes the dissemination and communications plan of the SaT5G project. Dissemination target groups are identified as the European and international scientific community, the 5G Infrastructure Public Private Partnership (5G-PPP), terrestrial and satellite communications industry, standardization bodies, policy and decision makers and the general public. The document describes the goals set in the project plan in terms of medium used and quantity, such that performance on this component of the plan could easily be followed. The planned media are the project web page, annual newsletters, press releases, inputs to high impact journal articles as well as conference articles, workshops and tutorials, commercial proposals and demonstrations. These media obviously have various opportunities and demands. Therefore, the document shows so far identified dissemination opportunities for each medium, e.g., suitable journals and conferences. These are mostly presented in tables.

Since plans are usually not perfect, new opportunities will appear and new information about identified opportunities will become available, the dissemination plan updating process is discussed. For this purpose the project uses a Dissemination Planning Tool that is an excel document located in the project's internal web server under the relevant task (WP6.3). In principle, the dissemination opportunity tables presented herein are also in the tool and will be updated once new information on deadlines, locations or possibilities are available. Furthermore, the tool is also used to collect information about dissemination such as the title, authors and status of publications/tutorial/workshops (submitted/accepted/...) and it therefore forms the basis to create the Dissemination Activity Report (D6.5).

Also the interaction plan with 5G-PPP and other phase I and II H2020 5G projects is discussed. Related to 5G-PPP the plan is to action in several working groups in addition to other dissemination activities in 5G-PPP fora. The identified working groups, where project partners are involved, are pre-standardization, spectrum, 5G architecture, SDN/NFV, NetMgmt & QoS, and trials. We have identified phase I projects where SaT5G partners are involved as well as identified which work packages these projects may have an impact on.

Finally, we have identified phase II projects with whom SaT5G plans to cooperate more fully and they have been contacted already. These are 5G Xcast, 5G ESSENCE and 5G CITY.

1 Introduction

This document describes the dissemination plan of the SaT5G project. In this section it is described to whom we want to influence, it is also discussed what are our dissemination goals in terms of medium and quantity. Furthermore, it is explained how dissemination opportunities and occurred dissemination activities are collected.

1.1 Target Groups

The SaT5G project aims to investigate several aspects of having satellite communications as an integral part of the 5G system. In order to make our result visible and useful we have to influence various actors that are related to this aim. First, we have to report our scientific findings to the European and international scientific community in journals, magazines and conferences and various scientific events, e.g., related to H2020 projects. Then we have to report our proposals to the 5G-PPP community and standardization bodies that develop the 5G concept. It is also important to inform policy and decision makers about benefits and challenges of this integration. Finally, we have to inform media and the general public about possibilities and challenges the integration will provide. In this sense this plan includes also communications activities. All these stakeholders are illustrated in Figure 1-1.

