



The Digital Transformation eHealth for clinical benefit

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Trends, possibilities and challenges in e-Health

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Swedish healthcare 2018: *Patient with symptom meets doctor*

Reactive

Inefficient

Episodic

Digitalisation 1.0

Our health care system is still based on the old 20th century model

1. Reactive: We only consult healthcare when we have fallen ill or had an accident!
2. Inefficient: Healthcare is calling patients with chronic diseases to routine visits that the patients and their doctors are not preparing in advance!
3. Episodic: Neither patients with with chronic diseases, nor healthy people monitor their health regularly, only when they are in pain.
4. Digitalisation in healthcare is still about doing the same things as always, but in digital formats. Such as having video meetings with the doctor or filling out questionnaires online.



We are so stressed! We don't have time for transformation!
Measure the leaders on digitala transformation
Create heroes, encourage failure

Chronical care: time imbalance

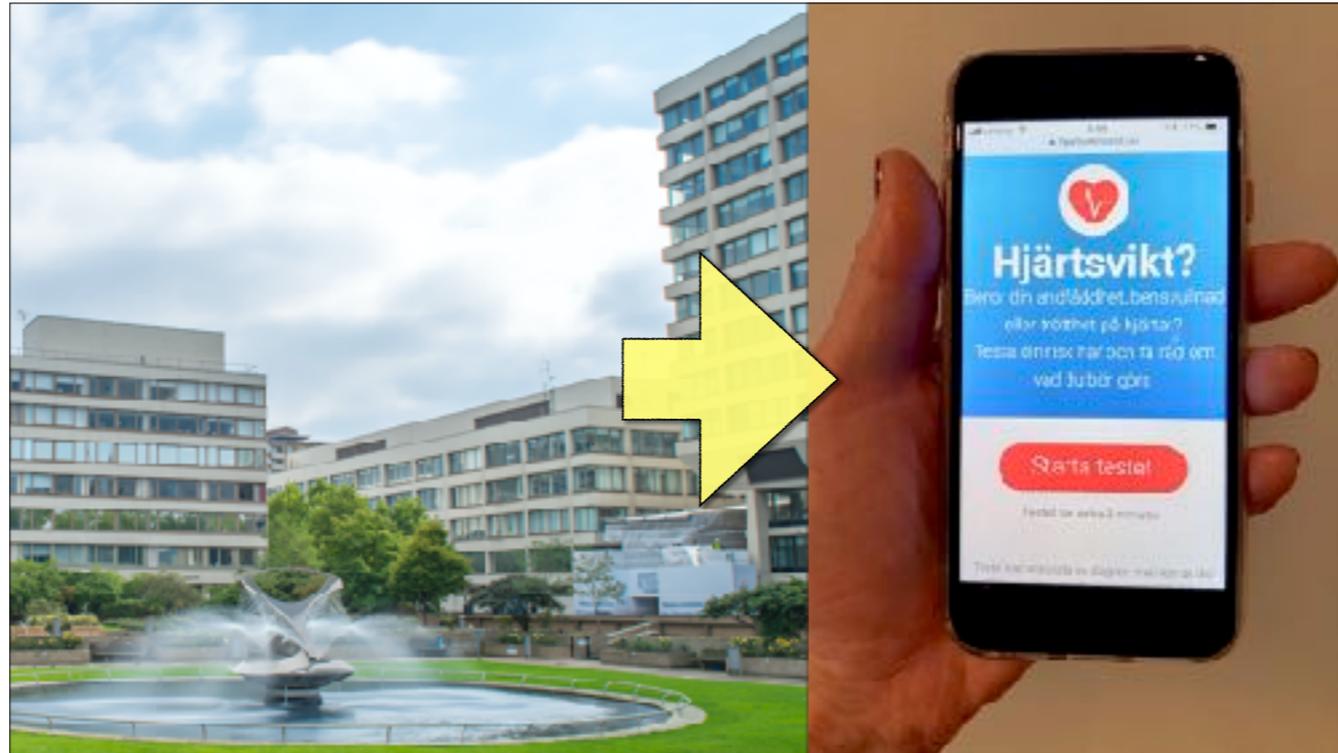
Specialist doctor: 1 h/year/patient



Patient: all my own time



Over 80% of the total healthcare budget is for for patients with chronic diseases!
There is lot of complaints about lack of time among healthcare staff.
A doctor has very little time per year for each patient, typically 2 half-hour visits.
But the patients have both time and motivation to be engaged daily in their health. They need is smart tools that support their self-care.



