

Prototyping a next generation of
responsive and safe living
environments for Europe's
elderly citizens ...with



Anastasia Garbi,



13th February 2007

Brussels

E&AR Methodology

- Active involvement of older users at all stages
- Real life settings
- **Large-scale validation**
- **600 users in 4 countries**

Strongly Innovative RTD

- Service-oriented Architecture
- Open standards
- Innovative H/w
- Multiple modalities
- Ambient Intelligence

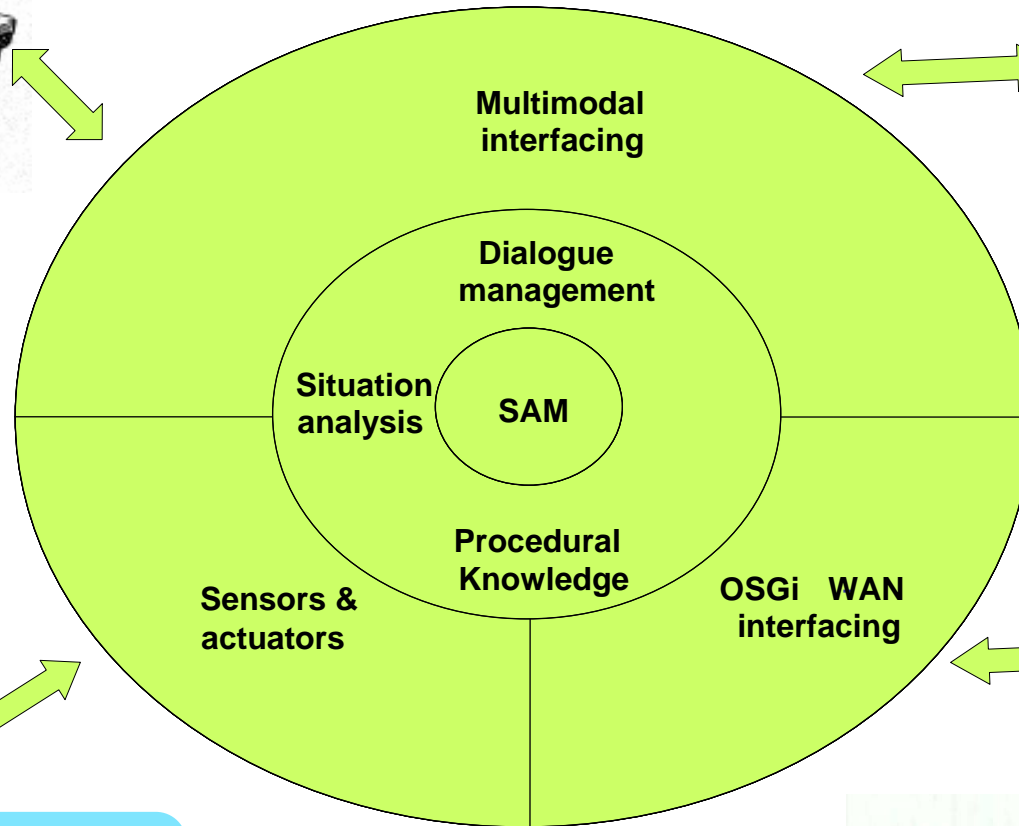
Exploitation & Markets

- Leadership by global player
- **Large scale demonstration**
- Mainstreaming into consumer markets

...to develop **Context-aware, smart environment services** with **natural and comfortable interfaces** for **elderly people and everyone** at **affordable cost**

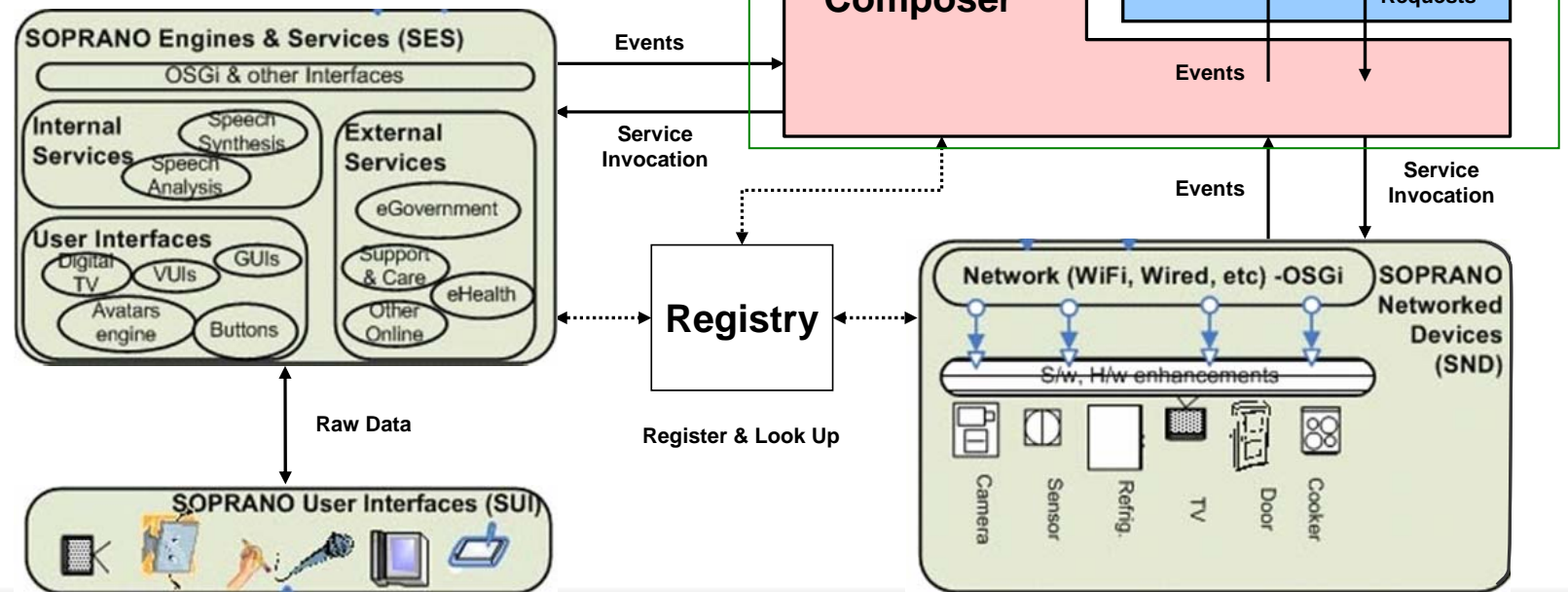
...aligned to **market and user needs**

...validated In **Full-scale demonstrators & Large-scale demonstrations**



SOPRANO Ambient Middleware (SAM)

