

Horizon 2020

Robotics and Autonomous Systems - 2018-2020 Budget and Deadlines

Objective	Budget	Deadline
ICT-09-2019-2020: Robotics in Application Areas		
a) Research and Innovation boosting promising robotics applications (3-5M€ per project) Innovative approaches to hard research problems in relation to applications of robotics in promising new areas are particularly encouraged. Proposals are expected to enable substantially improved solutions to challenging technical issues, with a view of take-up in applications with high socio-economic impact. Driven by application needs, the work can start from research at low TRL, but proposals are expected to validate their results in realistic environments in order to demonstrate the potential for take-up in the selected application(s). Excl topics on healthcare, inspection, maintenance of infrastructure, agri-food and agile production.	20M€	28 March 2019
b) Innovation Actions - Robotics for infrastructure inspection and maintenance (7-9M€ per project) Establish large-scale pilots capable of demonstrating the use of robotics at scale in actual or highly realistic operating environments; showcase advanced prototype applications built around platforms operating in real or near-real environments and demonstrate high levels of socio-economic impact. Proposals are expected to make a significant step forward in platform development in the area of infrastructure inspection and maintenance.	28M€	
c) Robotics Competitions Proposals (CSA) should address the delivery of challenge-led, robotics competitions focusing on the four application areas prioritised: Healthcare, Infrastructure Inspection and Maintenance, Agri-Food, and Agile Production.	2M€	
ICT-10-2019-2020: Robotics Core Technology		
Proposals should address one of the four core technologies and target the development of core technology modules (modular, open and non-proprietary) and tool kits for use in deployable system platforms that meet the requirements of applications in the following four prioritised application areas: Healthcare, Infrastructure Inspection and Maintenance, Agri-Food and Agile Production: a) AI and Cognition b) Cognitive Mechatronics c) Socially cooperative human-robot interaction d) Model-based design and configuration tools	5-10M€ per project 42 M€	28 March 2019

DT-ICT-02-2018: Robotics - Digital Innovation Hubs (DIH)		
The challenge is to provide a sustainable ecosystem of robotics stakeholders covering the entire value network to facilitate and accelerate a broad uptake and integration of robotic technologies, and supporting the digitisation of industry through robotics. Proposals should address the provision of a network of robotics Digital Innovation Hubs (DIH) in the four prioritised application areas (PAA) of Healthcare, Infrastructure Inspection and Maintenance, Agri-Food and Agile Production. Proposals are expected to: develop a network of DIHs, address the delivery of services (technical and non-technical); provide access to best practice and research results in robotics relevant to the chosen application area; contribute to common system platforms, engaging in the development of industry-led standards and developing and disseminating standards demonstrators; facilitate access to pilots and collaborate with all the robotics actions funded in the WP and beyond, as appropriate.	16M€ per project 66 M€	17 April 2018
DT-ICT-08-2019: Agricultural digital integration platforms		
- Building platforms integrating different technologies like Internet of Things (IoT) devices, cloud, photonics, networks, geolocalisation (including through Galileo and EGNOS (the European Geostationary Navigation Overlay Service)) and robotics combined with applications based on data analytics and knowledge management. - Sharing data and generating knowledge via capturing and translating more and precise information. - Developing decision support systems that will include, but are not restricted to, a benchmarking system on the productivity and sustainability performance of farms, services, technologies and practices	Up to 15M€ per project 30 M€	14 Nov 2018
ICT-26-2018-2020: Artificial Intelligence		
The goal is to develop a European AI ecosystem bringing together the knowledge, algorithms, tools and resources available and making it a compelling solution for users, especially from non-tech sectors. The action should build on and link to existing relevant initiatives, including for instance existing platforms, data repositories, cloud computing, HPC.	Up to 20M€ per project 20 M€	17 April 2018
DT-FOF-02-2018: Effective Industrial Human-Robot Collaboration (RIA)		
Proposals need to extend the current state of the art of individual HRC to work environments where robots and workers function as members of the same team throughout the factory. Proposals should cover two of the following three areas: - Integration in industrial production environments of novel human-centred designed smart mechatronic systems such as for example soft robotics for high payloads; - Implementation of novel artificial intelligence technologies capable of massive information processing and reacting in real-time to enable new levels of autonomy, navigation, cognitive perception and manipulation for robots to collaborate with humans in the process;	6-8M€ per project	22 Feb 2018

