

## Presentation to EUSJA

# Strategic Intelligence Monitor: Personal Health Systems (SIMPHS)

Seville, 20 January 2011



JRC – IPTS – IS Unit  
Ioannis Maghiros

## Health and Social Care in EU Member States

**The role of ICT in the provision of Health services**

**Personal Health Systems: market and innovation dynamics**

**The potential**

- **Public Health expenditure and Long Term Care:**
  - 5.7% and 1.1% (6, 8%) of GDP today (~800 bln Euro);
  - Grows at a pace of 4% a year (faster than EU economic growth);
  - may double (12.8%) by 2050 (~1600 bln Euro if no action taken)
- **Public Budget Recession for EU**
  - Public Deficits rising (7% on average) and MS Debt levels (>80% of GDP)
- **Health is Wealth**
  - Health capital contributes to productivity and growth

OECD Health Data 2009

- **Health sector employs 9.3% of EU total workforce:**
  - more than >15 Million people
  - compared to ~13.0 M employed in retail, EU COM(2010)2020
  - compared to ~13.3 M employed in business services
- **Ageing of the EU Population**
  - Old-Age dependency ratio from 0.25 to 0.33 (2020) to 0.5 (2050)
  - Tax payers and employment impacts (pension system sustainability)
    - 46% of older workers (55-64 yo) compared to 62% in US/JP (on average)

**Major  
Impact**



**Shortages of Health Care  
Professionals and LTC workers**

## Health and Social Care in EU Member States

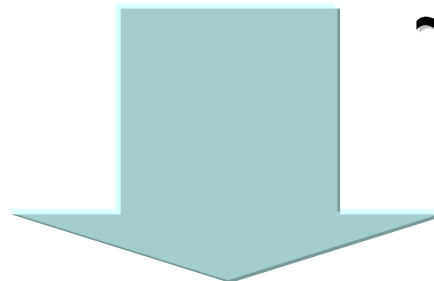
**The role of ICT in the provision of Health services**

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**The potential**

**EU 27 health Expenditure**  
**~ €1000 billion\***

**ICT market value**  
**~ €668 billion\*\*\***



**eHealth Market**  
**€14,2 billion\*\***

< 2% of total expenditure

eHealth potential to rise to 5%  
(in the next 5-10 years)

