



D4.4

Exploitation and Sustainability Plan

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

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Project Deliverable

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Authors (organisations):

Inno TSD

Contributions from all partners

Reviewers (organisations):

Svetlana Klessova, inno TSD

Abstract: This document is the final Exploitation and Sustainability Plan, elaborated on the basis of a draft that was developed at midterm of the project to investigate first ideas and paths for sustainability and exploitation of project tools and results. These paths have been examined and a final direction was chosen to ensure sustainability of the PICASSO project outputs. The main assets which constitute PICASSO along with the exploitation paths that are possible to safeguard their long-term sustainability after the end of the project are described within this document.

Keywords: Sustainability, exploitation, project assets

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The PICASSO Project

The aim of the 30-months PICASSO project was (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 was oriented to industrial needs, provided a forum for ICT communities and involved 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 have been a unique feature of PICASSO.

A number of analyses have been accomplished, as well as related publications, that for a major part are made public and contribute to the project's outreach. A specific information tool, CROSSROADS, has been developed to foster awareness raising and knowledge sharing through dedicated webpages and a mobile app among the RDI communities in Europe and the USA. The four PICASSO Expert Groups with their strategic activities and planned sustainability paths can be considered a major achievement of the project.

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Acronyms and Definitions

Acronyms	Defined as
CPS	Cyber-physical Systems
CS	Communication Strategy
DoA	Description of Action
EC	European Commission
EG	Expert Group
EU	European Union
IoT	Internet of Things
R&I	Research and Innovation
WP	Work Package
US	United States of America

1. Executive Summary

The PICASSO project was a 30-months project funded under the European Union Horizon 2020 programme aiming to support EU-US collaboration in the field of ICT. Since January 2016 the project partners have carefully designed and implemented a wide range of activities aiming 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
- ⇒ support the EU-US ICT policy dialogue by contributions related to e.g. privacy, security, standardisation

In order to pave the way towards the proper exploitation and sustainability of the PICASSO project offering beyond its lifespan, first ideas for sustainable actions had been gathered in a draft Exploitation and Sustainability Plan at mid-term of the project. In this frame, a list of exploitable assets had been established. For each project exploitable asset, the different options have been evaluated in internal discussions among the project partners and with stakeholders (where relevant) and the sustainability path for each asset has been chosen. The exploitation path is further illustrated in this final Exploitation and Sustainability Plan.

The pool of **PICASSO exploitable assets** that are expected to be exploited well beyond the completion of the project comprises several categories as displayed below.

- ★ Project assets internally maintained: those that will continue to work after the project end and rely on the input from partners.
 - PICASSO website (will be maintained at least 24 months after the project completion). During the maintenance period, the website will remain open for public inputs, e.g. comments, questions and answers.
 - Helpdesk on EU-US collaboration, programmes and open calls
 - “Access opportunities” Webinars (recorded)
 - Info-packs: Fact sheets on access opportunities in each of the technical focus areas
 - PICASSO knowledge related to EU-US ICT collaboration
 - 3 of the PICASSO Expert Groups (5G Networks, CPS/IoT, Policy) with engaged members (in average 6 per group): collaboration with experts will be continued under the lead of the EG Chairs.
- ★ Project assets open to sustainable external exploitation: those that can be exploited by parties external to the project – any type of stakeholder interested in the topic and item – and will become sustainable once such external party has taken over the activity.
 - 1 PICASSO Expert Group (Big Data) with engaged members is suggested to BDVA for the set up of a specific Working Group (pre-agreed, under investigation)
 - CROSSROADS – EU-US info-hub mobile application and dedicated webpages has been suggested to the ENRICH in the USA (previously named NearUS) initiative for incorporation to its services (pre-agreed, under investigation)
 - Trans-Atlantic Symposium on ICT Technology and Policy – the second edition is already co-organised with an external partner, The Wilson Center (Washington, DC, USA) and further

editions with a similar format could for example be taken over by another organisation / initiative with sponsorship from NSF

★ Exploitable results of the project: documents and materials that will be used by stakeholders, but will not be updated after the end of PICASSO, e.g. analysis reports, recommendations; (this includes other main assets which constitute the PICASSO offering, such as the project logo).

- PICASSO social media accounts (twitter, linkedIn)
- Analysis report “Overview on ICT-related access opportunities in EU and US”
- Analysis report “Panorama of ICT landscape in EU and US”
- Analysis report “Industrial drivers and societal needs”
- Opportunity report for EU-US collaboration with recommendations (5G Networks, Big Data, CPS/IoT, Policy)
- Proposals for EU-US collaboration actions and strategic initiatives (5G Networks, Big Data, CPS/IoT targeting policy makers)
- Policy briefs
- Policy White Paper with recommendations for specific high potential ICT policy initiatives in the EU-US dialogue
- Policy webinars (recorded)

The exploitable outcomes and main assets which constitute the PICASSO offering along with the exploitation paths that are envisaged to safeguard their long-term sustainability after the end of the project are described within this document. Whilst chapter 2 provides an overview, detailed descriptions are displayed in chapter 4 for each of them.

This report includes the following sections:

- Section 2: presents the main assets/exploitable outcomes and sustainable activities;
- Section 3: presents the external stakeholders, who could benefit from the project assets and main sustainable outcomes;
- Section 4: provides an overview of the main exploitation routes of the project assets;
- Section 5: presents partners intentions on sustaining the project results
- Section 6: presents the main conclusions of the document

More information on PICASSO, its results, as well as on the consortium is available on the web portal of the project (www.picasso-project.eu).

2. Overview of Exploitation Assets

The PICASSO sustainable outcomes created and exploitable results obtained during the project implementation enhance the potential of many EU–US collaboration activities. Any ongoing or future planned initiative targeting in cooperation between the two regions in the field of ICT could exploit these assets and this is an additional reason for the promotion of PICASSO assets beyond the project.

The sustainable outcomes and exploitable results of the PICASSO project are summarised in the following table. A detailed description of these assets, in terms of potential contribution to the sustainability of the project, is provided within chapter 4.

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
Project assets internally maintained (relying on input by partners)					
PICASSO website <i>(exploitable asset)</i>	inno	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public)	Copyright of PICASSO partners	The PICASSO website has been implemented by inno with contribution of all partners. It is a visually attractive communication hub which includes information on the Expert Groups, reports, Newsletters and project communications, project information, etc. It is also an entry to the CROSSROADS dedicated pages (see below).	The PICASSO website will be publicly accessible under the same url (www.picasso-project.eu). The website will remain live at least for two years after the project ends.
Helpdesk on EU-US collaboration <i>(sustainable asset)</i>	APRE	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives)	Copyright of PICASSO partners	The Helpdesk is integrated both into the project website and CROSSROADS (where it is further developed as a whole sub-section). Requests addressed to the helpdesk have been mainly handled by APRE, with the support of inno and FIU-EUCE.	The Helpdesk will be maintained and activity continued as part of APRE's role as ICT National Contact Point. The specific information (including FAQ etc.) can easily be transferred into another website or printed material if useful.