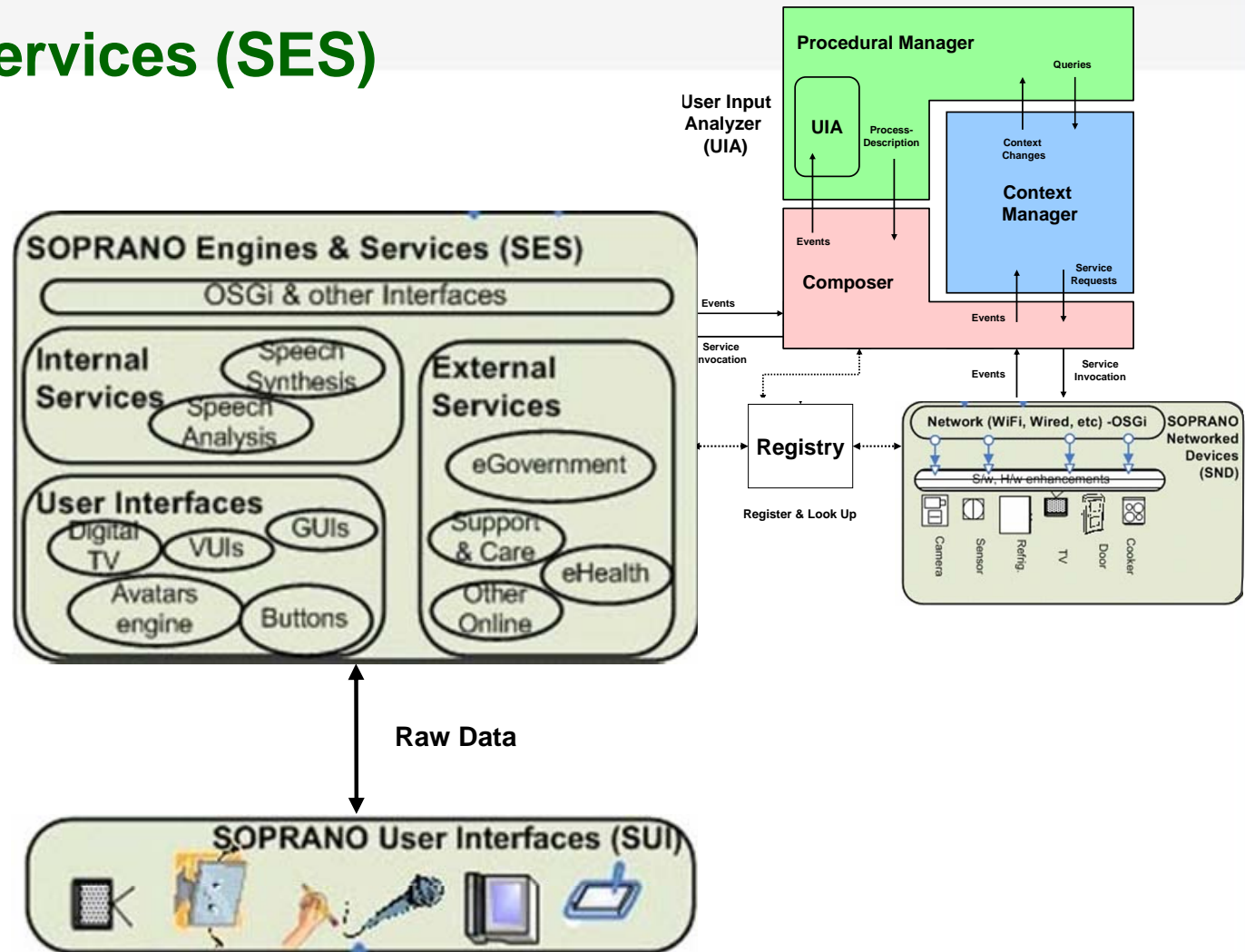
- Context Mgr: provides / exploits user & environment information
- Procedural Mgr: compiles an abstract process description
- Composer: interfaces „ intelligent components“, compiles process execution



SOPRANO Engines & Services (SES)

Services & Engines Repository

- Internal Services: Speech Synthesis & recognition
- User Interfaces: VUIs, GUIs, Digital TV, Avatars, PDAs, etc.
- External Services: i.e. Care response center
- OSGI & Other interfaces interfaces services with SAM

