



HORIZON 2020

**The New EU
Framework Programme for
Research and Innovation**

2014-2020



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Horizon 2020

The Multiannual Financial Framework 2014-2020:

European Council conclusions, 8 February 2013

Key challenge : stabilise the financial and economic system while taking measures to create economic opportunities

1. Smart & inclusive growth (€451 billion)



2. Sustainable growth, natural resources (€373 billion)

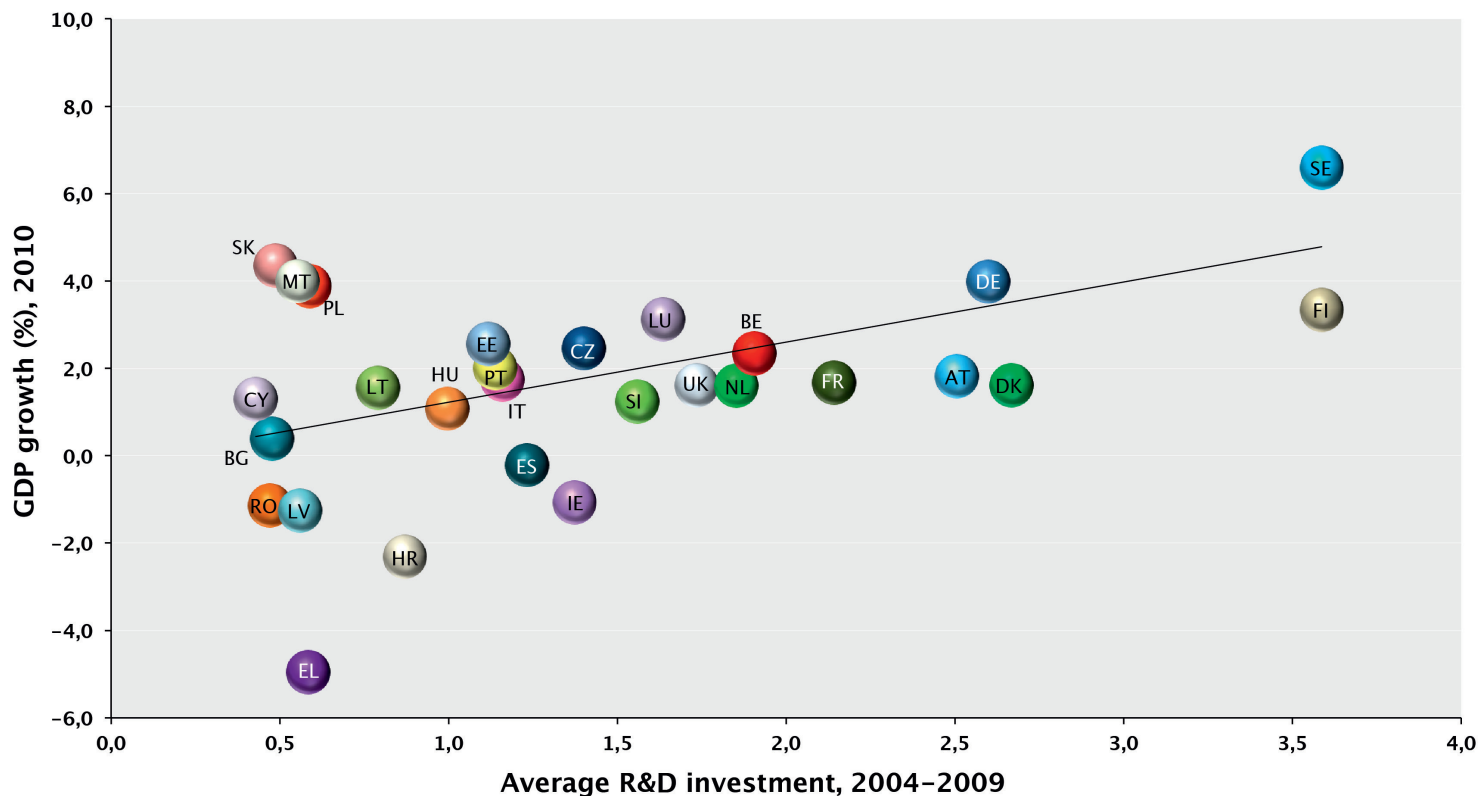
3. Security and citizenship (€16 billion)

4. Global Europe (€58 billion)

5. Administration (€61.6 billion)



Investment in R&D is part of the solution to exit from the economic crises



Source: DG Research and Innovation - Economic Analysis Unit
Data: Eurostat

Notes. (1) Greece: average R&D intensity refers to 2004-2007.
(2) Denmark, Portugal, Slovenia, Sweden: Break in series between 2004-2009.

