EU-US Cooperation Agreements

In matters of research and innovation, the cooperation between the EU and the US is governed by the "Agreement for Scientific and Technological Cooperation" that was originally signed in 1998, and renewed four times for five years each time, and is now valid until October 2018.

An agreement has been signed between the European Commission and the US Government on October 17, 2016, facilitating cooperation between European and US researchers on projects funded under Horizon 2020, the European Union's research and innovation programme. According to this agreement, cooperation between Horizon 2020 participants and US entities may be organized outside the formal H2020 Grant Agreement in cases where the US organisations are funded by the US and do not receive any funding from the Horizon 2020 programme.

This fact sheet summarizes **Internet of Things / Cyber-physical Systems** opportunities in Horizon 2020. It describes the research and innovation stakeholders' ecosystem in this area and the funding priorities for future calls for proposals.

Evolution of the European Strategic Framework for IoT

March 2015. In order to develop and support a dynamic dialogue and interaction among the Internet of Things (IoT) players in Europe, **the European Commission created the Alliance for Internet of Things Innovation (AIOTI)**, converted into a European association based in Brussels. The Alliance builds on the work of the IoT Research Cluster (IERC) and aims to transfer innovation across IoT industries and business sectors, supporting the transformation of ideas into solutions and business models. Most importantly, **AIOTI assists the European Commission in defining research, innovation, and standardisation policies** in the field of IoT, through the work of four horizontal groups (Research; Innovation Ecosystems; Standardisation; Policy) applied on nine vertical areas (Smart living environment for ageing well; Farming and Food Security; Wearables; Smart Cities; Smart Mobility; Water Management; Smart Manufacturing; Smart Energy; Smart Buildings and Architecture).

May 2015. The Digital Single Market Strategy (DSM) was adopted, leading Europe a step further in accelerating developments on IoT. The strategy underlines the need to **avoid fragmentation** and to **foster interoperability** for IoT to reach its potential. Therefore, it consolidates initiatives on **security and data protection** – essential for the adoption of this technology – and promises to tackle interoperability and standardization under an upcoming action: the "Building a European Data Economy" Communication. The EC Communication also highlights the need to fostering and enhancing technical development concerning smaller, lighter, more power-efficient and cheaper hardware; more intelligent sensors and actuators; new platforms; ubiquitous wireless connectivity; and available data analytics tools.

April 2016. The staff working document "Advancing the Internet of Things in Europe" was published by the European Commission, accompanying the Communication "Digitising European Industry - Reaping the full benefits of a Digital Single Market", with specific provisions and measures to advancing the IoT in Europe. The staff working document specifies the EU's IoT vision, which is based on three pillars: i) a thriving IoT ecosystem; ii) a human-centred IoT approach; iii) a single market for IoT.

January 2017. The "Building a European data economy" Communication was published as a part of the wider Digital Single Market Strategy, contributing to the creation of a European single market for IoT. This initiative proposes policy and legal solutions concerning the free flow of data across national borders in the EU, and liability issues in complex environments. Liability, in particular, is

considered as decisive to enhance legal certainty around the IoT products and services, facilitating uptake as a consequence.

The Evolution of IoT/CPS Funding in Horizon 2020

European research on IoT has shown a progressive evolution in the last few years under the H2020 Programme. EU funding initially focused on technology development (2014-2015), continuing in 2016 through a big step towards the funding and implementation of IoT large-scale pilots. The pilots, with a budget between 15M and 30M Euros each, explored IoT applications in the following domains: Smart living environments for ageing well; Smart Farming and Food Security; Wearables for smart ecosystems; Reference zones in EU cities; Autonomous vehicles in a connected environment.

The pilots, which started their work in January 2017 and involve all value-chain actors, are delivering IoT practical solutions in terms of applicable technology and standards, business models as well as usability, acceptability and user validation. The pilots should also serve to deduce methodologies to assess privacy and security impacts of IoT. They will serve as up-scaling of open platforms like FI-Ware, CRYSTAL, UniversAAL, and by providing **cascade funding** to new suppliers located in Europe.

In the current biannual ICT work programme (2018-2020) we find IoT funding in combination with other technologies, and as fundamental component of the Next Generation Internet. Although the current work programme does not include explicit calls dedicated to IoT, other interlinked technological dimensions, which influence the future design of the Internet of Things applications, are funded, such as: the development of advanced platform architectures for smart objects; embedded intelligence; smart networks; and the Next Generation Internet initiative.

US Participation Conditions

In most cases, US beneficiaries, coming from what is considered an industrialized countries, are not eligible for EC financial contribution and are required to cover the costs they will incur in during the project. However, if a grant applicant can convincingly demonstrate that the objectives or impact of the proposal would not or only partially be achieved without the participation of a US partner, the EC can decide to provide funding to US partners.

Calls for Proposals focus
The text of the specific call is available in the H2020 Participant Portal, under the 2018-2020 ICT Work Programme[1]

IoT funding opportunities are addressed in the following areas:
• Application of Electronic Smart Systems (ESS) to bring intelligence and real-time reconfiguration to the IoT edge; Application of AI to IoT
• Large-scale pilots in robotics
• Large-scale IoT/Cloud-enabled industrial pilot test-beds for big data applications, by combining and taking advantage of relevant technologies (Big Data, IoT, cloud and edge computing, etc.)
• Big Data technologies and extreme-scale analytics
• Improved standardisation and interoperability especially in the context of cross-sector applications and technology convergence (data, Cloud, IoT, connectivity a.o.)
• Integration between photonics and IoT

CPS is addressed with a focus on CPSoS research (TRL 2-5) with a view to apply them in the industrial sector (e.g. transport networks; large manufacturing facilities).

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[1] http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-ict_en.pdf