EU-Japan cooperation in Research and Innovation through Horizon 2020

"Integration and Disintegration in the Japanese Vision of Society 5,0: A Model for an Open Society in Europe?"
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EU-Japan R&I cooperation framework

- EU-Japan **Science and Technology agreement** signed in 2009

- EU-Japan **Joint S&T Cooperation Committee**: 2011, 2013, 2015, 2017

- The **Strategic Partnership Agreement** (SPA) and **Economic Partnership Agreement** (EPA) will boost STI cooperation and related issues of norms and standardisation

EU-Japan Strategic Partnership in R&I

- **Deepening strategic cooperation by frequent consultations at multiple levels**

- **Thematic cooperation in key strategic areas**

- **Consolidate framework conditions that facilitate cooperation**

- **Regular consultation and possible cooperation in Research and Innovation policy areas**

- **Support activities and public engagement**

Thematic cooperation in R&I

Areas of current substantial cooperation:

- **ICT**

- **Aeronautics and other transport areas** (automated driving)

- **Advanced Materials research**

There is also considerable cooperation between Euratom and Japan in **nuclear research** – both fission and fusion (such as through ITER) - under bilateral agreements.

Thematic cooperation in R&I

Examples of other areas with cooperation and cooperation potential:

- **Health**

- **Renewable energy**

- **Environment/Climate change** (including Arctic Research, Disaster Risk Reduction)

- **Security Research**

- **Quantum Technologies**

Japanese participation in Horizon 2020

- Japanese applicants have participated **548** times in **442** eligible proposals

- There are so far **88** Japanese participations in **72** signed grants

- The **success rate** for Japanese applicants to Horizon 2020 is higher than the average, at an impressive **20%**, compared to an EU average of 15%.

- Japanese participants are the most active in the areas of researchers' mobility (the Marie Sklodowska-Curie Actions); Environment research; Nanotechnologies and Advanced materials (NMBP); and Nuclear research cooperation through Euratom

