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Monash e-Research Centre

briefing to Monash Research Committee 19 April 2007

Contents

Long-term trends and near-term benefits

- What is e-Research ?
- What is Monash e-Research Centre ?
- New ITS Division services

What is “e-Research” ?

- the use of IT to do research collaboration better
 - big research wins in cross-disciplinary and cross-institutional collaboration
- the use of IT to do research better
 - improve Monash’s research performance / productivity
- by analogy to “e-Learning” which was a *~complete change* in the way teaching and learning were conducted, over a period of about 10 years
 - technology ... culture change ... cost ... utility

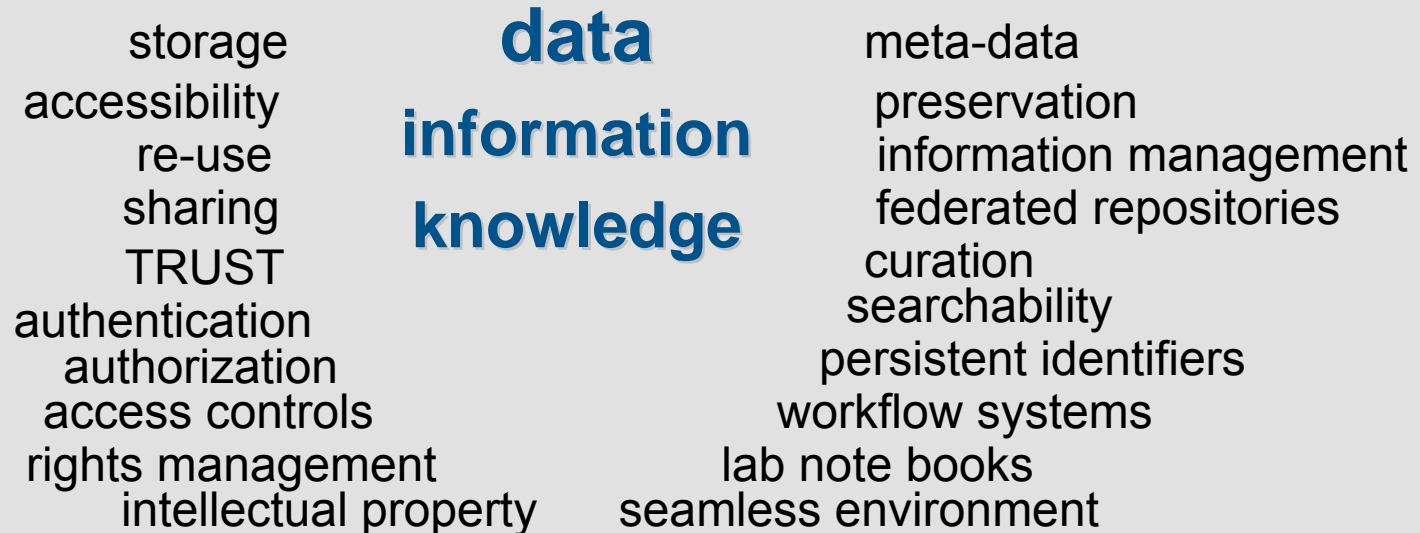
“e-Research” is all about **data**

the ‘data’ word draws together and anchors all the e-Research themes:

[PMSEIC Working Group on Data for Science
NCRIS Platforms for Collaboration]

“e-Research” is all about **data**

the ‘data’ word draws together and anchors all the e-Research themes:



“e-Research” is all about **data**

big new drivers for data at Monash include:

synchrotron

microscopes

storage
accessibility
re-use
sharing
TRUST
authentication
authorization
access controls
rights management
intellectual property

data
information
knowledge

meta-data
preservation
information management
federated repositories
curation
searchability
persistent identifiers
workflow systems
lab note books
seamless environment

“e-Research” is all about **data**

digital imaging

wind-tunnel

synchrotron

microscopes

telescopes

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major underlying technology driver is **digital imaging**