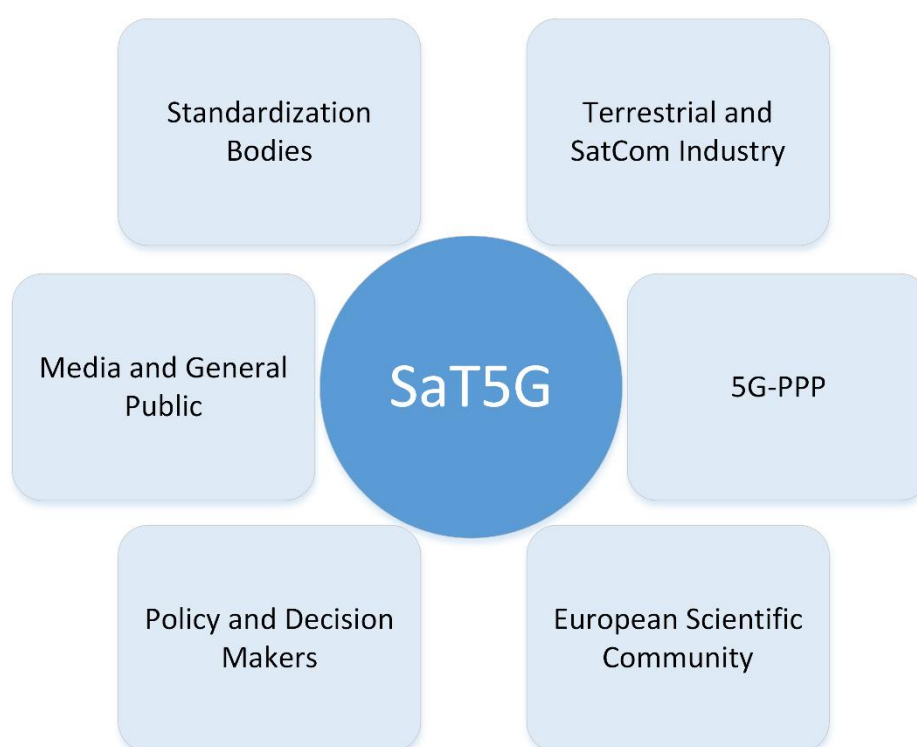


Figure 1-1: SaT5G dissemination target groups

1.2 Overview of Dissemination Targets and KPIs

In the project plan, the following dissemination activities have been listed in terms of quantity. In addition, this list also takes contents into account, i.e., in some cases it specifies what the contents of aimed dissemination activities should be:

- At least **one** white paper with the reference project architecture
- At least **three** white papers on integration enablers
- At least **two** high-impact scientific/industrial journals with the reference project architecture
- At least **fifteen** technical publications
- Presentation of at least two commercial propositions at **one** or more conferences and at **one** or more workshops
- **Two** newsletters (year 1 and year 2) with the reference 5G architecture integrating satellites and terrestrial networks
- Demos at least at **EuCNC 2018** (Ljubljana) and **MWC 2019** (Barcelona)

These activities will not necessarily be distributed evenly during the project's thirty months lifespan. At the beginning the dissemination and communication activities will concentrate on projects goals and use cases and afterwards on novel scientific and technical findings. We expect that most scientific papers will appear in the latter half of the project, i.e., 2019-20. First scientific papers describing new results could be expected in 2018. The three test beds will eventually demonstrate various developed ideas and can be seen as the culmination points of the project. These will be at the end part, year 2019.

1.3 Dissemination Activity Plan

The next section presents various dissemination and communication media the project has identified. Different media are placed in different subsections. Each subsection includes a brief generic explanation followed (if relevant) by a table of identified candidate dissemination possibilities. The tables identify different possibilities in each subsection, the number of planned activities for each category (see subsection 1.2), impact factor for journals, known or generic deadlines for conferences, known special issues, etc.

SaT5G dissemination plan includes plans for:

- public website;
- social media;
- journals articles;
- conference articles;
- demonstration events;
- joint workshops;
- project presentations;
- workshops, tutorials;
- general publicity.

1.4 Activity Plan Updates and Dissemination Activity Collection

The dissemination opportunities tables in this document are not exhaustive but new opportunities and information about existing ones will be added once identified. This is done *using our Dissemination*

Planning Tool that is an excel sheet maintained in the project's internal workspace (Projectplace) under WP6.3. The tool includes guidelines to fill it.

In addition to possibilities the tool is used to collect dissemination activities. This means that article titles, authors etc. information will be collected as well as the status of submission. The status of articles could be submitted, accepted, rejected, and the status of workshops/tutorials could be proposed, accepted, rejected.

All the participants will be regularly (3-4 times a year) asked to update the tool tables with new possibilities and/or new information about them and new realized dissemination activities, but more frequent updates are also possible, e.g., once new information is available. Some information is updated by the sub work package leader only.

Since these tables are used to collect information about the realized dissemination activities, this tool serves also as the basis of Dissemination Activity Report (D6.5).

