1. FOUNDATIONS FOR TOMORROW'S INDUSTRY

Call identifier: H2020-NMBP-TO-IND-2018-2020

Call summary and aims

The purpose of this call is to lay the foundations for tomorrow's industry in Europe, and to create jobs and growth through an innovation ecosystem for the design, development, testing, and upscaling of advanced materials and nanotechnologies. This should enable a vast array of applications and facilitate innovators to bring their disruptive ideas to the market. Success will be seen in an effective eco-system allowing innovators to overcome the technological and regulatory barriers.

The call covers

Open Innovation Test Beds will provide the development and upscaling of advanced materials and nanotechnologies, combining digital, chemical and physical advances for innovative new products and services.
Advanced characterisation tools, predictive modelling of materials at different scales, and support for a framework to ensure public safety in nanotechnology.
The call is expected to create about 20 Open Innovation Test Beds for materials development and upscaling in six technology domains, four Open Innovation Test Beds for materials characterisation and four Open Innovation Test Beds for modelling, in addition to the already existing NanoSafety Platform[[http://www.nanosafetycluster.eu]]. These are expected to collaborate in order to create a European ecosystem.

The call will contribute to the focus area on Digitising and Transforming European Industry and Services, by supplying the innovation test beds for upscaling, characterisation and modelling that will complement the digital innovation hubs.

Proposals for Research and Innovation Actions and Innovation Actions submitted under this call should include a business case and exploitation strategy, as outlined in the Introduction to the LEIT part of this Work Programme except for topics under chapter 1.3.

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.

Proposals are invited against the following topic(s):

NMBP-13-2018

NMBP-14-2018

NMBP-15-2019

NMBP-16-2020

NMBP-17-2020

Topic	Budget (EUR) - Year : 2018	Budget (EUR) - Year : 2019	Stages	Opening date	Deadline
NMBP-15-2019 - RIA Research and Innovation action		27,800,000	two-stage	16 October 2018	22 January 2019 03 September 2019
DT-NMBP-10-2019 - RIA Research and Innovation action DT-NMBP-08-2019 - RIA Research and Innovation action		37,800,000	two-stage	16 October 2018	22 January 2019 03 September 2019
DT-NMBP-03-2019 - IA Innovation action		50,000,000	two-stage	16 October 2018	22 January 2019 03 September 2019
NMBP-14-2018 - RIA Research and Innovation action NMBP-13-2018 - RIA Research and Innovation action	30,000,000		two-stage	31 October 2017	23 January 2018 28 June 2018
DT-NMBP-09-2018 - IA Innovation action DT-NMBP-07-2018 - IA Innovation action	44,000,000		two-stage	31 October 2017	23 January 2018 28 June 2018
DT-NMBP-01-2018 - IA Innovation action DT-NMBP-02-2018 - IA Innovation action	75,000,000		two-stage	31 October 2017	23 January 2018 28 June 2018
DT-NMBP-12-2019 - CSA Coordination and support action		4,000,000	single-stage	16 October 2018	03 September 2019
NMBP-34-2019 - CSA Coordination and support action		3,000,000	single-stage	16 October 2018	03 September 2019

http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/nmbp-15-2019.html

TOPIC : Safe by design, from science to regulation: metrics and main sectors (RIA)
Topic identifier: **NMBP-15-2019**
Types of action: RIA Research and Innovation action
DeadlineModel: two-stage
Opening date: 16 October 2018
Deadline: 22 January 2019 17:00:00
2nd stage Deadline: 03 September 2019 17:00:00

Specific Challenge:

Risk management involves quantifying hazard (toxicity) and exposure, and taking the necessary steps to reduce both to acceptable levels, ideally at an early stage of the nanomaterial development process (Safe-by-Design). Various industrial sectors, and in particular structural or functional materials, coatings and cosmetics, as well as pharma and health technology are currently searching for ways to mitigate possible risks from nanomaterials and nano-containing products. The challenge now is to distil existing methods into simple, robust, cost-effective methods for monitoring and modelling of physical-chemical properties and biological effect assessment of nanomaterials in relevant use conditions including in product-relevant matrices.

