| Project Title | Global vision, standardisation & stakeholder engagement in 5G |
| Project Acronym | Global5G.org |
| Grant Agreement No | 761816 |
| Instrument | Coordination and Support Action |
| Topic | Supporting vertical industries and analysing market trends; promoting global standardisation around verticals. Focusing on regulatory and policy issues around network densification. |
| Start Date of Project | 01.07.2017 |
| Duration of Project | 30 Months |
| Project Website | www.global5g.org |

# D4.1 - COMMUNICATIONS AND STAKEHOLDERS ENGAGEMENT PLAN

| Work Package | WP4, Vertical Engagement and Collaboration |
|---|---|
| Lead Author (Org) | Trust-IT |
| Contributing Author(s) (Org) | INNO, AALTO, IDC |
| Due Date | 30.09.2017 |
| Date | 27.06.2019 (re-submission following Interim Review) |
| Version | 2.0 |

Dissemination Level

| X | PU: Public |
|---|---|
| | PP: Restricted to other programme participants (including the Commission) |
| | RE: Restricted to a group specified by the consortium (including the Commission) |
| | CO: Confidential, only for members of the consortium (including the Commission) |

## Versioning and contribution history

| Version | Date | Authors | Notes |
|---------|------|---------|-------|
| 1.0 | 29.08.2017 | Laura Baracchi, Cristina Piagentini, Olga Renda (Trust-IT), Eva Fadil (INNO), Stephanie Parker (Trust-IT) | Delivery |
| 1.1 | 15.10.2018 | Stephanie Parker (Trust-IT) | New Toc |
| 1.2 | 11.11.2018 | Stephanie Parker (Trust-IT) | 1st drafts of sections 1,2, 3 |
| 1.3 | 09.12.2018 | Stephanie Parker (Trust-IT) | 1st full draft, all sections |
| 1.4 | 03.02.2019 | Stephanie Parker (Trust-IT), Eva Fadil (INNO), | Adjustments due to new activities |
| 1.5 | 31.05.2019 | Stephanie Parker (Trust-IT), Eva Fadil (INNO), | Further adjustments |
| 1.6 | 10.06.2019 | Stephanie Parker (Trust-IT), Eva Fadil (INNO) | Final draft |
| 1.7 | 15.06.2019 | Eva Fadil (INNO) | Internal review |
| 2.0 | 26.06.2019 | Stephanie Parker, Trust-IT | Delivery |

## Disclaimer

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## Executive Summary

This deliverable is a revised and updated version of **D4.1 – Communication and Stakeholders Engagement Plan** (September 2017) under the new title of **Communication, Stakeholder Engagement and Coordination Plan, 1st Report**. It effectively replaces the original plan.

Its main purpose is to lay the ground rules for the Global5G.org strategy for stakeholder engagement through diverse mechanisms and levers, the core messaging to achieve positive outcomes, coordination and collaboration across the 5G PPP.

The plan covers the periods:

- July 2017 to June 2018, including impacts achieved.
- October 2018 to December 2018, namely, plans for stakeholder engagement and coordination and expected outcomes.

The Plan is aligned with the Vertical Engagement Strategy developed by the Verticals Task Force, led by the 5G Infrastructure Association. Such an approach helps Global5G.org drive concerted efforts around vertical stakeholder engagement, understand their specific requirements, also in terms of information needs, and how these relate to participation in 5G standardisation and changing business models. This includes a new, more flexible approach to the Global5G.org Advisory Board (formerly External Advisory Group), drawing on increased participation in the working groups of the 5G PPP and 5G-IA, including closer relationships formed with To-Euro 5G.

The Plan also better reflects the revised Global5G.org work plan, its additional and revised outputs, as well as collaborative inputs through the working groups to which it contributes. This includes also a new approach to international cooperation, aligned with the evolving work within the 5G-IA International Cooperation Stream.

It revises the key performance indicators (KPIs) and adds several qualitative metrics aimed not only at monitoring statistical impacts but also ensuring a quality-assured approach to WP4 impacts.

As it evolves, the Plan will reinforce the SMART approach to communication and stakeholder engagement, showing how Global5G.org is implementing specific-measurable-achievable-realistic-timed actions for many of its communication and engagement activities.

# 1    Introduction

## 1.1    Purpose and Scope

This document is a re-submission of ***D4.1 – Communication and Stakeholders Engagement Plan*** (uploaded on ECAS, September 2017, M3), under the new title of ***Communication, Stakeholder Engagement and Coordination Plan, 1st Report***.

It is a streamlined, updated plan strengthening engagement with verticals industries on the one hand, and on collaboration across the 5G PPP on the other. It also reflects intensified activities on 5G standardisation, starting in April 2018, a new focus on emerging 5G business models and the introduction of a Performance KPI Tracker, complementing the Verticals Cartography, Standards Tracker and Market Watch.

Its main purpose is therefore to:

- Position Global5.org in the 5G PPP context in terms of outputs, stakeholders, collaborations and synergies.
  - The main output for the period covered is the design and development of the Verticals Cartography, coordinated through the Trials WG.
  - Planning the design of the Standards Tracker through the Pre-Standardization Working Group alongside the tracking of input contributions from 5G PPP Phase 2.
  - The development of the Performance KPI Tracker through participation in this Ad-hoc WG.
- Mapp Global5G.org outputs across relevant stakeholder groups, and providing a clear stakeholder engagement plan, evolving over time as interest in 5G filters through vertical industries. This includes a revised plan for the IDC and Trust-IT webinar series, joint events with 5G PPP, the Working Groups and To-Euro 5G.
- Define a communication and content strategy around the Global5G.org outputs, stakeholder engagement, collaboration across the 5G PPP and 5G-IA, and internationally. Promotional campaigns are mostly based on a SMART approach (specific-measurable-achievable-realistic-timely and timed), with a clear start and end date while tracking progress towards defined KPIs. There are basically three types of SMART campaigns:
  - One-off campaigns, e.g. tailored around a specific event or webinars, promoting the events and their outcomes.
  - Recurrent campaigns for the project's niche products, e.g. launches of online tools and updated content, including
  - Insight campaigns on main findings of the project
  - Stakeholder engagement campaigns:
- Present and measure achievements for the first 12 months of the project.
- Plan for the period July – December 2018.

