



Demonstration of **5G** solutions for  
**SMART** energy **GRIDs** of the future

Deliverable **7.2**

**Plans for Dissemination and Communication,  
Standardisation, and Interaction with 5GPPP**

Version **1.0** - Date **29/03/2021**



## D7.2 – Plans for Dissemination and Communication, Standardisation and Interaction with 5GPPP

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## Executive summary

The Smart5Grid project through the D7.2 describes the initial plans that will be applied by the Smart5Grid Consortium, related to WP7 activities of communication, dissemination, standardisation and the interaction with 5G-PPP plan throughout the entire life cycle of the project. This deliverable is addressed towards SME's, vertical industries, academia/industry researchers, general press, technical/non-technical audience and the public. Moreover, the communication plan emphasizes on the various channels that will be used, and the overall action plan developed for communicating the project to all the relevant stakeholders to achieve the maximum impact. The dissemination action plan incorporates all the appropriate means that will be utilised to efficiently transmit the Smart5Grid results and the technological advances to the corresponding targeted audience. The project's standardization plan and the cooperation with rest 5G-PPP projects will be applied throughout the partners' participation and their contributions to SDOs, 5G-PPP/5G IA and the energy industry. The plans described hereby, will be constantly updated, while adapting to the project requirements for attaining the maximum impact.

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# 1. Introduction

The main target of Smart5Grid project is to complement contemporary energy distribution grids with access to 5G network resources through an open experimentation 5G platform and innovative Network Applications (NetApps). Smart5Grid project administers four significant use cases for the energy vertical ecosystem, in order to demonstrate efficiency, resilience and elasticity provided by the 5G networks. On top, Smart5Grid provides an open environment to third parties for experimentation, to support development, testing, and validation of 5G Network Applications specialised for the Energy Vertical. Moreover, Smart5Grid consortium consists of SMEs, energy and telecommunications stakeholders, technology providers, and academics. Capitalizing these competencies, Smart5Grid Consortium will develop and implement thoroughly regulation and market challenges across Europe, creating synergies with 5G PPP initiative, 5G PPP projects, WGs, and also other relevant H2020, in order to build upon their achievements. Additionally, Smart5Grid will focus on using all available means to disseminate and communicate the achievements, the results and the knowledge acquired during the project. To this end, contributions to standardization bodies, working groups, advisory boards and fora have been planned. Joint dissemination activities in the 5G PPP Program Events have been also provisioned along with coordinated actions leading to a holistic approach for 5G PPP. Scientific excellence will be demonstrated by a number of papers in prestigious international conferences and open access journals (with acknowledgment to the Smart5Grid), while various media and marketing collateral channels will offer communication of high impact and optimal quality. Special measures will be applied to address SME communities that can uptake the Smart5Grid outcomes to ensure awareness and the sustainability of the impact for European Economy.

Please note that COVID-19 potential implications to Smart5Grid impact activities are continuously monitored and an update will be provided in the upcoming deliverables if the project's impact performance, during the 1st year, is eventually affected and deviations are noted over the proposed action plans of the following sections.

## 1.1. Scope of the document

The scope of D7.2 is to present and analyse the following initial plans of Smart5Grid project: communication plan, dissemination plan, standardization plan and the interaction with 5G PPP plan. Plans and strategies presented in this document will be applied throughout the entire life-cycle of the project and will be regularly updated/revised, if required, as per the needs of the project.

The document is kept on the point and is composed of five main sections:

- Project Branding Policy
- Communication and Dissemination plan.
- Monitoring, Control and Evaluation
- Standardization plan
- Interaction with 5G-PPP plan

## 1.2. Notations, abbreviations, and acronyms

Item	Description
3GPP	The Third Generation Partnership Project
5G	The Fifth Generation of (Mobile and Wireless) Communications
5G-ACIA	5G Alliance for Connected Industries and Automation
5G IA	5G Infrastructure Association
5G PPP	5G – Public Private Partnership
5GS	5G System
AB	Advisory Board
AI	Artificial Intelligence
API	Application Programming Interface
CA	Consortium Agreement
CBRS	Citizens Broadband Radio Spectrum
CEN	European Committee for Standardisation
CENELEC	European Committee for Electrotechnical Standardisation
CIGRE	International Council on Large Systems
CIREN	International Conference on Electricity Distribution
CN	Core Network
CNF	Cloud-native Network Function
CS	Certification Specification
CU	Centralised Unit

DoW	Description of Work
DRES	Distributed renewable energy sources
DSO	Distribution System Operator
DU	Distributed Unit
EC	European Commission
EDSO	European Distribution System Operators for Smart Grids (non-profit association)
EEGI	European Electricity Grid Initiative
EFTA	European Free Trade Association
EG	Experts Group
EMS	Energy Management Systems
EN	European Norm
ENI	Experiential Networked Intelligence
ENTSO-E	European Network of Transmission System Operators for Electricity
EPC	Evolved Packet Core
EPIA	European Photovoltaic Industry Association
ESO	European Standards Organisation
ETSI	European Telecommunications Standards Institute
EU	European Union
EVE	Evolution and Ecosystem
EWEA	European Wind Energy Association

FCC	Federal Communications Commission
GA	Grant Agreement
GOOSE	Generic Object-Oriented Substation Event
GS	Group Specification
FP7	Seventh Framework Programme
IaaS	Infrastructure as a Service
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IFA	Interfaces and Architecture
IP	Internet Protocol
ISG	Industry Specification Group
ISO	International Organisation for Standardisation
ITU	International Telecommunication Union
LTE	Long Term Evolution
LV	Low Voltage
M-CORD	Mobile Central Office Re-architected as a Datacenter
MANO	Management and Orchestration
MCPPT	Mission Critical Push-To-Talk
MEC	Mobile Edge Computing
MEC	Multi-access Edge Computing
MVNO	Mobile Virtual Network Operator
MV	Medium Voltage



NFV	Network Function Virtualisation
NG	Next Generation
NGMN	Next Generation Mobile Networks
NR	New Radio
ODL	OpenDaylight
OPNFV	Open Platform for NFV
ORAN	Open RAN
OSM	Open-Source MANO
OSR	Open SmartGrid Repository
PAS IEC	Publicly Available Specification
PDC	Phasor Data Concentrator
PMU	Phasor Measurement Unit
QoE	Quality of Experience
RAN	Radio Access Network
RTD	Research and Technology Development.
SBA	Service Based Architecture
SCADA	Supervisory Control And Data Acquisition
SDN	Software Defined Networking
SDO	Standards Developing Organisation
SEG	Smart Energy Grid
SGTF	Smart Grids Task Force
SME	Small- and Medium-sized Enterprise
SMV	Sampled Measured Values
SP	Service Provider
SW	Software

T&D	Transmission and Distribution
TA	Targeted Action
TC	Technical Commission
TC	Technical Committee
TCP	Transmission Control Protocol
TIP	Telecom Infra Project
TMV	Test, Measurement and KPIs Validation
TR	Technical Report
TS	Technical Specification
TSO	Transmission System Operator
VHP	Virtual Heat and Power
VNF	Virtualised Network Function
WG	Working Group
WP	Work Package

**Table 1 Acronyms list**

## 2. Project Branding Policy

### 2.1. Introduction

An organization's/project's image is extremely important. It is the sum of the impressions made on the public in a variety of ways.

Consistency, Compatibility and Relevance are the benchmarks by which communications should be judged. Consistency is the most significant benchmark since it is a must to maintain an overall aesthetic integrity. The purpose of graphic design is to communicate, not dazzle, and an inconsistent design will result in decreased user effectiveness. This means keeping individual visual and typographic elements simple and clear. It also means applying them uniformly, so that the implications and the connotations of a particular type of style, or the results of interaction with a particular graphic element, are independent of their context.

### 2.2. Visual Identity

The main goal of the developed visual identity is to establish and convey a brand recognition leading to an optimal presentation and recognition of the project.

The brand identity uses various graphic elements to easily identify the project. Special design elements contribute to identifying communication and dissemination activities, such as posters, newsletters, publications and all kinds of written as well as visual communication about on-going and completed project activities. This section gives an overview and a brief description of how to apply Smart5Grid branded identity and design elements to various materials.

### 2.3. Logo

In this sub-section the creative rationale behind the logo and the correct way to use are presented. For more detailed information about the Smart5Grid logo and its history, the reader can consult the ANNEX A.

#### 2.3.1. Logo description

The logo (Figure 1) has been designed and developed based on the following rationale:

- The logo provides Smart5Grid with a vibrant and unique icon that reflects its mission and values.
- The logo consists of two parts:
  - Icon part: contains a grid that represents the energy grids, the curved lines cascade outwards represents 5G and the text represents the project acronym.
  - Text part: contains the title of the project.
- The main colours of the logo are blue and black. Blue is a perennial choice in corporate branding — not only is it the colour most people cite as their favourite, but it's also associated with power and success. Both blue and black connote sober authority, something early tech pioneers were anxious to communicate.
- A clear and modern font has been used for the text parts.



**Figure 1 Final Logo with Text**

- The complete design was conceived to allow flexibility for a wide range of applications including advertising, web and printed material.
- The project logo is available on Projects Repository (Microsoft Teams) for all partners free to use. Additionally, it is early circulated by the Project Coordinator to all partners.

## 2.4. General Templates

In pursuance of a consistent brand identity all templates have the typical Smart5Grid look. The templates are developed for internal and external use. The general guidelines followed regarding these templates are the following:

### Font:

1. Segoe UI Family

### Colour Palette

1. **Blue color:** Pantone 295 U
  - a. Value equivalents RGB 55 81 114, HEX/HTML #375172, CMYK 100 66 5 44
2. **White color**
3. **Black color**

Combined these templates have been shared to all partners and are available on Projects repository (Microsoft Teams) accessible to all partners.

### 2.4.1. Presentation Template

The PowerPoint Master shown in Figure 2, has been set up for internal and external presentations such as conferences, speeches, meetings and in general presenting research results.

# Smart5Grid project presentation template

## Quick guide

- V.3. Third version, 5G-PPP logo added, disclaimer changed, cover updated
- V.2. Second version, alignment changes
- V.1. First edition



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101016912



**Disclaimer:** This presentation reflects the Smart5Grid consortium view and the European Commission (or the 5G-Public Private Partnership) is not responsible for any use that may be made of the information it contains

## Figure 2 PowerPoint presentation Template

### 2.4.2. Deliverable Template

For all deliverables, a general template has been created, which gives a detailed description of how it must be used. From executive summary to conclusion, it gives a brief definition and explains the formatting of headings, tables, figure etc.

The main settings are already preset in the document master for all users. Furthermore, there are predefined settings in header and footer. These measures shall ensure that all partners can easily issue a well-structured document for their deliverables (Figure 3).




**Demonstration of 5G solutions for SMART energy GRIDs of the future**

Deliverable **5.5.5**

**Deliverable title**

Version 0.1 - Date: 01/01/2021



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D7.2 deliverable: This document reflects the SmartGrid consortium's view and the European Commission for the 5G Public Private Partnership is not responsible for any use that might modify the information contained herein.

Deliverable – Deliverable title V#.#

**D#.# – Deliverable Title**

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Author(s)	Authors names – Company name
Reviewers	Reviewers names – Company name



G.A. 101016912


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Figure 3 Deliverable Word document Template

### 2.4.3. Meeting of Minutes Template

This template has been compiled to meet the requirements for the internal documentation process.

The main objective of the meeting minutes is that every issue discussed or decided and the person responsible for it can be seen at a glance. (Figure 4)




**Demonstration of 5G solutions for SMART energy GRIDs of the future**

WP #.# - (WP name)

**Meeting name**

Minute of Meeting, Conference call (or place): 01/01/2021



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ID 101016912

(meeting name or acronym) – Minute of Meeting  
Topic, Jan 1<sup>st</sup> 2021

**1. Agenda of the Meeting**

#	Content
1	
2	
3	

**2. Action list (if any)**

Topic	Due date	Responsible


**3. Decision taken (if any)**

Decision	Topic

**4. Overview and discussed items**

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G.A. 101016912

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(meeting name or acronym) – Minute of Meeting  
Topic, Jan 1<sup>st</sup> 2021

**5. Participants list**

Name	Role	Organization



G.A. 101016912

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Figure 4 MoM Word document Template

## 2.5. Branding Policy and other channels of communication

The predefined brand design and its brand elements build the basis for all applications. This ensures that there is a perfect match, and all communication tools transport a coherent image. That way, awareness for the project and its results can be raised and the corresponding products can be promoted to potential stakeholders. These tools and channels of communication are stated below briefly and are further analysed in the Section 3:

- Website
- Leaflet
- Brochure
- Poster
- Press Release
- Newsletter
- Roll-up
- Advertisement
- Videos

All the creatives will try to follow the already mentioned guidelines regarding, the logo, the Fonts and the colour palette applied already on the Templates. Yellow colour has been added as a highlighted colour. Also some more elements must always be added.

### Font:

1. Segoe UI Family

### Colour Palette

1. **Blue color:** Pantone 295 U
  - a. Value equivalents RGB 55 81 114, HEX/HTML #375172, CMYK 100 66 5 44
2. **White color**
3. **Black Color**
4. **Yellow** Name: Tangerine Yellow
  - a. Hex: #FFCC00, RGB: (255, 204, 0) CMYK: 0, 0.2, 1, 0

### Additional obligatory elements

2. **European flag** and the following Statement.
  - a. 'This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101016912'
3. **5GPPP** logo with link to the 5GPPP website.
4. **Project's Disclaimer:** This document reflects the Smart5Grid consortium view and the European Commission (or the 5G-Public Private Partnership) is not responsible for any use that may be made of the information it contains.
5. **Project's details:** GA ID: 101016912, Topic: ICT-41-2020, Duration: 36 Months, Start Date: 1 January 2021
6. **Social Media** logos with links (when digital) to the corresponding
7. **Project's Website:** [www.smart5grid.eu](http://www.smart5grid.eu)

The creatives and the corresponding templates will be digitally available on Projects repository (Microsoft Teams). Every partner will be able to download and print the communication tools and use the layout for specific communication activities, such as press conferences, internal communication, and others.



### 3. Communication and Dissemination Plan

#### 3.1. Communication and Dissemination Definition

In order to facilitate the reader of this Deliverable, a Dissemination and Communication definition is presented briefly according to the directions of the European Commission regarding the projects under the umbrella of HORIZON 2020.

**Communication** 'on projects 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.'

**Dissemination** 'is 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.'<sup>1</sup>

The Table 2 below briefly illustrates the main differences between the two.

COMMUNICATION	DISSEMINATION
Covers the whole project (including results).	Covers projects results only.
Starts at the outset of the project	Happens only once results are available
<b>Multiple audiences</b> Beyond the project's own Community including the media and the Public.	<b>Specialist Audiences</b> Groups that may use the results in their own work including peer groups, industry, professional organisations, policymakers.
Informing and engaging with society to it can benefit from the research	Enabling the take up and use of results

**Table 2 H2020 Guidance – Social Media guide for EU-funded R&I projects: v1.0 – 06.04.2018**

#### 3.2. Communication and Dissemination Activities Overview

A comprehensive set of dedicated dissemination, communication and community building activities will contribute to the overall success of Smart5Grid, with the clear ambition to directly help the growth and consolidation of the 5G PPP program as a crucial initiative for successful transformation and liberalisation of the European smart grids. The main goal of Smart5Grid dissemination and communication strategy is to create and spread the awareness of the project and its results to the broadest possible audience and to attract potential users and customers.

To reach this goal, Smart5Grid will differentiate between two major strands of communication: The general communication activities, which will be focused on mainly in the first months of the project, targeting the wide public audience, and a set of more dedicated dissemination activities, designed to present Smart5Grid advances and outcomes to the scientific communities, academia, targeted SME's, relevant industries, and end-users. This type of communication will become more important as the project evolves, and concrete results will become the focus of the dissemination plan.

<sup>1</sup> <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/glossary>

Within this context, throughout the lifetime of the project, two specific types of action will structure the Smart5Grid dissemination and communication strategy: online and offline actions.

- **Online actions:** based on the use of social media, website and other online resources (e.g.: Twitter, LinkedIn, digital resources).
- **Offline actions:** based on on-site and face-to-face actions (e.g.: events, workshops, presentations, trials).

To build and implement an effective Smart5Grid dissemination and communication plan, it is necessary to continuously analyse and update the Smart5Grid project characteristics and its environment, through the institution of a process that will run throughout the project lifetime, within the following framework of actions:

- Identify different types of target audience.
- Define the purpose and objectives of the dissemination and communication plan.
- Define the means of communication and dissemination.
- Develop and update, if needed, the Communication and Dissemination Action Plan
- Quantify the results and set KPI's (e.g., number of papers, visits on website, etc.) and provide feedback to dissemination and communication planning.
- Involve dissemination partners to multiply and amplify the message using their well-established communication paths.
- Define monitoring, tracking, evaluation and statistical mechanisms.

### 3.3. Target Audience

One of the primary objectives of Smart5Grid is to enable 5G dense technologies and high-tech NetApp solutions, with special emphasis on providing opportunities to SMEs to enter niche market cases of the existing power distribution grids. The consortium will therefore be targeting, among others, to key initiatives in the vertical domains, and stakeholders of the 5G and emerging related technologies markets. Smart5Grid project will engage in dissemination, communication and community building towards industry and utilities, including network operators and infrastructure providers, energy service providers, smart grid operators, SMEs, standardization bodies, researchers, as well as citizens, public authorities, initiatives policy makers, relevant 5G and energy communities and 5G projects as illustrated in Figure 5.

Consequently, different Target Audiences' identification is important in order to build and implement an effective communication and dissemination plan, which will serve suitably each profile by providing the relevant information about Smart5Grid project's activities and outcomes. Each target audience will receive the content that is suitable to its interests, knowledge and needs.

**SMEs** is a key target stakeholder in Smart5Grid. The following groups of stakeholders will be addressed with the aim of ensuring the uptake of the results and their impact in the Energy industry. SMEs will be directly engaged not only through the industry-oriented actions, but also through entities that provide advice and support to the establishment and sustainability of the SME business in Europe.

**Targeted stakeholders** of the project will be Industry Manufacturers, Telecom Operators and Power Grid Operators, as well as SMEs, the 5G PPP actors, 5G IA members, industrial organisations actively

involved in 5G, DSOs/TSOs and ESPs. In relation to the selected showcases, target stakeholders are also industrial players, SMEs and researchers in the vertical segments (mobility, smart grids, factories of the future, eHealth, media and entertainment) that could uptake and/or complement and extend the Smart5Grid concepts, technologies and applications. The aim is to raise awareness about the work and results of the project, and reach consensus on NetApps, 5G platform functionalities and targeted performance. The industry can be effectively reached by joint forces of the consortium, which gathers several industrial actors that are prominent in the 5G / 5G PPP scene and will play an essential role in the further engagement of other industry players from the broader ICT arena including several vertical market segments and the energy sector.

**Researchers both in academia and industry** will be devoted to spread the benefits of making use of the Smart5Grid concepts and technologies such as the developed open-source 5G platform, the Open Repository and the NetApps, but also to transfer and promote the scientific and technical know-how generated within the project. This target group can be effectively reached by initiatives and institutions in Europe and beyond.

**Incubators, Associations, Digital Innovation Hubs** will be engaged into training sessions about the Smart5Grid and their open-source outcomes, in order to reinforce these organisations with knowledge about NetApps, 5G features and upcoming business opportunities in Energy vertical. Such activities will allow Smart5Grid to increase the outreach into innovative players looking for ways to disrupt the market and enabling the energy transition.

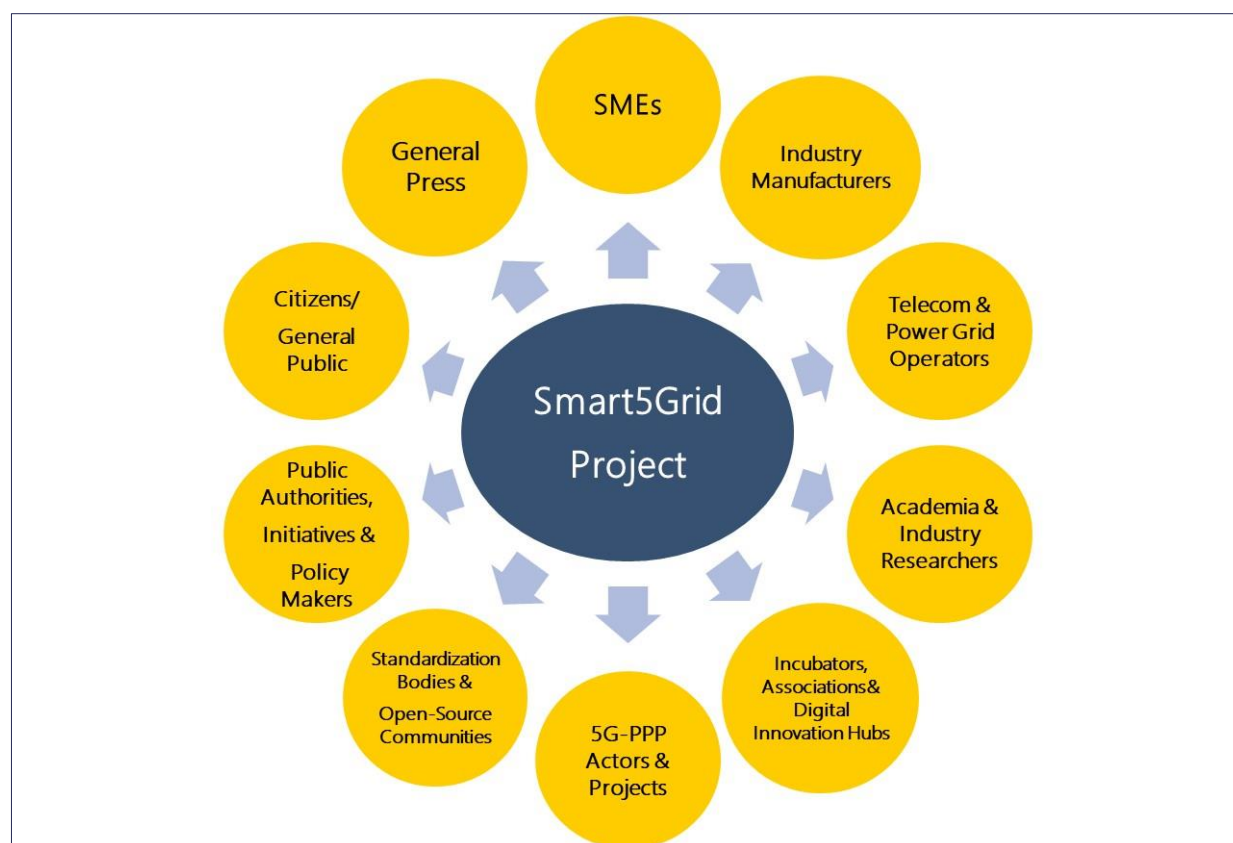
**5G PPP Actors and Projects** will be contacted as the reference research and innovation community to coordinate strategic and operational efforts, helping to validate and sustain the Smart5Grid outcomes and ensure more effective uptake of 5G technologies in the target verticals, with the ambition of contributing to the excellence and leadership of the European industry on a global perspective.

**Standardisation Bodies and Open-Source Communities** are an essential target to maximize industrial impact, by fostering the uptake of 5G developments targeting the energy sector, smart grids, and power distribution grids.

**Public Authorities, Initiatives and Policy Makers** given the complexity of 5G landscape and ecosystem and the speed of its spreading adoption, especially on the energy sector, good information and meaningful engagement can go a long way to facilitate timely and effective policymaking.

**Citizens / General Public** comprises a wide group of stakeholders including citizens, students, and non-governmental organisations (NGOs) that could benefit from the adoption of the new 5G services and enhanced 5G capabilities offered via the Smart5Grid outcomes, i.e., integration of more RESs into the power generation mixture, cross-border management support, etc.

**General Press** includes specialised press and media agencies, online and offline channels to amplify the communication efforts of the Smart5Grid and thereby increasing impact of the planned dissemination activities.



**Figure 5 Smart5Grid Project's Target Audience**

### 3.4. Purpose and Objectives

Communication and Dissemination activities are of crucial importance for the project's successful diffusion of knowledge, for raising awareness and for attracting potential supporters, industries and verticals, end users and customers. The main objectives that will be fulfilled by the Smart5Grid dissemination and communication actions are:

- To raise awareness of the project to relevant industries and stakeholders
- To communicate and disseminate project activities, innovations, findings and recommendations.
- To build communication connection and enhance collaboration with other 5G initiatives from the 5G PPP program, ensuring alignment with ongoing projects, and influence on 5G PPP work groups.
- To attain high project visibility and increased awareness to the broadest audience.

### 3.5. Channels of Communication

In this sub-section, the Channels of Communication are presented briefly, justifying the selection. The Communication Action Plan is described in sub-section 3.7 *Communication and Dissemination Action Plan*.

#### 3.5.1. Project Logo and presentation templates

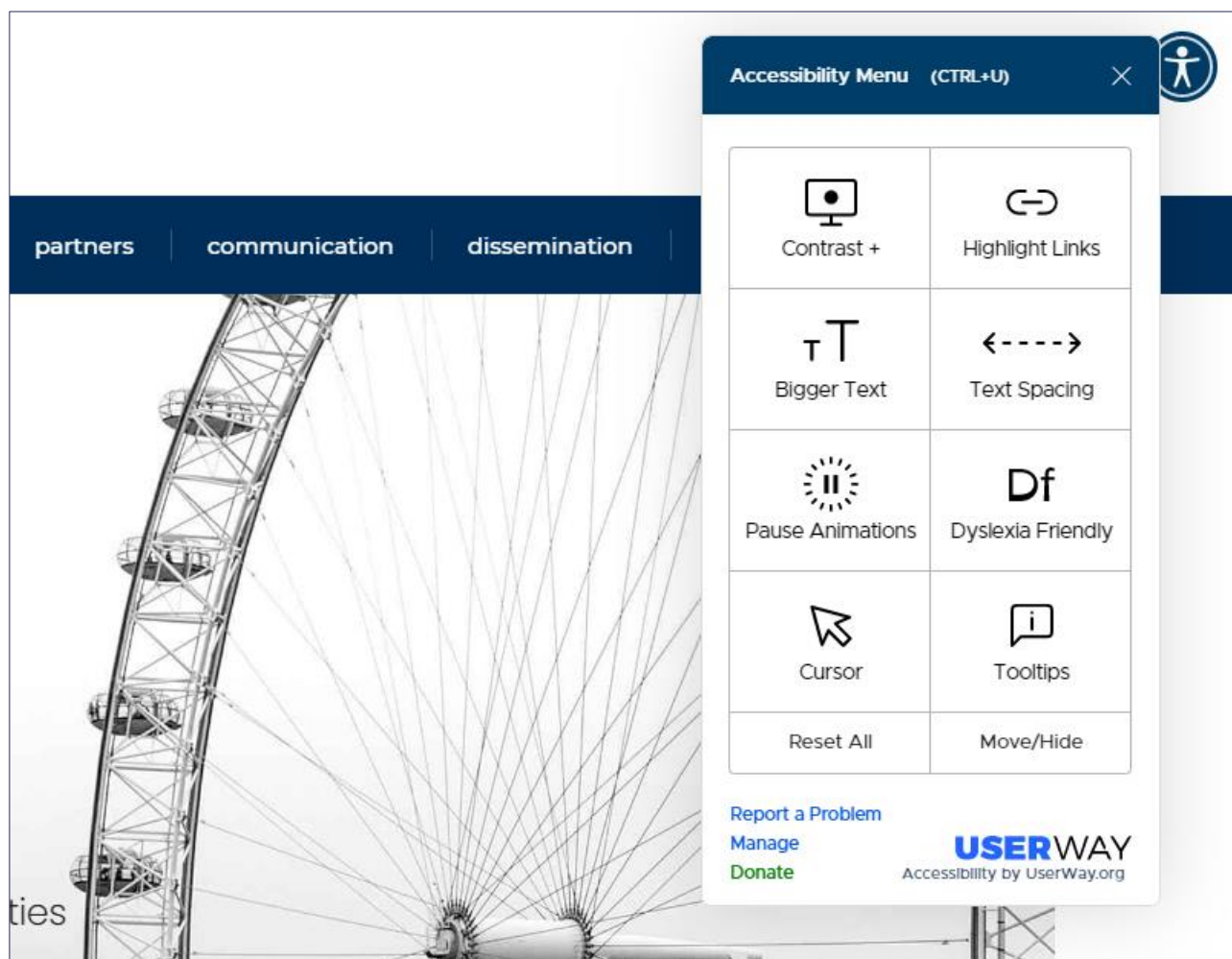
The Smart5Grid logo and the presentation templates were created at the very beginning of the project aiming to provide a clear identity and appearance. These two means of communication were presented in Section 2 Project Branding Policy.

### 3.5.2. Website

The website will be the major tool of communication and promotion of the project and is introduced and thoroughly analysed in Deliverable D7.1. Here, there is only a short description in order to facilitate the reader through the various means of Communication.

The design of the website <https://smart5grid.eu> reflects the overall visual identity and transmits knowledge as well as innovation. The public project website enables external and internal audiences to be informed on the project's approach and objectives, its news and events and provides the contact information of the project leader. Moreover, the website serves as a kind of public business card for stakeholders with an interest in the project or the products resulting from it.

The website is divided into eight menu sections, namely: Home, In Brief, The Project, Use Cases, Partners, Communication, Dissemination, Contact us. Additionally, in order to make the website even more user-friendly and the content accessible to all, a dedicated section was created with accessibility features which allow to facilitate customise the content representation based on the special needs of each reader, as indicated in Figure 6, reassuring that the project does not exclude anyone from accessing its results and findings.



**Figure 6 Website accessibility menu**



For more details regarding the structure of the Smart5Grid Website please consult the ANNEX B – Website Structure included in this Deliverable and as already mentioned consult the Deliverable D7.1.

### 3.5.3. Social Media Channels

Along with the project website, social media platforms contribute to the effective communication of Smart5Grid activities, achievements and highlights as well as the increase of awareness for it. The project's presence in a wide range of social media channels lead to the wider exposure of the impact of the project to diverse audiences in a cost-effective and efficient way.

