

eHealth and future ICT

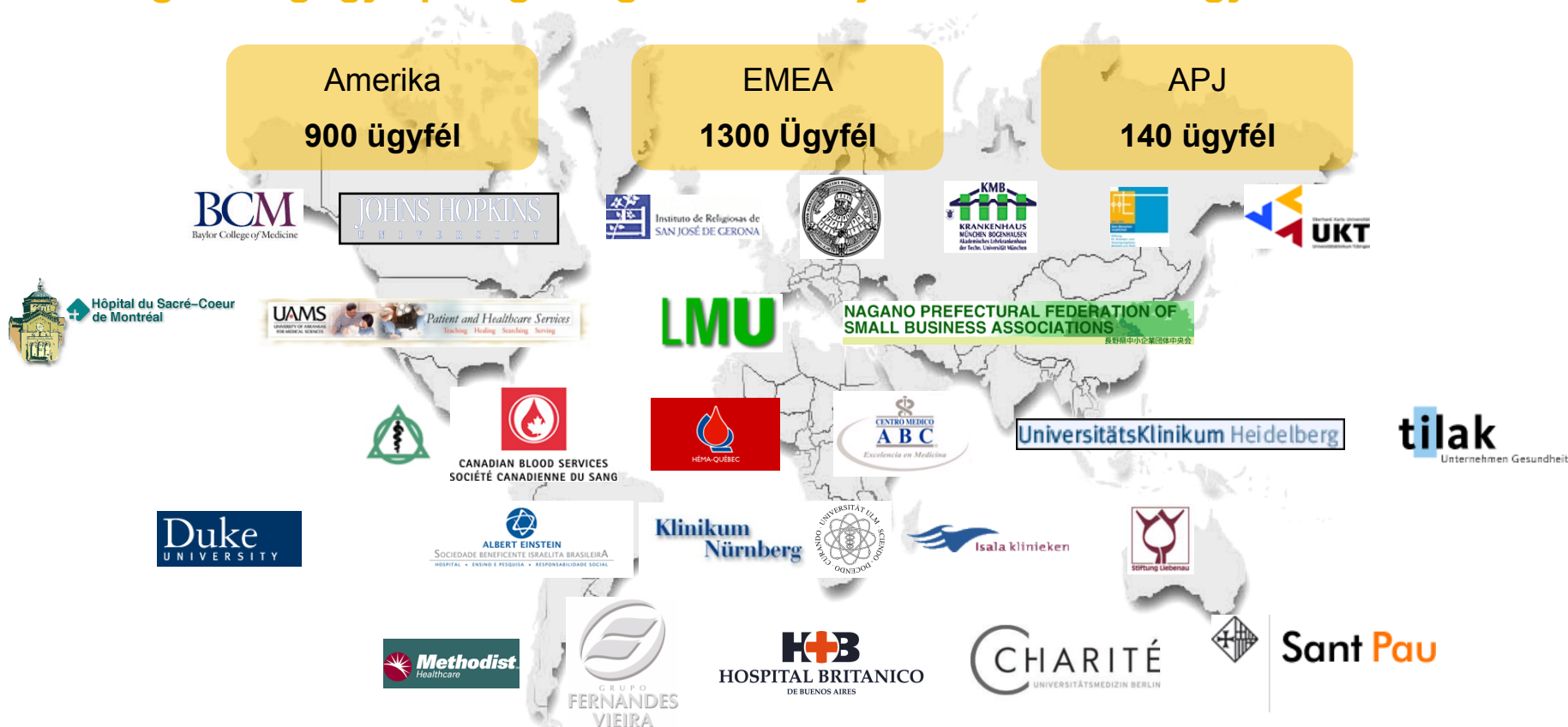
Tamás Klotz
Senior Advisor Public sector

7 of the 10 best hospitals in the world run SAP solutions.

Source: Healthcare Global Top 10 Hospitals In The World 2014

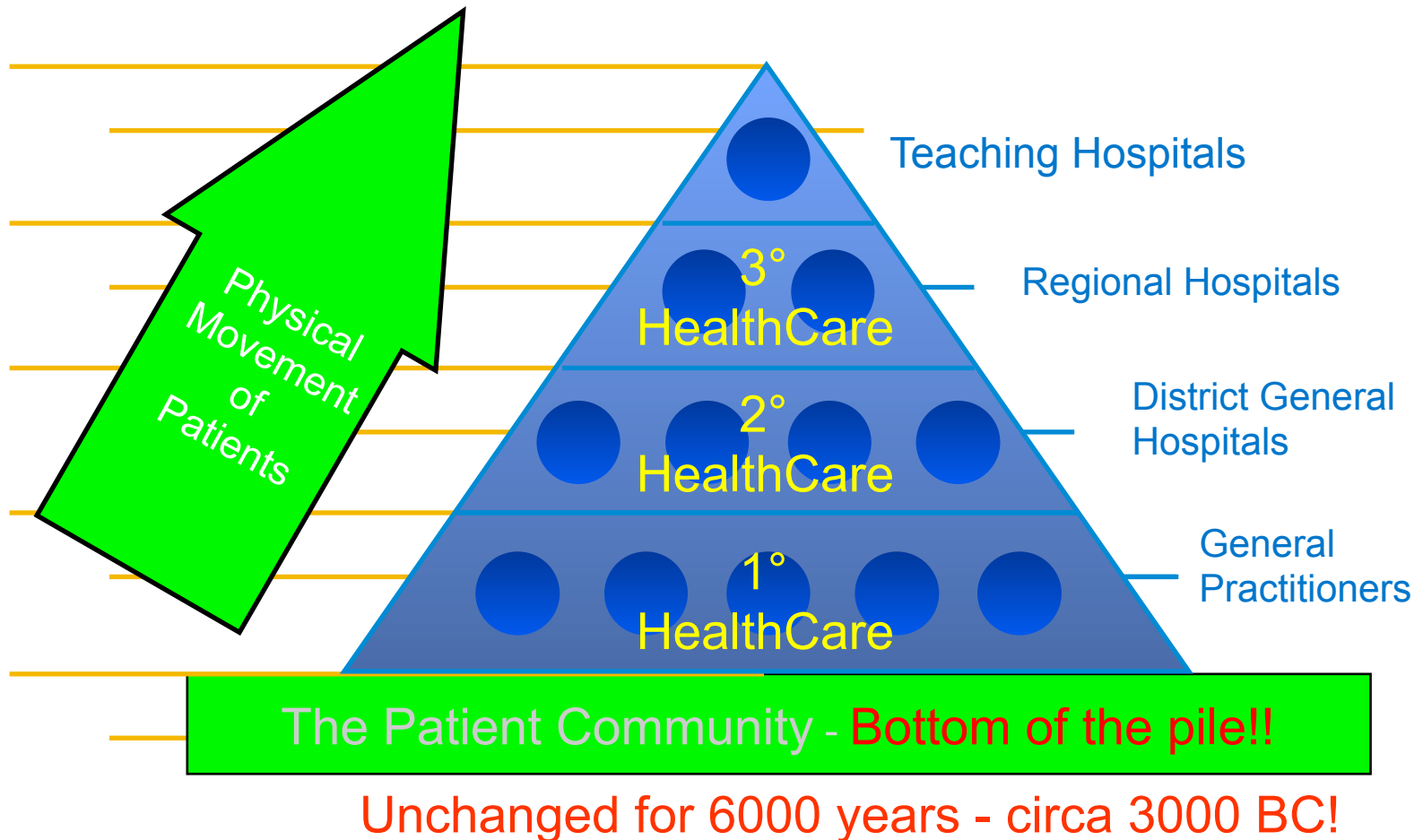
Globális ügyfélkör

SAP Egészségügyi iparági megoldás: kiterjedt nemzetközi ügyfélkör

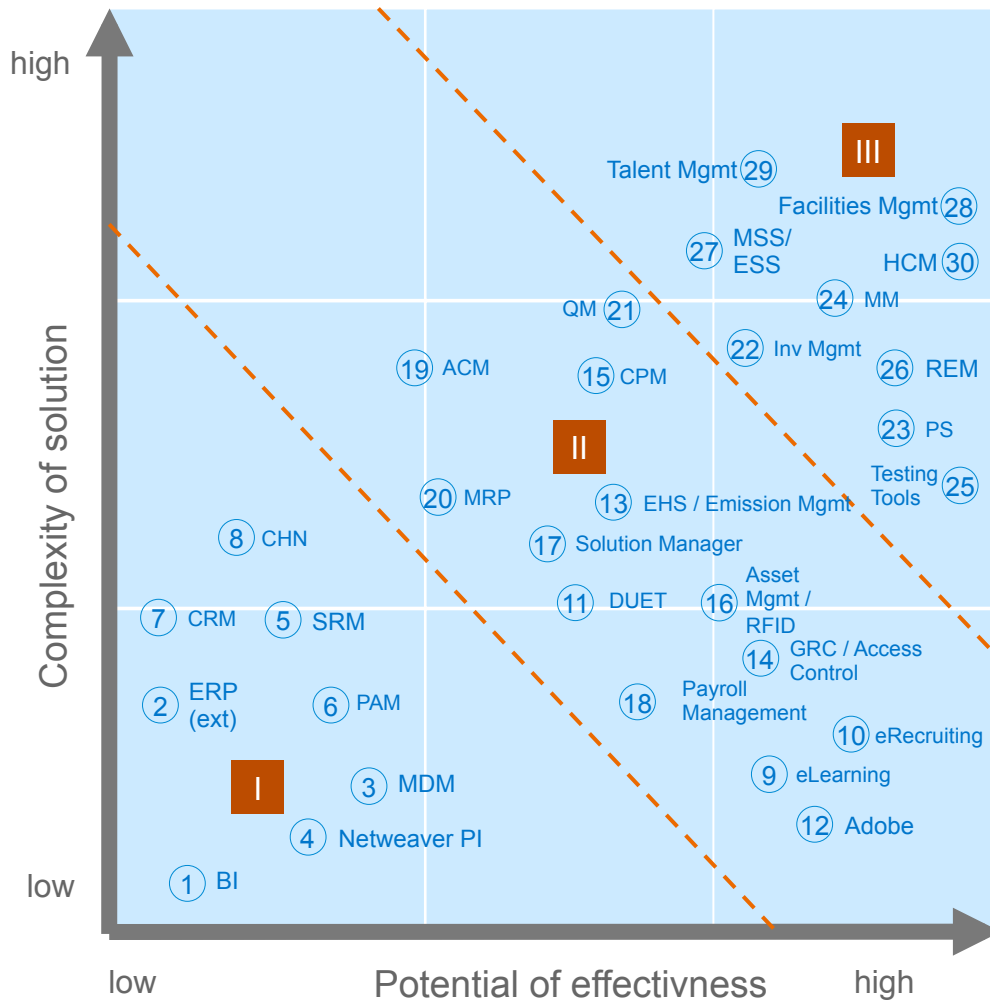


Több, mint 2300 ügyfél, több mint 60 országban

Traditional Healthcare Delivery Model



IT for Health industry



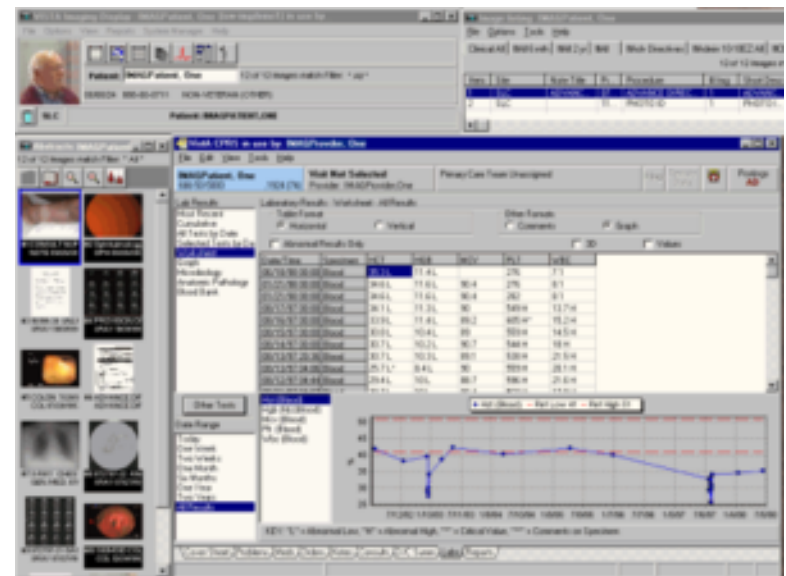
I	Short term
	1. BI 2. ERP Standard (extension) 3. MDM (Master Data Mgmt) 4. Netweaver PI 5. SRM (Supplier Relationship Mgmt) 6. PAM – Patient Mgmt & ISH-MED 7. CRM (Customer Relation Mgmt) 8. CHN (Collaborative Health Network)
II	Mid-term
	9. eLearning/RDW 10. eRecruiting 11. DUET 12. Adobe 13. EHS (Env., Health, Safety)/ Emission Mgmt 14. GRC (Govern., Risk, Compl.) / Access Control 15. CPM (Corporate Performance Mgmt) 16. Asset Management / RFID 17. Solution Manager 18. Payroll Management 19. ACM 20. MRP (Material Resource Planning) 21. QM (Quality Mgmt)
III	Longterm
	22. Investment Mgmt 23. PS (Project Support) 24. MM (Materials Mgmt) 25. Testing Tools 26. Real Estate Mgmt 27. MSS/ESS (Employee Self Service) 28. Facilities Management 29. Talent Management 30. Human Capital Management

