

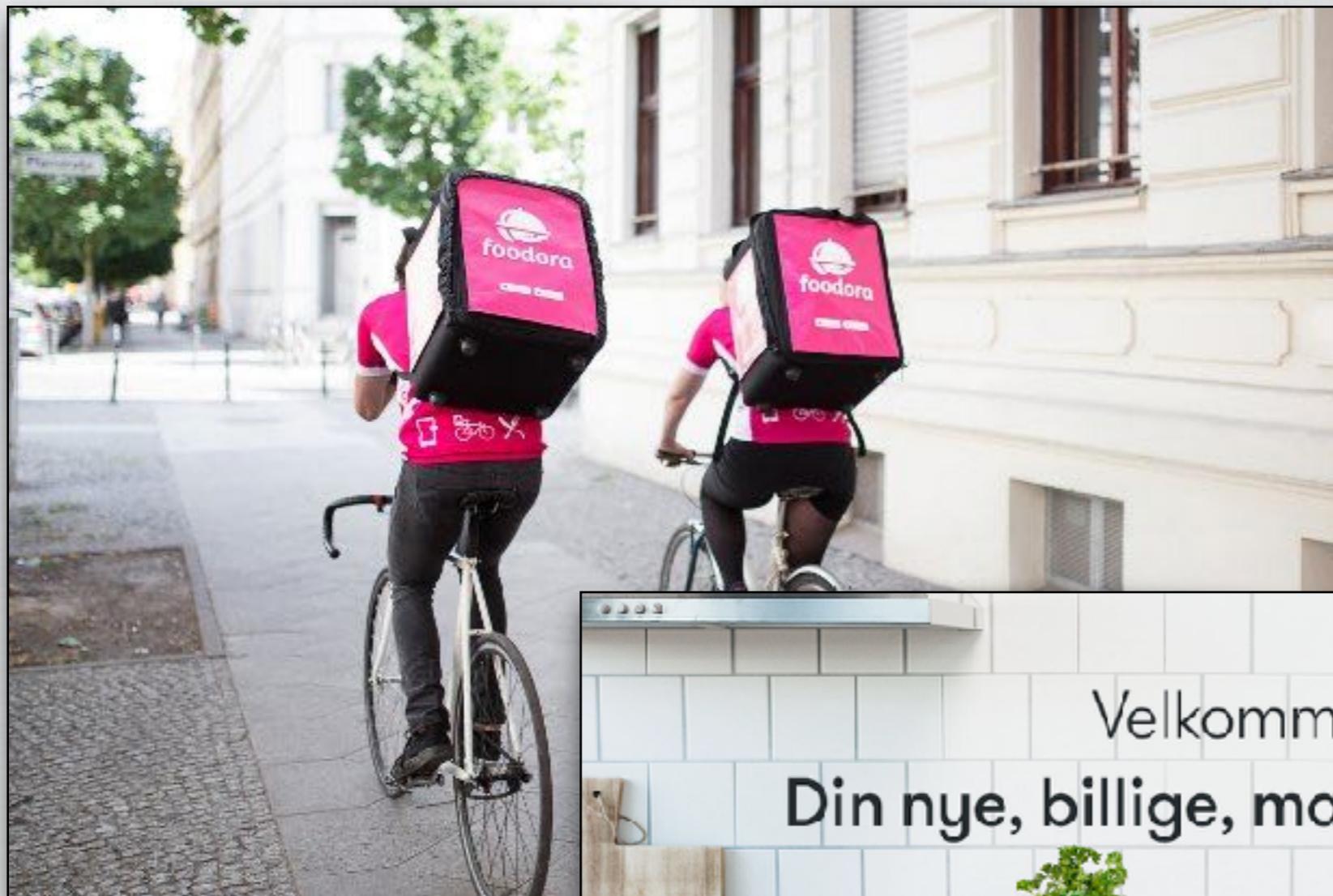
# Health as a resource



- Eye Networks, 24 April 2017  
*Nard Schreurs - IKT-Norge*

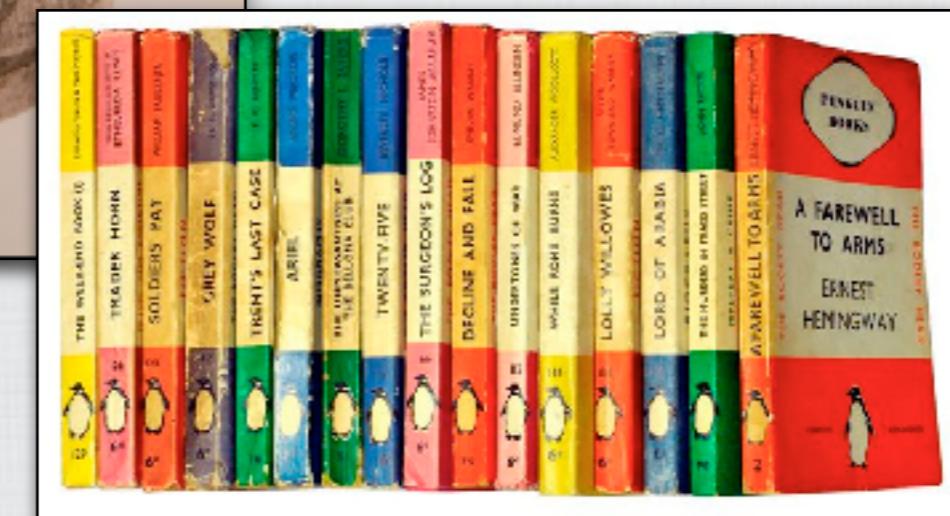
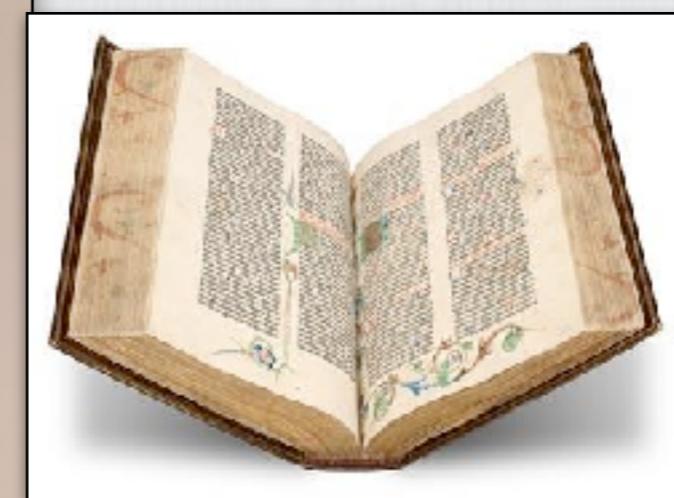
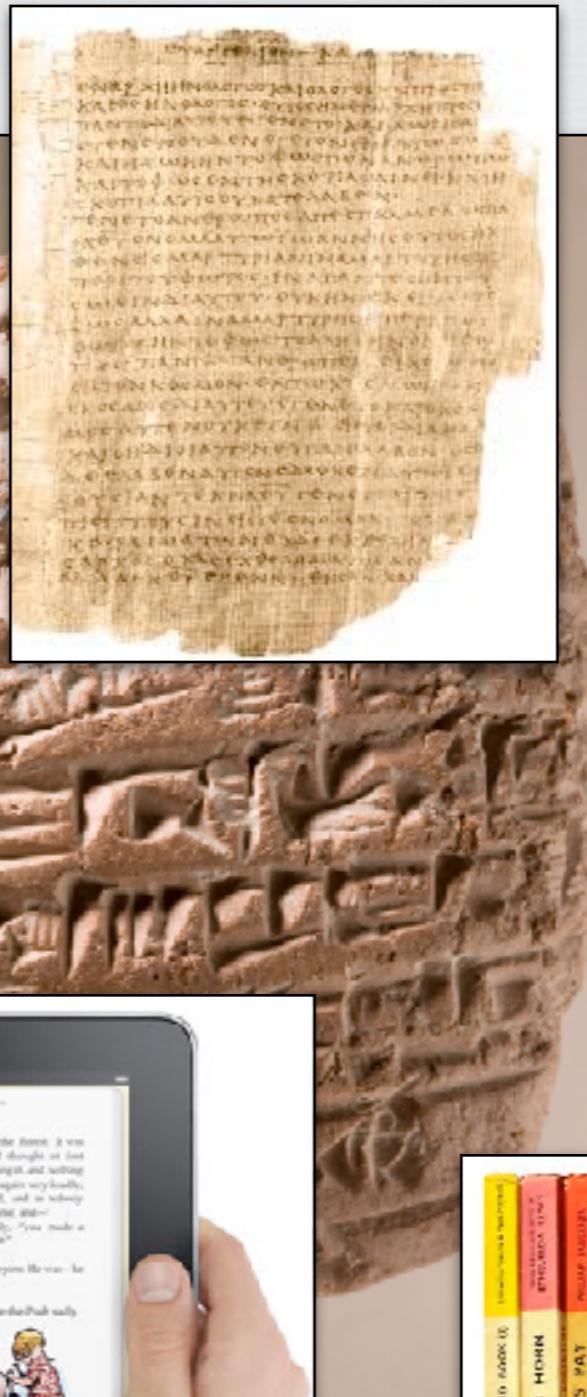
- **What wil I talk about:**
- Innovation
- Health
- The Future
- Your possibilities - public private - your own health
- Norway as a ehealth nation



