

EU AND MS/AC FUNDING OPPORTUNITIES FOR U.S. RESEARCHERS



TABLE OF CONTENTS

Executive Summary	3
Abbreviations	4
EU Funding opportunities for international cooperation	5
Introduction	5
U.S. in H2020- A SNAPSHOT	6
H2020 calls specifically encourage international participation	11
Excellent Science.....	14
Program: Research infrastructures	14
Program: Marie Skłodowska-Curie actions.....	17
Program: European Research Council	21
Industrial Leadership.....	22
Program: Innovation in SMEs	22
Societal Challenges	24
Program: Climate action, environment, resource efficiency and raw materials.....	24
Program: Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Secure, clean and efficient energy, Climate action, environment, resource efficiency and raw materials	30
Program: Health, demographic change and wellbeing	36
Program: Secure societies - Protecting freedom and security of Europe and its citizens	39
Program: Secure, clean and efficient energy.....	42
Program: Smart, green and integrated transport.....	45
Societal Challenges, Industrial Leadership.....	57
Horizon 2020 Pillar: Societal Challenges, Industrial Leadership	57
Program: Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Climate action, environment, resource efficiency and raw materials, Leadership in enabling and industrial technologies (LEIT)	57
MS/AC Funding Opportunities	60
Other ERA Multilateral INITIATIVES OPEN FOR International Collaboration	61
Joint Programming Initiatives (JPIs) and ERA-Nets Co-fund	61
Joint Technology Initiatives.....	63
References.....	65



EXECUTIVE SUMMARY

This report is a product of the [BILAT USA 4.0](#) project, funded by the European Union, and started on 1 February 2016. BILAT USA 4.0 continues activities started by the predecessor projects BILAT USA and BILAT USA 2.0 with the aim to enhance and develop science, technology, and innovation (STI) partnerships between the U.S. and Europe. A particular focus of the project activities will be put on an intensification of interactions between EU and US researchers and innovators, the support for the improvement of research and innovation framework conditions, the provision of analyses delivering a sound base for political decision making and an enhanced coordination and synergies between different European and US policies and programs. Detailed information can be found on our website: <http://www.euussciencetechnology.eu/>

The overall objective of this report is to inform the US Science, Technology and Innovation (STI) community about the funding opportunities that are available at European Union (EU), Member States (MS) and Associated Countries (AC) in a comprehensive way.

According to the Horizon 2020 program (H2020) contract data, 83 U.S. participants out of 387 US participants in 306 main listed projects have already signed a Grant Agreement. The rest is in the signature process. Within the 83 signed agreements Health is the leading theme (30), followed by ICT (12), Food security, sustainable agriculture and forestry, marine and maritime and inland water research (5) and Advanced Materials (4).

Among the Third Countries in all H2020 signed grant agreements, the United States rank 2nd in number of participations and 1st in budget share.

The recently signed [EU-U.S. Implementing Arrangement](#) for cooperation between researchers funded separately by the European Union's and the United States framework programs on research and innovation is expected to boost EU-U.S. collaboration within H2020 due to lifting barriers on framework conditions that prevented many US STI actors to participate actively in H2020.

The report originally aimed to have the following components and data sources:

- EU Funding opportunities including H2020 2016-2017 Work Program topics that focuses on international cooperation as well as U.S. relevant themes;
- Member States and Associated Countries' funding opportunities

EU funding opportunities under H2020 Work Program 2016-2017 are made available in this report as well as on the BILAT USA4.0 web-site.

According to the search criteria that are relevant for the U.S. the following call topics are included in this document:

- one topic for Research Infrastructures (e-infrastructures),
- two topics under Marie Skłodowska-Curie Program
- one topic for Industrial leadership,
- 16 topics under societal challenges and
- one topic combining Societal Challenge and Industrial Leadership.

Additional information on funding opportunities offered by bilateral programs between MS/AC and the U.S. is currently being prepared by SFIC, based on the questionnaire results gathered from MS and AC and will be included in this document once publicly available.



ABBREVIATIONS

AC	EU Associated Country
CP	Collaborative Project
CSA	Coordination and Support Action
EC	European Commission
EU	European Union
ERA	European Research Area
ERC	European Research Council
FP6/FP7	Sixth/Seventh Framework Program
HEI	Higher education institutes
ICT	Information and Communication Technologies
MS	Member State
NIH	National Institute of Health
NMP	Nanotechnologies, Materials and new Production technologies
SFIC	Strategic Forum for International S&T Cooperation
STI	Science Technology and Innovation
S&T	Science and Technology
U.S./US/USA	United States of America



EU FUNDING OPPORTUNITIES FOR INTERNATIONAL COOPERATION

Introduction

Horizon 2020 is the EU's Program for research and innovation lasting from 2014 -2020 with a budget of nearly 75 billion euro. Its aims are:

- Responding to the economic crisis to invest in future jobs and growth
- Addressing people's concerns about their livelihoods, safety and environment
- Strengthening the EU's global position in research, innovation and technology

The Program has 3 main priority blocks:

Excellent Science pillar aims to bring the best talent and infrastructure together in Europe to perform world class science;

Industrial Leadership pillar emphasizes the strategic investments in key enabling technologies, increasing the investments from the private sector as well as supporting innovative SMEs for creating new jobs and realize the growth;

Societal challenges focus on the multidisciplinary topics that concerns European citizens and societies such as climate change, environment, agriculture and food security, healthy life, etc. that require collaboration at the highest level in order to scale up innovation and bring breakthrough solutions.

Horizon 2020 also includes the budget for some additional programs and initiatives, such as the European Institute of Innovation and Technology (EIT), EURATOM (nuclear research) and the European Joint Research Centre (JRC).

According to the EU's policy on enhancing and focusing EU international cooperation in research and in innovation, EU is the world leader in excellence in science in terms of expenditure on research, high impact publications and patent applications. Nevertheless, changes in global settings in S&T (such as emerging economies raising their shares in global R&D expenditures rapidly, worldwide connectivity, access to knowledge increased international mobility) grand societal challenges and large scale infrastructures) excellence without international cooperation is not possible anymore.

Following these changes in global STI landscape, as well as in line with the United Nation's Global Development Goals for grand societal challenges, openness to and engagement with the world in research and innovation is one of the strategic approaches in H2020. Therefore, International cooperation is considered as a crosscutting priority within the Horizon 2020, which is completely open to participation from the whole world. In its implementation the EC follows a „dual approach strategy" focusing on the general openness of instruments and targeted international activities on country and topic level. This means that participants from all over the world, regardless of their place of establishment or residence, can participate in most of the calls of Horizon 2020. In addition to this general openness, several topics strongly encourage or require cooperation with non-EU partners in collaborative projects, target a certain country/region following the international cooperation roadmaps.

Regarding funding, researchers and research performing organizations from industrialized countries (including the U.S.) are not automatically eligible for funding in Horizon 2020. Exceptional cases are:

- Industrial Leadership and Societal Challenges: Research and Innovation Actions (RIA), Innovation Actions (IA) and Coordination and Support Actions (CSA): If funding is provided for in a bilateral scientific/technological agreement or similar arrangement between the EU and the organization. In the area of



Health, demographic change and well-being there is a bilateral arrangement between the US National Institutes of Health and the European Commission. In recognition of the opening of the US National Institutes of Health's programs to European researchers, any legal entity established in the US is eligible to receive EU funding for its participation for most of the topics in calls under the Societal Challenge 'Health, demographic change and well-being'.

- Industrial Leadership and Societal Challenges: Research and Innovation Actions (RIA), Innovation Actions (IA) and Coordination and Support Actions (CSA): If U.S. participation is deemed essential for carrying out the action, for instance due to outstanding competence/ expertise, access to research infrastructure/ particular geographical environments/ access to data. This rule is also applicable for calls that specifically encourage participation from the US.
- Excellent Science: European Research Council (ERC): US researchers are eligible to hold ERC Starting, Consolidator or Advanced Grants that provide up to five years of support for outstanding researchers, and their research teams, and allow them to spend up to 50 per cent of their time outside Europe. They may also spend these funds outside Europe when that is required to advance their research. See Chapter III for more details.
- Excellent Science: Marie Skłodowska Curie Actions (MSCA): There are a number of different MSCAs presenting different opportunities for US researchers and research organizations. Individual Fellowships. There are two types of individual fellowships. European Fellowships offer US researchers a PhD full funding for advanced research training in Europe for up to two years (including travel, accommodation and salary).
- Global Fellowships offer similar support for Europeans researchers (often postdoctoral fellows) for advanced research training at US institutions. In these cases, US institutions are also eligible for funding from the project coordinator (the Fellow's home institution in Europe) to cover training, consumables, management and overhead costs. Through participation in the Research and Innovation Staff Exchanges (RISE) and the Innovative Training Network (ITN) scheme, US research institutions may also host Europeans, and receive funding from the project coordinator, on the basis of a bilateral partnership agreement, for costs associated with particular activities or events such as distance learning, field research, workshops, conferences and summer schools. See Chapter III for more detailed information on MSCAs

U.S. in H2020- A SNAPSHOT

According to the Cordis database¹ there are 83 signed H2020 Projects with 387 U.S. participants. US Participants entitled to receive around 37.639.481MIO € from the EC.

The Health theme leads the cooperation with U.S. under H2020 societal challenges pillar with 30 projects, followed by 'Food security, sustainable agriculture and forestry, marine and maritime and inland water research with 10 projects.

EU-Performance Monitor: Horizon 2020²

All Horizon 2020 -figures as of 31.05.2016-

PROJECTS	PARTICIPATION	EC CONTRIBUTION
9.131	38.495	15.979,8 Mio. €

United States (US) in H2020

¹ **Community Research and Development Information Service.** It is the European Commission's primary public repository and portal to disseminate information on all EU-funded research projects and their results in the broadest sense. As of 31.05.2016 http://cordis.europa.eu/projects/home_en.html

² Source: EU Performance Monitoring, Austrian Research Promotion Agency. <https://eupm.ffg.at/ui/login/>



PROJECTS	PARTICIPATION	EC CONTRIBUTION
306 US participates in 3,4% of all H2020 Projects.	387 1% of all participation in submitted proposals.	37,6 Mio. € 0,2% of all EC contributions.
COORDINATION	PARTICIPATION IN GRANT AGREEMENTS	SUCCESS RATE
1 0% of all projects.	83 21,4% of participation from United States already signed the Grant agreements	16,6%

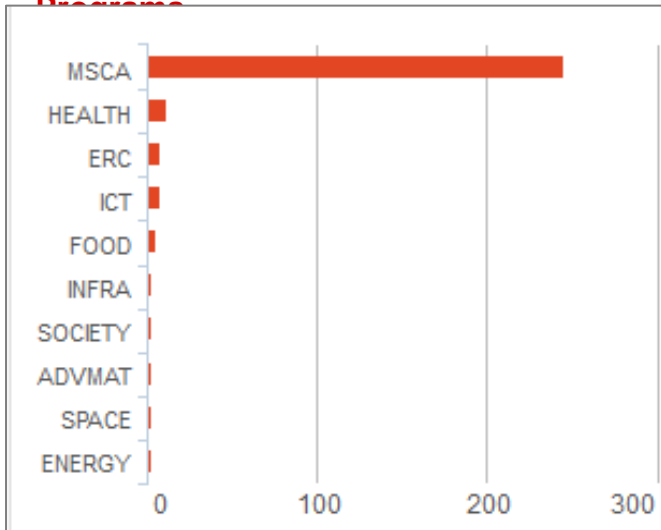
U.S. Participation based on Organization Type

	ALL COUNTRIES	UNITED STATES	% OF UNITED STATES IN ALL COUNTRIES
HIGHER EDUCATION INSTITUTION	13.182	297	2,3%
COMPANY	12.594	18	0,1%
RESEARCH ORGANIZATION	8.362	28	0,3%
PUBLIC INSTITUTION	2.363	17	0,7%
OTHER	1.994	27	1,4%

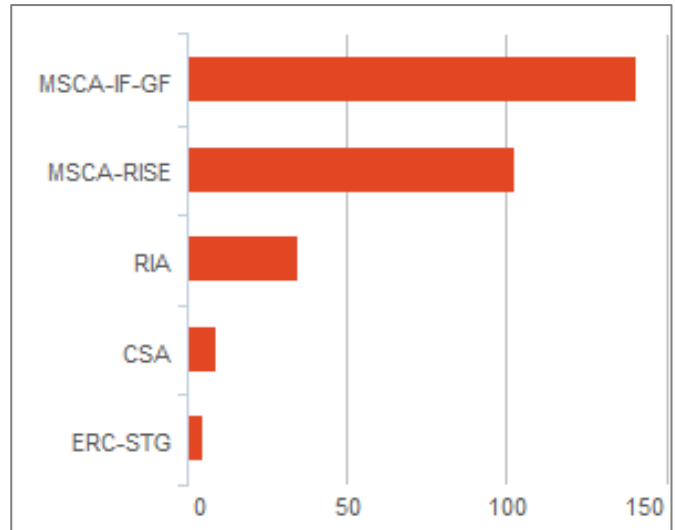
Around 77% of all US participants in H2020 are from HEIs, followed by research organizations and public institutions.



of U.S. HEI Participants: Top Programs



of U.S. HEI Participants: Top Instruments



Tables above show that the Marie Skłodowska Curie Program is by far the most used Program by HEIs from U.S, followed by Health, ERC, ICT and others. Within the MC Program the most successful instruments are Individual Fellowships followed by the staff exchange scheme. After these MC instruments collaborative research projects and coordination and support actions are other mostly used forms of cooperation by higher education institutes (HEI).

