CHANGING THE HEALTHCARE EQUATION –

Role of IT in eHealth

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25th October, Viena.

MACRO, SECULAR FORCES

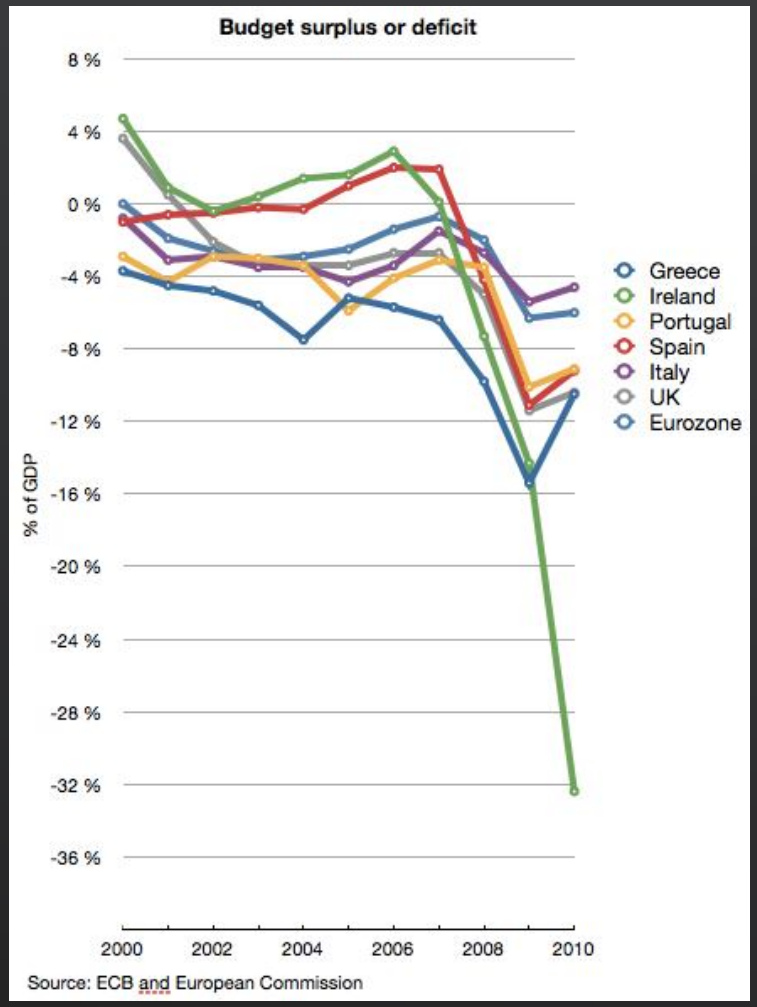
Demographics

- By 2025, in Germany, the number of people under 40 will decrease about 28%
- In Europe, the population over 65 years of age is estimated to increase from 17% to 30% within next two decades
- In Germany, over 90% of the aging population lives with a chronic condition

MACRO, SECULAR FORCES

Financial crisis & healthcare spend

- 10% of EU workforce unemployed
- 2010 EU GDP growth 1.8%
- Healthcare spending growth in Europe is twice as much as GDP growth
- In Spain 80% healthcare spend in on aging population



