

Networked Society

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Abstract

This document summarises the dissemination and communication activities performed by the NetSoc project consortium during its second year; July 2013 – June 2014. In the scope of its community building activities the NetSoc project maintained and redesigned several community websites and established a new website to support the newly created 5G infrastructure PPP. Furthermore, the NetSoc project supported promotion of the involved ETPs and the 5G PPP by organising and performing branding activities of newly created NetWorld 2020 ETP, re-branding for the NEM Initiative ETP, and full brand and identity establishment for the 5G PPP. Finally, the NetSoc project organised a number of workshops and events as stand-alone events or collocated with other related events, such as the NetSoc Expert Group workshops, 5th Usage Areas workshop, 5G PPP information days and workshops, as well as meetings and events of the supported ETPs.

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1 INTRODUCTION

This document summarises the dissemination and communication activities performed by the NetSoc project consortium during its second year; July 2013 – June 2014.

In the scope of its community building activities, presented in Chapter 2, the NetSoc project maintained and redesigned several community websites and established a new website to support the newly created 5G infrastructure PPP. Furthermore the project established a 5G brokerage platform and maintained various collaboration tools, used by the supported communities as appropriate, as well as widely promoted the European networking community at various occasions as part of the project efforts for the community building.

Furthermore, the NetSoc project supported promotion (Chapter 3) of the involved ETPs and the 5G PPP by organising and performing branding activities of newly created NetWorld 2020 ETP, re-branding for the NEM Initiative ETP, and full brand and identity establishment for the 5G PPP. As results, a set of promotional material have been created by the NetSoc project, including a 5G PPP promotion video.

The NetSoc project organised a number of workshops and events as stand-alone events or collocated with other related events, as reported in Chapter 4. Among others, it includes the NetSoc Expert Group workshops, Usage Areas workshop, 5G PPP information days and workshops, as well as meetings and events of the supported ETPs.

2 COMMUNITY BUILDING ACTIVITIES

2.1 Community websites

2.1.1 ETP websites

From the beginning of the NetSoc cproject, the following three websites of the European Technology Platform have been maintained:

- Net!Works (www.networks-etp.eu),
- ISI (www.isi-initiative.org), and
- NEM (www.nem-initiative.org).

During the NetSoc project life time, the Net!Works and the ISI ETPs established a new ETP in the networks area called NetWorld2020 whereas NEM by reconsidering its scope and main targets has been re-established. In accordance with the branding activities of the two ETPs (presented in Sec. 3.1), the NetSoc project took the action on establishing the NetWorld2020 website and restructuring the NEM website.

The **NetWorld2020 website** (Figure 1) has been established at <http://networld2020.eu/> domain, containing all actual and for the addressed community relevant information on its home page, providing information about the ETP, people involved, its major events and related news, as well as relevant publications for the download. The website also includes particular sections providing additional information about the 5G PPP and for SME support, including a subscription portal for everyone willing to receive news feeds from the NetWorld2020 ETP.

The **NEM website** (Figure 2) has been restructured by using the same web domain in accordance with the rebranding activities carried out with support of the NetSoc project. It contains regularly updated community information, basic information about the ETP, its structure, and membership. The new NEM website also includes information on the NEM Summit events, which were previously provided on a separated website.

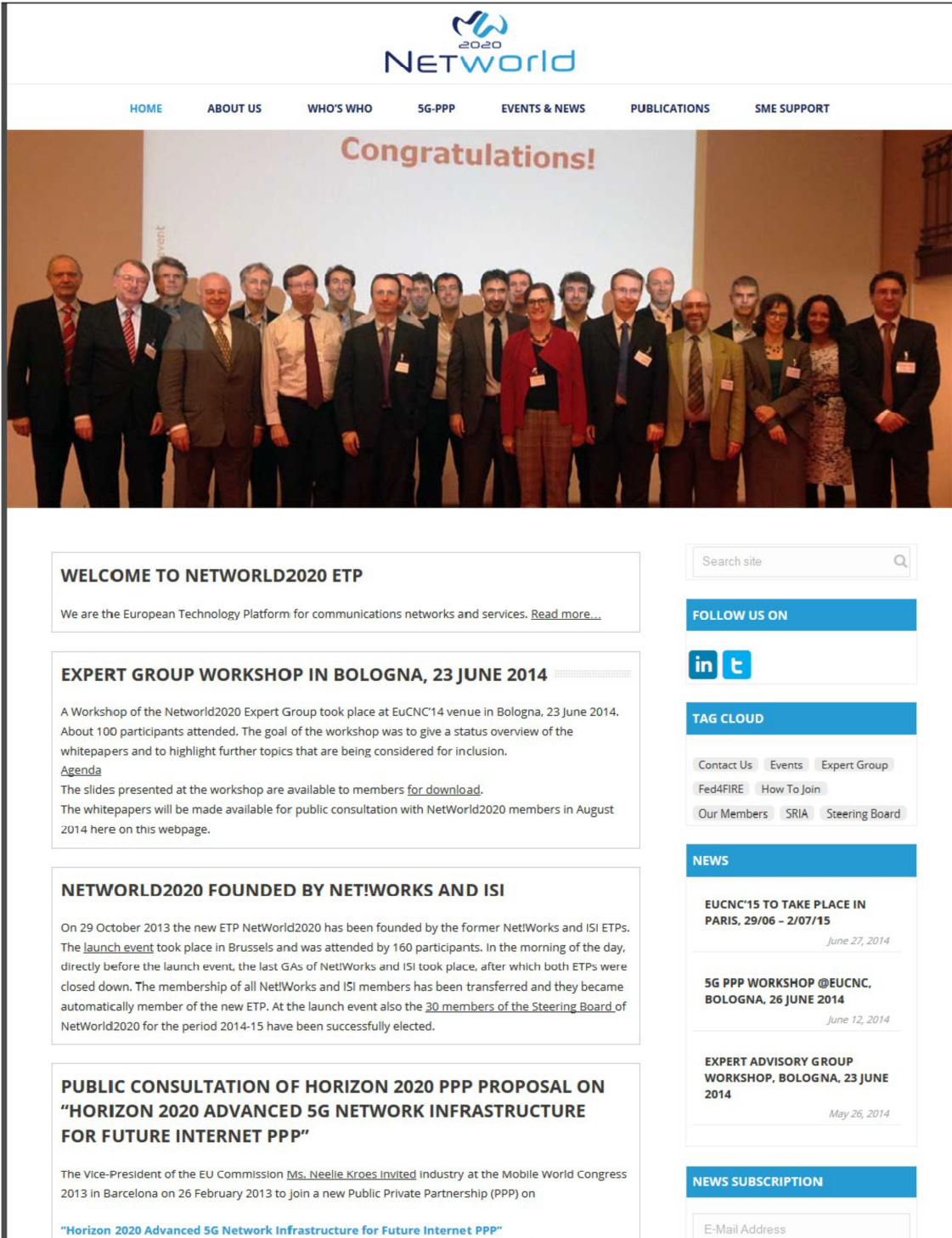


Figure 1: NetWorld2020 website



Figure 2: NEM website

2.1.2 5G PPP website

In order to support promotion of the 5G PPP, formally established in December 2013, the NetSoc project took the responsibility to establish and maintain the 5G PPP website. However, because the branding activities for the 5G PPP were not finalised by first quarter of 2014, the NetSoc project decided to establish a temporary 5G PPP website, to include all necessary information for the community and to support Industry Launch event in Barcelona end of February 2014. After finalisation of the 5G PPP branding activities, the corresponding website has been redesigned and completely implemented (Figure 3) at <http://5g-ppp.eu/>.

info@5g-ppp.eu
f
t


The 5G Infrastructure Public Private Partnership

About us
How to participate
Plans & Papers
Events
European 5G Action
Global 5G Actions
Media & News
Contact

5G PPP will drive the future networked society


x 1,000
increasing wireless capacity
1,000 times


7 Billion
connecting
7 billion people


7 Trillion
connecting
7 trillion "things"


90%
saving 90% energy


0 Latency
perceiving zero downtime

Home

- Vision & Mission
- 5G Association Members
- How to participate
- Statutes
- ETP
- PPP Structure

Upcoming Events

There are no upcoming events at this time.

Features Videos



Tweets from 5G-PPP

Tweets
Follow


5G-PPP
@SGPPP
16 Jun
Landmark agreement between the European Commission and South Korea on 5G mobile technology today!
5g-ppp.eu
Expand


5G-PPP
@SGPPP
5 Jun
5G-PPP Info day
Tweet to @SGPPP

The 5G Infrastructure Public-Private Partnership, in short 5G PPP, has been initiated by the EU Commission and industry manufacturers, telecommunications operators, service providers, SMEs and researchers. The 5G PPP will deliver solutions, architectures, technologies and standards for the ubiquitous next generation communication infrastructures of the coming decade.