US Participation in H2020 based on Contract Data

	UNITED STATES	% of US in All
H2020	83	0,2%
EC Treaty	81	0,2%
Excellent Science	11	0,1%
European Research Council	5	0,3%
Future and Emerging Technologies	0	0,0%
Marie Skłodowska-Curie actions	0	0,0%
Research infrastructures	6	0,4%
Excellent Science - Cross-theme	0	-
Industrial Leadership	20	0,2%
Leadership in enabling and industrial technologies (LEIT)	20	0,3%
Information and Communication Technologies	12	0,3%
Nanotechnologies, Advanced Materials and Production	2	0,3%
Advanced materials	4	0,9%
Biotechnology	0	0,0%
Advanced manufacturing and processing	0	0,0%
Space	2	0,2%
Access to risk finance	0	0,0%
Innovation in SMEs	0	0,0%
Industrial Leadership - Cross-theme	0	0,0%
Societal Challenges	48	0,3%



Health, demographic change and wellbeing	30	1,1%
Food security, sustainable agriculture and forestry, marine and maritime and inland water research	5	0,2%
Secure, clean and efficient energy	2	0,1%
Smart, green and integrated transport	0	0,0%
Climate action, environment, resource efficiency and raw materials	2	0,1%
Europe in a changing world - inclusive, innovative and reflective Societies	7	0,6%
Secure societies - Protecting freedom and security of Europe and its citizens	2	0,2%
Societal Challenges - Cross-theme	0	0,0%
Spreading excellence and widening participation	0	0,0%
Teaming of excellent research institutions and low performing RDI regions	0	0,0%
Twinning of research institutions	0	0,0%
ERA chairs	0	0,0%
Policy Support Facility (PSF)	0	-
Supporting access to international networks	0	-
Transnational networks of National Contact Points	0	0,0%
Spreading excellence and widening participation - Cross-theme	0	0,0%
Science with and for Society	2	0,4%
Make scientific and technological careers attractive for young people	0	0,0%
Promote gender equality in research and innovation	0	0,0%
Integrate society in science and innovation	2	1,3%
Encourage citizens to engage in science	0	-
Develop the accessibility and the use of the results of publicly-funded research	0	-
Develop the governance for the advancement of responsible research and innovation	0	0,0%
Anticipating and assessing potential environmental, health and safety impacts	0	-
Improve knowledge on science communication	0	-
Science with and for Society - Cross-theme	0	0,0%
Non-nuclear direct actions of the Joint Research Centre (JRC)	0	-
The European Institute of Innovation and Technology (EIT)	0	-
Cross-theme	0	0,0%
Cross-theme-without detail	0	0,0%
Euratom	2	0,5%
Euratom.0.	2	0,5%
Euratom.0.0.-without detail	2	0,5%

Auswertung der FFG im Auftrag von BMWFW, BMVIT und BMLFUW.

Datenstand: 31.5.2016

According to the contract data, 83 U.S. participants out of 387 U.S. participants in 306 main listed projects have already signed the Grant Agreement. The rest is in the signature process. Within the 83 signed agreements Health is the leading theme (30), followed by ICT (12), Food security, sustainable agriculture and forestry, marine and maritime and inland water research (5) and Advance Materials (4).

Among the Third Countries in all H2020 signed grant agreements, the United States rank 2nd in number of participations and 1st in budget share.



The recently signed [EU-U.S. Implementing arrangement](#)³ for cooperation between researchers funded separately by the European Union's and the United States framework programs on research and innovation is expected to boost EU-U.S. collaboration within H2020 due to lifting barriers on framework conditions that prevented a number of U.S. STI actors to participate actively in H2020. The agreement facilitates cooperation between U.S. organizations and Horizon 2020 participants in cases where the U.S. organisations are funded by the U.S. and do not receive any funding from the Horizon 2020 Program. It simplifies cooperation between a selected Horizon 2020 project and a U.S. entity by enabling researchers to organize their cooperation outside the formal Horizon 2020 Grant Agreement signed for each project, in accordance with applicable laws, rules, policies, and regulations of their respective funding programs.

³ http://ec.europa.eu/research/iscp/pdf/policy/eu-usa_implementing_arrangement_2016.pdf



H2020 CALLS SPECIFICALLY ENCOURAGE INTERNATIONAL PARTICIPATION

As stated above, all H2020 calls for proposals are open for participation from all over the world. Nevertheless, some topics specifically encourage international participation in proposals. In order to find out the US relevant calls within the 2016-2017 Work Programs the following keywords have been taken into account:

- Atlantic Ocean Research Alliance
- Atlantic Ocean
- Atlantic
- Arctic Research
- Arctic Ocean
- Blue Growth
- Belmont Forum
- Carnegie group of G8+05 Science Advisers
- Carnegie group
- Group of Senior Officials on Global Research Infrastructures/ Group of Senior Officials (GSO) on Global Research Infrastructures
- Global Science Forum
- Global Research Infrastructure
- Global Research Alliance
- Global Alliance for Chronic Diseases
- Galway Statement
- G7/G8/G20
- High-Income Country/ High-Income Countries/ High Income Country/ High Income Countries
- Industrialized Country/ Industrialised Country/ Industrialized Countries/ Industrialised Countries
- International cooperation
- Northern American
- Northern America
- North-Atlantic
- North American
- North America
- Marine Science
- Marine Research
- OECD's Global Science Forum
- OECD Global Science Forum
- Ocean Science
- Ocean Research Alliance
- Ocean Research
- Research Data Alliance
- Third country/Third countries
- Transatlantic Research Alliance
- Transatlantic
- USA/US/us/U.S./u.s.
- United States of America

On the next pages details of the U.S. relevant call topics from H2020 2016-2017 Work Program including above mentioned keywords are listed.



US Relevant Call Topics in H2020

2016-2017 Work Program

Executive Summary	3
Abbreviations	4
Dissemination Plan	Fehler! Textmarke nicht definiert.
EU Funding opportunities for international cooperation	5
Introduction	5
U.S. in H2020- A SNAPSHOT	6
H2020 calls specifically encourage international participation	11
Excellent Science.....	14
Program: Research infrastructures.....	14
Topic Title: Data and Distributed Computing e-infrastructures for Open Science.....	14
Program: Marie Skłodowska-Curie actions.....	17
Topic Title: Individual Fellowships	17
Topic Title: Research and Innovation Staff Exchange.....	19
Program: European Research Council.....	21
Industrial Leadership.....	22
Program: Innovation in SMEs	22
Topic Title: A better access to industrial technologies developed overseas	22
Societal Challenges	24
Program: Climate action, environment, resource efficiency and raw materials.....	24
Topic Title: Closing the water gap.....	24
Topic Title: Biodiversity scenarios.....	26
Topic Title: ERA-NET on Climate Services Roadmap: Cross-sector impact assessments (evaluation, comparison and integration)	28
Program: Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Secure, clean and efficient energy, Climate action, environment, resource efficiency and raw materials.....	30
Topic Title: Interaction between people, oceans and seas: a strategic approach towards healthcare and well-being	30
Topic Title: The effect of climate change on Arctic permafrost and its socio-economic impact, with a focus on coastal areas ³²	
Topic Title: Monitoring and assessing fish stocks, other pelagic species and habitats with an automated, non-invasive, opto-acoustic system.....	34
Program: Health, demographic change and wellbeing.....	36
Topic Title: Global Alliance for Chronic Diseases (GACD) prevention and management of mental disorders	36



Program: Secure societies - Protecting freedom and security of Europe and its citizens	39
Topic Title: Pan European Networks of practitioners and other actors in the field of security	39
Program: Secure, clean and efficient energy.....	42
Topic Title: Measuring, monitoring and controlling the potential risks of subsurface operations related to CCS and unconventional hydrocarbons	42
Program: Smart, green and integrated transport.....	45
Topic Title: Potential of the Physical Internet.....	45
Topic Title: Full-scale demonstration of urban road transport automation	47
Topic Title: Electrified urban commercial vehicles integration with fast charging infrastructure	49
Topic Title: Resilience to extreme (natural and man-made) events	51
Topic Title: Identification of gaps, barriers and needs in the aviation research.....	53
Topic Title: Protection of all road users in crashes	55
Societal Challenges, Industrial Leadership.....	57
Horizon 2020 Pillar: Societal Challenges, Industrial Leadership	57
Program: Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Climate action, environment, resource efficiency and raw materials, Leadership in enabling and industrial technologies (LEIT).....	57
Topic Title: Supporting international cooperation activities on agriculture soil contribution to climate change mitigation and adaptation.....	57
Topic Title: Advancing basic biological knowledge and improving management tools for commercially important fish and other seafood species	58
MS/AC Funding Opportunities	60
Other ERA Multilateral INITIATIVES OPEN FOR International Collaboration	61
Joint Programming Initiatives (JPIs) and ERA-Nets Co-fund	61
Joint Technology Initiatives.....	63
References.....	65



EXCELLENT SCIENCE

Horizon 2020 Pillar:	Excellent Science
Program:	Research infrastructures
Call Title:	E-Infrastructures
Call Identifier:	H2020-EINFRA-2016-2017
Topic Title:	Data and Distributed Computing e-infrastructures for Open Science
Topic Identifier:	EINFRA-12-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	29-03-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/einfra-12-2017.html>

Specific Challenge: This topic covers two complementary areas of e-infrastructures very closely related with the objective to make research data discoverable, accessible, assessable, intelligible, useable, and wherever possible interoperable – c.f. **G8** principles on research data:

- a. Secure and agile data and distributed computing e-infrastructures: fostering the integration of a secure, permanent, on-demand service-driven, privacy-compliant and sustainable e-infrastructure incorporating distributed databases, computing resources and software.

The European data and computing e-infrastructure landscape remains very fragmented which is an obstacle for research collaboration at European and global levels and introduces additional complexity for achieving sustainable governance. The challenge is to integrate at European level the geographically and disciplinary dispersed resources to achieve economies of scale and efficiency gains in providing the best data and computing capacity and services to the research and education communities. This action is interrelated to INFRADEV-04-2016, “European Open Science Cloud for Research”.

- b. Access and preservation platforms for scientific information: supporting the integration and consolidation of e-infrastructure for reliable and permanent open access to digital scientific records, based on existing initiatives across Europe (institutional and thematic repositories, aggregators, etc.).

The European infrastructures need to respond to the emerging requirements for seamless and reliable access to publications, research data and software. These requirements are complemented by the need for long term preservation and curation of scientific information to fully support data and computing intensive science. The challenge is to support the integration at European level of a robust and sustainable e-infrastructure, based on existing initiatives across Europe (institutional and thematic publishing platforms, aggregators, etc.) and services supporting European Open Access policies. An additional challenge is the building of capacity to link all kinds of digital research objects in order to enable a more transparent evaluation of research and reproducibility of results, enabling trust and facilitating access by innovative business actors.

Scope: Grants awarded under this topic will be complementary between them. The respective options of Article 2, Article 31.6 and Article 41.4 of the Model Grant Agreement will be applied. The main purpose of the collaboration agreements referred to in Article 41.4 of the Model Grant Agreement is to work on potential synergies, overlaps and gaps in the overall service offering. In addition, links should also be established



with projects selected under topic INFRADEV-04-2016, to collaborate, exploit potential synergies and ensure complementarity.

Proposals will address part (a) or (b), but not both. At least one proposal for each part will be selected:

- a. Secure and agile data and distributed computing e-infrastructures (proposals should address all points below):
 1. integration of computing, software and storage resources exposing them through a dynamic registry and catalogue of services supporting European research and education communities in their tasks related with data and computing intensive science. This integration should be done by means of open and flexible architectures and include institutional, regional, national and European capabilities, packaging them in the optics of end-user needs
 2. seamless operation of highly scalable and agile data and computing platforms and services dedicated to analytics including hardware and software components, database, compilers, analytics software, supported to easy user entry points for the community of users
 3. reliably address the aspects of privacy, cybersecurity and information assurance supporting multiple compartments with private, public or industrial corpus of data, protected from unauthorized access by secure interfaces
 4. adoption of standards-based common interfaces, open source components enabling access and processing of underlying data collected/stored in different platforms and formats. Empowering users to customise application and services tailoring them to specific requirements, which will differ across disciplines, applications etc
 5. work closely with user communities (from different disciplines) to foster the use of digital infrastructures, promote the values of open science and support their data management plans. Engage and train users (researchers, educators and students) to contribute to the dynamic registry and catalogue of services improving quality of data, software and computing infrastructure that become available for re-use
 6. foster interoperability of pan-European thematic/community-driven e-infrastructures providing cost-effective and interoperable solutions for data management. The data and computing e-infrastructure should be able to interoperate with resources based on different technologies which are operated/owned by public and or private organisations
 7. support the preservation and curation of data and associated software so that the reproducibility and accuracy of the data can be verified
 8. enable seamless transition and e-infrastructure upgrades, exploiting economies of scale and promoting interoperability with similar infrastructures across and beyond Europe and operate user-friendly and comprehensive repositories of software components for research and educationThe Commission considers that proposals requesting a contribution from the EU of between EUR 10 and 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.
- b. Access and preservation platforms for scientific information (proposals will address all points below):
 1. Deployment and maintenance of service-driven knowledge e-infrastructure responding to general and specific requirements of researchers and research organisations for open access to research digital objects, their registration and preservation. This e-infrastructure will further develop the research capacity through a coordinated and participatory architecture linking institutional and thematic repositories across Europe. It will support publishing platforms by providing essential services for scientific information that can be used by humans and machines. Such target platforms can be generic, specific for a research field or specialised on quality assurance, discoverability, archiving etc. Essential functions of this service-driven approach will include helpdesks, training and guidance to support producers and users of scientific information, community building to support research data sharing and management, as well as implementation of Open Access policies in Europe. Relevant indicators on the take-up of open access in Europe including publications and data should be elaborated and reported regularly. The project will promote a limited set of biblio- and webometrics that reflect open access policies. It will collect bibliometric data on publications,



citations, data citations, etc. on all Horizon 2020 scientific output (including on the Open Research Data Pilot) and produce both standard and on-demand statistics.

2. Supporting global interoperability of open access data e-infrastructures and linking with similar initiatives across the globe to complement the physical access to research facilities with data access and to ensure that Europe plays a leading role in international collaborations.

The Commission considers that proposals requesting a contribution from the EU of between EUR 8 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. It is expected that one proposal will be selected.

Expected Impact:

- a. the operation of a federated European data and distributed computing infrastructure for research and education communities will optimise the access to IT equipment and services and will put all European researchers and educators in equal footing to access essential resources to express their talent and creativity. Establishing partnerships with industrial and private partners the e-infrastructure will train people in research and academic organisations preventing lack of skilled and specialised infrastructure operators. It will avoid the locking-in to particular hardware or software platforms that would jeopardise the long-term planning for capacity upgrades. With such an operational infrastructure more scientific communities will use storage and computing infrastructures with state-of-the-art services for their research and education activities. The open nature of the infrastructure will allow scientists, educators and students to improve the service quality by interacting with data, software and computing resources. It will increase the incentives for scientific discovery and collaboration across disciplinary and geographical boundaries, putting Europe in the driving seat at global level. It will further develop the European economic innovation capacity and provide stability to the e-infrastructure.
- b. a reliable operation of e-infrastructure services for access and preservation of scientific information will make the intellectual capital of Europe available to researchers, business and citizens at large. It will generate economic and scientific advances now and in the future as that capital is safely preserved for further exploitation by future generations. Open Access publications resulting from Horizon 2020 funded research are available and easily findable online. Data needed to validate published results is linked to the publications and publicly shared whenever possible. Accurate science metrics for Horizon 2020 can be produced with almost no effort. Most of the European institutional repositories (at least 95%) as well as the principal thematic repositories are part of the same interoperable repository network.