- In addition, **10 joint/coordinated calls with Japan since 2011:** in **Aeronautics** with the Ministry of Economy, Trade and Industry (METI); in **ICT and Healthy ageing** with the Ministry of Internal Affairs and Communication (MIC)/National Institute of Information and Communications Technology (NICT); in **New materials and critical raw materials** with Japan Science and Technology Agency (JST); in **New energy technologies** with the New Energy and Industrial Technology Development Organisation (NEDO)
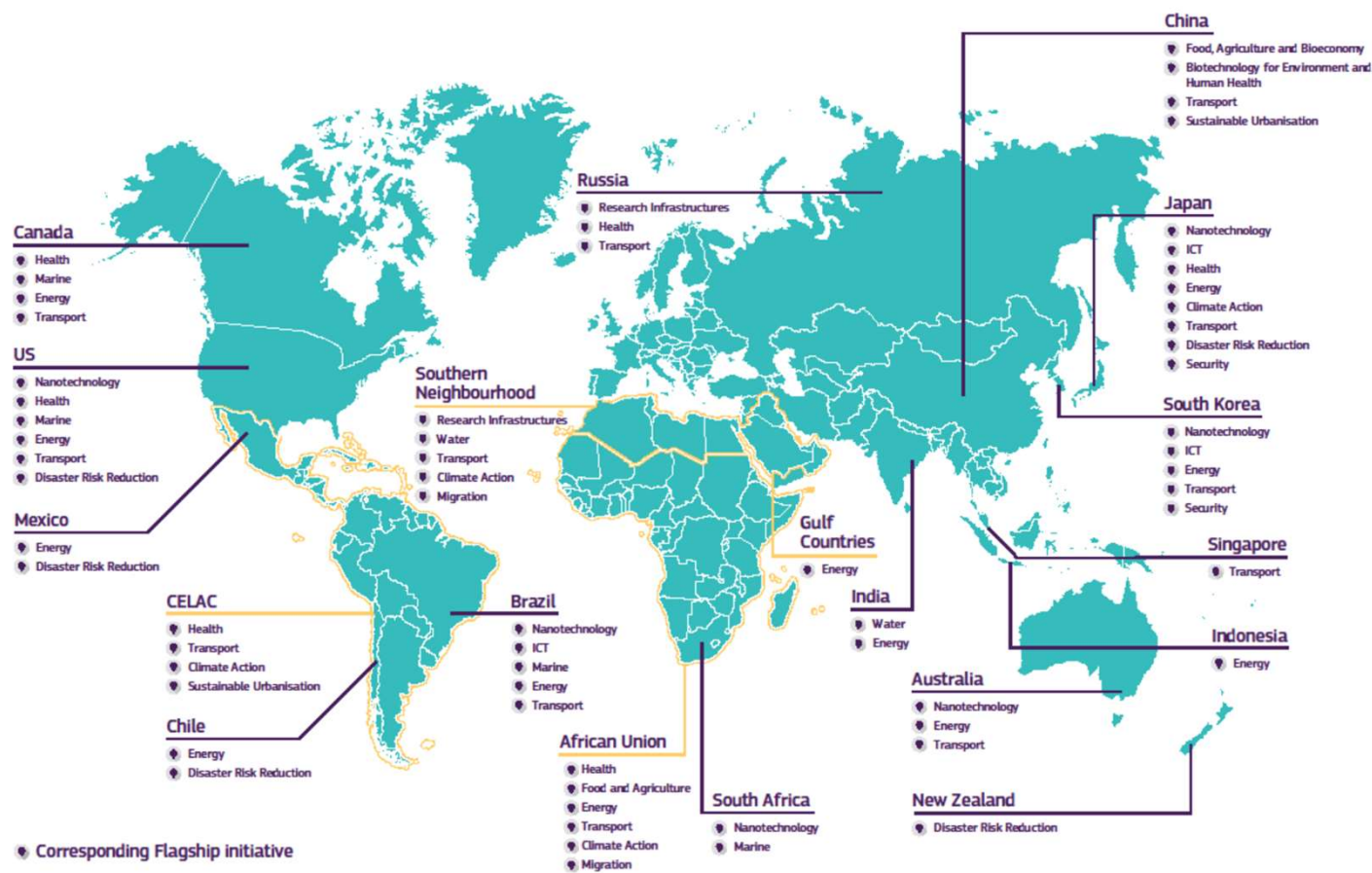
Cooperation possibilities in Work Programme 2018-2020

Where are the Horizon 2020 international flagships?

14 Horizon 2020 international flagships targeting Japan in 9 thematic areas

- **ICT**: <u>Bilateral Flagship</u> through "*Coordinated Call on 5G communication networks, security, cloud, IoT, Big Data*". Targeted in flagship on "*Unconventional Nanoelectronics*".
- **Transport**: Targeted in Flagships on "*Safer and greener aviation*", "*Automated road transport*", "*Integrated multimodal freight transport systems and logistics*", and "*Reduction of transport impact on air quality*".
- **Energy**: <u>Bilateral Flagship</u> on "*Advanced biofuels*". Targeted in Flagship on "*Mission Innovation*" on clean energy in general.
- **Health**: Cooperation through several multilateral initiatives. Targeted in Flagship on "*Technologies for global health care*".
- **Disaster Risk Reduction**: Targeted in Flagship on "*Operational forecasting of earthquakes and early warning capacity for more resilient cities*".
- **Security**: Targeted in Flagship on "*Technologies for first responders*".
- **Nanotechnologies**: Targeted in Flagship on "*Nanosafety*".
- **Climate Action**: Targeted in Flagship on "*Changing cryosphere/Arctic research*".
- **Research Infrastructures**: Targeted in Flagship "*Integrating and Opening activities*".

EU-Japan cooperation in ICT: Current state of play and opportunities for 2018-2020

•EU and Japan are like-minded countries sharing similar views about the impact of digital technologies and data on economic growth, competitiveness, innovation, job creation and societal progress.

•EU and Japan share many of the same challenges to be addressed by policy and by R&D in the ICT field (Internet governance, Internet security, ageing population, safer Internet, Future Internet, etc.).

