

SemanticHealthNet

The logo for SemanticHealthNet features the text "SemanticHealthNet" in a bold, dark blue font. The text is overlaid on a network diagram consisting of several light blue curved lines that intersect at various points, with small dark blue dots marking these intersection points.

SemanticHealthNet

Learning Health Systems

Institute for Innovation through Health Data

CISP-Club, Rouen, 17 octobre, 2015

**Robert Vander Stichele, Département d' Informatique médicale, EuroRec,
Université de Gand, Belgique**

Déclaration de conflit d' intérêt

Je suis médecin généraliste,
pratiquant dans la ville de Gand, Belgique

Je suis pharmacologue clinique,
professeur à l' Université de Gand

Je travaille sur des projets Européens (FP7 et H2020),
dans le cadre de :

- un service universitaire d' informatique médicale (RAMIT)
- une association Européenne sans but lucratif
de marchands de logiciels médicales (EuroRec)

OVERVIEW

The concept of Learning Health Systems

The Network of Excellence on Semantic Interoperability in Health Care : SemanticHealthNet (SHN)

Institute for Innovation through Health Data

A promenade of buzz words

Big data

Translational medicine

Ecosystems

Learning Health Systems

Semantic Interoperability

The concept of
Learning Health Systems

**Scaling up research and learning
for health systems: now is the time**



Report of a High Level Task Force,
presented and endorsed at the Global Ministerial Forum
on Research for Health 2008, Bamako, Mali



WHO, 2008

The Learning Healthcare System: Workshop Summary (IOM Roundtable on Evidence-Based Medicine)
<http://www.nap.edu/catalog/11903.html>

IOM ROUNDTABLE ON EVIDENCE-BASED MEDICINE

THE LEARNING HEALTHCARE SYSTEM

Workshop Summary

Institute of Medicine, 2013

In the Big Data era, we should strive to become
“learning health systems”

by making clinical data “research grade” and

by lowering the cost of data acquisition and
knowledge generation



The NEW ENGLAND
JOURNAL of MEDICINE

- Victor Dzau et al. “Transforming Academic Health System for an Uncertain Future”, Sept 2013.

In a learning health care system, research influences practice and practice influences research.

EVALUATE

Collect data and analyze results to show what works and what doesn't.

ADJUST

Use evidence to influence continual improvement.

DISSEMINATE

Share results to improve care for everyone.

IMPLEMENT

Apply plan in pilot and control settings.

INTERNAL AND EXTERNAL SCAN

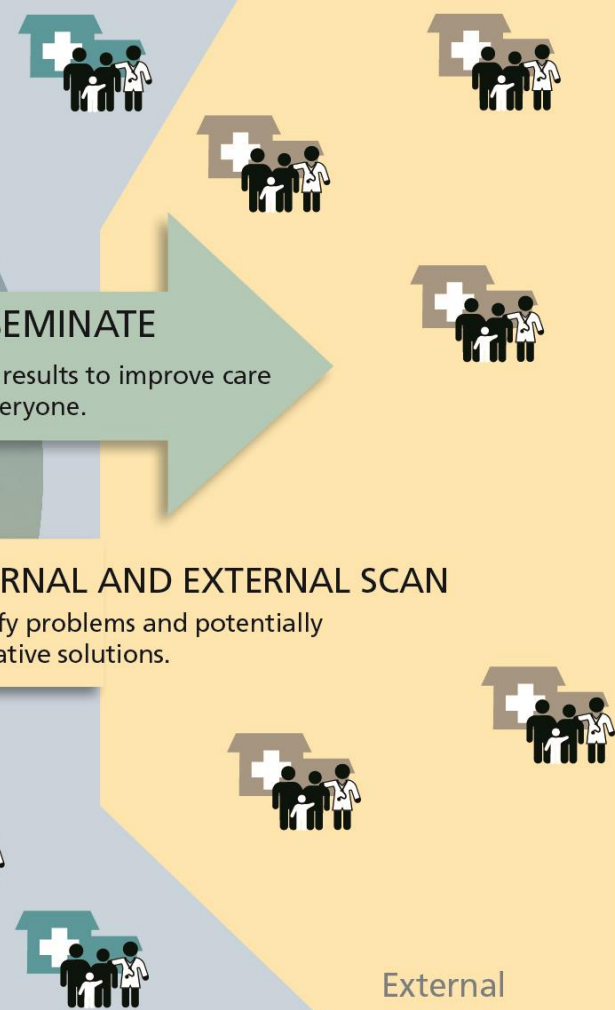
Identify problems and potentially innovative solutions.

