Deliverable 4.7

"Initial summary of activities about the EU US ICT community enhancement"

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Abstract:

One of PICASSO's goals is to set up and support communities on the three technological areas (IoT/CPS, 5G Networks, Big Data) between actors of different background (i.e. industry, policy making) coming both from the EU and from the US. The current report provides a summary of all major activities which took place during the first period of the project (Task 4.4), towards the creation and establishment of these communities by presenting the steps and activities which have been implemented so far. Moreover, a summary of foreseen activities to be implemented during the second half of the project, is also presented.

It is also critical to mention that the activity of community enhancement is completely interlinked with a number of other project activities, such the opportunity report, the webinars, dissemination activities etc., as all of them can be considered as the means for engaging external organisations and thus formulating an unofficial network and community of actors around the three technological pillars.

Keywords:

Community Engagement, Networking, International Collaboration

Disclaimer

The PICASSO Project

The aim of the 30-months PICASSO project is (1) to reinforce EU-US collaboration in ICT research and innovation focusing on the pre-competitive research in key enabling technologies related to societal challenges - 5G Networks, Big Data, Internet of Things and Cyber Physical Systems, and (2) to support the EU-US ICT policy dialogue by contributions related to e.g. privacy, security, internet governance, interoperability, ethics.

PICASSO is oriented to industrial needs, provides a forum for ICT communities and involves 24 EU and US prominent specialists in the three technology-oriented ICT Expert Groups and an ICT Policy Expert Group, working closely together to identify policy gaps in the technology domains and to take measures to stimulate the policy dialogue in these areas. The synergy between experts in ICT policies and in ICT technologies is a unique feature of PICASSO.

A number of analyses are being accomplished, as well as related publications, that for a major part are made public and contribute to the project's outreach. Dedicated communication and dissemination material are prepared that support the operational work and widespread dissemination through different channels (website, social media, publications …). The outreach campaign includes 30+ events, success stories, factsheets, info sessions and webinars.

Table of Contents

Index of Figures

Index of Tables

1. Introduction and Overview

1.1. Purpose of the document

The purpose of this current document is to describe the Community Enhancement plan to support the activities of all three PICASSO ICT Expert Groups and the Policy Expert Group (as a supportive Group) and to provide a summary report on the activities implemented so far. Moreover, it includes additional information and a detailed roadmap of future activities, to take place until the end of the project. This document is directly linked to Task 4.4 which runs from M10 until M30 of the project and can be used in conjunction with the Communication and Dissemination Strategy and other activities of the project.

The Community Enhancement Plan serves as a guideline mainly to the Expert Groups, to ensure a successful community engagement. The Policy Expert Group is supportive to work of the three ICT Expert Groups. What is critical to mention is that each ICT Expert Group is responsible to design and implement a set of activities and actions based on their requirements, needs and available resources. However, it is worth mentioning that all described activities in this document are directly linked with the overall Expert Group's activities and are embedded into each action implemented by the Expert Groups so far.

Adding to the above, Task 4.4 and therefore all activities implemented under this task, specifically focus on the following actions as described in the Description of Action (DoA):

- Stakeholder consultation for feedback gathering (relevant communities including European network and industrials and US side on the core topics of the Opportunity report of the expert groups)
- Organisation of public events in conjunction with the expert group meetings. At least one thematic event related to each expert group will be organised. The events will be related the societal challenges bringing together large companies, SMEs and start ups and also academia.
- Additional activities, if relevant for the Expert Groups, such as:
    o Animation of specific LinkedIn groups in the topic of the expert groups or in the topic of societal challenges; link to the relevant networks in the EU and the US will be considered.
    o Organisation of webinars on specific topics if needed and relevant, e.g. to gather feedback

The outcome of this task, as originally described in the DoA, is the involvement/contribution of the specialised target audiences to expert group activities and contribution to the enhancement of ICT communities related to the topics of the Expert Groups.

2. Methodology Framework

The current section is dedicated to the presentation of the methodology framework which has been agreed among all three ICT Expert Groups and has been and will be followed until the end of the project. Examples of actions and set of activities undertaken in this framework are described below; small divergences between the Expert Groups occur as each ICT Expert Group has chosen specific actions according to their needs and available resources.

2.1. Defining the Audience

The initial step of the methodology was to define the target audience of each ICT Expert Group and the Policy Expert Group that would be engaged in their activities. All four tables below provide information about these target audiences (per Expert Groups) both from the EU and from the US. It is important to mention that the lists below are not exhaustive and provide information mainly on higher level organisations and associations.

