



NEMZETI KUTATÁSI, FEJLESZTÉSI
ÉS INNOVÁCIÓS HIVATAL

Horizon 2020 Information & Communication Technologies

















FET & LEIT-ICT WP 2016-17

17 September 2015, Szeged



H2020-ICT LEIT WP 2016-2017 has been published,

together with the other parts of the H2020 Work programme that have received positive opinion from the relevant committee configurations:
<https://ec.europa.eu/programmes/horizon2020/en/draft-work-programmes-2016-17>

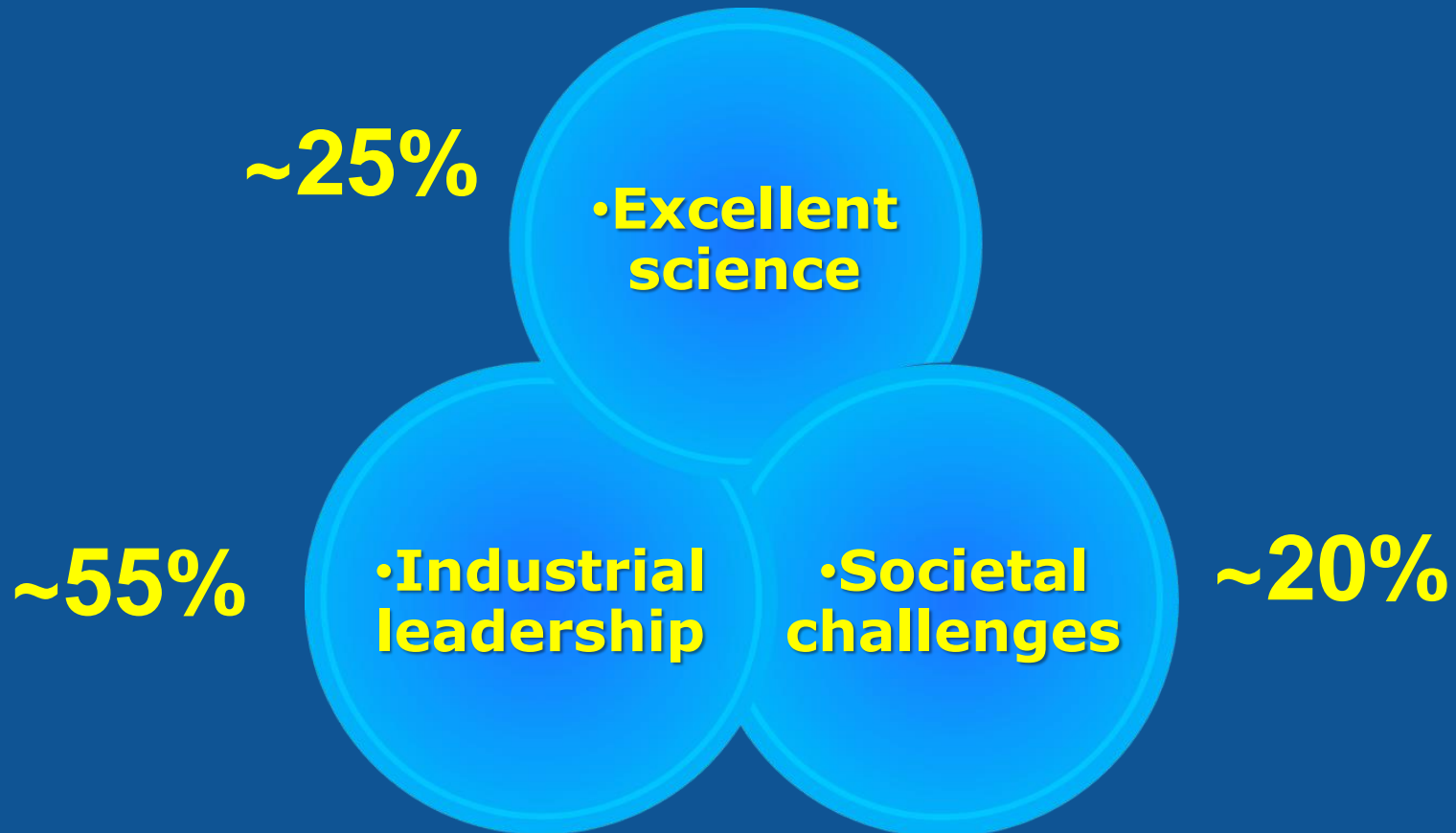
-  02. FET 2016-2017
-  03. MSCA 2016-2017
-  04. Infrastructures 2016-2017
-  05. LEIT Introduction 2016-2017
-  05i. LEIT-ICT 2016-2017
-  05ii. LEIT-NMBP 2016-2017
-  05iii. LEIT-Space 2016-2017
-  08. SC1-Health 2016-2017
-  09. SC2-Food 2016-2017
-  10. SC3-Energy 2016-2017
-  11. SC4-Transport 2016-2017
-  12. SC5-Climate Action 2016-2017
-  13. SC6-Inclusive Societies 2016-2017
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-  16. SWAFS 2016-2017
-  17. Cross-Cutting Activities 2016-2017

 Euratom 2016-2017

2015. 09.15.



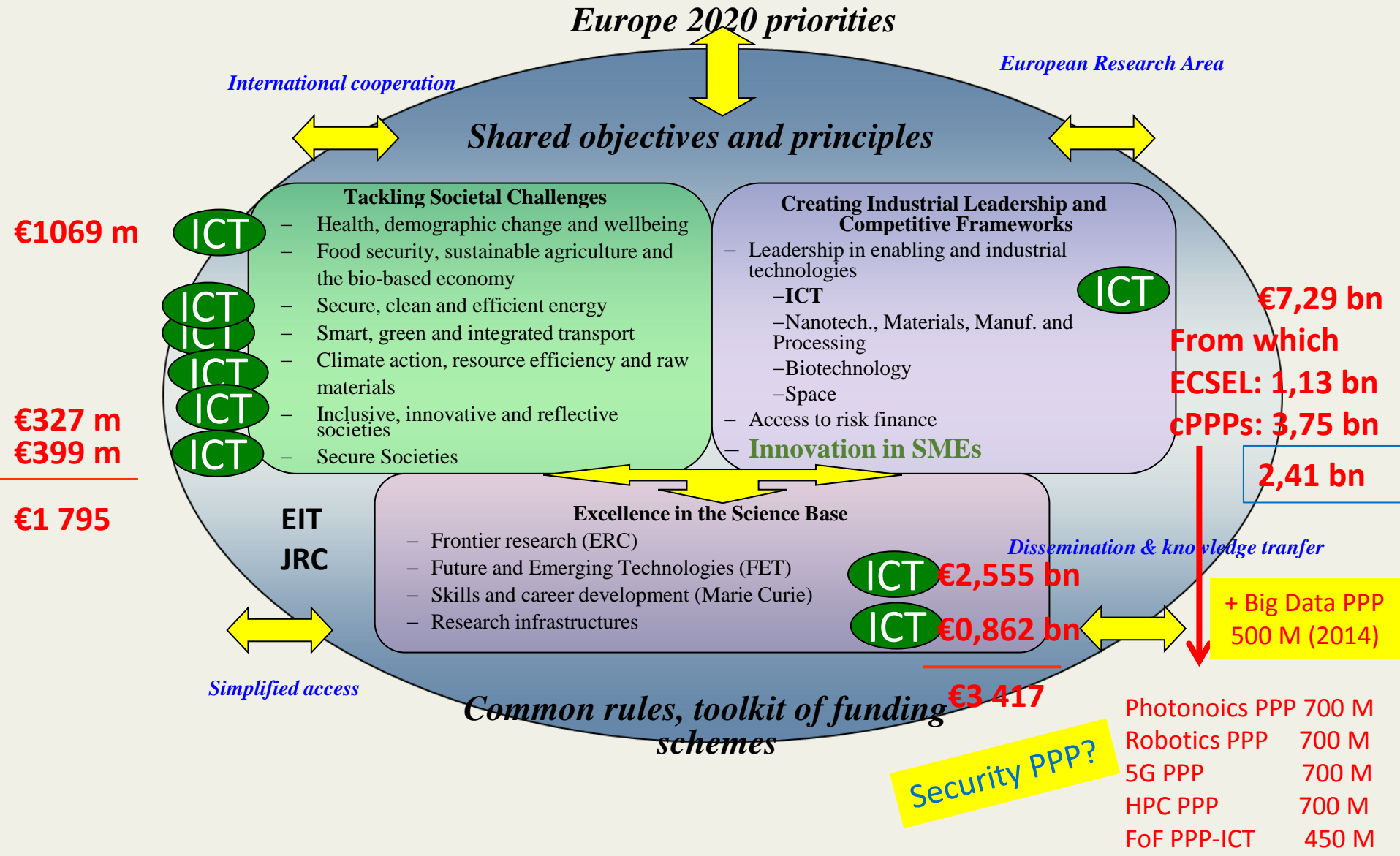
ICT in the 3 Pillars



Simplification?



ICT in H2020 (€ 12 509) – Reminder on „Complexity and Simplification”