2 Dissemination Activities

This chapter shows potential dissemination forums that the project has identified. Furthermore, also other kinds of planned dissemination activities are presented in the tables below.

2.1 Public Website

One of the main channels for dissemination and communication of the project results will be the project public website which is accessible at <http://sat5g-project.eu/>. The website is currently under development and will be updated throughout the project lifetime. More information about the structure of the website is presented in deliverable D1.4 “Project Website and Collaborative Platform Description”. The web page is, e.g., used to disseminate project overview in technical wording and layman terms as well as an access point to public deliverables and the list of publications.

2.2 Interaction with Social Media

Apart from the public website, the project will use social media platforms to engage with the various audience target groups and disseminate its progress and results. The platforms that have been identified by the project at this stage are LinkedIn and Twitter. These accounts will be set up in the next month and a communications policy will be developed alongside.

2.3 Journal Publications

The aim is to have at least two high impact articles that are describing the developed reference architecture. The potential journals are listed in Table 2-1. The table includes impact factors of potential journals according to SRJ in <http://www.scimagojr.com> in August 2017.

Table 2-1: Potential journals

Planned activity type	high-impact scientific/industrial journals with the reference project architecture	targeted min of 2
Potential targets	Special number deadline (if any)	impact factor
IEEE Communications Magazine		2.83
IEEE Wireless Communications Magazine	5G testing and field trials , Feb 1 2018	2.56
IEEE Transactions on Communications		1.39
IEEE Transactions on Wireless Communications		1.67
IEEE Transactions on Broadcasting		0.84
IEEE Communications Letters		0.63
IEEE Communications Surveys & Tutorials		4.17
IEEE Network	Special issue on integration of satellite and 5G networks m/s 15 th Feb 2018	1.80
IEEE Journal on Selected Areas in Communications		2.28
IEEE Communications Standards Magazine		Not available
Journal of Communications and Networks		0.45
Transactions on Emerging Telecommunications Technologies		0.31
International Journal of Satellite Communications and Networking	<i>Special Issue on 5G planned for 2019</i>	0.35

Elsevier Telecommunications Policy	0.73
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2.4 Conference and Workshop Publications

Potential conferences for scientific papers and workshops are listed in Table 2-2. SaT5G has targeted at least 15 scientific publications (Table 2-1 and Table 2-2).

Table 2-2: Potential conferences for technical papers and workshops.

Planned activity type	technical publications (count also high impact ones in Table 2-1)	targeted min of 15
Potential targets, place, date		Deadlines
EuCNC 2018 Ljubljana 18-21, June		CFP 5/Feb/18 CF workshops/special sessions 5/Feb/18
EuCNC 2019, June		
EuCNC 2020, June		<i>Note: outside the project duration but clearly an important target</i>
MWC 2019, Barcelona, Feb/March		
MWC 2020, Barcelona ,Feb/March		
Globecom 2018-19, December		CFP April, CF workshops July
PIMRC 2018-19, October		CFP May
European Wireless 2018-20, May		CFP February
VTC spring 2019-20, June		CFP September
VTC autumn 2018-19, September		CFP March
SATELLITE 2019		CF sessions ~July
IEEE International Conference on Communications (ICC) 2018-2020 , Kansas City 20-24, May 2018,		15 October 2017
IEEE Conference on Standards for Communications & Networking		
IEEE Conference on Network Function Virtualization and Software Defined Networks (IEEE NFV-SDN)		
IEEE Wireless Communication and Networking Conference 2018 Barcelona 15-18 April		15 th September 2017
Advanced Satellite Multimedia Systems Conference and Signal Processing for Space Communications Workshop (ASMS/SPSC) 2018-2020		
AIAA International Communications Satellite Systems Conference (ICSSC) 2018-2020, ~October (Trieste 2018)		
Ka Band Conference 2018-2020, ~October (Trieste 2018)		abstract May/June
Network virtualisation conferences: European Workshop on Software Defined Networks (EWSDN) or IEEE Conference on network Softwarization (NetSoft)		
International Symposium on Business Modeling and Software Design (BMSD), 2018-2020 (July 2018, Vienna)		March 2018

2.5 Demonstration Events

In this section, we list potential conferences to show our smaller scale demonstrations in Table 2-3. It is highly probable that larger scale test bed demonstrations (project demonstrations) will be hold at the test bed sites, but this will be confirmed. The aimed test bed demonstrations are listed in Table 2-4. Also exact dates and locations will be defined later.

