

Grant Agreement No.: 871808 Research and Innovation action Call Topic: ICT-20-2019-2020: 5G Long Term Evolution

INSPIRE-5Gplus

INtelligent Security and Pervasive tRust for 5G and Beyond

D6.1: Initial planning of Dissemination, Communication and Standardisation activities

Version: v1.0

Deliverable type	R (Document, report)
Dissemination level	PU (Public)
Due date	30/04/2020
Submission date	24/04/2020
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Work package, Tasks	WP6, T6.1 & T6.3
Keywords	Dissemination, communication, standardization

Abstract

This deliverable represents the main reference for dissemination, communication, and standardization activities of the INSPIRE-5Gplus project. It contains the principal guidelines for project partners in order to identify and exploit opportunities for spreading INSPIRE-5Gplus vision and achievements. In this line, key targets and adequate strategies have been identified to maximize the project's impact.

WP6 is responsible for dissemination, communication, and standardization activities and, therefore it is transversal to the rest of work packages. For that reason, all work packages of have contributed in different aspects to the production of this deliverable.

This deliverable is organized as follows. Section 1 provides a brief introduction to this document as well as the followed methodology. Section 2 dissects the Dissemination and Communication Plan and related activities. A similar structure is adopted in Section 3 regarding the Standardization activities. Finally, the deliverable is concluded with Section 4, summarising the most important dissemination, communication, standardization achievements so far.

Version	Date	Description of change	List of contributor(s)	
v0.1	23/01/2020	First draft version	Ramon Sanchez-Iborra	
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V0.2	03/04/2020	First complete version	Ramon Sanchez-Iborra	
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V0.3	06/04/2020	Review comments and suggested changesVincent Lefebvre		
V0.4	10/06/2020	Review comments and suggested changes	Gürkan Gür	
V0.5	14/04/2020	20 Review comments and suggested Pascal Bisson changes		
V0.6	15/04/2020	Integrated and polished version	Ramon Sanchez-Iborra	
V0.7	15/04/2020	Final review	Antonio Skarmeta	
V0.8	15/04/2020	Version sent for GA approval	Uwe Herzog	
V1.0	24/04/2020	Final editing and submit	Anja Köhler	

Document revision history

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Acknowledgment

The research conducted by INSPIRE-5Gplus receives funding from the European Commission H2020 programme under Grant Agreement No 871808. The European Commission has no responsibility for the content of this document.

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3GPP	3rd Generation Partnership Project
5G-PPP	The 5G Infrastructure Public Private Partnership
CDP	Communication and Dissemination Plan
ETSI	European Telecommunications Standards Institute
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IETF	Internet Engineering Task Force
ISO	International Organization for Standardization
IU	International Telecommunication Union
КРІ	Key Performance Indicator
RFC	Request For Comments
SME	Small Medium Enterprise
SP	Standardisation Plan
ТА	Target Audiences
WG	Working Groups

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1 Introduction

1.1 Purpose and structure of this report

1.1.1 Purpose

The INSPIRE-5Gplus consortium aims at proactively disseminating the project's technical results to the main stakeholder communities expected to use or benefit from the project's outcomes. In this vein, a significant number of dissemination activities are being planned, via several communication channels. Furthermore, the INSPIRE-5Gplus consortium will also address relevant existing standards (to enable interoperability of the envisioned project's outcomes), as well as provide contributions to the on-going development of new standards. Accordingly, within the INSPIRE-5Gplus project organization, WP6 is responsible for dissemination, standardization and outreach activities.

This deliverable mainly refers to the activities of the following project tasks:

Task 6.1 –Dissemination and Communication of the Results: This task focuses on the communication and dissemination of project results. During this task, the targeted audiences, the specific actions for their involvement in the project, and the metrics to verify the overall impact will be identified. In order to raise awareness, presentations will be held at fairs, workshops and conferences. This task will also facilitate the communications addressing the scientific community through scientific publications including journal articles, posters and presentations at reputable workshops and conferences. The academic partners of the project will also conduct specific educational activities related to the technologies developed. These activities will include training courses, tutorials and workshops that will be held in the universities and research centers. This task bundles all dissemination tasks regarding the project's outcomes. It includes a regularly updated web site, talks at industrial events, public talks for citizen awareness, the provision of online resources, training material and the demonstration of the use-cases.

Task 6.2 - Standardisation Evolution and Collaboration with Other Projects and Fora: This task frames all standardisation activities in the project. The project plans to contribute to standardisation via the project partner's membership in standardisation organisations, industry associations and open-source communities. INSPIRE-5Gplus will prepare informational material to influence standardisation via the involved bodies of the partner organisations. It will seek requirements and disseminate its results to 5G standardisation bodies and 5G-PPP, taking advantage of the participation in pre-standardisation Working Groups (WGs). This task will be focused on logistics, advice, and the required interactions with the target bodies. It will identify relevant standardisation entities, trigger and follow up participation, and maintain a list of relevant standards to monitor and contribute to. The technical content for the standardisation efforts will be provided by the respective technical WPs. A standardisation roadmap that enables other WPs to keep track of related standardisation activities, and planned and submitted contributions, will be maintained within this task. This will act as a bridge between INSPIRE-5Gplus and other relevant 5G-PPP programme projects (previous and current), institutions, and initiatives. This will enhance the visibility of the project and its outcomes and explore potential common activities and synergies with other projects, initiatives, networks, stakeholders and policy makers at the EU level.

WP6 deals also with the exploitation plan of the various results envisioned by the project. However, activities relevant to that goal are out of scope of this document and will be described in deliverables D6.3 and D6.5 respectively initial and final report on Exploitation, Business and Innovation Plans.

Therefore, the main objectives of this document are:

 to clarify roles and responsibilities for dissemination activities in the INSPIRE-5Gplus consortium;

- to describe main KPIs to measure the progress of dissemination and standardization;
- to define the conditions for dissemination;
- to describe the dissemination plan and relevant communication channels;
- to identify the main target audience;
- to describe initial dissemination activities;
- to provide a solid background of relevant standardization activities;
- to define initiatives and potential contributions to relevant standards.

1.1.2 Structure

The rest of this document is organised as follows. Section 1.2 introduces the methodology followed in INSPIRE-5Gplus for the dissemination and exploitation activities. The goals, objectives and KPIs of the Communication and Dissemination Plan (CDP) are defined in Section 2.1. In Section 2.2, the Target Audiences (TAs) are identified. The planning and monitoring of communication and dissemination activities are detailed in Section 2.3. Section 2.4 lists the INSPIRE-5Gplus-related publications in different communication media such as newsletters, scientific journals, social media, etc. Section 2.5 describes the events participated by INSPIRE-5Gplus. The communication and dissemination achievements of first half year are presented in Section 2.6. Section 3, in which the Standardisation Plan (SP) is explained, details the standardisation goals in Section 3.1, the targeted standardisation bodies in Section 3.2, and, finally, the standardisation-related activities in Section 3.3. This document is concluded in Section 4 by summarizing the most important achievements in the project's communication, dissemination, and standardisation activities.

1.2 Methodology

The methodology of this report is based on three pillars: (i) agreed definitions of key terms related to the subjects of this document, (ii) a coherent approach to the dissemination and use of knowledge, and (iii) an effective planning approach. These elements are explained below.

1.2.1 Definitions

The terms "Communication", "Dissemination" and "Exploitation" are defined by the EC in the context of Horizon 2020 projects as follows:

Communication – "is a strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results. It requires strategic and targeted measures for communicating about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange."²

Dissemination – "means the public disclosure of the results by any appropriate means (other than resulting from protecting or exploiting the results), including by scientific publications in any medium".²

Exploitation – "means the use of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities"².

Impact - is generated on technological, economic, and societal level through the combined effects of

² Horizon 2020 Rules for Participation

URL: https://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/rules_participation/h2020-rules-participation_en.pdf

communication, dissemination, and exploitation, including standardisation as a hybrid concept consisting of both dissemination and exploitation activities



Figure 1: Impact generation model

Knowledge – in the context of this project means the theoretical and practical understanding gained through the activities of INSPIRE-5Gplus. With regard to sharing or using knowledge generated in INSPIRE-5Gplus, this usually means knowledge documented in written or audio-visual form.

Standardisation – "is the process of implementing and developing technical standards based on the consensus of different parties that include firms, users, interest groups, standards organizations and governments." We consider the standards-related activities of Horizon 2020 projects to be at the cross-section between dissemination and exploitation. In an EC guide, standards are described "as a means of disseminating and implementing the results of research"; the guide points out that "standards differ from journal publications, which are specifically about knowledge dissemination and interpretation rather than knowledge dissemination and implementation."³ In the Horizon 2020 Rules of Participation², standardisation activities are considered as one of the ways for exploitation of results. Due to this special status, standardisation is covered in this report separately from dissemination.

