Horizon 2020

Information and Communication Technologies in Work Programme 2016-17

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European Commission

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HORIZON 2020

A few reminders on Horizon 2020...

- **Biggest EU R&I programme ever**

    €77 billion of EU funding over 2014-2020

    ~ 27% increase compared to 2007-2013

- **Core part of Europe 2020's strategy**

    Smart, sustainable and inclusive growth

- **Main objectives**

  ➢ **Responding to the economic crisis to invest in future jobs and growth**

  ➢ **Addressing people's concerns about their livelihoods, safety and environment**

  ➢ **Strengthening the EU's global position in research, innovation and technology**

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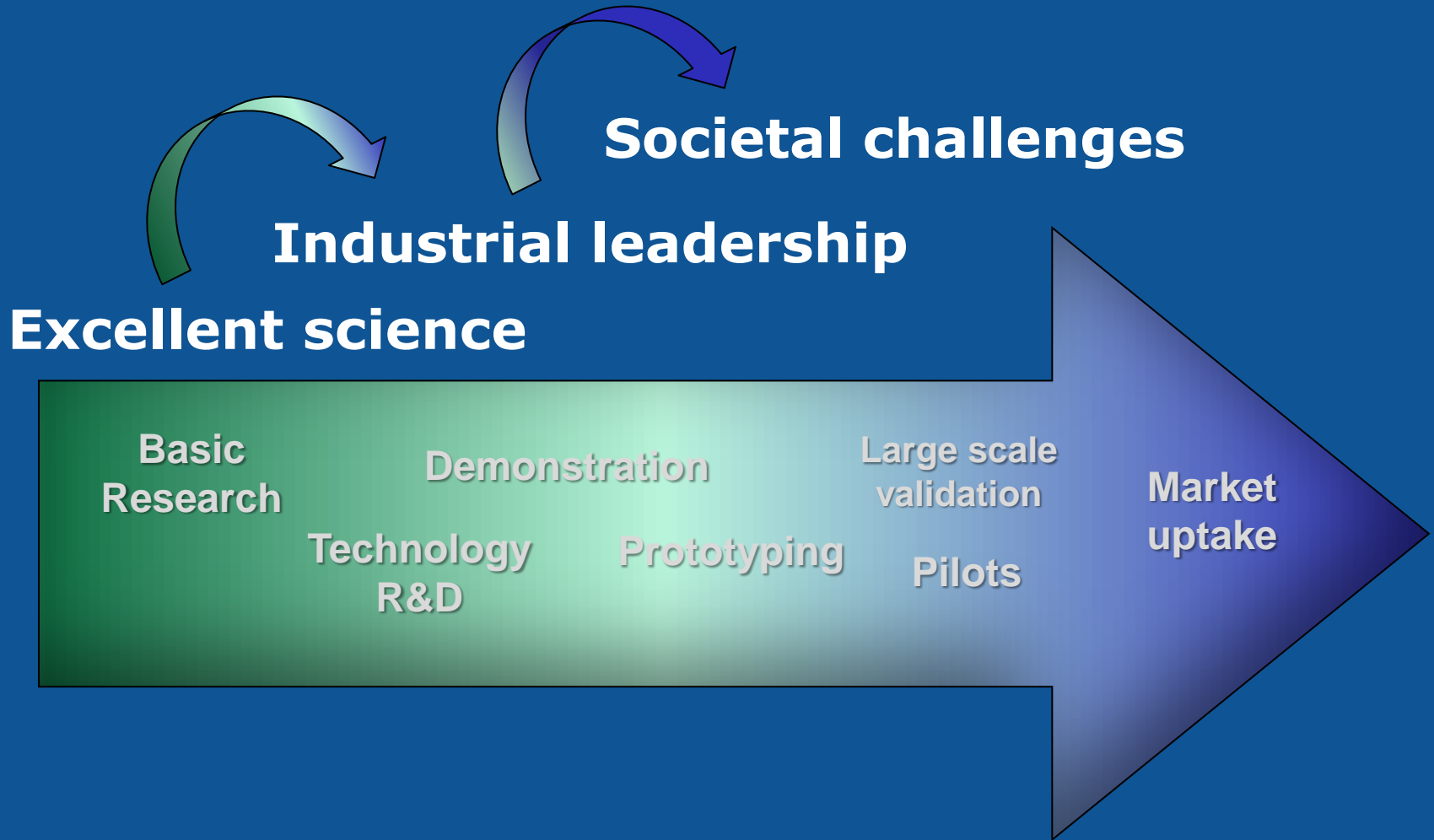
A few reminders on Horizon 2020...

