



## **Euro-5g – Supporting the European 5G Initiative**

### **D5.5 5G innovation potential and SME participation**

Version: v1.0

Deliverable type	R (Document, report)
Dissemination level	PU (Public)
Due date	30/06/2017
Submission date	14/07/2017
Lead editor	Timo Lahnalampi (InterInnov)
Authors	Jacques Magen (InterInnov), Giulia Pastor (InterInnov)
Reviewers	Monique Calisti (Martel)
Work package, Task	WP 5, T5.5
Keywords	SME, SME Working Group, NetWorld2020

---

#### *Abstract*

*This deliverable reports the work performed in the WP5/Task 5.5 with the objective of rendering SMEs aware of the progress of 5G technologies and of 5G PPP opportunities that are relevant for them. In addition, the support for innovative SMEs and their participation and promotion within the 5G PPP and in other related programmes and projects has been reported. The work has been performed together with the NetWorld2020 ETP, and within the Euro-5G project partners across WP1, WP3 and WP4 work packages.*

---

**Document revision history**

<b>Version</b>	<b>Date</b>	<b>Description of change</b>	<b>List of contributor(s)</b>
V0.1	24/05/2017	ToC agreed	Timo Lahnalampi, Giulia Pastor (InterInnov)
V0.2	21/06/2017	Section 2 and 3 updated	Timo Lahnalampi (InterInnov)
V0.3	29/06/2017	Edits and contributions added	Jacques Magen, Timo Lahnalampi, Giulia Pastor (InterInnov)
V0.4	30/06/2017	Edits and contributions added	Giulia Pastor, Timo Lahnalampi (InterInnov)
V0.5	01/07/2017	Final edits and contributions added	Timo Lahnalampi (InterInnov)
V0.9	07/07/2017	Final internal review	Jacques Magen (InterInnov)
V0.91	11/07/2017	Review and editing	Monique Calisti (Martel)
V1.0	14/07/2017	Final editing and submission	Uwe Herzog (Eures)

**Disclaimer**

This report contains material which is the copyright of certain EURO-5G Consortium Parties and may not be reproduced or copied without permission.

All EURO-5G Consortium Parties have agreed to publication of this report, the content of which is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License<sup>1</sup>.

Neither the EURO-5G Consortium Parties nor the European Commission warrant that the information contained in the Deliverable is capable of use, or that use of the information is free from risk, and accept no liability for loss or damage suffered by any person using the information.

**Copyright notice**

© 2015 - 2017 EURO-5G Consortium Parties

---

<sup>1</sup> [http://creativecommons.org/licenses/by-nc-nd/3.0/deed.en\\_US](http://creativecommons.org/licenses/by-nc-nd/3.0/deed.en_US)

## Executive Summary

The deliverable D5.5 - 5G innovation potential and SME participation – reports on the Euro-5G project activities to support Small and Medium-sized Enterprises (SMEs) helping them to become better visible within the 5G PPP context and in other related programmes and initiatives. This report covers the whole duration of the project and describes various activities, including also the work done towards SMEs, that have been made aware of the progress within the 5G PPP, the 5G Infrastructure Association, the NetWorld2020 European Technology Platform, and more generally of the 5G domain overall, including but not limited to relevant opportunities.

SMEs have an important role to play in developing, piloting and deploying 5G technologies to address the needs of various vertical sectors. The 5G PPP has aimed at more than 20% participation from SMEs in the projects.

According to statistics from the 5G PPP Call 1, SME participation reached then about 17%. The objective of the 5G PPP for Call 2 was thus to reach at least 23% SME participation. This is why the Euro-5G project has worked closely with the NetWorld2020 SME Working Group towards:

- Helping and supporting SMEs participation in the 5G PPP;
- Improving visibility of SMEs in the 5G domain, with a specific focus on the 5G PPP and also broadly e.g. taking advantage of the Global 5G Event and other such relevant events; and
- Activating channels that may enable, facilitate and promote SME contribution into the NetWorld2020 SRIA and research topics, as well as in 5G PPP related Working Groups.

Thanks to all the activities performed and reported in this deliverable, and summarized below, the SME Working Group has become a meeting point for all European SMEs active in the 5G technology area:

- Information sharing to SMEs about 5G PPP, other telecommunications and IT proposals and projects opportunities;
- Mapping and promotion of SME activities and expertise in the telecommunications and IT domain (including but not limited to 5G);
- Preparation and coordination of meetings, conference calls/webinars, and common participation to events;
- Preparation of SME-related promotion material for 5G PPP presentations and publications; and
- Support to SMEs for a better exposure and visibility.

## Table of Contents

<b>Executive Summary .....</b>	<b>3</b>
<b>Table of Contents .....</b>	<b>4</b>
<b>List of Tables .....</b>	<b>6</b>
<b>Abbreviations.....</b>	<b>7</b>
<b>1 Introduction.....</b>	<b>8</b>
1.1 Objective of the document.....	8
1.2 Structure of the document.....	8
<b>2 SME participation in 5G PPP phase 1 and 2.....</b>	<b>9</b>
<b>3 SME Working Group activities .....</b>	<b>10</b>
3.1 SME Mapping: Cartography, Value chain, Business verticals.....	10
3.1.1 Methodology .....	10
3.1.2 SMEs by Technology Areas (TAs).....	10
3.1.3 SME relation with Business Verticals .....	11
3.1.4 SMEs location/mapping in a 5G Value Chain.....	12
3.2 Telephone conferences .....	13
3.3 Support for community events.....	14
3.3.1 The 2nd Global 5G Event in Europe.....	14
3.3.2 EuCNC 2017.....	14
<b>4 PR Channels for SME support .....</b>	<b>18</b>
4.1 NetWorld2020 Website .....	18
4.1.1 NetWorld2020 Website statistics.....	20
4.2 Twitter @NetWorld2020SME.....	21
4.3 Publications.....	21
4.3.1 The SME brochure – SME Expertise and Skills in the 5G domain.....	21
4.3.2 SME Success Stories .....	22
4.3.3 NetWorld2020 SME WG poster.....	22
<b>5 Conclusions and recommendations for the next stages .....</b>	<b>23</b>
5.1 Conclusion .....	23
5.2 Recommendations.....	23
<b>Appendix A Additional information .....</b>	<b>25</b>
A.1 Appendix 1 – Participation of SMEs in 5G PPP Call 2.....	25
A.2 Appendix 2 – SME Mapping on-line survey .....	26
A.3 Appendix 3 – SME relation to Targeted Actions (TAs) of Phase 2 pre-structuring model....	28
A.4 Appendix 4 – SME Success stories on the NetWorld2020 web-page .....	29
A.5 Appendix 5 – Poster: SME expertise and innovation in the 5G domain and beyond.....	30
A.6 Appendix 6 – List of the SMEs in the SME Brochure .....	31

## List of Figures

Figure 1 - SMEs participation in 5G PPP .....	9
Figure 2 - SMEs position in the phase 2 of the pre-structuring model.....	11
Figure 3 - SMEs expertise in relation with the business verticals.....	12
Figure 4 - SMEs in the value chain (BtoB vs. BtoC and Physical/Application layer).....	13
Figure 5 - The SME Booth at EuCNC 2017 .....	15
Figure 6 - The SME name sign @EuCNC .....	15
Figure 7 - The SME Booth in Twitter during the EuCNC 2017 .....	16
Figure 8 - NetWorld2020 Website .....	18
Figure 9 - NetWorld2020 SME support website.....	19
Figure 10 - Find the SME you need web-page.....	19
Figure 11 - NetWorld2020 Website statistics: Web visitors/sessions.....	20
Figure 12 - NetWorld2020 Website statistics: Viewed Web-pages .....	20
Figure 13 - NetWorld2020 Website statistics: Countries.....	21
Figure 14 - The SME Brochure.....	21
Figure 15 - NetWorld 2020 SME WG poster.....	22
Figure 16 - SMEs relation to Targeted Actions (TAs) of the pre-structuring model .....	28
Figure 17 - SME Success stories on the NetWorld2020 website .....	29
Figure 18 - NetWorld 2020 SME WG poster in high definition format .....	30

List of Tables

Table 1 - SME Mapping on-line survey results page 1 .....26

Table 2 - SME Mapping on-line survey results page 2 .....27

Table 3 - List of the SMEs in the SME Brochure .....31

## Abbreviations

<b>3GPP</b>	3rd Generation Partnership Project
<b>5G IA</b>	5G Infrastructure Association
<b>5G PPP</b>	5G Public-Private Partnership
<b>AIOTI</b>	Alliance for Internet of Things Innovation
<b>BDVA</b>	Big Data Value Association
<b>EC</b>	European Commission
<b>ETSI</b>	European Telecommunication Standards Institute
<b>FSAN</b>	Full Service Access Network
<b>GA</b>	General Assembly
<b>IEEE</b>	Institute of Electrical and Electronic Engineers
<b>IETF</b>	Internet Engineering Task Force
<b>IRTF</b>	Internet Research Task Force
<b>ITU</b>	International Telecommunication Union
<b>MWC</b>	Mobile World Congress
<b>NFV</b>	Network Function Virtualization
<b>NGMN</b>	Next Generation Mobile Networks
<b>RAN</b>	Radio Access Network
<b>SDN</b>	Software Defined Networking
<b>SRIA</b>	Strategic Research and Innovation Agenda
<b>WP</b>	Work Package
<b>Y2</b>	Year two

# 1 Introduction

The deliverable D5.5 - 5G innovation potential and SME participation – reports on the Euro-5G project activities to support Small and Medium-sized Enterprises (SMEs) helping them to be more visible within the 5G PPP and in other related programmes and initiatives. It covers the whole duration of the project. This Task was led by InterInnov, supported by the 5G IA, UNIS, and Martel.