Smart5Grid consortium will monitor the project's achievement and progress through the below social media networks to enhance communication of the impact and results of the project.

Different channels (e.g., Twitter, LinkedIn, Facebook, Instagram, etc.) have been created from M1 to enhance the communication and reach the different target audiences.

a. **Twitter:** @smart5grid (<https://twitter.com/smart5grid>)

Twitter is one of the world's most popular social media platforms and can be useful for the promotion of Smart5Grid's content to the public to expand its global reach and effect.

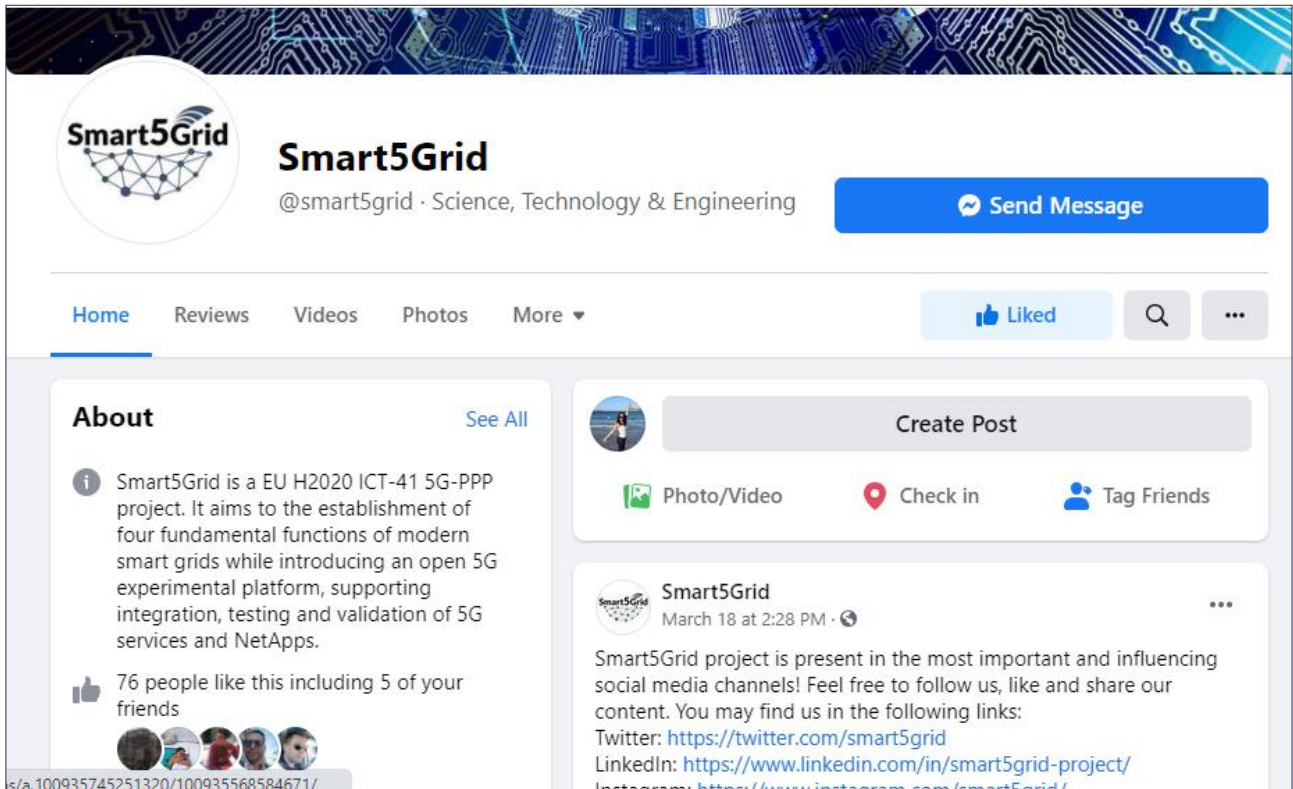


**Figure 7 Twitter Page**

b. **Facebook:** Smart5Grid (<https://www.facebook.com/smart5grid>)

Facebook is one of the largest and most recognized social media platforms globally and it is one of the best media to increase brand value and social media presence. The effect and the high popularity

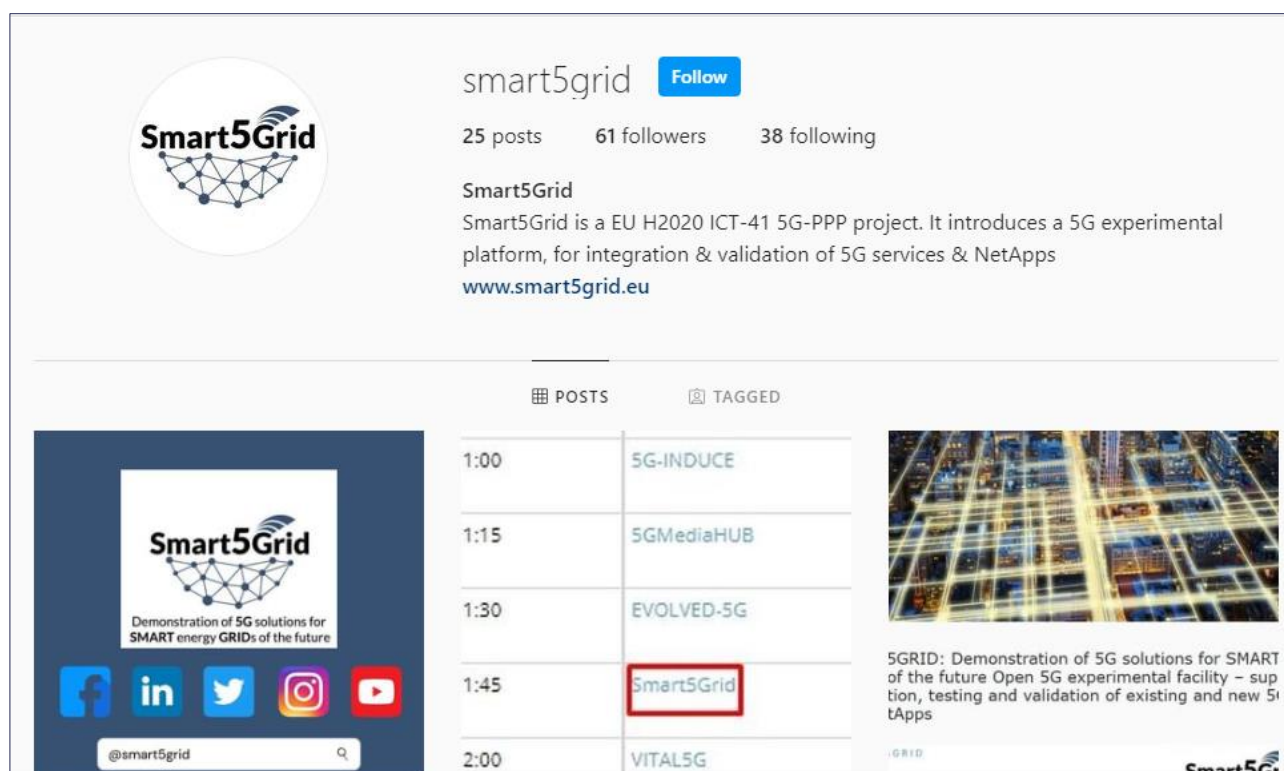
of this platform can significantly lead to the successful interaction between stakeholders and Smart5Grid.



**Figure 8 Facebook Page**

- c. **Instagram:** smart5grid (<https://www.instagram.com/smart5grid/>)

Instagram is the most popular image and video-sharing social media application. Smart5Grid will take advantage of this network by posting images featuring the project work and achievements, relevant materials and reaching new audiences to enhance dissemination and communication activities.

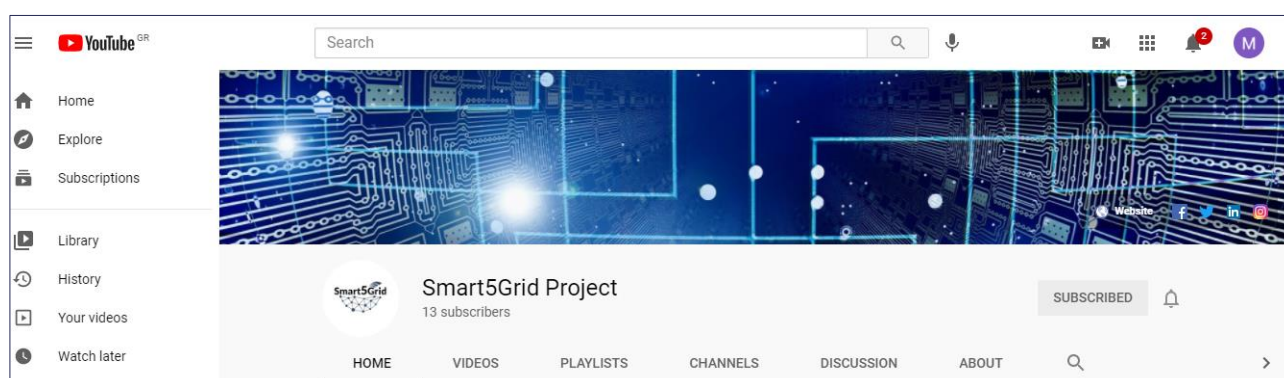


**Figure 9 Instagram Page**

d. **YouTube:** Smart5Grid Project

(<https://www.youtube.com/channel/UC3B4D0B2iw16FFbgiP4BJ4g>)

YouTube is one of the most significant and popular video distribution platforms on the Internet. The regular consistent creation of video content will lead Smart5Grid to reach a worldwide audience and appear in Google search engines for a successful promotion of the project.



**Figure 10 YouTube Page**

e. **LinkedIn:** smart5Grid Project (<https://www.linkedin.com/in/smart5grid-project/>)

LinkedIn is the largest professional and business-oriented networking website internationally. It is a powerful social network tool which will enable the consortium to communicate sufficiently the accomplishments and the impact of Smart5Grid to the relevant industries.

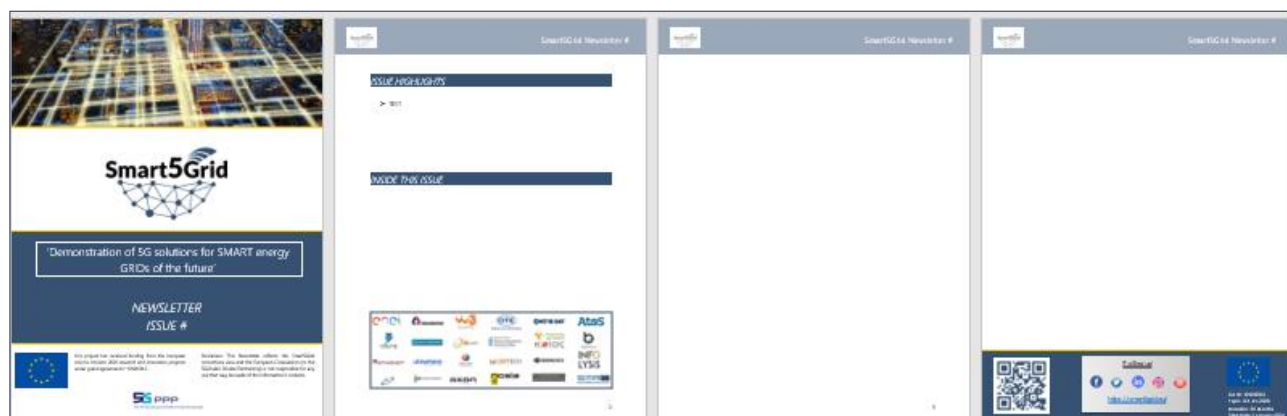




**Figure 11 LinkedIn Page**

### 3.5.4. Newsletters

The Newsletter is an important component of the communication strategy as it is used to diffuse the latest news and achievements at regular intervals to the wider public and the different stakeholders. The objective is to keep the community informed and engaged with the project and achieve more visibility and credibility.



**Figure 12 Newsletter Template**

### 3.5.5. Leaflets, Brochures, Posters and Roll-ups

All these four supportive means of communication will be used to boost communication of Smart5Grid activities by providing crucial information, including project's name, logo, objectives,

results etc., and as a result to raise awareness and increase engagement during dissemination and communication events.

### 3.5.6. Press Releases

Press Release is an important mean of communication which spreads the word and helps significantly to reach the broader audience through the Press, to drive traffic to the website and the Social Media, and to build the project's credibility.

### 3.5.7. Videos

Video is a mean of communication which create strong engagement with move and sound attracting easier the attention of the viewer and convey efficiently the key message.

### 3.5.8. Advertisements

Advertisements in public media like newspapers, radio, popular magazines, and websites might also be used. These sources will be chosen based on findings during the project that point out which media optimally reaches the relevant target groups per use case. Those channels will be targeted specifically for the trials and showcasing events.

In Section 3 the Means of Dissemination are presented in brief.

## 3.6. Means of Dissemination

In this sub-section, the Means of Dissemination are presented briefly, justifying the selection. The actual Communication Action Plan is described in sub-section 3.7 *Communication and Dissemination Action Plan*.

### 3.6.1. Publications in journals

Publications in peer-reviewed journals with a high impact factor, is one of the most vital mean for disseminating scientific findings. Publishing in the right journals will boost Smart5Grid project's visibility among other 5G projects and will make the work more discoverable inside the scientific and academic community and accessible in sophisticated distribution networks like libraries, organizations and institutes etc.

### 3.6.2. Publications in workshops and conferences

Research and Academia partners are expected to demonstrate scientific excellence not only by an outstanding number of papers in journals but also with publications in prestigious international conferences (with acknowledgment to the Smart5Grid)

### 3.6.3. Presentations in scientific events and fora.

Presentations at scientific events and fora are a great opportunity for gaining valuable feedback from the targeted research and industry community and increasing the credibility of the project.

### 3.6.4. Trials and Showcases

Trials and Showcases organized by the different Smart5Grid partners are crucial in order to attract potential users and customers, to get useful feedback and facilitate the dialogue among the researchers and the market.

### 3.6.5. Exhibitions in industrial and scientific events

An important focus point of the project is the demonstration of its Use Cases to the wider community, including experts from industry, SMEs, academia as well as audience with technical interests. This will be attained by Smart5Grid presence in major industrial and scientific events. Reaching out telecom operators, technology providers, content providers, service providers, energy providers, and device manufacturers from various verticals, will increase Smart5Grid's visibility and will have the chance to showcase its achievements by demonstrating its results and assessing Smart5Grid Use Cases.

### 3.6.6. Organization of events (workshops/seminars/webinars):

Educational events like workshops, seminars and webinars, are crucial in order to guide all the relevant stakeholders through the Use Cases and the results of the project and provide training about the experimentation Smart5Grid platform and the developed NetApps Repository.

### 3.6.7. Active participation in 5G PPP and NetworldEurope activities.

Smart5Grid partners are aware of the contractual commitment of the 5G PPP as well as the organisational structure as described in the 5G PPP contract and its technical annex. They acknowledge the roles and commitments of the European Commission, the PPP partnership board, the NetworldEurope (the previously named Networld2020 association) ETP, the 5G Infrastructure Association, and the 5G for Europe and commits to constructive interactions with these bodies.

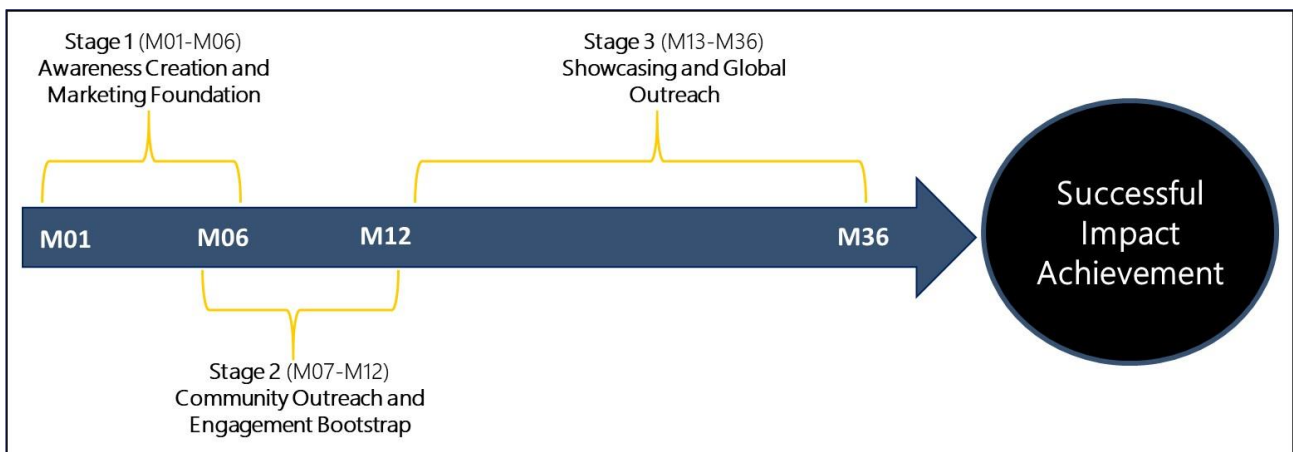
## 3.7. Communication and Dissemination Action Plan

### 3.7.1. Introduction

In this section, the Communication and Dissemination Action Plan is presented in more detail focusing on each medium/tool and providing the major guidelines (Timeline, KPI's etc) for the successful and effective communication of the project. The Action plan will primarily consider the wide public audience via means of communication, and will involve also a set of more targeted actions, i.e. the dissemination activities, dedicated to the presentation of Smart5Grid technical advances and outcomes to the scientific communities, academia, targeted SME's and corresponding industries.

### 3.7.2. Envisaged Activities and Plan

Smart5Grid will engage in a comprehensive and well-structured set of activities to ensure a broad promotion and effective trial/showcasing of the developed concepts, technologies, NetApps and overall results. This will include offline and online communications, digital presence, participation to and organisation of events, contributions to standardisation, interaction with 5G PPP projects, 5G PPP WGs and 5G IA, and liaisons with relevant national / local initiatives (especially around the NetApps validation procedures), as well as with other European research and innovation initiatives (such as NGI, IoT-LSP, Big Data, etc.) and global 5G organisations. While the planned activities and their timing will be refined in the first months of the project, the core structure of the envisaged Smart5Grid communication and dissemination plan has been organised as follows in Figure 13.



**Figure 13 Smart5Grid Dissemination and Communication Plan Core Structure**

### **Stage 1** - Awareness creation and marketing foundation (M01-M06)

**Scope:** To design the dissemination and communication strategy and plan, including refinement of target groups and selection of dedicated communication tools and community building activities, and to inform all relevant stakeholders about the Smart5Grid scope and objectives. This phase will also be dedicated to define the liaisons and interaction mechanisms with the rest of the 5G PPP entities and players, including ongoing 5G PPP projects.

**Measures:** The Smart5Grid website, the Dissemination and Communication plan, a project introduction flyer, a project presentation (slides), dedicated social media channels established, participation to 5G PPP corresponding WGs conference calls and the first edition of the Smart5Grid e-newsletter circulated.

### **Stage 2** - Community outreach and engagement bootstrap (M07-M12)

**Scope:** To actively reach out the main target stakeholders to generate interest in Smart5Grid activities and outcomes and set a solid foundation for the planned dissemination and showcasing activities. Stakeholders will also be reached out to provide support for the promotion of the project thanks to close collaboration of all WP3-6 tasks. Initial planning for first events participation and organisation.

**Measures:** Slide-based presentations of first project results, a first video to be used to raise awareness, social media channels, several new items pushed out via the Smart5Grid website and media, quarterly newsletters, and participation in selected events, to promote the project and its trials.

### **Stage 3** Showcasing and global outreach (M13-M36)

**Scope:** To actively engage and support industry, SMEs and all target stakeholders/shareholders in the adoption and deployment of the concepts, technologies and tools offered by Smart5Grid through dedicated promotional activities. This includes scientific publications, development and distribution of promo materials, deliverables, participation to selected events, organisation of dedicated workshops, demos, exhibitions, liaisons with relevant initiatives and with verticals and

coordination with 5G PPP bodies and projects as relevant. It is expected that standardisation efforts will intensify as the technologies developed and the trials will mature along the project's lifetime.

**Measures:** Promotional material in various forms, publications, input to standardization, established liaisons with 5G PPP projects, a number of new items pushed out via the project's website and media channels, including papers, technical reports, the quarterly-newsletter, interviews, participation to events, webinars, etc.

In the next sub-section the Communication Action Plan is presented independently in more detail.

### 3.7.3. Communication Action Plan

The main objective of Smart5Grid communication plan is to attain high project visibility and increased awareness to the broadest audience, technical and non-technical by deploying the appropriate content to the right target audience, at the right time via the most suitable channels.

More specifically, during the project, the content will be differentiated according to the needs and knowledge of each Target Audience and to the evolution of the project (Table 3), and also the intensity of the communication. This intensity is to be derived from the different phases of the project (activities, achievements, and results), along with the communication channels used as illustrated in Table 4. All communication activities will be carried out continuously, spanning throughout the project's duration with increasing levels of intensity as the project advances and the Consortium will have more communication material to diffuse.

The principles of the communication plan, which will be followed throughout the project lifetime, are the following:

- All communication channels are continuously used and updated on a regular basis.
- The project's web site will be constantly updated with news and fresh content.
- Social media posts are made on a regular basis.
- Higher frequency of posts during events, meetings, conferences etc.
- Different strategy on posts/content used per communication channel for addressing the appropriate audience.
- During the first six months of the project (M1-M6) an intensive communication of the project will be applied targeting to wider audience based on versatile content related to the project and 5G related topics for accumulating more visitors/followers. Then, as the project advances the content becomes more technical and more specialised audience and academia are targeted. In the 3rd phase, the content focuses on results and exploitation methods targeting the potential users and customers.

PERIOD	OBJECTIVE	TYPE OF CONTENT
<b>M1-M6</b>	General awareness and attract the attention of the wide audience technical/non-technical and SME's	General content about the project and the 5G industry
<b>M6-M24</b>	Attract SME's, technical, academia and industry audience	Technical specifications, Use Cases, achievements and results
<b>M25-36</b>	Attract potential supporters, customers, and users	Communication of the final project results

**Table 3 Content differentiation based on different period's target audience objectives.**

In the following sub-sections, we specialize the communication action plan per communication channel.

#### 3.7.3.1. Website

Smart5Grid project will share its concepts, results, and achievements through its dedicated project website, which was developed in M1 of the project and published on the 23rd of January. The content of the website will be supported by all project partners to provide a common view of the project and will be updated regularly providing a good overview of the major project activities.

The Smart5Grid website will run throughout the project lifetime, as well as for at least a period of three years after the end of the project. It will be the core communication channel/tool for the communication of the project information and activities.

In terms of traffic, the expected KPI is to attract annually more than 1000 visitors.

#### 3.7.3.2. Social Media

Through Social Media, Smart5Grid advertises its results, announce events, inform about the recent results, and provide a platform for discussion.

As relevant content plays a crucial role in achieving communication objectives, the content will be elaborated in such a way, so as to meet the different platform's and target audience's profile.

- **Facebook/Instagram:** General content to technical and non-technical audience - Posts on Smart5Grid topics of general interest and communication of all dissemination and showcasing activities.
- **LinkedIn/Twitter:** General content but later more technical and project-focused posts aiming at technical and scientific audience.
- **YouTube:** Addressing the general audience (technical and non-technical) with videos focused on presentations, conferences, events, tutorials etc.

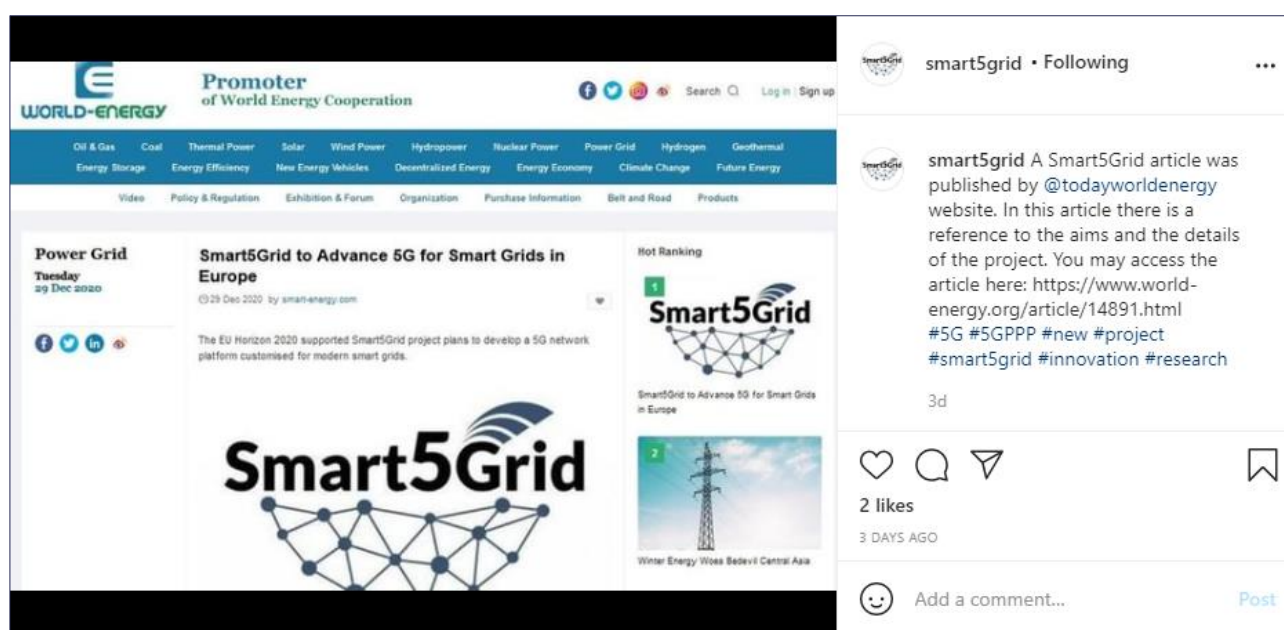
Moreover, the social media posts will cover the following activities using a variety of media content, such as photos, videos and URL links:

- News and updates on the Smart5Grid activities and progression of project's tasks and deliverables.



- Papers and presentations originating from workshops, conferences, journals etc.
- Project showcases/demonstrations.
- Publications in articles, online sources, newspapers
- Upcoming events prompting stakeholders for papers (CfP) and events participation.
- Partners Smart5Grid related activities and achievements
- Newsletter issues
- Articles on popular 5G topics

To keep updated our target audiences an average rate of 2 posts per week will take place. The hashtags **#smart5grid**, **#innovation** and **#research**, are used to give the core essence of the project and the hashtags **#5G** and **#5GPPP** are used in order to reference the 5G-PPP and engage the 5G community with Smart5Grid project as illustrated in Figure 14.



**Figure 14 Instagram Post Hashtag example**

In addition, all communicative Smart5Grid social media channels can and will be found in the footer of the project's official website, of the Newsletters and of all the rest of communication channels with activated links leading to the corresponding platform.

In terms of followers, the expected KPI is to attract more than 1000 followers as a total in all the platforms.

### 3.7.3.3. Newsletters

Newsletters will be issued quarterly in order to keep the relevant stakeholders informed about the various activities and the outcomes of the project. Each issue of the newsletter will be announced to the public via Smart5Grid communication channels, like the website and the Social Media platforms.

### 3.7.3.4. Press Releases

Press Releases will be issued from the Consortium in order to inform the international or local press about project's key activities and outcomes. Press Release template will be issued in-between M4-M6. Moreover, press releases will be also released at partners level in the form of news

announcements of major project events, achievements/results. In order to ensure communication coherency regarding Logo Use, EU Disclaimer etc, Partners will send their Press Releases to the Communication Team 15 days before release.

#### 3.7.3.5. Leaflets

Leaflets will be created to give a brief info of i) the project objectives ii) all external and internal stakeholders and iii) to engage the reader to have a closer look and provide the most essential project's innovations. They will be either in printed or in digital format (2-page leaflet in A4 size).

#### 3.7.3.6. Poster

The poster will be created to represent the project on conferences and likewise events. It aims at summarizing the project concept, briefly listing the objectives, as well as visualising the overall architecture of the project on which the technological advances will be integrated (1-page leaflet in A1 size)

#### 3.7.3.7. Videos

There will be a video about Smart5Grid project in general, and each pilot with aim to give a brief overview and make it more accessible to the end-users. The aim is to create a familiar and accessible atmosphere, which transmits simplicity in a complicated environment. The videos should trigger the feeling that the idea of the projects comes from a need of society and is then developed into a successful interaction of reality and technology. The first video will be available by M12 and will be used to promote the project and its objectives via various channels (social media, live events, etc.).

#### 3.7.3.8. Brochure

The aim of the brochure, as of the leaflet, is to give a brief project overview for all external and internal stakeholders. As the content will be generated from various members of the consortium, this brochure is to be understood as a highly developed look and feel. The design will be a tri-fold brochure and will be produced on demand.

#### 3.7.3.9. Roll-up

The roll-up serves as an eye catcher at events where Smart5Grid is being represented. It will be used for future project presentations, speeches at conferences, exhibition booths or likewise events. The production data for the roll-up will be performed on demand and will be available on Projects repository (Microsoft Teams) for all partners and free to be adapted to the needs of the events to be used.

#### 3.7.3.10. Advertisement (Print, Internet Ads, Ad Banner)

The different types of Advertisement will be also designed on demand. They will be used as a marketing tool for the printed as well as the digital media such as newspapers, magazines, and the Internet. The main message and objective of Smart5Grid will be visible at first glance and presented in an accessible way.

To conclude Section 3.7.3 the Table 4 below focuses on each Communication activity and the corresponding Timeline, Target Audience and the KPIs.