Traditional Healthcare IT



Focused on support systems

- Electronic Records
- E-Prescribing
- Management Information Systems
- Electronic Payments



Patient Electronic health record

Handy patients enterprise edition

File Edit View Help



David (5 month and 24 days)

Mother: Teacher
Father: Financial advisor
Parents: Married

Last: **Anderson** P

First: **David** Boy

Birth: 5 January 2009

Age: 5 month and 24 days Patient nb: 3

Appointments

Forms

- Meeting (Doctor)
- Full status (Doctor)
- Assistant
- Billing
- Reports
- Consultation (TARMED)

SOAP

R-V	Sum.	T
Admission	P, T, PC	Agenda

Sheets

- SOAP
- Prescription
- Consultations summary
- Troubles summary
- Medication & Plan
- Reading dossier
- Antecedents
- Vaccines
- Info for patient
- Info for patient R/T

Meetings

4 month checkup	8 May 09	4m.3d
3 months checkup	6 Apr 09	3m.1d
2 month checkup	5 Mar 09	2m.0d
1 month checkup	5 Feb 09	1m.0d
Respiration problem	22 Jan 09	17d
10 days checkup	13 Jan 09	8d
Control for return at home	9 Jan 09	4d

Diagnosis

General ☒ Social ☐

New documents

- Chest Radiogra
- 03 Jun 2009
- Patient pictur
- 01 Jun 2009

To Do

Send checkup

Assist: 1 Doc: 0

Notes

Ask the mother next appointment for the insurance nb.

Current doctor: Dr Herman

Menu 1 Menu 2 Menu 3 Search

Birth: 5 January 2009

Current age: 5 month and 24 days

Age consultation: 17 days

Thursday, 22 Jan 09 at 11:04 AM

New event Prev. event Next event Del. event Fratrie

Consultation description Billing

Respiration problem

Diagnosis 1/2

General

New Delete

Subjectif

David seems to have regularly his nose blocked and can't breathe correctly

Synthesis

Objectif

Ok

Plan

free nose regularly

Order

Fluimare Plus Spray nasal, 3-6x/day 1-2 Spout

Puls: 118 Weight: 3300 Term of Pregnancy: 39

P Systolic: Height: CP: Temp: 37.8

P Diastolic: CP: Temp: 37.8

- Chest Radiography - 3 June 2009

- Patient picture - 1 June 2009

Import Files

Page 1/1

Draw

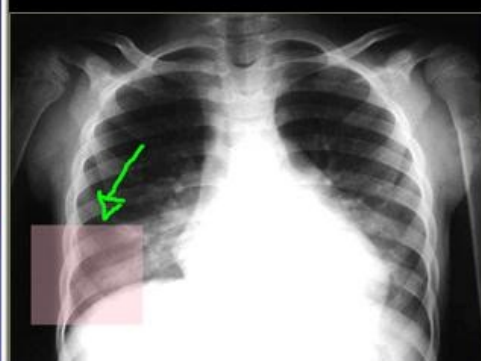
Mark

Color

Pen

5

Brightness

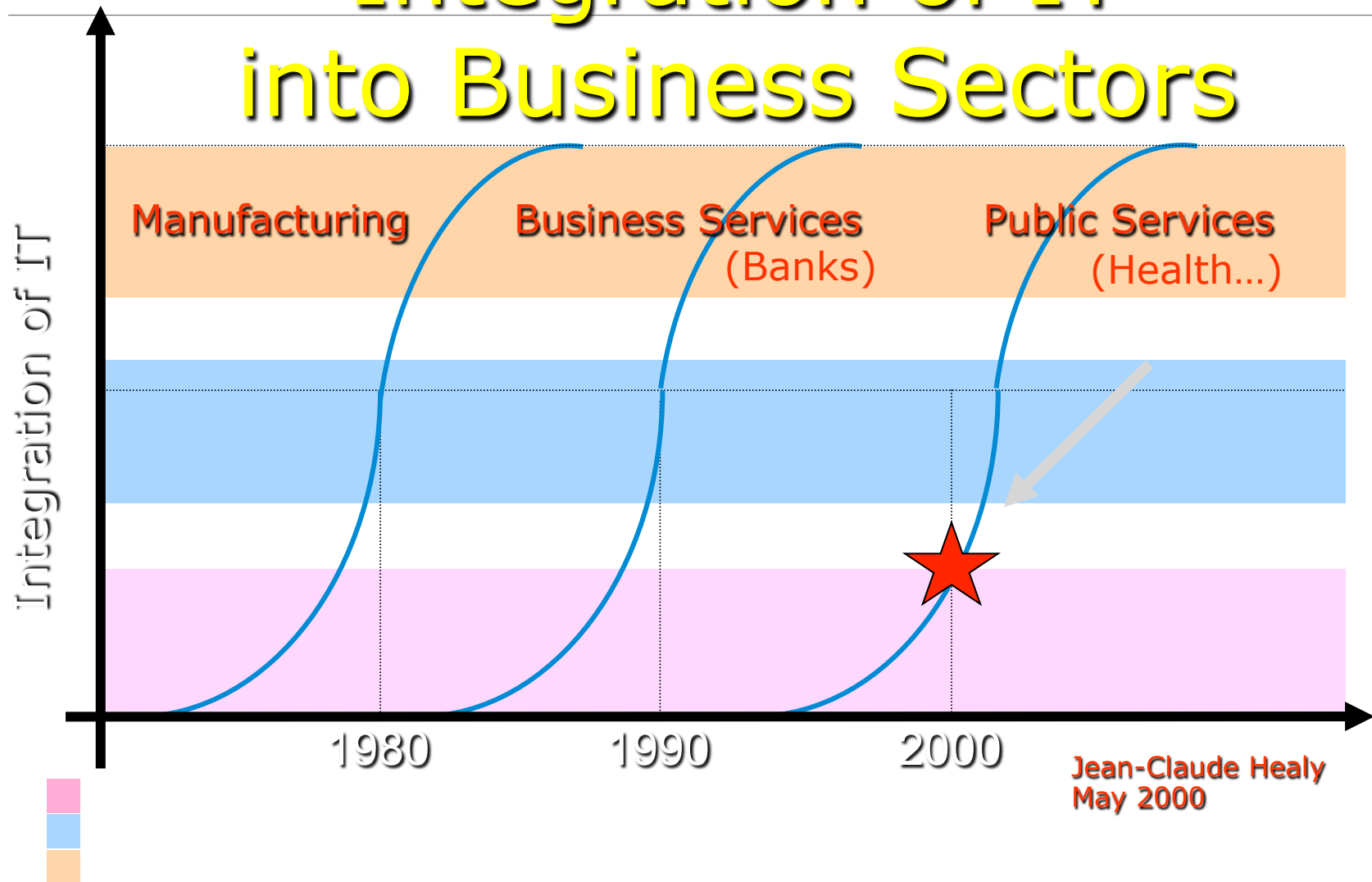


Challenges remain today

Standard for communication of health data

- ANSI X12 (EDI) - transaction protocols used for transmitting patient data. Popular in the United States for transmission of billing data.
- CEN's TC/251 provides EHR standards in Europe including:
 - EN 13606, communication standards for EHR information
 - CONTSYS (EN 13940), supports continuity of care record standardization.
 - HISA (EN 12967), a services standard for inter-system communication in a clinical information environment.
 - Continuity of Care Record - ASTM International Continuity of Care Record standard
 - DICOM - an international communications protocol standard for representing and transmitting radiology (and other) image-based data, sponsored by NEMA (National Electrical Manufacturers Association)
 - HL7 - a standardized messaging and text communications protocol between hospital and physician record systems, and between practice management systems
 - ISO - ISO TC 215 provides international technical specifications for EHRs. ISO 18308 describes EHR architectures

Integration of IT into Business Sectors



Jean-Claude Healy
May 2000

The Paradigm Shift

The Informed Wired up Citizen Community
The well-being factor

WWW

IDTV

IDTV

WWW

C-Health

Direct Access to specialists

Freestanding
Diagnostic
Centres

Home
Care

Health
Kiosks

DayCare
Surgery

Community
Hospitals
(Non-acute)

Community
Hospitals
(Acute)

Acute
Trauma

Maternity

Allied HealthCare Professionals

Primary HealthCare

The 'Super' Primary Care Physician

PRIMARY TELERADIOLOGY
AND TELEPATHOLOGY

eHealth &
Telemedicine

Clusters of
Specialists with
Global Access

TELEMEDICINE

Focused on patient care

- Telehealth
- Mobile Health (mHealth)
- Remote Monitoring
- Outsourced Specialty Services
- Telecare
- E-Health



NAME GAMES

▪ **Telemedicine**

▪ **Telehealth**

▪ **m-Health**

▪ **Remote Medicine**

▪ **E-Health**

▪ **Telecare**

WORLDWIDE DRIVERS FOR TELEMEDICINE

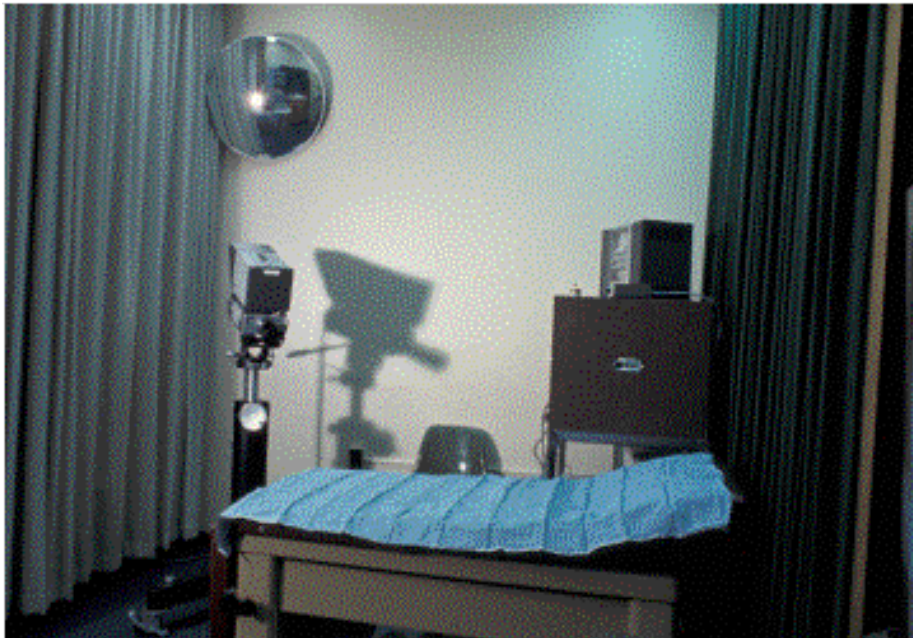
Accelerating demands and costs
Shortages of health professionals
Global public health concerns

HISTORY OF TELEMEDICINE



HISTORY OF TELEMEDICINE

Boston Logan Airport to Massachusetts General Hospital
1967



HISTORY OF TELEMEDICINE

STARPAHC – On the Papago Indian Reservation
1975

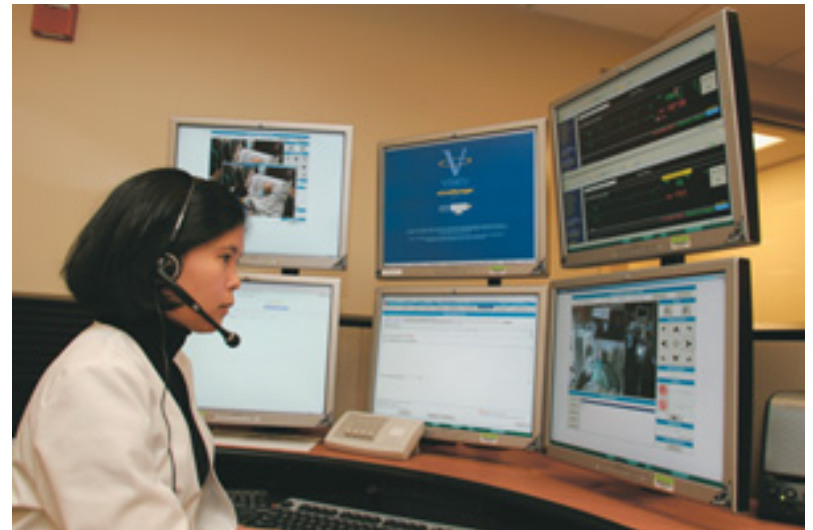


TELEMEDICINE SERVICES



Outsourced services –
teleradiology, neurology,
mental health

Service contracts -
prisons, oil rigs, ships,
international



EMERGENCY SERVICES AND DISASTER RESPONSE

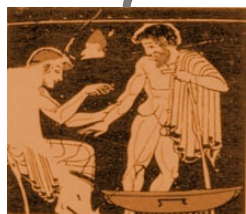


GENERATION WEB 2.0: USING NEW TECHNOLOGIES IN THE PUBLIC SECTOR IN EUROPE

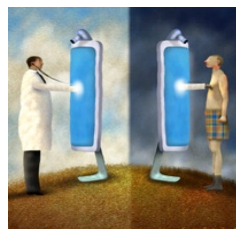
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Moving to ehealth



Healthcare
eHealth



Telemedicine



Store&Forward



Telehomecare



Telesurgery

What is eHealth?