- **A single programme** bringing together three separate programmes/initiatives*
- **Coupling research to innovation** – from research to retail, all forms of innovation
- **Focus on societal challenges** facing EU society, e.g. health, clean energy and transport
- **Simplified access,** for all companies, universities, institutes in all EU countries and beyond

*   The 7th Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT)

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Three priorities

Excellent science

Industrial leadership

Societal challenges

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Coverage of the full innovation chain

Societal challenges

Industrial leadership

Excellent science

Basic Research

Demonstration

Large scale validation

Market uptake

Technology R&D

Prototyping

Pilots

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Lessons learned from 2014-15 calls...
...Changes for 2016-17

- Increased support to **cross-cutting activities**
  - **Focus areas**

- Consolidation and strengthening of the **SME instrument**
  - **Single call** grouping all topics across the WP
  - **Fewer** and **broader** topics, with **higher budget** per topic and overall

- Change of **innovative procurement** instruments (PCP/PPI)
  - Move from co-fund to **standard grants**
  - **Increase of funding rates** (90%/35%)

- Reinforcement of **international cooperation**

- Increased use of **inducement prizes**

- More **precision**, **focus** and **clarity** in the topic descriptions (notably the **expected impacts**)...while keeping up an open and non-prescriptive approach

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ICT in Horizon 2020

Reminder: ICT in H2020 > LEIT-ICT

Excellent Science

Frontier Research (ERC)

Future and Emerging Technologies (FET) **ICT**

Skills and career development (Marie Skłodowska-Curie)

Research Infrastructures **ICT**

Industrial Leadership

Leadership in enabling

and industrial technologies

  ICT **ICT**   **ICT**

  Nanotech., Materials, Manuf. & Processing

  Biotechnology

  Space

Access to risk finance

Innovation in SMEs **ICT**

Societal Challenges

ICT

Health, demographic change and wellbeing

Food security, sustainable agriculture, **ICT**
and the bio-based economy

Secure, clean and efficient energy **ICT**

Smart, green and integrated transport **ICT**

Climate action, resource efficiency, **ICT**
and raw materials

Inclusive, innovative and reflective societies

Secure societies **ICT**   **ICT**

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Public Private Partnerships in ICT

Joint Technology Initiative

- **ECSEL** (Electronic Components and Systems for European Leadership)
  - ✓ **1,215 b€ from EU**
  - ✓ **3,6 b€** (out of which 1,2 b€ from Member States) **from industry partners and other sources**

Contractual PPPs

- **5G** –> **700m€** indicatively earmarked in H2020
- **Photonics** –> **700m€**
- **Robotics** –> **700m€**
- **High Performance Computing** –> **700m€**
- **Factories of the Future** (ICT part) –> **450m€**
- **Green Vehicles** (ICT part) –> **80m€**
- **Big Data** -> **500m€ (NEW!)**

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ICT in Excellent science

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Excellent Science - ICT

- **Future and Emerging Technologies (FET)**
  - **FET Open**: fostering novel ideas
  - **FET Proactive**: nurturing emerging themes and communities
  - **FET Flagships**: pursuing grand interdisciplinary science and technology challenges
    - **Graphene**
    - **Human Brain Project**

- **Research infrastructures**
  - Developing the European research infrastructure for 2020 and beyond
    - **Development, deployment and operation of ICT-based e-infrastructures**
      - **ICT infrastructure resources and services for Research**
      - **Access to and management of scientific data**
      - **High Performance Computing**

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ICT in Industrial leadership

Excellent science

Industrial leadership

Societal challenges
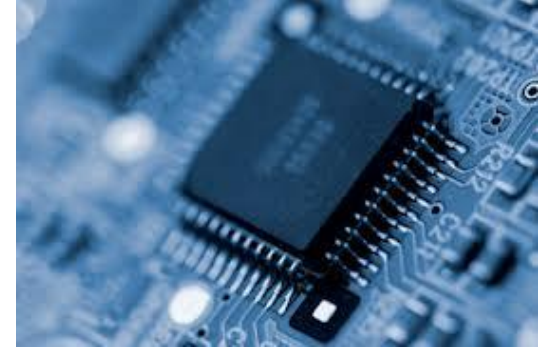
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Approach to WP2016-17

What's new?

