HORIZON 2020

LE PROGRAMME DE RECHERCHE ET D'INNOVATION DE L'UNION EUROPÉENNE

ICT 30 – 2015: *Internet of Things and Platforms for Connected Smart Objects*

Agenda

09H30 – 10H00	Accueil autour d'un café
10H00 – 10H20	**Introduction de la matinée** **Frédéric Laurent & Rémy Arquevaux,** représentants au comité de programme TIC
10H20 – 11H20	**ICT 30 – 2015: Internet of Things and Platforms for Connected Smart Objects** **Thibaut Kleiner**, Chef de l'Unité Communications Networks, Content and Technology
11H20 – 11H40	**FI-LINKS : Evangélisation des résultats du Future Internet PPP dans les régions Françaises** **Pierre-Yves Danet**, Orange
11H40 – 12H00	**FI C3** **Pierre François,** Images et Réseaux Questions/Réponses
	Déjeuner libre
13H00 – 15H00	**Rendez-vous B2B**

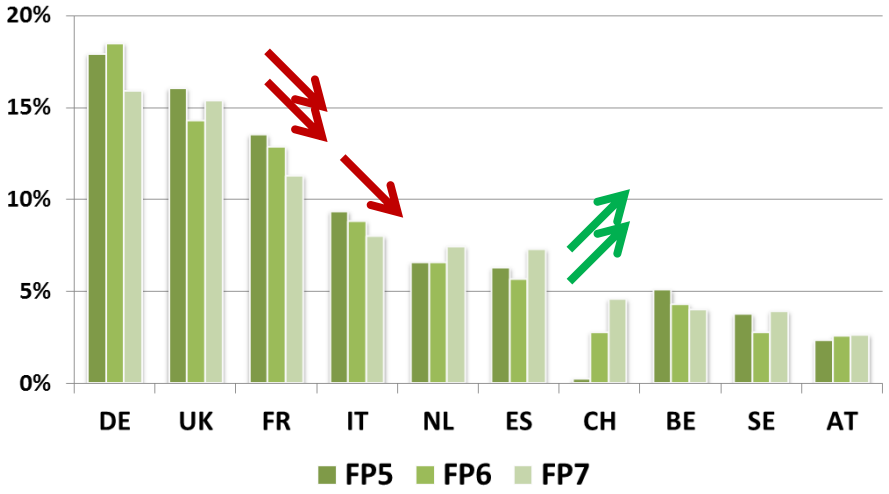
INTRODUCTION MATINÉE

Introduction

- Contexte national Horizon 2020 et TIC
- Horizon 2020 « en bref »
- Statistiques sur les parties liées à l'IoT dans l'appel ICT-2014

PCRDT: la problématique française (1)

- La France est le 3ème bénéficiaire du 7ème PCRDT et ses résultats se dégradent de manière continue depuis 15 ans:
  - 5ème PCRDT: 13,5% (vs. Top 10: 80,9%)
  - 6ème PCRDT: 12,8% (vs. Top 10: 78,9%)
  - 7ème PCRDT: 11,3% (vs. Top 10: 80,4%)



PCRDT: la problématique française (2)

- Sur le 7ème PCRDT, les équipes françaises ont gagné en moyenne **723 M€/an**!
- Sur l'année 2013 (pire année en terme de part des financements captée), les équipes françaises ont gagné **766 M€**!

- Pour **chaque €** abondé par la France au budget du PCRDT (via le budget de l'UE), **moins de 0,7 €** retourne aux équipes françaises
- Sur la période, la France a ainsi « perdu » 344 M€/an de crédits RDI
- En 2013, la France a « perdu » **plus de 640 M€** de crédits RDI au bénéfice de ses partenaires (mais aussi compétiteurs) européens

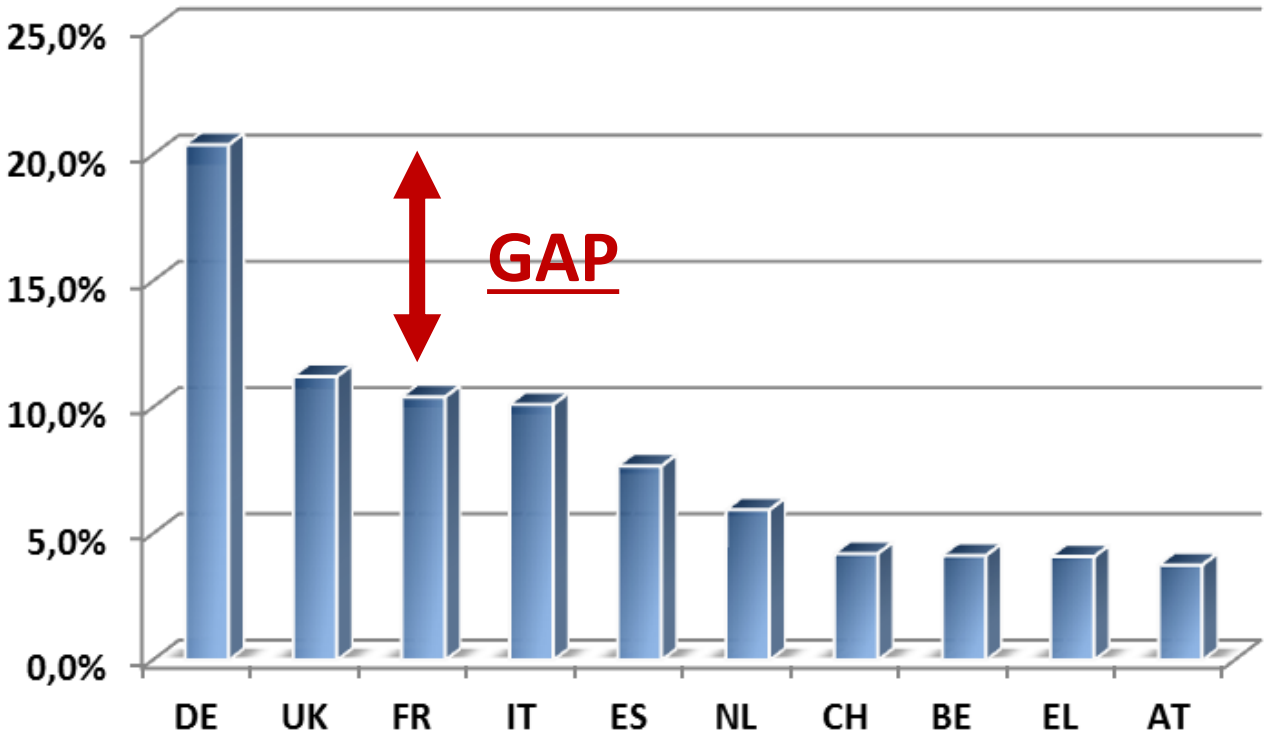
- Potentiellement
  - Si le taux de retour français approchait 1, le PCRDT aurait représenté 1,070 Md€/an en moyenne sur la période
  - Sur l'année 2013, le PCRDT aurait représenté **1,4 Md€** pour les équipes françaises!

