VertIcal demos over Common large scale field Trials fOr Rail, energy and media Industries

D5.1 Standardisation, Dissemination, Communication and liaison Activities Plan

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Executive Summary

This document is the first outcome of the effort dedicated to standardisation, dissemination, communication and liaison activities of 5G-VICTORI project. It sets the principles and summarizes the 5G-VICTORI plans that have been devised in order to effectively track the progress, evaluate and maximise impact of the project activities related to standardisation, dissemination and communication as well as participation to 5G–PPP activities and liaison with other projects. In general terms, the plans are defined in terms of: target audience, material to be prepared, sharing of responsibilities between consortium members, timelines to be followed, feedback procedures and assessment against relevant, specific, measurable Key Performance Indicators (KPIs).

The initial activities that have been undertaken by the consortium in the early phases of the project until the time of writing, are also listed. These activities are part of the project's Work Package 5 (WP5) and, in general, run continuously throughout the lifetime of the project.

This document also outlines the main intention of the 5G-VICTORI consortium towards achieving the goals in these areas, and maximising impact in this respect. For this purpose, the plans defined in this document are subject to continuous monitoring, revision and modification throughout the course of the project in order to ensure that the targets are achieved.

1 Introduction

The goal of the eighth framework programme funding research, technological development and innovation (H2020 programme), implemented by the European Commission (EC), is to invest in research that will bring Europe at the heart of research and innovation and drive its economic growth. The ongoing research within the H2020 Programme and, more specifically, within the 5G Infrastructure Public Private Partnership (5G-PPP), will be incomplete if the results of the funded projects are not shared with industry and the public in general and these results are not captured in standardisation bodies. Therefore, a clear standardisation, communication and dissemination plan is critical to ensure the required return of this huge investment.

Standardisation is a consensus-driven activity, necessary to ensure for any solution delivered to the industry:

- Interoperability and Compatibility,
- Simplification of the processes,
- Ensuring Quality of Service (QoS), Quality of Experience (QoE) and Safety.

Standardisation is always required to be addressed both way for any new solution: (1) towards achieving compliance with existing ecosystem, and (2) towards achieving consensus from industry to follow the proposed methods/solutions. 5G-VICTORI's standardization activities plan follow these principles.

Standardisation activities in 5G-VICTORI will be performed through interaction between Bodies of Interest (BoI) and Project partners. BoI for 5G-VICTORI are not only standardisation development organisations (SDOs), but also other organisations, initiatives and partnerships important for the project work. This document details the standardisation activities plan of the project in terms of identified BoI, and partners' responsibilities.

At the same time, communication and dissemination activities are important to:

- Raise awareness of and attract the attention at the local, National and International levels on the project targets and achievements
- Inform specific target groups (especially industrial stakeholders) about the results.
- Facilitate the alignment of the project results with similar academic and industrial research efforts,

and, at more mature project stages, to:

- attract the interest of potential partners open to future collaboration, and
- pave the way for the market demand for the project products as the first necessary stage of exploitation activities.

For this purpose, a well-defined communication plan has been devised in order to optimise the 5G-VICTORI communication efforts -taking into account existing resources, capabilities and constraints- and maximise the project impact. This plan is presented in this document addressing aspect such as target audience, material to be prepared, sharing of responsibilities between consortium members, timelines to be followed, feedback procedures and assessment against relevant, specific, measurable Key Performance Indicators (KPIs).

A third pillar of reaching out specific audiences with the 5G-VICTORI concepts and results is the participation and contribution to 5G-PPP collective activities, namely the several 5G-PPP Working Groups (WGs), as well as the liaison activities within the 5G-PPP framework and the projects belonging to this framework. The plans underpinning these activities are also presented in this document.

1.1 Objectives

The key objective of this document is to sets the principles and to summarise the 5G-VICTORI plans that have been devised in order to effectively track the progress, evaluate and maximise impact of the project activities related to standardisation, dissemination and communication as well as participation to 5G–PPP activities and liaison with other projects. It constitutes the written outcome of the work conducted in the context of 5G-VICTORI Work Package 5 (WP5), tasks T5.1, T5.2 and T5.4 until the time of writing.

1.2 Document Structure

This document comprises five (5) sections. Following the Executive Summary and Introduction sections:

- Section 2 provides an outline of the planning of activities related to standardisation.
- Section 3 defines the methodology underpinning the communication and dissemination activities plan, and defines the initial plan and the monitoring and evaluation procedures to be followed; it also presents the early communication and dissemination activities that have been performed by project partners until the date of submission of this deliverable.
- Section 4 provides an overview of the way activities are organised towards participating effectively to 5G-PPP's work; it also identifies collaboration and liaison opportunities with other projects especially EU funded (mainly 5G-PPP) ones.
- Finally, Section 5 summarises the planning of activities related to standardisation, communication and dissemination, as well as 5G-PPP and liaison with other projects' activities.

2 Standardisation Activities Plan

2.1 Why Standardisation

Standardisation is a consensus-driven activity carried out by the interested parties themselves. This activity is openness and transparent inside any organization with the aim to establish adoption of this standard and compliance with standard[1]. The main reasons why standardisation is necessary are:

- Interoperability and Compatibility.
- Simplification of the processes.
- Ensuring QoS, QoE and Safety.

Standardisation activities in 5G-VICTORI will be performed through interaction between Bodies of Interest (BoI) and Project partners. BoI for 5G-VICTORI are not only standardisation organisations, but also other organisations, initiatives and partnerships important for the project work.

Interactions between project partners and BoI are based on:

- monitoring activities (monitoring and obtaining access on pre-standards),
- dissemination activities (awareness and external dissemination of project work), and
- contributing activities (giving feedback to the relevant SDOs promoting project work and contributing to new (pre)-standards).

2.2 Organisation of standardisation activities in 5G-VICTORI

The leading partner for the standardisation activities in 5G-VICTORI project is **DBN**, with support from **KTA** and **ORO**, and contribution from all project partners.

Standardisation-related activities are focused on establishing a two-way influence between standardisation/regulation bodies and the project work, and they will be carried out through communication and contributions to SDOs. The project will contribute to regulatory-related activities at a European and an international level that might influence the work in the project. The aim is to guarantee overall viability and coherence of the 5G-VICTORI project results, to support the market readiness of the project outcomes, as well as to influence technology advancements.

These activities will include monitoring regulatory and standardisation activities directly related to the research areas of 5G-VICTORI, and contributions to the relevant SDOs. The plan will be further revisited and regularly updated throughout the project lifetime (see Figure 2-1).

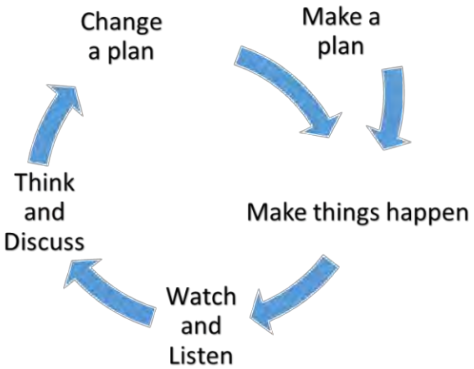


Figure 2-1: Monitoring and evaluation of standardisation plan.

[1] "Benefits of standards and standardization". Cooperation Platform for Research And Standards (COPRAS project).

The main activities that will be performed through the plan are:

- soliciting inputs from 5G-VICTORI partners to identify bodies where 5G-VICTORI needs to have direct contact,
- 5G-VICTORI project internal dissemination of relevant standards to ensure awareness and alignment of the partners and the respective Work Packages (WPs) and tasks with the best practices,
- making a good connection to SDOs and obtaining a draft of new standards (pre-standards), becoming active pre-standard working group (WG) member, and
- participating in the evolution of standards and giving feedback to the SDOs, promoting results of 5G-VICTORI results and innovations.

2.3 Standardisation Domains covered in the project

As an early identification of work, activities' monitoring and contributions to the following standardisation bodies/groups/forums are expected (but not limited to). The standardisation activities within 5G-VICTORI are initially focused on the following topics/domains:

- 5G Networks technology-specific:
    - IEEE Wireless technologies.
    - 3GPP network technologies RAN (Radio Access Network), CN (Core Network).
        - 3GPP RAN1/RAN2, ORAN forum: monitoring of activities and possible contribution to RAN API.
        - 3GPP RAN/SA: monitoring of activities and possible contribution focusing on interfacing further evolved multimedia broadcast multicast service (FeMBMS) with 5G Core Contribution on native 5G Broadcast support.
    - MANO technologies, in particular OSM (Open Source Management and Orchestration). Open Source MANO (OSM): participation in the OSM community to actively promote the activities of 5G-VICTORI, particularly in relation to cross-domain orchestration.
    - Software-Defined Networking (SDN).
    - ETSI NFV Information modelling, ETSI Multi-access Edge Computing (MEC).
- 5G Networks operation/deployment-related:
    - NGMN (Next Generation Mobile Network): monitoring of groups' activities, and possible contribution.
- Vertical Industries and Services – specific domains such as:
    - Transportation (Rail), Section 2.3.1.
    - Factories of the Future, in Section 2.3.2.
    - Media, in Section 0.
    - Energy, in Section 2.3.4.

Table 2-1 shows a more detailed list of standardisation bodies/sectors mapped to the involved partners, with all activities that will be carried out to contribute to the new (pre)-standards.

Table 2-1: Standardisation Bodies of Interest.

