ROBOTICS & AI in H2020 - ICT-2018-2020

Cécile Huet, PhD
Deputy Head of Unit A1
Robotics & AI
European Commission

Information and Communication Technologies

Artificial Intelligence and Technologies for Digitising European Industry and Economy		Open	Close
ICT-46-2020	Robotics in Application Areas and Coordination & Support	19-11-2019	22-04-2020
ICT-47-2020	Research and Innovation boosting promising robotics applications	19-11-2019	22-04-2020
ICT-48-2020	Towards a vibrant European network of AI excellence centres	09-07-2019	13-11-2019
ICT-49-2020	Artificial Intelligence on demand platform	19-11-2019	22-04-2020
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European Data Infrastructure: Big Data and Cloud technologies			
ICT-51-2020	Big Data technologies and extreme-scale analytics	09-07-2019	16-01-2020
5G			
ICT-52-2020	5G PPP – Smart Connectivity beyond 5G	19-11-2019	22-04-2020
ICT-53-2020	5G PPP – 5G for Connected and Automated Mobility (CAM)	09-07-2019	13-11-2019
Next Generation Internet (NGI)			
ICT-56-2020	Next Generation Internet of Things	09-07-2019	16-01-2020
ICT-44-2020	Next Generation Media	09-07-2019	16-01-2020
Digitising and transforming European industry and services: digital innovation hubs and platforms			
DT-ICT-03-2020	I4MS (phase 4) - uptake of digital game changers	09-07-2019	13-11-2019
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Research and Innovation boosting promising **robotics** applications

ICT-48-2020:

Towards a vibrant European **network of AI excellence centres**

ICT-49-2020:

Artificial Intelligence on demand platform

DT-ICT-12-2020:

AI for the **smart hospital** of the future

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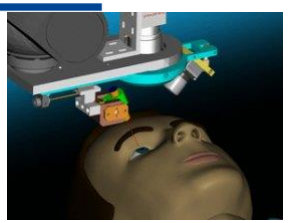
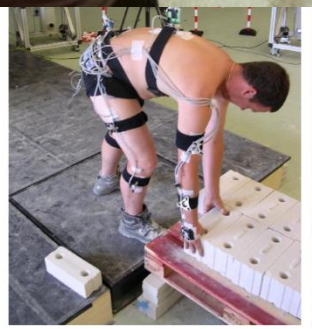
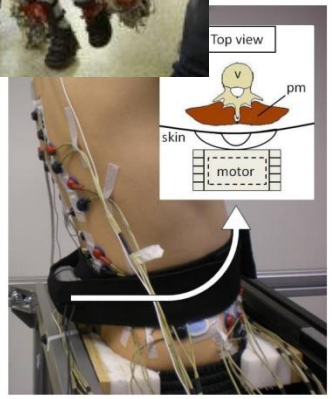
AI for the smart hospital of the future

European Commission

Robotics
4 Priority Areas

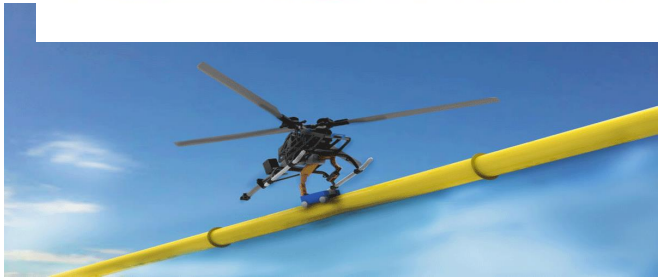






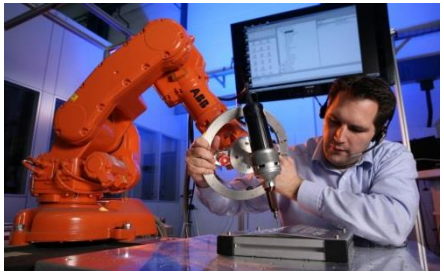
- Healthcare

- Inspection and maintenance of infrastructure



- Agri-food

- Agile production

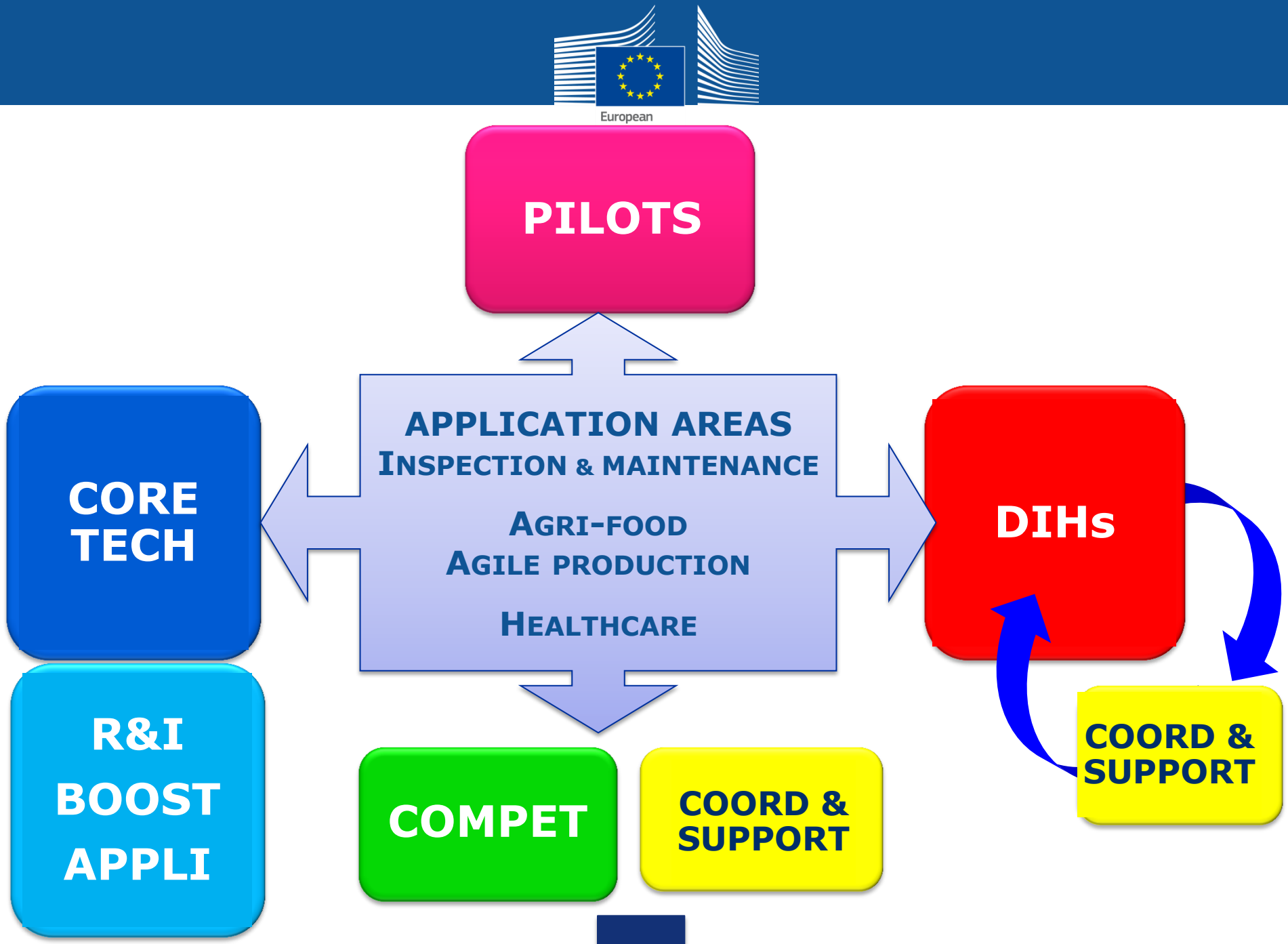


4 Core Technologies

- AI and Cognition
- Cognitive Mechatronics
- Socially cooperative human-robot interaction
- Model-based design and configuration tools

5 ACTIONS

- DIHs (Digital Innovation Hubs)
- RIAs (Research and Innovation)
- Large Scale Pilots
- Competitions
- Coordination