## 1.2 Relationship to other project outcomes

This revised version relates to all core activities in Global5G.org:

- WP1: quality assurance for the newly defined KPIs and qualitative metrics, e.g. the re-submission of D1.1, including the project's contributions to 5G PPP working groups and task forces.
- WP2: the online Verticals Cartography and its updates through WP4 triggered through the Trials Working Group. Links established through past and present international co-operation initiatives as the basis for the international benchmarking activities and contributions to the International Co-operation Stream.
- WP3: intensifying activities within the Pre-Standardisation WG, defining a methodology for collecting inputs, evolving the design of the online standards tracker and measuring impacts. Evolving and updating the study on small cells to produce a white paper for national regulatory authorities and policy makers, complemented by new web sections and insights from targeted Advisory Board members.
- WP4: boosting engagement across verticals, introducing new activities around emerging business models, examining 5G coverage through the newly planned Performance KPI Tracker, making international cooperation more focused and aligned with the 5G PPP. Monitoring both quantitative and qualitative impacts. The next iterations are this Plan are expected to be delivered in early June 2019, with a final version in December 2019.

## 1.3 Structure of the document

The rest of this document is structured as follows:

**Section 2:** outlines the main objectives of the plan. It positions Global5G.org in the 5G PPP context, defines the Global5G.org stakeholders and outlines collaborations and synergies. It also details a revised and extended set of key performance indicators (KPIs) and qualitative metrics for reporting on impacts.

**Section 3**: covers the plan for stakeholder engagement and community building, presenting a snapshot of stakeholders already engaged. It outlines the strategy for vertical events in Europe and international cooperation.

**Section 4**: focuses on community growth and profiling.

**Section 5**: presents the conclusions

## 2 Communication, Coordination and Engagement Goals

### 2.1 Global5G.org Communication and Engagement Goals

The Global5G.org communication and stakeholder engagement plan focus on the following goals:

1. Defining a **communication and dissemination strategy** for **Global5G.org outputs** and **stakeholder mapping**, including **collaboration** with **To-Euro 5G**, the **5G PPP projects**, **5G IA**, respective **working groups** and **task forces**, and the **EU 5G Observatory**.

2. Executing a **stakeholder engagement plan** that considers current awareness among vertical stakeholders about 5G, supported by the new **Advisory Board** and flanked by the **5G-IA Verticals Task Force** (5G-IA), thereby boosting impacts through joint and complementary stakeholder engagement. Participation in the 5G-IA Trials Working Group gives access to a broad range of stakeholders, covering several vertical industries and city councils across the EU. Participation in the **5G-IA International Cooperation Stream** is an opportunity to explore collaborations across verticals and help drive efforts around globally harmonised standards. Long-standing participation in the SME WG ensures engagement with small businesses as an important stakeholder group.

3. Ensuring the Global5G.org **content strategy** fits the information needs of targeted stakeholders, especially vertical industries. The strategy includes the IDC/Trust-IT webinar suite, exploring benefits and adoption strategies, with post-webinar online reports. The content strategy also aims to help phase 2 projects improve inputs to the online tools over time, building on results of the use-case experiments, and encouraging them to think from the perspective of the targeted verticals. Over time, Global5G.org will develop a 5G Competence Centre, starting with four verticals: automotive, energy, health, industry processes, and subsequently expanding to others. Community development goes hand in hand with this strategy to ensure content and communities are effectively linked together. Regular interactions on LinkedIn, as a key professional network, is a top priority for maximising impacts.

4. Producing **communications packages** and **SMART-based campaigns**. Communications packages include brochures on the Verticals Cartography (sector and country-based), practical guides (e.g. for vertical industry engagement in 5G standardisation), and the "high-quality video". Twitter cards on specific outputs and core messages for targeted stakeholder groups will also be a key feature. SMART-based campaigns will underpin promotional campaigns for the project deliverable insights, webinars, joint events with the 5G PPP, and outputs from WGs and the Verticals TF. Global5G.org will also contribute to 5G PPP newsflashes through collaboration with To-Euro 5G.

5. **Impact monitoring** by defining a new set of key performance indicators (KPIs) and

qualitative metrics for key project outputs and community development to demonstrate relevance.

## 2.2    Positioning of Outputs

Global5G.org brings to the 5G PPP and 5G-IA a niche set of online tools and reports, starting with early studies.

**Output #1a: Small Cells Study** (D3.1, December 2017)

The study gives a general classification of small cells and stakeholder analysis, describes the implications of sharing cells, discusses the EMF exposure limits and approvals and licensing regimes for deployment. It gives case studies from four countries (Netherlands, UK, India, U.S.) showing several barriers to deployment but also ways to ease deployment by lowering regulatory barriers.

**Future Output #1b**: **5G PPP White Paper on Small Cells** (D3.4, Spring 2019).

The white paper will draw on and update the initial study. It will examine key issues emerging from selected reports and events in the 2018-2019 timeframe, leveraging also insights from members of the Advisory Board recruited specifically to provide insights into barriers to network densification and good practices that can help overcome them. The white paper will be complemented by more detailed articles published on www.global5g.org, with links included in the white paper for those readers interested in getting more details on specific issues.

**Main targeted audiences**: national regulatory authorities, policy makers. Also of interest to the telecommunications industry and associations like the Small Cell Forum (SCF).