## 1.1 Objective of the document

The objective of D5.5 is to present the work performed in the WP5/Task5.5. Such activities include increasing the visibility and exposure of SMEs, especially towards large organisations (industry in particular), as well as awareness towards SMEs, that have been made aware of the progress within the 5G PPP, the 5G Infrastructure Association, the NetWorld2020 European Technology Platform, and more generally of the 5G domain overall, including but not limited to relevant opportunities.

This overview of the work done so far, including how specific activities have been more effective than others, will be key to properly set and define the planned activities that the follow-up project of EURO-5G will be focusing on.

## 1.2 Structure of the document

This document is structured in five sections as follows:

- Section 1: Describes the document objective and structure;
- Section 2: Summarises the SME participation in phase 2 of the 5G PPP;
- Section 3: Describes the SME Working Group activities;
- Section 4: Presents PR Channels for SME support; and
- Section 5: List Conclusions and recommendations for the 5G PPP Phase 2.



## 2 SME participation in 5G PPP phase 1 and 2

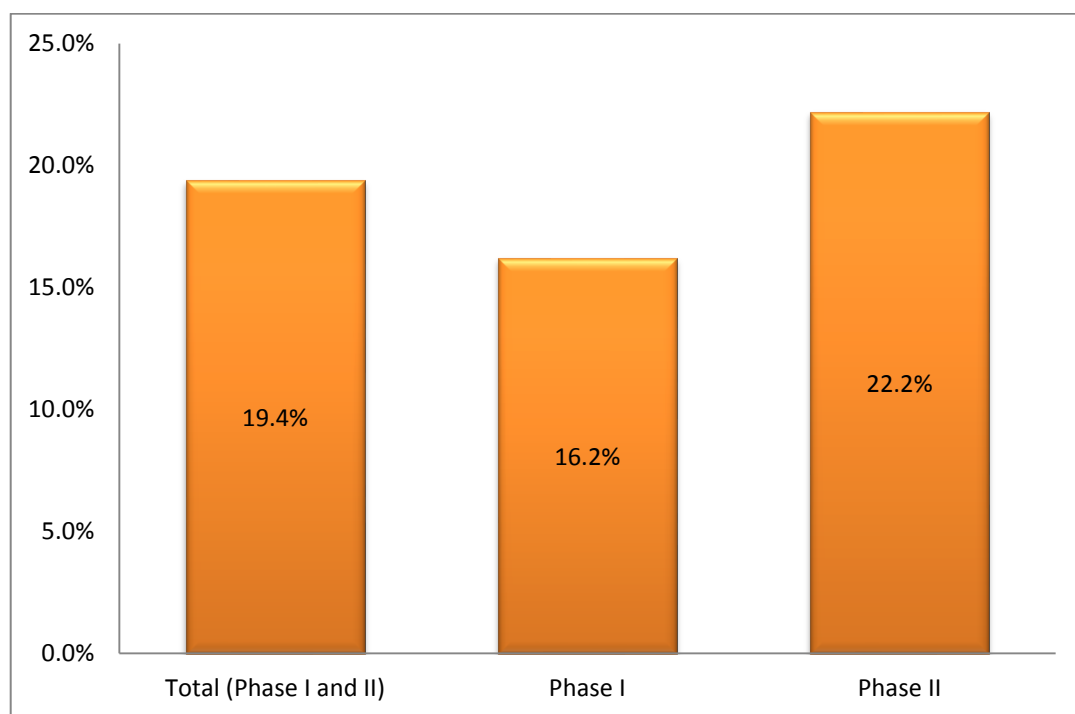
The European Commission provided information about the participation of SMEs in 5G PPP Call 1 and Call 2.

In the 5G PPP Call 1 projects, 28.6 % of beneficiaries are SMEs, with a budget share of only 16.2%<sup>2</sup>. More information about the SMEs participation in Call 1 is available in the 5G PPP Progress Monitoring Report 2015.

Information currently available on Call 2 shows that 30% of the beneficiaries are SMEs, with a budget share of 22.2%, almost reaching the objective of 23% SME participation in the 5G PPP Call 2<sup>3</sup>.

The resulting SME share in budget for Phase I and II in the 5G PPP is 19.4%, almost reaching the objective of 20% SME participation in the 5G PPP, which is one of the Key Performance Indicators set for the 5G PPP.

A full report on SME participation in Call 2 is available in Appendix A.1. This will also be made available as a separate document.



*Figure 1 - SMEs participation in 5G PPP*

<sup>2</sup> Requested EC contribution.

<sup>3</sup> Important: Please note that these numbers have not been verified by the EC as the validation of the SME status is performed only when the proposal is accepted.

### 3 SME Working Group activities

The NetWorld2020 SME Working Group was officially endorsed by the NetWorld2020 Steering Board on 27 June 2014 in Bologna.

During the first and the second year of the Euro-5G project, WP5/T5.5 supported the coordination of the NetWorld2020 SME Working Group, including preparation and coordination of meetings, conference calls and webinars; preparation of the SME-related material for 5G PPP presentations and papers; and support to SMEs involved in the various other Working Groups (WGs), in liaison with Euro-5G WP1, WP2, WP3 and WP4. Activities also included the organisation of the SME 5G “Cartography” and “Value chain” surveys to find out and disseminate SMEs positioning:

- Within the Phase 5G pre-structuring model;
- Within business vertical sectors; and
- Within the 5G value chain, together with physical/application layers mapping.

The SME 5G Cartography and the Value chain surveys were initiated during the first year of the Euro-5G project, but updates happened regularly also during the second year of the Euro-5G project, when new SMEs wanted to publish their data. The SME WG related web-pages were updated several times to be more generic and indicate SME’s general expertise in the 5G domain – not only addressing the 5G PPP Phase 2, as originally planned, but giving a broader picture.

#### 3.1 SME Mapping: Cartography, Value chain, Business verticals

##### 3.1.1 Methodology

Euro-5G project’s WP5/T5.5 organised an on-line survey (Appendix A.2) in February-April 2016, on behalf of the NetWorld2020 SME Working Group (WG). The survey was re-launched and kept open between June 2016 and January 2017 to include data from additional SMEs. The main objective of the survey was to strengthen the contribution of SMEs to the preparation of the ICT Work Programme 2018-2019 – along with NetWorld2020 and the 5G Industry Association – by finding out the 5G related SME expertise and priorities, in particular in relation with the Phase 2 pre-structuring model<sup>4</sup>.

The survey in the NetWorld2020 SME Working Group served as a preparation phase before the 5G PPP online brokerage service<sup>5</sup> was launched in May. Its purpose was indeed to complement the 5G PPP online brokerage service by providing a simple view of the competence, skills and business relations of SMEs in the 5G domain, thus making it easier for large organisations and more specifically large companies to identify which SMEs they could work with in upcoming projects, or other types of collaborations / partnerships. After the Call 2 was closed, the survey results were used to expose the SMEs overall expertise and relationship with 5G technology/ies.

##### 3.1.2 SMEs by Technology Areas (TAs)

38 SMEs (out of the 72 SME members of the WG at the time) provided information on expertise and competence in relation with the “targeted actions” of the Phase 2 pre-structuring model, issued by the 5G Infrastructure Association. In the survey, each SME had a possibility to select a maximum of three priority Targeted Actions that would best describe their area of expertise and of interest. Based on the results of that survey, depicted in the Figure 2 below, the four Targeted Actions where SMEs showed most expertise / interest and could contribute in Phase 2 were as follows (including SME “votes”), in priority order:

---

<sup>4</sup> <https://5g-ppp.eu/5g-ppp-phase-2-pre-structuring-model/>

<sup>5</sup> The online brokerage service at: <https://5g-ppp.eu/brokerage-platform-new/>

- TA1: 5G Wireless System Design (15 SMEs);
- TA4: Subsystems for 5G Platforms: Integration of Hardware and Software Aspects, and TA7: 5G for Future Machine Type Communication (MTC) Solutions (11); and
- TA13: Security, Privacy, Resilience, and High Availability (10).