Trend 1

From hospitals and primary care clinics -> Where the patient is at the moment, via the smartphone.



Trend 2

>Treatment of symptoms -> Prevention of disease

Focus on life style related diseases!

eHealth

Main disruptions:

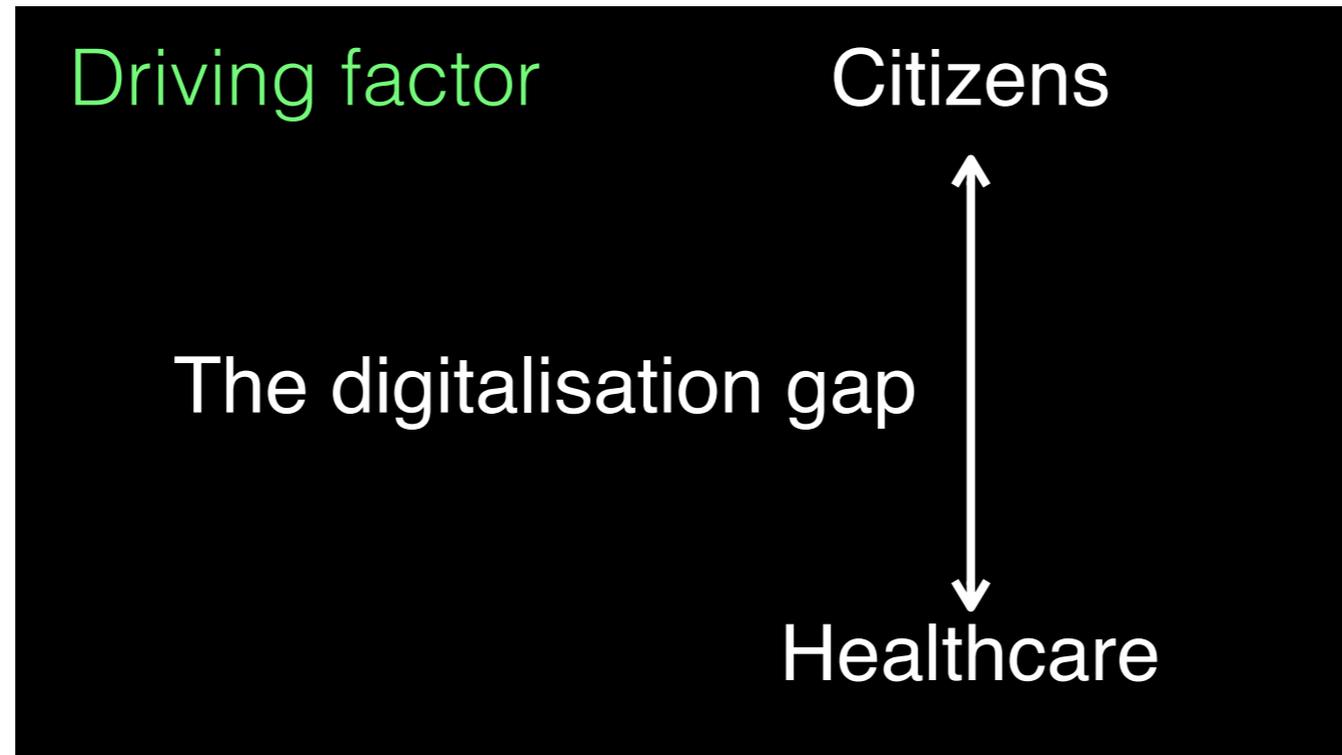
1. Patient empowerment
2. Continuous health monitoring
3. Decision support systems

The most important disruptions in health care, enabled by eHealth:

Patient empowerment: Enabling the patients to be engaged in their health care processes

Continuous health monitoring: Moving from episodic care to continuous monitoring of personal health data. For both prevention of disease and management of patients with chronic diseases.

Decision support systems for doctors: Quality assurance of anamnesis, diagnosis, treatment.



The increasing gap between our population of smartphone users and the slow digitalisation of the healthcare system is creating a growing frustration. Forcing change!