2.1.1. Big Data Expert Group

Table 1: Big Data Group Audience

	EU (Examples of organisations/structures)	US (Examples of organisations/structures)
– **Representatives of enterprises and business associations, including SMEs, working in the field of ICT from the EU / from the US respectively**	Big Data Value Association (BDVA) NESSI European Technology Platform	South Big Data Regional Innovation Hub Midwest Big Data Innovation Hub West Big Data Innovation Hub Northeast Big Data Innovation Hub Google
– **Representatives of R&I intermediaries in the EU and the US (e.g. clusters, incubators, business networks…)**	Big Data Value Association (BDVA)	South Big Data Regional Innovation Hub Midwest Big Data Innovation Hub West Big Data Innovation Hub Northeast Big Data Innovation Hub
– **Representatives of Universities and Research Institutes/ Organisations from the EU / from the US respectively**	Big Data Value Association (BDVA) NESSI European Technology Platform	Massachusetts Institute of Technology (MIT) University of Berkley Columbia University South Big Data Regional Innovation Hub Midwest Big Data Innovation Hub West Big Data Innovation Hub Northeast Big Data Innovation Hub
– **Policy stakeholders (Policy Makers, institutions / administrations) from the EU and the US and from EU Member States and lower policy levels in the EU and the US** – **Funding agencies from the EU and the US**	Big Data Unit, European Commission	National Science Foundation (NSF) National Institute of Standards and Technology (NIST) Networking and Information Technology Research and Development (NITRD) Executive Office of the President, President's Council of Advisors on Science and Technology (PCAST)
– **Other initiatives and projects targeting EU-US collaboration and / or one of the thematic focus areas of PICASSO**	-IEEE Big Data	

2.1.2. IoT/CPS Expert Group

Table 2: IoT/CPS Group Audience

	EU (Examples)	US (Examples)
− Representatives of enterprises and business associations, including SMEs, working in the field of ICT from the EU / from the US respectively	Senior industrial experts from a variety of domains (e.g. production, energy, transport)	
− Representatives of R&I intermediaries in the EU and the US (e.g. clusters, incubators, business networks…)	AIOTI, ARTEMIS-IA, Industrial Internet Consortium (IIC), FIWARE, GENI, FIRE, Industry 4.0-related initiatives, Allseen Alliance, Open Interconnect Foundation, SafeTRANS, Smart Manufacturing Leadership Coalition (SMLC), Intelligent Manufacturing Systems (IMS), National Council of University Research Administrators (NCURA Global)	
− Other initiatives and projects targeting EU-US collaboration and / or one of the thematic focus areas of PICASSO	International collaboration, research, and innovation initiatives, e.g. relevant public-private partnerships (PPPs) including cybersecurity, robotics, future internet, FoF, ECSEL), …, and projects, e.g. CPS Summit, BILAT USA 4.0, Platforms4CPS, CPSoS, CPSE Labs, HYCON2, …	
− Policy stakeholders (Policy Makers, institutions / administrations) from the EU and the US and from EU Member States and lower policy levels in the EU and the US − Funding agencies from the EU and the US	EC CPS and IoT units, ERA-NET	NSF, NIST, NITRD
− Representatives of Universities and Research Institutes/ Organisations from the EU / from the US respectively	Leading EU researchers in CPS and the IoT	Leading US researchers in CPS and the IoT (e.g. MIT, CMU, UPenn, UC Berkeley, UC Irvine, Caltech, Univ. of Maryland, Vanderbilt, …)

2.1.3. 5G Expert Group

Table 3: 5G Expert Group Audience

	EU (Examples of organisations/structures)	US (Examples of organisations/structures)
− Representatives of enterprises and business associations, including SMEs, working in the field of ICT from the EU / from the US respectively	Major international telecom vendors (e.g. Ericsson, Nokia, National Instrument, Qualcomm) and operators (e.g., Vodafone, Verizon, AT&T), major companies in verticals (e.g., transport, energy)	