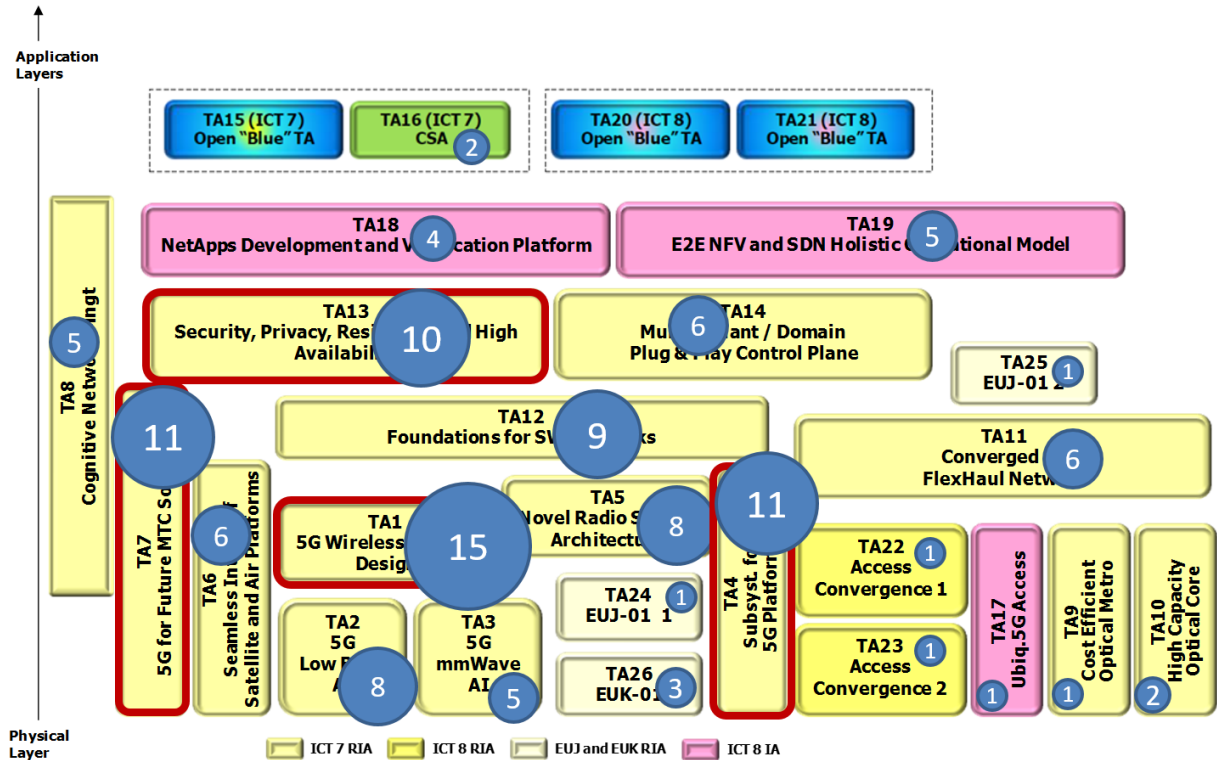


Figure 2 - SMEs position in the phase 2 of the pre-structuring model

A more detailed picture of the expertise areas of the SMEs with their logos in relation with the Targeted Actions (TAs) of the pre-structuring model is available in Appendix A.3.

### 3.1.3 SME relation with Business Verticals

The 5G Infrastructure Association had identified five vertical sectors where 5G may have a critical impact: *eHealth*, *Factories-of-the-Future*, *Energy*, *Automotive*, and *Media & Entertainment*<sup>6</sup>. Those five business vertical sectors were used as a basis in the on-line survey to find out in which business sector(s) SMEs could contribute in use cases and - at the same time - to find synergies between SMEs. The results (Figure 3 below) showed that:

- Factories of Future and Energy were the most interesting business verticals for SMEs, followed by
- eHealth, Automotive and Media.

SMEs also had the option to propose new business verticals in which they could contribute, in terms of use cases. This led to adding *Smart City enablers*, *Public safety*, *Digital retail* and *Smart Agriculture* as additional business verticals. A high interest in *Smart City enablers* can be explained by following the target stakeholder survey results in the WP1 where the *Smart City enablers* are actually included in

<sup>6</sup> <https://5g-ppp.eu/white-papers/>

the eHealth, Automobile and Energy business verticals<sup>7</sup>.

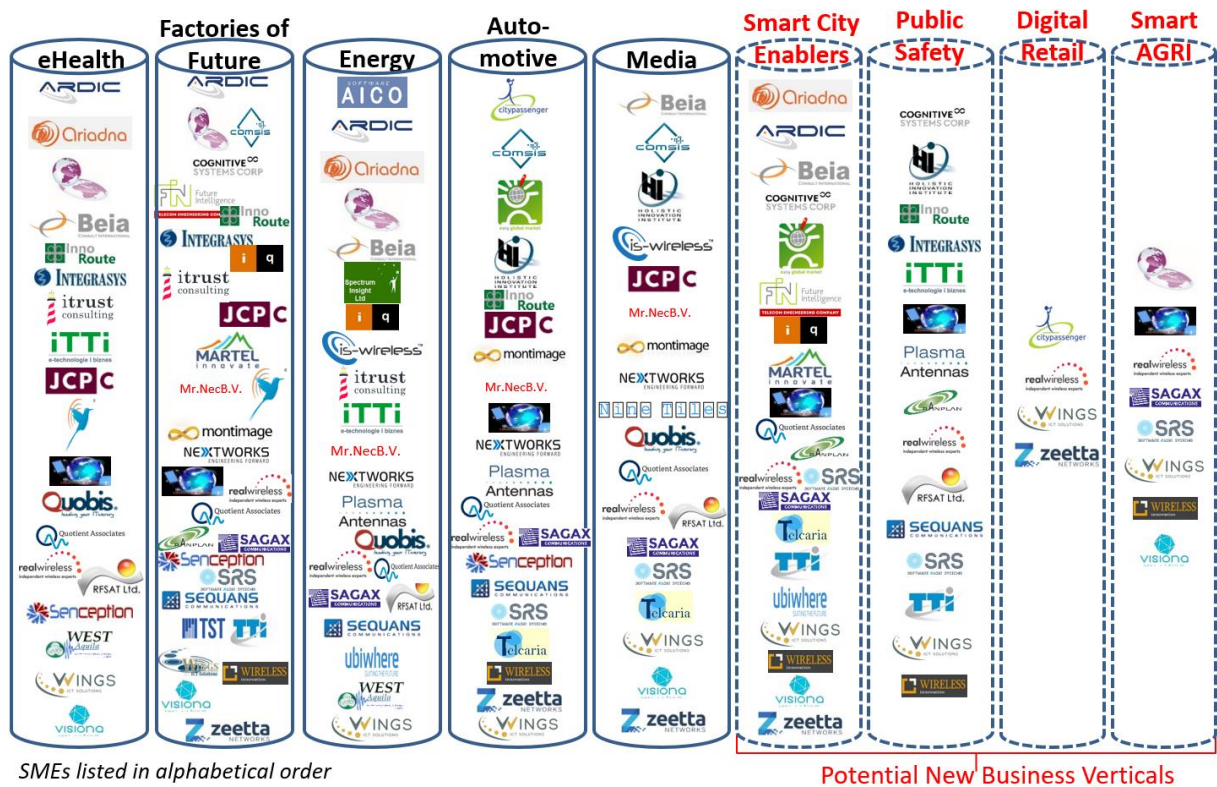


Figure 3 - SMEs expertise in relation with the business verticals

### 3.1.4 SMEs location/mapping in a 5G Value Chain

The 3<sup>rd</sup> part of the survey was the Value Chain analysis (Business-to-Business (BtoB) vs. Business-to-Consumer (BtoC)) together with the Physical/Application layer mapping. Combining those two dimensions in the same picture was intended to help SMEs identify potential new business partners e.g. to extend their current product/service offering. In Figure 4 this is marked “Partners”. On the other hand, potential competitors could also be identified, i.e. when companies are located within the same group - marked “Competitors” in Figure 4. The value chain survey results clearly show that SMEs mainly deal with BtoB customers and cover quite a wide technology area, from physical layer to application layer. Another interesting finding is that pure application (Apps) developers are a minority in the NetWorld2020 SME Working Group. Considering the NetWorld2020 ecosystem, focusing on networking related infrastructure and services, this is not surprising.