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
<p>“Access opportunities” Webinars (recorded) <i>(exploitable asset)</i></p>	<p>APRE</p>	<p>Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Project administrators</p>	<p>Copyright of PICASSO partners</p>	<p>The webinars were organised by PICASSO partners, notably APRE, FIU-EUCE and inno for logistics aspects and content aspects, involving generally other partners. All webinars have been recorded to allow anyone interested to benefit from the content of presentations and discussions – even beyond the project end. The recorded webinars are both available on the project website and on CROSSROADS.</p>	<p>No updates will be made, but the webinars (recorded versions) will remain accessible on the website for at least 2 years and on CROSSROADS - the sustainability path of CROSSROADS includes access to these webinars on a longer run as well. All PICASSO’s partners, and especially those directly involved in the webinar discussions, will use and make reference to this material.</p>
<p>Info-packs: Fact sheets on access opportunities in each of the technical focus areas <i>(exploitable asset)</i></p>	<p>APRE</p>	<p>Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects; Project administrators</p>	<p>Public document</p>	<p>The Info-packs, also called fact sheets, have been prepared by APRE with contributions by other partners, notably Expert Group Chairs. All fact sheets are continuously updated throughout the project lifetime and remain published on the PICASSO website. They are also part of CROSSROADS and updated therein.</p>	<p>The Info-packs / fact sheets will become part of the offer of APRE in the activity of support to R&I stakeholders. The developed documents will remain available as part of CROSSROADS.</p>

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
<p>PICASSO knowledge related to EU-US ICT collaboration <i>(exploitable intangible asset)</i></p>	<p>inno, APRE</p>	<p>EU and US ICT policy makers and specialists</p>	<p>N/A</p>	<p>The PICASSO team cumulated in-depth knowledge about the EU-US ICT collaboration, notably on the thematic focus areas of the project. The consortium is willing to continue support, although in a reduced way, to orient enquiries related to EU-US ICT collaboration – coming from EU and US ICT stakeholders and policy makers – to the relevant EU and US focus points, and to contribute to the major events related to EU-US ICT collaboration¹.</p>	<p>The orientation is suggested through the helpdesk (see above). Several EU initiatives exist that work on EU-US collaboration; it is expected that most stakeholders can be redirected to those initiatives 5BILAT USA 4.0, AEGIS, ENRICH in the USA).</p>
<p>PICASSO Expert Groups – IoT/CPS, 5G Networks, Policy (for Big Data see description in the 2nd category) <i>(exploitable asset)</i></p>	<p>TUDO, TUD, GNKS respectively</p>	<p>Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy). Other initiatives / projects</p>	<p>None</p>	<p>The Expert Groups (EG) on IoT/CPS, 5G Networks and Policy are managed by PICASSO Expert Group Chairs from TUDO, TUD, and GNKS respectively. Some of the other PICASSO project partners are involved as members (THHINK, TLI in the IoT/CPS EG).</p>	<p>- IoT/CPS: IoT/CPS: TUDO plans to employ the contacts and working relationships established in the IoT/CPS Expert Group to support follow-up activities when opportunities arise.</p>

¹ This needs to take into account certain limitation, for example, travel cost coverage from the organisers to take part in the event will most probably be needed, etc.

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
					<p>- 5G Networks: the 5G Expert Group has encouraged members of the Expert Group to participate in the H2020ICT-21-2018 call separately. To our knowledge, all the EG members from the EU side have participated in some consortiums and submitted their own proposals. It is expected that the knowledge developed by the PICASSO 5G EG will be delivered to the next project by members of the 5G EG.</p> <p>- Policy: insights achieved with PICASSO are widely shared in the global Internet Governance domain, such as during EuroDIG2018 and IGF2018. The white paper comes with a number of recommendations that can be used for</p>

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
					development of new research programmes.
Project assets open to sustainable external exploitation (open to exploitation by external parties)					
PICASSO Expert Group – Big Data (<i>exploitable asset</i>)	ATC	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy). Other initiatives / projects	None	The Expert Group on Big Data is managed by the PICASSO Expert Group Chair from ATC.	Throughout the project a parallel community of Big Data experts (approximately 50 members) both from EU and US has been established as an outcome of the PICASSO Big Data EG Group. This community is currently operated and organised by the South Big Data Hub (US), the Head of the PICASSO Big Data Group and BDVA members and will remain active after the project ends. Future joint activities have been already scheduled. Moreover, the possibility of incorporating this community under the BDVA, focusing on EU-US collaboration is also examined.

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
CROSSROADS – EU-US info-hub <i>(exploitable asset)</i>	inno	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public). Other initiatives / projects / networks working on either ICT or EU-US collaboration	Copyright of PICASSO partners	CROSSROADS has been implemented by inno with contribution of all partners. The website pages that give access to the tool will remain live at least for two years after the project ends. The same applies to the mobile application (unless there is a constraint with App Store and Android for this). All content can easily be extracted as data bases or downloadable reports and thus be provided to external parties interested in the exploitation.	As one of the major exploitable assets and as the platform of numerous project results, the most suitable exploitation path for this asset seemed to propose CROSSROADS' exploitation to a third party. The take over should allow further updates and possibly enriching of the content. inno has suggested CROSSROADS' exploitation to the ENRICH in USA (previously named NearUS) initiative and exchanges on how and when this could concretely be done are ongoing.
Trans-Atlantic Symposium on ICT Technology <i>(exploitable asset)</i>	TLI	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy makers)	None	The Trans-Atlantic Symposium is organised by TLI with the support of inno and APRE and input by all partners, notably regarding the organisation of sessions and invitation of speakers. It is a stand-alone event	Beyond the project lifespan this event concept could be continued by the Wilson Center or by another initiative or organisation, possibly funded

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
				organised by PICASSO in its first edition and involving other relevant initiatives / projects. The second edition is organised in June 2018 in collaboration with the Wilson Center, Washington, DC.	by NSF. Investigations are ongoing.
Exploitable results of the project (available to stakeholders without update by partners)					
PICASSO social media accounts <i>(exploitable asset)</i>	ATC	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public).	Copyright of PICASSO partners	The PICASSO social media accounts have been set up and coordinated by ATC.	The accounts will remain open but not updated after the project end. Any interested party may consider the option to maintain any social media account after the project ends, by shifting it into a topic specific account for EU-US collaboration (i.e. focusing only on IoT or 5G). This is however not planned so far.
Analysis report “Overview on ICT-related access	APRE	European Commission; US policy stakeholders / administrations;	Public report	This analysis report was mainly prepared by APRE with the support of other project partners. It is a valuable “stand-alone” exploitable result as a public report that can be used after	No further update of the report is planned. Updates of content items such as open calls are done within CROSSROADS until the project end. The