Scope:

Degradation of nano-enabled products and ageing of nanomaterials, and mixture toxicity;
New Safe by Design methods that enable reduction of hazard and exposure through design to an acceptable risk level without affecting the material performance and guide development of safer products at different stages;
Implementation of control measures and mitigation strategies for nanomaterials specific scenarios in various industrial sectors to reach acceptable regulatory risk level on the effectiveness of such measures, and develop computational approaches to model them;
For this topic the parallel calls scheme is envisaged with the USA-NNI. Resulting projects should establish close cooperation mechanisms. Legal, policy making and Responsible Research and Innovation aspects should be integrated in the proposal.
In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is particularly encouraged.
Proposals submitted under this topic should include actions designed to facilitate cooperation with other projects; to enhance user involvement; and to ensure the

accessibility and reusability of data produced in the course of the project.
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 5 and 6 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:
Safe by design approaches and tools at an early stage of the nanomaterial development process;
Quality workplaces that ensure maximum technical and economic performance in line with acceptable risk levels;
Control and mitigate exposure to acceptable risk level in case after release of nanomaterials from products;
Develop and validate low-cost techniques for delivering an integrated exposure driven risk assessment and the associated design of the required post-use monitoring.

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

2. INTEGRATING AND OPENING RESEARCH INFRASTRUCTURES OF EUROPEAN INTEREST

Call identifier: H2020-INFRAIA-2018-2020

Call summary and aims

This call will open up key national and regional research infrastructures to all European researchers from both academia and industry as well as ensure their optimal use and joint development.

In addition to serving basic science challenges, Integrating Activities target research infrastructures, ranging across all fields of science and technology, needed to support the EU political priorities and address the Societal Challenges, including Focus Areas. They also target research infrastructures needed to gain leadership in the industrial and enabling technologies.

ESFRI and other world-class research infrastructures are not specifically targeted by this call. Nevertheless, where relevant, they can participate in an integrating activity together with other key national and regional research infrastructures.

Topic	Budget (EUR) - Year : 2018	Budget (EUR) - Year : 2019	Stages	Opening date	Deadline
INFRAIA-01-2018-2019 - RIA Research and Innovation action	101,500,000	15,000,000	single-stage	05 December 2017	22 March 2018
NFRAIA-01-2018-2019 - RIA Research and Innovation action		110,000,000	single-stage	14 November 2018	20 March 2019

https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infraia-01-2018-2019.html

TOPIC : Integrating Activities for Advanced Communities
Topic identifier: INFRAIA-01-2018-2019
Types of action: RIA Research and Innovation action
DeadlineModel: single-stage
opening date: 14 November 2018
Deadline: 20 March 2019 17:00:00

Specific Challenge:

European researchers need effective and convenient access to the best research infrastructures in order to conduct research for the advancement of knowledge and technology. The aim of this action is to bring together, integrate on European scale, and

open up key national and regional research infrastructures to all European researchers, from both academia and industry, ensuring their optimal use and joint development.

Scope:

'Advanced Communities' are scientific communities whose research infrastructures show an advanced degree of coordination and networking at present, attained, in particular, through Integrating Activities awarded under FP7 or previous Horizon 2020 calls.

An Integrating Activity will mobilise a comprehensive consortium of several key research infrastructures in a given field as well as other stakeholders (e.g. public authorities, technological partners, research institutions) from different Member States, Associated Countries and other third countries when appropriate, in particular when they offer complementary or more advanced services than those available in Europe.

Funding will be provided to support, in particular, the trans-national and virtual access provided to European researchers (and to researchers from Third Countries under certain conditions), the cooperation between research infrastructures, scientific communities, industry and other stakeholders, the improvement of the services the infrastructures provide, the harmonisation, optimisation and improvement of access procedures and interfaces. Proposals should adopt the guidelines and principles of the European Charter for Access to Research Infrastructures.