DESIGN

Design care and evaluation based on evidence generated here and elsewhere.

Internal

External



The Learning Health System in Europe



International Conference

24 - 25 September 2015

Brussels, Belgium

Hotel Bloom

<http://www.eurorec.org/LHS>

TRANSFoRm: Implementing a Learning Healthcare System in Europe through Embedding Clinical Research into Clinical Practice

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Karolinska Institutet
Sweden

6th January 2015

Aims of TRANSFoRm

- To develop methods, models, services, validated architectures and demonstrations to support:
 - Epidemiological research using GP records
 - Use case: T2D genotype-phenotype study
 - Embedding research in care settings through bidirectional interaction of eCRFs and EHRs
 - Use case: GORD randomized clinical trial
 - Decision support for diagnosis
 - Use case: Simulated diagnostic encounters

TRANSFoRm software landscape

RCT tools
(Electronic Data
Collection)

Epidemiological study
tools
(Data queries)

Diagnostic support
tools

Middleware

Vocabulary
service

Secure data
transport

Authentication
framework

Provenance
framework

Data source
connectivity module

TRANSFoRm Consortium



University of London



UNIVERSITY OF BIRMINGHAM



RCSI



University of Crete



TRINITY COLLEGE DUBLIN
COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH

THE UNIVERSITY OF DUBLIN



Institut national de la santé et de la recherche médicale



Wrocław University of Technology



CPRD
MORE DIMENSIONS TO DATA

SemanticHealthNet

The logo for Semantic Health Net features the text "SemanticHealthNet" in a bold, blue, sans-serif font. The text is centered and overlaid on a network of blue lines and nodes. The lines are curved and intersect at several points, each marked with a small black dot, creating a web-like structure that suggests connectivity and data exchange.

SemanticHealthNet

EU Funded Network of Excellence (2012-2015)

SemanticHealthNet

will develop

a scalable and sustainable

pan-European organisational and governance process

for the semantic interoperability of clinical and biomedical knowledge,

to help ensure that EHR systems are optimised for

patient care, public health and clinical research

across healthcare systems and institutions.

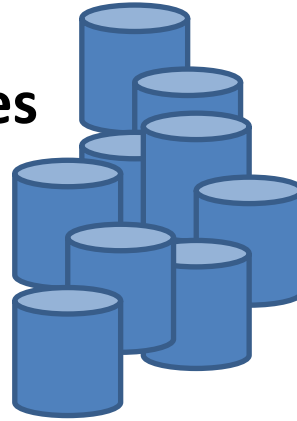
SemanticHealthNet

- 15 Partners
- Budget : 3.1 Meuro
- Project finished and approved mid 2015.
- Deliverables :

www.SemanticHealthNet.eu/index.cfm/deliverables

Domain-specific resources

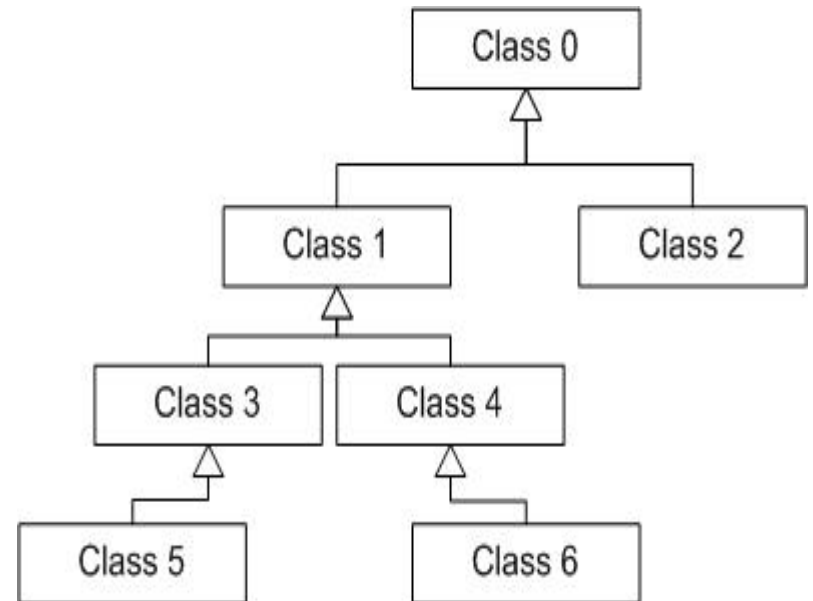
Terminologies



Clinical Models



Ontologies



Multiple disciplines



Letter to the leaders of the learned medical societies

What should those clinicians involved in the development of :

- Research networks
- Guidelines
- Clinical Pathways
- Decision support systems

know about semantic interoperability ?

