

## **CETIC – Position paper for the 2<sup>nd</sup> usage areas workshop on the Future Internet**

*(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?*

Patient treatment involves a lot of stakeholders. Information management in this domain has been difficult for years. The emergence of e-health is a key enabler for better processing, as well as setting the patient at the center of the process.

The building blocks are the regional & national health networks (e.g. Walloon Health Network in Belgian Walloon region): secured internet-based networks that allow consulting and exchanging data outside the hospitals. In an extended way, they can connect doctors, nurses, non-medical services providers, and patient themselves, in a secure, trusted way, conforming altogether to established practices in this sensitive sector. The trend is to also extend data gathering to the actual life of people and patients, in order to better link their daily life and the disease treatment. Decentralised data storage, privacy, transfer and processing are at the core of this system.

Several studies are undergoing, that can serve as a perfect testbed. It can be for instance: diabetic patient, diabetic old person at home or outside his/her home, or even people with risk or probability to develop the disease.

Basic scenario: The first aspect to be developed is to connect people and personal medical devices to the network, and use a local terminal in a standard, secure way, as a local interface to personal data.

A person is able to follow most of his/her treatment at home but also outside his/her home (when visiting his/her family/friends, or even when being on holiday) using wireless inter-connected medical appliances (weight scales, glucometer, tensiometer, device to distribute pills), some of them might be directly connected to the Internet (Internet of Things perspective). A modern terminal (e.g. Smartphone with Wi-Fi, 3G and GPS connectivity) is used. It collects and sends medical data of the patient to a remote repository connected to regional or national health networks (e.g. Walloon Health Network in Belgian Walloon region).

Possible services to the patient, accessible via his/her Smartphone, include:

- Local data concentrator, connected to health network
- Shared diary and reminders (for his/her appointments with doctors and for reminding him/her to take his/her medication);
- Alerts: automatically sent or sent by doctors to the patient in case of emergency with possible localization of the patient; alerts sent to relatives in case of problem;
- Interactive questionnaires (that the patient fills out in order to monitor the evolution of his/her health and psychological state).

Extended scenario: On holiday in a foreign country, in case of emergency the sick/elderly person goes to the local hospital. Using their EMR (Electronic Medical record) software the doctors in this hospital can seamlessly access the relevant parts of the medical record of the patient (or a summary of this record), using proper credentials, and through a secure interconnection between the health networks of the 2 countries. This medical record would automatically include the medical parameters of the patient that he measured using his personal connected medical devices, as the data may be of utmost importance.

The communication between the 2 national health networks is achieved through trusted interoperability HUBs which provide the interoperability layer between the different health networks deployed in Europe and in the rest of the world.

(2) *What innovative Internet functionality and technologies would you consider important for your suggested use case and scenario (e.g. context awareness, sensor networks, advanced real time processing capabilities handling huge volume of data, ad hoc service composition and mash-up, managed broadband connectivity and services, embedded media support for interfaces easing the interpretation of processed contextual data, etc.)?*

Very decentralised and locally managed storage and services with a set of coordinated communication hubs.

In addition: Ad hoc service composition and mashup, context awareness, Internet of Things, sensor networks, web portals, security and authentication mechanisms, ...

(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?*

- Native secure access and communication between delocalised storage systems
- High quality semantic annotation for health web services and at-home health devices, providing seamless interoperability
- Internet of Things

(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?*

The regional health network in Wallonia (Belgium) (called "Réseau Santé Wallon") can be considered as relevant starting point for transfer and exploitation of medical data, as regards the user view on the architecture. The environment must support a similar network pattern.

It would then need international connections, where a large set of users (5 000) as well as medical and non-medical partners from different countries (E.g. 5 hospitals, 10 non-medical services providers, 50 primary care doctors and specialists).

(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?*

CETIC can serve a relay with the different kind of users, making sure that their requirements are implemented in an efficient manner using the FI PPP infrastructure.

CETIC has strong connexions with the local sector via the "e-health for citizens" regional project that we coordinate. It addresses patient-centered at-home monitoring and interlinking with existing medical software and health networks. Our prominent role would be in semantic interoperability for data and services in order to provide flexibility in the composition of both.

CETIC is also coordinating the FP7 PONTE project which deals with clinical trials design, and leading the data representation & organisation aspects. CETIC was also part of FP6 OLDES addressing entertainment and ambient assisted living for elderly people.