**Output #2: Identify Use Cases** (D2.1, March 2018)

Analyses the potential role of 5G in four verticals: automotive, energy, health and industry (manufacturing). It also looks at the productivity increases and cost savings across the four verticals, as well as an overview of sector-specific and 5G standardisation for the Verticals Cartography (e.g. phase 2 project SAT5G) + EU case studies.

| Global5G.org Output | Added value for the 5G PPP |
|---|---|
| **#2: Online Verticals Cartography** (Sept. 2018 with iterative updates) | The Cartography tracks the experiments on verticals in the 5G PPP (63 currently included). It targets verticals and will be populated with curated content while promoting the experiments and projects. It is designed as a sustainable online tool. |
|  | It was launched in September 2018 for the ICT-19 Info Day to facilitate new project proposers in understanding current applications, 5G functionalities targeted, vertical and project partners, city locations. |
|  | **PARTNERS INVOLVED**: Trust-IT; AALTO. |
| **#3: Online Standards Tracker** (Nov. 2018) | The Tracker will be an online tool zooming in on 5G standardization work, primarily on 3GPP with a high-level view of contributions on verticals: 5G PPP and industry associations. It |

| | will be iteratively released with updated content around 3GPP plenaries, as well as relevant reports (e.g. articles, white papers) from vertical industry associations and other relevant standards organizations (e.g. ETSI, IETF). The tracker is designed as a sustainable online tool.<br><br>**PARTNERS INVOLVED**: Trust-IT. |
|---|---|
| #4: **Online Guides and Reports on Standardization** (**First Semester 2019**) | Curated guides for vertical stakeholders aim to facilitate participation in key standardization work, e.g. membership and contributions. The Tracker will also link to updates (Reports) on current standardization work relevant for verticals.<br><br>**PARTNERS INVOLVED**: Trust-IT; AALTO. |
| #5: Reports: Vertical Industries and Rollout to Market (Mar. and Dec. 2019)<br><br>Webinar series: Verticals and Market Forecasts (starting June 2018) | Provides an overview of the 5G market demand in Europe and a map about maturity and differences in relevant EU Member States with the aim to provide fact-based guidance to fully realize 5G capabilities and driving appropriate and timely EU investments<br><br>**PARTNERS INVOLVED**: IDC. |
| | Global5G.org is running a series of webinars targeting vertical industries. The initial webinars focus on educating the targeted verticals on the business opportunities of 5G and market forecasts along with perspectives from industry stakeholders explaining new applications and scenarios. The webinars will evolve to feature representatives from the verticals with direct inputs on 5G and their specific sector.<br><br>**PARTNERS INVOLVED**: IDC; Trust-IT. |
| #6: Small Cells White Paper (Spring 2019) | A high-quality production of a White Paper for a general audience, drawn from the principal results of D3.1.<br><br>**PARTNERS INVOLVED**: Trust-IT; AALTO. |
| #7: Analysis: Market and Regulatory Overview and Expected Impact (June 2019) | An overview of the 5G market demand in Europe and a map about maturity and differences in relevant EU Member States with the aim to provide fact-based guidance to fully realize 5G capabilities and driving appropriate and timely EU investments.<br><br>**PARTNERS INVOLVED**: IDC |
| #8: High-quality video (Dec. 2018) | The video targets a wide audience and focuses on 5G for verticals with a carefully scripted narrative and filming instructions. Selected 5G champions will take viewers through selected vertical applications.<br><br>**PARTNERS INVOLVED**: Trust-IT |
| **Global5G.org Advisory Board** | |
| **A new Advisory Board** (AB) **will be set up to support engagement with verticals and for the** on-going **study on small cells.** Global5G.org strongly encourages membership also from To-Euro 5G and the 5G IA to maximize impacts from collaborative work. | |

The AB will provide:

- **Timely strategic advice** on vertical stakeholder engagement supporting complementary activities by Global5G.org, To-Euro 5G and the 5G IA.
- Timely strategic advice on network densification and other policy/regulatory issues to support on-going analysis on these topics.
- Pragmatic support and participation in events and webinars (co)-organized by Global5G.org.

Table 1: Global5G.org Added Value

## 2.3    Stakeholder Mapping

The outputs of Global5G.org target multiple stakeholder categories sub-divided into primary stakeholders (directly affected), secondary stakeholders (influential associations and organizations that are supportive of the project's goals and outputs and can help reach the right people at the right time) and tertiary stakeholders (influential in boosting visibility and impacts, e.g. industry thought leaders; press and media; social media influencers).

**PRIMARY AND TOP PRIORITY STAKEHOLDERS**:

- **Vertical industries** including 5G PPP projects with experiments and stakeholders beyond 5G PPP. This is a top priority group to ensure broad understanding of 5G and help drive widespread adoption of new applications and services.
- **Standards Organizations:** This top priority group that targets high-profile representatives that can influence standardization work across vertical industries. 3GPP is the primary target and a top target for 5G PPP project contributions. Other targets for 5G PPP projects and Global5G.org include IETF and ETSI. Associations defining and developing relevant standards are also part of this group.
- **EU Member States**, **policy decision makers** and **regulators** are a priority group as they directly impact the rollout of 5G in terms of network densification and across vertical sectors by lowering regulatory and other barriers. This is a priority stakeholder group for Global5G.org to ensure relevant findings significantly impact this category.

SECONDARY PRIORITY STAKEHOLDERS: how to reach the primary stakeholders

- **Industry Associations** across targeted verticals are a priority stakeholder group as they play an important influential role in gaining momentum around the benefits and business opportunities of 5G amongst their members. They are also important in contributing to stakeholder engagement activities and in facilitating participation (e.g. membership and contributions) in standards organizations like 3GPP performing standardization work on or relevant for vertical industries.

TERTIARY STAKEHOLDERS

- **Industry influencers** are targeted as they have a stake in Global5G.org work on verticals, standardization, market forecasts and policy/regulatory issues. They can be reached through the 5G IA and LinkedIn network, such as community members of the community who are 5G champions and who have a large following. They will typically belong to a vertical stakeholder

group and/or the telecommunications industry. They are targeted from M19 (January 2019) when Global5G.org outputs are sufficiently mature and interesting to this group.

- **Social media influencers** can be reached through Twitter is the main means for reaching social media influencers, with the aim of garnering support and increasing visibility.
- **Press and Media** are important channels for disseminating results, boosting visibility and maximizing impacts. This group is targeted from M19 (January 2019) when Global5G.org outputs are sufficiently mature and interesting to journalists at local, national; EU and international levels.