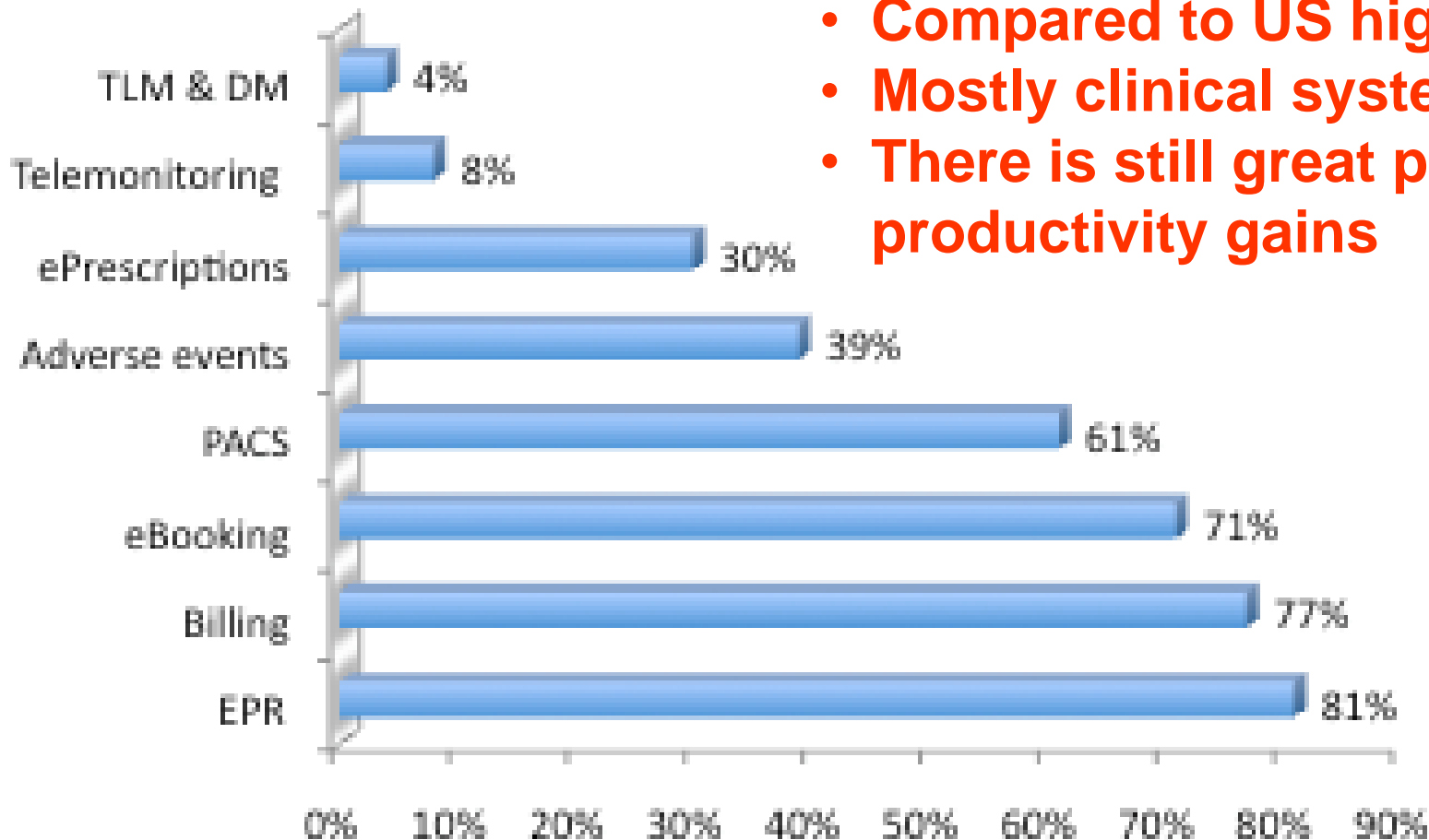
Compare to: Government 4%

Financial sector 13%

\* Deloitte&Touche - HINE report 2008

\*\* RAND/Capgemini Report 2009

\*\*\* EITO 2007



- Compared to US high deployment
- Mostly clinical systems
- There is still great potential for productivity gains

N= 907 hospitals in EU27 (questionnaire to CIO\*\*)

EPR= Electronic Patient Record; PACS= Picture Archiving and Communication Systems; DM = Disease Management

TLM = Telemonitoring

\*\* Study to be published in 2011

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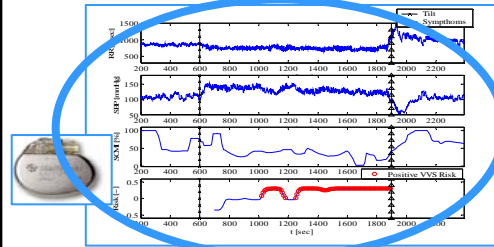


