

A Future Health Information Provider Architecture?

Peter Komisarczuk
HINZ 2006

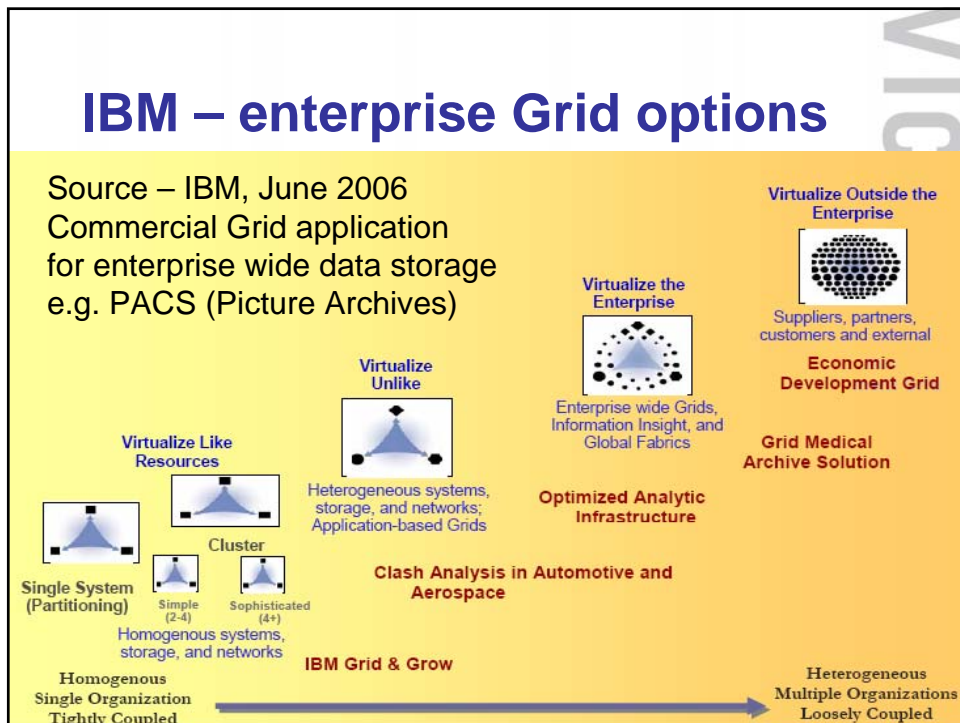
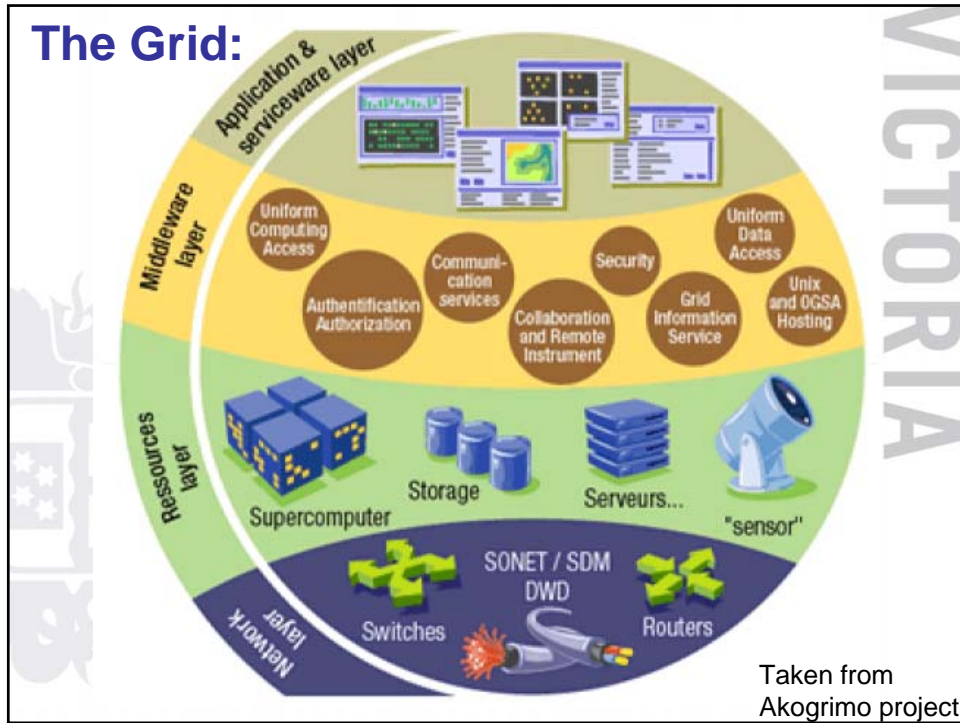
Victoria
UNIVERSITY OF WELLINGTON
*Te Whare Wānanga
o te Ūpoko o te Ika a Māui*
CAPITAL CITY UNIVERSITY



