



Press Release No.1480

January 8, 2021

Japan Science and Technology Agency (JST)

5-3, Yonbancho, Chiyoda-ku, Tokyo 102-8666

URL <https://www.jst.go.jp/EN>

**JST to Fund 6 Projects-in EIG CONCERT-Japan
within the Framework of the
Strategic International Collaborative Research Program (SICORP)**

JST (President, Hamaguchi Michinari) has approved funding new joint research project (details in Attachment 1) in the research field of “ICT for Resilient, Safe and Secure Society”, in collaboration with 10 funding agencies from 10 European countries (Attachment 2) in the framework of the EIG CONCERT-Japan under SICORP *1.

EIG CONCERT-Japan is an international joint initiative to support and enhance science, technology and innovation (STI) cooperation between Japan and European countries (Attachment 3).

In 2020, the seventh Joint Call was conducted from May18 to July 17 in the research field of “ICT for Resilient, Safe and Secure Society”, to which a total of 21 proposals was submitted. Following in depth evaluation by the Scientific Committee Meeting (Attachment 4) and subsequent discussion among funding agencies that participated in the Joint Call, it has been decided that JST will jointly fund the 6 projects. The period of support is to last for 3 years, during which Japan side researchers in each project receive up to 18 million JPY in total.

*1 EIG CONCERT-Japan:

The CONCERT-Japan was funded by the European Union (EU) as one of their international cooperation activities within the ERA-NET (European Research Area Network) of the Seventh Framework Programme for Research and Technology Development (FP7). Its continuation, the EIG CONCERT-Japan project, aims to further develop existing cooperation between European countries and Japan by promoting and enabling effective collaboration in science and technology research. (<http://concert-japan.eu/>)

Attachments

1. EIG CONCERT-Japan Projects Selected for Funding (2020)
2. EIG CONCERT-Japan Funding Organizations that participated in the ICT Joint Call
3. EIG CONCERT-Japan Partner Institutions
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Annex: Overview of the EIG CONCERT-Japan Joint Call on “ICT for Resilient, Safe and Secure Society”

Enquiries

Department of International Affairs, JST

K's Gobancho, 7 Gobancho, Chiyoda-ku, Tokyo 102-0076

Sato Masaki (Mr.)

Tel: +81-3-5214-7375 Fax: +81-3-5214-7379

E-mail: [concert\[at\]jst.go.jp](mailto:concert[at]jst.go.jp)

**EIG CONCERT-Japan
Projects Selected for Funding (2020)**

	Title	Researcher Country/Name/Affiliation/ Position	Research Abstract
1	Organically Resilient and Secure Wireless Networks for Next-generation IoT Technologies to Serve Future Connected Societies (ORACLE)	<p>Japan Ishibashi Koji The University of Electro-Communications Associate Professor</p> <hr/> <p>Germany <u>Giuseppe T.F. de Abreu</u> Jacobs University Bremen Professor</p> <hr/> <p>Spain Luis Hernández Encinas State Agency Spanish National Research Council Senior Researcher</p> <hr/> <p>Turkey Kaya Demir TÜBİTAK Senior Researcher</p>	<p>This project named ORACLE aims to realize organically resilient and secure wireless networks as a key enabler of next-generation Internet-of-Things (NG-IoT) technologies; all ambient devices are wirelessly connected, and collected data drastically improve our society and daily life. With the advancement of quantum computers, classical complexity-based security systems might be threatened. Our project aims to resolve the security vulnerabilities of NG-IoT in a post-quantum era by exploiting 3 technical pillars: post-quantum and lightweight security, secure physical layer wireless signal processing, and decentralized secure wireless architecture.</p> <p>Researchers from Germany and Japan will mainly contribute to wireless signal processing and decentralized architecture, and Turkey and Spain post-quantum security and hardware designs.</p>
2	Formal Analysis and Verification of Post-Quantum Cryptographic Protocols (FAVPQC)	<p>Japan Ogata Kazuhiro Japan Advanced Institute of Science and Technology Professor</p>	<p>In anticipation of the post-quantum era, this research project aims at inventing the formal analysis technique of post-quantum cryptographic protocols with Maude-NPA, an analysis tool for cryptographic security protocols that takes into account the algebraic properties of the cryptosystem. In our knowledge, there is no known formal analysis tool for these protocols. Moreover, it is known that formal analysis of post-quantum cryptosystems has not been studied deeply. In the scope of the project, we will use Maude-NPA for the analysis of post-</p>