What is Horizon 2020



- **Initial Commission proposal for a €80 billion research and innovation funding programme (2014-2020); now just over €70 billion**
- **A core part of Europe 2020, Innovation Union & European Research Area:**
 - Responding to the economic crisis to invest in future skills, jobs and growth
 - Addressing people's concerns about their livelihoods, safety and environment
 - Strengthening the EU's global position in research, innovation and technology markets

What different stakeholders expect



- **EU Presidencies: Sweden** (societal challenges-based approach), **Spain** (integration of research and innovation), **Hungary** (FP7 interim evaluation), **Poland** (widening participation), **European Council conclusions** from 4.2.2011 (Common Framework to bring together all EU R&D&I funding)
- **European Parliament reports:** Merkies (Innovation Union), Audy (FP7 evaluation), Matias (Horizon 2020) and Carvalho (simplification)

Overwhelming research community response to **the public consultations** on Horizon 2020 (more than 2000 contributions)

- **Survey on administrative costs for participants in FP7**
- **25 workshops on the content** of Horizon 2020

What's on offer



- **A single programme** bringing together three separate programmes/initiatives*
- **Coupling research to innovation** – from research to retail, all forms of innovation, support to SMEs, partnerships, ...
- **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)

Three priorities



Priority 1. Excellent science: why ?



- World class science sets the foundation for tomorrow's technologies, jobs and wellbeing
- Europe needs to develop, attract and retain its research talent
- Researchers need access to advanced infrastructures
- **FET consultations now open on-line**
<http://europa.eu/digitalagenda/en/content/>

Priority 1 funding (€ million, 2014-2020)*

<i>European Research Council (ERC)</i> Frontier research by the best individual teams	13 095
<i>Future and Emerging Technologies</i> Collaborative research to open new fields of innovation	2 696
<i>Marie Skłodowska-Curie actions (MSCA)</i> Opportunities for training and career development	6 162
<i>Research infrastructures</i> <i>(including e-infrastructure)</i> Ensuring access to world-class facilities	2 488

Priority 2. Leadership in enabling and industrial technologies: what's the H2020 rationale ?

- Strategic investments in key technologies (e.g. advanced manufacturing, micro-electronics, 5G, ...) underpin innovation across existing and emerging sectors
- Europe needs to attract more private investment in research and innovation
- Europe needs more innovative small and medium-sized enterprises (SMEs) to create growth and jobs

Priority 2 funding (€ million, 2014-2020)

<i>Leadership in enabling and industrial technologies (LEITs)</i> (ICT, nanotechnologies, materials, biotechnology, manufacturing, space)	13 557
<i>Access to risk finance</i> Leveraging private finance and venture capital for research and innovation	2 842
<i>Innovation in SMEs</i> Fostering all forms of innovation in all types of SMEs	616

Priority 3. Societal challenges

- Concerns of citizens and society/EU policy objectives (climate, environment, energy, transport, etc) cannot be achieved without innovation
- Breakthrough solutions come from multi-disciplinary collaborations, including social sciences, arts & humanities
- Promising solutions need to be tested, demonstrated and scaled up, and users need to be part of the picture from the start.

Priority 3 funding (€ million, 2014-2020)

Health, demographic change and wellbeing	7 472
Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the Bioeconomy	3 851
Secure, clean and efficient energy *	5 931
Smart, green and integrated transport	6 339
Climate action, environment, resource efficiency and raw materials	3 081
Inclusive, innovative and reflective societies	1 310
Secure societies	1 695
<i>Science with and for society</i>	<i>462</i>
<i>Spreading excellence and widening participation</i>	<i>816</i>

* Additional funding for nuclear safety and security from the Euratom Treaty activities (2014-2018)

