Hitting the ground running: Healthgrid deployment and adoption

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HealthGrid Vision

- ## From HG White Paper

  "grid infrastructure comprising applications, services or middleware components that deal with specific problems arising in the processing of biomedical data.

  Resources (..) are databases, computing power, medical expertise and even medical devices."

- ## Grid technology holds the *promise* of facilitating collaboration and resource sharing

HealthGrid: Vision X Reality

- Vision
  - Healthgrid white paper [2005]
  - SHARE roadmap [2008]
  - Many projects

- Reality
  - Slow adoption
  - Gaps (people, systems, cultures, language)

- Need to build bridges

This paper

- **Current**
  - Knowledge translation laboratory in Canada
  - Grid-enabled infrastructure for biosciences in NL
  - e-science program in Bioinformatics in NL

- **Wish**
  - combine, complement, share, deploy

- **Observation**
  - Difficult….

- **Trying to understand reasons**

SHARCNET

- Shared Hierarchical Academic Research Computing Network [2001]

- HPC culture, sustained

- Status:
  - 17 member institutions, over 900 PI
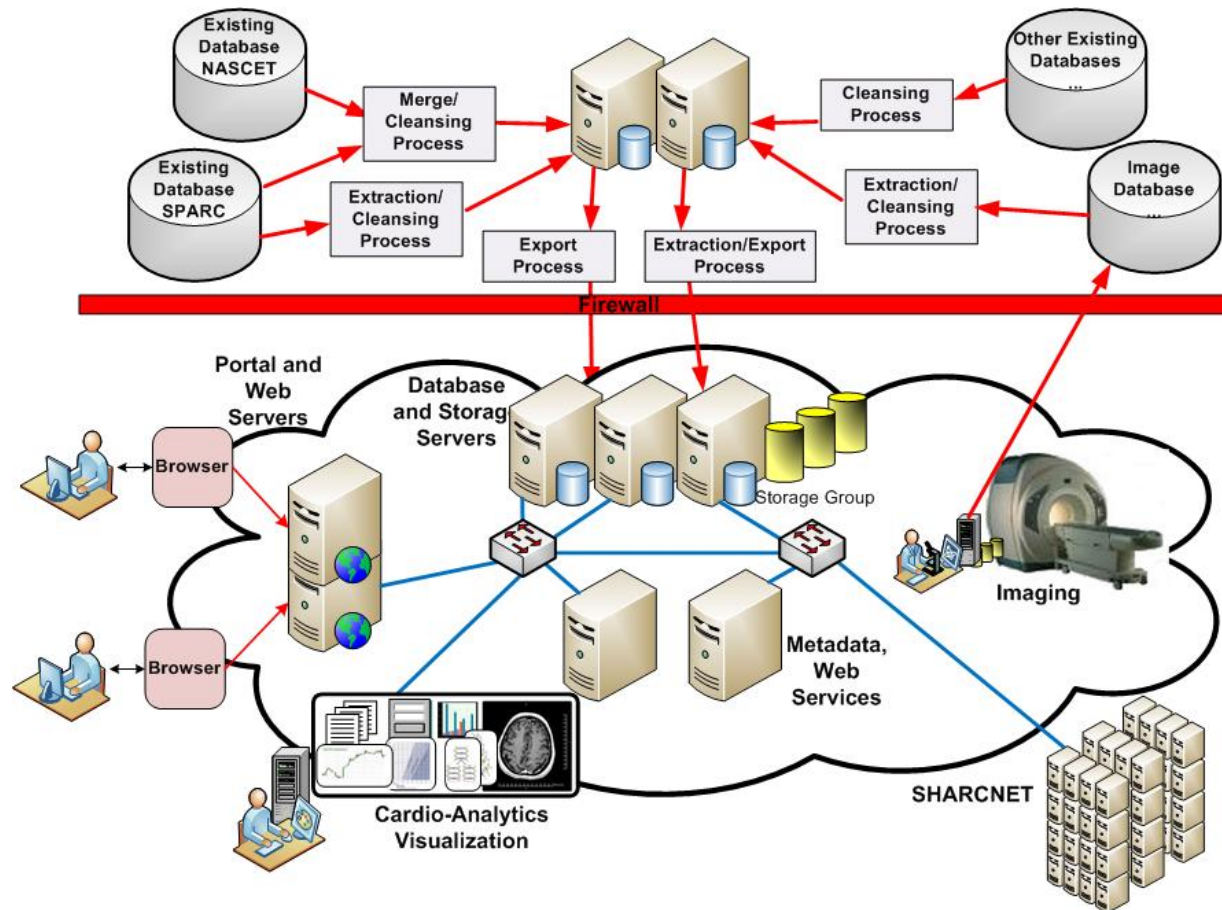 - formal collaboration with various others (I-THINK)