5G PPP Video



The challenge for the 5G Public-Private Partnership (5G PPP) is to secure Europe's leadership in the particular areas where Europe is strong or where there is potential for creating new markets such as smart cities, e-health, intelligent transport, education or entertainment & media. The 5G PPP initiative will reinforce the European industry to successfully compete on global markets and open new innovation opportunities. It will "open a platform that helps us reach our common goal to maintain and strengthen the global technological lead". Our key challenges for the 5G Infrastructure PPP:

- Providing 1000 times higher wireless area capacity and more varied service capabilities compared to 2010
- Saving up to 90% of energy per service provided. The main focus will be in mobile communication networks where the dominating energy consumption comes from the radio access network
- Reducing the average service creation time cycle from 90 hours to 90 minutes
- Creating a secure, reliable and dependable Internet with a "zero perceived" downtime for services provision
- Facilitating very dense deployments of wireless communication

Recent News


5G Research in Horizon 2020
Webcast


Industry launch of the EU
Partnership for 5G research


Signing ceremony of the PPP on
5G-Infrastructures (5G-PPP)



News subscription

E-Mail Address

SUBSCRIBE

UNSUBSCRIBE

In accordance with EU data protection laws, your e-mail address will only be used for the

Figure 3: 5G PPP website

The 5G PPP website includes all basic information and actual news of interest for the targeted community. There are also many details on participation possibilities for all potential 5G PPP partners and details on ongoing discussions related to technical scope of the PPP, as well as explanation of European and global dimensions of the programme. Finally, the website also includes a 5G PPP promotional video, created with support of the NetSoc project.

2.1.3 Future Internet portal and NetSoc project website

The European Future Internet Portal (<http://www.future-internet.eu/>) have been maintained from the project start because it has been identified as the main entry point for ICT communities and beyond to receive relevant and up to date information on research and innovation activities in the ICT area, in particular related to the Future Internet and related networking issues. The Future Internet portal was very important for the community and spreading information to the targeted audiences during the transition period, when Net!Works, ISI, and NEM ETPs have been restructured and the corresponding websites have been redesigned.

The NetSoc project website has been established on the project begin as part of the Future Internet Portal, providing web space to promote the project and document all relevant information. However, as the main purpose of the NetSoc project is to support the European ICT and networking communities, the main promotional channels of the community activities, supported by NetSoc, remained at the ETP websites and the Future Internet portal. In this way, change of the well-known web domains and potential confusion within the community, have been avoided. In the scope of activities on the website redesign, the NetSoc website has also been restructured (Figure 4) and made available under the new domain (<http://networld2020.eu/netsoc/>), of course, with appropriate redirection from old URL. Visible links to the NetSoc website are provided at NetwWrld2020 and NEM ETP websites, where the website will be hosted in the NetWorld2020 domain in the future.

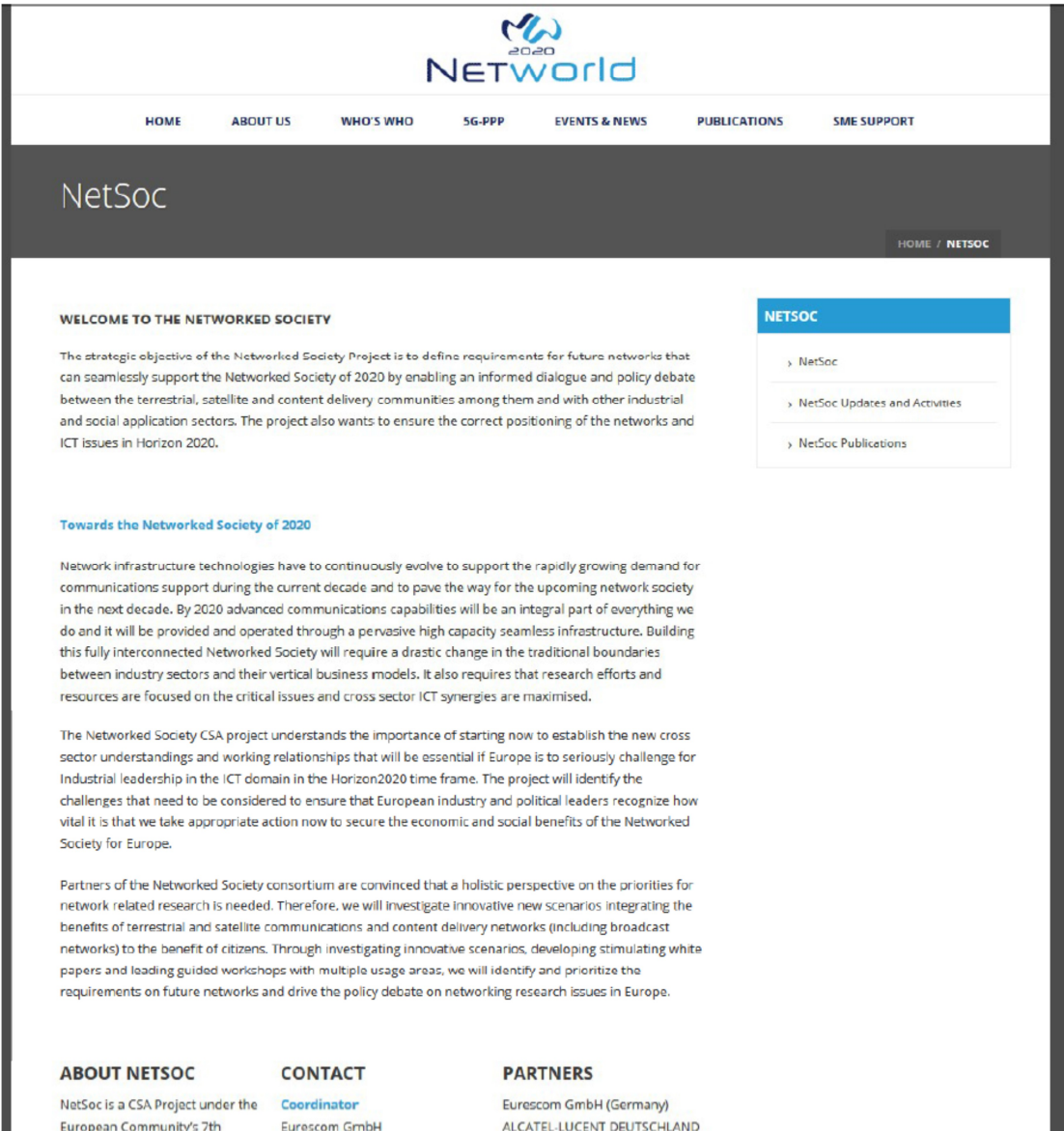


Figure 4: NetSoc project website

2.1.4 Web statistics

In order to present impact achieved by establishment of the new websites, we discussed gathered web statistics from the two selected websites; NEM Initiative and the 5G PPP. Figure 5 presents information on visits over time (NEM starting in April 2014 after its re-establishment/ 5G PPP in March 2014 after establishment of the new website format). It can be observed that in both cases on the beginning of the (re-)establishment of the websites attracted a higher number of users. Until end of June 2014 (end of NetSoc project), we can observe a typical weekly behaviour of the website visitors, where the local peaks can be observed during the working days. Typical number of visits per day remains under 40 for the NEM website and under 215 for the 5G PPP website. However, in the case of the 5G website, we can observe global peaks during May and June 2014 when the registrations for the 5G information days/events, organised by NetSoc, have been open.

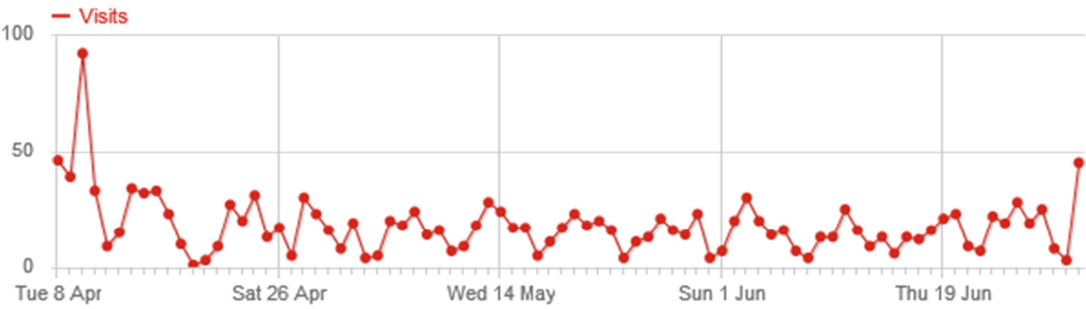


Figure 5: Website visits – NEM (above) and 5G (below) websites

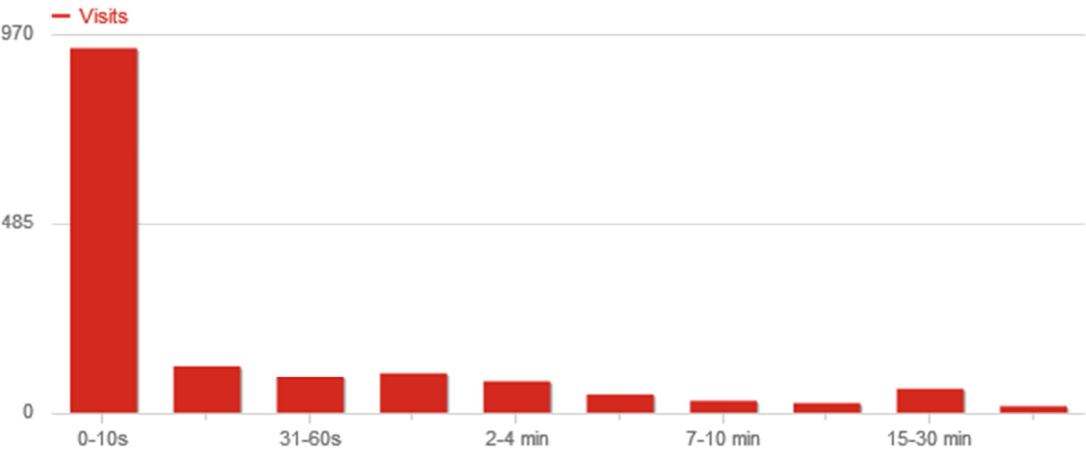
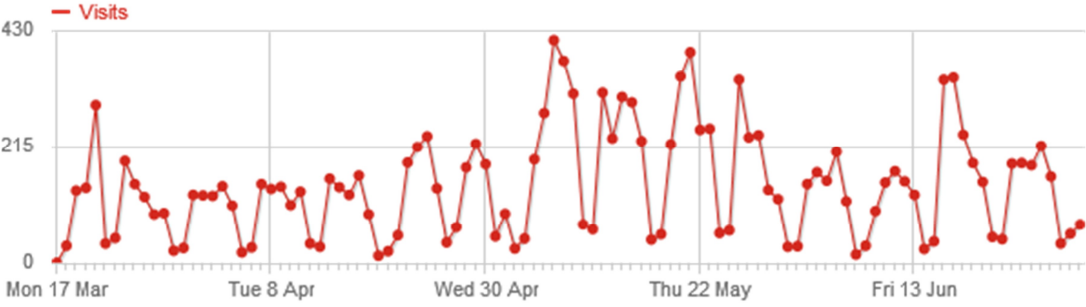


