



EXPERIENCES FROM FINLAND : DIGITALIZATION IN FINNISH HOSPITALS - CASE OULU UNIVERSITY HOSPITAL + NATIONAL VIEWPOINTS

Veijo Romppainen, CIO
Oulu University Hospital, Finland

CONTENT

Short brief about Oulu University Hospital
OYS future hospital

Esko EMR product family

Integration layer – primary care and social care: Kanta + some
digital services

Final notes - "wishes to Santa Claus" ;)



SHORT BRIEF ABOUT OULU UNIVERSITY HOSPITAL

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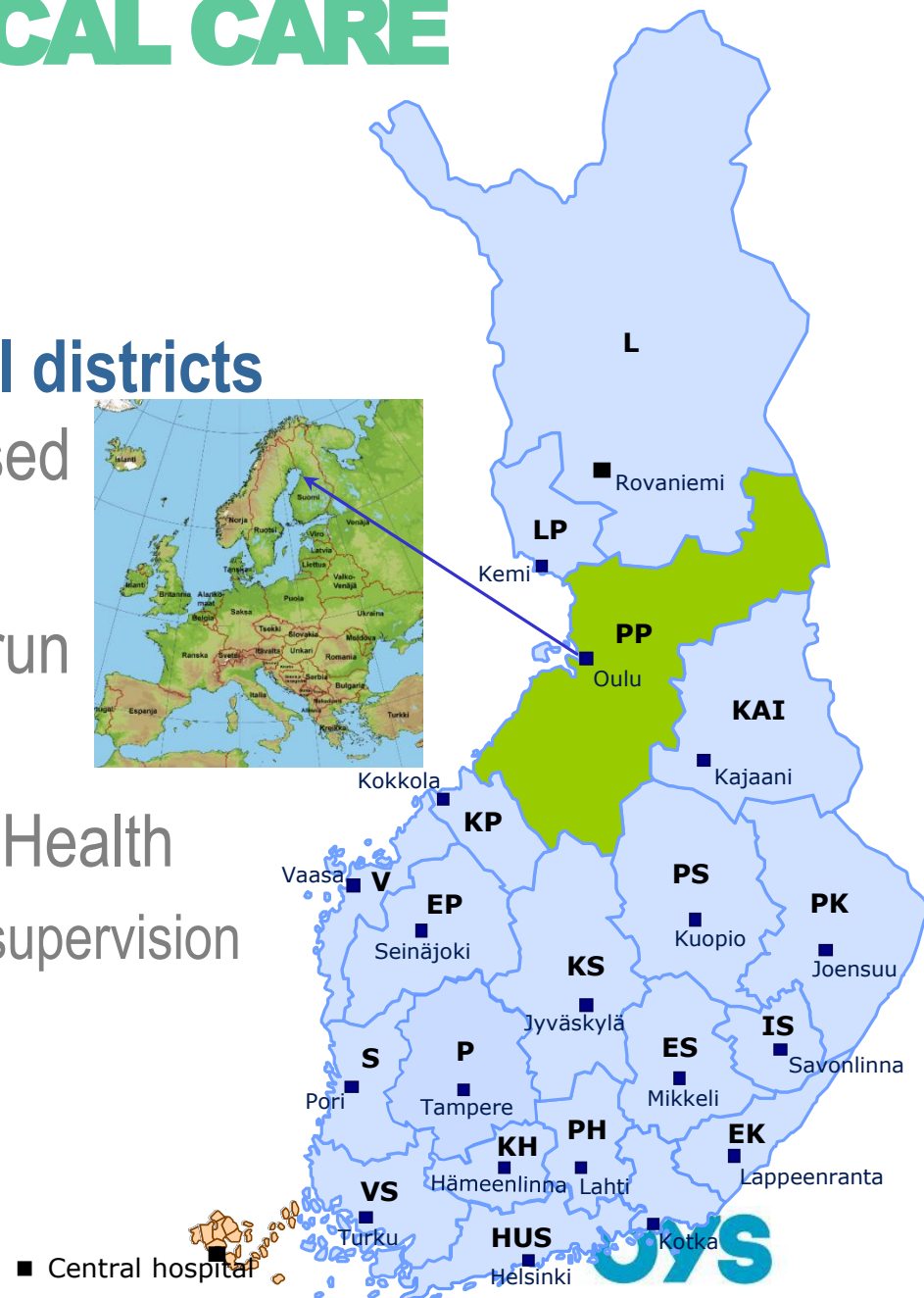
SPECIALISED MEDICAL CARE IN FINLAND

Finland is divided into 20 **hospital districts**
for the organisation of specialised
medical care