I-THINK Lab

- Innovative Translation of Health Informatics and Knowledge Research (www.ithinkresearch.com) [2007]

- Interdisciplinary facility enabling collaborations between clinicians, scientists and computer scientists

  – Security

  – Data storage services

  – Web interfaces
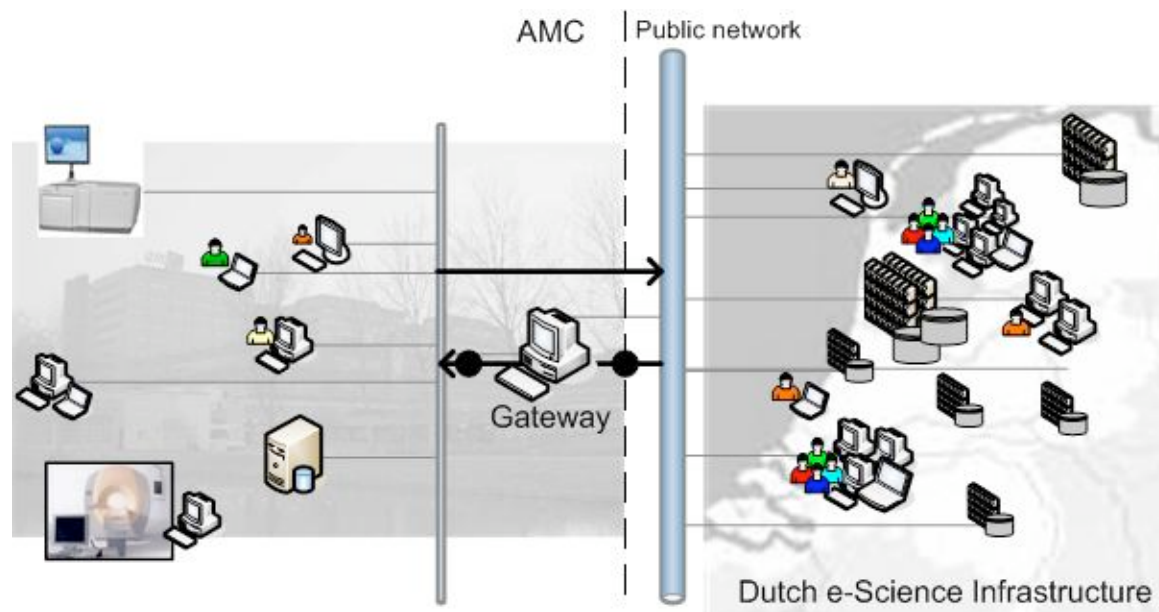
  – Support

  – Trust

I-THINK + SHARCNET

I-THINK + SHARCNET

- Joint Research/Development
  - Distributed data systems
  - Data integration
  - Decision support