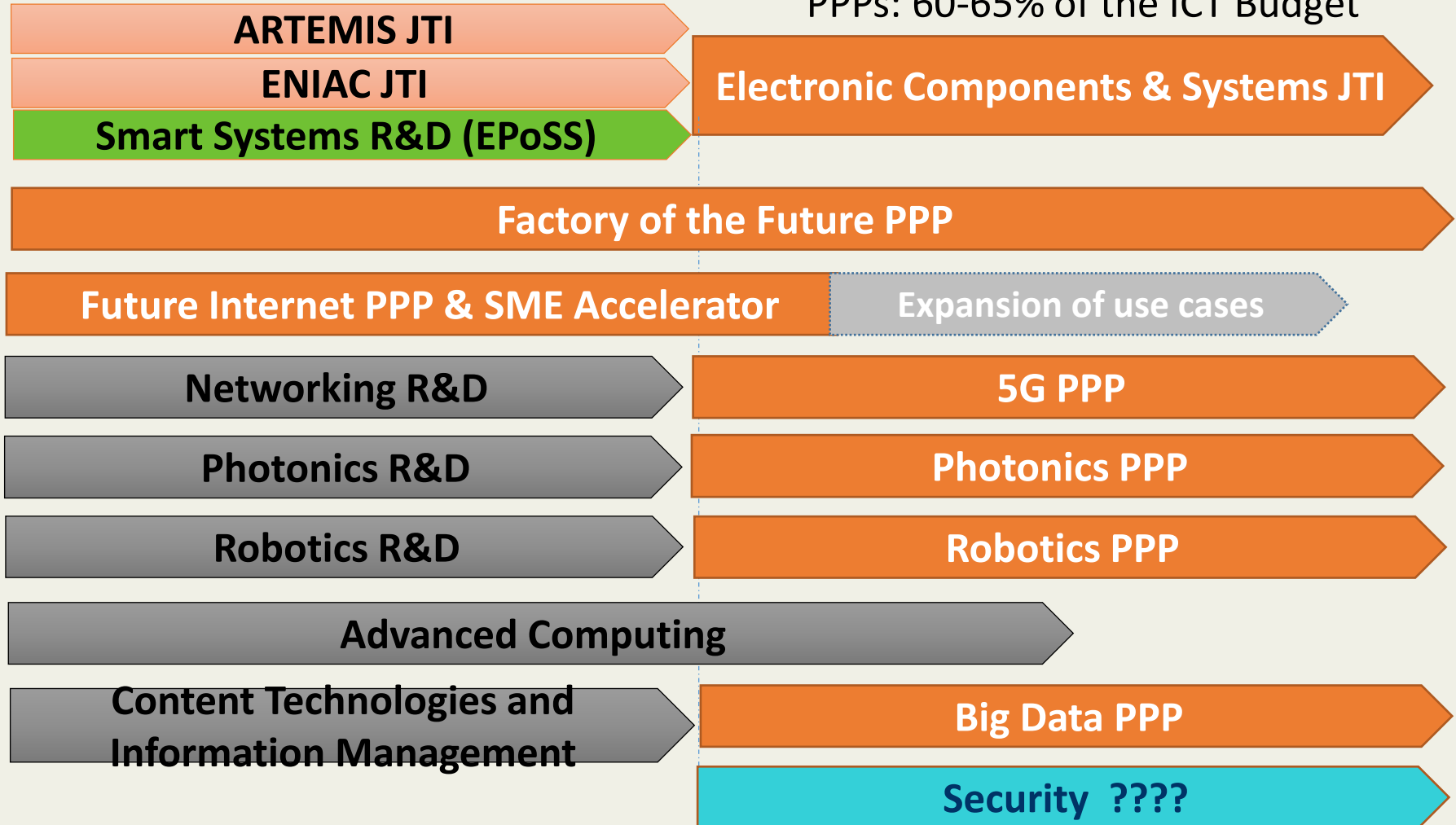


ICT Roadmap-based research: Continuity and consolidation

FP7

H2020

PPPs: 60-65% of the ICT Budget



9 Public-Private Partnerships

- **Factories of the Future (FoF)**, to support the manufacturing industry through the development of sustainable production technologies and systems (1150 M€)
- **Energy-efficient Buildings (EeB)**, to increase the competitiveness and energy efficiency of the construction industry (600 M€)
- **European Green Vehicles Initiative (EGVI)**, to develop a competitive and resource efficient transport system with significantly less CO2 emissions (750 M€)
- **Sustainable Process Industry (SPIRE)**, to make the process industry more resource- and energy-efficient (900 M€)
- **Photonics**, one of the key enabling technologies for our future prosperity and an essential element of many sectors, from energy and health, to everyday products like DVD players and mobile phones (700 M€)
- **Robotics**, a key driver of industrial competitiveness and essential to address key societal challenges in areas such as demographic change, health and well-being, food production, transport and security (700 M€)
- **High Performance Computing (HPC)**, which plays a pivotal role in stimulating Europe's economic growth and advancing European science (700 M€)
- **Advanced 5G networks for the Future Internet (5G)**, stimulate development of network internet infrastructure to ensure advanced ICT services for all sectors and users (700 M€)
- **Big Data Value PPP**, towards a data-driven economy in Europe (500 M€)

FET activities, WP 2016-17

- **FET Open*** supports the early-stages of the science and technology research and innovation around new ideas towards radically new future technologies. It also funds coordination and support activities for such high-risk forward looking research to prosper in Europe.
- **FET Proactive** addresses promising directions for research on future technologies in order to build up a European critical mass of knowledge and excellence around them.
- **FET Flagships** are science-driven, large-scale, multidisciplinary research initiatives oriented towards a unifying goal, aiming at transformational impacts with substantial benefits for European competitiveness and for society.

* Note that 40% of the H2020 budget for FET is earmarked for FET Open.



FETOPEN-01-2016-2017: FET-Open research and innovation actions

- **Long-term vision:** the research proposed must address a new and radical long-term vision of a science- and technology-enabled future that is far beyond the state of the art and not currently foreseen by technology roadmaps.
- **Breakthrough scientific and technological target:** research must target a scientifically ambitious and technologically concrete breakthrough, argued to be a crucial step towards achieving the long-term vision. The plausibility of the proposed breakthrough(s) to be attained within the life-time of the project must be argued in the proposal.
- **Novelty:** the research proposed for achieving the breakthrough must be based on cutting-edge knowledge, new ideas and concepts, rather than in the mere application or incremental refinement of existing ones.
- **Foundational:** the breakthroughs that are envisaged must be foundational in the sense that, if achieved, they would establish an essential basis for a new kind of technology and its future uses, not currently anticipated.
- **High-risk:** the inherently high risk of the research proposed will be reflected in a flexible but effective methodology for exploring alternative directions and options, supported by open and agile research and innovation practices.
- **Interdisciplinary:** the proposed collaborations are expected to go beyond 'waterfall' configurations in multi-disciplinary science- and technology research. Instead they should seek new solutions through genuine exchanges, mutual learning, cross-fertilisation and synergistic advances among distant disciplines in order to open unexplored areas of investigation and new directions for joint research.



Future and Emerging Technologies (FET) / 2016-2017

FET Open (202 m€)

- **All technologies, no topical scope**
- **RIA, CSA, Innovation Launchpad**
- **6 gatekeepers:**
 - Long term vision
 - Breakthrough S&T
 - Novelty
 - Foundational
 - High risk
 - Interdisciplinary
- Light, fast scheme
- Several cut-off dates per year
- one-step submission
- ~15 page proposals
- One stage evaluation
- RIA projects: up to 4 M EUR
- CSA projects: up to 0.5 M EUR
- Launchpad: up to 0.1 M EUR

FET Flagships (185 m€)

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



Future and Emerging Technologies (FET) / 2016-2017

Projects: 4- 10 M EUR
Up to 5 years

FET Proactive (95 m€)

- **Area 1: Future technologies for societal change** (20 M EUR)
 - Being human in a technological world
 - New science for a globalised world
- **Area 2: Biotech for better life** (30 M EUR)
 - Intra- and inter-cell bio-technologies
 - Bio-electronic medicines and therapies
 - Cognitive neuro-technologies
- **Area 3: Disruptive information technologies** (30 M EUR)
 - New computing paradigms and their technologies
 - Quantum engineering
 - Hybrid opto-electro-mechanical devices at the nano-scale
- **Area 4: New technologies for energy and functional materials** (20 M EUR)
 - Ecosystem engineering
 - Complex bottom-up construction



Future and Emerging Technologies (FET) / 2016-2017

FET Proactive High Performance Computing (85 m€)

- **Co-design of HPC systems and applications**
(Projects 10-20 M EUR)
- **Transition to Exascale Computing**
(Projects: 2-4 M EUR)
- **Exascale HPC ecosystem development**
(Projects: 1-2 M EUR)

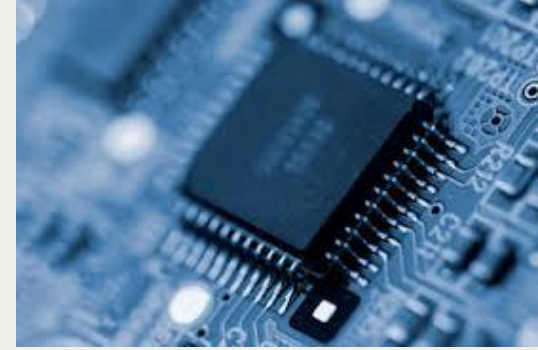


ICT in Industrial leadership



7,3 b€

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



LEIT-ICT 2016-17



LEIT-ICT Structure

CH1: Components and Systems

CH2: Advanced computing and Cloud Computing

CH3: Future Internet

CH4: Content technologies

CH5: Robotics

CH6: Micro-Nano and Photonics

2016 – 17:	1526,2
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Y1:	736,2
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Y2:	790,0
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ICT Cross-Cutting Activities