European
PILOTS
CORE TECH
APPLICATION AREAS
INSPECTION & MAINTENANCE
AGRI-FOOD
AGILE PRODUCTION
HEALTHCARE
DIHs
R&I BOOST APPLI
COMPET
COORD & SUPPORT
COORD & SUPPORT

TIMELINE

European Commission

OPENING

31 OCT 2017

DT-ICT-02-2018
DIGITAL INNOVATION HUBS

17 APRIL 2018

ICT-09-2019-2020:
APPLICATION AREAS

ICT-10-2019-2020:
CORE TECHNOLOGY

28 MARCH 2019

ICT-46-2019-2020:
APPLICATION AREAS
CORE TECHNOLOGY
CSA
ICT-47-2019-2020:
RIA BOOSTING PROMISING APPLICATIONS
DT-ICT-12-2020:
THE SMART HOSPITAL OF THE FUTURE

22 APRIL 2020

OCT2017 | 2018 | 2019 | 2020

ICT46: RIA	41.5M€
ICT46: IA	41.5M€
ICT46: CSA	3M€
ICT47: RIA	20M€
DT-ICT-12	40M€

TIMELINE

PILOTS - APPLICATION AREAS:
- AGRI-FOOD
- AGILE PRODUCTION

PILOTS
- SMART HOSPITAL OF THE FUTURE

CORE TECHNOLOGIES
- AI & COGNITION
- COGNITIVE MECHATRONICS
- SOCIALLY COOPERATIVE HRI
- MODEL-BASED DESIGN & CONFIG. TO

ICT-46-2019-2020:
APPLICATION AREAS
CORE TECHNOLOGY
CSA

ICT-47-2019-2020:

DT-ICT-12-2020:
THE SMART HOSPI
OF THE FUTURE

2020

CSA – 3M€
BUDGET: 3M€/PROPOSAL

RESEARCH & INNOVATION (RIA)
BOOSTING PROMISING APPLICATIONS

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DT-ICT-12-2020:

AI for the smart hospital of the future

TOPIC: ICT-46-2020:

Robotics in Application Areas and Coordination & Support

a) RIAs: Increased autonomy

Robotics Core Technology

➔ Budget: 6-7M€/action – TOTAL: 41.5M€ - min 1 per Core Techno.

b) IA: Large scale pilots in Robotics demonstrating the use of robotics in highly realistic environments in

- **Agri-Food / Agile Production**

➔ Budget: ~6-7M€/action TOTAL: 41.5M€ min 3 proposals/application area

c) Coordination and Support Action (CSA) – Robotics

➔ Budget: <3M€/action TOTAL: 3M€

TOPIC: ICT-46-2020:

Robotics in Application Areas and Coordination & Support

a) RIAs: Increased autonomy

Robotics Core Technology

- AI and Cognition
- Cognitive Mechatronics
- Socially cooperative human-robot interaction
- Model-based design and configuration tools

➔ Develop core modules/toolkits for application in prioritised application areas

➔ Link to Robotics DIHs networks funded in 2018 call

➔ Address 1 Core technology

➔ Min. 1 action in each core technology to be funded

➔ Budget: 6-7M€/action – TOTAL: 41.5M€

TOPIC: ICT-46-2020:

Robotics in Application Areas and Coordination & Support

b) IA: Large scale pilots in Robotics demonstrating the use of robotics in highly realistic environments in

- **Agri-Food** from farming to processing and distribution

Or

- **Agile Production**
  - Link to other sources of funding – sustainability
  - Reference architectures, platforms,
  - Performance targets and evaluation
  - Ecosystem building
  - Acces to pilot – link to DIHs
  - Technical & non-technical issues

➔ Budget: ~6-7M€/action TOTAL: 41.5M€ min 3 proposals/application area

TOPIC: ICT-46-2020:

Robotics in Application Areas and Coordination & Support

c) Coordination and Support Action (CSA) – Robotics

- Awareness and knowledge transfer
- High-level stakeholder forum + communication strategy
- Legal and societal issues - AI-based robotics technology
- Best practice to robotics stakeholders
- Advice on: socio-economic, cyber-security, data protection, ethical and privacy issues
- Public understanding /awareness activities

➔ Budget: <3M€/action TOTAL: 3M€

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AI for the smart hospital of the future

TOPIC: ICT-47-2020:

Research and Innovation boosting promising robotics applications

***Specific Challenge**:*

- Physical Intelligence

- Applications with high socio-economic impact and low environmental footprint – **OPEN TO ALL APPLICATION AREAS**

- Demonstrate the potential for take-up in the selected application(s).

TOPIC: ICT-47-2020:

Research and Innovation boosting promising robotics applications

Research Areas:

- Micro- or millimetre scale robots
- Novel materials for service robotics
- Beyond human manipulation of objects
- Non-visual sensing novel for service robotics
- Intrinsically safe physical powerful robotic systems
- Variable/shared autonomy systems

➔ TRL4 integrated demos

➔ Budget: 2-3 M€/proposal

ROBOTICS & AI in H2020 - ICT-2018-2020

ICT-46-2020:

Robotics in Application Areas and Coordination & Support

ICT-47-2020:

Research and Innovation boosting promising robotics applications

DT-ICT-12-2020:

AI for the smart hospital of the future

Conditions applying to all DT calls on « Platforms and Pilots »

- Platform building
- Large scale piloting
- Ecosystem building
- Standardisation

TOPIC: DT-ICT-12-2020:

AI FOR THE SMART HOSPITAL OF THE FUTURE

IAs: large-scale pilot

- ➔ In-facility pilot demonstrators
- ➔ Innovative AI-based solutions in a health and care setting (hospital, primary care facility or care home).
- ➔ Enable or support clinical, diagnosis and treatment, etc. carried out with clinical outcomes comparable to human delivered procedures and with comparable results.
- ➔ AI-based systems combining digital and physical services
- ➔ Integrate health and care partners
- ➔ Access to the relevant operational environment
- ➔ Link to DIH in robotics healthcare - https://dih-hero.eu/

- ➔ Budget: 7-10M€/action – TOTAL: 40M€

AI - in H2020 - ICT-2018-2020

ICT-48-2020:

Towards a vibrant European network of AI excellence centres

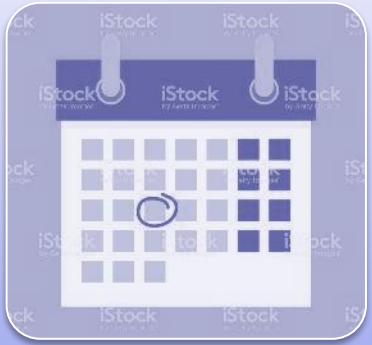
ICT-49-2020:

Artificial Intelligence on demand platform

ICT-48-2020: Towards a vibrant European network of AI excellence centres

BUDGET/TOPICS:

- **4 RIAs** (Research and Innovation Actions) **48M€**
- **1 CSA** (Coordination and Support Action) **2M€**



DATES:

- Opening: 09 July 2019
- **Closing: 13 Nov 2019**

CHALLENGE

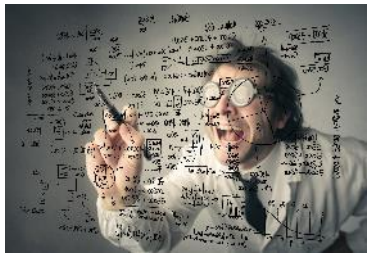
European Commission

➔ ***Foster cooperation among the best research teams in Europe, joining forces to tackle more efficiently major scientific and technological challenges in AI hampering deployment of AI-based solutions.***

TECHNOLOGY FOCUS

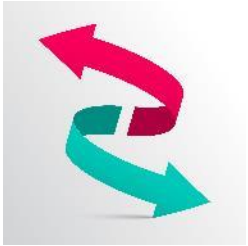
European Commission

Collaborative projects focus on ONE OR SEVERAL of the following topics & bring necessary competencies :

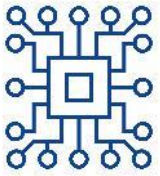


- ***Advances in FOUNDATIONS of AI (e.g.: learning and reasoning approaches) and APPROACHES for TRUSTED AI SOLUTIONS (including explainable AI, unbiased AI, safety, reliability, verifiability etc.),***
- ***Developing the next generation of INTELLIGENT ROBOTS,***