A **hospital district** can own and run
several hospitals

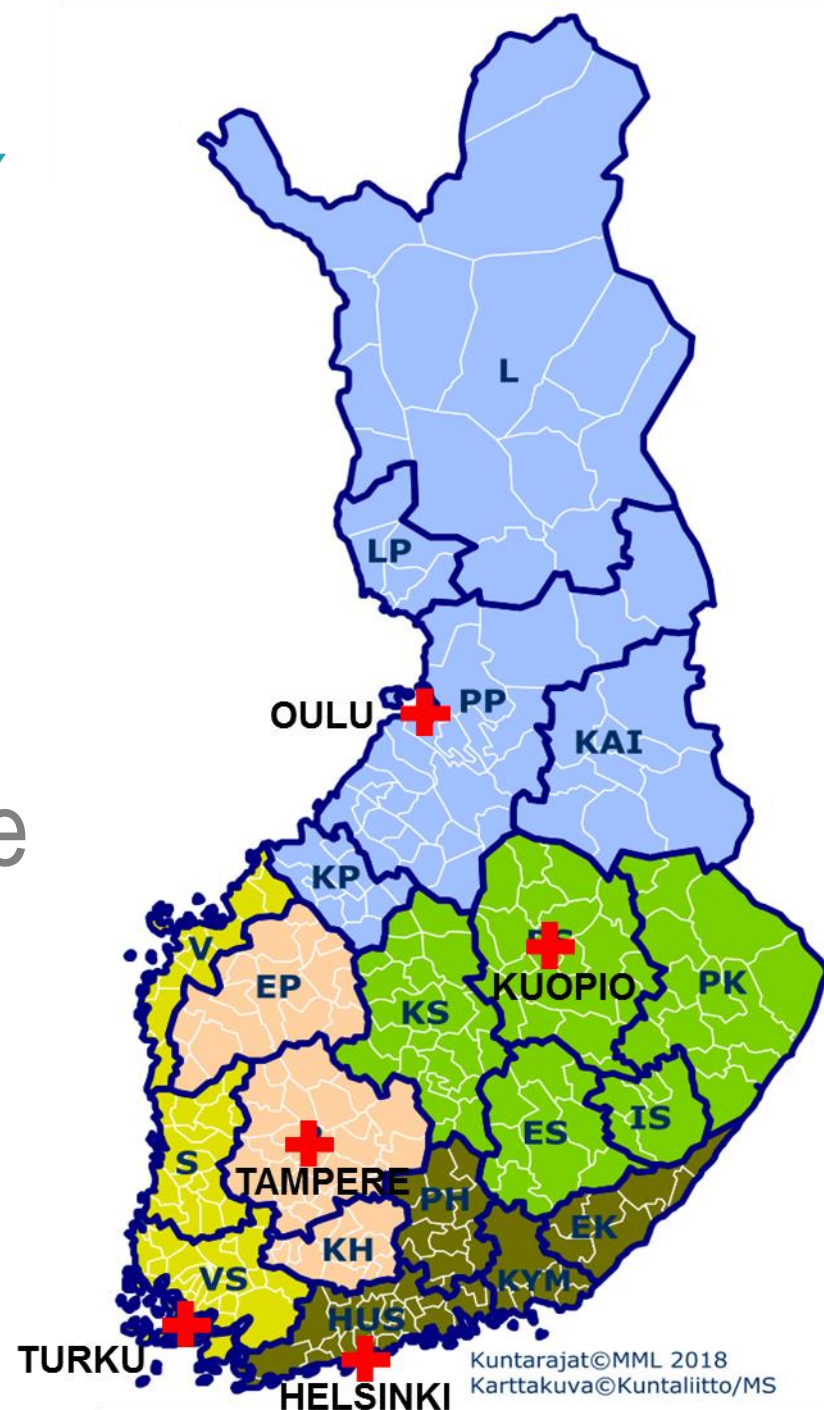
The Ministry of Social Affairs and Health

- general planning, direction and supervision
of specialised medical care



5 UNIVERSITY HOSPITALS

In Finland most advanced and highly specialised medical care is provided by five university hospitals