…à comparer aux ressources annuelles combinées de l'ANR, du FUI, du PIA…

Positionnement de la France

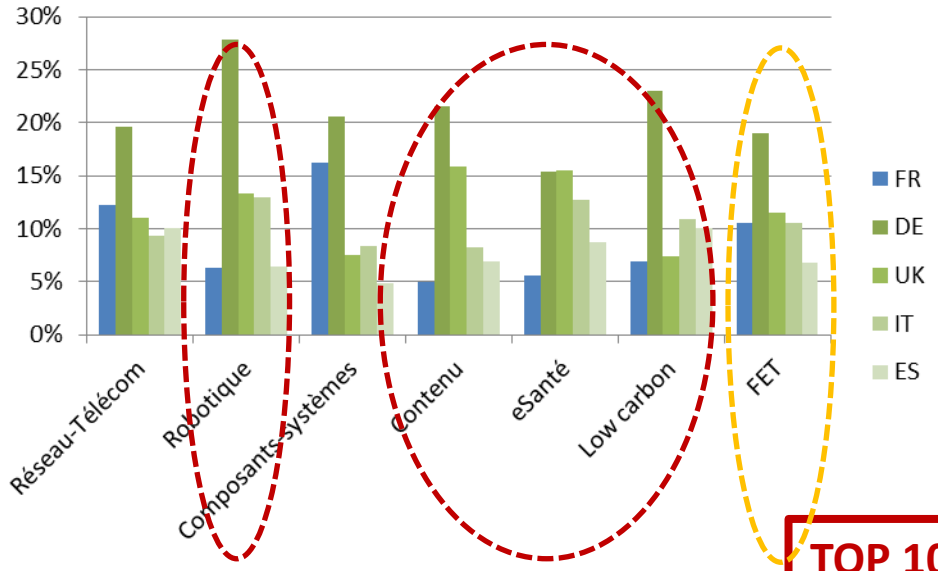
	Pays	€ gagnés (M€)	Part	Contribution au budget UE (2012)	Taux de retour	%GERD UE28 (2012)	% pers. R&D UE28 (2012)	% brevet UE28 (2009)
1	Allemagne	7 149	15,9%	20,0%	**79%**	29,5%	22,2%	38,9%
2	Royaume-Uni	6 909	15,4%	12,4%	**124%**	12,4%	13,4%	13,5%
3	France	5 066	11,3%	16,6%	**68%**	17,3%	15,1%	15,8%
4	Italie	3 596	8,0%	12,8%	**63%**	7,4%	8,8%	5,0%
5	Pays-Bas	3 338	7,4%	4,8%	**155%**	4,8%	4,4%	4,7%
6	Espagne	3 270	7,3%	8,5%	**85%**	5,0%	7,8%	2,0%
7	Suisse	2 045	4,6%	*2,8%*	***163%***	N/A	N/A	5,3%
8	Belgique	1 800	4,0%	4,1%	**99%**	3,1%	2,5%	2,2%
9	Suède	1 749	3,9%	2,8%	**138%**	5,2%	3,1%	6,9%
10	Autriche	1 177	2,6%	2,2%	**117%**	3,2%	2,4%	3,1%

Europe et TIC: la problématique française (1)

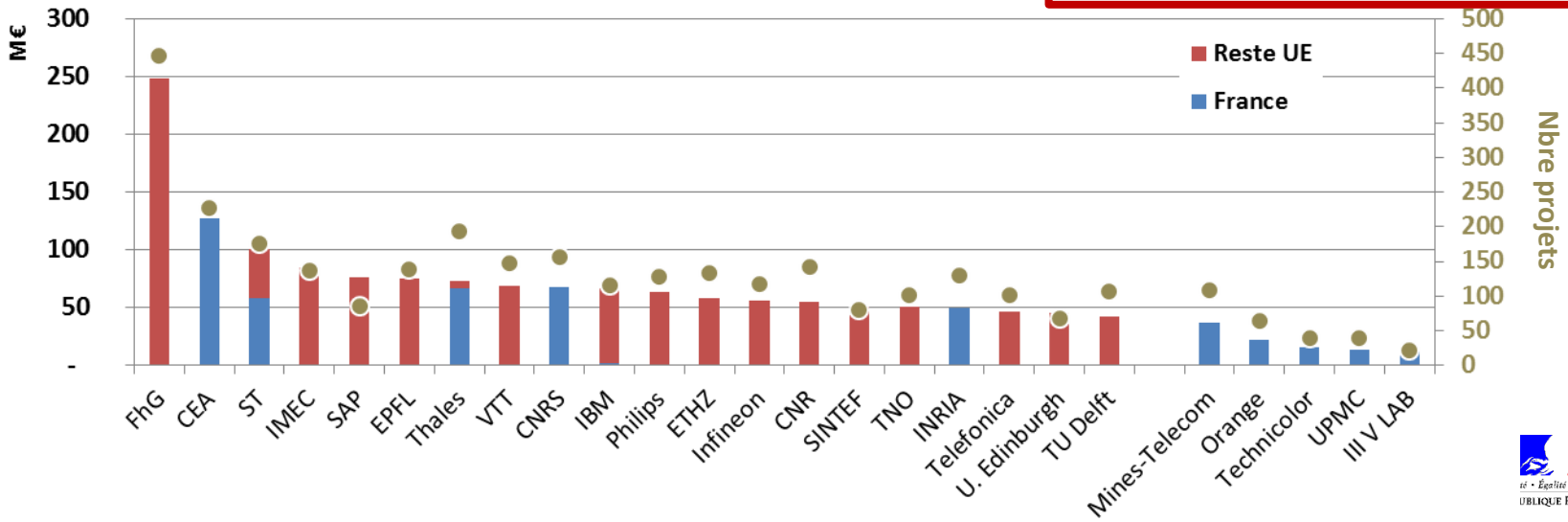


Retour FR de 10,4% vs. 20,4% pour DE sur l'ensemble du 7ème PCRDT/TIC

Europe et TIC: la problématique française (2)



TOP 10 FR = 55,6% € gagnés
TOP 20 = 64,4%
TOP 50 = 74,6



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ité • Égalité • Fraternité
UBLIQUE FRANÇAISE

Europe et TIC: la problématique française (3)

- Quelques chiffres sur les bénéficiaires français au 7ème CPRDT
  - 587 bénéficiaires uniques
  - …mais les 10 premiers représentent 56% du financement total obtenu
  - 99 ont bénéficié de plus de 1 M€
    - Dont 27 grands groupes, 7 ETI et 17 PME industrielles
  - Quelques bénéficiaires:

ALDEBARAN Robotics, Soitec, SEQUANS COMMUNICATIONS, Quantel, robosoft, MICROOLED, KALRAY, LINAGORA