<sup>7</sup> <https://5g-ppp.eu/5g-ppp-stakeholders-survey/>

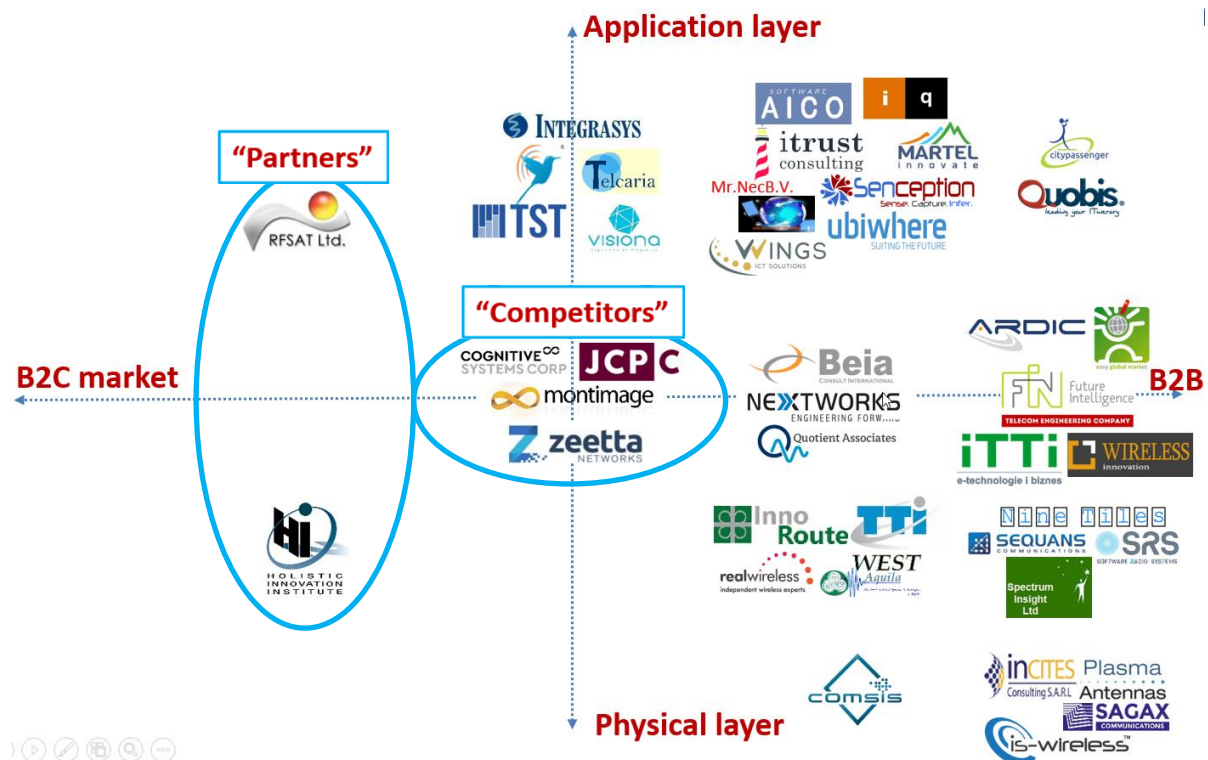


Figure 4 - SMEs in the value chain (BtoB vs. BtoC and Physical/Application layer)

The SME 5G Cartography survey results were published on the NetWorld2020 web site on a dedicated “Find the SME you need!” web-page<sup>8</sup>. Jacques Magen, T5.5 Leader and also Chair of the SME WG, presented the results during the 5G PPP Info Days in Bologna<sup>9</sup>, in Warsaw<sup>10</sup>, in Athens<sup>11</sup> and at the NetWorld2020 Steering Board meetings. He also promoted SMEs in the various meetings of the 5G Infrastructure Association including at Board level, and at every other opportunity.

### 3.2 Telephone conferences

Most SME representatives do not have the means or time to travel extensively to events and conferences. Despite several attempts, it was not really possible to organise SME WG physical meetings. The best channel for interaction and communication in terms of regularly sharing information and exchanging on important issues was therefore to organise telephone conferences (telcos).

Five telcos were organized during the Euro-5G project, with a typical participation between 10 and 20 SMEs. The person count in the conference calls was however higher due to fact that several persons attended from some of the SMEs. This is an indication that on the SME side there was an interest to hear “top-down” information and at the same time provide “bottom-up” information to other SMEs, and to get SME’s view up to NetWorld2020 and to 5G PPP level. The topics discussed during those telcos may be summarised as follows:

- Information collection and sharing about the statistics on SME participation in the 5G PPP Call 1 and Call 2 including lessons learnt, best practices, challenges, outcomes; as well as

<sup>8</sup> <http://www.networld2020.eu/find-the-sme-you-need/>

<sup>9</sup> [https://5g-ppp.eu/wp-content/uploads/2016/03/MAGEN-SME-Working-Group\\_Bologna\\_2016-03-17.pdf](https://5g-ppp.eu/wp-content/uploads/2016/03/MAGEN-SME-Working-Group_Bologna_2016-03-17.pdf)

<sup>10</sup> [https://5g-ppp.eu/wp-content/uploads/2016/03/006\\_SME\\_Working\\_Group\\_Warsaw\\_2016-05-18.pdf](https://5g-ppp.eu/wp-content/uploads/2016/03/006_SME_Working_Group_Warsaw_2016-05-18.pdf)

<sup>11</sup> <http://conferencestorage.s3-website-eu-west-1.amazonaws.com/sharedDocuments/b89b3c1ac54a863cd01ea5b8722920f2577160a3af70b.pdf>



- preparation of the 5G PPP Call 2;
- Coordination on common events participation and preparation of practicalities;
- Governance structure of the 5G Infrastructure Association and the NetWorld2020 ETP;
- Publications (Brochures, Posters, Success stories);
- Content and structure of the NetWorld2020 SME web-pages;
- Surveys (SME cartography/mapping);
- SME contribution to the preparation of the Work Programme 2018-2020;
- SME WG activities linked to other WGs, including also 5G external elements e.g. IoT, cloud computing, smart cities, public safety, etc.; and
- Promotion about on-going 5G PPP and 5G IA activities and paper preparations in which SMEs could contribute and/or participate.

### 3.3 Support for community events

#### 3.3.1 The 2nd Global 5G Event in Europe

The 5G Infrastructure Association hosted the 2nd Global 5G Event in Rome, Italy, on 9-10 November 2016. There was an exhibition and Jacques Magen, the chairman of the SME WG, asked from the members of the SME WG if they were interested in to join to a common SME networking booth. After several information requests it turned out that there were only few SMEs interested. Then we decided to use the 2<sup>nd</sup> Global 5G Event opportunity to promote SMEs expertise globally with an SME brochure that would even be more effective promotion mechanism - also after the 2<sup>nd</sup> Global 5G Event. We started to prepare a "European SMEs & 5G" leaflet in an A5 format, asking short descriptions from SMEs.

As a result of the exercise and despite a short notice 33 SMEs provided information in time and the "SME Expertise and Skills in the 5G Domain" brochure was designed, printed, and 250 copies were distributed in Rome at the 2<sup>nd</sup> Global 5G Event. By doing this in a very short time, the Euro-5G project showed flexibility and willingness to support SMEs in a common promotion. At the same time, SMEs showed their willingness to work together and make themselves more visible towards global 5G actors.

More details about the SME Brochure is available in the section 4.3.1. and in the WP3 deliverable D3.4.

#### 3.3.2 EuCNC 2017

As already stated, the objective for 5G PPP Call 2 was to reach at least 23% SME participation. This was presented several times during various events, and especially at the 5G PPP information days. That is why the 5G PPP community - represented by the Euro-5G project – has worked closely with the NetWorld2020 SME Working Group throughout the duration of the project. To support this objective and more generally to support SMEs to be able to show their work and to learn about others working in the 5G domain, the Euro-5G project decided to support an SME booth at EuCNC 2017. The objective was to promote SMEs' results and their work in the 5G domain, and to support their participation and contribution into the NetWorld2020 SRIA and research topics.

The preparation of the SME booth was performed in Task 5.5 (by InterInnov and Martel). As a starting point, we had a survey to ask SMEs interest to the booth. The interest was really high and due to booth size we had to limit the amount of SMEs to eight. Then the information was collected from all SMEs to elaborate on the booth proposal, that was put together and submitted by Martel on behalf of the SME Working Group. After the selection of the SME booth by the EuCNC PC, there were several conference calls with participating SMEs to prepare the booth in practice including: demos and required space for demo equipment, time schedule for off-session hours, needed internet connections on the booth, promotion material (availability, needed space), and additional equipment needed from

the EuCNC organizer. This was accompanied by an intense promotional campaign via all various 5G PPP media channels.

