Title: BETaaS - Building the Environment for the Things as a Service

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Focus Area

Today there are countless devices at work to improve productivity and quality of life of human beings, in all technological domains; they mainly work in isolation or with very little collaboration from their likes and usually for a well-defined specific purpose leading to sub-optimal solutions.

BETaaS offers a solution based on a platform for the execution of content-centric M2M applications, which is built on top of services deployed in a “local cloud”. The proposed platform seamlessly integrates existing heterogeneous M2M systems and allows to access things as a service transparently regardless of their location in the network.

BETaaS is providing a new vision about the way to expose and manage things in the Internet of Everything environment. It exposes all the things registered as services which can be accessed easily by those applications requiring certain functionalities while, at the same time, it allows to provide the data they generate as content.

Relevance to the EC Cloud Computing Strategy

The BETaaS project aims at defining an open platform able to host a wide variety of M2M applications. This is achieved in several ways. First of all the platform allows to plug-in third-party adapters in order to use a potentially unlimited set of devices. It then comes natural the development of standard-based adapters to link the platform to common devices, also considering the current evolution of the IoT (an ETSI plugin is indeed part of demo scenarios). BETaaS also contains the logic and ontology definition that allow to abstract from devices and make semantic requests (unaware of the actual used sensors/actuators). On the other side, M2M applications access BETaaS through standard interfaces (e.g SOAP) and negotiate their requirements through standard protocol implementations (i.e. WSAG4J). The abstraction from the physical layer together with the standard interfaces toward applications, is a key point that allow BETaaS to be used by a wide range of applications. Furthermore, its distributed nature together with capabilities like Virtualization, Trust and Quality of Service management, make it scalable and suitable to contribute to the Cloud technology expansion in several scenarios, from smart cities to home automation.

Relevant Standards for Interoperability and Portability

The BETaaS platform can leverage on standards such as:

- ETSI, to allow interoperability of heterogeneous M2M systems/applications
• OCCI (Open Cloud Computing Interface) that defines the entities and relationships in a cloud model and provides an high level protocol to manage resources. In the BETaaS context resources are represented by devices (sensors/actuators).

• WSAG4J, that is an implementation of the OGF WS-Agreement standard, to manage the negotiation of M2M application requirements.

The BETaaS Consortium takes advantage of some partners’ direct experience on standardization. Specifically AAU (Aalborg University) contributed to IoT-GSI (Global Standard Initiative) with requirements, recommendations, and functional IoT architectures. It also participated to Focus Group on Cloud Computing (FG Cloud) at ITU-T (International Telecommunication Union – Telecommunication Standardization Bureau). Intecs participated as an ETSI member to the M2M technical committee.

Plans for Sustainability and Business Models

The BETaaS consortium has followed a tried and tested approach for defining the exploitation options in the project. The process is based on a combination of standard business strategy tools (Value Chain and SWOT analysis) and more recent tools to identify business models (Osterwalder Business Model Generation Canvas1 and Problem vs. Solution Approach).

After a deep market analysis in order to provide the vision of the market, the consortium has also identified commercial and non-commercial sustainability possibilities for the future:

• Non-commercial Exploitation is mostly carried out by universities and research centers. Besides advance made on The State of the Art, this type of actions is also important since they aim at increasing visibility of research results, identifying resulting open research questions, and improving teaching standards, providing new lines of research and in the form of best practices, guidelines, knowledge transfer and conceptual results for all members of the consortium and the scientific community.

• Commercial Exploitation aims at transferring research results into new products and services, using research results in order to improve existing services or generating new commercially exploitable ones, both individually and as a collective.

Links and References


Project Start and end dates: 01/09/2012 – 31/03/2015

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1 “Business Model Generation”, A. Osterwalder, Yves Pigneur, Alan Smith, and 470 practitioners from 45 countries, 2010
Technical Coordinator: Nicola Valdambrini, nicola.valdambrini@intecs.it

Publications:


Conferences and Workshops:

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**An Architecture for a Platform Providing Things As A Service**, Francisco Javier Nieto