Cross-cutting Priorities: International cooperation, Open Science



Horizon 2020 Pillar:	Excellent Science
Program:	Marie Skłodowska-Curie actions
Call Title:	Marie Skłodowska-Curie Individual Fellowships
Call Identifier:	H2020-MSCA-IF-2017
Topic Title:	Individual Fellowships
Topic Identifier:	MSCA-IF-2017
Type of Action:	MSCA-IF-EF-CAR Career Restart panel , MSCA-IF-EF-RI Reintegration panel, MSCA-IF-EF-SE Society and Enterprise panel, MSCA-IF-EF-ST Standard EF, MSCA-IF-GF Global Fellowships
Deadline(s):	14-09-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-if-2017.html>

Objective: The goal of the Individual Fellowships is to enhance the creative and innovative potential of experienced researchers, wishing to diversify their individual competence in terms of skill acquisition through advanced training, international and intersectoral mobility.

Individual Fellowships provide opportunities to acquire and transfer new knowledge and to work on research and innovation in a European context (EU Member States and Associated Countries) or outside Europe. The scheme particularly supports the return and reintegration of researchers from outside Europe who have previously worked here. It also develops or helps to restart the careers of individual researchers that show great potential, considering their experience.

Scope: Support is foreseen for individual, trans-national fellowships awarded to the best or most promising researchers of any nationality, for employment in EU Member States or Associated Countries. It is based on an application made jointly by the researcher and the beneficiary in the academic or non-academic sectors.

Only one proposal per individual researcher will be evaluated.

Fellowships take the form of European Fellowships or Global Fellowships. European Fellowships are held in EU Member States or Associated Countries and are open to researchers either coming to Europe from any country in the world or moving within Europe. The researcher must comply with the rules of mobility in the country where the European Fellowship is held.

Return and reintegration of researchers into a longer term research position in Europe, including in their country of origin, is supported via a separate multi-disciplinary reintegration panel of the European Fellowships. For the reintegration panel, there shall be mobility into Europe.

Support to individuals to resume research in Europe after a career break, e.g. after parental leave, is ensured via a separate multi-disciplinary career restart panel of the European Fellowships. To qualify for the career restart panel, researchers must not have been active in research for at least 12 months immediately prior to the deadline for submission.

Researchers seeking to work on research and innovation projects in an organisation from the non-academic sector will be supported via a separate multi-disciplinary society and enterprise panel of the European



Fellowships. The objective of this panel is to facilitate career moves between the academic and non-academic sectors and to open attractive career opportunities for researchers outside academia.

Global Fellowships are based on a secondment to a third country and a mandatory 12 month return period to a European host. The researcher must comply with the rules of mobility in the country where the Global Fellowship secondment takes place, not for the country of the return phase.

Researchers receiving an Individual Fellowship may opt to include a secondment phase in Europe, notably in the non-academic sector, within the overall duration of their fellowship. For a fellowship of 18 months or less, the secondment phase may last up to three months. For a fellowship of more than 18 months, the secondment phase may last up to six months. The secondment phase can be a single period or be divided into shorter mobility periods. The secondment should significantly add to the impact of the fellowship.

A Career Development Plan should be established jointly by the supervisor(s) and the researcher. In addition to research or innovation objectives, this plan comprises the researcher's training and career needs, including training on transferable skills, planning for publications and participation in conferences.

Expected Impact:

At researcher level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia
- Increase in higher impact R&I output, more knowledge and ideas converted into products and services
- Greater contribution to the knowledge-based economy and society

At organisation level:

- Enhanced cooperation and stronger networks
- Better transfer of knowledge between sectors and disciplines
- Boosting of R&I capacity among participating organisations

At system level:

- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- Strengthening of Europe's human capital base in R&I with more entrepreneurial and better trained researchers
- Better communication of R&I results to society
- Increase in Europe's attractiveness as a leading destination for R&I
- Better quality research and innovation contributing to Europe's competitiveness and growth

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities, Gender



Horizon 2020 Pillar:	Excellent Science
Program:	Marie Skłodowska-Curie actions
Call Title:	Marie Skłodowska-Curie Research and Innovation Staff Exchange
Call Identifier:	H2020-MSCA-RISE-2017
Topic Title:	Research and Innovation Staff Exchange
Topic Identifier:	MSCA-RISE-2017
Type of Action:	MSCA-RISE
Deadline(s):	05-04-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-rise-2017.html>

Objective: The RISE scheme will promote international and inter-sector collaboration through research and innovation staff exchanges, and sharing of knowledge and ideas from research to market (and vice-versa).

The scheme fosters a shared culture of research and innovation that welcomes and rewards creativity and entrepreneurship and helps to turn creative ideas into innovative products, services or processes.

Scope: RISE involves organisations from the academic and non-academic sectors (in particular SMEs), based in Europe (EU Member States and Associated Countries) and outside Europe (third countries).

Support is provided for the development of partnerships in the form of a joint research and innovation project. This is aimed at knowledge sharing via international as well as intersectoral mobility, based on secondments of research and innovation staff (exchanges) with an in-built return mechanism.

The organisations constituting the partnership contribute directly to the implementation of a joint research and innovation project by seconding and/or hosting eligible staff members. Secondments shall always take place between legal entities independent from each other^[1].

RISE should exploit complementary competences of the participating organisations, as well as other synergies, and enable networking activities, organisation of workshops and conferences to facilitate sharing of knowledge, new skills acquisition and career development for research and innovation staff members.

RISE projects can focus either on one dimension of mobility (intersectoral / international), or include a combination of both.

Exchanges can be for both early-stage and experienced researchers' levels and can also include administrative, managerial and technical staff directly involved in the research and innovation activities of the proposal.

Support for the exchanges between institutions within Europe (EU Member States and Associated Countries) covers only intersectoral secondments.

Exchanges with institutions from and to third countries can be intersectoral as well as within the same sector.

Secondments between institutions located in third countries or within the same EU Member State or Associated Country will not be supported.

Expected Impact:

At staff member level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia
- Increase in higher impact R&I output, more knowledge and ideas converted into products and services
- Greater contribution to the knowledge-based economy and society

At organisation level:

- Enhanced cooperation and transfer of knowledge between sectors and disciplines
- Strengthening of international and intersectoral collaborative networks
- Boosting of R&I capacity among participating organisations

At system level:

- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- Strengthening of Europe's human capital base in R&I
- Increase in Europe's attractiveness as a leading destination for R&I
- Better quality R&I contributing to Europe's competitiveness and growth

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities, Gender



Horizon 2020 Pillar:	Excellent Science
Program:	European Research Council
Call Title:	ERC Consolidator Grant
Call Identifier:	ERC-2017-COG
Type of Action:	ERC-COG Consolidator Grant
Deadline(s):	9 February 2017 (single stage)
Participant Portal Weblink:	

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/erc-2017-cog.html>

Objective: ERC Consolidator Grants are designed to support excellent Principal Investigators at the career stage at which they may still be consolidating their own independent research team or program. Applicant Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

Scope:

Size of ERC Consolidator Grants

Consolidator Grants may be awarded up to a maximum of EUR 2 000 000 for a period of 5 years (The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects).

However, up to an additional EUR 750 000 can be requested in the proposal to cover (a) eligible "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or (b) the purchase of major equipment and/or (c) access to large facilities (As any additional funding is to cover major one-off costs it is not subject to pro-rata temporis reduction for projects of shorter duration. All funding requested is assessed during evaluation).

Profile of the ERC Consolidator Grant Principal Investigator

The Principal Investigator shall have been awarded their first PhD over 7 and up to 12 years prior to 1 January 2017. The effective elapsed time since the award of the first PhD can be reduced in certain properly documented circumstances (see [ERC Work Program 2017](#)).

A competitive Consolidator Grant Principal Investigator must have already shown research independence and evidence of maturity, for example by having produced several important publications as main author or without the participation of their PhD supervisor. Applicant Principal Investigators should also be able to demonstrate a promising track record of early achievements appropriate to their research field and career stage, including significant publications (as main author) in major international peer-reviewed multidisciplinary scientific journals, or in the leading international peer-reviewed journals of their respective field. They may also demonstrate a record of invited presentations in well-established international conferences, granted patents, awards, prizes etc.

The ERC actions are open to researchers of any nationality who intend to conduct their research activity in any Member State or H2020 Associated Country. Principal Investigators may be of any age and nationality and may reside in any country in the world at the time of the application. However, Principal Investigators funded through the ERC frontier research grants shall spend a minimum percentage of their total working time in an EU member State or Associated Country and a minimum percentage of their total working time on the ERC project.

The host institution must either be established in an EU Member State or H2020 Associated Country as a legal entity created under national law, or it may be an International European Interest Organisation (such as CERN, EMBL, etc.), the European Commission's Joint Research Centre (JRC) or any other entity created under EU law.



INDUSTRIAL LEADERSHIP

Horizon 2020 Pillar:	Industrial Leadership
Program:	Innovation in SMEs
Call Title:	For a better innovation support to SMEs
Call Identifier:	H2020-INNOSUP-2016-2017
Topic Title:	A better access to industrial technologies developed overseas
Topic Identifier:	INNOSUP-08-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	28-03-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/innosup-08-2017.html>

Specific Challenge: According to the OECD, the **US** and Japan dominate R&D stocks for technologies ready for uptake by industry. 40% and 28% of the R&D stock held in OECD countries are located in the **US** and Japan respectively. Korea further contributes a significant share as a result of an active technology development policy followed for decades.

Technologies are however hardly accessible for European SMEs – while multinational companies face less challenges in this respect. Access to technologies overseas is hampered amongst others by a mismatch of institutions and methodologies for technologies transfer. The friction from differences in approaches to technology transfer becomes evident in the daily work of the Enterprise Europe Network in which overseas entities became members on a self-financing basis. These network partners adopt the network's working methods but face the challenge that direct interaction is hampered by the geographic distance, as a result, real hand-on cooperation with overseas partners in the Enterprise Europe Network remain limited.

Scope: A limited number of experimental projects between the network sector groups and overseas partners of the Enterprise Europe Network shall be supported by grants. The objective is to better capitalise the industrial R&D stock of overseas OECD countries in the context of sector groups of the Enterprise Europe Network in collaboration with clusters. The action should develop and test new service formats by taking up elements of the technology and knowledge transfer practices of the network partners in the **US**, Japan and Korea – and other countries as appropriate - to assist SMEs to tap the pool of industrial knowledge and technologies in these countries.

Project partners shall be partners in the Enterprise Europe Network; collaborating or supporting entities overseas do not have to be partners in the Enterprise Europe Network – cluster organisation in Europe shall be included as collaborating / supporting entities.

Expected Impact: The projects to be supported shall mainly achieve a structural impact by:



- Better integrating overseas partners in the sector groups of the Enterprise Europe Network, further developing the methods used by the Network for collaboration with overseas partners, and thereby providing a lasting better access to the results of applied industrial research in the **US**, Japan and Korea for European SMEs.
- From the supported actions a significant number of European SMEs will get into contact with the developers of technologies ready for application overseas and possibly conclude cooperation agreements.

Cross-cutting Priorities: International cooperation



SOCIETAL CHALLENGES

Horizon 2020 Pillar:	Societal Challenges
Program:	Climate action, environment, resource efficiency and raw materials
Call Title:	Greening the Economy
Call Identifier:	H2020-SC5-2016-2017
Topic Title:	Closing the water gap
Topic Identifier:	SC5-33-2017
Type of Action:	ERA-NET-Cofund ERA-NET Cofund
Deadline(s):	07-03-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-33-2017.html>

Specific Challenge: Growing water demands, mismanagement of water use and climate change are increasing the stress on water supply, water bodies, and associated ecosystems and existing infrastructures, and emphasise the need to close the water cycle gap, by reconciling water supply and demand in both quantitative and qualitative terms. Research needs to be deployed in a number of scientific fields to improve the knowledge base on water resources availability and use and must be systematically combined with a socio-economic approach investigating the questions of adaptation strategies, participation, behaviour and commitment of stakeholders. This challenge is of European interest and will require a concerted action. To be more effective and increase the added value of related investments, the efforts and strategic research agendas of the many funding networks and organisations existing in Europe need to be integrated to establish transnational and trans-disciplinary research and innovation actions.

Scope: The action will support delivering on priorities identified in the Strategic Research and Innovation Agenda of the Water Joint Programming Initiative (JPI), by pooling together the necessary financial resources from the participating national (or regional) research programs with a view to implementing a joint call for proposals resulting in grants to third parties with EU co-funding. The joint call should address research and innovation to support the implementation of EU water policy, in particular on the thematic area “Closing the Water Cycle Gap” of the Water JPI Strategic Research and Innovation Agenda, specifically the sub-themes of Enabling Sustainable Management of Water Resources; and Strengthening Socio-economic Approaches to Water Management. Water resources observation and modelling will be required to better understand hydrological processes and to analyse and forecast the effect of management options, in order to support improved decision-making to ensure the long-term viability of water resources and to enable the integrated management of water resources at the national, basin, and global scales. Observation and modelling should also help to mobilise investments into innovation water management and use solutions in line with the objective of creating a circular economy.

In line with the EU's strategy for international cooperation in research and innovation international cooperation with international partners is encouraged. Proposals should include other joint activities including additional joint call(s) without EU co-funding. The proposal should demonstrate that these co-funded other activities exclude any overlaps with related ongoing actions co-funded by the EC. Cooperation and coordination with other ERA-NETs and/or JPIs to increase synergies on cross-cutting issues, where appropriate, is encouraged.



Participation of legal entities from international partner countries and/or regions is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries which are not automatically eligible for funding⁴ may nonetheless request a Union contribution (on the basis of the ERA-NET unit cost) for the co-ordination costs of additional activities.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Projects are expected to lead to:

- improved use of scarce human and financial resources in the area of water research and innovation;
- reduced fragmentation of water research and innovation efforts across Europe;
- improved synergy, coordination and coherence between national and EU funding in the relevant research fields through transnational collaboration;
- improved implementation of research and innovation programs in these fields through exchange of good practices;
- strengthened international leadership of European research in this area making the Water JPI, in collaboration with the European Commission, a privileged and attractive partner for global cooperation in research and innovation, in the context of the **Belmont Forum** and other international alliances;
- contribution to the implementation of the objectives of the JPI on Water;
- contribution to the implementation of the Sustainable Development Goals (SDGs), in particular SDG 6 'Ensure availability and sustainable management of water and sanitation for all' and SDG 13 'Take urgent action to combat climate change and its impacts', as well as the conclusions of the COP21 Paris Agreement⁵.

