Embedded systems

for ambient assisted living

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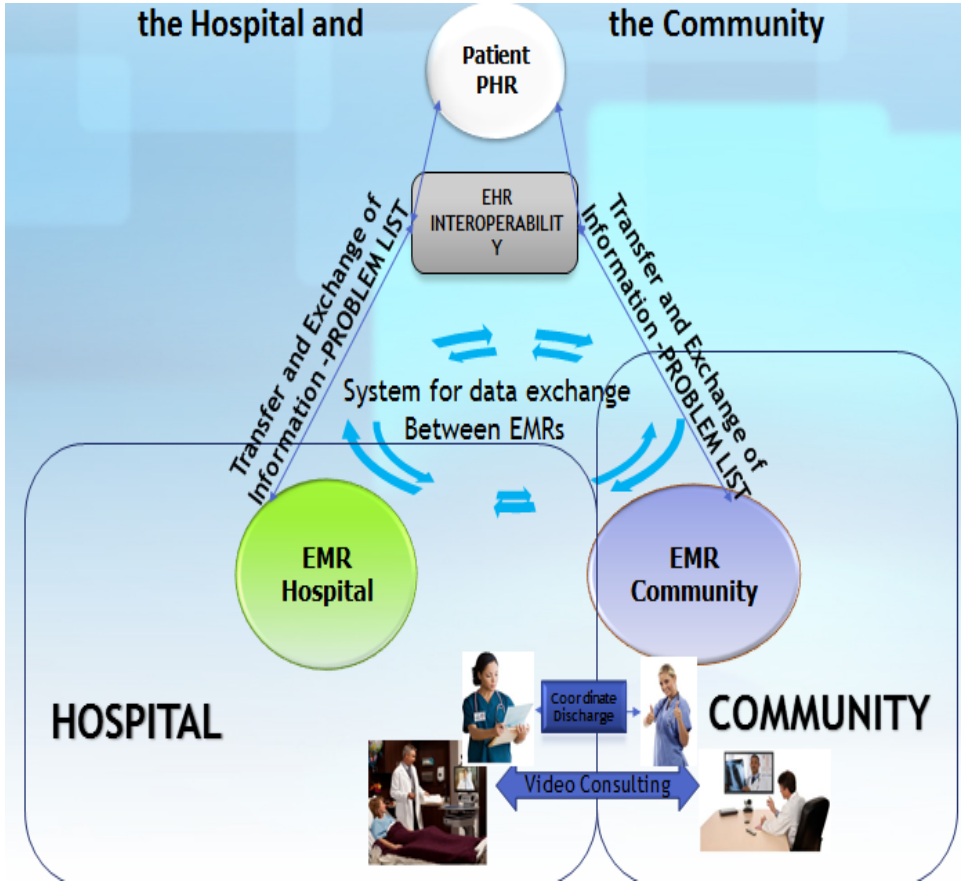
Motivations

- Need for reorganisation of the **assistance for elder patients and disabled people**
  - High impact worldwide, since these patients and persons "cause" very high costs
- Need for a network of services to guarantee **patient-oriented, integrated and continuative healthcare**
  - Patients are difficult to manage for their families