The SME booth at the EuCNC was an entry door for networking, attracting public to see the SMEs and their projects' activities, and foster future collaborations (Figure 5). The Euro-5G project coordinated and supported the SME booth where the eight SMEs showcased their demos as follows:

1. AICO Software presented methods and approaches to evaluate and test the performance of 5G components and services based on modelling.
2. InnoRoute showed its TrustNode research router and its programming along with later business applications.
3. Ubiwhere showcased its portfolio of solutions for Smart Cities, capable of generating intelligence based on data collected from the urban environments.
4. CityPassenger presented its innovative security approaches dedicated to IoT.
5. ARDIC showed their IoT Services capabilities with their platform and edge devices, including gateway.
6. Visiona Ingeniería de Proyectos presented its Broadcast Application taking advantage of Software-Defined Networks (SDN) and Network Functions Virtualization (NFV) capabilities and working as an Over-the-Top (OTT) service.
7. Nextworks presented two demonstrations (videos): a) Energy-efficient provisioning of vEPC service instances in 5G networks b) Dynamic reconfiguration of security chains in 5G mobile networks.
8. Montimage presented its research work on monitoring virtualised environments applicable to Software Defined Networks and Network Function Virtualisation with a specific case study related to NDN (Named Data Networks).



Figure 5 - The SME Booth at EuCNC 2017

The supporting promotional material (=means, described more in details in deliverable D3.4) used at the EuCNC 2017 included:

- The Euro-5G rollups;
- The NetWorld2020 SME WG poster;
- The SME brochure – SME Expertise and Skills in the 5G domain; and
- The SME name signs on the table (Figure 6).



Figure 6 - The SME name sign @EuCNC

The SME booth got a lot of publicity in the official EuCNC publications, on the organiser's website<sup>12</sup>, and in social media - especially Twitter before, during and after the EuCNC 2017 (Figure 7). Additionally the Euro-5G project invited the CTIF/Aalborg University to the SME booth to have a short presentation about the "Innovoice - an online startup ideabator". The presentation was seen interesting by participating SMEs to find new ideas for crowd innovation, business idea development, partnerships, collaboration across sectors, and for funding<sup>13</sup>.



Figure 7 - The SME Booth in Twitter during the EuCNC 2017

### 3.3.2.1 SME Video interviews

The Euro-5G project organised a set of video interviews which took place at the SME booth at EuCNC 2017 in Oulu. The objective of the video interviews was two-fold:

1. To get an overview of SMEs activities, experience and achievements in the 5G domain; and
2. To offer an additional marketing opportunity to SMEs by providing a new advertising channel for SMEs participating in the EuCNC 2017 and having relation with 5G.

Eight SMEs (Artic, City Passenger, InnoRoute, Montimage, Nextworks, Ubiwhere, Visiona, West Aquila) were interviewed about their company's activities and their relations with 5G.

It is worth noting that during EuCNC 2016 which took place in Athens, a set of interviews dedicated to SMEs and their added value was also performed. This material will also be used to prepare a dedicated SMEs video which can be used to promote the SMEs' work and expertise in 5G.

More information on the video interviews and video production is available in Euro-5G Deliverable D3.4.

### 3.3.2.2 Meetings with SMEs and others

Beside the context in the video interviews, there were meetings with SMEs participating in the SME booth, and with larger corporations. The topics that were discussed covered challenges, work, benefits

<sup>12</sup> <http://eucnc.eu/?q=node/134>

<sup>13</sup> <https://www.innovoice.com>



and potential improvements in relation with the work of the SME WG.

One of the biggest challenges SMEs faced is related to Call proposal phase was how to find a project consortium, and how get involved in the proposal preparations. SMEs that have been successful in getting involved indicated that connections to project consortium beneficiaries were made earlier in different networking events. Those who were not successful hoped to have more matchmaking type of events and on-line tools to accelerate interactions with project consortiums/coordinators. Surprisingly e.g. the ICT Proposers day was not known by some SMEs, although it had been widely promoted in the SME WG newsletters and conference calls.

The Brokerage tool was seen overall as useful and helpful for SMEs to promote their expertise, but still there were a few SMEs who did not know about the tool at all. One explanation for it may be that the persons met were not part of the company management team and that way may not have been aware of all options in the Call preparation phase. The matchmaking tool was mentioned in several discussions and one idea to help SMEs to promote their expertise would be to open the Brokerage tool also between the Calls and that way to provide additional “marketing” channel for SMEs. Discussions with large corporations indicated similar things: there is a miss of matchmaking tools. Large corporations were not aware of the Brokerage tool meaning that in the future Brokerage tool promotion should include also larger corporations beside SMEs.

Areas where the SME WG could improve were related more to topics to get more information about the other 5G PPP Working Groups and to get to know topics beyond 5G. One proposed new discussion topic in the SME WG would be to analyse possibilities to further broaden the SME WG scope beyond 5G topics including but not limited to IoT, Cloud computing, Smart cities, Public safety, etc. On the other hand, these topics are close to Business Verticals i.e. the SME WG could initially make sure that events and workshops containing Business Vertical topics are promoted to all SME WG members.

## 4 PR Channels for SME support

### 4.1 NetWorld2020 Website

The SME Working Group was established under the NetWorld2020 umbrella and therefore the main web presence of the SME WG resides on the NetWorld2020 web<sup>14</sup>. A snapshot of the NetWorld2020 web is shown in Figure 8.

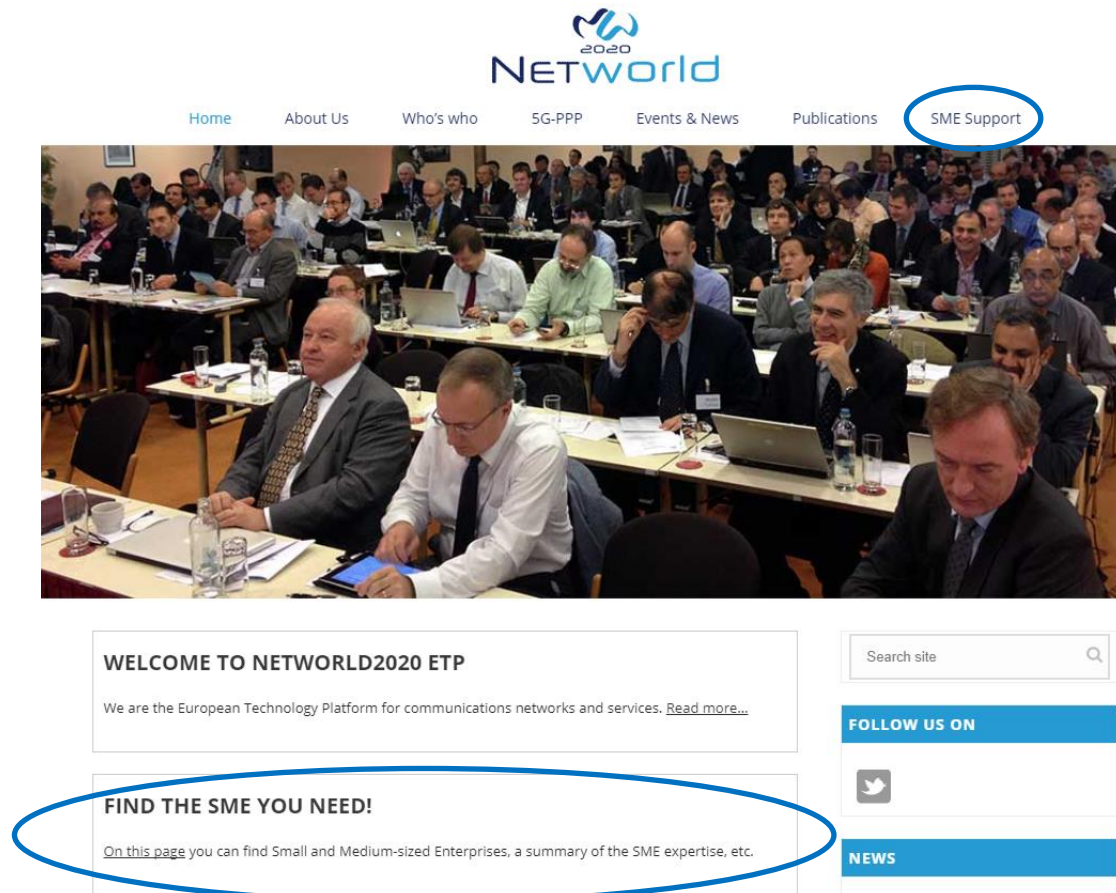


Figure 8 - NetWorld2020 Website

The SME page is well visible and there is currently even a pointer directly on the home page (Figure 8) to find the SME Support web-page and to the “Find the SME you need” web-page. Additionally, there is a direct web-link on the 5G PPP web portal under “Getting involved” that connects these two websites, making it easier to find SME web-pages.