•EU and Japan are among the world's leading ICT powerhouses therefore it is only natural that we work together to tackle the modern-day challenges.

EU-Japan cooperation so far in ICT

•Excellent collaboration on ICT: three joint calls with MIC/NICT on 5G, Internet of Things, Cloud, Big Data have been carried out so far, and a new joint call was launched in 2018

•Since 2013, 15 joint projects have been launched covering future networks topics (over €21M funding from each side)

•In addition, a joint call launched with MIC in ICT Robotics for Healthy and Active Ageing, with two joint projects that stared in Nov 2016

ClouT project: A success story (Apr 2013 – Mar 2016)

ClouT, (Cloud of Things for empowering the citizen clout in smart cities) is leveraging Cloud Computing as an enabler to bridge the Internet of Things with Internet of People via Internet of Services. ClouT develops an efficient communication and collaboration platform exploiting all information sources to make the cities smarter

➢ *It is a success story of strong collaboration between Europe and Japan addressing tomorrow's urban challenges of efficient usage of world resources. ClouT has developed a smart city platform that benefits from the latest advances in IoT and Cloud Computing domains.*

➢ *ClouT project received one of Horizon 2020 12 "Stars of Europe" awards (Dec 2016)*

http://clout-project.eu/

EUJ-01-2018: Advanced technologies (Security, Cloud, IoT, Big Data) for a hyper-connected society in the context of Smart Cities

Challenge: to address enhanced security and privacy and how the human user deals with the ever-increasing amount of sensors, smart objects and data.

Impact:
- *Credible demonstrations based on cross-border business and/or societal applications of robust interoperable technologies identifying policy/legal obstacles (i.e., free flow of data, data protection, data portability etc.).*
- *Concrete implementations of interoperable solutions that integrate IoT, Cloud and Big Data including security that are candidates for standardization.*
- *Facilitation of the development of cloud-enabled, secure and trustworthy IoT/big data applications.*
- *Promotion of the use of data related to Smart Cities and the creation of new increasingly efficient services in urban and regional administrative management.*
- *Joint contributions to standardization activities under the cooperation of EU-Japan research institutes and IoT-related consortia (e.g. Alliance for IoT Innovation (AIOTI) and IoT Acceleration Consortium).*

EUJ-01-2018: The Scope

Scope (1): Advanced technologies combining Security, IoT, Cloud and Big Data for a hyper-connected society (one project to be funded by EU+NICT). The focus is to research, develop and test advanced technologies combining Security, IoT, Cloud and Big data.

Scope (2): Interoperable technologies of IoT devices/platforms in the context of Smart Cities (one project to be funded by EU+MIC). The focus is to research, develop and test interoperable technologies of IoT devices/platforms in the context of Smart Cities. A further objective is to contribute to standardization activities under the cooperation of EU-JP research institutes and IoT-related consortia (e.g. the Alliance for IoT Innovation (AIOTI) – EU, and IoT Acceleration Consortium - Japan), and promote a global expansion of research results in Smart Cities.

EUJ-02-2018: 5G and Beyond

Challenge: to demonstrate technologies and system interoperability for 5G applications of interest in the two regions in early version of the International Mobile Telecommunications-2000 (IMT-2000) standards, but also to go further to address long-term challenges beyond 5G.

Impact:
- *Global interoperability demonstrations for 5G networks,*
- *Joint contributions to global 5G specifications for IMT-2020 in relevant organisations (e.g. 3GPP, ITU-R),*
- *Open new prospects for wireless technologies in terms of applications and use of novel spectrum,*
- *Identification of frequency bands above 275 GHz for use by administrations for the land-mobile and fixed services applications for WRC-19.*

EUJ-02-2018: Scope

Scope 1: Large-scale demonstrations and trials towards 5G applications

The objective is to research, develop and test technologies to enable applications developers and researchers to take advantage of the 5G integrated access/core network infrastructures and testbeds in the EU and JP, in order to showcase the adaptability of the latest 5G systems, technologies and early versions of the IMT-2020 standards.