- ***Advanced PERCEPTION or INTERACTION with humans (for human-centered AI) and environments.***



- ***AI at the EDGE and HARDWARE for AI.***



SYNERGIES WITH THE AI-ON-DEMAND PLATFORM

European Commission

- ***AI-on-demand platform = ONE-STOP-SHOP FOR AI resource in Europe ➔ backbone of these networks:***
  - ***PROVIDING tools and algorithms, data, support services, also to the research community***
  - ***LINK TO THE COMMUNITY AT LARGE ➔ spread the knowledge and develop collaborations***
  - ***ENRICHING the platform (tools, competencies, services) ➔ make it the REFERENCE and QUALITY LABEL for resource in AI.***
  - *tools, algorithms, resources developed in the networks of excellent centres ➔ available to all via the AI-on-Demand platform*

BUDGET

European Commission

- ***EUR 12 million per network (indicative)***

SCOPE

b) Coordination and Support Action (CSA)

European Commission

- ***Develop SYNERGIES and EXCHANGE***
  - ***between the selected projects***
  - ***with other relevant projects (AI-on-demand platform, community at large, academic and industrial)***
- ***Support the four RIAs in COMMON ACTIVITIES ➔ economies of scales***
  - ***Organization of events, logistics support for calls for FSTP, exchange mechanisms among labs, etc.***
  - ***Exchanges of best practices to reinforce and optimize cooperation, etc.***
- ***Support the RIA projects in their DISSEMINATION ACTIVITIES towards industry, users, and citizens. Diversity and gender aspects should be addressed, when relevant.***

SCOPE

b) Coordination and Support Action (CSA)

European Commission

To maximise the AI benefits

➔ ***Equip professionals with right SKILLS***

Support academia in cooperation with industry:

➔ ***What? Identify***

- AI courses and modules that could be integrated in ***NON-ICT*** education master programmes
- Mechanisms for ***INTEGRATION***.

➔ ***How? Workshops & other appropriate approaches***

BUDGET

European Commission

- ***EUR 2 million per network (indicative)***

EXPECTED IMPACT

- *Reinforce Europe's **RESEARCH CAPACITY** in AI*
- *Ensure Europe's **LEADERSHIP** in key **STRATEGIC** research topics*
- *Make Europe a research **POWERHOUSE** for AI*
- *Increase Europe's **ATTRACTIVENESS** for scientists ➔ nest for future generations of scientists and breakthrough in AI*
- *Strengthen the **AI-ON-DEMAND PLATFORM***
- *Mobilization and commitment from the community & high level experts ➔ making AI-on-Demand platform **THE REFERENCE RESOURCE** for European researchers, developers, integrators and users*
- *Pave the way to enrich the **EDUCATION OFFER** ➔ equip a broad range of **NON-ICT PROFESSIONALS** with the necessary AI skills*

MORE INFORMATION

European Commission

- ***Information from the Brokerage event on May 28***
- ***Including Virtual brokerage tools and presentations from participants***
- ***https://ec.europa.eu/digital-single-market/en/news/h2020-call-european-network-artificial-intelligence-excellence-centres-information-and***

AI in H2020 - ICT-2018-2020

ICT-48-2020:

Towards a vibrant European network of AI excellence centres

ICT-49-2020:

Artificial Intelligence on demand platform

BACKGROUND:
Building on project funded under ICT-26-2018

WP18-20: EUROPEAN AI-ON-DEMAND PLATFORM

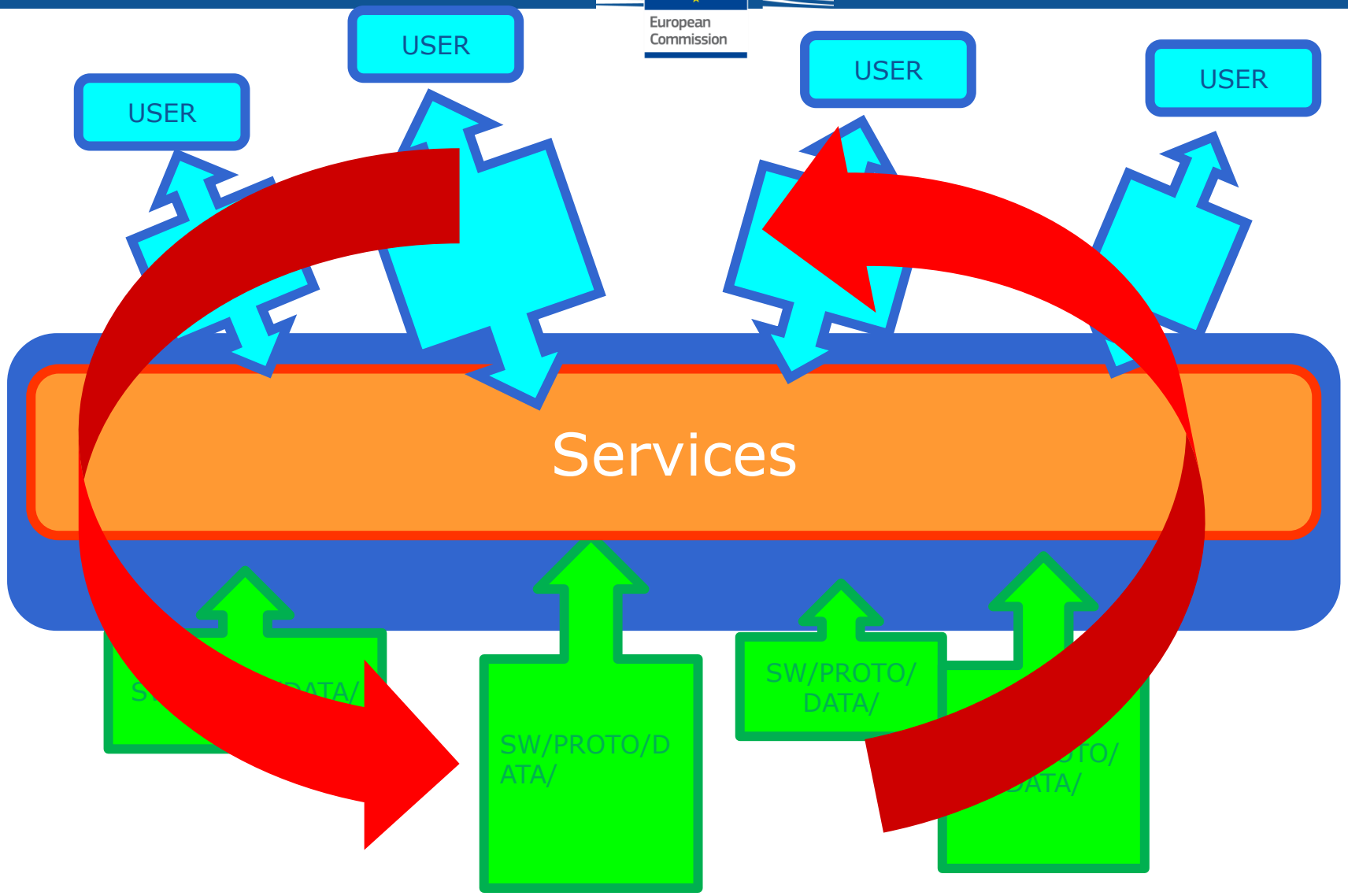
https://www.ai4eu.eu/

AI4EU Advancing Europe through collaboration in AI

THE Central access point – shared resource for Europe

- Integrating tools and resources
- Offering solutions and support to all users of AI to integrate AI into applications, products and services
- Mobilisation of the community
- Large project - 20M€ – 3M€ to be redistributed

Only the start → Expect « CONTINUITY » until 2027 (at least)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AI on demand platform: Consolidation and exploitation

Innovation Action:

- Build on AI-on-Demand platform funded under ICT-26 – AI4EU
- Reinforce service layer
- Enlarge user community, esp. non-tech sector & SMEs;
  - **FSTP (cascading fund) – min 2M€/project – to fund use-cases and small-scale experiments (50-200k€)**

Budget:

Up to 5M€ /proposal - Total: 20M€

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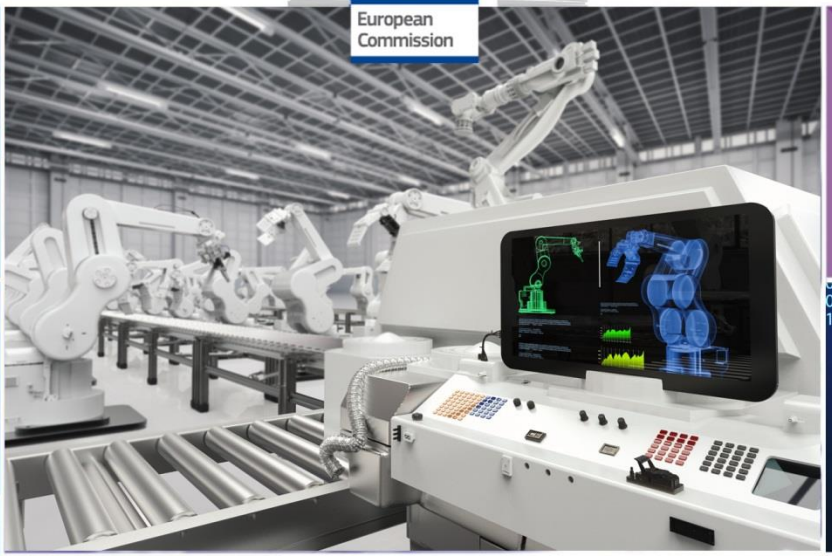



#DigitiseEU, #AI

ICT-38-2020
Artificial intelligence for manufacturing

Cristina Sandoval and Arian Zwegers

Technologies & Systems for Digitising Industry, DG CONNECT/A2, European Commission

AI for Manufacturing
ICT-38-2020

Specific Challenge

- **Integrate AI with manufacturing** technologies/systems to exploit potential in industry
- **Standardisation** and **international collaboration** to support deployment

Context

- Challenge for European economy to seize AI opportunities
  - Essential for Europe's mid and long term competitiveness, and welfare
- Topics support European businesses in developing building blocks of digital transformation

Scope Research and Innovation Actions:

- Focus on integrating AI technologies in manufacturing
  - Taking into account domain-specific requirements,
  - Effective **collaboration between humans and AI,**
  - Instantiating **ethical principles*** by HLEG on AI for manufacturing,
  - Building on existing AI research results, e.g. ICT-26-2018-2020 (AI-on-demand platform)
- Proposals must develop innovative concepts and tools
  - Taking into account status and availability of production resources, **learn** from past experiences, and deal with **unforeseen events**
  - If appropriate, **combine AI** techniques with **digital twins** and real-life feedback from shop floor
  - Generative design approaches
- Demonstrate technologies and solutions in at least two different manufacturing use cases
  - If applicable, identify **legal obstacles** to implementation of proposed solutions

* https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai

Scope Coordination and Support Actions:

- Standardisation
  - Extend, further develop, and support implementation of a model for synchronisation of **standardisation** activities on **AI** and related digital technologies in **manufacturing** at large
    - At Member State, European level, in global context
    - Taking into account legal and ethical issues where relevant
    - Building on previous activities, e.g. Joint MSP/DEI Working Group on standardisation in support of Digitising European Industry*

- Cooperation EU-Japan
  - Support possible cooperation with **Japan in AI-driven** innovation in **manufacturing** and **digital industrial platforms**
    - Assess opportunities and kick-off cooperation activities
    - Twinning with Japanese projects to exchange knowledge and experience, exploit synergies and develop recommendations for collaboration activities

* https://ec.europa.eu/digital-single-market/en/news/final-workshop-standardisation-support-digitising-european-industry-initiative-report-and

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 AI** 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 impact criteria, provide metrics, baseline and targets to measure impact

Open: 9 July 2019
Close: 16 Jan 2020

RIA: 47 M€, between 4 and 6 M€ would be appropriate,

CSA: 1 M€, 0.5 M€ would be appropriate, one CSA for each area

Upcoming events

- European AI Alliance Assembly, 26 June 2019
  - https://ec.europa.eu/futurium/en/european-ai-alliance/join-first-european-ai-alliance-assembly
- Workshop on Artificial Intelligence for Manufacturing, 2 July 2019
  - https://ec.europa.eu/digital-single-market/en/news/workshop-artificial-intelligence-manufacturing
- ICT Proposers' Day 2019, 19-20 Sept 2019, Helsinki
  - https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019
- European Research & Innovation Days, 24-26 Sept 2019
  - https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days_en
- World Manufacturing Forum, 25-27 Sept 2019, Cernobbio
  - https://www.worldmanufacturingforum.org/
- Manufuture 2019, 30 Sept – 1 Oct 2019, Helsinki
  - https://www.dimecc.com/events/save-the-date-manufuture-2019-conference-in-helsinki/
- DEI Stakeholder Forum, 13-15 Nov 2019, Madrid
  - https://ec.europa.eu/digital-single-market/en/news/digitising-european-industry-stakeholder-forum-2019

European Commission

Thank you!

Contacts

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@DSMeu

bit.ly/DigitiseEUpillars
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European Commission

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H2020-LEIT-ICT
WP2018-2020

ICT-51-2020

Big Data Technologies and extreme-scale analytics

ICT-51

Two different parts:

a) Research and Innovation Actions (RIA)

b) One Coordination and Support Action (CSA)

ICT-51 (RIA): The challenge

Rapidly increasing volumes of diverse data from distributed sources create challenges for extracting valuable knowledge and commercial value from data but at the same time have huge potential towards more accurate **predictions**, better **analytics** and **responsible AI.**

This calls for **novel methods, approaches and engineering paradigms in machine learning, analytics** and data management.

Not a new topic, but continuation of the ICT-12 topic of the ICT-2018-2020 Work Programme of H2020.

The state-of-the-art evolves constantly!

ICT-51 (RIA)

Research and Innovation Actions developing new big data analytics methodologies and engineering solutions addressing industrial and/or societal challenges.

Proposals should cover at least one of the following technology areas:

- **machine learning/deep learning**, architectures for collecting, managing and exploiting vast amounts of data;
- system engineering/tools to contribute to the co-design of federated/distributed systems;
- new methods for **extreme-scale analytics, deep analysis, precise predictions and automated decision-making**;
- novel visualization techniques;
- **data fusion and data integration** technologies;
- standardized interconnection methods for efficient sharing of heterogeneous data pools, seamlessly using distributed tools and services.

ICT-51 (RIA): Requirements

The data assets must be sufficiently large, realistic, available to the project and described in the proposal.

The proposed technical solutions must address **real-world industrial requirements.**

Quantifiable progress beyond the state-of-the-art has to be demonstrated whatever the chosen technical domain.

ICT-51 (RIA): Expected impact

- Increased productivity and quality of system design and software development thanks to better methods, architectures and tools for complex federated/distributed systems handling extremely large volumes and streams of data;
- Demonstrated, significant increase of speed of data throughput and access, as measured against relevant, industry-validated benchmarks;
- **Demonstrated adoption of results of the extreme-scale analysis and prediction in decision-making, including AI (in industry and/or society)**

ICT-51 (CSA)

One Coordination and Support Action to ensure **coordination** between the different existing and emerging activities in HPC/BD/Cloud/**AI** technologies, including Public-Private Partnerships, digital innovation hubs, and relevant national and regional initiatives, in particular the European Network of National Big Data Centres of Excellence.

This action is expected to support the transition towards the activities in the Horizon Europe programme.

ICT-51 (CSA): Expected impact

- Effective cooperation of the participating initiatives and platforms as measured by the jointly participating relevant members/users, countries/regions/cities and projects, and the organisation of common events and joint initiatives, resulting in an increased prevalence of data value chains and related technologies (HPC/Big Data/Cloud/IoT/**AI) in the national and regional strategies.**
- Smooth transition to Horizon Europe activities.