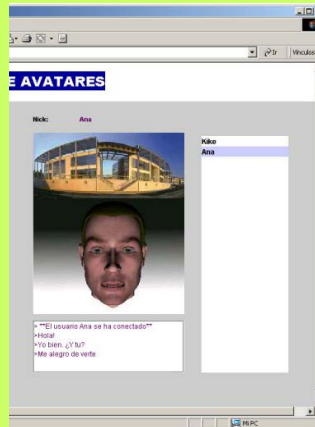


Functions

Avatar Assistant for elderly

+Talking

+Emotional



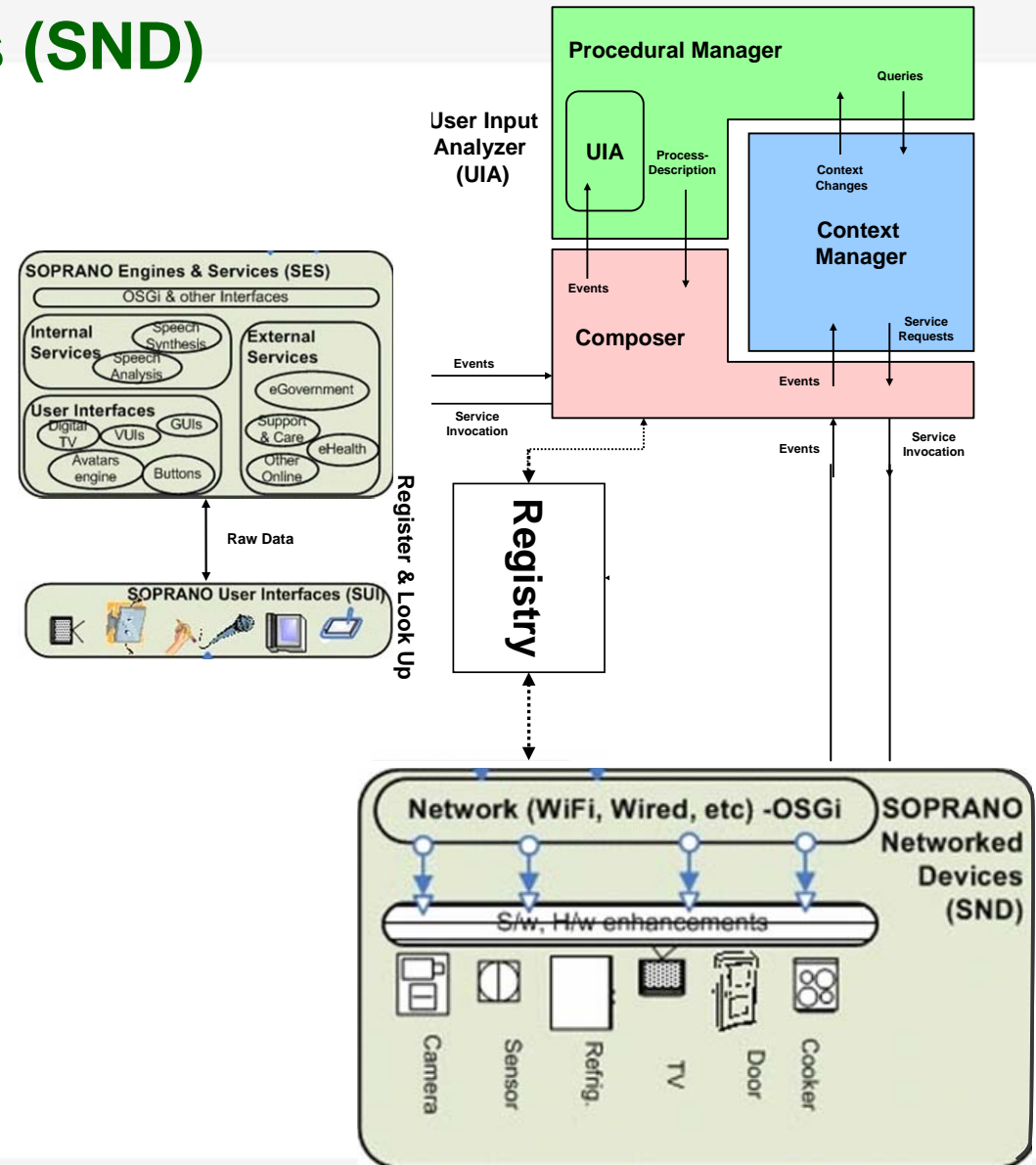
- instructions are much better followed
- elderly people both with and without cognitive impairment are capable of recognizing emotions in the facial expressions of the avatar
- the experience with an emotional avatar is 'pleasant'

- [Ortiz, et al.] in **Elderly Users in Ambient Intelligence: Does an Avatar Improve the Interaction?** Proceedings of 9th ERCIM Workshop "User Interfaces For All" September 2006

SOPRANO Networked Devices (SND)

SOPRANO H/w and Communication Channels

- OSGI
- Sensors.: fall, temperature, location, life sign, etc,
- Home Appliances & Devices: TV, Kichen, Door, etc.

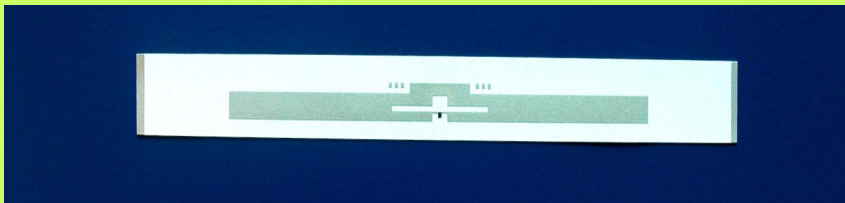


Functions of sensors:

- **Identify**
- Positioning
- Sensing lifesigns
- Communicate

Identification of inhabitants

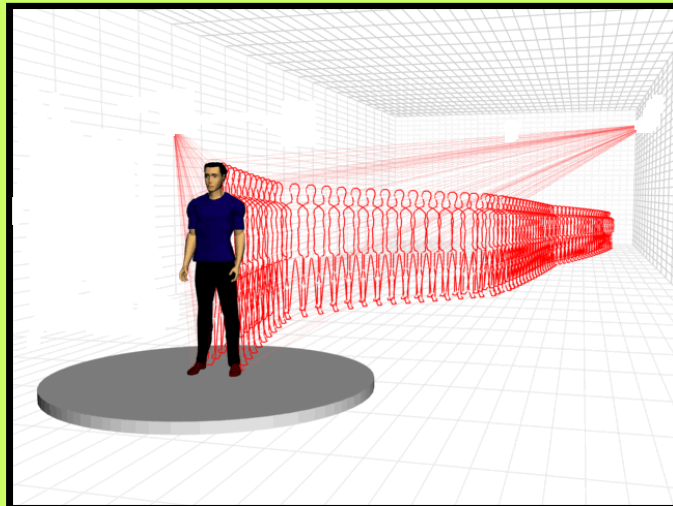
- Via RFID (13.56 MHz, 868 MHz-UHF)
- Via radarimage
- Via radar-ID tags
- Alternatives: biometric, optical, speaker recognition, ZigBee



Functions of sensors:

- Identify
- **Positioning**
- Sensing lifesigns
- Communicate

- RF-tags: active
- RFID-tags passive (UHF)
- Via ethernet, WLAN access points
- DECT
- IR (vision)
- UWB-chips
- Ultrasonic (US)

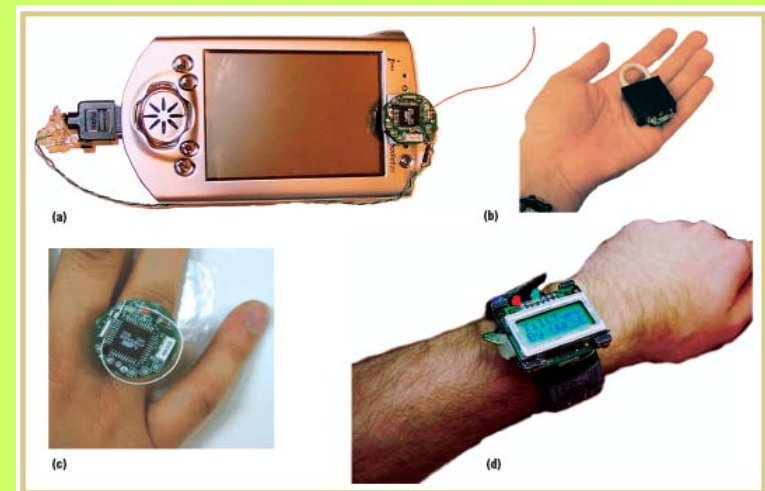
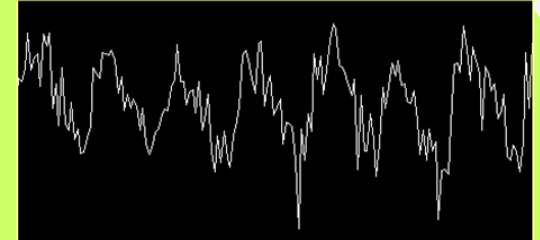


Functions of sensors:

- Identify
- Positioning
- **Sensing lifesigns**
- Communicate

Body-Sensing

- Radar
- Passive RF(ID)-sensors
- Conductive textiles for heart beat detection
- Imaging systems (Tongue Imaging?)

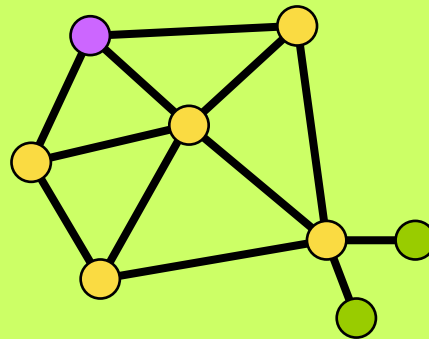
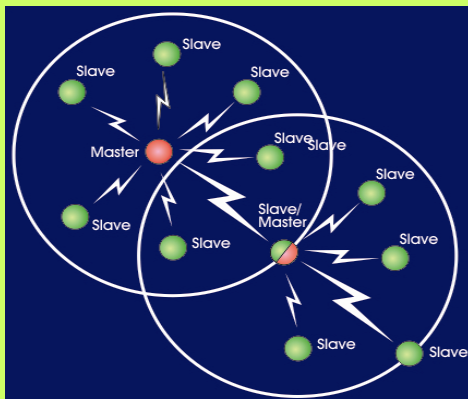