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
opportunities in EU and US” <i>(exploitable asset)</i>		Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Project administrators		the project – and its content has already been used for content of CROSSROADS and updated therein.	sustainability path of CROSSROADS includes information stemming from this report.
Analysis report “Panorama of ICT landscape in EU and US” <i>(exploitable asset)</i>	THHINK	European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy). Other initiatives / projects	Public report	This analysis report was mainly prepared by THHINK with contributions / feedback from all partners, including Expert Groups. It is a valuable “stand-alone” exploitable result as a public report that can be used after the project – and its content (programmes, initiatives, projects notably) has already been used for content of CROSSROADS and updated therein.	No further update of the report is planned. Updates of content items are done within CROSSROADS until the project end. The sustainability path of CROSSROADS includes information stemming from this report.
Analysis report “Industrial drivers and societal needs” <i>(exploitable asset)</i>	THHINK	European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts,	Public report	This analysis report was mainly prepared by THHINK with contributions / feedback from all partners, including Expert Groups. It includes the collection of extensive feedback from industry	No further update of the report is planned. Updates of content items are done within CROSSROADS until the project end. The sustainability path of

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
		<p>industry representatives, policy).</p> <p>Other initiatives / projects</p>		<p>representatives. It is a valuable “stand-alone” exploitable result as a public report that can be used after the project – and its content (programmes, initiatives, projects notably) has already been used for content of CROSSROADS and updated therein.</p>	<p>CROSSROADS includes information stemming from this report.</p>
<p>Opportunity report for EU-US collaboration with recommendations (5G Networks, Big Data, IoT/CPS, Policy) <i>(exploitable asset)</i></p>	<p>TUDO</p>	<p>European Commission; US policy stakeholders / administrations;</p> <p>Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy).</p> <p>Other initiatives / projects</p>	<p>Public report</p>	<p>This report has been compiled on the basis of individual Opportunity Reports of all PICASSO Expert Groups. The Opportunity reports’ content was discussed with all Expert Groups’ members and were distributed widely to international experts. They were also provided as draft for public consultation – publication on the PICASSO website and discussion in a webinar of the IoT/CPS report (see “webinars for public consultation”). The final opportunity reports are made publicly available.</p>	<p>The opportunity report provides comprehensive analyses and comparisons of EU and US RDI priorities, application sectors, funding environments, potential barriers, and proposals for collaboration actions. This material will be valuable information for stakeholders interested in setting up or participating in EU-US collaboration actions even after the end of PICASSO. For 5G in particular, this document will</p>

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
					provide initial inputs to the project that will be funded by the EC under the call H2020-ICT-21-2018 and NSF ICE-T on EU-US Wireless collaboration.
Proposals for EU-US collaboration actions and strategic initiatives (5G Networks, Big Data, CPS/IoT targeting policy makers) <i>(exploitable asset)</i>	TUDO TUD ATC	European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy). Other initiatives / projects	Public Report	This report is compiled with individual sections of all PICASSO Expert Groups. The reports' content has been discussed within each Expert Group beforehand. The proposals identified provide a concrete guideline for the establishment and support of EU-US collaboration actions that can be built upon by all relevant stakeholders. Their relevance is guaranteed by the contributions from high-level experts from EU and US funding agencies, industry (networks), and academia, and several actors have expressed interest in participating in such actions.	The report is an output of the Expert Groups' activity during the second project period. The proposals provide a guideline for collaboration that will be valuable to relevant policy makers even after the project has ended. IoT/CPS: The strategic initiative proposals and collaboration opportunities developed by the IoT/CPS Expert Group will be beneficial for all participants in the future, e.g. to establish follow-up activities and projects. Several of the actors that were part of the IoT/CPS Expert Group are involved in

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
					<p>other initiatives in the area of international collaboration and will continue to pursue the PICASSO objectives and to promote the PICASSO results.</p> <p>5G: Based on solid analysis of EU and US funding and research landscape, the 5G EG proposed 3 different strategic initiatives to policy makers, e.g., EC and NSF. In addition, some detailed recommendations are also provided considering the critical differences between EU and US funding agencies. Those proposals and recommendations will provide important insights to EC and NSF for continuing EU-US collaboration on wireless.</p> <p>Big Data: Strategic proposals have been designed jointly with BDVA and the US Big Data Hubs</p>

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
					during a physical workshop held in France (November 2017). These proposals have been disseminated to a wide networks of policy makers including members of the EC and the NSF.
Policy briefs <i>(exploitable asset)</i>	GNKS	European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy). Other initiatives / projects	Public report	The policy briefs are a major outcome of the work of the PICASSO Policy Expert Group, chaired by GNKS. All have been presented in public webinars and discussed with interested stakeholders in a draft version, prior to finalization. The final versions are published on the PICASSO website and on CROSSROADS.	No updates, but it can be expected that the policy briefs will be used by interested stakeholders working in the field. All results are summarised and presented in a PICASSO Policy White Paper towards Summer 2018. This paper, as well as the individual policy papers, will remain open to use by external parties.
Policy White Paper with recommendations for specific high potential ICT policy	GNKS	European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration	Public report	The White Paper is specifically based on the lessons learned and expressed in the policy paper. It includes a number of strategic recommendations and the rationale leading to those.	The Policy White Paper will be made widely available to policy makers and public and private research organisations as to facilitate better collaboration

Exploitable and/ or sustainable assets/ activities	Responsible partner for follow up	Main external stakeholders that may benefit	Intellectual Property Rights protection measures	Owner and partner(s) involved, information on access	Comments on the categorization and sustainable use of the asset
initiatives in the EU-US dialogue <i>(exploitable asset)</i>		(technical experts, industry representatives, policy). Other initiatives / projects			through insights and strategic recommendations in those fields where improvement is clearly achievable.
Policy webinars (recorded) <i>(exploitable asset)</i>	GNKS	Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy)	Copyright of PICASSO partners	The webinars were organised by PICASSO partners, notably APRE for logistics aspects and GNKS for content aspects, involving generally other partners. All webinars have been recorded to allow anyone interested to benefit from the content of presentations and discussions – even beyond the project end. The recorded webinars are both available on the project website and on CROSSROADS.	No updates, but remain accessible on the website for at least 2 years and on CROSSROADS - the sustainability path of CROSSROADS includes access to these webinars on a longer run as well.

Table 1: Main assets and exploitable outcomes of the PICASSO project

Independently from the list of assets above, PICASSO project material, project communications and visual identity items, such as the project logo, can be used by the partners as reference to their activities.