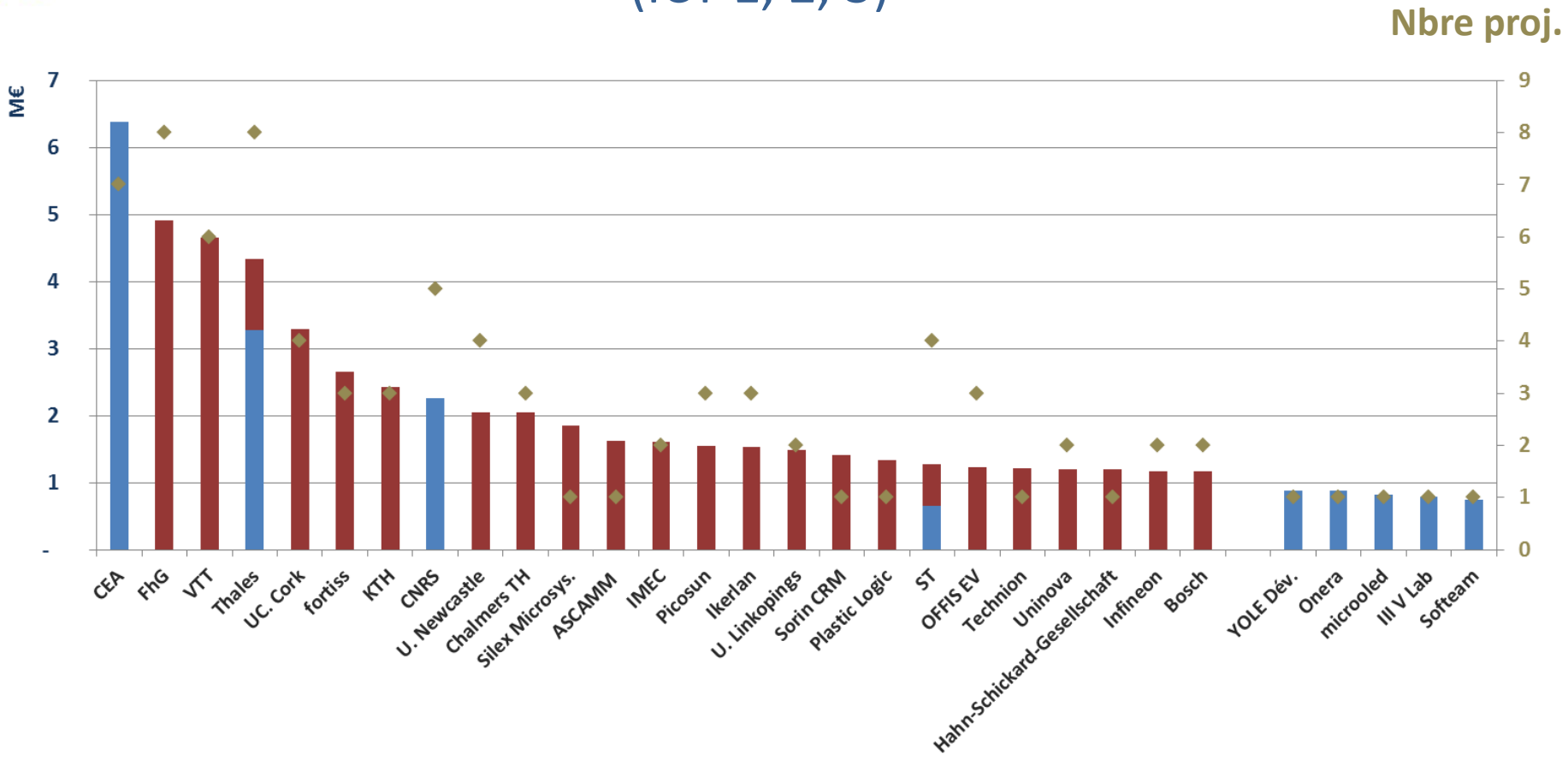
- Quelques bénéficiaires « TIC » sur les autres programmes du 7ème PCRDT:

SIGFOX One network A billion dreams, Parrot, sysnav NAVIGATION TECHNOLOGIES, lima, McPhy energy

Eléments appel ICT-2014

A new generation of systems and components

(ICT 1, 2, 3)

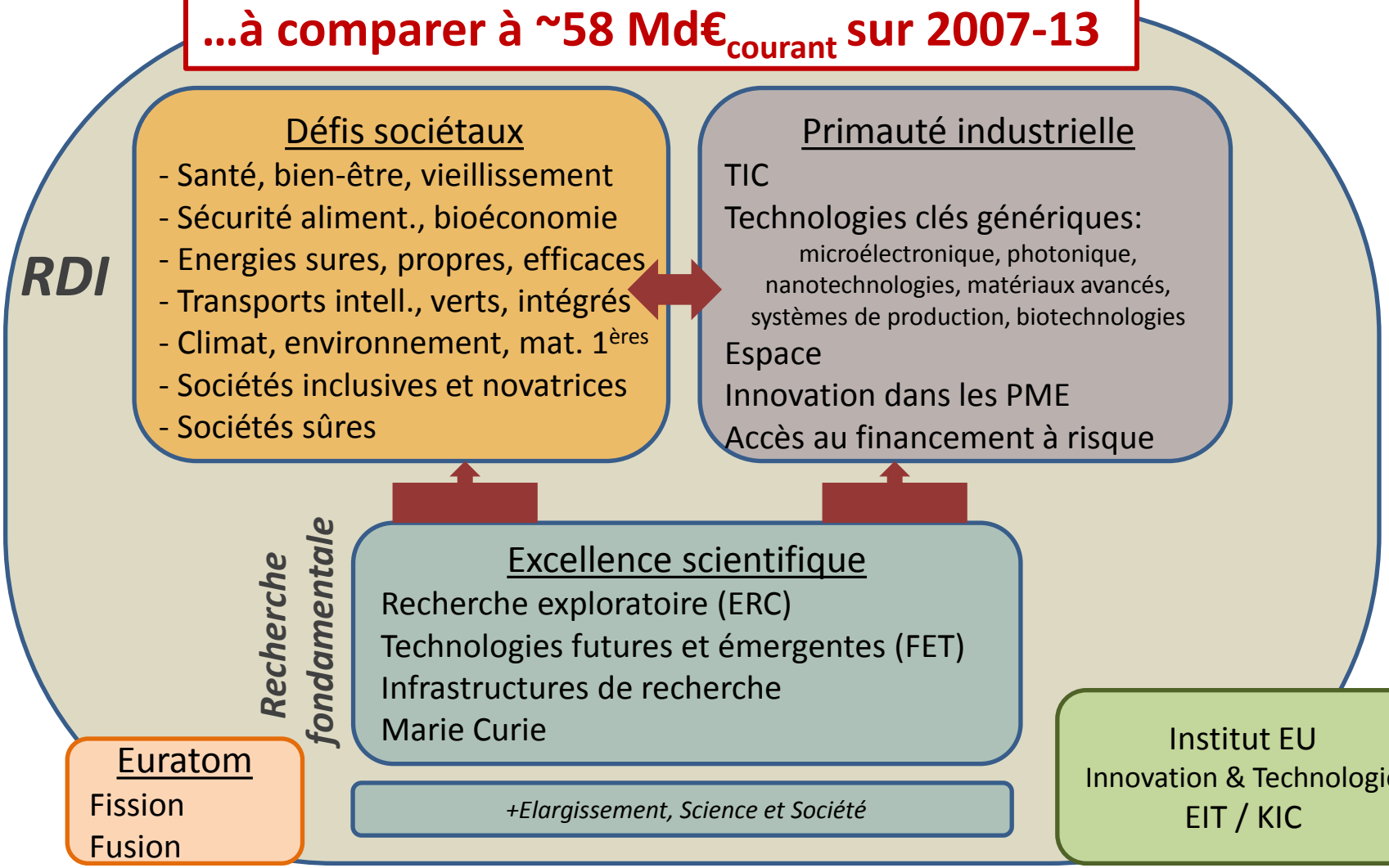


Participation FR: 12,3%
Part FR: 17,7%
Taux de succès FR: 16%
Taux de succès moyen: 9%