Figure 6: Length of the visits – NEM (above) and 5G (below) websites



As expected, because of fully new information provided, and in accordance with the results presented above, the distribution of length of the websites visits (Figure 6) shows that the newly created 5G website attracts visitors to spend longer time on the website.

Furthermore, as expected the most visitors of the NEM and 5G PPP websites (Table 1) come from Europe, followed by the visitors from North America, mainly USA. On the other hand, there were significantly more visitors from Asia, in particular from Korea, which is probably caused by related joint activities and discussions among EU and Korea, carried out also with the NetSoc support (see D2.3).

Table 1: Website visitor mapping

	NEM	5G PPP
Europe	56%	54%
Nord America	37%	34%
Asia	3%	11%
Others	4%	1%

Further web statistics, number of visits, duration, actions, page views, etc., can be observed in Table 2, where as expected the figures are significantly larger for the 5G PPP website.

Table 2: Further web statistics

	NEM	5G PPP
Website visits in period	1508	14999
Average visit duration	2:15 (min : sec)	3:57 (min : sec)
Average number of actions	2.5	3.5
Number of page views	3441	48711
Unique page views	2756	37861
Number of downloads	186	2610

2.2 5G brokerage platform

Call 1 in Horizon 2020 has been published on December 13, 2013. This call has two submission deadlines: April 23, 2014 for most of the objectives and November 25, 2014 in particular for ICT 14 (5G PPP). The NetSoc project supported the 5G Infrastructure Association in 5G PPP to develop and provide a Brokerage Platform between interested parties and emerging consortia, which is available on the 5G PPP website at <http://5g-ppp.eu/5g-brokerage-service/>.

This platform provides the following features:

- Interested parties to join emerging consortia can post their profile and potential proposal ideas. or contributions to the website. The posted information is publicly available.

- Coordinators of emerging consortia can view the different offers and can contact interested parties.

Basically, this approach is supporting the interests of coordinators and interested parties for matchmaking in the establishment of new consortia. However, interested parties do – to a certain extend – not want that their profile, ideas and proposed contributions are publicly available. In addition, coordinators of emerging consortia have a legitimate interest that proposal preparation is a competitive process and will not be done publicly.

Therefore, the 5G Infrastructure Association and the NetSoc project discussed improvements to the brokerage platform to address the concerns of interested parties and coordinators. The advanced brokerage platform will become available in July 2014 and will support the following features:

- Profiles, proposal ideas and proposed contributions should not be publicly available.
- The advanced tool will offer a catalogue of technical areas according to the Call for Proposals. Interested parties can select these areas, where their contribution should be made available.
- That information will only be forwarded to such emerging consortia, which are working on the selected technical areas.
- This approach ensures that provided information is not publicly available and the identity of the coordinator is still not provided.
- Coordinators of emerging consortia are encouraged to register to the tool.
- It is expected that coordinators are providing feedback to the proponents via the platform.
- In case on interest a direct contact should be established between the coordinator and the interested party for further discussion.

The community will be informed via the Networld2020 member's mailing list as soon as this advanced service will be available.

2.3 Further collaboration tools

The NetSoc project maintained a number of mailing lists related to the supported ETPs and the 5G PPP. For the time being, after restructuring of the ETPs and establishment of the 5G PPP, the following mailing lists (selection of main lists) are maintained by the NetSoc project.

NetWorld2020 mailing lists:

- full-members@networld2020.eu;
- coop-members@networld2020.eu;
- expertgroup@networld2020.eu;
- satcom-wg@networld2020.eu;
- sb@networld2020.eu;
- sb-and-observers@networld2020.eu;
- members@networld2020.eu;
- industry@networld2020.eu;
- research@networld2020.eu;

- sme@networld2020.eu

NEM Initiative mailing lists:

- info@nem-initiative.org
- NEM-EG@nem-initiative.org
- NEM-SB@nem-initiative.org
- NEM-SB-all@nem-initiative.org (including observers)
- NEM-SB-open@nem-initiative.org
- Nem-participants@nem-initiative.org

5G Infrastructure association mailing lists:

- assoc-all-members@5g-ppp.eu;
- assoc-board@5g-ppp.eu;
- assoc-full-members@5g-ppp.eu;
- assoc-full-members-plus-EC@5g-ppp.eu

On request, the NetSoc project also provided document repositories for various discussion groups in the initiatives mentioned above.

2.4 Project representation

Representations of the NetSoc project members at various occasions are listed below.

- Mohr, W.: P8 – Horizon 2020: Europe’s Major New Collaborative Research Programme. Invited panel presentation and participation. IEEE ICC 2013, Budapest, Hungary, June 12, 2013.
- Mohr, W.: Future Communication Networks towards 2020. Panel session at 24th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications – PIMRC 2013, September 8 to 11, 2013, London, UK.
- Magen, J.: Presentation of the status of the NetSoc promotional activities for the new ETP and 5G PPP. Net!Works Steering Board Meeting, Brussels, September 18, 2013.
- Mohr, W.: Advanced 5G Network Infrastructure for the Future Internet – Proposal for a Public Private Partnership in Horizon 2020. IPP (Industry Partner Program) Event 2013, Dresden, TU, Germany, October 10, 2013, invited presentation.
- Mohr, W.: Support of innovative SMEs as part of European collaborative research framework programs. WWRF meeting No. 31, Vancouver, Canada, October 22 – 24, 2013, invited presentation.
- Mohr, W.: Network infrastructures and services towards 2020. Networking Session at ICT Conference 2013, Vilnius, Lithuania, November 8, 2013.
- Mohr, W.: Panel Session XI: Future Internet. 27th IEEE Annual Computer Communications Workshop (CCW), November 13-15, 2013, Niagara Falls, Ontario, Canada, invited presentation.
- Magen, J.: Presentation of the status of the NetSoc branding activities for the new ETP and 5G PPP. “New ETP” Steering Board Meeting, Brussels, December 5, 2013.
- Magen, J.: Presentation of the status of the NetSoc branding activities for the new ETP and 5G PPP. “New ETP” Steering Board Meeting, Brussels, March 11, 2014.

- Magen, J.: Presentation of the SME Working Group. “New ETP” Steering Board Meeting, Brussels, March 11, 2014.
- Mohr, W.: Overview presentation on 5G PPP. Future Internet Assembly 2014, Athens, Greece, March 20, 2014.
- Mohr, W.: 5G PPP Overview. Photonics21 Annual Meeting, Brussels, March 28, 2014, invited presentation.
- Mohr, W.: European Research towards 5G systems in Global Context. IWPC workshop 5G – Rethinking Wireless Infrastructure, Oxford, UK, April 1 – 4, 2014, invited presentation.
- Mohr, W.: Global research activities on 5G communication networks. Panel P7: Global research activities on 5G communication networks. IEEEWCNC 2014, Istanbul, Turkey, April 6 – 9, 2014, invited panel organizer and chair.
- Mohr, W.: 5G Infrastructure PPP Information Day. April 28, 2014, 5G PPP Information Day, Paris, France.
- Mohr, W.: European research activities on 5G communication networks in the 5G PPP in Horizon 2020. ICT (International Conference on Telecommunications) 2014, Lisbon, Portugal, May 4 to 7, 2014, invited keynote presentation.
- Mohr, W.: 5G Research in Europe in Horizon 2020. WWRF Meeting, Marrakesh, Morocco, May 20 to 22, 2014, invited presentation.
- Mohr, W.: Opening remarks and conclusions. May 28, 2014, 5G PPP Information Day, Brussels, Belgium.
- Chuberre, N.: SatCom roles in 5G, May 28, 2014, 5G PPP Information Day, Brussels, Belgium.
- Magen, J.: Introduction of the “Ideas that don’t fit the strands” session and moderation of the session. May 28, 2014, 5G PPP Information Day, Brussels, Belgium.
- Mohr, W.: 5G-PPP – The European Approach on 5G Research. NGMN Partner Forum, June 3, 2014, Bonn, Germany, invited presentation.
- Mohr, W.: How 5G will contribute to the Future Internet. Invited presentation in panel session 2: Communications – Networking. Future Internet Summit, Luxembourg, June 12 and 13, 2014.
- Mohr, W.: The 5G Infrastructure Public Private Partnership. Networld2020 Expert Group Workshop, Bologna, June 23, 2014.
- Chuberre, N.: SatCom research topics in 5GPPP, NetWorld2020 Expert group Workshop, Bologna, June 23, 2014.
- Mohr, W.: Invited panel participation in Panel 1: On the 5G Research, Innovation and Collaboration Frameworks looking at a Global Agreement. EuCNC 2014, June 24, 2014, Bologna, Italy.
- Mohr, W.: Workshop The 5G PPP: Vision and Opportunities. Presentation of the 5G Infrastructure Association, EuCNC 2014, June 26, 2014, Bologna, Italy. The video prepared by NetSoc was also shown at this workshop.
- Magen, J.: NetWorld2020 Steering Board meeting: Presentation of the branding activities performed by NetSoc for the 5G PPP and NetWorld2020, June 27, 2014, Bologna, Italy.
- Magen, J.: NetWorld2020 Steering Board meeting: Presentation of the SME Working Group for endorsement. June 27, 2014, Bologna, Italy (*the presentation was given by Sabino Titomanlio from MBI in the absence of J. Magen who prepared the presentation*).

