

The digitalization of health and care - a challenge for enterprises?

***Framtiden inom mjukvaruutveckling
SWEDSOFT Linnéuniversitetet, Växjö***

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Why? Need, market and politics

- Age paradox
- Cost restrictions
- Time for empathy - e-trend?
- Individual independence and empowerment – m-trend
- Intensive technology and market drive



**→ High expectations on digitalization
in health and welfare**



Vision eHealth 2025

“Year 2025, Sverige will be best in the world to employ the opportunities of the digitalization and eHealth in order to facilitate for people to achieve a good and equal health and welfare, and to develop and strengthen their own resources for increased independence and participation in the societal life.”

“Best in Sweden?”



Devices for wellness vs medical purpose

- Certified?
- Clinically evaluated?
- Safe/trusted?
- Effects/outcome? Do they help?
- Value for money?



→ **Validation and research needed**

Apps for "second opinion" - how interact with healthcare?

Appar

Drugs

- Medihand

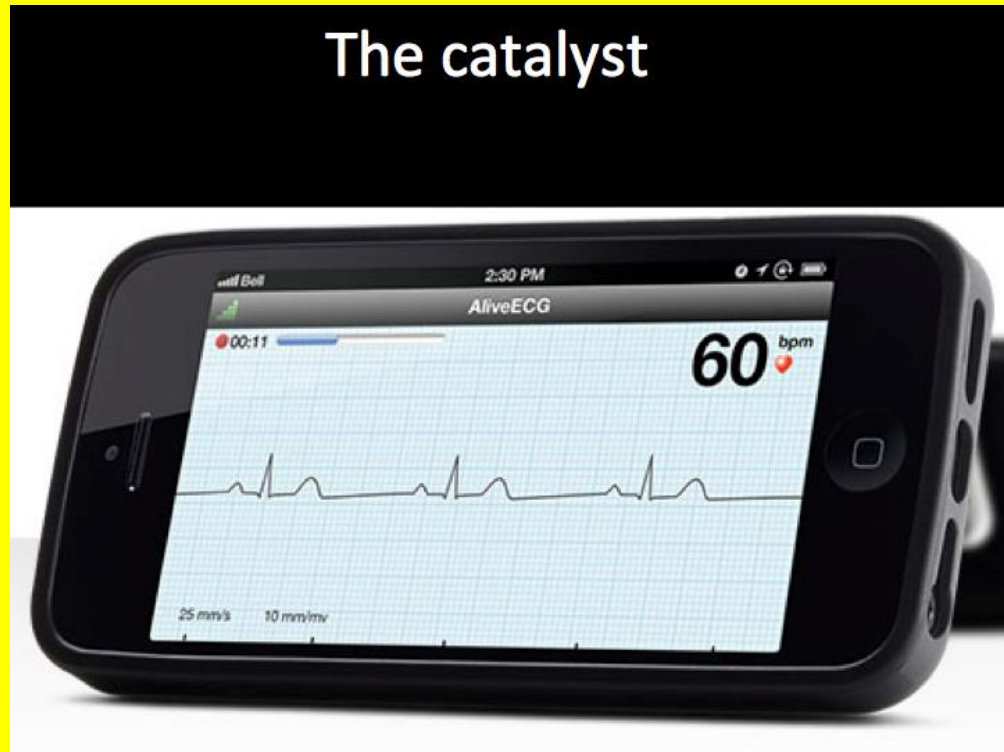
Trends

- Influenza

Self test

- Triage

The catalyst

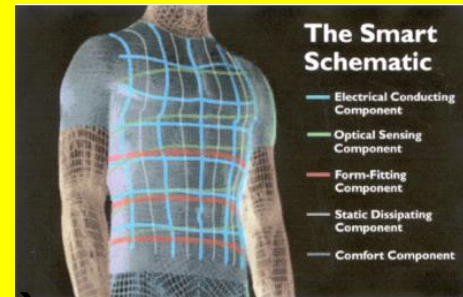


→ Challenge: How to interact with healthcare?