The difference between two demonstration types is that in the former (conferences) most likely just some ideas of larger test beds can be shown whereas the latter shows the totality. Also target audience could be different. Most probable fellow scientists are in the targeted audience in both cases, but in the latter their number could be limited. Media, policy and decision makers are additional targeted audience of the latter, though they are also welcome to conferences. The results will also be communicated to the public, see subsection 2.8. However, most probably access to the test bed demonstrations has to be limited to some selected number of people due to space limitations. This will be decided later.

Table 2-3: Conferences to show demonstrations of the obtained results.

Planned activity type	Demonstrations (in addition to the project demos)	targeted min # 2
Potential targets	Deadlines	comments
EuCNC 2018 (and/or 2019, 2020)	exhib.. 9 Apr.	
MWC 2019	TBC	
IEEE World Forum on 5G	TBC	

Table 2-4: Open test bed demonstrations.

Test bed demonstrations	targeted min # 3
Place	Date
UoS	TBC
Zii	TBC
UOULU	TBC

2.6 Workshops, Tutorials and Training Events

SaT5G aims at organizing workshops on integration of satellite and terrestrial communications and provide related tutorials. Potential events for holding these are shown in Table 2-5.

Table 2-5: Potential workshop and tutorial activities events.

Workshops/Tutorials and Other Training Events	Event	Place and Date	Who
<i>EuCNC 2019, 2020</i>			<i>All responsible</i>
Standardisation of satellite in 5G	ETSI workshop	2018 (TBC), Sofia Antipolis	TAS
Tutorial on emerging 5G broadcast technologies and applications (SaT5G has been invited by 5G-Xcast)	IEEE BMSB 2018	5 th June 2018, Valencia	TBC

SaT5G aims also for participating cooperative workshops organized in/by EU H2020, 5G-PPP, ETPs (NetWorld2020, NEM) and ESA (5G demo projects). Identified opportunities are listed in Table 2-6.

Table 2-6: Potential joint workshops.

Workshop		
Event	Date	comments
"Inserted once confirmed"	TBC	
"Inserted once confirmed"	TBC	
"Inserted once confirmed"	TBC	

2.7 Presentations at International Fora

Project's existence, aims and later on results in generic form will be communicated in various fora. Table 2-7 shows these events. The *italicised and blue font* indicates those that have already occurred.

Table 2-7: Project presentations at various fora.

Project Presentations	Event	Place and Date	Who
<i>SaT5G Project Overview</i>	<i>EuCNC</i>	<i>Oulu, 15 June 2018</i>	<i>AVA</i>
<i>SaT5G Project Overview</i>	<i>5GPP Kick-off and Collaboration Meeting (H2020 phase 2)</i>	<i>Brussels, 1 June 2018</i>	<i>AVA</i>
<i>SaT5G Project Overview</i>	<i>GVF Cellular Backhaul Conference</i>	<i>London, 21-22 June 2017</i>	<i>AVA, SES, IDR, GLT</i>
<i>SaT5G Project Overview</i>	<i>Priorities for UK spectrum policy: competing demands, developing 5G, and the UK's international role</i>	<i>London, 06 July 2017</i>	<i>SES</i>
SaT5G Project Overview	SES Industry Days 2018-2019	Luxembourg	SES
Satellite 5G trials & testbed roadmap	Satellite Communications for 5G and beyond, WWRF39	Barcelona, 20 October 2017	AVA (With H2020 SANSA)
SaT5G Project Overview	8 th FOKUS FUSECO Forum – Workshop "Satellite 5G Access Networks"	Berlin, 09-10 November 2017	SES

2.8 General Publicity Material

Projects existence and main findings have to be made available for fellow scientists and the larger audience in more easily understandable form (layman terms). For these reasons, the plan is to publish articles, annual newsletters, press releases and white papers as well as release information of test bed results among others. These targets are shown in Table 2-8.