1.2.2 Approach to the dissemination and use of knowledge

The project consortium considers the dissemination and use of knowledge to be of core importance for creating technological, economic and societal impact. Thus, we will make large parts of our results publicly available and will openly share our knowledge on how to use them. We believe that knowledge grows when it is shared to the largest extent. Thus, we regard the sharing of knowledge in an open dialogue with our target audiences as crucial for growing knowledge and achieving impact.

We believe that the communication, dissemination, standardisation and exploitation activities of INSPIRE-5Gplus are complementary elements in our endeavour to positively impact society in a

³ Standards and Standardisation. A practical guide for researchers. Brussels 2011, p.13 – URL:

 $https://ec.europa.eu/research/industrial_technologies/pdf/practical-standardisation-guide-for-researchers_en.pdf$

sustainable way. In this report, we focus on the planning of communication, dissemination, and standardisation. The planning of exploitation activities will be covered in a separate report – "Initial report on Exploitation, Business and Innovation Plans" (D6.3, month 18 – April 2021).

1.2.3 Planning approach

The consortium partners apply the proven PDCA method for ensuring high quality and effectiveness of the INSPIRE-5Gplus communication, dissemination and standardisation activities and results. This iterative management method consists of four steps:



Figure 2: PDCA Cycle

- 1. **Plan** Based on the general project goals and the respective impact goals, the consortium will define the specific implementation steps for communication, dissemination and standardisation activities as well as KPIs and target values for measuring success.
- 2. **Do** The consortium will perform the planned communication, dissemination and standardisation activities to achieve the envisaged results.
- 3. **Check** The consortium will analyse performance and results against the KPIs and target values defined in the planning phase.
- 4. Act If the previous step reveals a gap between planned and actual performance, the consortium will analyse possible causes and develop measures for corrective action, which will feed into the next iteration of the planning step.

The iterations will correspond to the points in the process where measurable outcomes are to be expected. While the completion of activities (Do) and related monitoring (Check) are ongoing, corrective action (Act) and re-planning (Plan) will be driven by corrective needs identified while monitoring.

2 Communication and Dissemination Plan

2.1 Goals, objectives and KPIs

The INSPIRE-5Gplus project aims at maximizing the outcomes of its activities, by leveraging multiple communication channels. The dissemination and communication activities will be at the service of the whole project so as to:

- Ensure broad visibility and raise awareness about INSPIRE-5Gplus by spreading knowledge about the project ambitions and its results.
- Reach, stimulate and engage a critical mass of relevant stakeholders to ensure that the results of the project are well-known and taken up, especially by vertical industries, to set up trials of innovative use cases and validate 5G-PPP programme level KPIs and promote security KPIs so far lacking.
- Foster high-impact contribution to relevant standardization bodies as appropriate and relevant to the planned exploitation plans and the project's outcomes.
- Facilitate the exploitation of the project's outcomes and promote the development of innovative solutions based on the new technologies introduced by INSPIRE-5Gplus.
- Increase the public visibility of the project and its outcomes, using generalist communication channels to connect with non-technical audiences.

Target audiences (TAs). INSPIRE-5Gplus identifies **11 TAs**, classified in two main groups: end-user TAs and other TAs, as listed in Table 1 with their interests.

End-user TA	Interest in the project
A—Academic and RTOs in cybersecurity, privacy & other fields	 Advancing own or INSPIRE-5Gplus-related post-project research; Training personnel & students on INSPIRE-5Gplus technologies.
B—Cybersecurity technology, 5G application & system developers, integrators & vendors,	 Utilising project's results in operations and R&D activities; Connecting with innovative organisations; fostering cooperation.
C —CSIRTs/CERTS and Law enforcement authorities	 Practically implementing the recommendations of the NIS directive; decreasing the occurrence / impact of cybercrime; Ensuring highest levels of digital security for their constituencies; Advancing incident handling, response and recovery support capabilities.
D —Cyber training and CDX actors	 Incorporating dynamic techniques and training methods into CDX; Providing training responding to end-user sector needs; Advancing incident management skills for professionals of CIIs; Closing the Cybersecurity skills gap.
E— 5G-PPP Community	 Discussion of the project advances through their specialized Working Groups: 5G Security Working Group of the 5G Industry Association.

	 Disseminate INSPIRE-5Gplus solutions among the vast community of potential adopters by leveraging the liaison between 5G Security Working Group of 5G PPP with WG6 (SRIA) of the European Cyber Security Organisation (ECSO).
Other TAs	Interest in the project
F— ECSO cPPP and its members	 Identifying common topics of interest; Establishing synergies and collaborations; Co-organising awareness and support events.
G —Consortia from SU-DS-05, other SU calls and relevant projects	 Contributing to advances towards a secure digital Europe; Gathering and sharing knowledge and tools for the development and use of novel solutions for digital security, privacy, collaboration and information-sharing in critical sectors.
H—Private and public funding institutions for innovation, Investors	 Identifying most promising innovation; and bringing it to market; Investing in cutting-edge cybersecurity / privacy technologies.
I—Key policy-making institutions regulating digital security policies. Relevant EU-wide initiatives (e.g. ETPs).	 Evaluating the project's techno-economic and regulatory aspects; Defining future innovation directions; Selecting incentives and policy mechanisms for Digital Market.
J—EU & MS cybersecurity organisations	 Developing national cybersecurity strategies aligned with the NIS Directive and in support of the EU Cybersecurity Act; Ensuring high levels of digital security, privacy and accountability within the EU digital single Market.
K—Media & General public, including Patients / Patients groups, European Citizens	 Informing the general and specialised public about recent innovations and expected impacts on their lives / operations; Stimulating innovation in unexpected groups of society;
L—Standards bodies and open-source communities, National and international agencies for standardisation	 Understanding the value of EU-funded innovation. Developing roadmaps for standards and open-source development; Receiving, gathering and consolidating inputs for standardisation; Incentivising open-source innovation and defending
	the principles of the Open science paradigm.

Table 1 - INSPIRE-5Gplus Target Audiences (TAs)

In the following, we focus separately on both aspects of these activities, namely communication and dissemination.

2.1.1 Communication goals, objectives and KPIs

INSPIRE-5Gplus has a comprehensive communications programme aimed at promoting the project and its results and successes by providing targeted information to stakeholder groups and audiences. This will include communication to the media and the general public, in a strategic and effective manner, also engaging them in a bi-directional exchange. The communication plan and associated activities (e.g. development of the project's identity, brand, website and social channels) is developed in detail under Task 6.1. The plan incorporates specific objectives and key messages addressed to relevant target communication audience groups, setting out clear descriptions and timings for each activity. The aim will be to ensure the visibility of INSPIRE-5Gplus and its results, ensure they can be understood even by non-specialists, and thus multiplied. The project website is operational since M1 as well as the project's four social media channels (Facebook, LinkedIn, Twitter and YouTube).

Communication objectives. The objectives of communication strategy and their relation to identified target audiences are presented in Table 2.

Objectives	Target audiences (as listed in Table 1)
Provide a clear view of the project, its goals and results	A, B, C, D, E
Create awareness of the project among the full range of stakeholders impacted by the results and engage those in a co-creation approach	ALL
Create interest from an active community of potential end-users (academic, consulting and industrial actors)	А, В, С, D, Е
Prepare the ground for the dissemination of project's results	ALL
Establish liaisons with other interested and/or interesting projects, initiatives and bodies for knowledge and innovation transfer	E, G, H, I, L
Recognition of the results among audiences beyond the immediate project's reach (standards bodies, policy-making institutions, ETPs, etc.)	E, F, G, H, I, J, K, L
Demonstrate how EU funding tackles societal and economic challenges	H, I, J, K, L

Table 2 - INSPIRE-5Gplus communication objectives

Communication activities and KPIs.

