From Physics to Daily Life

Health Surveillance

Dr. David Manset, CEO  www.gnubila.fr
Ebola

- The problem
  - 5,843 cases since 03/2014
  - 2,803 deaths
  - 337 infected healthcare workers
    - > 181 died

- Pandemic diseases: Avian Influenza A(H7N9), Corona Virus Infections, Pandemic H1N1, Influenza at Human Animal Interface…

Health Surveillance

- Absolute necessity in a globalised world

epidemiology
practices
informed policies
decision support
Data Silos

What the experts say…

- Many centers of transmission
- Many teams of clinical specialists
- Need to trace contact
- Information is fragmented
- Lack of access to basic information

And…

Data is…
- Fragmented
- Heterogeneous
- Locked in

- Understanding data is…
  - A science in itself,
  - Computationally demanding

- Data is potentially sensitive
  - Data protection and associated access rights
  - Patient safety
Technology Transfer

- Detect trends
- Evaluate risks
- Prioritize, plan,
- Inform, recommend

- Integrate
- Process

- Collect
- Filter
- Control

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AMGA

- Metadata catalogue in grid environments
- Distributed/Federated
- Interoperable with standard databases
- Paired with computational power

Full Replication
- Ex: Radiology Information System
  - Backup
  - Performance
  - Fault tolerance

Partial Replication
- Ex: Genetics profiling
  - Restricted access
  - Targeted processing

Distribution
- Ex: Cross-enterprise Patient Information System
  - Distributed sites
  - Heterogeneous data
  - Controlled access

Proxy
- Ex: Medical office
  - Secure access
  - Lightweight node

*Courtesy of B. Koblitz
Global Initiative for Sentinel E-health Network Grid

GINSENG Project

A light-weight e-infrastructure for e-health and epidemiology,

Private and dedicated e-infrastructure focusing on

- Breast and colon cancer,
- Perinatal pathologies

A network of healthcare professionals to collect, aggregate and analyze medical data,

- Screening associations
- Anatomopathologists
- Health surveillance organizations
- Hospitals

Breast cancer  Colon cancer  Pregnancy follow-up  Trisomy 21

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GINSENG Architecture

- Alternative strategy to Personal Medical Record
- Network of professionals
- Open architecture
- Highly secure
  - Strong authentication
  - Virtual Private Network (VPN)
  - Communications encrypted
- Distributed and federated
• Improve cancer screening process
• Support epidemiological studies
• Enable practices benchmarking
Major paradigm shift
Unlocking data
Raising new data protection concerns
Patient-centered policies
Global Information System