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities, ERA-NET.

⁴ http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm

⁵ The Paris Agreement was adopted at the 21st Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change, in Paris on 12 December 2015.



Horizon 2020 Pillar:	Societal Challenges
Program:	Climate action, environment, resource efficiency and raw materials
Call Title:	Greening the Economy
Call Identifier:	H2020-SC5-2016-2017
Topic Title:	Biodiversity scenarios
Topic Identifier:	SC5-32-2017
Type of Action:	ERA-NET-Cofund ERA-NET Cofund
Deadline(s):	07-03-2017 (single-stage)
Participant Portal Weblink:	

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-32-2017.html>

Specific Challenge: Evaluating and improving the sustainability of the management of biodiversity and ecosystem services is a major challenge of our time all over the world. Scenarios of biodiversity and ecosystem services have been a key component of forward-looking decision making as they contribute to i) better understanding and synthesizing a broad range of observations, ii) informing decision makers about future impacts of global changes such as climate change, land use change, resource overuse, invasive alien species or pollution, iii) providing decision support by developing adaptive management strategies, and iv) evaluating the implications of alternative social-economic development pathways and policy options.

Development of scenarios for biodiversity and ecosystem services, based on the understanding and modelling of their dynamics and the evaluation and reanalysis of past changes, is beginning to receive high priority in the research policy of the majority of countries worldwide. In this context, aligning research agendas and implementing them through international calls will promote synergies and optimal use of the available expertise and resources, avoiding duplication and ensuring robust outcomes of global relevance. To attain this, BiodivERsA is opening to third country partners and the **Belmont Forum** provides an excellent platform for international collaboration.

Scope: Proposals should pool the necessary financial resources from the participating national (and as needed local and regional) research programs with a view to implementing a joint call for proposals with EU co-funding resulting in grants to third parties. The proposal should include other joint and follow-up activities, including possibly additional joint call(s) without EU co-funding. The proposal should demonstrate that these co-funded other activities exclude any overlaps with ongoing actions of this ERA-NET co-funded by the EC. Actions should build on the strategic roadmap of BiodivERsA ERA-NET Cofund and launch at least one international call on biodiversity and ecosystem services scenarios in collaboration with the **Belmont Forum** specifically to promote trans-continental collaboration. Cooperation and coordination with other ERA-NETs and/or JPIs to increase synergies on cross-cutting issues, where appropriate, is encouraged.

Participation of legal entities from international partner countries and/or regions, particularly from countries participating in the **Belmont Forum**, is encouraged in the joint call as well as in other joint activities without EU co-funding. For the co-ordination costs of additional activities only, participants from countries which are not automatically eligible for funding⁶ may nonetheless request a Union contribution (on the basis of the ERA-NET unit cost).

⁶ http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm



The Commission considers that proposals requesting a contribution from the EU in the range of EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Actions are expected to lead to:

- the alignment of research and innovation agendas in the area of scenario development for biodiversity and ecosystem services and co-ordinated streamlining of the implementation of at least one call;
- enhanced excellence and global relevance of research and innovation activities on biodiversity and ecosystem services, improving the relevance and value of advances made in developing socio-economic scenarios and models of global change impacts on the dynamics of biodiversity and ecosystem services for decision makers at multiple scales;
- increased visibility of European biodiversity scientific community and research outcomes at international level;
- strong and lasting alliance with the funding agencies of key international partners for research and innovation actions on biodiversity and ecosystem services (e.g Brazil, China, India, Japan, Mexico, South Africa, **USA**);
- link with possible assessments as those conducted, e.g., by the IPBES to induce a wider, worldwide and regional use of scenarios to better assess future, plausible trends of biodiversity and ecosystem services and explore the role that nature-based solutions may play;
- contribution to the implementation of the Sustainable Development Goals (SDGs), in particular SDG 15 'Protection, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'.

Cross-cutting Priorities: ERA-NET, International cooperation, Socio-economic science and humanities



Horizon 2020 Pillar:	Societal Challenges
Program:	Climate action, environment, resource efficiency and raw materials
Call Title:	Greening the Economy
Call Identifier:	H2020-SC5-2016-2017
Topic Title:	ERA-NET on Climate Services Roadmap: Cross-sector impact assessments (evaluation, comparison and integration)
Topic Identifier:	SC5-30-2017
Type of Action:	ERA-NET-Cofund ERA-NET Cofund
Deadline(s):	07-03-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-30-2017.html>

Specific Challenge: Following the outcome of the European Workshop 'Towards a European Market of Climate Services' (18th March, 2014), a European Roadmap for Climate services has been prepared by an independent group of experts and presented in a subsequent European Conference on 17th March 2015. The Roadmap identifies a series of challenges and specific actions that need to be undertaken by various actors in Europe, in order to strengthen the European market of climate services. In the Horizon 2020 Work Program of 2015 an ERA-NET Cofund action was already launched with the JPI Climate for developing scientific advances in support of climate services, involving mandated governmental research centres in the design of co-aligned actions. The challenge is to support the implementation of the Roadmap, building upon the layer of activities already launched, in order to support knowledge-based decision making, both in the public and private sector, to avoid risks and seize opportunities towards sustainable development. This requires cross-sectoral and robust impact assessments that nest climate change information into others socio-economic changes, as well as taken into account adaptation policies to reduce vulnerabilities and increase resilience in future.

Scope: The action will support the implementation of the roadmap for climate services and align actions of the various national entities of Member States and Associated Countries active in climate services and climate research by developing, evaluating, and integrating impact assessments, methodologies, and models while adding to the development of Shared Socioeconomic Pathways (SSP). It requires transdisciplinary research – co-designed with key stakeholders – across key economic/societal sectors, including food, water, energy, health, finance, investment, equity and security. This action should be implemented through a close cooperation with Member States grouped around the JPI Climate, should take into account relevant actions already carried out in the first Horizon 2020 programming cycle and within other relevant JPIs, and should benefit from cooperation with advanced programs and projects on climate regional modelling and knowledge gaps, such as the one foreseen in this work program for 2016 (SC5-2, SC5-3). Furthermore, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), it should open cooperation at international level with other key initiatives such as the **Belmont Forum** or at regional level in Latin America and/or Africa.

The proposal should pool the necessary financial resources from the participating national (or regional) research programs with a view to implementing a joint call for proposals with EU co-funding resulting in grants to third parties. The proposal may include, in addition, publicly-funded research performing organisations that will contribute with their own resources (in-kind contributions from their institutional funding). In this case the joint call should include a separate topic for the participating research performing organisations. They will carry out the transnational projects resulting from this topic themselves. Their



participation in the ERA-NET Cofund action must be mandated by the national/regional authorities in charge (normally the responsible Ministry).

Proposals should include other joint activities including additional joint calls without EU co-funding, while demonstrating at the same time that activities exclude any contextual or financial overlaps with related ongoing actions co-funded by the EC. Cooperation and coordination with other ERA-NETs and/or JPIs to increase synergies on cross-cutting issues, where appropriate, is encouraged.

Participation of legal entities from international partner countries and/or regions, including from **Belmont Forum** members and/or Latin America or Africa, is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries which are not automatically eligible for funding⁷ may nonetheless request a Union contribution (on the basis of the ERA-NET unit cost) for the co-ordination costs of additional activities.

The Commission considers that a proposal requesting a contribution from the EU in the range of EUR 13 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The results of the projects launched through this ERA-NET are expected to:

- substantially increase the capability of quantifying the impacts of climate change at local/regional level in a cross sectoral risk-assessment framework including better quantification of uncertainties;
- increase the potential of using climate impact data in operational climate services;
- increase the integration of economic and impact model assessments in support of adaptation and mitigation decisions;
- align public funding on actions in support to the development of climate services within the JPI Climate member countries and beyond, including others relevant JPIs;
- support a network of key European research performing organizations;
- strengthen international leadership of European research, in particular its contribution to the Global Framework for Climate Services (WMO-GFCS), the Inter-Sectoral Impact Model Intercomparison Project (WCRP/ISI-MIP) and the Future Earth Program, and eventually to IPCC assessments, UN-SDGs and the **Belmont Forum**;
- contribute to implementing the Sustainable Development Goals (SDGs), in particular SDG 13 'Take urgent action to combat climate change and its impacts', as well as the conclusions of the COP21 Paris Agreement.

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities, ERA-NET

⁷ http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm



Horizon 2020 Pillar:	Societal Challenges
Program:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Secure, clean and efficient energy, Climate action, environment, resource efficiency and raw materials
Call Title:	Blue Growth - Demonstrating an ocean of opportunities
Call Identifier:	H2020-BG-2016-2017
Topic Title:	Interaction between people, oceans and seas: a strategic approach towards healthcare and well-being
Topic Identifier:	BG-06-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	14-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-06-2017.html>

Specific Challenge: The interaction between people, oceans, seas and coasts is a broad domain with significant impacts on human health and well-being. However, it remains fragmented, poorly understood and underexploited. As coastal populations grow worldwide, not only due to permanent dwellers but also due to increasingly larger number of tourists, the determinants and impacts of this link between oceans and people become more relevant. On the one hand, the seas provide benefits namely through food, feed and positive impacts on overall wellness. On the other hand, the risks associated with the marine environment include chemical and physical pollutants of anthropogenic origin, harmful algal blooms, and countless marine microorganisms that lead to a still poorly assessed proportion of human morbidity and mortality. Therefore, the challenge is to coordinate the existing multidisciplinary research knowledge and resources, including distributed infrastructures, across Europe. This would make it easier to take advantage of the benefits and to better manage the risks of the interaction between oceans and people using an ecosystem-based approach and to formulate evidence-based policies that can benefit citizens as well as achieving good environmental status.

Scope: Proposals should include a plan for the creation of a multi-stakeholder forum that would make it possible to better understand the potential health benefits of marine and coastal ecosystems including in economic terms, anticipate new threats to public health more effectively, identify ways of improving ecosystem services that the marine environment can provide and contribute to reducing the burden of diseases caused by the interplay between marine-degraded environments and human behaviour. This forum is expected to issue a strategic research agenda based on data covering the biological, cultural and socio-economic dimensions of the interaction between oceans and human health that can ultimately impact morbidity and mortality in the general population. Data should encompass sex and gender differences in the populations studied. Data should be assessed through an active involvement of diverse stakeholders across Europe, including local marine communities, civil society, industry, and public authorities.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 2 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Projects funded under this topic will by default participate in the Pilot on Open Research Data in Horizon 2020, with the option to opt-out, as described in the introduction.



Expected Impact: In order to support key EU policies, in particular those directly related to the marine and maritime sectors, such as the EU **Blue Growth** Agenda, the Blue Tourism Communication and the Marine Strategy Framework Directive, proposals are expected to

- Create a multi-stakeholder forum that issues a strategic research agenda for oceans and human health, based on new scientific and/or technological evidence and best practices across different geographical locations and climates.
- Highlight novel, cost-effective solutions or interventions that enable effective policy making that aims to maximise health benefits and minimising risks derived from exposure to marine and coastal ecosystems.
- Actively involve local communities across different European maritime regions, comprising civil society, industry, public authorities in data supply, knowledge generation and solution implementation processes.
- Improve global cooperation around oceans and human health.
- Improve the professional skills and competences for those working and being trained to work within the blue economy.

Cross-cutting Priorities: Gender, Socio-economic science and humanities



Horizon 2020 Pillar:	Societal Challenges
Program:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Secure, clean and efficient energy, Climate action, environment, resource efficiency and raw materials
Call Title:	Blue Growth - Demonstrating an ocean of opportunities
Call Identifier:	H2020-BG-2016-2017
Topic Title:	The effect of climate change on Arctic permafrost and its socio-economic impact, with a focus on coastal areas
Topic Identifier:	BG-11-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	14-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-11-2017.html>

Specific Challenge: Arctic permafrost contains twice as much carbon as the atmosphere, stored in the upper metres of the ground. Thawing of permafrost may trigger the release of this carbon and its transformation to greenhouse gases, reinforcing global warming (permafrost carbon feedback). Moreover, permafrost coasts make up 34% of the world's coasts. Increasing sea-level in combination with changing sea-ice cover and permafrost thawing expose these coastal areas to higher risks. Knowledge gaps exist in relation to the transfer of material - including organic matter - from land to sea and its fate, with the consequence that processes of accumulation and/or subsea permafrost degradation are not accounted for in global climate and Earth system models. The pressing challenge is to understand the impact of permafrost thawing on climate change and its implications for the environment, for the indigenous populations and the local communities. Finally, permafrost thawing affects the stability of built infrastructure.

Scope: Actions should assess the impact of permafrost thawing on Arctic (natural and human) coastal systems and its effect on the availability/accessibility of resources, the stability of infrastructure, the growth of potential new economic activities, as well as on pollution and health. The research should employ a holistic and trans-disciplinary approach and in co-operation with stakeholders. It should consider the needs of and the impacts on indigenous populations, local communities and economic actors operating in this vulnerable region in the sustainable development context. Actions should address key processes of environmental change and develop appropriate adaptation and mitigation responses with an emphasis on permafrost at the interface between land and water.

Proposals should develop relevant forms of communication for EU (and possible national) services to adequately disseminate results that could be used for policy action. Trans-disciplinary and participatory approaches, including social sciences and humanities, in the process are considered necessary. In line with the strategy for EU international cooperation in research and innovation⁸, actions will contribute to implementing the **TransAtlantic Ocean Research Alliance**. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals should benefit from the inclusion of partners from the **USA** and from Canada⁹. International cooperation with partners from other Arctic and non-Arctic third countries is also strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 10 million

⁸ (COM(2012)497)

⁹ Please note that participants from developed countries are not eligible for Horizon 2020 funding.



would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Projects funded under this topic will by default participate in the Pilot on Open Research Data in Horizon 2020, with the option to opt-out, as described in the introduction¹⁰.