## 2.4    Revised KPIs for Communication and Engagement

Global5G.org has revised and/or expanded on its KPIs, aligning them with the recommendations of the 1st Interim Review (September 2018). The main revisions are:

- *KPI4.3 - number of jointly organized events* now focuses on coordination through the co-organisation of events at the programme level and/or through participation in the 5G-IA International Cooperation Stream underpinned by consortium links and collaborations between EU and other regions in the world, e.g. Japan, South Korea and the U.S. International benchmarking (INNO) aims to give insights into 5G developments in the countries targeted.
    o It effectively replaces the original KPI4.3 on satellite events, which are no longer part of the Global5G.org work plan.
    o It makes only one count of engagement through events, thus merging the original KPI4.3 and KPI4.4 into one indicator.
- *KPI4.4 - number of features in 5G PPP newsletters* aims to streamline project activities through a more coordinated approach.
- *KPI4.5 - number of views of high-quality video* is applicable from December 2018 but already included here to show full coverage of KPIs for WP4.
- *KPI4.6 – number of views on major project outputs* is a new KPI based on the recommendation of the 1st Interim Review to include coverage of the online tracking tools and cartography, as well as vertical industries and small cells.

The table below lists the new KPIs, indicating end of project targets, achievements for month 12 (June 2018) and for month 15 (September 2018).

| KPI Reference | End of Project Target (*) | Number at M12 | Current at M18 |
|---|---|---|---|
| **KPI4.1 – profiled LinkedIn Community** | 2000 | LinkedIn (aggregated): 1276 | LinkedIn (aggregated): 1843 |
| **KPI4.1 – Twitter followers** | 800 | 280 Twitter followers | 334 Twitter followers |
| **KPI4.1 – Twitter** | 2000 | 119,30 | 302,400 |

| analytics: Monthly top tweets, top mentions, impressions etc. | | | |
|---|---|---|---|
| **KPI4.2 – number of participants at vertical events** | 50 x "N" | 230 (workshops, 2 webinars) | 280 |
| **KPI4.3 – number of jointly organized events** | Min. 3 | 1 (EuCNC 2018) | 2 (EuCNC 2018; ICT2018) |
| **KPI4.4 – number of features in 5G PPP newsletters** | Min.5 | 0 Planned from 2019 | 0 Planned form 2019 |
| **KPI4.5 – number of views of high-quality video** | Applicable from December 2018: Target 300 views – 150 achieved in M18 | | |
| **KPI4.6 – number of views on major project outputs** | No target set as dependent on incremental rollout of online tools | 22,108 | 33, 601 |

<p align="center">Table 2: KPI Impacts</p>

## 3 Stakeholder Engagement

### 3.1.1 Overview of stakeholder engagement

The table below gives an overview of stakeholder engagement at events during the period September 2017 to July 2018. Reports on events (co-)organized by Global5G.org are given in the subsequent section.

| Event, date and location Participating Partners and Roles | Focus and Outcomes | Target audiences reached |
|---|---|---|
| **IEEE 5G Summit 2017, 18.09.2017, Helsinki (Finland)** <br><br> **Trust-IT & INNO** <br><br> **Organisers and moderators of session on 5G for healthcare** <br><br> **IEEE "expert" certificate to Trust-IT in recognition of contribution** | Investigation into opportunities for digitisation, new applications and services and expected benefits. Examples of on-going and planned initiatives. Discussions on barriers to transformation. | Public and private sector organisations with a focus on health R&I and sector-specific standardisation. Global5G.org expert, Christoph Thuemmler, Professor of eHealth; the European Connected Health Alliance; VTT leader of national initiatives; IEEE experts. |
| **ETSI – Towards setting environmental Requirements for 5G, 23 November 2017, Sophia Antipolis** | Insights into assessments on energy efficiency performed by ITU SG5 and ETSI TC EE. High-level challenges and top priorities | Standards specialists from ITU and ETSI, industry, policy makers, operators, researchers. |

| INNO participation | surrounding the requirements, e.g. resource efficiency. | |
|---|---|---|
| **Factories of the Future Tradeshow, 19 March 2018, Paris**<br><br>**INNO participation** | Insights into low understanding of the benefits of 5G for this vertical. Engagement with industry stakeholders. | Industry – manufacturing from diverse sectors. |
| **World Small Cell Summit (WSCS), 20-22.05.2018, London (UK)**<br><br>**AALTO (with support from Trust-IT) with presentation of the project's small cell study & participation in panel debate** | Dissemination of project's findings on small cell deployment/urban network densification, discussions on major challenges to deployment with small cell experts and stakeholders. | Members of the Small Cell Forum from supply side; SMEs and policy makers. |
| **Annual 5G Huddle in Durban, South Africa on 29.05-01.06**<br><br>**AALTO: engagement with 5G PPP international stakeholders** | Discussions on 5G R&I developments; expected deployments, trials and pilots across the EU and globally. Insights into the 5G Plan for South Africa. | 5G PPP and international experts from research and industry. |
| **EuCNC 2018, 18-21.06.2018, Ljubljana (Slovenia)**<br><br>**Trust-IT & AALTO.**<br><br>**Co-organization of the workshop on vertical industry and rapporteur role.**<br><br>**Support of SME WG stand.** | Sharing insights on R&I developments across vertical industries and emerging business models.<br>New connections and interactions with 5G PPP phase 2 verticals. | 5G PPP phase 2 projects, including R&I specialists (academia, SMEs) and verticals (e.g. broadcasting, satellite); EU cooperation with Taiwan. |
| **PICASSO Summit / Final event, 18-19.06, Washington (U.S.)**<br><br>**INNO & Trust-IT**<br><br>**Workshop organization on EU-US collaboration on 5G, big data, cyber physical systems.** | Participation in panel debates. Shared insights on 5G R&I developments across the EU and U.S.; policy priorities and future directions (e.g. 6G), collaboration opportunities. New connections with the NSF. | EU and U.S. experts and stakeholders on 5G, big data, IoT and cyber physical systems. |
| **Webinar: 5G – What will it change for the Energy Industry, 28.06.2018**<br>**Hosting of the webinar.** | Presentation of market forecasts and trends. Knowledge exchange on 5G for the energy sector between analysts and large industry (Atos, BT), providing key insights into R&I and market readiness levels. | Energy companies (supply); telecom companies (supply – large and SMEs) |

### 3.1.2    Healthcare Session at IEEE 5G Summit

The session on 5G for Healthcare took place within the IEEE 5G Summit on 18 September 2017 in Helsinki.