The content of the SME support web site includes basic information about how SMEs can join NetWorld2020 and the SME working group. Information also includes relevant web-links for SMEs to find more information about funding possibilities, related programmes (EUREKA), SME National Contact Points (NCPs), live Twitter feeds and the latest NetWorld2020 news (Figure 9).

<sup>14</sup> <https://www.networld2020.eu/>



Figure 9 - NetWorld2020 SME support website

The content of the “Find the SME you need” web-page is directly accessible from the 5G PPP web portal and from the NetWorld2020 SME support web-page, and it has been updated regularly when new SMEs have provided information or existing ones on the website have updated their expertise areas on 5G. The web-page is a central place showing the expertise of SMEs in the 5G environment, as follows (Figure 10):

- Overview – a summary of the SME expertise;
- The SME brochure – SME Expertise and Skills in the 5G domain;
- Success Stories: SME expertise and innovation in 5G;
- Find your SME by their Technology Areas (TAs) of the 5G PPP; and
- Find your SMEs by the Business Verticals.



Figure 10 - Find the SME you need web-page

The content for the web-page has been collected in close co-operation with all SMEs who participated in the SME cartography survey (cf. section 3.1) and based on discussions in the SME WG telephone conferences (cf. section 3.2).

### 4.1.1 NetWorld2020 Website statistics

The website statistics has been collected from 1.1.2016 - 27.6.2017 for the whole NetWorld2020 website to see an overview and how SME specific web-pages have been accessed/viewed<sup>15</sup>.

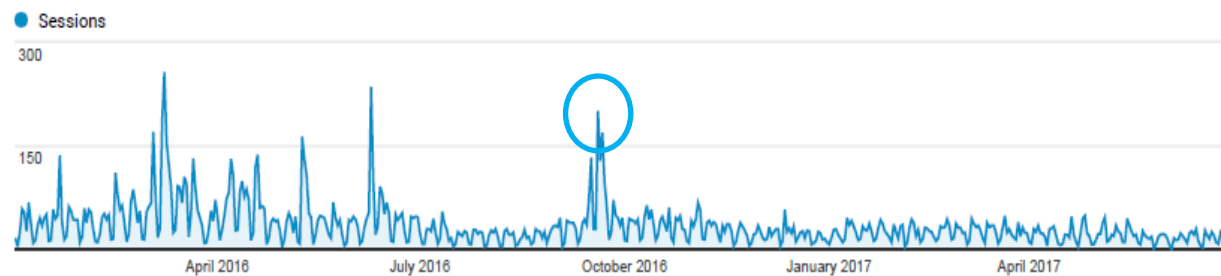


Figure 11 - NetWorld2020 Website statistics: Web visitors/sessions

The web visitor peak e.g. in October 2016 (highlighted in the Figure 11), when the 2<sup>nd</sup> Global 5G event and the SME brochure publication took place, reflects to the SME web-page publicity in the 5G PPP news and campaigns in Twitter/LinkedIn. Overall the SME centric web-pages (“Find the SME you need” and “SME support”) are ranked in position 3 and 4 just after the “home-page” and the “Published whitepapers” web-pages on the global NetWorld2020 website (Figure 12). Interesting finding in the statistics is that the “Find the SME you need” web-page is ranked highest (over 4 minutes) on the time web visitors spend overall on the NetWorld2020 web-pages and there are also more returning web visitors on that web-page (page views vs. unique visitors). The results indicate that there is an interest towards SMEs and their work in the 5G domain keeping also in mind the fact that the “Find the SME you need” web-page was published until middle of 2016!

Page	Pageviews	Unique Pageviews	Avg. Time on Page
	42,018 % of Total: 100.00% (42,018)	33,193 % of Total: 100.00% (33,193)	00:01:53 Avg for View: 00:01:53 (0.00%)
1. /	8,115 (19.31%)	6,570 (19.79%)	00:01:17
2. /sria-and-whitepapers/	6,781 (16.14%)	5,862 (17.66%)	00:03:37
3. /find-the-sme-you-need/	2,042 (4.86%)	1,389 (4.18%)	00:04:10
4. /sme-support/	1,968 (4.68%)	1,510 (4.55%)	00:02:11
5. /overview/	1,813 (4.31%)	1,388 (4.18%)	00:01:21

Figure 12 - NetWorld2020 Website statistics: Viewed Web-pages

The top five countries from where the web visitors are coming from are Spain, USA, Germany, Italy and United Kingdom (Figure 13).

<sup>15</sup> Note: the NetWorld 2020 Website statistics is presented only in this document - the D3.4 contains only the 5G PPP website statistics.

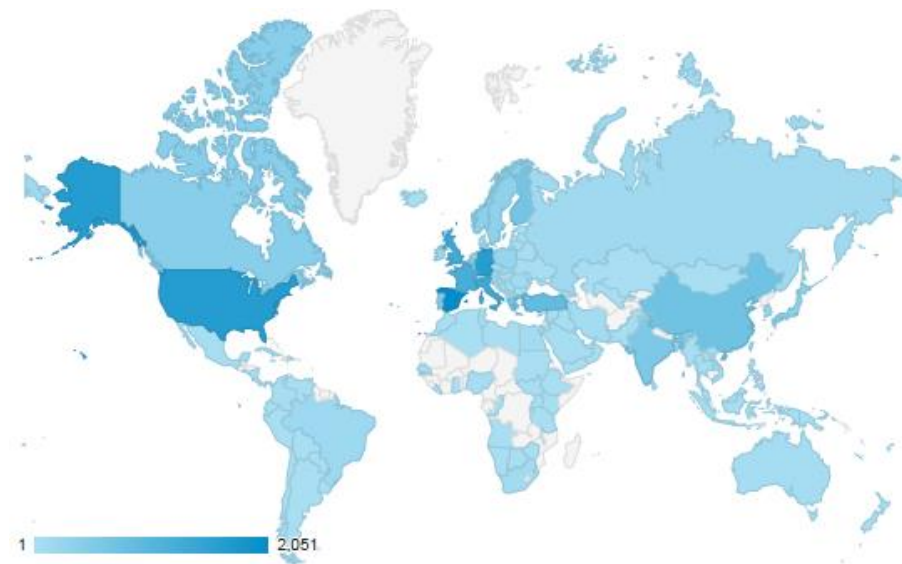


Figure 13 - NetWorld2020 Website statistics: Countries

## 4.2 Twitter @NetWorld2020SME

The Twitter account of the SME WG was mostly used to relay information related to the 5G PPP, and during specific events, in particular the 5G PPP information days. However, it is not too much consulted by SMEs and other organisations; therefore, although it has been kept alive, it is not that active as such as a communications and exchange channel.

## 4.3 Publications

### 4.3.1 The SME brochure – SME Expertise and Skills in the 5G domain

In the context of WP5, and in collaboration with WP3, we produced a brochure dedicated to SMEs, which has been broadly distributed during the 2<sup>nd</sup> Global 5G event in Rome and at EuCNC 2017 in Oulu.

This SME brochure is entitled “SME Expertise and Skills in the 5G Domain”, and it provides the description of 33 SMEs who responded to the SME cartography survey.

Thanks to this brochure, each SME had the opportunity to show to a large number of stakeholders their expertise in 5G related domains and on vertical sectors and also to show their interest in international cooperation.

While the SME brochure distribution took place in major 5G PPP (and overall 5G) events, it offered an additional, focused marketing channel for SMEs to advertise their know-how and expertise to larger corporations which are working in the 5G PPP. Additionally, SMEs can use the brochure for their own marketing activities as it is available for downloading both on the 5G PPP<sup>16</sup> and on the NetWorld2020<sup>17</sup> websites.

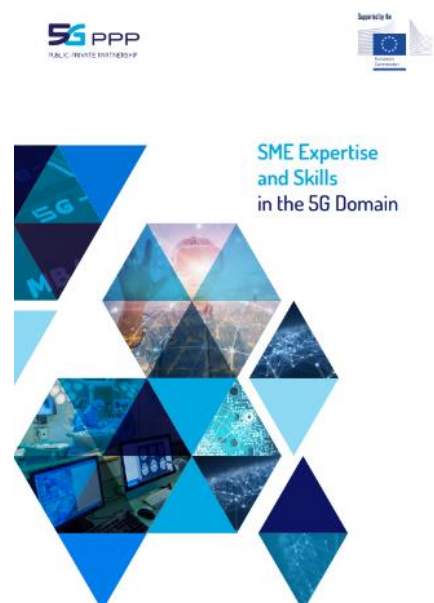


Figure 14 - The SME Brochure

<sup>16</sup> <https://5g-ppp.eu/flayer-brochure/>



More information on the content and the design of the brochure is available in the WP3 deliverable D3.4. A list of the SMEs in the SME Brochure is available in Appendix A.6.