Proliferation of terms:

Ehealth, telehealth, telemedicine, mhealth
teleoncology, teledermatology

World Health Organization:

- *eHealth is the transfer of health resources and health care by electronic means.*
- delivery of health information, for health professionals and health consumers, through the Internet and telecommunications
- using the power of IT and e-commerce to improve public health services, e.g. through the education and training of health workers.
- use of e-commerce and e-business practices in health systems management.



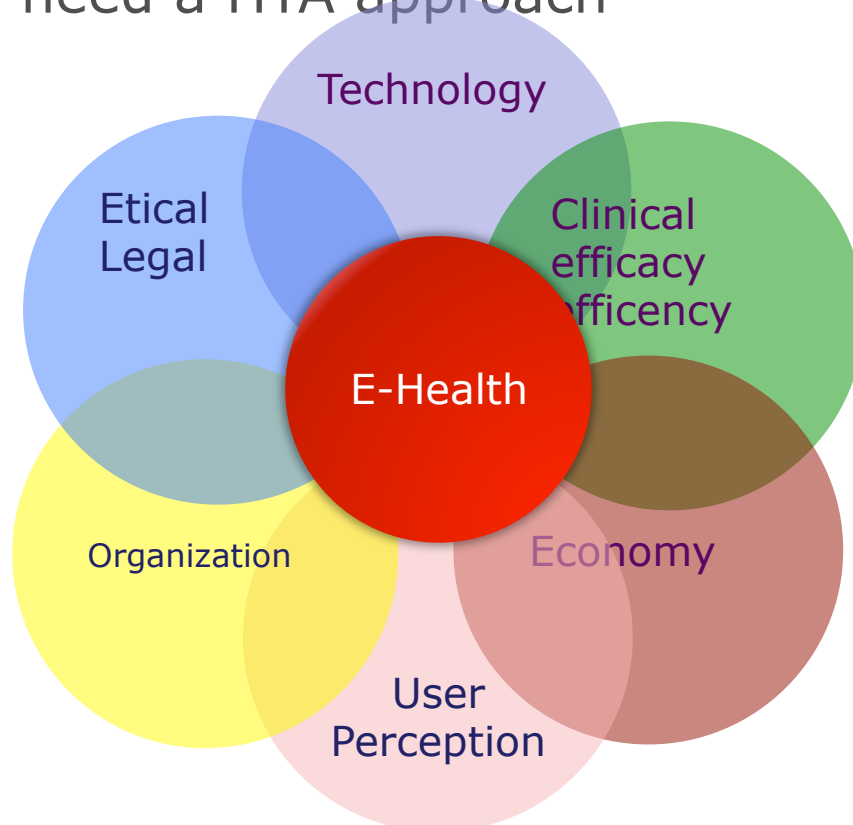


GENERATION WEB 2.0: USING NEW TECHNOLOGIES IN THE PUBLIC SECTOR IN EUROPE

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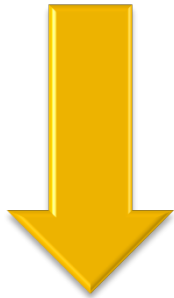


We need a HTA approach



PATIENT EMPOWERMENT

Health literacy



**Link between
patient and his/her
understanding of
health information**



Patient control



**Relationship
between the
patient and the
management of
his/her condition**



Patient participation



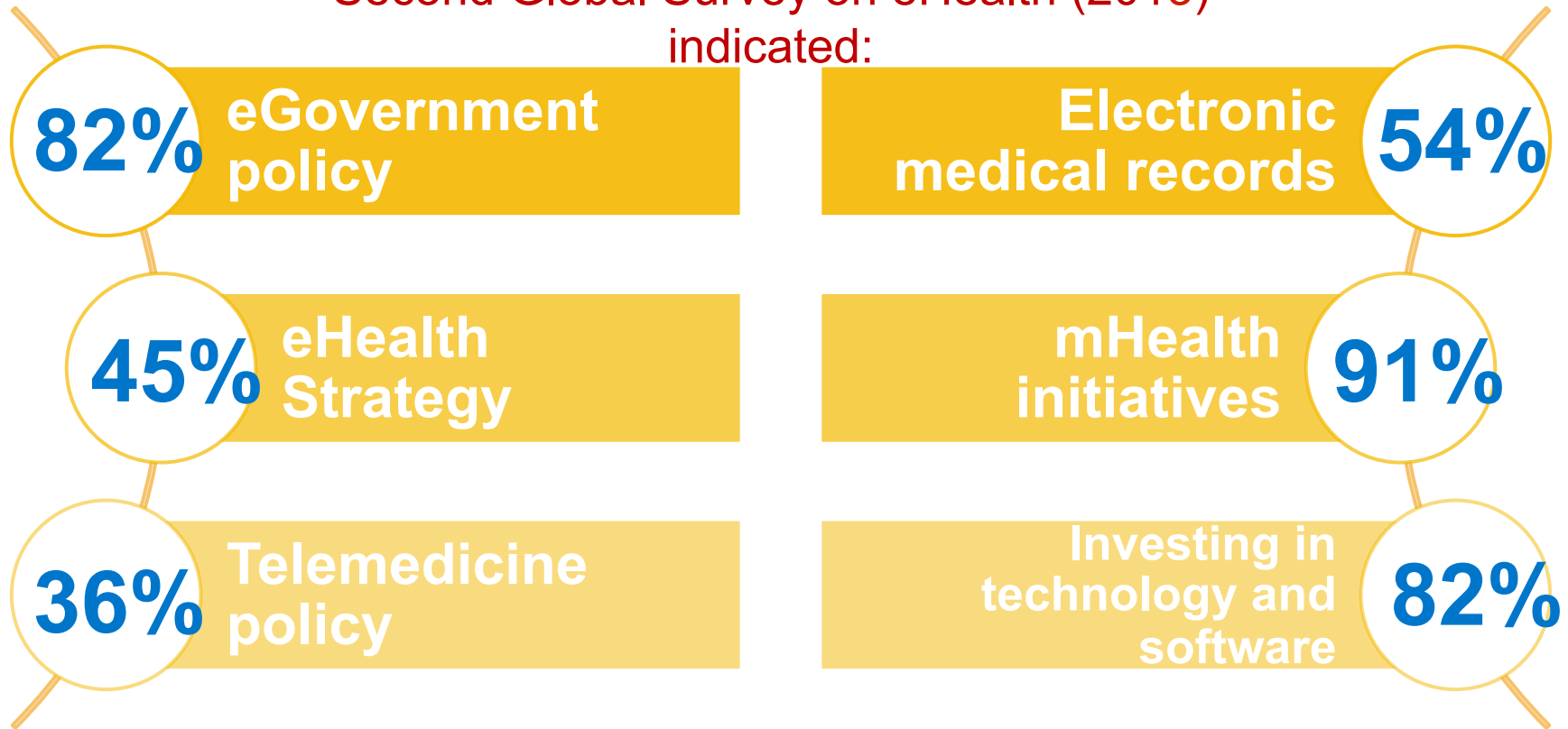
**Relationship
between patient
and health
professionals**



Meaningful Patient involvement in health

Situation Analysis

Member States that participated in WHO's
Second Global Survey on eHealth (2013)
indicated:



* Argentina, Belize, Brazil, Canada, Colombia, El Salvador, Mexico, Panama, Paraguay, Peru, USA