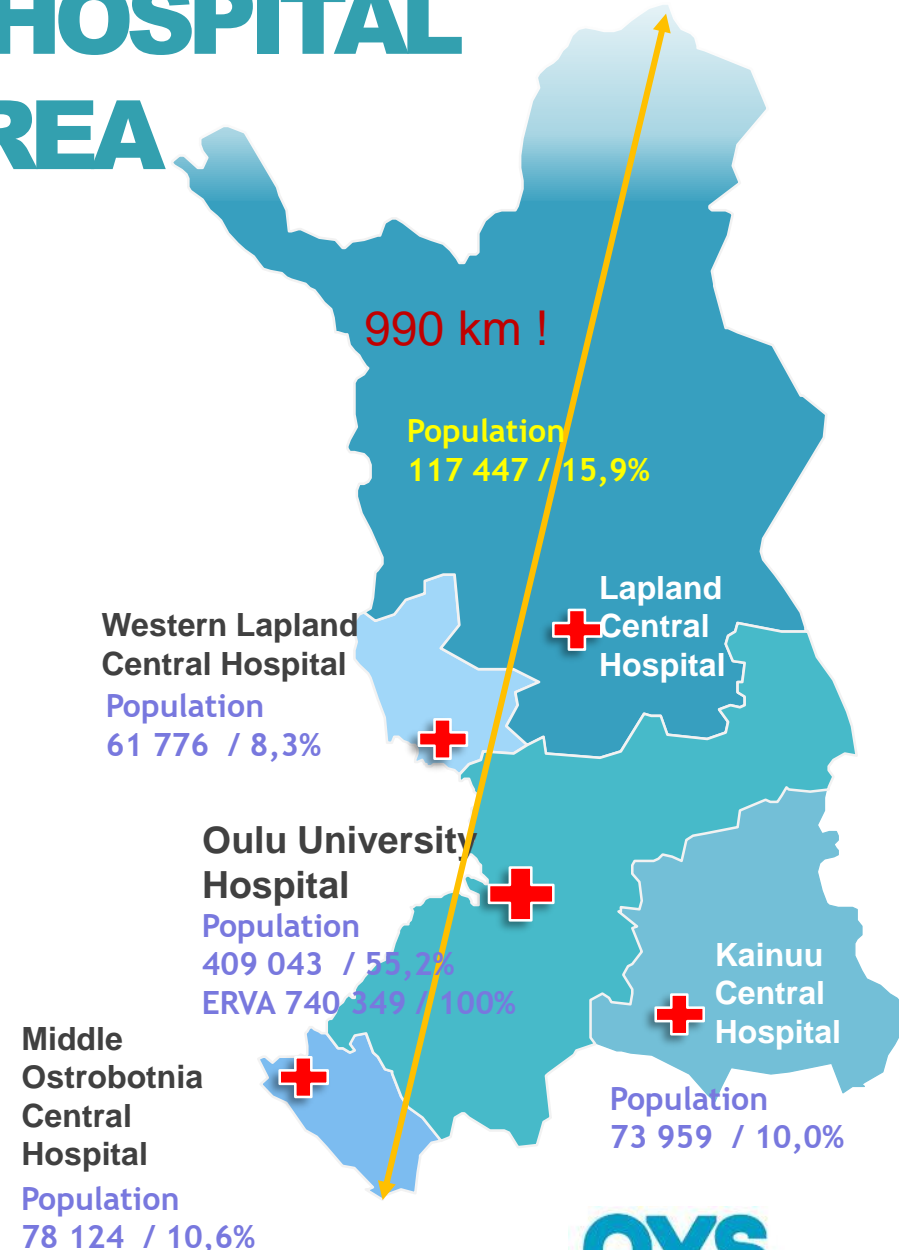


OULU UNIVERSITY HOSPITAL RESPONSIBILITY AREA OYS – ERVA 2018

Over **50%** of Finland and
740 000 inhabitants, **4 inh. / km²**

Oulu University Hospital offers
advanced specialised care for

- Cardiac surgery
- Neurosurgery
- Radiation therapy
- Demanding intensive care
- Neonatal intensive care (NICU)
for very preterm (< 32 weeks)



OYS

Northern Ostrobothnia Hospital District 2018

- 29 member municipalities
- 409 000 inhabitants (2017)
- 11 inh. / km²
- City of Oulu 202 000 inhab.
- Oulu area 240 000 inhab.
- Hailuoto 1 000 inhab.
- 36 600 km²