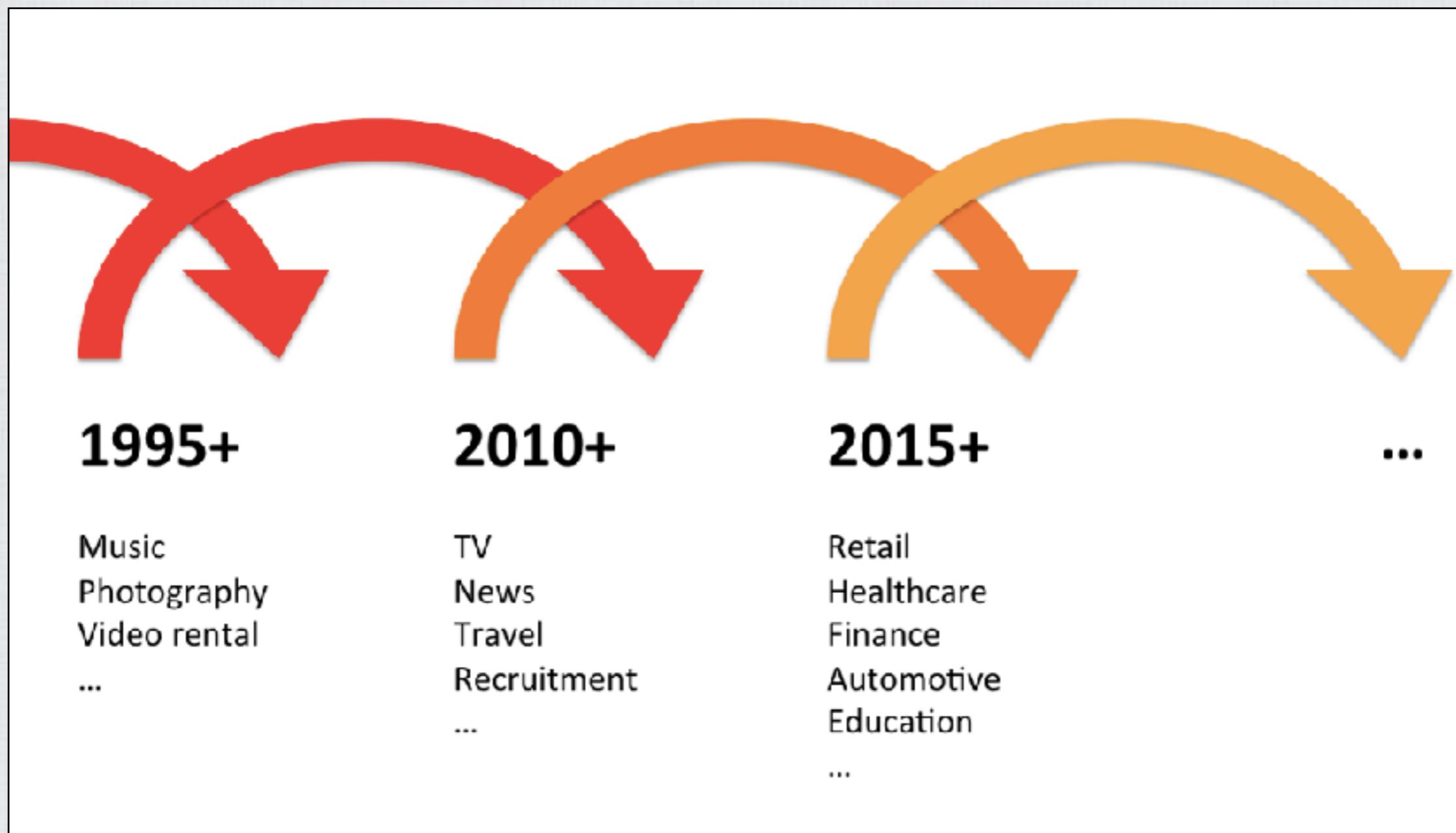


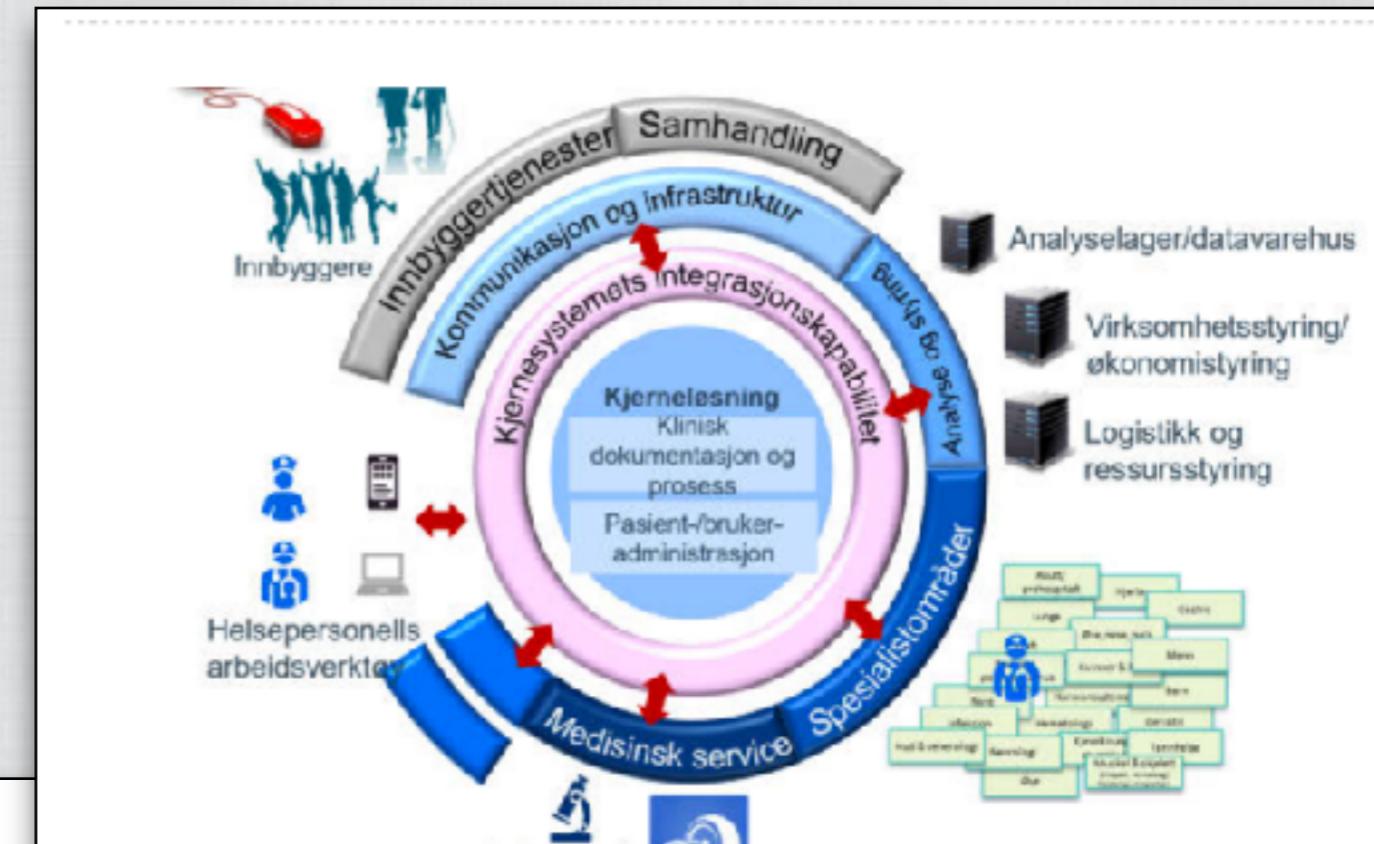
How do we go from a  
**hungry city**

to a  
**healthy city**



Source: Wikipedia



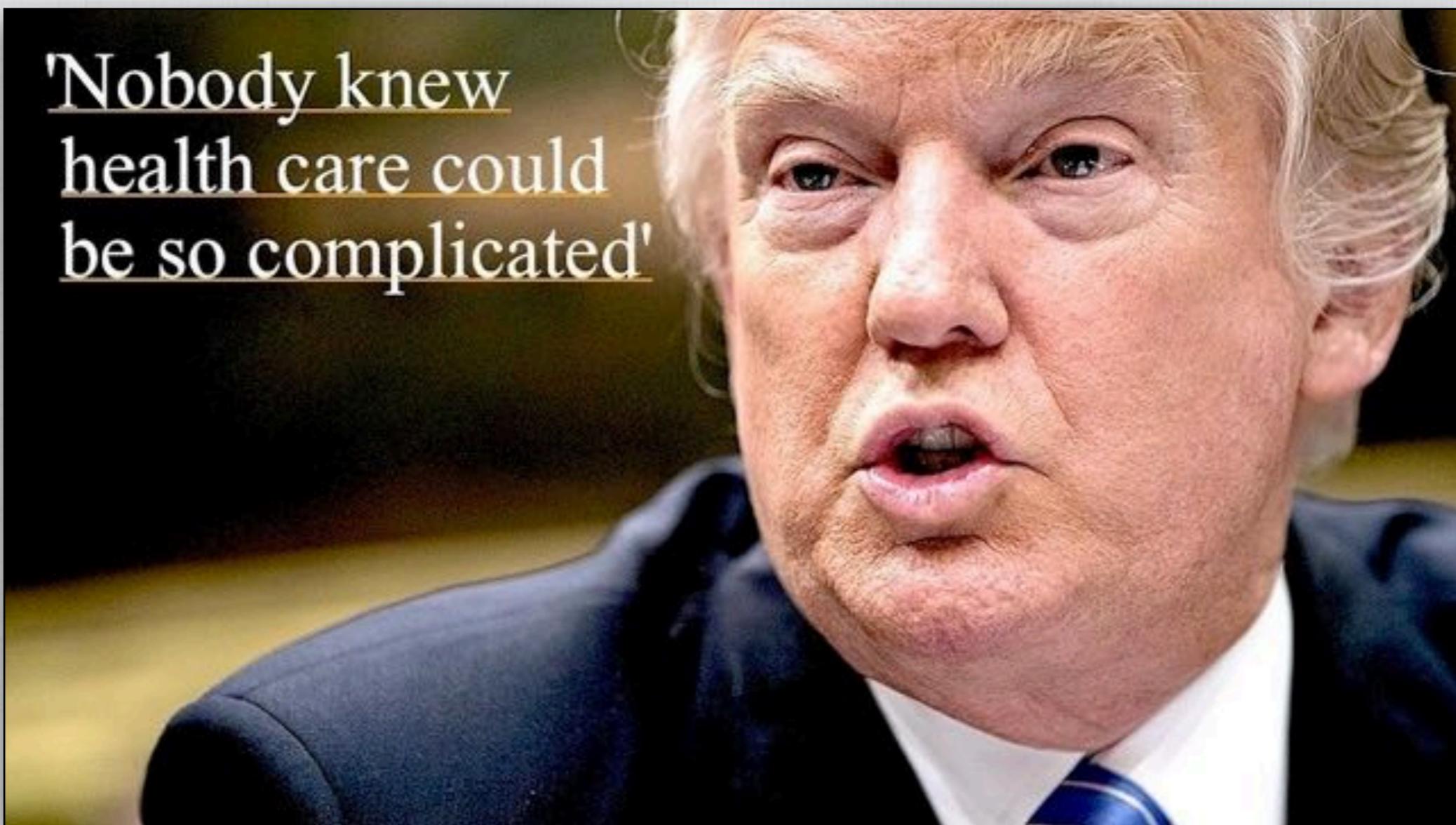


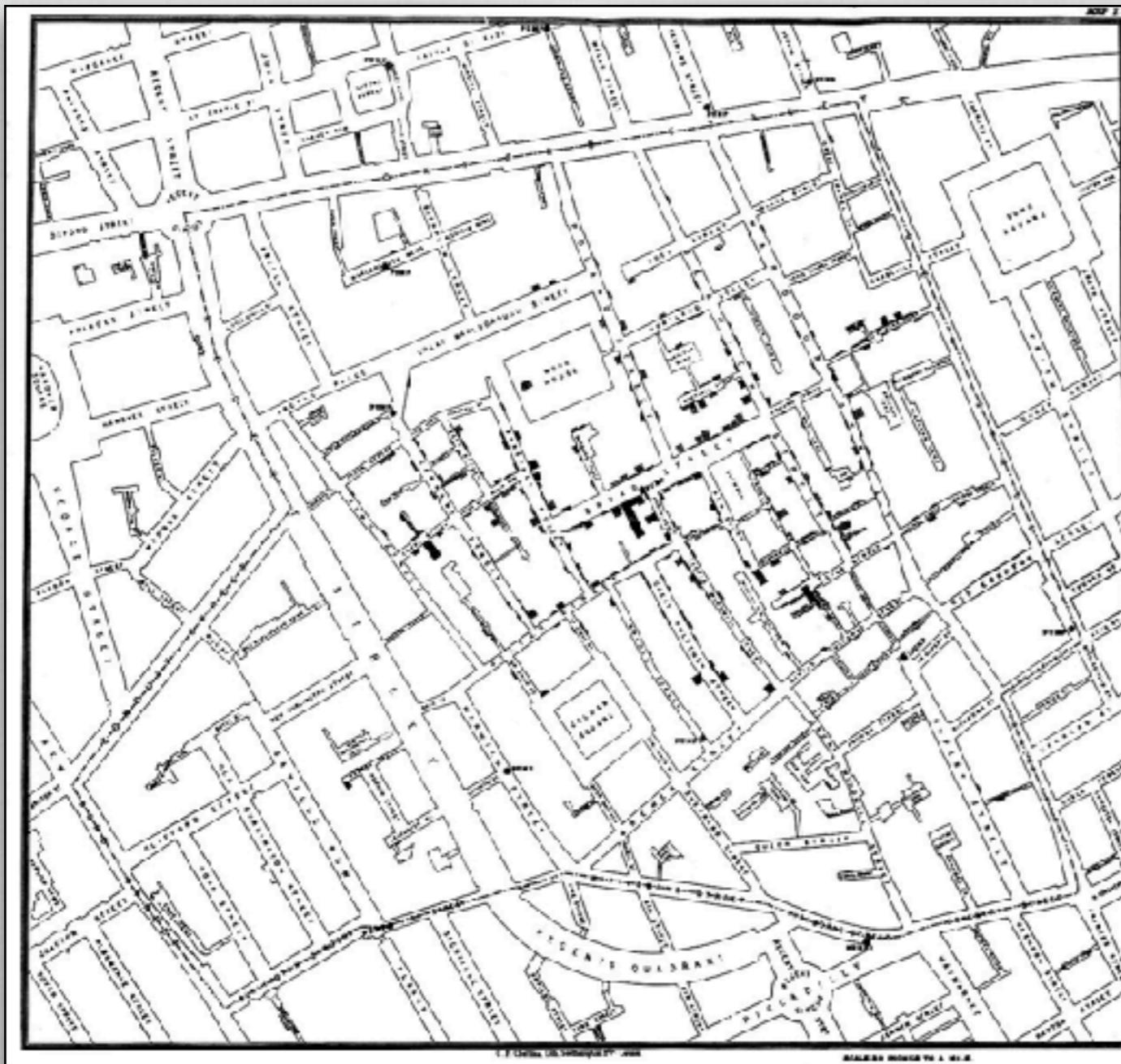
## **Slik skal helsevesenet digitaliseres**

**TU.NO** Dette er veien til én journal for én pasient.



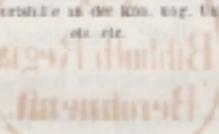
'Nobody knew  
health care could  
be so complicated'





Die Aetiologie, der Begriff  
und  
die Prophylaxis  
des  
**Kindbettfiebers.**

Von  
Ignaz Philipp Semmelweis,  
Bez. der Medien und Chirurgie, Magister der Gelehrtheit, o. o. Professor der theoretischen  
und praktischen Geburtshilfe an der königl. ung. Universität zu Pest  
etc. etc.