  - Mobile devices
  - Graduate course
- Results
  - Models of risk and progression of disease
  - Decision support systems at bed side
  - Cardiology, critical care, endocrinology, neuroscience
- Missing
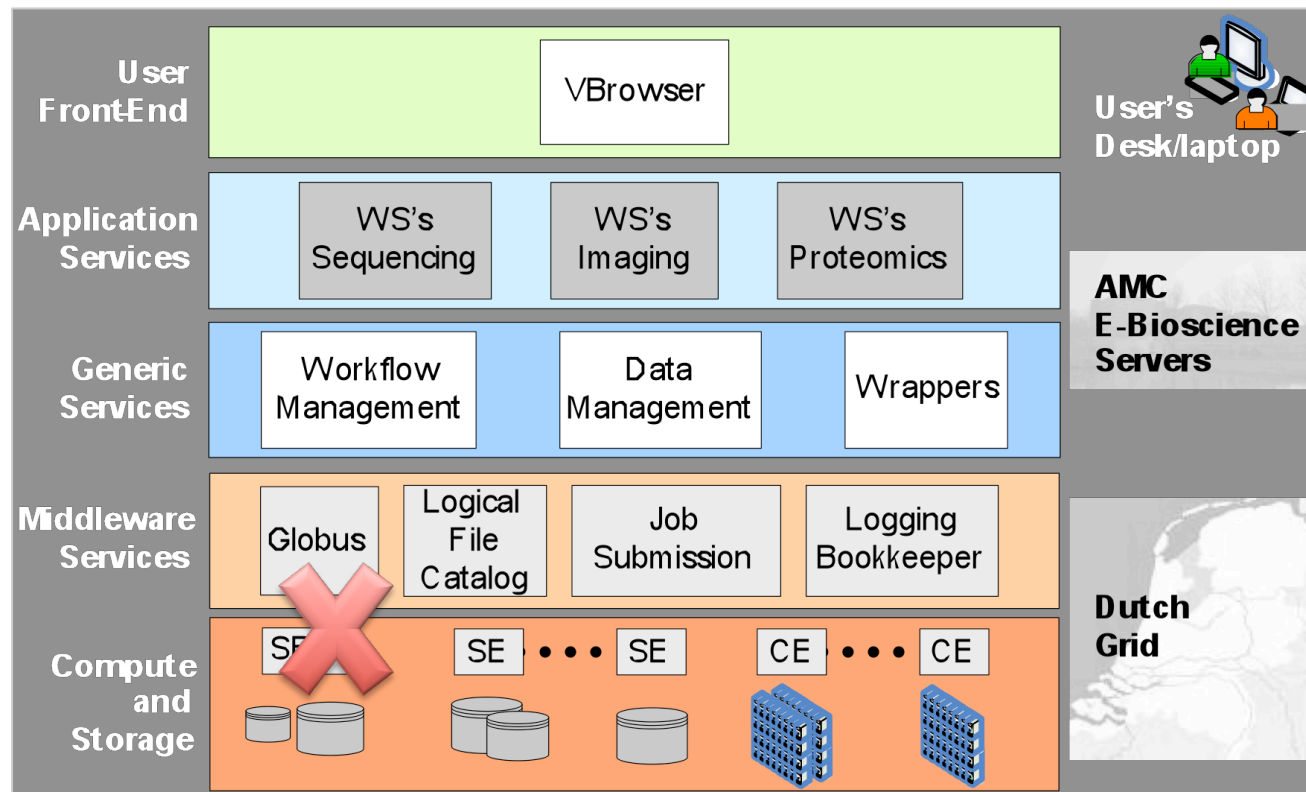 - Computing capacity – specific to health requirements

e-BioInfra

- e-infrastructure for bioscience research
  - VL-e Medical (VLEMED, 2005-2009)
  - Production grid: was VL-e PoC, now Dutch NGI
- Facilitated access by researchers