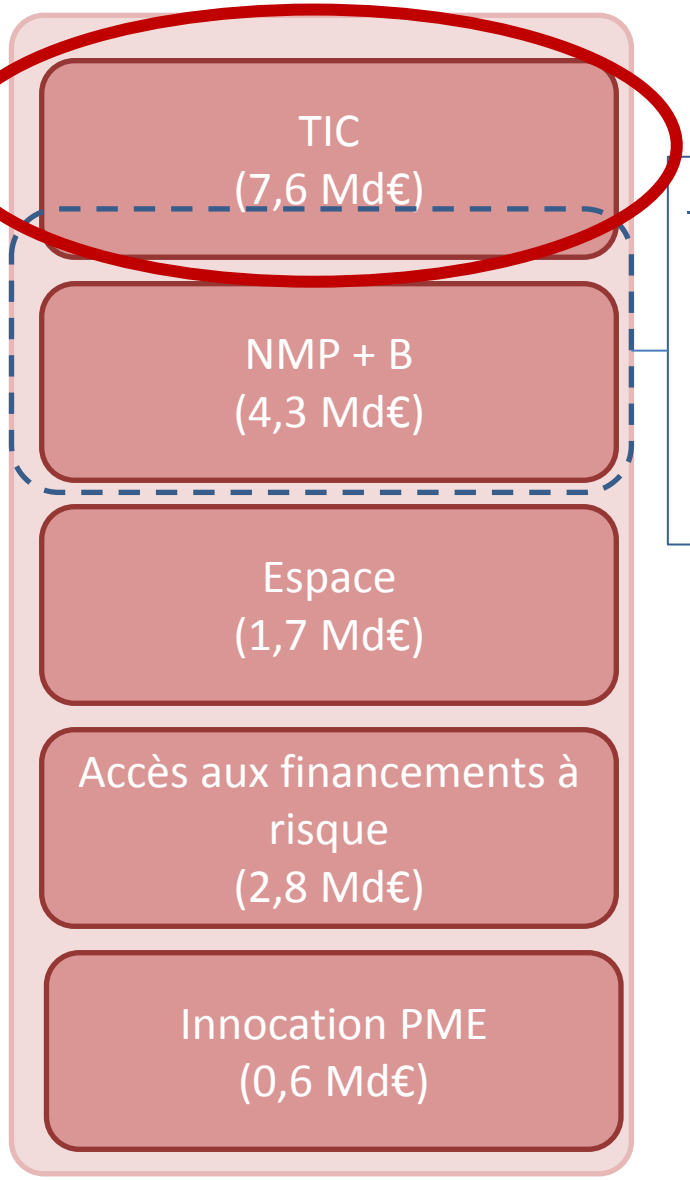
RAPPEL HORIZON 2020

Horizon 2020: architecture

79,4 Md€$_{courant}$ pour 2014-20
…à comparer à ~58 Md€$_{courant}$ sur 2007-13



H2020: le pilier Primauté industrielle



17 Md€

KET:
- Photonique
- Micro/nanoélectronique
- Nanotechnologies
- Matériaux avancées
- Procédés de fabrication avancés
- Biotechnologies

Règles de participation

- Toute entité légale peut participer
- 3 entités légales de 3 Etats-membres ou Etats associés différents
- Exception notamment pour les mono-bénéficiaires (ERC et PME)
- Entités légales financées établies dans les Etats-membres ou Etats associés (pour les Etats tiers : participation essentielle pour la mise en œuvre du projet ou prévue au titre d'un accord de coopération scientifique et technologique ou expressément prévu dans le programme de travail)
- 3 Critères d'évaluation des propositions:

  Excellence S&T – Impact – Mise en œuvre

  Pour ERC, un seul le critère: Excellence
- 2 types de projets collaboratifs:
  - Projet Recherche & Innovation
  - Projet Innovation

Critères d'évaluation

Excellence S&T (sur 5)	Impact (sur 5)	Management (sur 5)

Projet R&I

(note totale sur 15)

Projet I

(note totale sur 17,5)

Impact (sur 5, **poids de 1,5**)	Excellence S&T (sur 5)	Management (sur 5)

Taux de co-financement (projets collaboratifs)

Autres actions:
- PCP
- PPI
- CSA
- *Prizes*

- Deux types de projets collaboratifs principaux
  - Projets « Recherche & Innovation »: 100% des coûts éligibles
  - Projets « Innovation »: 70% des coûts éligibles

Taux de financement des coûts directs éligibles		
Thème fléché	« Non-profit » organisations	Entreprises
Recherche & Innovation	**100%**	**100%**
Innovation	**100%**	**70%**

Forfait de 25% des coûts directs éligibles pour l'assiette des coûts indirects

Taux de co-financement (projets collaboratifs)

Coûts directs éligibles

\+

Coûts indirects = 25% des coûts directs éligibles

=

Total des coûts éligibles

(i.e. assiette)

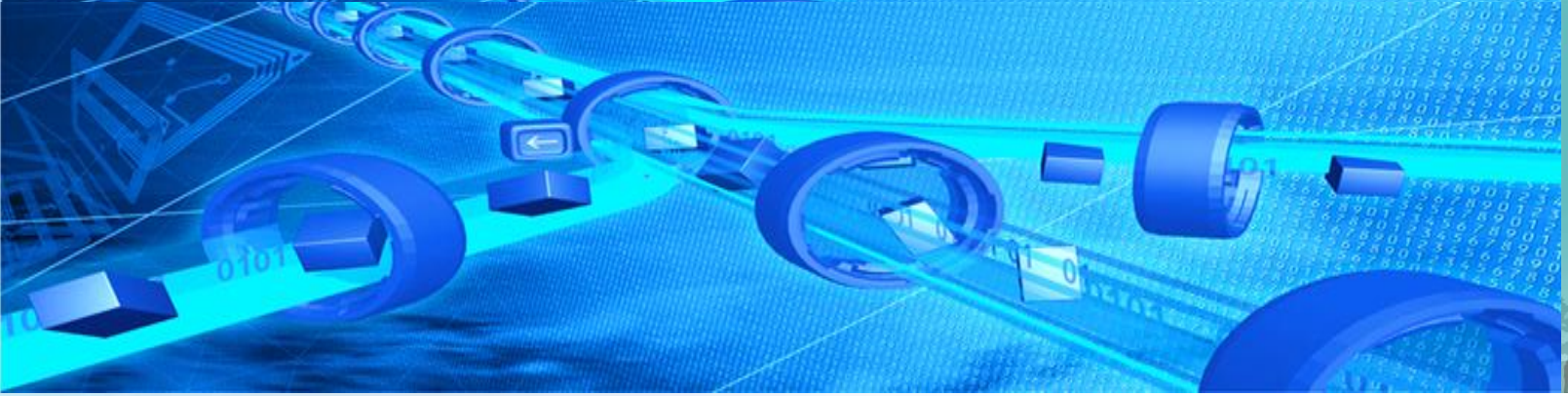
Calcul de la subvention UE:

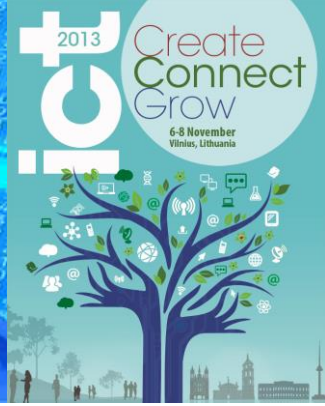
- 100% du total des coûts éligibles pour les projets de recherche et d'innovation : 100% de (100+25)
- 70% du total des coûts éligibles pour les projets d'innovation (100% pour les organisations à but non lucratif): 70% de (100+25)

Simplification

- ***Time-to-grant* réduit**
  - 5 mois entre le dépôt et la fin de l'évaluation
  - 3 mois de négociation avant signature
- Audits possibles pendant seulement 2 ans après le paiement final (vs. 5 ans après la fin du projet dans le 7ème PCRDT)
- Fin de l'obligation de placer le pré-financement sur un compte rémunéré et de reverser les éventuels intérêts générés
- Vérification de la capacité financière, seulement si la subvention de l'UE dépasse 500k€ et uniquement du coordinateur
  - Capacité financière peut être assurée par un tiers
- Possibilité de cumuler des financements UE sur un même projet (mais éléments de coûts différents)
- Accès simplifié à l'information pour le participant
- Echanges exclusivement électroniques, nouveau portail du participant (incluant Cordis à terme), nouvelle structure de la convention de subvention (options), texte explicatif de la convention de subvention, guides plus adaptés aux acteurs ciblés…

OBJECTIF ICT 30





LEIT ICT WP2014-15

ICT 30 2015: Internet of Things and Platforms for Connected Smart Objects

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EUROPEAN COMMISSION, DG CONNECT

Version 10/2014

Internet of Things: An important research and policy element of the European Commission