MACRO, SECULAR FORCES

Information Explosion

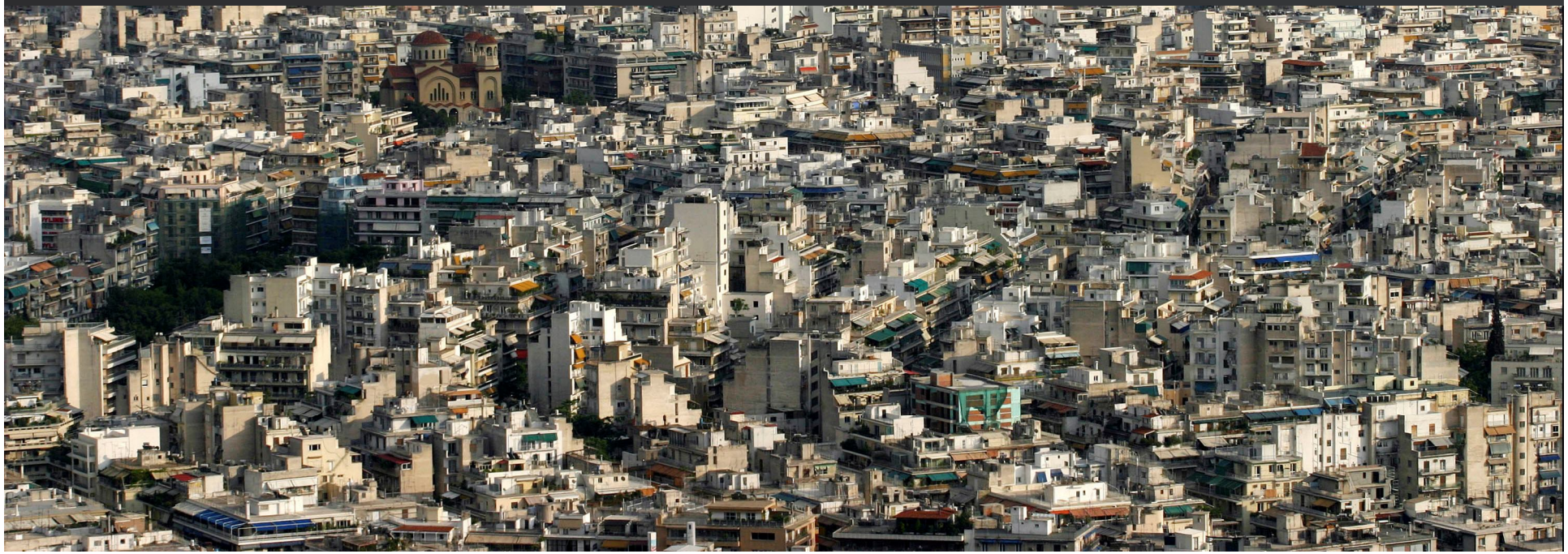
- There are over 570 million wireless, handheld devices in Europe
- Penetration rate of mobile devices in Europe is over 70%
- In 2011, 58% of European population is using the internet[2]
- Information doubles every 4 years
- Digital content — every 18 months
- Society expectation from Services

All these are putting

Governments and Healthcare Systems

under extreme pressure

The infrastructure we've built over the last 100 years…
doesn't map to the needs of the next 100 years



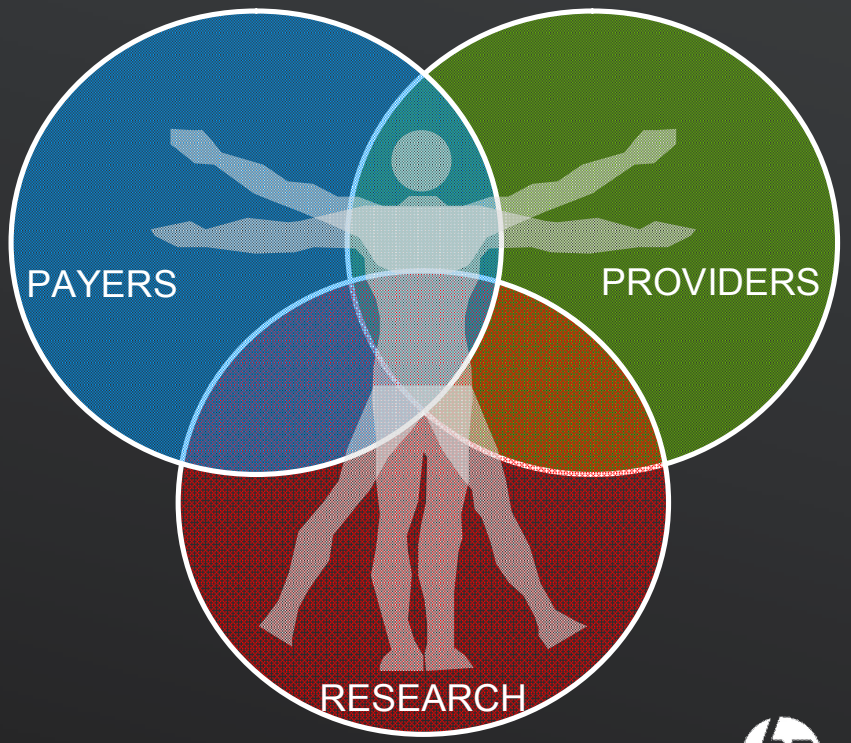
“Everything as a Service”

