

Information Day: ICT WP 11-12

Call 7 - Objective 1.3 ***Internet-connected Objects***

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The Internet of Things is a Metaphor

Each object can be addressed



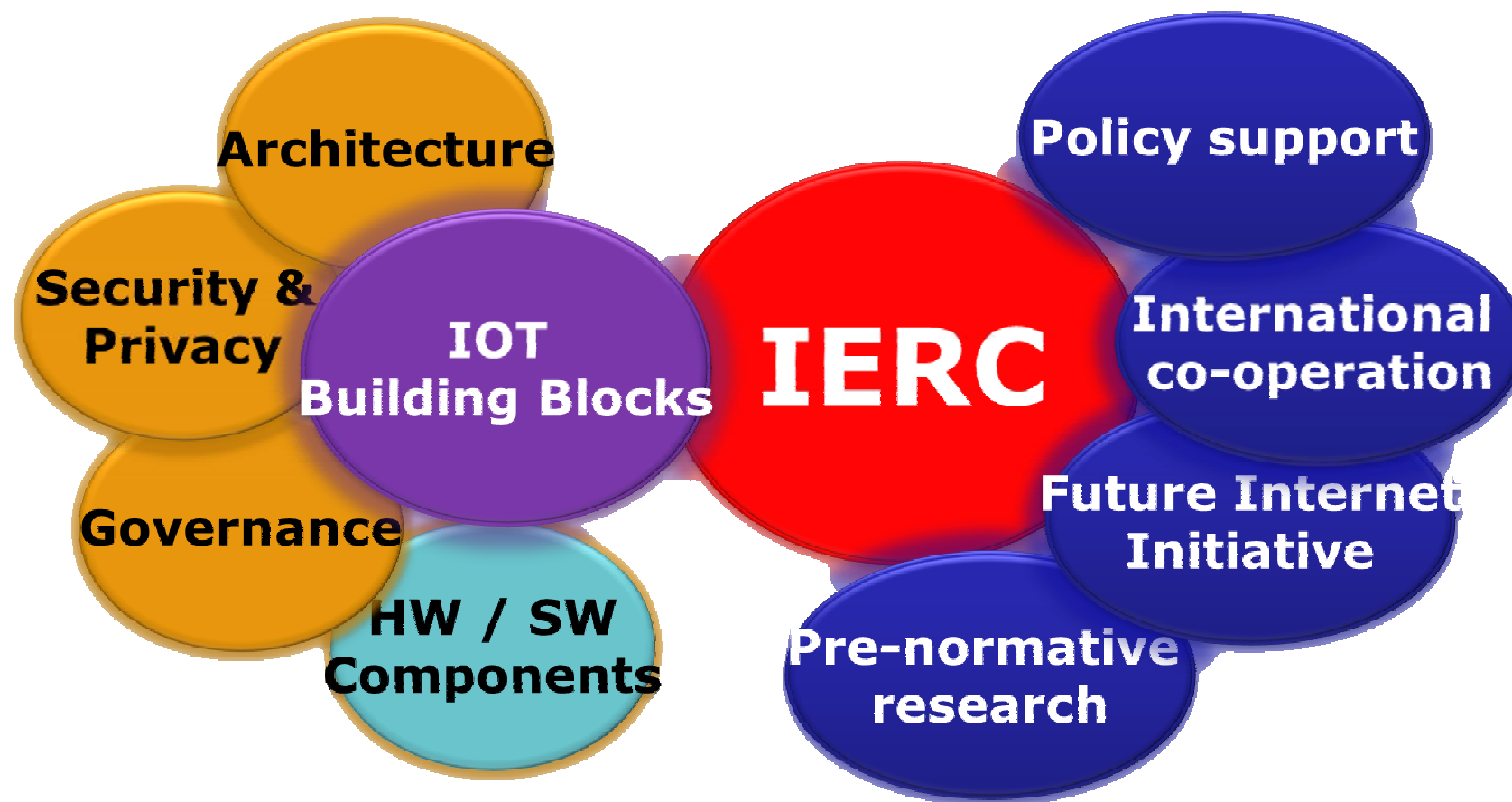
Objects can be linked and communicate

Horizontal and cross-cutting application areas
Sensor Networks and Decentralised intelligence
Integrated part of the Future Internet