Manufacturing

Internet of Things

Cyber-Security

Open Disruptive Innovation

Fast track to Innovation

RRI/SSH and creative dialogue

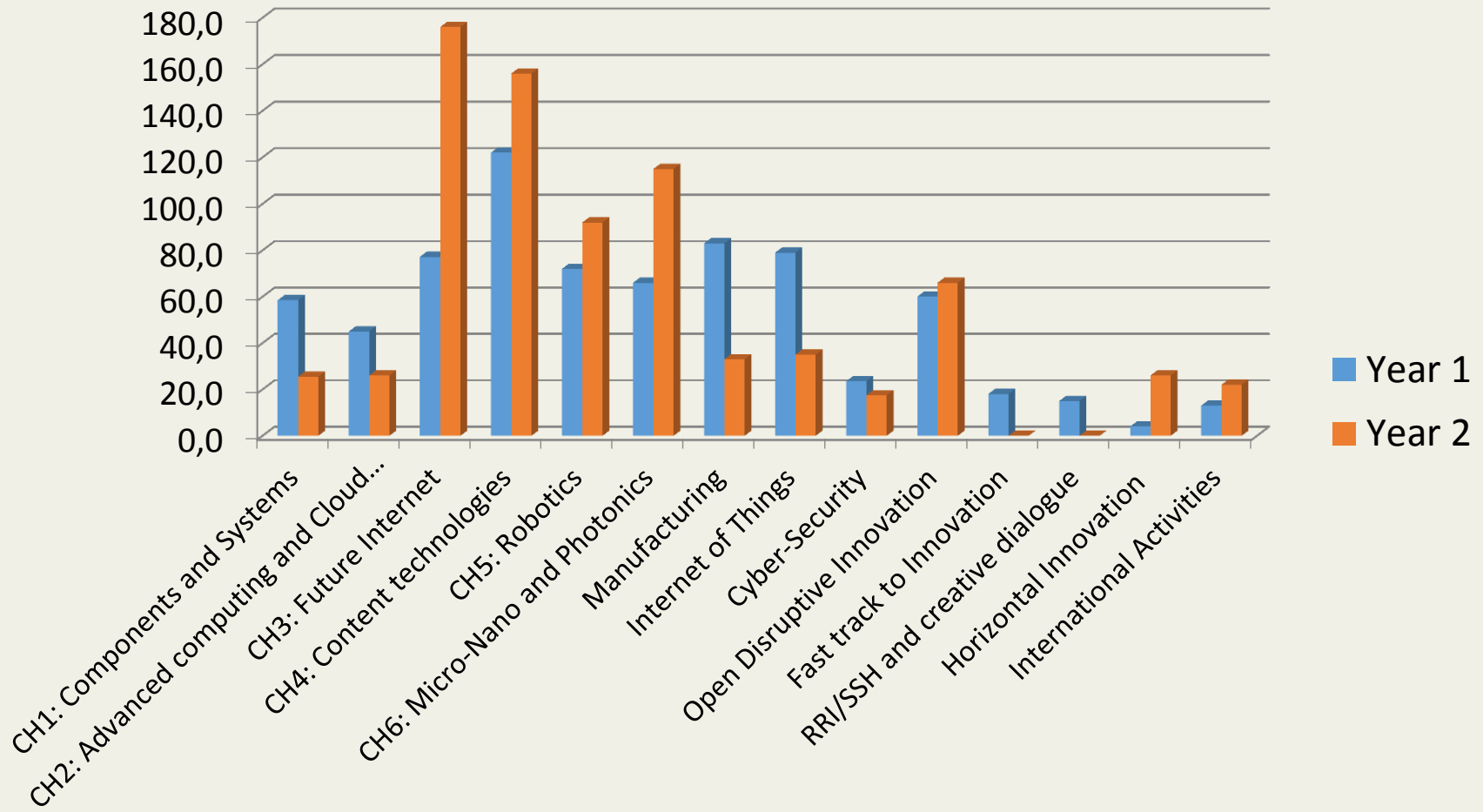
Horizontal Innovation

International Activities

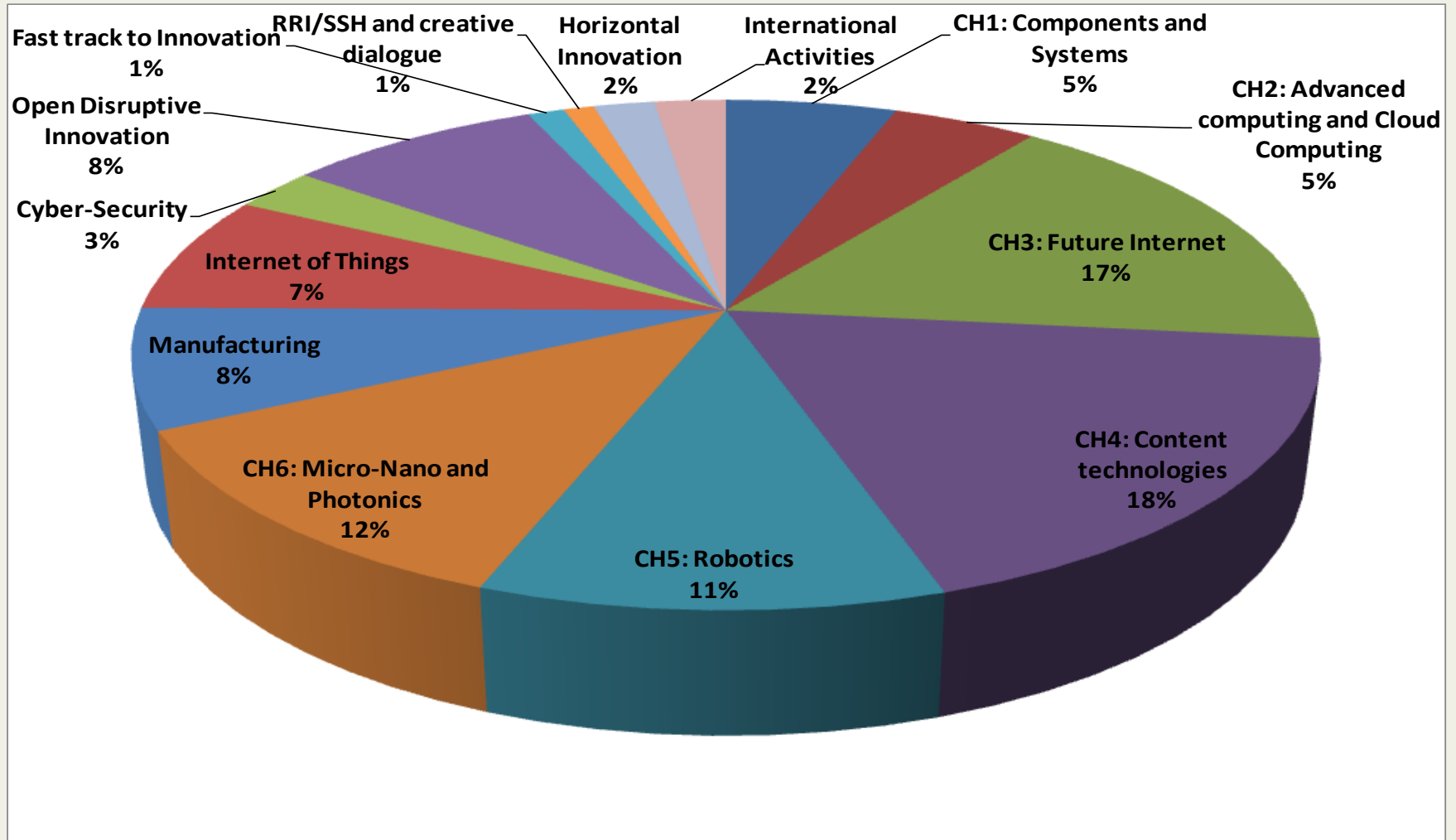
ICT WP 2016-17 Budget

	Total budget	Year 1	Year 2
CH1: Components and Systems	84,0	58,5	25,5
CH2: Advanced computing and Cloud Computing	71,0	45,0	26,0
CH3: Future Internet	253,2	77,2	176,0
CH4: Content technologies	278,0	123,0	155,0
CH5: Robotics	164,0	72,0	92,0
CH6: Micro-Nano and Photonics	181,0	66,0	115,0
Manufacturing	116,0	83,0	33,0
Internet of Things	114,0	79,0	35,0
Cyber-Security	43,0	23,5	19,5
Open Disruptive Innovation	126,0	60,0	66,0
Fast track to Innovation	17,9	17,9	0,0
RRI/SSH and creative dialogue	15,0	15,0	0,0
Horizontal Innovation	30,0	4,0	26,0
International Activities	35,8	15,8	20,0
Horizontal support	42	22,7	18,65
Total	1570	762,6	807,7
ECSEL	321	153	168
Total with ECSEL	1891	914	978

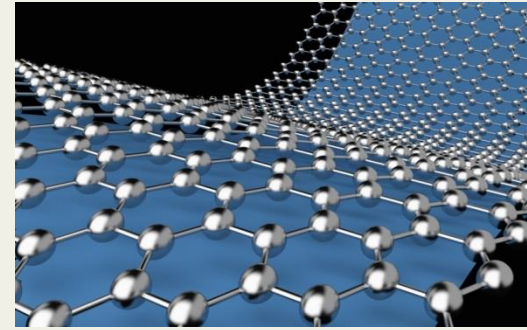
ICT Budget per year, 2016-17



Structure, topics, budget share



Components and systems



- Covers **systemic integration from smart integrated components to cyber-physical systems**
- **Complementary to the JTI Electronic Components and Systems (ECSEL)**
- **Organised in 4 related topics:**
 - Smart cyber-physical systems
 - Smart system integration
 - Advanced Thin, Organic and Large Area Electronics
 - Smart Anything Everywhere Initiative - uptake of advanced digital technologies by European industry, especially among them many SMEs and mid-caps in products that include innovative electronic components, software and systems – based on academy – industry cooperation – competence centers helping SMEs run experiments



Advanced Computing



- 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 2 topic:**
 - Customised and low power computing
 - Cloud computing



Future Internet

- Focused on **network and computing infrastructures** to accelerate innovation and address the most critical technical and use aspects of the Internet
- **Organised in 7 topics:**
 - 5G PPP Research and validation of critical technologies and systems
 - 5G PPP Convergent Technologies
 - Networking research beyond 5G
 - Software technologies
 - Collective Awareness Platforms for Sustainability and Social Innovation
 - Net Innovation Initiative
 - Future Internet Experimentation – Building a European Experimental Infrastructure

Content technologies and information management



Addresses:

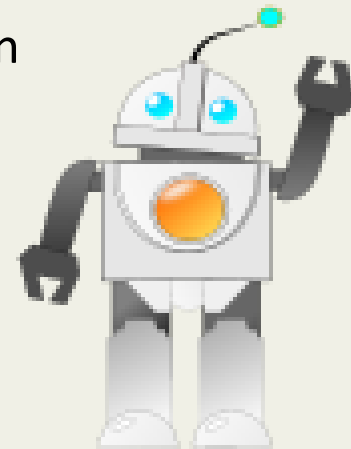
- **Big Data** with focus on both innovative data products and services and solving research problems
- **Machine translation** in order to overcome barriers to multilingual online communication
- **Tools for creative, media and learning industries** in order to mobilise the innovation potential of SMEs active in the area
- **Multimodal and natural computer interaction**
- **Organised in eleven topics:**
 - Big Data PPP: cross-sectorial and cross-lingual data integration and experimentation)
 - Big Data PPP: Large Scale Pilot actions in sectors best benefitting from data-driven innovation
 - Big data PPP: research addressing main technology challenges of the data economy
 - Big data PPP: Support, industrial skills, benchmarking and evaluation
 - Big data PPP: privacy-preserving big data technologies
 - Media and content convergence
 - Tools for smart digital content in the creative industries
 - Support technology transfer to the creative industries
 - Technologies for Learning and Skills
 - Interfaces for accessibility
 - Gaming and gamification





Robotics

- **Roadmap-based research driven by application needs**
→ **Robotics PPP**
- Advanced robot capabilities research and take-up
- System abilities, development and pilot installations
- System abilities, SME & benchmarking actions, safety certification
- Robotics Competition, coordination and support





Micro- and nano-electronics and photonics

Key Enabling Technologies

- Covers **generic technology developments on micro- and nano-electronics** focused on **advanced research** and lower Technology Readiness Levels (TRLs)
- Complementary to the JTI Electronic Components and Systems
- **Topics**
 - **Photonics**
 - **Micro-nanotechnologies**