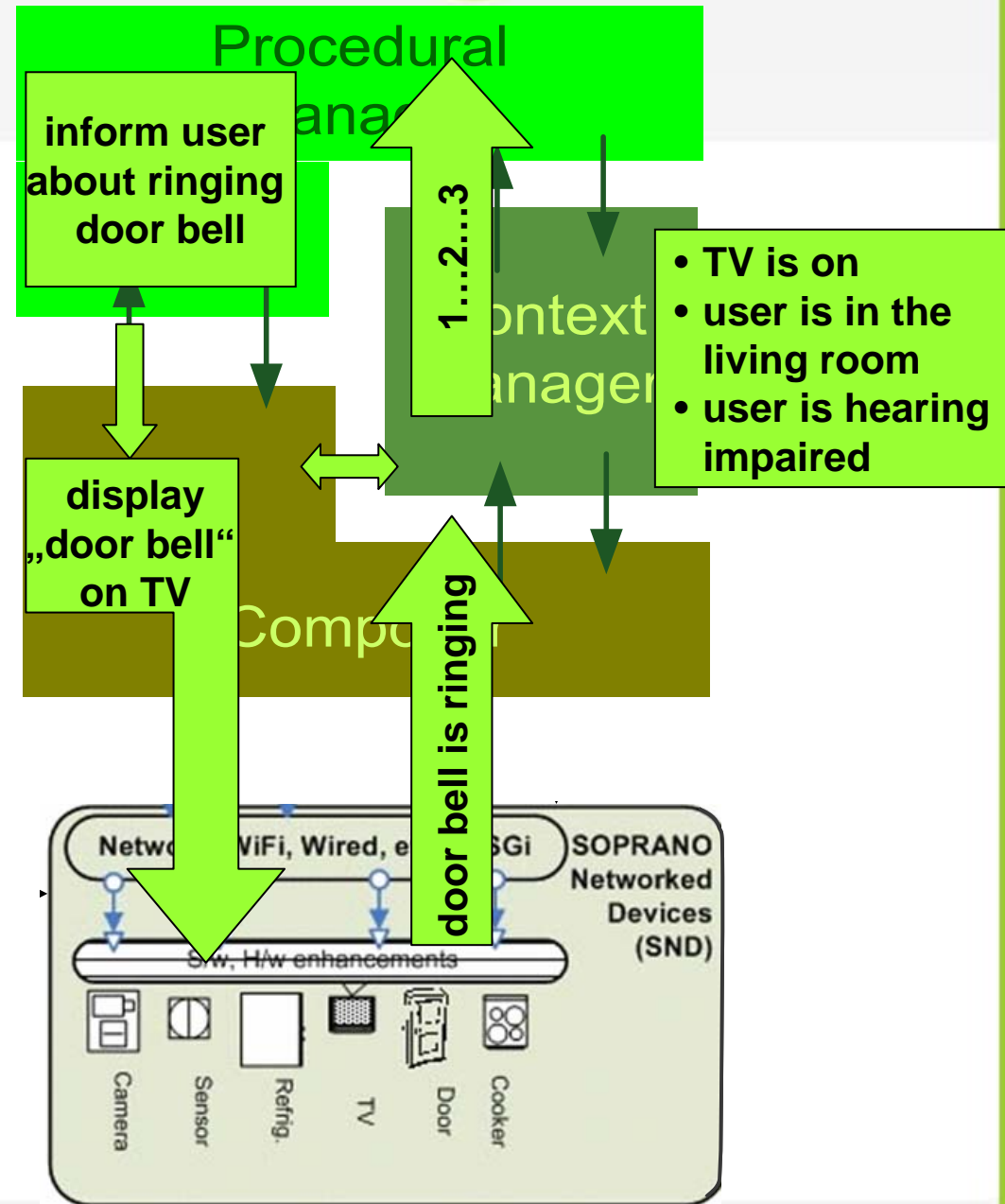
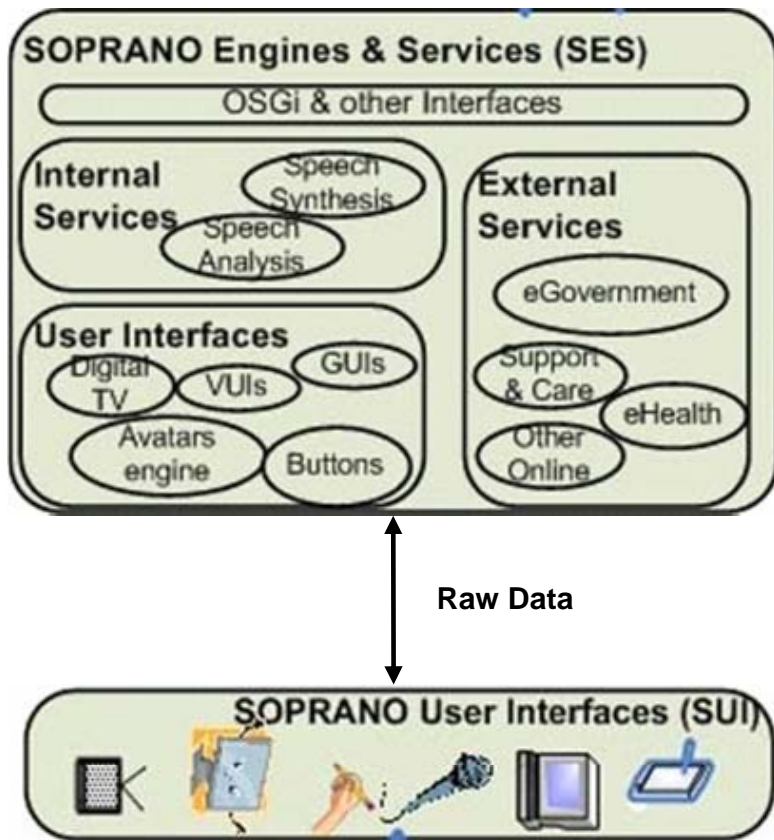
Functions of sensors:

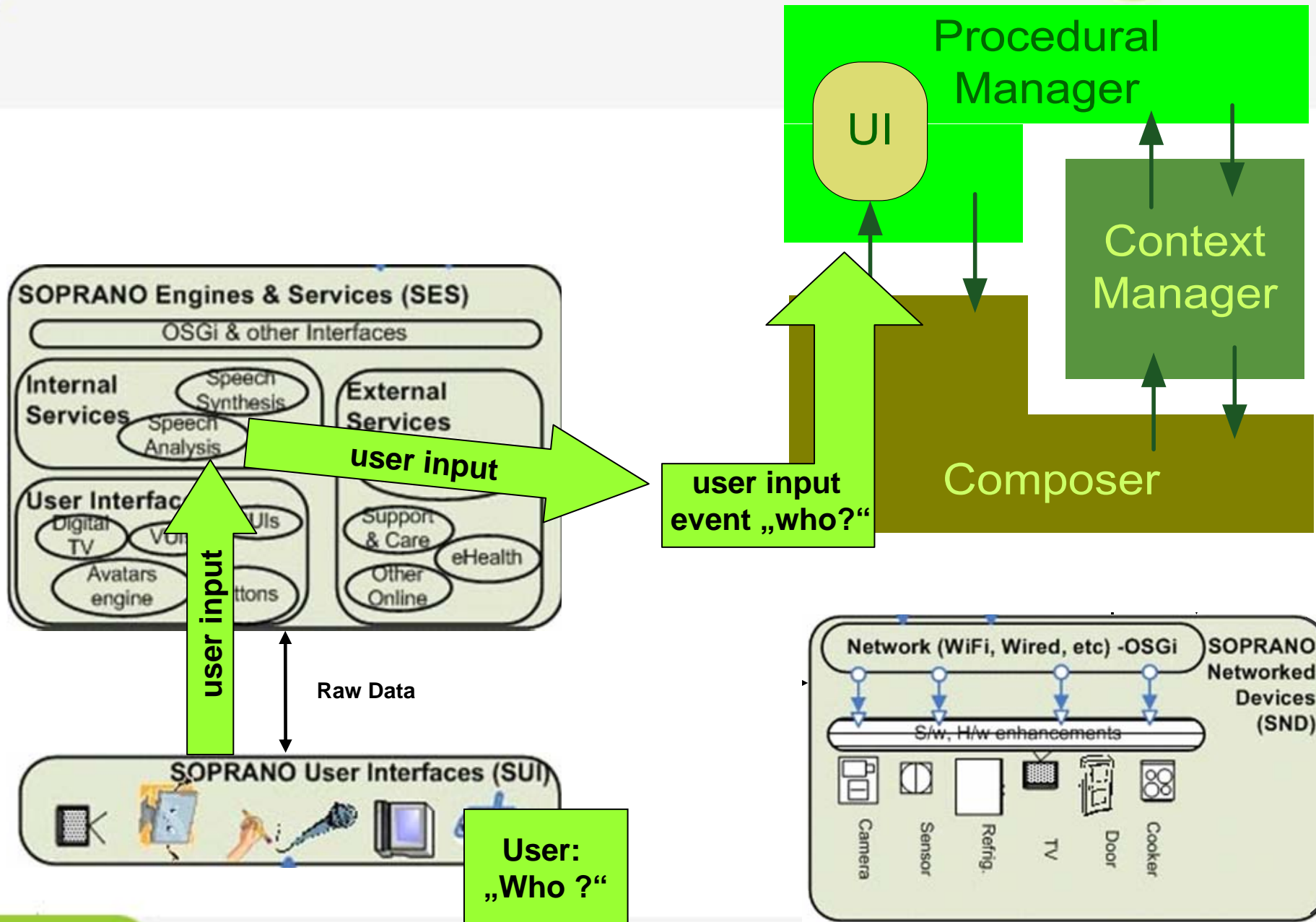
- Identify
- Positioning
- Sensing lifesigns
- **Communicate**