3 PROMOTION SUPPORT

3.1 Branding activities

The branding activities and the production of the associated PR material was performed by the NetSoc project for the NetWorld2020 ETP and for the 5G PPP, in strong liaison with the NetWorld2020 Steering Board on the one hand, and the 5G Infrastructure Association and the European Commission whenever relevant on the other hand.

Considering the schedule for the set-up of the NetWorld2020 ETP and for the 5G Infrastructure Association, these activities could not be performed before the last months of the NetSoc Project. Indeed the discussions between Net!Works and ISI to agree on the new ETP, and the set-up of the 5G Infrastructure Association legal structure and General Assembly took more time than anticipated when NetSoc was initiated.

In order to select the company in charge of the branding activities, an RfP (Request for Proposal) was drafted and released to about 20 communication and PR agencies. In order to support InterInnov in charge of the process, a group of persons from Netsoc project reviewed the proposals, pre-selected proposals for final decision by the Networld2020 Steering Board for decision.

The process which was followed included the following steps:

- Suggestions for 3 names for the new ETP; selection of the preferred name by the NetWorld2020 Steering Board.
- Design of 3 logos for the NetWorld2020 ETP; selection of the preferred logo and comments by the NetWorld2020 Steering Board.
- Design of 3 logos for the 5G PPP; selection of the preferred logo and comments by the 5G Infrastructure Association General Assembly.
- Design and layout of the associated PR material and web sites (see details below).

We had indeed to start first with the selection of the ETP name which was required to design the logo; and then of the logos as the logo have an influence on the layout and colours for the rest of the PR material.

The ETP Steering Board, which was elected as agreed upon by the former members of Net!Works and ISI, selected finally “NetWorld2020” as the name of the new ETP.

Among the three logos proposed for the NetWorld2020 ETP and for the 5G PPP, the logos presented in Figure 7, were finally selected.



Figure 7: NetWorld2020 and 5G PPP logos

There had been a request for both logos (and associated PR material) to show a certain level of consistency, which is shown in those logos.

The PR material and the web sites were then designed (see details in section 3.2). Considering the delay in the set-up of both the ETP and the 5G PPP, the new branding has been promoted especially on the side of the 5G PPP. Actions to promote the name of the new ETP and its branding shall be planned in the coming months.

For the 5G PPP, the new logo and then the new PPT templates were used in the 5G PPP information days organized in Paris on 28 April 2014, and in Brussels on 28 May 2014. The PR material (5G PPP roll-up and 5G PPP video) was first used at the European Conference on Networking and Communications (EuCNC) at the 5G PPP Information event on June 26, 2014 in Bologna.

PR material for both NetWorld2020 and the 5G PPP is now available for further use

Beside the extensive branding activities related to the NetWorld ETP and the 5G PPP, the NetSoc project also supported similar activities within the NEM Initiative. However, in accordance with decision of the NEM Steering Board, this ETP took a different approach:

- 1) First decision was made to keep the acronym “NEM” in the new ETP brand
- 2) The new ETP title have been chosen by the Steering Board – “New European Media”
- 3) A motto of the ETP was also chosen by the Steering Board – “Driving the future of digital experience”
- 4) In the last step, the NetSoc project organised a competition for the new NEM logo by using an open designer community, based on the source crowding. After the competition end, the NEM Executive Group selected the new logo (Figure 8)



Figure 8: NEM logo

3.2 Promotion material

The activities performed in relation with the PR material associated to the NetWorld2020 ETP and the 5G PPP were as follow:

- Designing, printing and releasing roll-ups and posters for NetWorld2020 and the 5G PPP
- Designing, printing and releasing flyers for NetWorld2020 and the 5G PPP
- Designing and releasing Word and HTML newsletter templates for NetWorld2020 and the 5G PPP
- Designing and releasing PPT templates for NetWorld2020 and the 5G PPP
- Designing and releasing the 5G PPP video
- Re-designing and releasing the NetWorld2020 and the 5G PPP web sites

All PR material followed a similar design and layout, included the selected logos, and handled the consistency between NetWorld2020 and the 5G PPP. It is available in Annex A.

In the case of the NetWorld2020 ETP, the main objective of the PR material is to make the telecommunications ecosystem aware of the activities and moreover have the relevant organisations register and participate in the activities of the ETP. In the case of the 5G PPP, the main objective is once again to make the ecosystem aware of the 5G PPP and its calls for proposals, and to show that it is open to any participant eligible under the rules for participation of H2020.

The PR material was designed with a group of NetWorld2020 and 5G IA General Assembly members. Indeed the material had to be carefully laid out in terms of content in a short time, and the experience with the selection of the name and the logos showed that this could not have been achieved with the consultation of all the members of the Steering Board and General Assembly as this process was much longer than anticipated.

The video in particular was designed with the active involvement also of the European Commission, from the first story board to the final release.

The NetWorld2020 and the 5G PPP web sites are now up and running, where the PR material is available, including the 5G video which is also available at <http://5g-ppp.eu/video/> and has been also advertised by the European Commission at http://europa.eu/rapid/press-release_MEMO-14-463_en.htm.

The 5G PPP was also advertised by the European Commission in light of the agreement that was signed between the EU and South Korea (cf. <http://5g-ppp.eu/landmark-agreement-between-the-european-commission-and-south-korea-on-5g-mobile-technology/> and <http://5g-ppp.eu/european-commission-and-south-korea-sign-a-landmark-agreement-on-5g/>). Other agreements are now being planned with Japan and China.

4 ORGANISATION OF EVENTS

4.1 Specific project events

4.1.1 Expert Group meetings

Expert Group meeting Stuttgart, 5-6 February 2014

On 5/6 February 2014, the Expert Group hold its meeting in Alcatel-Lucent in Stuttgart with participants from all sectors of the ICT industry encompassing experts from the two former ETPs ISI and Net!Works under the umbrella of the newly formed ETP NetWorld2020. There was a huge interest in attending and contributing but given the space constraints of the premises the participation had to be limited to about 70 attendees.

The goal of the workshop was to identify and agree on requirements and problems of Networking beyond 2020 and on a number of concrete strategic research topics. In total there were 31 presentations over one and a half days. It was followed by four breakout sessions to discuss white papers contents. The groups then rejoined in a plenary session to present their findings from the breakout sessions and the contents of the white papers.



Figure: Eran Raichstein from IBM Haifa Research Lab presents on Network Virtualization in Data Centres

The meeting agreed to prepare four whitepapers. The work on these white papers was immediately started. The whitepapers will feed into a SRIA document which will be submitted as input for upcoming versions of the 5GPPP/H2020 R&I programme.

The slides presented at the meeting were made available to all ETP members for download on the Expert Group's FTP space.

The following white papers were agreed:

1. Requirements, challenges, system elements (broadcast, mobile, satellite D2D)
 - Chair: David Soldani, Dirk Trossen
2. Virtualisation and its impact on future architectures and networking
 - Chair: Artur Azcorra

3. Networking/connectivity
 - Chair: Rui Aguiar
4. Wireless technologies / radio access / physical layer
 - Chair: Emilio Calvanese Strinati, Matti Latva-Aho

In addition, the SatCom WG initiated the drafting of a complementary white paper called “SatCom roles in 5G” with the vision that the 5G network shall be designed by 5GPPP for worldwide deployment and not restricted to Europe.

Expert Group meeting Bologna, 23 June 2014

The next Expert Group meeting was collocated with EuCNC’2014 (European Conference on Networks and Communications) in Bologna on 23 June 2014. About 100 participants attended. The goal of the workshop was to give a status overview of the whitepapers and to highlight further topics that are being considered for inclusion. Emphasis was given to experimental research facilities for 5G.

At the workshop it was agreed to launch another White Paper on “5G Experimental Facilities in Europe”. Roberto Verdone (University of Bologna) and Antonio Manzallini (Telecom Italia) have accepted to lead the preparation of the White Paper.

As before, the slides presented at the workshop were made available to all ETP members for download on the Expert Group’s FTP space.

Agendas from the both Expert Group workshops are included in Annex B.

4.1.2 NetSoc at ICT event 2013

The NetSoc project organised a networking session at the ICT Conference 2013 in Vilnius, Lithuania on November 8, 2013. Networking sessions were organized in small booths in the exhibition area of the event. NetSoc gave two presentations as an introduction to the session:

- Kennedy, D.: Growing Communities: Sectors, SMEs and PPPs.
- Mohr, W.: Network infrastructures and services towards 2020.