The integrated approach to communication adopted by INSPIRE-5Gplus combines a mix of traditional and disruptive communications channels (Table 3). All activities will be organised in communications campaigns. Communications activities targeting large numbers of stakeholders will use "push" communication channels with broad reach (e.g. social media, project's website, newsletters) while activities targeting smaller group of stakeholders (e.g. policy-makers, funding organisations) will use targeted "pull/interactive" channels such as workshops (invitation-only), focused group meetings, and targeted electronic communications. A set of modern communication and knowledge management tools will be used along with four social media platforms (LinkedIn, Twitter, Facebook, YouTube) as well as document-centric collaboration communities and forums that have pan-European visibility (e.g. MS SharePoint, Bitrix24, Alfresco, etc.). In order to evaluate the impact success of these activities, the following KPIs have been identified:

Communications means	Туре	Success indicator	Target # of outputs	Target audience	
Project website	Online	SEO Metrics	1	1000 unique visitors/year	
Social Media	Online Presence	# of users	4 social media channels	300 followers in Twitter/Linkedin/YouTube/SlideShare	
Promotional videos	Online Distribution	# of views	5	> 500 views	
Press releases	Online publications	# of elements	10	500 cybersecurity stakeholders	
Project meetings / roundtables	Events	# of events	10	> 40 internal and invited stakeholders	
Workshops/showcases	Events	# of events / attendees	5	250 participants in total	
Policy-level events in Brussels	Events	# of events	2	> 60 cybersecurity policy makers	
Newsletters, factsheets	Publications	# of publications	15	> 500 subscribers	
White papers	Publications	# of publications	4	500 recipients	
Deliverables (public)	Publications	QA standards	> 20	500 recipients	
Brochure and annual report	Publications	# of stakeholders	300	500 recipients	
Liaison with ECSO, participation in WGs and events	Events	# attended events	> 6	> 50 participants per event	
Liaison activities, common events with other H2020 projects	Networking	# of relevant projects	10	> 100 researchers on projects	
& knowledge exchange		# of joint workshops	3		
Liaison with relevant standardization bodies	Networking	# of active contributions to standards	5	Cybersecurity community	

Table 3 – KPIs for	r communication	activities
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2.1.2 Dissemination goals, objectives and KPIs

To strengthen and support the growth of the European leadership in 5G, INSPIRE-5Gplus will develop and execute from the very beginning a comprehensive strategy to maximise the impact of the project's activities and outcomes. The set of actions that INSPIRE-5Gplus will undertake, under the lead of WP6, will contribute to the success of the project's work with the ambition to promote a comprehensive security framework suitable for next-generation networks and different vertical market segments. The consortium will be primary targeting key interested or interesting ICT17 projects (5G platforms' scenarios), ICT18 (vertical scenarios on cooperative, connected and automated mobility) and ICT19 (general verticals' scenarios) to promote the adoption of the developed 5G security assets in their facilities/environments. This effort aims to raise awareness on the benefits that the INSPIRE-5Gplus assets and approach will bring in terms of security, trust and liability to advanced 5G communication systems and solutions. Stakeholders from the industry, as well as vertical business players will be also a key target for disseminating the project advances and developments in order to achieve a straight transfer to the technology market. Finally, the academic and standardisation communities will be also engaged by the organisation of workshops and events in which the outcomes of the project in terms of security assets, performance evaluation studies, etc. will be exposed. This will enable the collaboration with researchers and academics from universities and other research institutions.

The partners will adopt a dissemination plan which aims at establishing strong communication channels with the target audience. The proposed plan will provide guidelines on communicating the project's vision and results, with recognizable, clear and effective messages, as well as stimulate interest in the project technologies and achievements. To this aim, the INSPIRE-5Gplus consortium has identified several target audiences, which are described in Table 4.

Target audience	Activities
Industry	 Liaison with industrial associations. Key articles in trade press. Participation in relevant conferences/workshops with large audience among industrial organisations. Organisation of workshops and demo events. Individual presentations / discussions with key organisations
Vertical business players (including SMEs and industrial actors)	 Liaison with vertical business players. Articles in trade press. Participation in relevant conferences/workshops. Organisation of workshops and demo events at vertical business sites
5G-related projects	 Liaison and collaboration with other H2020 projects Common organisation of workshop and events
5G-PPP Community	 Promotion of the 5G PPP at programme level Direct liaisons with the 5G Infrastructure Association (5GIA), other existing 5G PPP governance bodies and working groups.
Standardization bodies and open source communities	 INSPIRE-5Gplus will collaborate with several standardization bodies. These bodies will be informed of any relevant project outcome that can be of interest for their activities. Stakeholder contributions will also be encouraged though targeted communications and participation to events.
5G Research & Innovation Actors	 Liaison and collaboration with researchers and academics from universities. Peer reviewed publications in scientific journals. Participation in conferences/workshops with large audience among the scientific community Through MoU signed between 5G PPP and Cybersecurity PPP (ECSO) liaison through 5G Security WG with ECSO SRIA WG and Sectorial demand WG.

Table 4 - INSPIRE-5Gplus dissemination strategy per stakeholder

To reach these target audiences, the main INSPIRE-5Gplus dissemination channels are:

- Mobile World Congress (2020, 2021, 2022): Mobile World Congress (MWC) is the main congress from the Telecommunications Industry. Significant awareness of the INSPIRE-5Gplus project and results will be brought to MWC attendees through the 5G-PPP / 5G-IA booth. INSPIRE-5Gplus will be key in order to generate an ecosystem for 5G security, trust and liability validation closely related to the MWC scope. Moreover, INSPIRE-5Gplus's industrial partners, Thales, Orange, and Telefónica will participate in the annual MWC and present innovations inspired from the work in INSPIRE-5Gplus. Due to COVID19 pandemic, MWC 2020's edition was virtual and INSPIRE-5Gplus was present in this on-line event as detailed later.
- International conferences, workshops, peer-reviewed journals, magazines and books: Coordination, publication and presentation of INSPIRE-5Gplus contributions to reputable international conferences, as well as peer reviewed journals and magazines will be realized. Taking into account the focus of 5G and security, the consortium will focus on providing publications in the high-impact conferences and journals. Examples of these include: IEEE Security and Privacy Magazine, IEEE Transactions on Vehicular technology, IEEE Journal on Selected Areas in Communications, IEEE Network Magazine, IEEE Transactions on Dependable and Secure Computing, IEEE Communications Magazine, IEEE Internet of Things Journal, ACM CCS, Usenix Security, IEEE GLOBECOM and IEEE ICC. The consortium will announce the dissemination planning early in the project, based on the planned outcomes of the research results and the dates and locations of respective conferences and events, or special issue announcements.
- Organisation of dedicated INSPIRE-5Gplus workshops: The INSPIRE-5Gplus consortium will organise workshops and training events targeting stakeholders, end users and industrial players. In this way, the introduction of INSPIRE-5Gplus results to other organisations will be accelerated, and potential business end users will be properly informed on all aspects relating to INSPIRE-5Gplus. Independent experts both from industry and academia will also be invited. These workshops will aim to be collocated with major events (e.g. ETSI Security Week) to maximise audience.
- Participation in public industry exhibitions: A high level of visibility will be achieved for the project by organising/participating in public exhibitions and industry/operator fairs contributing demonstrations of project achievements to approach business stakeholders. Examples of public exhibitions are Smart Industries⁴ and the ICIN⁵.
- Interactions with worldwide fora and institutes: INSPIRE-5Gplus will organise interactions with worldwide fora and institutes for the effective dissemination of project results and the cross-fertilisation of ideas and concepts, e.g., European Cyber Security Organisation (ECSO) SRIA WG6 SRIA but also WG3 sectorial demands, NIST, AI-HUB, SDNcentral.com.
- Academic dissemination: INSPIRE-5Gplus will disseminate its key findings and solutions to the academic community in order to be used by research and teaching programs. Results and knowhow from the project will be included as part of future graduate and postgraduate courses, facilitating the enrichment of the curricula offered at the partner universities. Furthermore, this activity will have considerable impact particularly for M.Sc. and Ph.D. students promoting the education of the new generation of European researchers/engineers working in the fields addressed by INSPIRE-5Gplus.
- Participation and contribution to the 5G PPP programme. To maximize the impact of the project's activities within the whole 5G PPP programme, the consortium will pursue and ensure close coordination with several ongoing (ICT17 and ICT18) and upcoming (ICT19) Phase 3 projects, and other related initiatives in Europe and beyond (Table 5). INSPIRE-5Gplus targets two main contributions to the 5G PPP programme on the one hand, INSPIRE-5Gplus will promote the

⁴ <u>https://www.smart-industries.fr/en</u>

⁵ <u>https://www.5g-eve.eu/event/icin-2020-paris/</u>

adoption of the developed 5G security intelligent and trust/liability assets for 5G platform and/or vertical UCs within the Phase3 projects. On the other hand, INSPIRE-5Gplus will contribute to the 5G PPP programme level KPIs and progress the security KPIs that have not been yet properly addressed. Accordingly, INSPIRE-5Gplus commits to work with its peer 5G-PPP Programme projects as required under the complementary grant agreement clause of the 5G PPP Phase 3 grant agreement and under the governance structures defined (5G PPP Steering and Technology Boards). Also, active contribution to the 5G PPP Communication Working Group including participation to the dedicated monthly conference calls with all ongoing 5G PPP projects will be realized to align on overall communication and dissemination efforts across the whole programme. The INSPIRE-5Gplus partners have identified various 5G PPP working groups, where several partners are already engaged in. It is worth to highlight that the 5G IA Security WG is led by the project members Pascal Bisson (Thales) and Jean-Philippe Wary (Orange).