ACTIVITY	TARGET AUDIENCE	TIMELINE	KPIs
Website	All - Technical/Non-Technical Audience (General Public)	Continuous Activity from M1-M36, +3 years after the project ends	a. Weekly content updates b. >3000 visitors
Social Media	All - Technical/Non-Technical Audience (General Public)	Continuous Activity from M1-M36	a. 2 posts per week b. Intensive posts during special events c. >1000 followers
Newsletter	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	M3-M36	Quarterly issues
Press Release	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	M4-M36	Regularly depending on project's needs
Leaflets	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	M4-M36	1 leaflet the 1st year to be updated annually or depending on project's needs.
Poster	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	M4-M36	1 poster the 1st year to be updated annually or depending on project's needs.
Video	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public),	M12-M36	1 per year or according to the project's needs

	Public and Private Service Providers, Standards Developing Organizations (SDOs)		
Brochures	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	On demand	
Roll-up	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	On demand	
Advertisement	Industry, SME's, Academia and Research Institutions, Technical & Non-technical audience (General public), Public and Private Service Providers, Standards Developing Organizations (SDOs)	On demand	

**Table 4 Target Audience, Timeline and KPIs per Communication Activity**

### 3.7.4. Dissemination Action Plan

The Smart5Grid dissemination action plan is focused on ensuring that the technological advances of the project will have an impact on the society and will strengthen the European Innovation. Dissemination activities deal mainly with making public to a wide scientific and technical audience and the targeted stakeholders, the scientific and technological knowledge generated within the context of the project and explain how the findings can be exploited towards the active participation of SMEs and start-ups to the energy sector and market. The Smart5Grid activities will address the full range of potential users, including all target stakeholders/shareholders, the academic, industrial, and vertical communities, along with all related SMEs, stakeholders, and end-users.

Three main dissemination actions have been identified for Smart5Grid and they will further analyzed in this Section and in Sections 5 and 6:

1. Publications in conferences, journals, workshops, international events, relevant fora, etc.
2. Dissemination of the project outcomes to create awareness and to facilitate further uptake not only by the international research and industrial communities, but in particular SMEs that will greatly benefit from them to deliver innovative services.

3. Smart5Grid's contributions and information exchange with relevant EU regulatory and policy making bodies and organisations to ensure a significant contribution of the project to relevant EU policy-making and regulatory efforts towards promoting the clean energy transition, the power grid liberalisation and all political initiatives concerning smart grids to be undertaken by Europe in the next years.

Smart5Grid's dissemination activities will differ in intensity based on the time evolution of the project. In order to better monitor the intensity and set the corresponding goals per time period, the dissemination activities will be divided and carried out in three main annual phases:

- Phase 1: Y1.
- Phase 2: Y2.
- Phase 3: Y3 and after project ends.

The intensity will differ per phase and the set goals should reflect this differentiation. As a result, **a split ratio percentage of 20/30/50 approximately will be used for setting the minimum planned goals per phase**. Potential deviations between phases will be acceptable given the progress and achievements of the project but the final targets shall be met.

The set metrics, targets, and goals for the Smart5Grid publications and dissemination's activities plan are summarized in Table 5.

PLANNED DISSEMINATION ACTIVITIES	METRICS	TARGET	TIMELINE	Y1	Y2	Y3
Publications in journals, and conferences	Number of publications	>20	Publications: M06-M36 (and after the end of the project)	10%	40%	50%
Presentations in scientific events and workshops	Number of presentations	>20	Presentations: M01-M36	20%	35%	45%
Field Trials/Showcases	Number of trials/showcases	>5	Exhibitions/Workshops/Events: M12-M36		30%	70%
Exhibitions in industrial and scientific events	Number of exhibitions/booths	>5	Demonstrations/Showcases: M12-36		30%	70%
Organisation of events (workshops/seminars/training/poster sessions/webinars)	Number of events	>10	Events: M06-M36	20%	35%	45%

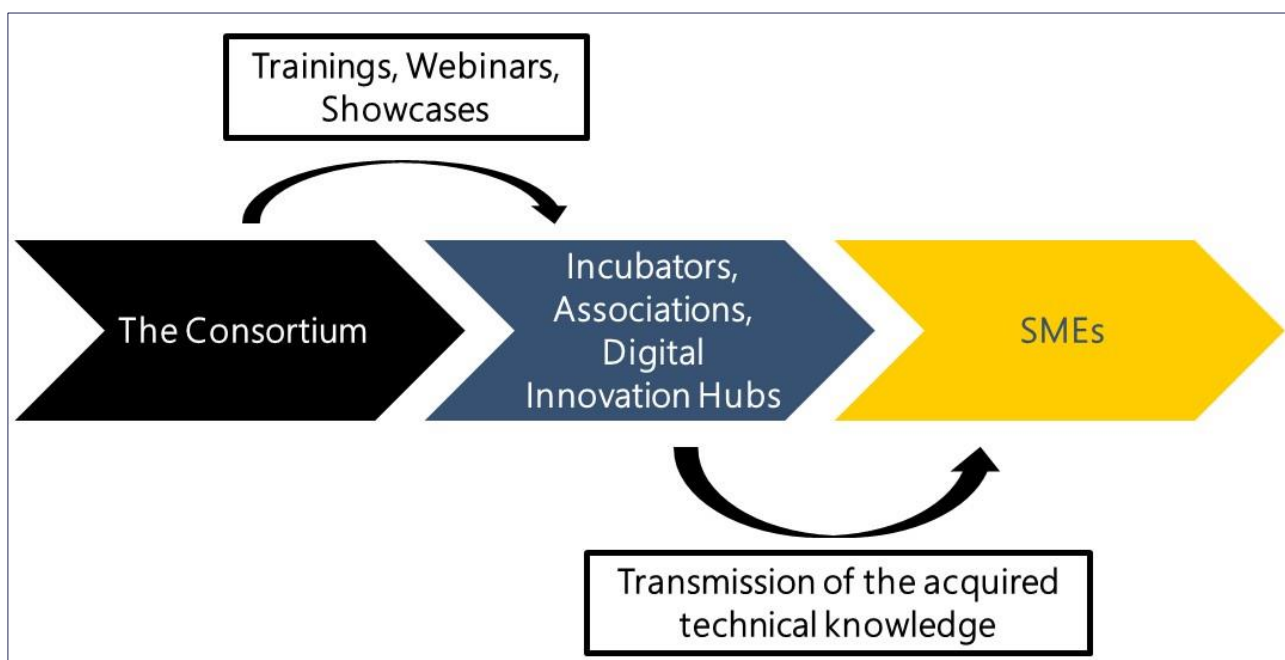
**Table 5 Smart5Grid metrics for the Dissemination Activities**

### 3.7.4.1. Dissemination Activities for SMEs

As already stated, SMEs from different verticals are the main stakeholder and one of the key beneficiaries of the project's results, as Smart5Grid unlocked energy ecosystem will give them the opportunity to entry the energy sector. This is the reason a devoted paragraph presents how the Consortium will aim to disseminate to this target audience.

Apart from the main dissemination activities, targeting all the stakeholders and analyzed further, a set of complementary activities (like webinars, trainings, etc.) to incubators, associations, and in particular to Digital Innovation Hubs, DIH (i.e. regional ecosystems supported by local governments and the European Commission to provide digital transformation services to SMEs) is foreseen (Figure 18). For example, one of the partners, i2CAT, manages a DIH in Catalonia with the support of the regional government. Thus, it is connected to other DIHs in Europe through the IoT eDIH Network, which aggregates all the regional actors that support SMEs in their digital transformation (Figure 15).

Moreover, SMEs will be reached through press and media communications, publications in magazines and dedicated press, organisation and participation at industry-focused events, prominent presence and dedicated showcasing activities, business exploitation and sustainability efforts, active participation to Standards Developing Organisations, participation to 5G PPP / 5G IA, including the SME Working Group.



**Figure 15 Reaching and attracting SMEs through third parties.**

Moreover, the following major dissemination actions have been identified for Smart5Grid to spread the results and the benefits of making use of the Smart5Grid concepts and technologies to all relevant stakeholders:

### 3.7.4.2. Publications in journals

Smart5Grid's academic and research partners are expected to provide scientific material related to the project's research. Below there is an indicative list of scientific journals from a variety of fields (i.e telecom, energy, ICT, etc.) that Smart5grid will target, taking under consideration the results and the progress of the project.

- **Telecom:** IEEE Wireless Communications, Communications of the ACM, Transactions on Emerging Telecommunications Technologies, IEEE Transactions on Wireless Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Mobile Computing, IEEE Journal on Selected Areas in Communications, European 5G Annual Journal, Computer Communications, Computer Networks, Mobile Networks and Applications, Ad Hoc Networks.
- **Energy:** IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, Applied Energy - Elsevier, IET Electric Power Applications, IET Proceedings on Generation, Transmission and Distribution, IEEE Transactions on Consumer Electronics, IET Electric Power Applications, Electric Power Systems Research - Elsevier, International Journal of Electric Power Systems, Electric Power Systems Research.
- **Other:** IEEE Transactions on Cloud Computing, Journal of Network and Computer Applications, Transactions on Information and System Security.

### 3.7.4.3. Publications in conferences proceedings

Smart5Grid's academic and research partners are expected to submit papers and participate and co-organize with other projects, various workshops at 5G related events and conferences. A tentative list of targeted conferences is the following:

- **Telecom:** IEEE INFOCOM, IEEE ICC, IEEE PIMRC, IEEE Globecom, IEEE MeditCom, International 5G Summit, IEEE 5G World Forum, IEEE DYSPAN, IEEE ASMS/SPSC 2022, EuCNC.
- **Energy:** IEEE EnergyCon, IEEE SmartGridComm, IEEE PowerTech Conference, IEEE PES Transmission and Distribution Conference and Exposition, IEEE PowerTech Conference, IEEE PES General Meeting, IEEE-ISGT Europe.
- **Other:** IEEE CLOUD, IEEE ICWS, IEEE ICME, ACM SIGCOMM.

### 3.7.4.4. Presentations in scientific events and workshops

Consortium members will present Smart5Grid projects and its objectives, architecture, use cases and final findings in scientific events and workshops. In addition, Smart5Grid partners will use presentations as a dissemination medium for promoting the objectives and achievements of Smart5Grid. A tentative list of targeted events and workshops is the following:

- **Telecom:** 5G Observatory Stakeholder Workshop, Global 5G Event, Broadband World Forum, NetWorld2020, 5G PPP/5G Global Events, EuCNC Workshops.
- **Energy:** PES General Meeting, Enlit, CIGRE Symposiums, UPEC and ENTSO-e events, InnoGrid 2020.
- **Other:** IoT Week, European Big Data Value Forum, SES Industry Days events, NFV World Congress, IFIP Networking, IoT World Congress, European Week of Regions and Cities.

#### 3.7.4.5. Field Trials and Showcases

The real-life validation of the Smart5Grid NetApps has been planned to take place in four countries: Italy, Spain, Greece and Bulgaria and one of the objectives is to develop high-performance NetApps that will support the ambitious Smart5Grid energy-oriented Use-cases. When the NetApps Open repository and the experimentation Smart5Grid platform are ready, the Consortium through showcases in different events and participation on trial events will give access to third parties (SMEs and all relevant stakeholders) to test them.

Furthermore, the experimental platform of the Smart5Grid involves testbeds and power grid assets along with their integrated, open, cooperative, and fully featured network platforms; the developed open 5G platform and testbeds will provide the opportunity to SMEs to pre-test their applications before being validated on the real power grid assets.

#### 3.7.4.6. Exhibitions/Demos/Booth in industrial and scientific events

The demonstration events in industrial, exhibitions and scientific events, are mainly focused on demonstrating the Smart5Grid's Use Cases, aiming to increase the visibility and commercial exposure of the project. These events are carefully selected not only based on their large number and variety of attendees, but also due to their worldwide geographical distribution, so that the maximum visibility, and thus, exploitation potential can be reached. Specifically, regarding demonstrations in exhibitions and public events, the following events are tentatively targeted:

- **Telecom:** Mobile World Congress (MWC), EuCNC, Global 5G Event, IEEE MeditCom (Demo Session), IEEE InfoCom (Demo Session).
- **Energy:** UPEC and ENTSO-e events, InnoGrid 2020.
- **Other:** IoT Week.

#### 3.7.4.7. Organization of events (seminars/training/webinars)

Smart5Grid's training dissemination activities will be not only focused on SME's and the industry but also on young researchers, students, energy communities and industry professionals. These activities will include the preparation of training workshops, educational material for technical schools and universities, detailed presentations and guidebooks for professionals and on-line project presentations on Smart5Grid-related scientific topics publicly available through the project's website.

#### 3.7.4.8. Active participation in 5G PPP and NetworkEurope activities

To ensure maximization of Smart5Grid impact to the realization of the 5G vision, the Consortium will establish close liaison and synergies with 5G PPP, 5G IA and NetworkEurope activities thoroughly analyzed in Chapter 6 of this Deliverable. Smart5Grid consortium consists of SMEs, energy and telecommunications stakeholders, technology providers, and academics and capitalizing these competencies, Smart5Grid will analyze thoroughly regulation and market challenges across Europe, creating synergies with 5G PPP initiative, 5G PPP projects and WGs, and also other relevant H2020 actions, in order to build upon their achievements. Moreover, several Smart5Grid's partners such as ATOS, INF, 8Bells and others are active members of 5G-PPP WGs and NetworkEurope, facilitating dissemination to its hundreds of members. More details about Smart5Grid participation in 5G PPP initiatives and WGs are provided in Section 6 Interaction with 5G-PPP plan.

### 3.7.4.9. Individual Dissemination Plans

Along with the general dissemination and communication plan of the project, the partners are building their own initial plans, that might be updated as the projects evolves, on how to better contribute to the Smart5Grid dissemination, following the project framework and established tools, but also their own means, network and activities. Complementary communication channels such as press releases and newsletters to inform the public about the project news and achievements will be used.

Moreover, academic partners will lead the activities for the creation of scientific papers and publications in international prestigious Journals and Conference Proceedings that are closely related to the project's research topics. The dissemination plan also includes the participation to selected events to present accepted publications or invited keynotes, workshop organisation, and any other scientific and technical venue of high relevance for the promotion of the Smart5Grid results. Industrial partners, Telecom Operators and SMEs will focus more on commercial targeted events such as MWC, IoT World Congress, Smart City World Expo, NFV World Congress, 5G Observatory Stakeholder Workshop, Global 5G Event, Broadband World Forum, etc. To support the dissemination activities, DSOs/TSOs will target regulators, utilities, customers and industry, and will also publish papers regarding overall project results, methodologies etc., and organize outreach activities that promote the opportunities presented by the project results. Finally, Smart5Grid partners will disseminate the results via their participation to industrial and standardisation bodies.

More specifically, all the 24 partners are presented below, their countries and their individual dissemination planning.

**ENEL – ITALY** ENEL Global infrastructure, in collaboration with the DSOs linked third parties of this project will use all the dissemination channels supported by the European network of contacts. In particular, the main events to be exploited: - INNOGRID 2020+ annual conference, where TSOs and DSOs are invited to present progress and achievements of all the ongoing European projects in line with EU strategic and sustainable goals; - CIRED conference 2022; - E.DSO project committee, where members of the European Association of electricity distribution system operators exchange lessons learned and experience gained in all the European Projects. Finally, the relevance of 5G infrastructure capabilities to support network operators use cases.

**ENGINEERING – ITALY** ENG will put effort on project results dissemination according to a twofold strategy. Scientific results will be disseminated via journals and conferences publishing, following a consolidated process for scientific production. On other hand an internal dissemination action will be put in place towards internal business units. The latter has the goal to activate, enforce and consolidate the knowledge transfer between the R&D department and the ENG production line. With this aim ENG will analyze which services and technology can be the most useful for disseminate the Smart5Grid platform outcomes in order also to enlarge its own commercial offer towards the utilities, which could be interested to integrate 5G tailored services. Special emphasis will be put to the edge cloud tailored applications and data interoperability middleware.

**WIND TRE SPA – ITALY** WI3 will contribute with other partners in the dissemination of the project's findings via peer-reviewed publications in different network and communications conferences and journals, white papers or using internal channels. Besides other activities will be promoted as



participation in major industrial and trade events and events with a potentially interested large audience to make presentations and distribute project dissemination material. WI3 will also cooperate organizing focused workshops and public relations events inviting national and international community to discuss issues of interest.

**OTE – GREECE** OTE will promote the project's results to biannual Deutsche Telekom Group workshops

since OTE is a member the DT Group) as well as to other international congresses and workshops, which will greatly enhance and strengthen the dissemination opportunities for their wide adoption. Simultaneously, OTE will take care to disseminate and communicate progress of the Smart5Grid effort within the company as well as within the broader scope of the OTE Group of Companies, especially via promoting press releases, white papers and other related material, as well as by using various social media so that to increase impact. Moreover, OTE will publish research papers in international journals and conferences in order to contribute to current standards, best practices and research findings, which is of crucial importance for the wide adoption and deployment of the Smart5Grid-related services. In the scope of more concrete actions, OTE plans to organize dedicated sessions in events of major market and/or business impact either internationally (such as EuCNC, MWC, ICC, AIAI) and/or nationally (i.e.: Infocom World Congress and Exhibition) potentially with booths for demos, as well as to organize at least two dedicated workshops in the framework of international events during the lifetime of the project. OTE also plans to cooperate with the project partners so that to organize potential informative sessions for the promotion of the project results, together with training actions (such as, for example, a dedicated summer school in cooperation with other project partners).

**NET IS SAT – BULGARIA** NIS will make use of the experience and results gained in Smart5Grid to disseminate knowledge internally through training. Moreover, NIS will help to promote the project through its own social media webpages, e.g., Facebook, LinkedIn, website, etc., and moreover, NIS will fully support any project workshops or exhibition demonstrations particularly placing emphasis on benefits to a network operator and illustrating reasons for deployment.

**ATOS – ATOS** will make use of its large expertise in communicating and disseminating the results from its research projects to also promote Smart5Grid. For that, ATOS counts on a group of communication and design experts as well a variety of methods and tools for an effective communication that will be explored in order to maximize the potential impact of Smart5Grid results in different market domains. ATOS is committed to support all dissemination activities carried out by the project via on-line communication (social networks, press media, web site, etc.), through the participation in relevant industry events and also exploiting synergies with already running research projects. As member of the 5G-PPP and participant in some of the working groups, ATOS s will also play an important role in 5GPPP collaboration aspects. ATOS is also member of OSM, where the project might be presented and potential synergies as well as bidirectional contributions identified.

**INDEPENDENT POWER TRANSMISSION OPERATOR S.A (ΑΔΜΗΕ) – GREECE** IPTO will promote the Smart5Grid findings through Med-TSO, an EU supported organization with Mediterranean countries TSOs where IPTO is a member. IPTO's dissemination plans will involve the results provided by the pilots of the project. Target groups include, among others, the European Network of Transmission System Operators for Electricity (ENTSO-e), policy makers, other TSOs and DSOs, as well as raising public awareness. The means of the dissemination process include internal reports,



academic publications in scientific journals and conferences as well as participation in various workshops. Additionally, IPTO plans to also use website, social media and other media publications in order to target wider public audience. Indicative events include CIGRE conferences, IEEE journals and others.

**ELECTRICITY SYSTEM OPERATOR (EAD) – BULGARIA** ESO will disseminate the project's results to the relevant bodies' events for Innovation Actions and in the ENTSOe community, as the Smart5Grid are of their interest. Additionally, annual presentation of the project's major steps in their relevant entrepreneurial media releases will be promoted, as well as be included in ESO's website and social media. Finally, presentation of the Greek-Bulgarian and Bulgarian pilot's accomplishments will be disseminated through press releases, workshops, and public awareness events.

**i2CAT – SPAIN** i2CAT experience and knowledge gained in the European funded project is an essential element to earn the required intellectual capital from i2CAT perspective. i2CAT as a research centre collaborates closely with the universities. It helps to make sure a continuous knowledge transfer to the next generations of experts via offering workshop, courses, and scholarships to university students. Moreover, i2CAT contributes to the scientific societies by publishing articles in the prestigious and internationally recognized journals and conferences such as, IEEE GLOBECOM, IEEE ICC, EuCNC, IEEE Transactions on Wireless Communications, IEEE Communication Magazine, Transactions on Emerging Telecommunications Technologies, International Journal of Satellite Communications and Networking.

**NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS – GREECE** UoA will perform several dissemination activities for wide-spreading the objectives and the results of the Smart5Grid project in different target groups: publication of high-quality papers in international journals and scientific conferences, publish press releases to raise the general public awareness in Greece, in Balkans, and in Europe, about the main objective of the project and regular appearance in social media (ResearchGate, LinkedIn, etc.) in order to inform public, researchers, stakeholders, and industry about the progress of the project. Apart from disseminating project results among the research community and students, UoA expects to disseminate project results among power systems players, technology manufactures, and developers through its extensive network.

**UNIVERSITY OF CYPRUS – CYPRUS** UCY (KIOS CoE) will promote the research and innovation work produced during the project to targeted audience such as: the international scientific community; the general public; the main energy stakeholders in Cyprus and international; and relevant research and industrial consortia, networking communities, and projects. It will organize outreach and communication session to the general public, will maintain links with other related EU funded projects to benefit from the research conducted by other consortia, but also to disseminate its own findings and contributions. Part of the scientific innovative knowledge will be used for education and advanced training sessions for PhD and Master students as well as continuous learning sessions for local industry partners and collaborators of KIOS CoE from the energy sector.

**EIGHT BELLS LTD – CYPRUS** 8BELLS will disseminate Smart5Grid results through its LinkedIn page as well as on its website. 8BELLS will actively contribute to the creation of scientific papers and publications in international Journals and Magazines, while knowledge will be widely disseminated through the participation in conferences, demonstrations and workshops. Furthermore, IEEE and 5G-

PPP conference and events shall be also addressed and included into the individual dissemination plan. Finally, 8BELLS will work on building liaisons with other 5G-PPP initiatives where 8BELLS participates and beyond, so that they become aware about the results of the project.

**ATHONET – ITALY** ATH will disseminate the results and project innovations to internal network of customers and leveraging communication channels both within the internal Italian market, and worldwide. Furthermore, ATH will present some results of the project in the form of demos or posters at major events, including MWC, CCW, etc. ATH will also publish information through its website and will also identify specific product roadmaps where ATH could leverage the results of the project.

**UBIWARE LDA – PORTUGAL** UW will disseminate the results of the Smart5Grid in UW's website and through its social media channels. Furthermore, UW participates in fairs and industrial/networking events as part of its business activity, in which the Smart5Grid results will be showcased and/or presented. Furthermore, UW is involved in several European initiatives, such as 5G PPP Software Networks WG, AIOTI and ETSI. These channels will be important to participate in events and to establish synergies between Smart5Grid and other ongoing relevant projects and stakeholders.

**NEARBY COMPUTING SL – SPAIN** NBC intends to enhance Smart5Grid dissemination plans through the promotion of the project activities in various technological events, as well as through different marketing and digital media channels. Also, will disseminate the main findings of the project at NBC websites and social media accounts.

**UBITECH ENERGY – BELGIUM** UBE delivers five major Service Lines: Consulting & Technology Services, Smart Grid solutions, Big Data Analytics, Energy Markets, and Electricity Grid Innovations. UBITECH ENERGY is member of UBITECH group renowned in IT and RD&I projects with a specific focus on helping enterprises to accelerate time to market for their next generation social, energy, and big data/analytics applications integrating innovation in the grid and markets. Along these lines all appropriate means of dissemination will be engaged, i.e., social media, promotional and collateral material, white papers, etc.

**SIDROCO HOLDINGS LIMITED – CYPRUS** SID intends to enhance Smart5Grid dissemination plans in a) publishing scientific articles in international, peer-reviewed journals and conference, b) preparing public material and c) establishing communication channels in Cyprus and southern Europe. SID will carry out high-level research, the results of which will be published in popular IEEE, ACM, Elsevier and Springer journal. Similarly, SID aims at publishing cutting-edge results in well-known International conferences. SID will utilize the following dissemination channels: (a) publication on its corporate website and company newsletter, (b) active participation to EU organized events and conferences, (c) scientific publications in topic-specific journals, conferences, and workshops, (d) editing and publication of brochures, press releases, and announcements. An indicative list of events: IEEE, ACM, Elsevier and Springer journal and conferences.

**INFOLYSIS – GREECE** INF's main communication and dissemination goal is to gain full exposure and influence within the business, scientific and 5G communities in order to ensure that the project's outputs are easily and quickly adopted. Within these communities, INF through its corporate communication channels, will communicate project outcomes and opportunities, exploring future expansion and exploitation in current markets, products, and services, thanks to its strong

collaboration with IT-related SMEs and industries. Dissemination activities will focus on relevant markets and industries in order to fully leverage the novel business opportunities generated by Smart5Grid related activities and business processes. In parallel, INF as task leader of project's communication and dissemination activities, will use intensively Smart5Grid communication channels for maximizing the impact of project's activities and results to the broadest possible audience. Finally, INF, through participation in conferences, info days, booths and publication of articles, will pursue and attain high project visibility and impact in various, project related, market segments. In parallel, INF will build liaisons with other 5G-PPP initiatives, WGs and projects in which participates, for further disseminating project's activities and results.

**SOFTWARE COMPANY FOOD – BULGARIA** SC will develop links with technology providers, manufacturers, system operators, scientific communities, national and European bodies to promote the Smart5Grid. Annual presentation of the project's major steps will be presented in relevant entrepreneurial media releases and website. Presentation of the pilots' accomplishments, with focus on the Greek-Bulgarian and Bulgarian Use Cases will be presented to the relevant bodies' events for Innovation Actions. Lastly, presentation of latest news in web site and social media (Twitter, LinkedIn, etc.), as well as presentation of projects progress to at least in 2 conferences/IT events per year.

**ENTRA ENERGY – BULGARIA** EE will use corporate channels to increase Smart5Grid project awareness. We would use LinkedIn to disseminate project results, finding and events. We would present the project in front of relevant associations, organizations and business owners that are part of our network and encourage them to share it amongst theirs. In collaboration with other beneficiaries, we can take part in events, conferences, meeting as well as use dedicated project website and social media accounts to share the latest news with all project followers.

**AXON LOGIC P.C. – GREECE** AXON aims to support the Smart5Grid Consortium with scientific publications of the project research findings and demonstration results to prestigious periodicals and Journals with more than 3.0 impact factor like, the IEEE Transactions in Communications, Elsevier Journal in Computer Communications, MDPI-Energies Journal, to name few. The scope is to disseminate the efficiency of the Smart5Grid platform in coordinating container-based NetApps in-and-out Europe towards a world-wide recognition of the Consortium's efforts from global Energy and ICT stakeholders. We will also keep publishing the project progress and key findings through our website, and promote the project's innovation potentials to our customers, which is an elegant way to attract the interest of the Greek market.

**NOSIA SRL – CYPRUS** NOSIA will disseminate the results of the project to international and European research and industry-oriented projects. Also, NOSIA will disseminate project's results in the public and the relevant beneficiaries of its clientele through its network and communication channels, suitable for large projects like Smart5Grid. NOSIA will attend several national, and European events such as conferences and workshops and also, the company envisions to promote the scientific results and outcomes by participating and publishing papers on relevant high recognition conferences and journals.

**SOUTHEAST EUROPEAN TECHNOLOGICAL COMPANY LTD – BULGARIA** SETECHCO will promote the Smart5Grid project through the scientific and market dissemination of the work carried out during the project to key technological systems stakeholders. SETECHCO will actively contribute to

the creation of scientific papers and publications in international Journals and Magazines, while knowledge will be widely disseminated through the participation in conferences, symposiums, and demonstration events.

**STAM SRL - ITALY** STAM will provide presentations and marketing material among the energy industrial partners of the company in order to raise awareness and to inform them about the novelties and the technologies introduced in Smart5Grid. Moreover, publications in journals and conferences will be targeted at all levels.

### 3.7.5. Smart5Grid Exploitation Plan Overview

During the first period of the project, the exploitation activities are mainly on the background as the first deployment of the outcomes along with the integration and validation stages are not expected to be completed before the second half of the project.

Therefore, a timely and successful implementation is a precondition to have concrete exploitation items to be used and presented to the relevant stakeholders and an exploitation plan is essential to show how exploitation can be structured in phases.

The purpose of this plan is to define actions which ensure that Smart5Grid results are utilized by the partners of the consortium either individually or by collaboration amongst them. Furthermore, it has to be taken in consideration the current or the newly developed IPRs to ensure that product development is not restrained by the common exploitation. Additionally, individual exploitation plans will be developed from the partners of the consortium by taking into consideration the size, industry and the objectives of each partner as well as to minimise the overall risk.

Some examples of exploitation activities that partners include on their individual exploitation plans, are the demonstration of Smart5Grid exploitable assets in exhibitions where customers will further be engaged with them as well as the design and promotion of new business models.

Furthermore, the use of results for direct commercial benefits and the exploitation of the Smart5Grid NetApps to existing energy stakeholders and new entries to the distribution and transmission grids, are amongst the partners' exploitation activities.

The following initially identified Smart5Grid outcomes are the basis for the exploitation team to develop successfully the appropriate strategy and sustainability plan.

- Automatic power distribution grid fault detection
- Remote inspection of automatically delimited working areas at distribution level
- Real-time Wide Area Monitoring
- Millisecond Level Precise Distribution Generation Control
- NetApps Open Service Repository (OSR)

Moreover, the open-source 5G platform and the demonstrated use cases are also exploitable assets whose main focus are verticals like energy, telecommunications and ICT industries for different sizes of businesses from SMEs to larger corporations. These assets and results will be evaluated and refined during the project's lifetime.

After defining the items to be exploited, the following action is the definition of the exploitation strategy and the areas that the consortium needs to focus on. More specifically, partners of the consortium should emphasise on the below directions:

- the cooperative exploitation of project outcomes,
- enhancing partners' business activities and
- exploitation of NetApp turnkey solutions

The set of these directions will contribute to the accomplishment of some of the strategic Smart5Grid goals which are:

- the creation of a viable route to market for Smart5Grid key bundles and overall environment with the involvement of consortium partners
- to enhance partners' existing products and services with new Smart5Grid functionalities
- the expansion and exploitation of NetApps, open-source platform and pilots' demonstrations

In the scope of pilots' demonstrations, the detailed design and execution of them, will increase the uptake of the Smart5Grid approach, motivating users to both add and gain value from the more efficient and effective exploitation of the collected results.