A world of information
delivered wherever, however and whenever you need it

CHANGING THE HEALTHCARE EQUATION

From treating sickness to enabling wellness

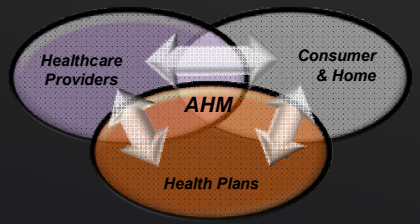
- Transform the “three-legged stool” into a solid foundation of patient care
- Better access to information across the health continuum
- Improved consumer experience: Preventive, personalized, transparent & accessible



Healthcare call for paradigm shift

Goal: organize available healthcare information in order to improve the efficiency of the ecosystem

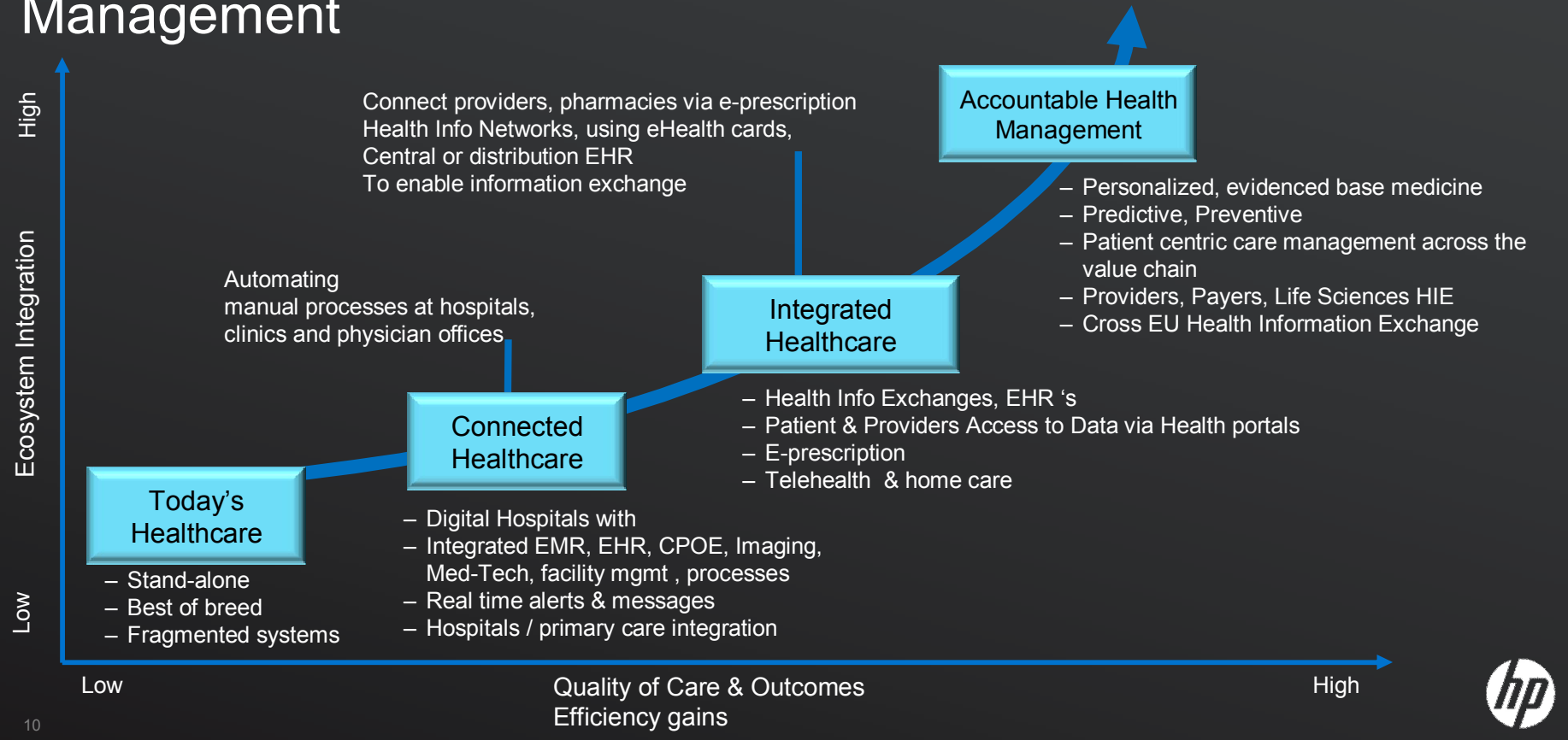
- European Union outlines 10-year eHealth plan - March 15, 2010
- U.S. Health Insurance Portability and Accountability Act (HIPAA) and Health Information Technology for Economic and Clinical Health Act (HITECH).