“e-Research” is all about **data**

simulations

digital imaging

digital multi-media
(audio, video, photo)

sensor networks

large instruments

humanities

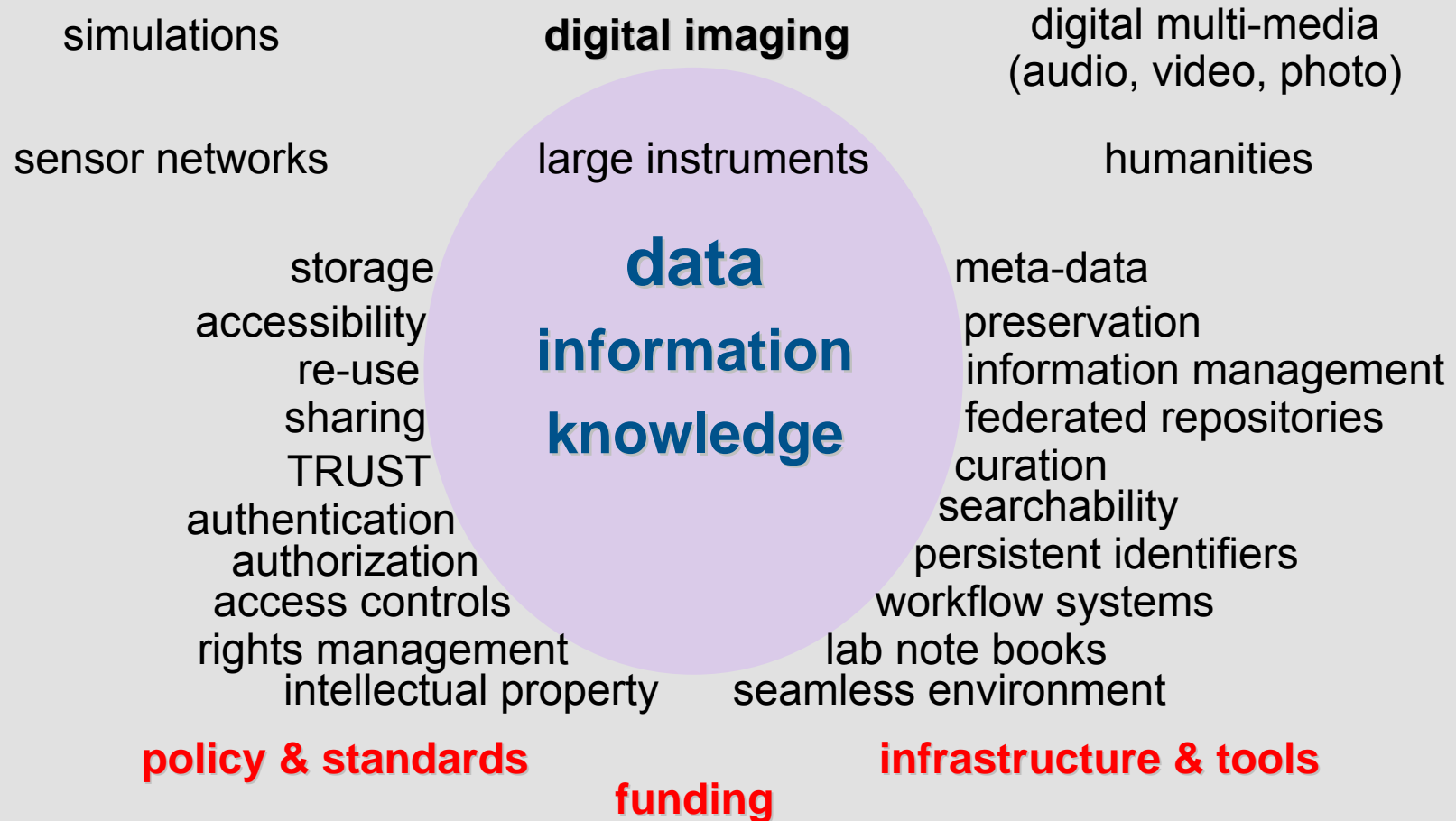
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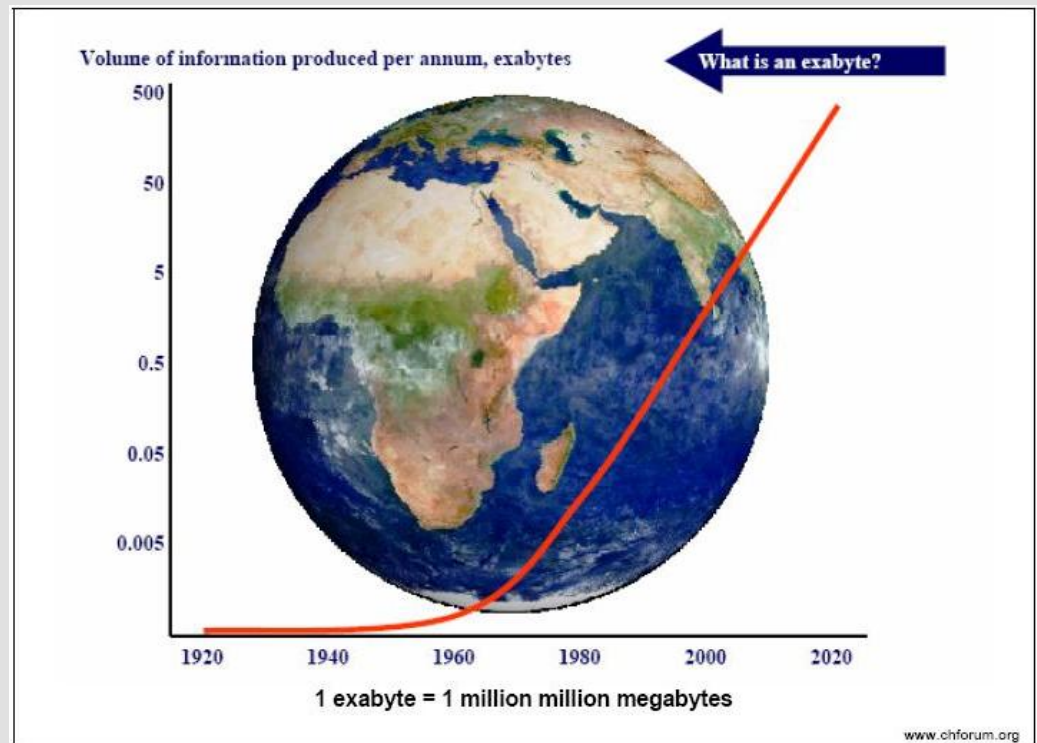
more drivers than just high-end instruments