Goals

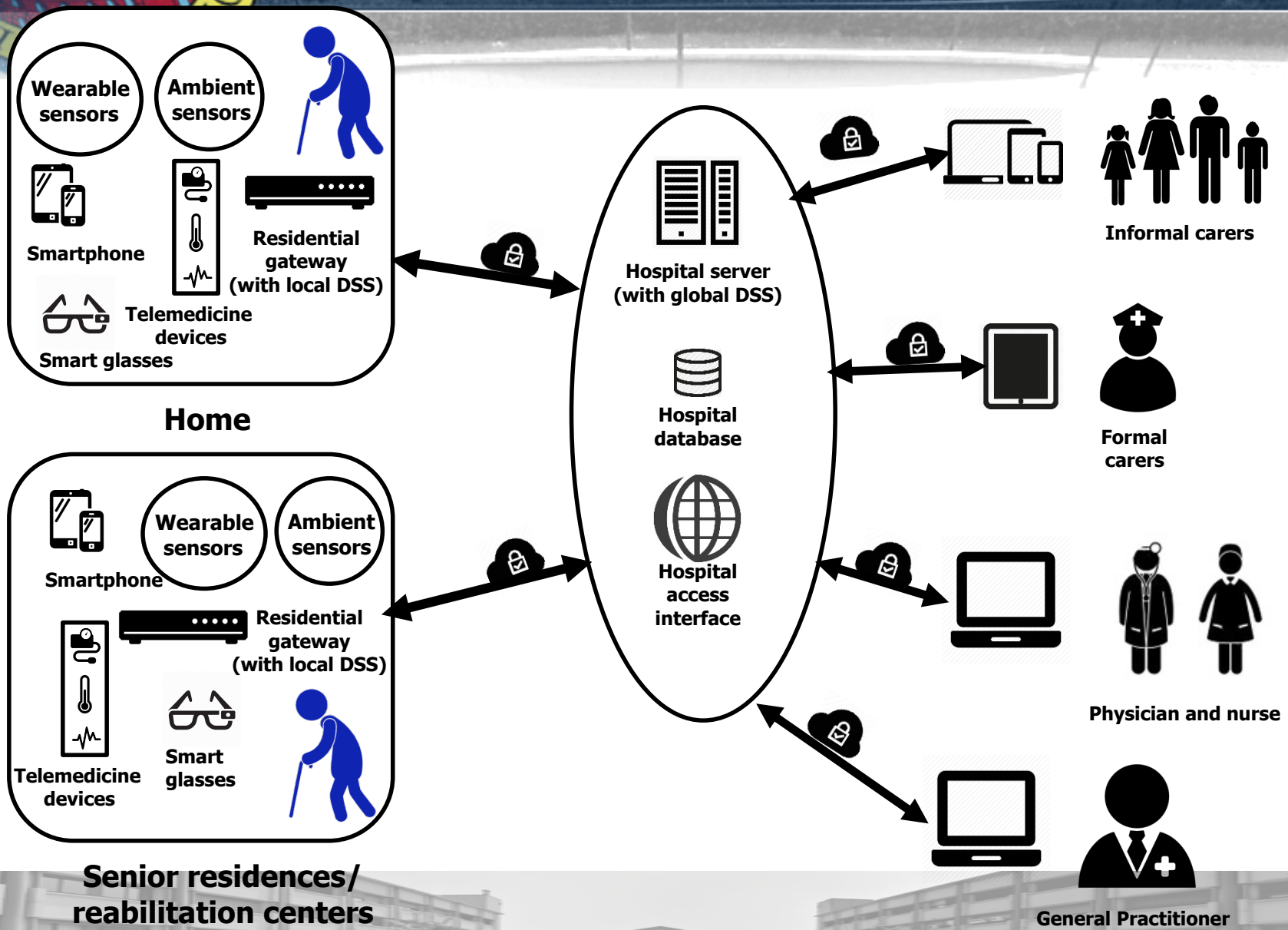
- IoT-based approach for integrated care of patients
  - Improvement of the **ratio between costs and benefits** for healthcare
  - Improvement of the **ratio between actual hospital admissions and ideal hospital admissions** , i.e., really necessary in relation to the patient status
  - Improvement of the **ratio between the effort** of medical staff and caregivers, their **satisfaction level**, and the **quality of the offered service**
  - General improvement in the **quality of life** of patients

The need: integrated care model



- **Better clarification of roles** among healthcare's actors
- More **effective and efficient** healthcare process between care providers
- **Incremental approach** to caregiving to enable a reactive and effective service at the right severity level
- **Proactive and personalized healthcare** service involving patients' family
- More capillary **community-based** healthcare system