eHealth in the Americas July 2014

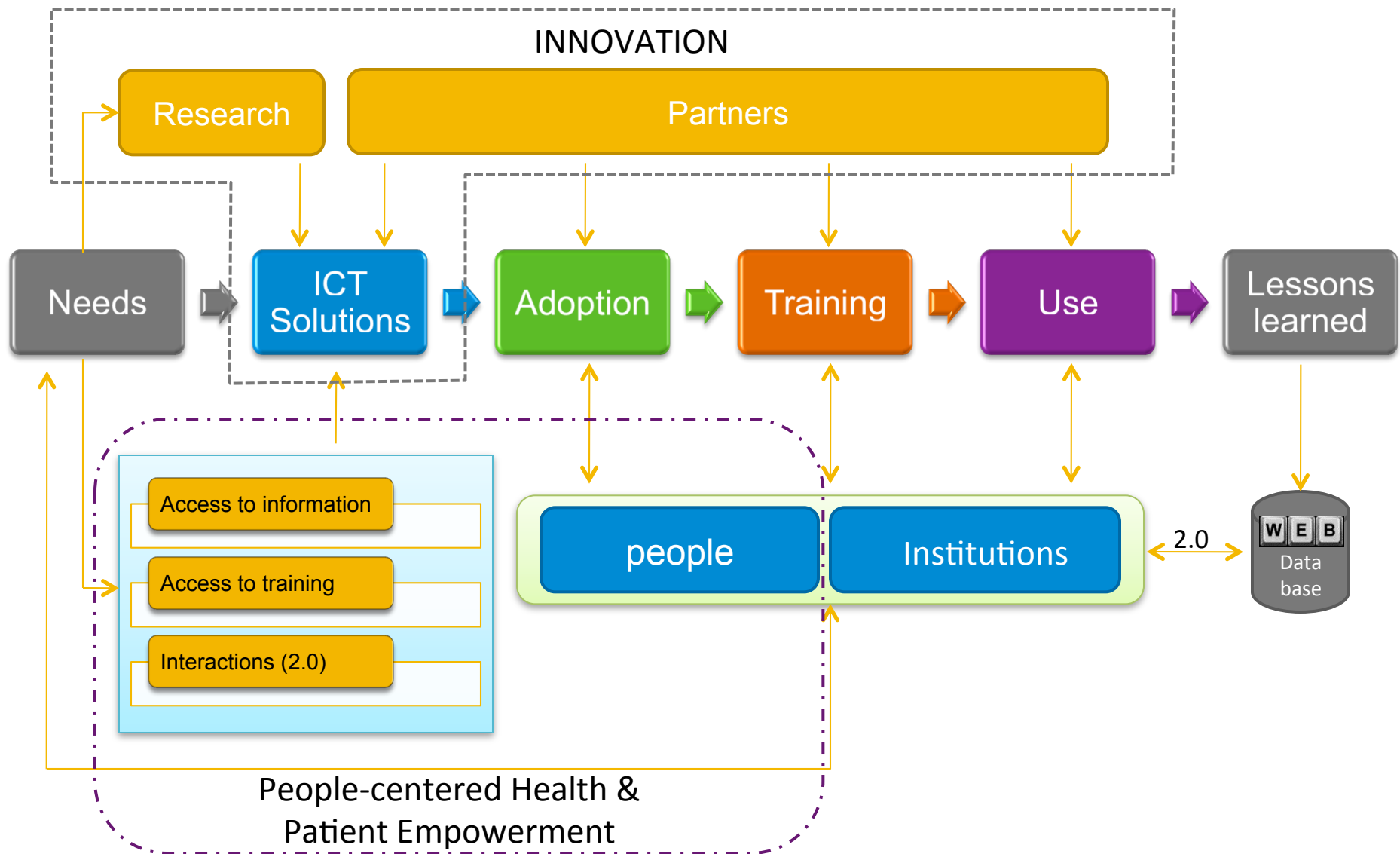
Content

This presentation

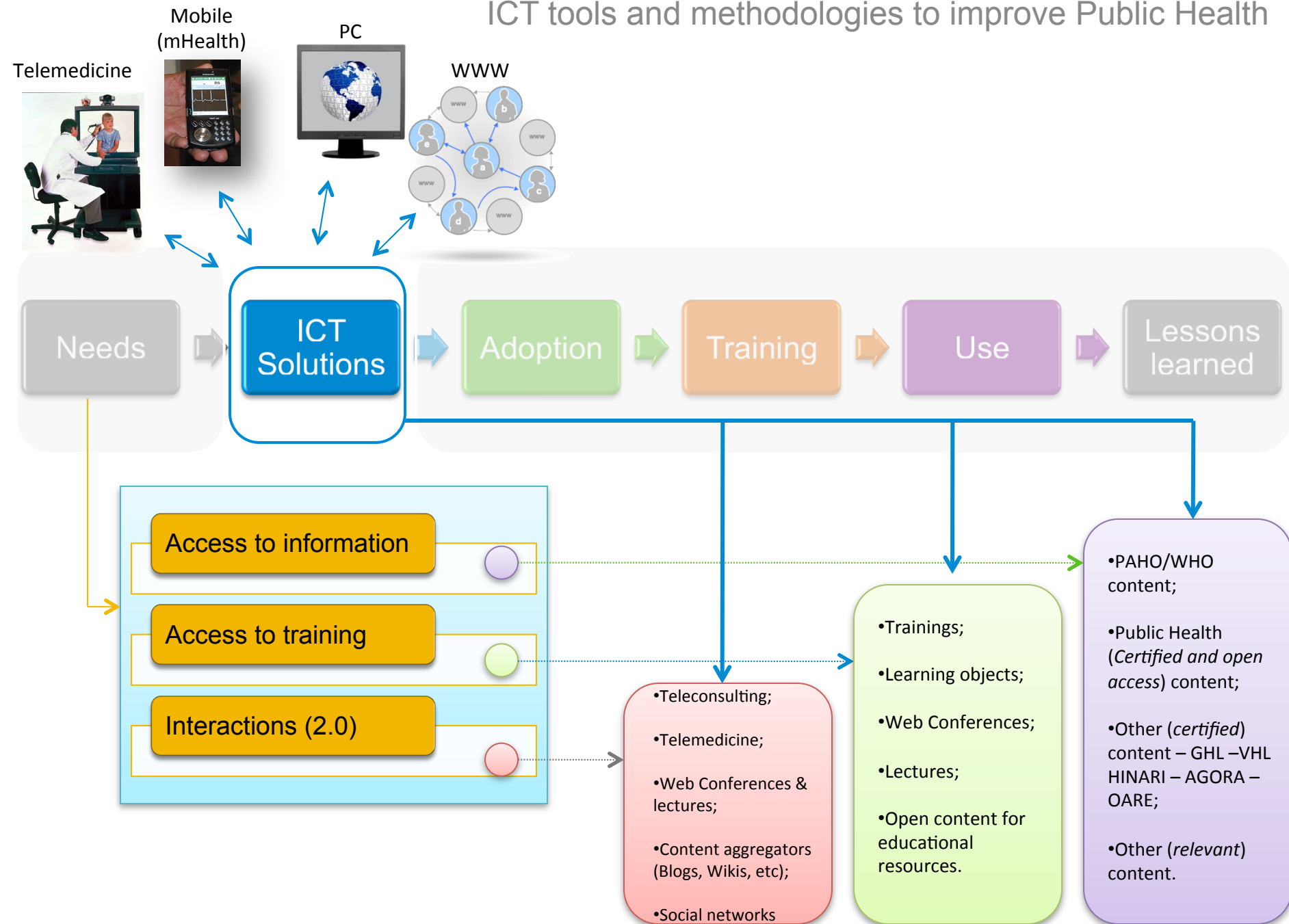
The
eHealth
model



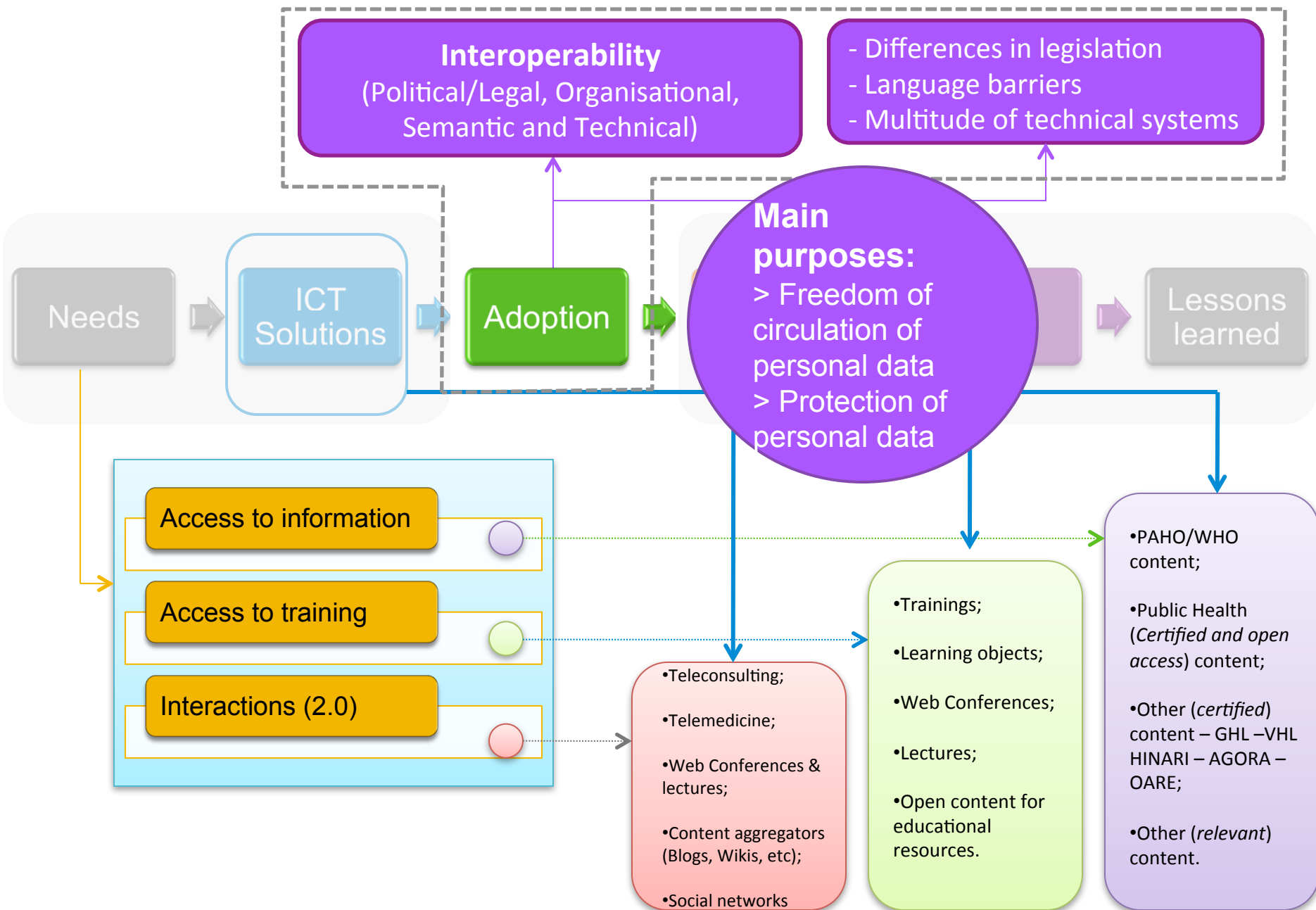
eHealth model



ICT tools and methodologies to improve Public Health



ICT tools and methodologies to improve Public Health in the Americas Region

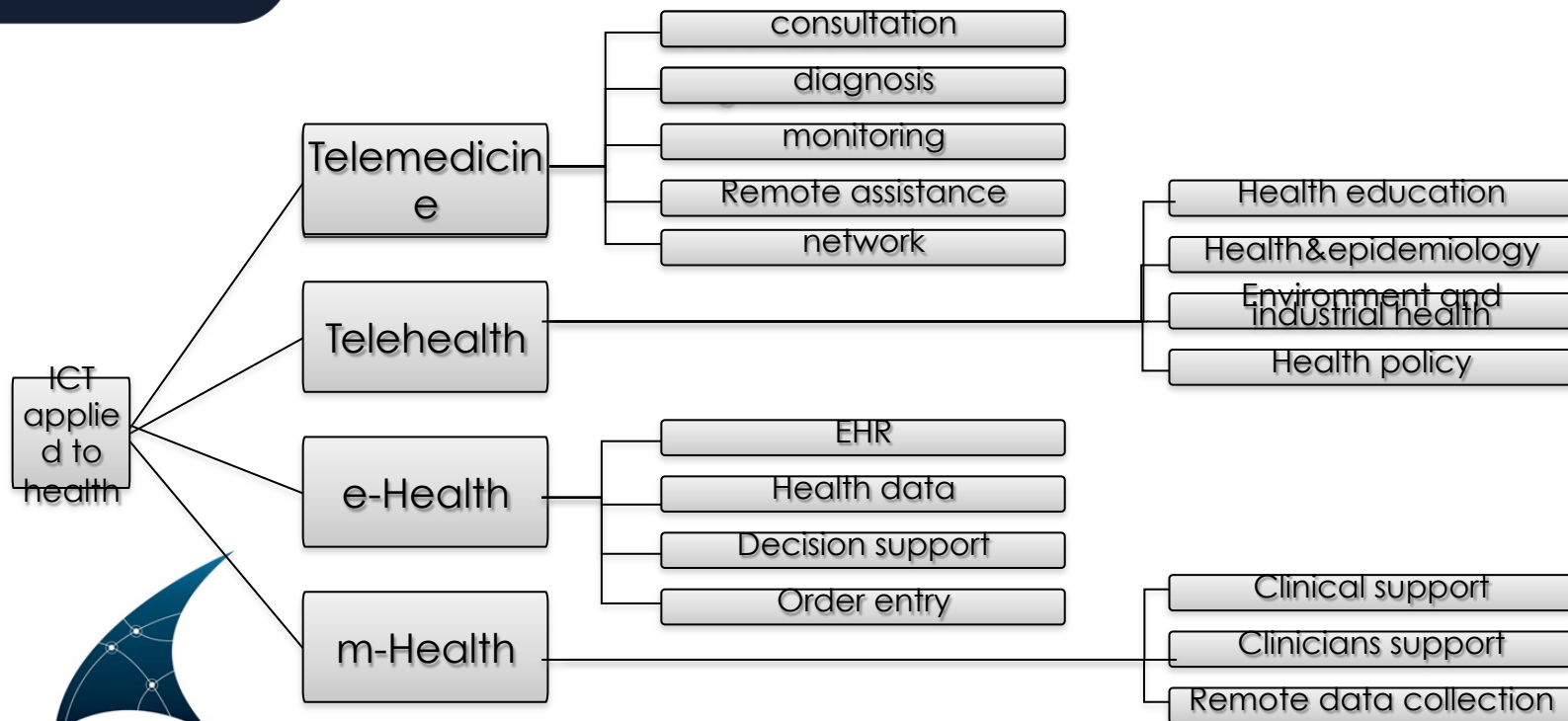


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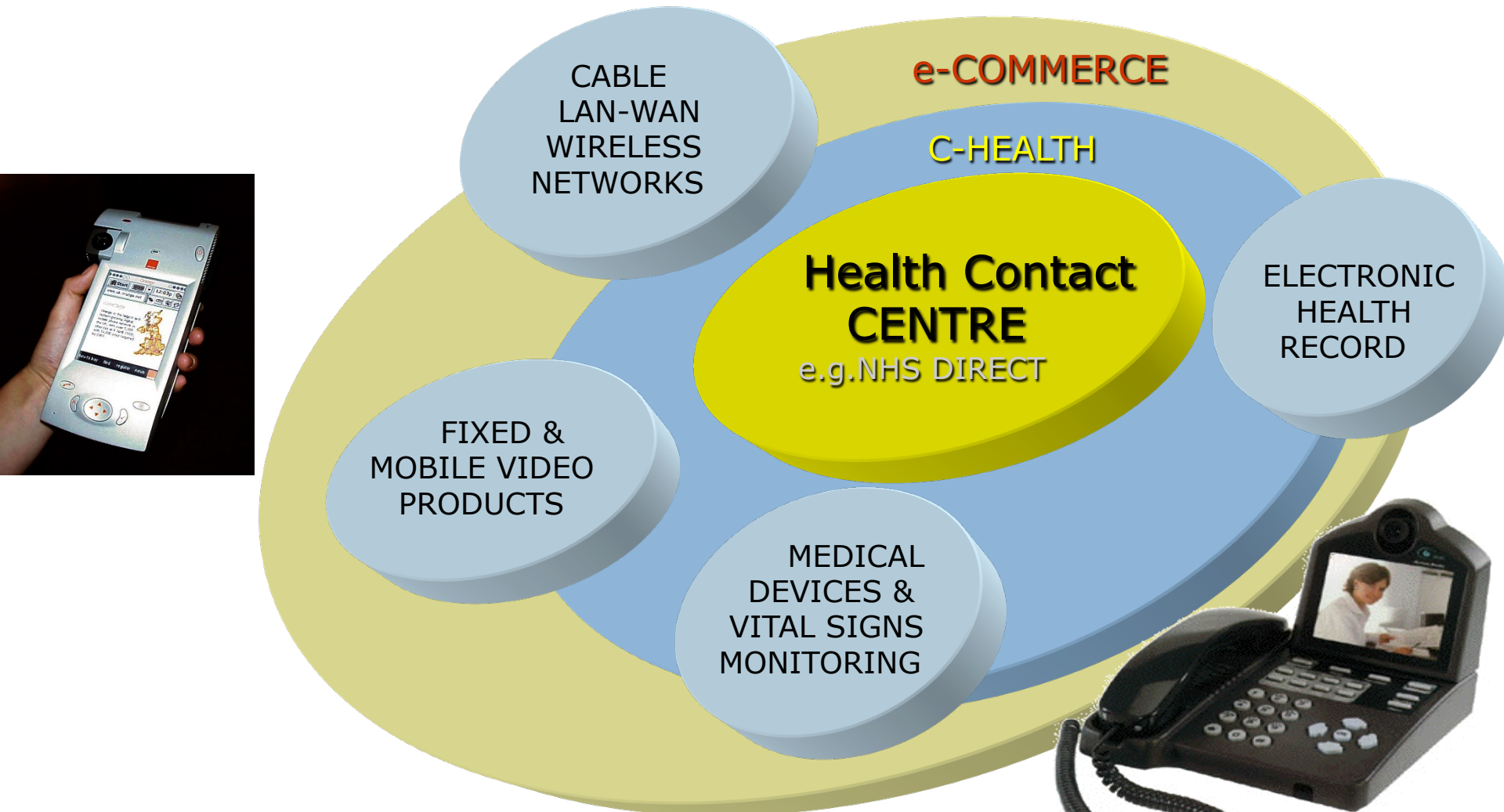
ICT applied to Health



