



Deliverable D2.5

Third Expert Group Meeting Report

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**ICT Policy, Research and Innovation
for a Smart Society**

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Abstract:

This report provides a summary of the 3rd meeting of the PICASSO Expert Groups. Each Expert Group has met at a different physical or virtual location, during different dates, according to the needs and requirements of each Expert group. For each of the four EG meetings, the meeting objectives, agenda, participants, and key messages and outcomes are described.

Keywords:

PICASSO Expert Groups, 5G, Big Data, IoT, CPS, Policy

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Executive Summary

All four Expert Groups decided to organize and host their 3rd and final meeting, independently to each other. More specific:

The **PICASSO Big Data Expert Group** convened for third time in Versailles during the Trans-Atlantic Workshop on Public Private Partnerships for Big Data, held on November 20th, 2017. Instead of holding a 3rd Expert Group meeting independently with the EU-US Big Data community, the Big Data EG decided to join forces and co-organise a larger event with additional participants (over 45 in total). Adding to the above, the main activity of the PICASSO Big Data Expert Group, during its third meeting and parallel to the Trans-Atlantic Workshop on Public Private Partnerships for Big Data, was to actively participate, contribute and orchestrate the workshop and also:

- Discuss, validate, and refine the analyses and technology themes given in the opportunity report and priorities these to identify the most promising key technology themes for which EU-US collaboration will have the highest impact and the highest likelihood of success.
- Discuss, validate, and refine the concrete proposals for EU-US collaboration actions.
- Decide on concrete actions and activities for building a strong collaboration link between BDVA and the Big Data Hubs.

Due to funding limitations, the 3rd **IoT/CPS Expert Group** meeting was organized remotely on May 16, 2018, in the form of **an interactive IoT/CPS webinar “Challenges and Opportunities in Autonomous Cyber-Physical Systems”**. The objectives of the 3rd Expert Group meeting were to discuss the current challenges in autonomy as well as EU-US collaboration mechanisms and the proposals for concrete strategic initiatives that were developed by the IoT/CPS Expert Group with an international audience of IoT, CPS, and application experts and to generate new ideas and recommendations for EU-US research and innovation collaboration.

The 3rd **5G Expert Group** meeting took place on Dec 6th, 2017 in Singapore and was in conjunction with the IEEE flagship communication society conference Globecom 2017. The objectives of this meeting were to:

- **Refine and validate** the final recommendations for **the opportunity report**.
- **Make a decision and recommendation** for the participation of the H2020 call ICT-21-2018 EU-US Collaboration for Advanced Wireless Platform.
- **Brainstorm and propose** strategic initiative recommendations for EU-US collaboration.
- **Discuss** organization issues for the PICASSO final event in Washington D.C., June 2018.

Last but not least, the 3rd meeting of the **Policy Expert Group** will take place on 17 June 2018 in Washington DC., with the objective to discuss and finalize the PICASSO Policy White Paper and to conclude with a number of strategic proposals.



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 - [5G](#), [Big Data](#), and [IoT/CPS](#) - 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. A synergy between experts in ICT policies and in ICT technologies is a unique feature of PICASSO.

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

List of Acronyms

5G	Fifth generation
BD	Big Data
BDVA	Big Data Value Association
CPS	Cyber-physical System
EC	European Commission
EG	Expert Group
EU	European Union
FP9	Framework Programme 9
GDP	Gross Domestic Product
H2020	Horizon 2020
IA	Industry Association
ICT	Information and Communication Technology
IoT	Internet of Things
NESSI	Networked Software and Services Initiative
NIST	National Institute of Standards and Technology
NSF	National Science Foundation
OR	Opportunity Report
RDI	Research, Development, and Innovation
R&D	Research & Development
R&I	Research & Innovation
US	United States

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1. Introduction

The current deliverable describes in detail the outcomes of the 3rd EGs meetings that took place independently to each other. Due to limited availability of all EG members and to the different scope of each expert group, all group leaders decided to meet either physically or remotely to each other.