The main goals of this first vertically focused session organized by Global5G.org, which were captured in an event concept paper, include:

- Exploring the potential of 5G for the healthcare industry by gaining a general understanding of its implementation and benefits, including non-technical barriers to uptake.

- Giving examples of initiatives, on-going and planned, including industry-research collaborations and their respective roles.

- Investigating the role of standards and benefits for the healthcare industry.

The session was an important opportunity for interaction with Global5G.org expert, Christoph Thuemmler, Professor of eHealth at Edinburgh Napier University, as well as with a high-level representative of the European Connected Health Alliance, a VTT expert of national initiatives on eHealth, IEEE experts and members.

The SMART-based promotion of the event included:

- The creation of event and speaker announcements for LinkedIn and Twitter.

- Live coverage via Twitter.

- Video interviews recorded during the event for post-event insights.

The first figure below shows a sample of the banners used for promotional purposes, starting from August 2017.



Figure 1: Promotion of the IEEE 5G Summit on Healthcare

The figure below shows a sample of live reporting from the event.

Figure 2: Live Coverage of IEEE 5G Summit

### 3.1.3 World Small Cell Summit

The synergy with the Small Cell Forum has been key to the project's study on small cells, helping not only in the collection and analysis of data but also in boosting the impacts of its key findings. It has thus had a good return on investment for Global5G.org.

In terms of events, Global5G.org has disseminated its Small Cell Study at the Small Cell World Summit (AALTO, 20-22.05.2018, London) through both a presentation and a panel discussion, zooming in on the barriers to network densification, highlighting the need for greater harmonization across Member States on small cell definition, policy, licensing and faster approval times to ease deployment across the EU.

A blog post for the SCF was produced after the event to capture the main points emerging from the Summit, and promoted through SCF and Global5G.org social media.
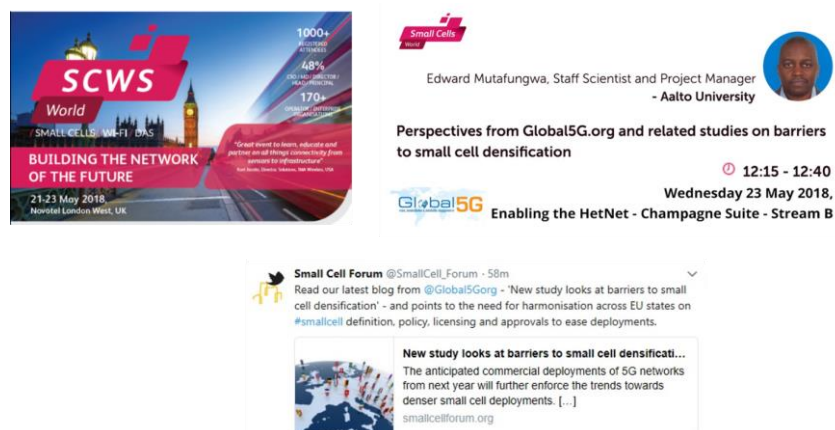


Figure 3: Visibility at Small Cell Summit 2018

Main impacts for the Global5G.org work on small cells is summarized in the table below.

| Consensus Building and Impacts on small cell deployments |
|---|
| • Collaboration with EC COCOM WG: contributions and interactions with delegates from EU Member States, including opportunities to present Global5G.org and collect feedback. |
| • Synergy with the Small Cells Forum as a key stakeholder representation group and influencer: data collection and analysis. |

> - Visibility boost through SCWS 2018 with 1000+ participants, spanning CxOs, directors and heads (50%) from 350 organizations.
> - Visibility at WWRF40 co-located with Annual 5G Huddle, with 140 participants.
> - Blog article on the project's study for the SCF website, with 30,000 subscribers.

### *3.1.4  Vertical Workshop at EuCNC 2018*

- Global5G.org led activities in merging 3 workshop proposals into one integrated agenda, coordinating aims of the sessions, speaker confirmations, agenda development.

- Global5G.org also prepared the graphically designed flier for the workshop for distribution at the event, as well as:

    o  Creation of new roll-up banner as a back-drop to the podium.

    o  Creation of Twitter cards.



Figure 4: Agenda for EuCNC_2018 Verticals Workshop

The SMART-based campaign was based on:

- Twitter cards on each session, presenter(s) or panellists in the run-up to the event.

- Live reporting from the event, via Twitter.

- Post-event report published on the website and promoted to share main insights. Post-event promotion also included posts on EuCNC 2018 takeaways.

Figure 5: Live Reporting and Twitter Card Sample for EuCNC2018

### 3.1.5    International Robotics Festival

The International Robotics Festival took place 28-31 September 2018 in Pisa with conference elements continuing also on 1 October 2018. The exhibition (28-31.09) was an interactive area with robotics demos and drone displays, targeting diverse audiences spanning high-school and university students mostly on 28.09 and families over the weekend, with industrial/business representatives attending on all days in varying numbers.

Global5G.org co-hosted a stand with 5G-Transformer (Ericsson R&I Lab, Pisa) and 5G-CORAL, with a focus on:

- Showcasing a robotics prototype designed for factory and automation processes (pellets) provided by Ericsson running on a TIM network with video demo and prompts (e.g. sign-posts) and images showing the 5G data transport side running on the cloud in Stockholm. Video snapshots from 5G-CORAL robotics and edge computing were relayed on the TV screen.

- Promoting the recent release of the Verticals Cartography through a series of gadgets and a flier on 5G PPP use-case experiments in Italy. Gadgets included a Global5G.org t-shirt with QR code linking to the online tool, a USB stick with videos and other material on the robotics theme.