- Evolution of IoT research and innovation in the context of H2020 for developing federating platforms towards a world of Connected Smart Objects
- Stronger combination of the IoT with Cloud Computing, Future Internet, Cyber-Physical Systems and network technologies like 5G (multiple actors)
- Support of the policy and social dialogue (including IoT governance) as the Internet of Things lays the foundation for a “digital society”

Issues at stake in a larger context of the Internet of Things

- The overall challenge is to **better support societal changes and economic growth**, to overcome the fragmentation of vertically-oriented closed systems, architectures and application areas, and to **move towards open systems and platforms** that support multiple applications and open API
- Europe needs to capture the benefits from developing **platforms** that require a strong cooperation between the **telecom, hardware, software and service industries**, in order to create and master **innovative Internet Ecosystems**. Integration of a **multiplicity of actors** is key in areas where the EU can differentiate and gain a leading edge
- The Internet of Things **cuts across several LEIT** (Leadership in Enabling & Industrial Technologies) **ICT challenges**, such as smart systems integration, cyber-physical systems, smart networks, big data, cloud, and brings together different generic ICT technologies (nano-electronics, wireless networks, low-power computing, adaptive and cognitive systems). A **multi-stakeholder and ecosystem perspective** rather than the deployment of individual, not compatible technical solutions towards IoT platforms supporting multiple use cases is pivotal
- A specific win-win strategy development for IoT international cooperation focusing on pilots/testbeds, architectures, semantics, security&privacy, standardisation is pivotal

Definitions

- **Internet of Things (IoT)** is a **dynamic global network infrastructure** with self-configuring capabilities **based on standard and interoperable communication protocols** where physical and virtual "things" have identities, physical attributes and virtual personalities and use intelligent interfaces and are seamlessly **integrated into the information network**. (Definition by ITU and IERC-Internet of Things European Research Cluster)

- **Cyber-Physical Systems (CPS)** are **integrated systems of computation**, networking, and physical processes. Embedded computers and networks in these systems monitor, control and manage the **physical processes**, with feedback loops where physical processes affect computations and vice versa. Further they can **exchange information** between them and with human users.

Internet of Things Cross-Cutting Activity in Horizon 2020

ICT 30 - Internet of Things and Platforms for Connected Smart Objects

- Cutting across several LEIT-ICT areas (smart systems integration, cyber-physical systems, smart networks, big data)
- Bringing together different generic ICT technologies and their stakeholder constituencies
- 51 M€, 2nd call of WP 2014-15 (publication: 15 October 2014)
- Research and Innovation Actions (100% funding) + Coordination and Support Action
- Large Projects
- Mechanism of open competitive calls up to 30% of total budget

ICT 30 – Scope of Research & Innovation Actions

- **<u>Architectural concepts and concepts for semantic interoperability</u> for "Platforms for Connected Smart Objects"**
  - Dynamically configured infrastructure and integration platforms for covering multiple technologies, multiple devices including robots, and heterogeneous integration levels
  - Integration of smart devices into self-adaptive, robust, safe, intuitive, affordable and interconnected smart network and service platforms

- **<u>Reference implementations</u>, including proof-of-concept, large-scale demonstrations and validation driven by innovative use scenarios, e.g. in**
  - Smart homes, public spaces and context aware commercial environments
  - Potential use scenarios include health, energy, mobility and commercial services

ICT 30 – Scope of Coordination / Support Action

- **Measures for development of ecosystems** around the platforms e.g.
  - Communities of open API developers for low cost applications, networking of stakeholders
  - Contribution to pre-normative activities / standardisation, development of business models, innovation activities which aim at stimulating platform adoption
  - Activities to increase societal acceptance and foster specific education

- Funding of one Co-ordination and Support Action to stimulate the collaboration between selected projects and between the potential platforms (including research clusters)
- Preparing for follow-up Work Program, in particular innovation actions

Targeted communities

- HW and SW providers, device manufacturers
- Service providers, industrial and home application providers,
- Integrators and telecoms
- Research institutes and universities
- Stakeholders from "Internet of Things European Research Cluster" - IERC, Smart cities, Living labs..
- National IoT initiatives
- Relevant European Technology platforms such as ARTEMIS, EPOSS, EUROP
- Creative industries
- SMEs, Web entrepreneurs, makers and geek communities

ICT 30 – Expected impact

- European offer for integrated IoT systems and platforms
- Availability of architectures and methodologies to provide IoT turn key solutions
- Dissemination and availability of results for technology adoption and pre-normative activities e.g. in standardisation fora and bodies like the EIT
- Facilitation of platforms for co-creation of products and services in open innovation ecosystems including all relevant stakeholders.

Next steps

- Publication of Call in 2nd half of 2014
  - Publication date: 15th October 2014
  - Deadline: 14th April 2015, 17.00

- 2014 Community building
  - Networking day at IoT Week, London: 20th June 2014
  - Networking event in Brussels: **07th November 2014**
    Registration: https://ec.europa.eu/digital-agenda/en/news/community-building-event-internet-things-and-platforms-connected-smart-objects
  - Networking day at CPS info event, Brussels: **17th Dec 2014**

ICT 30 – Clarifications

Community and value chain

- A strong community building towards the **creation of ecosystems** is required for the actors coming from various disciplines, including the industrial background and application areas, for supporting smart environments, businesses, services and end-users
- Need to have **different actors of the value chain(s)** (not only technology providers). Be creative in consortium building, keeping in mind that the consortium is the starting point of the future ecosystem
- The cooperation with **technology partners** such as FI-PPP, ARTEMIS-ECSEL JTI and FIRE, and with relevant international partners outside Europe is important

ICT 30 – Clarifications (cont'd)

Integration, examples, technology

- Demonstration of a sound integration of the LEIT (Leadership in Enabling & Industrial Technologies) is required towards future generations of devices, embedded systems and network technologies, software technologies and other evolving ICT advances.
- HW and technology development is in scope, but should not be the only focus. Overall the project should go beyond integration only (excellence in science)
- Examples should in particular address potential cross-sectorial applications but can also include vertical representations of sectors. Consideration of open platforms and technology approaches should include hardware/devices which allow application developers to produce new added value across multiple systems

Funding

- Requested funding is expected to be in the range of **5-8 Mio €** for Research & Innovation Actions and **1 Mio €** for one Coordination/Support Action; an appropriate integration between R&I Actions and the Support Action is pivotal

ICT 30 – Clarifications (cont'd)

Further relevant aspects

- To address appropriately the **evolutionary element** during the project lifetime
- To embed the **Social Science and Humanities (SSH) dimension** (identity, privacy, reputation, motivations, responsibility, attention, and fairness) where applicable
- To consider **creative/artistic methodical practises** where suited for system specification, exploration/testing and the social dimension of IoT and Connected Smart Objects
- Participation of **international partners** is possible under the standard international H2020 rules

Related work program objectives

- ICT 1 – 2014: Smart Cyber-Physical Systems
- ICT 2 – 2014: Smart System Integration
- ICT 5 – 2014: Smart Networks and novel Internet Architectures
- ICT 6 – 2014: Smart optical and wireless network technologies
- ICT 7 – 2014: Advanced Cloud Infrastructures and Services
- **ICT 10 – 2015**: Collective Awareness Platforms for Sustainability and Social Innovation
- ICT 11 – 2014: FIRE+ (Future Internet Research & Experimentation)
- ICT 14 – 2014: Advanced 5G Network Infrastructure for the Future Internet
- ICT 15 – 2014: Big data and Open Data Innovation and take-up
- **ICT 19 – 2015**: Technologies for creative industries, social media and convergence
- ICT 32 – 2014: Cybersecurity, Trustworthy ICT
- EUJ 1 – 2014: Technologies combining big data, internet of things in the cloud
- **H2020-SCC-2014-2015** : Smart Cities and Communities solutions integrating energy, transport, ICT sectors through lighthouse (large scale demonstration - first of the kind) projects