About 20 people attended the session. Space limitations did not allow a bigger audience. The introductory presentations were followed by extensive discussions with participants in the session. Both, the involvement of SMEs in Horizon 2020 and PPPs as well as future communication networks were discussed.

The discussion on SMEs was related to means for involvement and the conditions in Horizon 2020 and objectives like an involvement of 20 % SMEs in the program. The European Technology Platforms and PPPs will establish means to support SMEs to join consortia like information and networking events. These events are organized and supported by the NetSoc CSA.

Requirements on future communication networks from the today’s perspective raised questions on potential business models and technical challenges. These issues will be addressed in Horizon 2020 and in particular in 5G PPP projects.

NetSoc supported a booth at the conference and provided flyers on the ETPs Network2020 (in November 2013 this was still called Net!Works – ISI) and NEM.

4.1.3 NetSoc networking session at FIA event

The NetSoc project initiated organisation of a networking session “Innovation potential in Future Internet and FIRE programmes and opportunities for SMEs” at the Future Internet Assembly (FIA) event in Athens, 17-20 March 2014. In order to enlarge potential audience for the networking session and ensure proper representation of all relevant factors, the session was organised in cooperation with FUSION, CONCORD, and European Investor Gate projects and supported by the 5G PPP Association. The NetSoc project was responsible for overall session organisation and promotion, including invitations to the speakers and support for SMEs to attend the event.

Purpose and audience of the session

Because of the interests for the networking session, the largest room for the parallel FIA sessions was allocated by the event organisers, where more than 50 participants were present¹.

The session targeted discussion to answer the following key questions:

- How can we identify innovation potential of the Future Internet initiatives (FI-PPP, 5G PPP and FIRE) and where are concrete opportunities for SMEs and start-ups?
- What is the relation between the initiatives and how can we ensure continuity through the programmes in respect to development of new innovative applications and sustainable business models?
- How can SMEs get funding and access to testbeds for free to develop their own product?

Of course, the main targeted audience were representatives of SMEs, but also relevant stakeholders from industrial and academic environments were targeted, in order to better understand needs and constraints for SME participation in collaborative projects and also to elaborate on the best possible ways to involve SMEs in their research and innovation activities.

Agenda

- Introduction, Position of network related PPPs in the research landscape, Expansion phase of the FI-PPP – Halid Hrasnica (Eurescom) – NetSoc project
- Identifying business opportunities for SMEs and startups in PPP programmes – Alexandra Rudl (Business initiative Baden-Württemberg: connected) – EIG project
- Position and opportunities of SMEs in FIRE+ initiative - Jean-Charles Point (JCP-Consult) – FUSION project
- 5G PPP overview – Didier Bourse (Alcatel-Lucent) – NetSoc project
- The SME perspective - reasons to take part (or not) in Future Internet Programmes, Mirko Ross (Echolot)
- Open discussion – all session participants
- Wrap-up – Halid Hrasnica (Eurescom) – NetSoc project

¹ Registrations for the FIA event were handled by the event organisers for all sessions, so that exact number cannot be provided.

Key session message:

In order to participate in EU funded research and innovation activities, ensuring efficient and successful participation of SMEs, it is necessary to identify the right funding mechanisms where the SMEs should try to get involved, distinguishing among medium and long term targets of the SMEs, dedicated to gathering knowledge on particular technological areas, and their shorter targets aiming at quick product and/or service development and deployment.

Summary

The goal of the currently running FI-PPP is to explore service platform technologies, whereas the 5G PPP within Horizon 2020 will focus on future network infrastructures, ensuring a smooth transition from 4G to 5G on the infrastructure level and from Social to Professional Internet on the application level. The 5G PPP will develop an advanced 5G network infrastructure for the Future Internet in order to take into account new requirements on communication networks and from vertical sectors, which will open new opportunities for advanced generic enablers for the Future Internet. The FI-PPP and the 5G PPP are complementary to each other and the session will address their relation and means of cooperation. Moreover the existing FIRE testbeds are still available for use by SMEs and other stakeholders in the Horizon 2020 programme. Right involvement of SMEs and start-ups is essential for achieving this goal as well as appropriate collaborative models for these actors to efficiently and successfully participate in these programmes.

In respect to the FI-PPP programme, the most important opportunity form SMEs and start-ups is given by its 3rd implementation phase, where 80,000,000€ are available for them to develop and deploy new and innovative applications on the top of the Future Internet infrastructure, established during the 1st and 2nd FI-PPP phase. On the other hand, the 5G PPP is focused on establishment of a new network (wireless and wireline) infrastructure, where participation of SME at a level of 20% is expected. The SMEs involved in the 5G PPP are expected to bring their particular technological expertise and develop it further through collaboration with industry and academic stakeholders which will be involved in related projects. Finally, a number of projects in the FIRE area organise Open Calls for additional project partners and third parties to provide their testbeds within established FIRE infrastructures or to perform experiments by using the FIRE experimental facilities. Both options are very attractive for the SMEs to better utilise their resources and similar activities are planned in the scope of FIRE+ initiative within Horizon 2020 programme. Some of the FIRE projects (e.g. Fed4FIRE) already started to organise Open Calls dedicated to SMEs with simplified procedures to address the Open Calls and perform planned work without unnecessary overhead.

Recommendations

Public funding for SMEs makes particularly sense in the early innovation stage when the product or service prototypes are not yet ready and there is still need for the SMEs to do research in particular and focused areas. In this case, the European funding, e.g. through Research and Innovation actions can be of advantage. However, the European funding as such should never be the main objective because participation in the collaborative projects for SMEs means also to take further related organisational activities, which might represent significant overhead for small organisations if the project focus is not very close to their medium business targets. On the other hand, there is a variety of instruments supporting pre-commercial activities and targeting in particular small organisations, where SMEs can take part, to realise their short term objectives.

In order to make it easier for the SMEs to choose the right funding instruments, supporting the right type of their activities, corresponding information should be properly consolidated and made available for wide research community, preferably, by establishing a proper one-stop information shop for this purpose.

4.1.4 5th Usage Areas Workshop

The 5th Usage Areas Workshop “Future Internet – Enabling opportunities for vertical application sectors”, organised by the NetSoc project, was collocated with the 1st European Conference on the Future Internet (ECFI-1) in Brussels, on 2/3 April 2014. The session aimed at cultivating a common discussion between the stakeholders from ICT and vertical application sectors using, and planning to use, the services and facilities of the future communications network infrastructures. For example, the addressed vertical sectors include, but are not limited to: Energy, Smart Cities, Transport, Tourism, Agriculture, Health, and Manufacturing. Besides addressing and discussion the needs of the big industry players in these application sectors, the session also focused on the role of innovative SMEs, their areas of interests, and opportunities to participate.

This workshop session follows the successful Future Internet usage area workshops, organised by FP7 projects EX-FI and NetSoc in 2010, 2011, 2012, and 2013. A key theme of the session was to identify the opportunities for supported ICT cross-sector collaborative research in FI-PPP Phase 3 and planned Open Calls for developers of innovative applications. The workshop also addressed related opportunities for SMEs and further industry and academic players in the European research and innovation programmes Horizon 2020 and Celtic-Plus.

Agenda

- Requirements on ICT from transport, logistics and agri-food sectors - Sjaak Wolfert, Wageningen University, FIspace project
- Smart Grids requirements on ICT - Fiona Williams, Ericsson, FINESCE project
- Manufacturing and ICT sectors interaction - Oscar Lazaro, Innovalia, FITMAN project
- eHealth domain and Future Internet - Anastasius Gavras, Eurescom, FI-STAR project
- Supporting Creative SME Content Creators - Michela Magas, Stromatolite
- Start implementing FI-PPP 3rd phase: the INSENCE project - Gabor Vicze, project manager, INSENCE
- Dynamic Collaboration in Supply Chains handling Perishable Goods / Focus on Food and Flowers - Harald Sundmaeker, ATB, FIspace & FInish project

The session was moderated by Halid Hrasnica, Eurescom (NetSoc project).

Session organisation and results

The NetSoc project was in charge of the session organisation, which included invitation to the vertical sectors and other communities to present and participate. Around 50 participants¹ were present at the session, which besides the presentations also included a number of interested discussions.

The results of the presentations and discussion from the 5th Usage Areas workshop have been gathered by the NetSoc WP2 (Task 2.1) and documented in corresponding project deliverables (e.g. D2.6).

4.2 ETP related events and meeting

In the scope of its activities, the NetSoc project supported organisation of various meetings and events related to the supported ETPs. This support included all necessary meeting logistics, preparation of agendas, registration, and summary of the events (minutes, action points, etc.).

The following NetworkWorld2020 meetings and events have been supported by NetSoc:

- Net!Works SB meeting in Brussels, 18 September 2013
- ISI GA, Net!Works GA and NetWorld2020 launch event, Brussels, 29 October 2013
- NetworkWorld2020 SB meeting in Brussels, 5 December 2013
- NetworkWorld2020 SB meeting in Brussels, 11 March 2014
- NetworkWorld2020 SB meeting in Bologna, 27 June 2014

The following NEM meetings and events have been supported by NetSoc:

- 19th NEM Steering Board meeting in Paris on 18 July 2013
- 16th NEM General Assembly in Nantes on 28 October 2013
- 7th NEM Summit in Nantes on 28-30 October 2013
- 20th NEM Steering Board meeting in Nantes on 30 October 2013
- 21st NEM Steering Board meeting in Paris on 5/6 March 2014
- 17th NEM General Assembly in Brussels on 1 April 2014

Furthermore, the NetSoc project also organised regular audio conferences of the NEM Executive Group (in average two per month) and further NEM working groups.