## Data acquisition



Sensors for  
multi-parametric  
monitoring

## Data processing & analysis



Medical  
expertise

Intelligent  
analysis

Support to diagnosis  
decision & treatment

Health / call  
Centre

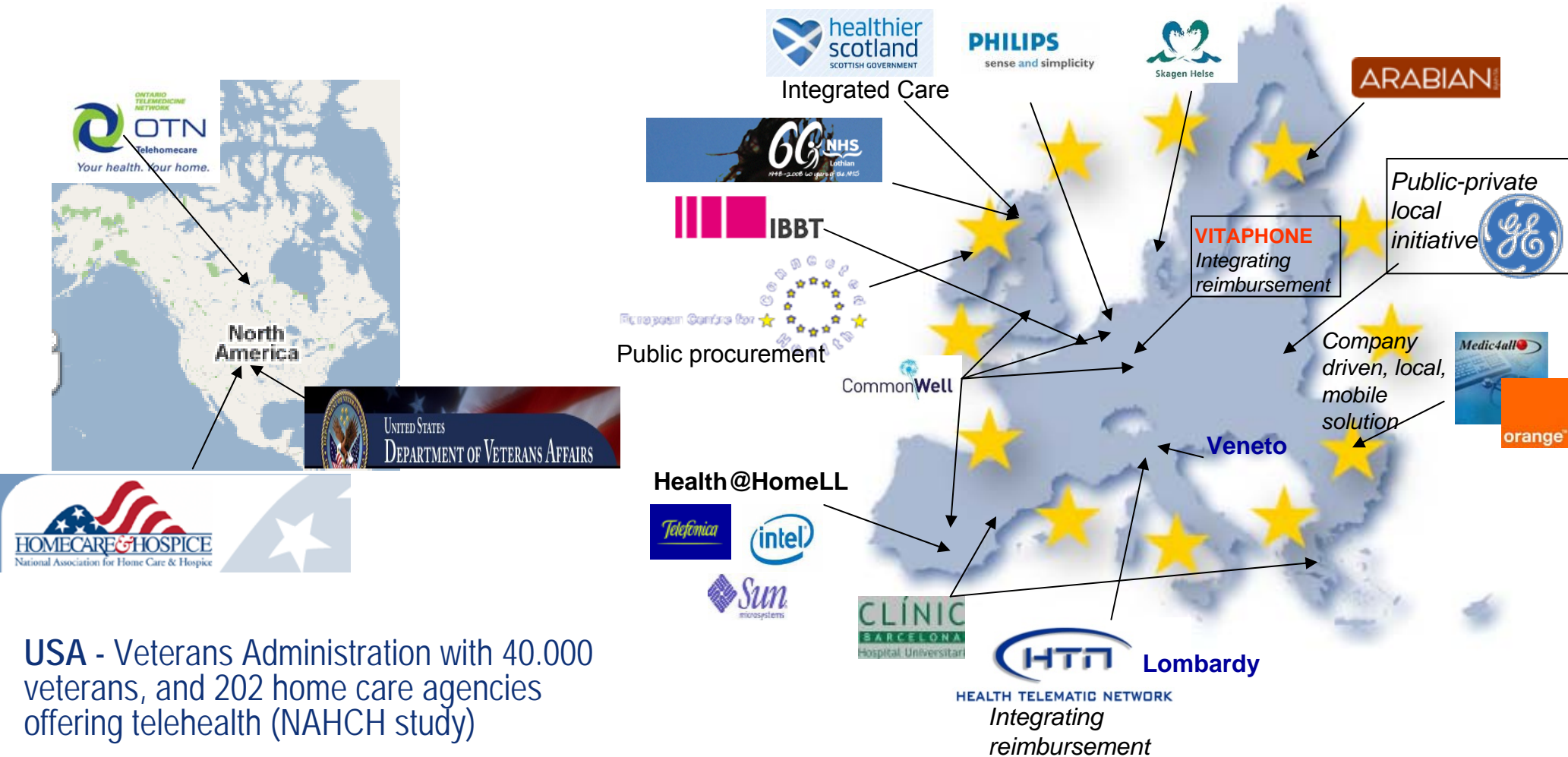


Hospital

Treatment,  
Rehabilitation

Data communication and feedback

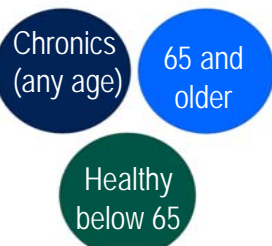
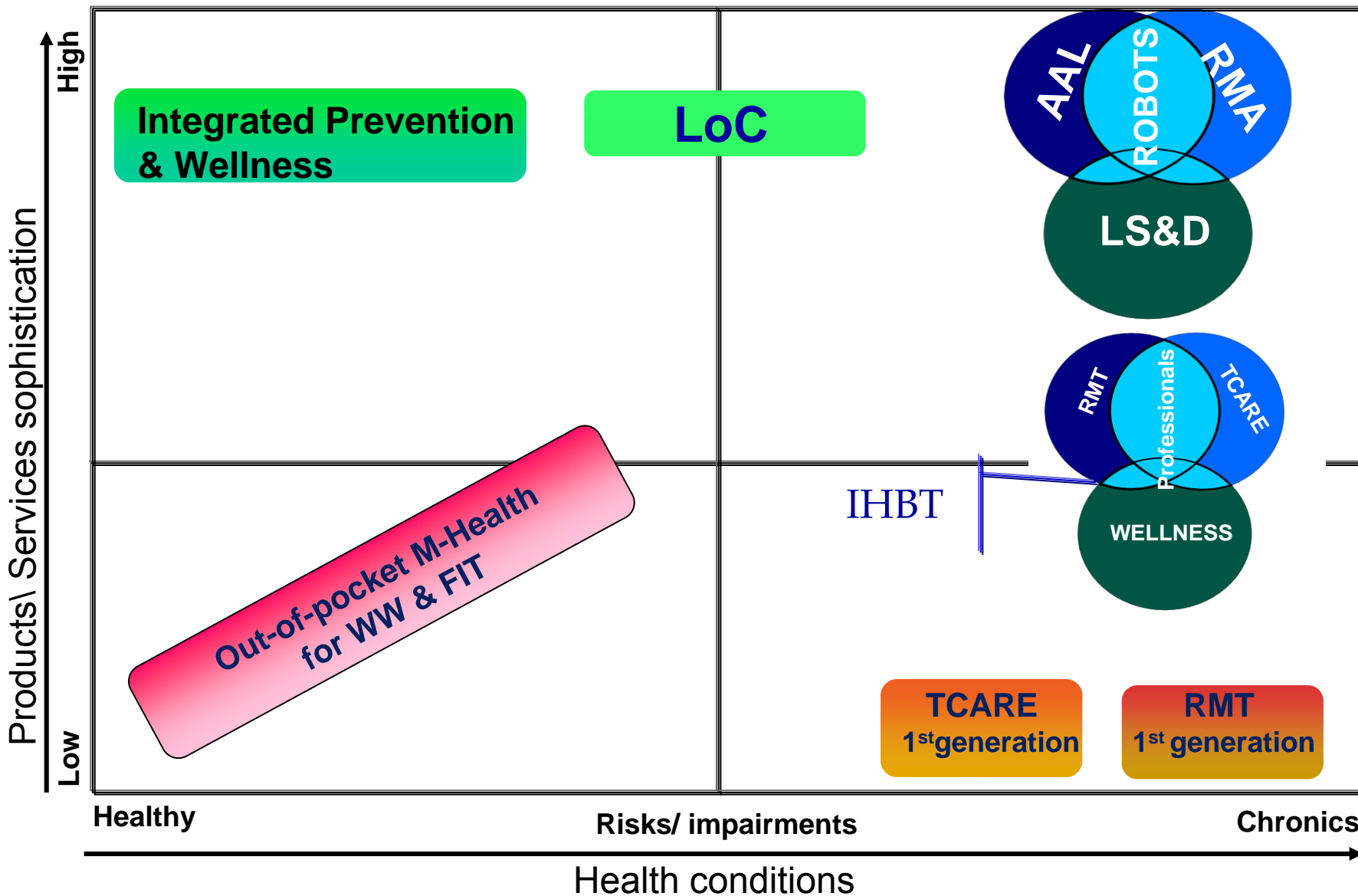
## Mapping of selected pilots & programmes