References

- IERC – Internet of Things European Research Cluster
  http://www.internet-of-things-research.eu/
- Internet of Things - CONNECT Digital Agenda
  http://ec.europa.eu/digital-agenda/en/internet-things
- EC Communication Internet of Things — An action plan for Europe
  http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0278:FIN:EN:PDF
- Robotics - platform EUROP
  http://robotics-platform.eu
- Embedded and Cyber-Physical Systems - CONNECT Digital Agenda
  http://ec.europa.eu/digital-agenda/en/cyber-physical-systems-1
- Embedded and Cyber-Physical Systems - JTI ARTEMIS
  www.artemis-ju.eu
- Micro-systems - platform EPOSS
  www.smart-systems-integration.org

European Commission

Further Information

Components & Systems

Priorities for H 2020

European Commission

Smart Anything Everywhere

- Platforms for connected smart objects **(what is smart?)**
- Embedded everywhere in our lives: home, work, on the move – **must be secure, dependable, intuitive** (user acceptance!)
- Across traditional, **low tech**, high value, emerging sectors
- Build on **EU strengths** in embedded software and Cyber Physical Systems
- Need for very **low power/low cost** devices
- Next generation of platforms must be **EU-driven**
- Next technology evolution/revolution:
  - smart artefacts embedded in physical systems
  - being integrated and networked in systems (and systems of systems)
  - becoming increasingly smart and autonomous and resilient
  - being powered by a computing continuum including "embedded HPC"
  - embedding societal and human dimension

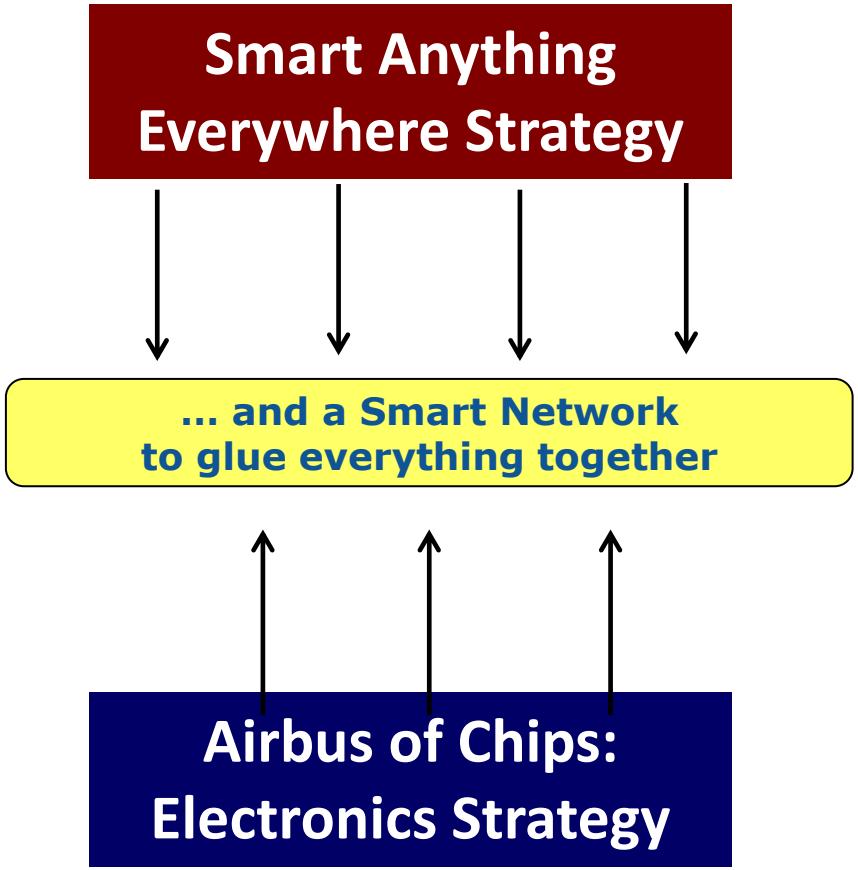
Smart Anything Everywhere

The value chain

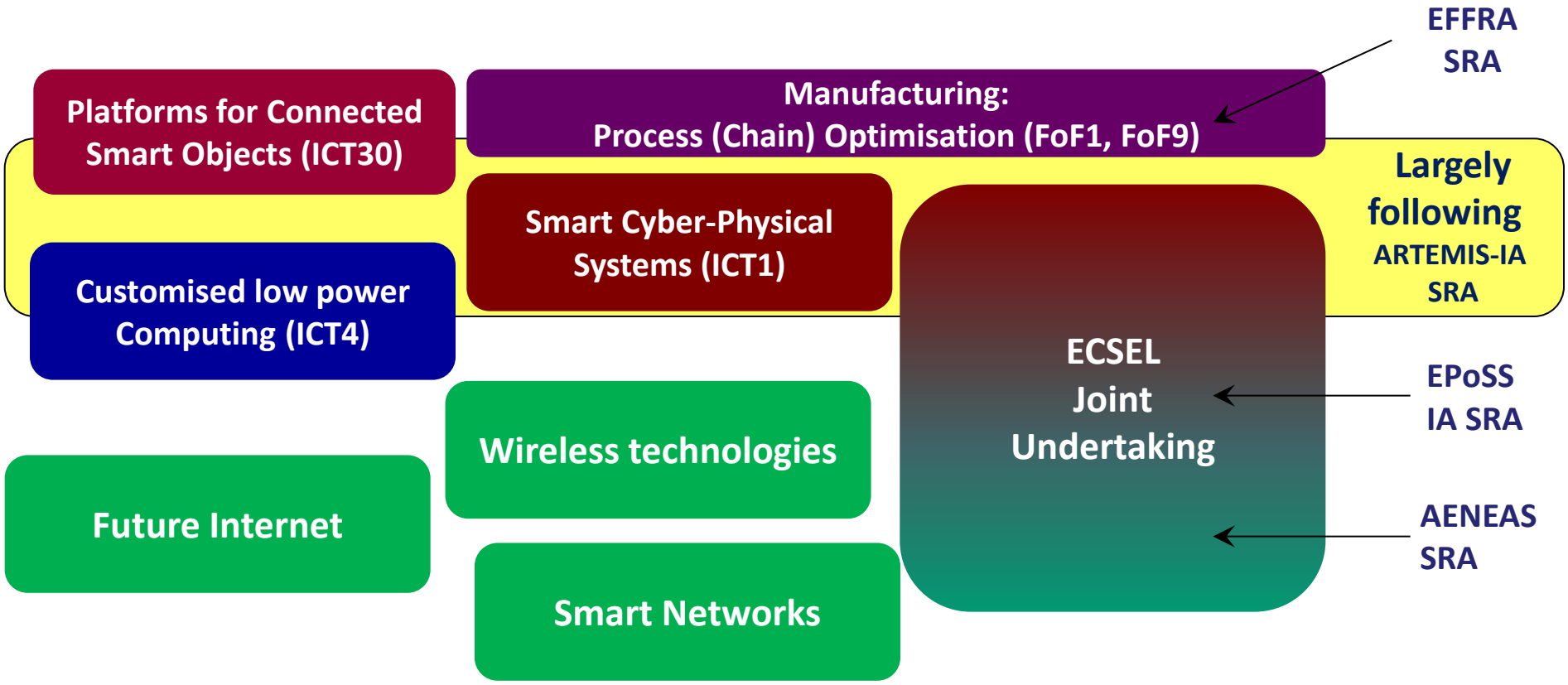
Services & applications
ICT equipment
ICTdevices
Photonics
Electronic Components