“e-Research” is all about **data**



The data explosion

- **Bottom line:** we have to go down this e-Research path because of the data explosion:
- **Capitalize as well:** Monash seeks to use e-Research to improve its research performance – through improved use of IT, collaboration, and improved accessibility and preservation of research data.



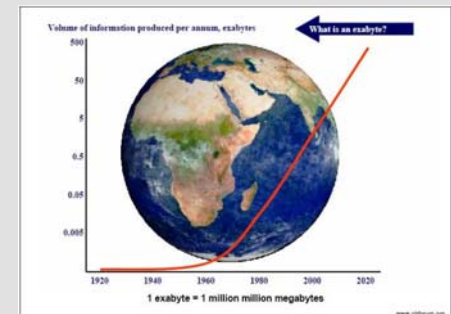
The data explosion

Researchers are asking for HELP!

- Data storage
- Information management
- Make it work
- Make it easy
- Data-intensive computing

Government objectives:

- Accessibility
- Preservation
- Re-use



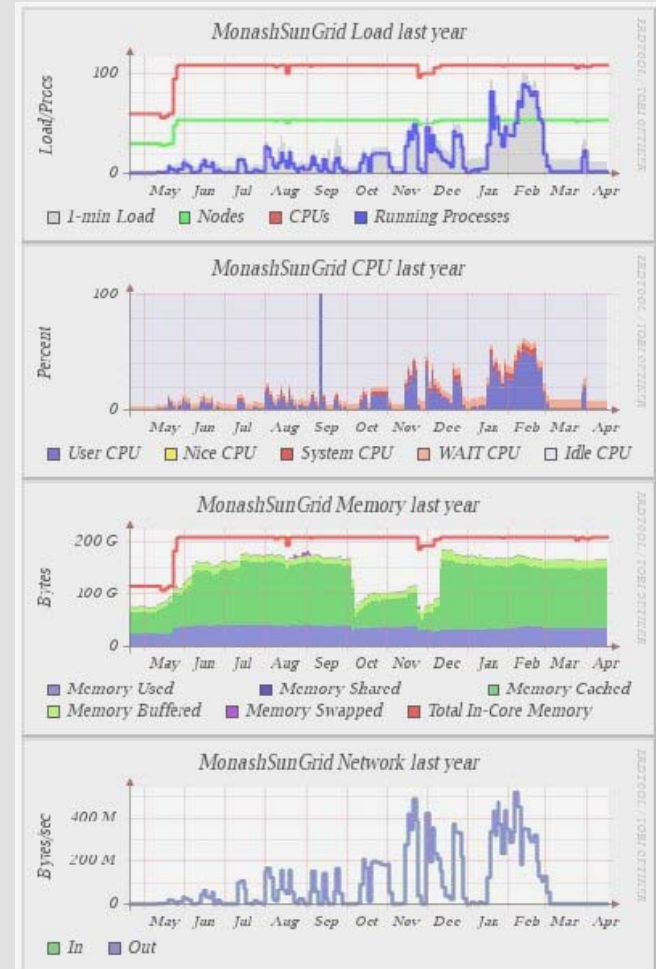
What is Monash e-Research Centre ?