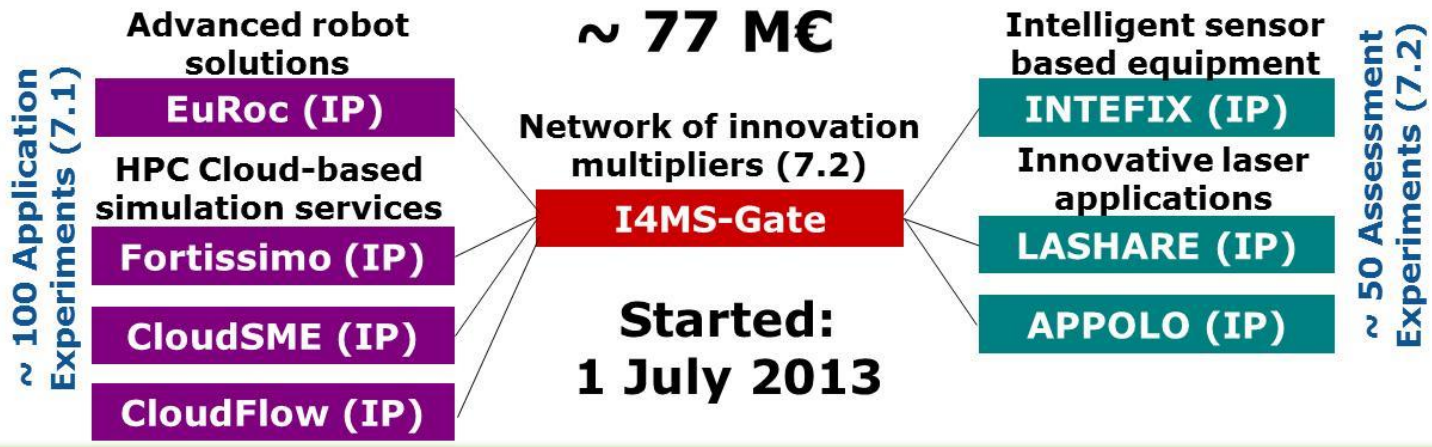
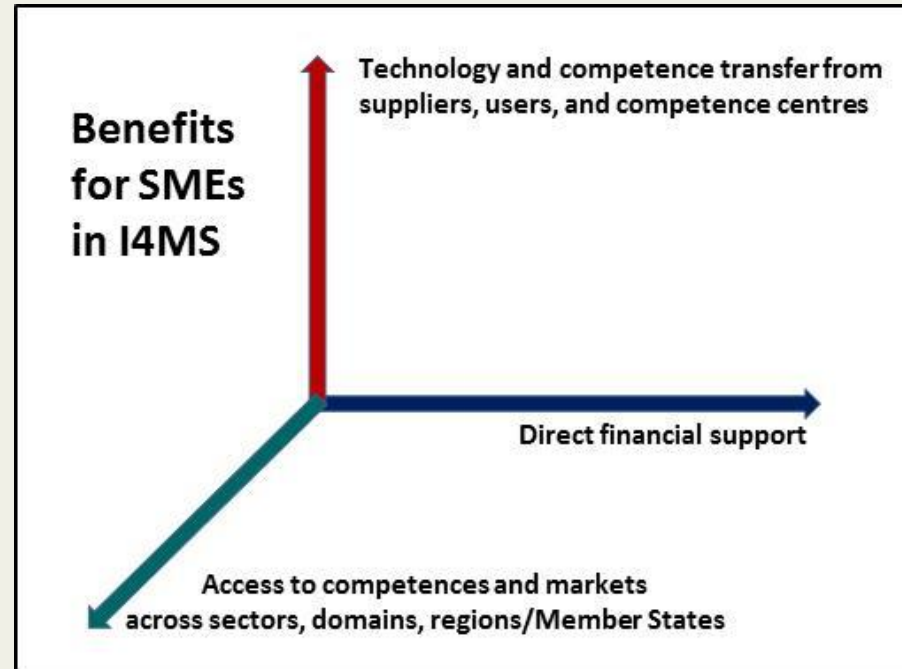
Factory of the Future

- Focuses on **ICT components of innovative production systems in all sectors** (for more personalised, diversified and mass-produced product portfolio and for rapid adaptations to market changes)
- Organised in **three topics**:
 - **Digital automation**
 - **ICT Innovation for Manufacturing SMEs (I4MS)**
 - **Photonics Laser-based production**



I4MS: ICT Innovation I4MS – for Manufacturing SMEs

- Key role of SMEs in value chains: users and suppliers
- SME need more than €s
- 150 application experiments along value chains clustered
- Clustered around networks of competence centres
- Open Calls for experiments during course of projects



www.i4ms.eu/



ICT Cross-Cutting Activities

- **Internet of Things and platforms for Connected Smart Objects**

- Large scale pilots (Smart living / ageing, smart farming / food security, wearables, cities, autonomous vehicles)
- IoT Horizontal activities
- R&I on IoT integration and platforms



- **Responsibility and Creativity**

- Enabling responsible ICT-related research and innovation
- Boost synergies between artists, creative people and technologists

- **Digital Security focus area**

- Assurance and Certification for Trustworthy and Secure ICT systems, services and components
- Cryptography



ICT horizontal innovation actions

- **Support for access to finance**

- Pilot action for business angels to co-invest in ICT innovative companies
- Implemented by EIF and closely coordinated with "Access to risk finance" part of H2020

- **Innovation and Entrepreneurship Support**

- Startup Europe for Growth and Innovation Radar
- Innovation procurement networks
- Pre-Commercial Procurement open

- **Fast track to Innovation**



- **Open Disruptive Innovation Scheme**

- Support to a large set of **early stage high risk innovative SMEs in ICT**
- Implementation through the **SME instrument**
 - > Continuously open calls with several (3) cut-off dates/year
 - > 8% of LEIT budget



Open Disruptive Innovation – LEIT-ICT

Lessons learnt - Most of the non-selected proposals were:

1. Too much focused on the project and **not enough on the business opportunity**;
2. Not convincing when **describing the company** (you have to explain why your company will succeed and not your competitor);
3. Not providing enough information on **competing solutions**;
4. Having a **too low level of innovation**, planning to develop a product that already exists on the market;
5. Proposing just an idea **without any concept for its commercialisation**;
6. Just **trying their luck** (the SME Instrument is not a lottery!).

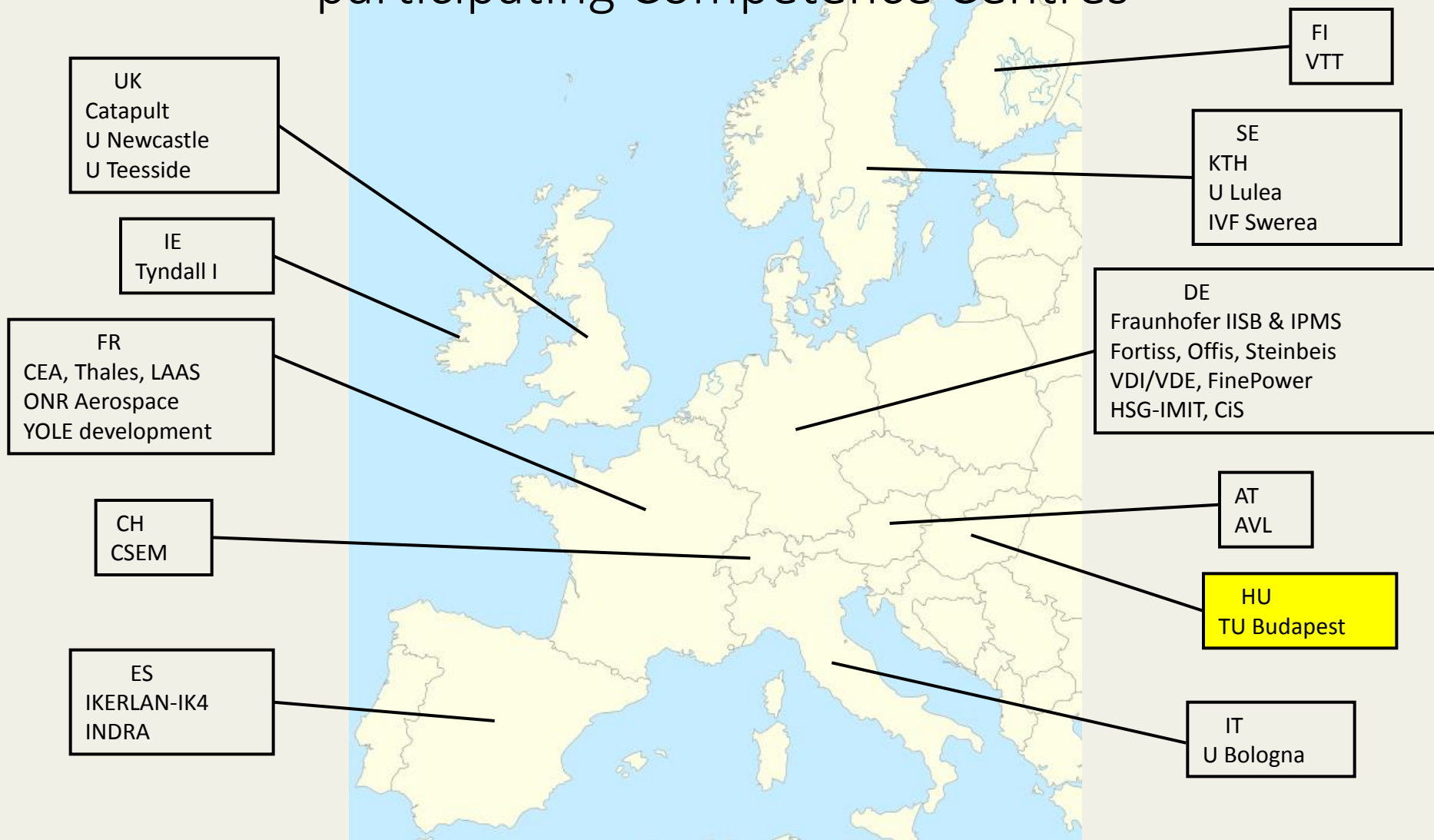
International cooperation

Targeted calls:



- **China – Future internet**
- **Mexico**
- **EU Brazil – Cloud, IoT**
- **EU Japan – 5G, IoT, Cloud, Big Data, Experimental testbeds**
- **EU South Korea – 5G, IoT, Mobile Cloud**
- **Low and middle income**

Smart Anything Everywhere participating Competence Centres



New feature: cascade funding

Annex B: Annex K to the General annexes for the H2020 work programme 2016-17:

•K: Actions involving financial support to third parties

Where a topic allows for grant proposals which foresee a financial support to third parties (in accordance with Article 137 of the Financial Regulation No 966/2012), the proposal must clearly detail the objectives and the results to be obtained and include at least the following elements:

- a fixed and exhaustive list of the different types of activities for which a third party may receive financial support,
- the definition of the persons or categories of persons which may receive financial support,
- the criteria for awarding financial support
- the criteria for calculating the exact amount of the financial support,
- the maximum amount to be granted to each third party (may not exceed EUR 60 000 for each third party unless it is necessary to achieve the objectives of the action) and the criteria for determining it.

ICT R&I in the Societal Challenges

Key principles for ICT R&I in the SC

- Interoperability
- Re-use and economies of scale
- Breakthroughs leveraging the transformative power of ICT
- Preparation for market deployment
- +
- Solutions and input for digital policy



Preparation for market deployment

A few examples from WP2016-17 drafts...