A double sided ("macaron") strategy



Internet of Things in LEIT
- a simple funding map -



LEIT = Leadership in Enabling and Industrial Technologies

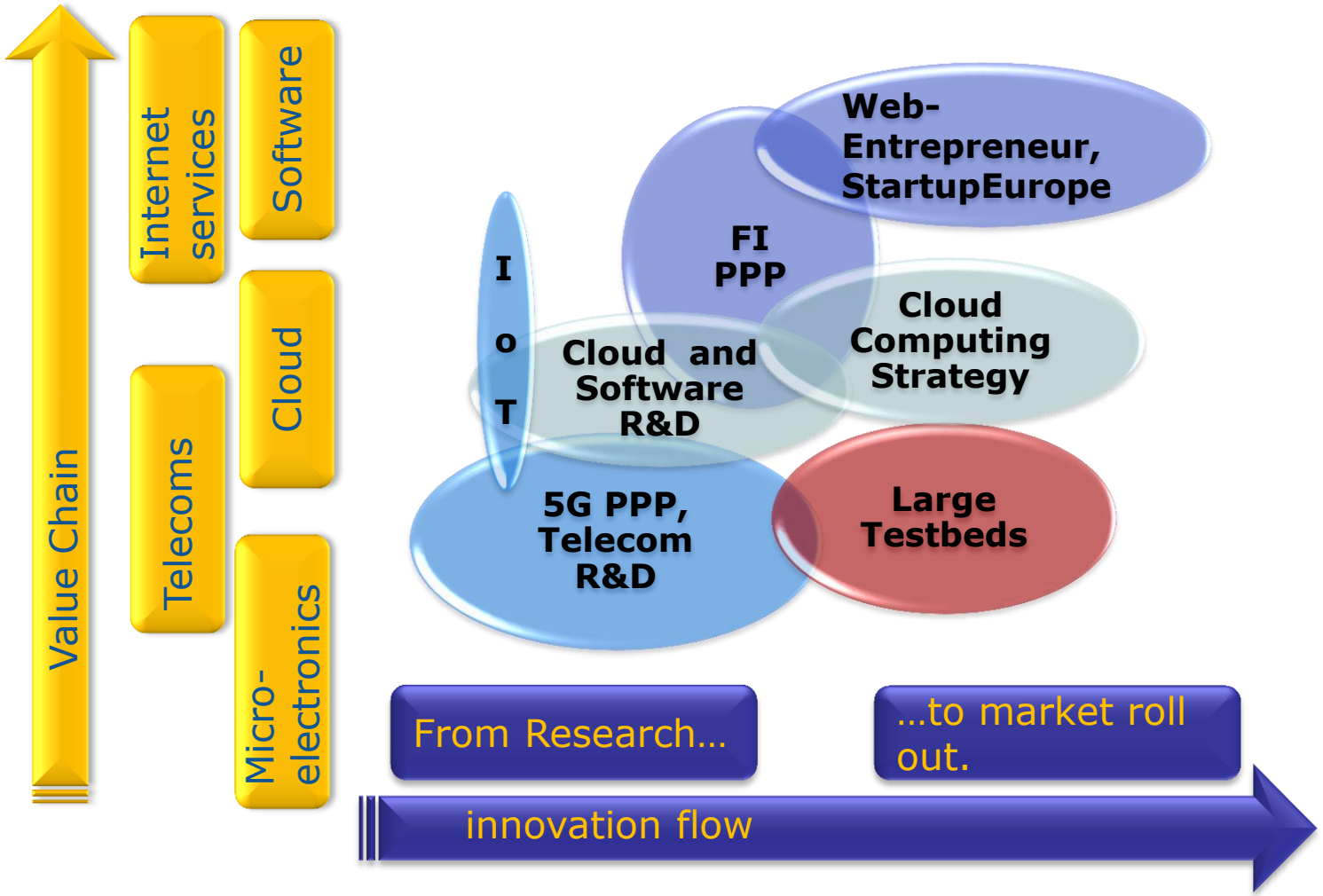
SRA = Strategic Research Agenda

Net Futures

Priorities for H 2020

European Commission

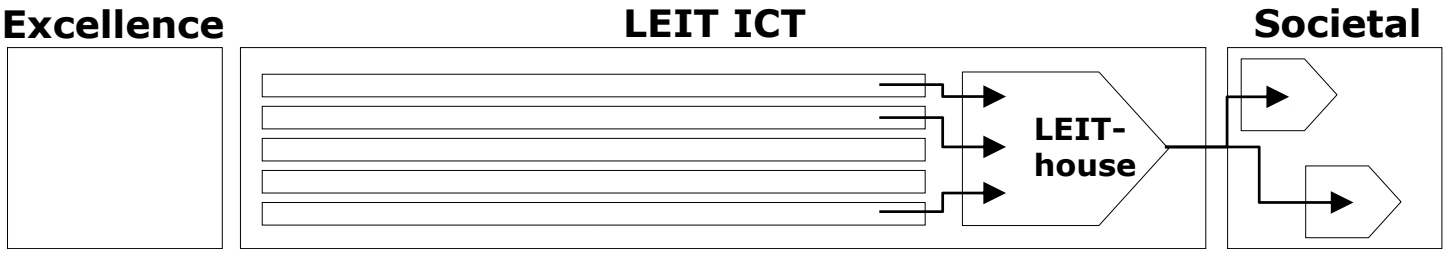
- Driven by key ICT industrial sectors such as telecommunication, software, cloud computing and content provision
- Developing enabling technologies affecting productivity in most industrial sectors and societal applications
- Supporting the relevant policy, governance, legal and regulatory frameworks
- Increasing engagement in international dialogues and collaborations


Value Chain
Internet services
Software
Telecoms
Cloud
Micro-electronics
I
o
T
Web-Entrepreneur, StartupEurope
FI PPP
Cloud Computing Strategy
Cloud and Software R&D
5G PPP, Telecom R&D
Large Testbeds
From Research…
…to market roll out.
innovation flow

- Holistic development of solutions for society underpin by technology
- Integrating currently fragmented and dispersed activities
- Give each of them and the complete set a new dimension
- High visibility and impact
- The European Commission showing leadership

Example: "Internet of Things LEIT-house" instantiated in the following environments:

- ✓ Smart city (public + private sector)
- ✓ Factory (private sector)
- ✓ …



New rules

European Commission

Horizon 2020

New rules – what's new for ICT 30

Why change the rules?

- **To better align with high-level EU objectives and to increase impact of our projects**
- **To guarantee a fair evaluation and good use of your money**
- **To make things simpler (we hope)**

New rules

Is my proposal acceptable?

- Outline business plan

RIAs and IAs should include an **outline** of the initial business and exploitation plan

- Operational capacity (yes/no flag)

Basic **operational capacity** of each applicant should be assessed. If a partner has no operational capacity, its tasks (and budget) have to be removed and project evaluated again.

- No general ethical screening

Only funded proposals will be screened for ethical issues

- Page limit to be enforced

Don't play tricks: be concise and clear

RIA = Research and Innovation Action

IA = Innovation Action

New rules

Can I get help to write my proposal?