Internet of Things - Typical examples



IERC – Internet of Things European Research Cluster



Introducing Objective 1.3: Internet-connected objects

- **Objective 1.3 in the context of Challenge 1**
 - a) Contribution to the Network and Service layers
 - b) Applied research in the enterprise and business environment:
 - Architecture and technological foundations for cooperative smart objects
 - Towards integration and decentralized intelligence
- **Target outcomes**
 - a) An open networked architecture
 - b) Adaptive software supporting data acquisition
 - c) Coordination and support actions

a) An open networked architecture for Internet-connected objects

Funding scheme: IP & STREP

- **Open architecture**
 - End to end characteristics
 - Manage a large population of devices
 - Conceal the heterogeneity of networks technologies
- **Architecture with large and dynamic capabilities**
 - Interoperability across providers and consumers of information and services, re-use of object entities
 - Open interfaces
 - Self-management, self-configuration, self-healing properties
- **Technologies should ensure**
 - Integration of the IOT into the service layer of the Future Internet
 - Distribution and aggregation of information
 - Communication among networked objects

b) Adaptive software supporting data acquisition

Funding scheme: IP & STREP

- **Integration with business platforms and components**
 - Large number of sensors delivering data
 - Compatibility with existing business environment
- **Interpretation of the environmental and context information**
 - Information from human behaviours and multi-modal interactions
 - Act on behalf of the users' intentions
- **Additional functionalities**
 - Interoperability, privacy, security
 - Discovery and mapping of real, digital and virtual entities

c) Coordination and support actions

Funding scheme: CSA

- **Roadmaps, standards, benchmarks, ... for future industrial developments of IOT applications**
- **International collaboration**
 - Analysis of research agendas, preparation of concrete initiatives (China, Japan, U.S., Brazil, ...)
 - Coordination of related EU R&D programmes/activities

Remarks and clarifications

General

- Reference to the a) IERC – Internet of Things European Research Cluster, b) the “Future Internet PPP”, c) the on-going IOT International co-operation (if relevant), and d) the Digital Agenda for Europe
- No short term R&D (time to market should be at least 5 years from project start)
- Complementarity with and enrichment of on-going European, national and international research activities; the two areas a) and b) can be addressed separately, but shall have a reference to the other area
 - Research is about systems and technologies and benefits from cross-domain fertilisation – application scenarios like Smart Cities, Healthcare, Intelligent Transport, Intelligent Manufacturing etc. can be used as reference frameworks
 - Projects can test and demonstrate novel IOT applications and business models in real settings in the sense of a proof-of-concept
 - Possible participation of third countries; financing is limited to travel costs in the Coordination Actions and for work contribution in exceptional cases
 - Leading players: ICT manufacturers, telecom operators, software and service providers, integrators, auto-identification research centres, leading-edge users such as networked companies, hospitals, energy installers, logistics managers, etc.
- The indicative number of participants is expected to be around 8-10 for STREPs and between 10-15 for IPs; additional partners and stakeholders could be included via Extended Member Group, Fora etc.

Remarks and clarifications

a) An open networked architecture for Internet-connected objects

- Proposals on architectures shall complete existing IOT architecture approaches (in Europe and internationally) on already addressed layers, target higher layers towards middleware and distributed intelligence, or anticipate the future evolution of Internet-connected objects and materials
- Due to the ever increasing complexity, characteristics and capabilities like interoperability, self-management, self-configuration and self-healing are crucial
- Proposals should also take into account the growing scope of virtual worlds and the connection between real and virtual worlds
- Large scope of research for IPs
- Funding for IPs should be around 10 Mio. €; IPs can also include some hardware development