- Consolidate the **innovation drive** initiated in 2014-15
  - Supporting core ICT industries through **roadmap-based PPPs**
    - **New cPPP: Big Data**
  - Facilitating **disruptive innovation**
    - Strengthening of **ODI**
    - Continuation of **'Fast Track to Innovation'** pilot
  - Introducing new **cross-cutting actions** and reinforcing **large scale piloting** in real world environments
    - **IoT** and **Digital Security focus areas**
    - **IoT** and **Big Data large scale pilots**

- Ensure the supply of **future technological building blocks**
  - Room for more **exploratory research** activities within each area

- Reinforce the **international dimension** of LEIT-ICT
  - Coordinated calls with **Brazil**, **Japan** and **South Korea**

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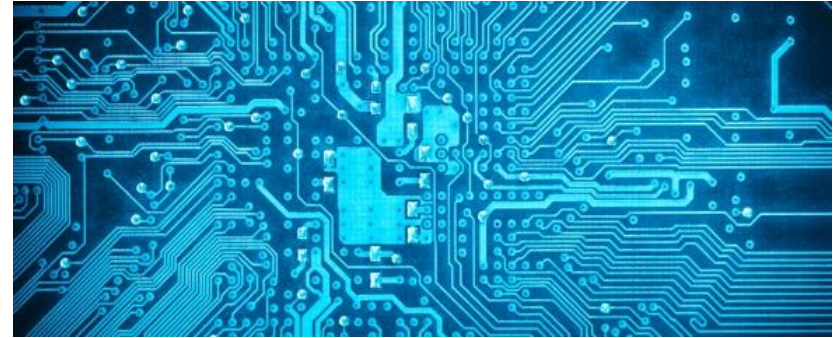# Industrial Leadership - ICT

- **A new generation of <u>components and systems</u>:**
  - engineering of advanced embedded and resource efficient components and systems

- **Next generation <u>computing</u>:**
  - advanced and secure computing systems and technologies, including cloud computing

- **<u>Future Internet</u>:**
  - software, hardware, infrastructures, technologies and services

- **<u>Content technologies</u> and <u>information management</u>:**
  - ICT for digital content, cultural and creative industries

  - **Advanced <u>interfaces</u> and <u>robots</u>:**
    - robotics and smart spaces

  - **<u>Micro- and nanoelectronics</u> and <u>photonics</u>:**
    - key enabling technologies

Components and systems
2016-2017

84 M€

- Cover **systemic integration from smart integrated components to cyber-physical systems**

- **Complementary to the JTI Electronic Components and Systems (ECSEL)**

- Organised in four topics:
  - **Smart cyber-physical systems** (20 M€)
    - Next generation embedded and connected systems
  - **Thin, Organic and Large Area Electronics** (20 M€)
  - **Smart system integration** (18,5 M€)
    - Integration of heterogeneous micro- and nanotechnologies into smart systems
  - **Smart Anything Everywhere** initiative (25,5 M€)

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Advanced Computing and Cloud Computing
2016-2017

71 M€

- Reinforce and expand Europe's industrial and technology strengths in **low-power ICT**

- Foster the evolution of **Cloud technology** to increase its uptake

- Complementary to the work in the Excellent Science pillar under Research Infrastructures and FET (on High Performance Computing)

- Organised in two topics:
    - **Customised and low energy computing** (26 M€)
    - **Cloud Computing** (45 M€)

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Future Internet
2016-2017

253 M€

- Integrated response to **technology** challenges and **innovation** needs of the future Internet

- Organised in seven topics:

  5G PPP (148 M€)
  - **5G PPP** Research and Validation of critical technologies and systems (103 M€)
  - **5G PPP** Convergent Technologies (45 M€)
  - **Networking research beyond 5G** (18 M€)
  - **Software Technologies** (31 M€)
  - **Future Internet Experimentation** - Building a European experimental Infrastructure (26 M€)
  - **Collective Awareness Platforms for Sustainability and Social Innovation** (10 M€)
  - **Net Innovation** Initiative (20 M€)

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Content technologies
2016-2017

278 M€

- Improve **access**, **creation**, **management** and **use** of **data** and **content** through advances along the **data, content and knowledge value chains**.