The Call for proposals

ICT-51-2020

- The Call opens on 09/07/2019
- The Call will close on **16/01/2020** at 17:00 CET
- Budget: 31,5 M€
  - **ICT-51 (RIA) 30 M€**
  - **ICT-51 (CSA) 1,5 M€**
- Proposals expected average size: 3-6 M€ (RIA)
- Proposals expected average size: 1,5 M€ (CSA)
- Article 30.3 (Commission right to object to transfers or licensing) to be added to all Grant Agreements

Upcoming events

- **Digital excellence forum Horizon 2020 Proposers' day 19-20 September 2019 in Helsinki**
  - Main event to learn about **last funding opportunities** in H2020
  - Big data digital innovation hubs (DT-ICT-05)
  - Big data technologies and extreme-scale analytics (ICT-51)
  - AI on-demand platform, AI excellence centres, AI for manufacturing etc.

  https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019
- **European Big Data Value Forum 14-16 October 2019 in Helsinki**
  - Main event of the year for **Big Data & AI**

    https://www.european-big-data-value-forum.eu/

European Commission

Information and Communication Technologies

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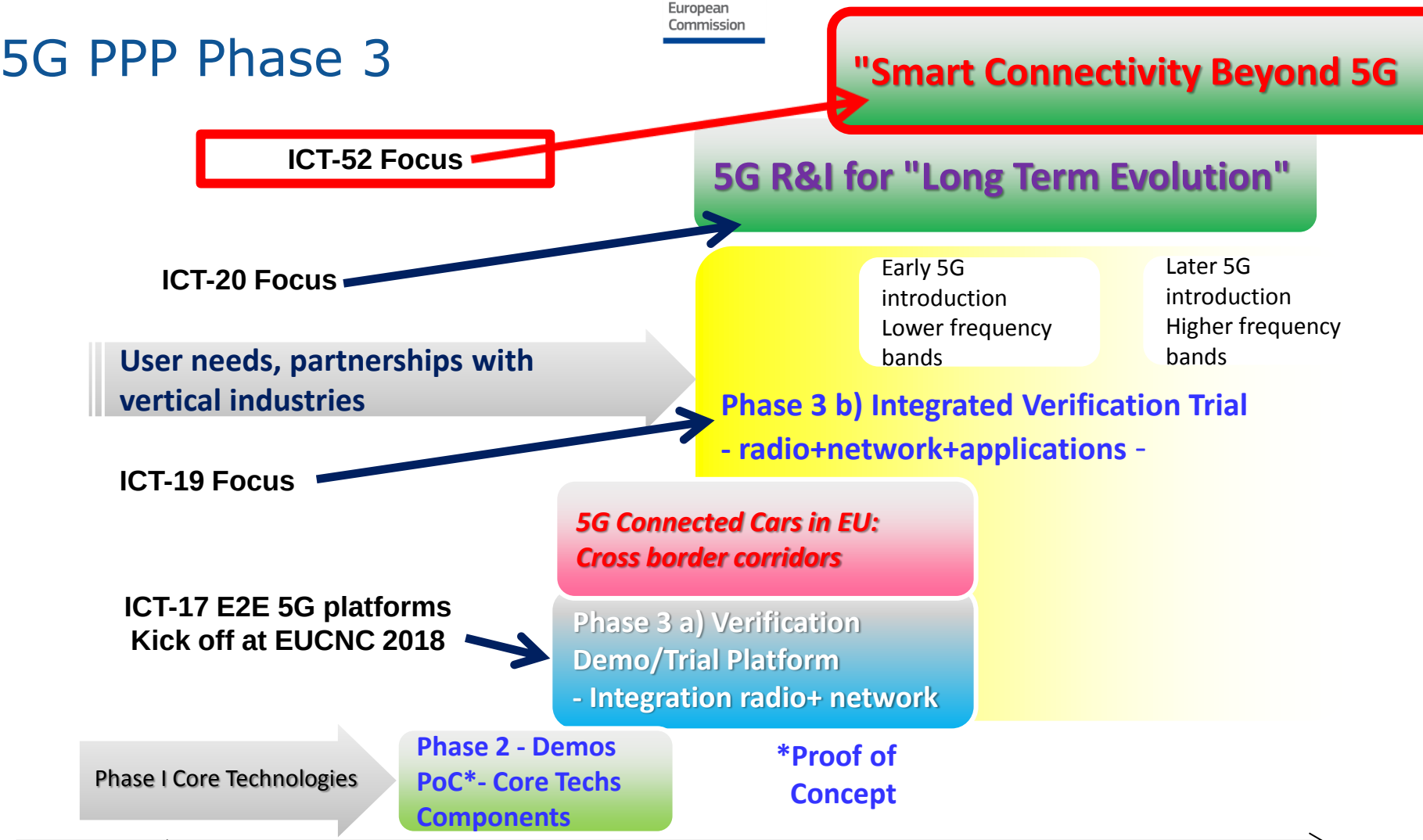
ICT-52-2020 Smart Connectivity Beyond 5G

European Commission
DG CONNECT
Future Connectivity Systems

NCP training 19-20 June 2019
Remy BAYOU

5G PPP Phase 3



ICT-52-2020 Smart Connectivity Beyond 5G

1. What are we looking for?

Challenges:

The challenge is to go well beyond the 5G capabilities available in 2020. It also looks **Beyond 5G to prepare Smart Connectivity systems** as a platform for a Next-Generation Internet, supporting a highly flexible connectivity infrastructure that can **dynamically adapt** to innovative applications whilst facilitating user data control and innovation friendly implementation of relevant legislation. This requires **a full value-chain** approach towards **seamless and secure end-to-end interworking with computing resources and with a range of innovative devices.**

ICT-52-2020 Smart Connectivity Beyond 5G

1. What are we looking for?

- Infinite network **capacity**, innovative spectrum use and management, usability of new bands and radio technologies and architectures
- Imperceptible **latencies** through flexible connect-compute technologies
- smart connectivity of **massive** amounts of things and systems
- novel architectures and protocols for **adaptive** networks
- personalised, multi-tenant and perpetual **protection** based on security, privacy and trust mechanisms

Proposals may address one or several aspects.

ICT-52-2020 Smart Connectivity Beyond 5G

1. What are we looking for?

Expected Impact:

- Smart connectivity technologies for platforms integrating ubiquitous connectivity, storage, and computing resources opening for new service and business models.
- Smart connectivity platforms towards perceived zero latency.
- Network scalability towards a high number of resource-constrained (IoT) devices
- Characterisation and availability of secure and trusted environments for software based virtualised networks, including underlying hardware limitations and enabling trusted multi-tenancy.
- Innovative radio spectrum use, novel strategies for coverage/service extension, support of novel wireless technologies and use cases through platforms, usability of today unexplored spectrum.
- Heterogeneous networks with dynamic topologies for advanced mobility solutions.
- Dynamic scalability of network capabilities with managed and enhanced optical resources.
- Characterisation of **AI** and blockchain technologies in the connectivity domain, notably **for network/service management and security.**
- Significant reduction of total cost of ownership through improved operational and capital expenditure efficiency, and energy consumption.

ICT-52-2020 Smart Connectivity Beyond 5G

1. What are we looking for?

Budget: **55 M€**

The Commission considers that proposals requesting a contribution from the EU of **between €5 and 12million** would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. In particular, initiatives with strong structuring effects across a large set of key industry stakeholders and programmatic impact for future European actions in the domain of Smart Network and Services may target the higher budget range. Other budgets may be considered as a function of the ambition of the proposals.

