

## TOWARDS A FUTURE INTERNET PUBLIC PRIVATE PARTNERSHIP

SECOND USAGE AREA WORKSHOP, 21-22 JUNE 2010, BRUSSELS, BELGIUM

### **HEALTH usage area**

Position Paper on issues and open questions to be addressed during the workshop on the usage area of health, input from the research centre IBBT.

*(Q1) 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?*

An ageing population, decrease of workforce in the healthcare sector and sustainability questions in view of healthcare economics are predominant in many EU countries. Adequate ICT services, such as telemedicine, telemonitoring, distant coaching and advanced AAL (Ambient Assisted Living) solutions can contribute to a more sustainable and qualitative care for the elderly people or people with chronic care needs. Optimised strategies towards ICT supported living and care solutions, provided at home or in multi-site residential settings should be experimented and leveraged on an EU scale. Though the social security system may differ in-between countries, basic people's needs are the same. Large-scale experimentation trials should be initiated starting from real user needs, combined with value network analysis and care process change management. Bringing together this knowledge on a EU level will provide the economy of scale needed to leverage the penetration of eHealth services. The greying society will then actually boost the "white" economy.

*(Q2) 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.)?*

- Wireless sensor networks and mesh networks will allow for massive data collection with respect to the individuals receiving e-Care services. These services should be ubiquitous in nature and be available any time, any place. Mobility of patients should be encouraged and supported being an essential factor in view of social inclusion and feelings of comfort. Secure and efficient cross-networking solutions, combining Wireless Mesh Networks, Wireless Sensor Networks and fixed network solutions are thus needed.

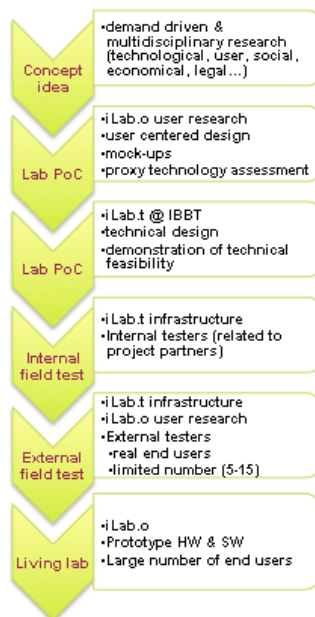
- Optimised data collection and handling in view of the e-Care model is predominant. Huge amount of data can be collected on a daily basis, but efficacy should be kept in mind for the future e-Care solutions. Overload of data towards the healthcare workforce can easily be created and anxiety of patients increased. Intelligent back-end and service solutions should be designed, for e.g. based on multi-parameter analysis, ontology-based knowledge representation, reasoning and inference on ontology's, self-learning software techniques. The FI technology will allow for testing and optimisation of these solutions.

- The e-Care service delivery needs to be flexible and adaptable to changing care needs. FI platforms need to provide easily adaptable service composition methodologies safeguarding security, privacy, QoS in a cost-effective and user-friendly way.
- Virtual storage concepts and cloud hosting will be needed in order to store and handle the vast amount of data that will become available when combining the concept of virtual networks and sensor networks for care process.
- Standardised means in view of identification; authentication and authorisation of people (both caregivers and care receivers!) will be predominant within the eHealth area, at the same time safeguarding the privacy of the people.

(Q3) *Which of the identified functionalities would you expect the Future Internet core technology platform to deliver to support your and other usage area scenarios?*

- e-Services delivered at home or in multi-site residential care settings using standardised and adapted interfaces (TV screen and remote control, touch screen)
- Basic access by service developers to the FI components and resources so that new services can be developed and delivered in a tailored and flexible way.
- Stimulation and activation of the prosumer behaviour in order to empower the patient (participatory medicine) and the care delivery organisation to come up with new and adequate solutions and services
- Domestication and integration of FI services into daily care practices
- Personal Health Systems based on body area and sensor networks, integrated with other health networks
- Dynamic service composition
- Standardized gateway - Remote monitoring – operational savings
- Cost optimized installation (possibly DIY solutions)
- Allow for “application” store model for adding additional services and for “cloud” model for storing and handling the vast amount of data
- Standardised and bullet proof solutions for safeguarding the security and the privacy of the eHealth solutions, at the same time allowing for third use of pseudonym-data in view of evidence-based-medicine research
- Semantic technologies would greatly advance the sharing of medical knowledge in the EU!

(Q4) *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?*



A typical development cycle for IBBT cooperative research projects (IBBT academic research partners + industry)

Several feedback loops are possible at different stages in the process flow. Several levels of testing include:

iLab.t = technology testlab facility

iLab.o = living lab facility

There is a strong interaction between iLab.t and iLab.o from the beginning of the development cycle!

