

Texte de l'appel

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

Specific Challenge: The evolution of the Internet of Things embedded in Smart Environments and Platforms forming a web of "everything" has been identified as one of the next big concepts to support societal changes and economic growth at an annual rate estimated at 20%.

The overall challenge is to deliver an Internet of Things (IoT) extended into a web of platforms for connected devices and objects. They support smart environments, businesses, services and persons with dynamic and adaptive configuration capabilities.

The biggest challenge will be to overcome the fragmentation of vertically-oriented closed systems, architectures and application areas and move towards open systems and platforms that support multiple applications. The challenge for Europe is to capture the benefits from developing consumer-oriented platforms that require **a strong cooperation between the telecom, hardware, software and service industries**, to create and master innovative Internet Ecosystems.

This topic cuts across several LEIT-ICT challenges (smart systems integration, cyber-physical systems, smart networks, big data) and brings together different generic ICT technologies (nano-electronics, wireless networks, low-power computing, adaptive and cognitive systems) and their stakeholder constituencies. Their applicability across multiple application domains (e.g. ehealth, energy, food chain, intelligent transport and systems, environmental monitoring and logistics) bridges the gap to applications-specific developments under the H2020 Societal Challenges.

Scope: The scope is to create ecosystems of "Platforms for Connected Smart Objects", integrating the **future generations of devices, embedded systems and network technologies** and other evolving ICT advances. These environments support citizen and businesses for a multiplicity of novel applications. They embed effective and efficient security and privacy mechanisms into devices, architectures, service and network platforms, including characteristics such as openness, dynamic expandability, interoperability, dependability, cognitive capabilities and distributed decision making, cost and energy-efficiency, ergonomic and user-friendliness. Such Smart Environments may be enriched through the deployment of **wearable /ambulatory hardware** to promote seamless environments

The Smart Environment(s) will provide a basis and methodology for developer's communities to test and validate in **large-scale experiments** low cost applications of e.g. wireless networks such as WSNs, M2M, and networked objects and spaces, as well as heterogeneous deployments and should be driven by use cases.

a. Research & Innovation Actions are focussed on the following:

Architectural concepts and concepts for semantic interoperability for "Platforms for Connected Smart Objects", which can cover **multiple use cases** whilst responding to specific requirements in terms of security, dependability, cognition and prioritised event processing.

- Dynamically configured infrastructure and integration platforms for "Connected Smart Objects" covering multiple technologies and multiple intelligent artefacts, potentially including **robots**, and heterogeneous integration levels; dynamically configured information representation and interpretation leading to an extended Internet of Things. Developments include aspects such as:

- Efficient integration of the next generation of smart devices into self-adaptive, robust, safe, intuitive, affordable and interconnected smart network and service platforms. This includes Dynamic Spectrum Access and Network Management techniques to solve the connectivity challenges to enable tens of billions on new wireless connections for the IoT.

- Provisioning of information processing/reasoning, potentially covering self-organising systems and autonomous behaviour.

- Methods for flexible, reliable and interoperable APIs supporting the development of use cases and allowing application developers to produce new added value across multiple systems, including partial opt-out capabilities.

Reference implementations including proof-of-concept, large-scale demonstrations and validation driven by innovative use scenarios, also leveraging on platforms developed elsewhere in the programme. **Smart homes, workplaces, public spaces**, context aware commercial environments and smart cities are targeted and potential use scenarios include health, energy, mobility and commercial services amongst others.

Proposals requesting a **Large contribution** are expected. The action may involve financial support to third parties in line with the conditions set out in Part K of the General Annexes. The consortium will define the selection process of additional users and suppliers for which financial support will be granted (typically in the order of EUR 50.000 – 150.000 per party). Maximum 30% of the EU funding requested by the proposal should be allocated to this purpose.

b. Support Measures

Measures for development of ecosystems driven by European players around the platforms e.g. communities of open API developers for low cost applications, networking of stakeholders, contribution to pre-normative activities and to standardisation, development of business models, innovation activities which aim at stimulating platform adoption (e.g. pre-commercial procurement), and activities to increase societal acceptance and foster specific education.