- No formal "pre-proposal check" possible (but you can ask your National Contact Point)

- Informal opinion and feedback in the context of public events

ICT30 networking day – Brussels 7/11

Information day – Brussels 17/12

Proposers' day – Florence 9-10/10

New rules

Award criteria / scoring

1. Excellence

Clarity of the objectives;
Soundness of the concept, including transdisciplinary considerations;
Credibility of the proposed approach;
Progress beyond the state of the art

2. Impact

Contribution to the expected impacts listed in the work programme
Enhancing innovation capacity and integration of new knowledge;
Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets;
…measures to, disseminate and exploit the project results,… communication

3. Quality and efficiency of implementation

Coherence and effectiveness of work plan, … allocation of tasks, resources;
Competences, experience and complementarity of the individual participants, as well as of the consortium as a whole;
Appropriateness of the management structures and procedures….risk management

For Innovation Actions **(and also SME instrument and Factories of the Future)**

- **Impact criterion weighted by factor of 1.5**
- **Impact considered first when scores equal**

SME = Small Medium Enterprise

New rules

Award criteria / scoring

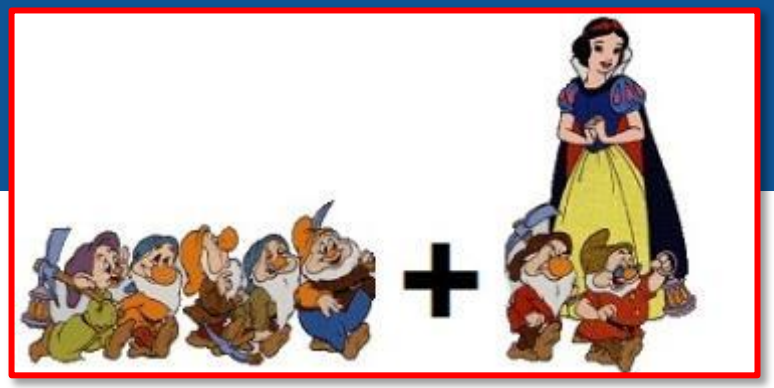
Ranking algorithm

For each group of tied proposals

- First consider those that "**fill gaps**" in the WP
- IF innovation action,
  look at score for '**IMPACT**', then at score for 'EXCELLENCE'
- ELSE (if RIA or CSA)
  look at score for '**EXCELLENCE**', then at score for 'IMPACT'
- If still equal, look at **SME budget**
- If still equal look at **gender balance** in key personnel
- If still equal, consider overall portfolio quality through synergies or other factors related to objectives of the call or H2020 in general
- Then repeat for those that don't "fill gaps"

Key message: write a great proposal, aim at strong impact, include SMEs and women in the team

New rules



The 5+3 rule

5 months from call deadline to evaluation report sent

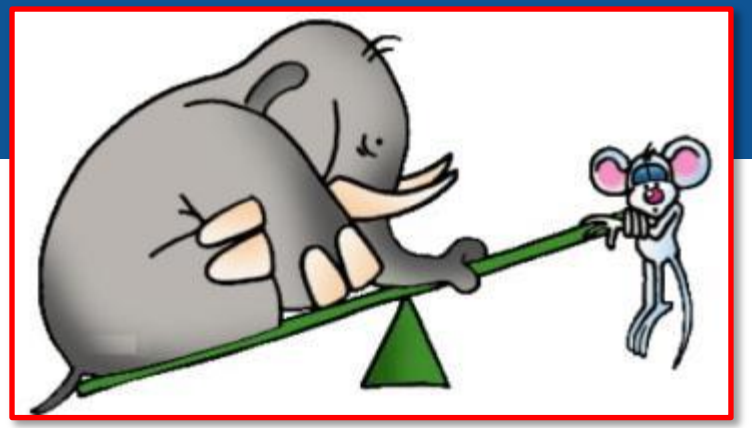
3 months for ~~negotiation~~ grant preparation

- **Evaluate proposals "as they are" (go/no-go)**
  - **No more recommendation for significant changes (e.g. consortium change)**
  - **Evaluators can only recommend small adaptations, which the consortium can implement without the need for any negotiation**

- **All participants must have a PIC (Participant Identification Code) at proposal stage**

PROPOSALS MUST BE "MATURE"

New rules



Project size

Small contribution: Contribution from the EU of between *EUR 2 million and EUR 4 million*

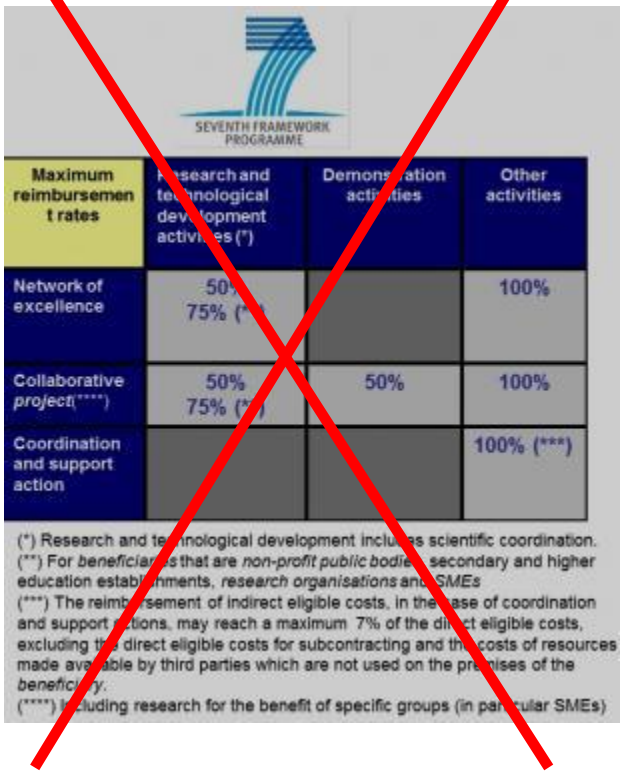
Large contribution: Contribution from the EU of between *EUR 5 million and EUR 8 million*

"this does not preclude submission and selection of proposals requesting other amounts"
(but, of course, you must justify your request!)

~~FP7 STREP~~ ~~FP7 IP~~

New rules

European Commission



One project = One rate

☑ **Same rate** for all beneficiaries and all activities in the grant.

☑ Applicable rate **defined in the Work Programme**:

- **Up to 100 %** of the eligible costs;
- **Up to 70 % for innovation projects** (exception for non-profit organisations: maximum of 100%).

☑ **Overhead flat rate**: 25% of total direct costs (total direct costs = personnel costs + other direct costs. Subcontracting, costs of third parties and financial support to third parties are excluded)

New rules

Financial support to third parties
(a.k.a. "open calls" or "cascading funding")

From General Annexes – K

Proposals […] shall **clearly detail the objectives** and the results to be obtained and include at least the following elements:

- a **closed list** of the different types of activities that qualify for financial support,
- 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

Specific rules for ICT 30

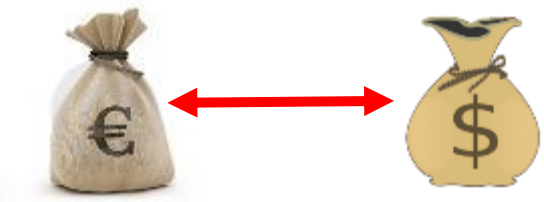
- maximum amount to be granted can be in the order of **EUR 50.000 to 150.000** per party (general rule: max. 60.000)
- total amount to be granted via open calls can be **maximum 30%** of the project funding

This is a powerful tool to make a proposal agile and attract new participants – use it!

New rules

International aspects

General idea: reciprocity



"the implementation of the Rules should duly take into account the conditions for the participation of Union entities in third countries' corresponding programmes"

*International organisation or legal entity in a third country can be funded if a **bilateral agreement exists** (between EU and the international organisation or the third country)*

Developing countries can still be funded even without a bilateral agreement, but not BRIC countries and Mexico

An international organisation or a legal entity in a third country can participate to a project, but using their own money (participation can be restricted if "considered to be prejudicial to the Union's interests")

See Regulation (EU) No 1290/2013 (Rules for participation) and "General Annexes – A" (complete list of countries)