Multiple digital sources – create more value when combined

Automatically vs voluntarily transferred data – intentionally or non-intentionally

- internet sites (automatically)
- social media (voluntarily)
- position - smart phone (automatically)
- sensors (automatically)
- alarms (voluntarily)
- web templates (voluntarily)
- health records (automatically/voluntarily)



	2015	2015	2015	2015	2015	2015	2015	2015	2015
Glukosa	100	110	120	130	140	150	160	170	180
Hemoglobin	12	13	14	15	16	17	18	19	20
LDL	150	160	170	180	190	200	210	220	230
HDL	50	55	60	65	70	75	80	85	90
Trigliserida	150	160	170	180	190	200	210	220	230
Cholesterol Total	200	210	220	230	240	250	260	270	280
LDL/HDL Ratio	3.0	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7
LDL/HDL Ratio	3.0	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7
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LDL/HDL Ratio	3.0	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7

➔ **Sufficient digital literacy?**



Internet of things → Internet of (empowered) people



**Generates big data:
smart?**



**Unite physical
and digital world**



Balancing act: information overload vs smartness

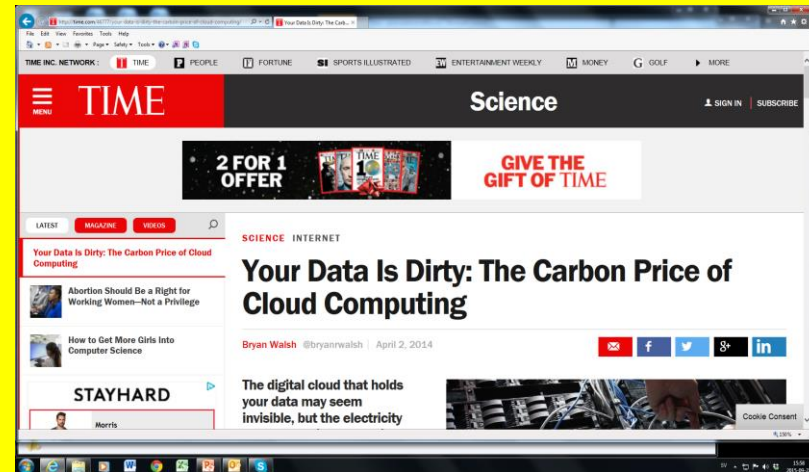
Cognitively limits

- for the patients
- for the profession (redundance, alert fatigue)

Societal limits

- costs
- environment

***Technology has no limits
- but people have!***



➔ Cost benefit analyses needed

Individual responsiveness to collected data

- Feedback
- Changed behaviour?
- Increased motivation?
- Individually adapted?

Computers are fast
but people are slow
- in the long run

Does it matter?
Crucial!