To this extent, an Integrating Activity shall combine, in a closely co-ordinated manner:

(i) Networking activities, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help develop a more efficient and attractive European Research Area;

(ii) Trans-national access or virtual access activities, to support scientific communities in their access to the identified key research infrastructures;

(iii) Joint research activities, to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

All three categories of activities are mandatory as synergistic effects are expected from these different components.

Access should be provided only to key research infrastructures of European interest, i.e., those infrastructures able to attract significant numbers of users from countries other than the country where they are located. Other national and regional infrastructures in Europe can be involved, in particular in the networking activities, for the exchange of

best practices, without necessarily being beneficiaries in the proposal.

Proposals from advanced communities will have to clearly demonstrate the added value and the progress beyond current achievements in terms of integration and services, of a new grant. The strongest impact for advanced communities is expected typically to arise from focusing on innovation aspects and widening trans-national and virtual access provision, both in terms of wider and more advanced offer of scientific services, than in terms of number of users and domains served. Furthermore, in particular for communities supported in the past under three or more integrating activities, the creation of strategic roadmaps for future research infrastructure developments as well as the long-term sustainability of the integrated research infrastructure services provided at European level, need to be properly addressed. The latter requires the preparation of a sustainability plan beyond the grant lifecycle as well as, where appropriate, the involvement of funders.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), Integrating Activities should, whenever appropriate, pay due attention to any related international initiative (i.e. outside the EU) and foster the use and deployment of global standards.

Integrating Activities should also organise the efficient curation, preservation and provision of access to the data collected or produced under the project, defining a data management plan, even when they opt out of the extended Pilot on Open Research Data. Data management (including ethics and privacy issues), interoperability, as well as advanced data and computing services should be addressed where relevant. To this extent, proposals should build upon the state of the art in ICT and e-infrastructures for data, computing and networking, and ensure connection to the European Open Science Cloud.

Integrating Activities should in particular contribute to fostering the potential for innovation, including social innovation, of research infrastructures by reinforcing the partnership with industry, through e.g. transfer of knowledge and other dissemination activities, activities to promote the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies.

Integrating Activities are expected to duly take into account all relevant ESFRI and other world-class research infrastructures to exploit synergies, to reflect on sustainability and to ensure complementarity and coherence with the existing European Infrastructures

landscape.

Proposals should include clear indicators allowing the assessment of the progress towards the general and specific objectives, other than the access provision.

As the scope of an integrating activity is to ensure coordination and integration between all the key European infrastructures in a given field and to avoid duplication of effort, advanced communities are expected to submit one proposal per area.

Further conditions and requirements that applicants should fulfil when drafting a proposal are given in part D of the section "Specific features for Research Infrastructures". Compliance with these provisions will be taken into account during evaluation.

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

On the basis of a multiannual plan drafted taking into account the assessment and the timing of previous grants as well as strategic priorities and needs, in term of research infrastructures services, emerging from other parts of Horizon 2020, this work programme invites proposals addressing the following areas listed under the different domains. A balanced coverage of the various domains, in line with the distribution of areas per domain, is expected as outcome of this topic.

Biological and Medical Sciences

Virus collections including for high-risk animal/human/plant pathogens. This activity aims at improving the access to high-quality authenticated collections of both human, animal and plant viruses including those requiring high-biosafety level laboratories (BSL 3 and 4), to support upstream virology, microbiology and immunology research as well as translational internationally-driven research aiming at drug and vaccine development, and to support epidemiological studies targeting disease and epidemics control in order to enhance the preparedness of countries to control their own emerging viral outbreaks.

Structural biology research infrastructures for health and food research. This activity should expand the availability of structural biology services (such as X-ray and neutron scattering, advanced NMR and advanced imaging technologies) to new communities of

users, and in particular to scientists with backgrounds other than structural biology, including from SMEs, to benefit translational research in drugs discovery, informed drugs design and other fields like biotechnology and biomaterials for health and food.