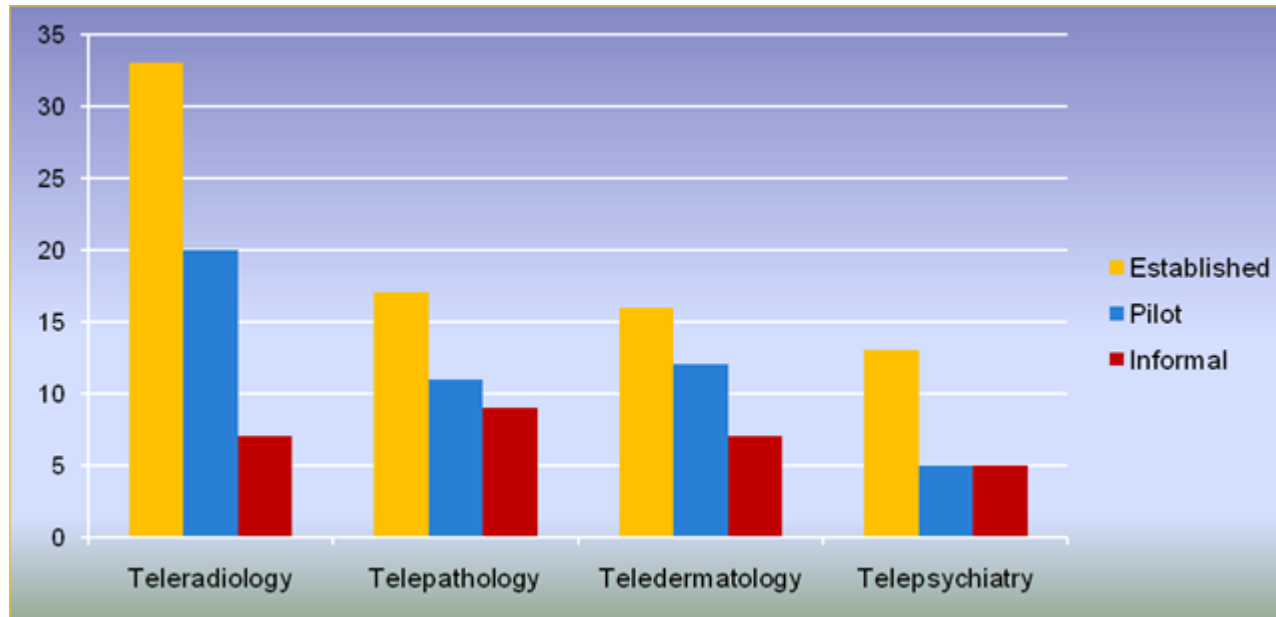
Future is the Collaborative eCare Management



Future ICT environments drive changes



The 4 Most Widely Implemented eHealth Services



Levels of development (%):

- Established - continuous service supported through funds from government or other sources
- Pilot - testing and evaluation of the service
- Informal - services not part of an organized program

Telehealth Consultation

Indirect and Direct Care



Photo Credit: averaphoto42012



Photo Credit: ODCHC, 2009

ONLINE SERVICES AND CONSUMER HEALTH APPS

Online Care

Welcome Robert Curtin | My Current Availability: **Busy** | My Account | Log Out

Home | My History | Message Center | Health Reference | Provider Reference | Help

You are now connected to Betty Peterson [View Summary] Time Remaining: 4:46 CANCEL CONVERSATION

Video [Disable Camera]

Hi, I have been feeling really tired every day...

Robert Curtin, MD: How many hours a night do you sleep?

Betty Peterson: About 6-7 hours.

Robert Curtin, MD: How many hours a week do you work?

Betty Peterson: I work around 55 to 60 hours a week.

[Notification: Robert Curtin has added a follow-up conversation to the "Provider Entries" tab.]

Phone [Connect via Phone]

☒ Allow Phone Connection (Your PIN: 1641)

My number: 617-564-7865 [Update]

Member is accepting phone connection

Chat

Betty Peterson: Hi, I have been feeling really tired every day...

Robert Curtin, MD: How many hours a night do you sleep?

Betty Peterson: About 6-7 hours.

Robert Curtin, MD: How many hours a week do you work?

Betty Peterson: I work around 55 to 60 hours a week.

[Notification: Robert Curtin has added a follow-up conversation to the "Provider Entries" tab.]

Notes **Encoder** **Rx** **Follow-Up** **Reference** **Health History**

B I U **A** Font **Color** **T** Size

How have you been feeling during [] [SEND]

Member is typing

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NEUROSURGICAL TELECOUNSELLING

ICT allows to sharing information and CT images between peripheral hospital and central hospital with Neurosurgeon - in all hospitals of Veneto region and in 4 european regions



Emergency room



Form for request+images

Form for response



Neurosurgery



Neuroradiology



Peripheral Hospital



Central hospital



CONTINUING MEDICAL EDUCATION



Telehealth Education / Learning



Telehealth Mentoring



ADVANCED TECHNOLOGIES



Remote
Surgery



Live Monitoring via
Cell Phones



Robotics

Robotic telesurgery



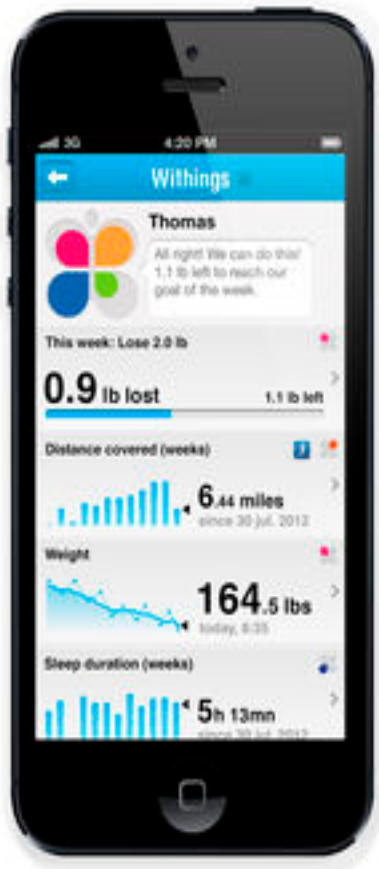
Opportunities & Space for Collaboration

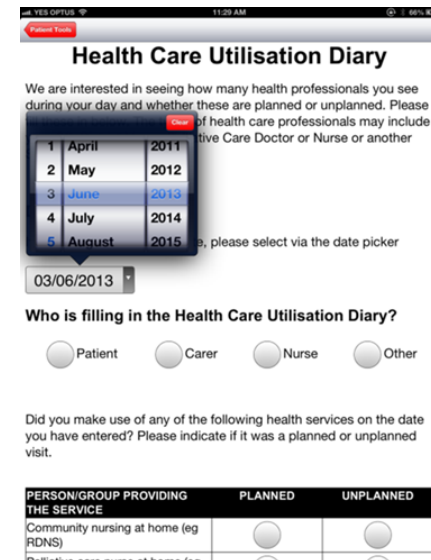
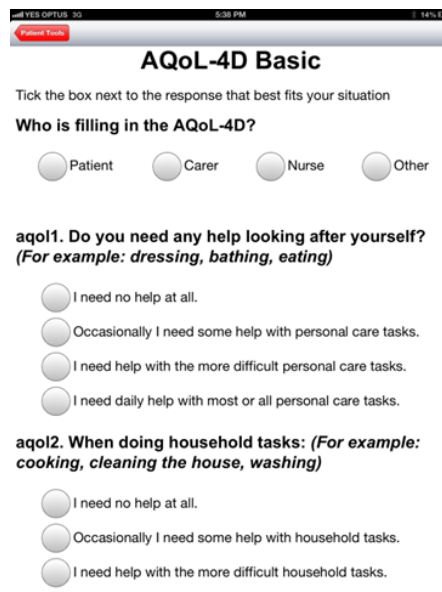
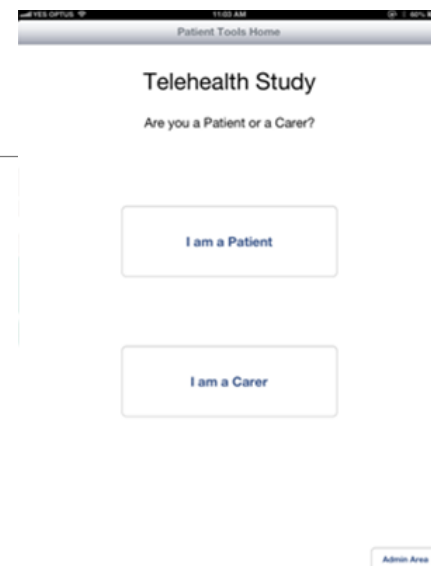