3. Potential benefits for the stakeholders

The external stakeholders, who could potentially benefit from the project outcomes, as well as the benefits that could arise for them, are briefly presented below. The first table presents the primary stakeholders of PICASSO (as defined in the Dissemination and Communication Strategy of the project) whereas the second table presents the secondary stakeholders. Representatives of any of these stakeholder groups can be candidates for the take-over of project outcomes and sustainable exploitation thereof, thus become an “external party” as specified for the 2nd category of project assets open to sustainable external exploitation – even at some time after the project end. Nevertheless, exploitation through other initiatives or projects seems more probable than through individuals.

Note that the Expert Group members are not mentioned as part of the stakeholders below, as they are considered an integrated part of PICASSO; they will naturally benefit from PICASSO results as they benefitted from the involvement in the project when it was running.

The table below presents potential benefits for the primary stakeholders of PICASSO:

<p>1. Representatives of Universities and Research Institutes/ Organisations and Research-related Networks from the EU / from the US respectively</p> <p><u>Benefits</u></p> <ul style="list-style-type: none"> - Learn about the US/EU ICT landscape, including projects, initiatives, networks and relevant research and industry actors - Get the picture of ICT research and industry priorities and trends in the US/EU and identify the fields with an enhanced collaboration potential - Learn about programmes and initiatives as a means of supporting research activities and become familiar with the corresponding procedures on how to participate in US/EU-funded projects, as well as relevant open calls - For industry, the results will help to identify opportunities to increase competitiveness by international collaboration - Raise awareness of their activities in the US/EU - Gain experience in 5G Networks, Big Data and CPS/IoT, as well as policy issues related to these fields - Learn about priorities and strategic directions on the thematic fields in the US/EU - Connect to relevant stakeholders from the US/EU
<p>2. Representatives of enterprises including SMEs and Business Networks, working in the field of ICT from the EU / from the US respectively</p> <p><u>Benefits</u></p> <p>Same as category 1.</p>
<p>3. 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</p> <p><u>Benefits</u></p> <ul style="list-style-type: none"> - Identify commonalities and differences between policy approaches related to the PICASSO focus areas - Learn about policy matters in both regions/countries related to the focus areas of the policy briefs (privacy & data protection, security, standards...)

- Identify strategic requirements of the US aligned with EU objectives and vice versa to further cooperation in 5G Networks, Big Data and CPS/IoT
- Receive recommendations approved by experts from both regions/countries on strategic initiatives
- Receive a recommended roadmap through the Whitepaper for high potential ICT policy initiatives in the EU-US policy dialogue

4. Other initiatives and projects targeting EU-US collaboration and / or one of the thematic focus areas of PICASSO

Benefits

- Learn about the US/EU ICT landscape, including projects, initiatives, networks and relevant research and industry actors
 - Get the picture of ICT research and industry priorities and trends in the US/EU and identify the fields with an enhanced collaboration potential
 - Learn about programmes and initiatives as a means of supporting research activities and become familiar with the corresponding procedures on how to participate in US/EU-funded projects, as well as relevant open calls
 - Raise awareness of their activities in the US/EU
 - Gain experience in 5G Networks, Big Data and CPS/IoT, as well as policy issues related to these fields
 - Learn about priorities and strategic directions on the thematic fields in the US/EU
- Connect to relevant stakeholders from the US/EU

Table 2: Potential benefits for the primary external stakeholders

The table below presents potential benefits for the secondary stakeholders of PICASSO:

5. Funding agencies from the EU and the US

Benefits

Same as categories 1, 2 and 3 with focus on access to information regarding programmes and funding schemes, as well as priority areas.

6. Representatives of R&I intermediaries in the EU and the US (e.g. clusters, incubators, ...)

Benefits

Same as categories 1 and 2 (representatives of research organisations and enterprises respectively) – for the benefit of their R&I members.

7. Media and citizens from the EU and the US

Benefits

- Learn about joint EU and US initiatives, projects and relevant stakeholders
- Learn about 5G Networks, Big Data and CPS/IoT, as well as policy issues related to these fields
- Benefit from implemented activity as it enhances research and industry, but is generally aligned to tackle societal needs: e.g. enhanced collaboration in 5G Networks facilitates the widespread and secure access, collaboration on Big Data or privacy & data protection issues (as part of the policy recommendations) impacts positively the daily use of most citizens of internet platforms and communication tools, etc. This benefit is obvious, even though it is difficult to measure in tangible terms.

Table 3: Potential benefits for the secondary external stakeholders

4. Exploitation & Sustainability Plan per asset

The major challenge that PICASSO partners faced during the project lifetime and following its completion is ensuring the continuation of its activities in a reduced format and the continuous exploitation of its major outcomes. This topic was discussed since the very beginning of the project (at the kick off meeting) and was taken into account when designing different project activities.

While it is evident that not all project activities are sustainable, PICASSO took advantage of the expertise and the intentions of each project partner as well as their actual involvement in the project, and designed a plan for keeping the knowledge accumulated by PICASSO updated and extend its impact on the targeted external stakeholders.

Following the particularities of each project asset, its sustainability channels are planned accordingly.

The following sections include a chapter for each exploitable asset and the related potential beneficiaries together with the detailed description of the suitable exploitation plans for ensuring the assets' use.

★ Project assets internally maintained:

Exploitable asset n°1

Description: **PICASSO website**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public)

Exploitation & Sustainability Plan: The PICASSO website has been a major dissemination and communication tool of the project. It contains information about the project objectives, partners and main outputs. Specific pages about the Expert Groups had been set up and a public repository gives access to all public reports, project communications, fact sheets, etc. It gives also access to the CROSSROADS web pages. It can be expected that this information is still relevant to the stakeholder groups after the project lifetime, notably of course the major analysis and activity reports.

The PICASSO website will be kept publicly accessible under the same url (www.picasso-project.eu). The website will remain live at least for two years after the project ends. A notification will be integrated that specifies that the content is however no longer updated (after the project end).

Exploitable asset n°2

Description: **Helpdesk on EU-US collaboration, programmes and open calls**

Target Groups / beneficiaries: Individuals or entities (e.g. university services) interested in EU-US ICT collaboration (technical experts, industry representatives, researchers).

Exploitation & Sustainability Plan: The helpdesk service has been performed during PICASSO lifetime in synergy with APRE's role as Italian H2020 National Contact Point hub. APRE will continue conveying the expertise acquired through PICASSO – both in terms of knowledge and in terms of contacts and networks – in the daily assistance work provided as Italian ICT National Contact Point. Helpdesk assistance can take different shapes: it could be performed through physical meetings or via emails; it

could be a question posed by the Italian communities within more general international cooperation questions, or a question coming from PICASSO's constituency, following PICASSO's specific dissemination actions. We provide information regarding both topic-specific opportunities (open calls, or relevant individual contacts and networks within a specific ICT area ecosystem), or clarifications on cooperation modalities and options (e.g. EU-US Bilateral Arrangement, EU-US collaboration opportunities within and out of the scope of the PICASSO project). Such assistance may involve signposting questions to the US H2020 NCP service, hosted by NCURA.