The set of a compatible and modular 5G end-to-end power distribution grid solution, the enhancement of both technical and technological maturity of the relevant environment, as well as the development of the Exploitation Agreement are vital steps to ensure the preparation of joint exploitation and commercialisation of the project's assets.

Finally, more detailed sections will follow up regarding the exploitation strategy to the upcoming deliverable 7.3 - Dissemination, communication, preliminary exploitation, and standardisation report - Period 1 at M12 as well as to future dedicated deliverables.

### 3.7.6. KIM team role

One significant part of the management structure of the Smart5Grid project is the KIM (Knowledge and Innovation Management) Team.

The main purpose of this team is to ensure the development of effective innovation management and regularly:

- Updating a market analysis and for Smart5Grid outcomes and results.
- Setting and updating business plans to support exploitation of the project results.
- Monitoring IPR topics where responsibilities are described detailly in the CA.

More specifically, KIM team alongside with Innovation Architect (IA) will support the exploitation plan by addressing the challenges and ensuring maximization of impact by adopting strategies such as impact and risk analysis, progress and quality management and SWOT analysis. These strategies will be further analyzed in the relevant deliverables in the scope of WP2 and WP7.

Regarding the impact achievement, this team will provide guidance to the identification of dependencies and other relevant stakeholders as well as their roles which will be provided after the approval of generated findings by the IA.

The above will lead to the optimal dissemination and communication management which will include the identification of target groups, audiences and platforms as well as the best communication practices.

Furthermore, one of the responsibilities of KIM team is that will receive feedback from the standardization manager about the progress standardisation and open-source development activities within the project which will be further reported to EC and be presented to the relevant 5G PPP WGs to increase joint opportunities.

Finally, for the handle of the patents, partners of the consortium will apply proven methods used already.

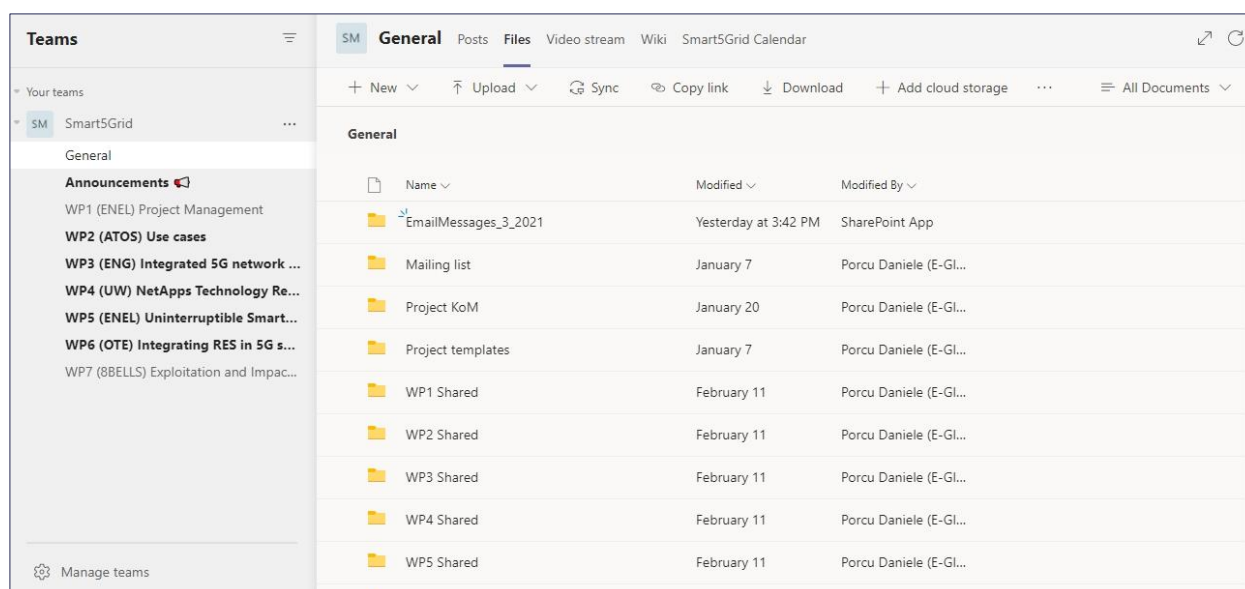
The KIM team is consisted of the Standardization Manager, the Dissemination and Communication Leader, the PB members and chaired by the Innovation Architect.

## 4. Monitoring, Control and Evaluation of Communication/Dissemination Activities

Throughout the project lifetime, the effectiveness of Smart5Grid communication channels will be constantly monitored and corrective actions will be applied whenever necessary. It is of vital importance the objectives and targets of Smart5Grid communication plan to be met, without deviations or underperformance. For that reason, a set of tools is used for securing the efficient and continuous monitoring and evaluation of communication channels and activities.

### 4.1. Communication/Dissemination Monitor and Control processes

The Smart5Grid partners utilize the Microsoft team platform, as the online repository tool for sharing material and content. For clear cooperation and better distribution of the material among partners this digital environment is divided into sections – folders and sub-folders. The MS-Teams platform plays an important role in the successful collaboration and alignment of the consortium's members. This specific online repository file is segregated in dedicated folders created per Work Package and Task (Figure 16). Also, there are folders created for the deliverables and for project coordination facilities (e.g. templates and material for public use). Furthermore, there is an option for online editing of files, a feature which is particularly useful in documenting and editing communication activities or files in general.



**Figure 16 MS TEAMS online repository**

In particular, a process that relies on the use of two separate Excel files in the MS Teams repository was established for the efficient recording of the interaction and dissemination activities conducted by each partner. These two files serve two different purposes. The first file is named "WP7 Activities reporting" and is completed after a partner performs a communication/dissemination activity related to the project. The second one is named "Posts for Social Media" and gives the partners the initiative to suggest potential content for upcoming posts at the project's communication channels and/or news for the News web page.



There is a specific procedure concerning these excel files. Extensively, every partner should update these files with the information that he wants to be communicated by INFOLYSiS partner. Every excel file has specific details that must be submitted by the interested partner. The "WP7 Activities reporting" excel file details are: Item - Authors/Partners - Activity Title - Target (Event, Location, Date) - Description

# Item	Authors/Partners	Activity Title	Target (Event, Location, Date)	Description
1	Daniele Munaretto/ Athonet	UPTIME Online Conference	27&28 January 2021 UPTIME Conference, Italy	On 27th & 28th January 2021, smart5Grid partner Athonet will host the first edition of the UPTIME conference at Villa Griffone, Italy, where Guglielmo Marconi made his first wireless transmission. The conference is free of charge and celebrates 10 years of the Private LTE industry. The aim of the event is to look forward to the next decade of Private 5G with abundant shared and unlicensed spectrum for deployment. Invited speakers will come from end-user industries, mobile network operators, specialist operators, cloud hyperscalers, and device manufacturers. More info at: <a href="https://www.eventbrite.co.uk/e/up-time-2021-the-annual-private-5g-lte-world-community-conference-tickets-1220484451857fbclid=IwAR2s5ZvLVhkyqstfkiQ9znkogT0zyH4eOC0uGmk-vHD9_cwdpldmUsUwbnl">https://www.eventbrite.co.uk/e/up-time-2021-the-annual-private-5g-lte-world-community-conference-tickets-1220484451857fbclid=IwAR2s5ZvLVhkyqstfkiQ9znkogT0zyH4eOC0uGmk-vHD9_cwdpldmUsUwbnl</a>
	Teodor Bobochikov/ Entra Energy on behalf of EE and Vivacom (NIS)	Webinar organised by ETNO	7 Dec 2020, 5G Users Forum: Empowering EU Smart Cities, webinar part of "Dialog series by ETNO"	Smart5Grid Use case 3 (WP6) was presented as a use case to demonstrate the potential usage of 5G network and IoT smart devices to allow flexibility and smarter grid and consumption management with potential to empower the transition to smart cities of the future. A video recording of the webinar is available here: <a href="https://www.etno.eu/events/past-events/132-5g-smart-cities.html">https://www.etno.eu/events/past-events/132-5g-smart-cities.html</a> . The presentation starts at 45:30" and ends at 57". The audience: ETNO Members (Telcos) and Patners, EU Commission representatives, Municipalities, Companies in the Energy sector vertical

**Figure 17 MS TEAMS - WP7 Activities Reporting Excel file**

While on the "Posts for Social Media" excel file, the requested details are Item # - Partners - Activity Type - Text For Posting - Social Media Channel.

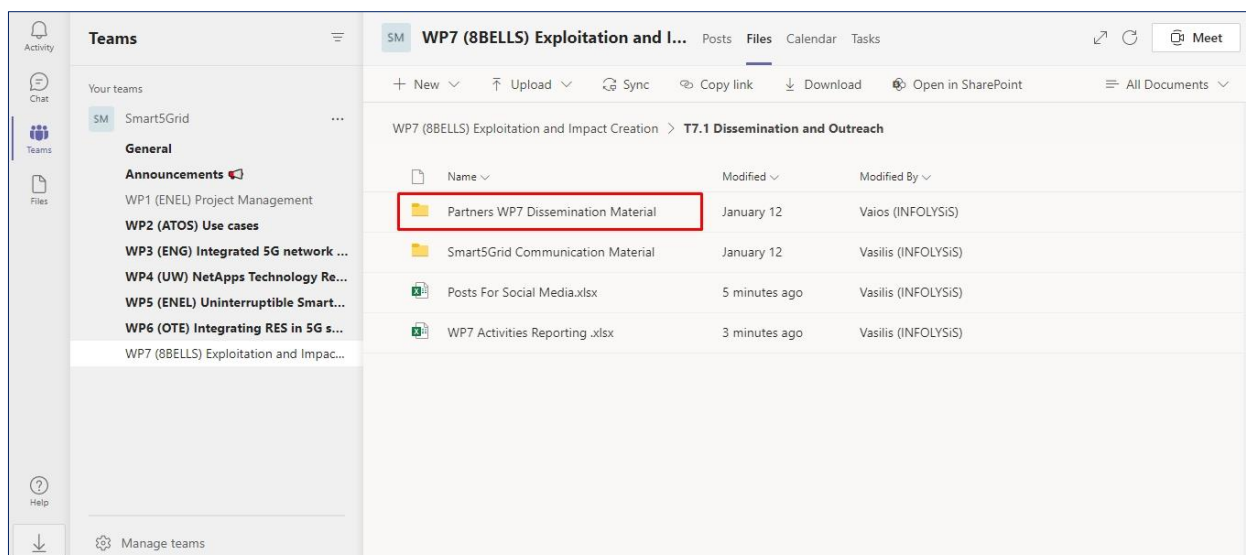
A	B	C	D	E
Item #	Partners	Activity Type	Text For Posting	Social Media Channel
1				LinkedIn <a href="https://www.linkedin.com/posts/sidroco_smart5grid-new-project-activity-6759796803211689985-J3GK">https://www.linkedin.com/posts/sidroco_smart5grid-new-project-activity-6759796803211689985-J3GK</a>
2	1 SID	Share post		Facebook <a href="https://www.facebook.com/permalink.php?story_fbid=227895328885529&amp;id=104331137908616">https://www.facebook.com/permalink.php?story_fbid=227895328885529&amp;id=104331137908616</a>
3	2 SID	Share post		
4	3 SID	Tweet	The Smart5Grid project officially started! The external Kick-off	Twitter <a href="https://twitter.com/sidroco/status/135403158955932864">https://twitter.com/sidroco/status/135403158955932864</a>
5	4 UCY	Tweet	Participation of UCY in the kick-off Meeting of smart5Grid	<a href="https://twitter.com/KIOSCoE/status/1353695700119400448">https://twitter.com/KIOSCoE/status/1353695700119400448</a>
6				
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**Figure 18 MS TEAMS – Excel File to cover Posts for Social Media**

Such information provided in these excel files is extremely helpful. First of all, it gives an idea about the event and the activity performed by a partner. Secondly, it helps to communicate it better. In other words, to see which communication channel is better for each activity and prepare equivalent material if there is not any.

Furthermore, every partner should upload any related material such as presentations, webinars, camera ready papers, etc. from the event he participated, in WP7 corresponding folders (Figure 19). Every partner has to create a new subfolder for each new event.





**Figure 19 MS TEAMS - WP7 Dissemination folder**

It is of vital importance to inform Communication and Dissemination team for any new activity for ensuring the prompt communication of each activity. Also, it is of utmost importance to accompany any recorded activity with material. Activities with materials would be more efficiently communicated.

## 4.2. Performance Evaluation and Statistical Dashboards

Through the Google Data Studio, the monthly data of the communication channels are processed and analyzed. The produced statistical data are internally released in graphical Dashboards (accessible online at Microsoft Teams Repository through static Google Data Studio URLs).

In specific, the Smart5Grid Social Media Google Data Studio Statistical dashboards will be regularly issued at quarterly periods. Moreover, custom timeframe periods can be statistically analysed and visualized in dashboards (e.g., 6 months, annually etc.). Every communication channel will be reported on its own dedicated statistical dashboard, which will include a variety of Key Performance Indicators (KPIs), aiming always to assist on achieving efficient performance assessment. The comparison of dashboards referring to different periods will reveal positive changes, trends, or deviations, which will derive from the evolution of communication strategy and the project progress (e.g., followers increase, content plurality, impact achievement, penetration increase and visibility awareness etc.).

However, if the statistics of the dashboards show a performance decline in numbers (leading to reduced impact) for a specific communication channel, this observation will trigger to proactively revise and improve the communication strategy of the specific communication channel.

Summarizing, Google Data studio is the main data tool that will provide feedback, control, monitoring, and statistical analysis concerning the efficiency and effectiveness of Smart5Grid communication channels' impact at our audience and stakeholders.

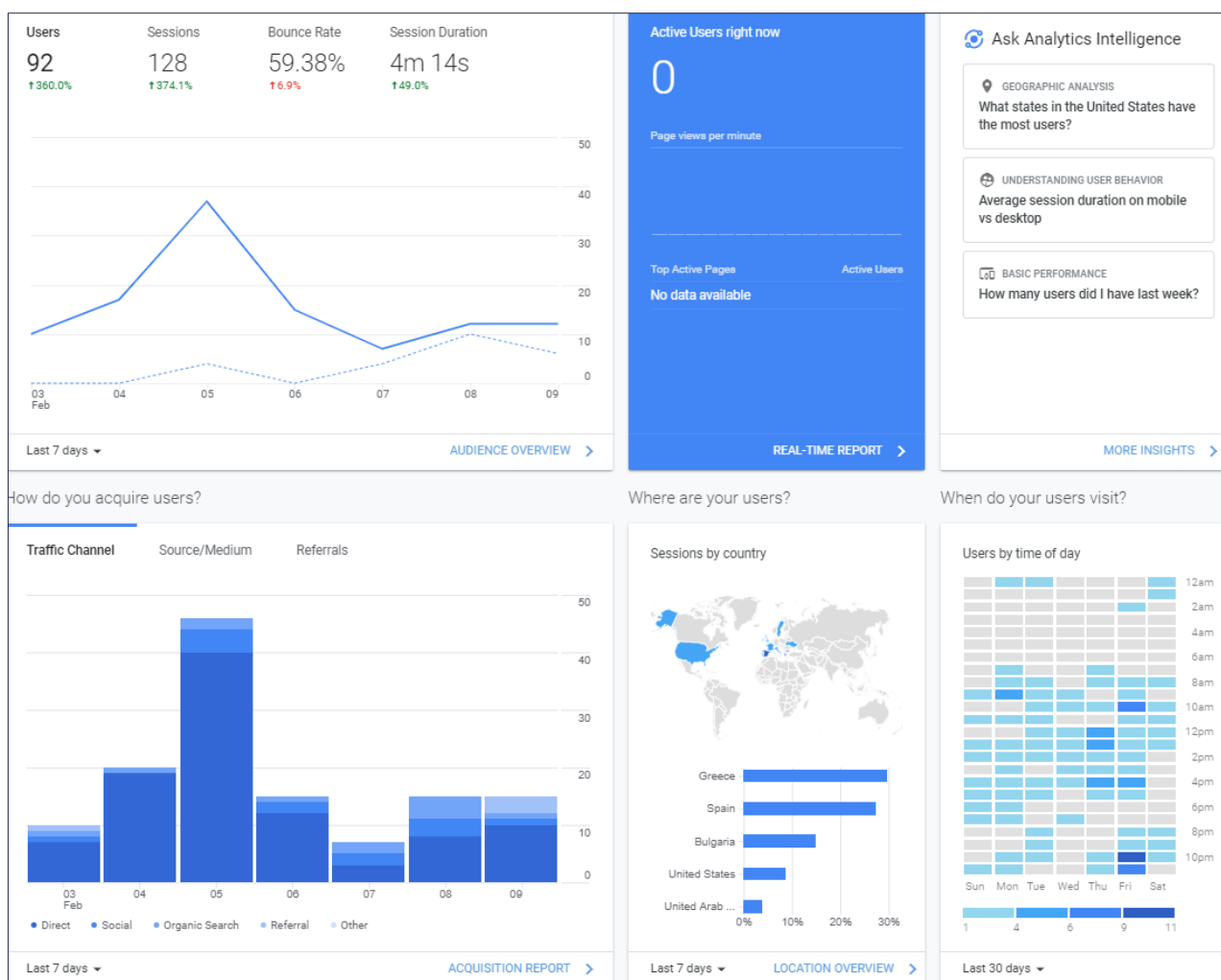
For indicative purposes, preliminary graphic dashboards referring to the statistical analysis of the January 2021 social communication channels activity is presented in the following paragraphs.

#### 4.2.1. Smart5Grid Website Statistics

In the framework of T7.1, the Smart5Grid Website statistics will be collected and processed. Part of this action is to visualize and present these data in a manner that its performance is easily assessed against specific metrics. This feedback shows different dimensions of website's functionality and consists the means for its detailed evaluation and improvement of SEO.

For such purposes, Google Analytics is an irreplaceable tool as it has the capacity to provide one with in-depth and sophisticated data analytics, reflecting different metrics and activities of a website performance and impact. However, it depends on the administrator to choose each time those data, which are related to website targets and communication strategy. Users' activity such as, which specific page they were more interested in, number of sessions, average duration of website visits and information about user acquisition are just a small indicative sample of the metrics planned to be monitored and analysed.

Within the framework of Smart5Grid and through Google Analytics, the communication team will analyse the performance and impact of the Smart5Grid website on a monthly basis and will release internally statistics on a quarterly basis. Any deviations or under performance, will be immediately spotted and corrective actions will be applied.



**Figure 20 Google Analytics Platform**

Google Analytics will not be used by the communication team only for monitoring and evaluating the website's efficiency, but the collected data will be also fed to Google Data Studio (<https://datastudio.google.com/reporting/6968b8dd-5261-45a9-8243-dae2ca35c673/page/pmtsB>) for summarizing the Google Analytics reports to a more comprehensive visual statistical overview of the website performance on a quarterly basis. Figure 21 depicts an example of a such report.

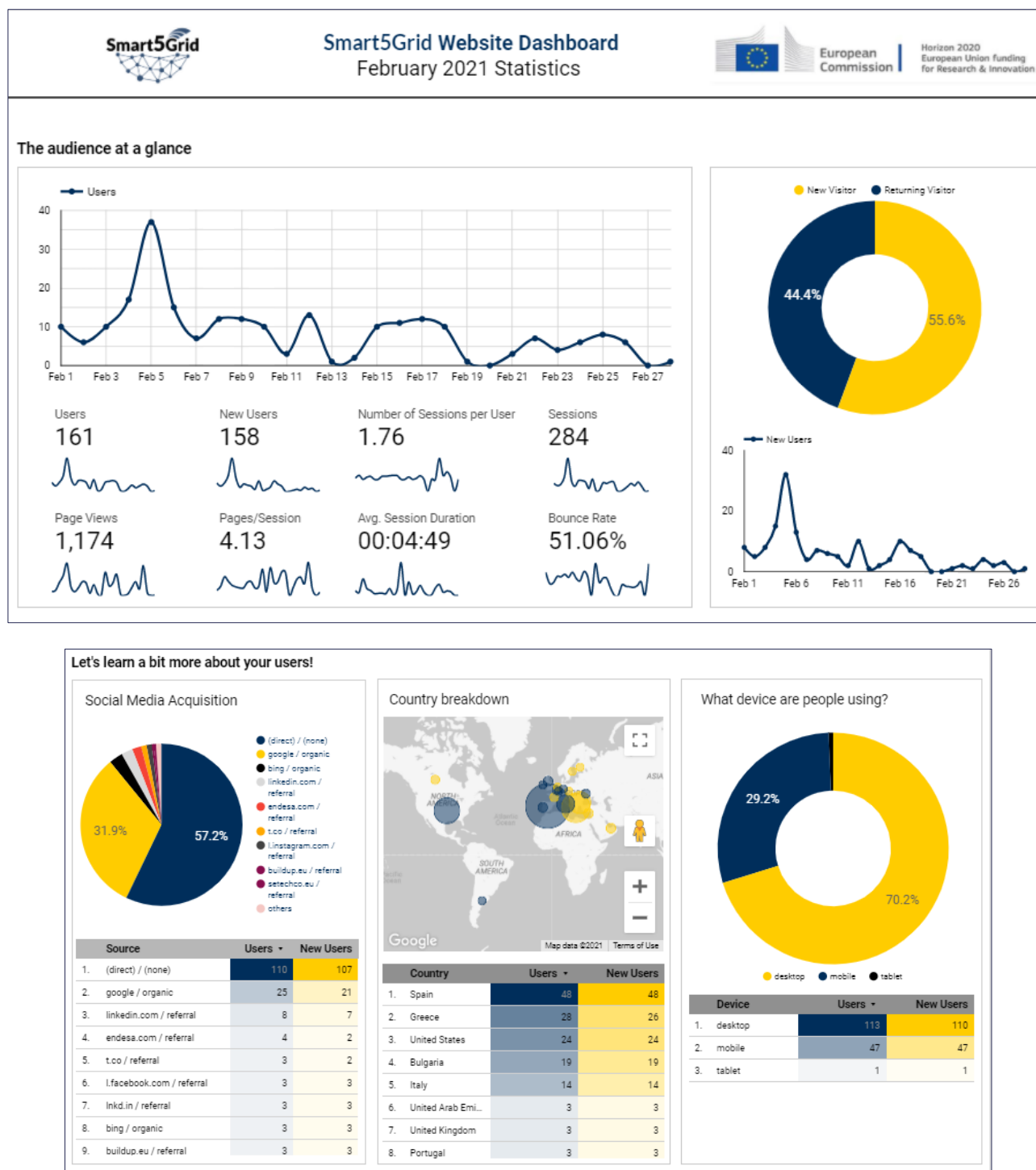


Figure 21 Google Data Studio Platform

#### 4.2.2. Smart5Grid Facebook Statistical Dashboard

Smart5Grid Facebook Dashboard (<https://datastudio.google.com/reporting/81a49a54-cc3a-46c6-a3ff-87f285e19af5>) will provide progress diagrams related to page views and page engagement throughout the examined period. Period and Total Statistics will also be included with various KPIs and metrics. Period Statistics refer to the statistics (such as number of posts) during a specified period, while Total Statistics provide similar information about the whole duration of the project.

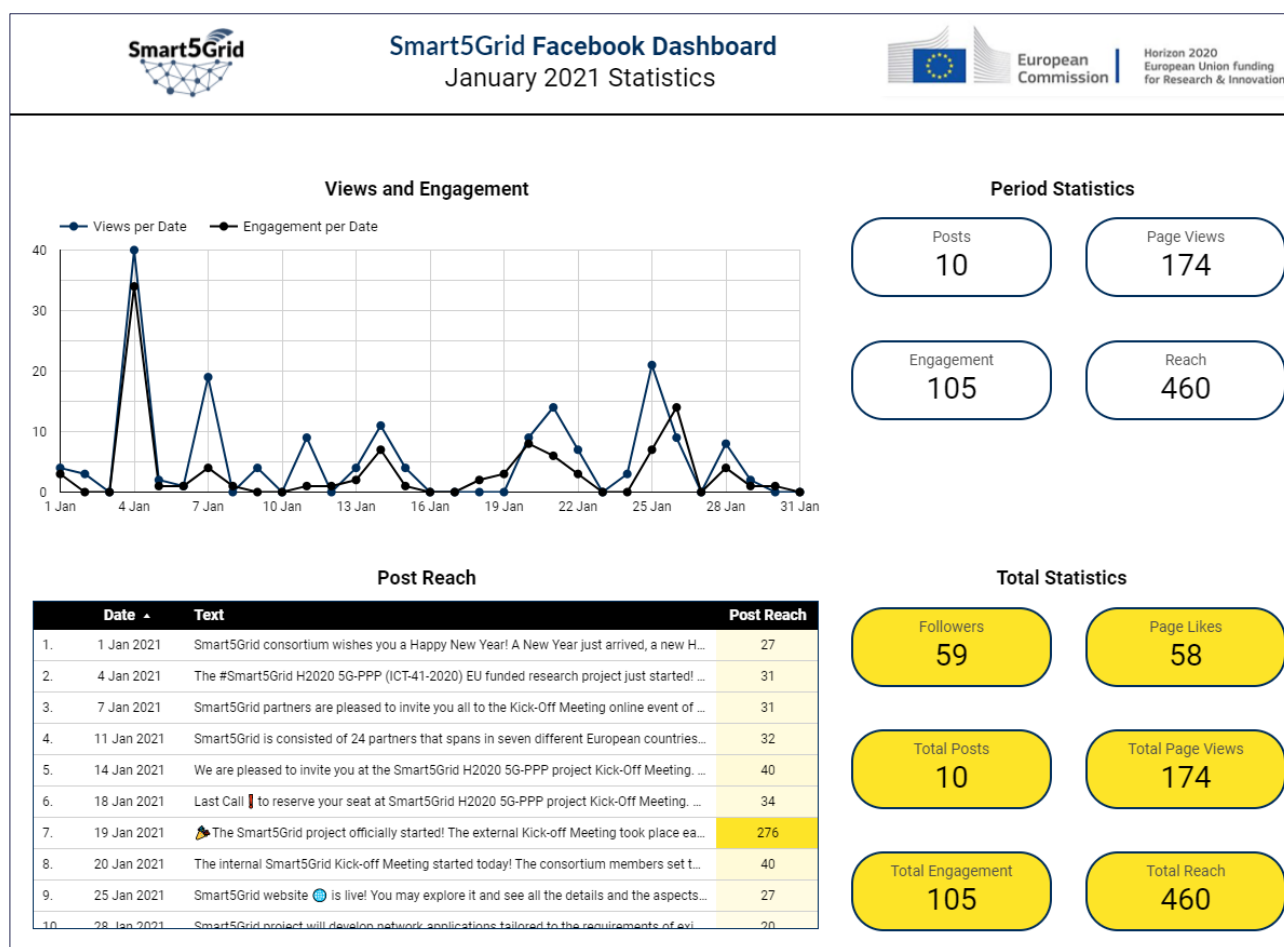


Figure 22 Facebook Statistics Dashboard

#### 4.2.3. Smart5Grid Twitter Statistical Dashboard

Smart5Grid Twitter Dashboard (<https://datastudio.google.com/reporting/2c009c29-598c-4dd7-a68c-55642b8a81e0>) similarly includes a diagram with likes per tweets and a table with tweet's likes, impressions and engagement. Period and Total Statistics include retweets, likes, impressions engagement rate and followers among other important values and metrics.

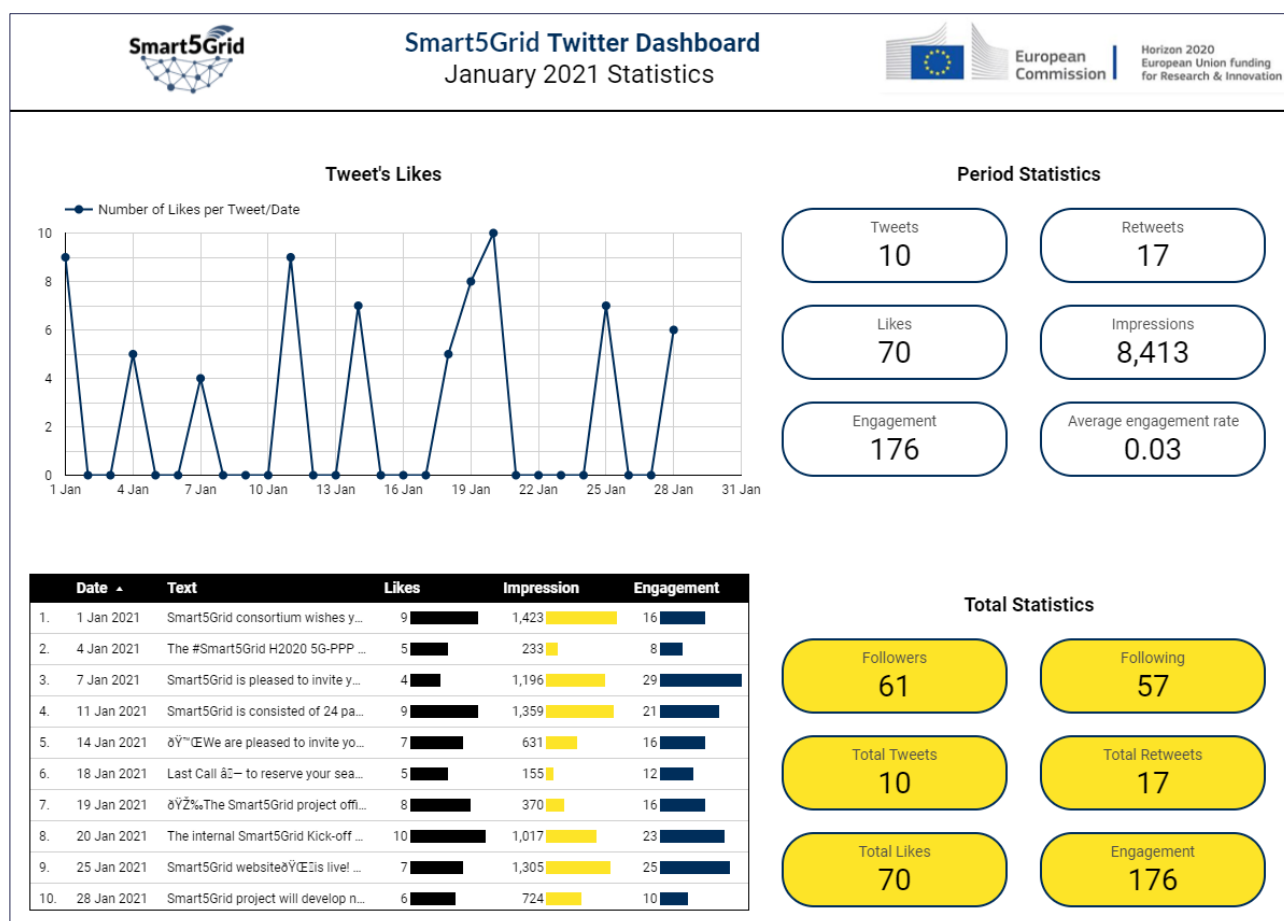


Figure 23 Twitter Statistics Dashboard

#### 4.2.4. Smart5Grid LinkedIn Statistical Dashboard

Smart5Grid LinkedIn Dashboard (<https://datastudio.google.com/reporting/c9c10ae6-c265-40a2-a73c-354a00d6d9fe>) focuses on likes and views on post level (per post), and their evolution through the examined time period. Period and Total Statistics will also be included following the same format as mentioned in the Twitter section above.