From		To
Fragmented	Patient Flow	Integrated & Automated
Invasive	Diagnosis & Treatment	Less Invasive, Preventive, Image based
Provider Centric	Focus	Patient Centric
Centralized - Hospital	Monitor	De-Centralized Shift to Community
One Size Fits All	Approach	Personalized Medicine
Therapeutics/ Diagnostics/Devices	Tools	"Theranostics"
Treating Sickness	Objective	Preventing Sickness "Wellness"

Source: Frost & Sullivan

From Healthcare (“Sickcare”) to Accountable Health Management



Trend 1. Electronic Health Records

- EHR is accepted although approaches to implementation are varied
- Increased nationalization of health records across the “continuum of care” - (public hospital, community health provider, GP, Pharmacy)
- Move from facility centric to patient centric
- Examples of eHealth initiatives are underway across the globe :-
  - UK’s NPfIT
  - Canada’s “Infoway”
  - Germany’s “Health Card”
  - Netherlands “Aorta”
  - Greece’s “EHCR”
  - Wales “Individual Health Record”
  - Denmark’s “MedCom’
  - Norways’ “KITH”
  - Sweden’s “Carelink”
  - Malaysia’s “Open Menu Plus”
  - Veterans Health Authority HealtheVet”
  - Hong Kong’s “Electronic Health Record Sharing System”
  - Singapore’s MOHH National electronic Health records initiative

Benefits of an EHR

Veterans' Health Administration Transformations 1995-1999

- Closed 55% (28,886) of acute care hospital beds
- Increased patients treated by >24% (700,000)
- ~350,000 (36%) fewer admissions per year
- 48% increase (25 to 37 million) in ambulatory care visits
- Decreased staffing by 12% (25,867 FTEs)