FUTURE HOSPITAL

The Smartest Hospital in the World

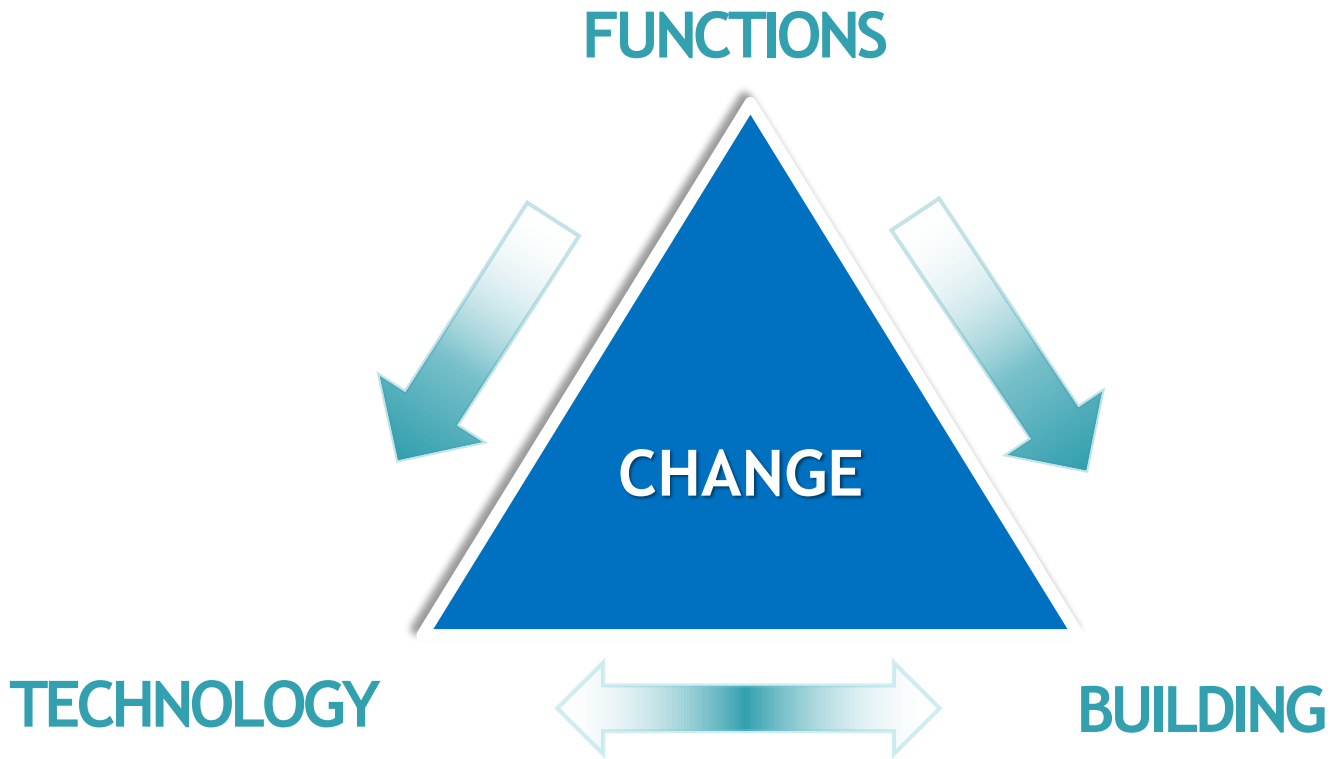


SMARTEST HOSPITAL OF THE WORLD

What does the smartest hospital
of the world mean?

How the goal can be reached?

