INTERNET OF THE FUTURE: DEVELOPING INNOVATIVE ENVIRONMENTS FOR NEW ONLINE SERVICES

The Spanish academic network RedIRIS contributes to the genesis of Future Internet (FI), participating in the European platform which will promote the competitiveness of key sectors.

THE INTERNET

With nearly two billion users around the world, the Internet is one of the greatest success stories of society today. It can be said that its integrated communications infrastructures almost entirely sustain the planet's economic and social fabric.

However, the Internet, which was designed in the '70s, is beginning to demonstrate certain limits and new hurdles are appearing in the areas of technology, business, society and government which require innovative developments in order to appropriately respond to challenges such as Smart Cities, Smart Homes, the Internet of Things, etc.

FI-PPP

To overcome these hurdles, the European Commission has launched the Future Internet Public-Private Partnership Programme (FI-PPP), a programme of public-private partnership which aims to lay the groundwork for the Future Internet (FI). The FI-PPP (2011-2016) is in its third and final phase of development. Its total budget is €500 million, 60% of which is funded by the European Union and the rest by entities of around 22 European countries, through 150 organisations, 65% of which are companies.

The program aims to create an open platform that provides a wide range of applications, adapted to a new technological environment characterised by mobility, deployment of sensor networks, big data and new relationships among the different players (operators, integrators, application and content developers, users, etc.).

The ultimate goal is to facilitate the FI-PPP management processes in areas such as transport, health and energy more efficiently and sustainably, and strengthen the competitive position of key sectors in the network such as software and content development, electronic communications and R&D.

FIWARE and FI-Core

The FI-PPP Programme consists of multiple projects, with FI-WARE (currently FI-Core) playing a major role. This project, whose initial budget was €66 million for three years (2011-2014), aimed to create a platform based on an open cloud environment for future Internet applications and services, with a maximum security guarantee. By some estimates, the platform would have an impact of 0.25% on EU GDP in 2020.

Participating in the FI-WARE project are the major European telecommunications companies (including Telefónica I + D, project coordinator), other relevant companies in the ICT sector, research centres and universities (such as UPM), plus national scientific and academic networks (NRENs), like the Spanish RedIRIS.

"FIWARE is the key tool for putting the European and Spanish industry and research centres in a privileged position on a global scale in the field of Future Internet, particularly concerning the Internet of Things. This project represents a unique opportunity for Europe to lead the Internet evolution-revolution over the next 20 years, in which the University of Cantabria, working closely with other organisations such as RedIRIS, wants to play a particularly active role".

Luis Muñoz, Professor of Telematics Engineering and Technical Coordinator of the SmartSantander project; Telecommunications Engineering R & D Laboratories. U. of Cantabria

The completed FI-WARE project has continuity in the FI-Core Project (2014-2016, with a budget of €23 million), which includes many members of the previous project, and continues to offer, develop and disseminate the FIWARE platform.

In these projects, RedIRIS is responsible for deploying the computing infrastructure, storage, communications and perimeter security of the platform on which "FIWARE Testbed" (FIWAT) and "FIWARE Lab" are deployed, which are FIWARE experimentation environments for developers, SMEs, researchers, etc.
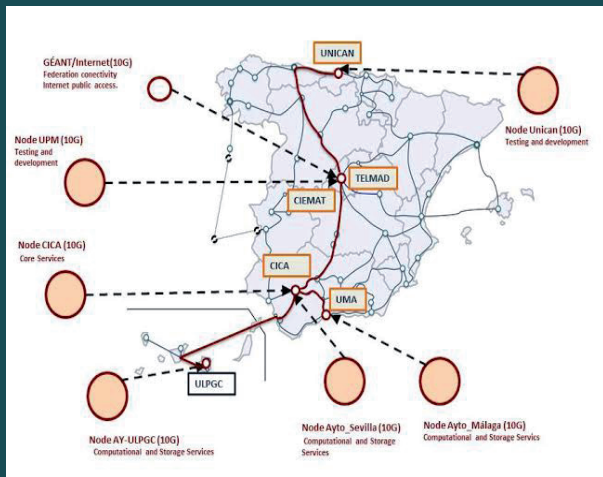

XIFI Topology: The Spanish node

FIWAT and Future Internet applications

The FIWAT platform, whose supporting infrastructure has been deployed by RedIRIS, was used in 2013 to test SafeCity, a system of devices integrated with the city of Madrid's network of security cameras, making it possible to anticipate risk in public spaces, such as leaving suspicious objects. This FIWAT platform also gave support to multiple already-completed FI-WARE project hackathons (currently FI-Core) at Campus Parties or at events like the one in Santander.

Internet of Things

One of the drivers of the Future Internet is the Internet of Things, in which the objects of our daily life are connected to the network using sensors, generating useful information for normally-automated services and opening new opportunities for companies, public authorities and citizens. For example, the refrigerator notifies the supermarket of what foods need to be sent to the home, a parked card alerts us to the presence of a stranger, etc.

This FIWAT infrastructure has been deployed in collaboration with several Spanish municipalities such as Seville, Malaga, Santander and Las Palmas, plus some universities in those cities.

The FI-Core project complements other projects in the FI-PPP, such as XIFI (2013-2015, budget of €16 million), in which RedIRIS also participates, and whose aim is to deploy a pan-European federation of testing infrastructures with different characteristics, interconnected through national research networks (including RedIRIS).

Collaborating with FI-PPP

FI-PPP tries to ensure the active involvement of many players, in addition to the formal members of the projects. A good example of this is the University of Cantabria (UC).

On the other hand, the UC has reached an agreement with Red.es and the city of Santander to make infrastructure elements for the FIWAT test platform,

connected to other platforms such those in Seville, Malaga and Las Palmas de Gran Canarias thanks to RedIRIS, available to the project . On the other hand, the UC encourages the development of applications based on the FIWARE platform, specifically by using the open data provided by the city of Santander which is very active in issues regarding Smart Cities. Lastly, the UC has also collaborated with other players in training events for developers interested in FIWARE (e.g. hackathon promotional event in October 2013).

For nodes like that of Santander and other collaborating cities like Seville, Malaga and Las Palmas, they can be accessed by any developer who has been part of the FI-WARE project (currently FI-Core) and, as an added value, both SMEs and local research groups will have an opportunity to increase their experience in this environment in order to participate in FI-PPP calls. This is a good example of the public-private collaboration sought by this programme.