

Call Topics for International Cooperation in Horizon 2020 EU and xxx

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Excellent Science

Horizon 2020 Pillar:	Excellent Science
Programme:	Future and Emerging Technologies
Call Title:	FET Flagships – Tackling grand interdisciplinary science and technology challenges
Call Identifier:	h2020-fetflag-2018-2020
Topic Title:	International Cooperation on Quantum Technologies
Topic Identifier:	FETFLAG-06-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	13.11.2019 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/fetflag-06-2020
Specific Challenges:	Quantum technologies is an emerging key enabling technology. In order to achieve its objectives, the Quantum Technologies FET Flagship could benefit from international cooperation activities with non-European partners having competences complementary to those or that are not available within Europe. Such activities will aim at providing a clear win-win situation for all parties involved. Target countries are the USA, Canada and Japan.
Scope:	The action should deliver a roadmap for international cooperation that outlines where Europe's strengths are, the competences missing in Europe, and in which of the target regions those can be found. The action should map the corresponding national innovation strategies in the 3rd countries and the available funding schemes and involved funding agencies. The action should give concrete recommendations on international cooperation actions, including how these can be established applying the funding instruments available, and should identify target region in which areas there is a win-win. The analysis and recommendations derived from the roadmap should be based on a clear methodology taking also into account benchmarking activities currently conducted in the Flagship. Close coordination of the action with the existing Flagship Coordination and Support Action is regarded as key for the successful implementation. The activities should include public consultations with the relevant stakeholders, workshops with the lead persons from science, industry and policymakers and fact-finding missions. The Commission considers that proposals requesting a contribution from the EU of up to EUR 500.000 and a duration of 36 months would allow this specific

challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or durations.

Expected Impact:

- Increased effectiveness of the European Quantum Flagship by having a focused strategy on international cooperation.
- Increased networking between European and international stakeholders excelling in quantum technologies;
- Increased scientific and technical knowledge
- Improve competitiveness of European industry by opening up international cooperation possibilities and gaining access to future markets.

Cross-cutting Priorities: International cooperation

Horizon 2020 Pillar:	Excellent Science
Programme:	Research Infrastructures
Call Title:	Implementing the European Open Science Cloud
Call Identifier:	h2020-infraeosc-2018-2020
Topic Title:	Integration and consolidation of the existing pan-European access mechanism to public research infrastructures and commercial services through the EOSC Portal
Topic Identifier:	INFRAEOSC-03-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	22.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/infraeosc-03-2020
Specific Challenges:	<p>The phase of integration and consolidation of e-infrastructure platforms initiated under the Research Infrastructures Work Programme 2016-2017 (in particular, through the EOSC-hub) as well as the work carried out by other EU funded projects and initiatives^[1], has set the ground for the development of the EOSC Portal. Through its main components, the EOSC website, catalogue of services and marketplace^[2], researchers and other users can find and use research-enabling services and resources, get technical support, integrated solutions from the EOSC providers, participate in co-design, and be informed about and engaged with, the EOSC vision and policy initiatives.</p> <p>Building on this work, the challenge is now to consolidate and scale up the EOSC Portal and its underlying service platform in order to:</p> <ol style="list-style-type: none"> 1. strengthen the EOSC Portal so that it continues to provide an increasing portfolio of high quality standard compliant and interoperable services of proven user interest and scientific relevance from a wide range of national, regional and institutional public research infrastructures in Europe as well as from commercial service providers in its catalogue; 2. reinforce the role of the marketplace as the access channel to integrated, composable and reliable services; 3. attract more users, within the research community and beyond, by enhancing the user experience and seamlessly accommodating their needs; and 4. ensure its long-term sustainability taking into account all the relevant governance and business frameworks.

Scope: Building on the outcomes of the projects awarded under topics EINFRA-12-2017^[3], INFRAEOSC-06-2019 (a), INFRAEOSC-05-2018 (a), INFRAEOSC-04-2018 and other relevant EU funded projects and initiatives^[4] (including the thematic clouds), proposals should address the following activities all together:

- a. Operation, maintenance and enhancement of the EOSC Portal (the website, the catalogue of services and the marketplace)
 - Enhance operational aspects of the EOSC Portal: proposals should include tools and activities to ensure the basic functionalities underpinning the portal, such as the support, quality, security, reliability and traceability of services, effective monitoring of usage and evaluation of performance, messaging and usage accounting. A user-friendly interface, offering integrated information on the EOSC vision and process, should be also ensured, encouraging constant learning and alignment in all disciplines and Member States.
 - Engage with the supply side of EOSC: proposals should provide a framework to interact with all service and resources providers^[5], in order to ensure that their services are integrated into the catalogue of services and, where appropriate, the marketplace. They should also ensure the alignment of the providers with future EOSC principles, standards and values including compliance with the Rules for Participation and FAIR principles^[6] and the reduction of the complexity barrier to users. Consortia should address issues related to the adoption of common standards by all suppliers, the implementation of Application Programming Interfaces (APIs), the automatic collection and exchange of information related to service updates, the mechanisms for reporting usage, the support for virtual access accounting mechanisms^[7], etc.
 - Interact with the EOSC end users and provide a highly usable service platform: proposals should foresee the necessary feedback mechanisms (including a user panel) and user behaviours' analysis within the EOSC Portal environment to allow for constant improvement of the features of the different EOSC Portal components and their usability easing the way users can interact and evaluate the service. The analysis should include gender sensitive issues, when relevant. Proposals should also put in place the necessary mechanisms to elicit users' needs requiring new services (including commercial ones).
- b. Fostering and enabling secure service composability

To allow for a higher level of service integration within the EOSC marketplace, proposals should take due consideration of the need for secure composition of services and resources from different providers. Researchers and other EOSC end users should be able to discover services and combine them to compose new, more complex services, tailored to their specific needs. By enabling EOSC users to compose reliable, secure and scalable services, the EOSC marketplace will become more flexible and adaptable, maximising its impact and benefit for the research community.

In this context, proposals should provide a framework, including specific pilot scenarios, for exposing, integrating and managing a wide-range of standard

and policy compliant cross-domain and domain-specific research enabling services and resources from pan-European horizontal and thematic research infrastructures as well as from commercial providers. In particular, they should:

- Allow for user friendly discovery, access and re-use of major public research outputs (e.g. publications or datasets) and data processing capabilities, analytical tools or any other added-value quality service from various providers;
- Provide and evolve service management tools that support the provider's participation to the EOSC federation;
- Foster secure composability of services and interoperability of datasets and other outputs by supporting the use of common interfaces, standards, ICT specifications and best practices that not only allows for services to be reused in multiple service compositions but also ensures the reliability, flexibility and scalability of those services.

c. User enhanced experience using Artificial Intelligence (AI) techniques

Proposals should describe how the EOSC Portal would be enhanced with AI-based services in order to exploit usage patterns and to advise researchers and other EOSC users on the most suitable EOSC services according to their research profiles and needs. In this way, researchers that have completed their EOSC user profile (including their affiliation, research interests and needs) can get suggestions based on what services other EOSC users with similar interests and access rights have used to address their research needs. The advice will have to be continuously updated, based on the actual activity of the users at the EOSC Portal enhancing quality and improving predictive response to cover evolving needs and ensure engagement. The quality of the advice of such AI-based services should improve with the increase of the number of EOSC users and services available.

d. Widening the EOSC user base

Proposals should include strategies and well-defined structures for gathering needs from potential new user communities and propose methods outlining the operational requirements to be satisfied by the EOSC Portal to effectively attract and integrate new users. This includes the possibility of federating and/or integrating heterogeneous and hybrid research clouds into the EOSC Portal.

In order to enable users from non-research communities to access EOSC services through the EOSC Portal, the AAI^[8] federated architecture implemented in the EOSC Portal should be fully aligned with the legal and interoperability framework set by the eIDAS Regulation^[9].

Proposals shall include the development of APIs or any other necessary feature that allow third parties such as Open Data Initiatives or other initiatives under the European Common Data Space to become users of the EOSC services and to access the available services in the EOSC Portal from their own environments.

Proposals should include an outline of the legal, technical and business processes to be implemented through contractual agreements between the EOSC Portal and user institutions that are interested in providing increased accessibility to EOSC services and resources to their affiliated members.

e. Widening the service offer with commercial services

Proposals should address both of the following activities:

- Proposals should incorporate commercial services into the EOSC marketplace and expand it, by building further on the work carried out under the topic INFRAEOSC-01-2018^[10] and under the EOSC-hub project. In particular, proposals should
 1. through the EOSC Portal feedback mechanisms^[11], aggregate the various needs of EOSC users for commercial services that are complementary to the services offered by public infrastructures,
 2. procure preferably green^[12] innovative commercial services addressing the aggregated user demand and
 3. make available the purchased services to EOSC users.

Proposals will make the procured capacity available for access - together with other capabilities of interest - through the portal access channel. Service capacity shall be allocated to projects and initiatives through a selection process that ensures excellence, fair distribution across scientific communities and removal of digital divides across communities and countries. The procurement mechanism should be compatible with the Green Public Procurement initiative^[13]. Examples of commercial services that could be incorporated include commodity type commercial digital services that are necessary for interdisciplinary research activities or secure Earth Observation commercial services stemming from the use of Copernicus open data, etc. The inclusion of such added-value commercial services will enrich the existing catalogue, generate positive impact on cross-disciplinary research activities in the EOSC environment and improve user experience with the overall EOSC service offering. A maximum amount of EUR 10 million of the total budget for this sub-topic is foreseen for this procurement activity.

- Building on the work of the EOSC-hub project, proposals should collaborate with private sector entities, in particular with SMEs, in the context of digital innovation hubs initiatives, in order to stimulate an ecosystem of innovation and knowledge transfer that fosters the development of commercial services to continuously cover the needs of EOSC users^[14].

f. Support activities

Proposals shall also cover all the following activities aiming at boosting the impact and outreach of the EOSC Portal:

i. Outreach and skills

Leveraging on existing networks and actions for training on and outreach

of the EOSC and in strong collaboration with the awarded grants under topic INFRAEOSC-07-2020, proposals should include activities to:

- Foster the EOSC initiative's uptake and spread both geographically and across scientific disciplines and communities (including long tail of science). Moreover, proposals should include measures and dissemination activities for closing the gap between European countries with higher and lower EOSC uptake, including the EU candidate countries and the Western Balkans.
 - Develop the necessary skills of EOSC users for sharing resources, managing data and applying the FAIR principles in the context of the EOSC Portal, by e.g. providing researchers and data practitioners with consolidated cross-infrastructure training packages for data skills, data science and data stewardship.
- ii. Support to the **Research Data Alliance**'s contribution to the EOSC:
- Proposals retained for funding should directly support the contribution of RDA to the EOSC initiative and, in particular, in the context of the EOSC Portal.
 - Proposals should also provide financial support to third parties wishing to engage and participate in the **Research Data Alliance** processes and activities, including RDA outputs adoption fostering the interoperability and service composition in the EOSC Portal^[15].

Grants awarded under this topic will be complementary to the actions awarded under topic INFRAEOSC-07-2020. The main purpose of the collaboration agreements referred to in Article 41.4 of the Model Grant Agreement is to describe the terms and conditions for the provision of services through the EOSC Portal.

Grants awarded under this topic will be complementary to the action awarded under topic INFRAEOSC-06-2019 (a) and should conclude a collaboration agreement.

For grants awarded under this topic, beneficiaries will be subject to the following additional obligations aiming at ensuring exploitation of its results: proposals must necessarily state the participants' commitment to: a) use open source software, b) make tools, standards, specifications and all other relevant outputs generated in the action available, through a well-defined mechanism, to the EOSC governance and any other institution responsible for the continuity of the EOSC Portal beyond the lifespan of the Grant Agreement.

Grants awarded under this topic are expected to carry out an analysis regarding energy consumption and environmental impact of technologies used in the context of the project. The analysis should include an action plan in order to limit the carbon and energy footprint with a specific reference to the standard EN 50600-4^[16] together with a timeline for implementation of the defined milestones and KPIs.

As the scope of this activity is to consolidate a single EOSC Portal, at most one single proposal covering all the described activities (a. to f. included) is expected to be funded.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 40.9 million and a 30 months duration would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts and durations.

Expected Impact:

- Provide pan-European access to state-of-the-art secure, interoperable and scalable EOSC services and resources enabling the emergence of genuine Open Science, enhancing data skills and boosting data intensive research in Europe.
- Enable researchers and other users to compose secure and scalable services that respond to actual and evolving needs, in a secure, flexible and scalable environment.
- Build an agile EOSC and increase the uptake of its services by public and private sectors stakeholders, across Europe, exploiting solutions and technologies for the benefit of all areas of economy and society.
- Reduce the burden for research organisations and other service users to engage in complex procurement processes, support cross-analysis of data from heterogeneous sources and create market opportunities for innovative research data services.
- Increase the overall value of open research data and ensure that EOSC contributes to the global playing field of open FAIR data.

Cross-cutting Priorities: Gender, Open Innovation, Open Science

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- [1] In particular, those mentioned in the SWD for the Implementation Roadmap of the EOSC Commission Staff Working Document, SWD(2018) 83 final.
 - [2] The EOSC marketplace is conceived as a platform integrated into the EOSC Portal where users are able to access, order and compose different services and resources: <https://marketplace.eosc-portal.eu/>
 - [3] <http://www.eosc-hub.eu/>, <https://www.openaire.eu/>, and <https://eosc-portal.eu/>
 - [4] In particular, those mentioned in the Implementation Roadmap of the EOSC Commission Staff Working Document, SWD(2018) 83 final.
 - [5] Including with service providers in the grant awarded under topics INFRAEOSC-02-2019, INFRAEOSC-04-2018 and the thematic clouds developed under other parts of the Horizon 2020 programme.
 - [6] See for reference: SWD(2018) 83 final – Implementation Roadmap for the European Open Science Cloud.
 - [7] See description of Virtual access activities in part D of the section “Specific features for Research Infrastructures”.
 - [8] Authentication and Authorization Infrastructure. Based on the work of AARC, AARC2 and the EOSC-hub projects.
 - [9] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market.
 - [10] OCIRE project: <https://cordis.europa.eu/project/rcn/219198/factsheet/en>
 - [11] See point a1) on user feedback.
 - [12] For more information about the green public procurement initiative:
http://ec.europa.eu/environment/gpp/index_en.htm
 - [13] http://ec.europa.eu/environment/gpp/index_en.htm
 - [14] See point a1) on user feedback.