Nanomedicine characterisation infrastructures. This activity aims at further integrating and opening key reference facilities for characterisation and engineering of nanoparticles for medical applications. It should offer access to a coherent set of tools, resources and expertise to support academic research teams and industry in their chemical, physical and biological research and innovation on medical applications. Emphasis should be on widening the user base and the services, ensuring long term sustainability to their integration.

Research infrastructures in aquaculture. This activity aims at further integrating highly diverse aquaculture research facilities and providing to research teams easy access to them. Specific attention should be given to dedicated facilities for new species, disease aspects and contribution to sustainable aquaculture. Emphasis should be on widening the user base, enlarging and strengthening the offered services, and fostering the innovation role of such infrastructures.

Energy

European smart grids research infrastructure. High shares of renewable energy and more decentralised energy supply require a grid with sufficient hosting capacity and the ability to manage the power fluctuation of the renewable sources. This activity should further integrate and open laboratory environments that enable the development and testing of different smart grid configurations without influencing end-customers of the electrical power supply. Emphasis should be on widening the user base, enlarging the offered services, fostering the innovation role of such facilities and ensuring long term sustainability to their integration.

Environmental and Earth Sciences

R**esearch infrastructures for long-term ecosystem and socio-ecological research**. This activity should further integrate and open LTER (Long Term Ecological Research) facilities and critical zone observatories, in different terrestrial and aquatic environments. It should include relevant socio-ecological research platforms as well as integrate research field sites, associated data management and numerical simulation tools to address ecosystem

and socio-ecological research issues such as biodiversity loss, climate change adaptation and mitigation, land use and management, food security and threats to soil and water.

Coastal and shelf seas observing research infrastructures. This activity aims at integrating and improving access to coastal observatories as well as developing innovative monitoring strategies to address better the complexity of coastal seas (such as the coupling of physics, biogeochemistry and biology). It should also promote harmonisation and seamless interface with open seas observing systems notably the relevant ESFRI infrastructures. It should foster innovation and societal impact including through effective synergies with European and global initiatives such as COPERNICUS, EMODNET, GEO/GEOSS.

Multidisciplinary Marine Data Centres for ocean and marine data management. This activity aims to further integrate in a cloud environment and open key data centres for in-situ and remote sensing data for marine (including coastal) research. It must present a long-term sustainable perspective on the facilities and related resources integration, and develop appropriate connection to the EOSC. It should enhance and innovate the services offered to an expanded multidisciplinary community and promote the adoption of the developed protocols and standards for interoperability to other key downstream initiatives in the field.

Mesocosms facilities for research on marine and freshwater ecosystems. This activity aims at further integrating and opening leading mesocosm infrastructures in Europe enabling in particular research on impact of climate change, pollution and other disturbance on ecosystems, from Mediterranean to Arctic. Emphasis should be on widening the user base, and on enlarging and strengthening the offered services.

Research infrastructures for terrestrial research in the Arctic. As an international network for terrestrial research and monitoring in the Arctic, this activity should further integrate and open key research stations and large research field sites throughout the circumpolar Arctic and adjacent northern countries, to provide capacity for research, monitoring and education. The project should include work on best practises for managing stations, and (international) logistics and establish links with relevant ESFRI infrastructures.

Research Infrastructures for earthquake hazard. This activity aims at further integrating and opening the key research infrastructures in Europe for natural and anthropogenic earthquake risk assessment and mitigation. More integrated services from seismic and engineering infrastructures would contribute to supporting the reduction of vulnerability of

European citizens and constructions to earthquakes. International collaboration activities and the further integration of the research field are encouraged.

Research infrastructures for environmental hydraulic research. This activity aims at further integrating and opening the key hydraulic infrastructures in Europe in order to optimise their use to help solve climate change adaptation problems. Particular attention to harmonising and organising the flux of data is expected. Emphasis should be on widening the user base, and on enlarging and strengthening the offered services including through synergies with relevant (emerging) ESFRI infrastructures.