Making clinical data

- more useful to the clinician
- more useful to the researcher
- bigger
- more interoperable

By combining expertise

- **Domain-specific expertise**
 - GPs
 - Other primary care disciplines
 - Medical specialities
- **Other strange bed fellows**
 - Medical informatics
 - Computational linguistics
 - Information retrieval experts
 - Bioinformatics
 - Semantic web experts
 - Public health scientists

The Institute for Innovation
Through Health Data

Combining and sustaining the results of European projects

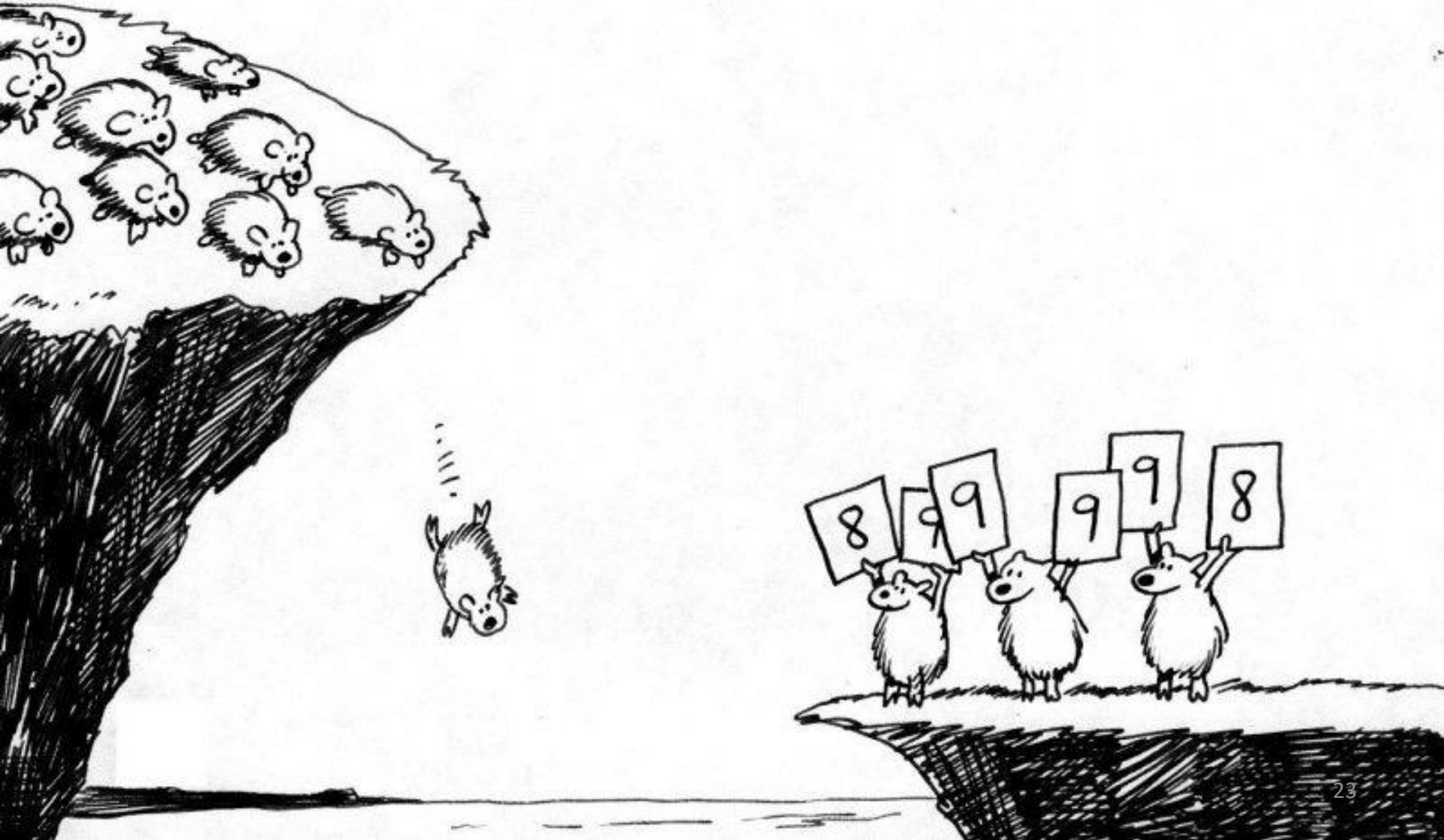


Trillium Bridge

Bridging Patient Summaries across the Atlantic



and soon after a project is over.....