4.3 5G PPP support

The NetSoc CSA organised four 5G PPP information sessions/days in order to support 5G PPP and the 5G Infrastructure Association, which has the task to inform the community about opportunities for collaborative research in Horizon 2020 ICT14 and to mobilise the launch of consortia and project proposals.

- A first information session was organized on March 20, 2014 at Future Internet Assembly in Athens. Representatives from the EU Commission and 5G PPP provided overview presentations, which were followed by discussion with the audience. About 80 people attended the session.
- The second information session was organised on 3 April 2014 at the ECFI (European Conference on the Future Internet) in Brussels as part of its plenary programme, where around 150 people attending the session.
- A full information day took place on April 28, 2014 in Paris, which hosted by Orange. After an overview session short proposal and profile presentations were given by participants. This meeting had more a networking character. There were about 170 participants in the event.
- A second full information day was organized on May 28, 2014 in Brussels, which was hosted by the EU Commission in Centre Borchette. Only short introductory presentations were given by Commission representatives and 5G PPP. The main objective of the meeting was to provide the opportunity to the

community for short presentations of their profiles and ideas and to enable networking. More than 100 participants attended the meeting.

- At EuCNC 2014 in Bologna a 5G PPP workshop took place on June 26, 2014. This workshop was organized by the NetSoc partner University of Bologna. In this event mainly white papers from the Expert and SatCom Group in the Networld2020 ETP were presented as the starting point for input for the next work program 2016/17 of Horizon 2020. More than 150 participants were in this meeting.

4.3.1 Feedback from 1st 5G PPP Information Day

In order to receive a feedback from the 5G PPP information days organised by the NetSoc project, the NetSoc project performed a survey among participants of the 1st 5G PPP information day, held on 28 April 2014 in Paris, so that appropriate improvements of organisation of the 2nd information day could be done². Answers from 27 participants of the workshop are summarised in the table below (Table 3) - scale of 1 to 10 was used, where 1 means very poor and 10 means excellent – 27 answers were provided.

Table 3: Feedback from the 1st 5G PPP Information Day

Question	Opinion / answer
Was the event well-advertised and easy to find?	8.52
Was the registration process clear and efficient?	8.93
Was the opportunity to submit a presentation / idea obvious?	8.26
Was submitting a presentation easy?	8.00
Are you representative of a SME?	22% (sample)
Part 1: 5G-PPP Organisation and working structure:	
Did these presentations offer information you were looking for?	7.77
Was there sufficient time to ask questions and discuss the points made?	6.88
Part 2: Addressing the challenges – Preparing for 5G PPP Call	
Does the pre-structuring model help you plan you project proposals?	7.33
Does the pre-structuring model help you plan your project participations?	7.11
Is the pre-structuring model complete?	6.52
How effective is the short presentation for making new relationships?	6.59
How useful was the event for finding roles and partners?	6.30

In addition, the survey also included a field for any other comments, which were mainly used to provide comments on concrete research topics etc., but in couple of the cases the

² Other information workshops have been collocated with other events, so that was not possible to perform exact participants' surveys.

participants required more time for the event, larger venue, as well as more time and space for networking.

5 CONCLUSIONS

After establishment of the NetWorld2020 ETP, through joint activities of Net!Works and ISI ETPs, the NetSoc project designed and maintained the corresponding website, available at <http://networld2020.eu/>, containing all actual and for the addressed community relevant information and including particular sections on the 5G PPP and for the SME support. In the same way, the NEM website (www.nem-initiative.org) has been also restructured in accordance with the rebranding activities carried out with support of the NetSoc project.

In order to support promotion of the 5G PPP the NetSoc project took the responsibility to establish and maintain the 5G PPP website (<http://5g-ppp.eu/>), including creation of a temporary website, to serve the community and to support Industry Launch event in Barcelona end of February 2014, before finalisation of the 5G PPP branding activities. Furthermore, the NetSoc project supported the 5G Infrastructure Association in 5G PPP to develop and provide a Brokerage Platform between interested parties and emerging consortia, which is available on the 5G PPP website.

The European Future Internet Portal (<http://www.future-internet.eu/>) have been maintained from the project start, which was very important for the community and spreading information to the targeted audiences during the transition period, when Net!Works, ISI, and NEM ETPs have been restructured and the corresponding websites have been redesigned. The NetSoc project website has made available under the new domain (<http://networld2020.eu/netsoc/>), as a part of the NetWorld2020 website.

The branding activities and the production of the associated PR material was performed by the NetSoc project for the NetWorld2020 ETP and for the 5G PPP, in strong liaison with the NetWorld2020 Steering Board on the one hand, and the 5G Infrastructure Association and the European Commission whenever relevant on the other hand. Beside the extensive branding activities related to the NetWorld ETP and the 5G PPP, the NetSoc project also supported similar activities within the NEM Initiative. As results of the performed activities, the NetSoc project created logos and further identity elements of the considered ETPs and the 5G PPP. Based on the created logos, significant marketing material has been produced, including a promotional video on 5G PPP.

During its second year (July 2013 – June 2014), the NetSoc project organised a number of meetings and workshops, where the main events organised are listed below:

- Expert Group meeting Stuttgart, 5-6 February 2014,
- Expert Group meeting Bologna, 23 June 2014,
- NetSoc networking session at FIA event dedicated to SMEs,
- 5th Usage Areas Workshop, and
- a number of ETP related meetings and events.

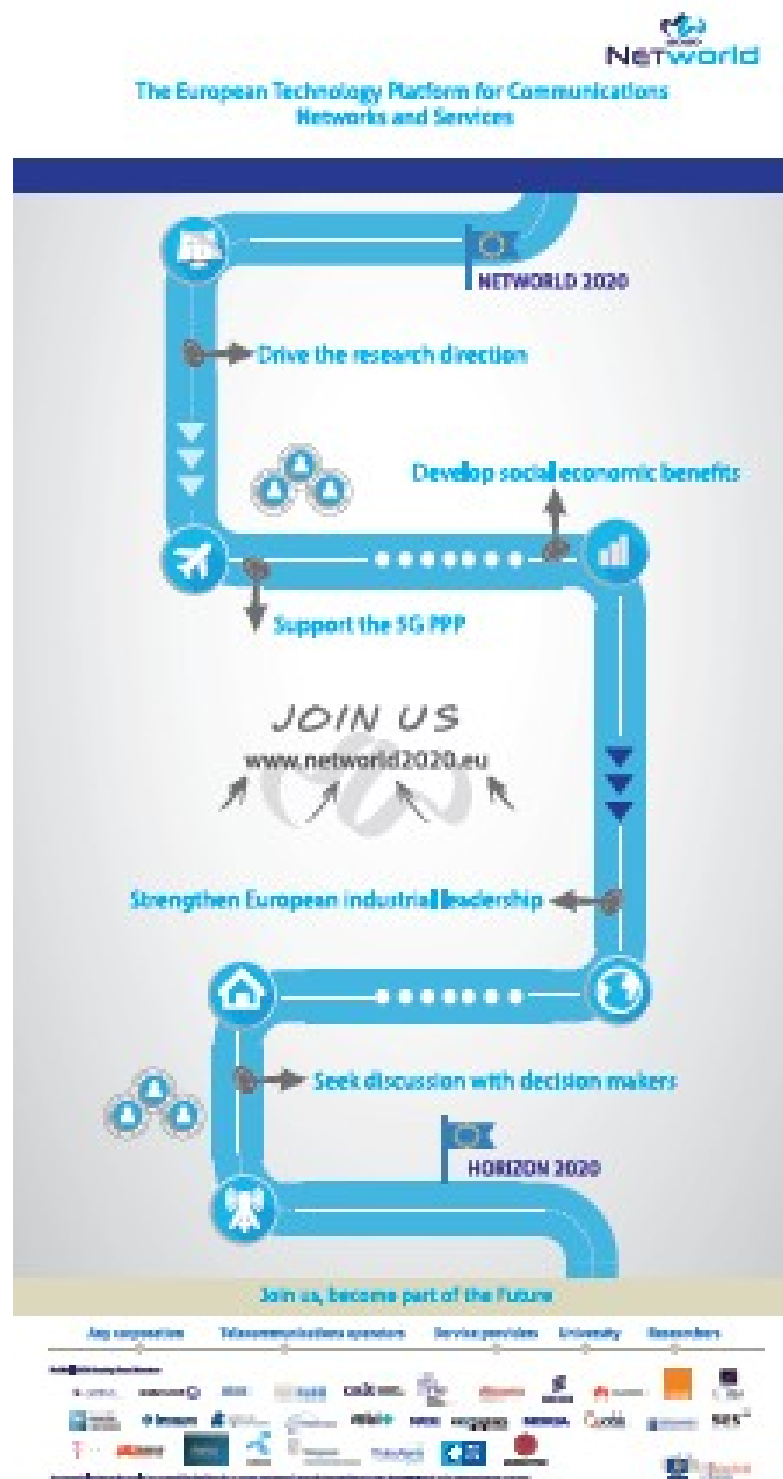
In respect to promotion of the 5G PPP, the following information days and sessions have been organised by the NetSoc project:

- 20 March 2014 at FIA in Athens,
- 3 April 2014 at the ECFI-1 in Brussels,
- Full information day on 28 April 2014 in Paris,
- Full information day on 28 May 2014 in Brussels, and
- On 26 June 2014 at EuCNC 2014 in Bologna.