- a conduit between researchers and ITS Division
- a conduit to broker collaborations between researchers
- a conduit to bring e-Research technologies and practices into wider use at Monash

Super computing at Monash [1]

Monash Sun Grid (MSG)

- MeRC funded the establishment of a 120 CPU cluster in 2005/6
- Generally lightly loaded
- Includes grid software suite
- ‘Partially supported’ ITS service
- Relatively low running costs
- Contact Neil Clarke for access

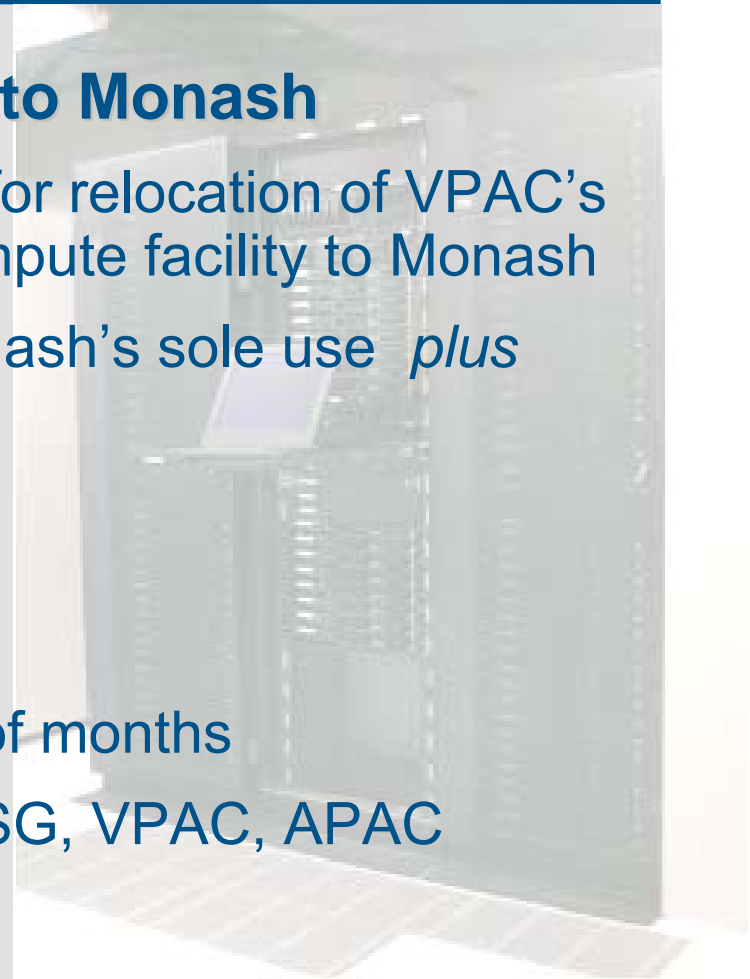


Super computing at Monash [2]



Relocate VPAC's "Brecca" cluster to Monash

- MeRC & ITS successfully negotiated for relocation of VPAC's current 190 CPU main production compute facility to Monash
- Monash gets 50% of "Brecca" for Monash's sole use *plus* Monash's normal (~24%) quota of:
 - the other 50% of "Brecca", and of
 - VPAC's replacement for "Brecca"
 - and APAC's facilities
- Move complete over the next couple of months
- Integrate access arrangements for MSG, VPAC, APAC
- Contact Neil Clarke for access



Super computing at Monash [3]



University of Oxford

- MeRC & ITS working with Oxford to harvest spare CPU cycles from existing desktop PCs into the Monash Campus Grid

Petabyte research data store at Monash

Monash Large Research Data Store ([LaRDS](#))

- MeRC attracted government funding (LIEF and VeRSI) 2006 and 2007, plus Monash central funding to build LaRDS
- By later in 2007 capacity approx:
 - 100 TB disk
 - 1000 TB tape (1 PB)
- ‘Partially supported’ ITS service
- Significant on-going costs to sustain and grow
- Contact Neil Clarke for access