Type of Action: **Research and Innovation Action**

Deadline: opens 19 November 2109, closes **22 April 2020**

5G PPP implementation: projects collaboration through contract clause 41.4, participation in 5G PPP Working Groups

Upcoming events / information days

9. Please list upcoming information days and other events of relevance to this area

- 19-20 September: Information day at the ICT 2019 Event in Helsinki https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019

5G PPP Phase III – ICT-53-2020
5G for Connected and Automated Mobility (CAM)

Pavlos Fournogerakis – Programme Officer

Future Connectivity Systems
European Commission – DG CONNECT

ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM) - general context

- Connected and Cooperative Assisted Mobility (CCAM) identified as a strategic industrial opportunity in the EU in line with 5G Action Plan objectives
- Member State support with Letter of Intent, signed at ministerial level in March 2017
- 5G specifications from 3G PP release 16 will be available early 2020 (5G NR-V2X and beyond)
- Paves the way towards operational deployment as envisaged with the Connecting Europe Facility proposal
- Relevant to cross border railway corridors in view of providing services to trains

➔ **ICT 53 aims at validating 5G for CAM in this wider techno-policy context**

ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM) - scope

- Validation of the latest available 5G specification in the context of innovative CAM applications under realistic conditions and seamlessly functioning across borders covering significant portions of roads or railways.
- Broad innovation perspective covering use cases in the vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-pedestrian (V2P), and vehicle-to-network (V2N) domains including the supporting service infrastructure.
- **Core technological innovation** expected from 5G, such as radio, RAN and core network. **Innovations in the area of Artificial Intelligence (AI) to enable advanced CAM use cases are also included.**

ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM) - scope

- Multi-tenant business architecture to optimise the return on investments and the efficiency of the deployed infrastructure, while considering the opportunity of a European cloud supporting roaming of CAM services
- Expected to provide a clear co-existence between multiple technologies (IEEE 802.11p, C-V2X, 5G-V2X) and migration path towards the use of 5G as the technology for CAM.
- It may include advanced services on board of international trains covering passenger services, train traffic management services, as well as other operational services in preparation for the advent of the Future Railways Mobile Communication Systems (FRMCS)

ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM) - expected impact

- Validation of 5G technologies and architecture in a CAM context, including business models and applicable standards as well as AI features to support most advanced CAM use cases
- Validated cost/benefit analysis of cross border 5G deployment enabling CAM along 5G corridors potentially including several business domains.
- Characterisation of 5G Release 16 or beyond for the most advanced CAM use cases including innovative spectrum use
- Technological validation of 5G introduction for train/railways use cases
- Development of a sustainable model for a pan-European cloud infrastructure
- Participation of key European industrial partners with high standardisation impact

ICT-53-2020: 5G PPP – 5G for Connected and Automated Mobility (CAM)

- Opening 09/07/2019
- **Closing 13/11/2019**
- Target is 3 to 4 projects
- Type of action: Innovation action
- **Special conditions!**
  - The limit for a full proposal is 100 pages
  - A complementary grant agreement will be implemented across projects in 5G-PPP Phase 3

up to 30 M€

Stakeholders Information Opportunities

https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019

Find out more

5G Action Plan for Europe

https://ec.europa.eu/digital-single-market/en/5g-europe-action-plan

ICT Work Programme

https://ec.europa.eu/programmes/horizon2020/en/what-work-programme

5G PPP	*http://www.5G-PPP.eu*
Horizon2020 web site	*http://ec.europa.eu/programmes/horizon2020*
Participants portal	*http://ec.europa.eu/research/participants/portal*
H2020 Helpdesk, including FAQ	*http://ec.europa.eu/research/index.cfm?pg=enquiries*

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Next Generation Internet (NGI): Connected Objects and the Internet of Things

WP2020 Perspectives

Rolf Riemenschneider
Peter Wintlev-Jensen
Internet of Things
DG Communications Networks, Content and Technology
European Commission

R&D drivers for Next Generation IoT

European Commission

ICT-56: Next Generation of Internet of Things

- SCOPE:
  - **The next chapter of IoT :**

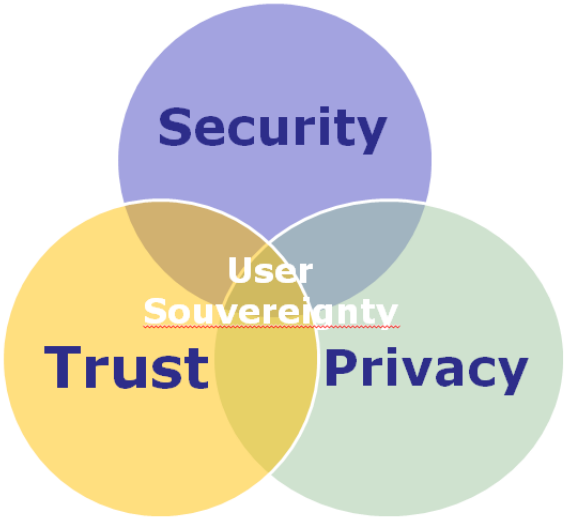
→ from Digitally enabling the Physical world
→ towards **automation** (at the point of interest) and **augmentation** of human experience with the connected world

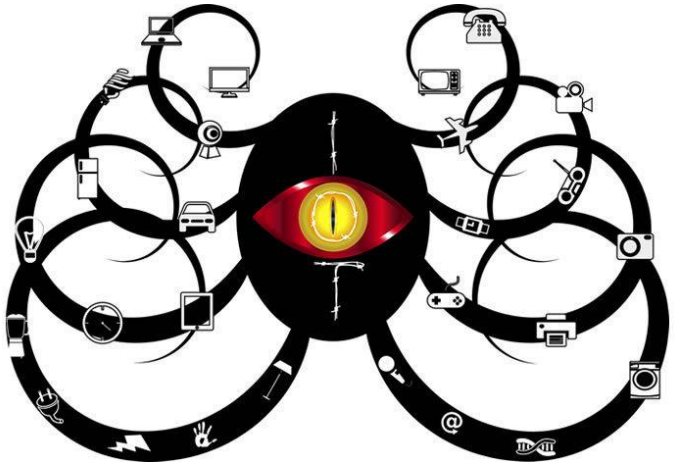
- **IoT Concepts and Solutions to underpin the NGI Vision**
  - Reference implementations for smart devices into **self-adaptive**, **robust**, **safe**, interconnected smart network and service platforms
  - Proof-of-concept, demonstrations driven by realistic use cases in areas such as wearables, transportation, agriculture, homes, health, energy, and manufacturing
  - Cascading funds to demonstrate open access to infrastructure implementations

- *Human-centered IoT*

  → New Architecture design paradigms?

  - More intimate information + exponential risks?
  - Central vs. Federated Architectures
  - **Machine learning/AI in hopes of providing a more dynamic deterrent.**





European Commission

D R A F T
subject to changes

Topic: H2020-ICT-56-2020

Timeline:

- Call opening: approx. July 2019
- Call deadline: approx. January 2020
- Budget: ~ **46 Mio €**

Specific Challenges:

- **Next generation IoT architectures** with a focus on real-time capabilities, **self-aware, semi-autonomous IoT systems, make use of distributed AI,** decentralized topologies and governance.
- At the edge: **the Tactile Internet** will be enables by IoT, AR/VR and contextual computing
- **Interoperability** for connecting vast number of devices, data sharing combined **with contractual arrangement** (e.g. DLT).
- **Next generation IoT devices** drawing on applicable results in micro-nano-bio integrating novel computing at the edge, new (mesh, 5G) topologies

Maximising the Impact

D R A F T
subject to changes

- **User at the Center**
  - Improved privacy and security
  - Contribution to human-centered IoT evolution improving usability and user acceptance
- **Future and emerging standards** and pre-normative activities
- Evolution of **next generation of IoT infrastructure service platforms**
  - Scientific progress enabling future semi-autonomous and real-time IoT applications
  - Decentralised architectures and governance
  - Automating Processing at the edge
- **New disruptive business models**
  - Opportunities for SMEs, innovators and start-ups

Thank you - useful links

- Digitising European Industry Strategy (DEI):

  https://ec.europa.eu/digital-single-market/en/digitising-european-industry

- EU Internet of Things in DAE:

  http://ec.europa.eu/digital-agenda/en/internet-things

- The Alliance of Internet of Things Innovation

  http://www.AIOTI.eu

- ENISA IoT work

  https://www.enisa.europa.eu/topics/iot-and-smart-infrastructures/iot?tab=publications

- IoTWeek 2019

  https://iotweek.org/

HORIZON 2020

ICT-54-2020

Blockchain for the Next Generation Internet

peter.friess@ec.europa.eu
stefano.foglietta@ec.europa.eu

img: BBC

Tackling online disinformation – DSM Policy

- **Action Plan on disinformation** focusing on four key areas:
  - improving detection, analysis and exposure of disinformation
  - stronger cooperation and joint responses to threats
  - enhancing collaboration with online platforms and industry to tackle disinformation
  - raising awareness and improve societal resilience
- **Code of Practice on disinformation** - actions to be taken in 5 areas:
  - Disrupting advertising revenues of certain accounts and websites that spread disinformation;
  - Making political advertising and issue based advertising more transparent;
  - Addressing the issue of fake accounts and online bots;
  - Empowering consumers to report disinformation and access different news sources, while improving the visibility and findability of authoritative content;
  - Empowering the research community to monitor online disinformation through privacy-compliant access to the platforms' data.

https://ec.europa.eu/digital-single-market/en/tackling-online-disinformation

Scope and subtopics

- Research and Innovation Actions (RIA) are called for in the following three sub-topics. Proposals should address only one of these sub-topics:
  - **i. Advancing research on Blockchain and Distributed Ledger Technologies**
  - **ii. Fostering trust in internet information exchange and content with blockchain**
  - **iii. Bringing forward the emergence of collective intelligence on the internet**

Please refer to the published work programme when elaborating a proposal

Subtopic iii. Bringing forward the emergence of collective intelligence on the internet

- Develop approaches for scientific understanding and technology-based stimulation of collective intelligence on social media and the internet to foster trustworthy knowledge and information sharing, and to enhance social inclusion.
- Two use cases:
  a) develop new community-based service models on social networks that **exploit collective intelligence** to provide enhanced community services, and increase the availability of trustworthy content and,
  b) in the context of collective intelligence develop and implement **new concepts for connecting people and smart objects/agents/AI on social media**.