Mathematics and ICT

Distributed, multidisciplinary European infrastructure on Big Data and social data mining. This activity should further integrate and open large social data repositories, social data mining methods and tools, and supercomputing facilities for conducting large-scale analytical processing. This integrated infrastructure should enable performing complex processes to extract social knowledge. Emphasis should be on enlarging and strengthening the offered services, widening the user base, fostering the innovation role of such facilities and ensuring long term sustainability to their integration as well as connection to the EOSC.

Material Sciences and Analytical facilities

Research infrastructures for advanced research in nanoelectronics. This activity aims at further integrating and opening key infrastructures in the field to enable a smooth and consistent transition of the European industry to a new era of nanoelectronics. Emphasis should be on enlarging and strengthening the offered services, widening the user base, fostering the innovation role of such facilities and ensuring long term sustainability to their integration.

Advanced laser sources for leading-edge research. This activity aims at further integrating and opening key laser infrastructures enabling a wide range of novel applications with high industrial and social impact, such as nanoscience, bio- and nanophotonics, (bio)material analyses, (bio)medical diagnosis and treatment, advanced imaging, communication and data processing. It should widen the user base, enlarge the offered services, foster the innovation role of such facilities, ensure long term sustainability to their integration, stimulate international cooperation and new scientific activities exploiting

new possibilities offered by relevant ESFRI infrastructures.

Physical Sciences

Research Infrastructures for Nuclear Physics. This activity aims at further integrating the key research infrastructures for studying the properties of nuclear matter at extreme conditions, using advances in nuclear physics experimentation to open new scenarios for fundamental research and employ them for new societal and industrial applications. It must present a long-term sustainable perspective on the integration of relevant facilities and related resources. Furthermore, it should also target new users and stimulate new scientific activities to take full advantage of new possibilities offered by relevant ESFRI infrastructures.

Research infrastructures for high-energy astrophysics. This activity aims at further integrating and opening facilities for developing, calibrating and testing technologies and individual instruments developed for supporting ground and space based experiments and missions in an environment representative of space conditions. In order to foster the creation of a European multi-messenger astrophysics platform, emphasis should be on enlarging the offered services, including in particular gravitational wave, electromagnetic wave and other high energy particle (e.g. neutrinos) observatories. Access to the infrastructures and data needs to be optimised in order to develop a wider multi-disciplinary community and foster a better exploitation of the results.

Research Infrastructures for planetary science. This activity aims at furthering the integration and opening of the key research infrastructures in Europe for studying planetary science by drawing in new partners and by providing access to the facilities to a larger number of users, taking into account the multi- and trans-disciplinary nature of the field. Emphasis should be on enlarging and strengthening the offered services, widening the user base, and ensuring long term sustainability to their integration.

Social Sciences and Humanities

European research infrastructures for cultural heritage restoration and conservation. This activity aims at further integrating and opening facilities, located in research centres, universities and important culture institutions, for advanced diagnostics, restoration and conservation of cultural heritage. Emphasis should be on strengthening and enlarging the offered services to cover restoration and conservation in fields such as palaeontology,

widening the user base, and fostering the innovation role of such facilities.

Contemporary European history: European Holocaust research infrastructure. This activity aims at further integrating and opening existing research infrastructures for research on Holocaust and expanding their services to include new material and new techniques in order to offer distributed and harmonised access of researchers to scattered material. Emphasis should be on enlarging and strengthening the offered services, widening the user base and ensuring long term sustainability to their integration.

Expected Impact:

Researchers will have wider, simplified, and more efficient access to the best research infrastructures they require to conduct their research, irrespective of location. They benefit from an increased focus on user needs.

New or more advanced research infrastructure services, enabling leading-edge or multidisciplinary research, are made available to a wider user community.