More specific:

- The 3rd **5G Expert Group** meeting took place on Dec 6th, 2017 in Singapore and was in conjunction with the IEEE flagship communication society conference Globecom 2017.
- Due to funding limitations, the 3rd **IoT/CPS Expert Group** meeting was organized remotely on May 16, 2018, in the form of an interactive IoT/CPS webinar “Challenges and Opportunities in Autonomous Cyber-physical Systems”.
- **The PICASSO Big Data Expert Group** convened for third time in Versailles during the Trans-Atlantic Workshop on Public Private Partnerships for Big Data, held on November 20th, 2017. Instead of holding a 3rd Expert Group meeting independently with the EU-US Big Data community, the group decided to join forces and co-organise a larger event with additional participants (over 45 in total).
- The 3rd **PICASSO Policy Expert Group** meeting will gather in Washington DC, on 17 June 2018, in order to discuss and finalize the PICASSO Policy White Paper conclusions and recommendations. For this, the draft White Paper is shared beforehand, so that Expert Group members can be well prepared.

The remainder of this report provides more detailed summaries of the meeting objectives, agendas, participants, and key outcomes of the four EG meetings.

2. Report of the Expert Group on Big Data

2.1. Meeting Objectives

The PICASSO Big Data Expert Group convened for third time in Versailles during the Trans-Atlantic Workshop on Public Private Partnerships for Big Data, held on November 20th, 2017. Instead of holding a 3rd Expert Group meeting independently with the EU-US Big Data community, we decided to join forces and co-organise a larger event with additional participants (over 45 in total). Adding to the above, the main activity of the PICASSO Big Data Expert Group, during its third meeting and parallel to the Trans-Atlantic Workshop on Public Private Partnerships for Big Data, was to actively participate, contribute and orchestrate the workshop and also:

- Discuss, validate, and refine the analyses and technology themes given in the opportunity report and priorities these to identify the most promising key technology themes for which EU-US collaboration will have the highest impact and the highest likelihood of success.
- Discuss, validate, and refine the concrete proposals for EU-US collaboration actions.
- Decide on concrete actions and activities for building a strong collaboration link between BDVA and the Big Data Hubs.

2.2. Meeting Agenda

Although the third EG meeting didn't have a separate agenda, the agenda of the Trans-Atlantic Workshop on Public Private Partnerships for Big Data was designed and based on the preliminary work already done by the PICASSO Big Data Expert Group.

Agenda			
Sunday, November 19 – Welcome Reception			
Hotel De France, Versailles			
6:00 pm	Registration/Networking Write something that people can ask you about on a piece of tape and put on your lapel.	11:00 am	Panel: Effective models and practices for supporting academia-industry collaborative research programs in Big Data/data science research and innovation across the US and EU, with particular focus on public-private partnerships (PPP) in the application domains of smart cities, transportation, health, environment/ag/food/energy/ water. <i>Nick Baguley, US West Big Data Hub Steering Committee and President of Big Data Utah (moderator)</i> <i>Nikos Sarris, Chair, Big Data Expert Group of the PICASSO Project</i> <i>Gari Clifford, Professor, Emory University and Georgia Tech</i> <i>Florence Hudson, Senior Vice President and Chief Innovation Officer, Internet2</i> <i>Arne J. Berre, SINTEF, BDVA TF6 Technical Priorities lead and DataBio project</i> <i>Milan Petkovic, BDVA Vice-President, Leader BDVA Task Force "Applications"</i>
6:45 pm	Welcome and Goals for Tomorrow <i>Lea Shanley, US South Big Data Innovation Hub</i> <i>Laure Le Bars, BDVA President</i> <i>Nikos Sarris, Chair, Big Data Expert Group of the PICASSO Project</i>	12:00 pm	Reflection on morning sessions <i>Lea Shanley, US South Big Data Innovation Hub</i>
7:00 pm	Speed Networking	12:15 pm	Lunch
8:30 pm	Adjourn	1:30 pm	Breakout groups instructions Breakout groups on four topics that will identify opportunities for direct bilateral research and innovation collaborations (at the project level and between individual researchers) between the US and EU, especially between the NSF Big Data Hub & Spoke projects and the European BDV PPP Lighthouse/Large Scale Pilots and Innovation projects along the verticals listed above as well as workforce development.
Monday, November 20 – Workshop			
Inria, Le Chesnay			
8:00 am	Bus from Gare de Versailles Château Rive Gauche to Inria	1:45 pm	Speed sessions for contributing to two groups (20 minutes each) Visit your areas of secondary and tertiary interest
8:30 am	Coffee	2:30 pm	Coffee Break
9:00 am	Welcome, introductions, and review of workshop goals <i>Lea Shanley, US South Big Data Innovation Hub</i> <i>Nozha Boujemaa, Inria Research Director, DATAIA Institute Director</i> <i>Andreas Metzger, EU BDVA Deputy Secretary General</i>	2:45 pm	Resume Breakout discussions at your main topic of interest
9:15 am	Keynotes: Big Data Ecosystems, Strategies in the US and the EU <i>Andreas Metzger, EU BDVA Deputy Secretary General</i> <i>Fen Zhao, NSF</i>	4:45 pm	Reassemble with report outs from breakout groups and discussion, any emerging ideas, recommendations and priority next steps
9:45 am	Panel: Effective models and practices for bridging urgent workforce needs that span academia and industry <i>Renata Rawlings-Goss, co-Executive Director, US South Big Data Hub (moderator)</i> <i>Ed Curry, EU BDVA Vice President, Leader "Skills" BDVe PPP support action</i> <i>Andrea Manieri, EDISON project</i> <i>Tim Gabel, Executive Vice President, Social, Statistical, and Environmental Sciences, RTI International</i>	5:15 pm	Closing Comments
10:45 am	Break	5:30 pm	Adjourn for the Day
		5:45 pm	Bus from Inria to Gare de Versailles Château Rive Gauche