Scope 2: Joint research on enabling technologies for beyond 5G

Focus should be on radio-based backhaul/fronthaul links in the millimeter or sub-millimeter wave bands to support super high rate applications, > 100 Gb/s, and targeting the use of very high frequency, notably spectrum > 275 GHz.

SC1-HCC-03-2018 (CSA)

Support to further development of international coordinated calls for digital transformation of health and care.

The action should develop and deliver a roadmap for international cooperation which outlines key relevant research and innovation areas in digital solutions, and services for active and healthy ageing.

International cooperation is encouraged, in particular with Japan, the US, Canada, South Korea and China. (CSA, €2M). Proposal submission deadline: 24 Apr 2018.

Proposals shall include at least one participant from the country or region targeted by the action which can demonstrate the necessary knowledge and can help mobilise the relevant international funding bodies.

ICT-06-2019: Unconventional Nanoelectronics (RIA)

Scope: The focus should be on demonstrating new concepts at transistor or circuit level which bring the potential of highly improved performance for generic or specific applications. The proposals should cover:

- ✓ Energy-efficient computation devices beyond current CMOS paradigm;
- ✓ Energy-efficient computation circuit architectures;
- ✓ Design for advanced nanoelectronics technologies;
- ✓ Demonstration of functionality at circuit level by integrating the adequate functional blocks.

International cooperation is encouraged, in particular with Japan, South Korea, Taiwan and the U.S. (RIA, €2-4M). Call opening: 16 October 2018; proposal submission deadline: 28 March 2019.

Further information

European Commission, DG Research and Innovation:
http://ec.europa.eu/research/index.cfm

DG Research and Innovation, Japan page :
http://ec.europa.eu/research/iscp/index.cfm?pg=japan

Participant Portal:
http://ec.europa.eu/research/participants/portal/desktop/en/home.html

Participant Portal, Japan page :
http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020_localsupp
_japan_en.pdf

Horizon 2020:
http://ec.europa.eu/programmes/horizon2020/en

Thank you for your attention!

Call topics encouraging cooperation with Japan in H2020 WP2018-2020

Year	Call identifier	Call topics
2018	DT-ART-01-2018	Testing, validation and certification procedures for highly automated driving functions under various traffic scenarios based on pilot test data
	DT-ART-02-2018	Support for networking activities and impact assessment for road automation
	EUJ-01-2018	Advanced technologies (Security/Cloud/IoT/BigData) for a hyper-connected society in the context of Smart City
	EUJ-02-2018	5G and beyond
	INFRAIA-01-2018-2019	Integrating Activities for Advanced Communities
	MG-2-5-2018	Innovative technologies for improving aviation safety and certification in icing conditions
	NMBP-13-2018	Risk Governance of nanotechnology (RIA)
	NMBP-14-2018	Nanoinformatics: from materials models to predictive toxicology and ecotoxicology (RIA)
	SC1-HCC-03-2018	Support to further development of international cooperation in digital transformation of health and care
	SC5-17-2018	Towards operational forecasting of earthquakes and early warning capacity for more resilient societies
	SU-DRS01-2018-2019-2020	Human factors, and social, societal, and organisational aspects for disaster-resilient societies
	SU-DRS02-2018-2019-2020	Technologies for first responders
2019	DT-ART-03-2019	Human centred design for the new driver role in highly automated vehicles
	DT-ART-04-2019	Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all
	ICT-06-2019	Unconventional Nanoelectronics
	LC-CLA-07-2019	The changing cryosphere: uncertainties, risks and opportunities
	LC-MG-1-7-2019	Future propulsion and integration: towards a hybrid/electric aircraft
	MG-2-9-2019	Integrated multimodal, low-emission freight transport systems and logistics (Inco Flagship)
	NMBP-15-2019	Safe by design, from science to regulation: metrics and main sectors (RIA)
	SU-SPACE-22-SEC-2019	Space Weather
2020	NMBP-16-2020	Safe by design, from science to regulation: behaviour of multi-component nanomaterials (RIA)
	NMBP-17-2020	Regulatory science for medical technology products (RIA)