- [15] In line with the conditions set out in part K of the General Annexes. A maximum amount of EUR 1M is foreseen for the total financial support to third parties under this point while the maximum amount per third party may not exceed EUR 60 000.
- [16] EN 50600-4: Information technology: Data centre facilities and infrastructures. For the link to the latest published version, tools and resources regarding the standard, check: <https://ictfootprint.eu/en-50600-4-factsheet-0>

Industrial Leadership

Horizon 2020 Pillar:	Industrial Leadership
Programme:	Leadership in enabling and industrial technologies (LEIT)
Call Title:	Foundations for Tommorow's Industry
Call Identifier:	h2020-nmbp-to-ind-2018-2020
Topic Title:	Safe by design, from science to regulation: multi-component nanomaterials (RIA)
Topic Identifier:	NMBP-16-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	12.12.2019, 14.05.2020 (two-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/nmbp-16-2020
Specific Challenges:	Complex multi-component, hybrid, functional nanomaterials and High Aspect Ratio Nanoparticles (NMs&HARNs), present both innovation potential and challenges in terms of assessing the risk in different environments. Concerns for these multi-component nanomaterials result from differing rates of degradation and toxicities of the separate and interacting components and their different interactions with biological and environmental systems. Previous projects on Safe by Design have developed risk assessment tools and strategies, however they were only implemented within the context of an example case study. The implementation of these tools and approach at scale is still remains to be achieved. The challenge is to develop and implement Safe by Design concepts for products incorporating such nanomaterials and to understand their impact on manufacturing processes, on product performance, and on the environment and on health.
Scope:	The proposals should:
	<ul style="list-style-type: none">• Coordinate with the projects from NMBP-15-2019, and focus on filling the gaps in the current understanding of exposure and hazard characteristics of NMs&HARNs especially those arising from their unique properties, as well as assessing the extent of and rates by which variations of environment modify the nanoparticle properties and agglomeration rates;• Use multiscale modelling approaches to identify how different patterns of release may influence physiological responses and how elements of multi-component nanomaterials interact with each other, with other NMs, and other chemicals leading ultimately to mixture toxicity;

Develop knowledge and tools for Safe by Design approaches that support the development of multi-component nano-enabled products with reduced persistence, exposure and hazard. This should be coupled with developing multi-scale modelling approaches to evaluate the effectiveness of the proposed safe-by-design strategies

Relevant indicators and metrics, with baseline values, must be clearly stated in the proposal and should be in line with previous efforts on Safe by Design. For this topic a parallel call scheme is envisaged with the USA-NNI. Resulting projects should establish close cooperation mechanisms. Therefore, proposals should foresee a dedicated work package for cooperation and earmark appropriate resources.

Activities should start at TRL 4 and achieve TRL 6 at the end of the project.

The Commission considers that proposals requesting a contribution from the EU between EUR 6 and 8 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:

- Implementation of validated safe-by-design strategies including enabling their uptake and utilization by SMEs;
- Recommendations on adaptation and improvement of current guidelines for exposure and hazard assessment of multi-component NMs as necessary;
- A categorisation scheme to cluster sector-specific multi-component nanomaterials by assessing nano-specific properties in real-life environments;
- Integration of specific characteristics of multi-component NMs, including the potential for mixture effects, in risk assessment and safe-by-design strategies.

Call information:

GOVERNANCE, SCIENCE-BASED RISK ASSESSMENT AND REGULATORY ASPECTS

Managing the risks of every emerging technology is of key importance for its societal acceptance and consequent possible success. The overall challenge is to establish a suitable form of nanotechnology risk governance and to ensure that beyond the state of the art technologies are accepted by stakeholders (civil society, industry, regulators).

This requires working on three different layers:

- (i) a scientific research layer for sound foundations,
- (ii) a regulatory research layer to validate and translate the scientific findings into appropriate regulatory frameworks and implementation, and
- (iii) a market layer dealing with the daily management of risks and safety.

These three distinct layers should be integrated through actions for risk governance, risk assessment and safe by design. Notably nano-informatics approaches offer good chances for innovation. These will include the challenge of ensuring consistency in all EU Member States in terms of risk management.

The present convergence of several sciences and the rapid evolution of novel technologies in the healthcare sector create a need for fast advance in regulatory science in that sector. Development and adoption of reference methods and of technical standards should be based on solid scientific foundation, hence the need for additional activities within regulatory science for medical technology products.

In terms of resources, the regulatory layer should be jointly supported by Horizon 2020, Member States governments and industry whereas at market level, Horizon 2020 should support only the networking and coordination. Proposals in all layers can foresee modalities for integrating additional public or private funding or foresee specific calls for proposals funded by these additional sources. Costs for the organisation of the calls and coordination of the work can be foreseen in proposals' budgets. Such calls can also be used to foster international cooperation in nanosafety.

Proposals in this area should apply the Open Access and the Open Data Access policies and strongly support the activities of EU regulatory bodies and agencies, and of international organisations like ISO, CEN and OECD. To maximise overall synergy and joint impact, projects should take account of the strategy and roadmaps in place, respect and complement the established ontology and the data logging format (ISA-TAB-NANO^[1]), contribute to the objectives of relevant platforms (such as the EU NanoSafety Cluster^[2] or The Nanomedicine Translation Hub) and foresee the necessary resources to this effect.

Nanosafety issues are global and, therefore, international collaboration is strongly encouraged. In particular, all projects in this area are expected to collaborate with similar projects under the established scheme of Communities of Research with the USA NNI programme^[3] and/or to include direct participation of relevant USA entities. In addition, participation from countries actively involved in the work of OECD -WPMN, the NanoSafety Cluster and the NANoREG^[4] project (e.g. South Korea, Brazil, Canada, Australia, China, Japan, South Africa) is strongly encouraged.

Proposals should consider risk-assessment procedures for both men and women, where relevant, and enable a reduction of animal testing in the regulatory compliance.

Cross-cutting Priorities: Open Science, Open Innovation, International cooperation

[1] <http://enamomapper.net>

[2] <http://www.nanosafetycluster.eu>

[3] <http://www.us-eu.org>

[4] <http://www.nanoreg.eu>

Horizon 2020 Pillar:	Industrial Leadership
Programme:	Leadership in enabling and industrial technologies (LEIT)
Call Title:	Information and Communication Technologies
Call Identifier:	h2020-ict-2018-20
Topic Title:	Artificial intelligence for manufacturing
Topic Identifier:	ICT-38-2020
Type of Action:	RIA Research and Innovation action, CSA Coordination and support action
Deadline(s):	16.01.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ict-38-2020
Specific Challenges:	<p>State-of-the-art AI technologies need to be integrated with advanced manufacturing technologies and systems in order to exploit their potential in manufacturing and process industry. AI systems cooperating with humans can improve production planning and execution, and can help to improve quality of products and processes.</p> <p>To widely deploy these technologies, specific attention has to be given to standardisation, synchronising EU and Member States activities, and to international collaboration.</p>
Scope:	<p>a. Research and Innovation Actions (RIA)</p> <p>The focus is on integrating state-of-the-art AI technologies in the manufacturing domain, for example in agile production processes and predictive quality, taking into account the domain-specific requirements in terms of time criticality, safety and security, finding effective ways for collaboration between humans and AI systems, and exploiting the strengths of both humans and machines while keeping the human in control. Ethical principles, as expressed by the high-level expert group on Artificial Intelligence^[1] should be followed and recommendations for instantiation in the manufacturing domain should be developed. Proposers are encouraged to build on existing results from artificial intelligence research, for example ICT-26-2018-2020.</p> <p>Proposals must develop innovative concepts and tools that take into account the status and availability of all relevant production resources, learn from past</p>

experiences, and deal effectively with unforeseen events. If appropriate, AI techniques should be combined with digital twins and real-life feedback from the shop floor or production facility to improve quality of products and processes. Generative design approaches for products and processes are encouraged.

Developed technologies and solutions should be demonstrated in at least two different realistic manufacturing use cases of significant economic value. If applicable, legal obstacles to implementation of the proposed solutions should be identified.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b. Coordination and Support Actions (CSA)

Standardisation

Proposals are expected to extend, further develop, and support the implementation of a model for the synchronisation of standardisation activities on AI and related digital technologies in manufacturing at large, at the Member State level and at the European level – and in a global context, taking into account legal and ethical issues where relevant. Proposals need to build on previous activities, such as the results of the Joint MSP/DEI Working Group on standardisation in support of Digitising European Industry^[2].

Cooperation EU-Japan

Proposals are expected to support possible cooperation with **Japan**, in areas relevant for AI-driven innovation in manufacturing and digital industrial platforms. Proposals will assess opportunities, and kick-off cooperation activities, by organising contacts between researchers and companies from EU and **Japan** working on AI applications for manufacturing, encouraging the exchange of information on the respective research programmes and technological results. Proposals shall foresee twinning with entities participating in projects funded by **Japan** to exchange knowledge and experience, exploit synergies and develop recommendations for further sustainable cooperation and collaboration activities.

The Commission considers that proposals requesting a contribution from the EU of EUR 0.5 million would allow these areas to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. One coordination and support action will be supported for each of the two areas above.

Expected Impact:

Research and Innovation Actions

- Products and services usable in a wide range of manufacturing processes leading to agile production processes and improved quality of products and processes
- Humans working together with Artificial Intelligence systems in optimal complementarity

Coordination and Support Actions

- Increased synchronisation and cooperation on AI and related digital technologies in manufacturing, with higher global impact

Proposals need to describe how the proposed work will contribute to the impact criteria above, provide metrics, the baseline and targets to measure impact.

Cross-cutting Priorities: International cooperation, Contractual Public-Private Partnerships (cPPPs), FoF

[1] <https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai>

[2] <https://ec.europa.eu/digital-single-market/en/news/second-workshop-standardisation-support-digitising-european-industry-initiative>

Horizon 2020 Pillar:	Industrial Leadership
Programme:	Leadership in enabling and industrial technologies (LEIT)
Call Title:	Competitive, low carbon and circular industries
Call Identifier:	h2020-low-carbon-circular-industries-2020
Topic Title:	ERA-NET on materials, supporting the circular economy and Sustainable Development Goals
Topic Identifier:	CE-NMBP-41-2020
Type of Action:	ERA-NET-Cofund ERA-NET Cofund
Deadline(s):	05.02.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-nmbp-41-2020>

Specific Challenges: Maintaining Europe's position in research related to materials science and engineering requires concentrated action on common European research priorities in view of implementing joint initiatives.

The M-ERA.NET 2 network has successfully targeted the Low Carbon Energy Technologies addressed by the SET Plan. Now the scope should on one hand guarantee some continuation, and on the other hand become more ambitious and underline the commitment of the EU regarding the circular economy and Sustainable Development Goals.

The European Commission has adopted an ambitious new Circular Economy Package to help European businesses and consumers to make the transition to a stronger and more circular economy. Moreover, in 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development came into force. They aim to end poverty, protect the planet, ensure prosperity and tackle climate change. The EU is fully committed to be a frontrunner in implementing the 2030 Agenda and SDGs. Finally, the Commission launched the Battery Alliance initiative in 2017.

Materials research is a relevant field for addressing these overall challenges and for making substantial contributions to achieving the specific objectives.

Global challenges call for co-operation on a global scale to build capacity in science, technology and innovation (STI) at both national and international levels. A strategic and industrially relevant approach is needed that cover the entire research and innovation chain by pooling national research and innovation capacities, thereby mobilising European infrastructure networks as well as promoting education and training in materials research and innovation.

Scope: The proposed ERA-NET aims at coordinating the research efforts of the participating Member States, Associated States and Regions in the field of materials, continuing the activities started by M-ERA.NET, for materials research and innovation, especially targeting the circular economy and Sustainable Development Goals (such as Goal 7 – “Affordable and clean energy”, by enabling electromobility through sustainable energy storage technology or Goal 9 “Industrial innovation and infrastructure”, by enhancing scientific research and upgrading the technological capabilities of industrial sectors). Proposals should pool the necessary financial resources from participating national or regional research programmes by implementing a joint transnational call for proposals (resulting mainly in grants to third parties) with EU co-funding to fund multinational innovative research initiatives in this domain, including support to the large scale research initiative on future battery technologies launched under the H2020-LC-BAT-2019-2020 Call^[1].

Proposers are also requested to implement other joint activities and, additional joint calls without EU co-funding. The proposal should demonstrate that these additional joint calls exclude any overlaps with related on-going actions co-funded by the EU under NMBP.

Proposals should demonstrate the expected impact on national and transnational programmes as well as the leverage effect on European research and competitiveness, and should plan the development of key indicators for supporting this.

Participation of legal entities from **third countries**, and/or regions including those not automatically eligible for funding in accordance with General Annex A is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries not listed in General Annex A are eligible for EU funding under this topic and may request a Union contribution (on the basis of the ERA-NET unit cost) only for the coordination costs of additional activities.

The Commission considers that proposals requesting a contribution from the EU of EUR 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. EUR 5 million of the requested contribution from the EU should be used as support to transnational projects, co-funded by the Commission, on future battery technologies, fostering synergy between European, national and regional initiatives and promoting broader partnerships between the European stakeholders in future battery technologies.

Expected Impact:

- synergies with international, national and regional programmes that support research and innovation;
- synergies but no overlap with the topics of Horizon 2020 and with related European Partnership initiatives and be open to adapt to future coming initiatives of Horizon Europe;
- leverage of national, regional and European funding;
- contribution to meeting Global Challenges through Better Governance: International Co-operation in Science, Technology and Innovation;

- relevant contribution to the SDGs, including sustainable battery based energy storage technology;
- relevant contribution towards a circular economy.