Mobile technologies are
growing and growing

Use of mobile
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the
ke

Telehealth Monitoring





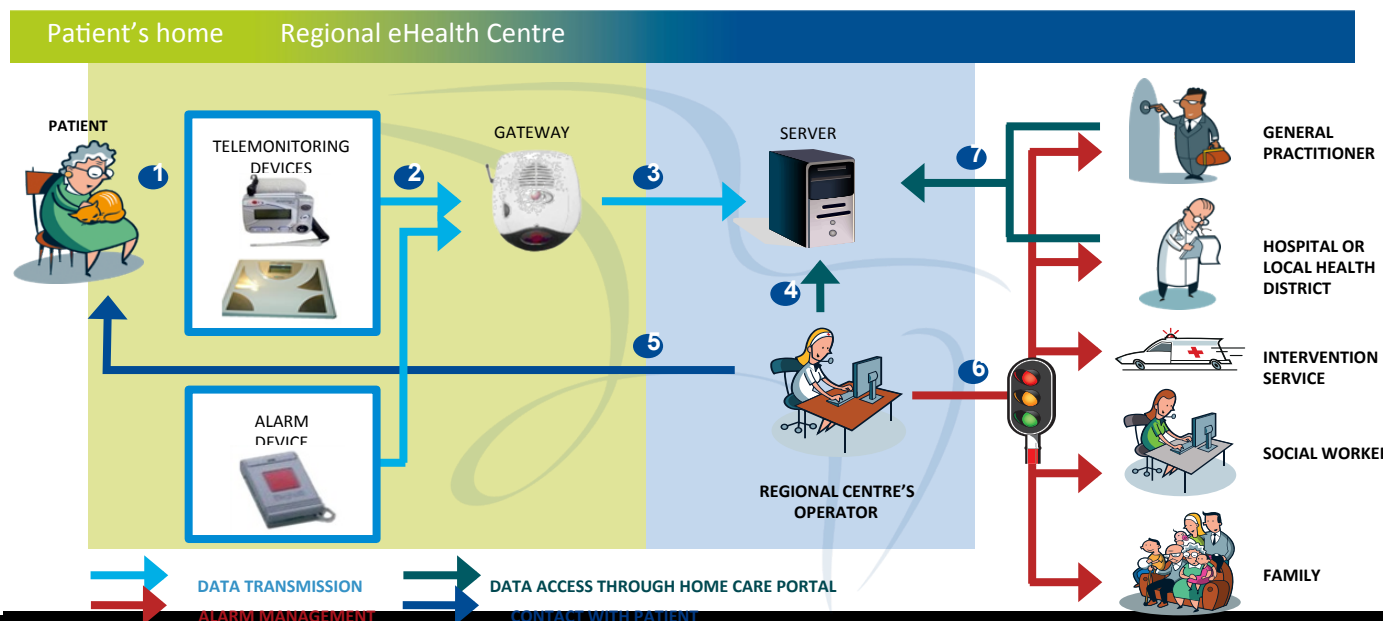
GENERATION WEB 2.0: USING NEW TECHNOLOGIES IN THE PUBLIC SECTOR IN EUROPE

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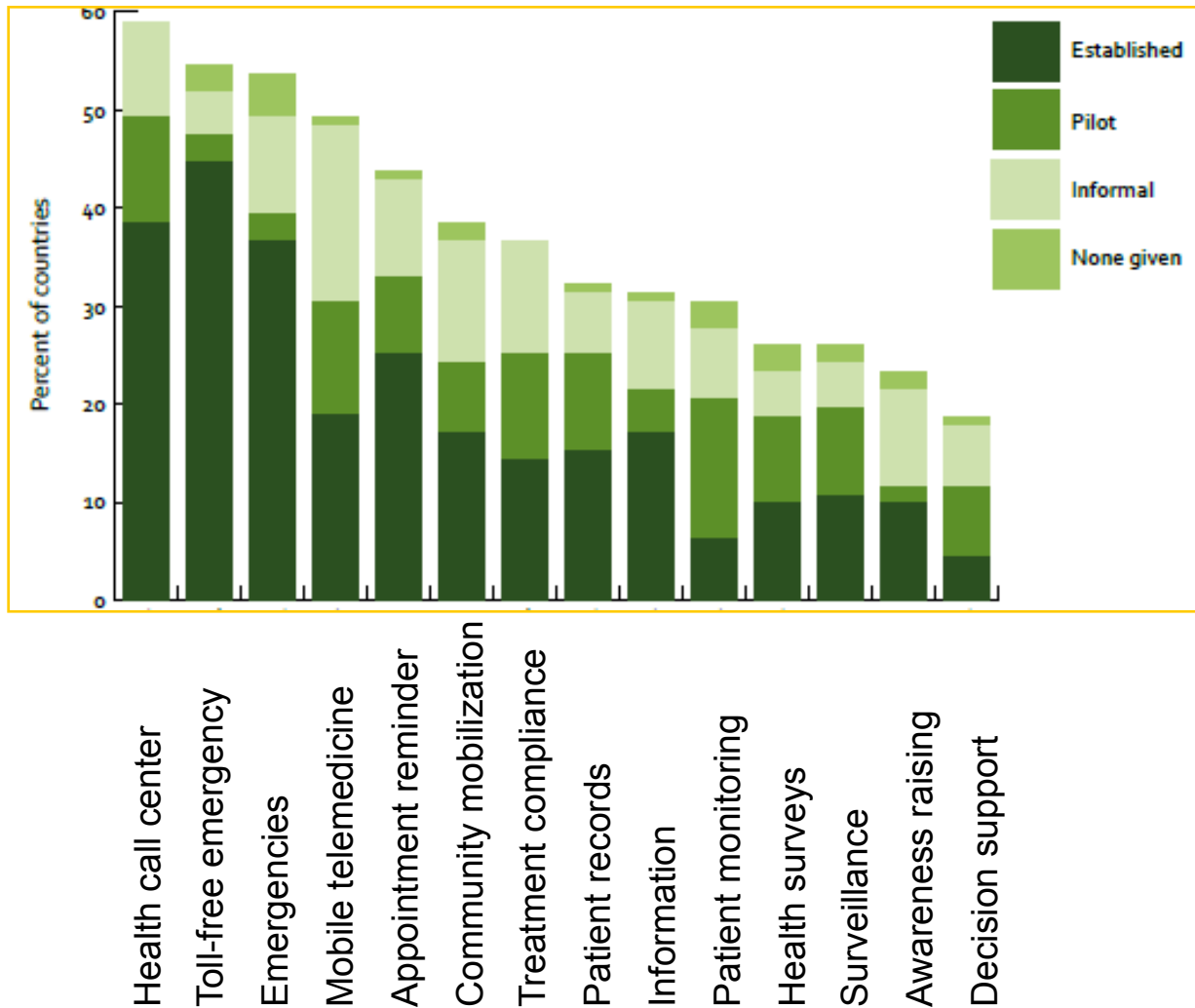


TELEMONITORING OF CHRONIC PATIENTS

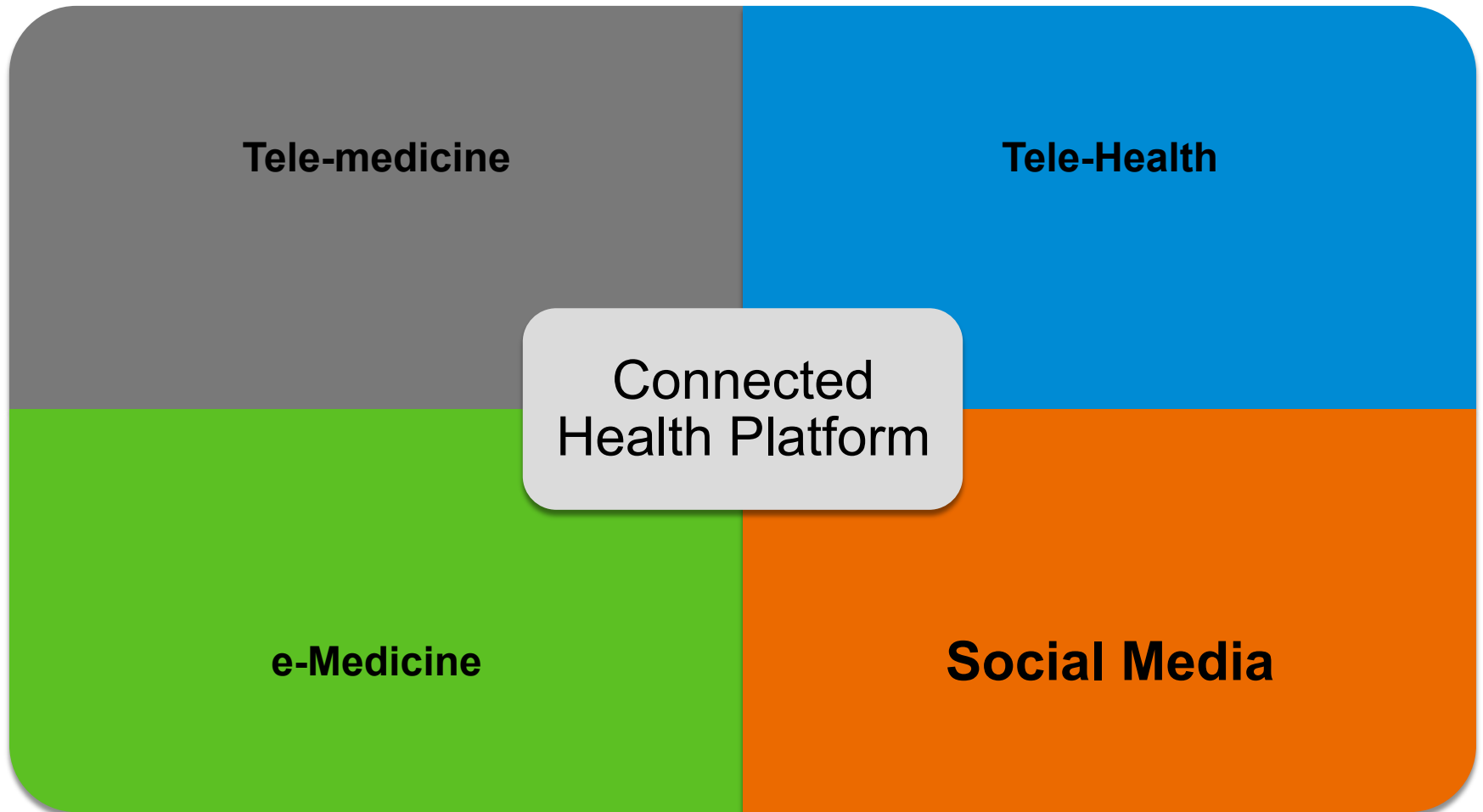
ICT allows to physician to manage the chronic patient (COPD, Diabetes, CVD) in remote way



Global Distribution of Mobile eHealth: 14 Most Widespread Mobile Services



Connected HealthCare



More than **7,900** healthcare providers in 94 countries are innovating with SAP solutions.



Az információ, mint stratégiai erőforrás

Nagy adatmennyiség, gyorsan, számos forrásból – miért SAP HANA?

2010 – Törvény az adatvagyon fontosságáról

A kormányzati stratégia része – szilárd bázis az egészségügyi teljesítmény-adatok szervezésének, monitorozásának fejlesztéséhez

Big Data az egészségügyben – Pulzus projekt

Hozzávetőlegesen évi 450 millió rekord

- Járóbeteg-szakellátás
- Fekvőbeteg-szakellátás
- További egészségügyi adatbázisok adatai

Klasszikus megoldások - Adattárházak, adatpiacok (Relációs, OLAP)

Új-generációs megoldások - Hadoop ,MapReduce, Hive, Appliance

Kombinált megoldás - SAP HANA in-memory appliance

- Adatbázis, és alkalmazás-platform
- Tisztán memória-alapú
- Duplikáció, és aggregátumok nélkül
- Valós idejű elemzések