Expected Impact:

- Improve the capacity to predict the impacts of permafrost thawing, both sub-sea and on land, identify and reduce uncertainties, and quantify key processes not currently or poorly represented in predictive models;
- Develop capacity to manage risks and to take advantage of opportunities emerging from Arctic changes;
- Promote the engagement of and interaction with residents of Arctic coastal communities and indigenous societies and develop a legacy of collaborative community involvement with scientific, economic, and societal actors and stakeholders on the development of Responsible Research and Innovation agendas that meet their concerns and expectations;
- Contribute to the ongoing and possible future OSPAR actions in Arctic water;
- Improve the professional skills and competences for those working and being trained to work within this subject area;
- Contribute to implementing the Sustainable Development Goals (SDGs), in particular SDG 13 'Take urgent action to combat climate change and its impacts', as well as the conclusions of the COP21 Paris Agreement¹¹.

Cross-cutting Priorities: International cooperation, Open Science, Socio-economic science and humanities

¹⁰ Beneficiaries of projects participating in the pilot on open research data should follow the Global Earth Observation System of Systems (GEOSS) Data Sharing Principles and register in GEOSS the geospatial data, metadata and information generated as part of the project. Further information on GEOSS can be found at <http://www.earthobservations.org>.

¹¹ The Paris Agreement was adopted at the 21st Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change, in Paris on 12 December 2015..



Horizon 2020 Pillar:	Societal Challenges
Program:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Secure, clean and efficient energy, Climate action, environment, resource efficiency and raw materials
Call Title:	Blue Growth - Demonstrating an ocean of opportunities
Call Identifier:	H2020-BG-2016-2017
Topic Title:	Monitoring and assessing fish stocks, other pelagic species and habitats with an automated, non-invasive, opto-acoustic system.
Topic Identifier:	BG-14-2017
Type of Action:	Innovation action
Deadline(s):	14-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-14-2017.html>

Specific Challenge: Efficient implementation of EU marine and fisheries policies relies on the provision of adequate, accurate and timely data on the diversity and abundance of marine species and the functioning of marine ecosystems. Legislation such as the Data Collection Framework Regulation for the EU Common Fisheries Policy (CFP) and the Marine Strategy Framework Directive (MSFD) as well as international agreements on biodiversity require effective monitoring and reporting to assess abundance and diversity of fish stocks and to support the definition of a good environmental status and progress towards its achievement. Conventional marine monitoring through sampling and the use of research vessels is costly and often invasive or lethal for the targeted biota. Progress in remote sensing and image processing technology offers the potential possibility to characterise and quantify pelagic fish species more efficiently using a non-invasive, automated opto-acoustic system which could be deployed in a single location without the need for a support vessel.

Scope: Proposals should develop a non-invasive, opto-acoustic system which can simultaneously quantify fish abundance, biomass, and diversity (at least 4 species) as well as other MFSD-relevant parameters through a further set of environmental instrumentation which can be linked to these data. The optical part should use low light levels. Mechanisms should be developed that translate information from the near field and far field and to effectively blend the data. The complete system should work autonomously, continuously and non-invasively over extended periods of time to enable the collation of representative data sets. The system should be tested in at least two underwater observatories and comparable data should be used for validation and calibration. The system should be developed to a pre commercial stage (TRL6). The monitoring systems data should comply with European and international standards and respond to the needs of organisations performing fish stock and marine or freshwater biodiversity assessment. Work should take into account the existing state of the art, including research supported within Horizon 2020 and the FP7 Programs such as **Blue Growth** Focus Area: "Unlocking the potentials of seas and oceans" in Societal Challenge 2 Work Program 2014-2015, focusing on optical and acoustic underwater imaging systems.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1,4 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Projects funded under this topic will by default participate in the Pilot on Open Research Data in Horizon



2020, with the option to opt-out, as described in the introduction.

Expected Impact: Proposals will

- Improve the efficiency and reduce the cost of data collection concerning fish stocks and measurement of underwater biodiversity.
- Support data collection and monitoring to address the implementation of European marine policies including the CFP and MSFD.
- Advance the opto-acoustic technologies and their application in the field of autonomous underwater environmental monitoring, bringing them to at least technology readiness level (TRL6) to be used by monitoring performers.
- Improve the quality of measurement and monitoring techniques available to assess fish stocks, biodiversity and possibly other MSFD descriptors.
- Improve fish stock assessment and the related scientific advice offered to the EU.
- Improve the professional skills and competences of workers in European industry and in particular SMEs within the marine and maritime sectors to develop and commercialised new technologies
- Improve the provision of open access data sets concerning the underwater environmental status and fish stocks that are also compatible with existing major repositories (Emodnet etc).



Horizon 2020 Pillar:	Societal Challenges
Program:	Health, demographic change and wellbeing
Call Title:	Personalised Medicine
Call Identifier:	H2020-SC1-2016-2017
Topic Title:	Global Alliance for Chronic Diseases (GACD) prevention and management of mental disorders
Topic Identifier:	SC1-HCO-07-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	11-04-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hco-07-2017.html>

Specific Challenge: The Global Alliance for Chronic Diseases¹² (GACD) call will focus on implementation research proposals on child, adolescent and adult age onset mental disorders¹³ including, but not limited to, dementia, depression, schizophrenia, bipolar disorders, alcohol- and drug-use disorders, etc., in low- and middle-income countries (LMIC) and/or in vulnerable populations¹⁴ in **High Income Countries** (HIC).

Mental health is an integral part of health as underlined in the World Health Organisation (WHO) definition of health as a 'state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.

Mental disorders represent an ever-increasing burden, to all ages of the population, challenging mental health and health systems. Depression affects 350 million people in all communities across the world and represents the third leading contributor to the global disease burden¹⁵. Dementia affects 47.5 million people worldwide with 58% of people living with dementia in low- and middle-income countries¹⁶. Global costs associated with mental disorders were estimated to € 2.2 trillion in 2010 and are expected to rise to € 5.3 trillion by 2030¹⁷.

Mental disorders place a heavy burden on individuals, families, communities and societies. They also increase the risk of co-morbidities and social exclusion. There are obstacles to achieving effective prevention, early identification and management of mental disorders and to ensuring patients' adherence to therapies. Effective management approaches exist but their implementation in LMIC and vulnerable groups in HIC is hampered by socioeconomic and contextual factors: gender; the stigma associated with mental disorders at work, in health care and communities; the role of traditional medicine in dealing with mental health including trauma; and barriers to accessing care. There is a need to strengthen the evidence base for the contextual scalability of interventions of promising or proven effectiveness for the promotion of mental health and the early identification and management of patients, taking into account the needs of different population groups across the life course.

¹² <http://www.gacd.org>

¹³ Mental and behavioural disorders (FOO-F99) of WHO's International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10): <http://apps.who.int/classifications/icd10/browse/2016/en#/V>

¹⁴ Applicants must demonstrate that the proposed population under investigation in HIC is considered as vulnerable.

¹⁵ WHO Fact sheet nr 369, 2012

¹⁶ WHO Fact sheet nr 362, 2015

¹⁷ Bloom, D.E., Cafiero, E.T., Jané-Llopis, E., Abrahams-Gessel, S., Bloom, L.R., Fathima, S., Feigl, A.B., Gaziano, T., Mowafi, M., Pandya, A., Prettner, K., Rosenberg, L., Seligman, B., Stein, A.Z., & Weinstein, C. (2011). The Global Economic Burden of Noncommunicable Diseases. Geneva: World Economic Forum.



Scope: Proposals must focus on mental disorders as defined by the WHO (see above), and must focus on implementation research in LMIC, and/or in vulnerable populations in HIC. Proposals must build on interventions with promising or proven effectiveness (including cost-effectiveness) for the respective population groups under defined contextual circumstances. Gender-responsive interventions should be addressed, wherever relevant.

The aim should be to adapt and upscale the implementation of these intervention(s) in accessible, affordable and equitable ways in order to improve the prevention and management of mental disorders in the community in medical health care, psychosocial, and public health and other settings and fields. Interventions should meet conditions and requirements of the local health and social system context and address any other contextual factors identified as possible barriers. When economic factors prevent access to effective, low-cost appropriate medication and other management and treatment modalities, proactive policy and strategies should be encouraged to ensure the availability of such medication or other management/treatment modality or means should be found to overcome these barriers.

Each proposal should:

- Focus on implementation research addressing prevention, and/or early identification and/or management strategies derived from existing knowledge about effective interventions.
- Include a strategy to test the proposed model of intervention and to address the socioeconomic and contextual factors of relevance to the targeted region and community.
- Lead to better understanding of key barriers and facilitators at local, national and international level that affect the prevention and management of mental disorders.
- Include health economics assessments as an integral part of the proposed research, including considerations of scalability and equity.
- Propose a pathway to embed the intervention into policy and practice addressing:
 - A strategy to include policy makers and local authorities (possibly by being part of the consortium), as well as other relevant stakeholders such as community groups, patient groups, formal and informal carers and any other group, where ever relevant from the beginning of the project, which will contribute to the sustainability of the intervention, after the end of project.
 - Relevance of project outcomes/evidence for scaling up the intervention at local, national and international level and then scaled-up appropriateness with respect to the local social, cultural and economic context.
 - Aspects of stigmatisation and potential equity gaps e.g. due to gender or age.

Proposal must address one of or combinations of the following items:

- Structural interventions or evidence based policies designed to improve mental health outcomes;
- Early case detection and other secondary or tertiary prevention strategies as well as modalities of treatment, care and access to care which are amenable to scale-up. Prevention, early identification and treatment may include validated pharmacological, psychotherapeutic, psychosocial support and other approaches of relevance to mental disorders such as accessibility to and enhancing compliance with the intervention, also considering cultural context. Wherever relevant, comorbidities and their impacts on prevention and treatment strategies should be taken into account;
- Ways to empower people with mental health problems as well as professional and informal care-givers like families according to the context are also relevant;
- Exploring the scale-up of family/community engagement in patient treatment and care, without pre-empting their living.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.



Expected Impact: (one of or combinations of)

- Advance prevention strategies and implementation of mental health interventions, alleviating global burden of mental disorders;
- Establish the contextual effectiveness of mental health intervention(s), including at health systems level;
- Improve tailored prevention and treatment; Develop affordable management and treatment modalities for mental disorders and expand access to care;
- Inform health service providers, policy and decision makers on effective scaling up of mental health interventions at local, national and regional levels, including affordability aspects for users and health providers;
- Reduce health inequalities and inequities, including due consideration of gender and age issues where relevant, in the prevention, treatment and care of mental disorders at both local and global levels;
- Maximise the use of existing relevant programs and platforms (e.g. research, data, and delivery platforms);
- Contribute to the United Nations' Sustainable Development Goals 3¹⁸, the Global Action Against Dementia and the First World Health Organisation (WHO) Ministerial Conference on Dementia¹⁹, the WHO Mental Health Action Plan 2013-2020²⁰, and/or the 2015 European Council Conclusions on dementia²¹.

The GACD aims to coordinate research on chronic diseases at global level in order to enhance knowledge exchange across individual projects, and to better understand the impact of socio-economic, cultural, geopolitical and policy on research findings, so as to appropriately adapt health interventions to different geographical, economic and cultural settings. Research under GACD involves regular exchange of research findings and information across participating projects by means of cross-project working groups and annual joint meetings. Wherever feasible, projects should harmonise and standardise their data collection and exchange data.

Applicants must budget for annual costs of having two team members participate in one annual face-to-face meeting of the Global Research Network (location to vary annually). Attendance at this meeting is mandatory for 2 team members, with at least one participant from the LMIC team where relevant. Teams are strongly encouraged to include one junior team member in each annual meeting.

Cross-cutting Priorities: International cooperation, Gender

¹⁸ <http://www.who.int/topics/sustainable-development-goals/targets/en>

¹⁹ <http://www.who.int/mediacentre/events/meetings/2015/global-action-against-dementia/en>

²⁰ WHO Mental Health Action Plan 2013-2020, in particular Objective 2, global target 2 or Objective 3, global target 3: http://www.who.int/mental_health/action_plan_2013/en

²¹ 2015 European Council Conclusions on dementia: 'Living with dementia: improving care policies and practices': http://www.consilium.europa.eu/en/meetings/epsco/2015/12/st14968_en15_pdf



Horizon 2020 Pillar:	Societal Challenges
Program:	Secure societies - Protecting freedom and security of Europe and its citizens
Call Title:	SECURITY
Call Identifier:	H2020-SEC-2016-2017
Topic Title:	Pan European Networks of practitioners and other actors in the field of security
Topic Identifier:	SEC-21-GM-2016-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	24-08-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sec-21-gm-2016-2017.html>

Specific Challenge: In Europe, practitioners interested in the uptake of security research and innovation (e.g. firefighters, police and intelligence communities, border guards, custom authorities, explosive specialists, forensic laboratories, medical emergency teams, etc.) are dedicated to performing their duty and to focusing on their operation. In general, practitioners' organisations have little means to free workforces from daily operations, and to dedicate time and resources to monitor innovation and research that could be useful to them. They have little opportunities to interact with academia or with industry on such issues. All stakeholders – public services, industry, academia – including those who participate in the Security Advisory Group, recognize it as an issue.

Scope: Practitioners are invited to associate in 4 different categories of networks:

- a. Practitioners (end-users) in the same discipline and from across Europe (some examples: firefighters; police and intelligence bodies; border guards, coast guards, and custom authorities; explosive specialists; forensic laboratories; medical emergency teams; think-tanks on security; etc.) can get together to:
 1. monitor research and innovation projects with a view to recommending the uptake or the industrialisation of results,
 2. express common requirements as regards innovations that could fill in capability and other gaps and improve their performance in the future, and
 3. indicate priorities as regards domains requiring more standardization;
- b. Practitioners (end-users) from different disciplines and concerned with current or future security or disaster risk and crisis management issues in a particular geographical area can get together to:
 1. monitor research and innovation projects with a view to recommending the uptake or the industrialisation of results,
 2. express common requirements as regards innovations that could fill in capability and other gaps and improve their performance in the future, and
 3. indicate priorities as regards common capabilities, or interfaces among capabilities, requiring more standardization.

Geographical priorities include:



- the Mediterranean region (including the Black Sea): to enable an EU joint network concept for border protection and other security- and disaster-related tasks, so that the entities in the network share information, collaborate better, and establish joint border surveillance scenario. The network should provide with human infrastructure organizing operations more efficiently and enable the coordinated use of interconnected information systems and national infrastructure in the whole region;
- the Arctic and North **Atlantic** region: to prepare to cope as a network with the security threats that will result from the opening of the Northern passages, which are very important for the development of the region, but from which seaborne disasters are likely to arise. The current lack of infrastructure makes dealing with catastrophic incidents quite a challenge. The region needs to prepare, taking into account geographical specificities (climate-related, demographic, topologic, and in relation with the functioning of space-based systems;)
- the Danube river basin: to enable an EU joint network concept for disaster resilience, so that the countries of the region, which faces natural disasters, particularly flooding in a repetitive manner, can benefit at most from the EU civil protection mechanism;
- the Baltic region: to enable innovative border control cooperation e.g. with respect to smuggling and other security related issues, to the trafficking in human beings, to maritime surveillance, and to macro-regional risk scenarios and gaps identification; to support the Baltic Sea Maritime Functionalities flagship initiative

These networks should gather the largest number of Member States or Associated Countries.