  Approaches for both use cases must be rooted in **scientific analysis of collective behaviour** (taking into account gender difference, where relevant) and network mechanisms, harness decentralised technologies such as P2P or blockchain for governance and support a **dependable collective memory**.

Timing and budget

- Call opening: 09/07/2019 Call closing: 16/01/2020
- Budget: i. RIA: 8 MEUR, ii. RIA: 6 MEUR, iii. RIA: 6 MEUR
- Expected duration: 24 to 36 months

- As the primary purpose of the action is to support and mobilise internet innovators, a minimum of 70% of the total requested EU contribution should be allocated to financial support to the third parties.
- For ensuring focused effort, third parties will be funded through projects typically in the range of EUR 50 000 to 200 000 per project, with an indicative duration of 12 months.
- In line with Article 23 (7) of the Rules for Participation, the amounts referred to in Article 204-205 of the Financial Regulation may be exceeded in order to achieve the objective of the action up to a maximum funding per third party of EUR 500 000.

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DT-ICT-03-2020: I4MS (phase 4) - uptake of digital game changers

Anne-Marie Sassen and Anna Puig-Centelles
Technologies and Systems for Digitising Industry – DG CNECT/A2

Focus area "Digitising and transforming European industry and services"

- Consortia should be deeply rooted in regional/national innovation ecosystems
- Critical mass of highly innovative, cross border experiments. At least 50% of the budget should directly benefit SMEs or slightly bigger companies. Financial Support to Third Parties may be used.
- Activities should aim at long-term sustainability and include a business plan for the DIHs, a plan to attract investors, to address training and skills development needs and dissemination. Established networks reaching out to SMEs like the Enterprise Europe Network and the NCP network should be used.
- Selected projects are expected to collaborate on building a network of Digital Innovation Hubs, covering most regions in Europe.

DT-ICT-03-2020: I4MS

Innovation Actions – 70 M€

+ CSA – 1 M€

13 November 2019 17h00

Accelerate design, development and uptake of advanced digital technologies by European industry – especially SMEs and mid-caps. Manufacturing SMEs and mid-caps need support in using secure digital technologies in production processes, products and business models to enable personalised products and to facilitate cost-effective small-scale production

Innovation Actions

- Digital Innovation Hubs that strengthen European SMEs and mid-caps by experimenting and testing in one or more areas. Identify area of centre of gravity
- Cover manufacturing sector at large
- If appropriate, building ecosystems around digital industrial platforms driven by European actors should be supported
- Minimising entry barriers and demonstrating added value of technologies, making SMEs and mid-caps more competitive by transferring innovative solutions into the wider manufacturing community. Special attention should be given to security considerations and to the development of skills.

DT-ICT-03-2020: I4MS

Innovation Actions – 70 M€

+ CSA – 1 M€

13 November 2019 17h00

Innovation Actions, Areas

- Smart modelling, simulation, and optimisation for digital twins
- Laser based equipment in advanced and additive manufacturing
- **Innovative Artificial Intelligence in manufacturing**
- **Cognitive autonomous systems and human-robot interaction**
- Widening Digital Innovation Hubs

Up to 8 M€ would be appropriate

At least one IA for each area, with the exception of the Widening Digital Innovation Hubs area, for which one IA is supported

Upcoming events

- European AI Alliance Assembly, 26 June 2019
  - https://ec.europa.eu/futurium/en/european-ai-alliance/join-first-european-ai-alliance-assembly
- Digital Innovation Hub workshop on DEP and DIH collaboration, 1 July 2019
  - https://ec.europa.eu/digital-single-market/en/news/seventh-meeting-working-group-digital-innovation-hubs
- Workshop on Artificial Intelligence for Manufacturing, 2 July 2019
  - https://ec.europa.eu/digital-single-market/en/news/workshop-artificial-intelligence-manufacturing
- ICT Proposers' Day 2019, 19-20 Sept 2019, Helsinki
  - https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019
- European Research & Innovation Days, 24-26 Sept 2019
  - https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/european-research-and-innovation-days_en
- World Manufacturing Forum, 25-27 Sept 2019, Cernobbio
  - https://www.worldmanufacturingforum.org/
- Manufuture 2019, 30 Sept – 1 Oct 2019, Helsinki
  - https://www.dimecc.com/events/save-the-date-manufuture-2019-conference-in-helsinki/
- DEI Stakeholder Forum, 13-15 Nov 2019, Madrid
  - https://ec.europa.eu/digital-single-market/en/news/digitising-european-industry-stakeholder-forum-2019

European Commission

Thank you!

Contacts

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Anna.Puig-Centelles@ec.europa.eu

Follow the latest progress and get involved

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bit.ly/futuriumdei

H2020-LEIT-ICT
WP2018-2020

DT-ICT-05-2020

Big Data Innovation Hubs

DT-ICT-05 Innovation Actions

The challenge:

- to break "data silos" and stimulate sharing, re-using and trading of data assets
- by launching a second-generation data-driven innovation hub that will federate data sources and foster collaborative initiatives with relevant digital innovation hubs
- to promote new business opportunities notably for SMEs as part of the Common European Data Space

DT-ICT-05 (IA)

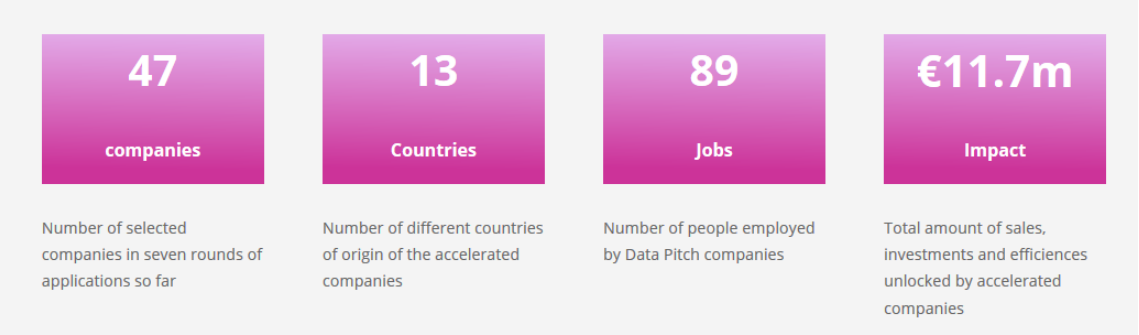
Builds on on “data incubator” projects selected from

- ICT-15-2014 - Big Data and Open Data innovation and take-up
- ICT-14-2016-2017 - Cross-sectorial and cross-lingual data integration and experimentation

DT-ICT-05 (IA)

Relevant previous/ongoing projects:

- **ODINE (ended)**
- **Data Pitch**



- **European Data Incubator**

DT-ICT-05 (IA): Scope

Digital Innovation Hubs that strengthen European SMEs and empower European citizens by supporting them to **use and combine data sources** from different sectors and communities (e.g. retail, tourism, manufacturing, finance and insurance, media, healthcare, consumer support, transport, energy, public administration...) to **develop innovative products and services**.

Special attention should be paid to fostering and facilitating the "fitness to the market" of the new solutions and data-driven business concepts, and to introducing best practices to sectors whose business models are not yet data-driven.