Adattárház építés

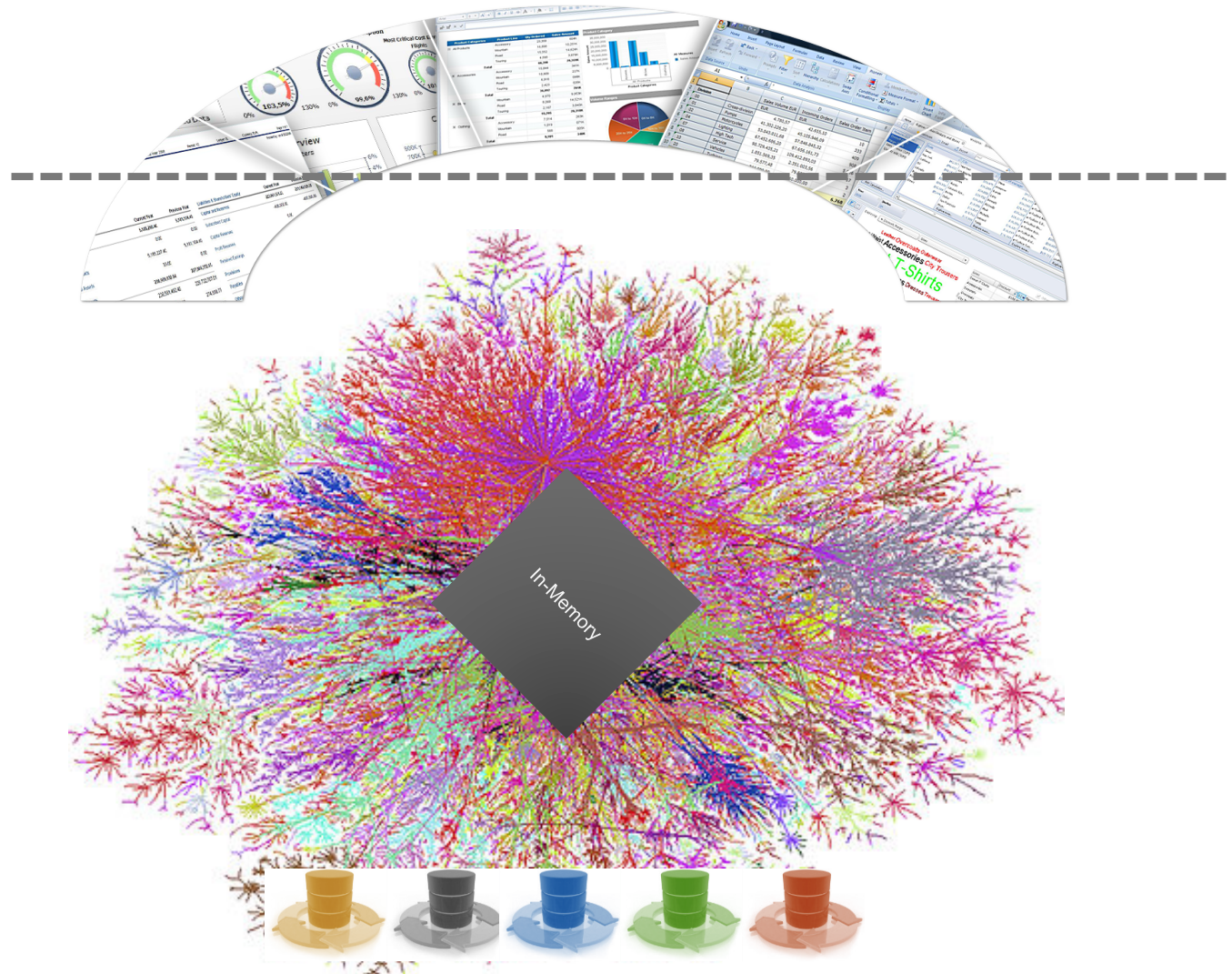
**Elvárt
eredmény**

**Definiálás helyett
használat**
Sebesség

**Strukturálás helyett
a teljes adatbázis
elemzése**
Sebesség

**Betöltés helyett
replikáció**
Tömörítés

Kiindulópont



Az elemzéstől a beavatkozásig

Egészségügyi szakrendszerek



Konszolidáció

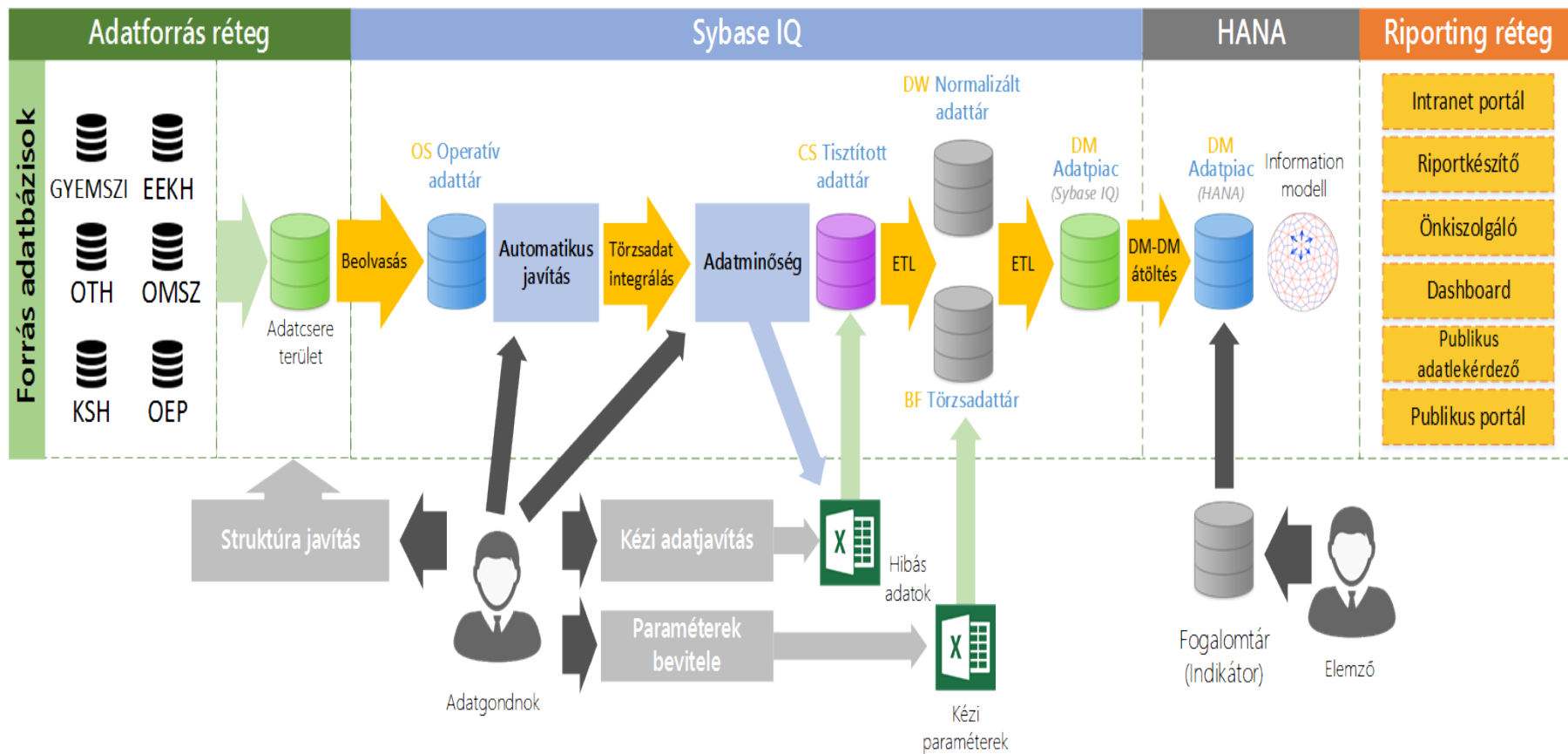


Személyes
adatok

Támogató rendszerek



PULZUS folyamat nézet

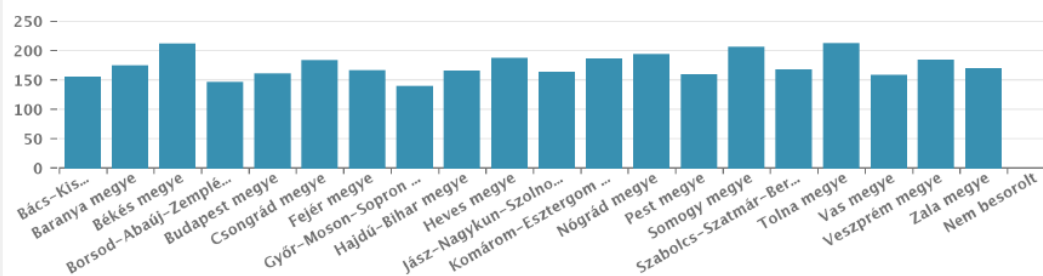


Web Intelligence – Infarktus Riport

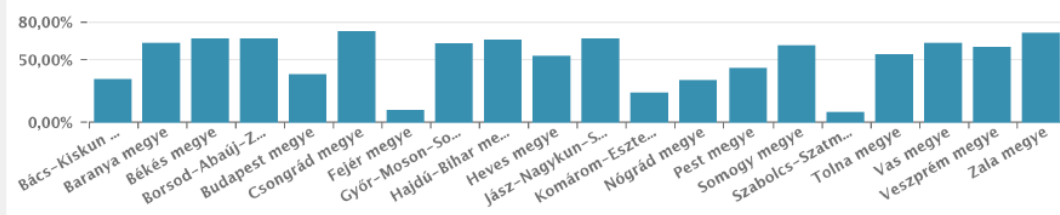
Megye név	Kórházba felvett infarktusos esetek száma	30 napon belüli halálozások száma	30 napon belüli halálozások aránya	1 éven belüli halálozások száma	1 éven belüli halálozások aránya	PCI-kezelésben részesültek közül 1 éven belül meghaltak száma	PCI-kezelésben részesültek közül 1 éven belül meghaltak aránya
Bács-Kiskun	801	142	17,70%	204	25,40%	44	5,40%
Baranya	559	93	16,60%	148	26,40%	51	9,10%
Békés	749	143	19,00%	224	29,90%	92	12,20%
Borsod-Abaúj-Zemplén	895	143	15,90%	239	26,70%	118	13,10%
Budapest	2 776	439	15,80%	719	25,90%	197	7,00%
Csongrád	729	124	17,00%	199	27,20%	113	15,50%
Fejér	678	98	14,40%	169	24,90%	15	2,20%
Győr-Moson-Sopron	582	93	15,90%	1			
Hajdú-Bihar	881	135	15,30%	2			
Heves	554	78	14,00%	1			
Jász-Nagykun-Szolnok	620	114	18,30%	1			
Komárom-Esztergom	549	70	12,70%	1			
Nógrád	357	58	16,20%	8			
Pest	1 906	313	16,40%	4			
Somogy	555	108	19,40%	1			
Szabolcs-Szatmár-Bere	878	117	13,30%	1			
Tolna	453	75	16,50%	1			
Vas	332	55	16,50%	7			
Veszprém	577	112	19,40%	1			
Zala	371	62	16,70%	8			
Nem besorolt	251	10	3,90%	1			

Infarktus Riport 2013

100 ezer főre jutó infarktusok száma



24 órán belül PCI-kezelésben részesültek aránya megyénként



Enabling Collaborative Care Management

Customer Successes



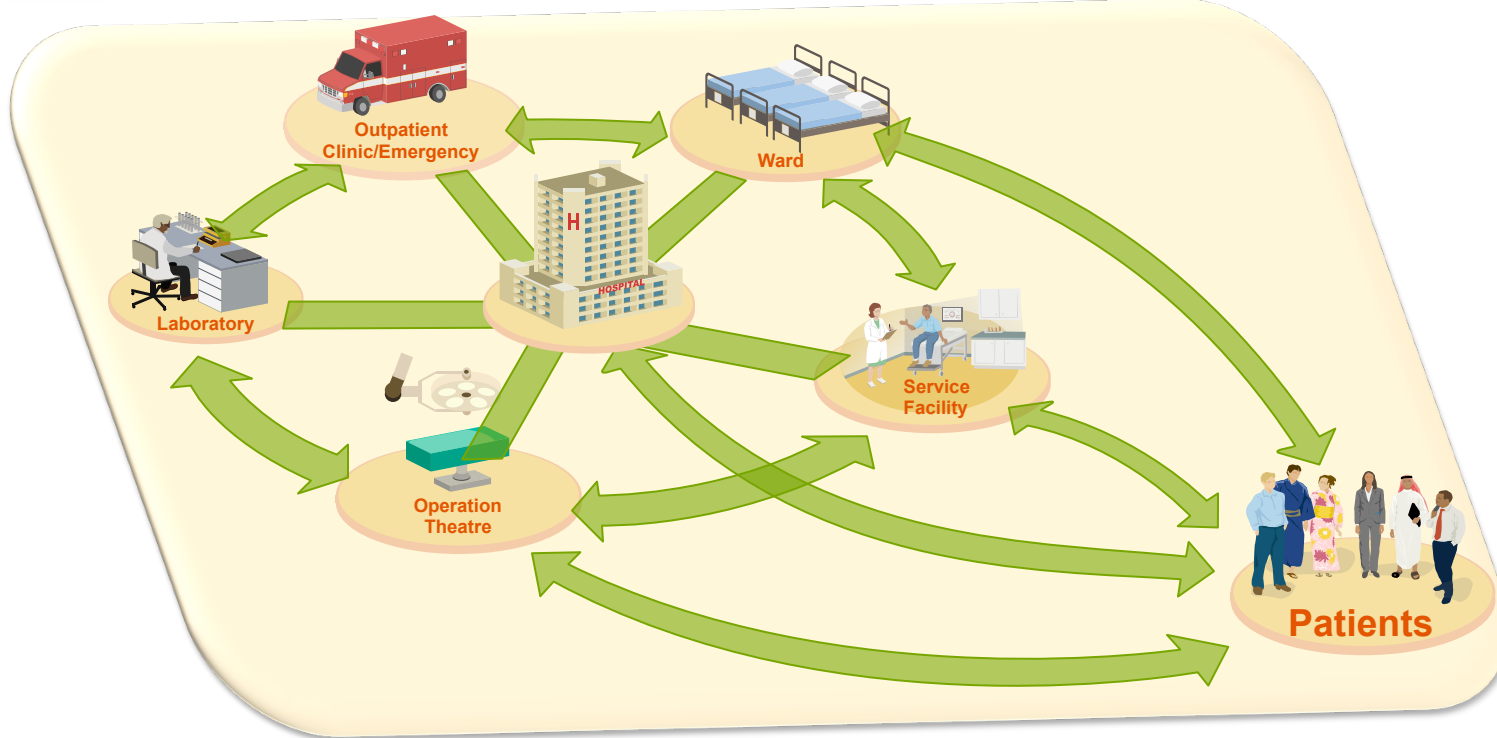
Better Coordination of Care

- Enterprise-wide occupancy management
- One consistent view of the patient for all 23 hospitals through central MPI



The “right” Clinical Decision Support

- Solid fact base eases clinical decision making
- Proven & “Real-World” oriented decision support



Improved Patient Safety

- Electronic Medical Record
- Instant access to information anytime, anywhere



More time for patients

- Comprehensive support for administrative tasks like coding & documentation
- Structures processes ensure legal compliance

Visibility for Sound Decisions for Collaborative Care Management

Quality Management Patient Management Workforce Management Operational Management Financial Management





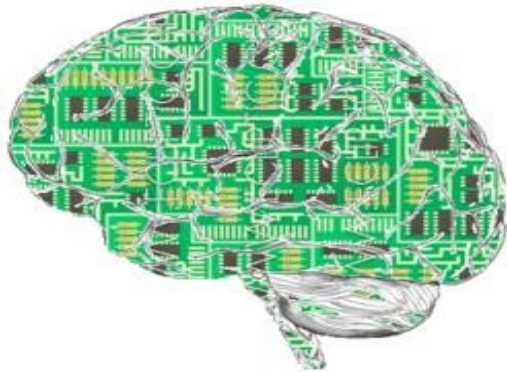
10 of the 10 top biomedical research institutions in the United States run SAP solutions.