SMART HOSPITAL VISION

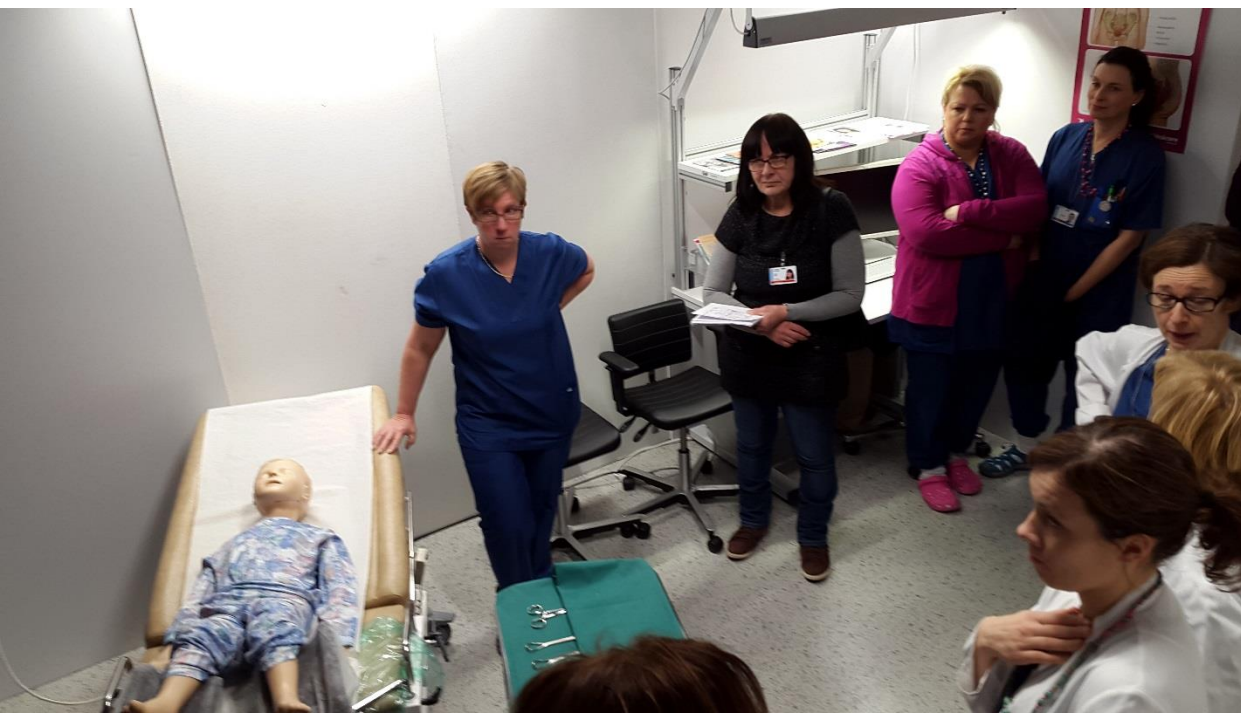


PRINCIPLES FOR HOSPITAL DESIGN (2012)



Co-creation is a dynamic process

Doctors and nurses in a
virtual 3-D cave



Engagement of professionals

Mock-up rooms in OYS
TestLab

Focus on patients and families

Children and their parents in 3-D
cave, participating in a designing
of rooms and processes



SMART HOSPITAL CONCEPT

What is needed?

- Attitude - culture of experiment
- Dynamic process, continuous developing
- Resources, know-how
- Determination, comprehensive planning
- Considered investments for technology
- Open co-operation and co-creation
 - Staff, patients, relatives...
 - Professionals - technology, ICT
 - Companies, universities, other developers
 - International networks



ESKO EMR PRODUCT FAMILY

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TOPICS

Esko EMR (Electronic Medical Record) in OYS

History, architecture

Research & Development

Focus areas

Usability

3rd party evaluations

ESKO EMR IN OYS

Developed in-house in Oulu University Hospital

We have our own R&D team

First Esko Deployments in 1996 in Oulu (Web based Esko 1998)

Other hospitals using Esko

- Vaasa, Lapland, Western Lapland

Totally about 10 000 end users

Web based, ESKO mobile app also available (Hoitu)