		Spain <u>Santiago Escobar</u> Polytechnic University of Valencia Associate Professor	quantum cryptographic protocols. The methods that will be used in the project are based on studying search and decision problems, and different interpretations of algebraic techniques. The project aims at the formal analysis of post-quantum cryptographic protocols by focusing on lattice-based and code-based. Maude-NPA will be extended so that such post-quantum cryptographic protocols can be formally analyzed well. This project is directly related with cyber security, including the prevention of and recovery from cyberattacks, also taking into account the post-quantum era.
	France Ayoub Otmani University of Rouen Normandie Professor		
	Turkey Sedat Akleylek Ondokuz Mayıs University Associate Professor		
3	Detection of Fake News on Social Media Platforms (DISSIMILAR)	Japan Kuribayashi Minoru Okayama University Associate Professor	This project aims to provide a system to prevent fake news from spreading over a social media network. The explosion of fake news has increased the threat of its use for deliberate public opinion and propaganda strategies, and the need for technology to correctly identify fake contents such as images, videos, and audio, as well as to verify the validity of the information. One is an active approach that realizes traceability of original source from suspicious content by inserting sub-information called a digital fingerprint into official ones. The other is a passive approach to classify natural content from fakes by analyzing the presence of unnatural signals involved in suspicious content. The system will also be optimized by introducing diffusion prediction techniques on social media networks, which is estimated from the human-computer interaction point of view.
	Spain <u>David Megías</u> Fundació per a la Universitat Oberta de Catalunya Professor		
	Poland Wojciech Mazurczyk Warsaw University of Technology Professor		
4	Deep Learning Anticipated Urban Mobility Peaks (DARUMA)	Japan <u>Jan-Dirk Schmöcker</u> Kyoto University Department of Urban Management Associate Professor	This research investigates the profound impact of COVID-19 waves and related events on urban life. The changes have been in some cases sudden and in some occur over an adjustment period of time. The goal of this project is to relate

		<p>Germany Constantinos Antoniou Technical University of Munich Department of Civil, Geo and Environmental Engineering Professor</p>	<p>the onset of such trends with mobility patterns. We utilize data fusion of mobility data, social media data and product price data as input for deep learning methods. The data are further input for simulation of urban traffic patterns to show congestion effects and changes in mobility patterns. Even though we focus on data observed during the still ongoing Covid-19 crisis, we aim to develop a framework with general applicability to larger disruptions. Case studies will be conducted in Madrid, Budapest and Kyoto. In the Madrid case, the focus is on telecommunication data, in Budapest on road traffic data and for Kyoto on a mixture of GPS tracking data, aggregate mobile phone data as well as supply-chain data. The outcome of the project will be useful for planners to develop short as well as long term policies to improve resilience.</p>
		<p>Hungary Tamás Tettamanti Budapest University of Technology and Economics Associate Professor</p>	
		<p>Spain Juan Carlos García-Palomares Complutense University of Madrid Professor</p>	
5	<p>Assessment of Transformations in Vitality, Vulnerability and Versatility of Rural Towns (3VRUT)</p>	<p>Japan Mukaida Akira, Solution Service Dpt.II, Remote Sensing Technology Center of Japan General Manager</p>	<p>Many resilience assessments and indicators hardly capture contemporary intangibles of rural development and insufficiently combine insights from spatial biophysical and socio-economic datasets. The overall aim of 3VRUT is therefore to develop a methodology to evaluate, quantify, and classify the risks and threats that exist at the junction of cyberspace and physical space in rural settings in the developed world. Remote sensing will be used to retrieve quantitative datasets and to conduct visual morphologic analyses, while socio-economic studies will bring out geostatistical information of surveys. Through the selection of case studies facing depopulation and urban migration in Germany, Spain, Poland and Japan, the study will examine two different scenarios per country with unlike social behaviour (i.e. Lehman shock of 2008, post-refugee migration crisis of 2015-2016,</p>
		<p>Germany <u>Walter T. de Vries</u>, Technical University of Munich Professor</p>	
		<p>Poland Luc Ampleman, Institute of International Relations and Public Policies, Faculty of Law and Social Sciences, Jan Kochanowski University Professor</p>	

		Spain Joaquin Sabaté Bel Chair of Urbanism, Architecture School at Universitat Politècnica de Catalunya Professor	COVID-19 social distancing in 2020).
6	Trustworthy Distributed Learning (TRURL)	Japan Yukawa Masahiro Keio University Associate Professor	This research project aims to develop a distributed artificial intelligence (AI) algorithm that is trustworthy and robust against cyberattacks and eavesdroppers, envisioning its use for Internet-of-Things (IoT) oriented future wireless communication technology to be deployed in heterogeneous environments. The distributed AI algorithm is trustworthy because of its many desirable features, in sharp contrast to the conventional centralized system, such as no single point of failure, tolerance for node losses, statistical guarantee relying on confidence intervals, and no share of private information. The existing distributed algorithm was typically built upon a simple communication model. For example, the popular (stochastic) gradient method requires many iterations with possible small data packages. This causes a decrease of communication efficiency together with an increase of energy consumption, and it has prevented the technology from being used practically. In this project, we develop a distributed AI algorithm integrated with a communication protocol which is optimized for the whole network system by mobilizing the knowledge of experts in wireless communication, adaptive signal processing, optimization, and statistics.
		Germany <u>Slawomir Stanczak,</u> Technical University of Berlin Professor	
		Poland Tomasz Piotrowski, Nicolaus Copernicus University Assistant Professor	

