Forum Grid Meeting, 02 July 2008, Berlin, Germany

The EU eHealth Agenda: Vision, Activities and Funding

Slides selected and presented by
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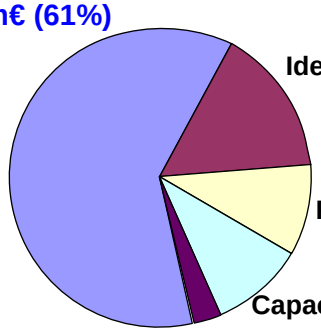
empirica GmbH, Bonn, Germany

Slides provided by the
ICT for Health (eHealth) Unit
DG Information Society & Media
European Commission
(Cf. for complete set
http://www.hst.aau.dk/%7Eska/MIE2008/ParalleSessions/Keynotes/IliasIakovidizMIE2008.pdf)

FP7 Specific Programmes

Cooperation: 44,735 m€ (61%)



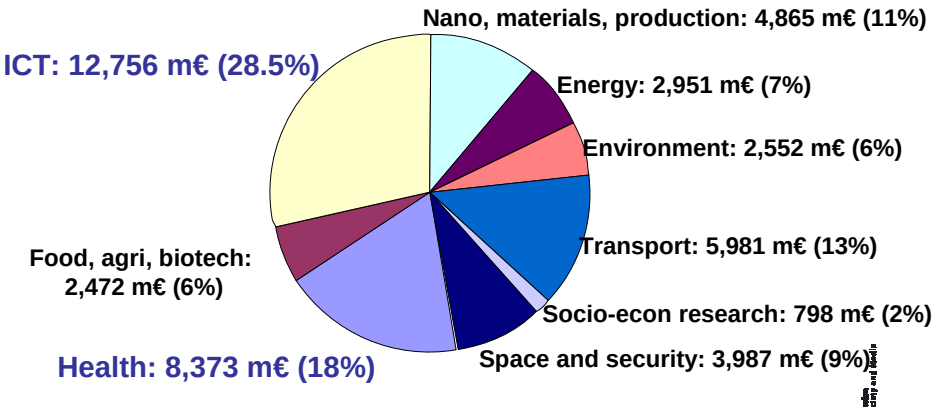
Ideas: 11,942 m€ (16%)

People: 7,178 m€ (10%)

Capacities: 7,536 m€ (10%)

JRC: 1,824 m€ (3%)

"Cooperation" – Collaborative Research – Themes



ICT for Health (eHealth) Unit, European Commission Information Society and Media DG

- ICT for Health supports mainly ***R&D in eHealth (ca € 100 Mil/year)***
- **Major focus in 90's:**
  - Regional Health Information Networks,
  - Electronic Health Records, Homecare/telemedicine
- **Today's focus:**

  i) Personal health systems

  ii) Patient safety

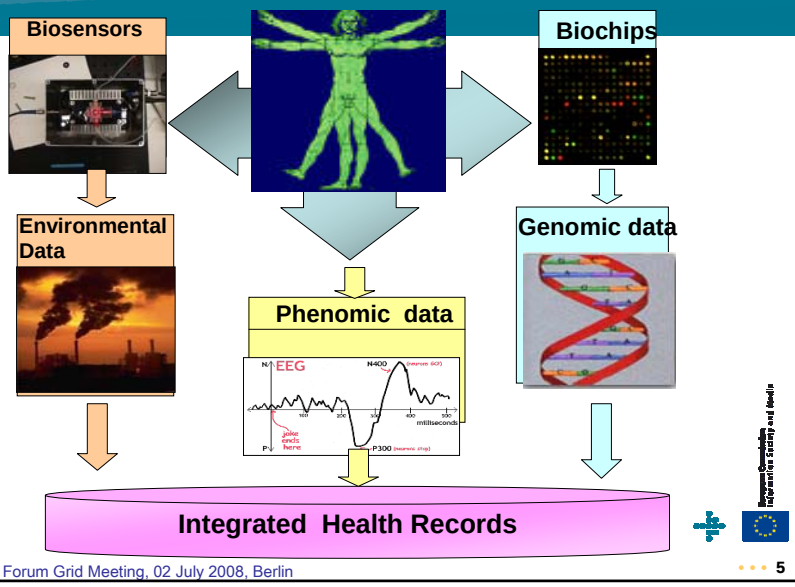
  iii) Modelling and Simulation of diseases (Virtual Physiological Human)

Also involved in policy and support to deployment:

- ***eHealth Action plan,***
- ***Lead market initiative,***
- ***Recommendation on Interoperability,***
- ***Deployment of telemedicine***
- **CIP: *Large Scale Pilots, certification***

New R&D Activities

Towards full picture of individual's health status
Genomics-based personalized medicine



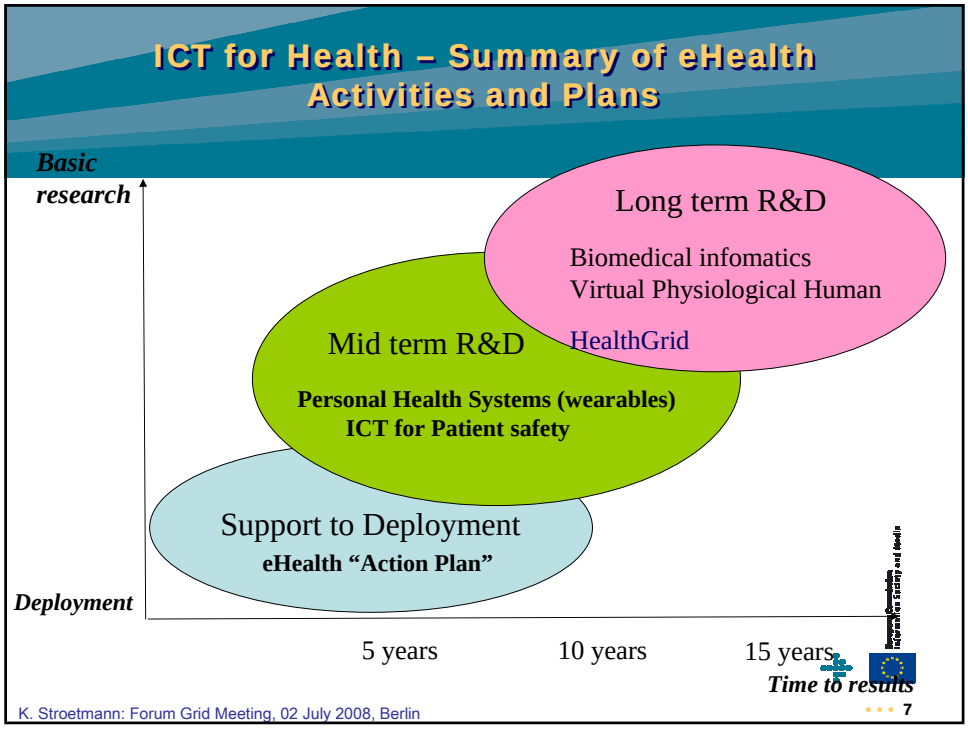
ICT for Health Unit support for Research & development (FP7)

- **Personalisation of Healthcare**
  - Personal health system

  € 72 Million (M) in 2007, (€ 63 M in 2009)
- **Patient safety / avoiding medical errors**

  € 30 M in 2007, (€ 30 M in 2009)
- **Predictive Medicine – Virtual Human**
  - Modelling/simulation of diseases

  € 72 M in 2007, (€ 68 M in 2009)