ESKO HISTORY

First pilots of EPR 1989 – 1996

ESKO project 1995

ESKO -implementation 1996 – 1998

Web-ESKO 1998

Referral – Discharge letters 1998

Regional Esko 1999

ESKO psychiatry 2000

Digital signature (PKI) 2006

Other hospital districts: Vaasa 2000, Lapland 2001, Länsi-Pohja 2002

Risks and diagnoses information 2011

Electronic dictation, speech recognition 2012

National ePrescription 2013

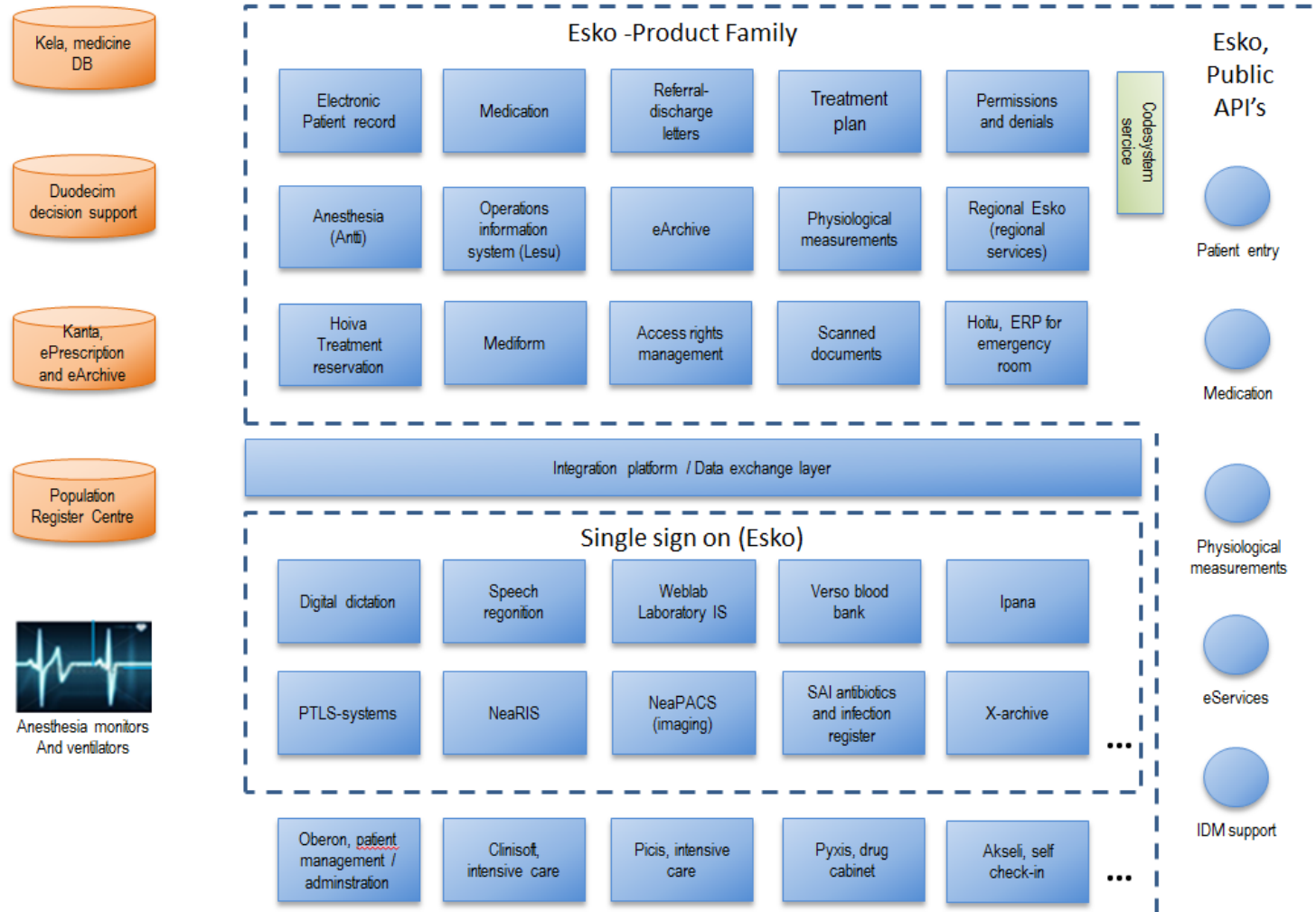
Anesthesia 2013

Operation Information system (Lesu) 02/2015

Cytostatic treatment, expansion for medication module 11/2015

Hoitu, solution for Emergency Room and Wards 03/2016,incl. Mobile support

ARCHITECTURE



*) PTLS -> Patient ja diseasebased quality and follow-up information systems

ESKO R&D

We are using Agile methods in our SW R&D

Clinical experts are part of core development team

- They participate to all development planning and review meetings.
- Clinical experts also have own networks of other experts.
- Typical core project team: 3 IT persons, 1 part time doctor and 1 nurse, testers

Enables quick adaptation for new requirements, even in the late phase of the project through active prioritization of the requirements with our clinical experts.

”Correct focus, prioritized”...

FOCUS AREAS

EMR Development focusing in the following areas (In the big picture):

- Improving Process support
- Mobile use (phablets etc.)
- Improving support for decision making
- Regional perspectives taken into account
- Usability
- Closed loop medication administration
- Enabling services for the patients
- API support for 3rd party vendors

USABILITY

Usability taken into account in the development process in several phases.

Clinical experts are part of our development team already from the start of the project.

- They participate to all development planning and review meetings. Clinical experts also has on own networks of other experts.

Usability tests organized for all new modules.

- This is great way to find possible usability problems already in the development phase (in this phase fixing problems are both easier and cheaper than in production phase).

3RD PARTY EVALUATIONS

HIMMS Emram evaluation

- Implementation between 10/2014 – 03/2014.
- Evaluation took into account both work processes and information systems.
- Oulu University hospital scored 5,4660 (evaluation scale from stage 0 to stage 7). Basically information systems could reach stage 6, but they were not used in the same way in all wards.

ESKO was scored the best EMR in Finland by Finnish physicians three times in a row.

- Finnish medical journal 2018
- Finnish medical journal 2014
- Finnish medical journal 2010



INTEGRATION LAYER - PRIMARY CARE AND SOCIAL CARE: KANTA + SOME DIGITAL SERVICES

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VIEWPOINTS

- National services - Kanta
- Citizen and hospital – Digital services

WHAT ARE THE KANTA SERVICES?

Kanta provides nationwide digital services for the social welfare and healthcare sector.

These services benefit the citizens as well as social welfare and healthcare service providers.

You can access the Kanta services wherever you live in Finland.



WHAT ARE THE KANTA SERVICES?

The users of the Kanta services include citizens, pharmacies, healthcare services and social welfare services.

Service providers in both public and private health care are using the Kanta services. EMR / client systems have been integrated with Kanta Services.

WHAT ARE THE KANTA SERVICES?

Basic Kanta services have been deployed in stages since 2010. Since early 2017, all prescriptions have been issued electronically in the Kanta service.

Social welfare and healthcare service providers join as a client of the Kanta services in order to access the services and to be able to offer them to their own patients and clients.