* Project Leaders are underlined

EIG CONCERT-Japan**Funding Organizations that Participated in the ICT Joint Call**

Country	Funding Organization
Japan	Japan Science and Technology Agency (JST)
Spain	State Research Agency (AEI)
Slovakia	Slovak Academy of Sciences (SAS)
Czech Republic	Ministry of Education, Sports, Youth and Science (MEYS)
Germany	Federal Ministry of Education and Research (BMBF)
Turkey	The Scientific and Technological Research Council of Turkey (TÜBİTAK)
Hungary	National Research, Development and Innovation Office (NKFIH)
France	The National Center for Scientific Research (CNRS)
Bulgaria	Bulgarian National Science Fund (BNSF)
Poland	National Centre for Research and Development (NCBR)
Lithuania	Agency for Science, Innovation and Technology (MITA)

EIG CONCERT-Japan

Partner Institutions

The CONCERT-Japan consortium is made up of the following 12 partners from 10 European countries and Japan:

Country	Partner Institution
Japan	Japan Science and Technology Agency (JST)
Spain	Ministry of Economy and Competitiveness (MINECO)
Slovakia	The Slovak Academy of Sciences (SAS)
Czech Republic	Czech Academy of Sciences (CAS)
Czech Republic	Ministry of Education, Youth and Sports (MEYS)
Germany	DLR Project Management Agency (DLR PT)
Turkey	The Scientific and Technological Research Council of Turkey (TÜBİTAK)
Norway	The Research Council of Norway (RCN)
France	The National Center for Scientific Research (CNRS)
Bulgaria	Bulgarian National Science Fund (BNSF)
Poland	National Centre for Research and Development (NCBR)
Lithuania	Agency for Science, Innovation and Technology (MITA)

EIG CONCERT-Japan

Scientific Committee Members who Participated in the ICT Joint Call

Country	Name	Affiliation	Role
Norway	Ivonne A. Herrera	The Research Council of Norway	Chair
Japan	Yuzuru TANAKA	Hokkaido University	Member
Spain	Carles Cane	The Institute of Microelectronics of Barcelona, The National Microelectronics Center (IMB-CNM-CSIC)	Member
Slovakia	Pavol Siman	Office of the Slovak Academy of Sciences	Member
Czech Republic	Michal Haindl	Institute of Information Theory and Automation	Member
Germany	Norbert Pohlmann	Westphalian University of Applied Sciences	Member
Turkey	Cetin Kaya Koc	Istinye University	Member
Hungary	Jozsef Vancza	Institute for Computer Science and Control	Member
France	Francesca Musiani	Center for Internet and Society, National Centre for Scientific Research	Member
Bulgaria	Nikolov Svetoslav	Bulgarian Academy of Science	Member
Poland	Michał Woźniak	Wroclaw University of Science and Technology	Member
Lithuania	Andrius Pleckaitis	Bank of Lithuania	Member

Evaluation of the EIG CONCERT-Japan Joint Call on “ICT for Resilient, Safe and Secure Society”

1. Prospective Applicants

Researchers are required to form consortia which must include partners from Japan and at least 2 European countries. Research leaders are required to possess adequate insight and experience to effectively implement their proposed joint research during their research period.

2. Evaluation Process

Proposals were subjected to evaluation by online peer review and a scientific committee made up of members selected by funding agencies which participates in the Joint Call. The participating funding agencies then met to decide on project selection, which was based on discussion of the results of that comprehensive evaluation.

3. Evaluation Criteria

- Scientific excellence
 - Sound research concept and quality of objectives
 - Ambition, innovative potential and uniqueness of the research idea
 - Scientific track–record, potential of the partners (including publications in scientific journals)
 - Scientific standing of the organizations the applicants belong to

- Impact of project results
 - Impact of the project on the scientific field and community
 - Contribution to enhancing innovation capacity and integration of new knowledge
 - Expected exploitation and dissemination of the results
 - Added value of the multilateral project consortium

- Implementation
 - Quality and effectiveness of the methodology
 - Feasibility of the work plan (in relation to governance, adequate budget, resources, time schedule)
 - Collaborative interaction and complementarity of project partners
 - Expected sustainability of the collaboration
 - Interdisciplinarity
 - Involvement of early-stage researchers and gender balance

For more information, see the call text below;

http://www.concert-japan.eu/IMG/pdf/eig_concert_japan_7th_call_text_and_annexes_.pdf