- c. Entities from around Europe that manage demonstration and testing sites, training facilities, including simulators or serious gaming platforms in the area of CBRN and for first responders or civil protection practitioners, can get together to: 1) establish and maintain a roster of capabilities and facilities, and 2) organize to share expertise, and 3) plan to pool and share resources with a view to optimize investments.

Opinions expressed and reported by the networks of practitioners should be checked against what can be reasonably expected, and according to which timetable, from providers of innovative solutions.

- d. In addition, support will be given in 2017 to a consortium of formally nominated NCPs in the area of security research. The activities will be tailored according to the nature of the area, and the priorities of the NCPs concerned. The network should focus on issues specific to the "Secure societies ..." challenge and follow up on the work of SEREN 3²².

Indicative budget: The Commission considers that proposals requesting a contribution from the EU of about € 3.5 million per action for a duration of 5 years (recommended duration) for Parts a), b) and c); about € 2 million per action for a duration of 3 years (recommended duration) for Part d) would allow for this topic to be addressed appropriately. Nonetheless this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Common understanding of innovation potential, more widely accepted understanding, expression of common innovation and standardization needs among practitioners in the same discipline.
- More articulated and coordinated uptake of innovative solutions among practitioners from different disciplines who are often called to act together to face major crisis.
- More efficient use of investments made across Europe in demonstration, testing, and training facilities for first responders.
- Synergies with already established European, national and sub-national networks of practitioners, even if these networks are for the time being only dedicated to aspects of practitioners' work unrelated to research and innovation (in general, to the coordination of their operations).

²² http://cordis.europa.eu/project/rcn/194868_en.html



- An improved and professionalised NCP service, consistent across Europe, thereby helping simplify access to Horizon 2020 calls, lowering the entry barriers for newcomers, and raising the average quality of proposals submitted.

Delegation Exception Footnote: This activity directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to the Research Executive Agency and will be implemented by the Commission services.

Cross-cutting Priorities: International cooperation, Open Innovation



Horizon 2020 Pillar:	Societal Challenges
Program:	Secure, clean and efficient energy
Call Title:	COMPETITIVE LOW-CARBON ENERGY
Call Identifier:	H2020-LCE-2016-2017
Topic Title:	Measuring, monitoring and controlling the potential risks of subsurface operations related to CCS and unconventional hydrocarbons
Topic Identifier:	LCE-27-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	05-01-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lce-27-2017.html>

Specific Challenge: Geo-energy applications such as carbon capture and storage (CCS), the development of unconventional hydrocarbons (in particular shale gas) and to some extent also geothermal operations, can have an impact on the subsurface. Consequently, advanced and cost effective monitoring is vital for the sustainable management of the subsurface and its resources.

In CCS, continuous and sophisticated monitoring, imaging and control of the growth of the CO₂ plume is a prerequisite for the safe and sustainable storage of significant volumes of CO₂ in the subsurface. In addition, CO₂ injection in CCS but also water (re-)injection in geothermal operations may lead to induced seismicity.

Recently, the development of unconventional hydrocarbon resources - in particular shale gas - has resulted in new opportunities, but also bears environmental and public health risks, which need to be better understood, monitored, managed and communicated appropriately. These risks relate mainly to water pollution (in particular stemming from insufficient underground characterisation, inappropriate well casing, the use of chemicals in the fracking process, and waste management), but also air emissions, induced seismicity and local impacts linked to transport, land and water use.

Research is needed to better understand and quantify possible (natural and engineered) leakage pathways for CO₂ and natural gas, the rates of leakage into aquifers and escape at surface, the impacts that leakage can have on fresh groundwater resources, soil and biodiversity, and the time frame in which emissions will return to baseline values. The effective detection and quantification of leakage requires a scientifically robust method for determining natural background concentrations of CO₂ and natural gas in the soil and at the surface. Uniform, unbiased and independent data are needed to manage and mitigate the risks of subsurface geo-energy related operations.

Scope: An integrated R&D project to gain a better understanding of the possible risks related to CCS and the exploration and exploitation of unconventional hydrocarbons. Focus should be on the detection and monitoring of induced seismicity and stray gases (CO₂ and natural gas), and on the mitigation and remediation of their possible negative impacts. A comprehensive R&D program should combine laboratory experiments, modelling and short- and longer-term field investigations that could include observation wells for the deployment of monitoring equipment. The drilling of exploration and production wells, hydraulic fracturing or other well stimulation and intentional subsurface release of fluids or gases to the groundwater or the atmosphere are strictly outside the scope of this topic.

Issues to be addressed include:



- Characterisation and lab testing of well seals, analysis of possible leakage pathways and rates, their time-related evolution as well as the mitigation of leakage;
- Geochemical and microbial interactions with host rocks, overburden, engineered seals such as cement and casing, groundwater, soil and biodiversity;
- Significantly improved detection limits for CO₂, natural gas and natural or human-introduced substances (e.g. metals, chemicals, organic compounds) that may be released through subsurface operations;
- Determination and validation of the optimal spatial and temporal resolution of a wide range of monitoring techniques, including for microseismicity;
- Sophisticated, scientifically robust method for determining natural background concentrations of CO₂ and natural gas in the soil and at the surface, and for distinguishing between biogenic and thermogenic methane emissions;
- Development of groundwater remediation methods and protocols;

The project should establish the following:

- One or more field sites for the deployment of a comprehensive suite of detection and monitoring methods (geophysical, seismic, chemical, biological, surface and subsurface, ...);
- A program for international cooperation to improve and cross-validate highly sophisticated detection and monitoring technologies for subsurface diffusion of CO₂ and natural gas and other substances that may be released through subsurface operations. Focus should be on cooperation and networking with comparable projects in the **US** and Canada, including the exchange of researchers;
- A well-documented contribution to the establishment of best practices for baselining, monitoring, mitigation and remediation methods and technologies;
- A continuous training program for researchers and students.

The project should take into account the on-going development by the Commission of a Best Available Techniques (BAT) Guidance document on upstream hydrocarbon exploration and production²³, as well as the results of relevant EU supported studies and projects²⁴.

Responsible Research and Innovation (RRI) and Social Sciences and Humanities (SSH) have to be taken on board in all areas of H2020. In the context of this topic, this includes multi-actor and public engagement in research and innovation, enabling easier access to scientific results, the take up of ethics in the research and innovation content and process, and formal and informal science education.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 10 million would allow this specific challenge to be addressed appropriately. This does not preclude submission and selection of proposals requesting other amounts. Industry participation is strongly encouraged to facilitate access to existing sites and data, and to allow extending the operating period of the research infrastructure beyond the project duration. In order to allow a timely use of the results, the duration of the project itself should ideally be limited to 3 years.

The project should take account of the review of the effectiveness of the Commission Recommendation of 22 January 2014 on minimum principles for the exploration and production of hydrocarbons (2014/70/EU) (such as shale gas) using high-volume hydraulic fracturing. For the purpose of any testing and demonstration activities, proposals should clearly describe how the project will comply with all relevant environmental legislation, in particular the Water Framework Directive²⁵, the enforcement of which is the responsibility of permitting authorities in the concerned Member States.

²³ http://ec.europa.eu/environment/integration/energy/hc_bref_en.htm

²⁴ <https://ec.europa.eu/jrc/en/event/conference/uh-network-annual-conference>

²⁵ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy



Expected Impact: Projects should deliver the unbiased and independent scientific evidence to assist policy making for CCS and unconventional hydrocarbons development. This topic is expected to provide European and (in particular) **North American** researchers, industry and policymakers with a platform to enhance and deepen **TransAtlantic** dialogue on environmental issues related to CCS and unconventional hydrocarbons development, to accelerate learning and to provide advanced training. Connecting pilots and projects across the **Atlantic** should bring the benefits of cross-validation of technologies, sharing results, distributing tasks, bundling expertise and expanding professional networks. For optimal impact, the research and training infrastructure should ideally remain available and operational beyond the duration of the EU support.

Cross-cutting Priorities: International cooperation



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Mobility for Growth
Call Identifier:	H2020-MG-2016-2017
Topic Title:	Potential of the Physical Internet
Topic Identifier:	MG-5-4-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	01-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-5-4-2017.html>

Specific Challenge: Ongoing research efforts show that the translation of the working principles of the Digital Internet to the routing of freight, thus creating the Physical Internet (PI), has the potential to be a real game-changer. In the PI world freight travels from hub to hub in an open network rather than from origin to destination directly. Each parcel is routed automatically and at each section it is bundled for efficiency. In the PI network of networks many (if not all) transport and logistics services would be accessible on demand to all users.

This will however require the successful integration of many innovative concepts and non-the-least the mental-shift to adopt a very different governance structure. The Internet of Things for example, which could link every future container, load unit or parcel to the internet, can be considered a pre-requisite for the Physical Internet to work as there will be an increased need to track all goods in a freight environment lacking a fixed and known transport route. The main challenge is to model a future Physical Internet network topology and assess the benefits it could generate in terms of carbon footprint, throughput times and cost reductions. Additionally the concept of the Physical Internet, already identified by ALICE²⁶, needs to be detailed into a strategic and operational vision which has the capability to get industry-wide endorsement of all stakeholders.

Scope: Proposals should cover all the following issues:

- Develop a roadmap towards the Physical Internet (milestones, first implementation opportunities, etc.) defining which changes are required for migrating to a PI and how these could take place (e.g. current vs future logistic practices, IT applications and enabling technologies, business models, mental shift, integration of SMEs, customer behaviour, etc.).
- Monitor logistics and freight transport initiatives and research projects from relevant European programs (H2020, TEN-T, etc.), and their impacts and contributions to Physical Internet. Fostering the links between ALICE and other transport and manufacturing focused ETPs with the aim to identify barriers and opportunities for the deployment of research results and improvement of framework conditions.
- Create support and consensus between public bodies, research and industry stakeholders on opportunities, barriers and next steps towards a PI. Organise workshops to present and discuss results, trends, exchange experience and foster innovation aspects
- Explore the need for legislative initiatives by authorities, including a legal contractual framework for participants to the Physical Internet.

²⁶ Alliance for Logistics Innovation through Collaboration in Europe (<http://www.etp-logistics.eu>).



In line with the Union's strategy for international cooperation in research and innovation²⁷, international cooperation, in particular with **US**, Canada and Hong Kong, is encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.5 to 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: To achieve the benefits resulting from the paradigm change proposed by the Physical Internet, actions are expected to demonstrate how the following aspects can be achieved:

- Kick-Start the development of the Physical Internet through building industry-wide support.
- Improved asset utilisation.
- 30% reduction in terms of congestion, emissions and energy consumption.

Delegation Exception Footnote: The Coordination and Support Actions, directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders, are excluded from the delegation to the Innovation and Networks Executive Agency (INEA) and will be implemented by the Commission services.

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities

²⁷ COM(2012)497



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Automated Road Transport
Call Identifier:	H2020-ART-2016-2017
Topic Title:	Full-scale demonstration of urban road transport automation
Topic Identifier:	ART-07-2017
Type of Action:	IA Innovation action
Deadline(s):	26-01-2017, 27-09-2017 (two-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/art-07-2017.html>

Specific Challenge: Fully automated road transport systems have the potential to revolutionise urban transport offering high quality public transport services which are not feasible with conventional public transport systems. Low speed full automation systems have been demonstrated in several European cities. However full-scale demonstrations are still necessary to prove the reliability, safety and robustness of fully automated road transport systems in complex scenarios in urban areas. In addition, it is necessary to address the remaining questions, such as user acceptance and legal framework and to develop business cases to make fully automated urban road transport systems economically viable.

Scope: Proposals should demonstrate fully automated road transport systems which should be complementary to mass transit to reach low to medium demand areas with high quality transport services. A fleet of automated road transport vehicles (e.g. light weight vehicles, cyber cars, small buses) should be implemented at pan-European level in urban and/or sub-urban areas. The demonstrated systems should be fully integrated into existing public transport systems and should provide evidence of their safety, reliability and fault tolerance in complex traffic scenarios (with automated and non-automated vehicles, pedestrians, cyclists, powered two-wheelers, etc.) as well as on potential benefits in terms of impact on climate-change and the environment.

Proposed actions should assess the user acceptance and effects on transport demand and modal transfer. Attention should also be paid to the analysis of socio-economic impacts and benefits of urban automated vehicle fleets as part of an integrated transport system, such as improved accessibility of persons with reduced mobility, elderly, etc. Gender specificities should be considered. Recommendations for local and national authorities to deploy fully automated road vehicles should be developed.

Active participation of SMEs is strongly encouraged.

In line with the Union's strategy for international cooperation in research and innovation²⁸, international cooperation is encouraged. In particular, proposals should foresee twinning with entities participating in projects funded by **US DOT**²⁹ to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 10 to 15 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

²⁸ COM(2012)497

²⁹ United States Department of Transportation.



Expected Impact: Actions are expected to demonstrate the reliability, safety and robustness of fully automated road transport systems in complex scenarios in urban areas. They should develop innovative solutions for the safe and smooth integration of automated vehicles into the existing transport system in urban areas, as well as door-to-door public transport services, which can change radically the mobility paradigm of European cities. Therefore, actions will contribute to the development of modern, more efficient urban transport systems, with reduced impacts on climate change, air pollution, noise, health and accidents. Moreover, actions will provide detailed knowledge and recommendations which enable transport authorities, policy makers and business to invest in urban automated vehicle systems and support the development of innovative mobility services (e.g. car sharing, road train systems, etc.).

