Health applications: paradigmatic application scenarios for adaptive services

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By creating the effect of a “virtual internmate”

“A “internet-linked” friend that replaces you acting on your behalf, acquiring knowledge, composing services, and providing assessment or decisions with a light link to you

In the different appealing matters such as: Transport, Energy, Environments, Leisure, Tourism

And of course…. Health → someone working on your prevention, diagnoses, or treatment
Future of Internet and eHealth (I)

» Future Network Infrastructure: large scale connectivity, compatibility and ubiquity will guarantee healthcare professionals and patient access to medical information anywhere, enhancing citizen mobility.

» Internet by and for people: providing a multilingual environmental and more interactive solutions
  - Offering preventive and proactive services
  - Facilitating personalized treatment
  - Giving patients an active part in managing their healthcare

» Internet of the Things (IoT): under FI umbrella, scenarios where objects exchange information, verify identities, and process information will be possible. This fact will allow, for instance, developing smart environment to provide a better and less invasive monitoring.
» Internet of Contents and Knowledge: digital medical information is increasing every day. FI can support knowledge management, going further than information accumulation by involving intelligent processes (e.g. learning algorithms, semantic web), and underpinning privacy and security in health information systems.

» Internet of Services: place where data is physically located or services are executed will be invisible for the end user (healthcare professional or patient). A service will typically be a composition of services provided by third parties, creating dependencies that should be invisible too.
Different (connected) environments

Hospital/Health centres and pharmacies: interoperability, information management, and M2M communications

Citizens: wearable and mobile devices for continuous monitoring and communication

Smart Houses: M2M communication, non-invasive monitoring, telecare

Future Internet will allow to connect all potential actors/places related to healthcare.

Other services: emergency services, public transport...
**E-health: issues and enablers**

FI in healthcare will allow an **empowerment of patient**, providing more participative services, a **better prevention, diagnosis and treatment**

### Key Issues to overcome

- **Interoperability and standardization** of computer-based medical systems.
- Management and interoperability of Electronic Health Records (EHR)
- **Interconnection** of hospitals and medical team remotely
- Extreme **guarantee of privacy** and confidentiality of data
- Enhanced remote care of patients (specially for chronic diseases and elderly people)

### Technical Enablers

- Interoperability of data- **Data Exchange**
- Semantic applications and Standards
- Machine to Machine communications.- **Better monitorization/Homecare**
- High capacity networks- **improving Telecare and m-Health**
- Open and interoperable Cloud Services- Grid computing to process great amounts of data- **DSS/VPH**
Enablers to “service” the USER

Semantic Interoperability and standards to transmit information

High Capacity & Trustworthy Networks

Cloud & Grid Computing to develop Decision Support Systems

IoT: Devices and M2M communications in houses and hospitals
Dynamic adaptation

» Health services will not necessarily happen in “traditional places” (ex. a hospital)
  » For example, monitoring and diagnosis may happen while at home, but also “on the move” → services will need to dynamically adapt to different (changing) locations and varied (user) interfaces (ex. mobile phone, laptop)

» Sources of information will change dynamically
  » From sensors at home to wearable computers → services will have to be conscious of these sources, being able to react to lack of data (when samples are not possible) and able to accept new sources

» eHealth services will be personalized and aware of the context
  » The same service will have to behave in a different way depending on who is the final user, in which situation he/she is using it, etc

» Added value will come from the combination/composition of services provided by third parties: all of them should be interoperable and dependencies will oblige them to self-adapt to the overall service chain
Thank you

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