

**TOWARDS A FUTURE INTERNET PUBLIC PRIVATE PARTNERSHIP:  
SECOND USAGE AREA WORKSHOP  
BRUSSELS, 21 - 22 JUNE 2010**

## Reply SpA

### Position Paper

Rev. 2.0

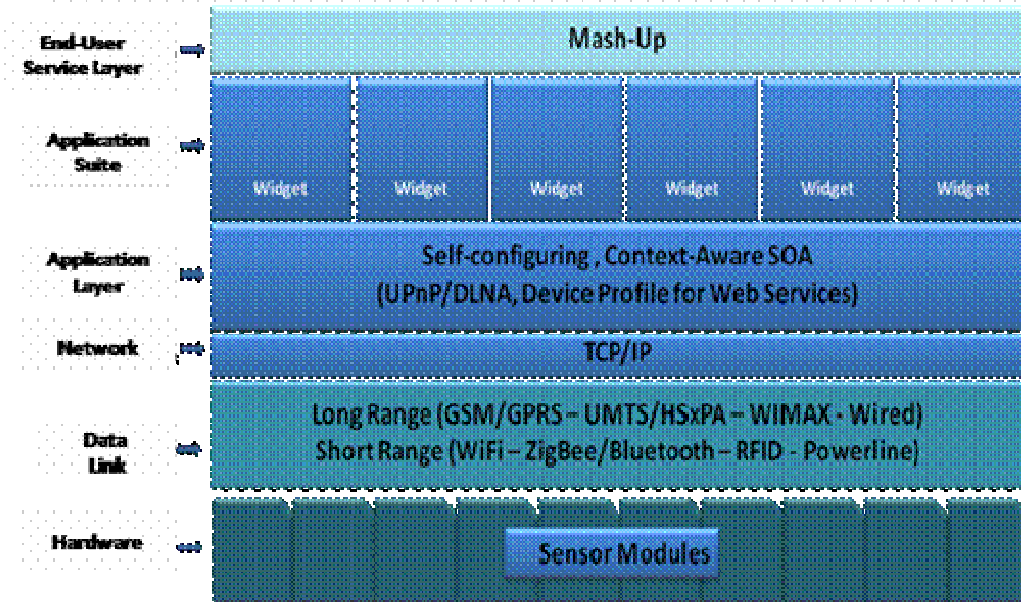
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Reply SpA is an Italian-based, large ICT company operating in the field of system and software integration in several European Countries. Reply is a group of more than 30 highly specialized companies operating as a network and organized around technologies, usage/business processes and application verticals. Thanks to its agility and spread knowledge, Reply is able to respond to several industry sectors and provide flexible and accurate ICT services to them.

Concept Reply, the technology company specialized in M2M and Internet-of-Things, has recently developed a software middleware for interconnection of simple and complex wireless sensors/actuators and mobile devices with self-configuring, self-adapting capabilities, adaptiveness at network and application levels, Service-oriented architecture, indoor/outdoor localization and semantic reasoning functionalities.

The middleware ,named Reply Internet-of-Things (IoT) platform, runs on commercial hardware with multiple wireless connectivity, both short-range (ZigBee, Bluetooth, WiFi) and long-range (GSM/GPRS and UMTS/HSxPA) and it will be compatible with Hydra and Aspire EU-funded architectures.

The platform architecture is made of elements that can be logically classified in Simple Node (sensor and actuators with low level of self-awareness/configuration and typically short-range connectivity only), Intelligent Nodes (with additional context awareness and self-configuration capability, multiple wireless connectivity, able to export functionalities and capabilities via web-services in a SOA view), Aggregator Nodes (aggregator of intelligent node services/information in logic/geographical areas). The scalable architecture can be roughly described as reported in picture below wherein sub-elements and layers are compound into nodes according to their logic classification (simple / intelligent / aggregator).



The solution, based on the innovative architecture/platform, is in the perspective of overcoming limits of previous ad-hoc vertical solution toward an increasing standardization and portability going beyond the state of art.