- **Big Data**

- SC1: Big Data supporting Public Health policies
- SC4: Innovative ICT solutions for future logistics operations
- SC6: Policy-making in the age of Big Data
- SC6: European cultural heritage, access and analysis for a richer interpretation of the past

- **Robotics**

- SC1: Robotics-based solutions for active and healthy ageing
- SC2: Robot-based precision farming

- **Internet of Things**

- **Large scale pilots**
 - Smart living environments for ageing well (10M€ each from SC1 and LEIT-ICT)
 - Smart Farming and Food Security(15 M€ each from SC2 and LEIT-ICT)
 - Autonomous vehicles in a connected environment (5M€ each from SC4 and LEIT-ICT pending a dedicated budget to ICT)
 - Water management for resilient cities (5M€ each from SC5 and LEIT-ICT pending a dedicated budget to ICT)



Links to DSM and other digital policy initiatives



- **eHealth**

- eHealth action plan 2012-2020

- **Silver Economy and Active and Healthy Ageing EIP**
- **Privacy & Cybersecurity, e.g. Privacy by design**
- **New eGovernment action plan, incl. 'Once-Only' principle**
- **Smart Cities and Communities EIP**
- **ICT contribution to Energy Union and EU 20/20/20 objectives**
- **SET-Plan**

Budget



SC	2014-15	2016-17	2014-2020 (w/o EFTA)	Total SC (w/o EFTA)	CNECT %
SC1	268	232	1 018	~ 6 900	15%
SC2	-	-	-	~ 3 700	
SC3	72	TBD	TBD	~ 5 400	
SC4	85	TBD	TBD	~ 5 850	
SC5	25	TBD	TBD	~ 2 750	
SC6	78	85	319	~ 1 200	26%
SC7	99	98	384	~ 1 550	25%
Total	627	415	1 903+	~ 27 350	7%

Note: All budget figures in M€



A guide to ICT-related activities in WP2014-15

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3511

Guide to the presence of ICT in H2020

Find out more:

<http://ec.europa.eu/programmes/horizon2020/>

A guide to ICT-related activities in WP2014-15:

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3511

H2020 launched first calls:

<http://ec.europa.eu/programmes/horizon2020/en/news/horizon-2020-launched-%E2%82%AC15-billion-over-first-two-years>


H2020 Calls published, see here:

https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/master_calls.html#h2020-fof-2014-2015

The Participant Portal:

<https://ec.europa.eu/research/participants/portal/desktop/en/home.html>

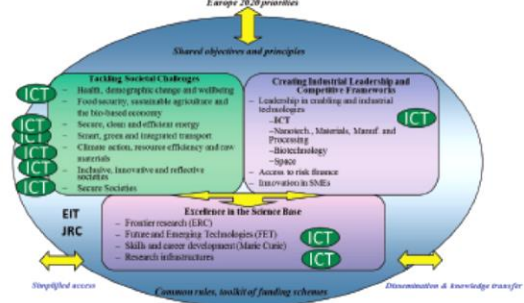
ICT Guide of
WP 2016-17
Is under
preparation



A guide to ICT-related activities in WP2014-15

ICT in H2020 – an Overview

As a generic technology, ICT is present in many of the H2020 areas. This guide is designed to help potential proposers find ICT-related topics across the different parts of H2020.



In work programme 2014-15, ICT-related topics are covered as follows:

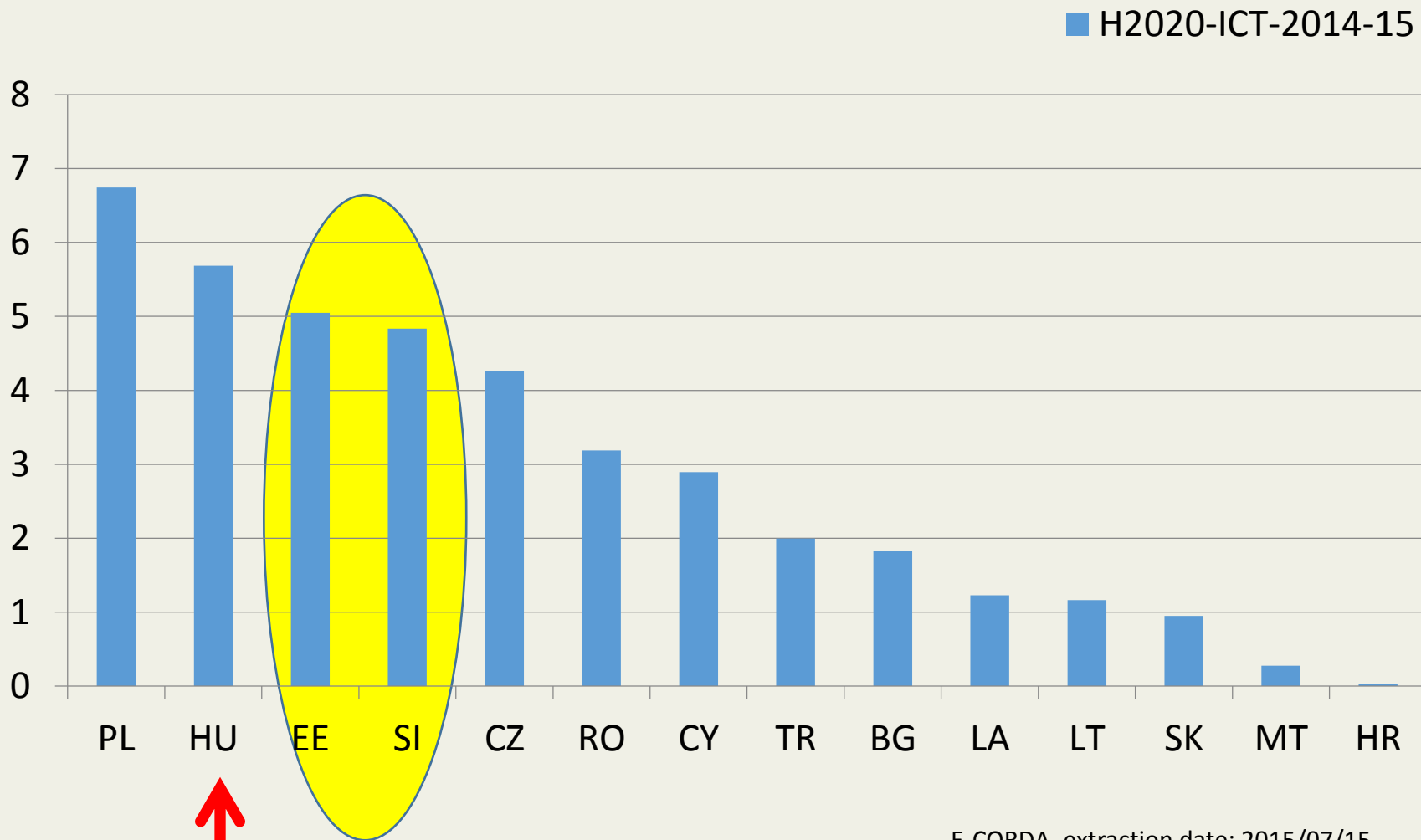
- Advanced research to uncover radically new technological possibilities and ICT contributors to research and innovation are addressed in the 'excellent science' part of the work programme, respectively under 'Future and Emerging Technologies' and 'European research infrastructures' ('infrastructures');
- Research and innovation activities on generic technologies either driven by industrial roadmaps or through a bottom-up approach are addressed in the 'Leadership in enabling and industrial technologies' (LEIT) part of the work programme, under 'Information and communication technologies';
- Multi-disciplinary application-driven research and innovation, leveraging ICT to tackle societal challenges are addressed in the different 'Societal challenges'.

The figures above and below provide synthetic overviews of the presence of ICT in Horizon 2020.