The helpdesk service shall be continued through the same email address contact@picasso-project.eu, present in the PICASSO website. PICASSO partners are invited to use and give visibility to this address in any relevant and coherent activity.

Exploitable asset n°3

Description: **"Access opportunities" Webinars (recorded)**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Project administrators

Exploitation & Sustainability Plan: The webinar raised a high interest in the contacted community. However, a certain discrepancy between number of registered users and attendee is always to expect (as it was the case) since people could be hampered at the time of live streaming for countless reasons. That is why all PICASSO's partners, and especially those directly involved in the webinar discussions, will use and make reference to this material. For example, APRE is planning to give further and wider visibility to the webinars via its channels. Integrated communication will be done of the whole package of webinars through different institutional communication channels, including those specific to APRE's international cooperation actions. Moreover, ICT NCPs during their periodic presentations and training throughout Italy, will make reference to this useful resource. In particular, for the training context, a slide will be created, listing and directing to all relevant exploitable material available on PICASSO's website.

Exploitable asset n°4

Description: **Info-packs: Fact sheets on access opportunities in each of the technical focus areas**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects; Project administrators

Exploitation & Sustainability Plan: This material will be used and disseminated by APRE, as long as the information within remain up to date, in all relevant international events, be they related to EU project, or international conferences linked to the NCP work. They will be also used throughout Italy, by the ICT NCPs during their periodical training and information days. In particular, for the training context, a slide will be created, listing and directing to all relevant exploitable material available on PICASSO's website.

Exploitable asset n°5

Description: **PICASSO knowledge related to EU-US ICT collaboration**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives); EU and US ICT policy makers and specialists

Exploitation & Sustainability Plan: The PICASSO team cumulated in-depth knowledge about the EU-US ICT collaboration, notably on the thematic focus areas of the project. The consortium is willing to continue support, although in a reduced way, to orient enquiries related to EU-US ICT collaboration – coming from EU and US ICT stakeholders and policy makers – to the relevant EU and US focus points, and to contribute to the major events related to EU-US ICT collaboration. The orientation is suggested through the helpdesk (see above). The [BILAT USA 4.0](#) project also plans the development of “information points” regarding EU-US collaboration, so once these are established requests can be redirected. There are other initiatives such as [ENRICH in the USA](#) or [AEGIS](#) projects that work with similar stakeholder groups (researchers, entrepreneurs, industry representatives from various sectors for the first and cybersecurity and privacy experts for the latter, both EU and US) and to which requests can possibly be redirected, where appropriate.

Exploitable asset n°6

Description: **PICASSO Expert Group 5G Networks**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects

Exploitation & Sustainability Plan: During the project, the PICASSO 5G Networks Expert Group has reached to a very wide community of experts and policy makers, both from the EU and the US. The project results, e.g., opportunity report and strategic initiatives, developed by the Expert Group provide systematic analysis and guidelines to projects, initiatives and policy makers who will work on concrete EU-US collaboration via e.g., H2020 ICT-21-2018 and NSF ICE-T programmes as well as building collaboration programme in Horizon Europe . In case some members of the PICASSO 5G Networks Expert Group are selected to work on the upcoming project under H2020 ICT-21-2018 call, the PICASSO objectives will naturally continue in a long run. In any case expert exchange with the upcoming project will take place.

Exploitable asset n°7

Description: **PICASSO Expert Group CPS/IoT**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects

Exploitation & Sustainability Plan: The CPS/IoT Expert Group was managed by TUDO but involved from the beginning some of the other PICASSO project partners as members (THHINK, Honeywell and TLI). Throughout the PICASSO project lifetime, close exchanges have taken place with the European and US community from both the CPS and the IoT (applicable to CPS) side. Policymakers have been consulted and involved in the Expert Group activity (in particular events and webinars), as well as business associations; specific links were established with the EC CPS unit, NSF, AIOTI. The close exchange between EG members and the wider community will be maintained in an informal way. Specifically, TUDO plans to employ the contacts and working relationships established in the IoT/CPS Expert Group to support follow-up activities when opportunities arise.

Exploitable asset n°8

Description: **PICASSO Expert Group Policy**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); interested in the global debates about Accountability in the Digital Age and Internet Governance; Other initiatives / projects

Exploitation & Sustainability Plan: The PICASSO Policy Expert Group has continuously interacted with the other PICASSO Expert Groups as the aim was to work on policies particularly relevant for the PICASSO domains. In this new insights have been found and shared, both in the networks of the other Expert Groups as in the networks of the Policy experts themselves. With two University Faculty members in relevant areas (UK and US) and with all members actively participating in global research and Internet Governance networks furthering of the insights are ensured, and people that have met in the PICASSO context will continue to find each other over the years to come.

★ Project assets open to sustainable external exploitation:

Exploitable asset n°9

Description: **PICASSO Big Data Expert Group**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects

Exploitation & Sustainability Plan: Throughout the project, the PICASSO Big Data Expert Group has been expanded to a much wider community of Big Data experts, both from the EU and the US. This community, originally initiated by the PICASSO project, will remain active after the project ends. The role of the community operator has been taken over by the South Big Data Hub, which orchestrates frequent exchanges with all community members and collaborates closely with senior members of BDVA in order to define a sustainable collaboration formula for this network. The Working Groups created inside the community will remain active as well.

Exploitable asset n°10

Description: **CROSSROADS – EU-US info-hub**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public); Other initiatives / projects / networks working on either ICT or EU-US collaboration

Exploitation & Sustainability Plan: CROSSROADS has been implemented by inno with contribution of all partners. All content can easily be extracted as data bases or downloadable reports and thus be provided to external parties interested in the exploitation.

The website pages that give access to the tool will remain live at least for two years after the project ends. The same applies to the mobile application (unless there is a constraint with App Store and Android for this).

As one of the major exploitable assets and as the platform of numerous project results, the most suitable exploitation path for this asset seemed to propose CROSSROADS' exploitation to a third party.

The take over should allow further updates and possibly enriching of the content. inno has suggested CROSSROADS' exploitation to the ENRICH in USA (previously named NearUS) initiative that is focusing on the establishment of a sustainable Network for European Research and Innovation acceleration in the US. ENRICH in the USA develops a number of services for the European RDI community, amongst others a series of online services where CROSSROADS suits well in the portfolio. A major part of the ENRICH in the USA stakeholders correspond to the target groups of CROSSROADS. The initiative has given a positive reply to the take over and exchanges on how and when this could concretely be done are ongoing.

Exploitable asset n°11

Description: **Trans-Atlantic Symposium on ICT Technology and Policy**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy makers)

Exploitation & Sustainability Plan: The Trans-Atlantic Symposium is organised as a stand-alone event. The first edition has been organised by PICASSO in Minneapolis, Minnesota, in June 2017, involving other relevant initiatives / projects. The second edition is organised in June 2018 in collaboration with the Wilson Center, Washington, DC. This shows that a continuity of the PICASSO event concept is already ensured.