The SMART-based campaign started one week before with a homepage banner announcing the event to one week afterwards, summing up the main outcomes and interactions (for privacy reasons, photographs of visitors were not taken, also given the high number of children present).



Figure 6: Sample of Tweets on the International Robotics Festival

A news piece summed up the main outcomes. This also shows the robotics demo and gadgets on display, including the flier.

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**Summary of Main Takeaways**

- Interest from a very broad audience, spanning all age groups and most walks of life: parents and their children, school teachers and their pupils, university students (under-graduates and master students), industry (e.g. drones, electronics, energy, oil rig, transport and logistics – Port of Livorno).
- Awareness raised on 5G in general and use-case experiments in Italy through the distribution of the flier and interactive discussions.
- Keen interest in 5G for industrial automation with the Ericsson robot and display items showing the remote control from Sweden (explanations varied depending on the audience age and understanding).

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**Global5G.org Webinar Series**

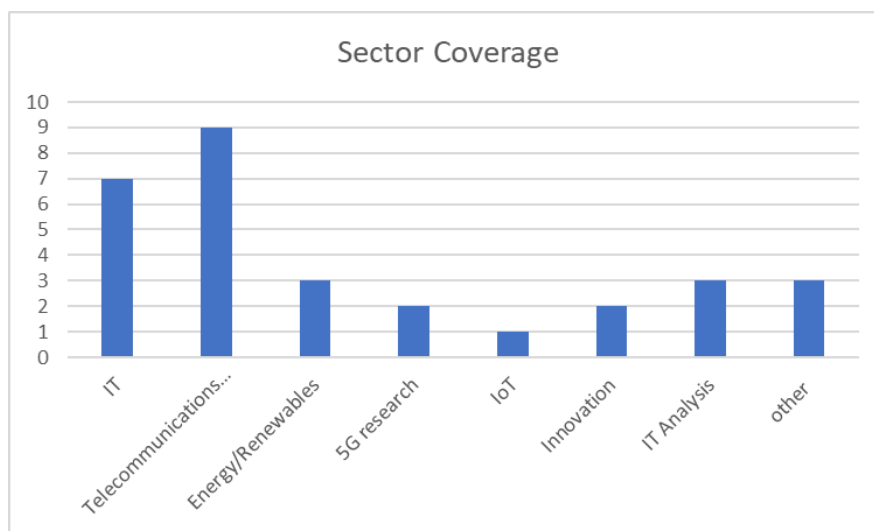- **Energy** (June 2018), using Trust-IT platform 5G: what will it change for the Energy industry[1].



Figure 7: 1st Webinar - Sectors and Verticals represented

The figure below shows organisation type. Most participants belong to large enterprises (13), followed by SMEs and start-ups (8). Other refers to the organisers' affiliations (i.e. IDC and Trust-IT) and one participant's unknown affiliation.

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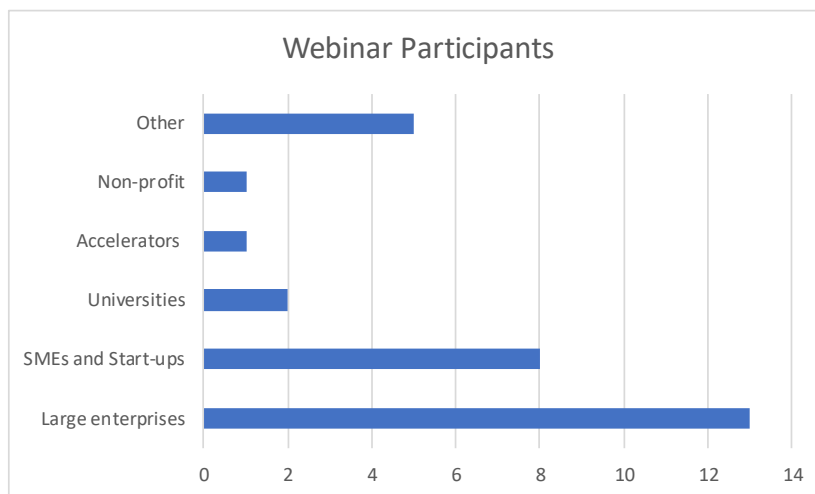[1] https://www.global5g.org/news/webinar-report-5g-energy-sector.

Figure 8: Organization Types

# 4 Community Growth and Profiling

## 4.1 Coverage of Vertical Industries

The table below shows a sample of the combined Global5G.org and 5G-ENSURE community.

| Sample of community members across verticals |
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| Vertical: **Automotive**<br>Associations: **5G Automotive Association (5GAA)**<br>Sample of connections: **Audi AG, BMW Group, Centro Ricerche FIAT, Daimler AG, Denso-Auto, Honda Research Group UK, Peugot, Porsche, Groupe Renault and Renault Software Lab; Volkswagen AG, Volvo.** |
| Vertical: **Energy**<br>Associations: **European Utilities Telecom Council (EUTC); EDSO (Smart Grid); European Federation of Agencies and Regions for Energy and the Environment (FEDARENE).**<br>Sample of connections: **EDP, Efacec, Electricity Company of Quito, ENEL Green Power, Energynautics GmbH.**<br>**Electron (UK; London based start-up harnessing blockchain technologies to design more efficient, resilient and flexible systems for the energy sector).** |
| Vertical: **Manufacturing (Industry - factory and automation process)**<br>Associations: **5G Alliance for Connected Industries and Automation (5G-ACIA)**<br>Sample of connections: **Bosch, Dyson, IFAIK, Siemens, Sony, Zvei, Weidmüller Group.** |
| Vertical: **Maritime**<br>Associations: **International Association of Lighthouse Authorities (IATA)** |
| Vertical: **Media and Entertainment**<br>Associations: **European Broadcasting Union (EBU), New Media Europe (NEM)** |