- Organised in eleven topics (+ one prize):

  - **Big data PPP (153 M€)**
    - Cross-sectorial and cross-lingual data integration and experimentation (54 M€)
    - Large scale pilots in sectors best benefitting from data-driven innovation (50 M€)
    - Research addressing main technology challenges of the data economy (31 M€)
    - Support, industrial skills, benchmarking and evaluation (7 M€)
    - Privacy-preserving big data technologies (9 M€)
    - *Big Data inducement prize (2 M€)*

  - **Media and content convergence** (39 M€)
  - Tools for **smart digital content in the creative industries** (17 M€)
  - Support **technology transfer to the creative industries** (14 M€)

  - Technologies for **Learning and Skills** (31 M€)
  - Interfaces for **accessibility** (12 M€)
  - **Gaming and gamification** (12 M€)

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Robotics and autonomous systems
2016-2017

164 M€

- **Technology-driven** actions to keep EU at the cutting edge of research + **market-driven** actions to accelerate take-up and deployment of robots

- **Roadmap-based approach**
  → Robotics PPP

- Organised in four topics in LEIT-ICT + one topic in SC2:
  - **Advanced robot capabilities research and take-up** (64 M€)
  - **System abilities**, **development and pilot installations** (42 M€)
  - **System abilities, SME & benchmarking actions, safety certification** (46 M€)
  - **Robotics competition**, coordination and support (5 M€)
  - **Robotics Advances for Precision Farming** (7 M€) (SC2)

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ICT key enabling technologies
2016-2017

181 M€

- Translate Europe's S&T excellence in **photonics** and **micro- and nano-electronics** into strengthened competitiveness and market leadership

- **Address the whole research and innovation value chain in photonics technology**: from materials to manufacturing, products and services, through equipment and devices – from advanced R&D to pilot lines
  → **Photonics PPP (153 M€)**
  → Complemented by activities of LEIT-NMBP and **FoF PPP**

- Cover **generic technology developments on micro- and nano-electronics** focused on exploratory research and lower Technology Readiness Levels (TRLs) (23 M€)
  - Complementary to the JTI Electronic Components and Systems

- Organised in three topics in LEIT-ICT + one in LEIT-NMBP + one in FoF

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ICT for the Factories of the Future
2016-2017

116 M€

- Part of the **'Industry 2020 in the Circular Economy'** cross-cutting focus area

- Focus on **ICT components of innovative production systems in all sectors** (for a more personalised, diversified and mass-produced product portfolio and for rapid and flexible reaction to market changes)

- Implementation of the **FoF PPP**

- Organised in three topics:
    - Digital automation (53 M€)
    - ICT Innovation for Manufacturing SMEs (I4MS) (33 M€)
    - Photonics laser-based production (30 M€)

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Internet of Things
2016-2017

139 M€

- **Cross-cutting focus area**
  - Contributions from **SC1** and **SC2**
- Increased support with the ambition to **foster the take-up of IoT in Europe** and to **enable the emergence of IoT ecosystems** supported by open technologies and platforms

- Organised in three topics:
  - **Large scale pilots** (100 M€)
    - Smart living environment for ageing well
    - Smart farming and food security
    - Wearables for smart ecosystems
    - Reference zones in EU cities
    - Autonomous vehicles in a connected environment
  - IoT Horizontal activities (4 M€)
  - **R&I on IoT integration and platforms** (35 M€)

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Digital Security
2016-2017

118 M€

- **Focus area**
  - Combining contributions from **LEIT-ICT**, **SC1** and **SC7**

- **Grouping the main R&D&I activities in digital security**, from enabling technologies to specific use cases

- Organised in eight topics:
  - **Cryptography** (18,5 M€)
  - **Assurance and Certification** for Trustworthy and Secure ICT systems, services and components (23,5 M€)

  - Addressing **Advanced Cyber Security Threats and Threat Actors** (18 M€)
  - **Privacy, Data Protection, Digital Identities** (18 M€)
  - **Cyber Security for SMEs, local public admin. and individuals** (22 M€)
  - **Economics of Cybersecurity (4 M€)**
  - **EU Cooperation and International Dialogues** in Cybersecurity and Privacy Research and Innovation (3 M€)