Certified lead patients



Can patients handle selfcare and self monitoring?

Sara Riggare: researcher at KI with Parkinson's disease, she has coined the term lead patient:

Developing innovative strategies for maximising their quality of life.

Lead patients know, can and want to do more than the health care system expects.

Certified lead patients

Self monitorering
Prescription renewals
Order blood tests
Support other patients
Participate in development



Alla med kroniska sjukdomar erbjuds en utbildning & certifiering att bli Spetspatienter.
Egenmonitorering med appar och mätare.
Förnya sina recept och beställa provtagningar.
Vara coacher åt andra patienter, sitta med i utvecklingsråd på vårdklinikerna och medverka i forskningsprojekt.

Spetspatienter kommer bli en viktig resurs och stor avlastning inom vården!

#WeAreNotWaiting

- to bridge disconnected data islands.
- for competitors to cooperate.
- for regulators to regulate.
- for device manufacturers to innovate.
- for payers to pay.
- for others to decide if, when, and how we access and use data from our own bodies.
- to build applications that focus on design and usability.
- to compel device makers to publish their data protocols.
- to make it easier to get data off of devices.
- for the cure.

Another growing movement: The hashtag #WeAreNotWaiting started as a rally cry of tech-savvy patients in the diabetes community. They are reverse-engineering existing products and creating smarter platforms and apps for better outcomes.
<https://twitter.com/hashtag/wearenotwaiting>

2. Continuous health monitoring

“When you go see a doctor, they will give you a bunch of drugs based on how they saw you at one single office visit. It’s almost criminal”

- Eric Dishman, Director Health Innovation, Intel

Health care today is based on spot checks when the patient has acute health problems.

Patients with chronic diseases get yearly follow-ups and usually no check-ups during the rest of the year.

The patients don't have much access to their data

So imagine if patient data is monitored continuously, and alerts are only sent to the patient and the doctor when attention is needed!

Chronical care 2.0

Focus: supporting selfcare & self monitoring

Sensors on and inside the body:

Blood pressure Heart rate Stress Balance

Ultrasound ECG Blood tests Body scanner

Eye scanner Breath tests Urine sample

Healthcare must see the chronically ill patients as an important resource in their care processes!

The patients check their own health daily with sensors on and inside their bodies and with different medical monitors at home.

3 Decision support for doctors - why?

10 000 diseases

3 000 new scientific papers per day

National guidelines & quality registers

There are hundreds of common disease and thousands of rare diseases and combinations of them.

So the risk of misdiagnosis is huge!

In the future it will be compulsory to use decision support systems before taking decisions on diagnosis and treatment.

3 Decision support for doctors - AI

Symptom analysis for anamnesis support
Updated treatment guides for all diseases

Digitalisation enables a more equal care for all patients, independent of where you live and what doctor you meet.
Doctors using decision support systems can always use updated best practices for each type of patient.
This secures that all patients get the best possible treatment based on their individual conditions.

Decision support for patients

From passive patient to
active healthcare co-creator

- Selfcare tools
- Holistic health status overview
- Personal support before-during-after healthcare visits

Patients need Personal Health Support Systems

Digital, holistic decision support for the healthcare, life style and wellbeing. Built on personal abilities, interests and preferences

Healthcare visits: adapted to patient needs
Online support before-during-after the visit

Patient shares relevant health data streams

Interactive health questionnaires with AI support

Automatic lab remittances when needed

= A structured groundwork for the visit

Physical visits are the core of health care.