− Representatives of R&I intermediaries in the EU and the US (e.g. clusters, incubators, business networks…)	− 5G PPP	− 5G America − Platforms for Advanced Wireless Research (PAWR) − Advanced Wireless Research Initiative (AWRI)
− Other initiatives and projects targeting EU-US collaboration and / or one of the thematic focus areas of PICASSO	− ESA Satellite for 5G initiative − ETNO	− International professional association (e.g., IEEE), international operator association (e.g., NGMN)
− Policy stakeholders (Policy Makers, institutions / administrations) from the EU and the US and from EU Member States and lower policy levels in the EU and the US − Funding agencies from the EU and the US	5G Unit, European Commission	− National Science Foundation (NSF) − National Institute of Standards and Technology (NIST) − Federal Communication Committee (FCC)
− Representatives of Universities and Research Institutes/ Organisations from the EU / from the US respectively)	Internationally well-known universities and institutions in the 5G domain (e.g., 5G lab Germany, Eurescom, CWC Oulu)	Internationally well-known universities and institutions in the 5G domain (e.g., UC Berkeley, UT Texas, Rutgers University)

2.1.4. Policy Expert Group

Table 4: Policy Expert Group Audience

	EU (Examples of organisations/structures)	US (Examples of organisations/structures)
− Representatives of enterprises and business associations, including SMEs, working in the field of ICT from the EU / from the US respectively	All of the above	
− Representatives of Universities and Research Institutes/ Organisations from the EU / from the US respectively)	Universities with socio-economic-technical interests in the PICASSO domains.	
− Other initiatives and projects targeting EU-US collaboration and / or one of the thematic focus areas of PICASSO	In addition to the above: civil society actors that are concerned about privacy, business consortia that are concerned about IPR.	
− Policy stakeholders (Policy Makers, institutions / administrations) from the EU and the US and from EU Member States and lower	European Commission DG CNECT, European Commission DG JUST, EU national governments, Policy researchers, Policy think tanks	National Science Foundation (NSF) National Institute of Standards and Technology (NIST) Federal Communication Committee (FCC) National Telecommunications and Information Agency (NTIA),

policy levels in the EU and the US − **Funding agencies from the EU and the US**		Policy researchers, Policy think tanks
− **Representatives of R&I intermediaries in the EU and the US (e.g. clusters, incubators, business networks…)1**	Not relevant	

2.2.   Engagements Tactics

In the section above, we have outlined the target audiences that have been, and will continue to be, approached during the project by all three ICT Expert Groups. In this section, we describe the engagement tactics that may be used to reach our selected target audiences. Not all tactics are followed or will be followed by all Expert Groups as each EG may choose which tactic to follow for strategic purposes.

2.2.1. Direct Face-to-Face Engagement

Direct face to face engagement tactics are time-consuming, however this method is considered as the most efficient way of engaging external partners/stakeholders to a project. General face to face engagement tactics are outlined below; each Expert Group has selected tactics that suits it target audience.

2.2.2. Webinars

Each Expert Group has to implement at least 1 webinar on selected topics and on EU and US programme participation, relevant to their expertise and interest, in conjunction with Task 4.3 and 1 webinar in order to initiate an open discussion for collecting feedback related to the opportunity report and its update. All webinars combined should engage over 100 attendees.

2.2.3. Workshops

Each of the three Expert Groups may consider to participate or organize thematic workshops for external stakeholders parallel to other larger events in order to engage external stakeholders to our activity.

2.2.4. Public Events

Each ICT Expert Group should organize at least one thematic event related to their interests. These events will be related to societal challenges bringing together large companies, SMEs, academia and/or policy makers. All three ICT Expert Group public events should engage at least 120 attendees (Task 2.4).

2.3. Social Media

2.3.1. Viral Marketing/Engagement through Social Media

Each Expert Groups may choose to actively engage in major social networking platforms (LinkedIn, Facebook, Twitter, etc.). Information about Expert Group activities may be published there in order to increase its visibility on the Internet.

2.3.2. E-Newsletter

The Expert Groups are presented in dedicated articles in the regular PICASSO newsletters and their specific activities are promoted there as well. In addition and in order to keep all external communities engaged, each Expert Group may choose to prepare and disseminate specialized e-Newsletters, in order to highlight major outcomes and future activities. These e-Newsletters may also include articles Measurement Overview of Activities and Next Steps.

3. Expert Group Activities and Next Steps

3.1. Big Data Expert Group

3.1.1. Big Data Expert Group Activities so far and engagement of external stakeholders

The Big Data Expert Group has implemented a number of activities to which external stakeholders have been engaged, either through direct or indirect participation as Expert Group members and by providing feedback and input to requested deliverables, such as the opportunity report.