between sensors and gateway/SOPRANO engine

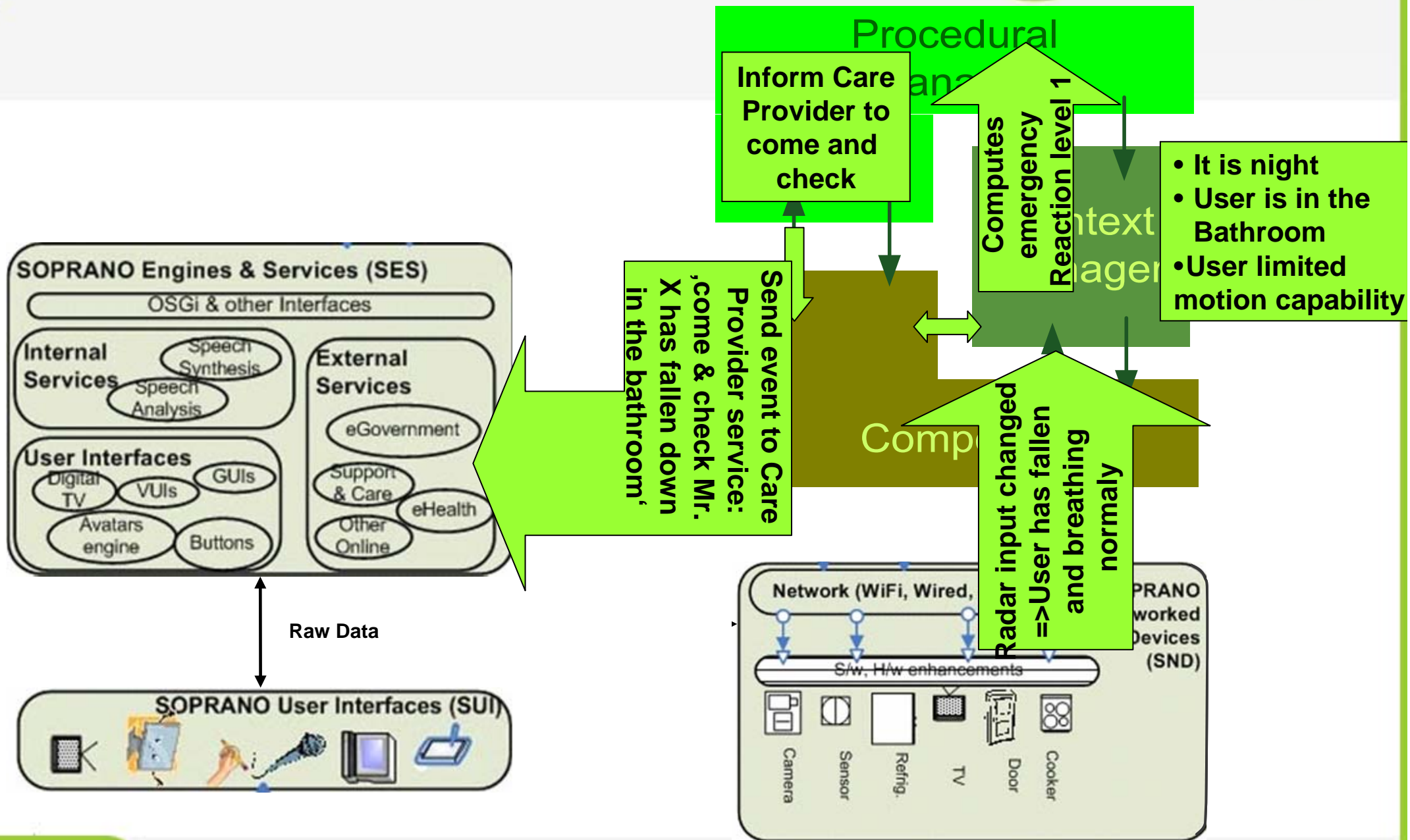
- Via ethernet, power cables
- Via wireless connections
- Via sensor network (Bluetooth, ZigBee, WLAN)
- Use standardized protocols, adapt slightly if necessary