Pest, Wien und Leipzig.  
C. A. Hartleben's Verlags-Expedition.  
1861.

By 2020, 90% of world's population aged over 6 will have a mobile phone:



General vision:

*«Healthcare is in it's worst situation, with aging and cronical diseases»*

Reality (I think):

*«We will see the most spectacular breakthroughs in healthcare in the next 10-15 years»*



**Age  
1980-2010**

**Men 72 to 79 years  
Women 79 to 83 years**

*Statistisk sentralbyrå*

**Cronical diseases  
Diabetes/COPD/obesity  
Mental health  
Addiction**

**Resources  
People  
Money**







# The Creative Destruction of

# Medicine

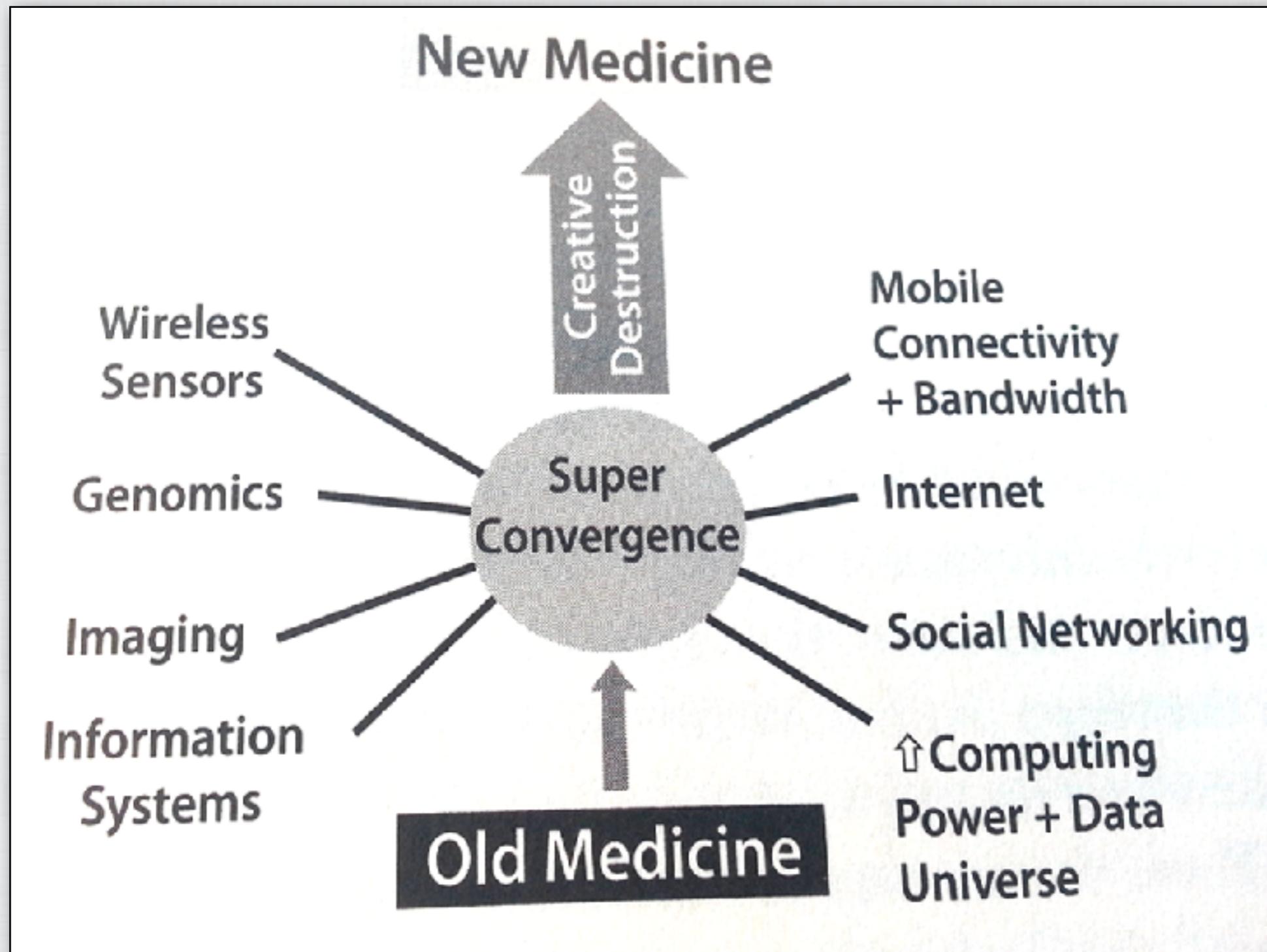


HOW THE DIGITAL REVOLUTION  
WILL CREATE BETTER HEALTH CARE

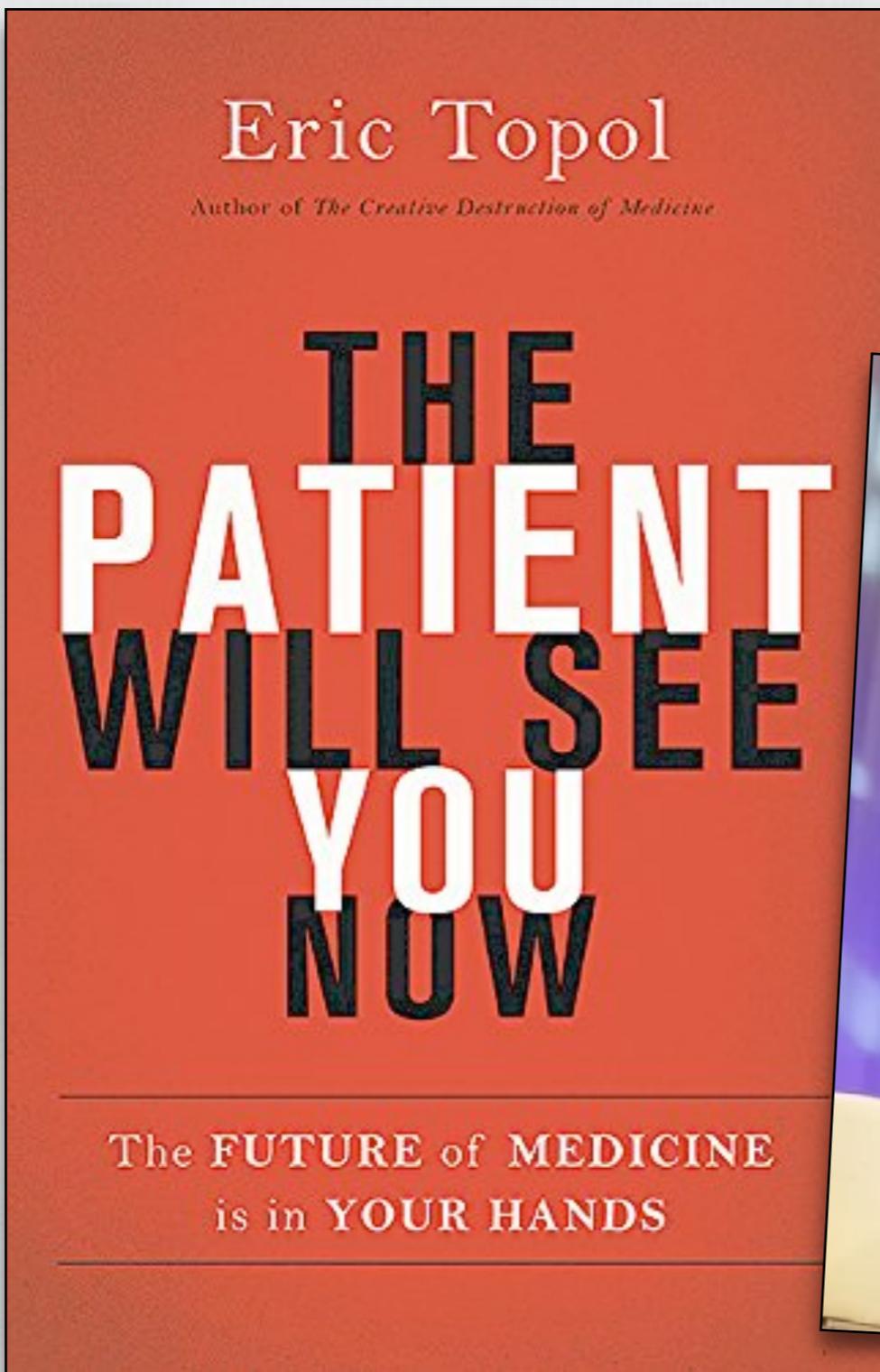
ERIC TOPOL, M.D.



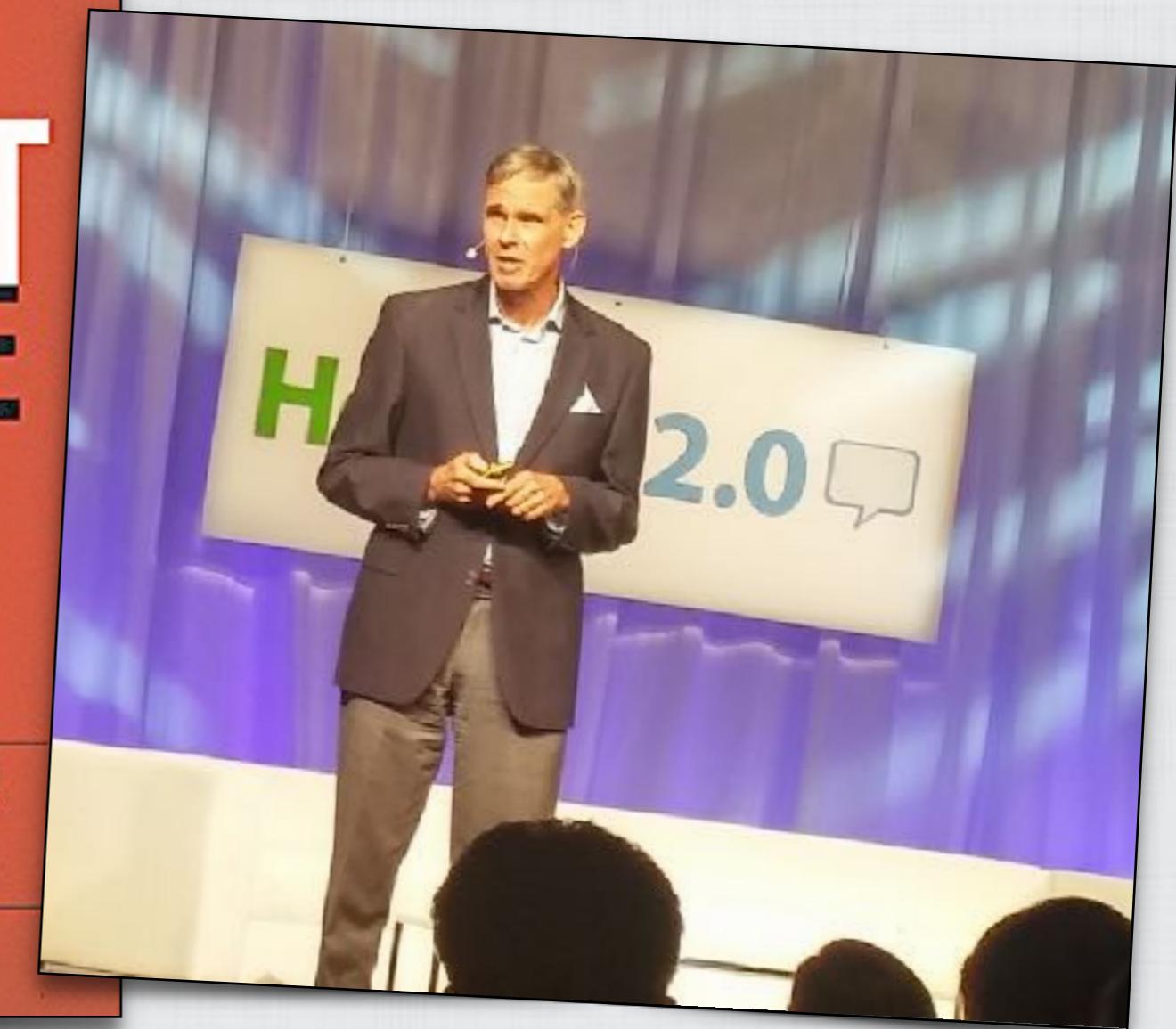
Topol The Creative Destruction of Medicine



Kilde: Eric Topol - *The Creative Destruction of Medicine*



Computers will replace physicians for many diagnostic tasks, and enormous data sets will give us new means to attack conditions that have long been incurable.