→ *Research needed*





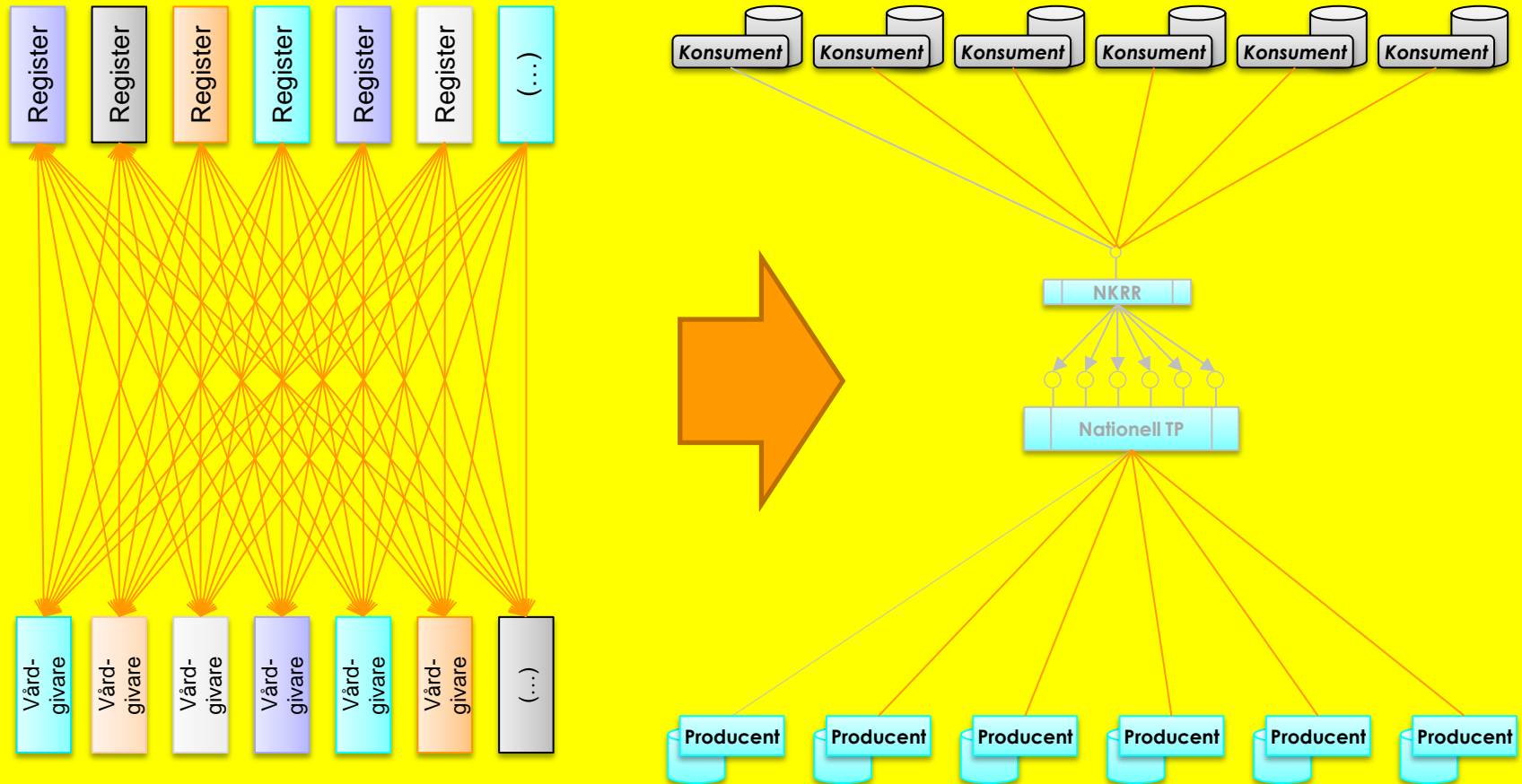
Clinical research needs patient generated data – for innovation

- RCT – randomized controlled study in a limited sample (expensive, difficult)
- Real world – epidemiological “big data” (not “all”)
- R-RCT (register RCT)
- Quality registers – enthusiasm!
- Involvement of patients!



→ Life science needs large and robust data to grow

National programme for data collection – NPDI



(From Åke Nilsson,
www.kvalitetsregister.se)

Challenges of exploitation patient generated data

- Structure and standardization
- Interoperability
- Integration - patient's own data with healthcare records (eg. Hälsa för mig)
- Adoption by elderly – and staff!
 - rewards or bonus?
- Legacy and Ethics
 - data privacy
 - de-anonymization
 - some groups excluded?



→ To be solved by collaboration and governance

eHealth Institute: Evaluate the intervention of digital support

Evaluation and follow-up

- MTO-perspective, holistic, users, research based

Education in eHealth

- Lectures
- Master programme for healthcare and industry

Cross disciplinary work

- Medicine, computer science, pharmacy, informatics, caring science

Collaboration

- Healthcare, municipalities, vendors, authorities (e.g. eHealth Agency, Medical Products Agency, Agency for Health and Social Welfare)

Dissemination (since 2007)

- Reports (>45), scientific publications (>45), theses (8)
- Meetings



Recommendations to software producers for healthcare

- Meet individuals´ needs
- Collaborate with healthcare
 - involve staff
 - involve IT-departments (automatize?)
 - connect apps with health care records
- Follow standards
- Follow regulations (MPA)
- Employ big data (when created!)
- Involve research
- Evaluate inventions!



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