Remarks and clarifications

b) Adaptive software supporting data acquisition

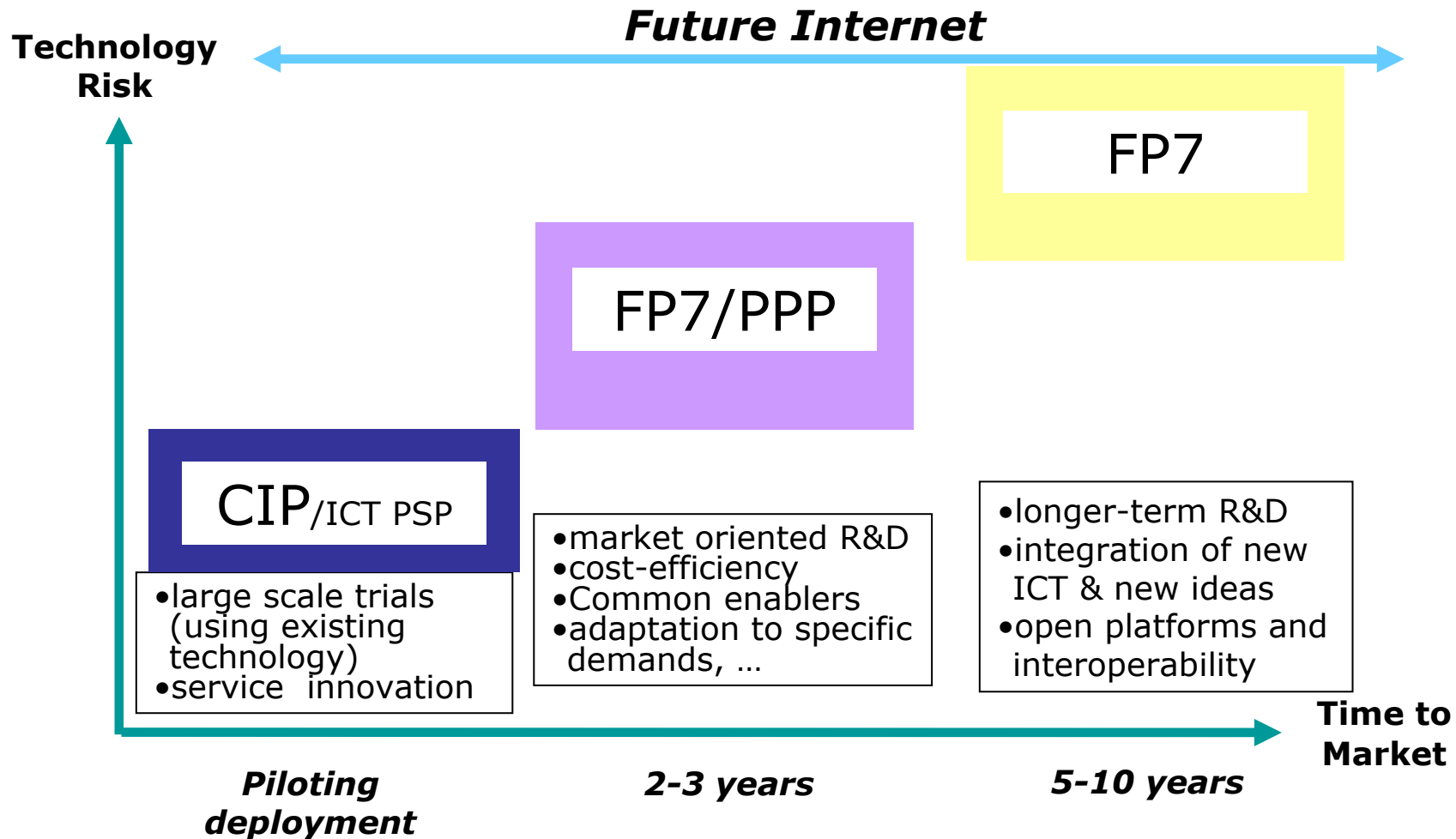
- System and service platforms for integrating large data streams (up- and down) from sensors and actuators with higher-level components and applications
- Smart interpretation of environmental and context information, also with respect to centralised / de-centralised “reasoning”
- Proposals should also address multi-modal interfaces between user and system for a richer and user-friendly interaction.
- At the same time, (semi-)autonomous agents or services should act on behalf of the users’ intentions and rules for reducing the handling complexity
- Proposals shall give a high attention towards Privacy and Security and horizontal solutions