ICT for Health – Summary of eHealth Activities and Plans
Basic research
Long term R&D
Biomedical infomatics
Virtual Physiological Human
HealthGrid
Mid term R&D
Personal Health Systems (wearables)
ICT for Patient safety
Support to Deployment
eHealth "Action Plan"
Deployment
5 years
10 years
15 years
Time to results
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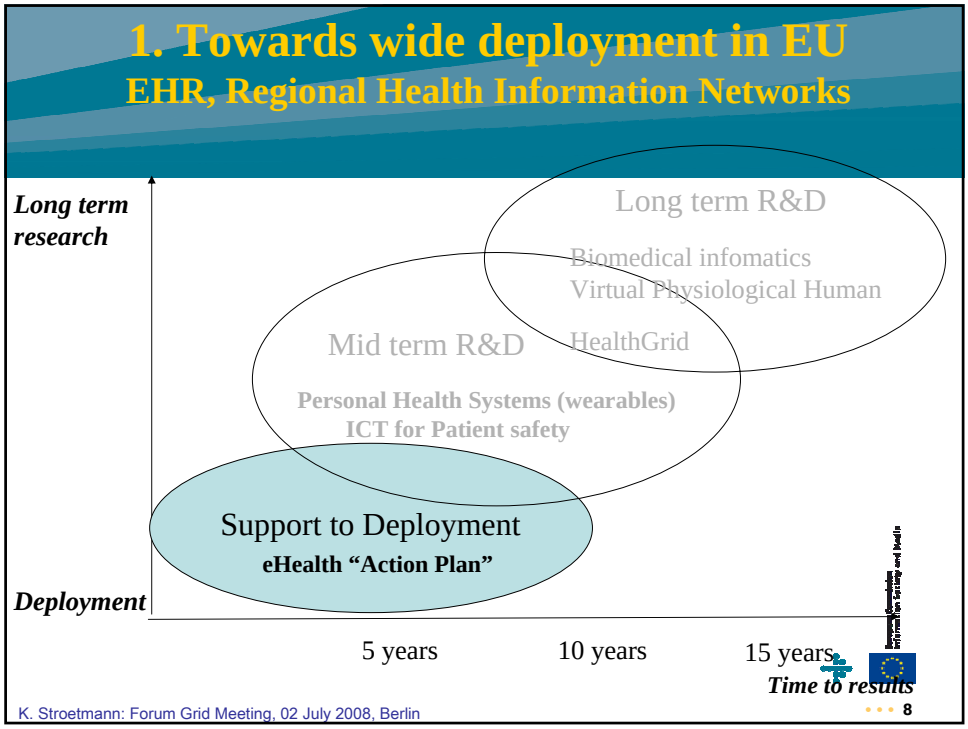
7


1. Towards wide deployment in EU
EHR, Regional Health Information Networks
Long term research
Long term R&D
Biomedical infomatics
Virtual Physiological Human
HealthGrid
Mid term R&D
Personal Health Systems (wearables)
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8

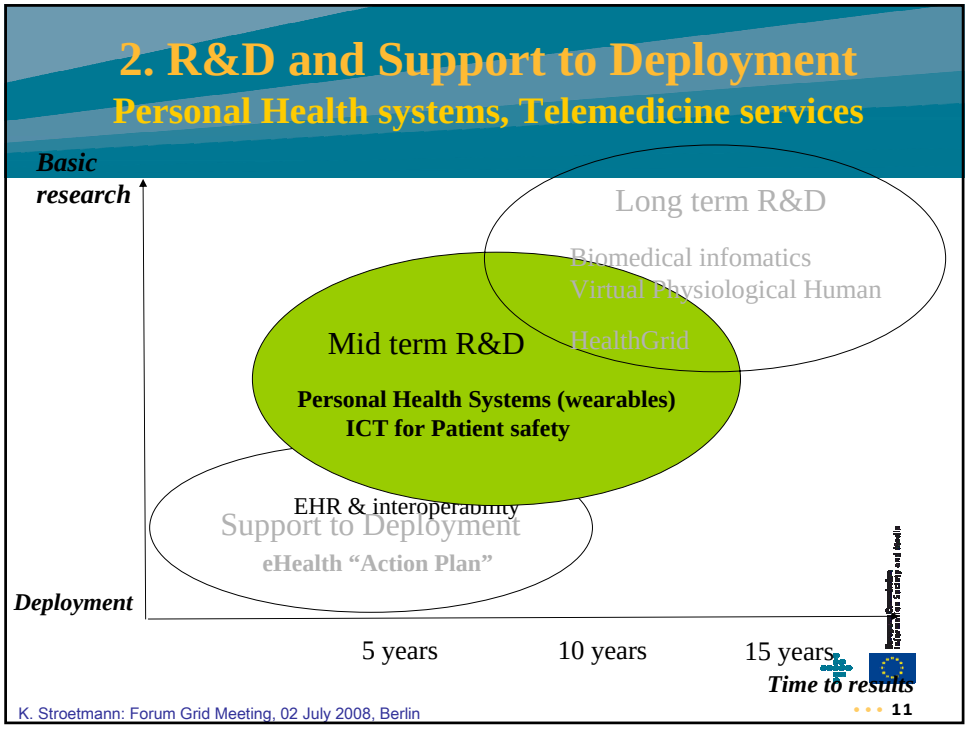
EU current eHealth Agenda
Support to Deployment

ec.europa.eu/information_society/ehealth

- Quality Criteria of Health Related Websites – COM (2002) 667 final
- **eHealth Action Plan** – COM (2004) 356 final
- Publishing
  - eHealth Roadmaps of 27 Member States (March/07), numerous studies
  - **EC Recommendation** on EHR interoperability (June/08)
  - **Communication on Telemedicine** (Q4/2008)
- Launching **Large Scale Pilot** (on interoperability) – CIP (7/08)
- Mobilising the Actors
  - 6th eHealth 2008 High Level Conference Slovenia May 6-8, 2008
  - World of Health IT (WHIT 08), Copenhagen, November
- Creating the conditions: Working with all stakeholders, other DGs, Innovation, boosting of eHealth financing, International cooperation