External Stakeholders engaged: Representatives of Big Data Value Association (BDVA), Big Data Europe, NESSI ETP, IEEE Big Data Initiative, South Big Data Regional Innovation Hub, Midwest Big Data Innovation Hub, West Big Data Innovation Hub, Northeast Big Data Innovation Hub, NSF, NIST, MIT, European Commission Media Unit, Research institutions, public audience.

Figure 1: External Stakeholders engaged in Big Data EG activities

1. **Big Data Opportunity Report:** The first draft version of the Opportunity report (WP2) regarding Big Data has been shared with Expert Group members and other external experts (over 11 individuals in total, representing 16 different organizations - from EU or US) in order to collect feedback and validate the content of this report. These individuals were representing the following organisations: Big Data Value Association (BDVA), Big Data Europe, NESSI ETP, IEEE Big Data Initiative, South Big Data Regional Innovation Hub, Midwest Big Data Innovation Hub, West Big Data Innovation Hub, NSF, NIST, MIT and European Commission Media Unit. The initial impact achieved from this activity is the active exchange of thoughts and views on Big Data issues from actors coming from both regions and the publication of a single document presenting current status, similarities and differences on Big Data issues which has been shared to a large pool of actors.

2. **Participation as Expert Group members (Permanent or External):** Individual experts already participating as permanent or external members to our Expert Group, hold important positions in prestigious and well known research institutions, policy organisations or other Big Data related associations. Through their direct

participation as EG members, we also envisage that views of their institutions and associations are also infused into our discussions and activities. The initial impact achieved is that key individuals representing important EU and US organisations are members of a single group and are entering into discussions in a regular basis.

3. **Participation in Expert Group activities:** Significant individuals who are not engaged as members in the Big Data Expert group (i.e. SINTEF, University of Washington, Columbia University) have been already engaged as members of the following internal working groups which also include members from the **BDVA, NSF, PICASSO and US BD Hubs**. These internal working groups, which can be considered as "flexible" thematic groups of the Expert Group, will work together towards the following subjects in order to extract and define valuable outcomes and possible joint actions. These internal working groups are:

    1. Big Data Literacy

    2. Smart Transportation

    3. Best Practices for Industry-Academia Partnerships on Big Data / Data Science

    What is important to mention at this stage is that during the second half of the project, we have the flexibility to alter the scope of these internal working groups in case we find this useful and relevant to a possible change of scope. These internal thematic working groups have not achieved any significant impact yet, as they are a relatively new activity, however we foresee that these internal working groups will come back with concrete suggestions and propositions about EU-US collaboration on specific topics.

4. **Communication Activities:** Initial discussions have been initiated between the PICASSO Big Data EG and the Media and Big Data Units of the European Commission, in order to examine possible ways for engaging them into the EG activities – in addition to feedback to the opportunity report. A first thought was to organize a joint workshop between EU and US on Big Data for the Media, during the Minneapolis Symposium, however this was abandoned as there was no available timeslot in the symposium. The discussions continue in order to find a common topic, date and opportunity to organize a joint event/workshop.

5. **Engagement with the public audience during the "Trans-Atlantic Symposium on ICT Technology and Policy" symposium:** As already described in other deliverables, PICASSO consortium has organised the "Trans-Atlantic Symposium on ICT Technology and Policy" symposium in Minneapolis, to which the Big Data Expert Group contributed with three sessions (two thematic sessions and one Keynote talk), during which an active engagement with the public audience took place. Guest speakers and presenters, who are all members of the Big Data Expert Group, had fruitful discussions with the general public through their presentation sessions which were dedicated on dissemination of the Expert Group's views. The Expert Group had the opportunity not only to present and expose its views and suggestions to a wide audience but also to collect valuable feedback to be take into account during future activities.

3.1.2. Next Steps

Following the first phase of engagement of external stakeholders, we foresee to expand and engage additional individuals and organisations into our activities. The following activities have been already foreseen and will target mainly the engagement of additional organisations both from the EU and from the US, in order to collect additional feedback and widen the spectrum of our activities thus achieve greater impact.

1. **Webinars:** We foresee to implement two webinars. One in conjunction with task 4.3 "Promotion of access opportunities" which will target research managers, experienced researchers in universities, government and ICT industry, both from the EU and US in order to disseminate opportunities about possible joint projects supported either by the EU or the US side. The second webinar will be implemented in order to exchange views and validate the finding of the opportunity report in later stage, by integrating recent policy updates related to Big Data. Moreover, the possibility of implementing additional webinars on the topics of the three internal

working groups (as mentioned above: Big Data Literacy, Smart Transportation, Best Practices for Industry-Academia Partnerships on Big Data / Data Science) will be examined.