ANNEX A PROMOTION MATERIAL - OVERVIEW

A.1 Logos







A.3 Flyers

www.networld2020.eu

NETworld
The European Technology Platform for Communications Networks and Services

Networld
Founded by NetWorks and ISI

NetWorld2020 is the European Technology Platform for **communications networks and services**

NetWorld2020 is the European Technology Platform for communications networks and services. Communications networks enable interaction between users of various types of equipment, either mobile or fixed; they are the foundation of the Internet. The NetWorld2020 European Technology Platform gathers players of the communications networks sector: industry leaders, innovative SMEs, and leading academic institutions. NetWorld2020 is the new structure created by the former NetWorks and ISI European Technology Platforms in the ICT domain.

Member

ANY LEGALLY ESTABLISHED CORPORATION
UNIVERSITY - RESEARCH INSTITUTE

Area

MOBILE AND WIRELESS

Time

HORIZON2020 AND BEYOND

Opportunity

DRIVE THE RESEARCH DIRECTION

A new initiative to improve services to citizens in the near future

Efficient telecommunication infrastructures have a positive influence on the quality of life of the people in high-income countries and on life expectancy in low- and middle-income economies. When Europe invests in research and innovation in ICT and telecommunication infrastructures, it ultimately leads to sustainable development and a better quality of life for the people in Europe and beyond.

The Missions of Networld2020

DEVELOP POSITION PAPERS ON TECHNOLOGICAL RESEARCH-ORIENTED AND SOCIAL ISSUES

UPDATE STRATEGIC RESEARCH AND INNOVATION AGENDA IN COMMUNICATION NETWORKS DOMAIN

SUPPORT CRITICAL COMMUNICATION NETWORKS POLICY ISSUES

INTERACT WITH DECISION MAKERS IN THE PUBLIC AND PRIVATE DOMAINS

SUPPORT THE BB-PFP

STRENGTHEN EUROPEAN INDUSTRIAL LEADERSHIP IN NETWORKING TECHNOLOGY AND SERVICES

The Networld Society Project has received funding from the European Commission's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 517765.

Networld Society

NETWORLD2020 SUCCESS STORIES

Get inspired by our **REAL SUCCESS**

Join us, become a pioneering contributor in the sector of communications networks and services

Mobile Communications

The introduction of mobile technology accelerated the global growth in the Information and Communication Technology (ICT) sector. This sector now generates 5% of European GDP, with an annual value of € 660 billion.

ICT has become a ubiquitous technology and investments in ICT are responsible for at least 50% of European productivity growth in recent years. We already see a dramatic increase in data traffic on converged mobile and fixed communications networks generated by smart city, smart energy, environmental monitoring and health applications.

By 2020, enormous growth in network traffic is expected. The European success story resulting from the investment in collaborative research projects is certain to continue for many years to come, if Europe continues to invest in collaborative research.

Broadband Internet Access

The Internet has become a basic utility for homes and businesses in the same way as electricity or water. Affordable, reliable and secure broadband connectivity is essential to making full use of the services that the Internet offers nowadays. The demand for even more high-speed connectivity is constantly growing, driven by new Internet services with multi-media rich content.

To take full advantage of such services, faster, smarter and cheaper high-speed access network technologies are required. Work by scientists in European research programmes is making ultra-high-speed broadband networks a reality for all Europeans, using technology that can cost-effectively deliver up to 10Gb/s both to your front door and within the home network.

Availability of cost-efficient and highly scalable broadband access technologies is critical. If all European citizens are to benefit from a broadband Internet connection by 2013, from a 10Mbit/s connection by 2020 and that at least 50% of households have a 100 Mbit/s connection by 2020, as provided by the European Commission in its Digital Agenda.

Optical Communications

Highly reliable and cost-efficient, 50% of all digital information is transported over optical networks. Fiber-optic communication is the backbone of the information society today. It will become even more important in the future.

7 of the top 20 network operators are headquartered in Europe. 6 of the 20 largest optical equipment manufacturers have major R&D centres in Europe and represent more than 30% of the global equipment market. Two of the top 3 component manufacturers have operations in Europe.

By 2020, at least a 10-fold increase in fiber capacity and 10x per wavelength will be required. Fiber communication will move closer to the user and will become a critical infrastructure in datacenters, private, home, vehicle and sensor networks. Based on its strength and expertise, Europe is well positioned to respond to these challenges. It continues to invest.

Mobile Satellite Systems

Mobile Satellite Systems (MSS) offer voice and data services to mobile professional, Governmental, and the consumer enables users worldwide. They address bandwidth as well as reliability, speed and almost round-the-clock service.

The expertise of the European manufacturing space industry in the decade has been developed thanks to its involvement in R&D projects carried out under European Commission, European Space Agency and National Government.

In the 2020s, MSS are expected to contribute to a satellite-based service offer to terminals with reduced size and to provide increased performance towards high speed broadband, with higher spectral and cost efficiency.

Satellite Broadband

The value of broadband access as a socioeconomic benefit is not disputed. Governments worldwide place an increasingly high value on the ability of their citizens to participate in the knowledge economy through broadband Internet in order to stimulate economic growth.

Increased speeds and equality of access are the key criteria and political motivators for broadband services.

The European Digital Agenda aims to ensure that 30 Mbit/s is available to all Europeans by 2020. Current research projects aim for terabit improvements in satellite capabilities by 2020 which will be needed to deliver very high speed broadband.

NETworld

"Europe's place in this future knowledge society will depend on our ability from this moment forward to both facilitate and manage 'knowledge-driven' change on our continent, as European Investment Foundation, The Digital World in 2050"

Benefit for Participation

Inspiration

Leadership

Innovation

Implementation

New Vision

NetWorld2020 Members also benefit from receiving up-to-date information and news on research activities and results, information about opportunities for participation and funding, and information on NetWorld2020 publications, consultations, activities and events. Full members have voting rights in the General Assembly. Members also have the opportunity to contribute and provide feedback to the NetWorld2020 Strategic Research and Innovation Agenda (SRIA).

Join us, become a Member

If you want to become a member of NetWorld2020, please fill in the Membership Application Form: <http://www.networld2020.eu/membership-application-form/>

www.networld2020.eu

www.5g-ppp.eu

The European path towards global next generation communication networks

the 5G infrastructure public-private partnership

THE 5G PPP
The 5G Infrastructure Public-Private Partnership

The 5G Infrastructure Public-Private Partnership, in short 5G PPP is an initiative initiated by the EU Commission and industry manufacturers, telecommunications operators, service providers, SMEs and researchers. The 5G PPP will deliver solutions, architectures, technologies and standards for the ubiquitous next generation communication infrastructures of the coming decade.

Industry manufacturers Telecommunications operators Service providers SMEs Researchers

The 5G PPP will reinforce the European industry to successfully compete on global markets and open new innovation opportunities. The 5G Infrastructure PPP will contribute to enable new services supporting a better quality of life in domains such as health, energy, environment, and transport.

CONTRIBUTION

- IMPROVE QUALITY OF LIFE AND SERVICES
- CONNECTED CITY
- CONNECTED FARM
- CONNECTED TRANSPORTATION
- CONNECTED HEALTH
- SMARTER AGRICULTURE AND LIVELIHOOD
- ACCELERATE ECONOMIC GROWTH
- EMPOWER LOCAL CAPACITIES
- SUPPORT ECONOMIC INNOVATION
- SPEED UP INNOVATION OF SERVICES
- OPEN NEW INNOVATION OPPORTUNITIES
- REINFORCE INDUSTRY COMPETITIVENESS

***** 5G PPP CALL *****
Register <http://5g-ppp.eu/call>

The financial backing is provided by the European Commission (under the Horizon Programme) and the 5G PPP members (plus government of 10 EUs).

Why do we need the 5G infrastructure PPP?

"5G" is currently widely deployed all around Europe for people to access services from their mobile device even faster than what is available on fixed networks (their computers at home). Telecommunication infrastructures built in Europe have helped to improve the quality of life, by contributing to improving services to citizens in many areas that are increasingly dependent on connectivity.

5G is key for enabling to be doing what no telecommunication network can deliver enhanced or accelerated deployment and capabilities that allow the network, infrastructure etc. to operate in providing people, products, companies, markets, services, advantages, economic goals, broader being according to a multiplicity of application specific requirements.

- Health and well-being creation of wireless diagnostic and disease management systems, hospital consultation and emergency support, remote technologies and well-being and personal products and services.
- Energy and environment: detection of urban air pollution, water pollution, floods, forest, volcanic eruptions and other dangerous circumstances.
- Transport: smarter and more integrated transportation systems reduction of traffic congestion through more efficient urban and road traffic control and trip management, vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications, securing services, security and public services and reducing a lot of energy-related problems.