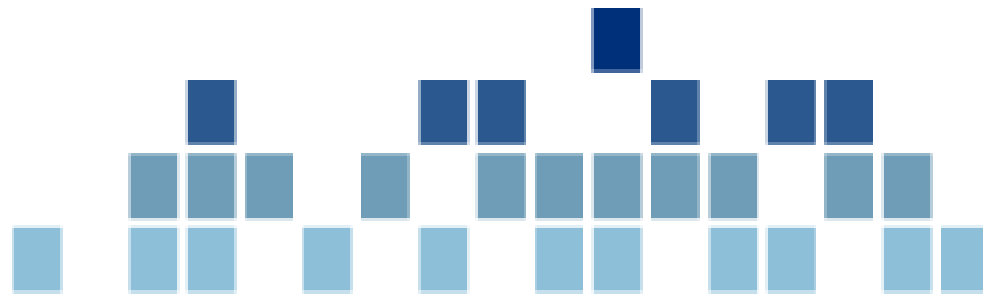


EuroRec

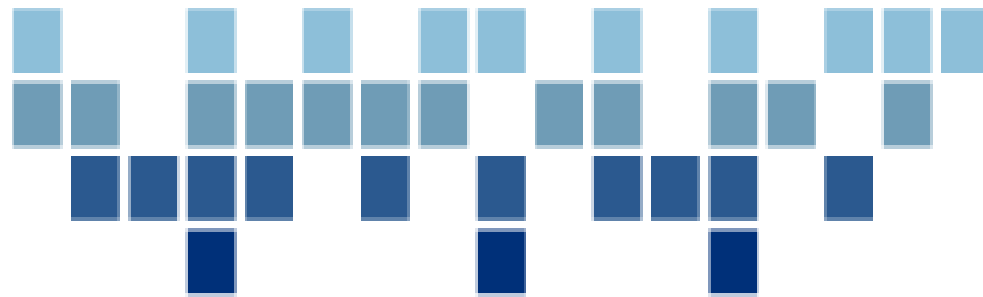
The EUROREC Institute (EuroRec) is an independent not-for-profit organisation, promoting in Europe the use of high quality Electronic Health Record systems (EHRs).

One of its main missions is to support, as the European authorised certification body, EHRs certification development, testing and assessment by defining functional and other criteria.

EuroRec is organised as a permanent network of National ProRec centres and provides services to industry (developers and vendors), healthcare providers (buyers), policy makers and patients.



The European Institute For Innovation Th~ugh Health Data



Enriching knowledge and enhancing care through health data

Building synergy and consensus

- **i~HD** will act as a focal point bringing stakeholders together to share experiences, agree common priorities and approaches, working towards convergence and cross-fertilisation between:
 - ✦ Patient associations
 - ✦ Citizen, family and carer associations
 - ✦ Health professional associations
 - ✦ Clinical and informatics academia
 - ✦ Healthcare providers
 - ✦ National decision makers
 - ✦ Third party payers, commissioners
 - ✦ EHR system and applications vendors
 - ✦ Medical Device vendors
 - ✦ Pharma, Bio-tech
 - ✦ Health data aggregators and consumers
 - ✦ Regulators
 - ✦ Standards development organisations (SDO)
 - ✦ Multi-national decision makers
 - ✦ Social care providers
 - ✦ Electronic health (eHealth) competence centers

i~HD has been formed because a complementary, neutral and not-for-profit organisation is needed

- **to play a central role in governing** and expanding a trustworthy health data driven ecosystem including EHRs and EHR4CR platform services;
- **to act as a connector between health care and clinical research standards**, that are presently developed in silos and impair the interoperability and pooling of health data for research;
- **to promote the adoption of healthcare standards and of data quality**, to enable more effective, safer and better integrated healthcare;
- **to promote to society the importance of using health data for research**, to improve efficiency through reduced duplications, delays, costs enhance speed and efficiency in clinical studies.

CONCLUSION

**If you are not part of the solution,
you are part of the problem.**

**Eldridge Cleaver,
Berkeley, USA, 1968**