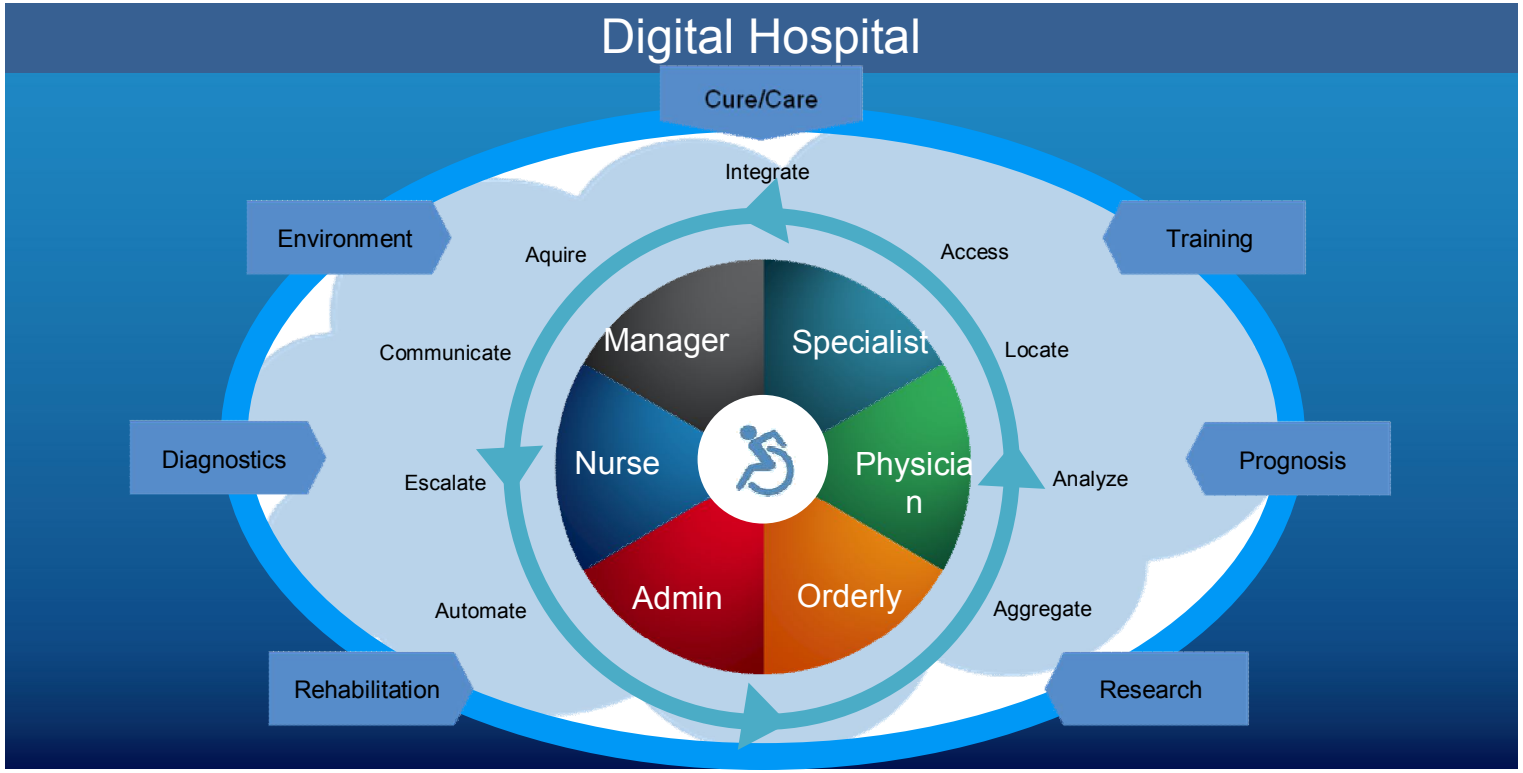
Efficiencies in a stressed system ✓

Ability to respond to change - AGILITY ✓

Better outcomes ✓

Trend 2. Digital Hospital

Technology supporting Care Orchestration



What are the trends in Digital Hospital?