Table 2-8: Other dissemination activities.

Generic dissemination activities	Responsible	Deadline (if any)	Comments
Project Newsletter (#≥2)	AVA leads	At least Y1 and Y2 before review meetings	<i>To be published on the project web site and shared on LinkedIn and Twitter</i>
Press releases	All		
White papers with the reference project architecture (#≥1)	ADS leads		<i>To be published at least on the project web site, shared on LinkedIn and Twitter</i>
Whiter papers on integration enablers (#≥2)	SWP leaders		<i>To be published at least on the project web site, shared on LinkedIn and Twitter</i>
Presentation of at least two commercial propositions at 1 or more conferences and at 1 or more workshops	Industry partners		
Communicating results of project demonstrations -one for each site or combined	demo sites: UoS, Zii, UOULU		<i>In the project web page, site's web pages, press releases, etc.</i>
Article in the ETSI newsletter "The Standard" presenting the project concept		February 2018	<i>Published twice a year in February and September</i>
Popularizing magazines			

3 Cooperation with other 5G Parties

SaT5G is committed to working with 5G-PPP through the established Working Groups (WGs) and collaboration with other Phase 1 and 2 projects. In the sections that follow we present the SaT5G approach and expected outcomes of this collaboration.

3.1 Participation in the 5G-PPP Working Groups

The figure below presents the existing 5G-PPP WGs that have been established by the 5G Infrastructure Association or the 5G-PPP projects.