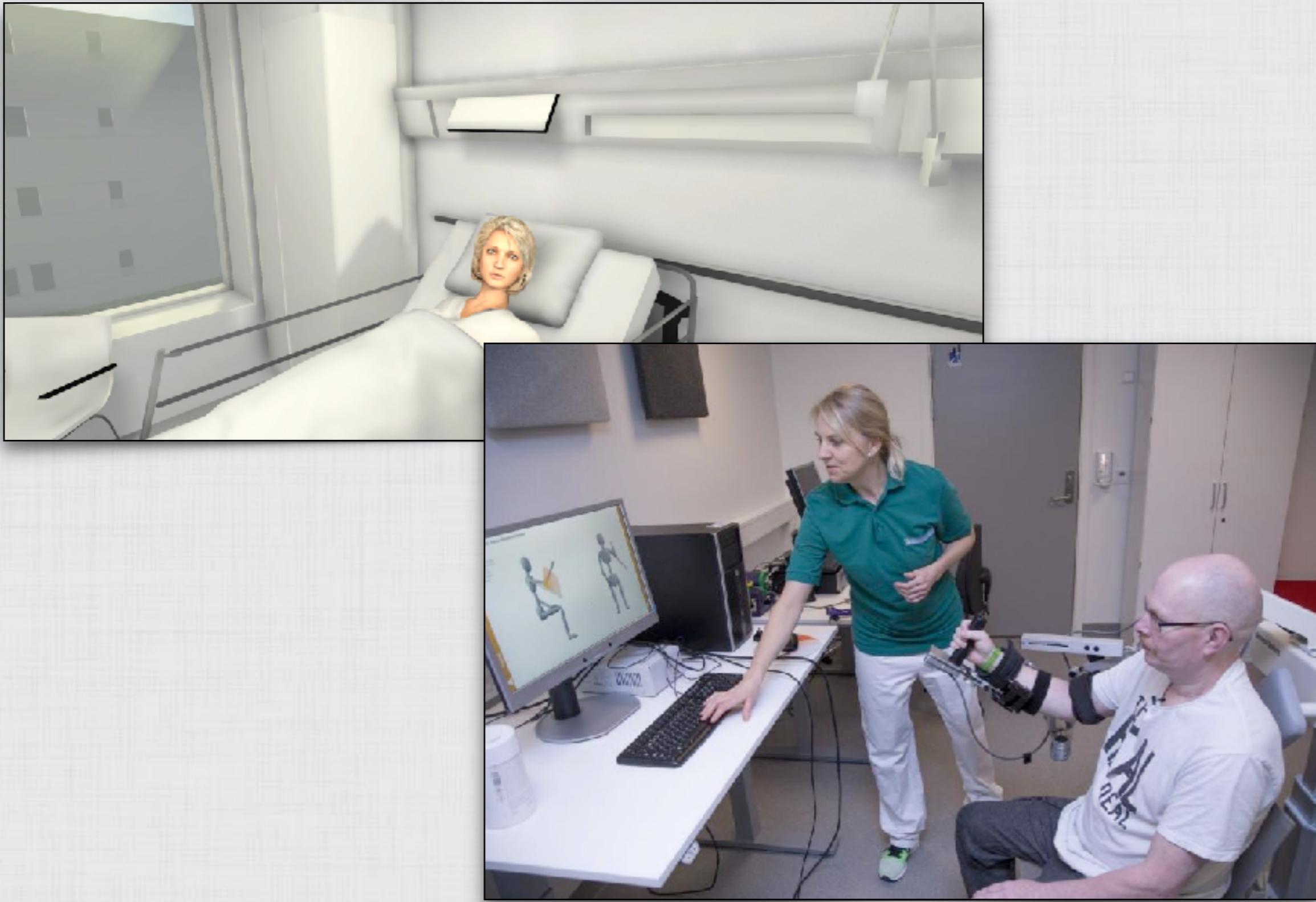


In "The Patient Will See You Now," Eric Topol, one of the nation's top physicians, examines what he calls medicine's "Gutenberg moment."

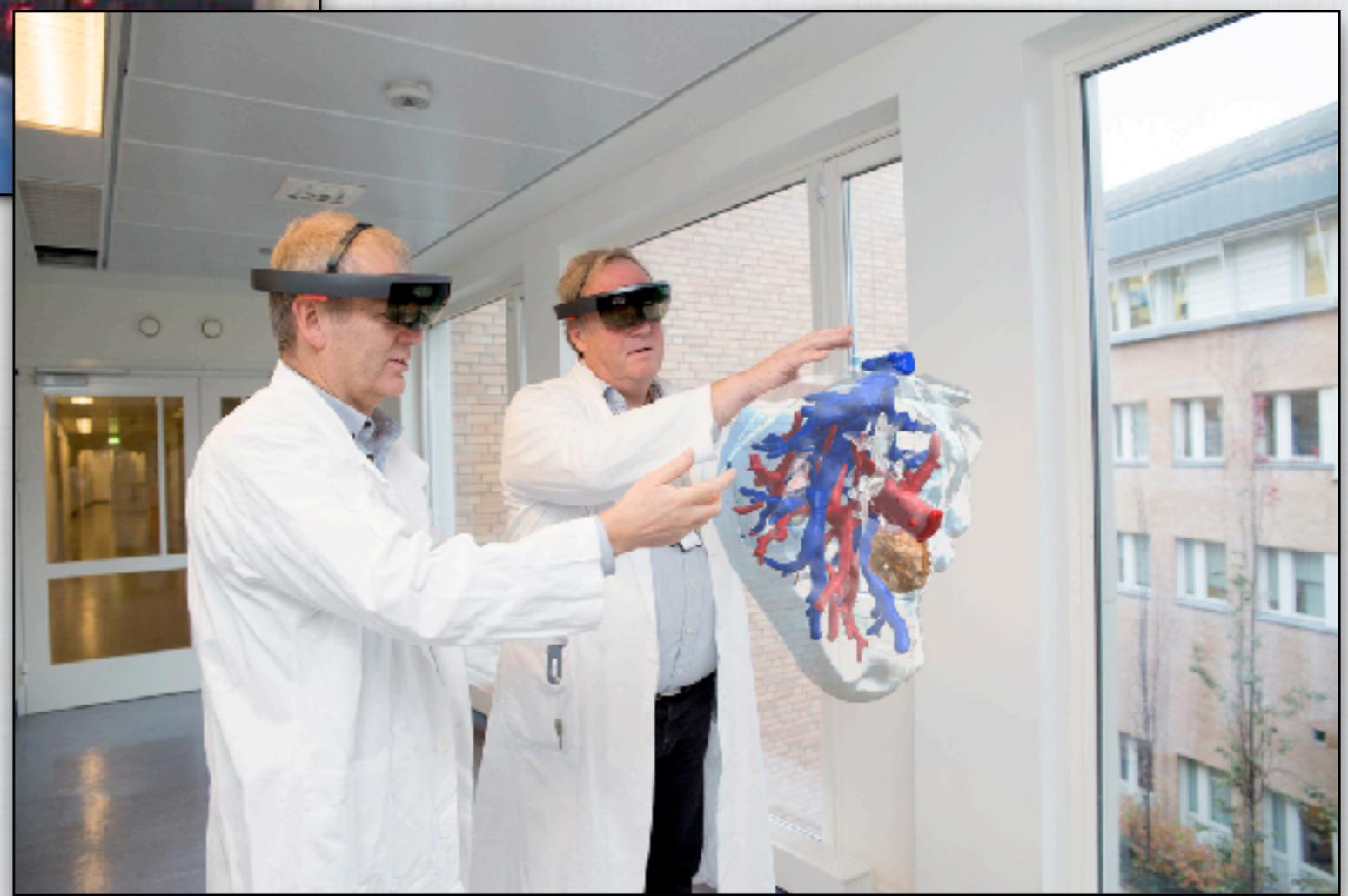
Much as the printing press liberated knowledge from the control of an elite class, new technology--from the smartphone to machine learning--is poised to democratize medicine.

In this new era, patients will control their data and be emancipated from a paternalistic medical regime in which "the doctor knows best." Mobile phones, apps, and attachments will literally put the lab and the ICU in our pockets.