- “Patient-oriented” or “Efficiency” drives design
- Reduction in error rates
- Single enterprise view – care outside of the hospital
- Enterprise Architecture adopted early to gain efficiencies and leverage best practice with technology
- Proven models to leverage – St Olav’s, Nye Ahus
- Evidence based design is still in its infancy with most facility investments informed by preference and precedence
- Design for the future is a must – floor width, over-wired walls, open space floor plan
- Resilient and responsive IP network with 99.999% availability

DIGITAL HOSPITAL CASE STUDY – ST. OLAV'S

"… should be considered the world's benchmark in terms of tactical and strategic usage of technology in life and death scenarios for the better of their customers, the patients …"
– IDC Case Study

ST. OLAVS HOSPITAL
UNIVERSITETSSYKEHUSET I TRONDHEIM

Delivering outcomes that matter

30%	20%	6%
Outpatient capacity	Length of stay	Productivity improvement (per year)

..while reducing overall operating expenses..
..while improving patient satisfaction..

Based on our success in Norway, HP has established a Health Center of Excellence, which can be leveraged WW.

Source: IDC Health Industry Insights

Trend 3. Digital Home

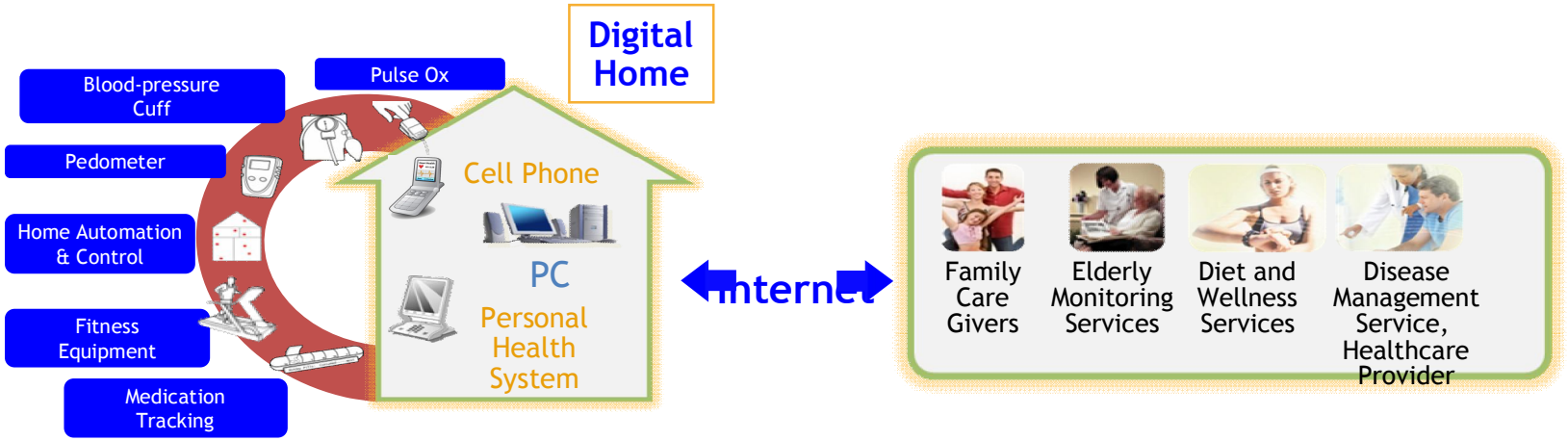
- Independent living
- Chronic disease

Basic life monitoring:

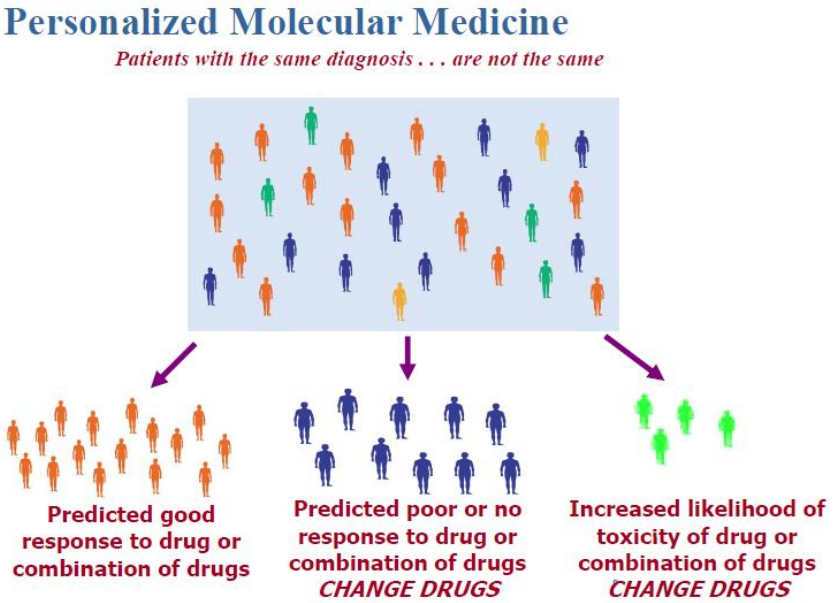
- Bed pressure (sleep)
- Bathroom sensor
- Gas / water sensor
- Emergency sensor

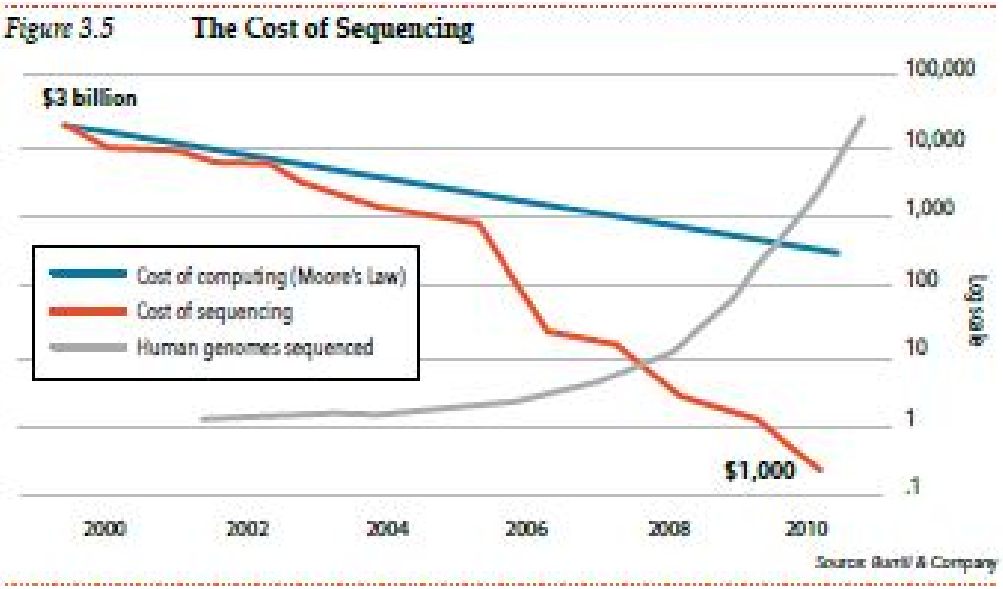
Benefits:

- Involve family members
- Allow remote analysis & care
- Provide integrated view
- Encourage early detection
- Reduce costs