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| Sample of connections: **IRT GmbH, RAI, Samsung Electronics, Südwestrundfunk, Sony, Tv3 Latvia.** |
| Vertical: **Public Safety**<br>Associations: **Public Safety Communications Europe (PSCE), The Critical Communications Association (TCCA). National: Ministry of the Interior (Finland), UK Home Office** |
| Vertical: **Smart Cities**<br>Associations: **EUROCITIES**<br>Sample of connections: **Amsterdam City Council, Barcelona City Council, City Council of Lucca (IT), Sunderland City Council.** |
| Vertical: **Transport and Logistics**<br>Associations: **International Rail Union (UIC); ACEA (European Automobile Manufacturing Association, covering cars, vans, trucks and buses); IRU (international road transport association); ERTICO (ITS Europe). National: Transportstyrelsen (Swedish Transport Agency); Ministerio de Transportes y Comunicaciones (Peru). EC Policy: Shift2Rail.**<br>• |
| Satellite/Nonterrestrial networks: multi-vertical and underserved areas<br>**SES, AIRBUS. Avanti Communications PLC.**<br><br>**Space Application Services (system and software engineering for the European Space Agency (ESA), National Space Agencies and the aerospace industry)** |

Table 3: Community - Verticals

## 4.2    Telecommunications Industry and Standards Specialists

Actors within the 5G ecosystem are assuming multiple roles, e.g. Swisscom has transformed into a large IT company and Deutsche Telekom's portfolio spans artificial intelligence and verticals like connected cars/automotive and health, blurring the boundaries between traditional stakeholder categories.

| *Industry/Stakeholder Group* | Sample of Community Members |
|---|---|
| *Telecommunications supply side (large companies; small companies within enterprise groups)* | **Europe (EU and Associated Countries)**<br>• AT: A1 Telekom Austria AG<br>• BE: KPN BASE, Proximus/Belgacom, Orange Belgium<br>• DE: Vodafone Germany GmbH; Deutsche Telekom, T-Systems International GmbH<br>• ES: Telefonica, Parlem<br>• FR: France Telecom/Orange, Bouygues Telecom, Com4Innov; Orange Labs; SFR<br>• GR: OTE/COSMOTE, Intracom Telecom<br>• IT: TIM/Telecom Italia<br>• NL: Vodafone Ziggo Netherlands, T-Mobile Nederland<br>• SE: Ålands Telefonandelslag;<br>• SL: Telekon Slovenia |

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| | • UK: BT; 02/Telefonica, Vodafone UK.<br><br>**Outside EU** - Argentina: Frixtel; Bangladesh: Robi Axiata ltd; Brazil: Oi S.A; China: China Telecom; Egypt: Vodafone, Telecom Egypt; India: Jio; Iran: MTN Irancell; Japan: NTT DOCOMO; KDDI Corporation; Saudi Arabia: Mobily; South Korea: SK Telecom; Vietnam: Viettel Network Technologies Center - Viettel Group; US: Verizon & Verizon Wireless, Liberty Global, T-Systems.<br><br>**Vendors/manufacturers**: Cisco Systems, Ericsson, Huawei Technologies European Research Center and Huawei, Intel, Nokia, Qualcomm, Samsung Electronics. |
| Sample of SME technology providers **(from micro to up to 200 employees; mostly 11-50)** | • **Airrays GmbH** (Germany; Cellular Wireless, Adaptive Antenna Systems, Massive MIMO, Active Antenna, and 5G).<br>• **Azcom** (Italy;<br>• **Bisdn GmbH** (Germany; SDN, NFV, Whiteboxing, Switches, software, Open source, OpenFlow, and Routers).<br>• **Brown-Iposs GmbH** (Germany; network and service providers with planning, integration, and operation services for LAN/WAN-networks, IP-services, and for GSM, UMTS, LTE, WiFi).<br>• **HOP Ubiquitous** (Spain; smart Cities, Internet of Things, Future Internet, RESTFul/CoAP, OMA, Sensors, LoRA, Personal Area Networks, M2M Communications, IPv6, Bluetooth Low Energy, and Cloud Computing).<br>• **Hypermesh** (Germany; start-up (2017) blockchain protocol for the telecommunications industry; decentralised wireless networks).<br>• **WINGS ICT** (Greece;<br>• **Worldsensing** (UK)<br>• **Zeetta Networks** (UK; development of fully programmable, open ICT network infrastructures, made possible by the network slicing and network splicing® capabilities of NetOS®, Zeetta's programmable network infrastructure platform). |
| Standards specialists, including members of the | 3GPP: member of the 3GPP NR Standards Group. In addition to an increasing number of contributors/rapporteurs, network connections include:<br>• 3GPP CT: TSG Chair and TSG RAN Chair.<br>ETSI: good relationship established with ETSI communications (both general and for OS MANO)<br>• ETSI CTO.<br>• ETSI Innovation Manager.<br>• ETSI NFV ISG: Chair and Vice-Chair; Advisor; Technical Manager.<br>• ETSI CYBER: chair, vice-chair and specialists.<br>• ETSI Open Source MANO: Chair and specialists, including phase 1 projects.<br>• ETSI MEC ISG: Chair and 5G PPP phase 2 project specialists. |

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| | • ETSI SCP. |
| | • ETSI RRS (Reconfigurable Radio Systems) WG1 Chair. |
| | • ETSI IPR Committee Chair. |
| | • ETSI Chair of AIOTI. |
| | ITU: strong connections made with SG17and ITU communications team in phase 1 project 5G-ENSURE. Network connections include: |
| | • ITU Head of Europe Office. |
| | • ITU programme manager. |
| | IEEE |
| | • IEEE Tactile Internet Sub-committee chair. |
| | • IEEE Sensors Council. |
| | • IEEE specialist for 5G, IoT, smart cites. |
| | • IEEE IoT Chair – scenario track. |
| | • IEEE 5G initiative co-chair. |
| | • IEEE Privacy specialist. |
| | IETF |
| | • IETF CCAMP WG Co-chair. |
| | • IETF ACE Group Chair. |
| Small Cells & Spectrum | Small Cells Forum |
| | • SCF Chair; Co-chair of Tech & 5G Group. |
| | ETSI |
| | • Director of Spectrum and Equipment Regulation |