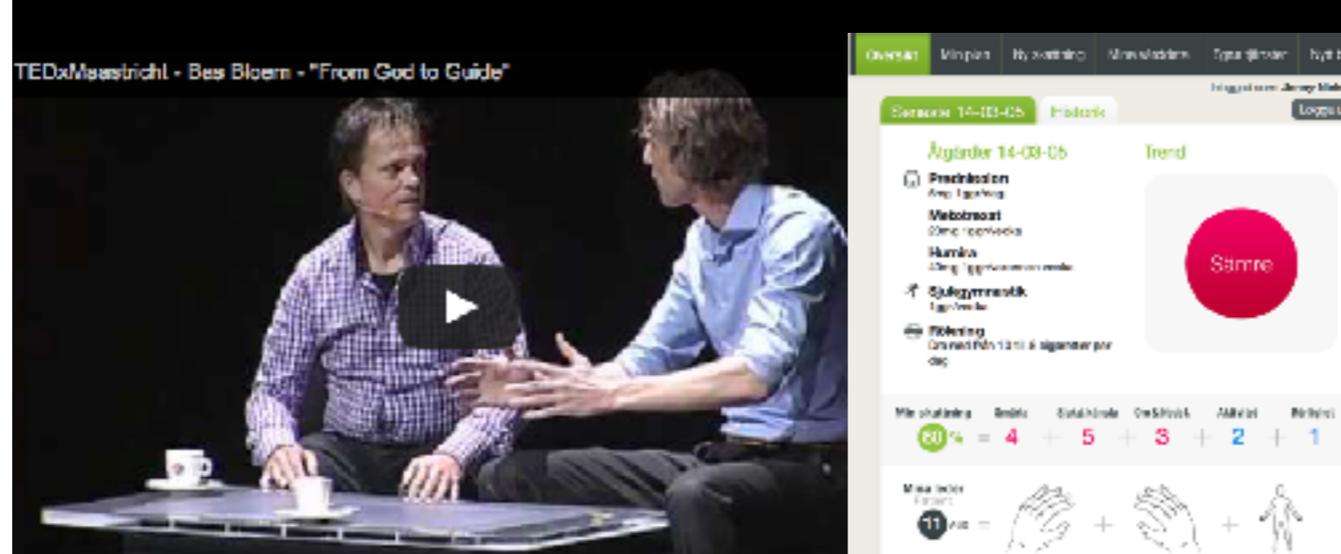
Need to be much more effective!

Before: The patients shares their data streams, goes through interactive questionnaires with AI support and get advice on what to do and how to prepare for the visit.

The AI automatically create lab remittances so that relevant tests can be taken before the visit

All this creates a structured groundwork for a very time efficient healthcare visit!

Healthcare visits: adapted to patient needs Online support before-during-after the visit



During: healthcare visits must be much more efficient!

Patient empowerment creates much more involved patients!

So the role of the doctor will be changed: Coach & Knowledge broker

See this awesome TEDx talk by Dr Bas Bloem, Dutch neurologist , from TEDxMaastricht <http://youtu.be/LnDWt10Maf8>

Bild från forskningsprojektet Patientkunskap där jag skrev en Best practice rapport: <http://alfabravo.com/2014/11/patientkunskap-best-practice/>

Healthcare visits: adapted to patient needs
Online support before-during-after the visit

My care plan My medications

Diet, physical activity

Who can I contact?

After: The system automatically generates a summary for the patient:

The agreed care plan, what the patient should do, instructional films, medication information etc.



Own your
health data

Self-monitoring
Sharing

Personal health support requires that the patients owns and controls all their health data and can share it safely with their healthcare, families and patient networks etc. Then you can compare your health data with others, get a personal health status overview and follow up changes in order to optimise your quality of life.

Moving patients out of the hospitals

“Hospitals, as we know them today, will eventually be extinct”

-Eric Topol

Home Assessments

- 24/7 insight in domestic activities
- Alerts health professionals about risky situations



HomeMonitoringApp

Telemonitoring is growing quickly, enabling much more advanced healthcare in the home