Cross-cutting Priorities: ERA-NET

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

Horizon 2020 Pillar:	Industrial Leadership
Programme:	Leadership in enabling and industrial technologies (LEIT)
Call Title:	Foundations for Tommorow's Industry
Call Identifier:	h2020-nmbp-to-ind-2018-2020
Topic Title:	Towards Standardised Documentation of Data through taxonomies and ontologies (CSA)
Topic Identifier:	DT-NMBP-39-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	05.02.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/dt-nmbp-39-2020
Specific Challenges:	<p>Standardised data documentation with metadata based on an agreed ontology^[1] across the domains covered by this work programme is critical for the widest use of data and, ultimately, reliable end-user products.</p> <p>The challenge is for all relevant stakeholders to develop, test, validate and agree on data documentation to ensure consistency and interoperability of intra-and cross-domain specific taxonomies^[2] and ontologies. The standardised data documentation should be developed with a global ambition through international cooperation.</p>
Scope:	<p>The proposals should develop EU-wide standardised data documentation that ensures interoperability of data. The data documentation should take the form of an actionable ontology that consists of a top level ontology, adapted existing domain ontologies (such as manufacturing, materials processing, materials modelling, nano-safety, characterisation and life cycle sustainable analysis ontologies), complemented by new ontologies for other subdomains,.</p> <p>In particular, the projects should:</p> <ul style="list-style-type: none"> • Network relevant stakeholders to collect input on existing data documentation; • Develop and agree on a top level ontology to connect relevant subdomains of this work programme • Harmonise existing ontologies with respect to the top level ontology. • Develop and agree on new ontologies for relevant sub-domains of this work programme

- Deliver at least ten demonstrators on the use of ontologies (decision systems, innovation projects, workflows, quality assurance, guided AI and data parsing...)

Projects should liaise with the work done under the European Open Science Cloud, standardisation bodies, the **Research Data Alliance** and other relevant initiatives. Existing taxonomies and/or ontologies relevant for this part of the programme should be taken into account. Therefore, proposals should foresee a dedicated work package for this cooperation and earmark appropriate resources.

Proposals should guarantee the maintenance and further development of the ontology and data documentation after the project duration. The vast majority of the deliverables, including subsequent taxonomies and ontologies, should be public.

The Commission considers that proposals requesting a contribution from the EU around EUR 4 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: Proposals must address all the following impact criteria, providing metrics to measure success where appropriate

- Enable a standardised and operational data documentation at intra- and cross-across domains covered by this work programme that meets the FAIR data principles;
- Enable a mechanism to allow practical and user-friendly re-usability of data across domains and industrial sectors;
- Enable a maintained and continuously developed ontology and data documentation to ensure long-term relevance and implementation;
- Facilitate uptake of new project results;
- Improved ability to build interoperable software solutions in materials, process and manufacturing;
- A better integrated materials, processes, and manufacturing development environment in Europe from networking academics, innovation hubs and industry.

[1] An ontology consists of definitions of vocabulary, classes and relations between classes

[2] A taxonomy consists of definitions of vocabulary and classes

Societal Challenges

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Better Health and care, economic growth and sustainable health systems
Call Identifier:	h2020-sc1-bhc-2018-2020
Topic Title:	Innovative actions for improving urban health and wellbeing - addressing environment, climate and socioeconomic factors
Topic Identifier:	SC1-BHC-29-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	24.09.2019, 07.04.2020 (two-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-bhc-29-2020>

Specific Challenges: The natural and built^[1] environment as well as the social fabric are critical determinants of health and well-being. Three quarters of the European population now live in cities and urbanisation continues at high speed, driven by economic growth and employment opportunities. The related environmental changes e.g. pollution of air and water, transportation problems, reduced social cohesion and stress affect physical as well as mental health. Although health has improved in the EU over the last decades, large differences in health still exist between and within all countries in the EU. These differences are caused by many factors such as living conditions, health-related behaviour, education, occupation and income, health care. Some of these inequalities are widening^[2]. As European cities are growing, they are increasingly taking action and introducing policies to become more sustainable and liveable, adapting to climate change, investing in a range of smart and innovative solutions such as clean and sustainable transport, higher energy efficiency and stronger social cohesion. Similar initiatives are underway e.g. in Canada, USA as well as in Asia and Africa which could provide valuable knowledge.

At EU level, the Urban Agenda for the EU^[3] focuses on improving the life of their citizens for example through the development of digital solutions, reducing urban poverty and better integration of migrants and refugees. The headline targets in the EU2020 strategy aim to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion^[4].

Improving urban health and reducing health disparities can be achieved by changes in individual behaviour as well as policies such as urban design and sustainable transport, (re)creating green and blue space or improved housing standards. There is a need to address public policies across sectors to achieve health benefits, systematically taking into account the health implications of decisions, to seek synergies, and avoid harmful health impacts (health in all policies^[5]).

Scope: European research should engage to build the evidence base of effective policies, developing and testing new initiatives to improve urban health and environment in Europe. Given the variety of national experiences across European countries and regions, there is an important potential to learn from each other's practices and develop innovative actions for urban health.

Proposals should develop and test effective actions and/or policies for improved urban health and wellbeing in Europe. Where applicable, health inequalities and environmental aspects should be addressed. These actions or policies should also be assessed for cost-effectiveness as well as barriers and facilitators to implementation. Proposals should address improved physical or mental health, or both, while considering the relevant socio-economic and/or environmental determinants of health. They could address any sector (with priority on other sectors than health care) or policy area relevant to achieve a lasting health improvement. Proposals should include analysis of vulnerable groups and gender aspects and address any such inequities in the design of interventions. Research teams should bring in all appropriate scientific disciplines to design and test interventions. This includes social scientists not least for their role on behavioural aspects

In order to link research to practical needs and user demands, teams should include other relevant parties in urban health, building partnership with stakeholders such as policy makers, users, business, and local communities. Proposals should address the need for more systematic data collection on urban health across the EU, to allow better analysis and conclusions. This may include the linking up with relevant population based cohorts.

As urban health is of concern in many regions of the world, proposals should foresee the possibility to link up internationally with other relevant urban health initiatives. Proposals should include in their budgets funds for participation in at least one international meeting gathering urban health initiatives relevant to the research.

The Commission considers that a proposal requesting an EU contribution between EUR 4 and 5 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:

- More robust evidence for policy making on improved urban health in the EU
- Improved population health, physical and/or mental, in urban areas of the EU
- Reduced health inequalities in urban areas

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

- [1] Man-made structures, features, and facilities viewed collectively as an environment in which people live and work (https://en.oxforddictionaries.com/definition/built_environment)
- [2] <http://www.health-inequalities.eu/about-hi/health-inequalities-in-the-eu>
- [3] <https://ec.europa.eu/futurium/en/urban-agenda>
- [4] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>
- [5] http://www.who.int/healthpromotion/conferences/8gchp/statement_2013/en

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Better Health and care, economic growth and sustainable health systems
Call Identifier:	h2020-sc1-bhc-2018-2020
Topic Title:	Global Alliance for Chronic Diseases (GACD) - Prevention and/or early diagnosis of cancer
Topic Identifier:	SC1-BHC-17-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	07.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-bhc-17-2020
Specific Challenges:	<p>The Global Alliance for Chronic Diseases^[1] (GACD) call will focus on implementation research proposals for the prevention^[2] and/or early diagnosis of cancer in Low and Middle-Income Countries (LMIC) and/or in vulnerable populations^[3] in High- Income Countries (HIC)^[4].</p> <p>The world is facing a critical healthcare problem due to ageing societies, unhealthy lifestyles, socio-economic inequalities, and a growing world population. Cancer is becoming one of the most important public health problems worldwide. In 2018, it is estimated that 181 million^[5] people have been diagnosed with cancer and 9.6 million have died from it. Predictions suggest that 30 million people will die from cancer each year by 2030, of which three-quarters in low- and middle-income countries (LMICs).</p> <p>With an estimated 30-50% of avoidable cancers, it is a leading cause of premature death, reducing a country's productivity. Current cancer prevention and control do not fully reflect ethnic, cultural, environmental, socio-economic and resource differences. In particular, limited implementation research is conducted on cancers primarily found in LMICs and vulnerable populations in HIC. In order to achieve the United Nations' sustainable development goal 3.4^[6], implementation research and healthcare efforts are needed to prevent and control cancers in these countries and populations.</p>
Scope:	<p>Proposals should focus on implementation research for the prevention and/or early diagnosis of cancer on in LMIC and/or in vulnerable populations in HIC.</p> <p>Proposals should build on interventions with promising or proven effectiveness (including cost-effectiveness) for the respective population groups under defined</p>

contextual circumstances. For promising interventions, a limited validation period can be envisaged. However, the core of the research activities should focus on their implementation in real-life settings. The proposed interventions should gender-responsive.

The aim should be to adapt and/or upscale the implementation of these intervention(s) in accessible, affordable and equitable ways in order to improve the prevention and early diagnosis of cancer in real-life settings. Interventions should meet conditions and requirements of the local health and social system context and address any other contextual factors identified as possible barriers.

Each proposal should:

Focus on implementation research addressing prevention, and/or early identification strategies derived from existing knowledge about effective and/or promising interventions.

For screening interventions, the pathway to referral for positive cases should be included.

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/or early diagnosis of cancer.

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 local, regional or national health 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.

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 Annual Scientific Meeting (location to vary annually).

Applicants must budget their involvement in GACD working groups and other GACD wide activities, beyond their projects.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 to 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: The proposals should address one or combinations of:

- Advance local, regional or national cancer prevention and/or early diagnostic health policies, alleviating the global burden of cancer;
- Establish the contextual effectiveness of cancer intervention(s), including at health systems level;
- Improve tailored and affordable prevention and/or early diagnosis;
- Provide evidence and recommendations to national programmes and policies focusing on prevention, screening, and/or early diagnosis;
- Inform health service providers, policy and decision makers on effective scaling up of cancer interventions at local, regional, and national levels, including affordability aspects for users and health providers;
- Reduce health inequalities and inequities, including due consideration of socio-economic, gender and age issues where relevant, in the prevention and/or early diagnosis of cancer at both local and global levels;
- Provide pathway to cancer care for the patients diagnosed with cancer;
- Maximise the use of existing relevant programmes and platforms (e.g. research, data, and delivery platforms);
- Contribute to the United Nations' Sustainable Development Goal 3.4.

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

[1] <http://www.gacd.org/>

[2] Tertiary prevention is excluded from the topic.

[3] Proposals should demonstrate the vulnerability of the targeted population in HIC.

[4] <https://databank.worldbank.org/data/download/site-content/CLASS.xls>

[5] GLOBOCAN and CONCORD-3

[6] <https://www.un.org/sustainabledevelopment/health/>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Better Health and care, economic growth and sustainable health systems
Call Identifier:	h2020-sc1-bhc-2018-2020
Topic Title:	Creation of a European wide sustainable network for harmonised large-scale clinical research studies for infectious diseases
Topic Identifier:	SC1-BHC-35-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	07.04.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-bhc-35-2020>

Specific Challenges: Infectious diseases pose a serious threat to human health and there are many challenges and needs to efficiently protect citizens across Europe and beyond. There is still a need to understand how antibiotics and other interventions work on patients and how to better assess the effectiveness of vaccines. Innovation is needed to overcome the problem of antimicrobial resistance, and in case of emerging epidemics and pandemics, a timely response to a rapidly emerging infectious diseases is significantly challenging and often delayed. In this context there is a need to establish a pan-European clinical research network that has the capacity and capability to directly enrol patients with infectious diseases, and to increase efficiency for testing and developing new diagnostic, preventive and/or therapeutic strategies and therapies. Europe should also contribute to the G7 aim concerning the need to establish a global clinical studies network on drug resistance that provides access to a large clinical research infrastructure for the design, coordination and conducting of clinical trials and studies. It should also respond to the Council Recommendation on strengthened cooperation against vaccine preventable diseases^[1], which calls for the reinforcement and establishment of novel infrastructures to increase the effectiveness and efficiency of EU and national vaccine R&D funding.

Scope: Proposals should set up a European-wide multidisciplinary network able to provide a platform for a rapid response in the conduct of clinical studies in relation to any severe infection. The initial clinical studies to be performed should be included in the proposal, whereas criteria and processes for including

further clinical studies in the project should be clearly described. This should include provisions for flexibility (including re-allocation of budget and de-prioritisation) in case of new scientific developments and in particular the need to address newly or re-emerging infectious diseases.

The proposed consortium should comprise expertise of stakeholders from academic organizations, SMEs, larger industry, patient organisations, ethics committees, public health bodies and regulators. It is expected to perform clinical studies and further advance clinical research in the field of infectious diseases. It should develop new, or make use of existing, standardised methodological approaches to rapidly perform large-scale clinical trials with the view of delivering optimal diagnosis and preventive or therapeutic interventions to patients affected by infectious diseases, taking into account sex and gender differences when relevant. Applicants should build on the results of successful European collaborative initiatives such as PREPARE^[2] and COMBACTE^[3].

Proposals should build on established structures for infectious disease clinical research at national or regional scales. To ensure the common benefit of the outcomes, it should also work in cooperation with existing global experts networks and infrastructures such as ECRIN^[4] and BBMRI^[5]. Proposals should in particular take into account the available result of the H2020-funded project ECRAID Plan (project resulting from SC1-HCO-08-2018). The network should address all aspects of clinical trial conduct, from study preparation and design, trial management and reporting. It should develop and allow for innovative research approaches and enable flexibility in responding to unpredictable events during its implementation. The sustainability of the network should be carefully worked out in the proposal. Furthermore, the network should create synergies with global initiatives, enabling quick and smooth interactions and collaboration across the world.

Special attention should be given to EU Member States and Associated Countries with currently limited capacity to perform clinical trials.

The Commission considers that a proposal requesting an EU contribution between EUR 25 to 30 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amount.

