itACiH findings and agenda

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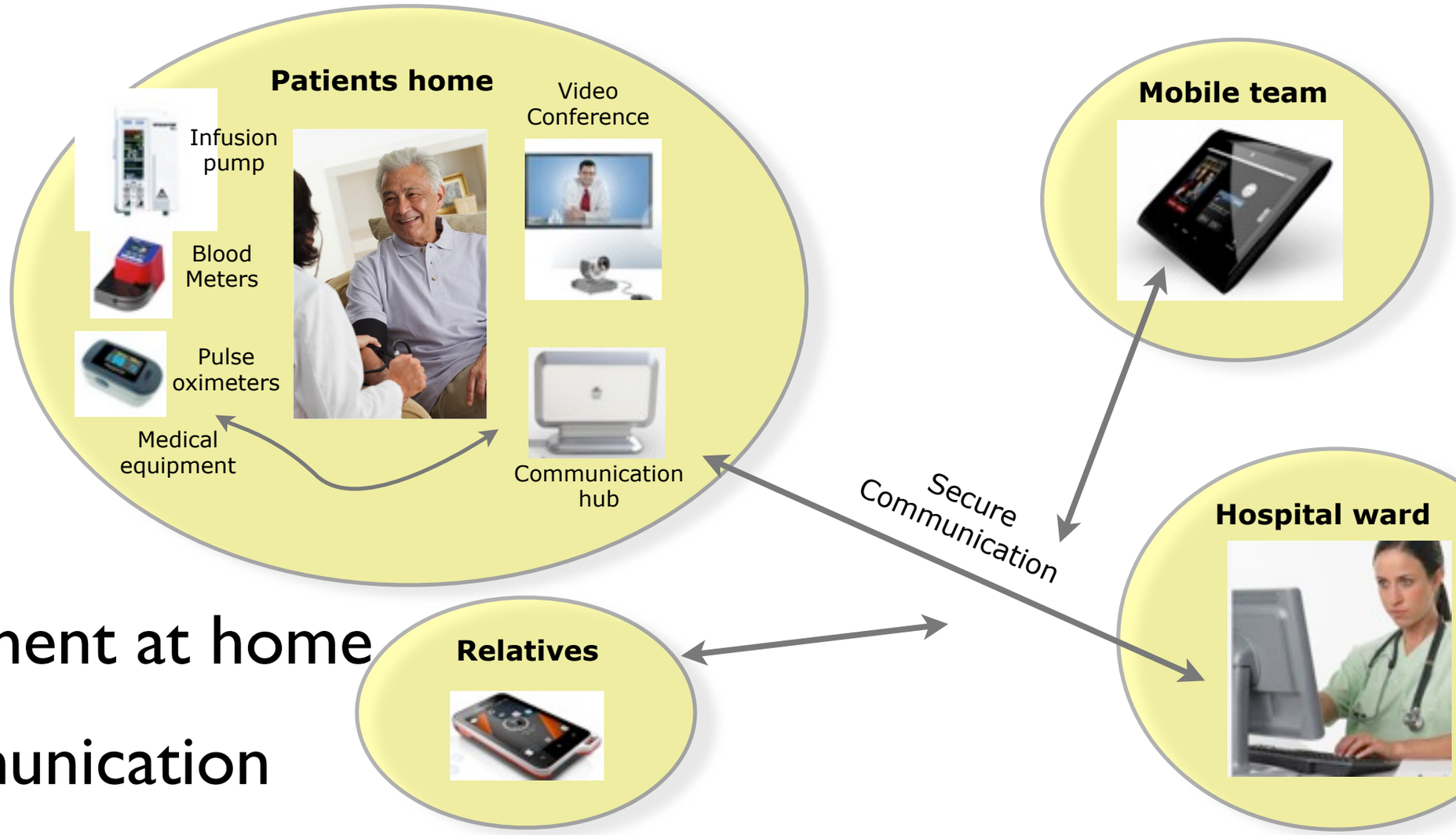
it-support for
Advanced Care in the Home

- UDI-project financed by VINNOVA, 2 years, extension
- LU + RS/SUS + 6 companies
- Support for advanced care at home
  - focus on palliative care of patients with cancer
  - enable more patients to be able to stay home longer

- Increasing form of care, fewer beds at hospitals
  - many more diagnosis
  - important to make this a viable
  - for the patients, to feel safe a home
  - for the hospital/communities - efficient

Home care - setup



- Equipment at home
- Communication
  - Patient - Ward - Mobile Nurse- Community Nurses
- Support for the home care process

at Home - Internet of Things !

- Equipment that needs to be integrated
  - From different vendors (med tech in this case)
  - Sporting a variety of protocols
  - Connected over a variety of networks/cable etc
- Vendors propose solutions:
  - Device → Vendor Server → Access over Web
- But: One solution for each device (all different)
  - How many different systems can you take?
  - How many SIM-cards ?