Overview

- Context - Grid Computing for Healthcare...
 - What is a Grid?
 - eHealth and HealthGrid
- Scope of research in Grids for Healthcare
- An example – VO for emergency systems
- Looking into the future?

© VUW, 2006

VICTORIA







The Grid, eHealth, HealthGrid

- The Grid:
 - An infrastructure of computing and communication technology from **multiple entities collaborating to perform a function**
 - High performance computing, aiming toward high availability, fault tolerant, secure, interoperable and ubiquitous computing
- eHealth
 - Use of ICT to provide benefits in healthcare delivery
 - assisting healthcare professionals to perform better
 - **Outcomes?** Better diagnosis, better therapies, optimised health knowledge exchange etc
- HealthGrid:
 - Grid computing applied to health related tasks

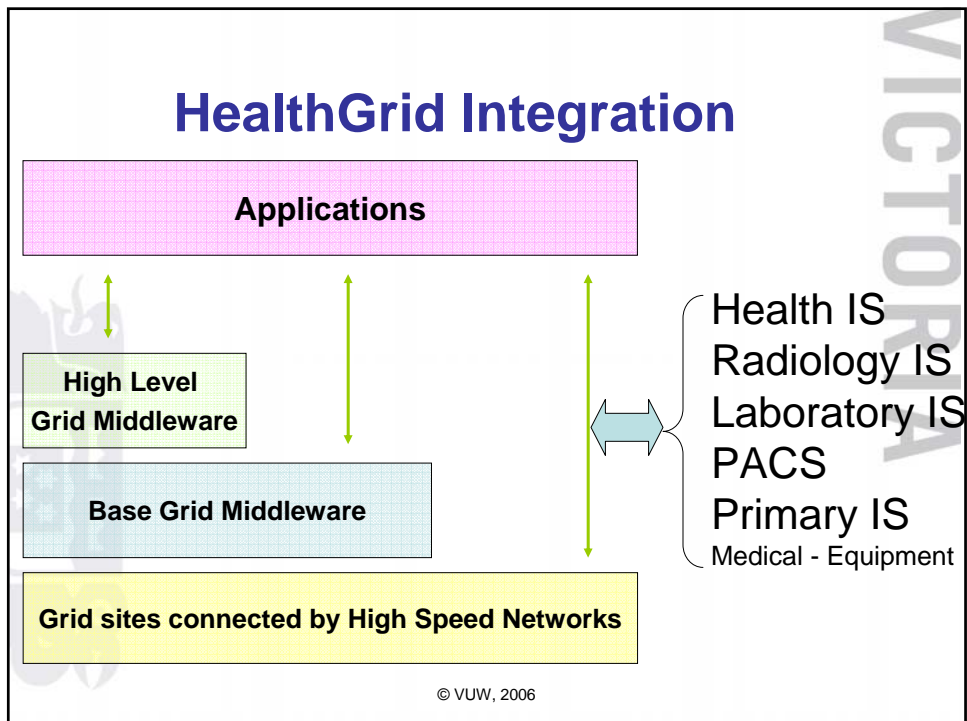
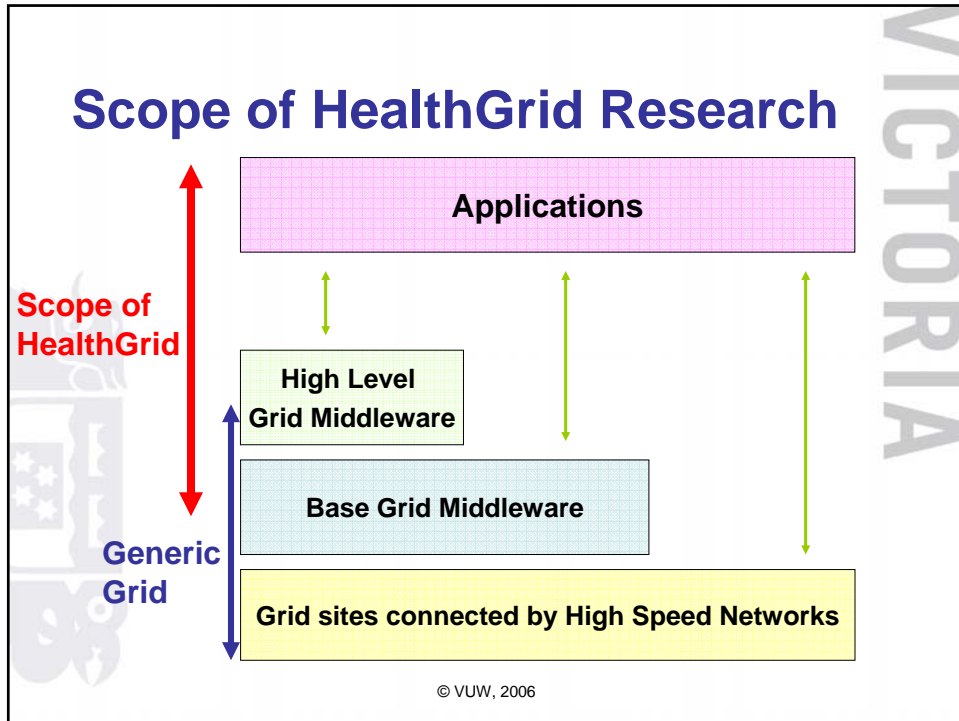
© VUW, 2006