Working Group (WG)	Involved INSPIRE-5Gplus partners
Security	THALES/TSG (chair), Orange (chair)
5G Architecture	CTTC, NCSRD, THALES/TSG, TID, Orange
5G Automotive	Thales, UMU
Pre-Standardization	TID
Software Networks	CTTC, NCSRD, TID, Orange
SME	MI, CLS, TAGES
Trials	CTTC, NCSRD, UMU, TID
Vision and Societal Challenges WG	CTTC, EURES, THALES/TSG, TID
Network Management & QoS WG	EURES, THALES/TSG; Orange
IMT-2020 Evaluation	NCSRD, TID
5G-IA membership	THALES/TSG, Orange, TID, CTTC, NCSRD

Table 5 - Direct Involvement of INSPIRE-5Gplus partners in 5G PPP

Finally, to quantitatively measure the efforts of dissemination activities and to verify the relevant progresses, the consortium has defined specific KPIs, reported in Table 6, addressing different areas.

KPIs	Target		
Publication in scientific journals/books	> 10		
Communications in International Conferences	>15		
Participation in public industry exhibitions	>5		
White papers	>3		
Event organisation	> 5		
Deliverables	> 20		

Table 6 – KPIs for dissemination activities

2.2 Planning and monitoring of communication and dissemination activities

The INSPIRE-5Gplus communication and dissemination activities will be performed in four distinct phases, which are described below. In order to achieve the dissemination goals defined in Section 2.1, the project follows the PDCA method described in Section 1.2.3. The planned activities are distinguished into two categories: events (see sub-Section 2.4) and publications (see sub-Section 2.5).

2.2.1 Implementation phases

The communication and dissemination activities of INSPIRE-5Gplus will be carried out in four phases. Each of these phases is focused on specific objectives and target audiences, and activities will be performed using the most suited channels.



Figure 3: Implementation phases for communication and dissemination activities

Phase 1 – Awareness Creation (M1-M12): During this initial phase the objective is to create awareness about the project's objectives and expected results among the 5G+ related target audiences. INSPIRE-5Gplus will leverage the awareness that has already been created around the 5G PPP programme. *Dissemination and communication activities:* establishing communication channels including the project website and Social Media accounts, production and distribution of online and offline dissemination material, dissemination through conferences and workshops, scientific publications, 5G PPP collaboration. These actions will accompany the first technical phase of the project, in which the current 5G security ecosystem will be explored.

Phase 2 – 5G+ Community Outreach (M13-M24): In this phase, INSPIRE-5Gplus will actively reach out to the main target audiences in the European 5G Community, in order to generate interest in engaging with INSPIRE- 5Gplus. First project results, e.g. from use cases, will be discussed with the 5G+ Community.

Dissemination and communication activities: sharing of information on project results and activities via the project website and Social Media, production and distribution of online and offline dissemination material, dissemination through conferences and workshops, scientific publications, 5G PPP collaboration, media relations including press releases, proof-of concept and/or demos. This phase will be aligned with the second technical stage of INSPIRE-5Gplus, in which the first development outcomes will be achieved.

Phase 3 – Global Outreach and Engagement (M25-M33): In this phase, INSPIRE-5Gplus will expand its outreach both geographically and in terms of target audiences to be approached. Beyond the target audiences from phase 2, we will reach out to the global 5G+ Community as well as to a wider scope of target audiences, including policymakers and regulators. The main goal in this phase is to actively engage and support all target audiences in the adoption and deployment of the INSPIRE-5Gplus concepts. In this context, INSPIRE-5Gplus will make particular use of the mechanisms and channels offered by the 5G PPP, including Working Groups and global interaction with sister organisations in other regions of the world.

Dissemination and communication activities: sharing of information on project results and activities via the project website and Social Media, production and distribution of online and offline dissemination material, dissemination through conferences and workshops, scientific publications,

Phase 4 – Demonstration of Final Results (M34-M36): In this phase, final results will be demonstrated specifically to those target audiences interested in using them. At the same time, the final scientific and business findings of the project will be consolidated and published in national/ international journals and online media. The primary objective of this phase is to demonstrate to internal and external customers and to attract investors.

Dissemination and communication activities: sharing of information on project results and activities via the project website and Social Media, production and distribution of online and offline dissemination material, dissemination through conferences and workshops, scientific publications, and 5G PPP collaboration, media relations including press releases, proof-of concept and/or demos. This phase will be aligned with the Integration and validation stage of INSPIRE-5Gplus.

2.2.2 Measuring the effectiveness of activities and corrective actions

INSPIRE-5Gplus has defined a number of KPIs and targets for measuring the effectiveness of the project's communication and dissemination activities. The monitoring of KPIs and targets will enable INSPIRE-5Gplus to adapt and improve the effectiveness of its measures according to its planning process.

The initial set of KPIs and targets for each activity is presented in Table 3. The KPIs will help the project to effectively monitor the progress towards achieving the communication and dissemination goals defined in Section 122.1.

Monitoring of activities in accordance with the KPIs will also help us in identifying any potential problems with respect to the effectiveness of our activities, e.g. regarding the extent to which target audiences have been reached and engaged in a dialogue. An important process in the monitoring of KPIs is the tracking of communication and dissemination activities, which is described in Section 2.2.3.

In the case that any of the target values for the KPIs are not fully achieved, the project will decide upon suitable counter-measures, following the PDCA approach outlined in Section 1.2.3.

2.2.3 Tracking of communication and dissemination activities

As part of the project's PDCA methodology for managing communication and dissemination activities (see Section 1.2.3), INSPIRE-5Gplus is giving special attention to monitoring and tracking dissemination activities. To this purpose, the project is using a specific tool and a related process for dissemination tracking: the EuresTools® Tracker is a cloud-based tool for tracking and controlling dissemination activities and results. It provides an easy overview on activities and results, and it facilitates the process of agreeing on dissemination documents. In addition, the tool provides an automated integration of dissemination results on the project website, which significantly shortens the time and effort for publishing dissemination documents on the web.

Through an easy-to-use export function, EuresTools[®] Tracker enables the project management team to prepare up-to-date tables on dissemination activities for use in reports to the European Commission. The tool was introduced to the consortium partners for internal project use in July 2018.





Figure 4: EuresTools® Tracker interface

2.3 Publications

2.3.1 Logo and visual identity

At the start of the project, the consortium has created a logo to make all visual communication and dissemination easily recognizable.



Figure 5: INSPIRE-5Gplus project logo version 1



Figure 6: INSPIRE-5Gplus project logo version 2

The consistent use of the INSPIRE-5Gplus project logo (Figure 5 and Figure 6) will be the major factor contributing to the project's visual identity. The logo is available in the OnlyOffice document repository of INSPIRE-5Gplus for anyone in the project to use. It is also consistently embedded in templates for deliverables, presentation slides, and more.

The creation and maintenance of a visual identity will be further supported through the consistent use of a colour scheme based on the logo colours.

The visual identity of the project will help induce brand recognition and trust among target audiences for the project activities and results. It is, thus, instrumental to the impact of all communication and dissemination activities.

2.3.2 Website

A preliminary version of the INSPIRE-5Gplus project website was launched under the domain name www.inspire-5gplus.eu in November 2019. By January 2020, the website had already reached a high level of maturity. Since then, the website has been regularly updated in the Publications, Events, and News sections. The project website serves as the central reference point for all of the project's communication and dissemination activities.

Beyond the home page level, the website is structured into five sections:

- 1. About Us
- 2. Ambition
- 3. Publications
- 4. Events
- 5. News & Media

INSPIRE-5Gplus INtelligent Security and Pervasive tRust for 5G and Beyond

HOME	ABOUT US	AMBITION	PUBLICATIONS	EVENTS	NEWS & MEDIA			
		1000010 0101010 110110 01101: 0101100	01111100 01010010 00100011 11001011 00110010				• • • •	
	telligent Security and for 5G and B	5 -5Gplus I Pervasive Trust Beyond gplus.eu	Video – (February 13, The video results an project IN: security al	Dverview or 2020 provides an d partners of SPIRE-5Gplu: nd pervasive	n INSPIRE-5Gplus overview on the goals, a f the project. 5G PPP res s explores solutions for trust for 5G and beyond	activities, search intelligent 1.	in 🔌 健	٩
		EIRESCOM	INSPIRE November 12 On 4-5 No met for its meeting w In the 2-da towards a	-5G-plus kid , 2019 vember 2019 s kick-off mer vas hosted by ay meeting, th dvancing the	ck-off meeting in Hei b, the INSPIRE-5Gplus co eting in Heidelberg, Gerrr y project coordinator Eur he consortium made the security of 5G and Beyone etacacure	idelberg onsortium many. The rescom. e first step ond	Subscribe to our Email * Subscribe!	Newsletter

Figure 7: INSPIRE-5Gplus website at https://www.inspire-5gplus.eu

The website is regularly updated, particularly the news section, where website visitors will frequently find new items. The latest news items are also directly visible and accessible via the news column, which is always visible on the right side of the home page and most other pages. It also contains syndicated news feeds from the INSPIRE-5Gplus Twitter account.

The website, which is based on a WordPress implementation, is hosted, managed, and edited by Eurescom.