Standardisation Body	Sector/ Area	Partner	Activity
IEEE 802.11	Wireless	**IHP**	The millimeter wave work carried by **IHP** within 5G-VICTORI could be proposed as a contribution to IEEE 802.11 (e.g. Wi-Fi sensing activities). Having voting member status, **FhG** will assist IHP in steering project results in IEEE 802.11
Open Source MANO (OSM)	SDN, NFV	**DCAT, UNIVBRIS**	**DCAT** plans to actively promote the activities of 5G-VICTORI in the OSM community, particularly the aspects related to cross-domain orchestration. **EUR** will monitor OSM. **UTH** is a member of OSM and will contribute with cross-domain SDN based orchestration through tools integrated with OSM and existing widely adopted tools for implementing VIMs (e.g. OpenStack) **UNIVBRIS** will contribute to the MdO development based on OSM and ETSI NFV Standards
3GPP (RAN1/RAN 2, O-RAN)	RAN	**EUR, Orange**	In terms of role, **EUR** will contribute to 3GPP standardisation focusing on both RAN 1 and RAN2 contributions and ORAN forum focusing on the RAN API. Via 5G-VICTORI, **Orange** wants to be also active in Open Source frameworks, such as: O-RAN, that aims at defining universal interfaces for interconnecting easily equipment's from different manufacturers and also functions coming from Open Source communities; OAI; ONAP, that will be used as main orchestrator in the French site facility in the 5G EVE project.
3GPP	SA	**IRT**	**IRT** will monitor activities in these groups and evaluate opportunities for contributions. Currently the specifications 26.891 "Media distribution", 23.757 "Study on architectural enhancements for 5G multicast-broadcast services" and 26.501 "5G Media Streaming (5GMS)" seem to be particularly relevant.
NGMN	Operators	**EUR, Orange**	**EUR** will monitor NGMN activities. **Orange** is also active in NGNM working Program where operators specify requirements in the definition of new standards
MEF, ETSI MANO	NFV	**UNIVBRIS, ZN**	**UNIVBRIS** has contributed to the ETSI NFV MANO (OSM) in design and development of WAN manager. UNIVBRIS will contribute to the 5GViOS APIs based on ETSI standards and would extend it if required. **UNIVBRIS** is also member of MEF and will contribute result of project to transport API and LSO related

Standardisation Body	Sector/ Area	Partner	Activity
			activities of the project on VNF Management and NFV Orchestration to ETSI OSM. **ZN** is a member of MEF and will contribute result of project to transport API and LSO related activities of the project on VNF Management and NFV Orchestration to ETSI OSM.
ETSI	NFV	**EUR**	**EUR** will monitor ETSI NFV Information modelling, MEC.
ETSI	MEC	**ICOM**	**ICOM** will monitor ETSI MEC activities for the porting of vCDN services to the MEC environment.
3GPP (SA1, SA6, CT1), ETSI RT		**KTA**	**KTA** Requirements, gap analysis and technical implementations. Focus on control and user-plane interface MCX - 5G.
3GPP, ETSI, ITU		**Orange**	**Orange** is contributing, to play a pioneering role in the specification of the next generations of radio access networks and to be prepared to deploy and operate them. Orange will continue to follow and contribute to the next releases of these standardization groups.
UNISIG	Rail	**BT**	**BT**. Findings from using Rail Critical Services over 5G with Network Slicing, uRLLC/eMBB services and QoS usage is an example which could be used as input to UNISIG. For example a rail corridor with a first 5G Network Slice could be used for these rail operators, using for example: • uRLLC with high prio for rail signaling. • uRRLC with lower prio for voice, emergency calls and cab radio. • eMBB with high prio for CCTV. • eMBB with medium prio for onboard passenger surfing. • eMBB with low prio for maintenance data.
DIN	Rail	**DBN**	**DBN** is a working group member – Security & Safety
CENELEC	Rail	**DBN**	**DBN** is a working group (WG) member. Involved in SGA 16 (survey group for an EU position on IT-Security in signaling Updating/writing EN 50126/EN 50128/EN 50129 standards Involved in rolling stock and fixed installations safety and security topics. CEN TS 50701 (prTS 50701) – Railway application – Cyber-security application

Standardisation Body	Sector/ Area	Partner	Activity
W3C	Web & Networks Interest Group	FhG, IRT	The W3C "Web & Networks Interest Group""solutions for web applications to leverage network capabilities in order to achieve better performance and resources allocation, both on the device and network. FhG and IRT both are active W3C members, will monitor the activities of the group and contribute to use-case and requirements specification work if this appears to be sensible from a strategic point of view.

We list below some additional contributions the 5G-VICTORI project partners pursue in other BoI.

- **DBN**: ISA, Shift2Rail, ER-ISAC, EUAfR, ENISA.
- **ICOM**: ETSI OSM, ETSI NFV, monitoring the updates in the MANO and NFV fields that might affect the 5G-VICTORI work.
- **KTA**: 3GPP RAN/SA, ETSI MEC.

The next sections present a more detailed information on how some of the 5G-VICTORI partners are planning to contribute to some of the BoI.

2.3.1 Rail-specific BoI

Figure 2-2 presents the current interaction of **DBN** with rail-specific BoI. DBN is involved in multiple associations and bodies related to railway and cyber security in railway environments. Besides the good interaction and inclusion in ER-ISAC (European Railway Information Sharing and Analysis Centre), Shift2Rail initiative, ENISA (European Cyber-security Agency, UIC (International Union of Railways) and EUAR (EU Agency for Railways), DBN will also contribute to:

CENELEC – CLC/TC 9X/WG 26 IT-Security / Cybersecurity in the railway sector.

DBN is working group member – WG26. Sustained involvement in updating/writing of EN 50126/EN 50128/EN 50129 standards (Specification for RAMS, Software for Railway control and System safety). Ongoing involvement in rolling stock and fixed installations safety and security topics.

CEN TS 50701 (prTS 50701) – Railway application – Cyber-security application is pre-standard (draft) and will replace after publication, for example in Germany, DIN VDE V 0831-104.

DIN:

DBN is working group (WG) member – continued advocacy and observation of developments.

From another side, DBN will exploit 5G-VICTORI and cutting-edge 5G capabilities into the design of this new rail critical services and interlocking technology. Findings of 5G-VICTORI will influence the security architecture of NeuPro[2], its strict requirements for network availability and reliability and depending on their performance may also become part of a future prototype of NeuPro.

The results of 5G-VICTORI will have an important impact on the exploitation plans of DBN since they can be replicated all around the DBN rail network in Germany. The German railway infrastructure consists of more than 8000 train stations and has a length of over 33,000 km.

This network is controlled by about 3,300 interlocking systems of various types (from mechanical, electro-mechanical, radio relay, electronic and new generation of digital interlocking system – ETCS).

[2] Neue Produktion (ETCS)

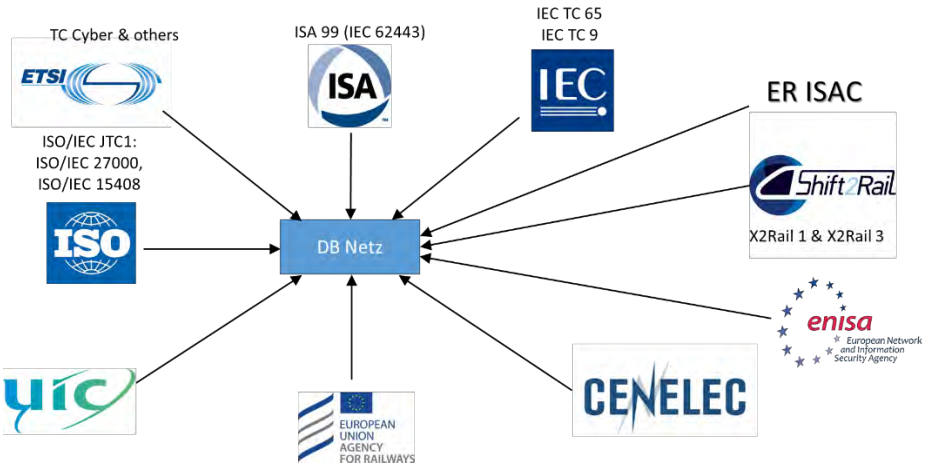


Figure 2-2: Current Interactions of DB Netz AG.

2.3.2 Factories of the Future specific BoI

Contributions are not yet identified.

2.3.3 Media specific BoI

Within 3GPP there are three specifications that are relevant to the media-delivery related use cases. These are:

- 26.891 "Media distribution" (latest version 16.0.0).
- 26.501 "5G Media Streaming (5GMS)" (latest version 16.1.0).
- 23.757 "Study on architectural enhancements for 5G multicast-broadcast services".

The first two are part of Release 16 of 3GPP which, according to the 3GPP roadmap, will be finalised by the end of the second quarter of 2020. 26.891 documents insights of a study into how different media distribution scenarios, including CDN and edge-caching functionalities and the delivery of AR/VR content, can be realized on top of 5G network functions. It identifies key enablers provided by the 5G system to improve media delivery in mobile radio networks as well as remaining gaps. 26.501 presents an architecture for uplink and downlink video streaming considering both progressive and adaptive bitrate streaming techniques. We will assess the findings from both documents with regards to how they meet the specific requirements of the media-related use cases of the 5G-VICTORI project. The implementation of broadcast services on a 5G basis will not succeed within the framework of the project. The necessary mechanisms will be covered in the work on future 3GPP releases. 23.757, for example, will be developed as part of Release 17. **IRT** closely monitors the activities in this area and brings the interests of leading European broadcasting companies to the table.