By involving the user in the early phase of the development cycle, the user can shape the solution, instead of only adopting it. The user is hence involved in the creation process.

The close interaction between user research and technical

research allows for a more robust (user centred & technical) design and increases the chances for successful living lab trials.

IBBT believes this model could be successfully adapted to the FI – PPP projects.

*(Q5) 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.*

IBBT (Interdisciplinary Institute for Broadband Technology) is engaged since it's beginning in 2005 in user-centred inter-disciplinary research. Specifically in the eHealth area the research projects initiate explicitly from the user needs and the analysis of the user's expectations. Effort is being made at the kick off of the projects, in order to make all non-technical issues explicit in the research track, such as: usability, legal issues, value network analysis, techno-economical issues, potential factors inhibiting future valorisation. Close collaboration in-between technical research groups, non-technical research groups, industry and user communities are built-in into the IBBT GBO and ICON project structure. IBBT has built-up valuable knowledge in the area of inter-disciplinary research methodologies.

Next to this IBBT has a track record with respect to technological research for the future Internet area since many years. Research expands from the networking technologies, management issues, and cross-networking solutions upto the software service layer. In the area of eHealth we can mention the sensor network research enriched with context aware service development, body area networks and integration with other health data networks, private network solutions for easy and secure multimedia sharing, distributed software services with dynamic composition and brokering mechanisms, work flow mgt with optimised resource efficiency, resilience and support for dynamic updates and clinical decision support software. Ontology-based knowledge representation, reasoning and inference on ontology's are new research topics within IBBT.

Last but not least IBBT is engaged in finding sustainable business models for this type of applications: Exploring value network models, identifying the different roles that needed to be fulfilled. Which actors can take up the proposed roles? How can an economic viable model be established, considering all actors will benefit? A detailed analysis of the capital and operational costs, as well as direct revenues and indirect savings (due to optimizations in operational processes) must be elaborated. The most valid approach seems an 'open' system, giving the opportunity to add services/applications by different actors (government, service providers, insurance companies, etc).

Two national testlabs have been created during the past years, namely iLab.t and iLab.o both complementing each other and given valuable assets to the FI – PPP initiative. (see also Q4). More information on these testlabs, reference project results and publications can be found through the IBBT website ([www.ibbt.be](http://www.ibbt.be))

#### *National Reference Projects*

- IBBT - IM3 project on mobile medical monitoring
- IBBT - Coplintho project on multi-service patient platforms and data-exchange platforms based on web-services
- IBBT - TanseCare on eHomecare platforms for independent living
- IWT - Cosara on clinical decision support software for the ICU clinical environment
- IBBT - DEUS for easy deployment of wireless sensor environments, use case : senior mobility support
- IBBT - ACCIO for intra-muros continuous care systems based on self learning software systems

### *National Reference Partners*

Co-operation with many partners has been established in the recent years in the eHealth area, such as, private companies:

- Alcatel Lucent
- One Access
- Televic Healthcare NV
- Androme
- Custodix
- GreenPeak

Care organisations and hospitals:

- Wit Gele Kruis Vlaanderen (homecare)
- Solidariteit voor het Gezin (homecare)
- OCMW Gent – WZC De Vijvers (residential care for the elderly)
- DSI Gits (residential care for handicapped people)
- University Hospital Ghent, (hospital)
- ZNA Antwerpen (hospital)
- OLV ZKH Aalst (hospital)

Intermediate organisations:

- MLOZ (mutuality)
- in-Ham (Expert Center for Assistive Technologies)
- Several governmental organisations (BeHealth)

### *EU Reference Projects*

- Apollen EU-CIP (zie voor meer info eventueel [http://ec.europa.eu/information\\_society/activities/livinglabs/docs/pdf/smart\\_cities\\_jan\\_2010/morning/03%20De%20Vos\\_PUBLIC.pdf](http://ec.europa.eu/information_society/activities/livinglabs/docs/pdf/smart_cities_jan_2010/morning/03%20De%20Vos_PUBLIC.pdf))

### **About IBBT**

The IBBT (Interdisciplinary Institute for Broadband Technology [www.ibbt.be](http://www.ibbt.be)) is an interdisciplinary research institute for ICT innovation in Flanders, Belgium. It has been established in 2004 by the Flemish government as a Strategic Research Centre in view of the emerging e-society. It has today over 600 researchers dealing with the technological, economic, legal and social dimensions of the development and exploitation of broadband services. The IBBT-SMIT (Studies in Media, Information and Telecommunications) research centre has almost 50 researchers and is specialised in business modelling, user and policy research for the digital society. The IBBT-IBCN (INTEC Broadband Communication Networks) research group counts around 100 members, specialised in various technology aspects of both fixed and wireless networks, the related services and supporting software and the techno-economic evaluation of the future internet.

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