Source: Fierce Biotech Research, The top 10 biomedical research institutions

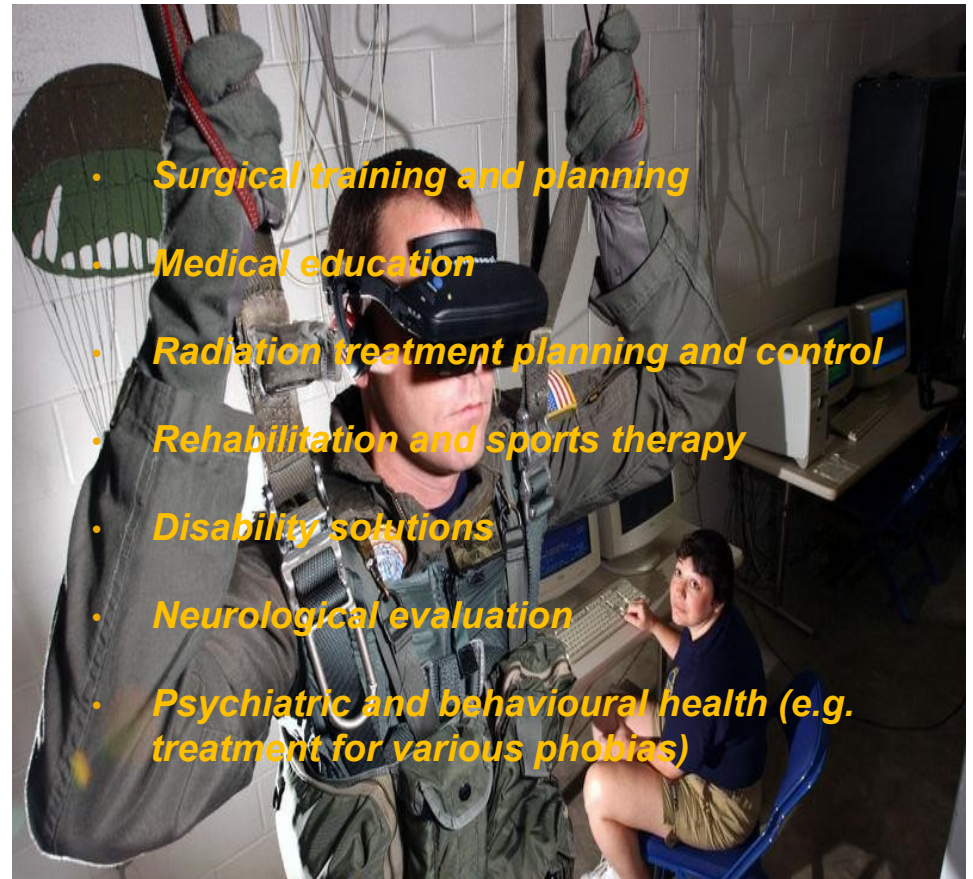
Future challenges

Usage of AI in different domains

Eg. IBM Watson services



Usage of Virtual Reality eg:



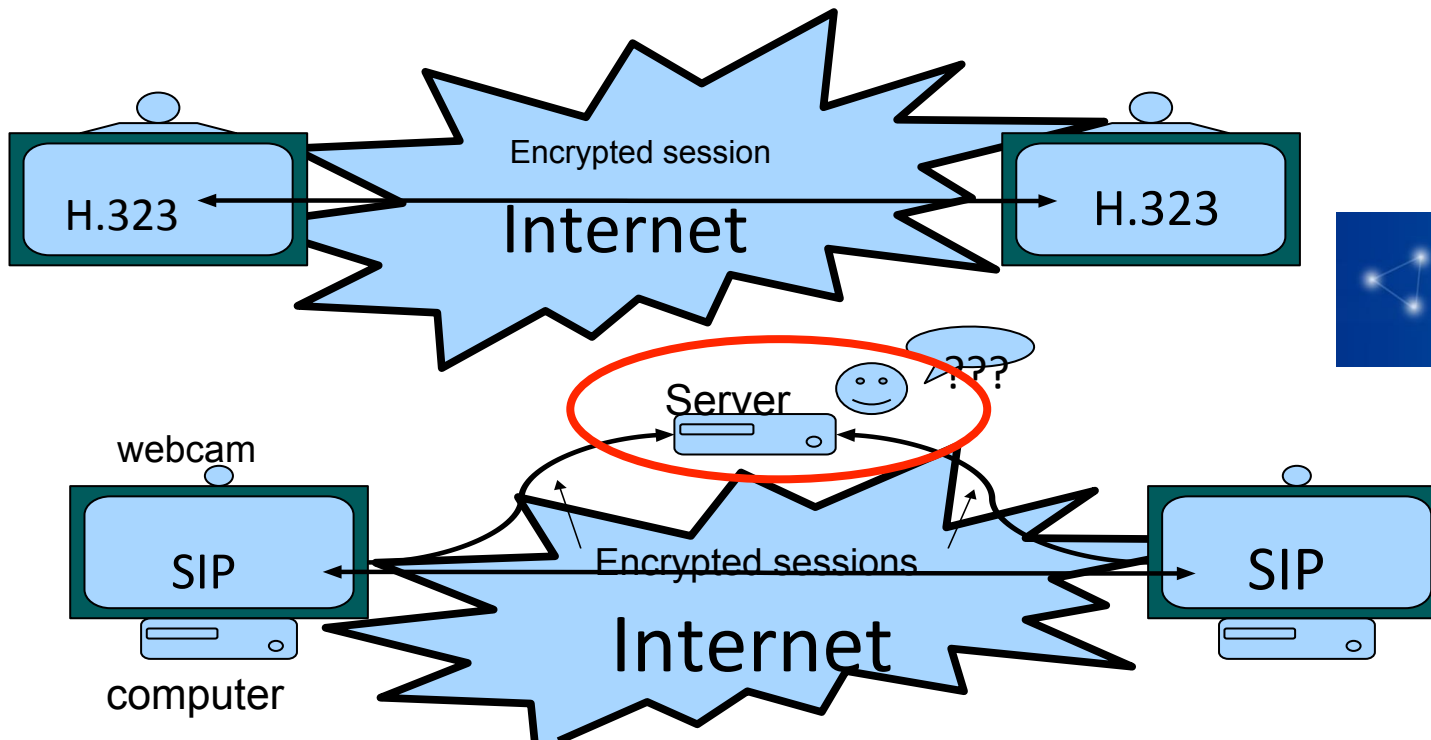
Challenges



Challenges - Privacy & Security (HIPAA)

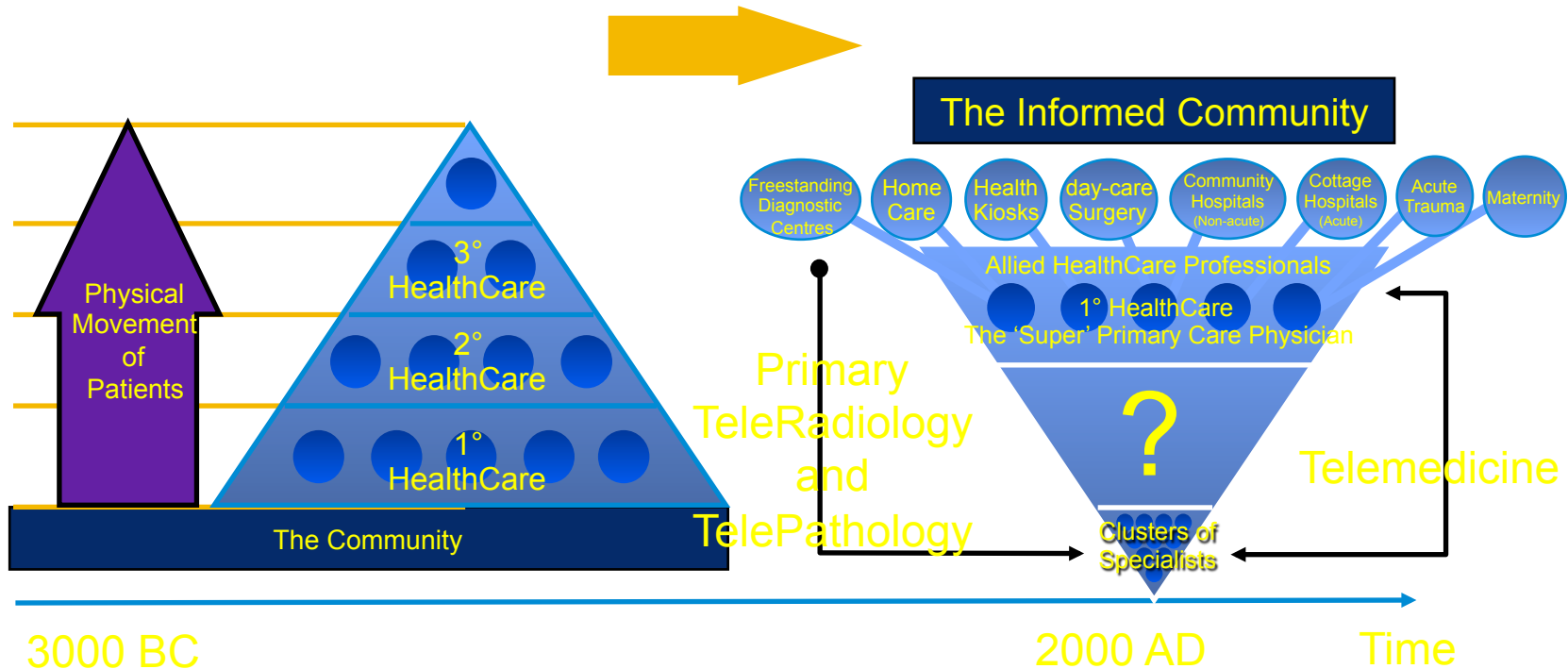


- Live video stream is “patient communication” (must be encrypted)
- Secure connections are available, but not always guaranteed
 - Security = system of documented practices
- Internet chat providers won’t attest to security (Skype, iChat, Google)



The Developing World

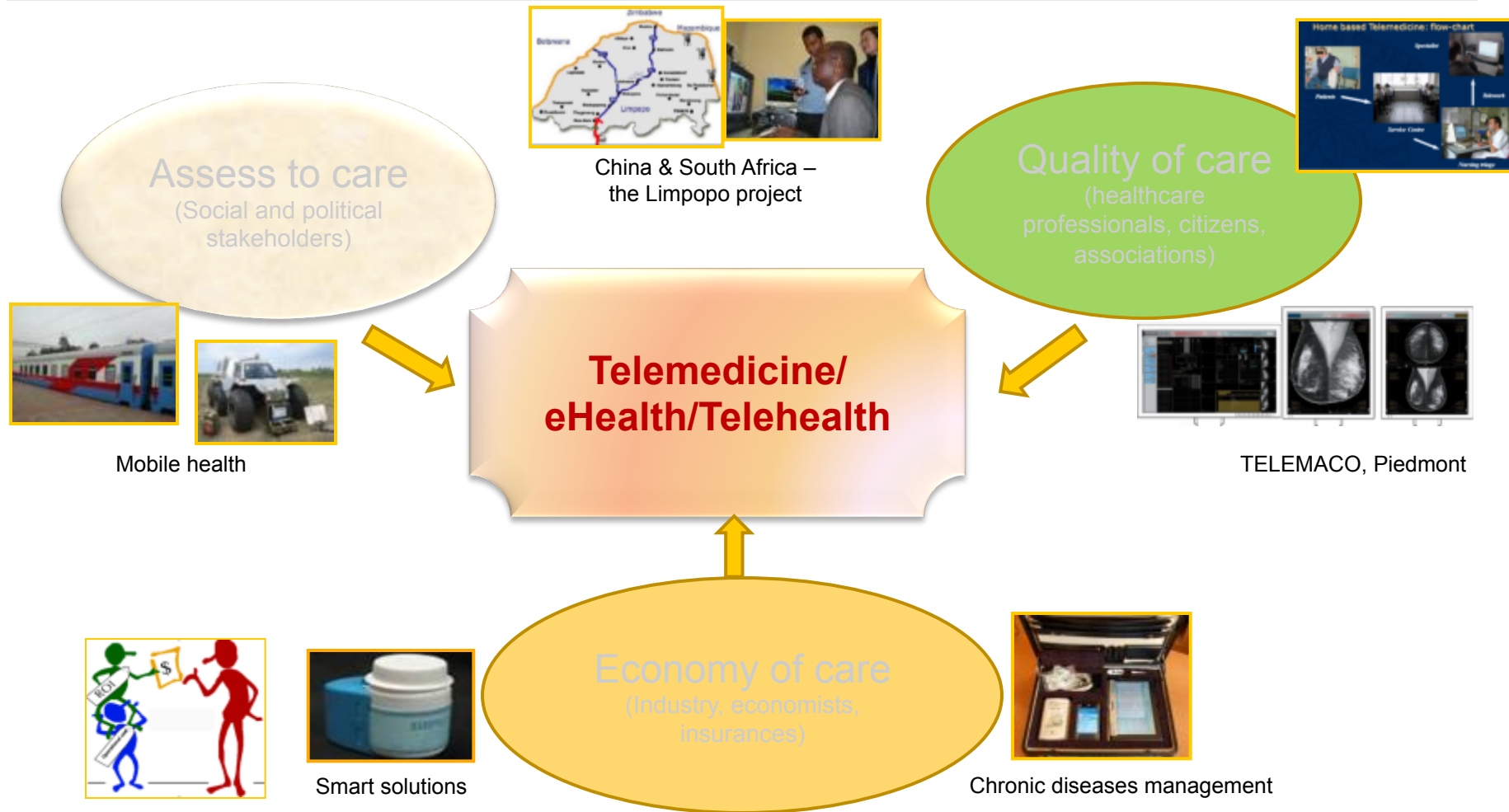
Can leap-frog the traditional evolutionary process



China -
Malaysia
Africa -

The Golden Health Project
- The Telemedicine Blue Print
? Take some responsibility ?

eHealth World



After Healy J.C. 2007, Med-e-Tel www.medetel.eu



Future ICT in eHealth video

Thank for your attention

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