The World Wide Web Consortium (W3C) is the main body for standards related to the World Wide Web. The probably most widely known standards of the W3C include the Hypertext Markup Language (HTML) and the Cascaded Style Sheets (CSS) which are used to describe structural semantics and presentation of documents to be sent over the internet and to be interpreted by Web Browsers as Web sites. As a follow-up action of a joined meeting of 3GPP and W3C members at GSMA in London in May 2018 (https://www.w3.org/2017/11/web5g-workshop/report.html), W3C founded the "Web & Networks Interest Group" which defines its mission to be exploring "solutions for web applications to leverage network capabilities in order to achieve better performance and resources allocation, both on the device and network." (https://www.w3.org/web-networks/). The group first met and kicked-off activities at TPAC (Technical Plenary and Advisory Committee Meetings) in Japan in September 2019. Fraunhofer FOKUS (**FhG**) participated in this meeting and expressed interest in a contribution for media and 5G-related activities. The groups current charter runs until 31 December 2020 (https://www.w3.org/2019/05/web-networks-ig-charter.html). The two main topics "Network Quality Monitoring and Prediction" as well as "Edge Computing" as currently outlined by the group are highly

relevant for the media-related scenarios in the 5G VICTORI project. We will therefore monitor the activities in the group and, where appropriate, communicate experiences from development work in the project to the group. FhG and IRT are active members of the W3C.

2.3.4 Energy specific BoI

Contributions are not yet identified.

2.4 Project pre-standardisation activities within 5G-PPP (and 3GPP standardisation)

Additionally, 5G-VICTORI will contribute within 5G-PPP on standardisation activities, becoming an active member of the Pre-Standardization Working Group (WG), and informing on the different standardisation activities the project is active.

In November 2019 5G-VICTORI obtained access to the 5G-PPP Pre-standardization WG shared Workspace Server – BSCW (https://bscw.5g-ppp.eu/pub/) and, formally, 5G-VICTORI became a member of the pre-standardization WG.

Standards Meeting Calendar inside 3GPP is shown is Table 2-2, and 5G-VICTORI partners will have active role in all activities according their domain and tasks in project. Contributions to 3GPP are the main target of the 5G-PPP Pre-Standardization WG to monitor and to pursue.

Table 2-2 Standards Meeting Calendar inside 3GPP.

Meeting	Start date	Dates
3GPP SA6	11.11.2019	11 - 15 Nov 2019
3GPP SA1-3, SA5	18.11.2019	18 - 22 Nov 2019
3GPP RAN Workgroups	18.11.2019	18 - 22 Nov 2019
3GPP RAN Plenary	09.12.2019	9 - 12 Dec 2019
3GPP SA Plenary	11.12.2019	11 - 13 Dec 2019
3GPP SA2, SA6	13.01.2020	13 - 17 Jan 2020
3GPP SA4	20.01.2020	20 - 24 Jan 2020
3GPP SA1, SA3, SA5	10.02.2020	10 - 14 Feb 2020
3GPP RAN Workgroups	24.02.2020	24 - 28 Feb 2020
3GPP SA2, SA6	24.02.2020	24 - 28 Feb 2020
3GPP RAN Plenary	16.03.2020	16 - 19 Mar 2020
3GPP SA Plenary	18.03.2020	18 - 20 Mar 2020
3GPP SA4	06.04.2020	6 - 9 Apr 2020
3GPP RAN Workgroups	20.04.2020	20 - 24 Apr 2020
3GPP SA2, SA5	20.04.2020	20 - 24 Apr 2020
3GPP SA3, SA6	11.05.2020	11 - 15 May 2020
3GPP SA1	18.05.2020	18 - 22 May 2020
3GPP RAN Workgroups	25.05.2020	25 - 29 May 2020
3GPP SA2, SA4, SA5	25.05.2020	25 - 29 May 2020
3GPP RAN Plenary	15.06.2020	15 - 18 Jun 2020
3GPP SA Plenary	17.06.2020	17 - 19 Jun 2020
3GPP SA6	06.07.2020	6 - 10 Jul 2020
3GPP SA3	13.07.2020	13 - 17 Jul 2020
3GPP SA2	13.07.2020	13 - 17 Jul 2020
3GPP RAN Workgroups	24.08.2020	24 - 28 Aug 2020
3GPP SA1, SA2, SA4-6	24.08.2020	24 - 28 Aug 2020
3GPP RAN Plenary	14.09.2020	14 - 17 Sep 2020
3GPP SA Plenary	16.09.2020	16 - 18 Sep 2020

3GPP RAN Workgroups	12.10.2020	12 - 16 Oct 2020
3GPP SA2, SA5	12.10.2020	12 - 16 Oct 2020
3GPP SA3	02.11.2020	2 - 6 Nov 2020
3GPP SA4	09.11.2020	9 - 13 Nov 2020
3GPP RAN Workgroups	16.11.2020	16 - 20 Nov 2020
3GPP SA1, SA2, SA5, SA6	16.11.2020	16 - 20 Nov 2020
3GPP RAN Plenary	07.12.2020	7 - 10 Dec 2020
3GPP SA Plenary	09.12.2020	9 - 11 Dec 2020
3GPP RAN Plenary	15.03.2021	15 - 18 Mar 2021
3GPP SA Plenary	17.03.2021	17 - 19 Mar 2021
3GPP RAN Plenary	14.06.2021	14 - 17 Jun 2021
3GPP SA Plenary	16.06.2021	16 - 18 Jun 2021
3GPP RAN Plenary	13.09.2021	13 - 16 Sep 2021
3GPP SA Plenary	15.09.2021	15 - 17 Sep 2021
ETSI MEC	No meetings scheduled	
IETF IRTF NFVRG	No meetings scheduled	
IETF DETNET	No meetings scheduled	
IETF CCAMP	No meetings scheduled	
IEEE 802.11ay		
Open Networking Foundation CSO		
IEEE 802.1cf		
ETSI BRAN		

3 Communication and Dissemination Activities Plan

3.1 Overview

Given the fact that one of the main impact factors measuring success in innovation and research is the acceptance of the results and their further reference and exploitation by present and future academic and industry aspirations, ccommunication and dissemination activities are a crucial part of innovative projects as the means of raising awareness and transferring knowledge to interested parties (as outlined e.g., by EC decision C (2014)4995: “Activities to disseminate information and exploit research and innovation results as well as carry out communication activities will be an important and integral part of Horizon 2020”). From this point of view, the 5G-VICTORI consortium has the commitment to maximise the popularity of the project, set up the proper communication links to attract and interact with a wide audience, including academia, public and private stakeholders, and take care of the project results communication in several different activities and actions. At this point we consider a loose distinction between the dissemination activities as mainly focused on targeting the academia and research communities and the communication activities as mainly focused on targeting the 5G network’s market and industry (of course not excluding the academia).

In particular, the main objectives of the 5G-VICTORI communication activities are to:

- raise awareness of and attract the attention at the local, National and International levels on the project targets and achievements,
- inform specific target groups (especially industrial stakeholders) about the results and linking them to the line of work of each target group addressed, and
- facilitate the alignment of the project results with similar academic and industrial research efforts (in both ways),

and, at more mature project stages, to:

- attract the interest of potential partners open to future collaboration, and
- pave the way for the market demand for the project products as the first necessary stage of exploitation activities.

For this purpose, a well-defined communication plan has been devised in order to optimise the 5G-VICTORI communication efforts -taking into account existing resources, capabilities and constraints- and maximise the project impact. This plan is presented in this chapter, and consists the strategical reference for all the project communication activities throughout the project. The 5G-VICTORI communication plan is based on existing public communication guidelines and best practices. The strategy consists of the following phases:

- The Plan analysis phase comprises the main objectives of the communication plan, the target groups, and the relative responsibilities of the different partners.
- The Design phase defines the communications tools and the proper means to pass through the project messages and results, namely the communication channels, the relevant material and the targeted events/opportunities.
- The Implementation phase comprises activities related to the preparation of the material, the identification and contact of the communication channels, and the actual performance of the activities.
- The Impact Assessment phase constitutes an internal feedback loop in order to periodically assess the project communication activities impact, besides keeping track of the performance of activities according to the devised time plan.

The communication and dissemination activities strategy phases are illustrated in Figure 3-1:

Figure 3-1: Communication and Dissemination Activities Strategy.

3.2 Communication Activities Plan

In general, the first essential step for any communication plan is therefore the identification and profiling of the targeted audience. After that, the second step is the definition of proper and most effective messages to be used to convey the intended information, and the third step the identification of the relevant, available, and most efficient communication channels.

3.2.1 Target Audience and Messages

The first essential step prior to generating a concrete strategy is the identification and profiling of the targeted audience, along with the associated message that is of their interest, and the appropriate communication methods to reach them. To this end, based on commonly followed approaches we have segmented the 5G-VICTORI audience into specific "target groups", or else we have identified and profiled the key groups to address.

Given the nature of the project; i.e. to provide network infrastructure solutions to vertical industries, the general audience primarily consists of corporate/business entities and its segmentation has been done on the basis of the stakeholders' business activities.