USA - Veterans Administration with 40.000 veterans, and 202 home care agencies offering telehealth (NAHCH study)



**AAL**= Ambient Assisted Living  
**LoC**= Lab on Chip  
**RMA**= Remote Monitoring and Actuation  
**LS&D**= applications for adherence to drugs and lifestyle prescriptions  
**IHBT**= Intensive Home-based Treatment  
**TCARE**= Telecare  
**RMT**= Remote Monitoring and Treatment  
**WW**= Worried Well  
**FIT**= Fitness



## Industry players views

- **Lack of reimbursement**
  - No unified approach at EU level
  - Unclear business models, revenues
  - Not viable as out of pocket market
- **Buyers' fragmentation**
  - Locally based strategies
  - Institutional and market fragmentation feed each other to raise uncertainty
- **Entry "barriers"**
  - End-to-end provision by suppliers not easily accepted; need for IOP & standards
  - Not fully operational PHR/EHR linked to PHS
  - Lack of consolidated evaluation methods



**Unclear business model, shaky revenues, fragmentation**

## HC experts and insiders views

- **Unfavourable incentives for HC profs.**
  - Neither "fee for service" nor "capitation" incentives work for RMT; "outcomes-based" reimbursement might!
- **Primary, secondary & social care**
  - Improved education for Patients/Carers.
  - NO integration between Health- & Social- Care.
  - Silos, turf wars
- **Missing policy box**
  - RMT is part of 'territorial' medicine; it competes for attention and funds with other applications.
  - In need of clear policy & political support.
- **Evidence/awareness vicious circle**
  - Need for large scale clinical evidence.



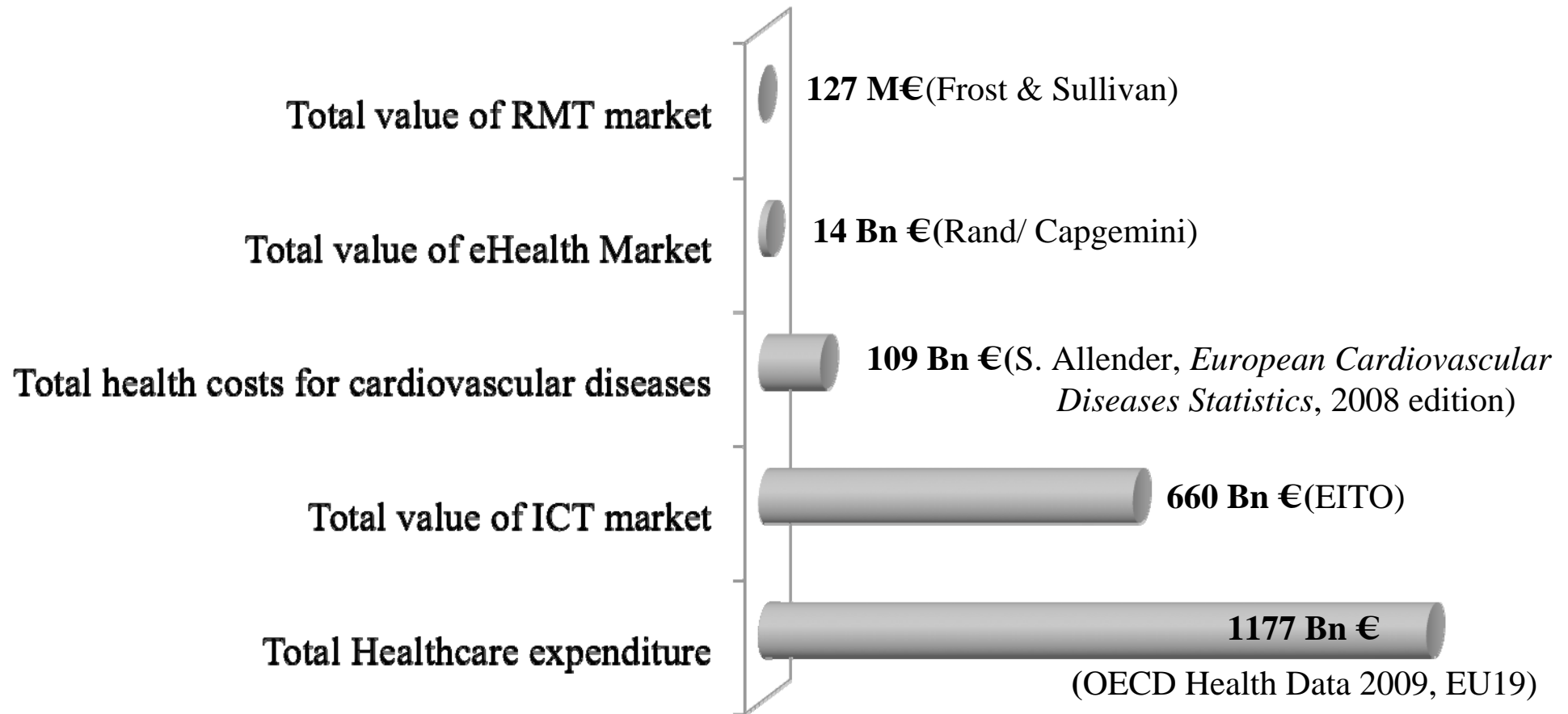
**Lack of strategic vision on organisationally embedded and integrate health and social care**