2. **Engagement through social media:** The Big Data Expert Group is examining the opportunity to try and animate a fruitful discussion around Big Data and collaboration activities between EU and US, in the PICASSO LinkedIn group, as a result of the increased interest for discussion during the Minneapolis Symposium. The EG will propose a number of open topics for discussion to be posted in LinkedIn in order to enhance and engage additional participants who are, right now, excluded from this discussion as they do not get the chance to participate. Additional participants will be invited thought personal contacts and by filtering the attendance list from the Minneapolis event, to identify people who are interested in Big Data.

3. **Validation of the Opportunity report:** During the second phase of validation of the opportunity report, the Big Data EG will seek the active engagement of additional stakeholders for updating and refining the opportunity report. This will be achieved through the following means:

   i. Direct engagement through one-to-one communication with individuals external to the EG organisations.
   ii. Direct email engagement with individuals and organisations through our EG members' networks.
   iii. Publicly publish an early draft, disseminate through social media, and request feedback from the social media (open to the public)
   iv. Organise a dedicated webinar with the participation of EG members and additional individuals to collect and integrate feedback.

4. **Public Event:** The Big Data Expert Group foresees to host a session at the European Big Data Value Forum 2017, jointly organised by the Big Data Value Association and the European Commission, to be held in Versailles, France (Palais des Congrès) from 21st to 23rd November 2017. This type of event is a great opportunity for presenting the Expert Group's views to a wider public and try to engage additional audience to our activities to be implemented during the following months. In case this session cannot be implemented, alternative events will be considered.

3.2. IoT/CPS Expert Group

3.2.1. IoT/CPS Expert Group Activities so far and engagement of external stakeholders

The Expert Group so far has conducted the following major dissemination and community enhancement actions:

- Two IoT/CPS Expert Group meetings were organized (in addition to numerous remote interactions via email and webinars). The first EG meeting was organized and held in Washington D.C. on May 20, 2016, in conjunction with meetings of the other EGs and a public workshop (see deliverable D2.1). In addition to EG members, the meeting was attended by seven external experts, mostly from NIST. The second EG meeting was organized and held on June 20, 2017, in Minneapolis, alongside the public PICASSO Trans-Atlantic Symposium on ICT Technology and Policy (see deliverable D2.4). Both meetings led to fruitful discussions of numerous important aspects that helped both sides to understand in more detail the initiatives, the players, and the focus of the other side. The results were used as the basis for follow-up activities, in particular for the development and revision of the IoT/CPS opportunity report.

- Dissemination and feedback collection of project reports (opportunity report, report on the analysis of industrial drivers and societal needs) to relevant stakeholders (EC, government agencies, industry representatives, non-governmental industry associations, research institutions, and others) via direct mailing, distribution to expert networks, in-depth personal interviews, and social media (LinkedIn, Twitter, more than 800 recipients). Particular effort was spent on the dissemination of and feedback collection for the opportunity report. In January 2017, a draft version of the IoT/CPS opportunity report was circulated for questionnaire-based feedback collection, including to leading individual researchers and practitioners in the EU and the US

and to the expert networks of the projects and initiatives AIOTI, CPS Summit, BILAT USA 4.0, TAMS4CPS, CPSoS, Road2CPS, oCPS, and CPSE Labs. Particular focus was given to industrial distribution by the involvement of the industry associations ARTEMIS-IA, Industrial Internet Consortium (IIC), and SafeTRANS. In addition, the report contents were presented and discussed with an international audience in an interactive webinar that was held by the PICASSO IoT/CPS Expert Group on February 2, 2017, and the report was published on the PICASSO website for public consultation.

- Dissemination of other project results and announcements to relevant stakeholders and via social media (LinkedIn, Twitter, more than 800 recipients).

- Organization of the interactive webinar "Towards EU-US Collaboration on the Internet of Things & Cyber-Physical Systems" on Feb. 2, 2017. Invitations to the webinar have been spread via the project team and in particular the IoT/CPS EG chair contacts and network and via PICASSO website and Twitter account. The invitation was disseminated by the IoT/CPS EG chair by email, along with the first public version of the opportunity report (D2.2). It was sent to about <u>75 individuals</u>; moreover, the IoT EG chair asked for distribution in the networks of the following initiatives: AIOTI, ARTEMIS-IA, projects Road2CPS, TAMS4CPS, DISCOVERY, HYCON2, oCPS, CPSE Labs, SafeTRANS-DE, CPSE Labs, BILAT USA 4.0, CPS Summit. Given the double-step dissemination process, it is difficult to precisely quantify how many people were reached, but we assume these to be in the order of a few hundred. Registrations were managed through the Eventbrite platform.