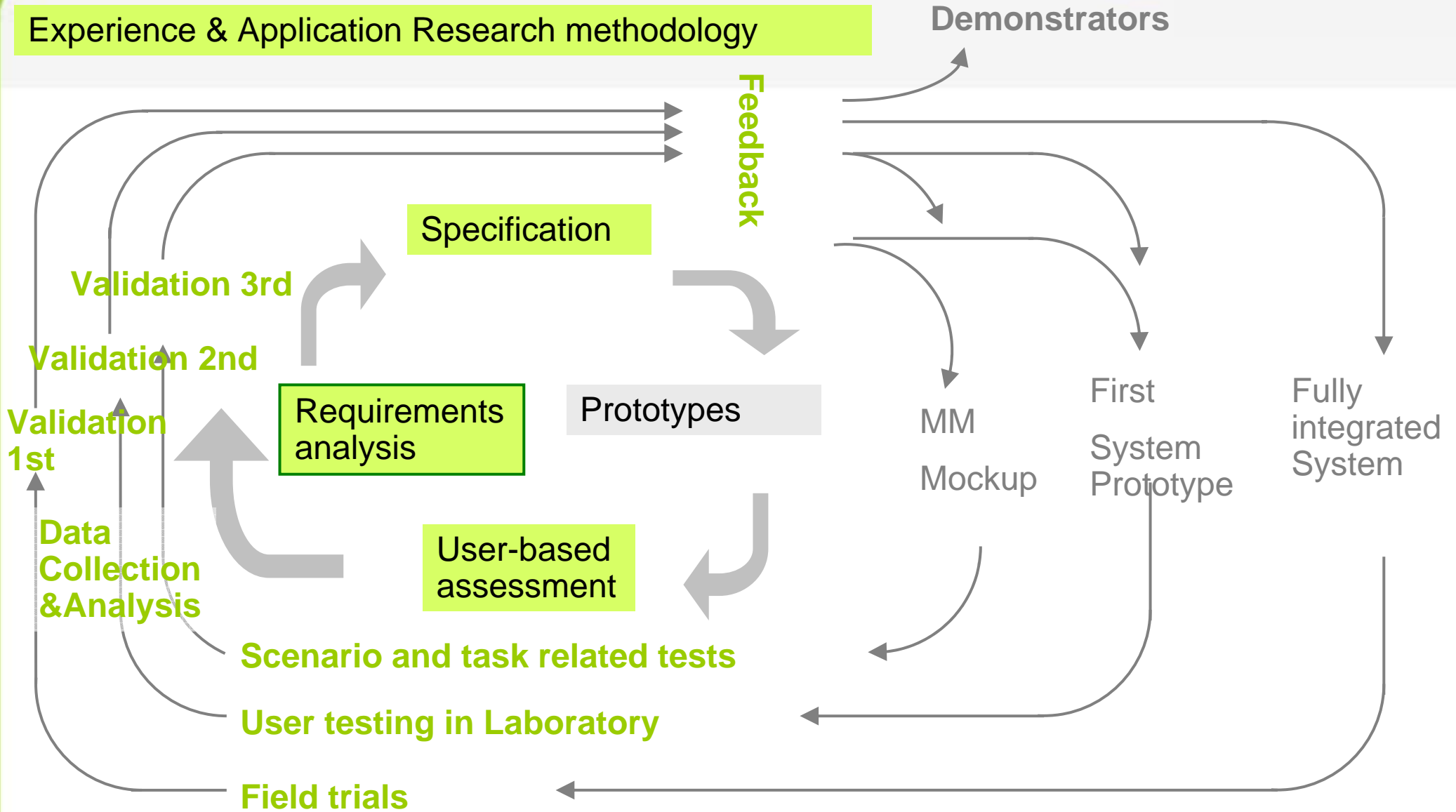






Safer & Responsive Home





Full Scale

- Fully functionality
- Laboratory environments
- Munich (DE), Eindhoven (NL), San-Sebastian (ES)
- 100 users testing in each setting

Large scale

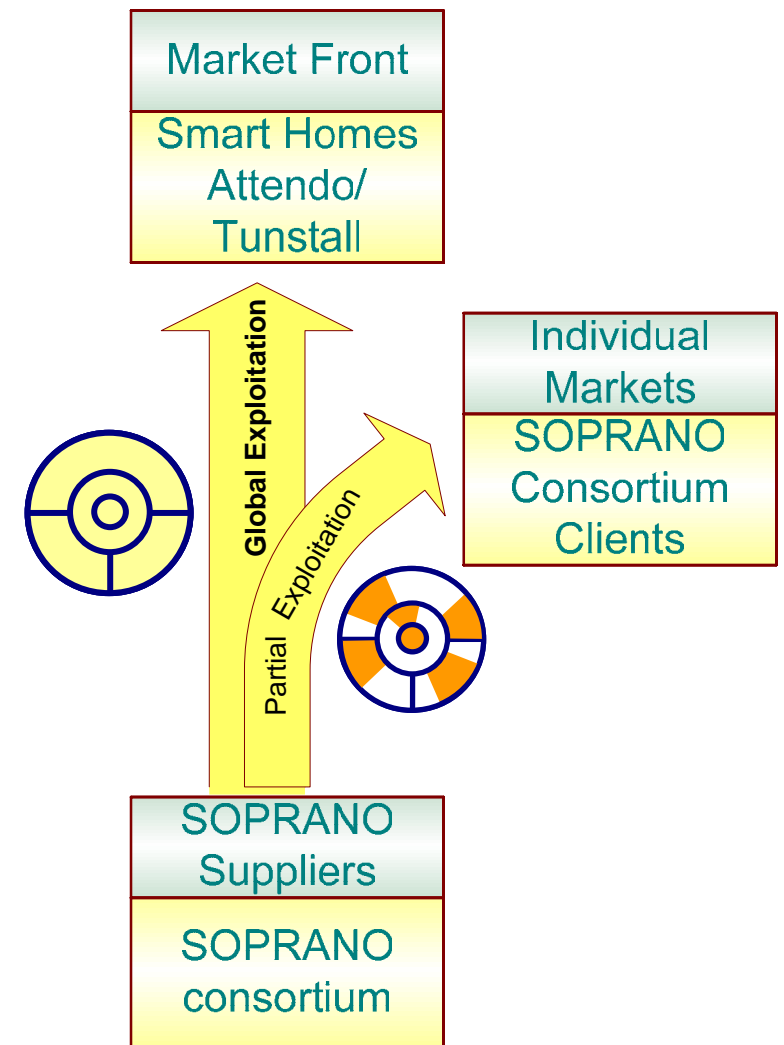
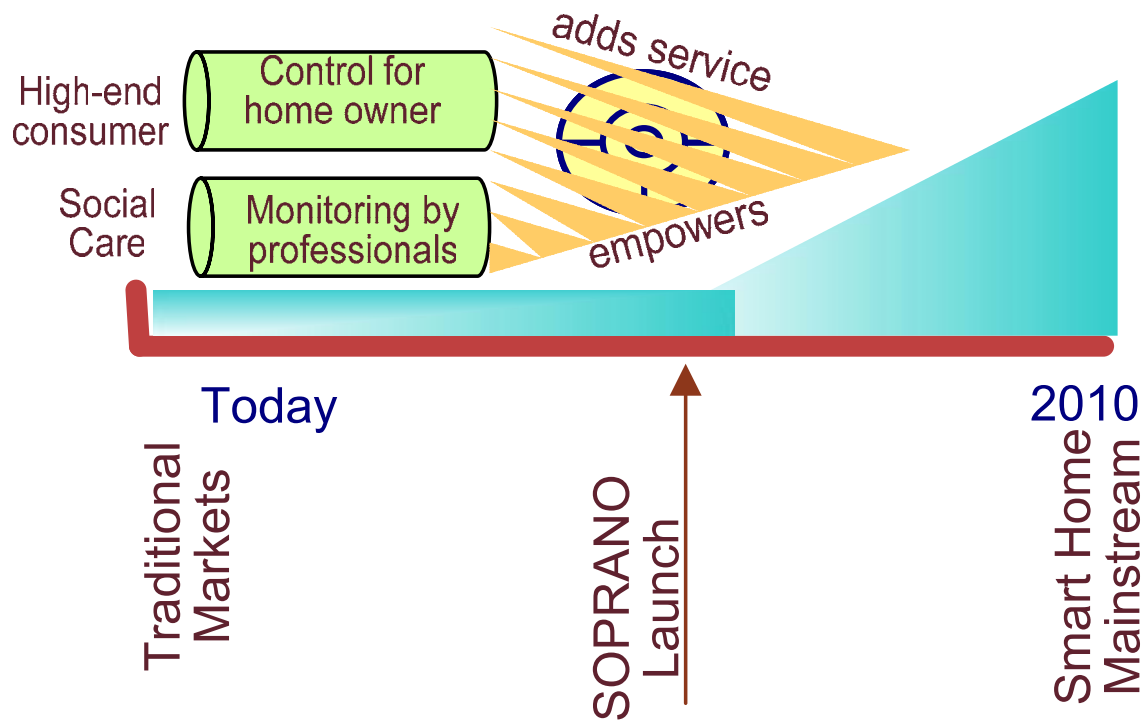
- Limited functionality
- Users own Home Environment
- UK, NL, ES
- 100 homes in each country