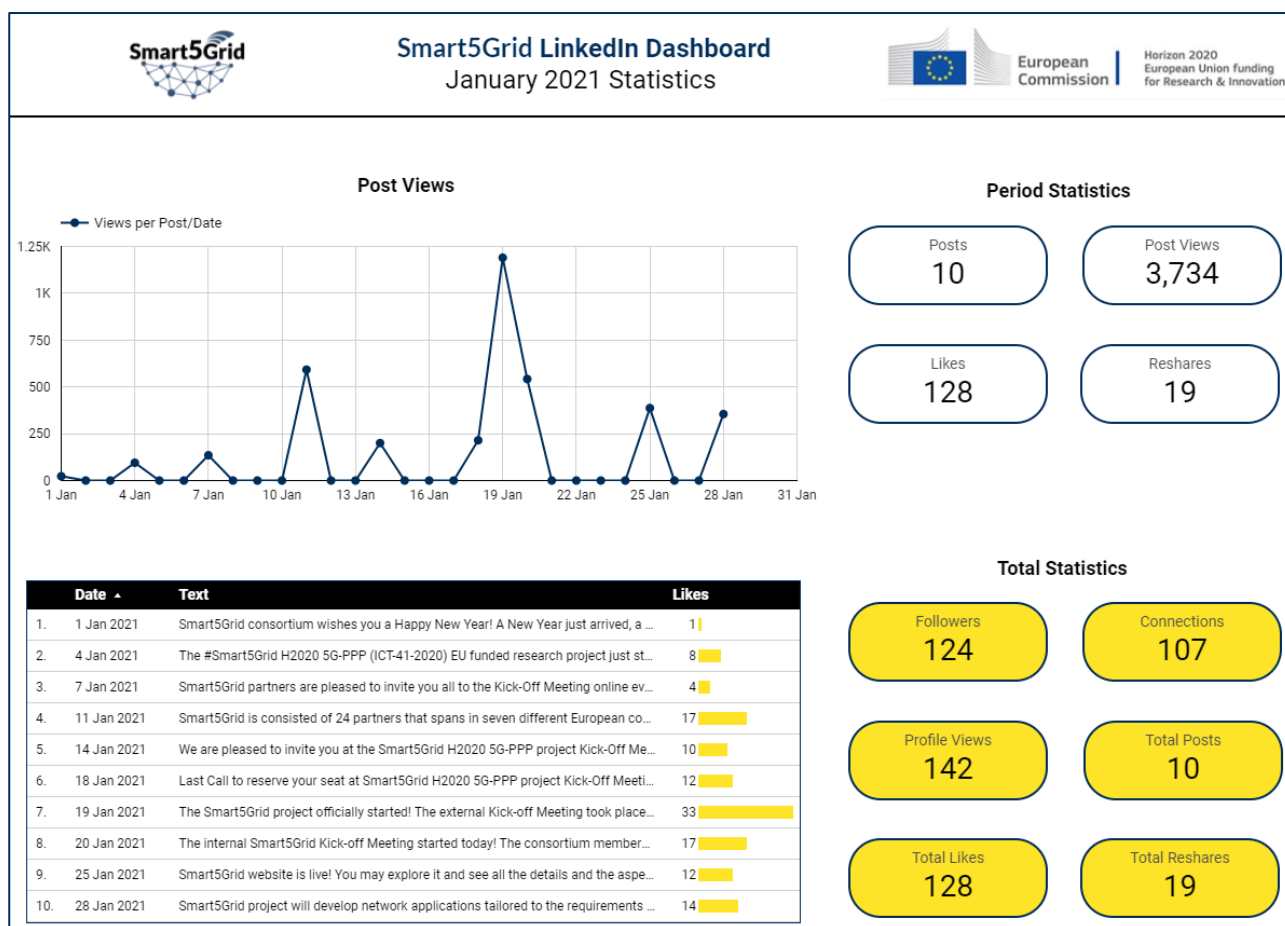


Figure 24 LinkedIn Statistics Dashboard

#### 4.2.5. Smart5Grid Instagram Statistical Dashboard

Smart5Grid Instagram Dashboard (<https://datastudio.google.com/reporting/d04e6930-3e95-40f3-b1eb-6b6127c21cd8>) shares the same concept as the previous ones. The statistics will be provided on a post level, and will show the progress on post impression, reach and likes. The total number of posts, likes, followers, follows, etc. will be included in the Period and Total Statistics section.

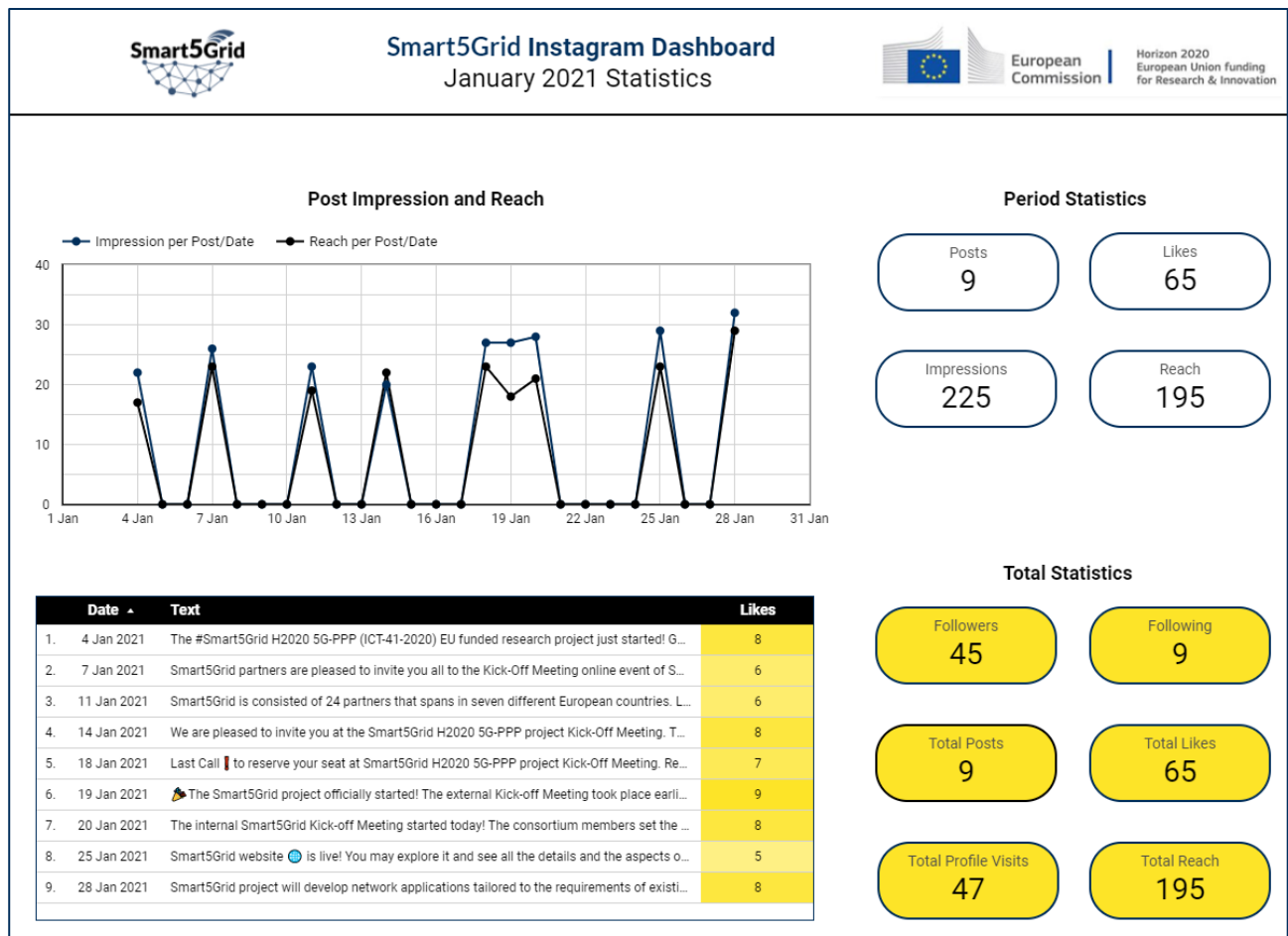


Figure 25 Instagram Statistics Dashboard



## 5. Standardisation Plan

Smart5Grid consortium consists of a variety of participating partners covering representatives from various market categories (such as SMEs, energy and telecommunications stakeholders, technology providers and academics). Capitalising these competencies, Smart5Grid will analyse related challenges across Europe and will create appropriate synergies, especially as of the effective inclusion of project-based technical solutions around the selected use cases. In the scope of the intended promotion of the technical progress, the consortium will give priority to and will investigate options for contributions to corresponding standardisation bodies, working groups, advisory boards and fora.

Smart5Grid is clearly addressing the challenges of the topic *ICT-41-2020 ("5G PPP – 5G innovations for verticals with third party services")*. In particular, among this topic's framework it has been identified the option for the involved facilities *"to provide opportunities for SMEs and developers to experiment their applications in the context of specific vertical use cases on open experimental network platforms, and to create 5G open-source repositories for wide use and towards standards development"*. Towards fulfilling this concrete aim, the Smart5Grid project promotes the open source-based evolution of network elements across the entire 5G architecture, thus providing the opportunity especially for SMEs to develop, experiment and validate their NetApps and, in this context, the use of the open Smart5Grid platform will be a first-class opportunity for new entrants in the domain of energy. Of crucial importance in this effort, is the provision of the Smart5Grid OSR (Open Smart5Grid Repository) for NetApps, which will play the role of promoting and opening the energy ecosystem to smaller players and newcomers in this challenging arena. The open repository of the project will also enhance the visibility of the project outcomes and moreover, it will enhance the collaboration and new partnerships of SMEs, by allowing them to work synergistically and collaboratively. Finally, being a big innovation 5G PPP project promoting technical innovations to the previously mentioned areas, Smart5Grid also anticipates promoting its results to international standardisation bodies and for that reason the work breakdown includes a dedicated task (WP7/Task 7.4) that will be responsible for "mapping" the key exploitable innovations to the standardisation objectives, in order to prepare a concrete plan to submit contributions to relevant standardisation fora.

In the following years, a digital transformation is expected across several industrial verticals. These verticals will bring a wide variety of uses cases, with unprecedented and diverging requirements in terms of functionality and performance. 4G architecture was initially conceived to support only mobile broadband services, thus it is not able to deal with the future use cases<sup>2</sup>. To address that issue, the "softwarisation" technologies (i.e., Software Defined Networking<sup>3</sup> (SDN) and Network

<sup>2</sup> International Telecommunication Union - Telecommunication Standardisation Sector (ITU-T) (2018): *ITU-T Recommendation Y.3101 (01/2018): "Requirements of the IMT-2020 network"*. Available at: <https://www.itu.int/rec/T-REC-Y.3101-201801-I/en>

<sup>3</sup> Software Defined Networking (SDN): Another new feature of 5G networks is what is called as SDN which provides the separation of the control plane from the user plane. The usage of SDN allows for a high level of programmability, enabling the separation of the network in different slices within the same hardware. Each slice can then be dedicated to a different type of service. SDN is a complementary trend to NFV that allows the control of network resources to be opened to third parties, with the possibility for these third parties to manage their own physical or virtual resources individually, as needed, with the required level of performance tailored to actual needs. SDN centrally configures and manages physical and virtual network devices in data-centres, such as routers, switches, and gateways. This possibility goes much beyond the

Functions Virtualisation<sup>4</sup> (NFV) are “key” concerns<sup>5,6</sup>. With these technologies, the physical network infrastructure can be logically split into a set of slices, each tailored to support the specific requirements of a particular use case. This paradigm, known as Network Slicing<sup>7</sup> (NS), will enable the operators to accommodate vertical use cases in a flexible, programmable and agile manner<sup>8</sup>. Given the benefits provided by network slicing, Standards Developing Organisations (SDOs) along with the telco industries and academia have made every effort in the last years to integrate network slicing into the 5G architecture.

From the standardisation viewpoint, 3GPP<sup>9</sup> has defined the framework to manage and orchestrate network slices across the 5G Core Network<sup>10</sup> (CN) and the RAN segments<sup>11</sup>. To support it, the architectures of these segments have included novel features. In the RAN segment, the RAN nodes can be split into a Central Unit (CU) and several Distributed Units (DUs) and this split enables the customisation of the distribution of the radio protocol functions between the radio transmitters and edge clouds in order to satisfy the latency requirements of each slice, while centralisation benefits

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management capabilities offered to today's Mobile Virtual Network Operators (MVNOs). The combination of NFV and SDN technologies enables a lower capex as compared to traditional networks, accelerating time-to-market. For further reading see, *for example*: Li, Y., and Chen, M. (2015): Software-defined network function virtualisation: A survey. *IEEE Access*, 3, 2542-2553.

- <sup>4</sup> NFV is a paradigm shift in how the networks that underpin today's service provider infrastructures are built and operated, and how the services they deliver are managed. New degrees of freedom are introduced to the network and its management as resources now may be added, changed, and removed dynamically. This change opens up a wave of new business opportunities
- <sup>5</sup> In the framework of actual 5G developments and with the pure aim of supporting *ad-hoc* digital business models of industrial users, SDN and NFV are often seen as “key and supplementary components” to allow these specific categories of professional users to control their network capabilities dynamically, according to their specific needs.
- <sup>6</sup> For further reading also see, *among others*: Nguyen, V.-G., Brunstrom, A., Grinnemo, K.-J., and Taheri, J. (3rd quart. of 2017): SDN/NFV-based mobile packet core network architectures: A survey. *IEEE Communications Surveys and Tutorials*, 19(3), 1567-1602.
- <sup>7</sup> The usage of Network Slicing (NS) allows for the creation of multiple virtual networks and network resource pools within the same physical network. The parameters for each network slice are optimized according to different criteria and possibly used by different tenants or organizations. Each slice can then be optimized based on the characteristics of the services being provided in that slice and the applications that can be delivered on it. A slice can be thought of as a dynamic Infrastructure as a Service (IaaS) custom made for a service. Network slices can be viewed as “on demand” networks. Slicing may also include a fine-grained allocation of resources, such as compute, memory and disk space, in addition to network separation. In this view, the slice can represent a dynamic and logically independent application delivery infrastructure (IaaS). If an operator wishes to save costs by sharing slice resources (for example, oversubscribing slice resources) then it is possible, and a cost/risk study has to be conducted for each use case
- <sup>8</sup> See the context discussed in: Ordonez-Lucena, P.J., Ameigeiras, J.J., Lopez, D., Ramos-Munoz, J.L., and Folgueira, J. (2017): Network Slicing for 5G with SDN/NFV: Concepts, Architectures, and Challenges. *IEEE Communications Magazine* 55(5), 80-87.
- <sup>9</sup> The 3rd Generation Partnership Project (3GPP) unites seven telecommunications standard development organisations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), known as “Organisational Partners” and provides their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies. The project covers cellular telecommunications technologies, including radio access, core network and service capabilities, which provide a complete system description for mobile telecommunications. The 3GPP specifications also provide hooks for non-radio access to the core network, and for interworking with non-3GPP networks. For a more detailed information also see: <https://www.3gpp.org/about-3gpp/about-3gpp>
- <sup>10</sup> For further details also see, *among others*: The Third Generation partnership project (3GPP): 3GPP TS 23.501 V16.3.0 (2019-12): “System Architecture for the 5G System (5GS); Stage 2 (Release 16)”. Available at: [https://www.3gpp.org/ftp/Specs/archive/23\\_series/23.501/](https://www.3gpp.org/ftp/Specs/archive/23_series/23.501/)
- <sup>11</sup> Further details can be found at: <https://www.3gpp.org/specifications-groups/ran-plenary>

will be maximised<sup>12</sup>. The CN segment can be implemented as an SBA, meaning that the architecture elements offer their services to external network functions that are permitted to make use of these provided services. This feature eases the deployment of customised CN functions (e.g., mobility management, session management, etc.) across clouds while specific vertical applications and functions are integrated with them without defining new interfaces<sup>13</sup>.

Previously, SDOs have not considered the underlying virtual resources of slices but this approach is realised by ETSI. On one hand, ETSI has defined the Management and Orchestration (MANO) framework<sup>14</sup> to manage VNFs and orchestrate their resources<sup>15, 16</sup> and although MANO was not conceived to support network slicing, ETSI has analysed how network slicing can be supported by MANO<sup>17</sup>. From the multi-domain perspective, ETSI has also recently reported how different providers can cooperate with their respective MANO frameworks to deploy VNFs among their domains (i.e., cross domain management)<sup>18, 19, 20</sup>. Moreover, ETSI has defined the MEC framework<sup>21</sup> to manage

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- <sup>12</sup> The Third Generation Partnership Project (3GPP): 3GPP TS 38.401 V16.4.0 (2021-0001): "NG-RAN; Architecture Description (Release 16)". Available at: [https://www.3gpp.org/ftp//Specs/archive/38\\_series/38.401/](https://www.3gpp.org/ftp//Specs/archive/38_series/38.401/)
- <sup>13</sup> The Third Generation partnership project (3GPP): 3GPP TS 23.501 V16.3.0 (2019-12): "System Architecture for the 5G System (5GS); Stage 2 (Release 16)". Available at: [https://www.3gpp.org/ftp//Specs/archive/23\\_series/23.501/](https://www.3gpp.org/ftp//Specs/archive/23_series/23.501/)
- <sup>14</sup> For further details see: <https://www.etsi.org/technologies/nfv>
- <sup>15</sup> For further information also see the scope discussed in: European Telecommunications Standards Institute (ETSI): ETSI GS NFV MAN V1.1.1 (2014-12): "Network Functions Virtualisation (NFV); Management and Orchestration". Available at: <https://www.google.com/search?client=firefox-b-d&q=etsi+nfv+mano>
- <sup>16</sup> For more details see, among others: European Telecommunications Standards Institute: ETSI GS NFV-IFA 009 V1.1.1 (2016-07): "Network Functions Virtualisation (NFV); Management and Orchestration; Report on Architectural Options". Available at: [https://www.etsi.org/deliver/etsi\\_gs/nfv-ifa/001\\_099/009/01.01.01\\_60/gs\\_nfv-ifa009v010101p.pdf](https://www.etsi.org/deliver/etsi_gs/nfv-ifa/001_099/009/01.01.01_60/gs_nfv-ifa009v010101p.pdf)
- <sup>17</sup> Also see: European Telecommunications Standards Institute: ETSI GS NFV-EVE 012 V3.1.1 (2017-12): "Network Functions Virtualisation (NFV) Release 3; Evolution and Ecosystem; Report on Network slicing Support with ETSI NFV Architectural Framework". Available at: [https://www.etsi.org/deliver/etsi\\_gr/NFV-EVE/001\\_099/012/03.01.01\\_60/gr\\_NFV-EVE012v030101p.pdf](https://www.etsi.org/deliver/etsi_gr/NFV-EVE/001_099/012/03.01.01_60/gr_NFV-EVE012v030101p.pdf)
- <sup>18</sup> European Telecommunications Standards Institute: ETSI GR NFV-IFA 022 V3.1.1 (2018-04): "Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Report on Management and Connectivity for Multi-Site Services". Available at: [https://www.etsi.org/deliver/etsi\\_gr/NFV-IFA/001\\_099/022/03.01.01\\_60/gr\\_NFV-IFA022v030101p.pdf](https://www.etsi.org/deliver/etsi_gr/NFV-IFA/001_099/022/03.01.01_60/gr_NFV-IFA022v030101p.pdf)
- <sup>19</sup> European Telecommunications Standards Institute: ETSI GR NFV-IFA 028 V3.1.1 (2018-01): "Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Report on architecture options to support multiple administrative domains". Available at: [https://www.etsi.org/deliver/etsi\\_gr/NFV-IFA/001\\_099/028/03.01.01\\_60/gr\\_nfv-ifa028v030101p.pdf](https://www.etsi.org/deliver/etsi_gr/NFV-IFA/001_099/028/03.01.01_60/gr_nfv-ifa028v030101p.pdf)
- <sup>20</sup> Also see: European Telecommunications Standards Institute: ETSI GS NFV-IFA 030 V1.3.1 (2018-09): "Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Multiple Administrative Domain; Aspect Interfaces Specifications". Available at: [https://www.etsi.org/deliver/etsi\\_gs/nfv-ifa/001\\_099/030/03.01.01\\_60/gs\\_nfv-ifa030v030101p.pdf](https://www.etsi.org/deliver/etsi_gs/nfv-ifa/001_099/030/03.01.01_60/gs_nfv-ifa030v030101p.pdf)
- <sup>21</sup> Multi-access Edge Computing (MEC) – previously also known as Mobile Edge Computing – makes no assumptions on the underlying radio infrastructure, which makes it a highly flexible element in the communications networks. As the delivery technology, together with the underlying hardware of the MEC platform, remains open, this enables new levels of adaptability to the chosen deployment scenario. Therefore, Service Providers (SPs) can use MEC as a revenue generator and application test-bed (including service producing applications) without being forced to wait for full ratification of the 5G standard and the associated capital investment. This approach enables SPs to offer third parties a cost effective way to trial their applications. Due to the virtualised characteristics of MEC, it is easy to monitor performance and resource needs of an application, which, in turn, enables more accurate pricing for operators towards application providers for hosting the applications, as well as dimensioning the edge equipment exactly as required for the application set proposed. Thus, MEC allows content, services and applications to be accelerated, increasing responsiveness from the edge. The mobile subscriber's experience can be enriched through efficient network and service operations, based on insight into the radio and network conditions.

verticals' applications (NetApps) on edge clouds (e.g., augmented reality, IoT, location services, etc.)<sup>22</sup>. MEC is used to provide a new ecosystem and value chain, since innovative, slice-specific applications can be deployed in a flexible and rapid manner.

In parallel, and constantly being replenished with the SDOs specifications, some 5G PPP research projects are shedding light on the key aspects of the 5G architecture. The majority of 5G PPP Phase 2 projects<sup>23</sup> have already assumed the integration of ETSI MANO and 3GPP framework. However, they focus on specific aspects of the 5G architecture, obviating in this way a complete solution that gathers all the aspects required to accommodate a specific use case in a real environment. For instance, some of these projects focus on specific network segments, missing in that way the management and orchestration viewpoint of multiple network segments. An analogous approach has also been adopted within the scope of the on-going 5G PPP Phase 3 projects<sup>24</sup>, where both ETSI MANO and 3GPP frameworks have been considered as "essential" for realising related architectures.

## 5.1. Standardisation Roadmap

Smart5Grid is addressing the recommendations published by the 5G Industrial Association (5G IA) in the so-called Phase 3 (part II) Pre-Structuring Model from February 2019<sup>25</sup>. Concretely, Smart5Grid is aligned with the six common challenges for all vertical Targeted Actions (TAs), as well as the four specific challenges for the Energy Verticals (TA10).

In particular, the identified Common Challenge 2 predicts for *"Standardisation of functionalities, APIs, testing procedures and any other aspect not already covered by 3GPP or other relevant standardisation bodies"*. In this scope, Smart5Grid targets to develop and demonstrate novel aspects of the 5G usefulness in the energy sector that have not yet covered by relevant standardisation bodies. 3GPP has defined the framework to manage and orchestrate network slices across the 5G Core Network and the Radio Access Network (RAN) segments. For the Smart5Grid project, the RAN nodes would be split into a Central Unit and several Distributed Units and this split enables the customisation of the distribution of the radio protocol functions between the radio transmitters and edge clouds in order to satisfy the latency requirements of each slice, while centralisation benefits will be maximised. On the other hand, the Core Network segment can be implemented as a Service Based Architecture, meaning that the architecture elements offer their services to external network functions that are permitted to make use of these provided services. Additionally, the Service Based Architecture (SBA) in Smart5Grid will enable an even more flexible development of new NetApps that will be container-based, without introducing new interfaces, but rather registering and subscribing to the core network services as opposed to traditional point-to-point architectures used up to now for communications in energy distribution power grids, which contain a large number of unique, or quasi-unique, interfaces between functional elements, each connected to multiple adjacent elements.

<sup>22</sup> More interesting informative details can also be found at: European Telecommunications Standards Institute: ETSI GS MEC 003 V2.2.1 (2020-12): *"Mobile Edge Computing (MEC); Framework and Reference Architecture"*. Available at: [https://www.etsi.org/deliver/etsi\\_gs/MEC/001\\_099/003/02.02.01\\_60/gs\\_MEC003v020201p.pdf](https://www.etsi.org/deliver/etsi_gs/MEC/001_099/003/02.02.01_60/gs_MEC003v020201p.pdf)

<sup>23</sup> More details about the 5G PPP Phase 2 projects can be found at: <https://5g-ppp.eu/5g-ppp-phase-2-projects/>

<sup>24</sup> More details about the 5G PPP Phase 2 projects can be found at: <https://5g-ppp.eu/5g-ppp-phase-3-projects/>

<sup>25</sup> 5G Public Private Partnership (5G PPP) (2018): *"Phase 3 (Part 2) Pre-Structuring mode"*. Available at: <https://5g-ppp.eu/phase-3-part2-pre-structuring-model/>.

Furthermore, in the scope of the Common Challenge 6 it has been identified that *“TAs may consider standardisation and community building (e.g. to foster progressing existing or developing new APIs and SW), not only in Telco fields but also focusing on Verticals and general enablement”*. Towards fulfilling this goal, standardisation becomes a “core” aspect in Smart5Grid intending to create the necessary industry-led framework, to exploit the core project innovations and to accelerate the visibility and acceptance of the technologies specifically targeted by the project. In this direction, contributions to the 5G-standardisation initiatives as well as energy standardisation bodies will be targeted, leveraging the active involvement of the key industrial consortium members and to accelerate the visibility and acceptance of the technologies targeted by the project. The project will follow a concrete standardisation plan, also identifying the specific partner(s) for contributions, the accurate timelines, and the corresponding Working Groups (WGs) of the Standards Developing Organisations.

The Smart5Grid standardisation and community building activities may go also beyond the Telco field, as they will be focused on providing input to any further development of EU standards and policies, potentially including the IEEE European Public Policy Initiative Energy Working Group<sup>26</sup>, CIGRE<sup>27</sup> Study Committee C5<sup>28</sup>, CIGRE Study Committee C6<sup>29</sup> and the CIRED Working Group focusing on “Resilience of Distribution Grids”<sup>30</sup>.

Smart Grids can manage direct interaction and communication among consumers, households or companies, other grid users and energy suppliers. This opens up unprecedented possibilities for consumers to directly control and manage their individual consumption patterns, providing, in turn, strong incentives for efficient energy use if combined with time-dependent electricity prices.

<sup>26</sup> In 2014, the IEEE European Public Policy Initiative created two working groups on Energy and ICT. The Energy Working Group is comprised of 12 leading electrical engineers from all walks of life, including academia and industry. The group develops technical policy statements and other documents (e.g., white papers, responses to consultations, etc.) on a wide range of issues with the aim of informing policy makers at the technical level on key topics in the energy realm. Through this Working Group, European IEEE members are able to participate in peer-selected volunteer groups that develop public policy position statements and may engage in or organize policy-related events. For further information also see: <https://www.ieee.org/about/ieee-europe/europe-energy.html>

<sup>27</sup> CIGRE (International Council on Large Systems) is a global community committed to the collaborative development and sharing of power system expertise. The community features thousands of professionals from over 90 countries and 1250 member organisations, including some of the world’s leading experts. CIGRE operates the world’s foremost knowledge programme, spanning 16 domains of work encompassing all the core areas of the power system. Across these domains 250+ Working Groups draw and build on practical expertise to solve existing and future challenges facing the power system. For more details see: <https://www.cigre.org/>

<sup>28</sup> See CIGRE Committee C5 - Working Group C5.25 (2019): *“Regulation and market design barriers preventing capture all the value from fast and high-locations-freedom energy storage”*. This report is the result of a collaborative work to identify regulation and market design barriers preventing to fully capture the value from “new” energy storage technologies, which are faster and have higher-location-freedom than conventional power generation assets. For further information see: <https://e-cigre.org/publication/752-regulation-and-market-design-barriers-preventing-to-capture-all-the-value-from-fast-and-high-locations-freedom-energy-storage>

<sup>29</sup> See CIGRE Study Committee C6 - Joint Working Group C6-C1.33 (2017): *“Multi-energy system interactions in distribution grids”*. For further information also see: [https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6\\_C1\\_33\\_Multi-energy%20system%20interactions%20in%20distribution%20grids.pdf](https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_C1_33_Multi-energy%20system%20interactions%20in%20distribution%20grids.pdf)

<sup>30</sup> CIRED is the International Conference on Electricity Distribution. CIRED works for the purpose of increasing the business relevant competencies, skills and knowledge of those who see themselves as a part of the electricity distribution community, whether they are from the utility, product, consultancy, service, business or Academic sector. CIRED is dedicated to the design, construction and operation of public distribution systems and of large installations using electrical energy in industry, services and transport. For further information also see: <http://www.cired.net/cired-working-groups/resilience-of-distribution-grids>



Improved and more targeted management of the grid translates into a grid that is more secure and cheaper to operate. Smart Grids will be the backbone of the future decarbonised power system. They will enable the integration of vast amounts of both on-shore and off-shore renewable energy, while maintaining availability for conventional power generation and power system adequacy. Smart Grids also provide a platform for traditional energy companies or new market entrants such as ICT companies, including SMEs, to develop new, innovative energy services while taking due account of data protection and cyber-security challenges. That dynamic should enhance competition in the retail market, incentivise reductions in greenhouse gas emissions and provide an opportunity for economic growth<sup>31</sup>.