Table 4: Sample of Community Members for Telecoms & Standards

## 4.3   Other Stakeholders

5G PPP projects are reached directly through the boards and working groups, e.g. Technology Board, Steering Board; Automotive WG, COMMS WG, Pre-Standardization WG, SME WG, Spectrum WG, Trials WG. Global collaborative projects are reached through the International Cooperation Stream.

| Stakeholder Group | Sample of Community members |
|---|---|
| **5G PPP projects** | MmMAGIC; 5G-Crosshaul. 5G-CORAL; 5G-PHOS; SLICENET; 5GCity; 5G-Transformer; 5G TANGO; Metro-Haul; 5G-MEDIA; 5G-PICTURE; 5G-MONARCH; 5GENESIS. |
| **Associations** | APRE - Agency for the Promotion of European Research; CEA & CEA-LETI MINATEC (smart devices); Council for Scientific and Industrial Research (CSIR); |
| **SMEs & Start-ups** | Airrays GmbH; Minato Ltd; KIO Artificial Intelligence |
| **Research centres and universities (EU and global)** | CNIT; CTTC; Eurecom; Fraunhofer FOKUS and Fraunhofer IIS; i2CAT Foundation; VTT; Aalto University (external); Ajman University; Brunel University; Harbin Engineering University; King's College London; Politecnico di Milano; Scuola Superiore Sant'Anna; Shenzhen University; Shiv Nadar University; Thakur College of Engineering and Technology; |

|  | The Open University; The Johns Hopkins University Applied Physics Laboratory; TU Dresden; University of Genoa; University of Glasgow; University of Leeds; University of Leicester; London South Bank University; University of Oulu; University of Piraeus; Universidad Carlos III de Madrid; University of Surrey and the 5G Innovation Centre; Xi'an Jiaotong-Liverpool University. |
|---|---|
| **International** | |
| **Canada** | TrendForce; Research Training Program on Pervasive and Smart Wireless Applications for the Digital Economy; iRadio Lab - University of Calgary |
| **Japan** | Rakuten |
| **Morocco** | Maroc Telecom |
| **Peru** | Ministry of Transport and Communications |
| **South Korea** | Samsung Electronics |
| **Taiwan** | ADLINK Technology |
| **U.S.** | AT&T; IDT - Integrated Device Technology, Inc.; Technology Consulting; Corenova Technologies; Consultant Engineering, Inc.; Milliwave Silicon Solutions, inc.; ViaSat Inc. |

Table 5: Sample of Community Members for Other Stakeholders

| *5G IA WGs* | *5G PPP Project WGs* | *NetWorld 2020 WGs* |
|---|---|---|
| *Pre-Standardization WG: leading collection of standards activities feeding into the Standardization Tracker and analysis. Impact assessment support.* | *Automotive WG: contributing to analysis of connected and automated mobility from diverse perspectives, emerging business models and WG white paper.* | *SME WG: supporting the promotion of SME expertise and innovation. Analysing verticals cartography from an SME perspective.* |
| *Spectrum WG: supporting analysis of related regulatory aspects and feeding in findings from small cell study.* | *Participation in this WG is valuable for contributions to emerging WGs on verticals.* | |
| *5G International Cooperation Activity: supporting the tracking of international trials and testbeds and stakeholder engagement.* | | |
| *Ad-hoc KPI WG: tracking high-level KPIs and their correlations* | | |

| | | |
|---|---|---|
| *with the Verticals Cartography. Support of any future white papers.* | | |
| *Trials: Verticals Cartography tracking and analysis, also feeding into the Pan-European Trials Roadmap.* | | |
| *Community Building and Public Relations Activity: supporting the organization of joint events and outputs.* | | |
| **Synergies for Stakeholder Engagement** | | |
| *5G IA Vertical Task Force* | Stakeholders: telecom industry and vertical industries that benefit from 5G and standards. | Regular interactions to define joint actions, e.g. events, webinars, synergies to ensure complementarities and mutual benefits. AB participation. |
| *Global5G.org Advisory Board* | Stakeholders from vertical industries and experts on small cells. The AB also ensure ever closer ties with To-Euro 5G, the Vertical TF and the EU 5G Observatory. | Support Vertical TF via SME WG |
| **EU 5G Observatory** | | |
| *Trials WG* | *Exchange of knowledge and identification of joint actions* | |
| **Collaborations and Synergies for small cells** | | |
| *EC CoCOM 5G WG & Small Cell Forum* | Stakeholders: EC and Member States<br><br>Simon Forge, SCF – exhanges on small cells and SAWAP | Global5G.org contributes to the EC Communications Committee Working Group NBP/5G to collect inputs and share findings and recommendations emerging from its small cells studies |

Table 6: Stakeholders via WGs and TFs

## 4.4    Impacts from SMART campaigns and engagement

Sample of impacts from Tweets July 2018

- EuCNC 2018 Verticals Workshop: 3,118

- Cloudscape Brazil: 4020

- 5G MEDIA results: 1995

Sample of impacts from Tweets August 2018

- Use-case experiments on media and entertainment: 3,338

- IEEE workshop on standards: 1,713

- ICT2018 (first announcements): 1,186

- Small cells (post-publication of dedicated page): 2198

- 5G PPP newsletter with Cloudscape Brazil feature: 1024

Sample of impacts from Tweets September 2018

- Launch of Verticals cartography: 4516

- International Robotics Festival: 5169

- 5G standardisation (e.g. 5G-Xcast): 1422

# 5    Conclusions and Next Steps

Global5G.org embraces the many changes it has undergone since its inception as an opportunity to re-position itself in 5G PPP. While all work packages have been revised, WP4 has undergone significant changes, including revisions to its overall approach, including contributions to 5G PPP working groups and the re-allocation of effort across the tasks.

The revised version of D4.1 sets out to re-position the project and its outputs, mapping them against stakeholders. The next iteration of the plan is D4.3, which will expand and update the plan as Global5G.org evolves and takes on new roles.