e-BioInfra

- Workflow
- Service-oriented
- Integration, collaboration, support

e-BioInfra

- Adopted
  - Medical imaging, next generation sequencing and growing

- Supported by
  - AMC, Dutch NGI

- Missing
  - Link to clinical applications
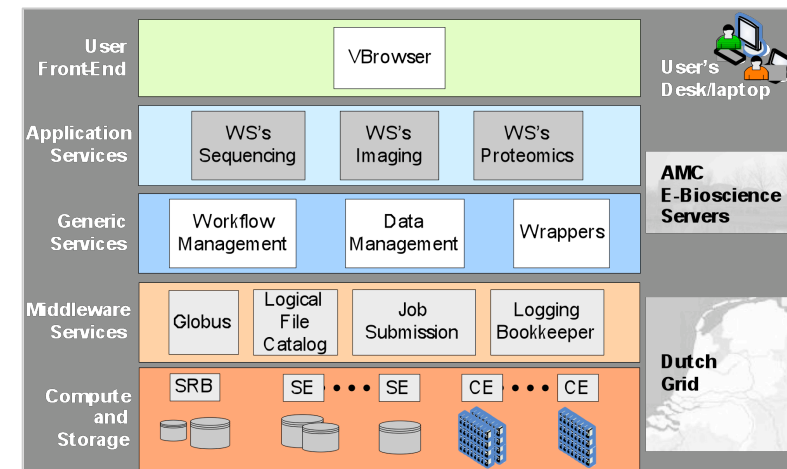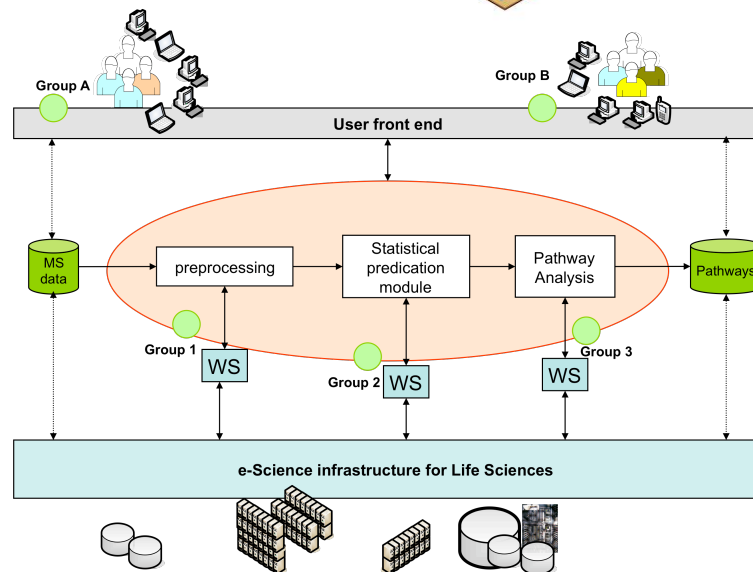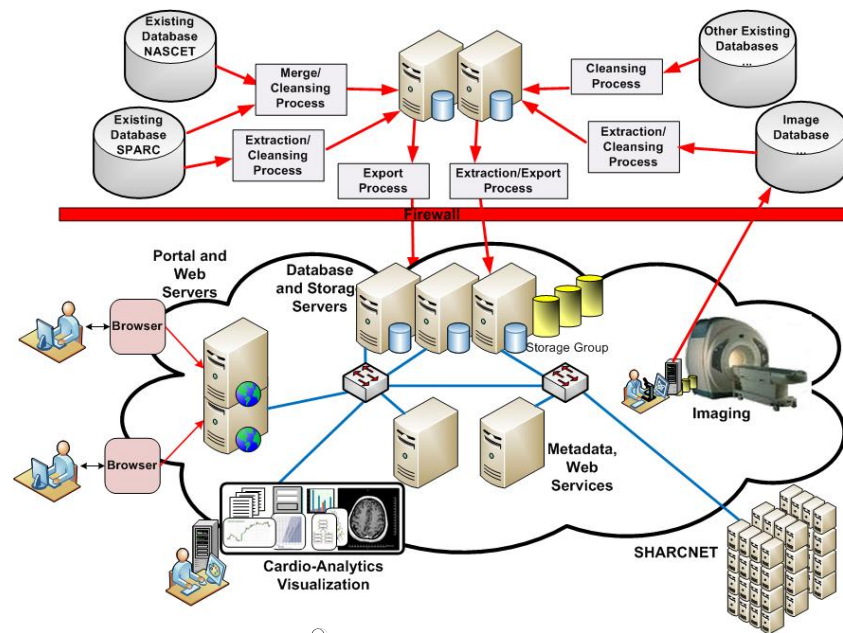
NBIC BioAssist Programme

- Netherlands Bioinformatics Center (NBIC)

- Develop and disseminate e-science approaches for bioinformatics support [2006]
  - Collaboration with VL-e, BIGGrid and SARA

- Platforms
  - High throughput sequencing, proteomics, metabolomics, biobanking, systems biology
  - Leader, users, experts, programmers