Sensors, medical test gadgets, video meetings using tablets or smartphones

Hospital without patients



Mercy Virtual Care Center in St Luis, USA

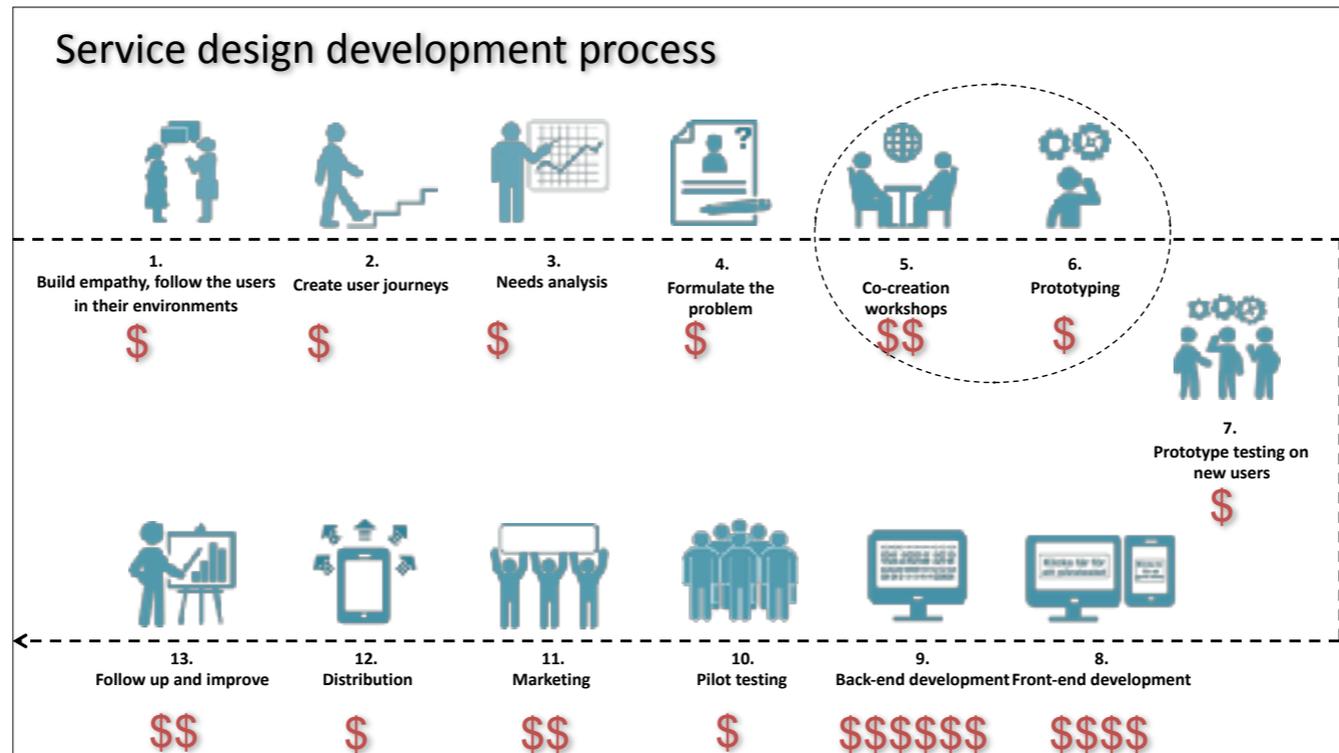
An advanced control center for remote motoring of patients.

Article: <https://www.politico.com/agenda/story/2017/11/08/virtual-hospital-mercy-st-louis-000573>

Why don't we have anything like this in Sweden?



Home Monitoring
Virtual ICU



Grundråd för utvecklingsprocessen. Tjänstedesign-processen säkrar att tjänsten blir användarvänlig, nyttig, önskvärd och effektiv samt upplevs som relevant av användarna.

\$=hur mycket budget som behövs i respektive steg.

Är det inte dyrt att köra workshops och fokusgrupper och bygga prototyper?

Nej, det lönar sig att lägga tid och pengar på steg 1-7, så att den mera resurskrävande utvecklingen i steg 8+9 baseras på rätt underlag

What do we gain by using
Service design in health care?

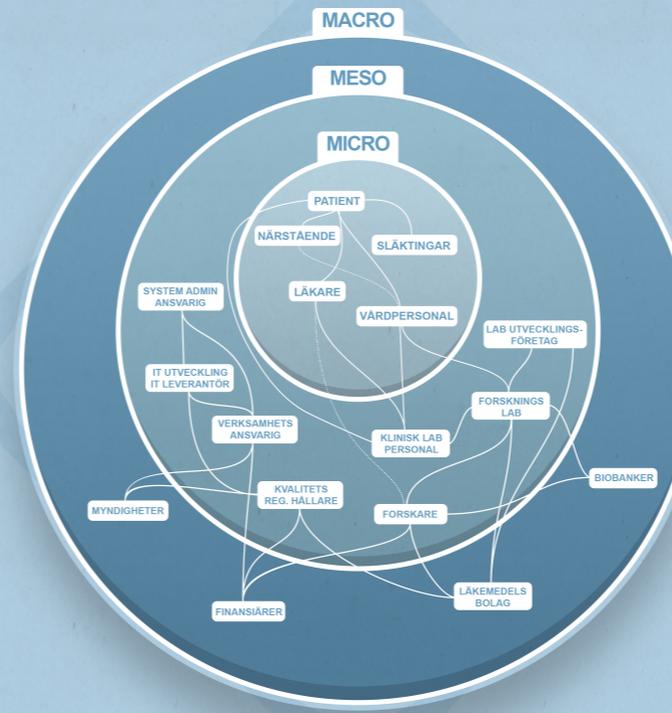
Usable: Would I use it?