Primary Target Groups

In general, the research and academia communities as well as the industry working on 5G networks are of primary interest to the project. As aforementioned, we consider the dissemination activities as mainly focused on targeting the academia and research communities and the communication activities as mainly focused on targeting the 5G network's market and industry (of course not excluding the academia). The latter audience, taking into account the current market ecosystem and value chains, can be further refined to:

- Telecom Network Operators,
- ICT and Software Developers/companies; especially those including or targeting expansion of their activities to software network domain,
- Telecom equipment vendors; traditional or new coming ones, and
- Network solutions integrators and infrastructure providers.

Considering the 5G ecosystem value chain, the unique setup of the 5G-VICTORI project, characterized by the strong integration of 5G High Performance Infrastructures with innovative applications and solutions for vertical industries, allows the outreach of the project results to vertical industries, especially those with activities in the fields of:

- Rail Services: Railway/Train Operators (**TRA**, **DBN**, etc.).
- Energy: Energy Suppliers, Energy Transmission System Operators (e.g. **ADMIE**).
- Media: Content Providers (e.g. **COSMOTE**), Broadcasters (e.g., **COSMOTE** TV, **RBB**, **IRT**), large venues (e.g. Stadium Owners).
- Factories of the Future: Utilities (e.g. **ADMIE**).

These vertical industries stakeholders constitute major target groups of the project communication activities, which are planned to be approached with tailored communication activities.

Last but not least, communication activities target also the relevant EU bodies and other research clusters for several purposes.

Secondary Target Groups

The 5G-VICTORI proposed network solutions can be further applicable to other vertical industries, with similar targets/requirements/restrictions to those represented in the project vertical use cases. The project results and objectives will be therefore communicated to a broader audience, including the general public.

Messages

The most effective messages to spread will be selected and formulated in accordance to the different project phases, taking into account the target groups and their relevant expectations. As generally known, to maximise impact, the messages will follow the general rules; they must:

- Be clear and simple.
- Be consistent.
- Have proper tone to the audience.
- Be truthful and inspire credibility.
- Be relevant to the audience needs.

Taking into account the above principles and the project targets, the main messages to be spread at initial stages (at present stage of the project) could be the following:

- 5G-VICTORI is an ICT-19 Project “Conducting large scale trials for advanced 5G use case verification focusing on highly demanding vertical use cases”.
- 5G-VICTORI will extend and interconnect main sites of all ICT-17 infrastructures (5GENESIS, 5G-EVE, 5G-VINNI) and the 5G UK test-bed in a Pan-European Network Infrastructure.
- 5G-VICTORI will extend the ICT-17 infrastructure with technologies developed in 5G-XHaul and 5G-PICTURE Projects.
- 5G-VICTORI will provide enhancements to extend ICT-17 infrastructures towards integration of commercially relevant, operational environments.
- 5G-VICTORI focuses on Transportation, Energy, Media & Factories of the Future, as well as on cross-vertical use cases.

Given the location structure of the project facilities and the partners’ involvement, a separate message with regard to the vertical use cases that are planned per area can be provided to the specific audience of each area.

Of course these messages will be further enhanced, refined, specified throughout the course of the project, taking into account the audience addressed in each activity, and the work progress of the project.

3.2.2 Communication Channels

Once the target groups and the messages have been identified and defined, the selection of the most effective communication channels follows. Aspects such as communication channels availability, effectiveness, and cost and resources availability need to be considered at this point. To this end, 5G-VICTORI will exploit communication channels available to the project partners using besides resources provided by the EC also internal partner resources, such as existing media communication channels of companies-partners. The initially identified communication channels as well as initial status of activities utilising them are presented in the following paragraphs.

Websites

The 5G-VICTORI public website is one of the main communication tools, as it provides a window to all audiences, and actually provides the central point of obtaining information about the project in general, the project status, the project outcomes and the project news. The projects' one has been developed by **I2CAT** (supported by **IHP**) being accessible at https://www.5g-victori-project.eu/ and, to date, it comprises the following sections:

- Home.
- Abstract.
- Motivation.
- Work Plan.
- Consortium.
- Deliverables.
- News & Events.

The 5G-VICTORI website has been developed with Wordpress.org. Wordpress.org is a free and open source content management system (CMS) platform based on PHP and MySQL. It is usually used with the MySQL or MariaDB database servers but can also use the SQLite database engine. Features include a plugin architecture and a template system, referred to inside WordPress as Themes. Moreover the website uses Secure Sockets Layer (SSL), also called a Digital Certificate, creating a secure link between the website and a visitor's browser. The website has been designed so that visits related statistics can be collected by web analytics tools, such as Google Analytics, providing insightful metrics on usage, user engagement and content performance. The website uses Search Engine Optimization (SEO) tools, such as Google Search Console and Yoast SEO, to improve organic search visibility and effectiveness.

The website is planned to be maintained at least throughout the course of the project and for 3 years beyond that. A plan will be agreed as part of project exploitation activities in how to address interest in the website contents, and the maintenance of it beyond the project end.

Initial screenshots of the 5G-VICTORI Website can be found in Figure 3-2 and Figure 3-3.

Figure 3-2: 5G-VICTORI public website Home page.

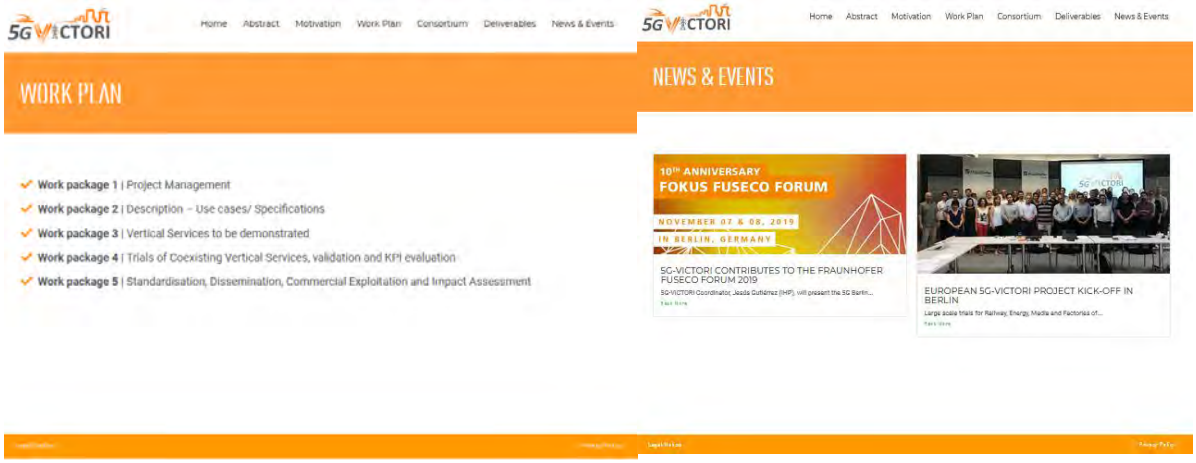


Figure 3-3: 5G-VICTORI public website - Indicative webpages.

Complementarily, in order to maximise visibility and impact, other websites will be maintained by 5G-PPP and project partners to provide information on a permanent basis, and links to the official 5G-VICTORI website.

Social Networks

Given the key role of social networks in spreading messages and news around the globe, and their wide adoption not only for private but also for professional purposes, 5G-VICTORI will use widely adopted social networks to increase project visibility and to exchange experiences/views/news among professionals and stakeholders. The key social networks used are the following:

- **LinkedIn:** A 5G-VICTORI company profile (URL: https://www.linkedin.com/company/5gvictori/) has been created where news about the progress and achievements of the project will be posted. The LinkedIn page is continuously fed with news regarding the project activities form the initial steps of the project; including notifications of project events and partners' communication/dissemination ones (Figure 3-4).

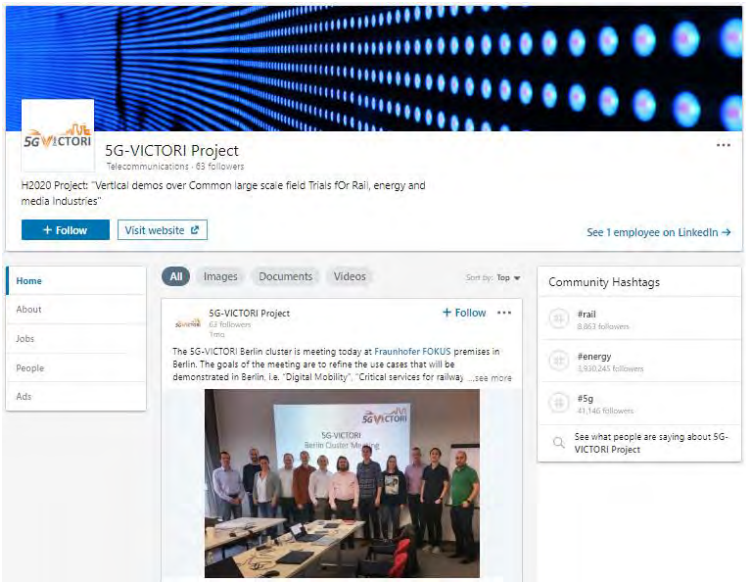


Figure 3-4: 5G-VICTORI LinkedIn account.

- **Twitter:** Twitter is a main social platform to drive engagement through dissemination of project updates and outcomes (60% of the content), and other relevant information for the project community and ecosystem (40% of the content). A twitter account (URL: https://twitter.com/5gvictori?lang=en) has been created and maintained by **I2CAT** for these purposes (Figure 3-5).

Figure 3-5: 5G-VICTORI Twitter account.