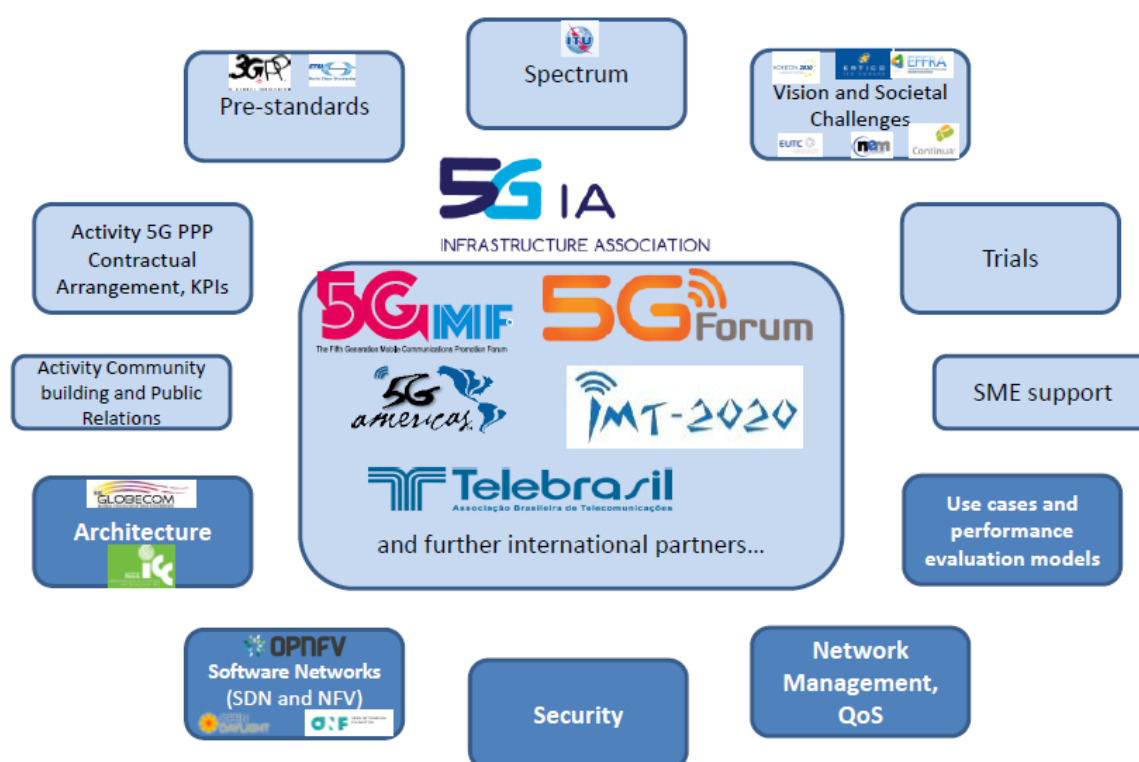


Figure 3-1: 5G-PPP Working Groups structure [1].

The SaT5G consortium has identified an initial list of WGs that are the most relevant to the project and to which it can actively contribute [2]:

- **Pre-Standardization WG:** The goal of this WG is to:
 - Identify standardization and regulatory bodies to align with e.g. ETSI, 3GPP, IEEE and other relevant standards bodies, & ITU-R (incl. WPs) and WRC (including e.g. ECC PT1).
 - Develop a roadmap of relevant standardization and regulatory topics for 5G: Evaluate existing roadmaps at international level;
 - Propose own roadmap for 5G being aligned at international level. Influencing pre-standardization on 5G and related R&D: Potentially propose where topics should be standardized; Influence timing on R&D work programs (e.g. EC WPs)

- **Spectrum WG:** The goal of this WG is to:
 - Promote research results in the spectrum area obtained by 5G-PPP/H2020 projects as well as relevant FP7 projects,
 - Set up of a dialogue between 5G-PPP projects concerning potential synergies and common interests across projects in spectrum-related issues,
 - Pursue the convergence of results on spectrum topics from the different projects to maximize the achievable outcome towards relevant technical bodies,
 - Establish a knowledge base from European and other Global project results concerning advances in spectrum research,
 - Liaise with spectrum groups or entities in regulatory bodies and industry associations,
 - Work for improved understanding of collaborative spectrum research importance.
- **Architecture WG:** The goal of this WG is to serve as a common platform to facilitate the discussion between 5G-PPP projects developing architectural concepts and components and foster the discussions on the basis of the KPI's described in the 5G-PPP contract. The group could also facilitate consensus building on the 5G architecture.
- **SDN/NFV WG:** The purpose of this WG is to analyse and address unification and applicability of key research topics related to Software Networking including software defined concepts, infrastructures, systems and components for Wire and Wireless Networks, including Networked Clouds, IoT and Services, i.e. Software Defined Networks (SDN) and Network Function Virtualization (NFV) as developed and promoted by the 5G-PPP projects.
- **Network Management & QoS WG:** Network Management, Quality of Service and Network Security are three themes closely correlated:
 - Network Management aims to maintain the operations of the network in a manner that ensures that the required services are properly delivered to the users, that an expected quality of service is enforced for delivering such services to the end user and that security is maintained. To do so, network management is mainly focused on the control plane of the network to make sure all the services and operations running in the data plane are working properly.
 - Network Security covers the overall resilience of the network to fraud and intrusion or efforts to undermine the operations or integrity of the network. The focus will be on security at the level of the control planes of the network.
 - Quality of Service covers areas such as networking, packet scheduling, traffic adaption and any other technique implemented in both data and control plane to make sure an expected quality of service is implemented for the delivery of services to the end user (bandwidth, low latency, mobility and availability).
- **Trials WG:** The objectives of the WG are as follows:
 - To develop the European Trial Roadmap based on the 5G Manifesto.
 - To facilitate the involvement of verticals in the trials roadmap.
 - To discuss and define business principles underpinning the economic viability of trials.
 - To consider and coordinate the activity on trials with other relevant initiatives at international level (e.g. proposal from China Mobile).
 - To investigate and propose how to link trials to Horizon 2020 5G-PPP Phase 3 in order to get funding for parts of the overall trial roadmap.