Horizon 2020

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3511

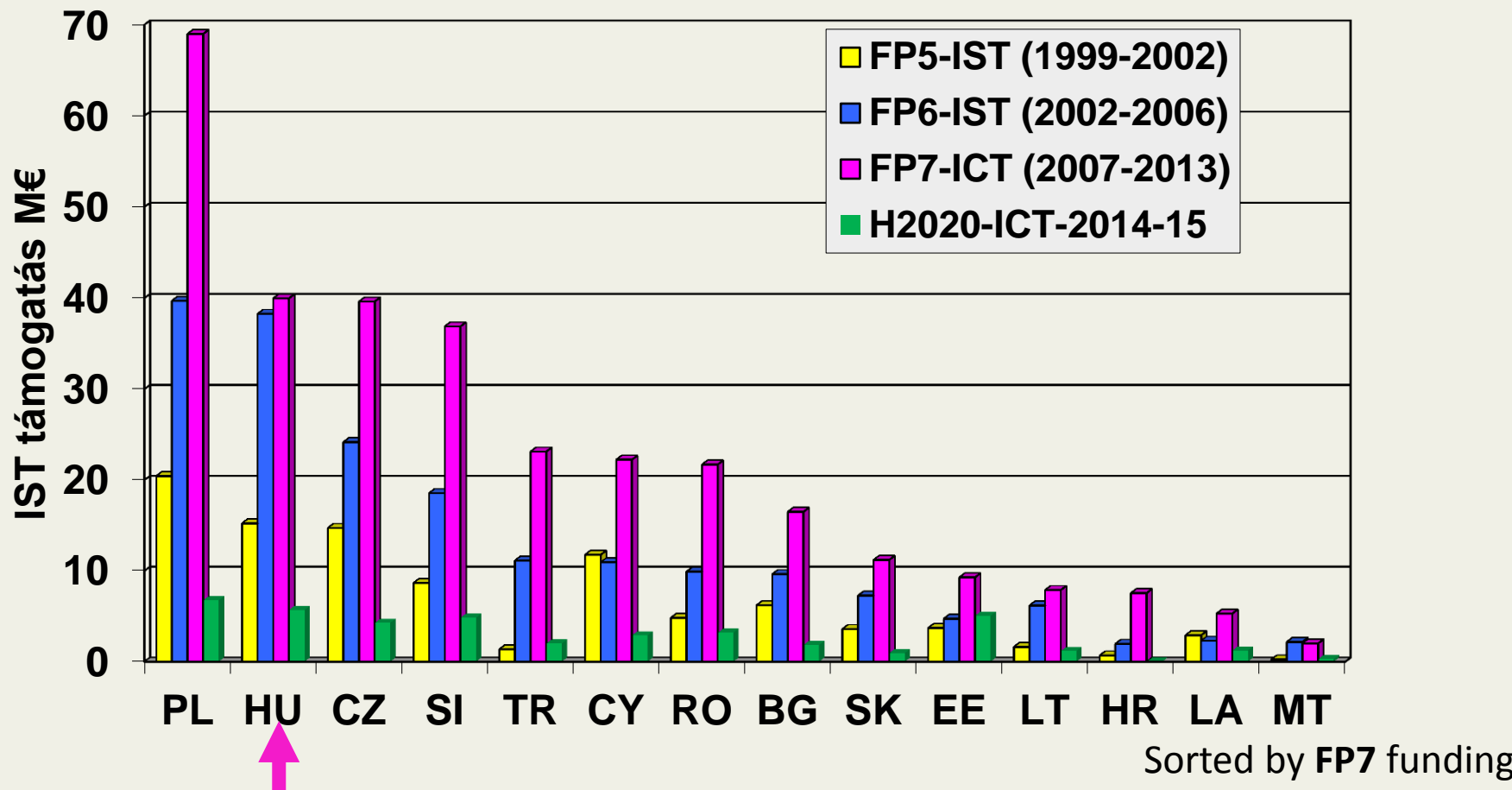
H2020 ICT Funding for EU13, 2014-15



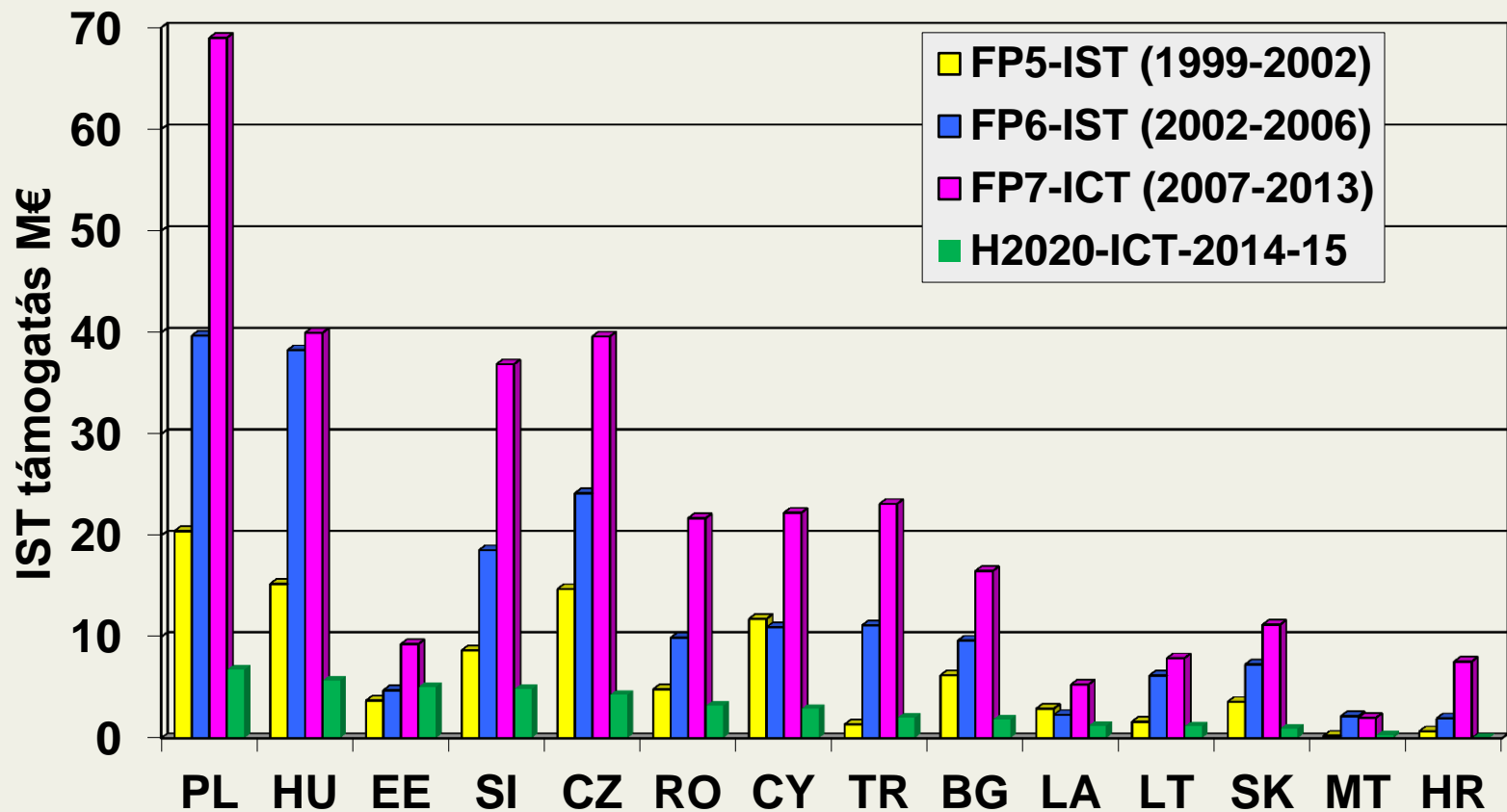
E-CORDA, extraction date: 2015/07/15



**New MSs' Funding in FP-5-6-7-8 IST/ICT,
HU share= 15,87% / 20,48% / 13,65%/14,9%**



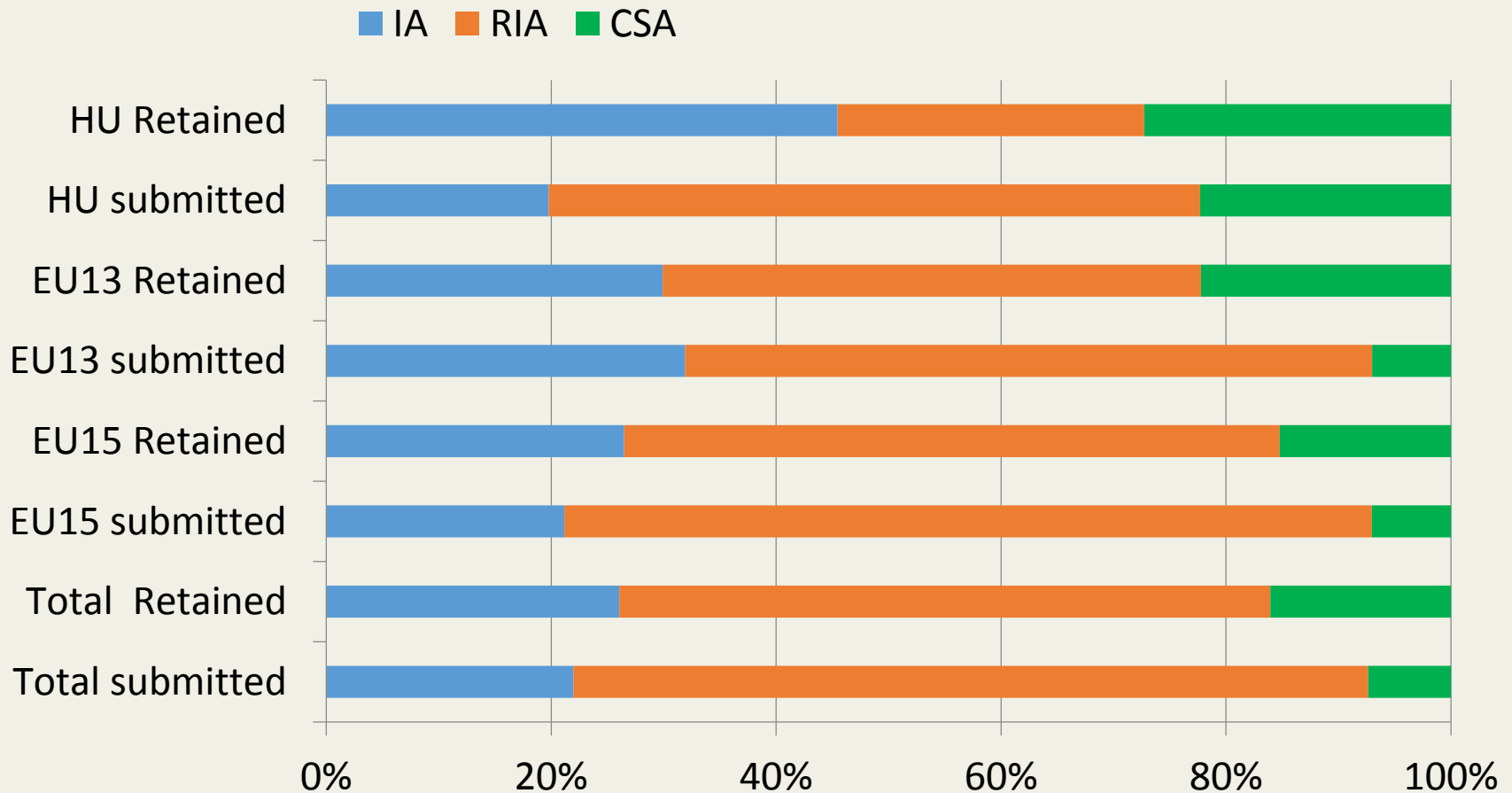
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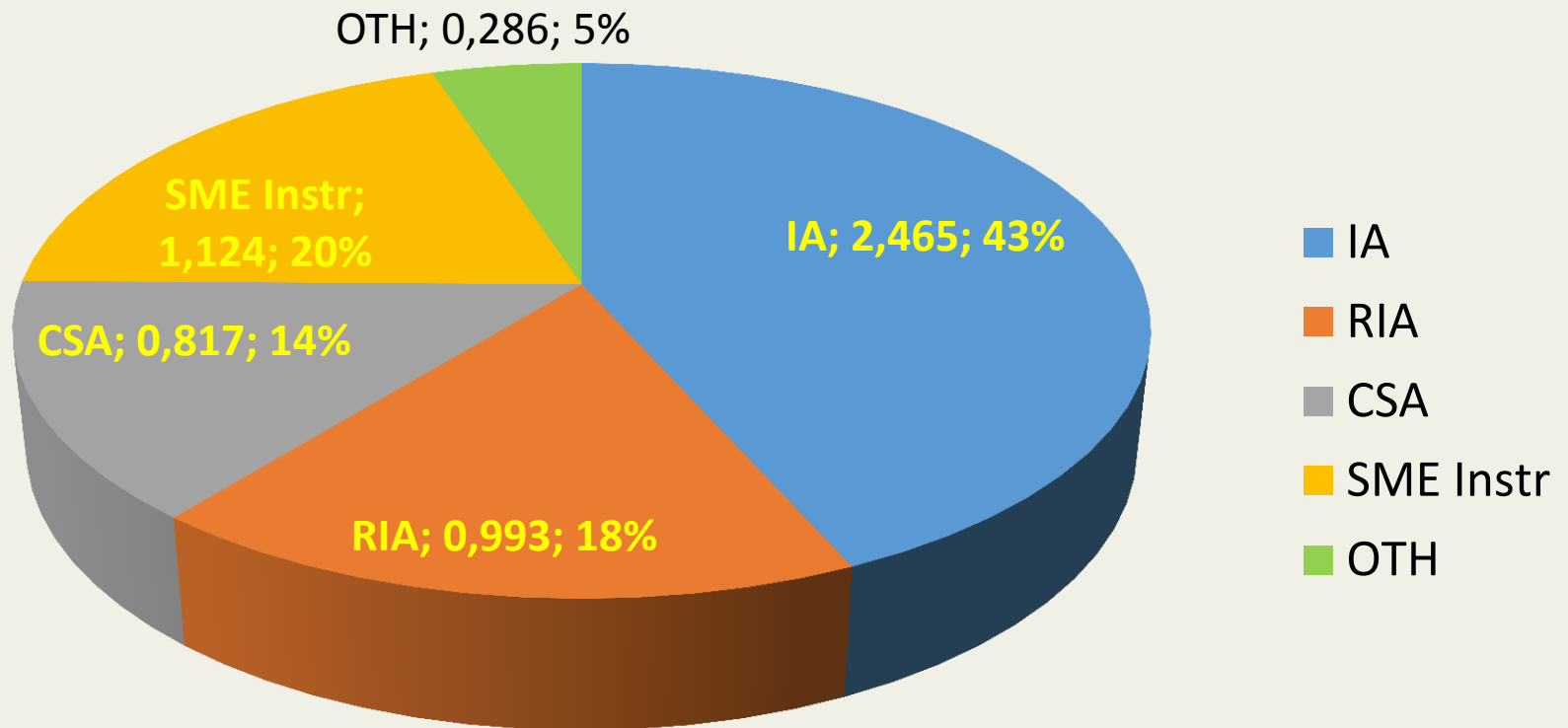
Sorted by H2020 funding



