

Report on the R&D situation of IoT and smart city in Europe (Summary)

First part : Smart city policies in Europe

European people are keenly sensitive to environmental issues. So, Smart city policies, which can contribute to reduce the use of energy, are strongly promoted by the European Union, European municipalities. What is important for the EU's Smart city policy is the integration of Smart Transport, ICT and Smart Energy for the achievement of a global Smart city concept, while only the latter had been promoted for Smart city concept up to now. Under HORIZON 2020, the EU supports big Smart city projects, called *Lighthouse project*, in several European cities, which develop and test their integrated solutions in real field

The European Union's smart city policy

After the "Concerto Initiative" (2005-2010), which supported Smart city R&D under the sixth and seventh *Framework programs* (FP6 and FP7) and established "Smart City Information System", the European Union (EU) started a new initiative, "Smart cities and communities industrial initiative", in 2011. After one year, "The European Innovation Partnership for Smart Cities and Communities (EIPSCC)" succeeded in the latter. Unlike old initiatives, this new smart city policy has integrated the transport, ICT and energy areas to promote smart city R&D from a global point of view. It has also established "Market place of the European Innovation Partnership for Smart Cities and Communities", which is an *information hub* for smart city stakeholders in Europe.

Under Horizon 2020 (FP8), smart city's R&D projects, called *Lighthouse* projects, need demonstration in two or three cities in Europe, also called *Lighthouse* cities.

- Total EU grant for 2014 – 2015 : 200 000 000 euros
- Total EU grant for 2016 – 2017 : 233 500 000 euros

Horizon 2020 also financially supports some technologies used for Smart city such as IoT, Intelligent Transport System and Smart Health.

- IoT is supported for 2014 – 2015 in ICT area of Leadership of Enabling and Industrial Technologies (LEIT) and for 2014 – 2015 in Cross-cutting activities of Societal Challenge.
 - Total EU grant for 2014 – 2015 : 51 000 000 euros
 - Total EU grant for 2016 – 2017 : 141 000 000 euro.
- Intelligent Transport System (ITS) is supported in *Smart, Green, Integrated Transport* of *Societal Challenge*.
 - Total EU grant for 2014 – 2015 : 31 000 000 euros
 - Total EU grant for 2016 – 2017 : 30 000 000 euros
- Smart Health is supported in *Health, Demographic change and Wellbeing* of *Societal Challenge*.

There is no specific call for Smart health.

- Total EU grant for 2014 – 2015 : more than 50 000 000 euro
- Total EU grant for 2016 – 2017 : more than 30 000 000 euro

European countries' smart city policies

Apart from the EU's Smart city policy, many European countries or cities have their own Smart city policies.

- Paris released its global smart city strategy, "Paris Intelligent et durable" ("Intelligent and Sustainable Paris") in 2015. This strategy rests on three pillars, An Open city, A Connected City and A Sustainable city. The second one is the ICT solution for smart cities. Paris municipality's participation to budget will be 500 000 000 euros up to 2020.
- A Smart grid is supported by the French government's industrial policy, "New industrial France". In March 2015, the French government opted to invest in three projects (budget : 50 000 000 euro), Flexgrid, Smile and You & Grid to support local smart grid initiative. Three local municipalities are leading these projects.
- Berlin released its smart city strategy, "Smart city Strategy Berlin", in April 2015. It is a global framework of the use of ICT for Smart city. The budget is not indicated in this strategy.

Second part : Technological tendencies for Smart city R&D in Europe and examples

'Smart city' is composed of many smart-x technologies. The major ones being : Smart environment, Smart Transport and Smart Health. So, many projects for these technologies are supported under EU's FP7 and HORIZON 2020. Apart from EU projects, there are European many companies for Smart city R&D.

Smart environment

- FP7 GEYSER project develops several technologies for data centre, which allow it to use renewable energy and interact with smart grid and smart city (Period : November 2013 – October 2016, Budget (EU participation) : 4 844 220 euro (2 979 000 euro), coordinator : Engineering).
- FP7 SAID project develops smart water system using ICT solutions for managing water, and tests it in a real environment (Period : January 2014 – December 2016, Budget (EU participation) : 3 235 095 euro (2 179 076 euro), coordinator : ABEINSA BUSINESS DEVELOPMENT).
- Horizon 2020 ENTROPY project designs and deploys an IT ecosystem for improving energy efficiency through consumer's understanding, participation and behaviour (Period : September

2015 – August 2018, Budget (EU participation) : 2 439 467 euro (1 997 592 euro), coordinator : University of Murcia).

- Horizon 2020 ORBEET aims to develop innovative ICT solutions for the efficient use of energy by supporting public and organizational participation (Period : March 2015 – February 2018, Budget (EU participation) : 1 776 625 euro (1 776 625 euro), coordinator : Solintel).

Smart transport

- Horizon 2020 OPTIMUM project develops an architecture for managing and processing multi-source Big data analysis to monitor the transport system continuously (Period : Mai 2015 – April 2018, Budget (EU participation) : 5 966 816 euro (5 966 186 euro), coordinator : Intrasoft international).
- Horizon 2020 Growmarter project is one of the Lighthouse projects which are global projects for the smart city by integrating Smart environment, Smart Transport and ICT. It is widely tested in Stockholm, Cologne and Barcelona (Period : January 2015 – December 2019, Budget (EU participation) : 34 635 912 euro (24 820 974 euro), coordinator : Stockholm municipality).
- HIKOB, a French company, develops monitoring systems for analysing sensor data. It offers SENTINEL, a monitoring system for buildings and infrastructures, HIKOB IN MOTION, for monitoring human beings or bicycles in motion, and PULSE for Smart Transport.

Smart Health

- Ericsson and Kings College London established a joint lab for 5G and its applications, Tactile Internet Lab, in March 2016. They are developing a remote surgery system as an application for 5G
- MYSPHERA, a Spanish company, is developing and commercializing a real time positioning system using wireless technologies for medical facilities. Based on RFID, it can reduce costs, control staffs and medical materials and increase patient's security.
- NIVELY, a French company, is specialised in developing a real time positioning system using wireless technologies for medical facilities, and smart sensor and camera for monitoring aged people or patients .
- NISSATECH is a Serbian high-tech company, developing Big data, remote monitoring and

analysis of sensor data. It commercializes a remote monitoring system, My Cardio Advisor, to supervise aged people by using a sensor terminal.