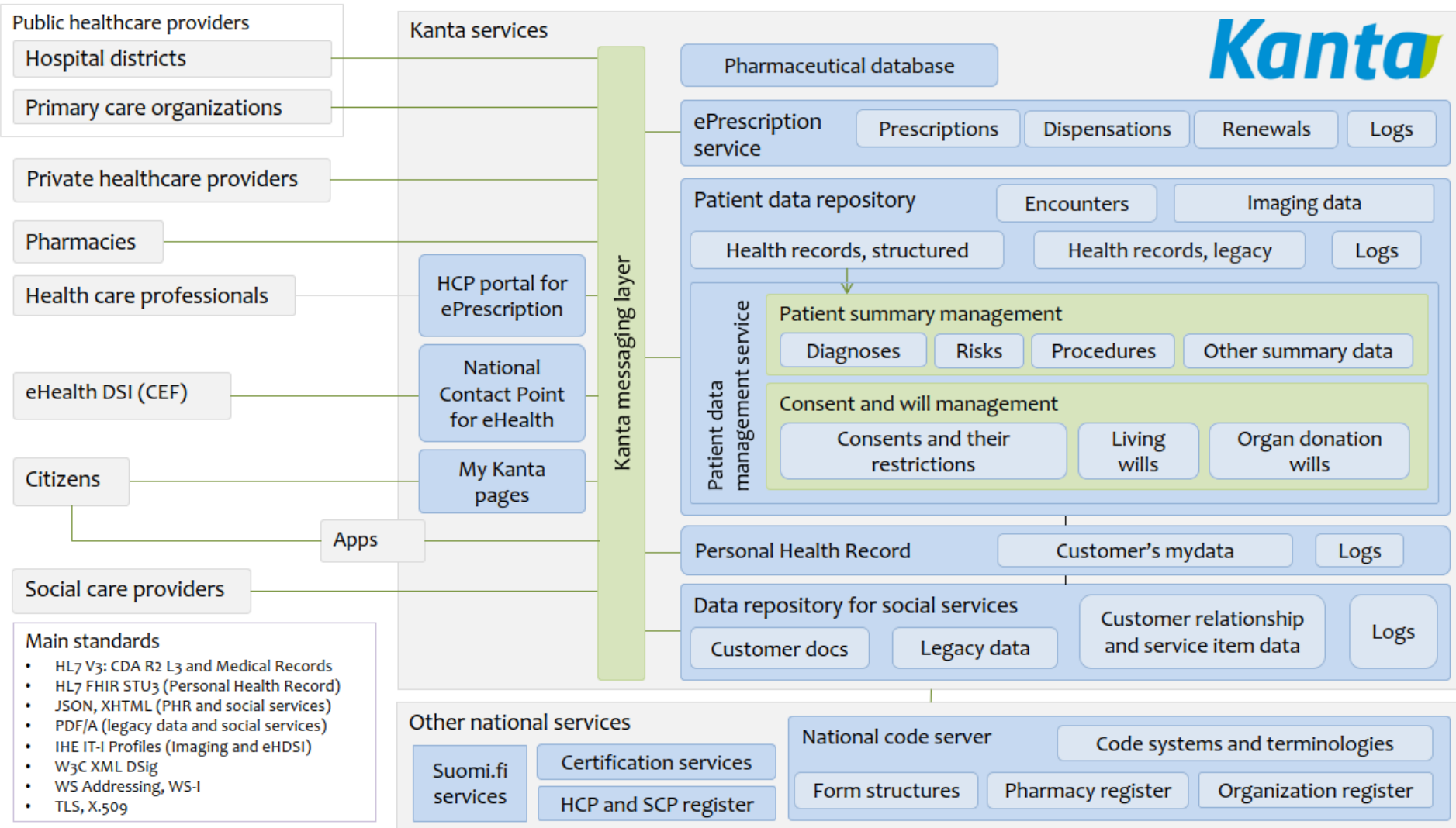
LEGISLATION

Act on Electronic Prescriptions

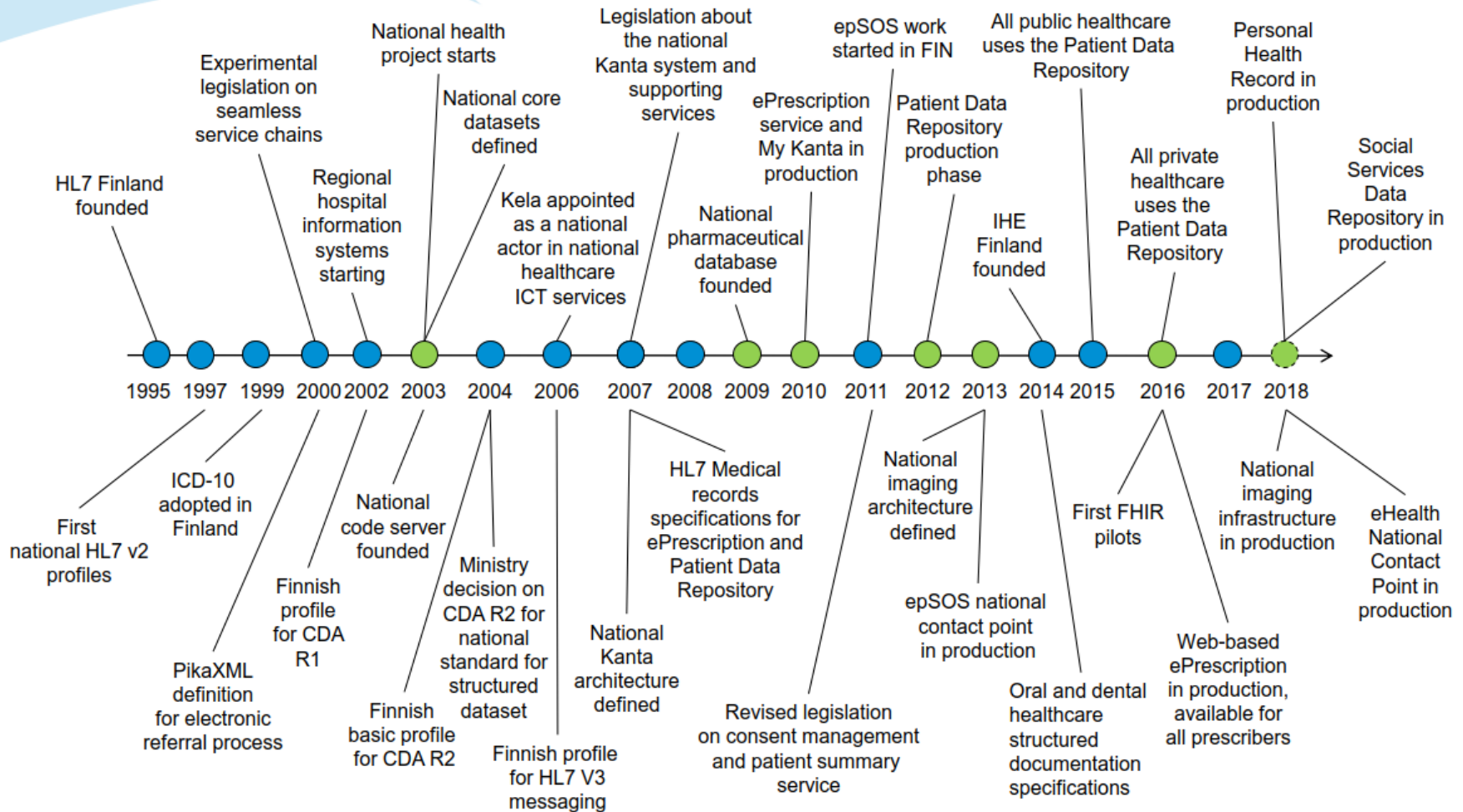
- All prescriptions must be issued electronically
- Telephone or paper prescriptions may be issued only in exceptional cases

Act on the Electronic Processing of Client Data in Social and Health Care Services

- Public healthcare organisations are obliged to enter patient records in a nationally centralised archive
- Deployment of the centralised archive is mandatory for private healthcare organisations, if they have an electronic system for long-term storage of patient records



Timeline of Finnish Healthcare ICT Standardization for Interoperability



KANTA - CHALLENGES

- In practice, doctors and nurses struggle with Kanta-information
- Main reason is the lack of easy-to-use user interfaces to access the data in EHR systems
- A lot of data in old systems scattered around the country
- Information is not real-time => we need integration between core EHR systems also

VIRTUAL HOSPITAL 2.0

National digital service developed by all 5 university hospitals

Contains A&E + other digital care paths for several speciality areas

<https://www.terveyskyla.fi/>

OTHER DIGITAL SERVICES ARE FOR EXAMPLE...

Municipalities and hospital districts currently have their own digital services in use

Private healthcare providers have their own digital services

More development needed in this area

FINAL NOTES – WISHES TO SANTA ;-)

Kanta development continues, we also have other exiting development projects ongoing in Finland

- UNA and Apotti concentrate on EMR renewal
- Social welfare and healthcare renewal coming (?)
- IHAN project starting in OYS with Sitra

"ERP"-like planning tools required to hospitals and regions – patient in the centre

Digital services will enable more efficient processes

Thank you!