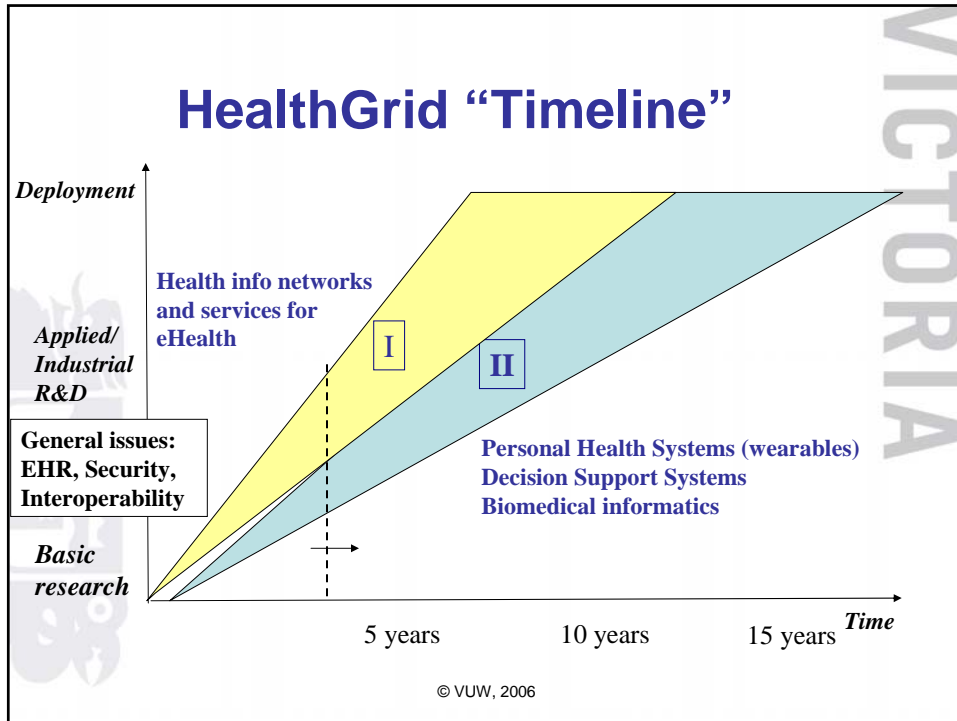


HealthGrid Projects Categorisation

- HealthGrid systems - computing and/or communication intensive tasks including medical expertise and medical devices
- Knowledge Discovery/Intensive applications
 - Knowledge management
 - Data processing/dissemination
- Medical assessment especially assistive medical imaging
- Telemedicine – virtual hospitals and labs
- Decision support systems - including personal health systems using wearable sensors
- Bioinformatics, genomics, drug trials/analysis pharmaceutical industry
- Sharing expertise – communities of practice

