

Introduction to the National Grid Service

W T Hewitt

Monday 5th July 2004
NCeSS All Hands Meeting 2004
Manchester



THE UNIVERSITY
of MANCHESTER

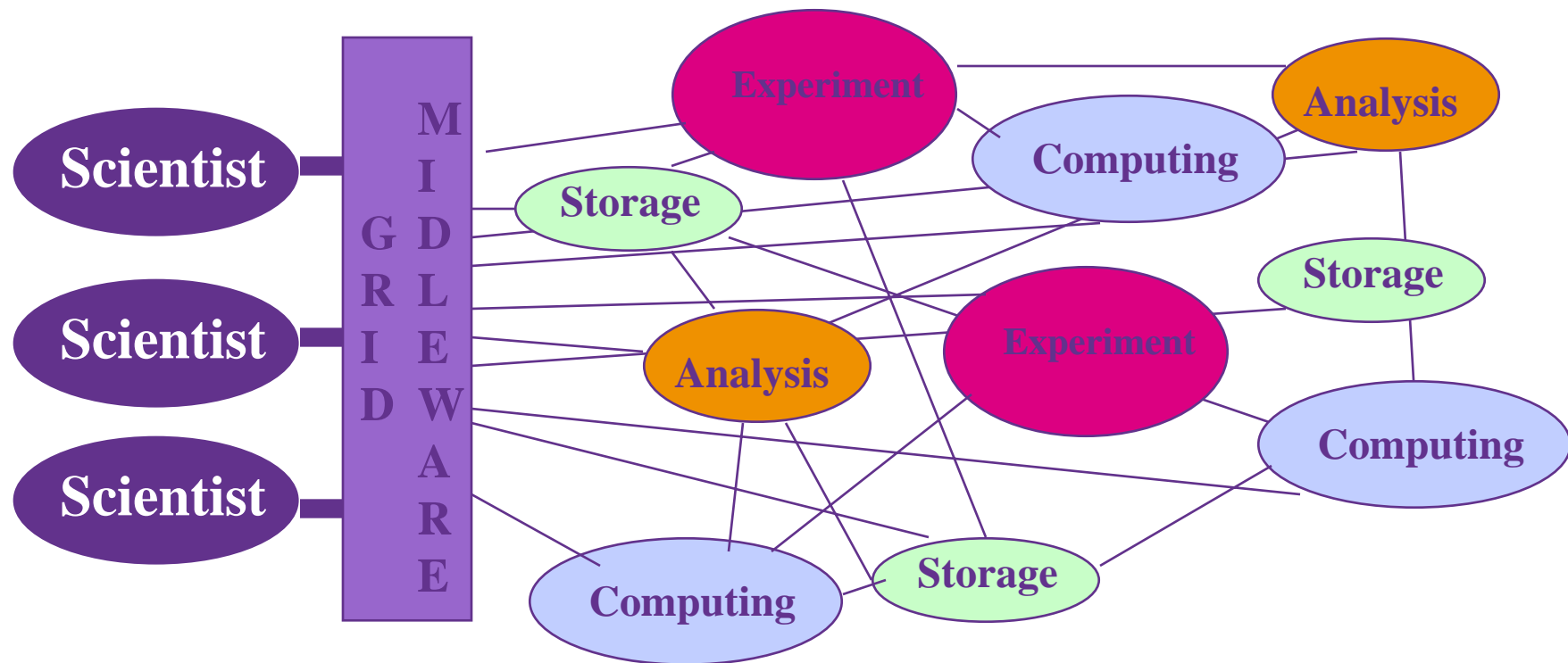
‘e-Science is about global collaboration in key areas of science, and the next generation of infrastructure that will enable it.’

‘e-Science will change the dynamic of the way science is undertaken.’