Expected Impact:

- Reduced cost and time through efficiently implemented clinical trials for diagnosis, prevention and treatment of infections.
- Create and strengthen the operational capacity and the infrastructures for providing real-time evidence for optimal medical intervention and practice in infectious diseases.
- Contribute to existing EU policies, including the Council Recommendation on strengthen cooperation for vaccine preventable diseases, and the Communication "A European one health action plan against Antimicrobial Resistance (AMR)"^[6].
- To ensure the EU's worldwide leadership in controlling and responding to infectious diseases.

- Foster links between existing networks in Europe and other countries/regions in the world to optimise a coordinated response to infectious diseases for innovation and delivery of new preventive and therapeutic technologies.
- Foster collaboration between stakeholders from academic organizations, SMEs, larger industry, patient organisations, ethics committee, public health bodies and regulators.

Cross-cutting Priorities: Gender, International cooperation

[1] <http://data.consilium.europa.eu/doc/document/ST-14152-2018-REV-1/en/pdf>

[2] <http://www.prepare-europe.eu/>

[3] <https://www.combacte.com/>

[4] <http://www.ecrin.org/>

[5] <http://www.bbmri-eric.eu/>

[6] https://ec.europa.eu/health/amr/sites/amr/files/amr_action_plan_2017_en.pdf

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Better Health and care, economic growth and sustainable health systems
Call Identifier:	h2020-sc1-bhc-2018-2020
Topic Title:	Actions in support of the International Consortium for Personalised Medicine
Topic Identifier:	SC1-HCO-01-2018-2019-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	07.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-hco-01-2018-2019-2020
Specific Challenges:	<p>Personalised Medicine is a very broad and multifaceted area where success relies on a well-functioning collaboration between several disciplines and different actors. While great advances have been made in some fields of medicine, in particular in stratification of cancer patients and in addressing rare diseases, most of today's healthcare protocols do not include personalised approaches apart from occasional division into broad age groups (children/adults/elderly), sex or ethnicity. Furthermore the prevention aspect of personalised medicine, i.e. identifying individuals prone to develop certain diseases, is largely isolated from treatment options. As is the case for a relatively nascent field there is a need for standardisation of approaches, including for sampling, data storage, interpretation and data exchange and also for clinical trials design and reimbursement models. European countries with their social model of healthcare along with (in several cases) centralised cost reimbursement, are ideally placed to lead the way for an integrated health management system. Many needs for coordination and support activities have been identified by ICPerMed^[1], an EU Member States led initiative which includes representatives from most EU countries along with several other European countries, Brazil and Canada. The EC currently supports ICPerMed with a grant to operate its secretariat until October 2020^[2]. Wider internationalisation of ICPerMed can be underpinned by coordinating networking activities with third countries.</p>

Scope: Each action should focus on one of the following fields:

- International aspect: The action should focus on building links with **third countries** by analysing the potential and advantages of collaboration in personalised medicine (PM) with those countries, studying areas of interest for Europe in PM collaboration and promoting international standards in the field. In particular the uptake of personalised approaches in health systems and healthcare should be addressed, taking into account social, cultural, ethical and legal aspects, health economy issues and equitable healthcare. For the 2018 call, the project should focus on CELAC^[3] as a group of countries, and for the 2019 call on China. For the 2020 call, the project should focus on countries in Africa^[4], linking also into the EU-AU (African Union) policy dialogue and taking into account the new Africa-Europa Alliance for Sustainable investment and Jobs^[5]. Alignment with activities of the **Global Alliance for Chronic Diseases** (GACD) and The European and Developing Countries Clinical Trials Partnership (EDCTP) activities should be explored. Special attention should be given to prediction and prevention, and to promoting well-being for all at all ages. Furthermore, the project should seek to integrate local knowledge and practice. Data safety and privacy should be addressed in line with existing standards and legislation. The project should have a duration of at least four years and address sustainability beyond that to ensure longer term structuring effect. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant based in the international partner region; Africa (2020 call).
- Regional aspect: The action should establish and support networking between regions and interregional cooperation in different European countries, in particular linking remote or sparsely populated regions with regions harbouring critical mass of medical and PM expertise while taking into account broader socio-economic and cultural aspects. The focus of the action can include aspects of genomic analysis, me-Health (mobile and electronic Health), telemedicine etc. but should aim at structuring PM application at regional level. Linkage to existing inter-regional projects (financed by INTERREG programmes) or interregional partnerships of Thematic Smart Specialisation Platforms will be actively encouraged. (2018 call).
- Healthcare- and pharma-economic models for personalised medicine, interlinking European public health approaches with medical practice and financing. The action should carry out studies in support of research in and development of new health- and pharma economic models for PM, including prevention, to capture value and to develop relevant health financing models. Analysing mid- and long-term impacts of innovative products designated for sub-sets of patient populations on the patients themselves and on public health systems. Assessing the benefits of personalised medicine development for citizens and their broader social environment while ensuring patient safety, access, equity, solidarity, data safety and financial sustainability of public health systems in the EU. The action should involve different relevant stakeholders and take into account work being carried out by other EU funded initiatives, such as EUnetHTA^[6]. SME participation is encouraged. Results of the studies and workshops should be actively disseminated to a wider

audience, including relevant authorities, professionals and the wider public. (2018 call).

- Standardisation for clinical study design. Establishment of innovative clinical trial design methodology for PM, including guidelines for research and reflection papers. The action should take into account sex/gender differences as well as the work done by relevant stakeholders and authorities such as EMA^[7] and the HMA network^[8], as well as the European legal framework^[9]. SME participation is encouraged. The results of the studies and workshops should be actively disseminated to a wider audience, including, industry, researchers and other professionals. (2019 call).
- ICPeMed secretariat: The project should continue the work done by the secretariat for ICPeMed, e.g. maintenance of existing services, organising the meetings of the ICPeMed Executive Committee, convening dedicated workshops and preparing and issuing updates of the ICPeMed Action Plan. Furthermore maintaining the network of policy makers and funders gathered in ICPeMed and expanding the membership to new interested and complementary partners as well as maintaining communication with all EC funded activities related to ICPeMed (2020 call).

For grants awarded under this topic for Coordination and Support Actions it is expected that results could contribute to European or international standards. Therefore, the respective option of Article 28.2 of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1.5 and 2 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: Contributing to the implementation and reach of the ICPeMed initiative; furthermore:

- International aspect: Integrating the country/group of countries into ICPeMed activities. Support wider adoption of standards developed in Europe. Support the EU-AU policy dialogues relevant to research and health (2020 call). Contribute towards the UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages.
- Regional aspect: Strengthened links between European regions setting up or planning personalised medicine healthcare approaches. Aligning research funding with ongoing and foreseen investments e.g. from Structural Funds. Recommendations on best practice in implementing PM at regional level.
- Healthcare- and pharma-economic models: Increased understanding of personalised medicine perspectives on how to capture value, develop institutional support and design relevant payment models. Recommendations for faster translation from discovery to patients'/citizens' access. Contributing to understanding of trends and dynamics in the pharmaceutical markets in relation to increased emphasis of research and development efforts on PM. Suggestions on how savings through prevention can be included in payment and reward models and contribute to the sustainability of public health

- systems in the EU. Improved knowledge and understanding among healthcare professionals and the wider public of potential benefits of PM approaches.
- Standardisation for clinical study design: Contribute to standardisation of PM clinical trial design. Demonstrate feasibility and importance of PM approaches. Underpin accelerated market uptake. Improved knowledge and understanding among healthcare professionals, regulatory authorities and industry how best to adapt clinical trials designs to stratified patient populations.
 - ICPERMed secretariat (2020 Call): Ensure continuity of the operations of ICPERMed beyond 2020. Increase the visibility of the consortium and ensure openness of the structure. Provide harmonised vision for the further development of personalised medicine. Contribute to the convergence of members' approaches to personalised medicine and further alignment of research efforts in the field.

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

[1] <http://icpermed.eu>

[2] H2020 Grant Agreement 731366

[3] Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Grenada, Guyana, Jamaica, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

[4] African Union Member States

[5] <https://www.africa-eu-partnership.org/en/stay-informed/news/european-commission-unveils-new-africa-europe-alliance-sustainable-investment-and>

[6] European Network for Health Technology Assessment: <http://www.eunethta.eu/>

[7] European Medicines Agency: <https://www.ema.europa.eu>

[8] Heads of Medicines Agencies: <http://www.hma.eu/>

[9] Especially the clinical trials regulation (EU) No 536/2014 and the data protection regulation (EU) 2016/679

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Digital transformation in Health and Care
Call Identifier:	h2020-sc1-dth-2018-2020
Topic Title:	International cooperation in smart living environments for ageing people
Topic Identifier:	SC1-DTH-04-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	22.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sc1-dth-04-2020
Specific Challenges:	<p>Demographic change and the ageing of the population create new heterogeneous challenges for society and, in particular, for ageing people. On top of the health-related age impairments such as poor health, cognitive impairment and frailty, ageing people are at risk of facing situations leading to potential social exclusion with considerable negative consequences for their independence, quality of life, those who care for them, and for the sustainability of health and care systems.</p> <p>Digital solutions can play a key role when addressing these challenges and, especially those aimed at creating smart living environments for ageing people. For these to be successful, one necessary condition is to ensure users' acceptance, which in turns requires bringing the users to the centre of the design. Moreover, these environments need to provide innovative user-friendly user interfaces such as voice-based interaction.</p> <p>These challenges are shared by ageing populations beyond the EU and other countries are also looking into the potential of digital solutions to address them. In this context, there is a need to explore collaboration and cooperation with international efforts in this domain.</p> <p>This action aims to address these challenges by developing smart living environments for ageing people, while strengthening relevant international collaboration in the area.</p>
Scope:	Proposals should develop and validate new solutions leading to smart living environments for ageing people, supporting independent active and healthy lifestyles.

The proposed solutions should provide personalised advice, guidance and follow-up for key age and health related issues in daily life which impact the person's ability to remain active, healthy and independent. These may include amongst others diet, physical activity, risk avoidance, preventive measures, lifestyle and activity management, leisure, social participation and overall wellness and health. Proposals should pay particular focus to measures aimed at fostering social participation and avoiding social exclusion.

Proposals should convincingly describe the planned progress beyond state of the art in the development and integration of trusted smart living environments for ageing people, which should build upon intelligent and interoperable information and communication technology (ICT) environments, access to relevant physiological and behavioural data, emotional computing, open platform and Internet of Things approaches.

Proposals should be based on trans-disciplinary research, involving behavioural, sociological, psychological, medical and other relevant disciplines, including gender and cultural aspects.

Proposed solutions should make use and further develop user interaction, including voice-based, taking into account Artificial Intelligence methods for understanding the users' intentions, knowledge extraction and learning. It is essential that they build on active user engagement in order to ensure the understanding of user needs. They need to safeguard ethics, privacy, security and regulatory aspects and take gender issues into account appropriately. The proposed solutions should be unobtrusive and avoid attention theft.

Proposals should include validation in realistic test sites, such as at home or at care centres, in order to demonstrate the expected benefits and impacts.

The proposed research and innovation actions should address one of the following international collaboration possibilities:

1. Cooperation with **Japan**

Proposals addressing international collaboration with **Japan** should ensure the use of generalized infrastructures such as cloud system and open sources.

Without limiting the use of specific applications or hardware systems, platform approaches are required to ensure interoperability and future expandability.

Proposals are recommended to foster the adoption of the existing standards (including de-facto/ consortium standards), contributions to appropriate ongoing standardization work, and suggestions of new standards by an EU-**Japan** joint consortium in order to accelerate practical introduction of the results into societies.

Proposals should be driven by the needs, interests and lifestyles of older people in order to ensure user acceptance, taking into consideration the relevant cultural aspects.

Proposals are expected to contribute to help ageing people remain active and healthy inside and outside their home, by providing action guidance and

decision support derived from personal information such as memories and action histories through progress beyond the state of the art in interaction technology and ICT.

The proposed solutions on an open-platform where data collection by sensors, data analysis by artificial intelligence and user-friendly user interfaces cooperatively work are expected to be naturally integrated into ageing people's daily life and provide emotional support to ageing people.

Proposed solutions should make use and further develop multimodal interaction including voice-based conversation and gesture in order to help ageing people by the most effective and personalized way.

An amount of EUR 4 million will be reserved for proposals focusing on cooperation with **Japan**.

2. Collaboration with Canada^[1]

In addition to the scope and challenge of this topic as defined above, proposals addressing the international collaboration with Canada need to include the use of ICT-based solutions to support smart living environments that address transitions in care challenges for ageing people. Applications should focus on the development, integration and evaluation of eHealth innovations, in collaboration with stakeholders, including eHealth industry partners^[2], clinicians, patient/family/caregivers and decision makers, in order to improve health outcomes.

In collaboration with stakeholders, applicants should consider ways to improve the quality of outcomes and the cost-effectiveness of smart living environments that support care transitions. This call supports the integration of smart living environment solutions which are ready to progress beyond the prototype stage for use into care delivery programs and undergo pragmatic evaluation. Applicants are required to use strong research designs; and should provide a clear description and justification of the proposed research methodology to be used.

Funding of the Canadian component of the proposal requires that a proposal also includes one or both of the following research areas as relevant to aging people.

Areas:

1. Changing health status or care: Individuals facing changes in their health status or living with chronic or complex health conditions. These individuals experience several handovers among health providers, institutions, hospital units and/or have a change in their care location (e.g., home vs. hospital; community care vs. tertiary care).
2. Key populations to optimize transition in care outcomes: Populations at increased risk of adverse transition in care outcomes include but not limited to: First Nations, Inuit and Métis Peoples; individuals residing in rural and/or remote communities; individuals who are transgender; individuals with an intersex condition; older adults and new aging populations (i.e., survivors of diseases/conditions that previously led to

early death); new immigrants; and those who experience systemic, cultural and/or language barriers.