- **YouTube:** A dedicated account to publish the forthcoming videos produced within the project activity will be also created. I2CAT will undertake the management of the project's YouTube channel.

The social network accounts is planned to be maintained at least throughout the course of the project and for 3 years beyond that. A plan will be agreed as part of project exploitation activities in how to address interest in the networks' contents, and the maintenance of them beyond the project end.

Press Releases

Local press is another significant communication channel to disseminate the project work and outcomes. The locality of the 5G-VICTORI demonstrations and the partners' involvement in them, facilitates and also necessitates the exploitation of such channels to communicate project activities especially to the demonstrations'-related countries/markets, namely – not restrictively though – to Germany, Greece, Romania and UK. In particular, the fact that demonstrations in these countries involve a number of industrial partners from these countries, allows for exploiting their existing media relations' communication channels for issuing press releases especially targeting in these countries' market/stakeholders, and maximising impact locally. Of course press releases will be considered by all industrial partners irrespectively of their basic activities' location. Press releases will be channelled to appear in a number of local electronic and printed media.

Press releases at initial project stages will aim at notifying of the involvement of partners in the project. At later stages, press releases will focus on communicating the partners' involvement along with major project achievement.

EC Communication Mechanisms

For the purposes of maximising visibility in EC's research community as well as the whole European research and market segments, the EC supported communication mechanisms will be utilized. Such communication activities will be linked to the 5G-PPP liaison activities of Task 5.4

At first stages these mechanisms would be the publication of project information on the official EC sites such as the collective 5G-PPP projects' site, and CORDIS[3]. In particular, the former links 5G-VICTORI activities with the general 5G-PPP ones, while the latter enables users to advertise their events or publish press releases relative to Research, Technological Development and Innovation activities on the CORDIS News and Events service, thus addressing a wider spectrum of the research community.

At next, participation in networking activities organized by the European Commission will be sought, such as the concertation meetings organized within the EU, participation in Workshops and invited talks in events such, e.g. Digital Transport Days, Towards Terahertz Communications workshop.

3.2.3 Communication Material

Communication and dissemination activities, will be supported by a rich set of communication material that will be created, maintained and updated throughout the project lifetime. The material will include various forms of printed and electronic documentation, of various degrees of elaboration, delivering various (usually brief though significant) messages/ project highlights, addressing a wide number of audiences, to be distributed through a wide number of channels, and at different project time-phases. The main communication material to be generated is presented in the following paragraphs.

Logo

5G-VICTORI logos have been designed by **UNIVBRIS** and **IHP** and the official one has been selected through a voting process. It is depicted in Figure 3-6.

[3] 5G-VICTORI Page at CORDIS: https://cordis.europa.eu/project/rcn/223637/en

Figure 3-6: 5G-VICTORI Logo.

Presentation

The 5G-VICTORI presentation is a document to be used by the project partners to provide an overview of the project scope, objectives and expected outcomes in various events (e.g., workshops, conferences, etc.) especially at the initial phases of the project. A first version of the 5G-VICTORI presentation provides the following information:

- What 5G-VICTORI is;
- Partners;
- Objectives;
- General Architecture;
- Use cases;
- Contact info.

An overview of this presentation is shown in Figure 3-7:

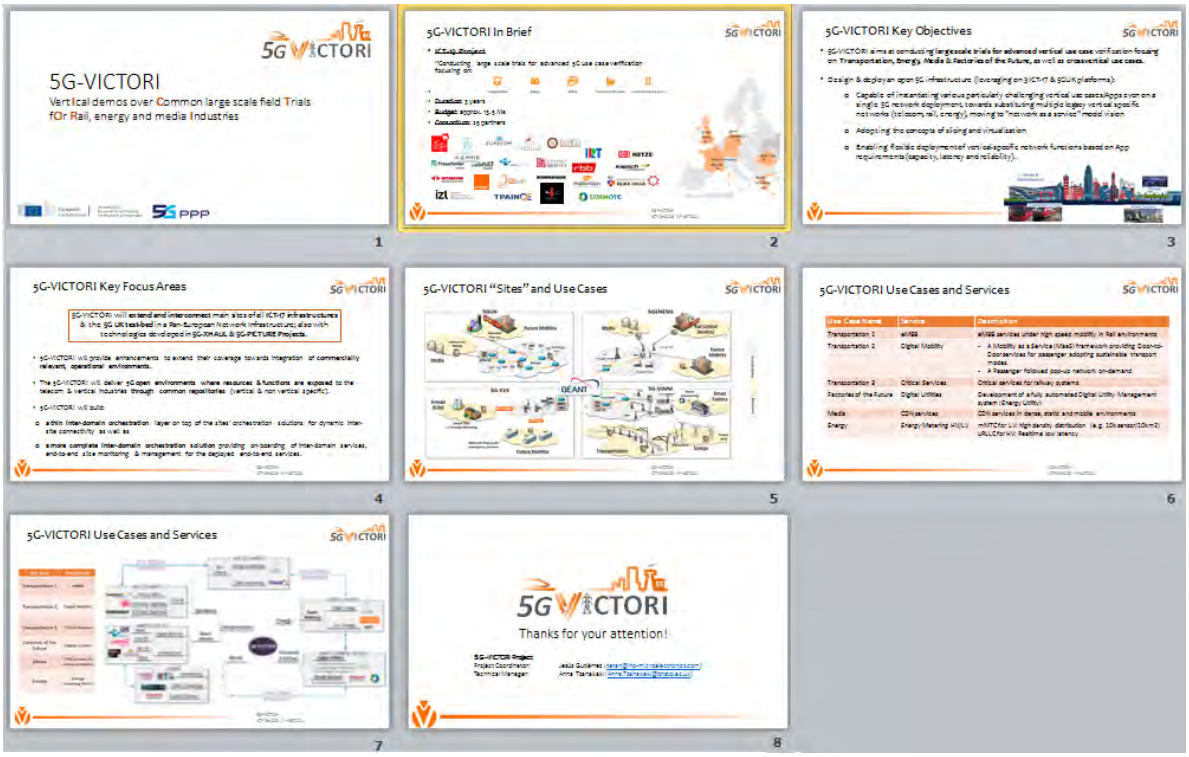


Figure 3-7: 5G-VICTORI Initial Project Presentation.

The presentation will be continuously updated incorporating information about the project running status, progress and main running achievements. I will be also modified when addressed specific, local markets.

Brochure/Leaflet

The 5G-VICTORI brochure/flyer will be used to spread the main messages of the project and will be available in electronic format in the 5G-VICTORI Website, while hard copies will be printed to support dissemination activities of partners in a number of dissemination events.

The brochure/flyer will provide similar information to the project presentation, but in more detailed way. In particular it will include the following information:

- What 5G-VICTORI is; Partners;
- Key Objectives;
- General Architecture, Concepts and Highlights of the Technical Solution;
- Vertical Use Cases addressed and benefits;
- Partners and project details: including duration, Grant Agreement number, budget;
- Contact information.

Poster

5G-VICTORI posters will be created at various phases of the project in order to accompany partners' communication activities, especially those associated with demos, booth presence at various events. The poster will be updated throughout the project lifetime, incorporating information about the project running status, progress and main running achievements. Initial version of the poster will provide similar information to the Brochure/Leaflet, in a more graphically attractive way.

Video

At least one official 5G-VICTORI video will be created at a mature stage of the project to attract interest especially from the market segments of the addressed vertical industries. Given the high cost incurred by a well-processed video production, the details will be arranged after a communication circle between a number of partners is completed. In practice the generation of the video will involve: preparation of the scenarios to be presented, identification of resources within these companies, arrangement of shooting processes, processing of material, distribution of material in communication channels, etc. At first place **COSM** and **MATI** will identify the initial requirements of this activity, and will undertake the organisation effort of it. At the same time partners involved in the demonstrators will be involved so as to allow, arrange, and participate in the shootings.

For the final distribution of the video COSMOTE TV's streams can be used at final stage for reaching out the Greek public, besides the YouTube 5G-VICTORI channels.

3.2.4 Communication Activities Identification

Participation in Industry Events

As aforementioned, communication activities will primary focus on market/industry audiences/segments. Considering the direct business to business communication barriers, the initial way to establish communication and convey the 5G-VICTORI messages, is through participation to targeted industry events. The latter will be the focus of the industry partners, but considering that communication comes hand in hand with dissemination in this case, the whole consortium will seek such opportunities for short scale or larger scale presentations/demonstrations/etc. For this purpose, a list of events has been created and will be further maintained (see Table 3-1). The latter includes:

- ICT and 5G Network – related events of global/European scale, and
- Vertical industries-related events.

Table 3-1: Initial List of Industry Events.

Domain	Type	Event
ICT and 5G Network	Conferences	Mobile World Congress (MWC), IWPC, InfoCom World Conference (Athens), IEEE 5G World Forum, 5G World Summit London, Telecom Infra Project Summit, etc.
Transportation/ Mobility	Exhibitions	DETH, Innotrans, SmartRailEurope
Media	Exhibitions	IBC, IFA, Medientage
Smart Cities	Exhibitions	Smart City Expo

Table 3-2: 5G-VICTORI Communication Activities Responsibilities.