© VUW, 2006





Grids - Virtual Organisations

- **Comprises**
 - Many commercial or personal entities bringing resources together to carry out task(s) defined in a workflow
- **Objective Driven:**
 - Business or personal goals
- **Dynamic and collaborative:**
 - Makes use of utility/pervasive computing & communication resources on demand
 - Time limited relationships – minutes to years
 - Generally multi-entity – the number of entities change through the lifecycle of the VO

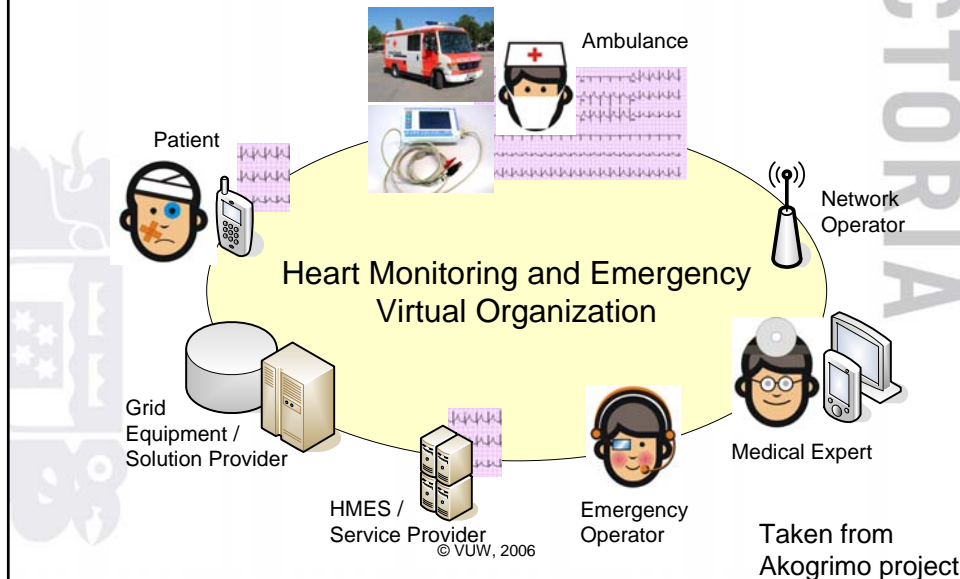
© VUW, 2006

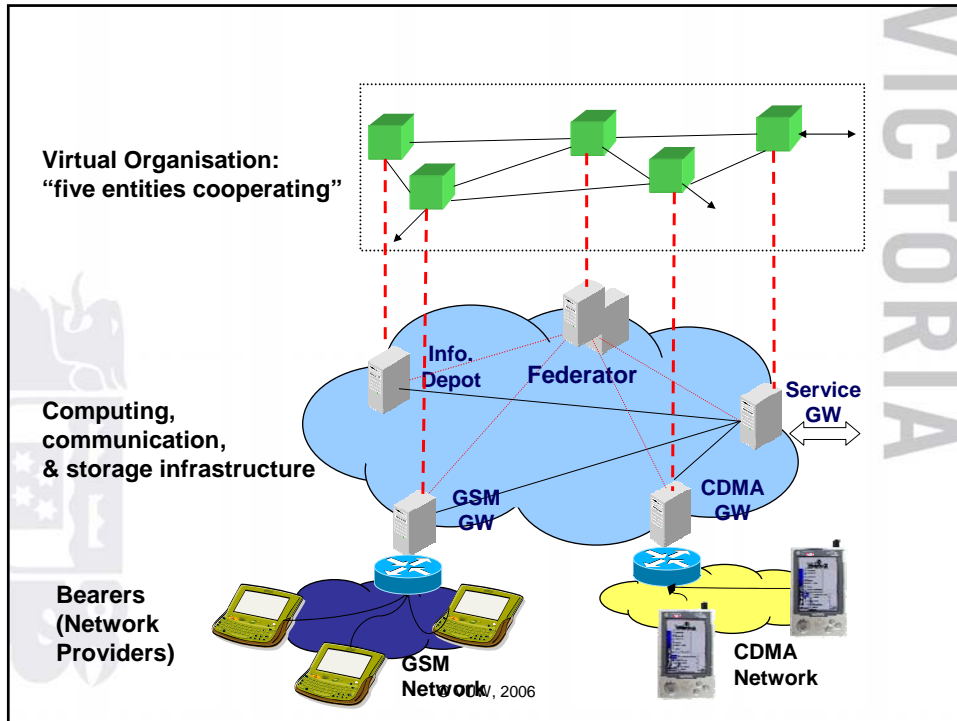
Virtual Organisation Lifecycle

- Four Major Lifecycle Phases:
 - Identification:
 - VO goals and aims: policy, security, trust assessment
 - Services, resources and potential providers identified
 - Formation
 - Relationships and interoperation (trust, identity & location)
 - Workflow description and service orchestration