The consortium should also have the capacity to:

- Establish productive partnerships with eHealth innovation industries to co-design eHealth-enabled smart living environments to improve transitions in care;
- Evaluate the impact, efficiency, and cost-effectiveness of eHealth innovations in addressing gaps and inefficiencies using smart living environments in servicing the identified research areas. The evaluation will utilize rigorous research design(s) to generate high-quality (valid and reliable) evidence that will assist in the subsequent spread and scale (sharing) of successful innovations; and
- Integrate successful eHealth innovations into care delivery programs and promote their uptake and use to support effective and efficient smart living environments.

Example of potential topics may include, but are not limited to the following:

- Ageing patients/survivors patients with acute, chronic or complex health conditions that are transitioning from hospital to home and supported by Information and Communication technology (ICT)-based solution (i.e. sensors monitoring their vitals and providing feedback to themselves and providers).
- Ageing patients/survivors of chronic conditions transitioning into a smart living long-term care facility.
- Implementing smart living environments for managing care transitions of ageing people within different culture and social groups, and/or geographic regions.
- Evaluation of smart living environment solutions that address transition in care challenges for ageing patients with the capability to progress beyond prototype stage, into care delivery programs for pragmatic evaluation. In alignment with the CIHR Sex, Gender and Health Research policy^[3], all proposals requesting funding from the CIHR are expected to consider how sex and/or gender might shape eHealth innovations to support transitions in care for ageing populations.

An amount of EUR 4 million will be reserved for proposals focusing on cooperation with Canada^[4].

At least one proposal collaborating with **Japan** and at least one proposal collaborating with Canada should be funded under this action. The evaluation of proposals will be jointly carried out by the Commission and the relevant **Japanese** and Canadian funding organisations as applicable.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Participation of SMEs is encouraged.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one organisation as partner in the consortium from **Japan**^[5] or Canada^[6].

Expected Impact: The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Independent living, and quality of life of older persons compared to current state of the art;
- Usefulness and effectiveness of personalized recommendations and follow-up in terms of the goals of preserving physical, cognitive, mental and social well-being for as long as possible;
- Evidence of user-centred design and innovation, effective ways of human computer interaction, and user acceptance;
- Fostering social participation and reducing social exclusion's risks;
- Validation of non-obtrusive technology for physical, cognitive, social and mental well-being;
- Strengthened international cooperation in Research and Innovation on ICT for AHA.

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

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- [1] This collaboration is a component of the CIHR Transitions in Care Initiative, one of CIHR's multi-Institute Initiatives. This multi-Institute Initiative is led by the Canadian Institutes of Health Research (CIHR), and includes a number of dedicated funding opportunities focused on supporting research that aims to transform the Canadian health system to optimize the outcomes of patients experiencing transitions in care.
 - [2] In Canada small-to-medium enterprises (SMEs) are the primary driver of innovation in most industrial sectors, including eHealth. Team grants are intended to foster an alignment of funding and incentives with SME funding and support agencies at the federal, provincial, territorial and regional levels, as well as with national and multi-national industries. As such, eHealth Innovation partners are targeted towards (but not limited to) Canadian SMEs and foreign subsidiaries in the digital health care/medtech sector.
 - [3] Applicants are encouraged to visit the CIHR sex- and gender-based analysis resource page for more information on key considerations for the appropriate integration of sex and gender in their proposal.
 - [4] In addition, the total amount available to the Canadian component of the team focusing on cooperation with Europe is expected to be CAD \$1,920,000, enough to fund up to two (2) grants. The maximum CIHR amount per grant is \$240,000 per year for up to four (4) years for a total of \$960,000, per grant. Of note, Canadian applicants must secure partnership contributions equivalent to a minimum of 30% of the total grant amount requested, with a minimum of half (15%) of the amount must represent a cash contribution (i.e., a total of \$288,000 partner match required per grant with a minimum of \$144,000 as a cash contribution per grant), for a total grant value of up to \$1.248 million per grant over four (4) years.
 - [5] Funding is expected to be made available in **Japan** by the Ministry of Internal Affairs and Communication (MIC) and/or the National Institute of Information and Communications Technology (NICT).
 - [6] Funding is expected to be made available in Canada by the Canadian Institutes of Health Research (CIHR)

Horizon 2020 Pillar: Societal Challenges

Programme: Food security, sustainable agriculture and forestry, marine and maritime and inland water research

Call Title: Blue Growth

Call Identifier: h2020-bg-2018-2020

Topic Title: The Future of Seas and Oceans Flagship Initiative

Topic Identifier: BG-07-2019-2020

Type of Action: IA-LS Innovation action Lump Sum

Deadline(s): 22.01.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/bg-07-2019-2020>

Specific Challenges: Our future is intimately linked to the future of the seas, oceans and coasts. The seas, oceans and coasts provide multiple ecosystem services and a wealth of resources, influence climate and provide many economic opportunities. To fully profit from the seas and oceans also in the future, we have to preserve those valuable resources and ensure that their exploitation is sustainable. Furthermore, without appropriate ocean observations for forecasting and for the protection of property and human activities, the global economy would lose hundreds of billions of euros annually. For this, we need to have the technologies for observations, integrated ocean observing systems, data management systems, and appropriate models and services. This action will contribute to make ocean observations and data management in European seas and the Atlantic Ocean fit for the future, in line with the **G7** Future of the Oceans Initiative (Tsukuba Communiqué of the **G7** Science Ministers^[1]). It will also support the Collaborative Research Action on Oceans of the **Belmont Forum**^[2] and the International Ocean Governance Communication^[3]. Similarly, ocean observation data must be available to effectively address local, national and global challenges such as the forecasting of ocean conditions and climate change, to take stock of biomass and biodiversity, to mitigate the impact of climate change and ocean acidification, to ensure food security and food safety (also in fresh water), and to contribute to the UN 2030 Sustainable Development Agenda, notably UN SDGs 2, 13, 14 and 15, and monitoring their targets for 2020 and 2025.

Scope: Proposals shall address the following sub-topic: technologies for observations (in 2020). Actions shall demonstrate integration, capacity and (scientific, economic

etc) potential. They shall complement and build on existing observation tools and systems such as EuroGOOS/EOOS, IOOS, GEO/GEOSS, COPERNICUS Marine Service or EMODnet, European research infrastructures such as Euro-Argo ERIC and EMSO ERIC as well as funded H2020 projects such as SeaDataCloud^[5]. The interdisciplinary and cross-sectorial nature of the proposal should also apply to training activities improving the professional skills and competencies of workers and supporting the creation of new jobs in the blue economy.

[C] 2020 - Technologies for observations

Proposals shall address

- i) the demonstration of new and innovative technologies to measure the Essential Ocean Variables (EOV) at all depths, and
- ii) sensors to measure variables for aquaculture, fisheries, micro and nanoplastics, and marine litter and micro-litter,
- iii) the demonstration of novel approaches to observe the ocean with multiple underwater, surface, and air vehicles (surface and air vehicles are optional, but underwater must always be included) with a view to realizing the digital ocean. Optional air vehicles could potentially, among others, contribute to the development of fully documented fisheries.

Sensors should measure in-situ biogeochemical and biological EOVs and may include new or emerging EOVs (possibly defined at OceanObs19^[20] or those needed for MSFD Descriptors) as well as technologies needed for “augmented” observatories (i.e. genome-enabled multidisciplinary observatories) to allow deeper investigation of marine biology and ecology and as sites to test the new technology. Demonstrations to advance deep sea oceanography, notably biological oceanography, by combinations of fleets of gliders, fixed stations, research vessels, etc. should reach TRL 6 or higher. Proposals may also cover the standards, protocols and communications needed for the observations, for open access to data, standards for data management and communication. Activities to transfer technologies from other sectors (for example combinations with data from satellites) will also be considered. The proposals shall also address issues such as low-power, miniaturisation, modularity, interoperability and low-cost. The proposals shall take agreed standards (for example Open Geospatial Consortium standards) into account. The development of new vehicles or other platforms are excluded from this call. Data collected (except data for testing) must be prepared in line with commonly agreed standards and be made available in a form suitable for EMODnet and clouds.

This topic is in support of the European Strategy for Plastics in a Circular Economy. Selected projects under this topic as well as projects selected under other topics in H2020 supporting the Plastics Strategy are strongly encouraged to participate in joint activities as appropriate. These joint activities could take the form of clustering of projects, participation in workshops, common exploitation and dissemination etc. The projects should describe how they will be complementary with already existing relevant national activities or other multilateral activities funded by the EU or funded jointly by several Member

States. The proposals are expected to demonstrate support to common coordination and dissemination activities. Therefore, the proposals should foresee a dedicated work package for this purpose and earmark appropriate resources. Further details of these coordination activities will be defined during the grant preparation phase with the Commission.

Please note that this topic is part of the lump sum funding pilot scheme. Funding for grants awarded under this topic will take the form of lump sums as defined in Commission Decision C(2017)7151 of 27 October 2017. Details of the lump sum funding pilot scheme are published on the Funding and Tender Portal together with the specific Model Grant Agreement for Lump Sums applicable.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 9 million for sub-topic [C] would allow this specific challenge to be adequately addressed. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact: Contributing to the ongoing implementation of the Galway and Belém Statements and of EU policies such as the EU Bioeconomy Strategy, the Circular Economy Strategy, the European Open Science Cloud Initiative, the Blue Growth Strategy, the Common Fisheries Policy, the EU Maritime Spatial Planning Directive, the Marine Strategy Framework Directive, the International Ocean Governance Communication and the UN Sustainable Development Goals, activities will:

In the short-term:

- Support the implementation of the G7 Future of the Seas and Oceans initiative, the Paris Climate Agreement, the UN Decade of Ocean Science for Sustainable Development, and the needs of the Marine Strategy Framework Directive.
- Achieve at least TRL 6 for ocean observations' systems and tools (sub-topic B and C).
- Contribute to regularly measure 50% of biological and biogeochemical EOVS, including in the sea below 2000 m, and predict negative impacts of ocean acidification and other selected stressors to take timely preventive measures, notably to protect aquaculture resources (sub-topic B and C).
- Lay the foundations for and contribute to the sustainable management and protection of marine and coastal ecosystems to avoid significant adverse impacts (UN SDG 14).

In the medium-term:

- Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health (UN SDG 14).
- Improve forecasting of climate changes, weather and ocean conditions to protect human activities, in support of UN SDG 14 and other relevant goals, and of the objectives of related conventions (for example on biodiversity).

- Shorten the time span between research and innovation and foster economic value in the blue economy.
- Improve the professional skills and competences of those working and being trained to work within the blue economy and in the context of open data sharing.
- Contribute to policymaking in research, innovation and technology.
- Increase data sharing and increase integration of data.
- Contribute to determining the distribution and fate of marine litter and microplastics (sub-topic C).

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

[1] <http://www8.cao.go.jp/cstp/english/others/20160517communique.pdf>

[2] **Belmont Forum** <https://www.belmontforum.org/>

[3] (JOIN(2016) 49)

[5] This will also include mutual feedback processes with the Copernicus Programme and other relevant actions such as those undertaken by IOC/IODE or the Marine Environment Monitoring Service. See topic DT-SFS-27-2019 under this Work Programme's SC2 Sustainable Food Security Call. European Research and Innovation for Food and Nutrition Security, SWD(2016)319. <http://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-319-F1-EN-MAIN.PDF>

[20] <https://www.oceanobs19.net/>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Food security, sustainable agriculture and forestry, marine and maritime and inland water research
Call Title:	Sustainable Food Security
Call Identifier:	h2020-sfs-2018-2020
Topic Title:	Healthy terrestrial livestock microbial ecosystems for sustainable production
Topic Identifier:	SFS-02-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	22.01.2020, 08.09.2020 (two-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sfs-02-2020>

Specific Challenges: Research is increasingly paying attention to the importance of interactions between the animal host and microbiota and their effects on the production efficiency, and the health and welfare of animals. These interactions are highly dynamic and influenced not only by genetics, but also by external factors such as environment, nutrition/feeding and management. Recent developments in omics science and technologies have opened new avenues for understanding not only the biology and genetics of animals, but also the ecosystems in which they function and those which they harbour, i.e. microbiomes. This is particularly relevant for micro-organisms that are currently non-culturable. Research on the interplay between the animals and their microbial ecosystems is needed to contribute to the improvement of sustainable livestock production.

Scope: Activities shall address relevant microbial ecosystems of terrestrial livestock, and their effects on the production, health and welfare of animals. They should look in a balanced way at the characterisation of microbial ecosystems (including microbial communities and microbe-derived metabolites), assessing variability within and between breeds in relation to variability of production systems and diet; at microbial behaviour (e.g. interactions between microbiota, evolution with age of animals, transmission); at microbial functions and interactions with host, environment and management practices, including feeding where relevant; and at possible ways in which those ecosystems can be managed, including socio-economic aspects, in order to reduce environmental impact, improve production and its quality, and/or health in particular during challenging periods

such as early life, weaning or after disturbances. Activities will include the incorporation of data on microbial ecosystems in the models used to analyse phenotypic variability and to perform genetic evaluations. The activities shall address either ruminants, or monogastrics. Gut microbiome of pigs or poultry can be addressed only in so far as the activities are complementary to those in related projects selected under LC-SFS-03-2018. Proposals may cover one or more species and one or more microbial ecosystem.

Research on anti-microbial resistance can be included as long as it is not the main objective of the project (see topic SFS-12-2018/2019). Research on single animal pathogens is not the focus of the topic. The projects are encouraged to interact as appropriate with relevant collaborative projects in Europe as appropriate and with international initiatives such as the rumen microbial genomics network of the **Global Research Alliance on Agricultural Greenhouse Gases**^[1].

The Commission considers that proposals requesting a contribution from the EU of up to 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. Funding will allow support for at least one project relating to ruminants and one to monogastrics.

Expected Impact: Funded activities will contribute to deciphering the characteristics and functions of the livestock microbial ecosystems and understand the ways in which they influence production, health and/or welfare of animals. They will provide standardised methodologies for further application in livestock production to the greatest extent possible, including socio-economic aspects.

In the short- to medium term, the application of the knowledge and solutions developed will, as appropriate:

- enable inclusion of data on microbial ecosystems in the models used to analyse phenotypic variability and to perform genetic evaluations;
- improve resource use and environmental impact of terrestrial livestock production;
- improve robustness and health of terrestrial livestock, in relation to productive functions;
- reinforce collaborations with initiatives in related domains to promote coherence and applicability of research on microbial ecosystems.