Cross-cutting Priorities: Gender; Socio-economic science and humanities; International cooperation



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Green Vehicles
Call Identifier:	H2020-GV-2016-2017
Topic Title: infrastructure	Electrified urban commercial vehicles integration with fast charging
Topic Identifier:	GV-08-2017
Type of Action:	IA Innovation action
Deadline(s):	01-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/gv-08-2017.html>

Specific Challenge: Electrification of different types of transportation and delivery typically in urban and suburban areas (including buses, vans, medium trucks, and specialist vehicles such as trucks for refuse collection) is a privileged path to reduce their energy consumption and emissions. At the same time, achieving the same range capabilities using large over-night charged batteries would undermine their payload capacity and vehicle performance (e.g. acceleration and hill climbing ability). It is therefore necessary to integrate either a range extender or solutions for the fast transfer of significant energy volumes, be it at terminals, loading/de-loading stops or in-route. However, large magnitude power transfer directly from the grid can be costly and introduce disturbances into the grid. Furthermore, large power flows in relation to the total energy capacity of the involved energy storage systems may be harmful to the energy storage systems. Therefore, the different options of rapid charging at stops and terminus need to be assessed and compared with respect to cost and their impact on the power grid. The overall challenge is to design integrated, energy efficient low emission vehicles taking into account the powertrain, energy storage and the charging infrastructure needed to cover the intended missions, without compromising on vehicle performance or comfort and safety of the vehicle driver and occupants or increasing the final costs to the users/customers.

Scope: Actions should address the development of vehicle drive train concepts and energy storage (battery and super-capacitor) which can deliver the required vehicle performance and are able to operate in a pure electric mode with high energy recovery capacity. This will ensure zero emissions and low noise pollution either on the whole mission or in designated low-emission zones, while permitting in the second case highly efficient, low environmental impact internal combustion engine operation without range restrictions in other areas. Such technologies can be applied to one or both of the following vehicle types:

- Electrified medium duty trucks for urban and peri-urban applications (freight delivery, refuse collection, etc.) capable of time efficient operation.
- Electrified high capacity (at least 12 m) buses for urban use, capable of following normal timetables and when needed to effectively charge and drive at bus stops with multiple bus lines.

For both above applications, where appropriate, development and integration in the vehicles, of power transfer solutions for ultrafast (< 30 seconds), superfast (< 5 minutes) and/or fast (< 30-50 minutes) wireless and contact-based electric energy transfer technologies, demonstrating how the system level efficiency and economic impacts can be achieved, including amortisation of infrastructure.

To ensure the acceptability of such systems into the market, negative effects on battery life and the grid, and measures to mitigate them should also be developed and integrated in the global system, as well as



standardisation and health and safety implications.

Extension of these concepts to lighter vehicles should be taken into account wherever appropriate to enhance opportunities for exploitation.

An interaction with interested European cities to provide input on needs and implementation plans will be performed targeting market readiness by 2023.

Proposals could foresee cooperation with entities participating in projects funded by Japan and **US** to exchange knowledge and experience and exploit synergies in the field of fast charging and its impact on infrastructure in view of establishing future international standards.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 15 million each depending on the number of developed vehicles and charging technologies would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: All actions will contribute to climate action and sustainable development objectives by achieving the following targets.

For electrified medium duty trucks for urban use:

- Energy efficiency improvements up to 70% in comparison with equivalent category conventional vehicles are targeted, with full electric driving ranges of at least 50 km (including energy recuperation and superfast charging at delivery stops).
- Low noise operation (<72 dB) allowing e.g. off peak delivery.
- Polluting emissions below Euro VI with a Conformity Factor of 1.2 in real driving when in range extended mode.

For electrified high capacity buses for urban use:

- Bus energy efficiency improvements similar to dual mode medium duty trucks, with an average speed compatible with normal bus operation, depending on whether charging take place only at end terminals or at bus stops.
- Polluting emissions below Euro VI with a Conformity Factor of 1.2 in real driving when in range extended mode.
- Reduced operating costs competitive with conventional low emissions buses or trucks.

For fast charging infrastructure:

- Power transfer capability above 100kW
- Transfer efficiencies above 90% for static contactless systems

Cross-cutting Priorities: Contractual public-private partnership; EGVI; International cooperation



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Mobility for Growth
Call Identifier:	H2020-MG-2016-2017
Topic Title:	Resilience to extreme (natural and man-made) events
Topic Identifier:	MG-7-1-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	26-01-2017, 19-10-2017 (two-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-7-1-2017.html>

Specific Challenge: Extreme weather conditions, climate change, damages to the infrastructure (caused by natural and man-made hazards) and traffic impediments negatively impact the reliability of mobility solutions. Risk analysis, adaptation measures and strategies need to be developed that enable minimising the impact of both natural and man-made extreme events on seamless transport operation, protect the users of the transport network in case of extreme conditions, as well as provide optimal information to the operators and users of the transport infrastructure.

Scope: Building on results obtained by FP7 and ERA-NET Road / CEDR³⁰ projects and EUROCONTROL³¹ studies, proposals should address several of the following aspects:

- Identification of risk factors and mapping of the extreme weather conditions and climate risk 'hot spots' and their possible impact on the European transport network; identification of the appropriate risk analysis, adaptation measures, and development of cross-modal implementation strategies or operational strategies that optimise cost-performance-risk.
- Strategic application of new materials, techniques and systems for construction, operations and maintenance in order to ensure reliable network availability during unfavourable conditions.
- Integration of terrestrial and satellite systems for the structural health monitoring of key infrastructures located in a natural risk (earthquakes, landslides, floods and extreme weather) prone area and for the monitoring of extreme weather conditions.
- Innovative engineering of links and connections to allow a smooth transfer from one mode to another in case of extreme disruption in one transport mode.
- Assessment of the psychological and behavioural dimensions of safety from the perspective of users, including risk tolerance levels during extreme events.

SME active participation is strongly encouraged.

In line with the Union's strategy for international cooperation in research and innovation³², international cooperation is encouraged. In particular, proposals should foresee twinning with entities participating in projects funded by **US DOT**³³ to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 to 5

³⁰ <http://www.cedr.fr/home/index.php?id=260>

³¹ <http://www.eurocontrol.int/sesar-research>

³² COM(2012)497

³³ United States Department of Transportation (<http://www.dot.gov>).



million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Actions will contribute to substantial improvement of smooth continuity of mobility of people and freight even in case of serious disruptions due to natural or man-made circumstances. Major progress will be made regarding individual mode components' resilience to damage due to extreme weather conditions, including reduction of maintenance and retrofitting needs. Projects will contribute to achieve reliable modal interchanges allowing continuous fluid traffic flow even during or after disruption. A high level of resilience of the transport infrastructure is an essential contribution to sustainable development and of impact on and adaptation to climate change conditions.

Cross-cutting Priorities: Socio-economic science and humanities; International cooperation



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Mobility for Growth
Call Identifier:	H2020-MG-2016-2017
Topic Title:	Identification of gaps, barriers and needs in the aviation research
Topic Identifier:	MG-1-5-2016-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	01-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-1-5-2016-2017.html>

Specific Challenge: The Advisory Council for Aviation Research and Innovation in Europe (ACARE) has developed in 2012 a new Strategic Research and Innovation Agenda that describes the actions needed to meet the highly ambitious goals set by Flightpath 2050. In order to ensure the achievement of these goals, regular assessment of progress, gaps and barriers is necessary and strong collaboration between all European stakeholders is required.

In 2017 attention will also be paid to collaborations with non-European stakeholders where relevant, in order to solve common challenges, leverage resources, mitigate risks and establish long-term relationships.

Scope: The actions should address one of the two following areas:

1. Provide on an annual basis a review of the state of the art of research and innovation including international benchmarking, identify gaps in the research landscape, bottlenecks to innovation (regulation, financing) and formulate recommendations to address those. The actions should address one or several of the following research domains of the ACARE Strategic Research and Innovation Agenda:
 - o Mobility
 - o Competitiveness
 - o Environment and energy
 - o Safety and security

A close cooperation with the relevant ACARE Working Groups and involvement of all main relevant stakeholders should be ensured. The actions should take into consideration R&D synergies with other sectors (e.g. batteries, composites, product lifecycle management). Special attention should be paid on the economic, environmental and mobility aspects of the long distance traveling.

2. Set up an open platform between EU and relevant third countries to reach out to research and innovation stakeholders (industry, research establishments and academia) and aviation research and innovation funding authorities in order to facilitate and increase collaboration along common research and innovation roadmaps. Proposers should take into account achievements of past and on-going cooperation initiatives such as the H2020 coordinated calls with Canada, China and Japan, and previous support actions³⁴. Proposals can include organisation of workshops and studies to identify

³⁴ Seventh Framework Program support actions with Canada (CANNAPE), Brazil - Latin America (Coopair-LA), Japan (SUNJET), China (e.g. Aerochina, GRAIN2), South Africa (AeroAfrica-EU), Ukraine (AeroUkraine) and **United States of America** (CooperateUS) & EU-US Memorandum of Cooperation on civil aviation research in addition to the multinational aviation research forum (IFARs).



win-win opportunities, areas of common interest, barriers and solutions for improved cooperation in research and technology development as well as recommendations for future actions. Proposers should demonstrate relevant background in aviation research cooperation with third countries.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 to 2 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: The actions will support to reach the goals set by the aviation sector in a more efficient and optimal way thorough assessment of the progress towards Flightpath 2050 goals³⁵, identification of future needs, gaps and barriers, and make recommendations for further actions. The actions will result also in providing solutions for improved research infrastructure for the European aviation sector adapted to the needs for achieving the long term goals. The actions will support also a more efficient use of the available research capabilities in Europe through creating new links between the stakeholders of EU Member States, Associated Countries and third Countries, stimulating the creation of transnational cooperation mechanisms in the aviation research.

Delegation Exception Footnote: The 2017 part of this activity is directly aimed at supporting the development and implementation of evidence base for R&I policies and supporting various groups of stakeholders is excluded from the delegation to the Innovation and Networks Executive Agency (INEA) and will be implemented by the Commission services.

Cross-cutting Priorities: International cooperation

³⁵ <http://www.acare4europe.org/sria/flightpath-2050-goals>



Horizon 2020 Pillar:	Societal Challenges
Program:	Smart, green and integrated transport
Call Title:	2016-2017 Mobility for Growth
Call Identifier:	H2020-MG-2016-2017
Topic Title:	Protection of all road users in crashes
Topic Identifier:	MG-3.2-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	26-01-2017, 19-10-2017 (two-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-3.2-2017.html>

Specific Challenge: The continued introduction of active safety systems has the potential to reduce accidents. Nevertheless, the risk of collision and particular crash situations will still remain. An approach will be needed that will ensure improved crash safety in those circumstances. A number of societal trends add to this challenge such as the ageing population, an increase in the number of powered and non-powered two-wheelers and the introduction of green, light, sub-compact cars.

An important step forward will be to develop fully integrated safety systems and deploy them so that they provide better protection for all road users. Emerging new vehicle types and the possible use of Cooperative Intelligent Transport Systems (C-ITS) would need to be considered. The application of advanced safety features and the development of personal safety equipment can also be seen as ways to reduce fatalities and injuries to pedestrians, cyclists and riders of Powered Two Wheelers (PTWs). In addition, simulation tools (including new virtual human body models) will need to be developed to assess new safety systems and determine their effectiveness and potential impact.

With respect to competitiveness, user protection has been an area where European industry has exhibited technology leadership, but this is now being increasingly challenged worldwide.

Scope: Proposals should focus on one or several of the following aspects:

- Vehicle based systems such as: solutions for improved crash compatibility; optimisation of restraint systems by including pre-crash information; and methods and requirements to assess safety performance in traffic of extremely low-mass vehicles.
- Personal protection such as: development and testing of focused personal safety equipment for various road user categories, to warn them adequately and/or protect them in the most safety critical situations; and integrated assessment methods for the overall safety of road users and solutions that enhance their protection.
- Crash simulation such as: computationally efficient and robust crash simulation tools; implementation of virtual testing; and development of virtual human body models of road users and situations not currently available.

Proposed actions should focus on fully integrated safety systems.

Consideration should be taken of gender aspects such as body structure and stature and other demographic factors such as the disabled (persons of reduced mobility), ageing, obesity, etc.

Participation of SMEs with proven experience in these areas is encouraged.



Links with Member State initiatives in this area are encouraged.

In line with the strategy for EU international cooperation in research and innovation³⁶, international cooperation is encouraged, in particular with **Industrialised Countries** (i.e. **US**, Japan, Canada, Australia) and emerging economies (primarily China, India, Brazil). Proposals should foresee twinning with entities participating in projects funded by **US DOT**³⁷ to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 9 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: By providing an integrated approach to safety systems, actions are expected to make a direct contribution to the reduction of fatalities and severity of injuries, as well as the number of injured persons. They will deliver measures that will make the 'triangle' of European road users, vehicles and infrastructure safer. In this way, actions are expected to contribute to important savings in the health system linked with the reduction of accidents and injuries.

Proposers are expected to demonstrate how the project results will have a significant impact on road safety casualties and injuries and how they will make an effective contribution to the standardisation of products and testing techniques.

A credible strategy is expected to demonstrate the future full scale manufacturing of critical products developed in the project in Europe.

Cross-cutting Priorities: International cooperation, Socio-economic science and humanities, Gender

³⁶ COM(2012)497

³⁷ United States Department of Transportation (<http://www.dot.gov>).



SOCIETAL CHALLENGES, INDUSTRIAL LEADERSHIP

Horizon 2020 Pillar: Societal Challenges, Industrial Leadership

Program:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Climate action, environment, resource efficiency and raw materials, Leadership in enabling and industrial technologies (LEIT)
Call Title:	Sustainable Food Security – Resilient and resource-efficient value chains
Call Identifier:	H2020-SFS-2016-2017
Topic Title:	Supporting international cooperation activities on agriculture soil contribution to climate change mitigation and adaptation
Topic Identifier:	SFS-50-2017
Type of Action:	CSA Coordination and support action
Deadline(s):	14-02-2017 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-50-2017.html>

Specific Challenge: Climate change is among one of the threats for the future capacity of agriculture to cope with increased demands on food production. This challenge can be addressed, among other options, by changes in land and soil management at the farm level. There is a strong direct link between the soil management and a significant contribution of agriculture sector to climate change mitigation and adaptation (i.e. outcome of the COP21, 4 per 1000 initiative, links to SDGs). There is a strong need to develop synergies on research in this area at EU and global level. The results of this activity should contribute to climate change mitigation and adaptation debate and consider the ongoing work on Sustainable Development Goals implementation.

Scope: Proposals should cover the topic of soil carbon sequestration and its links with climate change mitigation from the perspective of agricultural sector. Other areas to be tackled should include land (use) management within the scope of this topic. Participation of initiatives such as the **Global Research Alliance** (GRA), the Joint Programming Initiative on Sustainable Agriculture, Food Security and Climate Change (FACCE) or the 4 per 1000 initiative is encouraged.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 2.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact:

- Improved understanding of agricultural soil carbon sequestration in different pedo-climatic conditions.
- International Research Community on agricultural soil strengthened
- Provide the basis for a more structured approach towards the issue, for instance with the establishment of an International Research Consortium (IRC).