Figure 1: Agenda

2.3. Meeting Participants

A number of permanent and external participants took part in this 3rd EG meeting. As already mentioned above, the Trans-Atlantic Workshop on Public Private Partnerships for Big Data had over 45 participants both from the EU and from the US. More detailed information about the participants of the workshop can be found in **D4.8: Final summary of activities about the EU-US ICT community enhancement including evaluation of results and lessons learnt**.

2.3.1. Permanent Members

The following permanent members of the EG Group have participated both in the 3rd EG meeting and in the Trans-Atlantic workshop.

Name	Organization Position
Nikos Sarris EG Chair	ATC SA, Greece Head of the ATC Innovation Lab, member in the Steering Committee of the NESSI European Technology Platform and a representative of ATC in the General Assembly of the Big Data Value Association
Andreas Metzger	University of Duisburg-Essen, PALUNO, Germany BDVA – EU Head of Adaptive Systems and Future Internet Applications, Chief technical architect of the European Future Internet Public Private Partnership project on transport, logistics and agri-food (Flspace), Deputy general secretary of the Big Data Value Association (BDVA) and steering committee vice chair of the European Technology Platform NESSI
Ray Walsh	Dublin City University, Ireland BDVA-EU Assistant Professor at Dublin City University. Lead Editor of ISO WG9 Big Data Standards , Head of Ireland Delegation for Big Data at NSAI , Member of Cloud Select Industry Group (C-SIG) for DG-CNECT at European Commission, Steering Board member for NetWorld2020 the European Technology Platform for communications networks and services, Chair of Standardisation Group at Big Data Value Association (BDVA) , Digital Leader at World Economic Forum.

2.3.2. External Members

A number of external members have also participated in the meeting. What is critical to mention, is that all members below have been actively collaborating with the Big Data EG Group throughout the whole project and have participated either physical or remotely also in the 2nd EG meeting which has held in Minnesota.

Name	Organization Position
Melissa Cragin	Midwest Big Data Innovation Hub & University of Illinois at Urbana-Champaign, USA Executive Director

Meredith M. Lee	West Big Data Innovation Hub & UC Berkeley, USA Executive Director
Lea Shanley	South Big Data Innovation Hub & University of North Carolina at Chapel Hill, USA co-Executive Director
Andrew S. Hoffman	University of Washington, USA Data Ecologies Lab Human Centered Design & Engineering Big Data Regional Innovation Hubs Investigator
Arne Berre	SINTEF, Norway BDVA – EU Chief Scientist

2.4. Photos



Figure 2: PICASSO EG Members (permanent) during the Trans-Atlantic Workshop



Figure 3: PICASSO EG Members (permanent and external) during the Trans-Atlantic Workshop



Figure 4: Participants of the Trans-Atlantic Workshop

2.5. Outcomes & Future Plans

2.5.1. Major Outcomes

This 3rd expert group meeting gave the opportunity to Expert Group members to interact with some of the most important actors and organisations from the Big Data sector both from the EU and the US. Concrete areas and topics for collaboration on Big Data between EU and US have been identified and preliminary suggestions for collaboration have been produced and shared between policy makers (i.e. NSF, DG Connect). In conclusion, the meeting led to a fruitful discussion between all members that helped both sides to better understand the needs

and opportunities and agreed to jointly collaborate on a number of scientific and networking topics. The outcomes of this workshop resulted to an update of the Big Data Opportunity Report and were also infused directly to **D3.2 Strategic initiatives proposals and recommendations.**