In the longer term, the funded activities will contribute to more resilient production systems.

Delegation Exception Footnote: This topic is part of a microbiome cluster. For complementary activities see also SC2 topics SFS-01-2018/19/20, SFS-03-2018 and BG-06-2018 on Marine Microbiomes as SC1 topic SC1-BHC-03-2018

Cross-cutting Priorities: International cooperation

^[1] <https://globalresearchalliance.org/research/livestock/networks/rumen-microbial-genomics-network>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Secure, clean and efficient energy
Call Title:	Competitive, low carbon and circular industries
Call Identifier:	h2020-low-carbon-circular-industries-2020
Topic Title:	Low carbon industrial production using CCUS
Topic Identifier:	LC-SC3-NZE-5-2020
Type of Action:	IA Innovation action
Deadline(s):	01.09.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-sc3-nze-5-2020>

Specific Challenges: CCUS in industrial applications faces significant challenges due to its high cost and the fierce international competition in the sectors concerned. However, these sectors currently account for 20% of global CO2 emissions, and in the 2 degree scenario, should represent half of the stored CO2 by 2050. Relevant sectors with high CO2 emissions are for example steel, iron and cement making, oil refining, gas processing, hydrogen production, biofuel production and waste incineration plants.

Scope: Projects will focus on integrating CO2 capture in industrial installations, whilst addressing the full CCUS chain. Projects will elaborate a detailed plan on how to use the results, i.e. the subsequent transport, utilisation and/or underground storage of the captured CO2. Important aspects to address are of technical (e.g. the optimised integration of capture plant with industrial processes; scalability; CO2 purity), safety (e.g. during transportation and storage), financial (e.g. cost of capture; cost of integration) and strategic nature (e.g. business models; operation and logistics of industrial clusters and networks).

Projects are expected to bring technologies to TRL 6-7 (please see part G of the General Annexes). Technology development has to be balanced by an assessment of the societal readiness towards the proposed innovations. Relevant end users and societal stakeholders will be identified in the proposal, and their concerns and needs will be analysed during the project using appropriate techniques and methods from the social sciences and humanities, in order to create awareness, gain feedback on societal impact and advancing society's readiness for the proposed solutions. Projects should also explore the socio-economic and political barriers to acceptance and awareness with a view to regulatory or policy initiatives.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with relevant **Mission Innovation**^[1] countries such as China^[2].

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction of this part of the Work Programme.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 15 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: Successful, safe and economic demonstration of integrated-chain CCUS from relevant industrial sources such as mentioned in the specific challenge will accelerate the learning, drive down the cost and thus help break the link between economic growth and the demand for industrial output on one hand, and increasing CO₂ emissions on the other hand. The impact of projects under this call will to a large extent be determined by the extent to which the results will be exploited, i.e. the plan on how the captured CO₂ will be actually utilised and/or stored, either in the project or planned as a future phase. This will be evaluated based on the maturity and quality of the proposed post-capture solutions. Projects under this call that are carried out in areas where there is both a high concentration of CO₂ emitting industries and a nearby capacity for geological storage are considered prime sites for hub and cluster developments, and will generate the highest impact on full-scale deployment in the medium to longer term.

Cross-cutting Priorities: Socio-economic science and humanities

[1] <http://mission-innovation.net/our-work/innovation-challenges>

[2] A Co-funding mechanism is in place in China; see <https://ec.europa.eu/programmes/horizon2020/en/news/eu-china-research-and-innovation-co-funding-mechanism-first-call-launched-china>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Secure, clean and efficient energy
Call Title:	Building a Low-Carbon, Climate Resilient Future: Secure, Clean and Efficient Energy
Call Identifier:	h2020-lc-sc3-2018-2019-2020
Topic Title:	International cooperation with Japan for Research and Innovation on advanced biofuels and alternative renewable fuels
Topic Identifier:	LC-SC3-RES-25-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	01.09.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-sc3-res-25-2020>

Specific Challenges: Disruptive conversion technologies are needed for replacing completely the use of fossil fuels in the transport and heating sectors with advanced biofuels and alternative renewable fuels. International collaboration is mutually beneficial in strategic areas where knowledge can be exchanged and Europe can obtain leadership together with its international partners.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), actions will contribute to the **Mission Innovation Challenge 4**^[1].

Scope: Proposals will aim at international cooperation with **Japan**^[2] involving **Japanese** organisations in the consortia for the development of disruptive catalytic technologies, by developing novel catalysts and linked lab-scale components/systems with significantly improved performance for conversion efficiency and specific marginal cost reduction for obtaining low-cost bioenergy carriers, non-food/feed based advanced biofuels and alternative renewable fuels (excluding hydrogen) and maximizing GHG abatement.

Proposals are expected to bring technologies to TRL 3 (please see part G of the General Annexes).

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 5 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: It is expected that the exchange of knowledge through the targeted research activities with **Japan** will progress the technology state-of-the-art and in addition it will strengthen the European and **Japanese** technology base. At the same time, it is expected that the development of renewable fuels that outperform the best fossil fuel alternatives is accelerated.

Call information:

TARGETED INTERNATIONAL COOPERATION

The following paragraphs are relevant for the entire 'Targeted international cooperation' section of the Work Programme, i.e. topics SFS-32-2018 to SFS-40-2020 inclusive.

FNSSA Africa:

In 2016 the EU-Africa High Level Policy Dialogue on science, technology and innovation (HLPD) has adopted the roadmap (Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture. Addis Ababa, 4-5 April 2016) for the EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA). In support of the implementation of the R&I Partnership on FNSSA and in line with the 'Joint communication to the European Parliament and the Council for a renewed impetus to the Africa-EU Partnership'[[JOIN (2017) 17]], a number of actions are proposed. The actions include: for pillar I of the roadmap (Sustainable intensification) a portfolio of projects (SFS-35-2019-2020 and CE-SFS-36-2020). Pillar IV of the partnership should be considered as appropriate in each proposal.

Proposals are expected to establish relevant links with other projects funded in support of the EU-Africa R&I Partnership on FNSSA, including those funded by previous Horizon 2020 work programmes and those funded by the EU's development budget.

Cross-cutting Priorities: Clean Energy, International cooperation

[1] <http://mission-innovation.net/our-work/innovation-challenges/sustainable-biofuels-challenge/>

[2] The **Japan** Science and Technology Agency (JST) is the expected funding **Japanese** authority

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	2018-2020 Digitising and Transforming European Industry and Services: Automated Road Transport
Call Identifier:	h2020-dt-art-2018-2019-2020
Topic Title:	Efficient and safe connected and automated heavy-duty vehicles in real logistics operations
Topic Identifier:	DT-ART-05-2020
Type of Action:	IA Innovation action
Deadline(s):	21.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/dt-art-05-2020
Specific Challenges:	<p>Connected and automated driving systems for heavy commercial vehicles have great potential to bring a disruptive change to the trucking industry, fleet operators and the whole logistics sector. They can improve safety and efficiency of freight transport and make vehicle operations more comfortable. Fuel efficiency gains can be achieved through automated truck operations, such as platooning. Various automated trucks and truck platooning concepts are being tested in several countries. Positive impacts can be expected when highly automated systems will be used in logistics operations going from hub to hub including both operations in mixed traffic and in confined areas.</p> <p>There are a number of specific challenges that need to be addressed before connected, cooperative and automated driving technologies for heavy commercial vehicles can be widely deployed: vehicle technologies, driver/user interaction/collaboration, vehicle-to-vehicle and vehicle-to-infrastructure communication, operational challenges in confined areas (ports, logistics terminals, consolidation centres, truck parkings, etc.) and in mixed traffic on public roads.</p>
Scope:	The focus of this topic is to develop, test and demonstrate connected and automated systems for heavy commercial vehicles in real logistics operations.
	Proposed actions should include all the following aspects:
	<ul style="list-style-type: none"> • Identify logistics operational needs and analyse new, emerging business and operating models and related technologies for efficient, high capacity and safe

- connected and automated heavy commercial vehicles (preferably low-emission vehicles) and optimised links with other parts in the logistics chain.
- Develop, design, test and validate enhanced connected and automated vehicle technologies for heavy commercial vehicles for improved perception and localisation, vehicle control, connectivity (vehicle-to-vehicle, vehicle-to-cloud and vehicle-infrastructure), system resilience and dependability, functional safety, cyber security, interoperability and system cost optimization, reduced emissions and fuel consumption at fleet level.
 - Test and demonstrate innovative, efficient and safe connected and automated heavy commercial vehicles for real logistics operations on hub-to-hub corridors, on open roads in mixed traffic or in confined areas addressing mixed traffic capabilities to prepare for operation in real road conditions.
 - Enhanced interaction between connected and automated heavy commercial vehicles and their users and other (vulnerable) road users. Innovative services for automated freight logistics of individual transport units.

A cost-benefit analysis will demonstrate the added value and economic viability of automated systems in real logistics operations for users and stakeholders.

The active involvement of shippers, freight forwarders and truck manufacturers is strongly encouraged. The cooperation with organisations linked to actions of the TEN-T network is encouraged.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should foresee cooperation with projects or partners from the US, **Japan**, South Korea, Singapore and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies. Twinning with **Japan** is also encouraged.

The Commission considers that proposals requesting a contribution from the EU between EUR 15 and 20 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 contribute to the accelerated deployment of innovative connected and automated freight transport solutions in Europe. Actions will show that they will help to increase the overall safety and efficiency of freight operations of individual trucks or fleets (emissions/freight ratio, fuel consumption, road occupancy, vehicle utilization, capacity of transport network) in confined areas and in mixed traffic (hub to hub) through innovative connected and automated driving systems. Actions will show the uptake of new business models and seek to reach a total cost reduction of operations and logistics and supply chain leading to improved competitiveness of the European transport and logistics industry.

Cross-cutting Priorities: International cooperation

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	2018-2020 Digitising and Transforming European Industry and Services: Automated Road Transport
Call Identifier:	h2020-dt-art-2018-2019-2020
Topic Title:	Large-scale, cross-border demonstration of connected and highly automated driving functions for passenger cars
Topic Identifier:	DT-ART-06-2020
Type of Action:	IA Innovation action
Deadline(s):	21.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/dt-art-06-2020
Specific Challenges:	<p>Significant progress has been made in developing technologies for connected and automated driving in Europe and many large-scale demonstration projects are already ongoing. Automated driving functions for passenger cars at SAE Level 3^[1], such as Traffic Jam Chauffeur or Highway Chauffeur, are expected to be introduced into the market from 2020 onwards.</p> <p>However, several challenges remain, in particular for highly automated vehicles, before we will see them on the roads. Highly automated vehicles must achieve very high levels of availability and effectiveness of the vehicle functions and their performance has to be better compared to the performance of human drivers. Based on ongoing demonstration pilots, new large scale, cross-border corridor projects for highly automated driving systems are needed to ensure that no new risks are introduced and to study user and customer expectations and acceptance, market potentials and risks.</p>
Scope:	<p>The proposed actions should include all the following aspects:</p> <ul style="list-style-type: none"> • Demonstrate the robustness and reliability (functional safety) and user acceptance of connected and highly automated driving technologies and systems for passenger cars (SAE level 4[2]) for different use cases in particularly challenging and complex environments that are expected to be introduced into the market after 2020. • Test innovative connectivity technologies for connected and automated driving since communication and cooperation of automated vehicles with other vehicles, infrastructure and other road users has the potential to increase the safety, comfort, productivity and the enabling of innovative

business models of automated vehicles and to improve the efficiency of the overall transport system.

- The use of the European Global Navigation Satellite Systems (Galileo and EGNOS) should be encouraged to achieve the full potential of advanced satellite positioning for automated driving functions.
- Optimised use of digital technologies such as the Internet of Things, Artificial Intelligence and Big Data for automation should be considered.
- Conduct cross-border demonstrations to ensure that new services and systems are compatible and interoperable at European level, to optimise the use of digital technologies for automation between countries, to coordinate investments towards reliable communication coverage and to exploit the full potential of hybrid communications between short-range and long-range technologies and technologies within the 5.9 GHz spectrum band.
- Develop and test solutions for smooth communication and interaction between automated vehicles and their users and other (vulnerable) road users, taking into account gender differences, when relevant.
- Holistic concept for cybersecurity to protect automated driving systems (and its connectivity points) to avoid any (conscious) manipulations of the information enabling automated driving functions and to assure confidentiality, availability and integrity of data. This concept should also include the protection of the information collected by the automated vehicles and the external data transferred to the vehicles. Provide support to the development of testing and validation procedures of connected and automated driving functions, including their performance related to cybersecurity.
- Evaluate effects of connected, cooperative and highly automated driving systems on transport system efficiency, safety, security, environment as well as on user behaviour and user acceptance, taking into account gender differences and other intersectionalities, when relevant.

Lessons learned (data, knowledge and experiences from the project, including disengagements and edge cases) should be provided. Consortia should commit to make the data collected during the pilots available through common data sharing frameworks in order to foster further research.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should foresee cooperation with projects or partners from the US, **Japan**, South Korea, Singapore, and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies. Twinning with **Japan** is also encouraged.

The Commission considers that proposals requesting a contribution from the EU between EUR 15 and 30 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 demonstrate at large-scale the technological readiness, reliability and safety of the connected and highly automated driving functions for different use cases in particularly challenging

and complex environments. They will show that highly automated driving systems for passenger vehicles can increase road safety and transport efficiency, reduce energy use, pollutant emissions and traffic congestions, and therefore support climate action and sustainable development objectives. Better protection of connected and automated vehicles against any type of cyber threats to guarantee safe operations. Actions will seek to improve user acceptance of innovative connected and highly automated driving systems and the uptake of new business models. They will contribute to a better understanding of viable business and operating models that could lead to private and/or public private investments in communication infrastructure.

Cross-cutting Priorities: International cooperation

[1] Definition of SAE Level 3 – Conditional Automation – "the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, with the expectation that the human driver will respond appropriately to a request to intervene", according to the SAE International's standard J3016.