Do not forget the role of the EIT and JRC in Horizon 2020

	<i>Funding (€ million, 2014-2020)</i>
<i>European Institute of Innovation & Technology (EIT)</i> Combining research, innovation & training in knowledge and Innovation Communities	2 711
<i>Joint Research Centre (JRC)*</i> Providing a robust, evidence base for EU policies	1 903

* Additional funding for the JRC for Euratom Treaty activities

Rules for Participation



1. A single set of rules:

- ✓ Adapted for the whole research and innovation cycle
- ✓ Covering all research programmes and funding bodies
- ✓ Aligned to the Financial Regulation, coherent with other new EU Programmes

2. One project – one funding rate

- ✓ Maximum of 100% of the total eligible costs (except for innovation actions, where a 70% maximum will apply for profit making entities)
- ✓ Indirect eligible costs: a flat rate of 25% of direct eligible costs

3. Three evaluation criteria

- ✓ Excellence – Impact – Implementation (Excellence only, for the ERC)

4. New forms of funding aimed at innovation

- ✓ pre-commercial procurement, inducement prizes, dedicated loan and equity instruments

5. International participation

- ✓ facilitated but better protecting EU interests

Simplification: Rules for Participation



6. Simpler rules for grants

- ✓ broader acceptance of participants accounting practices for direct costs, flat rate for indirect costs, no time-sheets for personnel working full time on a project, possibility of output-based grants

7. Fewer, better targeted controls and audits

- ✓ Lowest possible level of requirements for submission of audit certificates without undermining sound financial management
- ✓ Audit strategy focused on risk and fraud prevention

8. Improved rules on intellectual property

- ✓ Balance between legal security and flexibility
- ✓ Tailor-made IPR provisions for new forms of funding
- ✓ A new emphasis on open access to research publications

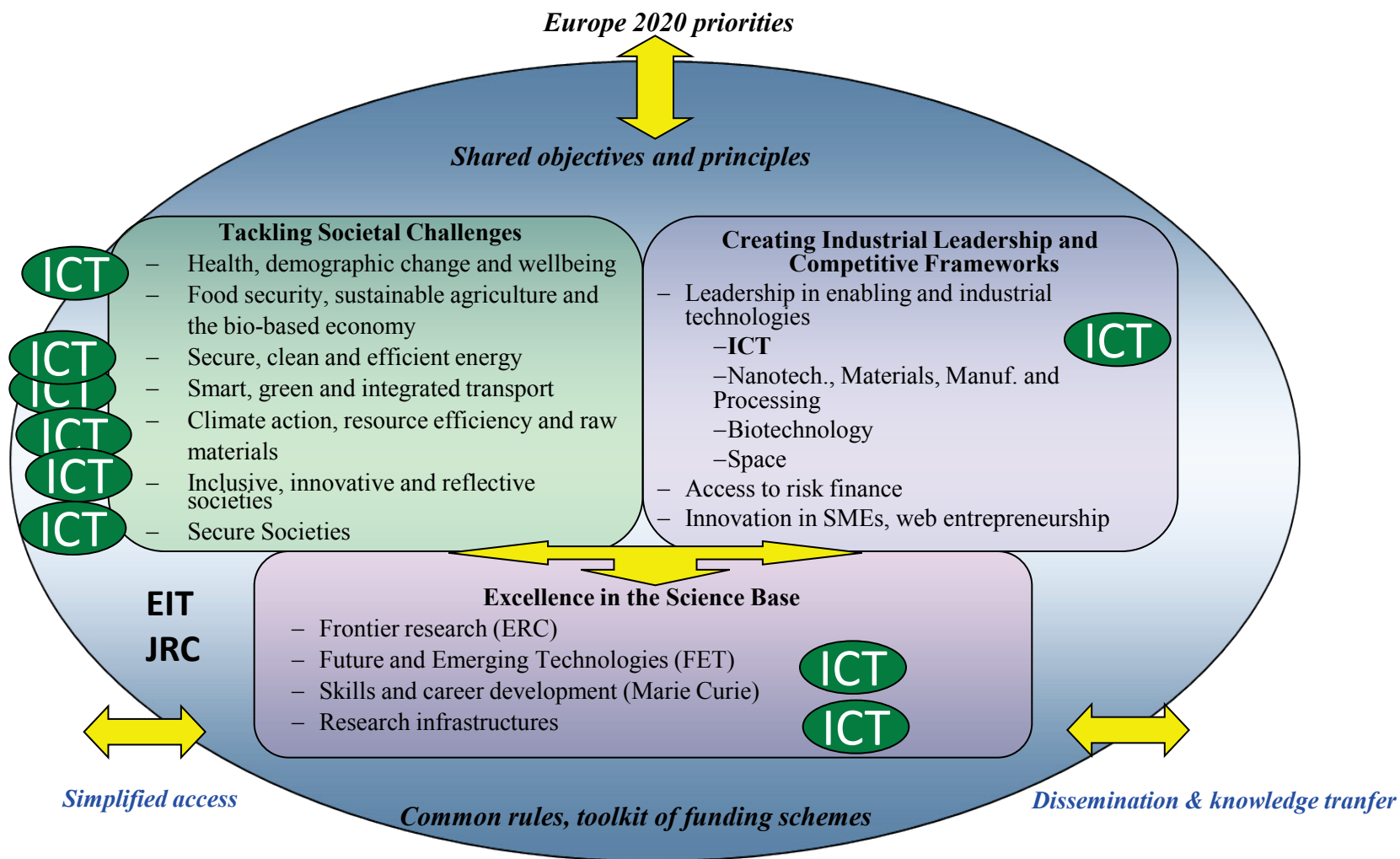
Beyond the Rules: further simplified provisions in the Grant Agreement and implementing procedures to facilitate access to Horizon 2020 (e.g. common IT platform).