ICT Call-1, H2020 Instruments, Share of participants by action type



HU contracts in ICT by instruments, 2014-15

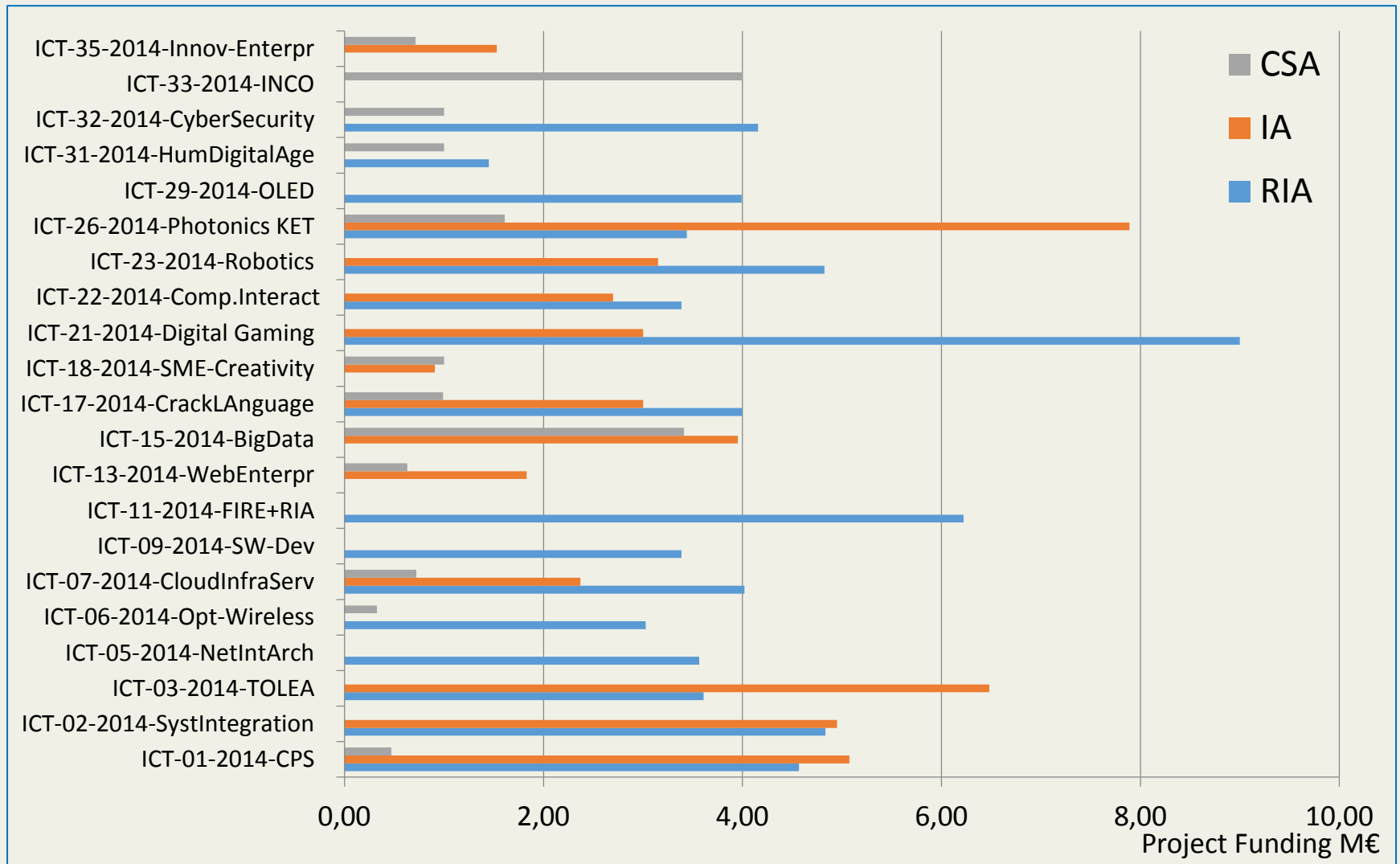


E-CORDA, extraction date: 2015/07/15



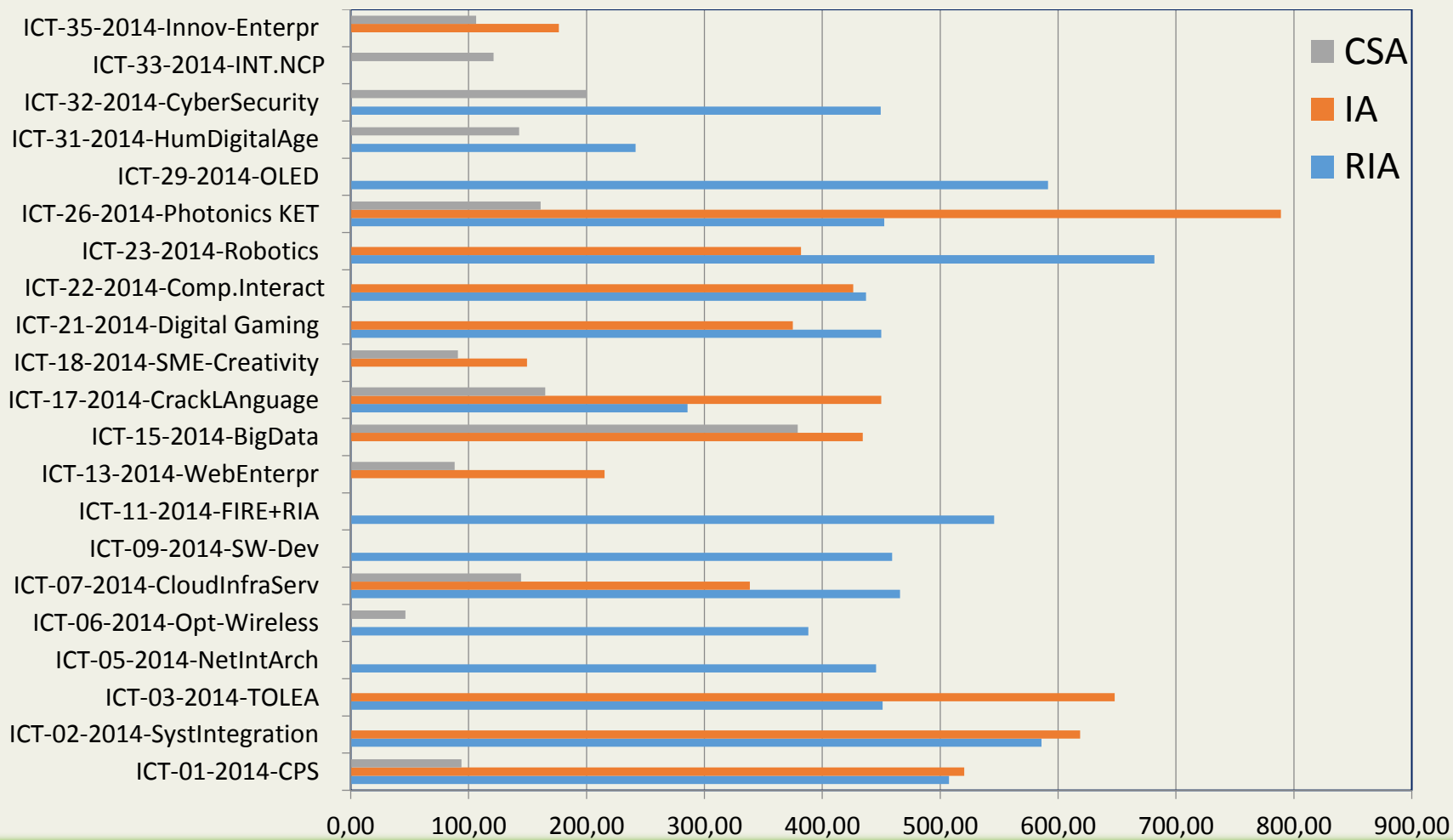
H2020 ICT Call 1. Size of Projects

Project's Funding by Topic and Instrument



H2020 ICT Call 1. Funding/Participants

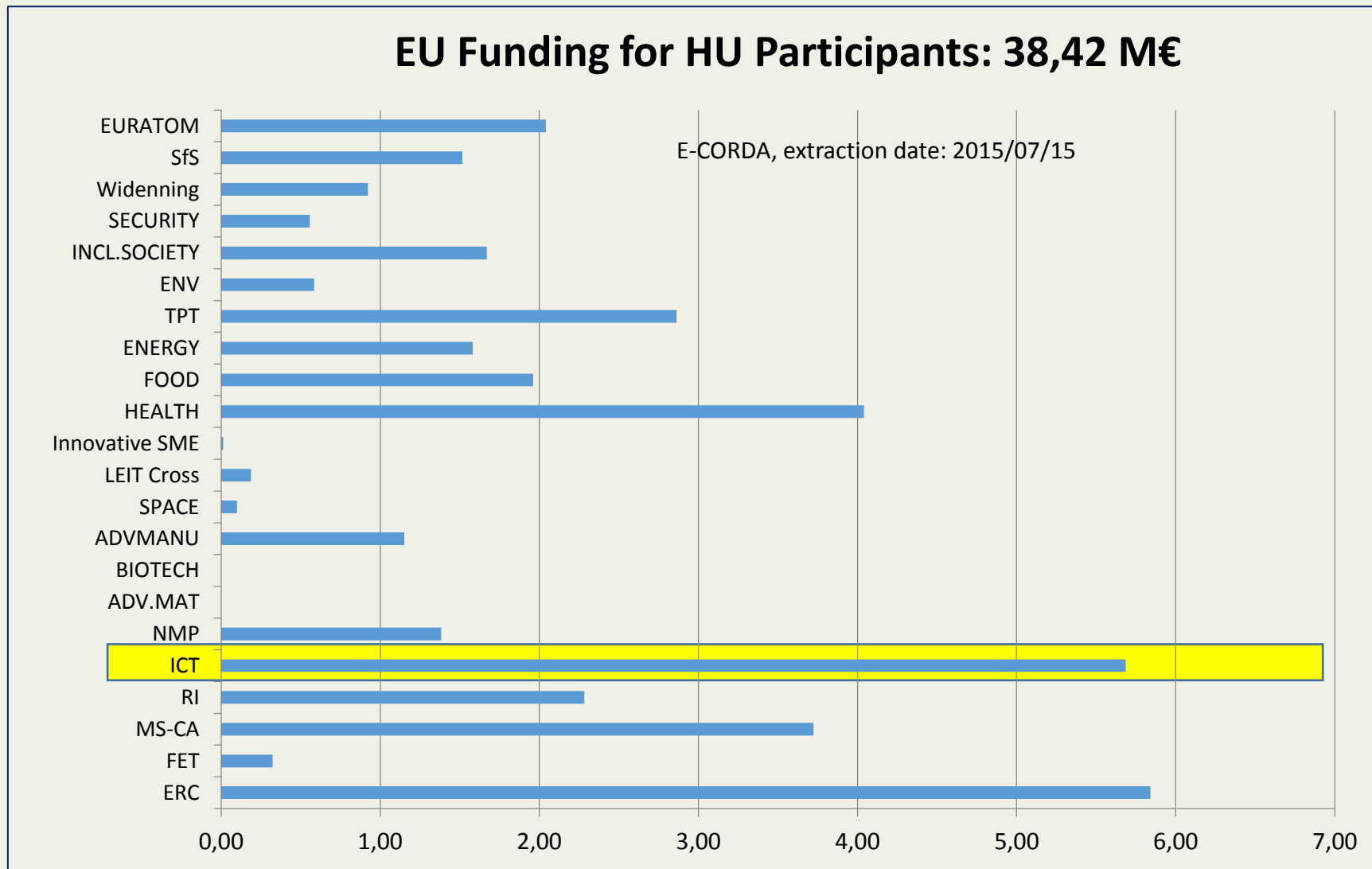
Participant's Funding by Topic and Instrument



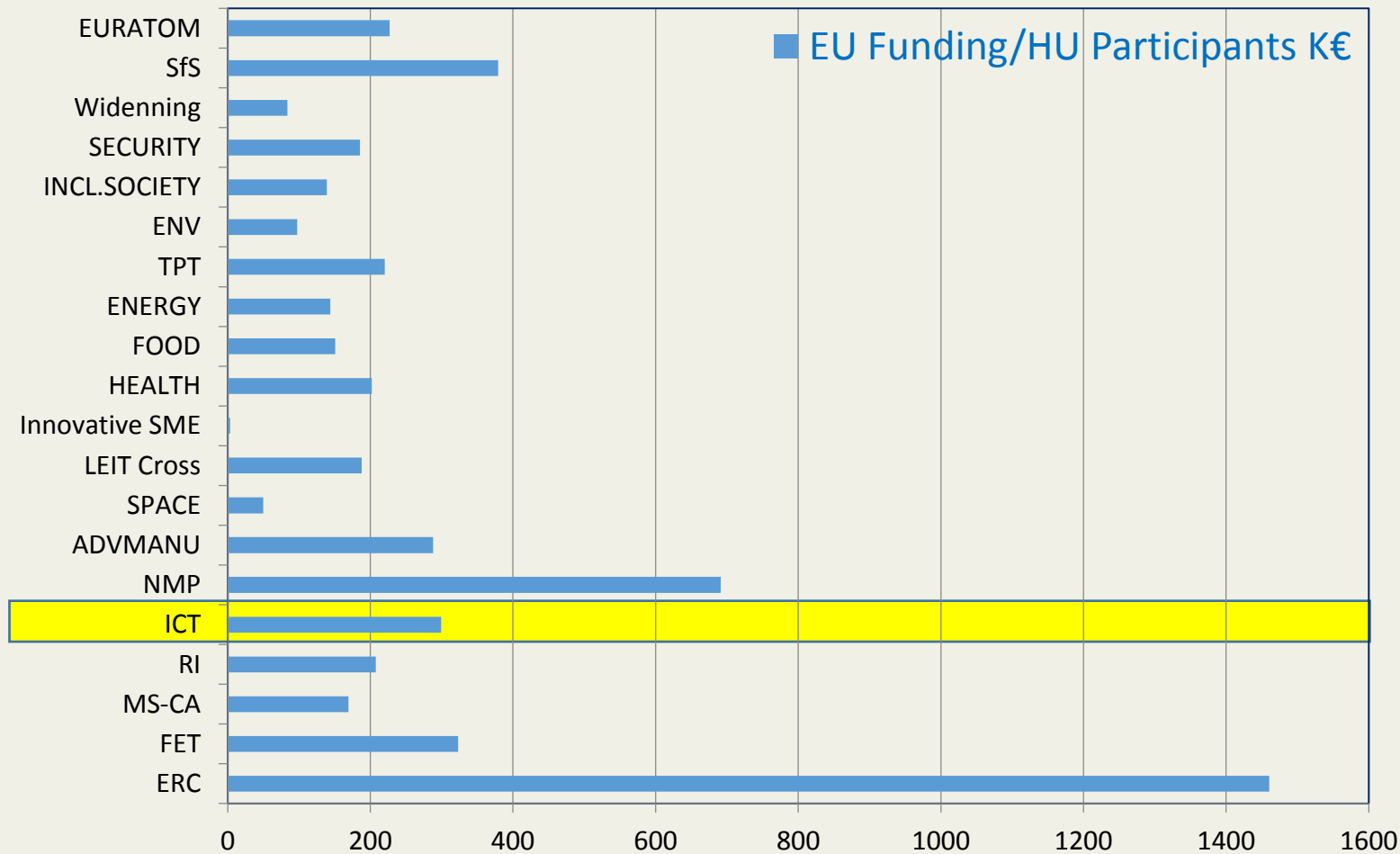
Funding/Participants K€



H2020 Contracts 2014-2015, Funding for HU, by H2020 PC Configuration



All H2020 Contracts, 2014-15, Funding/HU Participants



E-CORDA, extraction date: 2015/07/15

Funding/HU Participants K€



H2020 Contract, 2014-2015, HU Top 20 organizations' list Top 10s are „EUR millioner”

1. [KOZEP-EUROPAI EGYETEM \(CEU\)details](#)
2. [MAGYAR TUDOMANYOS AKADEMIA WIGNER FIZIKAI KUTATOKOZPONT \(Wigner RCP\)details](#)
3. [MAGYAR TUDOMANYOS AKADEMIA SZAMITASTECHNIKAI ES AUTOMATIZALASI KUTATOINTEZET \(MTA SZTAKI\)details](#)
4. [EOTVOS LORAND TUDOMANYEGYETEM \(EOTVOS LORAND UNIVERSITY\)details](#)
5. [BUDAPESTI MUSZAKI ES GAZDASAGTUDOMANYI EGYETEM \(BME\)details](#)
6. [MAGYAR TUDOMANYOS AKADEMIA RENYI ALFRED MATEMATIKAI KUTATOINTEZET \(RENYI\)details](#)
7. [BAY ZOLTAN ALKALMAZOTT KUTATASI KOZHASZNU NONPROFIT KFT. \(BZN\)details](#)
8. [FALCON-VISION MUSZAKI FEJLESZTO ES SZOLGALTATO ZARTKORUEN MUKODO RT \(FALCON VISION ZRT\)details](#)
9. [DEBRECENI EGYETEM \(UNIVERSITY OF DEBRECEN DE\)details](#)