Considering the scope and goals of the WGs presented above, the project expected contribution is presented in Table 3-1.

Table 3-1: SaT5G expected contributions to 5G-PPP WGs

5G-PPP Working Groups	Expected contributions	SaT5G partners
Pre-Standardization	Contribution to the consolidation of European position in 3GPP/ETSI when appropriate	TAS, ADS, TNO, SES
5G Architecture	Contribution to the definition of the 5G system architecture integrating satellite leveraging SaT5G reference architecture	ADS, TAS, BT, GLT, SES, TNO
SDN / NFV	Share results from the virtualisation of satcom network functions Ensure compatibility of the SaT5G solution with the SDN/NFV architecture	i2CAT, UoS, iDr, GLT,i2C
NetMgmt & QoS	Contribution to harmonise satcom with 5G QoS and management	BT, AVA, GLT
Trials	Contribution to the European trial roadmap and to developing new vertical opportunities leveraging added value of satcom (especially in Media & Entertainment and Transport)	AVA, UoS, UOULU, Zii, TNO
Vision and Societal Challenges	Monitoring.	AVA, SES, TNO

We should note that this WG selection reflects the current thinking of the consortium and it is not the final one.

In addition to the WGs the project will also participate in the 5G-PPP Steering Board and Technology Board through participation of its Project Director, Project Manager and Technical Manager.

3.2 Collaborating with other Phase 1 & 2 projects

When developing the SaT5G concept, the consortium had already identified Phase 1 projects that have been doing relevant work that can be leveraged for SaT5G. This liaison will happen mainly through partners participating in both Phase 1 projects and SaT5G. The relevant projects, inputs and partners are presented in Figure 3-2.