Activity/ Material	Responsible Partner	Role
Official Project Website	I2CAT, IHP	Maintenance, update of content upon request from partners, and based on project progress
LinkedIn Account	I2CAT	Maintenance, update of content upon request from partners
Twitter Account	I2CAT	Maintenance, update of content upon news from partners, etc. monitoring of impact, monitoring of sent invitations/ comments/ questions etc. and contacting partners to act upon.
YouTube Account	I2CAT	Maintenance, update of content with project videos, monitoring of impact, monitoring of sent invitations/ comments/ questions etc. and contacting partners to act upon.
Partner Permanents Webpages	Partners hosting 5G-VICTORI information	Maintenance, update of content monitoring of impact.
Press Releases	1. Industrial Partners, 2. Academic Partners	Issuance of press release to partners' existing media relations' communication channels; Notification of consortium upon submission; monitoring of impact.
EC Communication	Project Management Team	These activities will be performed along with T5.4 activities.
Logo	UNIVBRIS, IHP	Create Logo, trigger a voting procedure to select the logo.
Presentation	IHP, UNIVBRIS, COSM	Preparation of the material and notification of consortium.
Brochure/ Leaflet	IHP, UNIVBRIS, COSM	Preparation of the material and notification of consortium.
Poster	I2CAT, IHP, UNIVBRIS, COSM	Preparation of the material and notification of consortium.
Video	COSM, MATI, all partner especially those involved in test facilities	Preparation of the scenarios to be presented, identification of resources within these companies, arrangement of shooting processes, processing of material, distribution of material in communication channels, etc.
Participation in Industrial Events	Mainly Industrial Partners	Presentation of 5G-VICTORI scope and results to specifically targeted market/industry audiences/segments.
Organisation of Workshop	UNIVBRIS, IHP	Organisation of project Workshop, send invitations to relevant research projects/communities/groups, arrangement of presentations' agenda, arrangement of workshop logistics, etc.
Internal Communication Activities	Mainly Industrial Partners	Identification of internal companies' communication channels and communication of project results in other departments, affiliated companies, etc.

Other Communication Activities

Additional communication activities will be conducted especially by 5G-VICTORI industry partners related to the internal communication of the project activities and results within their companies' departments, or where possible to other affiliated companies (e.g. companies within the same group).

3.2.5 Communication Activities Responsibilities and Time plan

The partners' responsibilities with regard to maintaining the communication/dissemination material, and planning/performing the planned communication activities is summarised in Table 3-2.

A time plan underpinning the performance of communication activities is presented in Table 3-3. It shall be noted that depending on the responsiveness of the communication channels (which is different of that of the partners) and based on the project progress the plan will be subject to modifications throughout the course of the project.

Table 3-3: 5G-VICTORI Communication and Dissemination Activities Plan Gantt Chart.

Activity	1st year				2nd year				3rd year			
	M1-M3	M4-M6	M7-M9	M10-M12	M13-M15	M16-M18	M19-M21	M22-M24	M25-M27	M28-M30	M31-M33	M34-M36
Project Website (MS9)	Creation by M4		Maintenance									
LinkedIn Account	Creation by M5		Maintenance									
Twitter Account	Creation by M6		Maintenance									
YouTube Account	Creation by M7			Maintenance								
Partner Permanents Webpages				Creation by M12	Maintenance							
Press Releases				Initial Participation - related			Activities Performance - related				Results - related	
EC Communication	Pages Creation by M4				Participation in Networking Events				Participation in Networking Events			
Logo	Creation M1											
Presentation		1st Version M4				2nd version M18		Demonstrator -specific versions M24				
Brochure/ Leaflet (MS9)		1st Version				2nd Version						
Poster				1st Version				2nd Version		3rd Version		
Video								Official Video				
Participation in Industrial Events												
Workshop (MS11)											Project Dedidated Workshop	
Internal Communication												
Publications in Journals/ Magazines												
Participation in Conferences												
Trainings/ Tutorials												
Monitoring					D5.2 (v1) Standardisation, Dissemination, Communication and liaison Activities Report						D5.2 (v2) Standardisation, Dissemination, Communication and liaison Activities Report	

3.3 Scientific Dissemination Activities Plan

5G-VICTORI will constantly and eagerly pursue dissemination of the project research/ scientific/ technology- related results through high-profile international dissemination channels. The latter will include participation in highly ranked conferences, congresses, workshops, etc. with high-quality papers and presentations, submission of scientific publications in high-profile international journals, technical magazines, white papers etc., disseminating the most refined, advanced and innovative aspects and results of the project.

Contrary to communication, as dissemination activities mainly refer to publishing research/ scientific/ technology-specific results thus need to follow a more flexible plan, given the fact that:

- Messages are very specific, addressing a highly educated/ skilled audience.
- Cannot be repeated several times in the same way; thus one piece of dissemination work can be only presented at one event.
- The main channels are the research/ scientific/ technology – related events/ journals/ etc., which are many, but work to be disseminated needs to provide significant results/ innovative content, in very well defined ways, thus addressing one event requires more effort, time, scientific and technical competence.
- Implies competing with similarly advanced work.

For these reasons, although having a plan related to the tentative events to participate can be helpful, acceptance is not certain, thus the plan needs to be constantly monitored, evaluated and adjusted in close relation with the conducted project work.

As expected, dissemination opportunities and activities of these types are expected to peak after the project is halfway, and especially towards its end. The associated activities time plan will be continuous throughout the project, and contribution is expected from all partners. To this end, partners are encouraged to circulate information (freely e.g. through the project mailing lists) about tentative, significant dissemination opportunities and select and publish scientific papers according to their own specific objectives and work. To this end also, at this initial stage of the project, a number of tentative events/ opportunities have been listed, as shown in Table 3-4.

The guidelines and procedures to be followed in these submissions have been agreed and included in the Projects' GA.

Table 3-4: Initial Dissemination Opportunities' List.

Domain	Activity Type	Opportunity
ICT	Conferences	**General/Wireless**: EuCNC, ICC, PIMRC, GLOBECOM, CNC, MobiCom, CoNEXT, ETSI 5G Summit, IEEE NFVSDN, IEEE Net Soft, IEEE INFOCOM. **Optical/Networking**: OFC, ECOC, ONDM.
	Journals/ Magazines	**General**: IEEE JSAC, IEEE Comms Magazine **Wireless**: IEEE TWC, **Networking**: IEEE Transactions on Network and Service Management. **Optical/Networking**: IEEE/OSA JOCN, IEEE JLT, IEEE PTL, IEEE Transactions on Networking.
	White Papers, Books(s) chapters	**5G-PPP**: WG Architecture, WG SDN/NFV, WG Trials

Transportation / Mobility	Training/ Tutorials	Independent Summer Schools, (OAI) Workshop, EuCNC, NOMS, SigComm, NoF.
	Trainings	OSE Locomotive drivers training school, training sessions @Railway stations
Media Media	Conferences	• EBU Broadthinking, • EBU Forecast, • NEM initiative (New European Media Initiative (https://nem-initiative.org), an initiative, set up as European Technology Platform (ETP) in FP7, that deals with Connected, Converging and Interactive Media & Creative Industries, driving the future of digital experience.)
	Journals/ Magazines	FKT Journal
City- related	Conferences	ISOCARP, Sustainable Urban Mobility Plans (SUMP) Conference, Smart CityDay Conference, ISC2 International Smart Cities Conference

Organisation of a Workshop

At least one 5G-VICTORI Workshop and/or educational exhibitions open to various stakeholders/vertical industries' representatives will be organised. According to initial planning, the consortium will seek opportunities so that the workshop is collocated with a popular dissemination event (e.g. conference), thus maximise potential participation from external audience. The initial time plan for this workshop is set towards the project end, to allow the project activities to achieve a specific maturity state and to allow for results to be gathered. However, given the high competition usually experienced in terms of hosting a workshop with popular events, opportunities will be sought even from the initial stages of the project.

Joint Dissemination Activities

Finally, it shall be noted that in the context of liaison activities with other 5G-PPP and ICT projects (see also 4.2), joint dissemination activities will be sought.

3.4 Communication and Dissemination Activities Monitoring and Evaluation

The communication and dissemination activities progress will be monitored throughout the course of the project, and will be evaluated against the initial planning, in order to be able to adjust the communication strategy, uptake corrective actions, towards maximising project visibility and impact. To this end, a structure evaluation plan has been created, on the basis of specific measurable KPIs on a per type of activity. This is shown in Table 3-5.

Table 3-5: 5G-VICTORI Dissemination and Communication Activities KPIs.