10. [QUANTISLABS INFORMATIKAI BIZTONSAGTECHNIKAI KUTATOLABORATORIUM KFT \(QuantisLabs Kft.\)details](#)
11. [SEMMELEWEIS EGYETEMdetails](#)
12. [HOLOGRAFIKA HOLOGRAMELOALLITO FEJLESZTO ES FORGALMAZO KFT \(HOLOGRAFIKA\)details](#)
13. [REGIONAL ENVIRONMENTAL CENTER FOR CENTRAL AND EASTERN EUROPE -RECdetails](#)
14. [SYREON KUTATO INTEZET KORLATOLT FELELOSSEGU TARSASAG \(SYREON\)details](#)
15. [GEONARDO ENVIRONMENTAL TECHNOLOGIES LTD \(GEONARDO LTD\)details](#)
16. [MAGYAR TUDOMANYOS AKADEMIA ENERGIATUDOMANYI KUTATOKOZPONT \(MTA EK\)details](#)
17. [SZECHENYI ISTVAN UNIVERSITYdetails](#)
18. [ENVIROINVEST KORNYEZETVEDELMI ES BIOTECHNOLOGIAI ZARTKORUEN MUKODO RESZVENYTARASASAG \(ENVIROINVEST Corp.\)details](#)
19. [INNOREG KOZEP-MAGYARORSZAGI REGIONALIS INNOVACIOS UGYNOKSEG KOZHASZNU EGYESULET \(INNOREG KM\)details](#)
20. [KAPOSVARI EGYETEMdetails](#)

Funding
4,5-1 M€

.....50.....[SZEGEDI TUDOMANYEGYETEM \(USZ\)details](#) (3 projects, 150 K€)



ICT 2015 Event, 20-22 October 2015, Lisbon

Website: www.ec.europa.eu/digital-agenda/ICT2015

Twitter: @ICT2015eu #ICT2015

Objectives of ICT 2015

- A **policy conference**
present new Commission policies and initiatives
- An **interactive exhibition**
showcase results and impact of recent EU R&I
- **Networking**
engage stakeholders, enhance quality partnerships
- **Startup Europe Forum**
innovation & entrepreneurship, networking and accelerator activities
- **Inform** about H2020 WP 2016

4500-5000 delegates



Thank you for your attention!

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