2008 EC places emphasis on Interoperability

- Supports projects and workshops on semantic interoperability
- Gives mandates (M 403) to CEN, CENELEC, ETSI to provide standards on (http://www.ehealth-interop.nen.nl)
  1) patient and health practitioner identifiers;
  2) the patient summary;
  3) an emergency data set
- EC Recommendation on (cross border) EHR Interoperability
- Launches pilot to deploy the above 3 services across borders
- Call for proposals:
- EHR certification (CIP June 08)
- Conformance testing (FP7-Call 4 Nov 08)
- PHS (wearable, portables) interoperability (FP7-Call 4 Nov 08)


2. R&D and Support to Deployment
Personal Health systems, Telemedicine services
Basic research
Long term R&D
Biomedical infomatics
Virtual Physiological Human
HealthGrid
Mid term R&D
Personal Health Systems (wearables)
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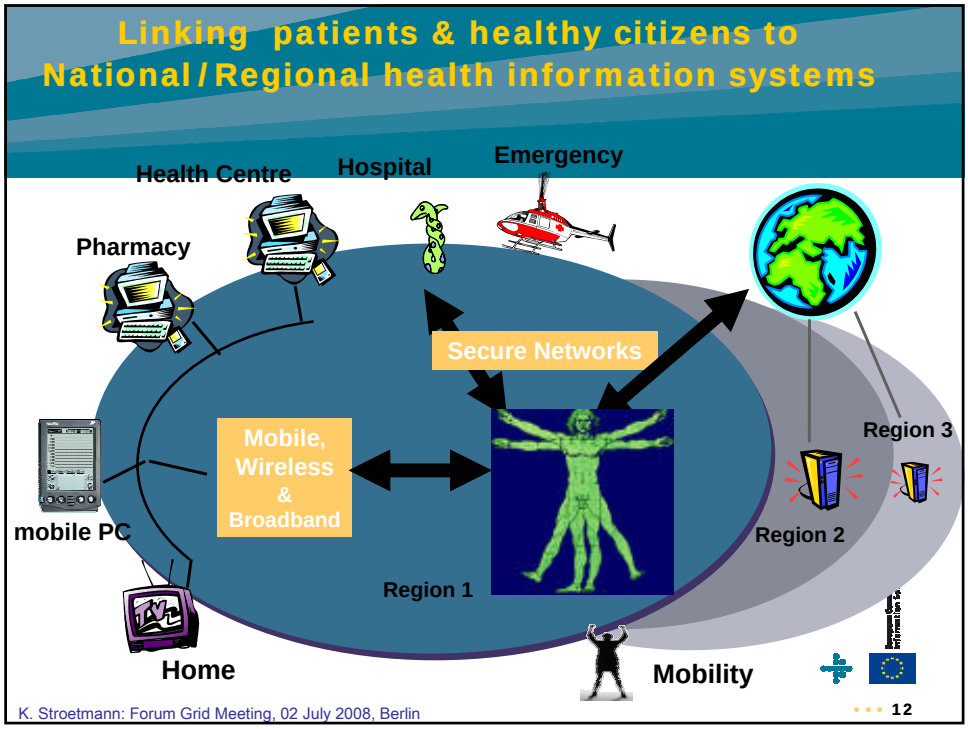
11


Linking patients & healthy citizens to
National/Regional health information systems
Health Centre
Hospital
Emergency
Pharmacy
Secure Networks
Mobile, Wireless & Broadband
mobile PC
Region 3
Region 2
Region 1
Home
Mobility
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12

Prototype PHS

Examples

- Wrist-worn devices
- Body Sensor Networks
- Biomedical clothes

Project AMON

Project WEALTHY

Project MYHEART

Textiles with embedded sensors to assist rehabilitation of post-stroke patients

R&D for future PHS generations – Possible areas

- **Mental Health**
  - Rising prevalence
  - Very costly to healthcare systems, lost productivity
  - Less systematic effort so far in comparison with e.g., CVD, diabetes, etc.
  - Several challenges pertaining to application of ICT for:
    - prevention, management and treatment of mental disorders
  - Strong links and interdisciplinary collaboration with neurosciences are key elements