Challenges

- 1,000x increasing network capacity (1,000 times)
- 10x increasing number of people (10 times)
- 10x increasing network usage (10 times)
- 100x saving energy (100 times)
- 10x latency (10 times)

5G Infrastructure PPP Impact

The 5G PPP will provide everywhere to everyone a secure, reliable and dependable Internet with zero perceived downtime for services. The expected impact of the 5G PPP:

- At global level:** Reinforce EU industrial base in network technologies (retaining at least 3.5% of the global market share)
- At societal level:** Ubiquitous access to a wider panel of services and applications at lower cost (increased resilience and connectivity)
- At operational level:**
 - 1000 times more capacity
 - 10x 100 times more connected devices
 - 10x 100 times higher typical user data rate
 - 10 times more energy efficient
 - 10 times more resilient
 - Ubiquitous 5G access (including in low density areas)

www.5g-ppp.eu

ANNEX B AGENDAS FROM EXPERT GROUP WORKSHOPS

B.1 Expert Group Workshop - February 2014

10:30-10:35

Welcome

Andreas Leven, research leader, Bell Labs Germany

andreas.leven@alcatel-lucent.com

10:35-10:40

Workshop Objectives

Rahim Tafazolli, University of Surrey

R.Tafazolli@surrey.ac.uk

10:40-10:55

New ETP and EC 5GPPP

Werner Mohr, NSN

werner.mohr@nsn.com

Session One, Chair: Werner Mohr

10:55-11:10

On the Challenges and Opportunities with 5G in EU H2020

David Soldani and Markus Dillinger, Huawei

david.soldani@huawei.com;markus.dillinger@huawei.com

11:10-11:25

Service Provider Challenges in the timeframe 2020

Marcus Brunner, Swisscom

Markus.Brunner3@swisscom.com

11:25-11:40

Multi-Service RAN for 5G

Hans-Peter Mayer ALU

hans-peter.mayer@alcatel-lucent.com

11:40-11:55

Management for Future

Colin Willcock, NSN

colin.willcock@nsn.com

11:55-12:10

Knowledge-based and bio-inspired intelligence for network management in the 5G world

Panagiotis Demestichas, University of Piraeus

pdemest@unipi.gr

12:10-12:30

Role of satellite in Future Networks

Sandro Scalise, DLR

Sandro.Scalise@dlr.de

Session Two; Chair: Arturo Azcorra

13:30-13:45

Trends in Service Virtualization

Arturo Azcorra, University of Carlos III de Madrid

azcorra@it.uc3m.es

13:45-14:00

Service Virtualization

Miguel Egido, GOWEX

megido@gowex.com

14:00-14:15

Service Virtualization, focusing on NFV

Spyros Denazis, University of Patras

sdena@upatras.gr

14:15-14:30

Network and Service Programmability

Dirk Kutscher, NEC

Dirk.Kutscher@neclab.eu

14:30-14:45

What and how to program and virtualise systems for Managed 5G Networks

Alex Galis, University College London

a.galis@ucl.ac.uk

14:45-15:00

Virtualization of distributed networks (RAN and CN aspects)

Haibin Zhang, TNO

haibin.zhang@tno.nl

15:00-15:15

Modelling NFV and SDN for network service virtualization based on cost and performance metrics

Kashif Mahmood, Telenor

Kashif.Mahmood@telenor.com

15:15: 15:30

Network Virtualization in Data Centres and Cross Data Centres

Eran Raichstein IBM Haifa Research Lab

ERANRA@il.ibm.com

Session Three, Chair: Rui L Aguiar

15:50-16:05

Ubiquitous Networking: Paving the way towards 5G Communications

Christos Politis, Kingston University

C.Politis@kingston.ac.uk

16:05-16:20

What connectivity in a hyper-connected Network

Carla-Fabiana Chiasserini, Politecnico di Torino

chiasserini@polito.it

16:20-16:35

Improved Connectivity and Service Experience in Heterogeneous 5G Deployments

S. Andreev, Y. Koucheryavy (Tampere University of Technology), S. Talwar (Intel Labs)

Presented by: Sergey Andreev

sergey.andreev@tut.fi

16:35-16:50

IoH - Internet of Humans - and 5G

Roberto Verdone, Università di Bologna

roberto.verdone@unibo.it

16:50-17:05

Spectrum Micro-trading

Kashif Mahmood, Telenor

Kashif.Mahmood@telenor.com

Second day

Session Four, Chair: Emilio Calvanese Strinati

6th of Feb

09:15-09:30

Wireless SDN

Xavier Perez Costa, NEC

Xavier.Perez-Costa@neclab.eu

09:30-09:45

5G - Spectrum sharing below 6GHz vs. new spectrum allocations above 6GHz

Matti Latva-aho, University of Oulu

matla@ee.oulu.fi

09:45-10:00

Service Dependent Spectrum Sharing

Luis M. Correia, University of Lisbon

luis.correia@inov.pt

10:00-10:15

Complexity considerations regarding spectrum management in an ultra-dense network context

Panagiotis Demestichas, University of Patras

pdemest@unipi.gr

10:10-10:30

Broadcast/Uncast Wireless Spectrum Convergence

Symeon Chatzinotas, University of Luxembourg

Symeon.Chatzinotas@uni.lu

10:30-10:45

5G Air Interface Design

Stephan Pfletschinger, CTTC

Stephan.pfletschinger@cttc.es

10:45-11:00

5G in the mmWave bands

Dr Howard Benn and Dr Maziar Nekovee, Samsung Electronics R&D Institute UK

howard.benn@samsung.com; m.nekovee@samsung.com

11:00-11:15

Context as service and radio resource facilitator

Klaus David, University of Kassel

david@uni-kassel.de

11:15-11:30

"Internames" a new concept building on Information Centric Networking, ICN

Nicola Blefari Melazzi; Università degli Studi di Roma - Tor Vergata

blefari@uniroma2.it

Session Five, Rahim Tafazolli

11:50-12:20

Discussions on white papers

13:20-14:50

Breakout Sessions into White Papers, led by Session Chairs

14:50-15:50

Report back from breakout sessions on potential content of the white papers

15:50-16:00

Next steps

End of Workshop

B.2 Expert Group Workshop - June 2014

10:00-10:05

Welcome

Roberto Verdone, RadioNetworks, DEI, Università di Bologna

10:05-10:15

Workshop Objectives

Rahim Tafazolli, University of Surrey

10:15-10:35

Update on EC 5GPPP

Werner Mohr, NSN

Session One, Chair: Dirk Trossen

10:35-10:50

Update on “5G Requirements” White Paper

Dirk Trossen, InterDigital

10:50-11:05

Energy efficiency as a horizontal theme in 5G - The need for coordination and support

Franco Davoli, University of Genoa

11:05-11:20

Is this really about being (10 x everything) and a bit more flexible?

Adam Wolisz, TU Berlin

11:20-11:35

Quality of Experience in 5G and medical applications

Maria G. Martini, Kingston University

11:35-11:55

Role of SatCom in 5G on behalf of the SatCom Working Group

Nicolas Chuberre, Thales Alenia Space

11:55-12:10

Experimental facilities for use by 5GPPP projects

Miguel Egido Cortés, Gowex

12:10-12:25

XIFI pan-European infrastructure (a federation)

Federico Alvarez, UPM

NetWorld2020-Experts Workshop

Room EUROPA, 1st Floor, Palazzo della Cultura e dei Congressi,

Bologna, Italy

12:25-12:40

5G testbed - 5G creativity: flexible radios in flexible networking configurations

Sofie Pollin, KU Leuven

12:40-12:55

5G Vision

Werner Mohr, NSN

12:55-13:30 Lunch Break

Session Two; Chair: Arturo Azcorra

13:30-13:45

Update on “Software Architectures and Service Virtualization” White Paper

Arturo Azcorra, IMEDIA,

13:45-14:00

On the Advanced 5G Infrastructure for Full Immersive Experience and Anything as a Service

David Soldani, Huawei Europe

14:00-14:15

Integrated System of Communication, Localization and Sensing for Innovative Services

Enrico Del Re, Università di Firenze

14:15-14:30

Dresden 5G Vision

Steffen Watzek, TUD

14:30-14:45

Internet of Humans and 5G: Preliminary Results

Roberto Verdone, RadioNetworks, DEI, Università di Bologna

Session Three, Chair: Daniel Corujo

14:45-15:00

Update on “Networking and Mobility” White Paper

Daniel Corujo, University of Aveiro,

15:00-15:15

NetWorld2020-Experts Workshop

Room EUROPA, 1st Floor, Palazzo della Cultura e dei Congressi,

Bologna, Italy

23rd June 2014

Mobile mesh networking for enhanced service reliability

Andreas Polydoros, University of Athens,

15:15-15:30

Moving beyond edge caching towards a unified orchestration framework

Dirk Trossen, InterDigital

15:30-15:45

Name-to-name architectures and mechanisms for 5G networks

Stefano Salsano, University Roma

15.45-16.00 Coffee Break

16:00-16:15

Security and Resilience for 5G to support critical communications

David Lund, HW Communications Ltd

16:15-16:30

Experimental facilities and our know-how on QoS evaluation in both mobile and fixed networks

Paolo Grazioso, Fondazione Ugo Bordoni (FUB)

16:30-16:45

Testbeds for beyond LTE networks

César-Augusto García Pérez, Pedro Merino Gomez, University of Malaga

Session Four, Chair: Emilio Calvanese Strinati

16:45-17:00

Update on “High frequencies and wireless” White Paper

Emilio Calvanese, LETI

17:00-17:15

Spectrum Sharing using Spectrum Micro-trading

Pål Grønsund, Telenor

17:15-17:30

BME envisaged experimental facility for outdoor mm-wave mesh network aimed at propagation studies

János Bitó , Budapest University of Technology and Economics (BME)

17:30-17:45

A research perspective on 5G access networks: issues, methodologies and ways forward

Andrea Zanella, University of Padova

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17:45-18:00

Radio measurements for 5 G networks covering both open issues and available/needed equipment

Sana Salous, Durham University

18:00-18:15

Cognitive Radio for SatCom: the CoRaSat approach

Alessandro Vanelli-Coralli , University of Bologna

Session Five, Rahim Tafazolli

18:15-18:30

Next steps

End of Workshop