Cross-cutting Priorities: International cooperation



Horizon 2020 Pillar:	Societal Challenges, Industrial Leadership
Program:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research, Climate action, environment, resource efficiency and raw materials, Leadership in enabling and industrial technologies (LEIT)
Call Title:	Sustainable Food Security – Resilient and resource-efficient value chains
Call Identifier:	H2020-SFS-2016-2017
Topic Title:	Advancing basic biological knowledge and improving management tools for commercially important fish and other seafood species
Topic Identifier:	SFS-21-2016-2017
Type of Action:	RIA Research and Innovation action
Deadline(s):	14-02-2017, 13-09-2017 (two-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-21-2016-2017.html>

Specific Challenge: More efficient fisheries management, based on science, is needed to support the continued SFS-20-2017 need to manage European fisheries, the global rise in seafood demand and the need to maximise fish production sustainably. Our understanding of the biology and ecology of several fish and other seafood species is far from complete for stocks fished in European seas and in particular for multi-species fisheries. This also applies in some areas outside EU waters where EU fleets fish. Relevant stocks include species in international waters or in the waters of third countries with which the EU has signed sustainable fisheries partnership agreements. For species fished outside EU waters, the challenge often extends beyond gathering knowledge of biological characteristics to include research on management tools and appropriate stock assessment models.

Scope: Proposals should focus on an identified number of fisheries that are important for the fishing fleets of multiple EU countries and should respond to the priorities of Regional Fisheries Management Organisations (RFMOs) and of the Common Fisheries Policy (CFP). The proposals should review existing knowledge and perform multidisciplinary research to help close important knowledge gaps that have a significant impact on the management of key target and by-catch species and that currently limit the advice that relevant bodies can give. Research results should be able to be applied immediately to provide a more solid knowledge base and advice on fisheries management.

Proposals should cover one of the following geographical scopes:

Strengthening the knowledge base for resilient and resource-efficient fisheries in EU waters and in international waters covered by the North-East **Atlantic** Fisheries Commission and the General Fisheries Commission for the Mediterranean.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 5 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Projects funded under this topic will by default participate in the Pilot on Open Research Data in Horizon 2020, with the option to opt-out, as described in the introduction.

Expected Impact: To improve fisheries management under the Common Fisheries Policy, including outside of EU waters, proposals should:



- Increase the knowledge base, share new findings, provide new tools and promote their uptake by end-users to more efficiently manage fish stocks of interest to the EU, both inside and outside EU waters.
- Increase the long-term profitability of the EU fleet and increase the number of jobs in the fishing sector.
- Improve market supply and food security in Europe through a significant, predictable and sustainable provision of seafood from all areas in which EU vessels operate.
- Contribute to adjusting fishing exploitation to levels that ensure the maximum sustainable yield.
- Improve the professional skills and competences of those working and being trained to work within the blue economy.

Cross-cutting Priorities: International cooperation



MS/AC FUNDING OPPORTUNITIES

Bilateral funding programs of the Member States and Associated Countries with the U.S. will be accessed through the Strategic Forum for International Cooperation, so called "SFIC". It is composed of high-level representatives of the Member States and the European Commission and aim to facilitate the further development, implementation and monitoring of the international dimension of ERA. In practice, this means sharing information and consultation between the partners (Member States and the European Commission) with a view to identifying common priorities which could lead to coordinated or joint initiatives. The group also aims at coordinating activities and positions vis-à-vis third countries and within international fora.

The SFIC working group on a "Toolbox for international cooperation" works on developing a practical overview on cooperation activities at bilateral and multilateral level of MS/AC and the EC. In order to get a broad picture on bilateral activities of MS/AC and the EC with international partner countries the working group developed a questionnaire and gathered the input from MS/AC through 2016. Activities asked in this questionnaire were:

- Identify different sets of users for the toolbox (ministries and funding organisations most relevant);
- Gather information from MS/AC/EC, which can provide relevant input to the project;
- Make an overall assessment, based on relevant existing studies together with input from MS/AC/EC;
- Provide an overview of relevant instruments for international cooperation based on points b) and c);
- Cooperate and coordinate with the SFIC country-specific working groups;
- Collect relevant MS/AC experiences of different instruments as well as examples of good practice;
- Consider possible synergies/links with the new Commission's anticipated Service Facility in support of the strategic development of international cooperation in research and innovation;
- Propose SFIC recommendations based on the mapping and the assessment.

Results are currently being evaluated by SFIC. Once the toolbox is prepared, BILAT USA 4.0 will request to disseminate USA relevant information through its own platforms.



OTHER ERA MULTILATERAL INITIATIVES OPEN FOR INTERNATIONAL COLLABORATION

In addition to Horizon 2020, the European Research Area has a range of strategic and operative opportunities for participation. The guiding principle of the European Union focuses primarily on fostering inclusion as well as scientific and technological cooperation among its Member States.

- [Article 185](#) Measures, [ERA-Net Initiatives](#) (Networking in the European Research Area) and [Joint Programming Initiatives \(JPIs\)](#) coordinate national research topics and provide opportunities for collaboration at European and international level via joint calls and other coordination actions.
- The [European Innovation Partnerships \(EIPs\)](#) do not receive EU funding subsidies, but members of the Action Groups may participate in the calls of individual funding programs such as Horizon 2020, structural funds or national funding programs.
- Future and Emerging Technology ([FET](#)) [Flagships](#) are long-term initiatives, which promote basic research for the benefit of industry and society. Open calls provide opportunities to participate in the implementation of the relevant mission.
- [Joint Technology Initiatives \(JTIs\)](#) and so-called “contractual Public Private Partnerships” ([PPP initiatives](#)) develop strategic plans for strengthening industrial competitiveness, which are then implemented through calls for proposals. Valuable content-related input is also provided in this context via the [European Technology Platforms \(ETPs\)](#), which offer excellent opportunities for establishing international networks.
- The [European Innovation and Technology Institute \(EIT\)](#) connects research, education and innovative entrepreneurship with a focus on selected topics, which are then developed in networks known as Knowledge and Innovation Communities (KICs).
- The [COSME Programme for the Competitiveness of Small and Medium-sized Enterprises](#) supports better access to finance for SMEs and more favourable conditions for business start-ups and expansions.
- [EUREKA](#) (the initiative for applied research and development in Europe) is a European-international network for applied research and development in Europe and provides a framework for cross-border cooperation projects between companies and research organisations.
- [COST](#) is a research initiative of European states and promotes European cooperation in the field of science and technology. COST Actions support scientific-technical cooperation in the field of precompetitive research.

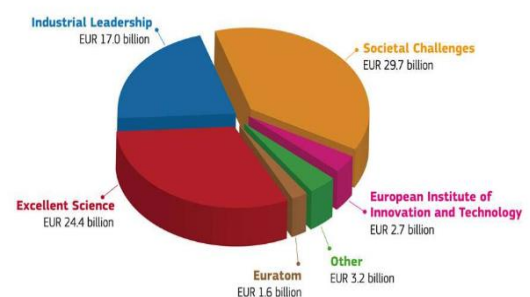
Among all these initiatives and programs the following 2 initiatives have been selected as they offer opportunities for international cooperation beyond Europe in the area of societal challenges.

Joint Programming Initiatives (JPIs) and ERA-Nets Co-fund

Societal challenges have become one of the major motives for collaborative research efforts. As one of the responses to this common topic, the Joint Programming process was started in 2008 as a research and innovation policy concept. In order to achieve one of Europe’s central goals of creating a vital European Research Area (ERA) it will be necessary to improve the coordination and alignment of national and regional research programs. The Joint Programming Process was set in motion by the EU to help construct the European Research Area (ERA) in order to tackle grand societal challenges through more efficient use of resources, by the alignment of funding at national level and through decreasing fragmentation in the ERA.

On a variable geometry basis (also called “fit for purpose”), Member States commit to Joint Programming Initiatives (JPIs) where they implement joint Strategic Research and Innovation Agendas (SRIA) together.

HORIZON 2020 BUDGET (EUR 78.6 billion, current prices)



The following ten Joint Programming Initiatives (JPIs) have been launched to date. They have established their own governance structures and have elaborated their SRAs. The current challenge for the JPIs is the effective implementation of the SRAs through joint activities, and the alignment of funding at national, European, and wherever possible, at the international level.

- [JPI Urban Europe – Global Urban Challenges, Joint European Solutions](#)
- [JPI Neurodegenerative Disease Research \(JPND\)](#)
- [JPI Agriculture, Food Security and Climate Change \(FACCE\)](#)
- [JPI A Healthy Diet for a Healthy Life \(HDHL\)](#)
- [JPI Connecting Climate Knowledge for Europe \(CLIMATE\)](#)
- [JPI More Years, Better Lives – The Potentials and Challenges of Demographic Change \(MYBL\)](#)
- [JPI Water Challenges for a Changing World](#)
- [JPI Cultural Heritage and Global Change: A New Challenge for Europe](#)
- [JPI Healthy and Productive Seas and Oceans](#)
- [JPI Antimicrobial Resistance – An Emerging Threat to Human Health](#)

The EC supports JPIs through various support measures in H2020 such as coordination and supporting actions (CSA) as well as by ERA co-fund instruments.

ERA-NET Cofund under Horizon 2020 is designed to support public-public partnerships, including joint programming initiatives between Member States, in their preparation, establishment of networking structures, design, implementation and coordination of joint activities as well as Union topping-up of a trans-national call for proposals. It is based on the merger of the former ERA-NET and ERA-NET Plus actions and is implemented by using 'program co-fund actions'. It allows for program collaboration in any part of the entire research-innovation cycle.

The main and compulsory activity of the ERA-NET Cofund under Horizon 2020 is the implementation of the co-funded joint call for proposals that leads to the funding of trans-national research and/or innovation projects (one co-funded call per Grant Agreement).

Currently there is no U.S. organization taking part in these JPIs as full or associated member. According to ERA-Learn 2020³⁸ database, 3 US entities have participated in 5 Networks and 7 joint calls in the following areas:

Joint Call Title	Network Name	Network Type	U.S. Organization
<u>3rd ERA-CAPS Call - Europe-USA Call strengthening transnational research in the Molecular Plant Sciences (2016)</u>	ERA-CAPS ERA-NET for Coordinating Action in Plant Sciences	Era-Net-Self sustained	NSF
<u>Third Joint Transnational Call (2014)</u>	SIINN Era-Net Safe Implementation of Innovative Nanoscience and Nanotechnology	FP7 (inactive)	NSF
<u>ERA-CAPS 2nd Joint Call: Expanding the European Research Area in Molecular Plant Sciences II (2014)</u>	ERA-CAPS ERA-NET for Coordinating Action in Plant Sciences	FP7 (inactive)	NSF
<u>Building Synthetic Biology capacity through innovative transnational</u>	ERASynBio Development and	FP7(inactive)	NSF

³⁸ <https://www.era-learn.eu/network-information/countries>



projects (2014)	Coordination of Synthetic Biology in the European Research Area		
<u>Joint Call on Food Security and Land Use Change (2014)</u>	FACCE JPI	JPI	NSF
<u>Multi-partner Call on Agricultural Greenhouse Gas Research (2013)</u>	FACCE JPI	JPI	USDA
<u>ERA-CAPS 1st Joint Call: Expanding the European Research Area in Molecular Plant Sciences (2013)</u>	ERA-CAPS ERA-NET for Coordinating Action in Plant Sciences	Era-Net (inactive)	NSF (as observer)
No joint call	Gender Net Promoting gender equality in research institutions and the integration of the gender dimension in research contents	FP7 (inactive)	NAS
No joint call	EUPHRESKO II European Phytosanitary Research Coordination II	FP7(inactive)	USDA (as Observer)
No joint call	ERA-GAS ERA-NET for Monitoring and Mitigation of Greenhouse Gases from Agri- and Silvi-Culture	FACCE JPI/ H2020	USDA

One of the objectives of the BILAT USA 4.0 project is bridging funding bodies with these JPIs by:

- identifying the interest of the JPIs in Europe and the funding bodies in USA
- setting up initial meetings to create awareness followed by designated workshops
- preparing the ground for a joint call or other joint activities

With this purpose a workshop is being organized titled [“JPIs on the Global Stage: Opportunities for International Collaboration”](#) on 21 November 2016 in Brussels.

Joint Technology Initiatives

Joint Technology Initiatives (also called institutional Public Private Partnerships) are long-term Public-Private Partnerships which are managed within dedicated structures based on Article 187 of the Treaty on the Functioning of the European Union (TFEU). JTIs support large-scale multinational research activities in areas of major interest to European industrial competitiveness as well as issues of high societal relevance. The legal framework for the JTIs is **Joint Undertakings** as a new way of realizing public-private partnerships at European level in the field of industrial research.

JTIs are open to a wide range of sectors in Europe, and all types of research institutions and enterprises, including SMEs, may apply for funding. Funding is provided both by the industry and the public sector. Until now participation from 3rd countries in JTIs were very limited. However, according to the evaluation results, coordination with regional, national and international initiatives and policies was seen as limited and should be improved. Internationalization



strategy and priorities should be developed and agreed upon³⁹.

The current JTIs are:

- [Innovative Medicines 2 \(IMI2\)](#): to develop next generation vaccines, medicines and treatments, such as new antibiotics
- [Fuel Cells and Hydrogen 2 \(FCH2\)](#): to accelerate market introduction of clean and efficient technologies in energy and transport
- [Clean Sky 2 \(CS2\)](#): to develop cleaner, quieter aircraft with significantly less CO2 emissions
- [Bio-based Industries \(BBI\)](#): to use renewable natural resources and innovative technologies for greener everyday products
- [Electronic Components and Systems for European Leadership \(ECSEL\)](#): to boost Europe's electronics manufacturing capabilities
- [Shift2Rail](#): to develop better trains and railway infrastructure that will drastically reduce costs and improve capacity, reliability and punctuality
- [SESAR](#): to modernise European ATM by defining, developing and delivering new or improved technologies and procedures

³⁹ Pg. 19, Commissions response to the 1st Interim Evaluation of IMI, Clean Sky and FCH

Pg. 10, REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Second Interim Evaluation of the CLEAN SKY, FUEL CELLS AND HYDROGEN and INNOVATIVE MEDICINE INITIATIVE Joint Technology Initiatives Joint Undertakings, 8 May 2014.



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