eResearch Strategic Positioning for the Future
-The National Collaborative Research Infrastructure Strategy Influence

A Decade of Strategic Investment -1

  - the establishment of the Australian Partnership for Advanced Computing to provide access to high performance computing capability
- 2000: Establishment of Advanced Networks Programme
  - Establish demonstrator advanced networks
- 2002: Higher Education Bandwidth Advisory Committee Report
  - the establishment of Australian Research and Education Network Advisory Committee, and investment in the Australian research and education network
- 2003: Higher Education Information Infrastructure Advisory Committee Report
  - the establishment of ARIIC and funding of projects to improve the access of Australian researchers to information
A Decade of Strategic Investment -2

- **2004: Research Infrastructure Taskforce Report**
  - the establishment of the National Collaborative Research Infrastructure Strategy Committee to implement a program of strategic investment in research infrastructure

- **2006: eResearch Coordinating Committee Report**
  - outlines an integrated program of skills development and of middleware and computer science research


The National Collaborative Research Infrastructure Strategy Principles

- Investments must result in excellent research infrastructure that addresses the national requirements of the relevant capability area described in the NCRIS Roadmap.

- Investments must result in research infrastructure that is accessible by researchers on the basis of merit, at reasonable prices.

- Investments must include a facility ownership and management structure that will result in the efficient and effective operation of the infrastructure.

- Investments must include a business plan that will result in the efficient implementation and effective ongoing financial management of the infrastructure.

A single integrated proposal from the research sector
National Collaborative Research Infrastructure Strategy

Australian Government spend of about $540M over the five years: 2007-2011
• Evolving bio-molecular platforms and informatics
• Integrated biological systems
• Characterisation
• Fabrication
• Biotechnology products
• Networked biosecurity framework
• Optical and radio astronomy
• Integrated marine capability
• Structure and evolution of the Australian continent
• Population health and clinical data linkage
• Terrestrial ecosystem research network
• Platforms for Collaboration (allocated $75M)

Key Outcomes

• Distributed capabilities
• Collaborative governance regimes
• Data focus- create, store, use
• Data intensity
• Linking of physical facilities, operational frameworks and data
• Modelling opportunities

….The eResearch agenda seen from the user end
Platforms for Collaboration

Towards the Future - It ain’t what it used to be

- National Collaborative Research Infrastructure Strategy, Platforms for Collaboration:
  - access to leading edge research infrastructure nationally and internationally
  - access to distributed and large datasets
  - advanced modelling & analysis opportunities
    - integration of datasets and computational resources
    - transdisciplinary and interdisciplinary research
  - innovation from data rather than data from innovation
    - shorter innovation cycles
    - new forms of ’publication’
    - new forms of peer review
  - new forms of collaboration
    - data rather than models or discipline
The Future - eResearch Strategic Directions

- Continuing Need for a Focus
  - through a nationally coordinated approach
- Human Capabilities
  - people with skills and understanding
- Linkage of eResearch Resources
  - seamless access to resources
- Access to Data
  - adopt best practice data management and curation
- Structural and Cultural Change
  - evolution of organisational structures and cultures
- Awareness and Support
  - develop researchers’ ability to adopt eResearch methods

The Future - Physical Platforms

- Networks:
  - AREN + Institutional + Commercial + Wide-area wireless
- Computation:
  - National facilities + Institutional + grid services
- Data stores:
  - ‘Central’ + Institutional
- ‘Instruments’
  - International, national, institutional
The Future - eResearch R&DD Issues

- Resource scheduling, marshalling, management, monitoring
- Intelligent and flexible search for resources
- Data management, access, integration
- Security and integrity
- Collaborative tools
- Simulation, modelling, visualisation
- Management of complex and intelligent systems
- Remote operation

The Future - The Hard Issues

- Cultural re-engineering - the institutional factor
- Capability development - the human factor
The Future - Cultural Re-engineering

• Competition vs collaboration vs sharing
  – individual
  – institutional
  – sectoral
  – funding processes
• Discipline traditions vs trans-discipline future
• Universities cf government and industry research performers
• University IT as an enabler cf administrative service

The Future - Role of the Research Institution

• Host and/or Owner of intellectual capital
  – critical mass created in a trans-institution manner
• Repository of knowledge (eg publications) or data
  – platforms of the past or for the future
• Competitor, ally or promiscuous collaborator
  – control of personal and virtual collaboration?
  – individual pre-eminence vs collaborative pre-eminence
• Provision of resources
  – physical, access, human support
• Integrity management
  – ethics, identity
The Future - Capability Development

• **Researcher confidence & proficiency**
  – underlying assumptions and work arounds

• **Researcher support**
  – domain-ICT linking professionals
  – career structures and positioning

• **Platform evolution**
  – ICT expertise
  – international linkage