Operators of related infrastructures develop synergies and complementary capabilities, leading to improved and harmonised services. There is less duplication of services, leading to an improved use of resources across Europe. Economies of scale and saving of resources are also realised due to common development and the optimisation of operations.

Innovation is fostered through a reinforced partnership of research organisations with industry.

A new generation of researchers is educated that is ready to optimally exploit all the essential tools for their research.

Closer interactions between larger number of researchers active in and around a number of infrastructures facilitate cross-disciplinary fertilisations and a wider sharing of information, knowledge and technologies across fields and between academia and industry.

For communities which have received three or more grants in the past, the sustainability of the integrated research infrastructure services they provide at European level is improved.

The integration of major scientific equipment or sets of instruments and of knowledge-based resources (collections, archives, structured scientific information, data infrastructures, etc.) leads to a better management of the continuous flow of data collected or produced by these facilities and resources.

When applicable, the integrated and harmonised access to resources at European level can facilitate the use beyond research and contribute to evidence-based policy making.

When applicable, the socio-economic impact of past investments in research infrastructures from the European Structural and Investment Funds is enhanced.

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

Topic conditions

1. Eligible countries: described in Annex A of the Work Programme.
A number of non-EU/non-Associated Countries that are not automatically eligible for funding have made specific provisions for making funding available for their participants in Horizon 2020 projects. See the information in the Online Manual.

2. Eligibility and admissibility conditions: described in Annex B and Annex C of the Work Programme.
Given the specific nature of this topic, specific eligibility conditions, in addition to the standard eligibility conditions for Research and Innovation Action, apply: all the three types of activities: networking, access and joint research activities shall be included in the proposal. Please read carefully the provisions under the part D of the section "Specific features for Research Infrastructures" before the preparation of your application.
Legal entities established in Australia, Brazil, Canada, China, India, Japan, Mexico, New Zealand, ***Republic of Korea,*** Russia and USA, which provide, under the grant, access to their research infrastructures to researchers from Members States and Associated countries, are eligible for funding from the Union.

3. SECURITY

Call identifier: H2020-SU-SEC-2018-2019-2020

Call summary and aims

This Call deals with R&D and innovation towards establishing disaster-resilient societies, fighting against crime and terrorism, and improving border and external security.

When a topic has eligibility and admissibility conditions which require the active involvement of specific entities (e.g.: '3 Law Enforcement Agencies (LEA) from at least 3 different EU or Associated countries'), this means that these entities have to be participants and should be directly involved in the carrying out of the tasks foreseen in the grant. When a reference is made to "practitioners", the text refers to someone who is qualified or registered to practice a particular occupation, profession in the field of security or civil protection. Applicants should identify clearly which members of the consortium they consider "practitioners" in the specific context of their proposal, and to include a clear description of their respective role and added-value as practitioners in section 4.3 of proposal part B4-6.

Whereas activities will have an exclusive focus on civil applications, coordination with the activities of the European Defence Agency (EDA) may be considered with possible synergies being established with projects funded by the EDA programmes[[http://eda.europa.eu/what-we-do/eda-priorities/research-technology]]. The complementarity of such synergies should be described comprehensively. On-going cooperation should be taken into account. Only an explicit and firm commitment from EDA-funded projects to contribute to a project may positively impact the evaluation of a proposal submitted under this work programme part.

In this Call, "standards" and "standardisation" are used in a broad sense, except where they are specifically referred to as "European standards" or "European standardisation".

For grants awarded under these topics for Innovation Action and/or Research and Innovation Action, under the 2019-2020 calls, the Commission or Agency may object to a transfer of ownership or the exclusive licensing of results to a third party established in a third country not associated to Horizon 2020. The respective option of Article 30.3 of the Model Grant Agreement will be applied.

The Commission reserves the possibility under this call to exclude a specific project from

the delegation to the REA if it appears that that project would necessarily have a close link to the development of EU policies in the field of security.