Simplification: summary



- **Single set of** simpler and more coherent participation **rules**
- New **balance between trust and control**
- Moving from several **funding rates** for different beneficiaries and activities to just two
- Replacing the four methods to calculate overhead or «indirect costs» with a **single flat rate**
- Major simplification under the **forthcoming financial regulation**
- **Successful applicants can start working more quickly:** time-to-grant of 8 months; exceptions for the ERC and in duly justified cases

ICT in Horizon 2020



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**

- **Research infrastructures**

- Developing the European research infrastructure for 2020 and beyond
 - **Development, deployment and operation of ICT-based e-infrastructures**

FET 2014-2015 (budget 472 M€)

- **FET Open (160 M€)**

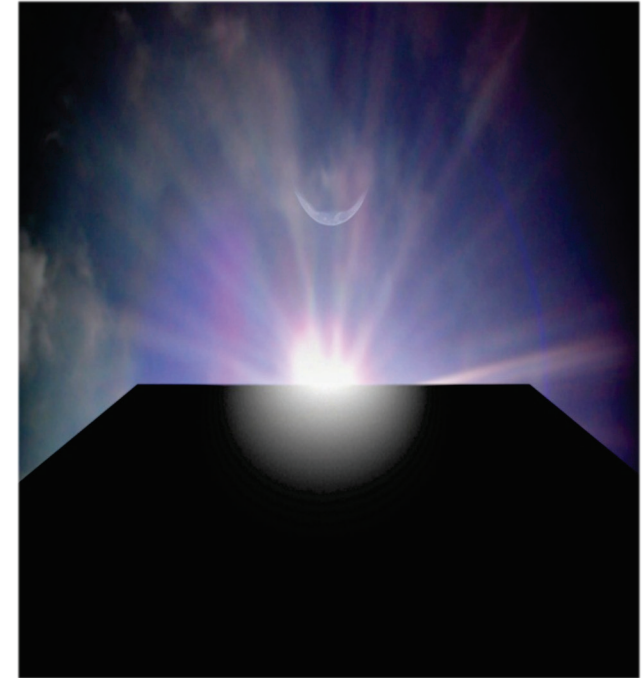
- **All technologies, no topical scope**
- **Light and fast scheme**
 - Several cut-off dates per year, one-step submission of ~15 pages
 - One stage evaluation

- **FET Proactive Initiatives**

- **Global Systems Science (GSS) (10 M€)**
 - Improve the way in which scientific knowledge can stimulate, guide, and help evaluate policy and societal responses to global challenges
- **Knowing, doing, being: cognition beyond problem solving (15 M€)**
 - New approaches to cognitive systems
- **Quantum simulation (10 M€)**
 - Quantum technologies to ultimately address real world problems
- **Exascale high performance computing (97,4 M€) HPC PPP** with LEIT and RI