 - Contract negotiation, validation, business process initiation
 - Operation
 - Workflow execution - consume services to achieve VO goals - ensure availability & recovery procedures
 - Dissolution
 - Clean up and termination of VO, contracts etc.
 - Maintain trust knowledge etc.

© VUW, 2006

A Health Grid Virtual Organisation

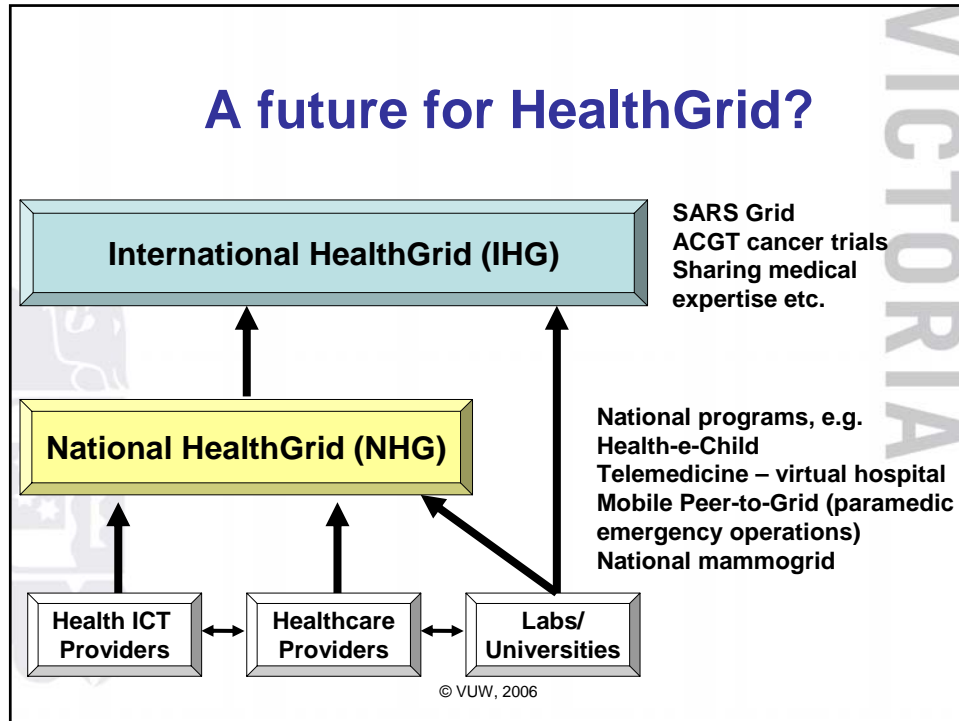




Issues in HealthGrid?

- Yes...there are some
- Grid and interworking standards
 - Beginning to be developed
- Application development
- Service developments
 - Middleware and Service Oriented Architecture
- Ethics and regulatory compliance
 - Security, encryption, authentication/authorisation
- Availability of infrastructure
 - Secure, reliable, fault tolerant
- Development and deployment of virtual organisations (VO)

© VUW, 2006



Future for HealthGrid?

- Questions and Answers...

© VUW, 2006

Mobile Grid – SIGNAL project