There is also relevance to all the European Standardisation Organisations (CEN<sup>32</sup>, CENELEC<sup>33</sup> and ETSI<sup>34</sup>) in relation to new standards<sup>35</sup> (such as, for example EN ISO 13790<sup>36</sup>). Other relevant standards include

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- <sup>31</sup> To this aim, the European Council of February 2011 has early recognised the important role of Smart Grids and invited Member States, in liaison with European standardisation bodies and industry, “to accelerate work with a view to adopting technical standards for electric vehicle charging systems by mid-2011 and for smart grids and meters by the end of 2012”. Further details as of this important European initiative can also be found, for example, at: [https://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/119175.pdf](https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf). Also see: European Commission (2011): *Communication on Energy Roadmap 2050*. [COM(2011) 885 Final, 15.12.2011]. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0885:FIN:EN:PDF>
- <sup>32</sup> CEN, the European Committee for Standardisation, is an association that brings together the National Standardisation Bodies of 34 European countries. CEN is one of three European Standardisation Organisations (together with CENELEC and ETSI) that have been officially recognised by the European Union and by the European Free Trade Association (EFTA) as being responsible for developing and defining voluntary standards at European level. CEN provides a platform for the development of European Standards and other technical documents in relation to various kinds of products, materials, services and processes. CEN supports standardisation activities in relation to a wide range of fields and sectors including: air and space, chemicals, construction, consumer products, defence and security, energy, the environment, food and feed, health and safety, healthcare, ICT, machinery, materials, pressure equipment, services, smart living, transport and packaging. Also see: <https://www.cen.eu/YOU/Pages/default.aspx>
- <sup>33</sup> CENELEC, the European Committee for Electrotechnical Standardisation, is responsible for standardisation in the electrotechnical engineering field. CENELEC prepares voluntary standards, which help facilitate trade between countries, create new markets, cut compliance costs and support the development of a Single European Market. CENELEC creates market access at European level but also at international level, adopting international standards wherever possible, through its close collaboration with the International Electrotechnical Commission (IEC), under the “Frankfurt Agreement”. For more informative details about CENELEC’s activities also see, among others: <https://www.cenelec.eu/aboutcenelec/whoweare/index.html#top>.
- <sup>34</sup> The European Telecommunications Standards Institute (ETSI) is a European Standards Organisation (ESO). ETSI is at the forefront of new Information and Communication Technologies, leading the development of standards that enable a sustainable and securely connected society. It is a recognised regional standards body dealing with telecommunications, broadcasting and other electronic communications networks and services. For more details also see: <https://www.etsi.org/>
- <sup>35</sup> Also see the more generalised scope proposed by the CEN-CENELEC-ETSI Coordination Group on Smart Energy Grids (CG-SEG) in the report “SEGCG/M490/G\_Smart Grid Set of Standards 22. Version 4.1 (2017, January)”. Accessible at: [ftp://ftp.cenelec.eu/EN/EuropeanStandardization/Fields/EnergySustainability/SmartGrid/CGSEG\\_Sec\\_0042.pdf#page=1&zoom=auto,-202,784](ftp://ftp.cenelec.eu/EN/EuropeanStandardization/Fields/EnergySustainability/SmartGrid/CGSEG_Sec_0042.pdf#page=1&zoom=auto,-202,784). Of further reading is also the approach proposed by the CEN-CENELEC-ETSI Coordination Group on Smart Energy Grids (CG-SEG) in the report “SG-CG/ M490/F\_ Overview of SG-CG Methodologies. Version 3.0 (2014, November)”. Available at: [ftp://ftp.cenelec.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/SGCG\\_Standards\\_Report.pdf](ftp://ftp.cenelec.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/SGCG_Standards_Report.pdf)
- <sup>36</sup> International Organisation for Standardisation (ISO): EN ISO 13790:2008 (“Energy performance of buildings - Calculation of energy use for space heating and cooling”). (See: <https://www.iso.org/standard/41974.html>). The 13790 document was prepared by Technical Committee ISO/TC 163 (“Thermal performance and energy use in the built environment, Subcommittee SC 2, Calculation methods”), in cooperation with CEN/TC 89 (“Thermal performance of buildings and building components”). This standard provides the means (in part) to assess the contribution that building products and services make to energy conservation and to the overall energy performance of buildings. For further information also see, *inter-alia*: <https://www.iso.org/obp/ui/#iso:std:iso:13790:ed-2:v1:en>

Standard Technical Commission TC57<sup>37</sup> (Communications for power system control), CS EN 16231<sup>38</sup>, IEC TR 62837:2013<sup>39</sup>, IEC 61850<sup>40</sup>, IEEE Synchrophasor Standard C37.118.2-2011<sup>41</sup> and IEC 61850 Generic Object-Oriented Substation Event<sup>42</sup>.

In our approach we also take into account the probability of the rising of new superior relevant standards and technologies, threatening the project technical approach to become obsolete. In order to overcome this difficulty, trends within standardisation bodies and research areas (such as 3GPP,

<sup>37</sup> The IEC Technical Committee 57 (*"Power Systems management and associated information exchange"*) is one of the technical committees of the International Electrotechnical Commission (IEC). TC 57 is develops and maintains International Standards for power systems control equipment and systems including EMS (Energy Management Systems), SCADA (Supervisory Control And Data Acquisition), distribution automation, tele-protection, and associated information exchange for real-time and non-real-time information, used in the planning, operation and maintenance of power systems. For further information also see: <http://tc57.iec.ch/index-tc57.html>

<sup>38</sup> European Committee for Standardisation (CEN): EN 16231:2012 (*"Energy efficiency benchmarking methodology"*). The purpose of energy efficiency benchmarking is to establish the relevant data and indicators on energy consumption, both technical and behavioural, qualitative and quantitative in comparing performance between or within entities. Energy efficiency benchmarking can be either internal (within a specific organisation) or external (between organisations including competitors). This standard describes how to establish the boundaries of what is being benchmarked, including for example facilities, activities, processes, products, services and organisations. For further information about the related context also see, among others: [https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP\\_PROJECT:34105&cs=16431317A08F15A67C5804E1917CBC0C3](https://standards.cen.eu/dyn/www/f?p=204:110:0:::FSP_PROJECT:34105&cs=16431317A08F15A67C5804E1917CBC0C3)

<sup>39</sup> International Electrotechnical Commission (CENELEC): IEC TR 62837: 2013 (*"Energy efficiency through automation systems"*). This document provides a framework for the development and adaptation of documents in order to improve energy efficiency in manufacturing, process control and industrial facility management. For more details also see: <https://webstore.iec.ch/publication/7446>

<sup>40</sup> IEC 61850 is an international standard defining communication protocols for intelligent electronic devices at electrical substations. It is a part of the IEC Technical Committee 57 reference architecture for electric power systems. IEC61850, a common protocol that facilitates interoperability and communications among "Intelligent Electronic Devices (IED)" in substations, which will be essential for developments of smart grid or Virtual Heat and Power plants (VHP). The abstract data models defined in IEC 61850 can be mapped to a number of protocols. Current mappings in the standard are to MMS (Manufacturing Message Specification), GOOSE (Generic Object Oriented Substation Event), SMV (Sampled Measured Values) and soon to Web Services. These protocols can run over TCP/IP networks or substation LANs using high speed switched Ethernet to obtain the necessary response times below four milliseconds for protective relaying. For further information also see, for example: [https://en.wikipedia.org/wiki/IEC\\_61850](https://en.wikipedia.org/wiki/IEC_61850)

<sup>41</sup> Institute of Electrical and Electronic Engineers (IEEE): *IEEE C37.118.2-2011 - IEEE Standard for Synchrophasor Data Transfer for Power Systems*. This standard specifies messaging that can be used with any suitable communication protocol for real-time communication between phasor measurement units (PMUs), phasor data concentrators (PDCs), and other applications. It defines message types, contents, and use. Data types and formats are specified. Typical delays from a PMU to the PDCs are between 20-50msec and each level above adds additional delays in the range of 30-80msec. For further information also see, among others: [https://standards.ieee.org/standard/C37\\_118\\_2-2011.html](https://standards.ieee.org/standard/C37_118_2-2011.html)

<sup>42</sup> Generic Substation Events (GSE) is a control model defined as per IEC 61850 which provides a fast and reliable mechanism of transferring event data over entire electrical substation networks. When implemented, this model ensures the same event message is received by multiple physical devices using multicast or broadcast services. The GSE control model is further subdivided into GOOSE (Generic Object Oriented Substation Events) and GSSE (Generic Substation State Events). GOOSE is a controlled model mechanism in which any format of data (status, value) is grouped into a data set and transmitted within a time period of 4 milliseconds.

GOOSE provides the possibility for a fast and reliable system-wide distribution of input and output values. GOOSE messages are "published" by a device via Ethernet multicast such that they can be "subscribed" by any number of other devices. These messages are based on datasets. While IEC 61850 allows any dataset to be used with GOOSE, the practical uses suggest that the datasets should contain fairly small numbers of status values and their related quality information. A change in value of any dataset member is considered a change of "state", the new information is published immediately. The message is then retransmitted in case of lost packets or devices coming online which need the current state. In order to preserve bandwidth, the delay between retransmissions grows over time from minTime immediately following the state change to maxTime at the steady state condition.

ETSI MEC, ETSI NFV, etc.) will be constantly monitored throughout the Smart5Grid project duration and strong liaisons with other 5G PPP projects on relevant fields are to be established. If necessary, the technical choices (e.g., NFV orchestration platform, 5G RAN Controller) of the Smart5Grid project will be re-oriented, considering the latest advances, to avoid any Smart5Grid technical approach being, in any way, superseded.

## 5.2. Initial Planning

Smart5Grid will work in conjunction with the 5G-PPP initiatives to identify standardisation and regulatory bodies to which the activities in the project will align. Due to the nature of the project, this is expected to extend from the traditional cellular network standardisation groups such as 3GPP and IEEE, towards some of the distributed systems standardisation activities. Contributions to standardisation bodies will ensure that the Smart5Grid results will be adopted by related industrial sectors and that interoperability in multi-vendor environments will be guaranteed. The project intends to evaluate and identify potential contributions to the standardisation arena.

Standards play a key role in improving development, deployment and orchestration of network services and NetApps in a 5G ecosystem, given the multitude of involved mechanisms and stakeholders. Towards this direction, Smart5Grid has identified a set of standardisation bodies and groups that have to be closely monitored during the project lifetime, while in part of them, specific contributions are envisaged to be provided. Smart5Grid findings and outcomes will provide a significant contribution towards effectively achieving this goal.

There is a strong need to closely follow up standards and 5G technologies evolution, so that to avoid focusing on areas that are not at the forefront of modern industry trends. Standardisation is a core aspect in Smart5Grid to create the necessary industry-led framework and to exploit the core project innovations and the outcomes coming from the 5G NetApps developed by the project. In this regard, Smart5Grid has the key goal to target the 5G-standardisation initiatives as well as the energy standardisation bodies, leveraging the active involvement of the key industrial consortium members and to accelerate the visibility and acceptance of the technologies targeted by the project.

The Smart5Grid project commits to the creation of tangible outputs that include not only implementations, showcases and demonstrations, but also significant inputs to standardisation activities, significant impact on open source development communities, and finally and most importantly, the creation of commercially exploitable intellectual properties.

The initial standardisation plan considered by Smart5Grid includes the following four steps:

- Clear identification of the pertinent and most crucial Smart5Grid innovations that can lead to standardisation contributions and mapping of the venues that need to be targeted.
- Development of a concrete and integrated methodology in agreement with the partners for converting the innovations into standards contributions, including the identification of appropriate industrial channels to rely on to push the Smart5Grid contributions within the SDOs.



- Coordination of contributions across SDOs and industry forums, managed by the Standardisation Manager to ensure that the contributions follow the standardisation strategies proposed by WP7, within the scope of Task 7.4.
- Following up and relying on Smart5Grid partners (individually or collectively) to maximise the chances of success with the standardisation efforts.

The consortium's plan is also to support several communication activities focusing on providing input to any further development of EU standards and policies. The project will apply relevant standards in each field, building on those standards to define and test new common services and data models. Project participants will make direct contributions to WGs for standards.

Among others, the project is relevant to the activities of the EC Smart Grids Task Force (SGTF) because of its focus on power grid reliability, smart grid technologies and system services<sup>43</sup>.

As already mentioned in a previous section, there is also relevance to all the European Standardisation Organisations (CEN, CENELEC, and ETSI) in relation to new standards (such as, for example, the case of EN ISO 13790). Other relevant standards include Standard Technical Commission TC57, CS EN 16231, IEC TR 62837:2013 and IEC 61850. Following to the Smart5Grid effort within the above mentioned "paths", it should be expected that any relevant missing standards, missing elements within standards or clarifications needed in the telecom and the energy vertical sectors will be identified and further examined thorough research. If needed in the scope of Smart5Grid, appropriate pre-standardisation workshops will be organised, so as to support the development of roadmaps, which can be then used as a baseline for standardisation activities, taking the identified gaps in the field of power distribution grids strongly into account.

Smart5Grid will collaborate with several standardisation bodies (e.g. 3GPP, ETSI, NGMN Alliance<sup>44</sup>, O-RAN Alliance<sup>45</sup>, etc.) to identify where and how 5G and ICT standards should evolve in the energy

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<sup>43</sup> The Smart Grids Task Force (SGTF) was set up by the European Commission at the end of 2009 and is made up of stakeholder representatives from industry, regulators, consumer groups and the European Commission. The task force is composed of four experts groups (EGs) focusing on the following distinct topics, briefly mentioned as below: (i) Standards for smart grids (EG1); (ii) Regulatory recommendations for privacy, data protection and cyber-security (EG2); (iii) Regulatory recommendations for smart grids deployment (EG3); (iv) Smart grid infrastructure deployment (EG4), and; (v) Implementation of Smart Grid Industrial Policy (EG5). For more informative details also see: <https://www.edsofsmartgrids.eu/>

<sup>44</sup> The Next Generation Mobile Networks (NGMN) Alliance is an open forum founded by world-leading mobile network operators. Its goal is to ensure that next generation network infrastructure, service platforms and devices will meet the requirements of operators and, ultimately, will satisfy end user demand and expectations. The NGMN seeks to incorporate the views of all interested stakeholders in the telecommunications industry and is open to three categories of participants (the NGMN Partners) including: Mobile network operators (Members), vendors, software companies and many other leading industry players (Contributors) and research institutes contributing substantially to mid- to long-term innovation (Advisors). More details can be found at: <https://www.ngmn.org/>

<sup>45</sup> The O-RAN (Open – Radio Access Network) Alliance has been founded in February 2018 by AT&T, China Mobile, Deutsche Telekom, NTT DOCOMO and Orange. It has been established as a German entity in August 2018. Since then, the O-RAN Alliance has become a world-wide community of mobile network operators, vendors, and research & academic institutions operating in the Radio Access Network (RAN) industry. O-RAN Alliance's mission is to re-shape the RAN industry towards more intelligent, open, virtualised and fully interoperable mobile networks. The new O-RAN standards will enable a more competitive and vibrant RAN supplier ecosystem with faster innovation to improve user experience. O-RAN based mobile networks will at the same time improve the efficiency of RAN deployments as well as operations by the mobile operators. More details can be found at: <https://www.o-ran.org/>

sector. The project will monitor these bodies, as well as any relevant and related open source initiatives, such as OSM<sup>46</sup>, OPNFV<sup>47</sup>, ODL<sup>48</sup>, M-CORD<sup>49</sup>, etc., to identify opportunities to contribute, and progress to active contribution. Stakeholder contributions will also be encouraged through targeted communications and participation to dissemination events, as well as via alignment of efforts with 5G PPP Standardisation WG<sup>50</sup>.

The process to be followed to the Smart5Grid project aims to stimulate, prepare, and submit standard contributions and it is briefly described in the following:

1. Opportunities for standard contributions should be identified by Work Package Leaders (WPLs) and the technical experts in each technical Work Package.
2. Identified opportunities for standard contributions should be notified at an early stage to the Standardisation Manager and the Reference Person(s) for the target standardisation group, who will assist, if needed, the author(s) during the preparation of the submission and will guarantee that an effective coordination is achieved among project partners.
3. The author(s) is(are) requested to notify the Standardisation Manager and the Reference Person(s) to share draft contributions on the Smart5Grid mailing list before submission, to gather comments and possibly for co-signing contributions.
4. The author(s) of the submitted contribution(s) is(are) requested to announce over the Smart5Grid mailing list the results of the submission (whether the contribution was accepted, revised and/or rejected) and also circulate useful information gathered during the discussion of the contribution(s), so that it can be used as guidance for future project work.

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<sup>46</sup> Open Source MANO (OSM) is an ETSI-hosted project to develop an Open Source NFV Management and Orchestration (MANO) software stack aligned with ETSI NFV. The OSM is developing an open source Management and Orchestration (MANO) stack aligned with ETSI NFV Information Models. As a community-led project, OSM delivers a production-quality MANO stack that meets operators' requirements for commercial NFV deployments. More details can be found at: <https://osm.etsi.org/>

<sup>47</sup> The Open Platform for NFV (OPNFV) is a collaborative project under the Linux Foundation that is transforming global networks through open source Network Functions Virtualisation (NFV). It reduces time to integrate and deploy NFV infrastructure and on-board VNFs (Virtual Network Functions) / CNFs (Cloud-native Network Functions) CNFs for those who supply components and those who operationalize these platforms. The OPNFV community does this by implementing, testing and deploying tools for conformance and performance of NFV infrastructure, aligned with industry reference architectures. More details can be found at: <https://www.opnfv.org/>

<sup>48</sup> OpenDaylight (ODL) is a modular open platform for customizing and automating networks of any size and scale. The OpenDaylight Project arose out of the SDN movement, with a clear focus on network programmability. It was designed from the outset as a foundation for commercial solutions that address a variety of use cases in existing network environments. The ODL platform provides a flexible common platform underpinning a wide variety of applications and use cases. More details can be found at: <https://www.opendaylight.org/>

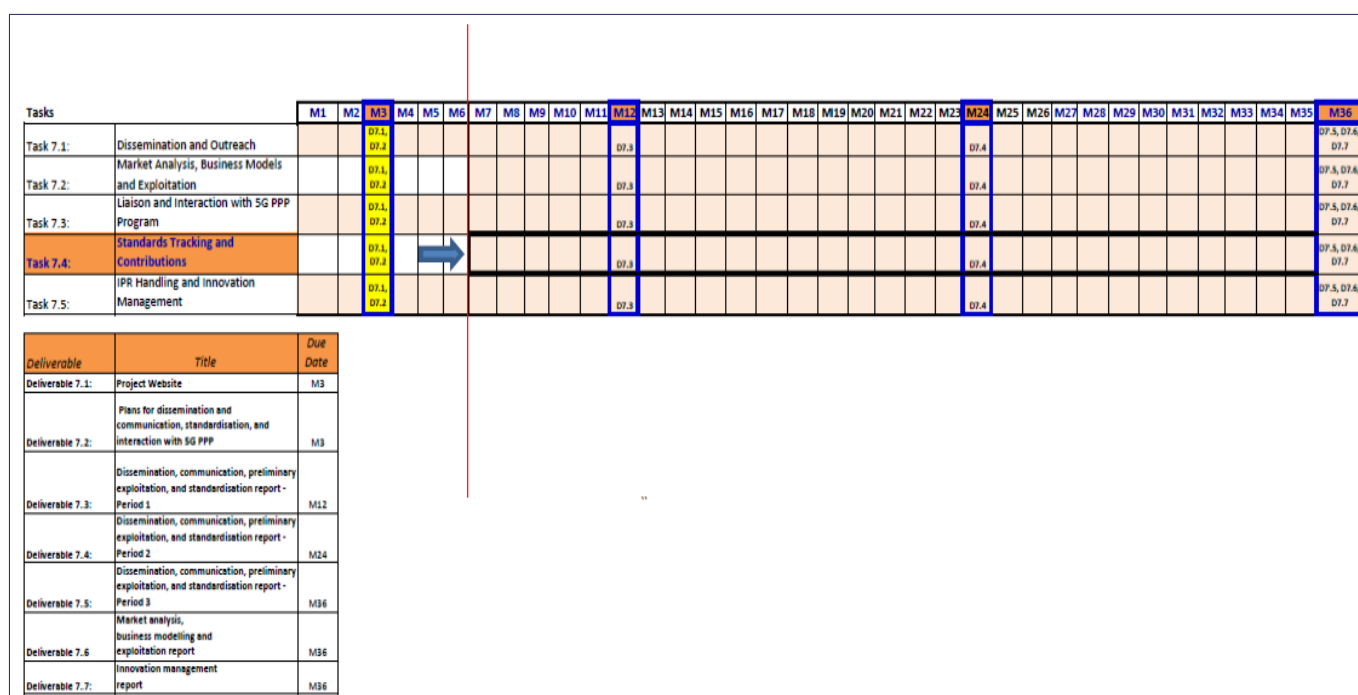
<sup>49</sup> M-CORD (Mobile Central Office Re-architected as a Datacenter) is an open source reference solution for carriers deploying 5G mobile wireless networks. It is a cloud-native solution built on SDN, NFV and cloud technologies. It includes both virtualisation of RAN functions and a virtualised mobile core (vEPC) to enable mobile edge applications and innovative services using a micro-services architecture. M-CORD transforms the mobile network by disaggregating and virtualizing cellular network functions as well as operator specific services. It enables the creation of use case-specific services that can be dynamically scaled. M-CORD lays the foundation for 5G networks and services through support for disaggregated and virtualised evolved packet core, end-to-end slicing from RAN to EPC (Evolved Packet Core), mobile edge computing, and a programmable radio access network. More details can be found at: <https://opennetworking.org/m-cord/>

<sup>50</sup> For more details also see: <https://5g-ppp.eu/5g-ppp-work-groups/>

Whenever allowed by the drafting rules of a standardization body, submitted contributions relating to the Smart5Grid project foreground must include the following statement acknowledging the financial support of the European Community: *"The Smart5Grid project is an EC funded Integrated Project under the Horizon 2020 Framework Programme – H2020-ICT-2020-2 - Grant Agreement number 101016912"*.

The work for standardization falls within the scope of the project's dedicated WP7 ("Exploitation and Impact Creation"), that includes five distinct tasks. WP7 will focus on the development and execution of viable plans (that are reviewed and updated regularly) for the Smart5Grid communication, dissemination and exploitation activities, with the aim to achieve high measurable impact of the project results, ultimately leading to successful adoption of the Smart5Grid NetApps, technological components and innovative features into the smart grid evolution ecosystem. More specifically, WP7 will define all the required actions to ensure that Smart5Grid work, solutions, and results are disseminated, demonstrated, and communicated to the appropriate stakeholders and potential shareholders, and at the right venues, and used to timely impact, improve, and drive standardisation activities.

In the following table we can see a depiction of the entire scope of WP7, with all included tasks and respective deliverables.



**Figure 26: Depiction of the WP7 activities within the course of the project**

We observe that Task 7.4 ("Standards Tracking and Contributions") starts by M7, which considers a prior adequate progress to take place in other technical WPs of the project, so that to better realise a more focused/concrete monitoring of the appropriate standardisation bodies. However, we see that D7.2 which also contains some initial contributions about standardisation planning has been scheduled by M3. This purely implicates that for our standardization approach proposed in the scope of the present Deliverable D7.2, although this constitutes a first approach to the respective matter, it may be possible during the course of the project to have some further "differentiations", based on

the outcomes of the technical work. Thus, a concrete depiction of the standardisation activities will appear in the next Deliverable D7.3 as of Y1 (M1-M12) that may potentially include (slight) differentiations if compared to the present document.

### 5.3. Smart5Grid contributions and participation to Standardisation Bodies

One of the primary objectives of Smart5Grid is to enable 5G dense technologies and high-tech NetApp solutions, with special emphasis on providing opportunities to SMEs to enter niche market cases of the existing power distribution grids. The consortium will therefore be targeting, among others, to key initiatives in the vertical domains, and stakeholders of the 5G and emerging related technologies markets. This aims to raise awareness on the benefits that target 5G technologies and architectures, along with the proposed NetApps, can bring to digitalise a broad range of advanced communication systems and solutions in the energy ecosystem. Towards realizing this effort, the project will set particular emphasis on standardisation-related actions, in order to better promote, validate and disperse expected findings that could further be adopted in a wider range, within current and/or future technical solutions and implementations.

Among the core priorities is the intended contributions to Standards via a dedicated plan: in particular, the role of this plan, shall be to define a strategy for partners to contribute (where relevant and possible) project outcomes to the wider 5G and, energy and network services communities, either via participation into open-source activities, or to pre-standardisation Working Groups (WG), i.e., 3GPP, ETSI, and other standardisation initiatives.

Most of and, in particular, the “key” consortium partners are involved in relevant SDOs, industry-oriented pre-standards forums and specification groups, thus forming domains where the potential contributions shall be possible from Smart5Grid innovations. For the time being, as we are still running the early initiation of the project activities, it is expected that, gradually, and by M6, the project will lay down a concrete standardisation plan, also identifying the specific partner(s) for contributions, the accurate timelines and the corresponding WGs of the respective SDOs.

As shown in the Table below, the consortium will leverage the strong expertise in standardisation to ensure that: (i) Relevant standards are monitored within the project, and; (ii) where possible, the project contributes to standardisation activities. Further opportunities for contributions will be identified within the course of the different technical WPs of the Smart5Grid project.

Consortium members have long experience in the groups listed in the following table and are active in the standardisation processes within the different groups. This will bring knowledge on standardisation to the project and will make the consortium aware of any standardisation results that can be applied to the project.

STANDARDISATION & INDUSTRY FORA	PARTNERS INVOLVED	RELEVANT WORKING GROUPS / EXPECTED CONTRIBUTIONS
3GPP (The 3rd Generation Partnership Project)	OTE, WI3	<ul style="list-style-type: none"> <li>Working Groups: SA2 Architecture 51 , Virtualisation and Orchestration of different resources.</li> </ul>
ETSI MEC52 (European Telecommunication Standards Institute Multi-access Edge Computing)	ATOS, ATH, UW, i2CAT, ENG	<ul style="list-style-type: none"> <li>Working Groups: MEC Platform WG, QoE WG, Services WG.</li> <li>Network slicing and network sharing integration into MEC.</li> <li>Compliance with the ETSI Mobile Edge Computing (MEC) standard.</li> <li>Management Orchestration, Smart5Grid scenarios for MEC, Smart5Grid interfaces for Service Management.</li> </ul>
ETSI ENI 53(Experiential Networked Intelligence)	i2CAT, 8BELLS, OTE, ENG	Contribution to cognitive network management.
ETSI NFV ISG54 (Network Functions Virtualisation Industry Specification Group)	ATOS, i2CAT	<ul style="list-style-type: none"> <li>Working Groups: ETSI MANO, INF WG, SWA WG.</li> <li>Smart5Grid will contribute to ETSI NFV plug tests and open-source community for extended MANO functionalities.</li> <li>Reference SW architecture for Open-Source MANO and functional building blocks.</li> <li>VNF Management and Orchestration specifications.</li> </ul>

<sup>51</sup> The SA WG2 Architecture is in charge of developing the Stage 2 of the 3GPP network. Based on the services requirements elaborated by SA WG1, SA WG2 identifies the main functions and entities of the network, how these entities are linked to each other and the information they exchange. Also see: <https://www.3gpp.org/specifications-groups/sa-plenary/sa2-architecture>

<sup>52</sup> Multi-access Edge Computing (MEC) offers application developers and content providers cloud-computing capabilities and an IT service environment at the edge of the network. This environment is characterized by ultra-low latency and high bandwidth as well as real-time access to radio network information that can be leveraged by applications. The MEC ISG is committed to produce timely and high quality specifications allowing the implementation of interoperable MEC solutions. For further information about the ETSI MEC ISG also see, among others: <https://www.etsi.org/technologies/multi-access-edge-computing>

<sup>53</sup> The ETSI ENI ISG is defining a Cognitive Network Management architecture, using Artificial Intelligence (AI) techniques and context-aware policies to adjust offered services based on changes in user needs, environmental conditions and business goals. It therefore fully benefits the 5G networks with automated service provision, operation, and assurance, as well as optimized slice management and resource orchestration. Also see: <https://www.etsi.org/technologies/experiential-networked-intelligence>

<sup>54</sup> For further information also see, among others: <https://www.etsi.org/technologies/nfv>

IEEE SDN Initiative	i2CAT	<ul style="list-style-type: none"> <li>• Present Smart5Grid solutions to raise public awareness in the IEEE SDN community.</li> <li>• Interface with non-EU stakeholders through the IEEE SDN initiative.</li> </ul>
5G PPP WGs55	ENG, WI3, OTE, ATOS, i2CAT, ATH, UW, 8BELLS	<ul style="list-style-type: none"> <li>• Particular interest on 5G TMV (Test, Measurement and KPIs Validation) WG.</li> <li>• Reference to cloud native approach and CNFs, 5G architecture, network slicing, MEC, vertical demonstrations, and SME involvement.</li> </ul>

**Table 6: Link activities to standards and open source initiatives to SmartGrid and foreseen contribution areas**

Moreover, **ATH** (Athonet Srl) is active in other 3GPP/ETSI initiatives, such as MCPTT plugtests<sup>56</sup> and NFV plugtests<sup>57, 58</sup>. Athonet is a member of the MulteFire Alliance<sup>59</sup> and of the CBRS Alliance<sup>60</sup>, as well as of Telecom Infra Project<sup>61</sup> (TIP) and 5G-ACIA<sup>62</sup> (5G Alliance for Connected Industries and Automation).