# Consumers vs. public sector who is in charge?



## I. Gamification



## 2. Virtual reality



### 3. Artificial intelligence and machine learning



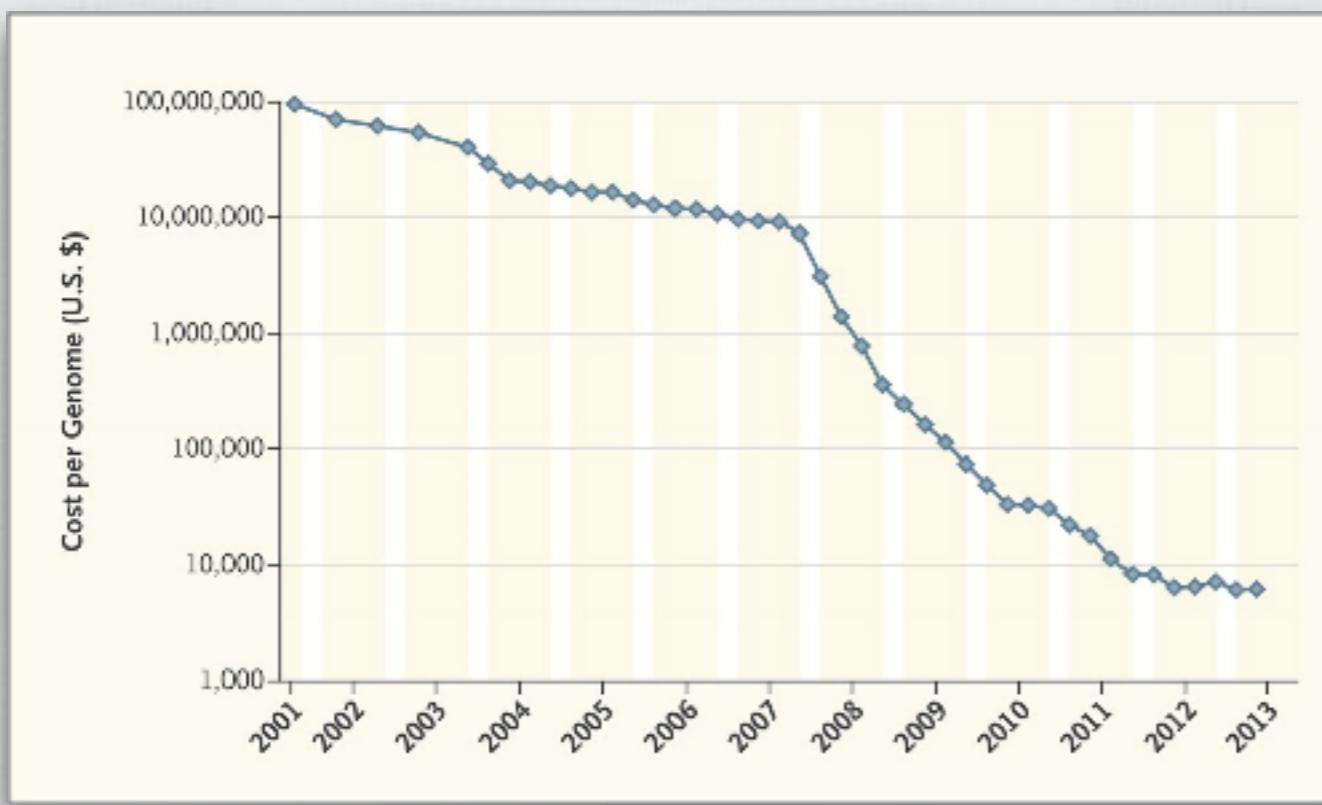
### 3. Telemedicine and distant help



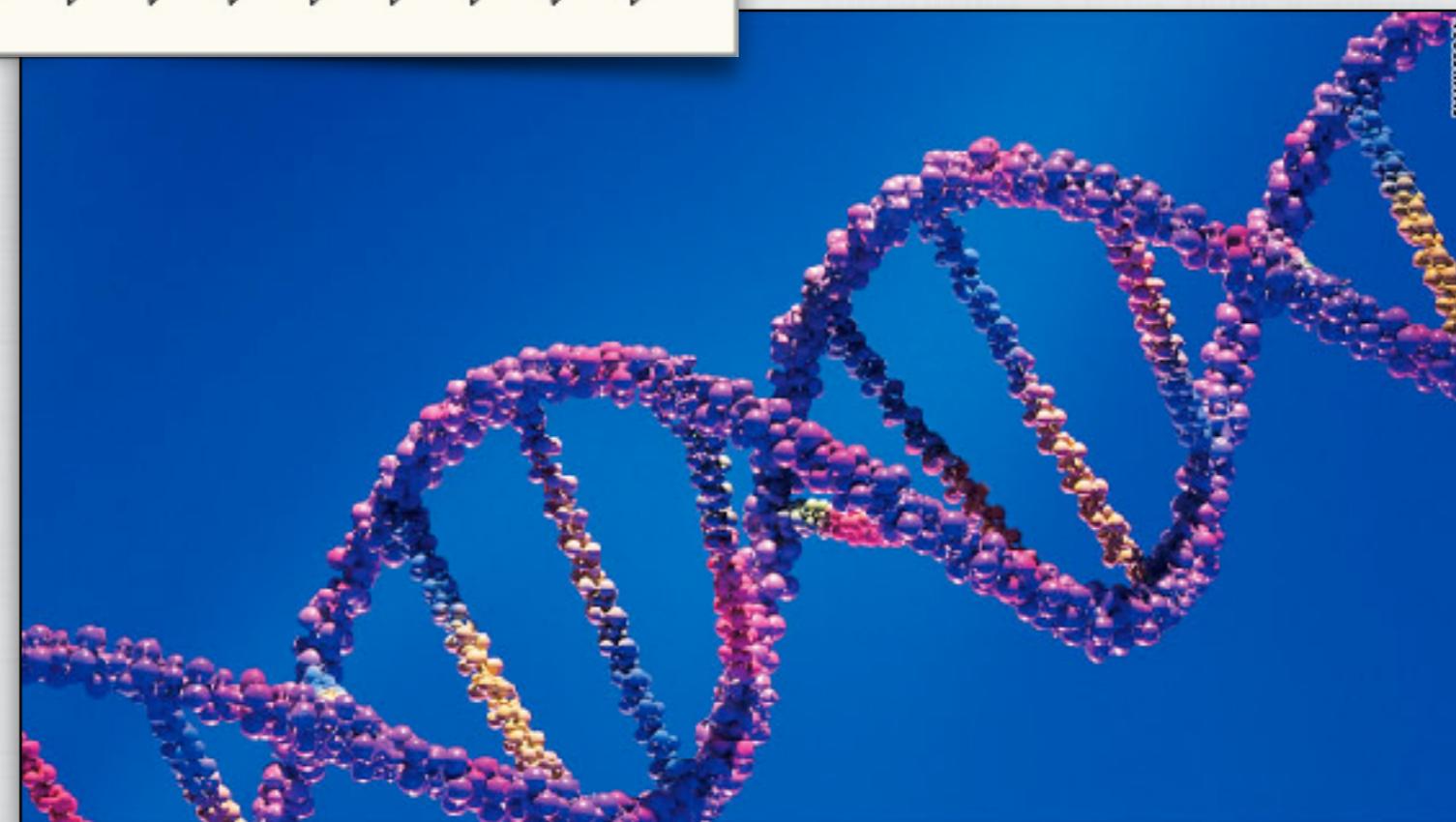


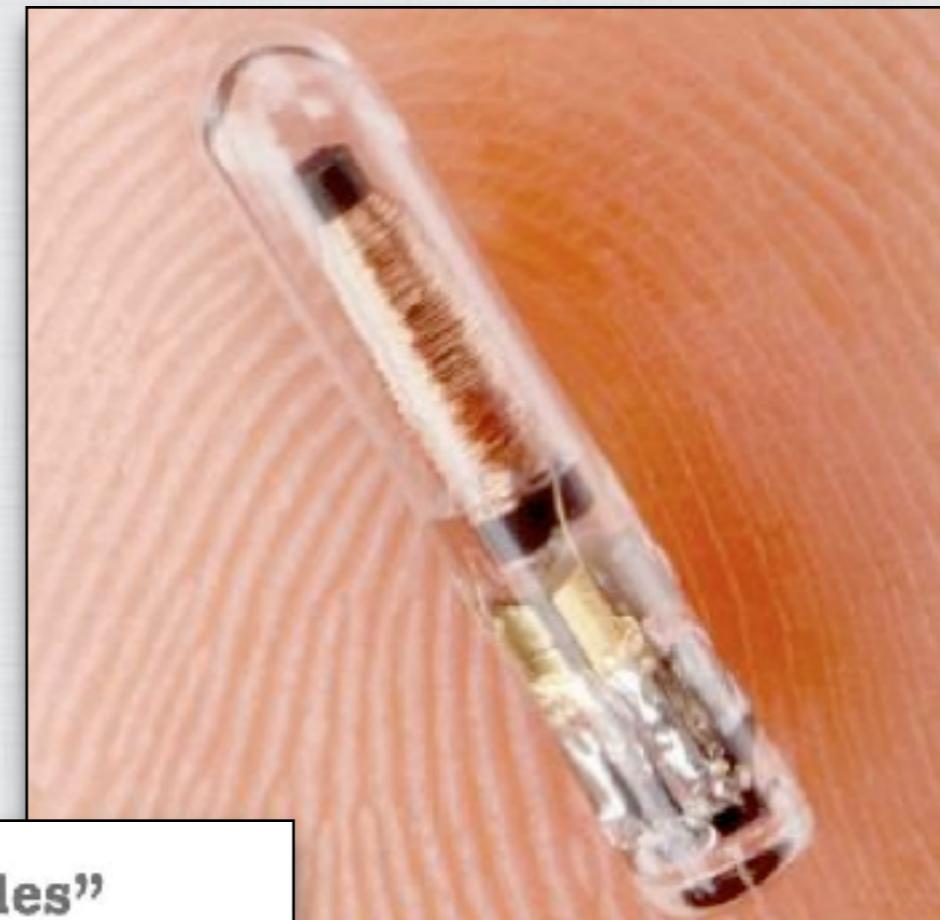
## 4. Robotics





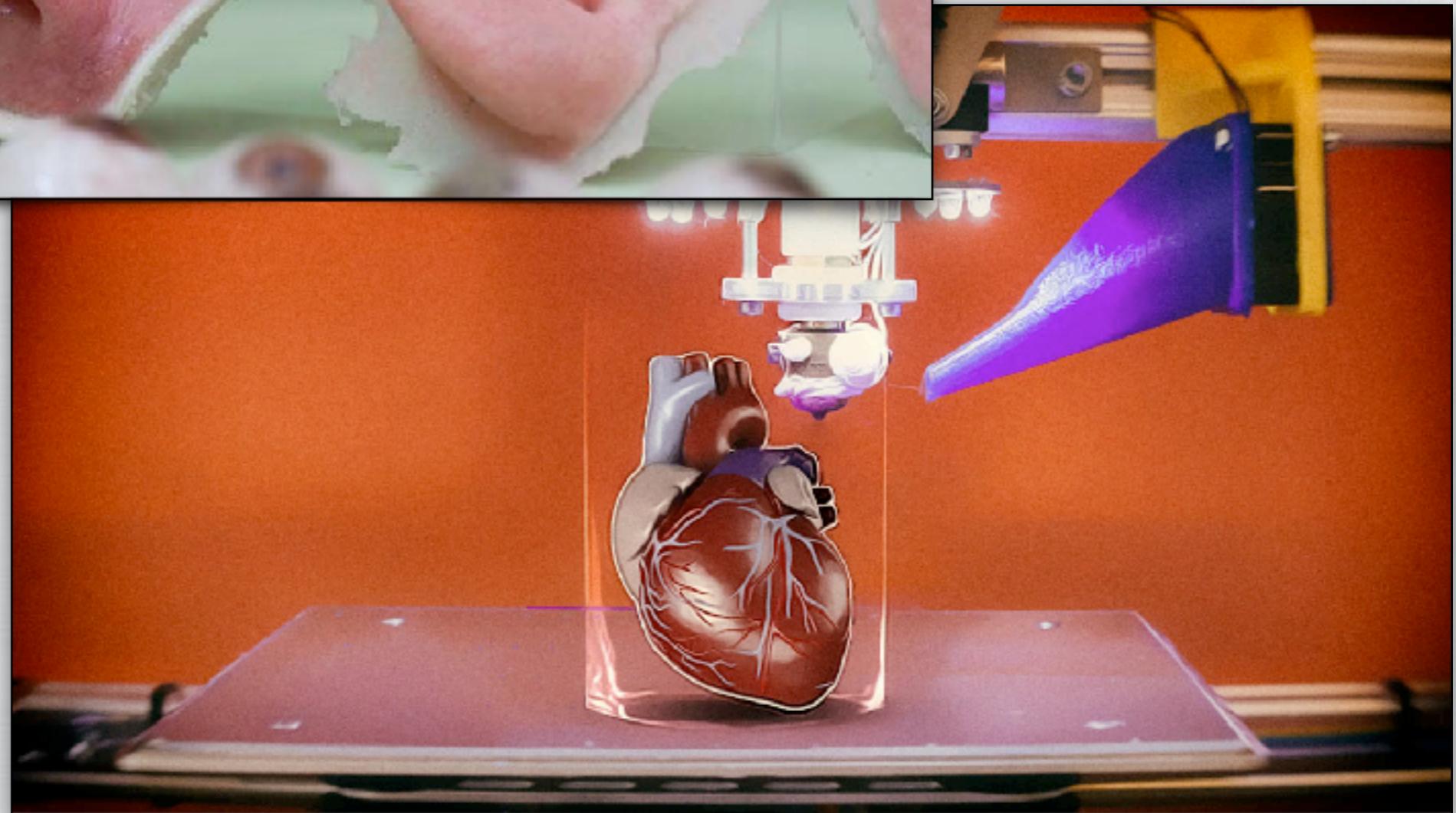
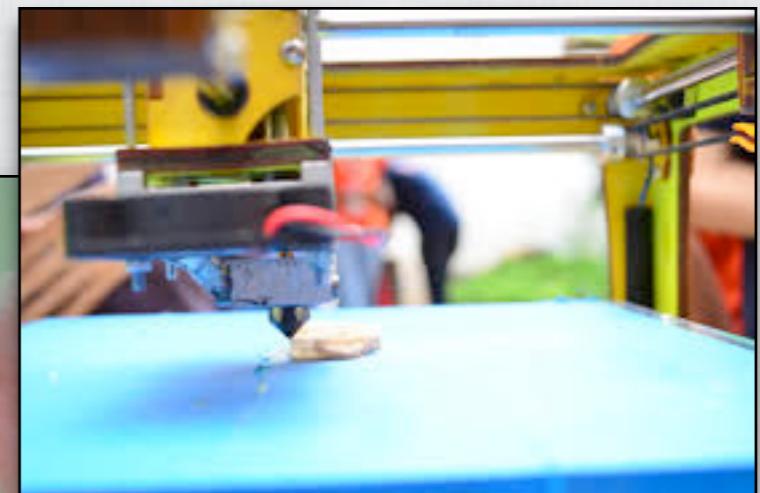
## 5. Genomics