The outreach to a number of initiatives and stakeholders (namely participants in the first edition and stakeholders involved in Expert Groups' activities) to investigate interest in co-organisation for the second edition has received large feedback. Among others, the University of Mississippi, BILAT USA, but also the Big Data Hubs had expressed their interest in becoming involved. These same types of stakeholders (organisations, networks or initiatives rather than individuals) are candidates for the exploitation of this asset in the future. Besides the Wilson Center (Washington, DC, USA) any other organisation / initiative could organise further editions with a similar format, possibly with sponsorship from NSF.

★ Exploitable results of the project:

Exploitable asset n°12

Description: **PICASSO social media accounts (twitter, linkedIn)**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy, general public).

Exploitation & Sustainability Plan: Social media accounts have been acted as direct communication and dissemination channel with the wider community. Experience throughout the project has shown that our twitter account has the dynamic to remain active after the end of the project. The PICASSO twitter account will be operated mainly by the South Big Data Hub and the BDVA, in order to disseminate related to the PICASSO Big Data Community. However, EG chairs of other PICASSO EG Groups may request to share relevant information through this account.

On the other hand, the LinkedIn account has not proven strong enough due to a number of known limitations related to dissemination. The account will remain active after the end of the project by ATC and will continue to disseminate information regarding PICASSO topics, with the collaboration of other EG chairs.

Exploitable asset n°13

Description: Analysis report “Overview on ICT-related access opportunities in EU and US”

Target Groups / beneficiaries: European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Project administrators

Exploitation & Sustainability Plan: This material will be used by APRE, as long as the information within remains up to date, in all international events, especially for helpdesk activities, to explain the basics functioning of the US federal research system. In particular, for the training context, a slide will be created, listing and directing to all relevant exploitable material available on PICASSO’s website.

Exploitable asset n°14

Description: Analysis report “Panorama of ICT landscape in EU and US”

Target Groups / beneficiaries: European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy).; Other initiatives / projects

Exploitation & Sustainability Plan: The report has been disseminated widely in Europe and the US through the PICASSO website, the PICASSO Consortium, via EC Units and NIST. There has been very good feedback on the report from the CPS and IoT areas of the Commission indicating that it provides a useful reference document highlighting key initiatives. THHINK has been active with the Commission in DEI Platforms (WG2), Standardisation, IoT, CPS, AI, PPP and FP9 (Horizon Europe) activities. A presentation highlighting some of the key outcomes of the report was also given to the Smart Cities Unit which was positively received. Positive feedback was also received from NIST indicating it provided a comprehensive overview of activities within Europe. Internally within THHINK the report influenced the company’s decision to set up a branch of the company in Amsterdam due to openness and very high levels of Smart City activities that were identified.

No further update of the report is planned. Updates of content items are done within CROSSROADS until the project end. The sustainability path of CROSSROADS includes information stemming from this report.

Exploitable asset n°15

Description: Analysis report “Industrial drivers and societal needs”

Target Groups / beneficiaries: European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects

Exploitation & Sustainability Plan: Dissemination of the report has taken place to industry, relevant EC Units, NIST, the ICT driven PPPs and ETPs and also the research community which supports these domains. The report has also been disseminated via the PICASSO website. There has been very good

feedback from the CPS and IoT EC units in particular as the report has gathered industry views on many leading topics that are of relevance in these domains. The strategic areas identified by industry have also been fed by THHINK into DEI WG2 Platform activities at the Commission. Internally THHINK has used the information obtained on industrial drivers and barriers to consider market opportunities particularly in the IoT domain with the launch of the THHINK Cloud in 2016.

The analysis was extensively used by the PICASSO Expert Groups to develop the D2.2 Opportunity report and proposals for future cooperation initiatives.

No further update of the report is planned.

Updates of content items are done within CROSSROADS until the project end. The sustainability path of CROSSROADS includes information stemming from this report.

Exploitable asset n°16 and n°17

Description: Opportunity report for EU-US collaboration with recommendations and Proposals for strategic initiatives (5G Networks, Big Data, IoT/CPS, Policy)

Target Groups / beneficiaries: European Commission; US policy stakeholders / administrations; Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); Other initiatives / projects. Each Expert Group has defined their specific target group in deliverable D4.7², section 2.1.

Exploitation & Sustainability Plan: The PICASSO Expert Groups have developed proposals for concrete strategic collaboration actions that are aimed at policy makers and describe strategic initiatives that should be enacted to foster EU-US collaboration. The opportunity reports of the Expert Groups complement these strategic initiative proposals as well as the final policy white paper prepared by the Policy Expert Group since they provide background information and more extensive overviews of collaboration opportunities and mechanisms.

The opportunity reports provide comprehensive analyses and comparisons of EU and US cross-domain and application-specific drivers and needs, enabling technologies, research and innovation priorities, current funding and collaboration landscapes, and potential barriers for collaboration that were developed using extensive analytical work as well as in-depth discussions and validations with a large network of PICASSO EG members and external stakeholders, including US funding agencies, the relevant EC units, industry-led associations, international technology companies, other EU-US collaboration initiatives, international expert networks, R&I projects, and a variety of roadmapping initiatives. The reports have been discussed face-to-face with a variety of stakeholders (in personal interviews and at events of PICASSO and of other initiatives) and were circulated widely, with positive feedback by a variety of relevant stakeholders from the EU and the US. Feedback from important stakeholders indicated that the analyses and comparisons of the EU and US R&I priorities and applications domains, as well as the analyses of the collaboration environment and potential barriers are seen as very useful to promote the understanding of the “other side”, and to clarify the concrete options that exist for future collaborations and their success probabilities, where the practical relevance of the report is strengthened by the comprehensive feedback that was provided by many stakeholders.

² http://www.picasso-project.eu/wp-content/uploads/2017/09/D4.7_Initial-summary_vf.pdf

The relevance of our results is guaranteed by the contributions from high-level experts from EU and US funding agencies, industry (networks), and academia, and several actors have already expressed interest in participating in such actions. 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. In addition, the lessons learnt in this work, as well as the new EU and US contacts, partnerships, and working relationships that were established in PICASSO, will be beneficial for all participants in the future, e.g. to establish follow-up activities and projects.

Several of the actors that are part of the IoT/CPS Expert Group are involved in other initiatives in the area of international collaboration and will continue to pursue the PICASSO objectives and to promote the PICASSO results.

The Big Data opportunity report and the strategic proposals have been designed jointly with BDVA and the US Big Data Hubs during a physical workshop held in France (November 2017). These proposals have been disseminated to a wide networks of policy makers including members of the EC and the NSF with the goal to influence future policies, measures and initiatives. Moreover, the BDVA has embraced parts of the strategic proposals and is examining possible ways and alternatives in order to include them in their international and collaboration strategy for the forthcoming years. Last but not least, all US Big Data Hubs have been disseminating these strategic proposals to the Big Data Unit of NSF in order to co-design measures for collaboration with the EU.