<sup>55</sup> For more details also see: <https://5g-ppp.eu/5g-ppp-work-groups/>

<sup>56</sup> The concept of "Mission Critical Push-To-Talk" (MCPTT) has been specified in 3GPP Release 13. Interoperability and MCPTT service harmonization are critical challenges to be taken into account for the successful deployment and operation of Mission Critical Communication. The interoperability of MCPTT products and services has not been tested in Europe previously, leading to this ideal opportunity. The goal of the MCX Plugtests events were to validate the interoperability of a variety of implementations using different scenarios based on 3GPP Mission Critical Services in Release 14. For further information also see: <https://www.etsi.org/events/1583-4th-mcx-plugtests>

<sup>57</sup> The NFV Plugtests Programme provides a continuous and ubiquitous environment for collaborative testing and validation activities among different organizations. Also see: <https://www.etsi.org/technologies/nfv/nfv-plugtests-programme>

<sup>58</sup> Also see, for further reading: <https://www.etsi.org/events/1683-nfv-mec-plugtests>

<sup>59</sup> The MulteFire Alliance is an independent, diverse, and international member-driven consortium defining and promoting MulteFire – a cellular-based technology for operating in unlicensed and shared spectrum. Its purpose is to support the common interests of members, developers and users in the application of LTE and next generation mobile cellular technology - such as 5G New Radio (NR) - in configurations that use only unlicensed or shared radio spectrum. More details can be found at: <https://www.multefire.org/>

<sup>60</sup> The CBRS (Citizens Broadband Radio Spectrum) Alliance is an industry organisation focused on driving the development, commercialisation, and adoption of OnGo™ shared spectrum solutions, today announced it is expanding its mission to encompass 3GPP technologies operating in shared spectrum bands around the globe. The Federal Communications Commission (FCC) established CBRS as a way for shared wireless broadband use of the 3550- 3700 MHz band, which is more commonly known as the 3.5 GHz band. More details can be found at: <https://www.cbrcalliance.org/>

<sup>61</sup> The Telecom Infra Project (TIP) is a global community of companies and organisations working together to accelerate the development and deployment of open, disaggregated, and standards-based technology solutions that deliver the high quality connectivity that the world needs – now and in the decades to come. For more details see: <https://telecominfraproject.com/>

<sup>62</sup> 5G-ACIA is the central global forum for shaping 5G in the industrial domain. On one platform, various industries from all over the world jointly create a new ICT and OT ecosystem and set the frameworks for a highly attractive emerging market. It is a unique alliance to ensure that the ICT needs on the automation industry are considered. For more details also see: <https://www.5g-acia.org/>



## 6. Interaction with 5G-PPP plan

### 6.1. Alignment with 5G-PPP

The Smart5Grid goals are aligned with the 5G PPP Programme vision and, therefore, it has been conceived to address the challenges, meet the objectives and achieve the targeted impact of the H2020 ICT-41 2020 Call “5G innovations for verticals with third party services”.

Smart5Grid commits to actively contribute to the 5G PPP Programme in order to maximise the programme’s impact and ensure a common and strong European group to face the challenges of the 5G deployment in the energy vertical.

Sufficient resources have been allocated by the consortium to actively participate in the Steering Board, the Technology Board, the Working Groups (WG) and the representation and dissemination activities, as recommended by 5G PPP.

### 6.2. Smart5Grid participation to 5G-PPP boards, WGs, and meetings/activities.

Smart5Grids intends to participate in the 5G PPP and 5G IA WGs relevant to the project through designated representative partners.

Table 7 briefly reports the WG’s relevance for the project, its objective and main activities, as well as the Smart5Grid representatives responsible for following and contributing to each initiative.

AREA	WORKING GROUP	RELEVANCE	OBJECTIVES & MAIN ACTIVITIES	Smart5Grid REPRESENTATIVES
5G PPP	Steering Board	High	Coordinating common actions and initiatives of the programme	<u>ENEL</u> Daniele Porcu <a href="mailto:daniele.porcu@enel.com">daniele.porcu@enel.com</a> Project Coordinator
5G PPP	Technology Board	High	Ensuring coherence and consistency of the technical solutions developed within the projects across the programme	<u>ENG</u> Giampaolo Fiorentino <a href="mailto:giampaolo.fiorentino@eng.it">giampaolo.fiorentino@eng.it</a> Technical Manager
5G PPP	COMMS	High	Coordinating joint communication actions among the projects	<u>8BELLS</u> Vasileios Samarinas <a href="mailto:vasileios.samarinas@8bellsresearch.com">vasileios.samarinas@8bellsresearch.com</a> Communications Manager

				Deputy: Dimitrios Nodaros <a href="mailto:dimitris.nodaros@8bellsresearch.com">dimitris.nodaros@8bellsresearch.com</a>
5G PPP	Architecture	High	Serving as a common framework to facilitate the discussion between 5GPPP projects developing architectural concepts	<u>ATOS</u>  Borja Otura <a href="mailto:borja.otura.external@atos.net">borja.otura.external@atos.net</a>  Deputy: Sonia Castro <a href="mailto:Sonia.castro@atos.net">Sonia.castro@atos.net</a>
5G PPP	Software Networks (SDN/NFV)	High	Analysing and addressing unification and applicability of key research topics related to Software Networking	<u>ENG</u>  Giampaolo Fiorentino <a href="mailto:giampaolo.fiorentino@eng.it">giampaolo.fiorentino@eng.it</a>  Deputy: Antonello Corsi <a href="mailto:Antonello.Corsi@eng.it">Antonello.Corsi@eng.it</a>
5G PPP	Test, Measurement and KPIs Validation (TMV)	High	Bringing together the projects that have common interest in topics related to the development of Test and Measurements and validation methods, test cases, procedures	<u>WI3</u>  Gianluca Rizzi <a href="mailto:gianluca.rizzi@windtre.it">gianluca.rizzi@windtre.it</a>  Deputy: Fabrizio Brasca <a href="mailto:FabrizioGabrio.Brasca@windtre.it">FabrizioGabrio.Brasca@windtre.it</a>
5G IA	Trials	Medium	Developing the European Trial Roadmap based on the 5G Manifesto, facilitating the involvement of verticals in it, discussing business principles	<u>UCY</u>  Irina Ciornei <a href="mailto:ciornei.irina@ucy.ac.cy">ciornei.irina@ucy.ac.cy</a>  Deputy: Lenos Hadjidemetriou <a href="mailto:hadjidemetriou.lenos@ucy.ac.cy">hadjidemetriou.lenos@ucy.ac.cy</a>



			regarding the economic viability of trials and coordinating the activity on trials with other relevant initiatives at international level	
5G IA	Vision and Societal Challenges	Medium	Identifying the societal, economic, environmental, business and technological benefits obtainable from the realization of 5G main concepts and application to vertical domains. Developing a consensus in Europe on 5G by collecting publicly available visions and major technical trends from industry even from other regions	<u>8BELLS</u> Vasileios Samarinas <a href="mailto:vasileios.samarinas@8bellsresearch.com">vasileios.samarinas@8bellsresearch.com</a> Deputy: Dimitrios Nodaros <a href="mailto:dimitris.nodaros@8bellsresearch.com">dimitris.nodaros@8bellsresearch.com</a>
5G IA	Security	Medium	Fostering the development of the 5G Security Community, pro-actively discussing and sharing information to collectively progress and align on the field	<u>UBE</u> Anastasis Tzoumpas <a href="mailto:atzoumpas@ubitech.eu">atzoumpas@ubitech.eu</a> Deputy: Thanasis Bachoumis <a href="mailto:abachoumis@ubitech.eu">abachoumis@ubitech.eu</a>
Networld Europe	SME	Medium	Supporting SMEs participation in the 5G PPP / EU R&D projects / NetworldEurope and improving their visibility.	<u>INF</u> Nikolaos Vrionis <a href="mailto:nvrionis@infolysis.gr">nvrionis@infolysis.gr</a> Deputy: Vaios Koumaras <a href="mailto:vkoumaras@infolysis.gr">vkoumaras@infolysis.gr</a>

				<p><u>8BELLS</u></p> <p>Vasileios Samarinas  <a href="mailto:vasileios.samarinas@8bellsresearch.com">vasileios.samarinas@8bellsresearch.com</a></p> <p>Deputy: Dimitrios Nodaros  <a href="mailto:dimitris.nodaros@8bellsresearch.com">dimitris.nodaros@8bellsresearch.com</a></p>
5G IA	Pre-Standardization	Medium	Identifying standardization and regulatory bodies to align with, developing a roadmap of relevant standardization and regulatory topics for 5G, evaluating even existing roadmaps for 5G international level alignment	<p><u>OTE</u></p> <p>Ioannis Chochliouros  <a href="mailto:ichochliouros@oteresearch.gr">ichochliouros@oteresearch.gr</a></p> <p>Deputy: Michalis Rantopoulos  <a href="mailto:mrantopoul@cosmote.gr">mrantopoul@cosmote.gr</a></p>
5G IA	Spectrum	Low	Pursuing the convergence of 5G PPP projects results in the spectrum area to maximize the achievable outcome towards relevant technical bodies, spectrum groups or entities in regulatory bodies and industry associations, and establishing a knowledge base concerning advances in spectrum research	NA

5G PPP	5G Automotive	Low	Serving as a common platform between 5G PPP projects developing V2X and Vehicle-as-Infrastructure concepts and components, aiming to consider a wide range of automotive related topics, such as use cases and KPIs, business aspects, spectrum usage, infrastructure capabilities, security and safety	NA
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**Table 7: Smart5Grid project participation in 5G PPP / IA WGs**

### 6.3. Alignment with 5G-PPP EU-funded projects

Smart5Grid commits to work with its peer 5G PPP projects as required under the complementary grant agreement clause 41.4 of the 5G PPP Collaboration Agreement, already signed by all the Smart5Grid consortium partners by the submission date of this deliverable.

The Smart5Grid partners' involvement in other 5G PPP Phases is clear, having some consortium partners long track record in establishing fruitful liaisons with other projects.

Table 8 illustrates the involvement of Smart5Grid partners in the on-going phase 3 projects and where some potential collaboration is foreseen.

PROJECT	PHASE	PARTNERS INVOLVED	Partners foreseen some collaboration
5GASP	5G PPP Phase 3, Part 6: 5G innovations for verticals with third party services & Smart	-	-
5G EPICENTRE		ATH	-
5GERA		OTE	-
5G-IANA		UBE	-
5GINDUCE		WI3, 8BELLS, OTE, UBE	8BELLS

5GMEDIAHUB	Connectivity beyond 5G.	-	-
EVOLVED5G		ATOS, 8BELLS	ATOS, 8BELLS
VITAL5G	H2020-ICT-41-2020: 5G innovations for verticals with third party services.	OTE	-
6GBRAINS	5G PPP Phase 3, Part 6: 5G innovations for verticals with third party services & Smart Connectivity beyond 5G.	-	-
AI@EDGE		ATOS, ATH, 8BELLS, i2CAT	-
DAEMON		OTE	OTE
DEDICAT 6G		ATOS	-
HEXA-X		ATOS	-
MARSAL	H2020-ICT-52-2020: 5G-PPP Smart Connectivity beyond 5G.	OTE	OTE
REINDEER		-	-
RISE-6G		-	-
TERAFLOW		ATOS	-
5GLOGINNOV	5G PPP Phase 3, Part 5: 5G Core Technologies innovation and 5G for Connected and Automated Mobility (CAM).	-	-
5GMETA		WI3	WI3
5G RECORDS		-	-
AFFORDABLE5G		ATOS, NBC, ATH, 8BELLS, i2CAT	8BELLS
CORENECT		-	-
DRAGON	ICT-42-2020: 5G-PPP 5G Core Technologies innovation.	-	-
FUDGE-5G		ATH, UBE	-
INT5GENT		UBE	-
5GBLUEPRINT	5G PPP Phase 3, Part 5: 5G Core Technologies innovation and 5G for Connected	-	-
5GMED		ATOS, NBC, 8BELLS, i2CAT	8BELLS
5GROUTES		ATOS	-

5GRAIL	and Automated Mobility (CAM). ICT-53-2020 call: 5G-PPP 5G for Connected and Automated Mobility.	-	-
ARIADNE	5G PPP Phase 3, Part 4: 5G Long Term Evolution 5G-PPP ICT-20- 2019.	-	-
5GCLARITY		i2CAT	-
5GCOMPLETE		-	-
INSPIRE-5GPLUS		-	-
LOCUS		OTE	OTE
MonB5G		OTE	OTE
TERAWAY		-	-
5GZORRO		ATOS, i2CAT	
5GSOLUTIONS	5G PPP Phase 3, Part 3: Advanced 5G validation trials across multiple vertical industries 5G-PPP ICT-19-2019	-	-
5GTOURS		ATOS, OTE	ATOS, OTE
5GDRONES		INF	-
5GHEART		OTE	OTE
5GROWTH		-	-
5GSMART		-	-
5GVICTORY		i2CAT	-
FULL5G		-	-
5GCroCo	5G PPP Phase 3, Part 2: Automotive Projects 5G-PPP ICT-18-2018	i2CAT	-
5G CARMEN		8BELLS	8BELLS
5GMOBIX		-	-
5GEVE	5G PPP Phase 3, Part 1: Infrastructure Projects 5G-PPP ICT-17-2018	OTE	-
5G-VINNI		-	-
5GENESIS		ATOS, INFOLYSIS, ATH	ATOS, INFOLYSIS

**Table 8: Smart5Grid project participation in 5G PPP / IA WGs**

In the next months, these foreseen collaborations will be analysed in more detail with the objective of starting the required interactions in order, when applies, to make them as fruitful as possible. The initial results will be documented in the next deliverable to be submitted by the WP, D7.3, in M12.

## 6.4. Other activities

Smart5Grid will also take part in joint dissemination activities within the 5G PPP Program with the clear ambition to directly help its growth and consolidation as a crucial initiative for successful transformation and liberalisation of the European smart grids.

As suggested per the 5G PPP communications guidelines, Smart5Grid will include the 5G PPP logo and, where possible, link to the 5G PPP portal (<https://5g-ppp.eu/>) in the project's communication materials.

In the following sections, the first 5GPPP initiatives in which Smart5Grid has been involved at this early stage of the project are described.

### 6.4.1. Smart5Grid presence in 5G PPP website

Smart5Grid is already referenced in the projects page of the 5G PPP website [[Smart5Grid < 5G-PPP \(5g-ppp.eu\)](#)] and its different communication channels reachable from it.



The screenshot shows the 5G PPP website interface. At the top, there is a blue header with the email 'info@5g-ppp.eu' and social media icons. Below the header, the 5G PPP logo is displayed with the tagline 'The 5G Infrastructure Public Private Partnership'. A navigation menu includes links for 'About us', 'Getting Involved', 'Plans & Papers', 'Events', 'European 5G Activities', 'Media & News', and 'Contact'. A blue banner below the menu contains the text 'SMART5GRID' on the left and 'Home /' on the right. The main content area features the Smart5Grid logo, which consists of the text 'Smart5Grid' above a network diagram. Below the logo is a table with project details:

Horizon 2020 call	H2020 – ICT- 2020
Topic	ICT-41-2020
Type of Action	IA
Duration	36 months
Start date	January 1 <sup>st</sup> , 2021
Project title	SMART5GRID : Demonstration of 5G solutions for SMART energy GRIDs of the future

Below the table, the website URL is given as [Smart5grid.eu](#). Social media icons for Twitter, LinkedIn, Facebook, Instagram, and YouTube are shown. The contact email is [SMART5GRID-Contact@5g-ppp.eu](mailto:SMART5GRID-Contact@5g-ppp.eu). At the bottom left, the word 'Abstract:' is visible.

**Figure 27: Smart5Grid project in the 5G PPP website**

### 6.4.2. 5G PPP social media channels

Smart5Grid is also following the 5G PPP social media channels:

- **Twitter.** The handle @5GPPP will be added to all Smart5Grid tweets, which will allow the 5G PPP to quickly retweet them - They currently have ±8,200 followers.
- **LinkedIn group** (<https://www.linkedin.com/groups/12011028/>). Smart5grid will be able to post directly there and reach their over 1,000 members.

### 6.4.3. Contribution to the European 5G Annual journal

The project has already provided its contribution to the sixth edition of the European 5G Annual journal to be published by the Full-5G project [<https://5g-ppp.eu/full-5g/>] in Q2 2021. This issue of the Journal will be produced in collaboration with other H2020 projects. Contribution on 5G innovations and major achievements expected from the projects will be presented for the broad public, but also for wide spectrum of researchers and managers. This represents a significant opportunity to start disseminating the activities of the project. The first editions are available on the 5G PPP Web site [<https://5g-ppp.eu/annual-journal/>].

### 6.4.4. Contribution to the 5G PPP Webinar "5G Innovations for Verticals"

Smart5Grid participated in the 5G PPP Webinar "5G Innovations for Verticals"<sup>63</sup> that took place on March 5, 2021.

Nine new projects, have been presented in this webinar, funded under the 5G-PPP ICT-41-2020 call: 5G-PPP 5G innovations for verticals with third party services, which main goal is to accelerate the adoption of 5G in the vertical sectors.

The webinar started with a short introduction from the European Commission and the 5G IA, that was followed by the presentation of the projects.

Smart5Grid was represented by Daniele Porcu from Enel, the project coordinator, who provided a presentation showing useful insights about this innovative project.

### 6.4.5. Contribution to the 5G PPP phase 3 project Brochure

Smart5Grid has also contributed to the 5G-PPP Phase 3 Project Brochure, which will complement the brochures from phases 1 & 2 with basic information about the new projects.

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<sup>63</sup> <https://5g-ppp.eu/event/5g-ppp-webinar-5g-innovations-for-verticals/>

<b>SMART5GRID</b>	
<b>Project Acronym</b>	SMART5GRID
<b>Project Full Title</b>	Demonstration of 5G solutions for SMART energy GRIDs of the future
<b>Coordinator: name, company</b>	Daniele Porcu, Enel Global Infrastructure and Networks Srl
<b>Start Date – End Date</b>	Jan 2021 - Dec 2023
<b>Website</b>	<a href="http://www.smart5grid.eu">http://www.smart5grid.eu</a>
<b>e- mail</b>	SMART5GRID-Contact@5g-ppp.eu
<b>Twitter account</b>	@smart5grid
<b>Main Objectives &amp; Challenges</b> (max 1000 characters spaces included)	
<p>Smart5Grid utilizing 5G aims to revolutionise the Energy Vertical industry through the successful establishment of four fundamental functions of modern smart grids (i) automatic power distribution grid fault detection, (ii) remote inspection of automatically delimited working areas at distribution level, (iii) millisecond level precise distribution generation control, and (iv) real-time wide area monitoring in a creative cross-border scenario, thus assisting power grid operators and other energy stakeholders such as distribution system operators, energy service providers, etc. Smart5Grid will also design, deploy, operate, and evaluate the baseline system architecture and interfaces for the provisioning of an integrated, open, cooperative, and fully featured 5G network platform, customised for smart energy distribution grids, while an open NetApp repository and high-performance NetApps will be also developed for supporting the Smart5Grid energy-oriented use cases.</p>	
<b>Applications &amp; Expected impact</b> (max 1000 characters spaces included)	
<p>Smart5Grid introduces an open 5G experimental facility, supporting integration, testing and validation of existing and new 5G services and NetApps from third parties (i.e., SMEs, developers, engineers) since underpinning experimentation with a fully softwareised 5G platform for the energy vertical industry is one of the key targets of the project. Moreover, in order to supply start-ups and newcomers with the opportunity to accelerate their growth in the high impact industry of the energy vertical, Smart5Grid provides an open access NetApp repository, provisioning support and assistance to third parties through a clear and trustworthy experimentation roadmap, along with a Validation and Verification (V&amp;V) experimentation framework for NetApp automatic testing, certification, and integration. Smart5Grid will ensure impact maximisation to the realisation of the 5G vision in Energy industry establishing close liaison and synergies with 5G PPP and rest 5G PPP projects.</p>	
<b>Vertical use cases addressed</b>	Please tick the relevant ones
Industry 4.0	
Agriculture & Agri-Food	
Automotive	
Transport & Logistics	
Smart Cities & utilities	
Public Safety	
Smart airports	
Energy	X
ehealth & wellness	
Media & entertain	

Figure 28: Smart5Grid project in the 5G PPP phase 3 projects brochure



## 7. Conclusion

This deliverable presented in detail the initial Communication and Dissemination plan, the Standardisation roadmap, and the initial actions planned for the Smart5Grid interaction with the 5G-PPP partnership and the rest 5G research projects. Smart5Grid's Target Groups, Communication and Dissemination Activities' Timeline and KPIs, targeted SDOs and 5G PPP WGs participation and actions were also presented and analysed in D7.2.

The ultimate goal of the provided plans is to assist Smart5Grid to achieve the highest impact of results by addressing at its best all targeted audiences and relevant stakeholders. Provided plans and proposed actions refer to activities throughout the project duration and they might be adjusted, updated, and enriched according to the evolution of the project and the various opportunities that may arise. Any updates potential on the mentioned plans and proposed actions will be reported on the upcoming WP7 deliverables.

## 8. ANNEX A

### 8.1.1. History and need for a change.


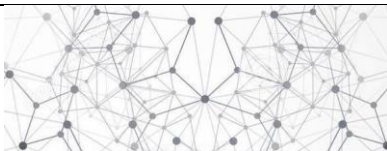
During the Proposal preparation, a first logo has been realized to provide a first visual identity to the project. In this first version, there are some elements that are quite obsolete, like the graphic element of the power line's pole representing the energy sector.



**Figure 29 First Logo**

Nowadays, Smart Grids are usually represented as an interconnected data network since the concept is closer to a complex structure of real-time data. More and more new stakeholders are involved in the energy vertical; we all are part of it.

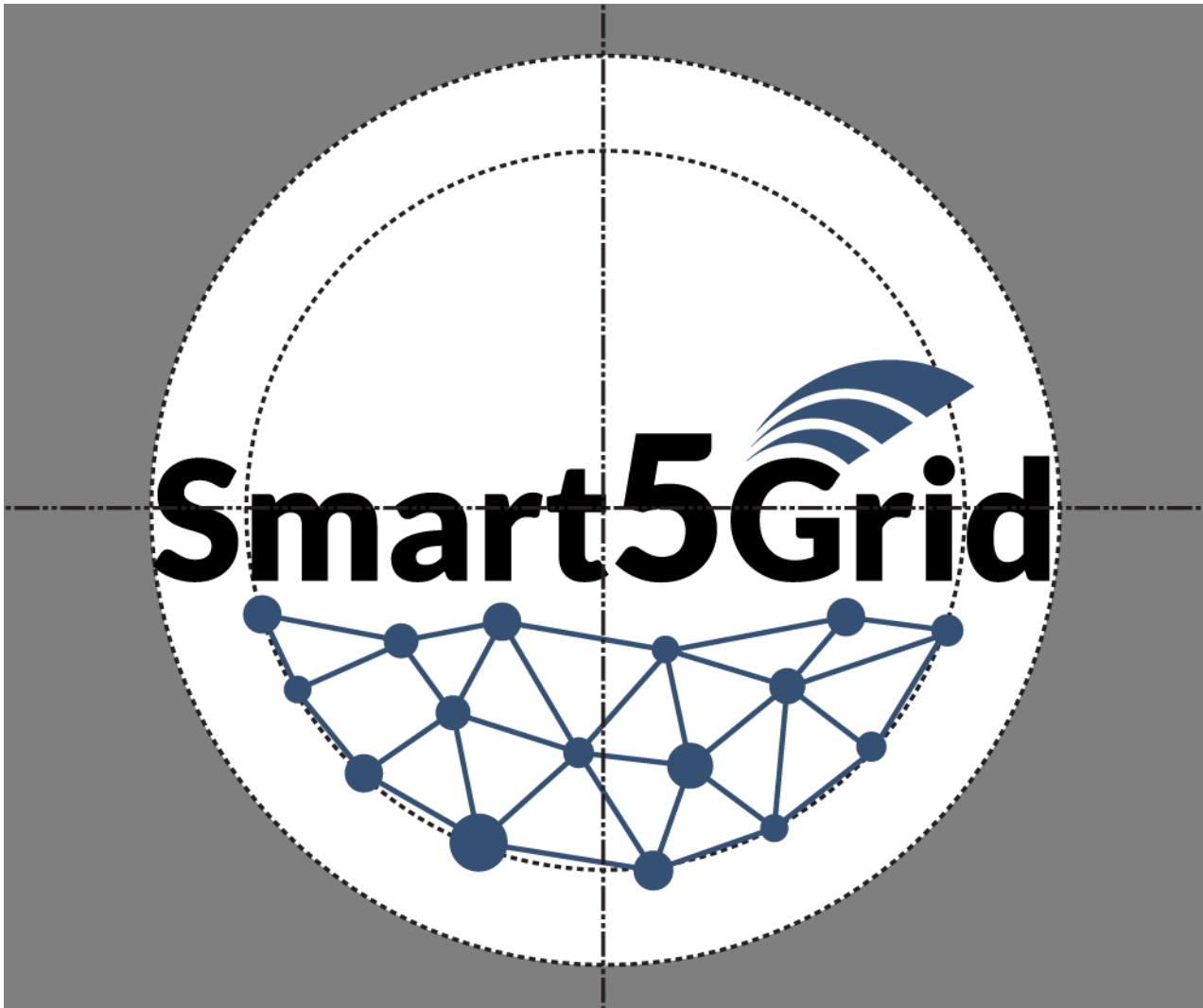
### 8.1.2. Project logo main elements

Project: <b>Smart5Grid</b>		
Primary Level	5G Logo	
	Smart Grid	
Secondary level	Inclusion	Circular shape
	Clearness	Reflecting the way, we want to communicate
	Solidity	The consortium involves major EU players from different domains
	Layers	Technologies developed on top of existing solid structures
	Future	Upper part is empty, we can build more things on top
Remark	In the final logo, the "G" letter has been kept at normal capital letters size, since	

	Smart and Grids has same relevance, while number 5 is bigger, same proportion of 5G logo
--	--

### 8.1.3. Logo Construction

The logo is a synthesis of all logo main elements using a circular shape, keeping symmetry and equal distance in order to enhance its structural visual expression.



**Figure 30 Final Logo Construction**

### 8.1.4. Logo use

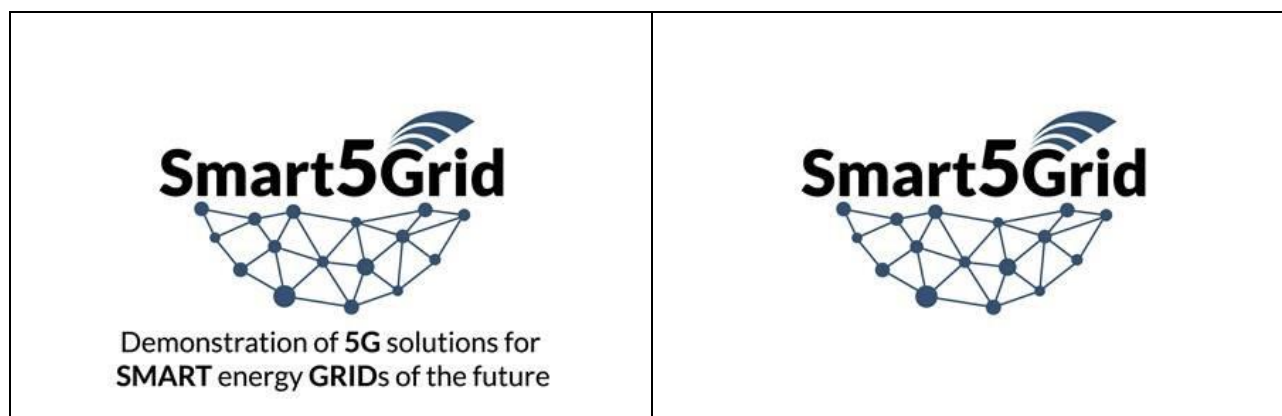
In order to ensure visibility and impact, the logo use must follow specific rules.

#### 8.1.4.1. Rules for logo use

The logo shall be positioned far enough of other logos, marks or other graphic elements so that they do not appear to constitute a single united element. This helps to ensure clarity and improve the impact of the logo.

The clear space is in direct proportion to the size of the logo. When the logo is used at a “supersize” for example in workshops, conferences and exhibitions, the clear space can be reduced.

In order to keep a clear visibility and impact of the use of the logo, ALL PARTNERS, before using the logo in dissemination activities must receive the approval by the Coordinator for the proper use of the logo.



**In covers and any time the full project title and subtitle are needed, the logo should be used in association with the EU Logo, fund information and the mandatory disclaimer.**

In all other cases (document footer, presentation header, gadgets, icons, social media profile, etc.)