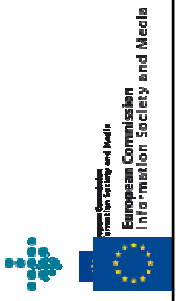
R&D for future PHS generations – Possible areas

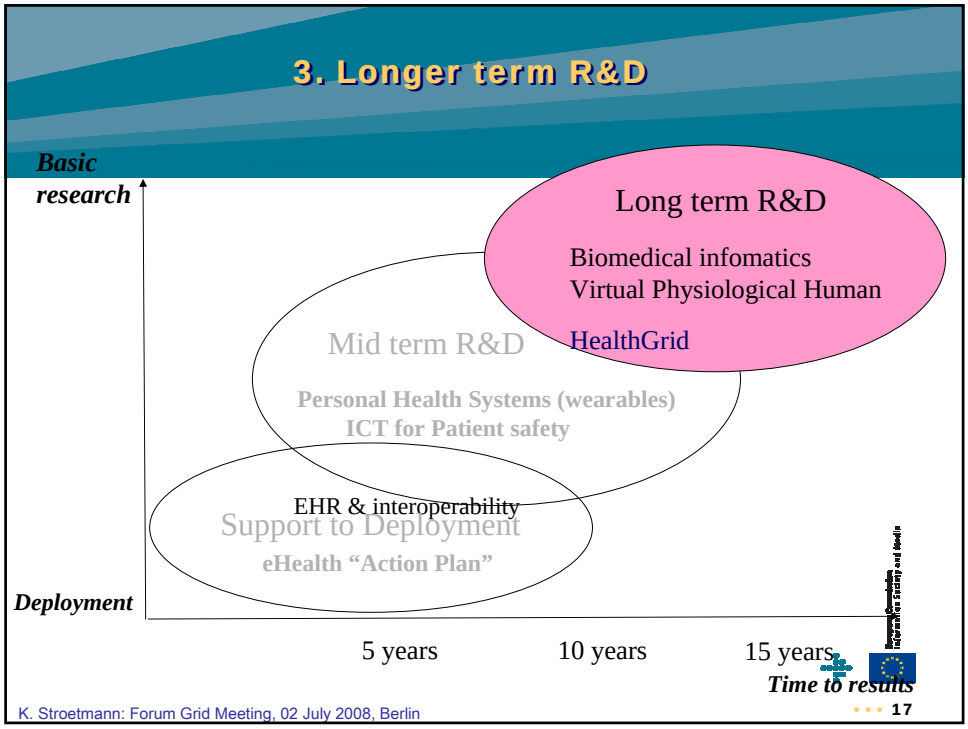
- **ICT-enabled Artificial Organs**
  - Minimally invasive PHS to overcome degraded functionality of body organs
    - kidney, liver, pancreas, heart, etc…
  - Reaping advances arising from the convergence of ICT, bio-, nano- and material technologies
    - Small, wearable artificial organs
  - Opportunities for developing artificial organs tailored to the individual's needs