One Co-ordination and Support Action must stimulate the collaboration between selected projects and between the potential platforms. It will also derive exploitation strategies, on how to make successful ecosystems emerge, to involve the user in the development process and to respond to the societal challenges for Europe.

Expected impact:

- Emergence of a European offer for integrated IoT systems and platforms with identified players capable of acting as technology and infrastructure integrators across multiple application sectors.
- Availability of architectures and methodologies that can be used by integrators and SME's to provide IoT turnkey solutions in a variety of application fields.
- Dissemination and availability of results for technology transfer and pre-normative activities e.g. in standardisation fora , open source initiatives and/or relevant bodies like the EIT.
- Facilitation of platforms for co-creation of products and services in open innovation ecosystems including all relevant stakeholders.

Types of action:

- a. Research & Innovation Actions – Proposals requesting a **Large contribution** are expected
- b. Coordination and Support Actions

51M€

Compte-rendu

Cet appel a pour objectif de réunir 2 communautés qui n'ont pas le réflexe de travailler ensemble: celle des **systèmes embarqués** (et plus particulièrement des CPS) et celle des **plateformes pour objets connectés**.

Les technologies devenant plus matures, le marché commençant à devenir porteur, l'action doit désormais se focaliser :

- sur le déploiement & les scénarios d'applications (de la recherche a déjà été menée autour d'ARTEMIS, de la plateforme CRYSTAL..., dans le FP7, 70 millions d'euro de financement direct dans 3 appels) ;

IoT projects : http://cordis.europa.eu/fp7/ict/enet/projects_en.html

http://www.artemis-ju.eu/home_page

- sur la création d'écosystèmes (interaction entre l'IoT, le cloud, les technologies réseaux...).

Le défi sera de développer des plateformes favorisant l'intégration de plusieurs acteurs à travers des scénarios d'applications et également de stimuler les PME pour les objets connectés.

2 types d'actions

Actions de recherche et d'innovation

- avec des projets fonctionnant comme les accélérateurs FI PPP (allouer une partie de son budget pour des Open call = une partie du budget peut-être redistribué en cascade à des PME de l'écosystème).

- projets de grande taille entre 5 à 8 millions d'euros.

- 8 à 10 projets devraient être financés

Actions de soutien et de coordination

- un projet devrait être financé

a. Actions de recherche et d'innovation

- utiliser une plateforme pour créer l'écosystème.

Il existe déjà des plateformes, ne pas réinventer la roue si elle existe (voir ce qui a déjà été fait dans le FP7).

Voir autour d'OPENIoT, IOTA (standardisation) etc...FIWARE

IOT-i Internet of Things Initiative <http://www.iot-i.eu/public>

IoT-A Internet of Things Architecture <http://www.iot-a.eu/public>

OPENIoT Open Source cloud solution for the IoT <http://openiot.eu/>

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

- il ne s'agit pas seulement de mettre en place une plateforme mais aussi de mettre en place des scénarios de mise en œuvre (démonstration, validation dans la maison intelligente, les espaces commerciaux etc...) dans des secteurs donnés (santé, domotique, automobile,...). Il peut y avoir des points sur la robotique (factory, santé,...).

- il faut prendre en compte - les aspects sociétaux (identité, vie privée,...)

b. Actions de soutien et de coordination

Actions de réseautage, de normalisation, et travail sur les aspects sociétaux (acceptabilité par les utilisateurs).

cf cluster sur l'Internet des objets – IERC **Internet of Things European Research Cluster**

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

ETSI panorama des standards

Conseils :

Si la plateforme peut gérer plusieurs scénarios applicatifs c'est un plus.

Il existe déjà des plateformes ouvertes, se référer à ce qui existe déjà et dont l'impact se fera ressentir en Europe.

Faire attention à impliquer la communauté SHS.

Faire attention également aux points éthiques qui seront forcément soulevés dans cet appel.

Faire attention au « **Ranking algorithm** » slide 49 pour préparer votre proposition (permet de trier les propositions ayant la même note sur des critères tels que la couverture du programme de travail, le budget alloué aux PME, le genre etc...).