NBIC BioAssist Platform
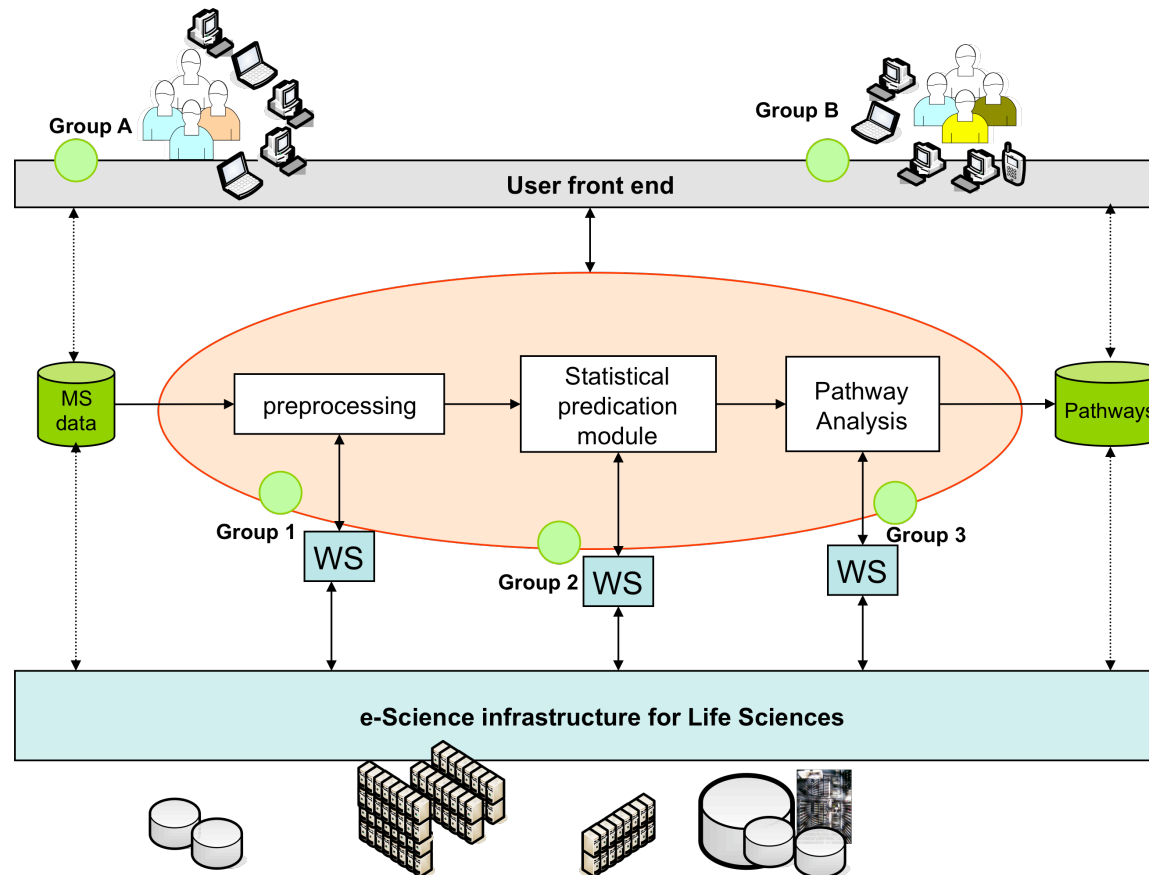
Bridges??

Lessons learned

- Security for distributed data remains a challenge
    - Integration with clinical information systems not allowed
- Usability is essential

- Common language is essential (translators)
- Sharing culture is not widespread (yet)
- People do not like to change their way of work (and benefits may be lost in translation!)
- Trust needs to be built (people, systems)
- Need to train people with proper expertise

- Pilot cases pay off

- Dedicated funding is needed

How do our findings relate to SHARE?

- SHARE: Supporting and structuring HealthGrid Activities and Research in Europe

- Roadmaps
  - Demonstrators
  - Challenges
  - Capacities

- Types of HealthGrids
  - Computing (e-BioInfra)
  - Data (I-THINK)
  - Collaboration (BioAssist)

- Gaps

Addressing Gaps

- **Development of grids and HealthGrids**
  - Data privacy
  - Usability
  - Expertise

- **Development and deployment of HealthGrids**
  - Integration with legacy IS
  - Trust

- **Technical and ELSE expertise**
  - Regulatory frameworks
  - Technical expertise for decisions
  - Sharing culture

Going Forward

- Education
- Training
- Demonstrate value

- Build multidisciplinary teams
- Change mentality from small to big science
- Attract funding

Thanks!