Remarks and clarifications

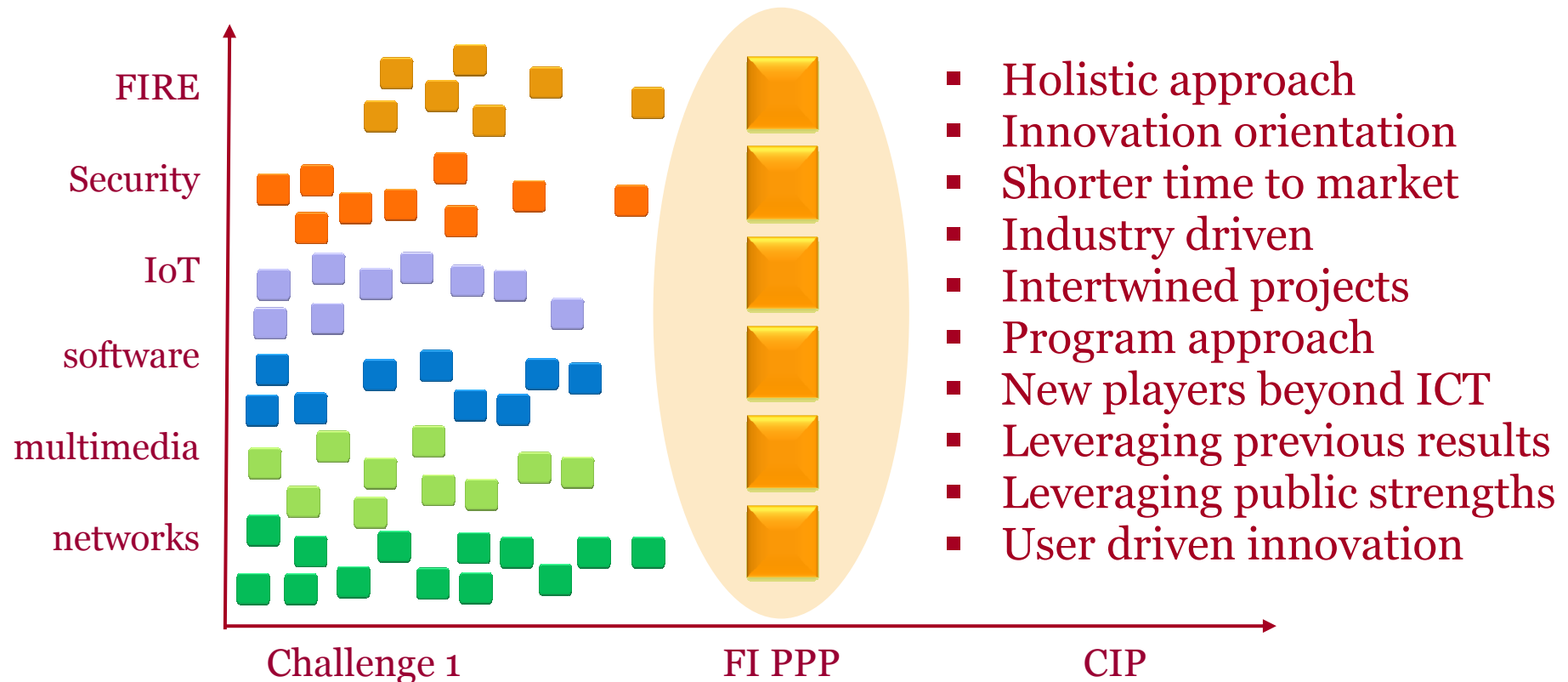
c) Coordination and support actions

- Support to IOT expert groups based on bilateral co-operation agreements between EU and different national governments and institutions outside Europe
- Preparation of concrete global initiatives for IOT collaboration among researchers and industry stakeholders
- Further exploration of IOT collaboration with North- and South America and ASEAN countries
- Exploration of possible IOT co-operation on Smart Cities and Smart Regions with Middle East/Africa
- Proposals shall as well develop and propose a methodology to measure the deployment of IOT related technologies.
 - Such detailed methodology should rely on limited yet measurable and consistent indicators. The methodology shall be used to several entities (cities, regions, countries) inside and outside of Europe with a view of better targeting further policies on IOT
- Proposals shall avoid overlap with and complement existing IOT support actions IOT-I and CASAGRAS2

Objective 1.3 ↔ FI PPP (1)



Objective 1.3 ↔ FI PPP (2)



Impact and Funding schemes

- **Expected impact**
 - New range of Internet services based on interconnected objects communications and integration with business processes
 - Novel business models on objects connectivity
 - Emergence of new companies (SMEs) offering innovative solutions
 - Consensus by industry (standards, benchmarks) and by stakeholders (governance) of the IOT
- **Funding schemes**
 - a), b): IP, STREP; c): CSA
- **Indicative budget distribution**
 - IP/STREP: EUR 27 million; the objective is to support 2 IPs
 - CSA: EUR 3 million
- **Call**
 - ICT call 7
 - OJ publication: 28 Sept. 2010, submission deadline: 18 Jan. 2011 – 17h00

More information and links

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IERC – Internet of things European Research Cluster:

<http://www.internet-of-things-research.eu/>