2.5.2. Future Plans

Participants of the Big Data Expert Group have joined this “EU-US Big Data Open Community of Experts” who met for the first time in the Trans-Atlantic Workshop on Public Private Partnerships for Big Data. This self-sustained community of over **50 Big Data Experts** and Policy Makers has been established mainly because of the joint efforts of the PICASSO EG Group, BDVA and the US Big Data Hubs. This community will remain live after the project ends as the animation of it has passed from the PICASSO EG Group to the US Hubs and to members of the BDVA. Moreover, the example of the Trans-Atlantic Workshop on Public Private Partnerships for Big Data showed, that US funding for activities is possible as the workshop was funded by NSF (only US participants). A set of concrete activities and measures for collaboration have been defined while a second workshop is schedule for 2018.

3. Report of the Expert Group on IoT/CPS

3.1. Meeting Objectives

Due to funding limitations, the 3rd Expert Group meeting was organized remotely on May 16, 2018, in the form of an **interactive IoT/CPS webinar “Challenges and Opportunities in Autonomous Cyber-Physical Systems”**. The objectives of the 3rd Expert Group meeting were to discuss the current challenges in autonomy as well as EU-US collaboration mechanisms and the proposals for concrete strategic initiatives that were developed by the IoT/CPS Expert Group with an international audience of IoT, CPS, and application experts and to generate new ideas and recommendations for EU-US research and innovation collaboration. The webinar invitation is shown in the following:



Invitation

Challenges and Opportunities in Autonomous Cyber-physical Systems Interactive Webinar by the PICASSO Project

The Internet of Things (IoT) and cyber-physical systems (CPS) are key pillars for future smart technological systems and industrial infrastructures, and their enormous potential has been recognized in the EU and the US. The PICASSO project has developed a comprehensive analysis of the drivers, needs, and research and innovation priorities in the EU and the US in these technology domains¹ and has identified **autonomy in IoT-enabled cyber-physical systems** as a key challenge in both, the EU and the US. To discuss, validate, and refine our findings, we will hold an **interactive webinar** to which you are warmly invited. The main objectives of the webinar are to discuss the current challenges in autonomy as well as suitable EU-US collaboration mechanisms with an international audience of IoT, CPS, and application experts and to generate new ideas and recommendations for EU-US research and innovation collaboration. The details are:

Date and time: Wednesday, May 16, 2018, 2 pm UTC / 4 pm CEST / 10 am EDT

Duration: Approx. 60 minutes

Registration:

If you are interested in research and innovation in the *IoT* and *CPS*, in meeting like-minded experts from around the world, and in supporting us in the development of promising ideas for EU-US collaboration, please **register to the webinar – it's free:** <https://goo.gl/V9P6Go>

For more information, please write to contact@picasso-project.eu. We are looking forward to discussing with you!

The 30-month *PICASSO* project seeks to reinforce EU-US collaboration in ICT research and innovation focusing on pre-competitive research in key enabling technologies related to societal challenges – 5G Networks, Big Data, Internet of Things and Cyber Physical Systems – and to support policy dialogue on privacy, security, internet governance, and interoperability.

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If you have not participated in an Adobe Connect meeting before, you may wish to use the following links to:

1. [Test your connection](#)

2. [Familiarize yourself with the software using this overview](#)

¹ Download the report here: http://www.picasso-project.eu/wp-content/uploads/2017/03/PICASSO-Opportunity-Report_March-2017_revMar19.pdf



PICASSO has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 687874.

3.2. Meeting Agenda

The agenda of the interactive webinar is shown in the following figure:

- **How to Participate – An Overview of the Adobe Connect System**
Riccardo Carelli, APRE, Italy
Project Manager
- **Welcome, PICASSO Overview, and Webinar Objectives**
Sebastian Engell, Professor of Process Dynamics and Operations,
Technische Universität Dortmund, Germany
Expert Group Chair
- **Challenges & Opportunities for EU-US Collaboration in Autonomous Cyber-physical Systems**
Christian Sonntag, Process Dynamics and Operations Group,
Technische Universität Dortmund, Germany
Expert Group Manager
- **Discussion and Feedback**
Moderated by Sebastian Engell

3.3. Meeting Participants

The webinar was attended by 28 international experts¹ from academia and industry:

- 8 participants were US-based (6 from academia, 1 from industry, 1 from the public sector).
- 19 participants were EU-based (5 from Germany, 5 from Italy, 2 from Greece, 2 from the UK, 2 from Portugal, 1 from France, 1 from Switzerland, and 1 from the Netherlands). Of the EU participants, 13 had an academic background, 6 represented industries.
- 1 participant attended from an Argentinian university.