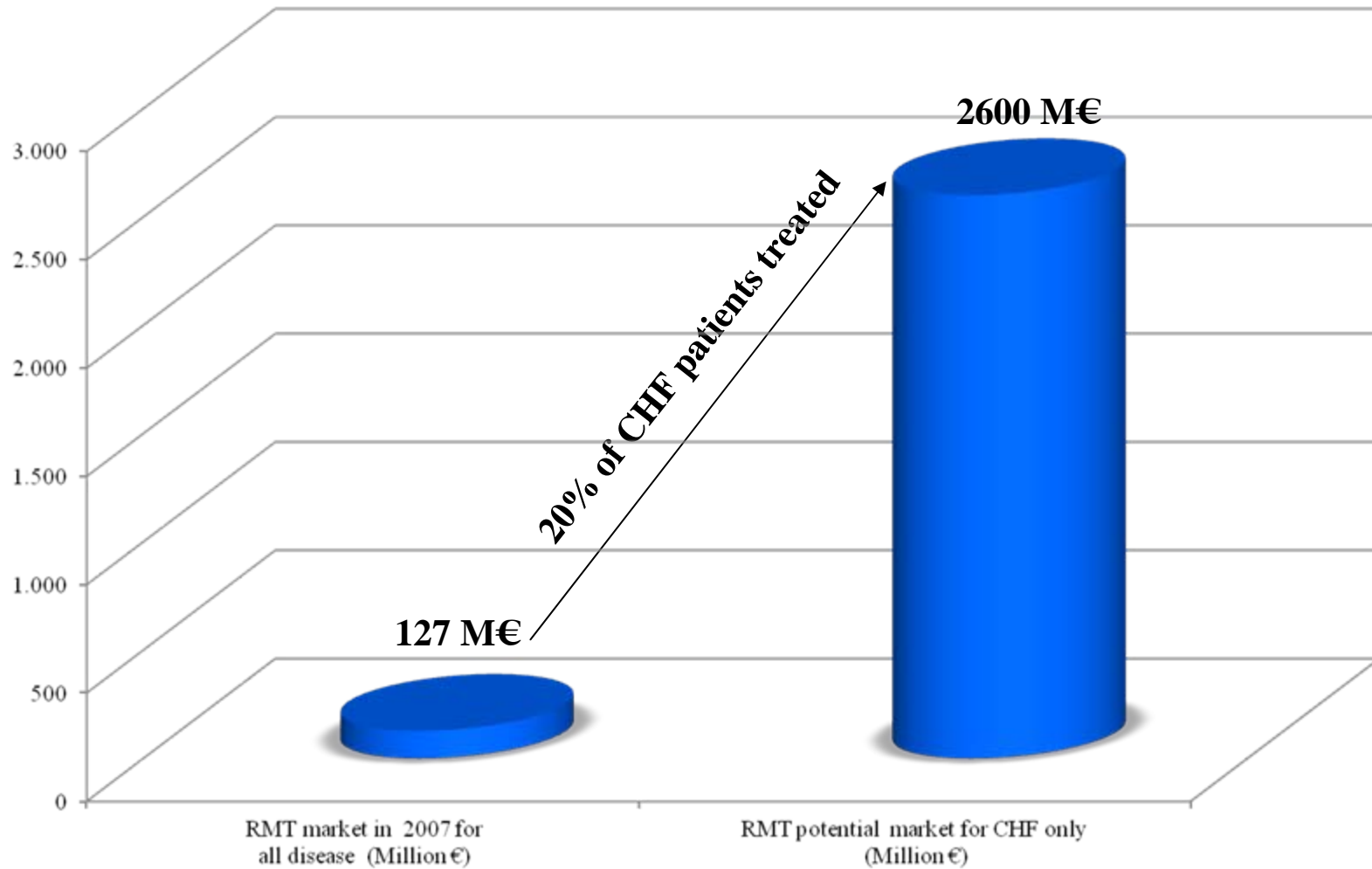
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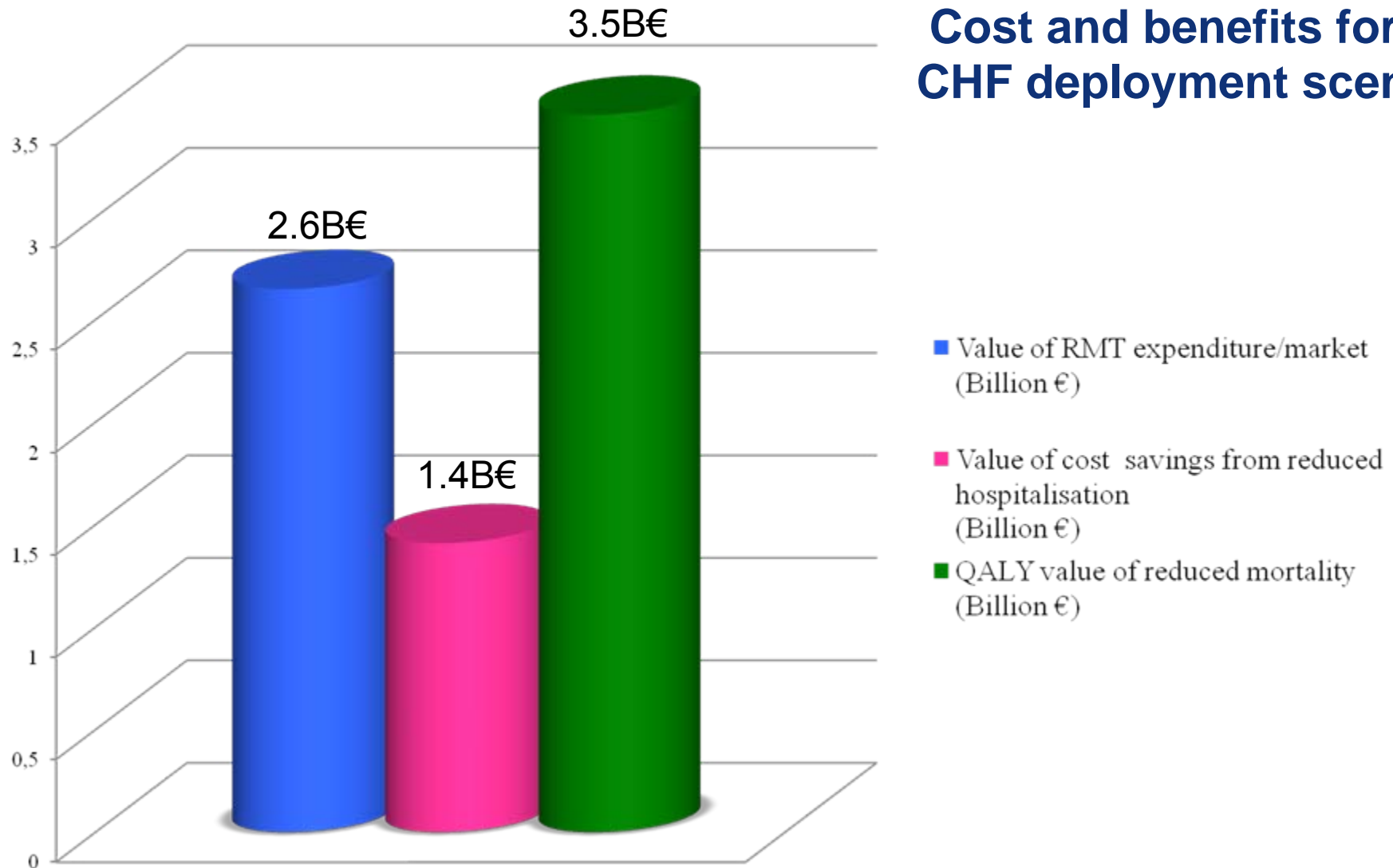
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## Cost and benefits for the CHF deployment scenario