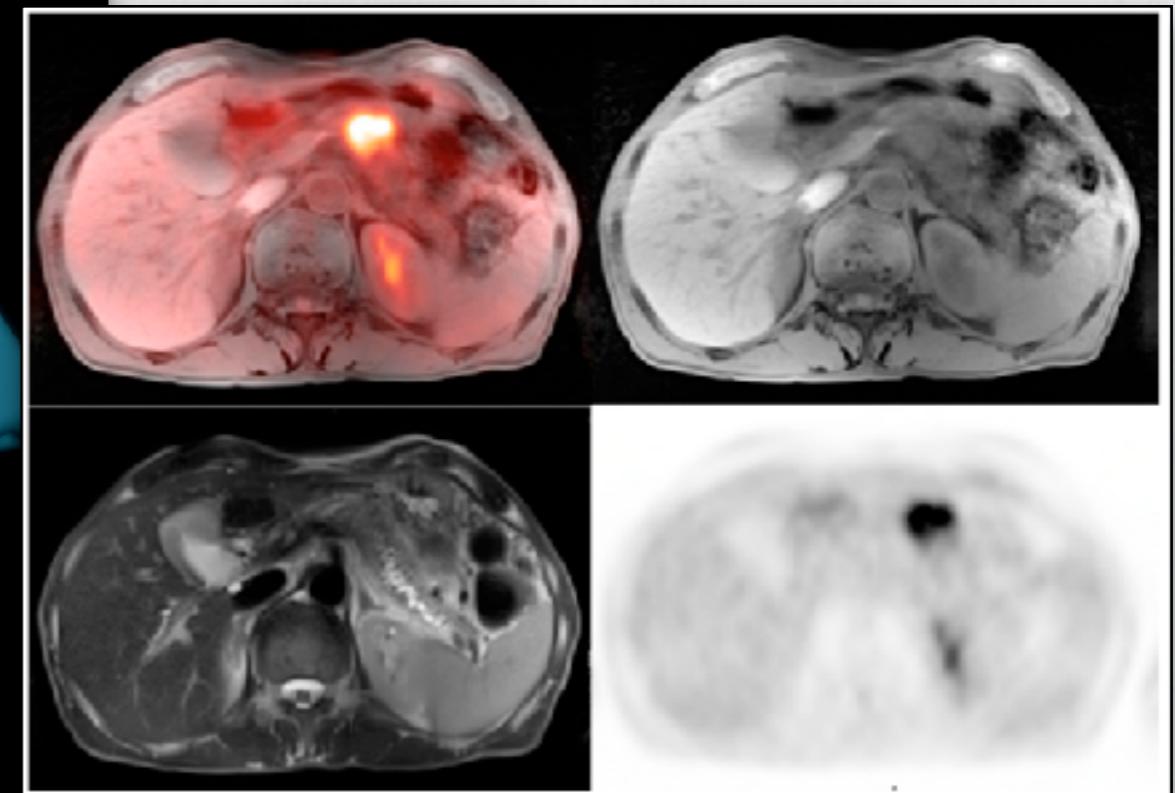
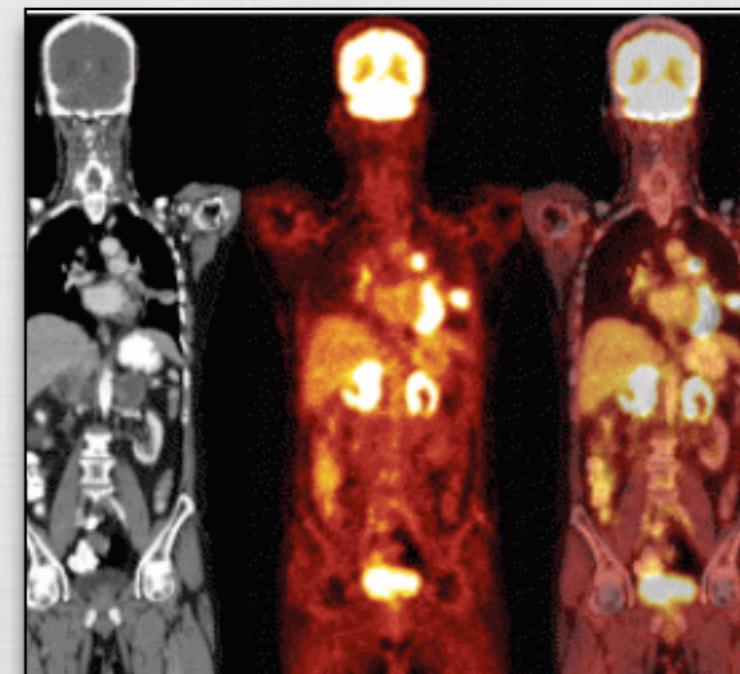