Infusion pump

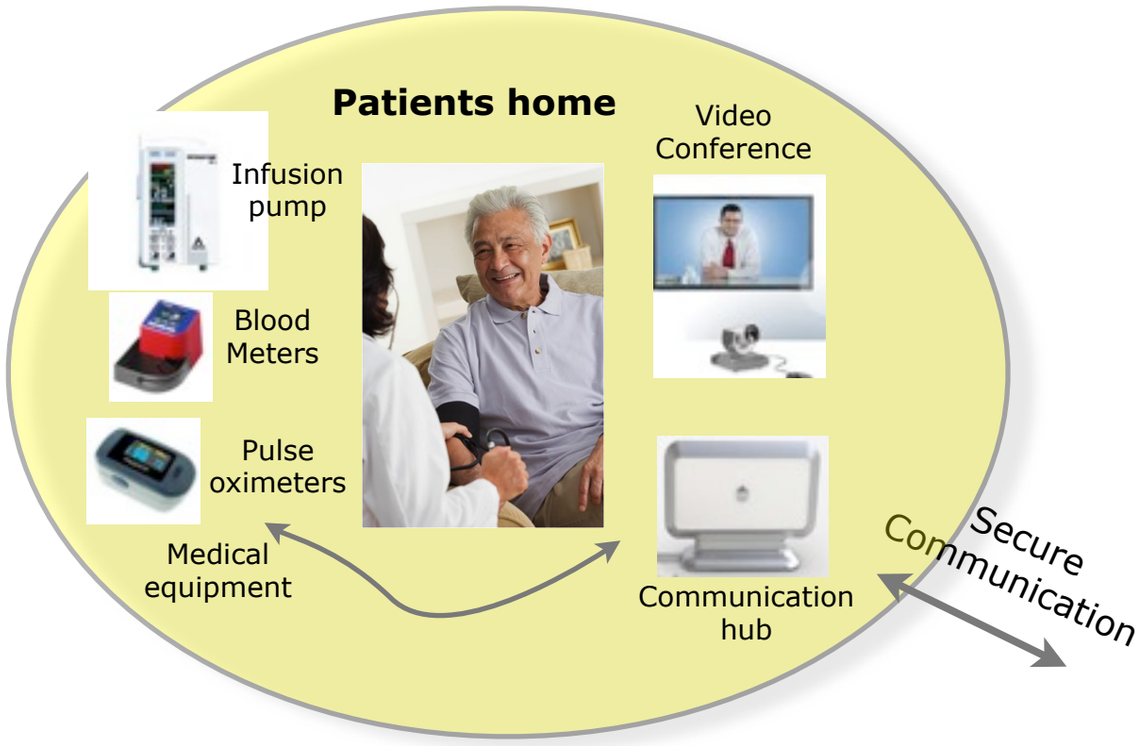
Blood Meters

Pulse oximeters

- Puls
- Blood pressure
- Weight
- Temperature

Integrated solution in the Home

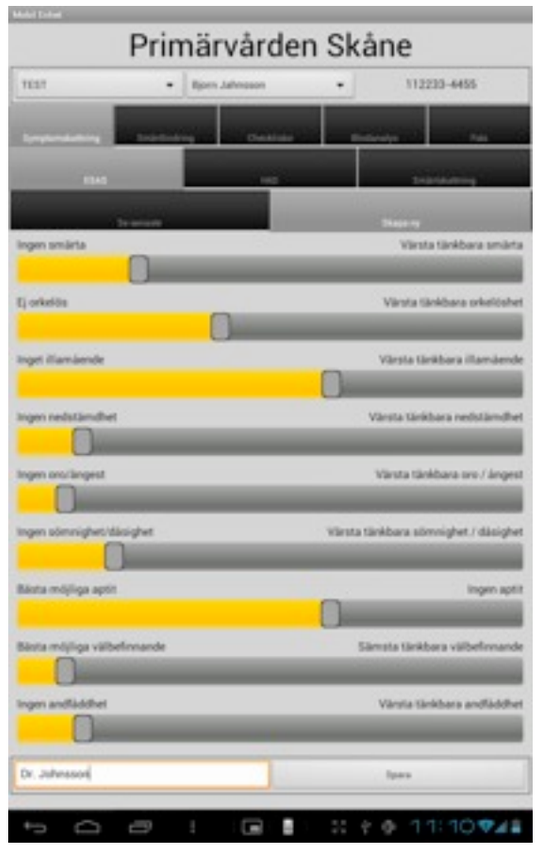
- Hub for communication uplink
  - can use different networks
- Devices connected to the Hub
  - discovery for simple configuration
  - downloadable software for control
- Autonomous
  - handle communication failures
  - buffering information, synching when back up.
- Typical IoT situation, ”blend into the walls”, changes.



Communication
Patient - Doctor - Nurse

- Existing systems:
  - Health systems
  - Phone
  - SMS
  - eMail
  - Pictures
  - Video
- All different systems:
  - Manage addresses
  - Security
  - Mobile situation

- Supporting the nurse
  - Integrated solution
  - Single way to access info



At the hospital

- Complex information situation
  - Too many web-based hospital systems already.
  - Equipment at patients homes
  - Nurses, planning, reporting, ...
  - Patients, evaluation, communication
  - Community services
- **Integrated support system for the Home care situation!**
  - Old systems and New functions

- EHR - Melior
- Patients - PASIS
- X-ray - DICOM
- Medicin - APODOS
- Planing - MobilKlinik
- Work - TimeCare
- .....

itACiH - Integration in **Open platform**

Other systems

Specialized

Devices

Server DB

GUI

Mobil Unit

Home Unit

Firewall

Clinic

General

Controlled access to other system

Communication structure

Palcom - middleware for communication

How do you develop such a system? Specification - Build - Done ? -- not really

- New system changes how people (can) work
  - Not even professionals know how they work - much less how they want to work.
  - Requirements change by the day
  - New ideas are constantly popping up
- We work directly with the nurses/doctors
  - Agile: functions start simple, are then improved
  - Incremental: parts developed one at the time
  - Deployment: in use by professional users from day one.
- Need a flexible framework to limit engineering

Conclusions

- This is Cloud!
  - Servers, some new, some old in the background
- This is Mobile Cloud!
  - Mobile equipment, on-line, both providers and consumers of info
- This is MIST - Mobile Internet Systems of Things!
  - Integration close to the ground, autonomous operation