As there will be a coming project on EU-US collaboration on Advanced Wireless Platform, the 5G Expert Group will deliver the PICASSO opportunity report and provide well-studied insights to the next selected projects, inherently helping the selected EU and US peers proceed the collaboration in a constructive way and continuing PICASSO results and objectives in a long run.

The PICASSO Policy white paper brings together the key insights that mark the changes in policy relevant for ICT R&I collaborations, and takes into account developments towards the future. By adopting a number of these strategic recommendations, ICT collaboration will continue at the highest possible levels.

Exploitable asset n°18

Description: **Policy briefs**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); interested in the global debates about Accountability in the Digital Age and Internet Governance; Other initiatives / projects

Exploitation & Sustainability Plan: The policy briefs mark important observations in time. As the current global policy environment is rapidly changing through the current geopolitical situation and the rapid change in technology adoption. The reports (on « Privacy and Data Protection » ; « ICT Security » ; « ICT Standards » ; « Spectrum » ; and on « Digital Communities ») will therefore be of relevance for a limited time – varying from subject to subject. All papers were subject to public scrutiny and debate, using the Webinars before finalising each draft policy paper, as well as PICASSO meetings and relevant third party meetings and comments per email before concluding a « final » policy paper.

The reports will not be updated. A contribution, based on these insights, will be developed for the IEEE Press book publications by a joint effort of a number of PICASSO researchers.

Exploitable asset n°19

Description: **Policy White Paper with recommendations for specific high potential ICT policy initiatives in the EU-US dialogue**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy)

Exploitation & Sustainability Plan: The PICASSO Policy White Paper brings together the key insights that mark the changes in policy relevant for ICT R&I collaborations, and takes into account developments towards the future. By adopting a number of these strategic recommendations, ICT collaboration will continue at the highest possible levels.

Exploitable asset n°20

Description: **Policy webinars (recorded)**

Target Groups / beneficiaries: Individuals interested in EU-US ICT collaboration (technical experts, industry representatives, policy); interested in the global debates about Accountability in the Digital Age and Internet Governance; Other initiatives / projects

Exploitation & Sustainability Plan: The webinars functioned to develop the policy papers, and have been recorded, and reported on, on the PICASSO website and on CROSSROADS. Any interested person who could not join the webinars when they took place will be able to see the recorded versions at any time.

5. Individual Exploitation Plans

The PICASSO team has cumulated in-depth knowledge about the EU-US ICT collaboration, notably regarding the thematic focus areas, and this is one of the most important assets of the project – an intangible asset.

The project involved a mix of partners, including SME's, large companies, policy organisations, technical universities and academia, all being interested in the exploitation of the project results. The individual exploitation paths are displayed below. Generally, the knowledge gained through wide consultation with industry possibly allows to identify industrial drivers and barriers to exploitation, but also business opportunities/models, and the close collaboration on research topics allows to consider alignment of priorities with respect to the application domains. The exchange on the more transversal policy thematic allows partners to align their R&I approaches with policy requirements and possibly to point to new directions for policy dialogue.

As for the external exploitation, PICASSO has allowed for networking with many key R&I actors with a wide coverage of the application domains and transversal topics (smart city, smart energy, etc.). This is likely to highlight new business opportunities across domains and result in the formation of new business partnerships.

The individual exploitation plans per partner are as follows:

inno TSD: inno TSD was strongly involved in the PICASSO project activities and monitored closely its outcomes and their sustainability to the benefit of the different stakeholders. Inno being a consultancy, knowledge and experience gained through PICASSO is aimed at being transposed into concrete business opportunities. On individual terms, inno specifically investigates the following aspects:

- **Sustainable strategic partnerships:** in order to maximize the impact of PICASSO activities and results, inno made sure the project was connected to numerous strategic initiatives which operate on either EU-US collaboration or one of the thematic focus areas of the project. The hand-over of exploitable results to third parties, notably initiatives, is at the heart of inno's concerns (e.g. inno strongly supports the exploitation path of CROSSROADS in the ENRICH in the USA initiative). inno builds on these partnerships for the benefit of its clients and partners in the long-run, in order to exchange with experts on diverse topics, set up collaborative activities and exploit synergies where arise. inno also aimed at further developing its knowledge base on the US and its network in the country through PICASSO.
- **Capitalisation on tools developed and information gathered:** in the framework of PICASSO a number of analyses have been conducted and tools developed, such as CROSSROADS, which inno uses for knowledge sharing with and business opportunities in other geographic regions (ASEAN, China...).
- **Added-value to partners' exploitable results:** as part of its accompanying of partners, inno supported their exploitation paths, proceeds to technology-watch and proposed means for sustainable implementation of actions and the exploitation of results. This activity results in a well-established network. Inno specifically supports the continuation of partnerships established through the PICASSO Expert Groups and major events such as the Trans-Atlantic Symposium.

TUDO: The PICASSO work by the IoT/CPS Expert Group has resulted in comprehensive analyses and comparisons of the state of the art in the EU and US in CPS, IoT, and diverse application sectors, and we have identified gaps, challenges, and collaboration opportunities based on these analyses. The lessons learnt in this work, as well as the new EU and US contacts, partnerships, and working relationships that were established in PICASSO, will be used by TUDO in the establishment and execution of follow-up activities and projects, e.g. any follow-up actions that derive from the PICASSO work itself (such as the establishment of new projects) or other actions (e.g. projects within related fields).

THHINK:

With respect to exploitation the knowledge gained in PICASSO is seen as core input for THHINK as a company. Here the company plans to exploit the outcomes of PICASSO both internally and externally. Internally, the Panorama Report and key areas identified will be used to align internal company roadmaps and priorities in particular for providing autonomous systems, wireless sensor systems and remote monitoring technologies. Interviews and consultation with industry not only identified key issues that need addressing but also potential business opportunities for the company.