The platform is the center of an ecosystem built on the large relationship network and which involves academic institutions (Politecnico di Torino, Politecnico di Milano, etc.), industrial research bodies (Istituto Mario Boella), small/medium enterprises, public entities (Regione Piemonte, Mediterranean Regions networks, ENOLL etc.), utilities, industrial manufacturers and end users communities (cities, associations, social houses, etc.)

The platform is being used in vertical solutions, funded projects, collaborations and prospects including:

- Ambient assisted Living for elderly people at their homes (7FP project)
- Infomobility: queue management for airports and large events
- Energy efficiency in buildings: intelligent/adaptive heating in bank buildings
- Welcoming offices with self-adaptive meeting rooms
- Transportation security for intermodal containers and trucks
- Smart city service provisioning for walking/driving citizens
- Energy Metering in cooperation with other members of "Meters and More" association
- Process/Energy efficiency for agriculture machinery
- Food traceability from farm to fork

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### Open questions and Reply SpA positioning

- (1) What use case and scenario in your area would you consider the most appropriate and representative one for large-scale experimentation with the Future Internet platform to be built starting from 2013.

Reply foresees a smart city scenario where the public/private entities, commonalities and the citizens exchange realtime, multidirectional information such as positioning of people and vehicles, energy and water consumption and production, good transportation, transformations and retailing, health and wellness parameters, environment status data, cultural relationships, digital social interactions. Each end user is able to tackle with his/her own lifestyle need with mobile devices and vertical applications. Each data coming from smart objects is made available in trusted and secure way to the whole smart city infrastructure and not only to vertical, isolated application as of today.

(2) What innovative Internet functionality and technologies would you consider important for your suggested use case and scenario:

- Unified resource monitoring and metering systems of resource for wireless sensors networks
- Context awareness
- Self-configuring, self-adaptive, self-healing object networks and protocols.
- Distributed semantic reasoning based on common ontologies
- Heterogeneous networks
- Energy harvesting hardware modules
- Low-bandwidth, low-cost, low energy wireless data networks
- Cloud and grid computing facilities at urban sites (including cloud-of-clouds interoperability)

(3) Which of the identified functionalities would you expect the Future Internet core technology platform to deliver to support your and other usage area scenarios?

All of the above.

(4) What kind of experimentation environment would you consider necessary for broad large scale testing of the platform to be developed in your use area? What would be needed to experiment new services and applications cutting across use areas (services and application mash-up) and building a new services and application ecosystem around the prototype implementations of the platform?

A network of smart cities, each of those making available a service platform and a device/object virtualization layer with common characteristics (service formats, brokering services, energy- and health- oriented ontologies) plus a federated/hybrid public/private cloud-based data center facilities to host secure databases for real-time computing and historical storage.

(5) How do you see the potential role of your organisation in the FI-PPP, in the context of Usage areas taking a prominent role in the Initiative, to ensure an appropriate application driven approach?

Concept Reply is willing to contribute to the FI-PPP, in the context of Usage Areas, in the following items:

- Web service and Wireless Sensor Network nodes/devices interoperability for Internet of Things sub-core middleware platforms for Health, Intelligent Buildings, Smart Cities Management and Content Delivery to mobile citizens.
- Web service definition for common/specialized services for energy monitoring and metering at room/house/building level and energy grids (Reply is member of the “Meters and More” alliance and has business relationships with ENI, ENEL, IRIDE (utilities companies for production/transport and delivery of energy in Italy)).

In addition to plenary presentations and discussions, it is planned to have two blocks of three parallel sessions of 4 hours, each addressing particular usage areas for the Future Internet (including smart energy grids, utilities and environment, transport, mobility and logistics, health, content). In addition, a session is planned on infrastructures for experimentation, such as smart city environments, research infrastructures, or the FIRE (Future Internet Research and Experimentation) infrastructure.

**Please Note:** Due to limited capacity (200 participants), it may not be possible to accept all requests for registration. Prospective participants are therefore required to submit a "Position paper" with their registration application, which provides a first set of answers to the five open questions listed above, in order to confirm their interest. These "Position papers" will be made publically available and will provide a starting point for building consensus on future directions.