[1][2] Definition of SAE Level 4 – High Automation: "the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene", according to the SAE International's standard J3016.

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	Building a low-carbon, climate resilient future: Green Vehicles
Call Identifier:	h2020-lc-gv-2018-2019-2020
Topic Title:	Setting up a common European research and innovation strategy for the future of road transport
Topic Identifier:	LC-GV-09-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	21.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-gv-09-2020
Specific Challenges:	<p>The objective of this topic is to define R&D roadmaps for a sustainable and efficient road transport system in Europe. It calls for a Coordination and Support Action to support ERTRAC (the European Technology Platform for Road Transport), future Partnerships relevant to road transport in Horizon Europe and the European Commission in defining the research needs for their upcoming research and innovation programmes, and by then helping to achieve the targets set at EU and global level (EU Transport White Paper, COP21 for decarbonisation, etc.).</p> <p>International cooperation with developing and emerging economies should also be developed in order to increase efficient mobility for all, reduce local (air and noise) and CO2 emissions, and tackle health and safety issues, and increase attractiveness and competitiveness in particular in urban areas.</p>
Scope:	<p>Proposals should take a comprehensive approach ranging from components up to system integration, and include enabling technologies where relevant. Both passenger mobility and freight transport should be addressed and covering urban mobility as well as inter-urban and long-distance transport. They should address all the following aspects:</p> <ul style="list-style-type: none"> • Updating of research agendas and roadmaps developed by the European Technology Platform ERTRAC (European Road Transport Research Advisory Council) and supporting the definition of research priorities of future Horizon Europe Partnerships relevant to road transport, covering all transport research fields. • Facilitating cooperation between cities in Europe, Asia, Latin America and Africa. Actively support policy and knowledge exchange and establish a peer-

to-peer exchange and capacity building programme that takes advantage of the results of a large number of relevant cities. Cooperation between EU and international projects on urban mobility. Develop implementation concepts for sustainable mobility including shared private vehicles (e.g. light-duty vehicles and 2-, and 3-wheelers), logistics (e.g. e-Trucks, cargo bikes), public transport systems (e.g. Bus Rapid Transit Systems, buses, soft modes) and new mobility services.

- Liaise with international financing institutions to foster the take-up and implementation of the concepts developed, support the European Commission in international discussions and specialised sectorial Fora related to Mobility for All, Climate Change and the New Urban Agenda. Track global progress on urban electric mobility and support UN activities, such as the Urban Electric Mobility Initiative (UEMI).

The implementation requires close collaboration with the leading European stakeholders in transport research, including vehicles manufacturers, supply industry, and research and engineering organisations, as well as strong links with other relevant European initiatives and associations. In line with the strategy for EU international cooperation in research and innovation, international cooperation is encouraged with key emerging countries, in particular with **Asia**, Latin America and Africa.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.8 to 1 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: This action will bring together the leading European stakeholders in road transport research to develop roadmaps and support international cooperation. It will contribute to a further harmonisation of research and innovation, and therefore contribute to the European Research Area, in particular also in the view of innovation, as well as to the European strategies for a future transport system.

Proposals are expected to contribute to:

- The objective of the European Union for climate action and sustainable development.
- The objectives set by the Paris Agreement (COP21) and the New Urban Agenda.
- The fulfilment of post 2020 emission targets in road transport (at least 30% by 2030 compared to 2021)
- The EU's long-term goal of moving close to zero fatalities and serious injuries by 2050 ("Vision Zero")
- UN's Sustainable Development Goals 11 "Sustainable cities and communities" (with particular attention to 11.2) and 13 "Climate Action"
- Strengthening the collaboration of the European Union with **Asia**, Latin America and Africa.

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	2018-2020 Mobility for Growth
Call Identifier:	h2020-mg-2018-2019-2020
Topic Title:	Towards global environmental regulation of supersonic aviation
Topic Identifier:	LC-MG-1-15-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	21.04.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-mg-1-15-2020
Specific Challenges:	<p>This action is part of the Aviation International Cooperation Flagship called "Safer and Greener Aviation in a Smaller World" mentioned in the introduction to this work programme 2018-2020.</p> <p>Accelerated public and privately-funded development and demonstration efforts in the US, over the last years, aim towards the introduction of new commercial supersonic aircraft as early as 2020-2022. In parallel, the FAA Reauthorization Act of 2018 directs the Federal Aviation Administration (FAA) to take a leadership role in creating federal and international policies, regulations, and standards to certify safe and efficient civil supersonic aircraft operations. Other countries such as Japan and Russia are also investing in research on commercial supersonic aircraft.</p> <p>The International Civil Aviation Organisation (ICAO) Assembly Resolution A39-1 instructs the Council to review its Annexes so as to ensure that they take due account of the problems that the operation of supersonic aircraft may create for the public. In response to this Resolution, the Committee on Aviation Environmental Protection (CAEP) is in the process of developing environmental standards and recommended practices (SARPs) under Annex 16. In October 2018 Austria on behalf of the European Union, of all EU Member States, of other Member States of the European Civil Aviation Conference and of Eurocontrol, submitted a working paper at ICAO (AN-Conf/13-WP/211)^[1]. This European working paper presents the European views on the subject and urges a holistic environmental approach (noise and emissions) before considering the introduction of supersonic aircraft into the global air navigation system.</p>

In response to this European working paper, the challenge for the EU is to act promptly and shape together with the International community high environmental standards in line with ICAO Assembly Resolution A39-1. Research is needed for better understanding the combined and interdependent environmental impacts of potential supersonic aviation on citizens, as well as on the European and international regulatory and certification processes.

The EU should remain a decisive player for thorough development of ICAO noise and emissions standards setting (CO₂ and air pollutants). This topic supports this objective by developing expertise at European and international level.

Leveraging resources with international partners can help, on the one hand, in shaping the new global regulations in line with EU's climate change Long Term Strategy, and on the other hand, in sharing costs, risks and benefits, as well as in ensuring a level playing field.

- Scope:** Proposals should timely assess the holistic environmental impact of potential supersonic aviation and provide evidence for public acceptance long with suitable international high environmental standards. Proposals should take into consideration the results achieved within the EU projects FP6 HISAC^[2] (Environmentally friendly high-speed aircraft) and Horizon 2020 RUMBLE^[3] (Regulation and norm for low sonic boom levels). Proposals should also include the latest technological developments and explore potential solutions beyond the state-of-the-art, contributing to two or more of the following areas:
- Advance further high-fidelity environmental modelling integrated into multi-disciplinary optimization of supersonic aircraft, trajectories and operations.
 - Assess and explore physics-based pathways to decrease noise and emissions at airport/local and global level (i.e. CO₂, NO_x, water vapour as well as their impact to ozone concentration in the stratosphere). Assess their impacts to trajectory optimization and aeropropulsion technologies to further reduce sonic-boom level and emissions.
 - Quantify the efficiency of sonic boom shaping in terms of various boom effects, and not only in terms of noise (e.g. sleep disturbance).
 - Explore further the characterisation of indoor boom annoyance (relevant metrics, measurements devices and locations), in collaboration with EASA and other national and international agencies.
 - Quantify sonic boom variability due to meteorology, turbulence, urban environment and buildings and address the development of certification processes that take into consideration the stochastic nature of sonic boom.
 - Develop at European or International level, accepted and validated modelling tools that capture the physics of the generation and propagation of sonic booms, towards further contributing at ICAO level, according to the CAEP work programme and agenda.

The proposals may include the commitment from the European Aviation Safety Agency and European national civil aviation authorities to assist or to participate in the actions. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with countries such as the Russian Federation, United

States of America, **Japan**, Canada, Brazil, Australia and South Africa. International cooperation can include work towards the development of enabling technologies, joint tests, standards and certification, taking into account bodies such as United Nations' International Civil Aviation Organisation (ICAO).

Where applicable, proposals are encouraged to join international demonstration campaigns for noise and emissions assessments at all phases, including take-off and landing, provided that meaningful outcomes can be delivered according to CAEP work programme and agenda.

The Commission considers that proposals requesting a contribution from the EU between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting lower or higher amounts.

Expected Impact:

- Maintain high level of environmental protection, especially in terms of global and local emissions and noise.
- Ensure suitable global regulations, standards, operational procedures and recommended practices for the protection of the citizens and of the environment.
- Contribute to maintain world-class knowledge and skills in Europe in the field of civil supersonic aviation.
- Contribute to stimulate disruptive innovation in civil aviation with spin-offs into other civil aerospace segments and other civil sectors.
- Contribute to inspire and engage new generations of students and engineers.

Cross-cutting Priorities: International cooperation

[1] https://www.icao.int/Meetings/anconf13/Documents/WP/wp_211_en.pdf

[2] <https://cordis.europa.eu/project/rcn/75786/reporting/en>

[3] <https://rumble-project.eu/i/>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	2018-2020 Mobility for Growth
Call Identifier:	h2020-mg-2018-2019-2020
Topic Title:	The effects of automation on the transport labour force, future working conditions and skills requirements
Topic Identifier:	MG-2-14-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	21.04.2020 (single-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/mg-2-14-2020>

Specific Challenges: The European Commission has launched a number of initiatives, studies, workshops and conferences on the challenges and effects that digitalisation and automation in transport may have on the labour force, including on women and persons with disabilities. In road transport, studies and research projects are starting to assess on the future employment needs and the new set of skills required for automation. However, such aspects need to be further explored for all modes of transport (road, waterborne, aviation, rail), as well as in the context of urban transport, logistics and for new forms of work (for instance platform work in transport).

In particular, action is needed to ensure the preparation of a comprehensive, evidence-based, action-oriented, appropriate agenda to tackle the identified challenges. This would also require the investigation of gaps and barriers, which could potentially impede or neutralise any positive effects expected from automation. For this purpose, in order to successfully address this challenge, it is key to have a strong involvement and engagement of all relevant European stakeholders, including European, national and regional social partners^[1] (representing employers and workers) and EU Member States.

Attention should also be given to the collaboration with non-EU stakeholders where relevant, in order to solve common challenges, leverage resources, and establish long-term relationships.

Scope: Proposals shall address all of the following areas:

- Assess the impacts of automation and connectivity in all modes of transport on the labour market as a whole, focusing on both direct effects on the transport workforce and indirect / induced effects in other sectors.
- Review past/contemporary experiences from other automation-driven transitions to derive best practices in the transfer of lessons learned between different environments and social contexts.
- Review and analyse recommendations/contributions from past/ongoing related studies, activities and H2020 R&I projects. Identify and prioritise relevant targets and elaborate an action-oriented agenda aiming to achieve at least an overall neutral impact of automation at the level of the entire economy.
- Activate the wider engagement of the social partners and EU Member States in order to validate the agenda, as well as increase their participation and involvement in the implementation of identified actions. Develop an appropriate framework to foster collaboration and exchange of best practices at EU, national and regional level.
- Provide a forum for EU and international stakeholders (as appropriate) in this field to exchange experiences and knowledge on the effects of transport automation on the workforce and future skills and discuss future challenges. Organise conferences and workshops in this area.

Proposed actions should build on the knowledge and results of past and/or ongoing EU-funded projects (such as SKILLFUL), addressing the socio-economic impacts of automation in transport and/or undertaking related reviews of transport jobs and future skills requirements.

In line with the Union's strategy for international cooperation in research and automation, international cooperation is encouraged. In particular, proposal should consider cooperation with projects or partners from Canada, Japan and the US.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 2.5 million would allow the specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Demonstrate the expected impacts of automation and connectivity in all modes of transport on the labour market as a whole
- Inform, mobilise and engage all relevant European stakeholders, including the European, national and regional social partners and EU Member States, in an active dialogue on the socio-economic effects of automation on the present and future transportation workforce
- Minimise any potential negative effects of automation on the transport labour force
- Demonstrate the potential to achieve at least an overall neutral impact of automation for the entire society and economy.

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

[1] <https://ec.europa.eu/social/main.jsp?langId=en&catId=329>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Climate action, environment, resource efficiency and raw materials
Call Title:	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
Call Identifier:	h2020-lc-cla-2018-2019-2020
Topic Title:	Polar climate: understanding the polar processes in a global context in the Arctic and Antarctic Regions
Topic Identifier:	LC-CLA-17-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	13.02.2020, 03.09.2020 (two-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-17-2020>

Specific Challenges: Many of the natural physical processes occurring in the polar atmosphere and oceans are potentially of profound significance in controlling conditions across the globe and affecting lives and livelihoods across the world, in the Polar, sub-Polar, temperate, and tropical regions. Understanding the interacting nature and feedback of polar processes and addressing their consequences in a global context will benefit the people, policy and businesses well beyond the Polar Regions.

Scope: Proposals should aim at developing innovative approaches, building on existing data resources and infrastructures, the latest observational products (including in-situ observations), and state-of-the-art climate models, to assess the key physical and chemical processes in the ocean and atmosphere and the key ocean-atmosphere-ice interactions. Proposals should cooperate with relevant projects funded by the ESA Earth Observation Programme. In addition, they are encouraged to join the EU Arctic Cluster in order to build synergies and maximise the complementarity of the different actions in the Cluster. Proposals should build upon previous actions funded under Horizon 2020 and avoid duplication or overlap.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with countries – beyond the EU Member States and countries associated to Horizon 2020 – that took part in the Arctic Science Ministerial meetings of 28 September 2016 and 25-26 October 2018^[1].

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 7-8 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 project results are expected to contribute to:

- improved understanding of how the changing polar climate systems affect and are affected by lower latitudes through ocean and atmospheric circulation;
- improved understanding of the key ocean-atmosphere-ice interactions;
- improved understanding of the fully coupled physical climate system (atmosphere-ocean-ice) on diverse space and time scales;
- improved understanding of the key physical and chemical processes in the ocean and in the atmosphere;
- improved projections of future polar and global climate, including feedbacks and impacts
- improved capability to respond to the impact of climatic change on the environment and human activities in the Polar Regions (with a focus on the Arctic), both in the short and longer term;
- the IPCC scientific assessments, the consolidation phase of the Year Of Polar Prediction (YOPP) and to the Copernicus Climate Change (C3S) services.
- supporting the assessment of regional climate impacts.