3.4. Outcomes & Future Plans

After an introduction and PICASSO overview by the chair of the IoT/CPS Expert Group, Prof. Sebastian Engell, the Expert Group manager Christian Sonntag gave a talk that summarized the main results of the work of the IoT/CPS Expert Group. The six technology themes that were identified as promising for EU-US collaboration by the Expert Group were presented, i.e. “Closing the Loop in IoT-enabled Cyber-physical Systems”, “Integration, Interoperability, Flexibility, and Reconfiguration”, “Model-based Systems Engineering”, “Trust, (Cyber-)security, Robustness, Resilience, and Dependability”, “Autonomy and Humans in the Loop”, and “Situational Awareness, Diagnostics, Prognostics” and then the theme that was identified as most promising (“Autonomy and Humans in the Loop”) was explored in more detail. The barriers for collaboration that were identified by the Expert Group were discussed, and the talk concluded with a summary of the two strategic initiative proposals that were

¹ The names of the participants of the public webinar are not shown here to protect their privacy.

developed by the Expert Group (“Joint EU-US Knowledge Exchange Initiative” and “Joint NSF-EC Programme on Autonomous IoT-enabled Cyber-physical Systems”).

The main objectives of the discussion were to:

- Discuss, validate, and elaborate on the proposed technological challenges in autonomy and humans in the loop
- Discuss, validate, and elaborate on EU-US collaboration barriers
- Discuss, validate, and elaborate on the two strategic initiative proposals

The key result of the fruitful discussion that followed the presentations was that, in addition to the mechanisms proposed before, there is a significant opportunity for collaboration at the city and state levels in the US. The feeling was that initiatives focusing on local/regional collaborations, e.g. between EU and US cities or (preferably) associations of cities, between US states and single EU member countries, or between EU and US ports, have a high chance of success even in the current political climate. Suitable initiatives could focus on the exchange of information and experiences, e.g. on topics such as autonomy, AI, cyber-security, smart cities, or smart ports where actors on both sides, such as cities, already have partnerships and/or are able to attract external funding (e.g. from local funding agencies or states) and to possibly include the elements of information exchange into the proposals.

The results of the discussion were used to finalize the key PICASSO documents (the IoT/CPS opportunity report and the proposals for strategic initiatives), where the option for local cooperation was added as a promising opportunity. This material will be valuable for many external stakeholders even after the end of PICASSO, e.g. in follow-up initiatives that are established in response to our recommendations.

4. Report of the Expert Group on 5G

4.1. Meeting Objectives

The 3rd 5G expert group meeting took place on Dec 6th, 2017 in Singapore and was in conjunction with the IEEE flagship communication society conference Globecom 2017. The objectives of this meeting are to

- **Refine and validate** the final recommendations for **the opportunity report**.
- **Make a decision and recommendation** for the participation of the H2020 call ICT-21-2018 EU-US Collaboration for Advanced Wireless Platform.
- **Brainstorm and propose** strategic initiative recommendations for EU-US collaboration.
- **Discuss** organization issues for the PICASSO final event in Washington D.C., June 2018.



4.2. Meeting Agenda

The meeting took place in the afternoon of December 6th, 2017, in the Marina Bay Sands Hotel, Singapore. The agenda is given in the following table:

13:00 – 13:05	Opening and Round of Introductions
13:05 – 13:30	Brief on Activities of PICASSO Project and 5G Expert Group <ul style="list-style-type: none"> • Summary of the 1st Trans-Atlantic Symposium on ICT Technology and Policy in Minneapolis, June 19-20th • Introduce two new external members of the PICASSO 5G expert group • Importance of increasing visibility and impact of the PICASSO 5G expert group
13:30-14:00	Discuss the H2020 call ICT-21-2018