- **Advising/influencing European Commission and NIST:** At an external level the company is engaged as an advisor to the European Commission in the areas of CPS, IoT, AI and standardisation as well as in joint initiatives with NIST. Here the industry view of key areas and domains, such as smart transportation, smart energy and smart cities has been very useful. Involvement in workshops and interviews with companies has also been extremely beneficial for networking and has resulted in discussions considering new joint business proposals. Promotion of the outcomes of PICASSO at events is also seen as an opportunity to advertise the credentials of the company in the CPS and IoT domain.
- **Forming strategic linkages:** THHINK is actively working with Intelligent Manufacturing Systems (IMS) based in Washington DC on forming links between the UK in the area of aerospace manufacturing. Additionally, THHINK presented at EMERGE Americas leading to meetings with UK government officials, discussions and offers of financial support for further collaborations in Florida. THHINK has also formed stronger links with NSF and it is planned to continue this with participation in future NSF meetings.
- **Promoting the Smart Everywhere Anytime vision:** The outcomes from PICASSO have provided the company with particularly useful input in the areas of the Internet of Things and Cyber Physical Systems. This allows THHINK to leverage the knowledge gained in PICASSO in other areas with the goal to move towards a "smart everywhere anytime" vision. The market predictions for growth in this area are outstanding and have key implications for the Digitisation of Europe and the world. Gartner, for instance, estimates that there will be 26 billion connected devices (excluding PCs, tablets and smartphones) by 2020 worldwide, and even higher predictions of 40-50 billion devices are being made by other analyst companies. THHINK is actively involved in developing this vision via EC working groups and through input into FP9. In this area THHINK is now engaged in the EC funded Smart4Europe project. There are many exciting opportunities for the future and THHINK is keen to exploit its CPS and IoT solutions in these new expanding markets.
- **Disseminating and engaging via existing networks:** Dissemination is seen as a key activity for THHINK since it is also seen as a promotional opportunity and a means to engage with future

potential customers. Outlets for the company are trade magazines and also regional trade associations that support SMEs, e.g. the Midlands Aerospace Alliance in the UK. Additionally, the company exhibits and speaks at business events such as, BIN@Shef and also events more specific to technologies under development at an international level. At a national level the company is also strategically linked with both the Transport and High Value Manufacturing Catapults in the UK. THHINK via Professor Haydn Thompson also has strategic links with the University of Sheffield and Cranfield University which provides links into the Boeing AMRC at Sheffield, the IVHM Centre at Cranfield covering research within the aerospace, marine and rail sectors. Promotion of PICASSO and its outcomes is also taking place via membership of Institutions in the UK. Haydn Thompson is a member of the Energy Harvesting Steering Group for the UK, the IET Aerospace Technical Committee and is also a member of several Knowledge Transfer Networks run by Innovateuk, the governmental funding body for industry research in the UK. As a research driven company THHINK also collaborates with academic partners to produce papers for academic conferences.

ATC: ATC though its engagement in the PICASSO project, will focus on several paths for achieving maximum exploitation from all possible angles. The following are some of those expected to be investigated due course

- **Strategic partnerships:** It is already envisaged that through PICASSO's Big Data Expert Group, ATC will cooperate with a large number of EU and, especially, US Big Data initiatives and organisations. As ATC is the leader of this Expert Group, we foresee to establish and create solid links with these organisations (from the US side) in order to define topics and themes for potential research or industrial collaborations.
- **Identification of non-EU funding sources for R&D:** ATC will investigate options for (i) additional funding (grant) opportunities from the US; (ii) sponsorships from private organisations, in order to extend its R&D activities by utilizing external funding sources.
- **Collaboration with non-Big Data organisations in other ICT fields:** ATC will try to exploit any possible synergies which may rise from our engagement to activities of the other Expert Groups, especially the IoT/CPS and 5G ones. The obvious interconnection that exists between Big Data and the above mentioned ICT topics, may be the basis of some excellent collaboration opportunities between EU and US organisations and companies.

APRE: APRE cooperates through specific MoU with a number of Italian institutions, such as the Ministry of Research, the Ministry of Foreign Affairs and International Cooperation, and the Security Secretary. PICASSO results will be re-elaborated and made available to the most appropriate directorates of the above-mentioned institutions, following their particular requests. APRE is also part of the international working group on smart cities coordinated by the Italian Energy Agency (ENEA), and the cooperation with the US is strategic in this context. APRE will also exploit results at the level of the Italian R&I stakeholder scenario through channelling strategic information in terms of partnerships or cooperation modalities, and in the context of other R&I international cooperation activities.

GNKS: GNKS will continue to develop its policy insights that inform policy makers on important aspects relating to new developments in the field of ICT and Internet R&I and Governance. In addition, GNKS will continue to provide support to consortia with regards to the policy/societal embedding of the work that is done.

With regards to strategies, GNKS will continue to provide foresight support and scenario planning to those that are planning for the future. This will help determine direction of future R&I as well as other policies that will be affected by the changes brought by ongoing developments in information and communication technology. The three PICASSO domains are very relevant in this, and the 5 policy papers cover key areas of policy that will remain relevant for the years to come.

As such, it is recognised that the reports and papers produced by PICASSO will have a limited shelf value, as developments are ongoing and as it is clear that the world is continuing to change in increasing pace.

TUD: TUD will take PICASSO project results, e.g., EU-US 5G technology challenges/opportunities, research themes and topics, into account for its own research planning. By interacting with various partners, stakeholders from industry, academia and policy makers, TUD also learnt different perspectives and gained good understanding on the EU-US collaboration regarding to driving forces as well as barriers. Based on those understanding and knowledge, TUD is interested in taking concrete actions on EU-US collaboration. For example, TUD has participated in the EC H2020-ICT-21-2018 call and submitted a proposal with a consortium. In case this project is granted, TUD will continue its work in the PICASSO project and work closely with EU and US peers bringing EU-US research collaboration on 5G/wireless into reality.

US non-funded partners:

University of Minnesota - Technology Leadership Institute (TLI); Honeywell; FIU-EUCE are all three non-funded partners from the US. All three parties confirm their strong will to continue supporting EU-US collaboration, notably in ICT. This will be done through advice on ad-hoc basis to interested parties where requested, as well as through contributions to events where asked by a third party, provided that resources can allow it.

The PICASSO consortium is willing to continue support, although in a reduced way, to EU-US ICT collaboration beyond the project lifetime, pointing to strategic directions through recommendations addressed at policy stakeholders, but also research and industry representatives. The PICASSO partners have agreed to orient enquiries related to EU-US ICT collaboration – coming from EU and US ICT stakeholders and policy makers – to the relevant existing EU and US focus points.

6. Conclusions

This report presents the main sustainable outcomes of the PICASSO project. It also presents the final chosen exploitation paths for exploitable assets, such as constituting a “guideline” for the exploitation and sustainability of the PICASSO offering beyond its lifespan. Exploitable assets are organised into three main blocks:

- ★ Project assets internally maintained: those that will continue to work after the project end and rely on the input from partners.
- ★ Project assets open to sustainable external exploitation: those that can be exploited by parties external to the project – any type of stakeholder interested in the topic and item – and will become sustainable once such external party has taken over the activity
- ★ Exploitable results of the project: documents and materials that will be used by stakeholders, but will not be updated after the end of PICASSO, e.g. analysis reports, recommendations; this includes other main assets which constitute the PICASSO offering, such as the project logo).

The main assets which constitute the PICASSO offering along with the exploitation paths that are visible to safeguard their long-term sustainability after the end of the project are described within this document.