Communication Means	KPI Description	KPI Target
Publications in Conferences/Journals	Publications in ICT Conferences	30
	Participation in Media related Conferences	5
	City Related Conferences	3
Exhibitions	Participation in ICT Industry exhibitions	7

	Participation in Transportation/ Mobility Industry exhibitions	2
	Participation in Media related exhibitions	3
	Participation in City-related Industry Exhibitions	2
Journals Magazines	Publications in Scientific Journals/ Magazines	12
Training sessions	Tutorials/ Summer Schools/ other Training Sessions	>2
Workshop	Organisation of Workshops	1
Websites	Official Website	1
	User sessions per year	1500-2000
	Partners' Webpages	>5
Online publishing	Press Releases	>20
	Online magazines, newspapers, blogs (not counting press releases copied retransmissions)	>20
Social media accounts		3
LinkedIn page	Number of followers	≥ 300
Twitter followers	Number of followers	≥ 200
5G-VICTORI YouTube views	Number of Videos	≥ 3
	Number of views	≥300
Project Videos		>1
Leaflets/ Brochures		>2
Posters		>3

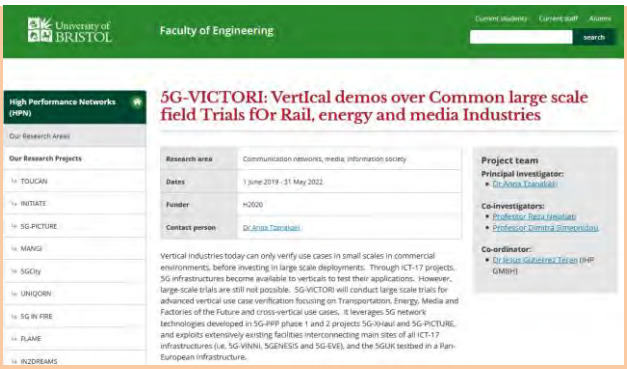
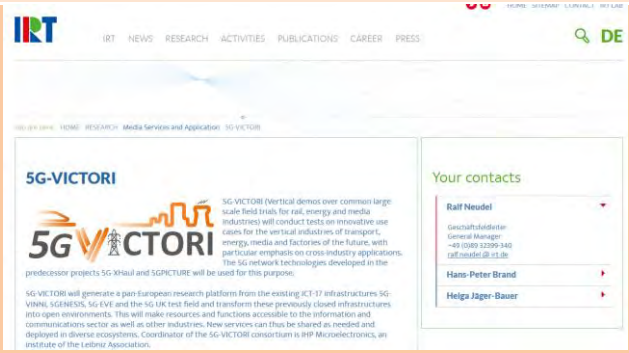
3.5 Initial Communication and Dissemination Activities

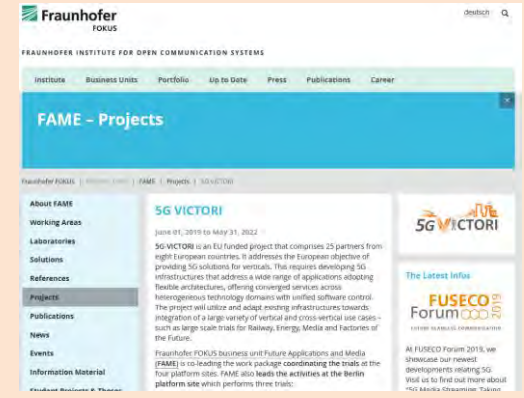
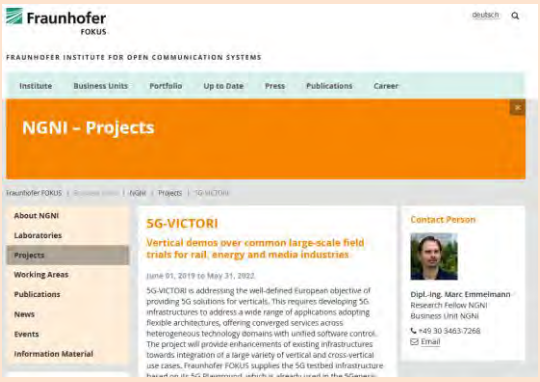
Given the experience and high interest of the partners of the consortium, communication activities worth mentioned have started since the very early stages of the project. These are summarised in the following sections.

3.5.1 Partner's Websites' pages on 5G-VICTORI

At present a number of partners' websites host – on a permanent basis – information on 5G-VICTORI along with links to the official channels. These are presented in Table 3-6:

Table 3-6: Permanent 5G-VICTORI Webpages in other Websites.

Partner Website	Website	Indicative preview
UNIVBRIS	http://www.bris.ac.uk/engineering/research/hpn/projects/5g-victori/	
COSM	https://www.cosmote.gr/cs/otegroup/en/5g_victori.html	
IRT	https://www.irt.de/en/research/media-services-and-application/5g-victori/	
I2CAT	https://www.i2cat.net/projects/5g-victori/	

RBB	https://www.rbb-online.de/en/unternehmen/der_rbb/profil/innovationsprojekte/projekte/5g-victori/	
FhG	https://www.fokus.fraunhofer.de/en/fame/projects/5g-victori and https://www.fokus.fraunhofer.de/en/ngni/projects/5gvictori	 Fraunhofer FOKUS FRAUNHOFER INSTITUTE FOR OPEN COMMUNICATION SYSTEMS FAME – Projects 5G VICTORI 5G VICTORI FUSECO Forum 

3.5.2 Press Releases

Initial press releases have been already issued in the local language and in English by a number of partners, as briefly reported in Table 3-7. A complete report of these activities, their appearance and their impact will be presented in deliverable 5.2.

Table 3-7: Initial Press Releases issued by 5G-VICTORI Partners.

Partner	Press Release Title & URL	Issued on
IHP	*IHP's essential participation in developing high performance 5G wireless technologies Third Horizon 2020 EU-project within the 5G-framework coordinated by IHP* https://www.ihp-microelectronics.com/uploads/media/PM_2019-04-24_5G-Projects_eng.pdf	April, 24, 2019

ORO	*Orange's first commercial 5G network launched in Romania* https://www.orange.com/en/Press-Room/press-releases/press-releases-2019/Orange-s-first-commercial-5G-network-launched-in-Romania	November 5, 2019
UHA	*Press release with Orange* https://urbanhawk.space/News/	(to appear as news)
ZN	*Zeetta Networks Joins 5G-VICTORI Project* https://zeetta.com/2019/05/01/zeetta-networks-joins-5g-victori-project/	May 1, 2019

3.5.3 EC Communication Mechanisms

EC's collective 5G-PPP projects' site already hosts information about 5G-VICTORI project, under URL: https://5g-ppp.eu/5g-victori/.

5G-VICTORI information is also available in CORDIS website under URL: https://cordis.europa.eu/project/rcn/223637/en.

3.5.4 Participation in Industry Events

Even from the early stages of the project partners have seized opportunities to reach out the industry with the objectives and vision of 5G-VICTORI, towards raising awareness, as briefly reported in Table 3-8. A complete report of these activities, including details regarding the presenters, their appearance and their impact will be provided in deliverable 5.2.

Table 3-8: Participation in Industry Events by 5G-VICTORI Partners.

Partner	Industry Event - Presentation	Date
IHP	EuCNC 2019, session FrA0- 5G-PPP ICT19 https://www.eucnc.eu/fra0/ https://twitter.com/5GPPP/status/1141979703131234304 **Presentation:** 5G-VICTORI: VertIcal demos over Common large scale field Trials fOr Rail, energy and media Industries	June 21, 2019
IHP	10th Fuseco Forum https://www.5g-victori-project.eu/2019/11/5g-victori-contributes-to-the-fraunhofer-fuseco-forum-2019/ **Presentation:** The 5G-VICTORI Project – A Closer Look To The Berlin Platform And Use Cases	November 7, 2019
FhG	10th Fuseco Forum 5G-VICTORI project related demos were showed at **FhG** booth. https://www.fokus.fraunhofer.de/499c1c467374b621	November 7-8, 2019
COSM	"Innovation Forum 2019", Workshop "IT–Telecommunications, "OTE Group Research Activities on 5G" https://griechenland.ahk.de/gr/ekdiloseis/plirofories-ekdilosis/foroym-kainotomias-h-kainotomia-os-mochlos-anaptyxis/ **Presentation:** 5G-VICTORI: VertIcal demos over Common large scale field Trials fOr Rail, energy and media Industries	November 18, 2019
COSM	*21st Infocom World Conference 2019* https://www.infocomworld.gr/21o-infocom-world-2019/5g-epistimoniki-synantisi-aithoysa-makedonia/ **Presentation:** 5G-VICTORI: VertIcal demos over Common large scale field Trials fOr Rail, energy and media Industries	November 26, 2019

3.5.5 Scientific Paper Publications

Even from the early stages of the project partners have seized opportunities to reach out the research community with early results of their work performed in the context of 5G-VICTORI (see Table 3-9). A complete report of these activities, including details regarding the presenters, their appearance and their impact will be provided in deliverable 5.2.

Table 3-9: Scientific Paper Publications.

Partner	Details
DBN	**Accepted Paper:** “Digital Forensic Investigation Process in Railway Environment”, **Event:** 2019 IEEE Conference on Application, Information and Network Security (AINS)- Information Security, 19 – 21 November 2019, Penang, Malaysia
UTH	**Published Paper:** M. Karatisoglou, K. Choumas and T. Korakis, "Controller Placement for Minimum Control Traffic in OpenDaylight Clustering", Proceedings of IEEE WF-5G 2019, Dresden, Germany, September-October 2019.
UTH	**Published Paper:** K. Chounos, N. Makris and T. Korakis, "Enabling Distributed Spectral Awareness for Disaggregated 5G Ultra-Dense HetNets", in proceedings of IEEE WF-5G 2019, Dresden, Germany, 30 September - 02 October 2019

4 Liaison Activities Plan

One of the main targets of a collaborative work, such as the 5G-PPP framework, is for each of the projects participating in it to be able to provide both project-related results, as well as to accomplish joint collaboration activities towards the establishment of 5G in Europe. 5G-VICTORI is willing to be one of the main instigators of these activities, with more or less involvement based on the project targeted objectives.

5G-VICTORI will foster the cooperation and commitment to joint activities/Working Groups/etc. towards maximizing the impact of 5G-VICTORI and the 5G-PPP projects as a whole, as well as providing/obtaining support on technology, market, etc. issues that are common to the different stakeholders participating in the 5G-PPP framework.