Development of methods for robotic hazard assessment and risk management to clarify trade-offs between productivity and safety for mixed human-robot smart devices environments.		
DT-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants (IA)		
Proposals need to develop new technologies to realise cognitive production plants, with improved efficiency and sustainability, by use of smart and networked sensor technologies, intelligent handling and online evaluation of various forms of data streams as well as new methods for self-organizing processes and process chains. Furthermore, proposals should cover the full digital transformation of a complete plant or site(s) including e.g. data acquisition, communication, automation, analytics, modelling, prediction and standardisation of relevant data interfaces.	6-8M€ per project 33M€	21 Feb 2019
SPACE-12-TEC-2018: SRC – Space robotics technologies		
Each proposal shall address only one of the following sub-topics: a) Orbital Support Services: demonstrate the techniques needed to offer a commercial service to operational satellites. This shall as minimum address robotic deployment and refuelling of satellites in orbit. By means of a general purpose robotic arm, a servicing satellite must be capable to demonstrate release, grasping, berthing and manipulation of a target satellite including services such as refuelling. b) Robotised assembly of large modular orbital structures: integrate a robot system and a set of functional modules that can assemble a large structure (such as a large reflector) otherwise not feasible with a single launch. c) Robotised reconfiguration of satellites: develop a satellite-mounted robot system and its related implements that can modify the functionality of a satellite by adding/replacing modules available on-board or provided by another servicing satellite. d) Autonomous decision making: integrate a rover system with long traverse capabilities (kilometres a day) managing independently the decisions required to reduce risks and seize opportunities. Such a rover system will be required to travel independently from a starting point (e.g. a lander) towards an end point (say a cache of sample), perform independent opportunistic science on the way and return to the lander with the acquired soil sample. e) Exploring robot-robot interaction. Proposals could address one of the following two scenarios. Advanced mobility: a suite of robots endowed with diverse mobility that can cooperate autonomously in the exploration of very hard-to-reach planetary areas. This team of robots will be entrusted to undertake multiple descents and ascents into a crater/gully performing coordinated mapping and science. Robotised construction: a team of specialised robots with multiple robotic arms and end-effectors that, through a minimum of drilling, excavating and manipulating, can cooperatively put together a future planetary base/ISRU 13 plant.	3-4M€ per project (a-c) 2-3M€ per project (d-e) 18M€	06 Mar 2018
MG-3-2-2018: The Autonomous Ship		
Achieve a breakthrough in automated waterborne transport through demonstration of a fully autonomous vessel targeted towards either inland waterways, short sea, ferry, coastal operation or urban water transport vessel within a relevant environment. Understand the social economic and regulatory factors of autonomous waterborne transport. Enable establishment of the first	10-20M€ per project	30 Jan 2018 (First Stage)

commercial automated water transport services within 5 years. Enhance European competitiveness and support European jobs and growth.		19 Sep 2018 (Second Stage)
MG-BG-01-2018: Unmanned and autonomous survey activities at sea		
Develop and demonstrate to TRL5 an autonomous sea bed survey vehicle (if appropriate including its docking and reloading device) which can operate within the deep oceans for extended periods without the need for a close support vessel. • Energy and propulsion systems capable of supporting several months of autonomous survey operation over large areas. • Minimising deep sea deployment and recovery costs by for example enabling deployment by air and return to base features. • Robust and secure data transmission, redundancy and "find me" features to enable self-recovery or in extreme case, rescue in case of breakdown. • Compatible survey equipment	Up to 8M€ per project	04 Apr 2018
MG-2-8-2019: Innovative applications of drones for ensuring safety in transport		
• Develop and test technologies, operational and business models for the application of drones or drone swarms and other emerging technologies to increase the safety, security, public acceptance and overall efficiency of air, waterborne and surface transport, both passenger and cargo, including search and rescue applications. • Explore and develop innovative technologies and sustainable business models for pilot services, such as large vehicles/vessels/aircraft inspections, transport management (including emergencies), transport infrastructure condition monitoring and maintenance, logistics, on-demand cargo and/or personal mobility using drones and other emerging technologies safely.	3-5M€ per project	16 Jan 2019 (First Stage) 12 Sep 2019 (Second Stage)
DT-ART-01-2018: Testing, validation and certification procedures for highly automated driving functions under various traffic scenarios based on pilot test data		
Comprehensive testing, validation and certification procedures for highly automated driving functions and reliable and accurate positioning to pave the way for accelerated implementation of highly automated vehicles across Europe. New testing procedures and tools for cyber-security vulnerability assessment to secure connected and automated vehicles from manipulation and threats to guarantee safe operations. Common criteria for model-based validation and simulation on vehicle, vehicle components, and V2X communication systems level to support harmonisation and standardisation for homologation processes.	4-6M€ per project	04 Apr 2018
DT-ART-02-2018: Support for networking activities and impact assessment for road automation		
Subtopic 1) Research and innovation action: Assessment of impacts, benefits and costs of connected, cooperative and automated driving systems Subtopic 2) Coordination and support action: Networking activities to support connected, cooperative and automated driving	4-6M€ per project (Sub-Topic 1)	04 Apr 2018