As a measure of effectiveness, the project will closely monitor and document the number of visitors and the responses elicited by the website.

2.3.3 Newsletter

As of Q2/2020, INSPIRE-5Gplus will be publishing a quarterly e-mail newsletter, called "5G+ Security News". The purpose is to inform target audiences about activities and results of the project.

Each newsletter is complemented by additional information on past and upcoming events. All articles published in the newsletter are also available in the news section of the INSPIRE-5Gplus website. Any website visitor interested can subscribe to the newsletter via the following web link: https://www.INSPIRE-5Gplus.eu/newsletter/.

All issues of the newsletter will be archived in pdf format on the INSPIRE-5Gplus website at https://www.INSPIRE-5Gplus.eu/ where they will be accessible as long as the website is online.

2.3.4 Social media

We will use Social Media to create and sustain awareness for the activities and results of INSPIRE-5Gplus among target audiences and all other interested parties. We decided to focus on particular Social Media channels, which promise to be most effective in reaching our target audiences. Similar to any other communication and dissemination activities, we will apply the PDCA cycle (see Section 1.2.3), which means we will regularly review the effectiveness of the different channels.

2.3.4.1 Twitter

At the project start in November 2019, we have set up a Twitter account under the name @INSPIRE_5Gplus (https://twitter.com/inspire_5gplus/ – see Figure 8). It will be used to redistribute news items published on the INSPIRE-5Gplus website and to connect with target audiences and anyone interested.



Edit profile
INSPIRE-5Gplus @INSPIRE_5Gplus
INSPIRE-5Gplus is the Horizon 2020 research project for Intelligent Security and Pervasive Trust for 5G and Beyond. It is funded by the European Commission.
European Union III Joined November 2019
8 Following 75 Followers
Figure 8: INSPIRE-5Gplus Twitter account

As of 4 March 2020, the INSPIRE-5Gplus Twitter account had 69 followers.

2.3.4.2 YouTube

INSPIRE-5Gplus has set up a YouTube account in February 2020 for sharing videos on its activities and results with its target audiences and other interested parties. As of 2019, the project will regularly publish videos on YouTube, including interviews and technical demonstrations.



Figure 9: YouTube channel of INSPIRE-5Gplus

2.3.4.3 LinkedIn

INSPIRE-5Gplus is using the LinkedIn group of the 5G PPP to share information on events and activities the project partners are involved in.



Figure 10: INSPIRE-5Gplus post in the 5G PPP LinkedIn Group

In addition, INSPIRE-5Gplus considers creating a LinkedIn group for community building on topics related to security in 5G and Beyond. The group would be specifically aimed at facilitating a productive dialogue with target audiences interested in 5G security.

2.3.4.4 SlideShare



Figure 11: Slideshare account at https://www.slideshare.net/ProjectINSPIRE5Gplus

INSPIRE-5Gplus has an account on LinkedIn Slideshare, which is used for sharing presentation slides

about the project and its activities and results with its target audiences.

2.3.5 Scientific papers

INSPIRE-5Gplus aims at disseminating the achieved research and innovation results in top-ranked scientific journals and magazines, as well as in international conferences and workshops. The scientific research items treated in the project will be also exploited by the editorship of book and Sections as a mean to present the INSPIRE-5Gplus work to the international research community. As aforementioned, the projects outcomes will be also presented at conferences, fora and bodies which are attended by potential interested stakeholders. Besides, INSPIRE-5Gplus members will provide talks and panels in these international events for increasing the awareness of INSPIRE-5Gplus. In the following, a non-exhaustive list of journals and conferences of potential interest for disseminating the project results is given.

2.3.5.1 Targeted journals

- IEEE Journal on Selected Areas in Communications
- IEEE Access
- IEEE Transactions on Industrial Informatics
- IEEE Transactions on Dependable and Secure Computing
- IEEE Communications letters
- IEEE Wireless Communication letters
- IEEE Wireless Communications
- IEEE Transactions on Wireless Communications
- IEEE Communications Magazine
- IEEE Network
- Elsevier Future Generation Computer Systems
- Elsevier Computer Networks
- Elsevier Journal of Information Security and Applications
- ACM Transactions on Privacy and Security
- ACM Digital Threats: Research and Practice

2.3.5.2 Targeted conferences

- European Conference on Networks and Communications (EuCNC)
- IEEE International Conference on Communications (ICC)
- IEEE GLOBECOM
- IEEE Conference on Standards for Communications and Networking (CSCN)
- IEEE Wireless Communications and Networking Conference (WCNC)
- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIRMC)
- IEEE World Forum on Internet of Things (WF-IoT)
- IEEE Global IoT Summit (GIOTS)
- IEEE Symposium on Security & Privacy



- ACM SIGCOMM
- International Conference on Availability, Reliability and Security (ARES)
- 6G Wireless Summit
- IFIP International Conference on ICT Systems Security and Privacy Protection (IFIP SEC)

2.3.5.3 Open Access

The consortium will follow the guidelines set forth by the EU on its mandate for open access publications to all peer-reviewed scientific publications, including research articles (published in conferences, journals, etc.). The project is aware that open access must be granted to all scientific publications resulting from Horizon 2020 actions. The project's policy towards open access regarding publications will be to allow the author(s) to determine the method of making the information available among the two main options, 'Gold' open access and 'green' open access.

2.3.6 White papers and guidelines

White papers and technical guidelines documents are a common and fruitful vehicle to disseminate the project achievements in order to reach a great audience. These documents are usually written with a technical perspective but using an accessible style to make them understandable by different type of readers. Under this scope, INSPIRE-5Gplus has contributed to the 5th edition of the European 5G Annual journal, by submitting a white paper presenting the aims and architecture of the project. Although 2020's issue has not been released yet, previous issues can be accessed from <u>https://5g-ppp.eu/annual-journal/</u>.

2.3.7 Flyers and brochures

The main goals, innovations, benefits envisioned by the project are given in the INSPIRE-5Gplus flyer. This document is a two-page brochure, summarizing the key objectives and concepts of the project, as well as the INSPIRE-5Gplus framework characteristics. Figure 12 presents the first page of the brochure. The complete flyer description can be found in Appendix A.





Figure 12: First page of INSPIRE-5Gplus brochure

2.4 Events

2.4.1 Targeted third-party events

INSPIRE-5Gplus have benefitted from and contributed to relevant international fora, including:

- IoT Forum (www.iot-forum.eu): UMU is hosting and is a board member of the IoT Forum. INSPIRE-5GPLUS will actively contribute to the activities of the IoT Forum, a global forum promoting IoT and its applications.
- International Cyber Security Protection Alliance (ICSPA), the Spanish Industrial Cybersecurity Centre (CCI) and the Cloud Security Alliance (CSA) where some of the partners such as UMU are participating
- AIOTI Alliance for the Internet of Things Innovation was launched by the European Commission and various key IoT players in March 2015. Several partners like UMU are involved and it is a fora where discussion on aspects like security and privacy related to IoT will be highly relevant to INSPIRE-5GPLUS for example to focus on labelling and testing mechanisms.
- ECSO <u>https://ecs-org.eu</u> it is the cPPP on Cybersecurity and partners such as THALES, UMU or ZHAW are involved on a number of topics through different WGs starting first with SRIA WG aka WG6 but also other ranging from WG1 (on Certification) till WG6 (SRIA WG) going through WG3 (on verticals). It will open the possibility to discuss the possible impact of INSPIRE-5Gplus results in a number of directions and with a broad range of additional players.
- European Cyber Week: Montimage hosted a booth in this relevant event and provided an exhibition/demonstration session focused on 4G/5G/IoT monitoring tools.
- ASTechAirbus Forum: A similar initiative as the previous one was carried out in this event by Montimage.
- Mobile World Congress: INSPIRE-5Gplus project was presented in this outstanding event through the on-line invited talk provided by CTTC.

• 1ST CYBER SECURITY JOINT PROJECT WORKSHOP, Panel 4: Good practices in data sharing for incident handling. Session moderated by UMU and participated by Montimage.

2.4.2 Workshops organised by INSPIRE-5Gplus

The consortium has agreed the organisation of a number of international workshops co-located with important scientific events in order to increase the visibility of the project:

- IEEE 5G-World Forum 2020. Workshop on 5G Security: Current Trends, Challenges and New Enablers. (30/09/2020 02/10/2020). Bangalore, India. <u>https://ieee-wf-5g.org/workshop-on-5g-security-current-trends-challenges-and-new-enablers/</u>
- IEEE 5G-World Forum 2020. 3rd Workshop on Blockchain for 5G/6G, IoT and CPS 2020. (30/09/2020 - 02/10/2020). Bangalore, India. <u>https://ieee-wf-5g.org/3rd-workshop-on-blockchain-for-5g-6g-iot-and-cps-2020/</u>

EuCNC 2020: Workshop on Cybersecurity for 5G networks and services. (15/06/2020 - 18/06/2020). Dubrovnik, Croatia. <u>https://www.eucnc.eu/workshops/.</u> Despite submitted this joint (5G & ECSO) workshop will not take place. Indeed, as a consequence of the current Coronavirus pandemic, the organising committee announced that due to the fact that COVID-19 pandemic the EUCNC 2020 edition will take the format of an on-line virtual conference and that in this new format, there will be no Workshops, Tutorials and Special Sessions.