**Figure 31 Two Smart5Grid logos for different uses**



**This project has received funding from the  
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grant agreement n° 101016912**

**Disclaimer: This presentation reflects the Smart5Grid consortium view and the European Commission (or the 5G-Public Private Partnership) is not responsible for any use that may be made of the information it contains**

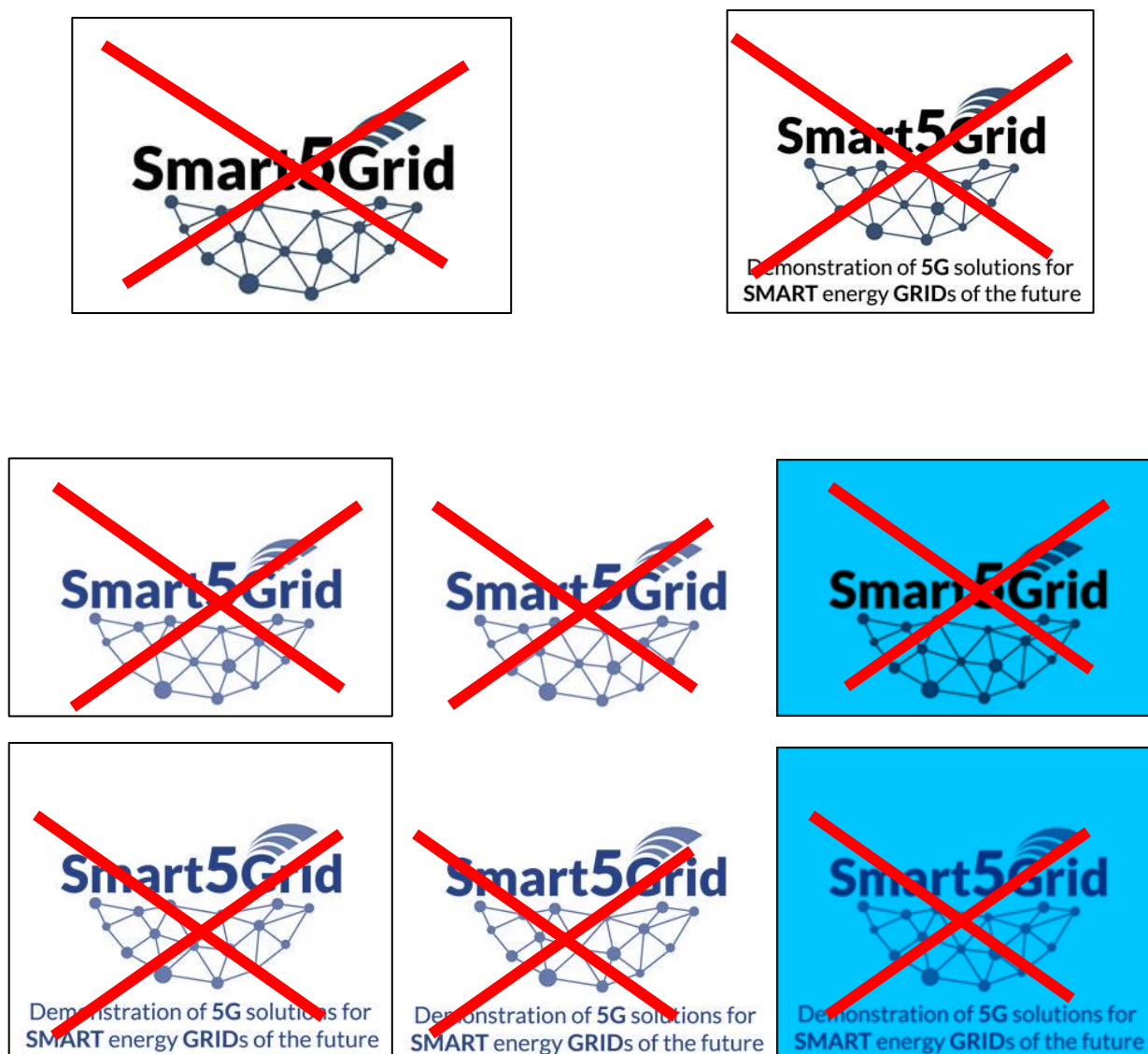
#### **Figure 32 Smart5Grid Logo for EU use**

##### **8.1.4.2. Logo Misuse**

This paragraph provides examples of how the Smart5Grid logo must not be used. The colors of the different elements may not be rearranged, distorted, or altered under any circumstances. See in the next pages for the full range of authorized logo versions.

The logo must always be used without keyline.


Reproduction: Smart5Grid logo should be reproduced only from the digital files provided by in the MS TEAM Repository.



**Figure 33 Logo misuse examples**

#### 8.1.4.3. Colours

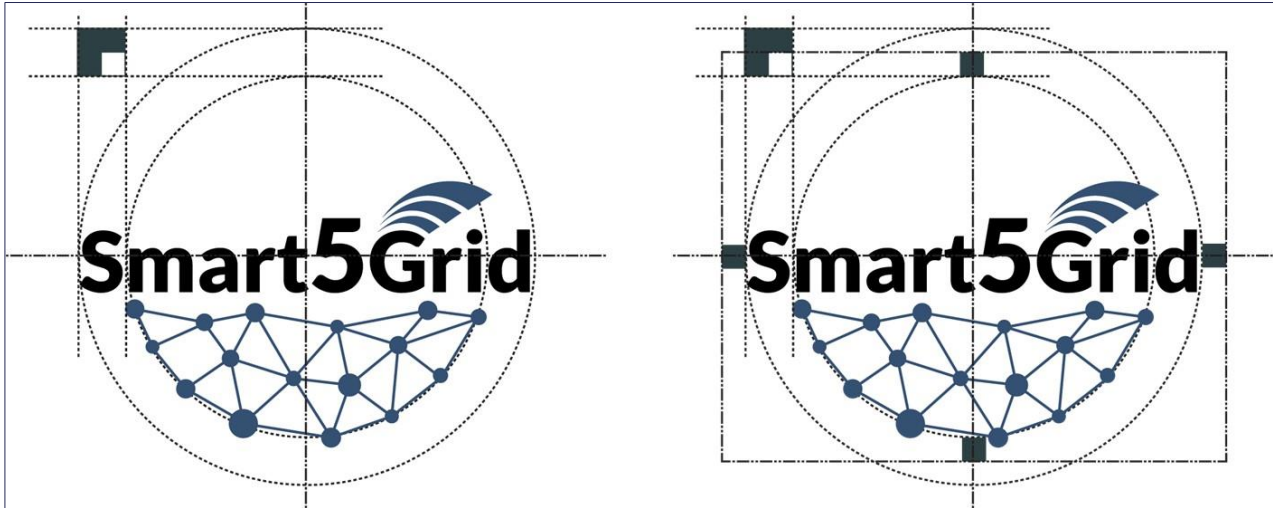
In all applications, the logo must be displayed in the colors specified in this document. Wherever possible, the logo should be used in the approved Color Palette, which is designed to establish a strong and recognizable identity giving consistency to all materials.

 <p><b>PANTONE</b> <b>295 U</b></p>	<p><b>Color Equivalent Values:</b></p> <p>RGB 55 81 114</p> <p>HEX/HTML #375172</p> <p>CMYK 100 66 5 44</p>
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**Table 9 Smart5Grid PANTONE color**

Since differences in substrates and processes can affect color, the CMYK equivalents indicated are guidelines only and should not be considered exact matches. To ensure consistent results, always proof carefully against the PANTONE FORMULA GUIDE.

8.1.4.4. Module for distances



**Figure 34 Round and rectangular frames**

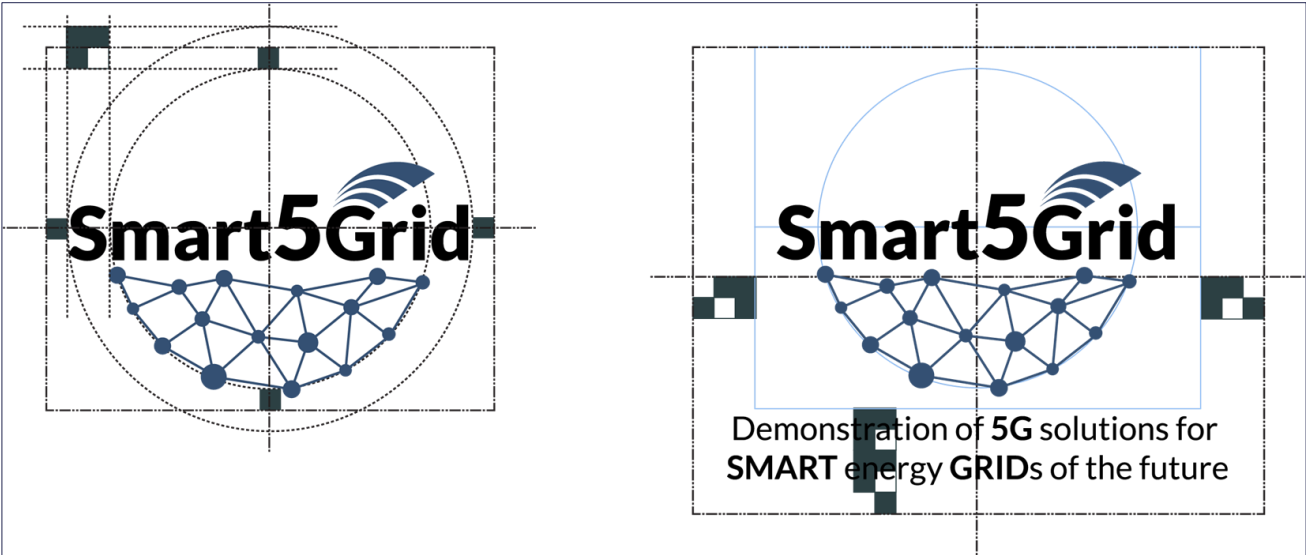


Figure 35 Margins with payoff

8.1.4.5. Logo Versions




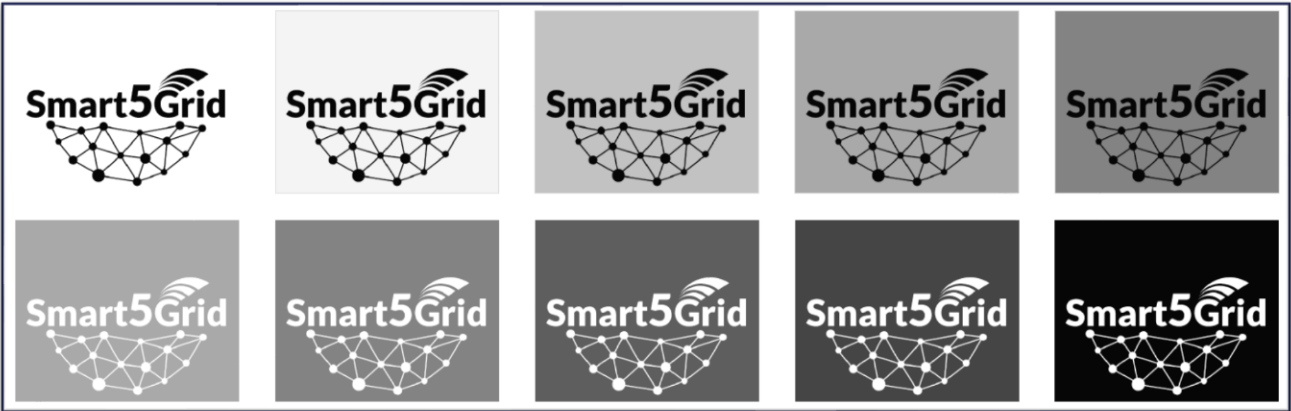
	 Demonstration of 5G solutions for SMART energy GRIDs of the future	
Smart5Grid Logo	Smart5Grid Logo with payoff	Smart5Grid Logo round

Figure 36 Different Logo Versions

Monochrome Versions – Background Variations, only for rectangular logo





Above are examples of the correct way to use the Smart5Grid logo on a variety of backgrounds. It is important to ensure adequate contrast between the logo and the background for optimal visibility. For the sake of comparison, the preferred logo is used to demonstrate each scenario.

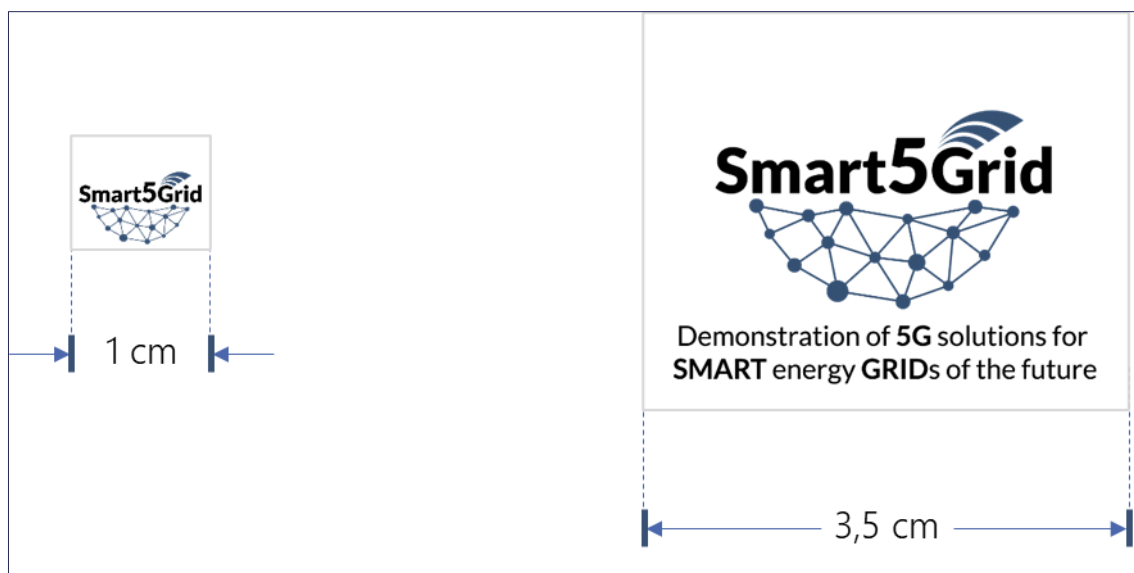
#### 8.1.4.6. Logo Scaling

The logo retains its visual strength in a wide range of sizes. However, when the logo is reproduced in print too small, it is no longer legible, and its impact is diminished.

Even if the specific size of the logo will vary according to each application, the logo should be used in a size large enough to ensure legibility.

The minimum preferred size for applications is shown below. Their purpose is to create a visual standard and minimize variation for proper readability.

The first practical requirement of any mark is that it can be clearly seen. Please do not reproduce the logo smaller than 1cm width and wider than 3.5 cm, according to the logo version.

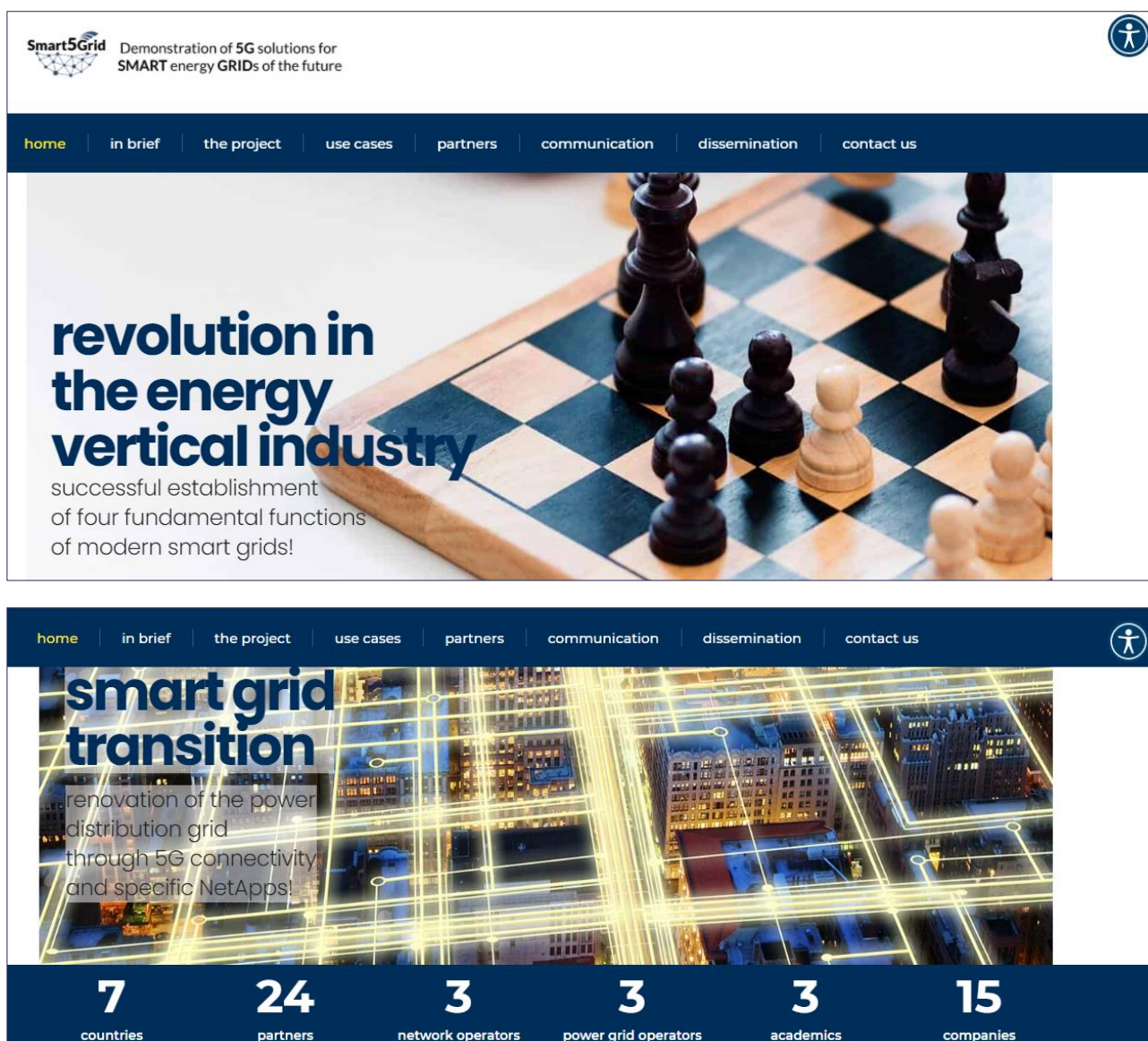


**Figure 37 Logo Scaling**

## 9. ANNEX B – Website Structure

For completeness of the document, we analyse hereby the web site sections.

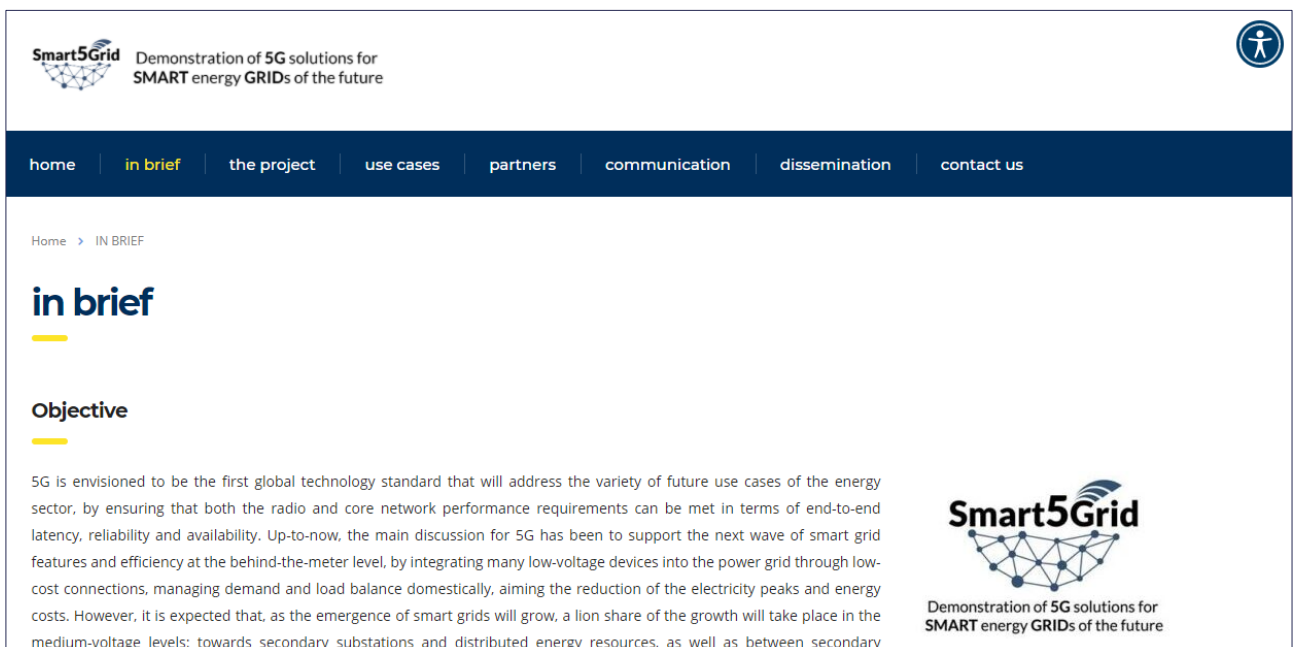
**Home Page:** This is the main page of the website, which provides brief information and key numbers regarding the number of participating countries, the number of partners etc., a map with the partners and the corresponding countries and other options that trigger the attention of the end-users, prompting them to learn more about the project. The homepage hosts several sections that easily navigate the visitors to the rest pages of the website for additional information (Figure 38).





**Figure 38 Home Page**

**In Brief Page:** The specific page incorporates the scope of the project and key information about it, including key dates, Budget, Name of the coordinator etc.



**Figure 39 Brief Page**

**The Project Page:** This page aims to provide the reader with more detailed information about Smart5Grid project. It includes 5 different subsections including Motivation, Objectives, Work packages, Synergy and Consortium as whole.



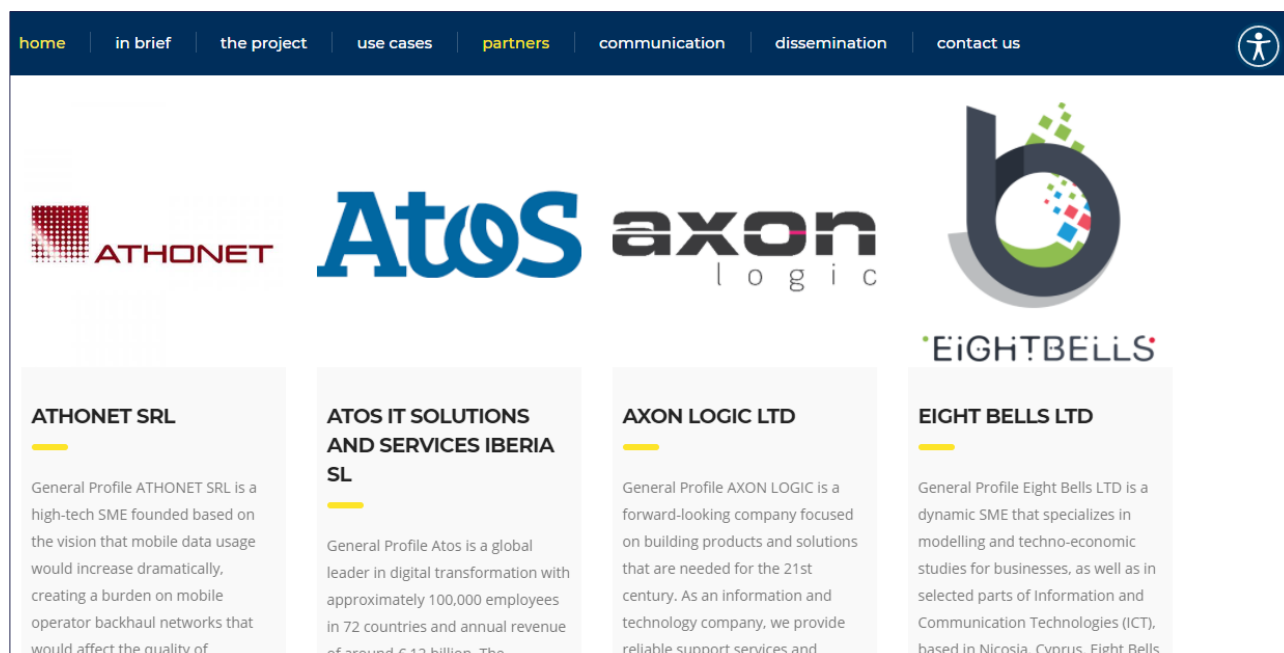
**Figure 40 The Project Page**

**Use Cases Page:** This page provides all the adequate information about the experiments that will take place in 4 different countries and power grid infrastructures and under true operational conditions.



**Figure 41 Use Cases Page**

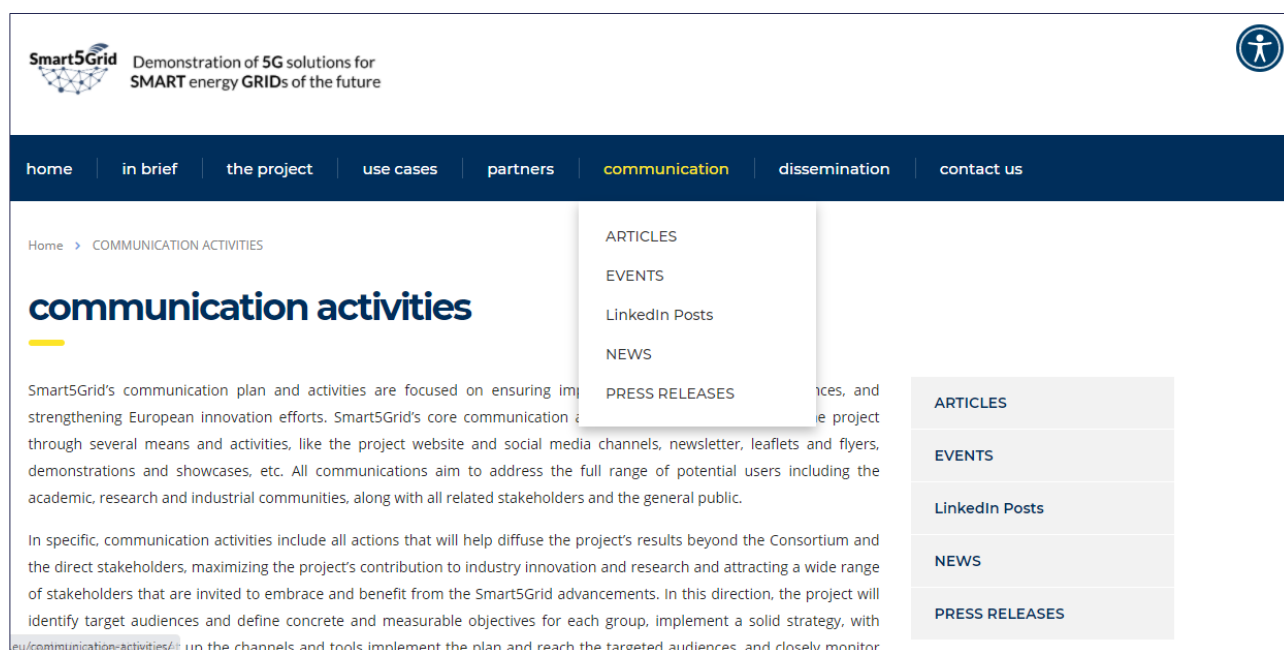
**Partners Page:** This page introduces in detail the 24 partners which contribute to the Smart5Grid project. The consortium/partners are presented within the specific page and each partner has a dedicated link 'Read more' leading to a different page where the nature of their activities along with their corresponding country of their origin are presented.



**Figure 42 Partners Page**

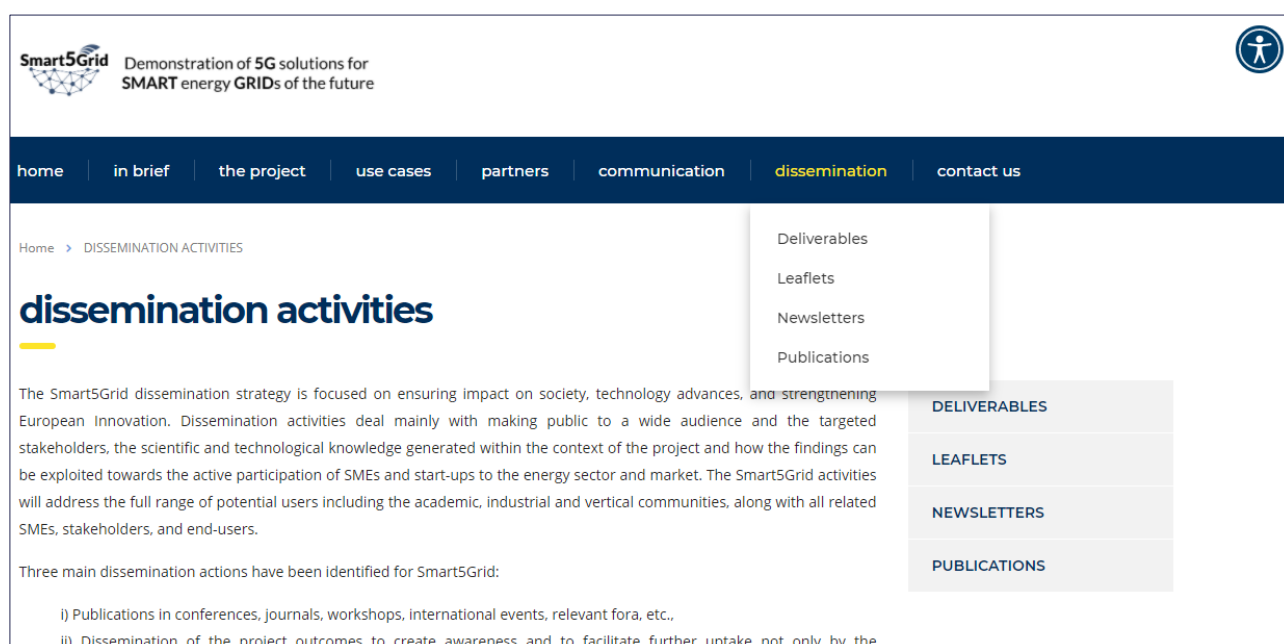


**Communication Page:** This is the page dedicated to the communication activities which will diffuse the project's results and activities to the broader audience, beyond the Consortium and the direct stakeholders. The page consists of 5 subsections **Articles, Events, LinkedIn Posts, News, Press Releases**.



**Figure 43 Communication Page**

**Dissemination Page:** This page aims to communicate to the wide audience and the targeted stakeholders, through different means e.g., Publications and Deliverables, the scientific and technological knowledge generated within the context of the project and the how this knowledge will be further towards the active participation of SMEs and start-ups to the energy sector and market. It consists of 4 different subsections: **Deliverables, Leaflets, Newsletters, Publications**.



**Figure 44 Dissemination Page**