- Presentation of PICASSO concepts and results at public events targeting many relevant stakeholders, such as ARTEMIS and the CPSoS, Road2CPS, and TAMS4CPS initiatives, academic and industry representatives attending conferences such as CPSWeek and EMERGE-Americas, and policy stakeholders such as the EC and NIST.

- Contributions to the EU-US ICT policy dialogue in PICASSO and to the PICASSO policy briefs and policy seminars on aspects relating to IoT/CPS.

- Contributions to the CROSSROADS ICT info hub, mobile app and dedicated web pages (database of currently funded R&I projects, lists of relevant main conferences, workshops, and other events in the EU and the US, and online teaching materials), to the PICASSO website, and to other WP4 activities (e.g. project communications, promotion of H2020 and US ICT opportunities, newsletters).

A large number of external stakeholders have been engaged and targeted in these activities:

> **External stakeholders engaged:** Representatives from AIOTI, CPS Summit, BILAT USA 4.0, TAMS4CPS, CPSoS, Road2CPS, oCPS, CPSE Labs, ARTEMIS-IA, Industrial Internet Consortium (IIC), SafeTRANS. NSF, NIST, the IoT and CPS units of the European Commission, the ERA-NET instrument, the Smart Manufacturing Leadership Coalition (SMLC), the Intelligent Manufacturing Systems (IMS) global research and business innovation program, the National Council of University Research Administrators (NCURA Global), and senior industrial and academic experts from a variety of domains (e.g. CPS, IoT, control, production, energy, transport).

3.2.2. Next Steps

The following activities with a community enhancement aspect are planned for the remainder of the PICASSO project. They will mainly target the engagement of organisations and experts both from the EU and from the US, in order to collect additional feedback and to widen the impact of the project results. The basis for our engagement strategy is the network of experts that we have established in PICASSO, which includes senior representatives from all of the audience types that are defined above. We plan to extend this network with additional experts that show interest in our work during the remainder of the project.

- Organization of a trans-Atlantic working meeting in 2018 (along with the 3rd EG meeting), possibly aligned with a public event in the EU, to foster a common EU-US understanding, present and discuss the state of the art and

the challenges for the specific technology topics identified in the opportunity report. It is planned to follow up the working meeting with informal meetings to discuss collaboration options. We aim to bring together senior experts from different areas (industry, academia and government agencies) who are focused on CPS or IoT and interested in fundamental issues or in technical solutions, and we expect that the discussion results will provide valuable guidelines for the refinement, concretization, and prioritization of the most promising technology themes for EU-US collaboration (see opportunity report).

- Monitoring and dissemination of calls for collaboration in the upcoming H2020 Work Programme 2018-2020 to our network of experts (which we plan to e), giving interested stakeholders a heads-up on future project opportunities.

- Dissemination of strategic EU-US initiative proposals to our network of experts, in particular to associations, standardization bodies, and policy stakeholders.

- Continued broad dissemination of project results and announcements to relevant stakeholders and via social media.

- Presentation of PICASSO concepts and results at public events.

- Contributions to the PICASSO website and to other outreach activities (e.g. project communications, promotion of H2020 and US ICT opportunities, newsletters, CROSSROADS).

- Contribution to upcoming webinars organized by the Policy Expert Group.

- Contribution to the organization of the final PICASSO event.

3.3.   5G Expert Group

3.3.1. 5G Expert Group Activities so far and engagement of external stakeholders

1.   Establish an External Stakeholder Network

Through actively engaging members of the 5G expert group and their direct connections, the PICASSO project is able to reach diverse stakeholders as presented in Figure 2. This chart forms the basic distribution network for the 5G expert group to disseminate project output, e.g., the opportunity report and conference information and receive feedbacks on different topics. As shown in the figure below, the involved external shareholders include major telecom vendors (Nokia and Ericsson), major equipment vendor (National Instruments), major universities (TU Dresden, UC Berkeley, UOulu, UGM), major research institutes/centres (CWC, Eurescom, 5G Lab Germany), a major funding organization (NSF), a major EU strategic initiative (5GPPP), a major international association (IEEE 5G) and major 5G projects (METIS II and Fast).