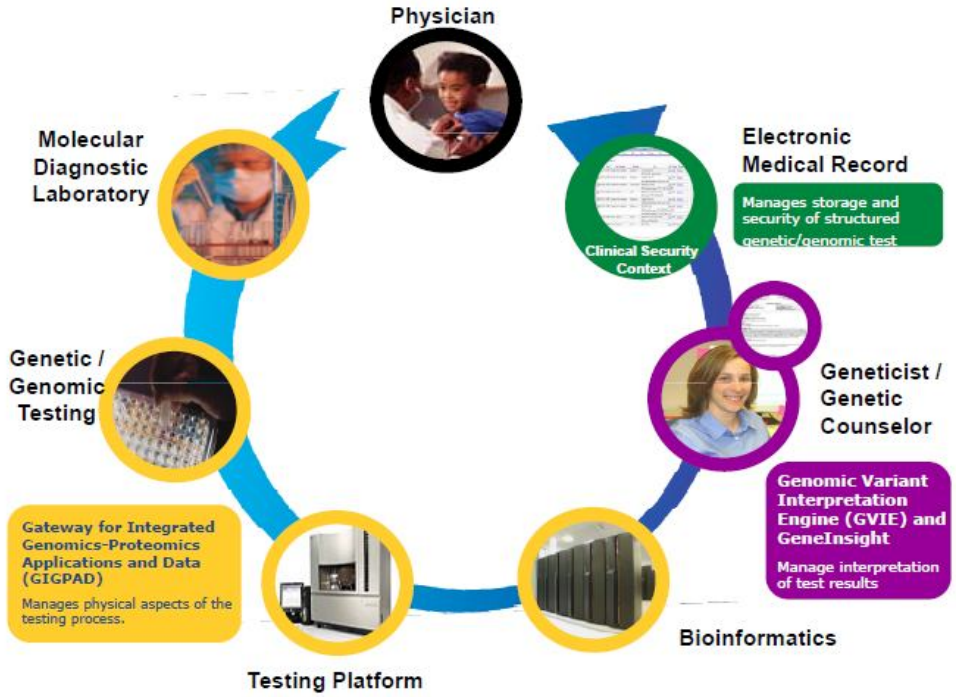
Trend 4. Personalized Medicine





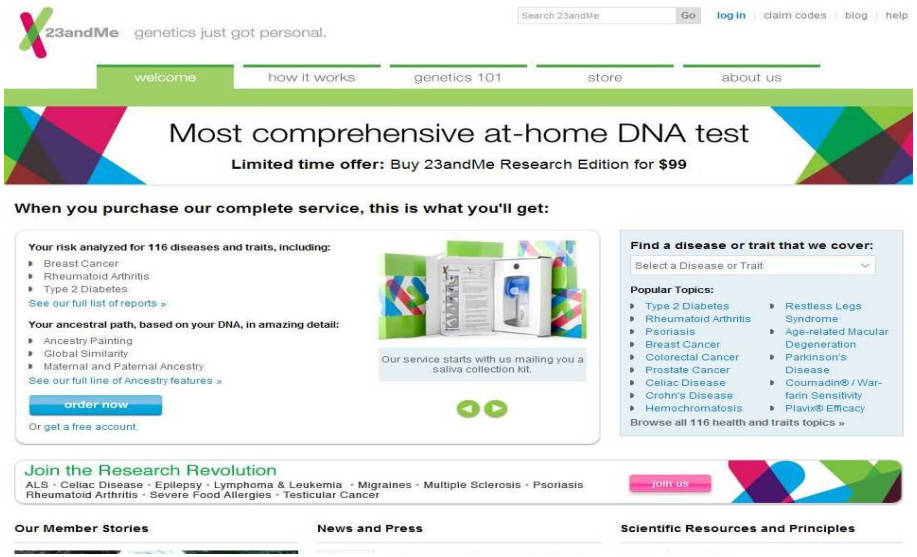
Source: Nature Biotech

Personalized Medicine, the right drug to the right patient at the right time



Healthcare 2015

- Empowered patients
  - explosion of at home testing
  - personal health records
- Personalized medicine
  - advanced genetic testing
  - microfluidics
  - new drug delivery systems
- Virtual Health
  - telemedicine
  - medical home



Healthcare 2015

- Social networking
  - patient wikis
  - clinical collaboration (Brightsquid)
- Advanced user interfaces
  - rise of Smartphones and new computing devices
- Advanced clinical applications
  - Digital Pathology
- Real-time hospitals

Role of IT in Healthcare

- IT is an enabler of
  - Change
  - Efficiency
  - Innovation
- Technology is here today...