3. New research frontiers

Biomedical Informatics

Virtual Physiological Human




3. Longer term R&D
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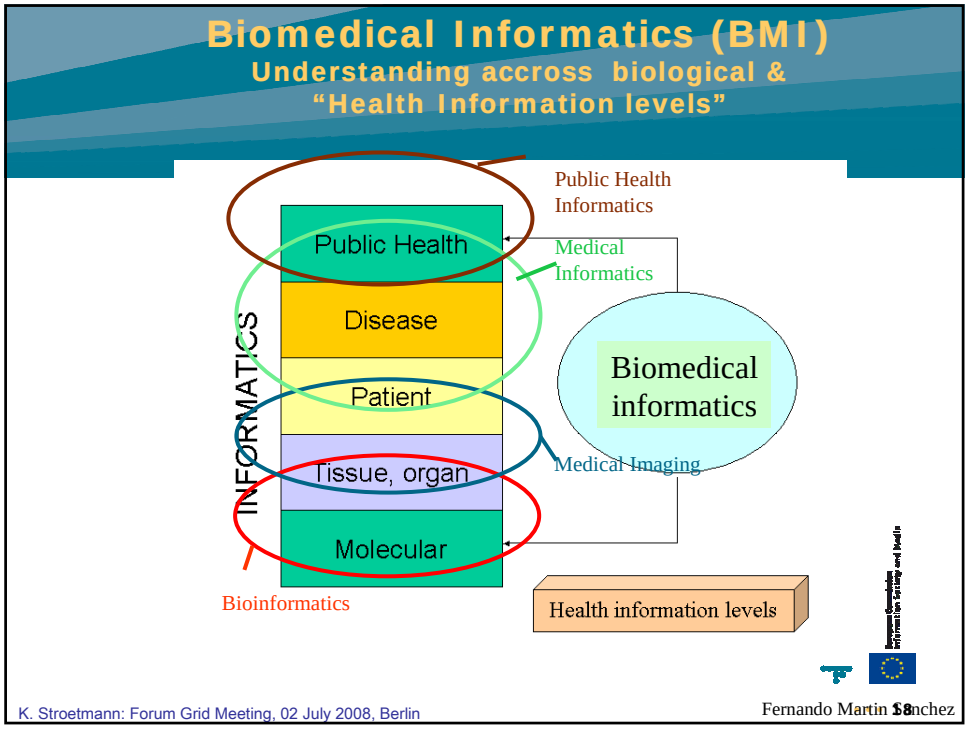
17


Biomedical Informatics (BMI)
Understanding accross biological &
"Health Information levels"
Public Health Informatics
Medical Informatics
Biomedical informatics
Medical Imaging
Public Health
Disease
Patient
Tissue, organ
Molecular
INFORMATICS
Bioinformatics
Health information levels
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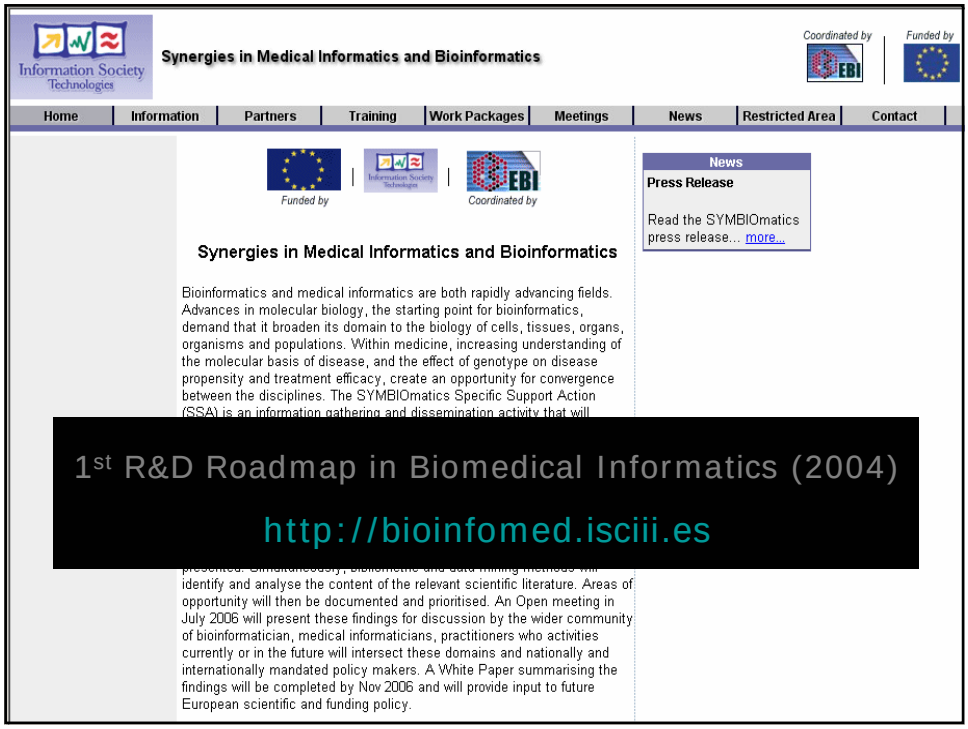
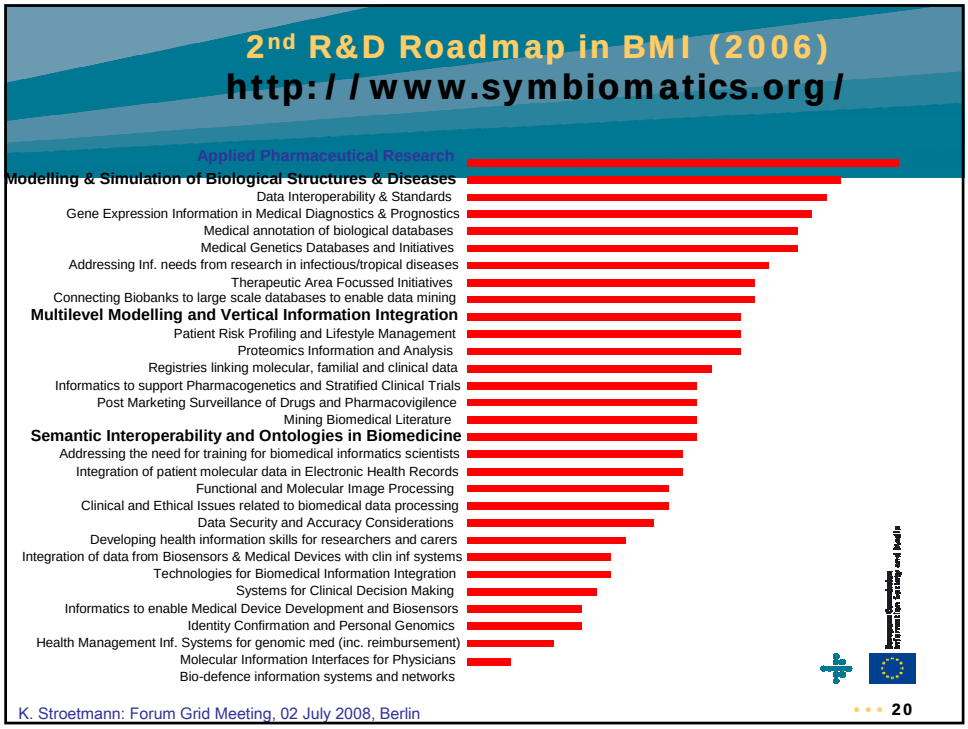
Fernando Martin Sanchez
18