## 6. Body sensors, inside and out

## 7. 3D-printing

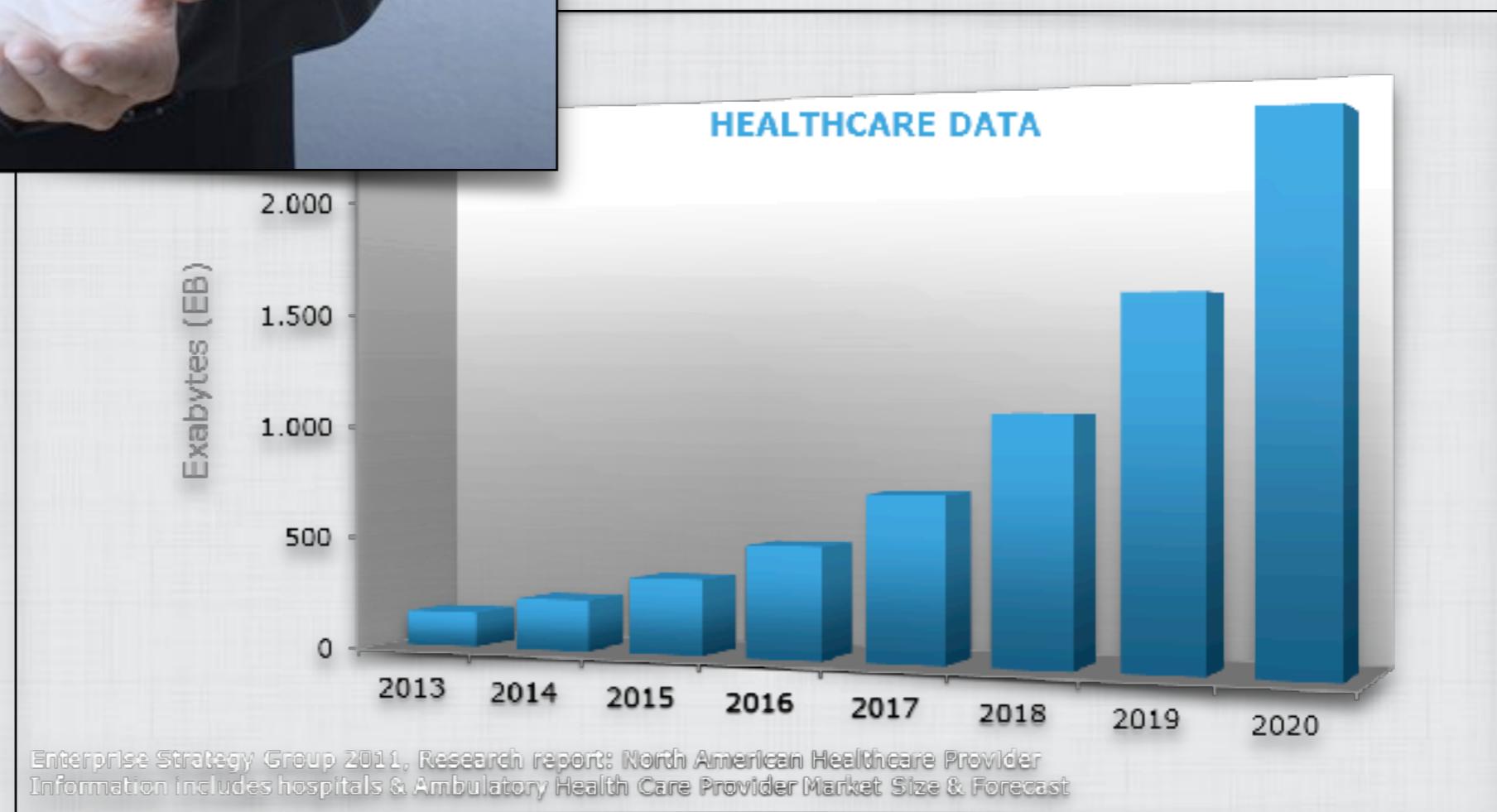


## 8. Imaging, diagnostics



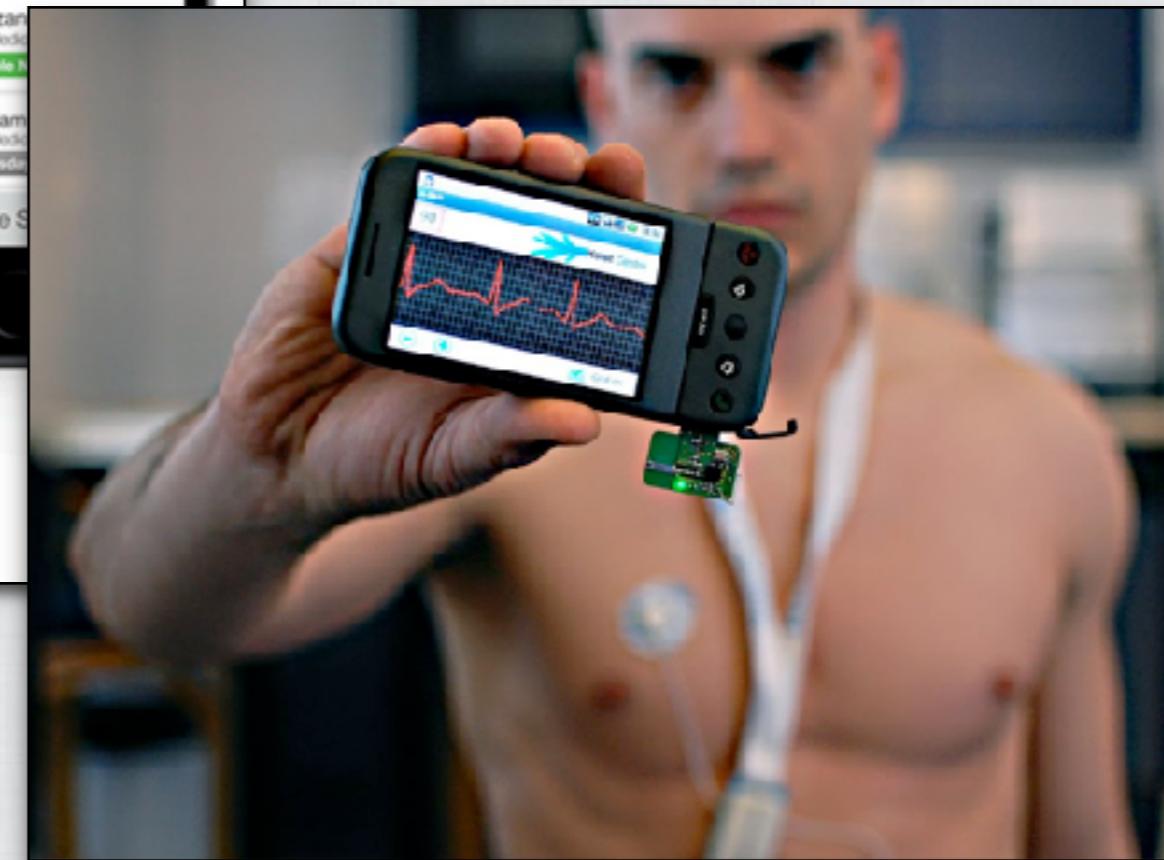


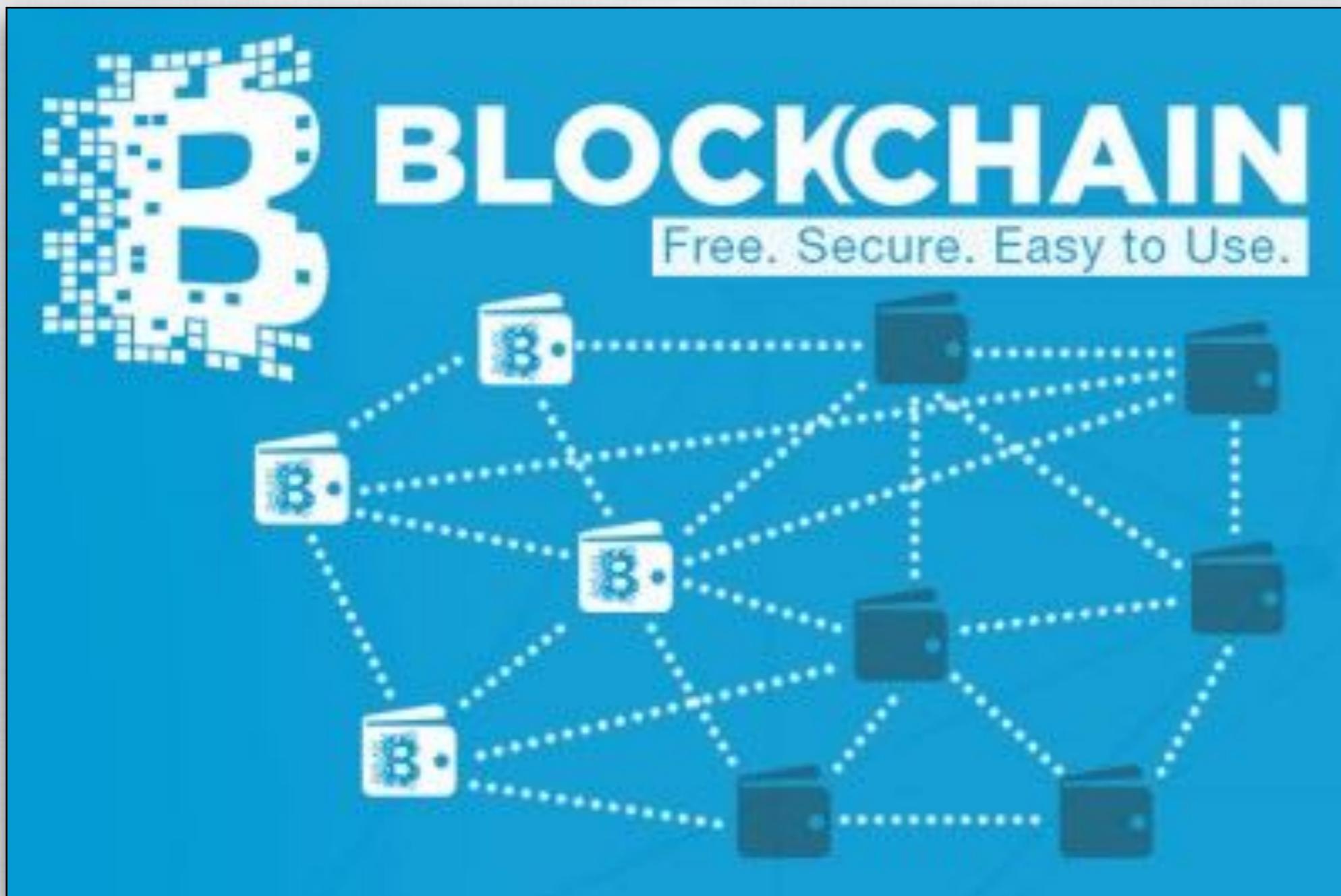
## 9. Big Data i helse





## 10. Smartphones





## II. Blockchain

## Trends in healthcare:

- Robotics
- Games
- Internet of Health
- Wearables/insidabels
- Population health
- mHealth
- Bigger than big data

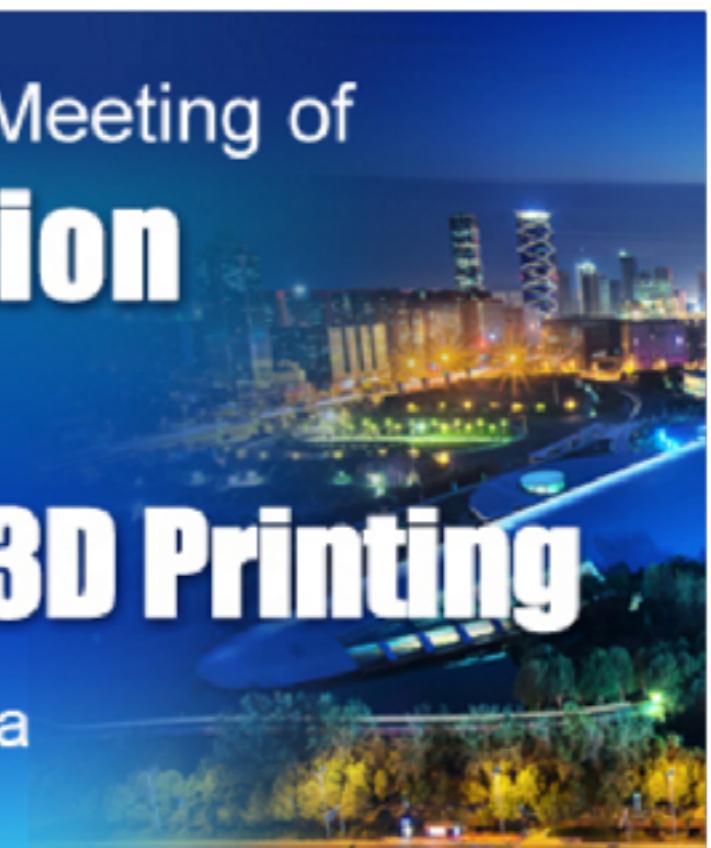
The 6<sup>th</sup> Annual Digital Medicine Academic Meeting of  
**Chinese Medical Association**

AND The 1<sup>st</sup> International Conference of

**Digital Medicine & Medical 3D Printing**

Time: June 17-19, 2016

Venue: Nanjing, China



## Topic I: Digital Engineering Technology Related to the Medicine

- ◆ Biological Big Data Development and Use of the Key Technology Research
  - ◆ Digital Anatomy
  - ◆ Information Obtaining of Human Body
- ◆ 3D Navigation Technology Original Innovation
  - ◆ Virtual Simulation Organs
  - ◆ Digital Human Body and the Simulation
  - ◆ Medical Robot and Artificial Intelligence
- ◆ Digital Instrument Device Development Upgrade
  - ◆ Digital Minimally Invasive and Noninvasive Surgery Technology
- ◆ Digital Medical Image Analysis and Data Processing Technology
  - ◆ Medical Wearable Equipment and M-Health
    - ◆ Visualization Technique
    - ◆ Digital Orthopaedice
  - ◆ Digital Liver and Biliary Tract Surgery
- ◆ The Use Of Digital Model In3d Printing Pre-Design Stage

## **Topic 2: The Clinical Application of Digital Diagnosis and Treatment Technology**

- ◆ Digital Medical Technical Support Clinical Diagnosis
- ◆ Digital Medical Technology of Medical Image Data Post-Processing
  - ◆ Surgical Operation Design
  - ◆ Virtual Surgery Simulation
  - ◆ Surgical Navigation
  - ◆ Evaluating Curative Effect
  - ◆ Clinical Decision Support System

## **Topic 3: Digital Hospital Administration and Medical Education**

- ◆ Digital Hospital Construction
- ◆ Administrative Management Information of Health Systems
- ◆ The Application and Management of Digital Medical Information
  - ◆ EMR ( Electronic Medical Record )
  - ◆ Telemedicine
  - ◆ Medical Health Data Privacy Protection
- ◆ Medical Education Courseware and Digital Simulation Teaching

## **Topic 4: Medical Materials and Advanced Manufacture**

- ◆ New Biomedical Materials and Advanced Manufacture
  - ◆ New Medical Materials and 3D Printing
- ◆ The Research and Application of 3D Printing Medical Apparatus and Instruments,
  - ◆ Biological 3D Printing

## **Topic 5: Application and Development of 3D Printing Technology in the Medical Field**

- ◆ 3D Printing Preoperative Planning
- ◆ Surgical Guide Design and Application
- ◆ The Research and Development of CAD Design and 3D Printing Personalized Implants
- ◆ 3D Printing Used in Clinical Practice of Osteology, Oral and Maxillofacial Science, Neurosurgery, Surgery, Cardiac and Thoracic Surgical and So On
- ◆ Drug Delivery System with 3D Printing Pharmaceutical

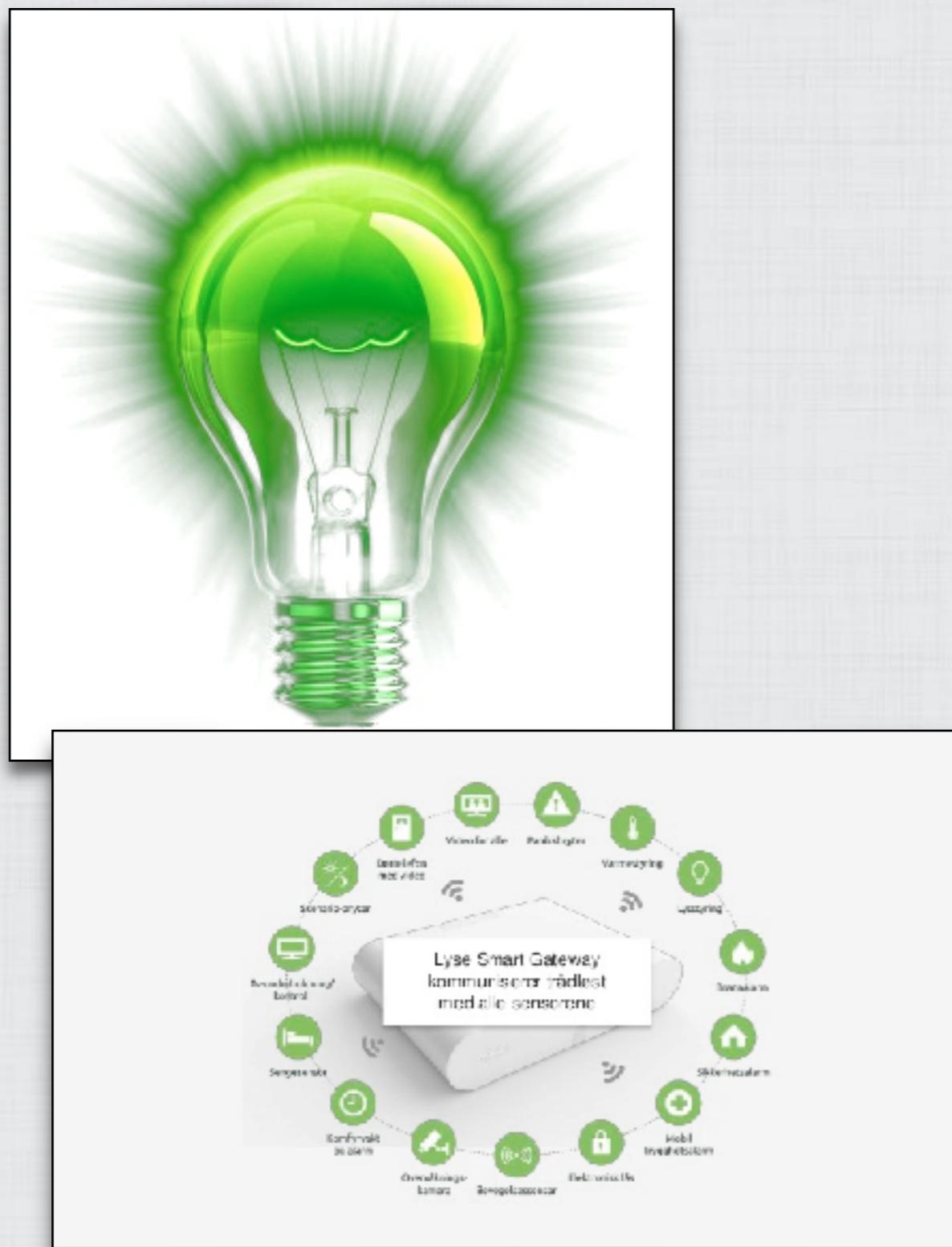
# What happens in Norway?