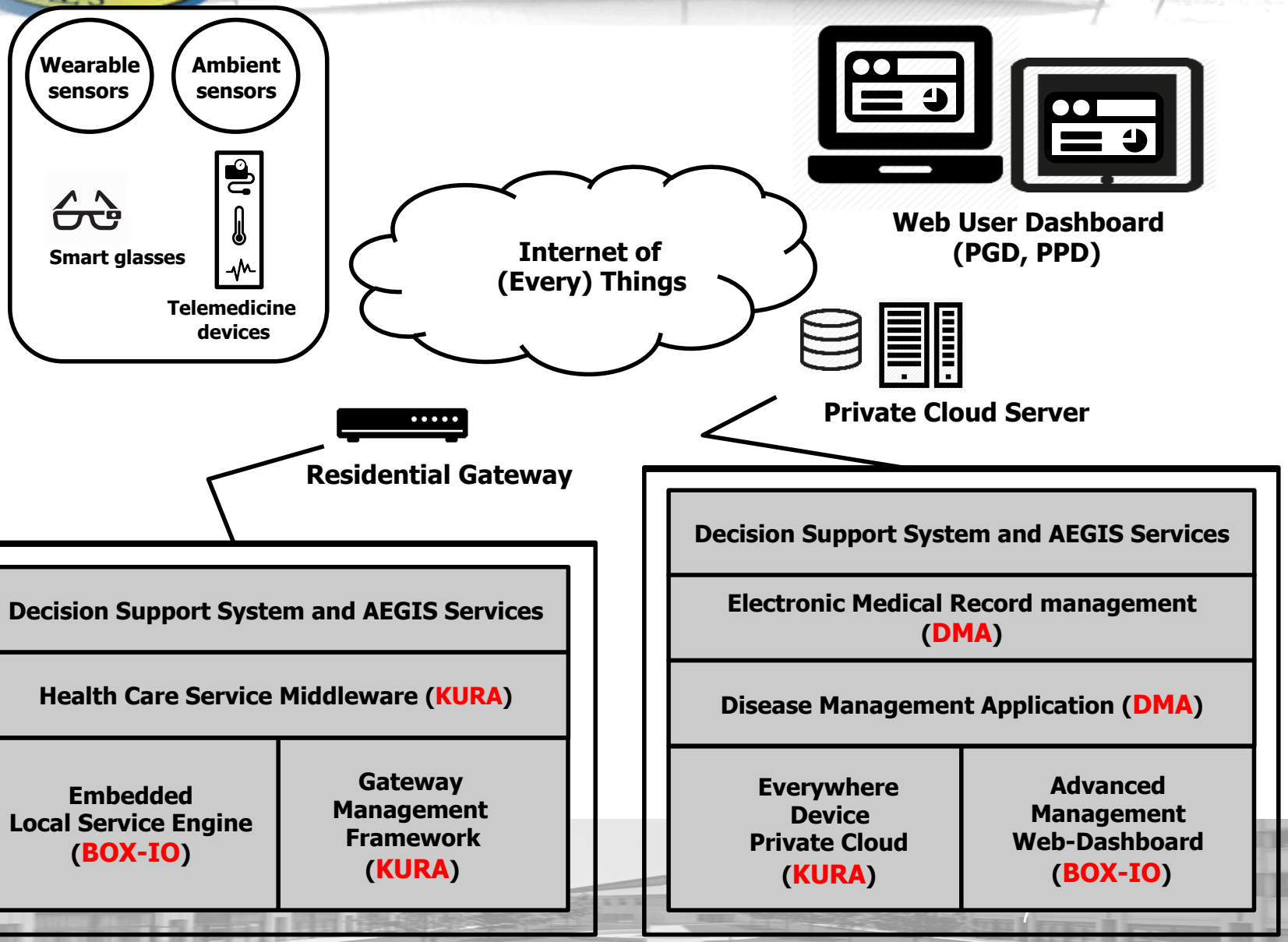
IoT for integrated care



Benefits of an IoT framework

- **Personalised and proactive healthcare service**
  - with high adaptability in response to changes in the health status of patients and in the evolution of their multi-morbidity conditions
- **Easier cooperation and integration**
  - between formal and informal caregivers
- **Better training**
  - of formal/informal caregivers and patients
- **Seamless connection**
  - between the clinical protocol and its applicability

What can we do?



A success story

SAFE-HOME

Domestic safety and control

Integrated communication and control system to enhance the quality of life in domestic scenarios for reliant people.
EDALab worked with other partners to build the final system and its contribution concerned:

- Distributed Communication Middleware
- DB Application Layer
- XML Exchange protocol
- Wireless Sensor Networks integration
- IP-cam

Touchscreen UI Example

The safe-home system

Front-End (***HiT***)

Middleware for data collection and management (***EDALab***)

Alarm management

sms

http-html

Gateway SMS Secure Home Recorder & Alerter *(IRS)*

Video communication *(HiT)*

Telemedicine *(Tesan)*

XML

Alarm system *(Fracarro)*

Energy consupmtion monitoring *(Real-T)*

Thermo regulation *(Setecna)*

Video entryphone IP *(Setecna)*

Videocamera *(IT+Robotics)*