Information Society Technologies
Synergies in Medical Informatics and Bioinformatics
Coordinated by
Funded by
Home
Information
Partners
Training
Work Packages
Meetings
News
Restricted Area
Contact
Funded by
Coordinated by
Synergies in Medical Informatics and Bioinformatics
Bioinformatics and medical informatics are both rapidly advancing fields. Advances in molecular biology, the starting point for bioinformatics, demand that it broaden its domain to the biology of cells, tissues, organs, organisms and populations. Within medicine, increasing understanding of the molecular basis of disease, and the effect of genotype on disease propensity and treatment efficacy, create an opportunity for convergence between the disciplines. The SYMBIOmatics Specific Support Action (SSA) is an information gathering and dissemination activity that will
identify and analyse the content of the relevant scientific literature. Areas of opportunity will then be documented and prioritised. An Open meeting in July 2006 will present these findings for discussion by the wider community of bioinformatician, medical informaticians, practitioners who activities currently or in the future will intersect these domains and nationally and internationally mandated policy makers. A White Paper summarising the findings will be completed by Nov 2006 and will provide input to future European scientific and funding policy.
News
Press Release
Read the SYMBIOmatics press release... more...
1st R&D Roadmap in Biomedical Informatics (2004)
http://bioinfomed.isciii.es


2nd R&D Roadmap in BMI (2006)
http://www.symbiomatics.org/
Applied Pharmaceutical Research
Modelling & Simulation of Biological Structures & Diseases
Data Interoperability & Standards
Gene Expression Information in Medical Diagnostics & Prognostics
Medical annotation of biological databases
Medical Genetics Databases and Initiatives
Addressing Inf. needs from research in infectious/tropical diseases
Therapeutic Area Focussed Initiatives
Connecting Biobanks to large scale databases to enable data mining
Multilevel Modelling and Vertical Information Integration
Patient Risk Profiling and Lifestyle Management
Proteomics Information and Analysis
Registries linking molecular, familial and clinical data
Informatics to support Pharmacogenetics and Stratified Clinical Trials
Post Marketing Surveillance of Drugs and Pharmacovigilence
Mining Biomedical Literature
Semantic Interoperability and Ontologies in Biomedicine
Addressing the need for training for biomedical informatics scientists
Integration of patient molecular data in Electronic Health Records
Functional and Molecular Image Processing
Clinical and Ethical Issues related to biomedical data processing
Data Security and Accuracy Considerations
Developing health information skills for researchers and carers
Integration of data from Biosensors & Medical Devices with clin inf systems
Technologies for Biomedical Information Integration
Systems for Clinical Decision Making
Informatics to enable Medical Device Development and Biosensors
Identity Confirmation and Personal Genomics
Health Management Inf. Systems for genomic med (inc. reimbursement)
Molecular Information Interfaces for Physicians
Bio-defence information systems and networks
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20

