

Energy, Technologies and Cities

Manuel Serrano

ETRA I+D

Madrid, Spain

mserrano.etra-id@grupoetra.com

Abstract—This keynote presents a coordinated management approach for infrastructures in Smart cities, in order to promote sustainability and energy efficiency. The adopted vision includes the development and implementation of an open platform in the cities of the future, in order to communicate and extend the functionalities of existing public infrastructures. Using the proposed open platform will allow the authorities to evaluate the behaviour of a Smart City from the point of view of energy efficiency, but also will allow them to dynamically negotiate with Energy Service Companies (ESCOs) and Facility Managers (FM) the quality of the different services based on a set of criteria, both economic and social. The keynote will present the most relevant results of the R&D European project SmartKYE, as well as the project BESOS, which extends the Open Energy Service Platform developed in SmartKYE.

Keywords—Smart City; energy management;

I. THE TOPIC OF THE KEYNOTE

Smart Cities have the potential to completely transform the way our cities are managed and operated. New technologies will make systems smart. Realtime monitoring and adaptation will enable optimised traffic flows through the city as well as efficient energy, water and waste management. To do so, future Smart Cities will have to integrate and coordinate a multitude of heterogeneous infrastructures and electronic systems throughout the city, like public lighting systems, urban heating, automation systems for public buildings and commercial centres, electric vehicles, micro-generation, residential prosumers, etc. All these systems are currently managed by isolated Energy Management Systems (EMS), that hardly have capabilities to offer information and services to third parties in order to achieve advanced coordinated energy saving strategies. Novel tools enable the monitoring of Key Performance Indicators at district-wide level, being able to assess the behaviour of the Energy Infrastructure deployed in the neighbourhoods based on realtime analytics and take the necessary business decisions.

Cities have already started to adopt new business models where not only the maintenance of the public infrastructure is outsourced, but also the management of any process leading to a saving of costs, energy or CO₂ emissions. The municipalities and facility owners responsible for public services have established contracts with specific Service Level Agreements (SLAs) with Energy Service Companies (ESCOs) and Facility Managers (FM) that, based on such SLAs, run the smart city trying to (a) reduce costs, so they

can obtain a business benefit, and (b) guarantee the levels of Quality of Service (QoS) established in their contracts. QoS is a key constraint of this kind of service schema since, at the end of the day, citizens will be the ones experiencing the outcome of the approach, and they will demand to maintain similar if not better - levels of QoS than before.

The SmartKYE and BESOS projects are geared towards addressing these challenges in order to provide an innovative integrated energy management platform for Smart cities. This Open Energy Service Platform will enable the different EMSs, deployed in a typical district consuming or producing energy, and which nowadays normally counts with an isolated IT management solution, to share data and services among themselves and to external third party applications. The platform will act as a flexible information hub that decouples the energy applications, interfacing different EMS in a neighbourhood. The use of such an open platform will enable new opportunities to municipalities, ESCOs and grid operators, who could negotiate different Service Level Agreements (SLA) to affect the normal operation of the EMS and address specific quality of service and critical situations with the support of new Decision Support Systems.

II. THE KEYNOTE SPEAKER

Manuel Serrano is the head of the New Technologies Area at ETRA Investigacin y Desarrollo, S.A. (ETRA I+D), the hi-tech unit within the ETRA Group, one of the leading industrial groups in Spain. With more than 2000 employees and a turnover of 250M Euro, the ETRA group is active in South-Central America, South East Asia and the EU.

Deeply involved with Smart City systems since many years, Manuel Serrano has participated in more than 25 R&D projects, many of them co-funded by the EU, coordinating the activities of multidisciplinary teams, managing the project at the technical and economical levels. He is currently involved in the GAMBAS, BEAMS and BESOS projects, leading the transfer of their results to the portfolio of products the company holds on Smart Cities. He is an Electronic Engineer and holds a double degree in Telecommunications from the Polytechnic University of Valencia (Spain) and lcole Nationale Suprieure des Tlcommunications de Bretagne (France) networking specialisation.