  - Increasing **digital security of health related data** on a systemic level (11 M€)

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Innovation and Entrepreneurship support
2016-2017

156+ M€

- Reinforce the **involvement of users** in R&D&I
- Support **digital entrepreneurship**
- Strengthen the **support to start-ups** and **SMEs**
- Facilitate the meeting between **investors** and start-ups
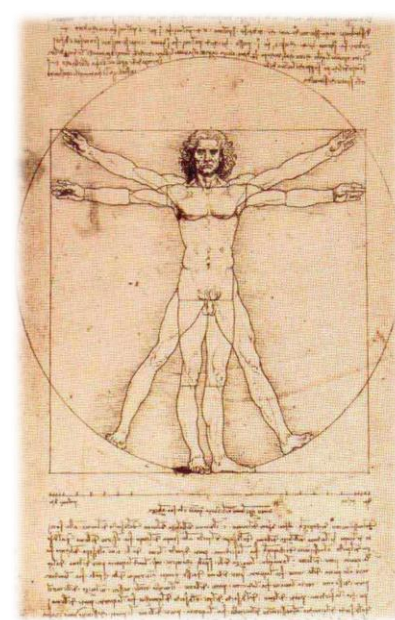- Increase the **entrepreneurial skills**

- Organised in five topics + inducement prizes:
  - **Startup Europe for growth and Innovation Radar** (12 M€)
  - **Innovation procurement networks** (4 M€)
  - **Pre-commercial procurement open** (4 M€)

  - **Open Disruptive Innovation** scheme – SME instrument (**126 M€**)
  - **Fast Track to Innovation** (100 M€ - for all fields of LEIT and SCs)

  - **ICT Horizon prizes** (10 M€)

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Responsibility and creativity
2016-2017

15+ M€

- Cross-cutting activities supporting the **nexus between technology, social sciences, humanities and arts.**

- Foster collaboration with SSH on **responsible research and innovation**.

- Engage with artists in innovation process to foster **creativity** and help enhance **user acceptance**.

- Two dedicated topics:
  - **Enabling responsible ICT-related research and innovation** (7 M€)
  - **Boost synergies between artists, creative people and technologists** (8 M€)

- …Complemented by **other activities embedded in technical topics** and a **large hub supported through SC6**.

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International cooperation

40,8 M€

- **International partnership building in low and middle income countries** (13,8 M€) / Target: **sub-Saharan Africa and ASEAN**

- **Coordinated calls**
  - **EU-Brazil** (7 M€)
    - Cloud computing
    - IoT pilots
  - **EU-Japan** (7 M€)
    - 5G – Next Generation Communication Networks
    - IoT/Cloud/Big Data platforms in social application contexts
    - Experimental testbeds on Information-Centric Networking
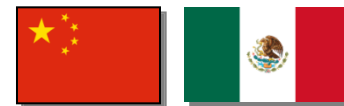 - **EU-South Korea** (6 M€)
    - 5G – Next Generation Communication Networks
    - IoT joint research
    - Federated Cloud resource brokerage for mobile cloud services
  - **Cooperation with Taiwan in 5G PPP topic on Convergent Technologies** (5 M€)

- **Other international cooperation activities**
  - **China**: Collaboration on Future Internet (1 M€)
  - **Mexico**: Collaboration on ICT (with a focus on FIWARE) (1 M€)

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SME Instrument – ICT
2016-2017

- **SME Instrument dedicated call** (739 M€ overall)

  - **Open Disruptive Innovation Scheme** (126 M€)

  - Accelerating the uptake of nanotechnologies advanced materials or advanced manufacturing and processing technologies by SMEs (67 M€)

  - **Accelerating market introduction of ICT solutions for Health, Well-Being and Ageing Well** (30,5 M€)

  - Stimulating the innovation potential of SMEs for a low carbon and efficient energy system (96 M€)

  - Small business innovation research for Transport and Smart Cities Mobility (119 M€)

  - **New business models for inclusive, innovative and reflective societies** (22 M€)

  - **Engaging SMEs in security research and development** (30 M€)

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Thank you
for your attention!

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