**Cristiano Codagnone**  
**Senior Scientist,**  
Information Society Unit  
European Commission, DG JRC Institute  
for Prospective Technological Studies  
(IPTS)  
Edificio Expo - Calle Inca Garcilaso, s/n  
E-41092 Sevilla - Spain

<http://ipts.jrc.ec.europa.eu>  
[cristiano.codagnone@ec.europa.eu](mailto:cristiano.codagnone@ec.europa.eu)

Phone +34 954 488 301 (direct)  
Fax +34 954 488 208

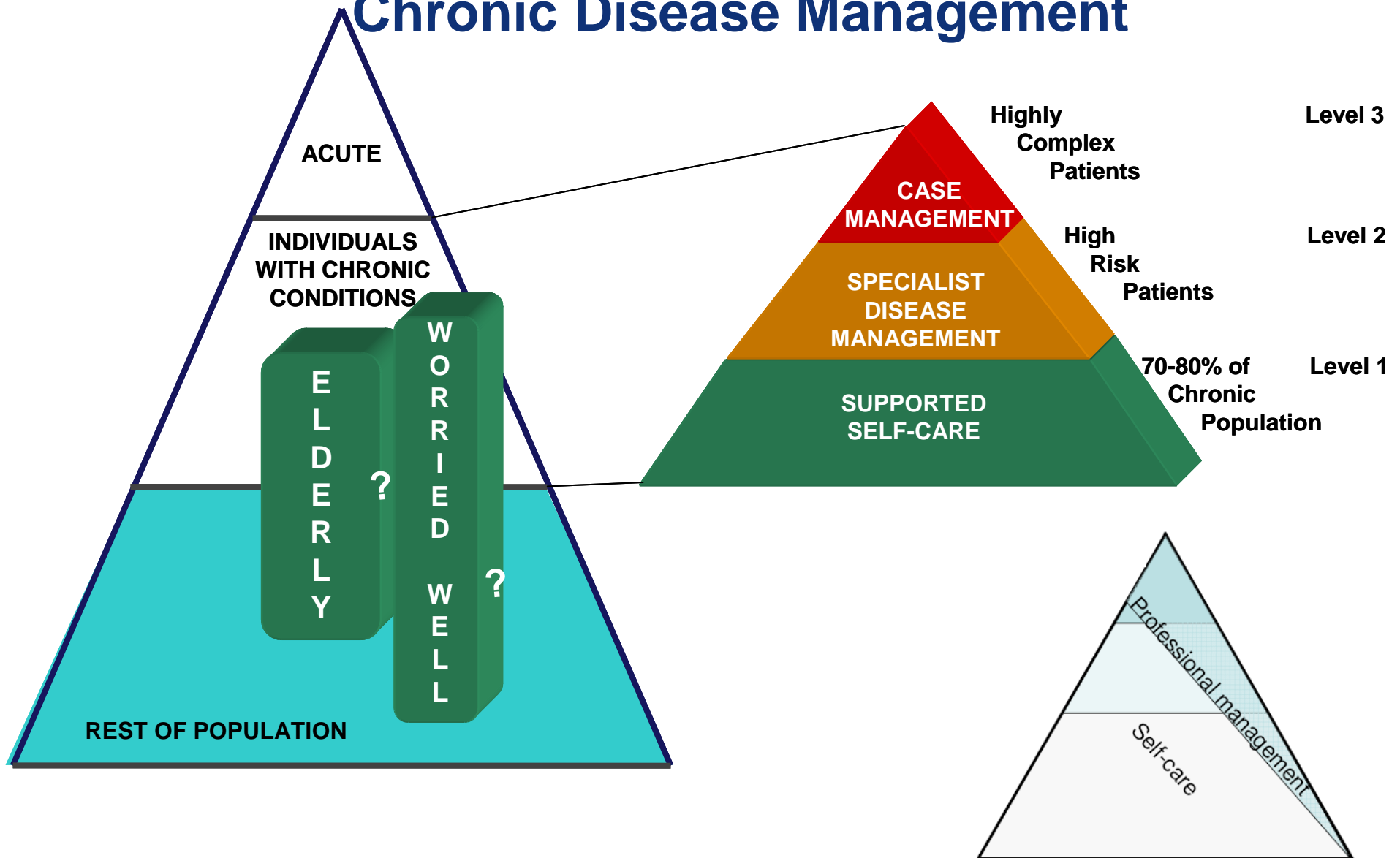
**Ioannis Maghiros**  
**Techno-Economic Impacts enabling social**  
Information Society Unit  
European Commission, DG JRC  
Institute for Prospective Technological Studies  
(IPTS)  
Edificio Expo - Calle Inca Garcilaso, s/n  
E-41092 Sevilla - Spain

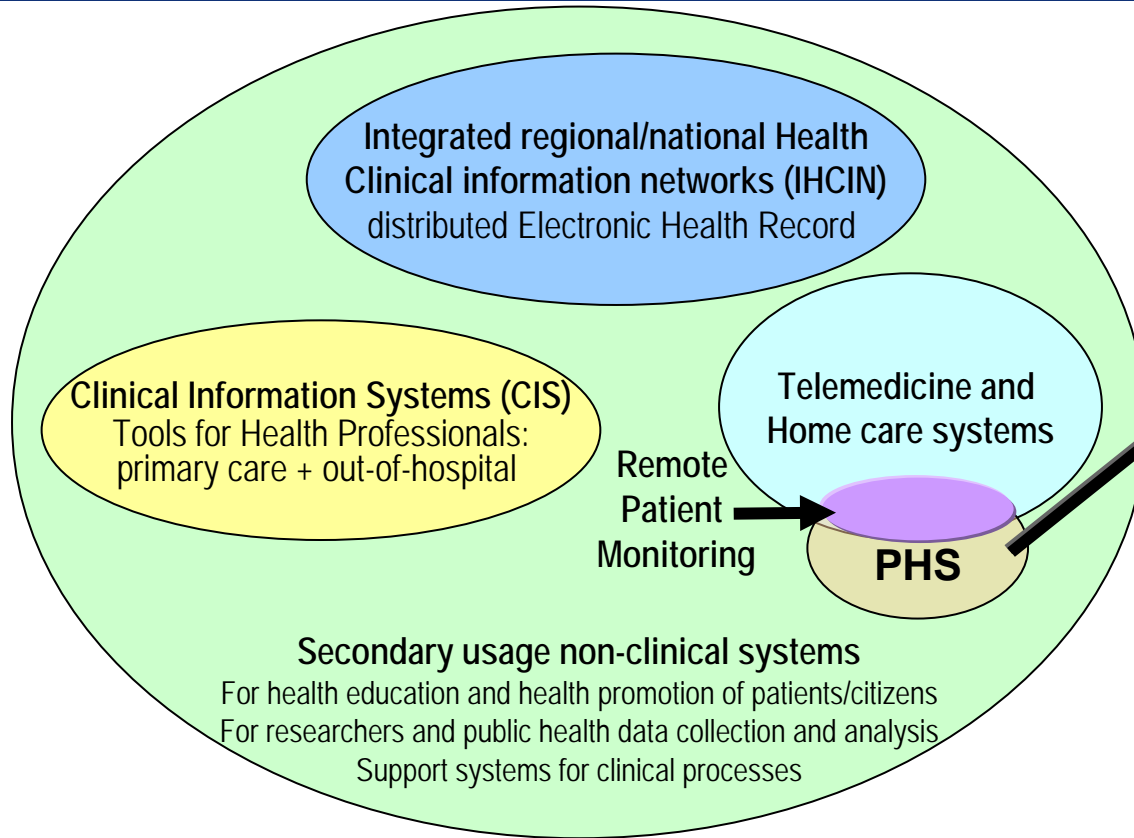
<http://ipts.jrc.ec.europa.eu>  
[ioannis.maghiros@ec.europa.eu](mailto:ioannis.maghiros@ec.europa.eu)