2.5 Communication and dissemination achievements of first half year

2.5.1 Publications

Publication in prestigious journals, magazines or conferences is a fundamental vehicle to disseminate the technical advances achieved in the project. In the following we present the works published or already submitted for their publication.

Activity event material type	Event name / material name	Papers / presentation title	Responsible partner	Status of publicatio n	Download link
Journal	IEEE Access	Enabling Roaming across Heterogeneous IoT Wireless Networks: LoRaWAN meets 5G	UMU	submitted	Not published yet
Magazine	5th edition of the European 5G Annual journal	INSPIRE-5Gplus: Intelligent Security and Pervasive Trust for 5G and Beyond	UMU	submitted	<u>https://onlyoffice.eurescom.eu /Products/Files/#7516</u>
Magazine	IEEE Trans. on Wireless Communica tions	Physical Layer Authentication for Massive MIMO Systems with Hardware Impairments	AALTO	published	http://www.mosaic- lab.org/uploads/papers/3b3c8 e51-10e3-4205-9b4a- 9f7a932959fe.pdf
Magazine	IEEE Network Magazine	Al-driven Zero Touch Network and Service	AALTO	published	http://www.mosaic- lab.org/uploads/papers/20edfc 7e-02db-4fad-9b63-

		Management in 5G and Beyond: Challenges and Research Directions			<u>d584342130d2.pdf</u>
Magazine	IEEE Network Magazine	ZSM Security: Threat Surface and Best Practices	AALTO	published	http://www.mosaic- lab.org/uploads/papers/8be64 54f-8c50-4f6b-9ba9- 9b80f7c5761b.pdf
Conference contribution	6G Wireless Summit - organised as virtual event	The Role of Blockchain in 6G: Challenges, Opportunities and Research Directions	ZHAW	published	https://www.researchgate.net /publication/338831183_The
Conference contribution	IEEE Conference on Communica tions and Network Security (IEEE CNS 2020)	A Blockchain Based Group Key Agreement Protocol (B-GKAP)	ZHAW	submitted	Not published yet
Conference contribution	IEEE Wireless Communica tions and Networking Conference (WCNC'202 0)	Robust Self- Protection Against Application-Layer (D)DoS Attacks in SDN Environment	AALTO	accepted	http://www.mosaic- lab.org/uploads/papers/c9cab 5c4-2dc4-4cf1-abde- 93ca63912094.pdf
Presenta- tion	EUCNC 2020 - Software Networks Workshop	Advancing security of softwarized networks	СТТС	submitted	Not published yet
Presenta- tion	ETSI Security Week/Secur ity challenges in 5G MEC	Security challenges in 5G MEC	Orange Polska	draft	Not published yet
Video/Film/ TV Clip	Project Video	Overview on 5G PPP project INSPIRE-5Gplus for security and trust in 5G	Eurescom	not applicable	https://youtu.be/W_MMj0t2C 20

Table 7 - Publications

2.5.2 Website

The INSPIRE-5Gplus website at <u>https://www.inspire-5gplus.eu</u> has attracted a growing number of visitors in the first six months (see Figure 13). Regarding the decrease in the number of visitors during

the month of April, this is justified by the impact of the COVID19 situation. For the next six months and beyond, we see potential for further growth once more results are available on the project pages.



Figure 13: Website visitors 1 October 2019 - 6 April 2020

Country		Acquisition			Behavior			
		Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	
		161 % of Total: 100.00% (161)	161 % of Total: 100.00% (161)	261 % of Total: 100.00% (261)	43.30% Avg for View: 43.30% (0.00%)	2.86 Avg for View: 2.86 (0.00%)	00:02:36 Avg for View: 00:02:36 (0.00%)	
1.	Spain	36 (22.09%)	35 (21.74%)	54 (20.69%)	51.85%	2.20	00:01:01	
2.	France	26 (15.95%)	25 (15.53%)	34 (13.03%)	47.06%	2.74	00:02:29	
3.	Finland	19 (11.66%)	19 (11.80%)	24 (9.20%)	37.50%	3.08	00:00:52	
4.	Greece	18 (11.04%)	18 (11.18%)	20 (7.66%)	35.00%	2.40	00:00:53	
5.	Germany	11 (6.75%)	11 (6.83%)	60 (22.99%)	43.33%	3.63	00:06:16	
6.	Italy	7 (4.29%)	7 (4.35%)	13 (4.98%)	23.08%	3.23	00:01:49	
7.	Poland	6 (3.68%)	6 (3.73%)	6 (2.30%)	33.33%	2.83	00:02:03	
8.	United Kingdom	5 (3.07%)	5 (3.11%)	5 (1.92%)	20.00%	3.00	00:03:54	
9.	Netherlands	5 (3.07%)	5 (3.11%)	10 (3.83%)	20.00%	4.20	00:02:23	
10.	India	3 (1.84%)	3 (1.86%)	3 (1.15%)	100.00%	1.00	00:00:00	

The regional distribution is dominated by visitors from Europe (see Table 8).

Table 8 - Regional distribution of website visitors 1 October 2019 - 6 April 2020

2.5.3 Social Media

The main focus of the project's Social Media activities in the first 6 months was on Twitter.

Twitter

The Twitter account has quickly grown to **75 followers** as of 7 April 2020. Between 1 December 2019 and 6 April 2020, Tweets by INSPIRE-5Gplus achieved a total of **12,297 impressions**, which means views. The most successful Tweet (see Figure 14) generated 2,700 impressions and 86 engagements, which means retweets, likes or other interactions.

Tweet	s Top Tweets Tweets and replies Promoted	Impressions	Engagements	Engagement rate
•	INSPIRE-5Gplus @INSPIRE_5Gplus · Feb 4 The second project meeting of INSPIRE-5Gplus is hosted by CTTC in Barcelona. It started this morning and will end on Thursday. The INSPIRE-5Gplus consortium works on advancing the security of 5G and Beyond networks. @CttcTech @5GPPP #5G #ICT #Cybersecurity #H2020 pic.twitter.com/ozWMWyUrQc View Tweet activity	2,700	86	3.2% Promote
•	INSPIRE-5Gplus @INSPIRE_5Gplus · Feb 14 Watch the INSPIRE-5Gplus overview video on YouTube to learn more about the project and how INSPIRE-5Gplus will improve security and trust in 5G and beyond. youtu.be/W_MMj0t2C20 #5G #ICT #Cybersecurity #H2020 @5GPPP pic.twitter.com/HPiwVG8H4h View Tweet activity	2,537	34	1.3% Promote
•	INSPIRE-5Gplus @INSPIRE_5Gplus · Feb 25 The fastest way to learn what INSPIRE-5Gplus is all about - Watch the 2.5 min overview video on how 5G EVE will advance security and trust in 5G youtu.be/W_MMj0t2C20 #5G #ICT #Cybersecurity #H2020 @5GPPP pic.twitter.com/HWYkP8DiE2 View Tweet activity	1,727	39	2.3% Promote

Figure 14: Top Tweets of INSPIRE-5Gplus

YouTube

The YouTube channel of INSPIRE-5Gplus was launched in February 2020 and contains one video, which received 39 views as of 7 April 2020.

Slideshare

The Slideshare channel of INSPIRE-5Gplus was launched in March 2020 and contains one slide set, which received 23 views as of 7 April 2020.

In the next period, INSPIRE-5Gplus will further expand its activities on all Social Media channels, including LinkedIn.



Open standards are not only essential to guarantee interoperability among the different components in a network, but to achieve their security as well. Without open standards, it would become impossible to perform any assessment on security properties or to validate practices in any given network infrastructure or service. A comprehensive security framework suitable for next-generation networks, as the one being developed by INSPIRE-5Gplus, must be committed to a tight collaboration with open standardization activities of any nature.

3.1 Standards-related strategy

Transforming the developed solutions and frameworks into standards is one of the key strategic objectives of INSPIRE-5Gplus, with the intent of creating consensus among global players to use the technologies developed by the project. The consortium is well aware of how this goal depends on the timeliness of the standardization process, and in particular on the speed at which standards get adopted and implemented by the industry. INSPIRE-5Gplus plans to monitor all relevant communities, so that proper adjustments can be timely made to increase the impact opportunities and keep the advantage of the project outcomes.