DT-ICT-05 (IA): Sub-topic 1

Federate and network the relevant actions and initiatives, especially digital innovation hubs (including national and regional hubs), that contribute to the creation of a **Common European Data Space**. Targeted organizations and individuals, especially SMEs, web entrepreneurs and start-ups, will be attracted to use federated data sources (including data platforms), digital infrastructures, tools and methods as accelerators for **developing innovative products and services based on data sharing across sectors and borders.**

The federating hub is expected to run specific communication and training activities (e.g. on tools, data sources and stakeholder needs) and address, where appropriate, data standardization and interoperability issues.

DT-ICT-05 (IA): Sub-topic 2

Select, launch and incubate innovation experiments in view of bringing to the market new solutions and services based on secure and trusted data value chains, such as those based on actions resulting from ICT-14-2016-2017 and ICT-18-2016.

Appropriate computing infrastructure, **tools** and support services (e.g. for GDPR compliance and data mentoring) must be made available by the Innovation Actions.

Each experiment may involve support to third parties as a mini project following an open call, up to the amount of EUR 120.000 for each such project.

DT-ICT-05 (IA): Sub-topic 3 (I)

Select, launch and incubate innovation experiments for data driven services and tools able to reshape the media value chain, including social media. Experiments should involve one or both of the following aspects:

1. to explore new ways in which citizens can exploit data to better target and extend the reach of user generated content so as to increase content diversity, transparency and accountability, in a way that enables bottom-up quality journalism, science education or digital democracy.

2. to explore new ways in which artists and more generally the creative sectors could be integrated in the development of innovative data exploitation for content creation.

DT-ICT-05 (IA): Sub-topic 3 (II)

For both aspects, experiments will consider the application of innovative business models and the necessary aggregation and secure handling of data available from sources such as sensors, observation data, visual data or social media **supported by AI systems**. Each experiment may involve support to third parties as a mini project following an open call, up to the amount of EUR 80.000 for each such project.

DT-ICT-05 (IA)

Sub-topic 1: one Innovation Action will be selected.

Sub-topic 2: at least one Innovation Action will be selected.

Sub-topic 3: one innovation action will be selected.

Innovation Actions are expected to collaborate closely with the Coordination and Support Actions under ICT-51-2020 and ICT-13-2018.

DT-ICT-05 (IA): Expected impact

- Substantial increase in the total amount of data shared and exchanged in the federated incubators, including closed/proprietary/industrial data;
- At least 150 SMEs and web entrepreneurs, including start-ups, participate in federated incubators, with an average 30% annual increase in the sales of the incubated companies;
- Improved service quality and user satisfaction resulting from optimized data-driven processes and business models.

Call for proposals DT-ICT-05-2020

- The Call opens on 09/07/2019
- The Call will close on **13/11/2019** at 17:00 CET
- Budget: 30,5 M€
- Proposals expected average size (EU contribution)
  - **Sub-topic 1: 8-12 M€**
  - **Sub-topic 2: 5-7 M€**
  - **Sub-topic 3: 5 M€**
- Article 30.3 (Commission right to object to transfers or licensing) to be added to all Grant Agreements

Upcoming events

- **Digital excellence forum Horizon 2020 Proposers' day 19-20 September 2019 in Helsinki**
  - Main event to learn about **last funding opportunities** in H2020
  - Big data digital innovation hubs (DT-ICT-05)
  - Big data technologies and extreme-scale analytics (ICT-51)
  - AI on-demand platform, AI excellence centres, AI for manufacturing etc.

  https://ec.europa.eu/digital-single-market/en/news/digital-excellence-forum-ict-proposers-day-2019
- **European Big Data Value Forum 14-16 October 2019 in Helsinki**
  - Main event of the year for **Big Data & AI**

    https://www.european-big-data-value-forum.eu/

Boost rural economies through cross-sector digital service platforms DT-ICT-09-2019

Joël Bacquet - Programme Officer – Internet of Things

DG CNECT - European Commission

Susana Gaona - Research Programme Officer- Research and innovation – DG AGRI - European Commission

DT-ICT-09-2020 Specific Challenges:

- Attractiveness of rural areas via jobs and services.
- Increase connectivity and digitization of rural areas.
- Limited interoperability between object/service platforms supporting applications and sharing data.
- Create a marketplace for service/applications providers and platform operators supporting an ecosystem

Nota bene
Part of Focus Area, so Introductory texts "Platforms and Pilots" are applicable, in addition to specific topic texts

Timeline
Open: 19 nov 2019
Close: 22 Apr 2020

***Budget- IA**: 30 M€, up to 15 M€/proposal(indicative)*

Scope: Proposals are expected to develop and demonstrate cost-efficient and flexible cross-domain applications through large-scale pilots addressing all of the following aspects:

1. Integration of data across different platforms for efficient service provision (**where appropriate based on AI**).
2. Develop open marketplace for cross-cutting services.
3. Reference implementations (proof-of-concept, demonstrators).
4. Develop Pilots demonstrating benefits in rural areas
5. Create innovation ecosystems for novel applications

Pilots could be developed in the following application areas:

- Public services;
- Energy;
- Autonomous robotics transport;
- Logistics;
- Education,
- Tourism;
- Health and care.

The application should support the implementation of the smart village concept

Smart village: the concept

Smart Villages are communities in rural areas that develop smart solutions to deal with local challenges and opportunities for a sustainable development

- *Use existing strengths and opportunities*
- *Participatory approach to develop and implement strategic initiatives*
- *Social and/or digital innovation*
- *More on:* ***https://enrd.ec.europa.eu/smart-and-competitive-rural-areas/smart-villages/smart-villages-portal_en***

European Commission

Further guidance:

- Platforms should be validated in at least 3 large-scale regional pilots in rural settings.
- Pilots to provide scalable solutions to meet social and economic targets relevant to rural services and businesses.
- KPI to measure progress on citizen's benefits.
- Financial support to third parties, particularly for SMEs (max 20% of EU funding).
- Pilots to follow participatory approach involving social groups.

European Commission

Further guidance (continued):

- To develop strategic approaches to help all actors to improve implementation of EU policies in rural areas.
- When necessary involve internet providers to ensure connectivity.
- The 4 activities described for platforms and Pilots (Platforms, Pilots, Ecosystems, Standardisation) apply.
- Contribute to the horizontal activities (DT-ICT-13-2019)
- Proposal of up to 15M€ allow to address the area.

European Commission

Expected impacts (specific to DT-ICT-09)**:**

- Validate the brokerage platforms illustrated by an increase of cross-cutting applications and services
- Demonstrate and show-case cross-sectorial platforms interoperability.
- Demonstrate the benefits of data sharing across platforms from different sectors.
- Exploration and validation of new industry and business processes and innovative business models validated in the context of the pilots.
- Overcome the digital divide between rural and urban areas, and to develop the potential offered by connectivity and digitisation of rural areas.
- Improve quality of life in rural areas, higher standard of living and services for citizens.
- Creation of opportunities for entrepreneurs, notably SMEs, by promoting new market openings, providing access to valuable datasets and direct interactions with users, creating new businesses in rural areas.

European Commission

Expected impacts (generic to platforms but still applicable)**:**

- Increased prospects future digital industrial platforms
- Strengthened links with other programmes and initiatives
- Increased number of services/applications by European companies
- Significant, measureable contribution to standards
- Increased number of platforms, applications, business processes and innovative business models validated via large-scale piloting
- Emergence sustainable ecosystems around digital platforms

Thank you - useful links

- Digitising European Industry Strategy (DEI):

  https://ec.europa.eu/digital-single-market/en/digitising-european-industry → **FUTURIUM**

- Smart villages concept

https://enrd.ec.europa.eu/smart-and-competitive-rural-areas/smart-villages/smart-villages-portal_en

- European Network for rural development

https://enrd.ec.europa.eu/home-page_en

- The Alliance of Internet of Things Innovation

  http://www.AIOTI.eu

- Contact points at EC for Pilot DT-ICT-09:

Joel.Bacquet@ec.europa.eu DG CNECT;

Susana.gaona-saez@ec.europa.eu DG AGRI

- *For more information please contact Idealist2018 - http://www.ideal-ist.eu/*

Thank you

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