1 petabyte = 10^{15} byte

1 PB = 1,000 TB

1 PB = 1,000,000 GB

1 PB = 1,000,000,000 MB

1 PB \approx 250,000 DVD

Petabyte research data store at Monash

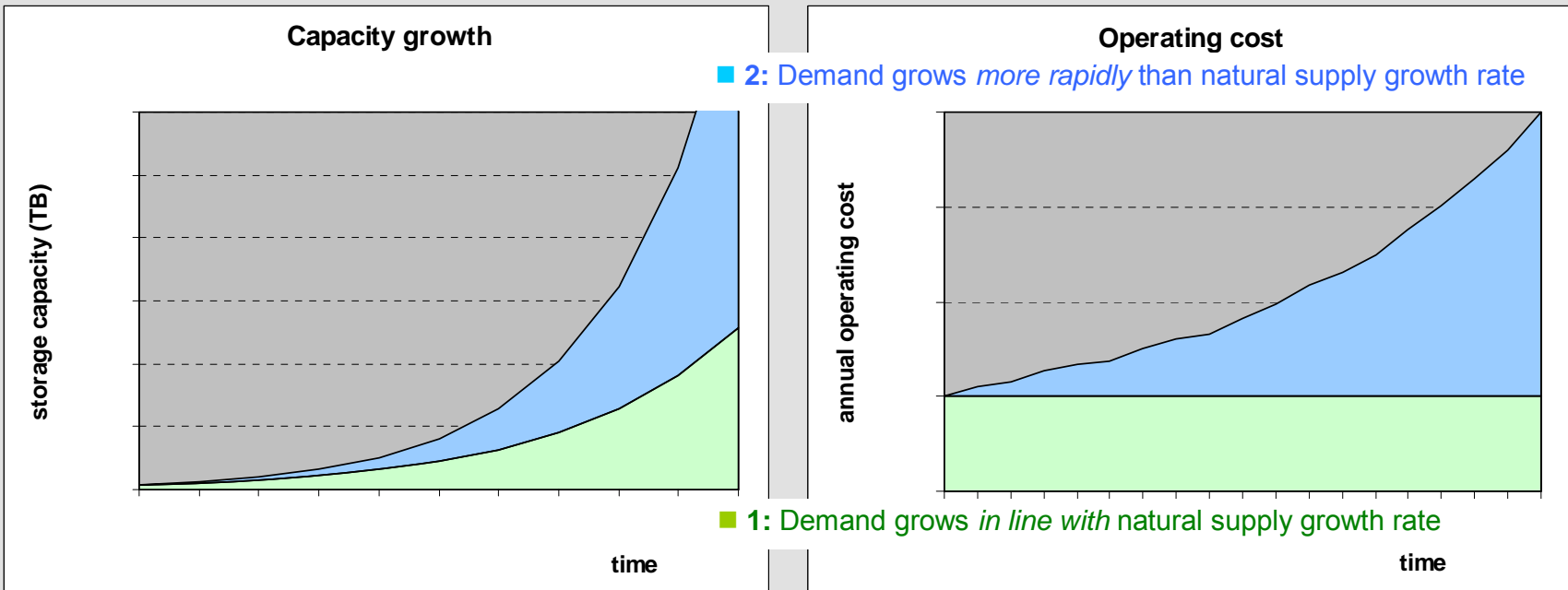
Monash Large Research Data Store (LaRDS)

- Two tier funding model:
 - centrally funded through central services support charges, similar to other ITS services for staff
 - > fund exponentially growing data store for fixed annual running cost
 - volume-based charge for additional capacity
 - > low rate at marginal cost of additional capacity only
 - > the intention is for only the very few highest-end users to be levied the additional volume based charge
- Proposed role for Associate Deans Research, or delegates, to assign priorities within faculty for storage and compute capacity

Petabyte research data store at Monash

Monash Large Research Data Store (LaRDS)

- Two tier funding model:



AARNet charging



- We contributed to successful lobbying for significant reduction in the volume-based component of AARNet charging
 - effective 1-January next year
- This is one important step towards simplifying the networking environment for researchers
- Volume-based charging is seen by the community as a barrier to uptake of AARNet's very high capacity network
 - 10 Gbit/s national and international backbone

Summary of the year ahead :

- Ongoing discussions with faculties and research centres to explore how we can assist their research and help develop research collaborations
- Attract government and private sector funding
- End-user support and outreach
- Education programme, marketing and [web site](#)
- [DART](#) concludes and [ARCHER](#) takes over
- Various [project activities](#) continue, including [VeRSI](#)
- [Synchrotron](#) and [MCEM](#) facilities commence

Questions & Answers ...

- Please contact me for any information or assistance about e-Research or ITS services for researchers

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