Aligned with **ethical** standards and according to **E&AR**
SOPRANO defined methodology for interacting with the elderly

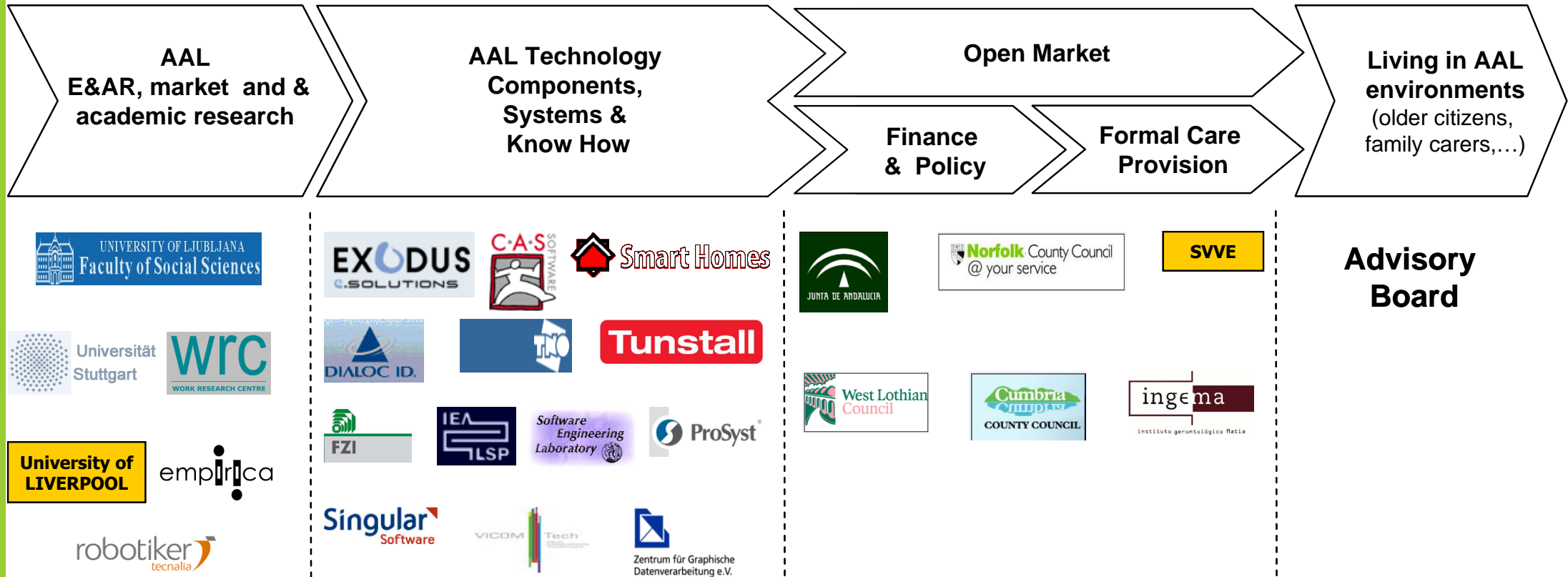
- **Societal Problems due to Europe's ageing populations**
- Innovative ICT-based support for self-support and independent living in home
- Access to ICT based services by older citizens

- **European Competitiveness by developing know-how for:**
- delivering usable ICT-based services to older people in need of some assistance in living
- smart service-oriented living environments to consumers across the globe

Business Models



SOPRANO stakeholders & potential value chain



Funded by EC, FP6

Contact us:



**Anastasia Garbi,
angarbi@exodus.gr**