DT-ART-03-2019: Human centred design for the new driver role in highly automated vehicles	4-8M€ per project	24 Apr 2019
• Innovative solutions, concepts and algorithms for a safe human-machine interface of highly automated driving functions and for safe and controlled transfer between use cases of different automation levels. • Reduction of risks for driver behaviour related incidents by ensuring that drivers/operators are adequately alerted, made aware and engaged when the highly automated vehicle encounters situations or use cases that it cannot handle and thus will turn to lower automation levels.		
DT-ART-04-2019: Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all	15-30M€ per project	24 Apr 2019
Proposals will test the overall mobility impact, in particular, how shared mobility solutions using connected and cooperative automated vehicles can contribute to a more sustainable, inclusive, and safe mobility system and help residents of a city/region (in particular less mobile persons, elderly and children) to increase mobility and improve urban freight transport efficiency. Proposed actions will help to reduce the total number of passenger cars and goods km in cities, overall CO2 and air pollutant emissions and energy consumption. They will improve market opportunities for SME's and new-entrants by addressing and developing innovative cross-sector business models. Actions will create strategic partnering opportunities between public agencies and the private sector for developing sustainable and scalable business models. They will also support the accelerated deployment of electrified vehicles for shared automated mobility services and integrated strategies for a smart and multi-modal mobility system and urban development, including land use and ITS and infrastructure development.		
DT-TDS-01-2019: Smart and healthy living at home		
Proposals should address one of the two following areas: • Intelligent and personalised digital solutions for sustaining and extending healthy and independent living The objective is to develop and deploy innovative and user-led digital solutions capable of supporting and extending healthy and independent living for older individuals who are facing permanently or temporarily reduced functionality and capabilities. Innovative ways for ensuring user-friendly and accessible interface design and new intuitive ways of citizen interaction and trust creation are needed. Special emphasis should be given to viable concepts that ensure security and privacy by design, data protection, safety, security and trust in the resulting system and service delivery inside and outside the home. • Personalised early risk detection and intervention. The objective is to develop and deploy innovative and user-led solutions building on big data for personalised risk detection, advanced health monitoring and early interventions for people facing increased health and social risks. Proposals should design and demonstrate innovative personalised treatments and therapies based on early detection and risk avoidance. Because of the personal and sensitive nature of health data, special attention needs to be paid to trust, privacy and data protection.	15-20M€ per project	14 Nov 2018
SU-FCT02-2018-2019-2020: Technologies to enhance the fight against crime and terrorism		

Proposals addressing other issues relevant to this challenge (for instance: technologies to improve LEAs capabilities (including augmented reality); autonomous systems to improve the fight against crime and terrorism; technologies to support better protection of public figures; tracking and monitoring technologies, including automated prevention of uploading terrorism-related content; capabilities to detect the widest possible range of threats and concealments (including complex concealed weapons)) and supported by a large number of practitioners are invited to apply under this sub-topic (see eligibility and admissibility conditions).	Up to 7M€ per project	23 Aug 2018
SU-BES03-2018-2019-2020: Demonstration of applied solutions to enhance border and external security		
Sub-topic 1: [2018] Remotely piloted aircrafts and underwater autonomous platforms to be used from on-board offshore patrol vessels. Remotely piloted autonomous platforms of all kinds should demonstrate innovative capacities for land border and coast surveillance. Underwater autonomous platforms are also of interest for choke points surveillance (i.e. a port entrance.)	Up to 5M€ per project	23 Aug 2018