Figure 2: The chart of engaged external shareholders via the 5G expert group

As an extension of the direct network in Figure 2, the 5G expert group chair Professor Gerhard Fettweis is able to reach partners in the 5G Lab Germany and the 5G Vertical program Fast. As shown in Figure 3 and 4, the partners in the 5G Lab Germany include most major international players in the 5G domain and the Fast program covers more than 90 partners in the 5G vertical industries.

At the same time, the 5G group also has arranged a meeting with European Commission 5G Unit and National Council of University Research Administrators (NCURA Global) to disseminate project results and discuss further actions. By organizing expert group meeting and public events, the 5G expert group also engaged significant individuals from FCC, AT&T, Wireless 20/20 and University of Minnesota. In addition, the 5G chair distributed conference information regarding to, e.g., student travel grant for Minneapolis symposium to major US universities, such as, UC Berkeley, USC, NYU, UTexas and Stanford.

Figure 3: Major stakeholders in the 5G Lab Germany that is led by the chair of the 5G expert group

Figure 4: Major stakeholders in the Fast program that is led by the chair of the 5G expert group

2. **Dissemination of the Opportunity Report over the External Shareholder Network**

One of the most important tasks for the PICASSO 5G expert group is to contribute to the comprehensive and thorough study and analysis on the EU-US collaboration in the 5G network domain. To disseminate the knowledge and understanding obtained from those prestigious 5G experts, a "5G opportunity report" was written based on all the discussion carried out inside the 5G expert group. This report was carefully reviewed and circulated among expert group members. It has been included as part of the PICASSO public deliverable "Opportunity Report -Towards Enhanced EU-US ICT Pre-competitive Collaboration". This deliverable has been disseminated over the established external shareholder network to more than 20 key persons and organizations in industry, R&I intermediaries, policy stakeholders, universities and research institutes. The R&I collaboration opportunities suggested by the opportunity report have raised some interests to the next phase EU-US 5G collaboration. However, no concrete action is taken so far.

3. **Public dissemination through Webinar**

A webinar on "EU-US collaboration on 5G funding opportunities in Horizon 2020" was held, by 5G Chair Gerhard Fettweis and Dr Werner Mohr from Nokia/5GPPP, on September 13, 2016. As described on http://www.picasso-project.eu/newsevents/project-events/eu-us-collaboration-on-5g-funding-opportunities-in-horizon-2020-webinar/, 170 participants from 15+ countries had registered. The presentation slides and video are available on PICASSO site for public access.

4. **Public dissemination through Public Event**

The 5G expert group also co-organised the "Trans-Atlantic Symposium on ICT Technology and Policy" from the 5G network point of view. The targeted groups are stakeholders from telecom industry (e.g., Nokia and Ericsson), policy makers (e.g., FCC), universities and research institutes (e.g., CWC Oulu). During the symposium, 5G experts disseminated their opinions on the EU-US collaboration to the targeted audience groups. The discussions carried out during the symposium provide some good ideas on how to take to make the EU-US collaboration forward. In addition, the 5G chair also promoted the PICASSO project and disseminated outputs in major well-known international events in the 5G domain, e.g., Globecom2016 and 5G Dresden Summit 2016.

3.3.2. Next Steps

In the next phase of the PICASSO project, the 5G expert group will continue to engage external stakeholders on the EU-US 5G collaboration. Meanwhile, it will participate in different activities and collaborate with other partners to improve the influences and impacts of the PICASSO experts and the project. The concrete plans are discussed as follows.

1. **Maintain the Established External Stakeholder Network**

The 5G expert group will continue to engage the established external shareholder network by, e.g., email exchanges, sending out project deliverables and invitations to different events.

2. **Update Opportunity Report and Disseminate again over the External Shareholder Network**

One important task of the 5G expert group in the next phase of the PICASSO project is to continuously update opportunity report from the 5G perspective. In the end of the project, a finalized opportunity report will be disseminated to all the possible channels including the external shareholder network of the 5G expert group as well as the PICASSO website. It is expected that this report will give another push to shareholders from industry, policy makers and research institutes to make concrete steps on the EU-US collaborations.

3. **Public dissemination through Webinar**

Based on the updated opportunity report, it is possible for the 5G expert group to hold another interactive webinar to shareholders and disseminate the identified technology theme and research topics for EU-US R&I collaborations in the 5G network domain. As there is an upcoming call on the EU-US 5G collaboration in H2020 2018 program, this webinar can certainly attract lots of interests and meanwhile disseminate the output of PICASSO project effectively.