#### 4.3.2 SME Success Stories

The “Find the SME you need!” web-page also contains SME success stories (electronic version only), which were collected to identify SME expertise and innovation in 5G, and to better understand what SMEs had already achieved in 5G projects<sup>17</sup>. The other objective of publishing the SME success stories was to inform larger companies about SMEs that are active in the 5G domain, and at the same time to inform other SMEs about potential co-operation possibilities.

The SMEs success stories were collected in an interactive way to keep each success story with a consistent structure, as follows:

- SME Introduction;
- Goals and Challenges in relation to 5G PPP;
- The use of 5G technology;
- Benefits and accomplishments;
  - o Success stories related to one or more 5G PPP objectives; and
  - o Success stories related to other 5G Objectives.

The published Success Stories help larger corporations to assess future business and potential cooperation possibilities with SMEs. The success stories cover a wide area of benefits and learnings on the technology side e.g. ultralow latency, hierarchical routing, 5G Small Cell Protocols, virtualized RAN with non-orthogonal waveforms, SDN/NFV implementations, Machine learning in wireless networks, etc.

On the business side, some achievements can already be perceived on practical 5G technology implementation into sellable products, together with the acquisition of fundamental knowledge about 5G networks and technology.

The overview of the current SME success stories is available in the Appendix A.4.

#### 4.3.3 NetWorld2020 SME WG poster

In collaboration with WP3, we produced a poster (Figure 15), entitled “SME expertise and innovation in the 5G domain and beyond”, which has been showed first at the SMEs booth during the EuCNC 2017 event in Oulu. The purpose of the poster is to provide general information about the NetWorld2020 SME WG, its work, objectives, type of participants, and placeholders to find more information and how to join to the SME WG. The content is kept by purpose on general level that makes it possible to use the poster also in the future events where the SME WG promotion is needed.

The content of the poster was first drafted in the Euro-5G project and then approved by Jacques Magen, Chairman of the SME WG. A high resolution picture of the NetWorld2020 SME WG poster is available in the Appendix A.5.



Figure 15 - NetWorld 2020 SME WG poster

<sup>17</sup> <https://www.networld2020.eu/find-the-sme-you-need/#brochure>

<sup>18</sup> <https://www.networld2020.eu/find-the-sme-you-need/#success-stories>

## 5 Conclusions and recommendations for the next stages

### 5.1 Conclusion

The SME Working Group has been acting as a meeting point for SMEs which are active in the 5G technology area. The main activities have been:

- Information sharing with SMEs about 5G PPP and other telecommunications and IT proposals and projects opportunities;
- Mapping and promotion of SME activities and expertise in the telecommunications and IT domain (including but not limited to 5G);
- Preparation and coordination of meetings, conference calls/webinars, and common participation to events;
- Preparation of SME-related promotion material for 5G PPP presentations and publications; and
- Support to SMEs for a better exposure and visibility.

These activities have created an additional marketing channel for SMEs working with 5G technology (and beyond) and thus have helped SMEs:

- To offer their special expertise and know-how for others in the 5G;
- To develop and deploy new products and service concepts for wider markets (including but not limited to 5G); and
- To find new business opportunities.

### 5.2 Recommendations

One of the biggest challenges for SMEs has always been how to find and how to be involved in a project consortium that is preparing a proposal. In that sense, the Brokerage tool got special thanks from SMEs as a channel that is used to show their expertise at the times of proposal preparation. In the future, the promotion of the Brokerage tool (after it is opened again) needs to continue, along with promotion at ICT Proposer's day (and similar other events) together with the matchmaking means. One real benefit for SMEs would be to have the Brokerage tool open also between the Calls, to provide continuous matchmaking opportunity. Another option that could be investigated would be to have a short SME WG introduction/presentation at the ICT Proposer's day (especially before 5G PPP Phase 3), to inform larger corporations where and how to find SMEs that are working in the 5G domain. Information sharing with other Working Groups in the 5G PPP could be expanded and promoted e.g. in the SME WG conference calls. One additional discussion topic in the SME WG could be to analyse possibilities to further broaden the SME WG scope beyond 5G topics, including but not limited to e.g. IoT, Cloud computing, Smart cities, Public safety, etc.

Recommendations for the next stages of the 5G PPP are summarised as follows:

- The SME WG conference calls needs to continue with potential extensions to share more information about the other WGs in the 5G PPP, extend the scope beyond 5G topics (have specific themes for the conference calls) and inform additional funding options for SMEs (e.g. SME Instrument);
- Collection and maintaining of the SME Success Stories - SME expertise and innovation in 5G - should continue, and results published on the SME web-page;
- "Find an SME by Technology Areas (TAs)" needs to be kept alive. The same applies to "SME relations to Business Verticals";
- Value chain analysis and presentation could become more as a working document/presentation as there will be more developers involved during the phase 2 and especially in following phase 3 of the 5G PPP;

- The SME web-page structure and presentation format needs to be checked for potential updates and improvements to make it easier to find SMEs;
- The Brokerage tool should be opened between the Calls in a more generic form, to provide a continuous matchmaking channel for SMEs and larger corporations;
- The Brokerage tool (after it is opened again) promotion needs to continue towards SMEs and also towards larger corporations which may not be aware of its possibilities;
- SME WG presentations in related events needs to continue, having also option to include a short SME WG introduction/presentation e.g. at the ICT Proposer's day (especially for phase 3 of the 5G PPP); and
- Support for SME networking booth(s) at different events should continue, providing also a booth coordinator on site who is able to "matchmake" booth visitors and the right type of SME on the booth.



## Appendix A Additional information

---

### A.1 Appendix 1 – Participation of SMEs in 5G PPP Call 2

#### NetWorld2020 SME Working Group

#### Participation of SMEs in 5G PPP Call 2– Results

*Statistics for the participation of SMEs in 5G PPP Call 2 provided by the European Commission*

The European Commission provided statistics for the participation of SMEs in 5G PPP Call 2. The results of the analysis of the figures provided by the EC show the following:

- In the 5G PPP Call 2 selected projects, **28% of the beneficiaries - compared with the overall number of beneficiaries per project - are SMEs** (80 SMEs among 286 beneficiaries).  
It is worth noting that there are beneficiaries (SMEs and non-SMEs) that participate in more than one Phase 2 project. If we count the organisations that participate in more than one project, we see that 171 different non-SMEs organisations and 74 different SMEs are involved in the 5G PPP Call 2 selected projects. As result, 245 different organisations (across 24 projects) are involved in Call 2.  
If we refine the figures taking into account these numbers, the percentage of SMEs participation increase from **28% to 30%**.
- **The SME share in budget (i.e. EC funding) is 22.2%.**
- In Call 2, 156 organisations (of which 32 are new to H2020) are new to the 5G PPP with respect to Call 1. Among those organisations, 49 are SMEs, i.e. **31% of the new beneficiaries in Call 2 are SMEs.**
- **The total SME share in budget in the 5G PPP (Call 1 and Call 2) is 19.4%, almost reaching the objective of 20% participation**, which is one of the Key Performance Indicators set for the 5G PPP.

[illegible]

Table 1 - SME Mapping on-line survey results page 1

# SME mapping to the Phase 2 pre-structuring Model

This table is created to collect information about the Phase 2 pre-structuring Model Targeted Actions (TA) related to the NetWorld2020 SMEs. Please add the name of your SME on Row 5 and then mark with a "X" on the three (3) most important Targeted Actions. In case you have more than 3, mark the rest as "O". After this click the "Business verticals" sheet! Below the table (row 33) you can find the graphical illustration of the Phase 2 pre-structuring Model; more information on the 5G P [5G-PPP web site](#)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	NetWorld2020 SMEs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Targeted Action (TA)	ARCTO SLASB	SECCANICA	FINMCCANICA	IS-WIRELESS	JCP-connect	MOLTOSENSE	HOLISTICINNOVATION	NESTWORKS	SENCEPTION	WESSTAGUILLA	TTWORKS	SPERUNTINSIGHT	FUTURETELLIGENCE	ITTT	ARADNASSOFT	STOCKHOLMUNIVERSITY	MARTEL	PLASMACONSULT	INTEGRATED	QUOBIS	WINGSTICSOLUTIONS	EASYGLOBALMARKET	CITYPASSANGER	ALICOSOFTWARE	WIRELESSINNOVATION	QUOTIENTASOCIATES	ZEITANPLANN	SOFTWARERADIOSYSTEMSLTD	TELECOM	COGNITIVESYSTEMS	INNOVATIVE	QUADRANTIA	SAGAXCOMMUNICATIONS	REALWIRELESS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

Table 2 - SME Mapping on-line survey results page 2

## Application Layers





## A.4 Appendix 4 – SME Success stories on the NetWorld2020 web-page

### SUCCESS STORIES: SME EXPERTISE AND INNOVATION IN 5G

Below you can find Success Stories of the SMEs which help you:

- To identify SME expertise and innovation in 5G;
- To understand what each SME has already achieved in 5G; and
- To see future business potential / co-operation possibilities with SME.