The INSPIRE-5GPlus team has a relevant trajectory of active contribution, including direct leadership, to different standardization bodies, communities and associations, as identified below. The project task for standardization aims at achieving a high level of contribution to current and future standardization efforts, focused on the coordination of the interactions with the target communities, in order to maximize the impact of the technical project results. This task monitors both regulatory bodies and open source projects, as well as find any relevant fora where the INSPIRE-5Gplus project outcomes can provide valuable contributions. To maximise the impact of these standardisation activities, the consortium has already appointed a Standardisation Task Leader (Diego Lopez TID), who will coordinate them in tight cooperation with the technical activities, and with all partners already engaged in standard bodies and open source activities. Partners are committed to exhaustively identify and cooperate in any opportunity to contribute to technical specifications, working groups, software elements, proofs of concept and whitepapers.

3.2 Targeted standardisation bodies and standards-related organisations

3.2.1 3GPP

3GPP covers cellular telecommunications technologies, including radio access network (RAN), core network (CN) and service capabilities, which provide a complete system description for mobile telecommunications. The 3GPP specifications provide hooks for non-radio access to the core network, and for interworking with non-3GPP networks. 3GPP specifications and studies are contribution-driven, by member companies, in Working Groups and at the Technical Specification Group level. The three Technical Specification Groups (TSG) in 3GPP are; Radio Access Networks (RAN), Services & Systems Aspects (SA), Core Network & Terminals (CT). Written contributions are submitted to 3GPP meetings by 3GPP member organizations. The meeting calendar⁶ describes the schedule of the meetings. 3GPP Release cycle is approximately 15 months. There are plenary sessions that approves the content of the release before the release cycle starts.

Obviously, the SA WG3 (commonly known as SA3) is responsible for security and privacy in 3GPP, determining the security and privacy requirements, and specifying the security architectures and

⁶ <u>https://www.3gpp.org/3gpp-calendar</u>

protocols. The WG also considers cryptographic algorithms applicable as part of the specifications. A specific subgroup (SA3-LI) provides the requirements and specifications for lawful interception. In addition, SA3 and the 3GPP Mobile Competence Centre have implemented a process to allow suspected or proven vulnerability in 3GPP specifications through Coordinated Vulnerability Disclosure (CVD)⁷.

There are several current work and study items that are directly related to INSPIRE-5Gplus goals, on aspects such as the GBA (Generic Bootstrapping Architecture) and SBA (Service-Based Architecture) security implications, the evolution of IoT security, the security of mission-critical systems, future authentication mechanisms or the security impacts of virtualization. In addition to these items and the potential contributions to them, the project will consider the proposal of new items suitable to address specific findings or results.

3.2.2 ETSI

ETSI is the European Telecommunication Institute, a recognized European Standards Organization dealing with telecommunications, broadcasting and other electronic communication networks and services. Most of the standardization work at ETSI is carried out in committees. Different tasks require different types of committees. Main types are:

- 1. Technical Committee (TC) addressing a number of standardization activities in a specific technology area
- 2. ETSI Project (EP) similar to a Technical Committee but established for a fixed period of time
- 3. ETSI Partnership Project established when there is a need to co-operate with other organizations to achieve a standardization goal. 3GPP is one of them.
- 4. Industry Specification Group (ISG) operating alongside the traditional standards-making mechanisms and focusing on a very specific activity

The committees typically meet between two and six times a year, either on ETSI premises or on other locations. ETSI members will decide what work to be done by each committee, establishing and maintaining a work program which is made up of individual items of work. While this analysis identifies those current work items in which the project can influence and contribute to, it is worth noting the project can propose new items around especially relevant results.

For INSPIRE-5Gplus, there are several ETSI committees providing opportunities to demonstrate and validate proposed standards, and to contribute project results to them. The main reference work is done within TC-CYBER, working to develop standards that increase privacy and security for organizations and people, by means of standards applicable across different domains, for the security of infrastructures, devices, services, protocols, and by the creation of security tools and techniques. TC-CYBER is currently working on matters related to balancing the privacy/security conflict, quantum-secure cryptographic mechanisms and IoT security.

In addition, the four ETSI ISGs on *network transformation* constitute relevant standardization targets:

- ZSM, on network service automation, has just started its second two-year cycle, once its
 essential concepts and architecture have been finished. Apart from providing evidence and
 feedback on the applicability of the ZSM architecture to address security requirements of
 next-generation network management, the project will have opportunity to contribute to the
 work in securing the ZSM architecture itself.
- NFV, on network function virtualization, is starting its Release 4 (cloud-nativeness), after releases 1 (feasibility), 2 (interoperability), and 3 (operationalization). The security

⁷ <u>https://www.3gpp.org/specifications/coordinated-vulnerability-disclosure-cvd</u>

implications of this *cloud-native* move, plus the consolidation of the security features of Release 3 are the main current opportunities.

- ENI, on AI-enabled network management, has already produced its essential concepts and architecture. Now it is focused on data and action flow interoperability, and there are opportunities in aspects related to the security of these flows and AI applications to security.
- MEC, on edge computing, is in its third two-year cycle and, as NFV, evolving towards cloud nativeness. In addition to the security implications of this move, the momentum edge is recently gaining in the industry constitute an excellent target for proof of concept activities.

Finally, there are other recently created ISGs, focused on new networking scenarios, that can constitute targets for further standardization activities related to next-generation network security. These ISGs are:

- NIN, focused on non-IP protocols and architectures.
- PDL, focused on distributed ledger operational matters, and currently working in smart contracts and interoperability issues.
- QKD, focused on quantum cryptography, and especially on the operational integration of quantum key distribution with current network management procedures.
- SAI, focused on the two sides of security in AI, beyond the application of the technology to security tasks. In particular, how to secure AI elements and how to deal with the use of AIs by miscreants.

3.2.3 IETF/IRTF

The IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. The IRTF (Internet Research Task Force) is a parallel organization focusing on longer term research issues. In the rest of this text, the term "IETF" will refer to both parallel organizations unless otherwise explicitly stated.

The basic formal definition of the IETF standards process is RFC 2026 (BCP 9)⁸. However, this document has been amended several times. The intellectual property rules are now separate in RFC 5378 (BCP 78, rights in contributions)⁹ and RFC 3979 (BCP 79, rights in technology)¹⁰. Another update is RFC 3932 (BCP 92, independent submissions to the RFC Editor)¹¹.

The technical work of the IETF is done in Working Groups (Research Groups within the IRTF), which are organized by topic into several Areas. Much of the work is handled via mailing lists. The IETF holds meetings three times per year. Every IETF standard is published as a Request for Comments (RFC) and every RFC starts out as an Internet Draft (I-D). The procedure in order to publish a standard is the following:

- Publish the document as an Internet Draft.
- Receive comments on the draft and edit the draft based on the comments.
- Repeat the steps above, until the draft is efficiently discussed.

⁸ https://datatracker.ietf.org/doc/rfc2026

⁹ https://datatracker.ietf.org/doc/rfc5378

¹⁰ https://datatracker.ietf.org/doc/rfc3979

¹¹ https://datatracker.ietf.org/doc/rfc3932

Then it is submitted to the IESG, composed of the different Area Directors. If the IESG approves the draft to become an Internet standard, then it is published as a Proposed standard and after six months it can become a Draft standard. A few years after a document has been a Draft standard, it can become an Internet standard. The IRTF follows a similar process, though the final result becomes an experimental RFC and the body in charge of approving it is termed IRSG.

All activities in the IETF Security Area, including not only active WGs but also the formation of new ones and other not totally formalized initiatives (usually structured around IETF mailing lists) are potential targets for INSPIRE-5Gplus standardization. Among the current ones, the partners have identified:

- In matters related to security management, the I2NSF (on interfaces and models for controlling and monitoring security functions) and ACME (on automated certificate management) WGs.
- In aspects focusing on trust and attestation, the RATS (on attestation evidences, and protocols to convey them to relying parties), TEEP (on TEE lifecycle and security domain management) and SUIT (on secure IoT updates and manifest format specifications) WGs, and the MUD initiative, focused on device-network signalling and access control.
- In what relates to threat prevention, the IAB-sponsored MODEL-T activities, discussing the evolution of the Internet threat model, and SMART, a group analysing external end point protection.
- Two research groups in the IRTF, namely PANRG (on endpoint and network cooperation) and the QIRG (on the technologies for the future Quantum Internet).

3.2.4 IEEE

Standardisation activities are sponsored by the IEEE through its *Standards Association* (IEEE-SA) and addresses global standards in a wide range of industrial activities related to the technical areas of interest of IEEE as professional association. These include energy, healthcare, transportation, nanotechnology and robotics, and for sure telecommunications, information technology and security.

Partners are already involved in several committees dedicated to key goals of INSPIRE-5Gplus, focused on IoT, industrial networks, cryptography and privacy. The strong orientation to local environments of most IEEE standards activities and the diversity of areas of interest will require a detailed analysis of potential contributions to guarantee their impact.