4.1 Interaction with 5G-PPP Work Structures

The task activities will include participation indicatively: in the Steering Board (SB) (mainly by the Project Coordinator), in the Technical Board (5G-TB) (mainly by the Technical Manager), in various Working Groups (WGs) already set up for the previous 5G-PPP Phases and in 5G-PPP fora (by the members of the consortium).

5G-VICTORI has declared from the project starting date its degree of involvement in most of the Working Groups (WGs) related to 5G-PPP, either triggered by the 5G IA or the 5G-PPP itself. We summarise the contributions per WG in Table 4-1, where the main contributors from 5G-VICTORI are listed. The criteria of choosing these responsible people stem from their general expertise working at their organisations, together with previous expertise in driving and contributing to the mentioned WGs.

5G-VICTORI will also align activities to NetWorld2020 and the 5G Infrastructure Association in order to maximise impact. To this end, the project will focus on contributing to showcasing the 5G-VICTORI deployments' capabilities to meet the stakeholders/verticals/end-users' service and performance requirements.

Table 4-1: 5G-VICTORI Contributors to the different WGs established by the 5G-IA and the 5G-PPP.

WGs	Origin	5G-VICTORI Contributors
Pre-Standardization WG	5G IA	Jasmin Cosic (DBN)
Spectrum WG	5G IA	Eckhard Grass (IHP)
5G Architecture WG	5G-PPP Projects	Anna Tzanakaki (UNIVBRIS), Jesús Gutiérrez (IHP)
Software Networks WG	5G-PPP Projects	Cristian Patachia (ORO), Paris Flegkas (UTH), Azahar Machwe (ZN)
Vision and Societal Challenges WG	5G IA	Anna Tzanakaki (UNIVBRIS), Jesús Gutiérrez (IHP)
Security WG	5G IA	Christian Schlehuber (DBN), Ioan Constantin (ORO)
SME WG	Networld2020	SMEs
Trials WG		Spyros Denazis (UoP), Jesús Gutiérrez (IHP)
Test, Measurement and KPIs Validation	5G-PPP Projects	Ioanna Mesogiti (COSM)

4.2 Interaction with 5G-PPP projects

Many of the 5G-VICTORI partners have collaborated over many years with each other in 5G-PPP projects and have extensive experience in European research projects, both as contributing research partners and in leading roles. A plenty of previous collaborations among the 5G-VICTORI partners reflects the degree of commitment and productivity this offers to the project. The collaboration in this consortium will only ensure a fruitful continuation of the work within the 5G-PPP framework.

Table 4-2 shows the current involvement of some of the 5G-VICTORI partners in 5G-PPP projects in Phase-3 (ICT-17-2018) and in Phase 3, Part 4: 5G Long Term Evolution (ICT-20-2019). From the table we can extract that many of the 5G-VICTORI partners are involved in the development and assessment of 5G technology in the last years. Those who did not participate in previous 5G-PPP projects, being mainly Vertical Industries, are ready to benefit from the developed technologies and use them to run their services at the different sites.

The same table also presents the current involvement of some of the 5G-VICTORI partners in 5G-PPP projects related to the verticals' engagement to 5G networks, more specifically through ICT-19-2019 (as 5G-VICTORI) and ICT-18-2019 projects. Such involvement will foster liaison activities with these projects towards sharing experiences and know-how related to vertical industries-specific requirements/ challenges/ restrictions and ways to address them not only through the meetings organised under the umbrella of 5G-PPP but also through direct contact with partners of these projects and direct sharing of information.

Table 4-2: Involvement of the 5G-VICTORI Partners in running 5G-PPP projects.

Partner	ICT-17-2018			ICT-20-2019							ICT-19-2019							ICT-18-2019		
	5G-VINNI	5G-EVE	5GENESIS	ARIADNE	5G-CLARITY	5G-COMPLETE	INSPIRE-5Gplus	LOCUS	MonB5G	TERAWAY	5G ZORRO	5GSolutions	5G-TOURS	5GIDrones	5G-HEART	5Growth	5G SMART	Full5G	5G-MOBIX	5GCroCo	5G CARMEN
IHP			√		√ (PC)	√															
UNIVBRIS					√	√															
COSM			√			√								√					√		
EUR		√	√						√					√						√	
FhG	√		√																		
I2CAT					√						√ (PC)									√	
IASA						√															
ICOM	√			√						√	√				√						
IRT												√									
Orange		√					√	√	√				√	√			√	√		√	
ORO		√																			
UoP	√											√									

As shown in this table, some of the 5G-PPP projects are being coordinated by 5G-VICTORI consortium members, which puts forward the degree of knowledge about this framework the Consortium has and demonstrates high level of commitment.

5G-VICTORI will foster the collaboration with peer 5G-PPP projects in different activities, some of them already described in Section 4.1. IHP, as PC and Task 5.4 leader will be in charge of setting up the necessary connections to other projects and, with the help of the task contributors, engage the Consortium to participate in joint activities to reach an overall benefit for al partners/organisations involved.

5 Summary and Conclusions

Towards addressing the European Commission's (EC) goal underpinning the H2020 programme of funded research, which is to bring Europe at the heart of research and innovation and drive its economic growth, 5G-VICTORI will perform concrete and effective standardisation, dissemination, communication and liaison activities, in the context of the relevant, dedicated Work Package 5 (WP5) towards maximising its visibility, and impact to the research and industry communities. These activities are part of the project's WP5 and, in general, will run continuously throughout the lifetime of the project. The 5G-VICTORI Consortium has devised at the early stages of the project specific plans in order to effectively track the progress, evaluate and optimise these project activities. This document sets the principles and summarises these 5G-VICTORI plans. In general terms, the plans are defined in terms of: target audience, material to be prepared, sharing of responsibilities between Consortium members, timelines to be followed, feedback procedures and assessment against relevant, specific, measurable Key Performance Indicators (KPIs).

As far as standardisation is concerned, the procedures supervising the associated activities have been defined. The latter include monitoring regulatory and standardisation activities directly related to the research areas of 5G-VICTORI – towards achieving compliance with existing ecosystem –, and contributing to the relevant SDOs – towards achieving consensus from industry to follow the proposed methods/solutions –, while maintaining feedback procedures aiming at continuous monitoring of project activities and uptaking of corrective actions. The key partners to be involved and the key focus areas to be addressed have been specified to:

- Pre-standardisation in the context of 5G-PPP,
- Railways' standardisation,
- Media standardisation, and
- 5G-networks' standardisation.

The latter have been further elaborated in terms of tentatively targeted standardisation bodies to be monitored and bodies to be reached out with contribution by 5G-VICTORI. Given the widely known challenges faced in accessing standardization bodies and achieving consensus in potential contributions, the plan will be further revisited and regularly updated over the course of the project.

Secondly, a well-defined communication plan has been devised in order to optimise the 5G-VICTORI communication efforts – taking into account existing resources, capabilities and constraints – and maximise the project impact. This plan is elaborated in terms of: target audience, material to be prepared, sharing of responsibilities between consortium members, timelines to be followed, feedback procedures and assessment against relevant, specific, measurable KPIs. The initial activities that have been undertaken by the Consortium in the early phases of the project until the time of writing, are also listed.

Last but not least, a specific plan underpinning the 5G-VICTORI activities related to participation and contribution to 5G-PPP Working Groups and Teams as well as the liaison activities with project of specific interest has been defined. The plan specifies the targeted WGs, Teams, projects along with the sharing of responsibilities.

The plans defined in this document outline the main intention of the 5G-VICTORI Consortium towards achieving the goals in its areas of interest, and maximising impact in this respect. For this purpose, the plans will be subject to continuous monitoring, revision and modification throughout the project lifetime to ensure the fulfilment of the targets.

6 Acronyms

Abbreviations / Acronyms	Description
3GPP	3rd Generation Partnership Project
3GPP SA1	Service and System Aspects WG
3GPP SA6	Mission Critical Application WG
5GMS	5G Media Streaming
5G-PPP	5 Generation Public-Private Partnership
BoI	Bodies of Interest
CEN/CENELEC	EU Committee for Standardization
CMS	content management system
CN	Core Network
DKE	Deutsche Kommission Elektrotechnik, Elektronik und Informationstechnik
EC	European Commission
ENISA	EU Network and Information Security Agency (Cyber-security Agency)
ER-ISAC	European Railway - Information Sharing and Analysis Center
ETCS	European Train Control System
FeMBMS	Further evolved multimedia broadcast multicast service
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ISA	International Society of Automation
ISO	International Standard Organization
ITU	International Telecommunication Union
KTA	Kontron Transportation Austria AG
MEC	Multiaccess Edge Computing
NEUPro	“NEUe PROduktion” (German word, eng. “New Production”)
NFV	Network Functions Virtualization
NGMN	Next Generation Mobile Network
O-RAN	Open Radio Access Network
OSM	Open Source Manual Orchestration
QoS	Quality of Service
QoE	Quality of Experience
RAN	Radio Access Network
RAN / RAN 1 / RAN 2, etc.	Radio Access Network (Layer1….)
SDN	Software Defined Networking
SDO	Standard Development Organisation
SEO	Search Engine Optimization
Shift2Rail	First European rail initiative to seek focused research and innovation (R&I) and market-driven solutions by accelerating the integration of new and advanced technologies into innovative rail product solutions
SSL	Secure Sockets Layer
SUMP	Sustainable Urban Mobility Plans

UIC	International Union of Railway
UNISIG	UNion of SIGnalling Industry
WG	Working Group