Cross-cutting Priorities: International cooperation, Blue Growth

[1] i.e. the United States of America, Canada, the People's Republic of China, Japan, the Russian Federation, South Korea, New Zealand, India, Singapore, and Greenland; see <https://www.arcticscience ministerial.org/en>

Horizon 2020 Pillar: Societal Challenges

Programme: Climate action, environment, resource efficiency and raw materials

Call Title: Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement

Call Identifier: h2020-lc-cla-2018-2019-2020

Topic Title: Supporting the implementation of GEOSS in the Arctic in collaboration with Copernicus

Topic Identifier: LC-CLA-20-2020

Type of Action: RIA Research and Innovation action

Deadline(s): 13.02.2020, 03.09.2020 (two-stage)

Participant Portal Weblink:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-20-2020>

Specific Challenges: In order to gain more insight in the fast rate of climate, ecological and environmental change taking place in the Arctic and to facilitate well-informed decisions, there is a need to develop coordinated Earth observations and information services specifically targeting this region, also building on the essential contribution of indigenous knowledge and community-based monitoring systems. These observations and services need to be delivered in order to support a sustainable development in the Arctic, particularly for responding to the needs of the people who live there. Observations and services are also necessary to improve the monitoring and predicting capabilities on changes that may affect other parts of the planet, and in particular the Northern hemisphere. The challenge and suitable actions to alleviate adverse consequences were identified in the 2nd Arctic Science Ministerial Joint Statement of Ministers.^[1]

Scope: The action should aim at:

- (i) advancing the operationalisation of an integrated pan-Arctic Observing System in preparation for a possible future ArcticGEOSS initiative;
- (ii) improving and extending the terrestrial, marine and cryospheric in-situ measurements and the community-based monitoring systems necessary for the monitoring of the Arctic;
- (iii) setting up pilot services and implementing the coordinated network of those services necessary for the adaptation to climate change in the region;

- (iv) contributing to the interoperability of Arctic Data systems; and
- (v) to make a positive contribution to national, regional and international decision-making processes and science strategies.

The action should help to build an Arctic "window"^[2] of Copernicus by bringing together all Arctic relevant observations deriving from different Copernicus services and promoting access to relevant Copernicus datasets.

The action should coordinate with projects stemming from the NSFs Arctic portfolio, such as the "Navigating the New Arctic" programme, and other actions of the Transatlantic Ocean Research Alliance, by establishing joint operational activities, in order to support the mission and objectives of the international initiative on Arctic observations brought forward by the Sustaining Arctic Observing Networks (SAON).

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with the countries and Indigenous Peoples organisations participating in the 2nd Arctic Science Ministerial^[3].

The action should build on the outcomes of previous EU-funded projects in the framework of GEO and Copernicus, create synergies and avoiding un-necessary duplications also by joining the EU Arctic Research Cluster. Likewise, the action should cooperate with relevant projects funded by the ESA Earth Observation Programme. To this end, proposals should foresee a dedicated work package and /or task and earmark the appropriate resources accordingly.

The pilot services should fall into the scope of EuroGEOSS and follow the direction of the EuroGEOSS initiative. Data and services produced through the projects should be registered in the GEOSS Common Infrastructure (GCI).

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 15 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 project results are expected to contribute to:

- the implementations the GEO-Cold Region Initiative with a specific emphasis on the Arctic, and the initiating of an ArcticGEOSS initiative;
- sound and effective decision-making by policy makers in the Arctic regions through the use of reliable and science-based Earth observation and information;
- supporting of the 2030 Agenda for Sustainable Development, the Paris Agreement and Sendai Framework for Disaster Risk Reduction 2015-2030;
- strengthening Earth observation capacity focused on the European region;
- delivering EuroGEOSS services for the Arctic;
- improved handling, archiving and interoperability of environmental data in polar regions;
- a coherent data management, through the use of GEOSS Data Management Principles and best practices (aligning with INSPIRE).

Cross-cutting Priorities: Blue Growth, International cooperation

- [1] Joint Statement of Ministers, 2nd Arctic Science Ministerial, Berlin 2018,
https://www.arcticscienceministerial.org/files/ASM2_Joint_Statement.pdf
- [2] <https://www.copernicus.eu/en/copernicus-services-information-and-sentinel-products-arctic-region>
- [3] i.e. the United States of America, Canada, the People's Republic of China, Japan, the Russian Federation, South Korea, New Zealand, India, Singapore, and Greenland; see <https://www.arcticscienceministerial.org/en>

Horizon 2020 Pillar:	Societal Challenges
Programme:	Climate action, environment, resource efficiency and raw materials
Call Title:	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
Call Identifier:	h2020-lc-cla-2018-2019-2020
Topic Title:	Coordination of European Polar research
Topic Identifier:	LC-CLA-21-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	13.02.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-21-2020
Specific Challenges:	<p>The EU is a major investor and player in Polar research. The EU also supports the development and the international access to research infrastructures (terrestrial research stations, remote and in-situ observing systems, research aircrafts and vessels, etc.) throughout the Polar Regions, with relevant international scientific cooperation activities with non-EU countries. Previous actions proved to be instrumental in providing the needed support and the high degree of coordination within the European landscape and beyond.</p>
Scope:	<p>Proposals should provide a platform to co-develop the strategies to advance and further coordinate the European Polar Research action and its contribution to the policy-making processes. This should include the prioritisation of research areas during transdisciplinary workshops, strategies for capacity building related to meaningful stakeholder involvement, allocation of seed money for the preparation of pre-studies and interaction with national funding agencies on ways of building synergies and optimising the use of resources. Proposals should cooperate with the relevant services of the European Commission and provide evidence-based policy advice. A special focus should be placed on supporting the implementation of sustained observation systems in the Arctic and Antarctic by setting up a European coordination office and by identifying measures to sustain it beyond the termination of the project. The office should also coordinate and support the contributions of the EU and the Associated Countries to International Arctic Science Committee (IASC), Sustaining Arctic Observing Networks (SAON), Scientific Committee on Antarctic Research (SCAR) and Southern Ocean Observing System (SOOS). Proposals should coordinate the EU</p>

Arctic Research Cluster ensuring a good cooperation between the projects in areas such as communication, dissemination, and stakeholder engagement. Proposals should build upon the previous action funded under Horizon 2020 and avoid duplications or overlaps.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 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: The project results are expected to contribute to:

- substantially advance Polar research cooperation in Europe by creating a Polar European Research Area;
- a more synergetic use of European resources;
- the policy advice at regional, national and EU level and to the support of the EU's international commitments with respect to the Arctic Council, the Montreal protocol, the UNFCCC and others related to polar sciences, such as the Antarctic Treaty System (ATS);
- improved cooperation of international polar research programmes and create the basis for the development of future large-scale joint international polar initiatives;
- the support of international scientific cooperation initiatives of the European Commission such as the **G7** Future of the Seas and Oceans initiative, Galway Statement, the Belém Statement and of the Administrative Arrangement on marine research between the European Commission and Argentina.

Cross-cutting Priorities: Blue Growth

Horizon 2020 Pillar:	Societal Challenges
Programme:	Climate action, environment, resource efficiency and raw materials
Call Title:	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
Call Identifier:	h2020-lc-cla-2018-2019-2020
Topic Title:	Enhancing the Belmont Forum Collaborative Research Action on Climate, Environment and Health
Topic Identifier:	LC-CLA-22-2020
Type of Action:	CSA Coordination and support action
Deadline(s):	13.02.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-cla-22-2020
Specific Challenges:	The EU is a major investor and player in both climate change and health research. The EU also supports global research and innovation collaboration, including that done by the Belmont Forum - a partnership of funding organisations, international science councils, and consortia committed to the advancement of interdisciplinary and transdisciplinary science. Bringing together climate change and health research has been a particular challenge in Europe that requires coordination and support. Previous similar actions proved to be instrumental in providing the necessary support and the high degree of coordination within the European landscape and beyond.
Scope:	Actions should develop and provide support mechanisms to advance and further boost the global added value of the Belmont Forum 's Collaborative Research Action (CRA) on Climate, Environment and Health and its inputs to the relevant EU policy-making processes. This should include the promotion and prioritisation of research and innovation areas during transdisciplinary conferences, meetings and workshops, capacity building related to relevant stakeholder involvement, cross-fertilisation activities amongst Belmont Forum , EU- funded and relevant nationally funded projects, synthesis of their results, with a particular focus on policy making, such as knowledge based policy briefs, dissemination, communication and outreach.
	Cooperation with relevant existing projects under Societal Challenge 1 and 5 of Horizon 2020, including relevant ongoing Coordination and Support Actions, is encouraged.

Actions should also provide support to a knowledge management platform of EU funded research and innovation on the linkages between health and climate, support the **BELMONT FORUM** Members, partners and secretariat, in relation to this CRA and support the organisation of an international conference on climate change and health.

Cooperation with the relevant services, expert groups and mechanisms of the European Commission will be required to provide evidence-based policy advice, and report on the CRA results and synthesis of their findings. Actions should also build upon EU research and innovation framework programmes and avoid duplication and overlaps.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 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: The project results are expected to:

- contribute to policy advice on climate change and health at international and EU level and supporting the EU's international commitments with respect to the Paris Agreement, UNFCCC and others related to climate change and health sciences;
- bolstering a network of projects funded under the CRA call with relevant EU-funded projects addressing climate, environment and health;
- better flow of information and knowledge dissemination on climate change, environment and health to low and medium income countries;
- raising global awareness of climate impacts on human, plant and animal health.

Horizon 2020 Pillar:	Societal Challenges
Programme:	Secure societies - Protecting freedom and security of Europe and its citizens
Call Title:	Security
Call Identifier:	h2020-su-sec-2018-2019-2020
Topic Title:	Technologies for first responders
Topic Identifier:	SU-DRS02-2018-2019-2020
Type of Action:	RIA Research and Innovation action
Deadline(s):	27.08.2020 (single-stage)
Participant Portal Weblink:	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/su-drs02-2018-2019-2020
Specific Challenges:	Resilience is critical to allow authorities to take proper measures in response to severe disasters, both natural (including climate-related extreme events) and man-made. Innovation for disaster-resilient societies may draw from novel technologies, provided that they are affordable, accepted by the citizens, and customized and implemented for the (cross-sectoral) needs of first responders.
Scope:	<p>Proposals are invited to propose novel solutions improving the protection of first responders against multiple and unexpected dangers, or enhancing their capacities by addressing related research and innovation issues, in particular:</p> <ul style="list-style-type: none"> • Sub-topic 3: [2020] Methods and guidelines for pre-hospital life support and triage <p>Development of innovative tools, methodologies and European pre-hospital guidelines for first responders of medical services, fire services and police and hospital trauma teams in order to ensure faster and more effective evaluation and control of numerous seriously injured casualties in disaster and/or emergency situations. This should take account of lessons learned from military mass-casualty techniques such as damage-control surgery. The aim is to ensure more effective pre-hospital triage of victims with appropriate digital traceability of actions and data transfer from the event to the hospital(s), including across administrative and political boundaries.</p> <p>If appropriate, proposals should demonstrate how they will build on relevant previous and on-going FP7 and/or H2020 projects.</p>

- Sub-topic: [2018-2019-2020] Open

Other technologies for use by first responders may be subject of proposals provided that they involve a large number of first responders' organisations (see eligibility and admissibility conditions.) For instance, but not exclusively: communicating and smart wearables for first responders and K9 units including light-weight energy sources; situational awareness and risk mitigation systems for first responders using UAV and robots, connected and swarms of drones; systems based on the Internet of Things; solutions based on augmented or virtual reality; systems communication solutions between first responders and victims; risk anticipation and early warning technologies; mitigation, physical response or counteracting technologies; etc.

Any novel technology or methodology under this topic should be tested and validated, not just in laboratories but also in training installations and through in-situ experimental deployment. They therefore need to be quick to deploy, bases on resilient and robust communication infrastructure. First responders, including through interdisciplinary teams (e.g. involving medical emergency services, public health authorities, law enforcement team, civil protection professionals, etc.) need to be involved in these activities. Proposals should address the participation of first responders in a systematic manner, and propose new methods on how to involve them and to organise their interaction with researchers when developing, testing, and validating technologies and methods.

Solutions are to be developed in compliance with European societal values, fundamental rights and applicable legislation, including in the area of privacy, personal data protection and free movement of persons. Societal aspects (e.g. perception of security, possible effects of technological solutions on societal resilience, gender diversity) have to be taken into account in a comprehensive and thorough manner.

In line with the objectives of the Union's strategy for international cooperation in research and innovation (COM(2012)497), international cooperation according to the current rules of participation is encouraged (but not mandatory), in particular with **Japanese** or Korean research centres. Co-funding opportunities from the **Japan** Science and Technology Agency exist for **Japanese** partners.[1] Co-funding opportunities from the Korean MSIP/NRF exist for Korean partners.[2]

The centre of gravity for technology development with actions funded under sub-topics 1,2 and open is expected to be up to TRL 4 to 6, whereas under sub-topic 3 it is expected to be up to TRL 6 to 7 – see General Annex G of the Horizon 2020 Work Programme.

The Commission considers that proposals requesting a contribution from the EU of about 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:** As a result of this action, first responders should benefit from:
- Novel tools, technologies, guidelines and methods aimed at facilitating their operations
 - New knowledge about field-validation of different tools, technologies and approaches involving first responders in (real-life) scenarios
- Cross-cutting Priorities:** International cooperation, Socio-economic science and humanities, Gender

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- [1] For more information on Japan, please consult http://www.jst.go.jp/sicp/announce_eujoint_04_GeneralInfo.html.
- [2] For more information on Korea, please consult <http://www.nrf.re.kr/eng/main> and
http://www.nrf.re.kr/biz/info/notice/view?nts_no=82388&biz_no=116&search_type=ALL&search_keyword=EU&page.