3.2.5 ITU-T

ITU is the most senior standardization body in telecommunications, with an activity that started in 1865, and it is a specialized agency of the United Nations since 1947. The ITU-T mission is to ensure the production of standards covering all fields of telecommunications and Information Communication Technology (ICTs) on a worldwide basis, as well as defining tariff and accounting principles for international telecommunication services. ITU-T standards (*Recommendations*) are formally produced and approved by governmental representatives, supported by specifically appointed experts from industry. While many of the ITU-T production is currently associated with general reference frameworks and architectural principles, some of these Recommendations become adopted as part of national laws. In all cases, activity in the ITU-T implies more formal weight than their equivalents in other bodies.

Study Group 17 (SG17) is in charge of coordinating security-related work across all ITU-T Study Groups, and therefore is the natural target for potential INSPIRE-5Gplus contributions. The representation structure and the demanding nature of the ITU-T procedures demand a clear focus and a thorough planning of the opportunities for contribution, as well as a good understanding of the foreseen evolution of the targeted activity.

3.2.6 Industrial groups

Apart from governmental institutions like ITU-T, industry associations like 3GPP, or technical communities like IETF, the networking industry has set a number of industrial groups to discuss technology evolution and its influence in business, providing pre-standardization requirements and steering the evolution of standardization bodies. In a project that intends to explore and pave the way for the evolution of current bleeding-edge standards, pre-standardization opportunities can become equally relevant for determining a high impact in industry evolution.

The most relevant association in this area is the GSMA that has been the reference association for the mobile industry since the advent of the first digital mobile technologies. Originally restricted to mobile service providers, the GSMA currently involves all the kinds of stakeholders on the mobile network landscape. While it has a so-called Security Group, it is very much focused on fraud aspects, and the most promising group as target for INSPIRE-5Gplus activity is the Internet Group (IG), in charge of analysing new technologies and business opportunities related to the evolution of the Internet protocol suite, and therefore connected with the activities in 3GPP control and data planes, and the IETF. The GSMA IG is currently finishing a study on DLT (a.k.a. *blockchain*) applicability and has recently started another one on the impact of quantum technologies.

Another important example of industry association in which several project partners participate and that constitute an important target for pre-standardization activity is the recently created EDDI¹². In contrast with GSMA, EDDI has a much more precisely focused goal, dealing with the adoption of new encrypted DNS proposals while preserving the distributed architecture of DNS, especially in what relates to security and stability. This is an interesting target for the project, not only because of the prevalence of DNS in current network infrastructures and services and the risk of an increasing centralization, but also due to the evolution of the whole protocol stack towards pervasive encryption and its effect on many of the usual security practices.

Finally, we can consider the different working groups in the 5GPPP as well, and in particular the Pre-Standardization and the Security WGs, as important fora for pre-standard contributions. The project is obviously committed to contribute in security aspects to the Pre-Standardization WG and to lead most, if not all, the activities in the Security WG.

3.2.7 Open-source communities

The INSPIRE-5Gplus consortium is well aware of the growing importance in the networking landscape of open-source communities, and their influence to accelerate standardization by means of their interaction with SDOs, either direct or indirect, and by means of their ability to produce reference implementations of those standards. To identify possible targets for contributions among the increasing number of open-source communities, a first classification of them and their main characteristics can provide useful insights.

First, we can identify a set of communities focused of what we can call the cloud foundations, comprising OpenStack (https://www.openstack.org/), Kubernetes (https://kubernetes.io/) and the more recent CNCF (https://www.cncf.io/). While the impact of potential contributions to these communities would be high, given the number of potential contributors and the width of their scope, the actual probabilities of acceptance are limited and would require a continuous and extremely high effort.

A second category is related to development of network infrastructures and infrastructure management mechanisms, where specific security enablers could be quite welcome, and therefore constitute one of the main targets for contributions. This category includes the O-RAN alliance

¹² https://www.encrypted-dns.org/

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(https://www.o-ran.org/), a hybrid approach to virtualised RAN technologies, TIP (https://telecominfraproject.com/), focused on telecommunications under the wider OCP (https://www.opencompute.org/) umbrella, and CNTT (https://cntt-n.github.io/CNTT/), a recent initiative sponsored by the GSMA for NFVI profiling and certification based on OPNFV (https://www.opnfv.org/).

The consolidation of the software approach to networking through SDN and NFV has implied the relevance of orchestration framework as mechanisms to deploy and activate security enablers, and coordinate tasks of threat detection and mitigation. The two reference projects in this space are ONAP (https://www.onap.org/) and OSM (https://osm.etsi.org/) that seems to slowly converge towards a common approach. In addition, we must consider the SONATA (https://github.com/sonata-nfv/) framework as source of additional innovation, and the OpenTAP (https://www.opentap.io/) project in what relates to testing. The nature of this class of projects makes them more suitable to contributions in the form of proofs of concept for the applicability of the orchestration frameworks to address security concerns.

A final category would be made of open-source edge frameworks, but many of them have been announced and there is not a clear group of mature and well-established projects that can constitute a clear target for project contributions. The team will keep an active monitoring of the edge opensource initiatives, focusing on those that get consolidated and thus best suited to consider active contribution to them.

Finally, it is worth noting the possibilities that the SNYK platform¹³, a collaborative approach to vulnerability early warnings and security assessment on open source, could offer to report such vulnerabilities, should any of them be discovered during the project lifetime.

3.3 Standards-related activities

Standardization activities fall within the fourth of the project phases identified by the partners (*Dissemination, standardization and exploitation*), involving the application of the results from specific technical activities. The assets specified and/or developed will be properly documented and shared with the related 5G security ecosystem, as described in the above section. The project aims at contributing to standardisation via the membership of project partners in standardisation bodies, industry associations and open-source communities, as well as at identifying how the outcomes of the project will be used in future activities beyond the lifetime of the project.

The activities will be essentially focused on logistics, advice, and facilitating the required interactions with the target bodies. In this framework, the initial list of target communities will be continuously updated, and a thorough monitoring of these communities will be performed, in order to identify relevant standardisation entities, and trigger and follow up participation. The technical content for the standardisation efforts will be provided by the respective technical WPs, while a standardisation roadmap that enables them to keep track of related standardisation activities, and planned and submitted contributions, will be maintained.

In addition to this initial analysis and plan, the framework for standards contributions will provide informational material to influence standardisation via the involved bodies of the partner organisations, and seek requirements and disseminate its results taking advantage of the participation in those 5GPPP WGs involved either directly (like the Pre-Standardization WG) or indirectly (such as the Security, Architecture or Software Networks WG) in standardization coordination, acting as a bridge between INSPIRE-5Gplus and the other relevant 5G-PPP programme projects (previous and current), institutions, and initiatives. This coordination will include the participation in international meetings and workshops, organized by the EC and other 5G-PPP

¹³ https://snyk.io/

projects; the collaboration, integration and promotion of 5G-PPP projects, activities and events via dissemination efforts carried out by partners, and the communication towards consortium, trials, European ICT industry representatives, and third-parties of 5G-PPP initiatives and vice-versa.

4 Conclusion and Outlook

This document has presented the initial planning for communication, standardization and dissemination activities of the INSPIRE-5Gplus project as well as their initial results. We have provided the fundamental guidelines for the widespread diffusion of project's outcomes. To this end, the key target groups have been identified together with an extensive set of activities for disseminating widely the project vision has been identified. By using the defined strategies, the awareness of the project and the interest in its technologies and achievements will be increased.

The communication and dissemination activities of INSPIRE-5Gplus will be carried out in four phases: Awareness Creation, 5G+ Community Outreach, Global Outreach and Engagement, and Demonstration of Final Results. Each of these phases is focused on specific objectives and target audiences, and activities will be performed using the most suitable channels. Therefore, the dissemination, communication and standardization activities will evolve with the development of the project.

By the preparation of this deliverable, the main initial related outcomes of the INSPIRE-5Gplus are: (i) public accessible website; (ii) several created social media channels, (iii) a brochure and video presentation, (iii) participation in international events as organizers or invited collaborators and (iv) a significant number of publications in top-ranked journals/magazines and conferences. Besides, a detailed study of the standardization scenarios and open opportunities of collaboration with different standardization bodies have been carried out.

The following project activities and achievements based on the initial planning in this deliverable will be reported on subsequent deliverables D6.2 (M18) and D6.4 (M36) respectively Intermediate and Final Report on Dissemination, Communication and Standardisation Activities.

Appendix A INSPIRE-5Gplus communication material



- Stakeholders
- Mobile network operators.
- Service providers.
- System vendors.
- SMEs
- Academia and research institutions
- Liable end-to-end smart security management.

Dynamic software-defined security models.

Artificial Intelligence/Machine Learning.

· Software-defined security and trust.

Smart end-to-end security management through

Trusted end-to-end smart (AI) security management.

Figure 16: INSPIRE-5Gplus flyer: Back side

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Total Budget:

4

INSPIRE-5Gpl

5,993,380 €