Useful: Does it give me value?

Desirable: Do I want it?

Efficient: Does it save time/resources?

Stakeholder map



Stakeholder map: relations between stake holders based on what level they are on

- Micro: Stakeholders directly involved in the healthcare of the patient
- Meso: Stakeholders that are part of the infrastructure of healthcare and research
- Macro: Stakeholders that are part of societal institutions and the business sector

Gunnel, 70 - pensionär

"Jag har handarbetat väldigt mycket i hela mitt liv, men det har reumatismen påverkat också. Jag har inte kraften, jag har inte motoriken ... jag köpte en kudde som jag skulle brodera, men det har jag ännu inte hunnit börja på, den ligger där och hånar mig."

Gunnel bor tillsammans med sin man, som också är pensionär, i ett hus strax utanför Stockholm. De lever ett lugnt liv, förutom när deras fyra barnbarn kommer och hälsar på, då blir det ett härligt liv i huset. På vintern flyr gärna Gunnel från kylan, och reser till något varmare land med sin man.

Gunnel älskar att hålla på med sin trädgård, och hon försöker göra det så fort hon får tid. Hon brukar sitta på en pall när hon arbetar i rabatterna, men hon kan inte hålla på för länge. Vissa arbetspositioner fungerar inte heller, då får hon för ont på grund av sin RA. Hon måste ta flera pauser för att kunna orka med.

Annars brukar hon försöka motionerna en till två gånger i veckan, och det lyckas hon oftast med. Nu den senaste tiden har det varit lite färre gånger på grund av att hon har känt en "förkylningskänsla".

Personas



NABC

What is the important customer and market **NEED**?

What is the unique **APPROACH** for addressing this need?

What are the specific **BENEFITS** per costs that result from this approach?

How are the benefits per costs superior to the **COMPETITION's** and the alternatives?

eHealth challenges in Sweden

Procurement models and competence

Revenue models

Infrastructure for patient-generated data

21 county councils, 290 city councils

EMRs... Regulations

Procurement models for eHealth are complex and there is a lack of competence in using them.

We need revenue models that work for the new ways of working with smart eHealth services.

Healthcare needs to be able to collect patient data streams

EMR incompatible silos, hard to integrate. We need open, modular information systems that are built for integration with smart services.

Outdated regulations for CE-markings etc

Sweden

Test market advantages

Infrastructure internet/mobile networks

IT-mature population, including the elderly

Smartphone usage

92% of people in Sweden in the age group 66-75 and 56% of 76+ years are internet users!

Source; <http://www.soi2017.se/vuxnas-digitala-kompetens/>

Sweden

Export potential

Global brand in healthcare

IT-developers AI, mobile, medtech

Medical quality registers

eHealth is a very big export potential for Sweden, we have excellent conditions and a very positive international reputation in healthcare.