Virtual Physiological Human (VPH) The aim

Based on the ideas of the International Physiome project

VPH constitutes effort towards

multi-scale patient-specific models for

- Personalised healthcare solution
- Early diagnostics & Predictive medicine
- Understanding diseases for the first time and across several biological levels

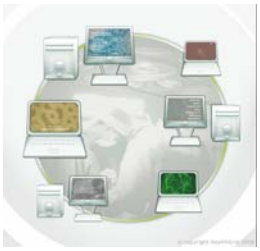
The VPH research roadmap (2007)

www.europhysiome.org

developed by the EC project STEP

VPH – concept & technology

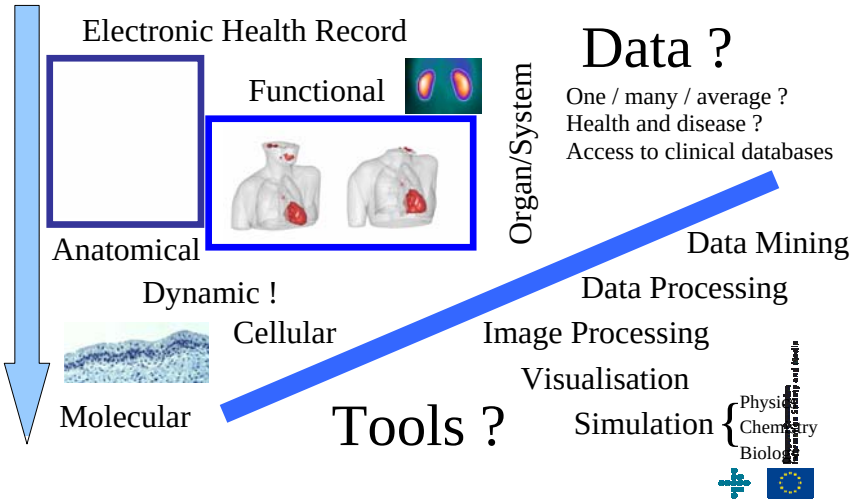
Computational framework for multi-scale in-silico model(s) of the human physiology and a toolbox for simulation and visualisation.



Technologies involved:

biomedical modelling, simulation and visualisation techniques, imaging, semantic integration, data mining, knowledge discovery tool, databanks, HealthGrid (infrastructure and tools)

What is a 'Virtual Physiological Human' ?



Rod Hose, University of Sheffield

International Cooperation in VPH

Cooperation with

- **University of Auckland – Physiome projects**
- **US/NIH on the tools and infostructure**
- **Japan – "in silico" medicine initiative, Fujitsu**
- **China – Virtual mechanical human**

2001

Synergy between Research in
Medical Informatics, Bio-Informatics and Neuro-Informatics

Knowledge empowering
Individualised Healthcare and Well-Being

14 December 2001
Pyramids, Place Rogier, Brussels

European Commission:
DG-Information Society, DG Research

ICT for BIO-Medical Sciences 2006

Information and Communication Technologies for **BIO-**Medical Sciences

2006 "ICT-BIO" conference 2006
29-30 June 2006
Charlemagne Bldg, Brussels

2008 ICT-BIO 2008, October 23-24, Brussels

ec.europa.eu/information_society/events/ict_bio2008

Coupling the clinical research and patient care data

Patient care and clinical research need each other - and have potential for greater synergy:

- Assisting each other in better performance/quality
- Faster translation of R&D into practice
- Learning from advances in information handling, knowledge representation

But still are "different worlds" w.r.t. data modeling, knowledge representation and storage and communication standards, legal framework ..

- in pharma limited experience with clinical care (e.g. HIS, EHR, RIS/PACS, LIS, HL7, ICD, SNOMED...)
- In clinical care limited experience with clinical research (e.g. EDC, validation, ICH, MedDRA ..)

Conclusions

- EC is also involved in support to deployment - develops strong relation between a) R&D, b) policy and c) deployment.
- Clinicians' and patients' involvement – we need to get better at it
- Involving procurers - next target of CIP programme
- International cooperation – needed but still difficult
- EC will call for proposals in personal health systems, patient safety and in Virtual Physiological Human (including cooperation with US and possibly Japan)

http://europa.eu.int/information_society/activities/health/index_en.htm

Thank you