	<ul style="list-style-type: none"> Analysis on the upcoming on EU-US 5G collaboration in the H2020 program Discuss possible collaboration mechanisms
14:00-14:45	Discuss and Brainstorming: strategic initiative <ul style="list-style-type: none"> Analysis on challenges and possibilities of EU-US collaboration on the 5G network Brainstorm on viable collaboration mechanisms and strategic initiatives
14:45-15:15	Discuss and Brainstorming: the PICASSO final event <ul style="list-style-type: none"> Propose meaningful topics for the final event Brainstorm on strategy for engaging interested parties, e.g., WiFiUS initiative.
15:15 – 15:45	The 5G Opportunity Report: Drivers, Needs, Opportunities, and Collaboration Proposals <ul style="list-style-type: none"> Discuss missing collaboration topics within the current opportunity report Provide the final recommendations on the EU-US collaboration topics
15:45– 15:50	Summary and Farewell

4.3. Meeting Participants

The meeting was attended by both, permanent and external members of 5G Expert Group:

Name	Organization Position
Gerhard Fettweis EG chair	TU Dresden, Germany Vodafone Chair professor, IEEE Fellow , member of acatech, Coordinator of 5GLab Germany, Coordinator of Cluster of Excellence cfaed and HAEC, Co-chair of the IEEE 5G Initiative Steering Committee, Co-founder of 12 high-tech start-ups
Chengshan Xiao	Lehigh University, US Professor, Department Chair , IEEE Fellow , former NSF Program Director.
Matti Latva-Aho	Oulu University, Finland Academy Professor, Head of Telecommunication Laboratory, co-coordinator of Finland-US wireless collaboration initiative WiFiUS.
Ari Pouttu	Oulu University, Finland Professor, Research director of centre for wireless communications Oulu
Amitava Ghosh	Nokia, US Nokia Fellow , Head of Small Cell Research, IEEE Fellow
Simone Redana	Nokia, Germany Head of Mobile Network Architecture & Systems Research Group

Meryem Simsek	ICSI/Berkeley, US Senior Scientist
Yaning Zou EG manager	TU Dresden, Germany Research manager at the Vodafone Chair

4.1. Outcomes & Future Plans

4.1.1. Major Outcomes

- Validated opportunity report and add two more recommendations on the **technology themes** for EU-US collaboration. In total, seven technology themes will be presented in the final opportunity report.
- Decided **not to pursue the H2020 call ICT-21-2018 as the PICASSO 5G Expert Group**. Instead, individual members of the 5G expert group can work separately with other consortiums who are interested in the call and disseminate outputs of PICASSO project to those consortiums.
- Proposed **three types of strategic initiatives** for EU-US collaboration on 5G in, e.g., Frameprogramme 9 (FP9).
 - ✓ EU-US Twinning Workshop Initiative
 - ✓ EU-US Twinning Coordination Project Initiative
 - ✓ EU-US academia research collaboration initiative
- Validated opportunity report and add two more recommendations on the **technology themes** for EU-US collaboration. In total, seven technology themes will be presented in the final opportunity report.
- Member of PICASSO 5G expert group prof. Matti Latva-Aho shall look into the possibility of co-locate WIFIUS workshop with US with the PICASSO final event for synergy.

4.1.2. Future Plans

Based on the discussion, all the EU meeting participants would participate in the H2020 call ICT-21-2018 through their own consortiums. In case one of them will be funded, the know-how obtained in the PICASSO project will be passed to the next project. Meanwhile, US meeting participants were also interested yet limited by their capacities or qualifications to participate NSF program. In any case, members of the PICASSO expert group from EU and US sides will continue to promote EU-US collaboration on the 5G or wireless network in their own organisations as well as in regional, national and international forums of consortia.

5. Report of the Expert Group on Policy

5.1. Meeting Objectives

The 3rd PICASSO Policy Expert group meeting gathers in Washington DC, on 17 June 2018, in order to discuss and finalize the PICASSO Policy White Paper conclusions and recommendations. For this, the draft White Paper is shared beforehand, so that Expert Group members can be well prepared.