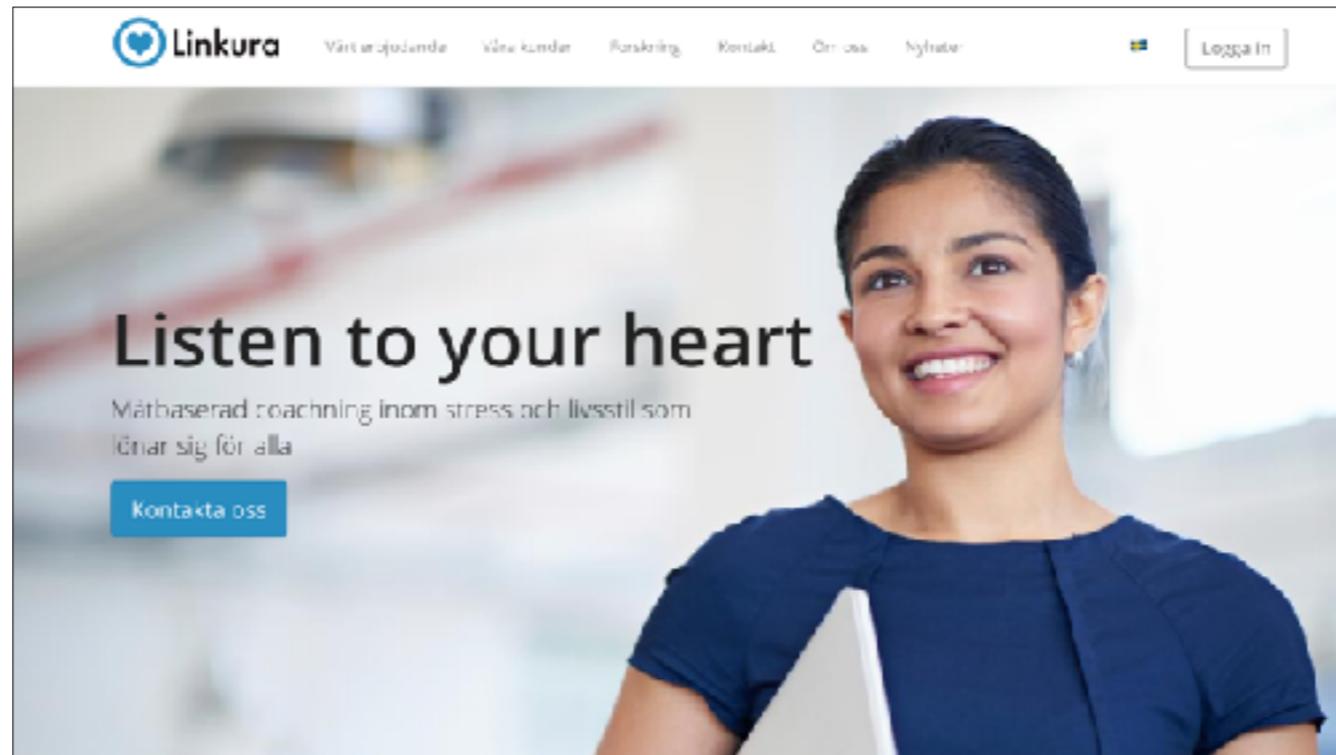
2025: Sweden is the hub in a globalized health care

Apps & online services
AI decision support systems
Medical guidelines
Outcome measures
Quality registries

2025 är eHälsa en enorm marknad globalt och det har blivit en stor och viktig exportsektor för Sverige.

Vi har blivit något av ett nav för utveckling och drift av både tjänster och standarder.

Grunden för det är vår goda renommé inom vård och omsorg och visionen om att Sverige ska bli ledande inom eHälsa 2025!

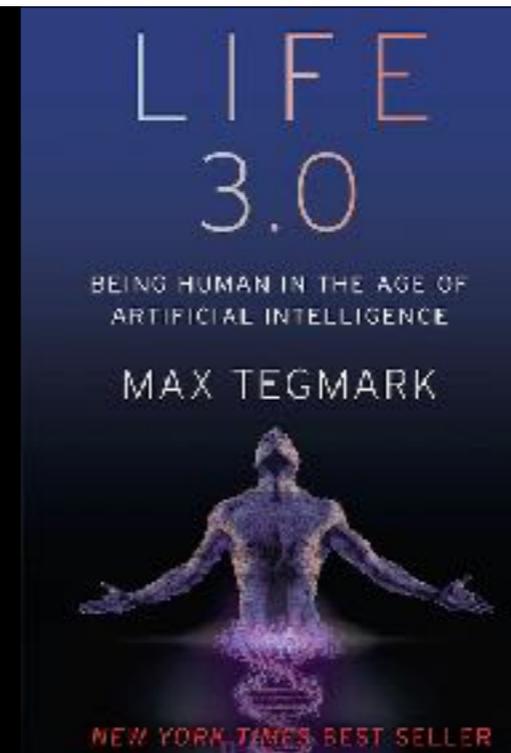


New trend: Prehab = active prevention

”Don’t ask: What will happen
in the future?

Instead ask yourself:
What do you want to happen?
- Then create that future!”

– *Max Tegmark*



Recommending the latest book by Max Tegmark

An exciting time for healthcare transformation!



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