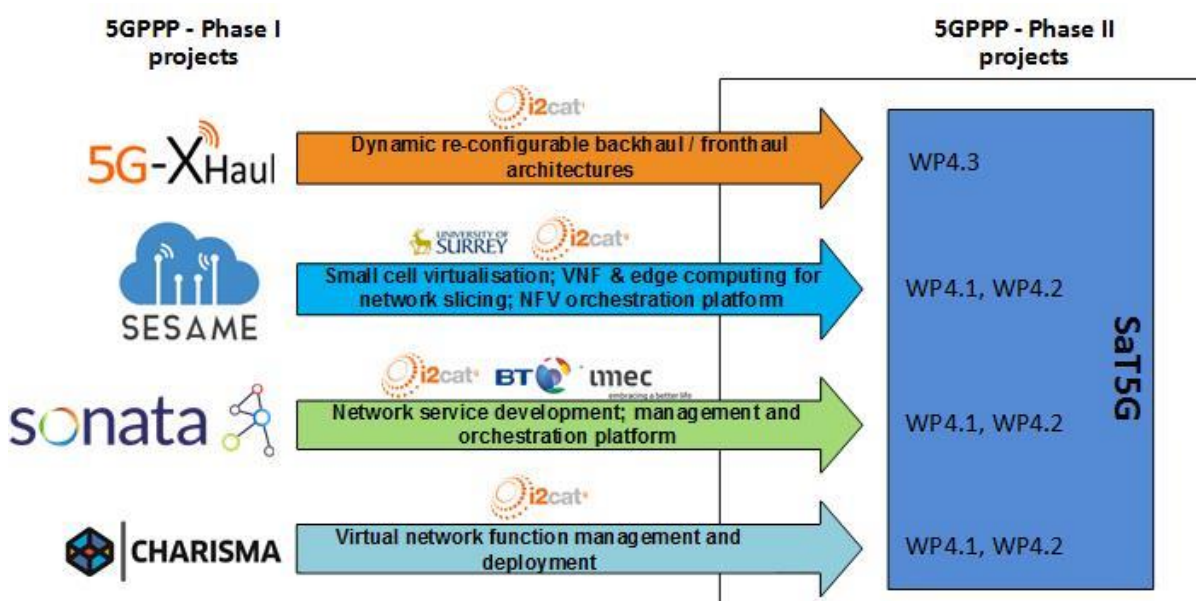


Figure 3-2: Leveraging of Phase 1 results

Further to this, the consortium has studied the Phase 2 projects and has identified potential candidates for collaboration based on two factors:

- Relevance of technical focus and complementarity of research areas;
- Number of common partners participating in both projects.

Initial contacts have been made with the coordinators of 5G-Xcast and 5G ESSENCE and follow-up meetings will be set to explore next steps in the collaboration. In addition to information exchange the collaboration could include organizing joint workshops where audience would get more comprehensive sight about what is going on in 5G development in H2020 projects.

The identified projects and their brief scope are as follows:

- **5G-Xcast** [3]: 5G-Xcast will devise, assess and demonstrate a conceptually novel and forward-looking 5G network architecture for large scale immersive media delivery. The project objectives are to:
 - Develop broadcast and multicast point to multipoint (PTM) capabilities for 5G considering M&E, automotive, IoT and PWS use cases, and evaluate 5G spectrum allocation options for 5G Broadcast network deployments.
 - Design a dynamically adaptable 5G network architecture with layer independent network interfaces to dynamically and seamlessly switch between unicast, multicast and broadcast modes or use them in parallel and exploit built-in caching capabilities.
 - Experimentally demonstrate the 5G key innovations developed in the project for the M&E and PWS verticals.
- **5G ESSENCE** [4]: 5G ESSENCE addresses the paradigms of Edge Cloud computing and Small Cell-as-a-Service (SCaaS) by fuelling the drivers and removing the barriers in the Small Cell (SC) market, forecasted to grow at an impressive pace up to 2020 and beyond and to play a key role in the 5G ecosystem. 5G ESSENCE provides a highly flexible and scalable platform, able to support new business models and revenue streams by creating a neutral host market and reducing operational costs by providing new opportunities for ownership, deployment, operation and amortisation. 5G ESSENCE leverages knowledge, SW modules and prototypes from various 5G-PPP Phase-1 projects, SESAME being particularly relevant. Among the fundamental 5G ESSENCE objectives are:
 - Full specification of critical architectural enhancements;
 - definition of the baseline system architecture and interfaces for the provisioning of a cloud-integrated multi-tenant SC network and a programmable RRM controller;
 - development of the centralised SD-RAN controller to program the radio resources usage in a unified way for all CESC (Cloud-Enabled Small Cells);
 - exploitation of high-performance and efficient virtualisation techniques for better resource utilisation, higher throughput and less delay at the network service creation time;
 - development of orchestrator's enhancements for the distributed service management;
 - demonstration and evaluation of the cloud-integrated multi-tenant SC network;
 - conduct of a market analysis and establishment of new business models, and finally, maximisation of impact to the realisation of the 5G vision.
- **5G CITY** [5]: The ultimate goal of 5GCity is to maximize the return on investment for the whole digital market chain (users, application, cloud providers, i.e., the municipalities themselves, telecom providers, and infrastructure providers). To do so, 5GCity's main aim is to build and deploy a common, multi-tenant, open platform that extends the (centralized) cloud model to the extreme edge of the network, with a demonstration in three different cities (Barcelona, Bristol and Lucca), and thus advance the state of the art to solve the main open research challenges in the 5G-based edge virtualization domain, including the neutral host perspective in dense deployment environments such as cities. Thus, 5GCity will design, develop, deploy and demonstrate, in operational conditions, a distributed cloud and radio platform for municipalities and infrastructure owners acting as 5G neutral hosts.

4 References

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