5.2. Meeting Agenda

19:00	Welcome, purpose of the meeting
19:10	Introduction of key message conclusions and recommendations
19:20	Discussion on key messages, conclusions and recommendations
20:30	Way forward
21:00	Closure

5.3. Meeting Participants

Name	Organization Position
Maarten Botterman	GNKS Consult BV Director, GNKS Consult BV; Chairman, IGF DC IoT, Chairman Supervisory Board, NLnet Foundation; ICANN Board Member; Institute for Accountability in the Digital Age Co-founder and Board Member - (Policy Expert Group Chair)
Jonathan Cave	GNKS Consult BV and Warwick University Professor, Warwick University; Associate GNKS Consult BV; Alan Turing Institute fellow; Regulatory Policy Committee Economist Member
Avri Doria	Technicalities Researcher, Technicalities; ICANN Board Member
Dan Caprio	The Providence Group Co-Founder and Executive Chairman, The Providence Group
Glenn Ricart	US Ignite Founder and CTO, US Ignite; Internet Hall of Fame Inductee
Dave Farber (contribution via email)	Keio University and Carnegie Mellon Co-Director of the Cyber Civilization Research Center at Keio University; Professor Emeritus at the University of Pennsylvania; adjunct professor at Carnegie Mellon University; visiting professor at Stevens Institute of Technology and the University of Delaware; IEEE fellow; ACM fellow; Internet Hall of Fame Inductee.

5.4. Outcomes & Future Plans

The expected outcomes of the 3rd Policy Expert Group meeting would be the acknowledgement that ICT is already today an integrated part of society as we know it. Digital services are rapidly becoming the norm and many of these services service us, without us noting anymore – ranging from traffic lights that react on presence of traffic to indoor climate systems that note our presence and patterns of use of the space. It is also clear that developments are increasingly driven by Communities – that are not determined by borders, jurisdictions per se. And it is expected to consider and propose the following strategic proposals:

1. *Privacy*: Solutions need to be found to allow services to develop that respect (European and US) privacy and data protection frameworks and – where appropriate – challenge their provisions. This will require policy collaboration that is looking forward to joint and sustainable solutions aimed at ensuring an even higher level goal than preserving privacy: that of preserving “human dignity” in a digital age, ensuring that we can still live as humans in our digital environment
2. *Security*: Recognising basic security is key to whatever we want to ensure: set up joint EU/US research collaboration to develop biologically inspired security. With IoT and underlying interconnections, there’s a significant risk with IoT devices providing a back door to enterprise systems and data. Using biological constructs (in particular those relating to immune responses and contagion), we may be able identify attacks before they become widespread and respond in a proportionate and dynamic fashion by directing resources to the appropriate area.
3. *Standards*: Stimulate participation of sponsored research and innovation in global (IETF, ITU, IEEE etc.) rather than focus on regional standardisation platforms alone, for EU/US collaboration.
4. *Spectrum*: Set up joint EU/US research collaboration on developing agility in spectrum allocation and management to ensure that ubiquitous connectivity enabling digital services to work becomes possible, not being held back by (slow and ineffective) spectrum allocation negotiations.
5. *Communities*: Support exchange of good practice experience between Communities in EU and US; many societal challenges are common to both regions and different types of communities and the potential of many solutions that have already been devised for adaptation elsewhere and optimisation *in situ* remain under-explored.

6. Conclusions

The four meetings of the PICASSO Expert Groups on Big Data, IoT/CPS, 5G, and Policy were held independently to each other in order to maximise the impact of each EG. All meetings of the Technical EGs on Big Data, IoT/CPS, 5G achieved all of their objectives and led to focused, fruitful discussions between all participants that helped to further establish a common understanding of the drivers, challenges, and opportunities on both sides, to identify and refine the proposals for collaboration actions and to define further steps and actions for collaboration after the project ends.

More specific, all Technical Expert Groups have worked towards enhancing collaboration between EU and US in their technological fields and discussed plans for pursuing future collaboration opportunities after the project ends, through EU and US funding or by building on existing communities between professionals. The 3rd meeting of the Policy EG will take place on June 17th, 2018 in Washington DC, and conclude with a number of strategic proposals that in the opinion of the distinguished members of the Policy Expert Group would very much support ICT R&I collaboration on issues like 5G networks (or: Advanced Wireless Communications); Big Data; Internet of Things (specifically Cyber-physical Systems).

7. References

1. **Sonntag, C., et al.** *Towards Enhanced EU-US ICT Pre-competitive Collaboration - Opportunity Report of the EU Project PICASSO*. [Hrsg.] C. Sonntag und S. Engell. Revised version V1.0.1 (March 19, 2017). 2017. Available at: <http://www.picasso-project.eu/outreach/project-reports>.
2. **Thompson, Haydn.** *First Expert Group Meeting Report, Washington D.C.* 2016. Available at: <http://www.picasso-project.eu/outreach/>.