4. **Public dissemination through Public Events**

In the spring of 2018, the 5G expert group will hold a public workshop in conjunction with a major event in the 5G domain, e.g., ICC'18 or WCNC'18, where large numbers of 5G group audiences as defined in the table 3 will attend. This will form an excellent channel to disseminate outputs of the 5G group, e.g., the opportunity report. In addition, the 5G expert group will also co-organise the final event with the PICASSO consortium and other EG groups. In this last event, the 5G expert group summarises all the activities and results and disseminates them to the related communities and audiences.

5. **Dissemination via Social Media**

In the next phase of PICASSO project, the 5G expert group plans to connect to audiences and the related communities via social media (e.g., LinkedIn and Twitter). By embracing the impact of social media, it is possible to communicate different audiences, e.g., in the industry, R&I intermediaries, 5G initiatives, policy makers and research institutes, who are interested in the EU-US collaboration in the 5G domain in a timely matter.

3.4.   Policy Expert Group

3.4.1. Policy Expert Group Activities so far and engagement of external stakeholders

Other than the ICT expert groups, the Policy expert group has three groups of stakeholders it serves. First and foremost: it provides the opportunity for PICASSO partners to more deeply and holistically address the policy context of their activities, notably the ICT Expert Groups. Supporting this is the prime interest of the Policy Expert Group, hence in all

events and deliverables the Policy EG works with the experts from the other three PICASSO expert groups. Policy expert group members themselves come from industry, research, and internet/telecoms technical communities with deep experience on policy matters, and involved in policy preparation on both sides of the Atlantic. The PICASSO work informs their interaction in the global and national fora as well as relevant workshops they participate in, sometimes explicit (e.g. referring to the PICASSO work during IGF, EuroDIG, USA IGF), sometimes implicit.

In order to be able to serve them well, the Policy EG is reaching out to two groups of networks: the global Internet Governance community, as all activities relate to internet governance in how data are reached, how objects are communicating, and how 5G establishes connectivity (over IP). This means that global Internet Governance issues provide challenges and opportunities for the three PICASSO technology domains. The PICASSO Policy Papers have been used to inform discussions during the global Internet Governance Forum, European and US Internet Governance meetings such as EuroDIG and IGF USA, and have been shared with ISOC, IETF, W3C, IEEE, ICANN researchers and policy makers. The second network is the European Future Internet community.

The Policy EG also actively reaches out to policy makers in government positions that are actively interested in the specific topics at hand at both sides of the Atlantic as to inform them, and to invite them to participate to discussions, where and when appropriate.

Next to engagement with external parties during international events, the Policy EG also organises webinars for which people from these communities and from the other three PICASSO expert communities are invited to discuss the key policy subjects selected by the PICASSO project team (at the suggestion of the PICASSO Policy Expert Group). So far, two webinars have taken place, and both of them attracted more than 80 people to sign up and eventually more than 30 people to actively participate during the webinars themselves. A third webinar will take place on 29 September 2017. In addition, the Policy EG has organised workshops and sessions during both of PICASSO's public events.

3.4.2. Next Steps

The Policy Expert Group will continue to serve the participants of the other PICASSO expert groups with policy context, and will continue to invite all to contribute to the development of the policy papers and to participate to the webinars. In addition, the Policy EG will continue to reach out to other researchers and policy makers during global internet governance and future internet events.

4. Summary and Main Points

During the first phase of the project, all expert groups have focused mainly on attracting and engaging key people from various organisations of strategic importance, both from the EU and the US. The involvement of representatives of a number of prestigious key organisations to all Expert Group activities has allowed the formulation of a "loose" community of actors which will be enhanced and supported through dedicated activities during the next period of the project. External organisations who have contributed to the PICASSO activities, cover a wide spectrum of expertise as they represent different clusters of stakeholders, with different agendas, such as the industry or policy making.

For the second phase of the project, the Expert Groups will work toward the enhancement of more permanent and solid communities which will be supported by a number of different activities, in order to maintain these communities as active as possible. Moreover, the sustainability of these communities will be examined and pursued by trying to build strong links between actors in order to set up a permanent platform for collaboration, from actors coming from the EU and the US, such the continuation of the Expert groups as part of other existing communities (i.e. 5G PPP, BDVA, etc.).

Last but not least, the second iteration of this deliverable will mainly focus on the overall evaluation of this activity by trying to identify and specifically determine its towards the overall scope of the project.