LØFTET: Partileder Jonas Gahr Støre i Ap vil løfte Norge som picner innen e-helse. Og målet er at Norge er best i Europa på dette, innen det er gått åtte år. Foto: Anne Grete Storvik

POLITIKK OG ØKONOMI

## Ap lover: – Norge skal bli best i Europa på e-helse innen 2025



## The new home hub:

Video  
Panic button  
Managing temperature  
Managing light  
Fire alarm  
Security  
Mobile alarm for elderly  
Electronic lock  
Movement sensor  
Security camera  
Cooking alarm  
Bed sensor  
TV controll  
Entertainment control  
Managing button  
Door phone with video  
Source: Lyse



- ◆ Monitoring
- ◆ Sensors
- ◆ GPS
- ◆ Communication
- ◆ Mobile

# Dementia

Diagnostic  
Reduce progress  
Care - longer at home

Quality of life better

Source: KPMG Norway



# Diabetes

Information - e-learning

Self test

Online programs

Food - where?

Quality of life better



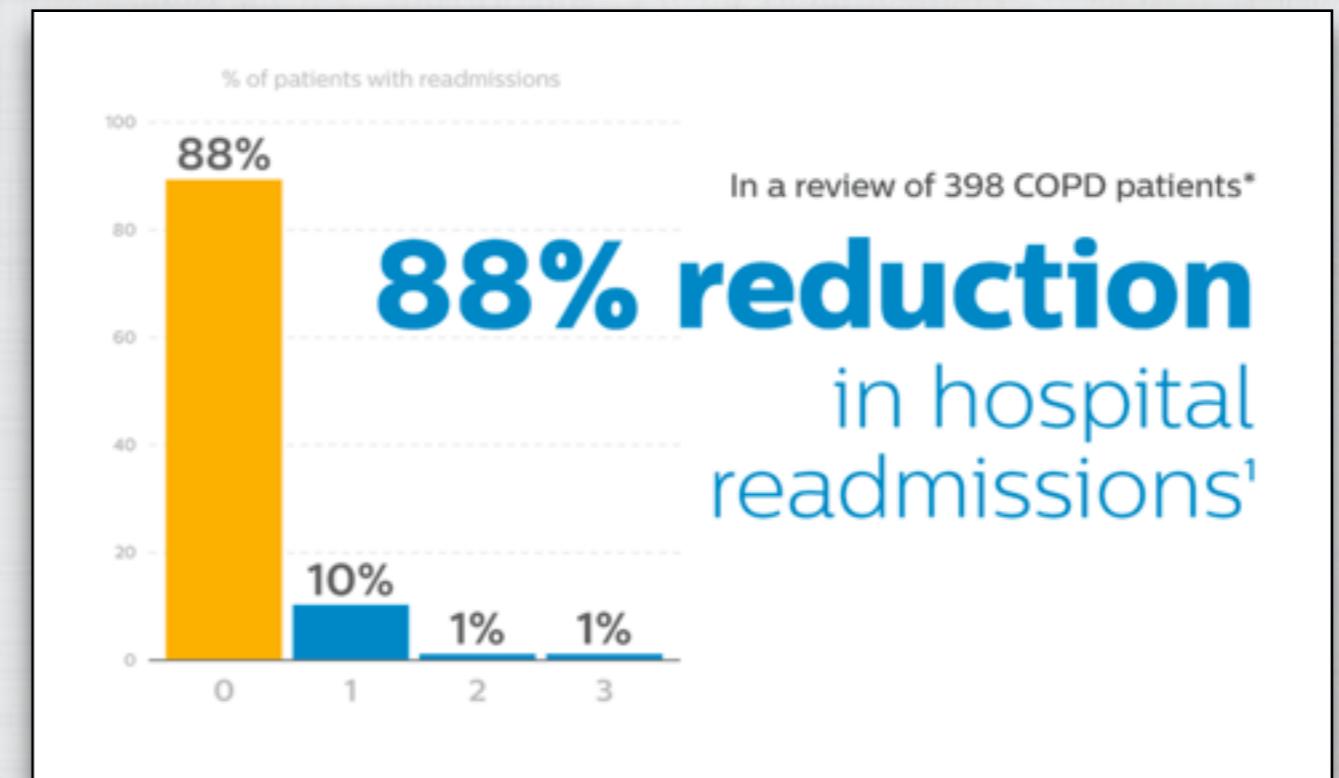
# COPD

Treating patients with advanced technology devices

Empowering clinicians and patients with education

Monitoring patients with connected solutions

Source: Philips



# eMental health

## E-mental health: what's all the fuss about?

Mental Health Network  
NHS CONFEDERATION



**"E-mental health is the use of information and communication technologies (ICT) to support and improve mental health."**

*"The impact digital technology has had on the way we live our lives today is immense."*



**74%**

of households  
are online.



**14.2**

the average number  
of hours a user spends per  
week online.



**91%**

of UK adults use a  
mobile phone.

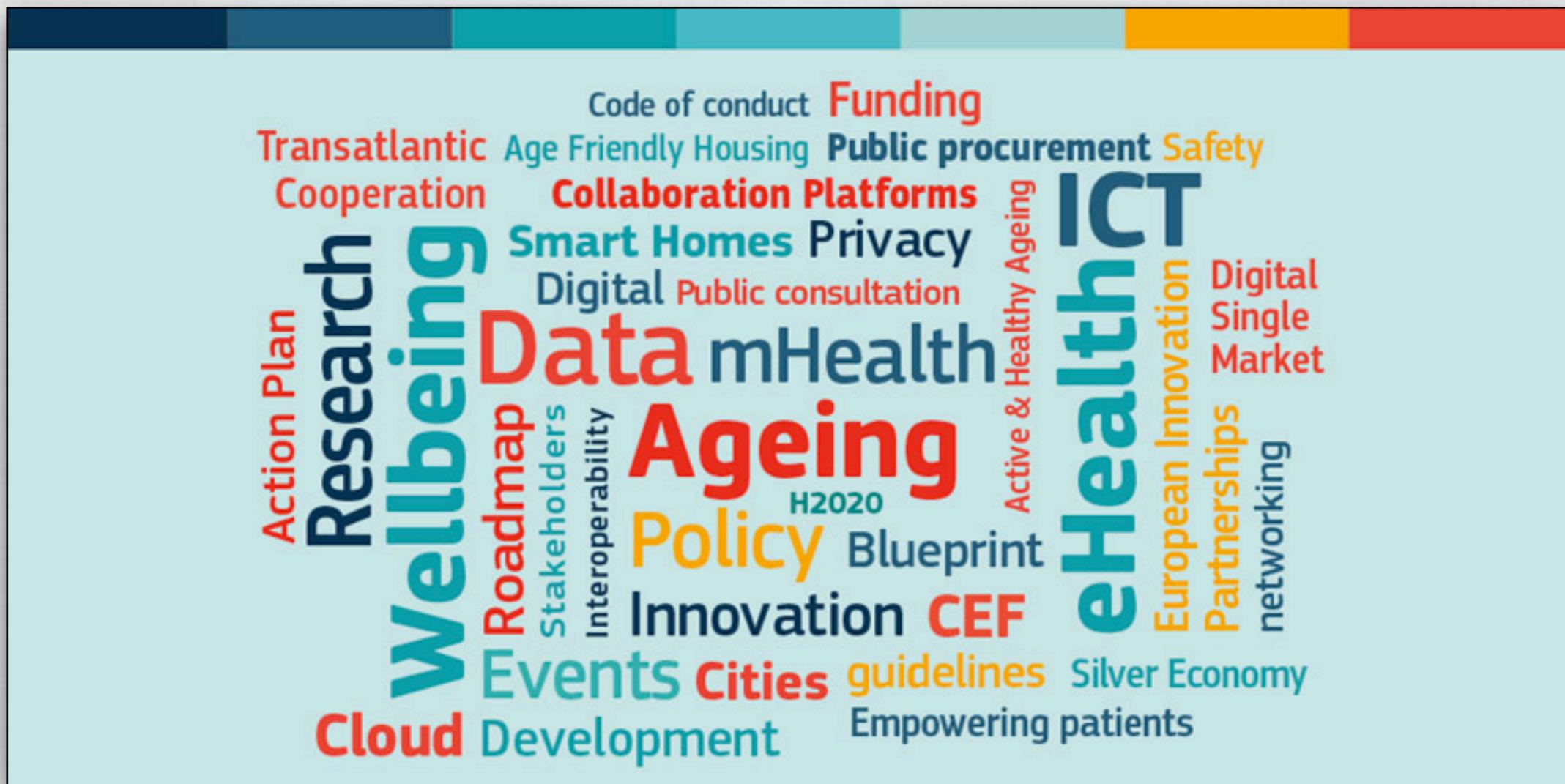


**52%**

of younger adults  
aged 16 to 24 use a  
smartphone compared to  
30% of all adults.

*"By making the most of the opportunities presented by e-mental health, we can address some of the biggest future resource challenges facing the mental health sector and support the cultural transformation we need."*

# Ageing





# The future home

# The cool stuff (some of it)



**VG NYHETER**

Kameraer og sensorer skal overvåke demente

Slik overvakes eldre med demens i egen leilighet





**Alder**  
ET RIKERE LIV

Blogg

Mer tid til mennesker  
Et intelligent verktøy for bedre frivillighet



## Brain Aging Monitor

The thermometer for cognitive decline



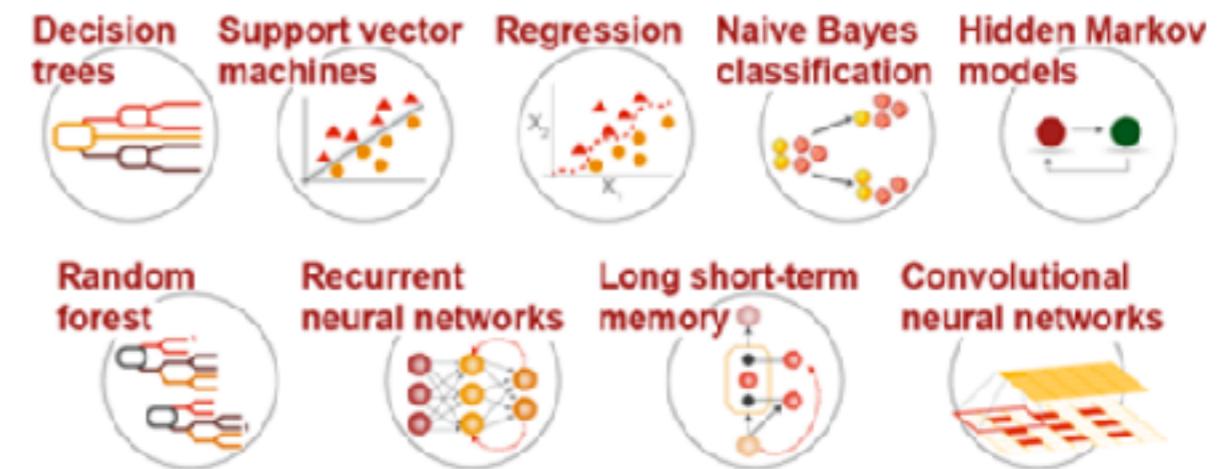
## BREAKING NEWS

### Elon Musk Just Outlined How He'll Merge The Human Brain and AI

Last week, Elon Musk confirmed reports regarding the launch of his new venture,...

FUTURISM.COM/DONT-EDIT-ELON... | DOOR SARAH MARQUART

## Machine learning methods



Source: pwc.com/nextintech  
© 2016 PricewaterhouseCoopers LLP. www.pwc.com/structure

## Machine learning methods (infographic)

What's the right algorithm for the task? Our visual primer shows the most common ones in use and the business problems they solve.

USBLOGS.PWC.COM

# Exploring open data from Oslo City Bike

A city full of blue and white bikes is a sure sign that spring has arrived. Carefree hipsters as well as parents running late for work are observed riding through the streets of Oslo.

In the spirit of transparency, Oslo City Bike have released both an [API and historical data](#) on how





The banner features a woman with blonde hair, wearing a dark blue dress and a lanyard, speaking into a microphone. In the background, other people are visible in a conference setting.

**EHiN**

HJEM INNSPILL TIL PROGRAMMET PARTNER OM OSS / KONTAKT 

**31/10 - 1/11 2017, Oslo Spektrum**

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# Thank you!

## Hope to see you at EHiN

*31 October - 1 November*

*Nard@ikt-norge.no*