- **FET Flagships (179,6 M€)**

- **Graphene**
- **Human Brain Project**



eInfrastructures / 2014-2015

(overall budget 177 M€)

- **ICT infrastructure resources & services Research (48 M€)**

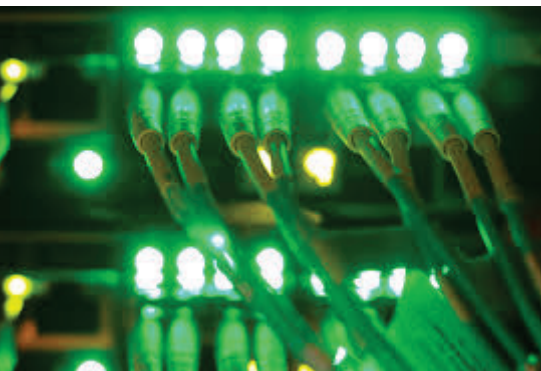
- Provision of core services across e-infrastructures
- Research and Education Networking – GEANT
- eInfrastructures for virtual research environments

- **Access to and management of scientific data (72 M€)**

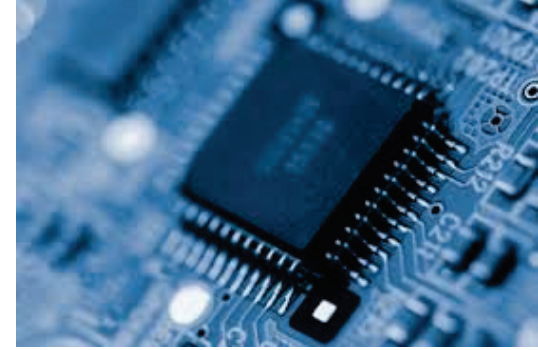
- Managing, preserving and computing with big research data
- Towards global data e-infrastructures – Research Data Alliance
- eInfrastructure for Open Access

- **High Performance Computing (57 M€)**

- Pan-European High Performance Computing infrastructure and services
- Centres of Excellence for computing applications
- Network of HPC competence centres for SMEs



Industrial Leadership - ICT



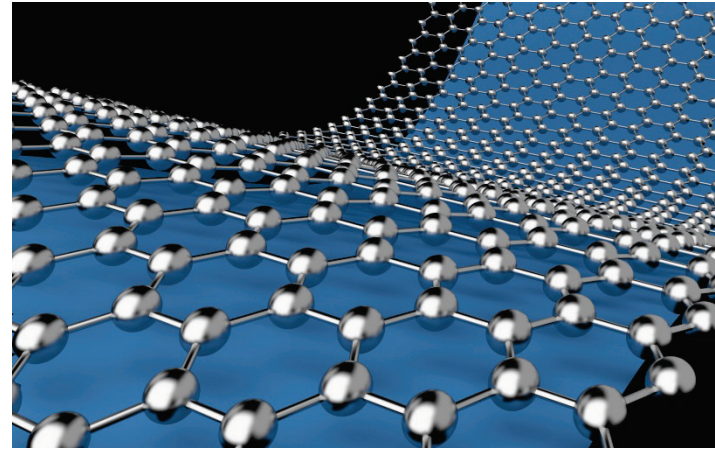
- **A new generation of components and systems:**
 - engineering of advanced embedded and resource efficient components and systems
- **Next generation computing:**
 - advanced and secure computing systems and technologies, including cloud computing
- **Future Internet:**
 - software, hardware, infrastructures, technologies and services
- **Content technologies and information management:**
 - ICT for digital content, cultural and creative industries
- **Advanced interfaces and robots:**
 - robotics and smart spaces
- **Micro- and nanoelectronics and photonics:**
 - key enabling technologies



Components & Systems

2014-2015 (budget 142 M€)

- Covers **systemic integration from smart components to cyber-physical systems**
- **Complementary to the JTI Electronic Components and Systems (ECSEL)**
- **Organised in three related topics:**
 - Smart cyber-physical systems (56 M€)
 - Next generation embedded and connected systems
 - Smart system integration (48 M€)
 - Integration of heterogeneous micro- and nanotechnologies into smart systems
 - Advanced Thin, Organic and Large Area Electronics (38 M€)
- R&I in this area will also contribute to the implementation of the **SRA on Energy Efficient Buildings**