You can find the SME success stories below in alphabetical order.

**InnoRoute** mission is to provide innovative routing solutions. In a former business project the company developed a packet processing library which was the basis to launch a router project. Begin 2015 we got the SME1 project TRUSTNODE to perform a feasibility study for an IoT router. Coaching support provided by SME Instrument helped us working out business cases.



[Download the success story](#)

**IS-Wireless** is a software developer and IP provider specializing in advanced solutions for wireless systems. IS-Wireless develops 4G and 5G algorithms, protocols and tools. Our clients are primarily early technology adopters including ODMs, OEMs, chip vendors, and operators. The company is engaged in EU H2020 and FP7 projects on 5G.



[Download the success story](#)

**Nextworks**, an Italian R&D SME with 45 employees, operates in the telecommunications sector and collaborates with some of the major European manufacturers and operators. The company's team boasts long-term experience and proven skills in control plane technologies for wired and wireless transport networks, with strong focus on NFV and SDN applied to 5G. Nextworks R&D division actively participates to standard development organizations, contributes to IETF/IRTF and ETSI NFV, is observer in various ETSI steering groups (OSM, NFV, MEC and NGP), and actively participates in multiple international projects on NFV, SDN, 5G and IoT.



[Download the success story](#)

**Ubiwhere** is a Research and Innovation SME, based in Portugal, developing innovative and user-centred software solutions mainly focused on two main areas namely Telco & Future Internet as well as Smart Cities.



[Download the success story](#)

**Visiona Ingeniería de Proyectos** is a high tech SME with wealth of experience in the design, development and deployment of systems and innovative engineering projects for our clients. Visiona's R&D division actively participates in novel projects such as those involving 5G, Smart Cities or Innovative Agriculture."



[Download the success story](#)

**WINGS ICT Solutions** is a fast growing SME which focuses on conducting R&D activities and providing consulting services in all areas related to 5G related domains. WINGS' portfolio of expertise includes (but is not limited to) the following domains; Smart Wireless Access, Cloud Continuum, Software Networks, Big Data Analytics, Security/Cybersecurity, Verticals (Assisted living, Water, Energy, Transport, Health, Food safety, Management).



[Download the success story](#)

Figure 17 - SME Success stories on the NetWorld2020 website

The Success Stories can be found at:

<https://www.networld2020.eu/find-the-sme-you-need/#success-stories>.

## A.5 Appendix 5 – Poster: SME expertise and innovation in the 5G domain and beyond

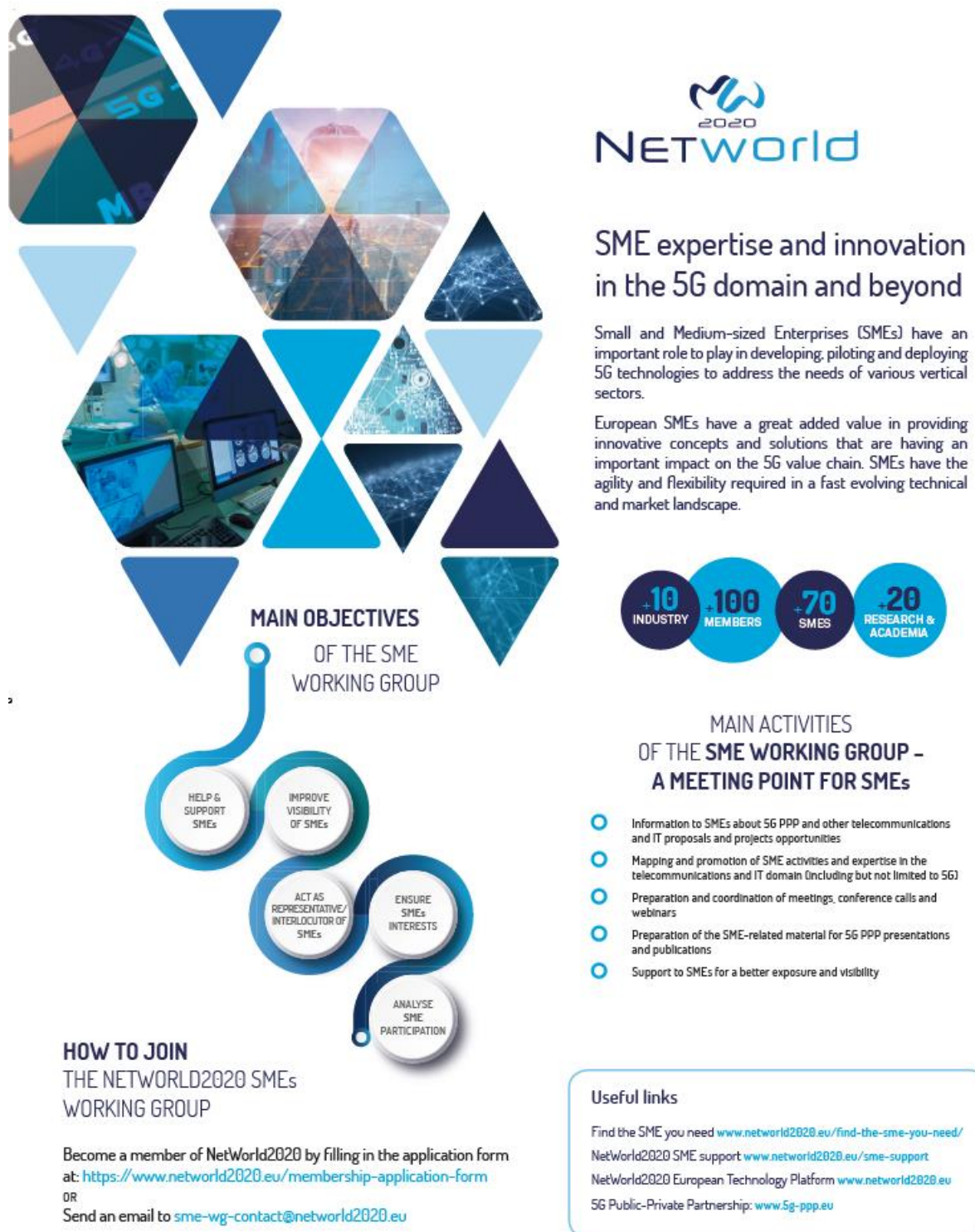


Figure 18 - NetWorld 2020 SME WG poster in high definition format

## A.6 Appendix 6 – List of the SMEs in the SME Brochure

AICO EDV-BERATUNG GMBH	5	NOUVEAUCOMM NETWORKS RESEARCH CENTRE	22
ARDIC	6	PLASMA ANTENNAS LIMITED	23
CITYPASSENGER	7	QUOBIS NETWORKS SL	24
COGNITIVE SYSTEMS CORPORATION	8	QUOTIENT ASSOCIATES LTD	25
HOLISTIC INNOVATION INSTITUTE, SLU (HI2)	9	RESEARCH FOR SCIENCE, ART AND TECHNOLOGY (RFSAT) LTD	26
INCITES CONSULTING SARL	10	SENCEPTION	27
INNOROUTE GMBH	11	SOFTWARE RADIO SYSTEMS	28
INTEGRASYS SA	12	SPECTRUM INSIGHT LTD	29
INTERINNOV	13	TELCARIA IDEAS S.L.	30
IQUADRAT INFORMATICA S.L.	14	TST	31
IS-WIRELESS	15	UBIWHERE	32
ITTI SP. Z O.O.	16	VISIONA INGENIERÍA DE PROYECTOS S.L.	33
JCP-CONNECT SAS	17	WEST AQUILA SRL	34
MAGISTER SOLUTIONS	18	WINGS ICT SOLUTIONS	35
MOLTOSENSO	19	WIRELESS INNOVATION	36
MONTIMAGE	20	ZEETTA NETWORKS	37
NEXTWORKS	21		

Table 3 - List of the SMEs in the SME Brochure