Phone +34 954 488 281 (direct)  
Fax +34 954 488 208

# Additional background material

## Chronic Disease Management





- New markets/New jobs
- Increased output efficiency
- More people included
- Active workers' life prolonged

Secondary Usage Non-Clinical Systems:	71.6%
Clinical Information Systems:	22.5%
Health Information networks:	5.0%
Telemedicine and homecare services:	0.9%
of which:	
Remote Monitoring and Treatment:	0.6%

"Accelerating the development of the eHealth market in Europe",  
EC eHealth Taskforce report 2007: Lead Market Initiative,  
Luxembourg: Office for Official Publications of the EU, 2007 p. 10  
[http://ec.europa.eu/information\\_society/activities/health/docs/publications/mi-report-final-2007dec.pdf](http://ec.europa.eu/information_society/activities/health/docs/publications/mi-report-final-2007dec.pdf)

- Currently very basic first generation sensors are deployed;
- Ongoing research needed to improve wearable smart sensors and textiles, implantable sensors, and on-board data processing capacity of sensors;
- Integrated, intelligent (auto-adaptive/self-calibrating), non-invasive and personalised PHS in future research.

PHS is combination of:

- Data processing
- Sensors
- Interacting and interfacing
- Point of Care (Lab-on-Chip)



**INFUSION OF  
BIOMEDICINE INTO  
TECHNOLOGY**

**PHS**

PHS personalised and fully accepted by healthcare professionals when they will integrate evidence and knowledge from clinical practice and biomedical research

*Source:* C. Codagnone, Reconstructing the Whole: Present and Future of Personal Health Systems

([http://ec.europa.eu/information\\_society/newsroom/cf/itemlongdetail.cfm?item\\_id=5555](http://ec.europa.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=5555))

- **RMT proven outcomes**

- Clinical outcomes: robust evidence
- Cost-effectiveness: inconclusive?
- CHF:
  - Re-hospitalisation due to CHF reduced
  - All cause re-hospitalisation not?

- **US VHA study:**

- Diabetes: 20.4% utilisation decrease;
- CHF: 25.9% utilisation decrease
- COPD: 20.7% utilisation decrease

- **Other Studies:**

- RCT for HBT in Italy (↓ hospitalisation readmission, ↓ mortality)
- Similar outcomes with diabetes/ COPD in other studies

## **Reducing diabetic death**

11,000 deaths caused by complication ensuing from diabetes could be reduced in the six Member States through the combined applications of EMR and disease management

*Source:* EU Swedish Presidency, (2009) ***eHealth for a Healthier Europe!*** , p. 34

## **Reduce hospitalisation**

Application of telemedicine and home health monitoring could avoid 5.6 million admissions to hospitals for chronically ill patients in the six Member States

*Source:* EU Swedish Presidency, (2009) ***eHealth for a Healthier Europe!*** , p. 36

Diseases	Prevalence	Aggregate Direct Costs
<b>Diabetes</b> (IDF Diabetes Atlas, plus several sources)	<ul style="list-style-type: none"> <li>• 6.6% of total population</li> </ul>	<ul style="list-style-type: none"> <li>• about € 90 bln per year</li> </ul>
<b>COPD</b> (Several sources)	<ul style="list-style-type: none"> <li>• Range from 4% to 11%</li> <li>• 2 million DALY lost yearly</li> </ul>	<ul style="list-style-type: none"> <li>• About 50 bln per year</li> </ul>
<b>CVD in general</b> (S. Allender, ed. 2008)	<ul style="list-style-type: none"> <li>• 12 million DALYs lost yearly</li> </ul>	<ul style="list-style-type: none"> <li>• € 109 bln per year</li> </ul>
<b>CHF</b> (several sources, OECD 2009 Health Data)	<ul style="list-style-type: none"> <li>• Between 1% and 3% of general population</li> <li>• 10% among the very elderly</li> </ul>	<ul style="list-style-type: none"> <li>• 23 bln per year</li> </ul>

**Set to almost double by 2020**