Disaster-Resilient Societies

The following two paragraphs are relevant for the Disaster-Resilient Societies section of the Work Programme, .i.e. topics DRS-01 to DRS-05.

Securing itself against, and being prepared for, disasters is one of the central elements of the functioning of any society. There are hardly any societal functions which are not to some extent exposed to natural or man-made disasters and related resilience and security issues.

The aim of this section is to advance innovation in the society at large, and among first responders (as acknowledged within the International Forum to Advance First Responder Innovation[[http://www.internationalresponderforum.org/]] in which the Commission has decided to participate) to reduce the loss of human life and to reduce environmental, economic and material damage from natural and man-made disasters, including from climate-related weather events, earthquakes and volcanic events, space weather events, industrial disasters, crime and terrorism threats.

http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-drs02-2018-2019-2020.html

Topic	Budget (EUR) - Year : 2018	Budget (EUR) - Year : 2019	Stages	Opening date	Deadline
SU-BES02-2018-2019-2020 - RIA Research and Innovation action		21,000,000	single-stage	14 March 2019	22 August 2019
SU-FCT02-2018-2019-2020 - RIA Research and Innovation action		28,162,910	single-stage	14 March 2019	22 August 2019
SU-FCT03-2018-2019-2020 - IA Innovation action		8,000,000	single-stage	14 March 2019	22 August 2019
SU-BES01-2018-2019-2020 - RIA Research and Innovation action		10,000,000	single-stage	14 March 2019	22 August 2019
SU-GM01-2018-2019-2020 - CSA Coordination and support action		7,000,000	single-stage	14 March 2019	22 August 2019
SU-DRS04-2019-2020 - RIA Research and Innovation action		10,500,000	single-stage	14 March 2019	22 August 2019
SU-FCT01-2018-2019-2020 - RIA Research and Innovation action		10,000,000	single-stage	14 March 2019	22 August 2019
SU-BES03-2018-2019-2020 - IA Innovation action		10,000,000	single-stage	14 March 2019	22 August 2019
SU-DRS03-2018-2019-2020 - IA Innovation action		6,000,000	single-stage	14 March 2019	22 August 2019
SU-DRS02-2018-2019-2020 - RIA Research and Innovation action		21,000,000	single-stage	14 March 2019	22 August 2019
SU-DRS05-2019 - IA Innovation action		10,000,000	single-stage	14 March 2019	22 August 2019
SU-DRS01-2018-2019-2020 - RIA Research and Innovation action		5,000,000	single-stage	14 March 2019	22 August 2019

TOPIC : Technologies for first responders

Topic identifier: SU-DRS02-2018-2019-2020

Focus area: Boosting the effectiveness of the Security Union (SU)

Types of action: RIA Research and Innovation action

Deadline Model: single-stage

Planned opening date: 14 March 2019

Deadline: 22 August 2019 17:00:00

Specific Challenge:

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:

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:

Sub-topic 1: [2018] Victim-detection technologies

The quick detection of victims potentially trapped in buildings as a result of all sorts of disasters of natural, accidental, or man-made or of terrorist origins is a major issue for

first responders. Novel technologies should enable them to save the time taken to detect victims who are not visible, enabling more efficient and faster rescue operations leading to higher chances of saving lives and reducing injuries.

Sub-topic 2: [2019] Innovation for rapid and accurate pathogens detection

Novel technologies are required by first responders for the rapid and accurate detection of pathogens, as well as tools for joint epidemiological and criminal risk and threat assessment and investigation.

Sub-topic 3: [2020] Methods and guidelines for pre-hospital life support and triage

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. For more information, please consult http://www.jst.go.jp/sicp/announce_eujoint_04_GeneralInfo.html. Co-funding opportunities from the Korean MSIP/NRF exist for Korean partners. 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=.

The centre of gravity for technology development with actions funded under this topic is expected to be up to TRL 4 to 6 – 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
Delegation Exception Footnote:
It is expected that this topic will continue in 2020.

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