Advanced Computing / 2014-2015 (budget 57 M€)

- Reinforce and expand Europe's industrial and technology strengths in **low-power ICT**
- Focus is on **integration of advanced components on all levels in computing systems**
- Complementary to and coordinated with work in the Future Internet area (on Cloud Computing) and in Excellence Science pillar under Research Infrastructures and FET (on High Performance Computing)
- **Organised in one topic:** Customised and low power computing

Future Internet / 2014-2015

budget 395,5 M€

- ICT-5-2014 Smart Networks & Novel internet architectures (24 M€)
 - ICT-6-2014 Smart **optical** & **wireless network** technologies (30 M€)
 - ICT-7-2014 Advanced **cloud** infrastructures and services (73 M€)
 - ICT-8-2015 Boosting public sector productivity and innovation through **cloud computing services** (22 M€)
 - ICT-9-2014 Tools and methods for **Software Development** (25 M€)
 - ICT-10-2015 **Collective Awareness Platforms** for Sustainability and Social Innovation (37M€)
 - ICT-11-2014 **Future Internet Research Experimentation** (31,5M€)
 - ICT-12-2015 Integrating experiments & facilities FIRE+ (18 M€)
 - ICT-13-2014 **Web Entrepreneurship** (10 M€)
 - ICT-14-2014 Advanced 5G Network Infrastructure (125 M€)

Europe in a changing world – inclusive, innovative and reflective societies / 2014-2015

(budget 82 M€)

- **Reflective societies – Cultural Heritage**
 - Innovative ecosystems of digital cultural assets
 - Advanced 3D modelling for accessing and understanding European cultural assets
- **New forms of innovation**
 - **In the public sector**
ICT led open government
 - Personalised public services
 - M-government
 - Open participation
 - Transparency
 - ICT for **learning and inclusion**



Content technologies & information management

2014-2015 budget of 260 M€ over the 8 ICT Calls

- **ICT 15-2014 Big Data & Open Data innovation and take up (50 M€)** focus is on both innovative data products and services
- **ICT-16-2015 Solving Big Data Research problems (39M€)**
- **ICT-17-2014 Cracking the Language Barrier (15 M€)**
machine translation to overcome barriers to multilingual online communication.
- **ICT-18-2014 Support the growth of ICT innovative Creative industries, SMEs (15M€)**
- **ICT 19-2015 Technologies for Creative industries Social Media and Convergence (41M€)**
- **ICT-20-2014 Technologies for better human learning and teaching (52 M€)**
- **ICT-21-2014 Advanced digital gaming/gamification technologies (17 M€)**
- **ICT-22-2014 Multimodal 7 Natural computer Interaction(31M€)**

WP 2016-17 1st draft by September 2014

Description of the topics for future H2020 Calls

- **Specific Challenge** – context, the problem to be addressed, why EU intervention is necessary
 - **Scope** – delineates the problem, specifies the focus and the boundaries of the potential action BUT without overly describing specific approaches
 - **Expected Impact** – describes the key elements of what is expected to be achieved
- types of action (instruments): Research & Innovation 100%; Innovation 70%; Coordination and Support Action, prizes etc.
 - Size of projects and budget is indicated

LEIT Calls **Check latest publication on Participant Portal**

- **H2020-ICT-2014 (ICT Call 1)**
 - Publication date: 11 December 2013
 - Deadline: **23 April 2014** (all topics except 5G Future Internet)
 - Deadline for 5G Future Internet: **25 November 2014**
- **H2020-FoF-2014/2015 (Factory of the Future)**
 - Publication date: 11 December 2013
 - Deadlines: **20 March 2014** and **9 December 2014**
- **H2020-EUJ-2014 (EU-Japan Call)**
 - Publication date: 7 January 2014
 - Deadline: **10 April 2014**
- **H2020-ICT-2015 (ICT Call 2)**
 - Publication date: 15 October 2014
 - Deadline: **14 April 2015**
- **H2020-EUB-2015 (EU-Brazil Call)**
 - Publication date: 15 October 2014, Deadline: **21 April 2015**



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