John Taylor,
Director General of Research Councils,
Office of Science and Technology

"Behind The Wall"

- Next generation - Information Utilities and col-laboratories



Manchester Computing

Supercomputing, Visualization & eScience

If one centre is good then many must be better



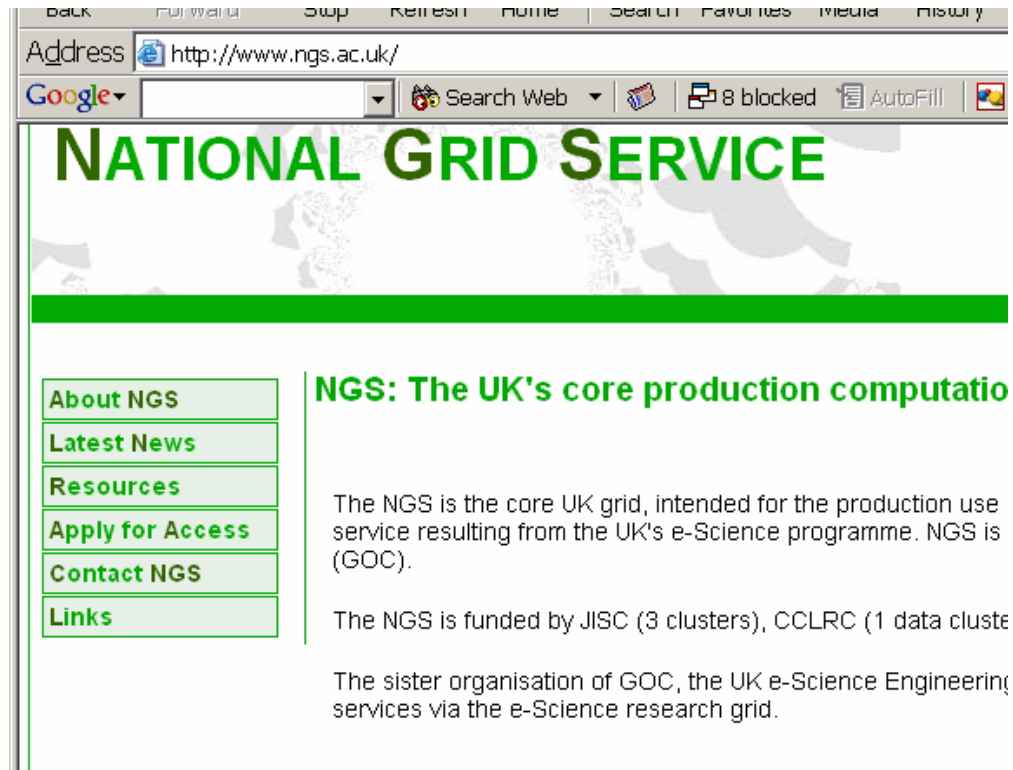
THE UNIVERSITY
of MANCHESTER

National Centres

- National e-Science Centre
 - EPSRC, www.nesc.ac.uk
- **National e-Social Science Centre**
 - ESRC, www.ncess.ac.uk
- National Institute for Environmental e-Science
 - NERC, www.niees.ac.uk
- OMII
 - www.omii.ac.uk
- Data Curation Centre
 - www.dcc.ac.uk
- **National Text Mining Centre**
- **Access Grid Support Centre**

**National Grid Service
(Grid Support Centre)**
www.ngs.ac.uk

The National Grid Service



The screenshot shows a web browser window with the address bar containing <http://www.ngs.ac.uk/>. The page title is "NATIONAL GRID SERVICE" in large green letters. Below the title is a green horizontal bar. On the left side, there is a vertical menu with the following items: "About NGS", "Latest News", "Resources", "Apply for Access", "Contact NGS", and "Links". To the right of the menu, the main content area features the heading "NGS: The UK's core production computatio" (partially cut off). Below this heading, there are three paragraphs of text: "The NGS is the core UK grid, intended for the production use service resulting from the UK's e-Science programme. NGS is (GOC).", "The NGS is funded by JISC (3 clusters), CCLRC (1 data cluste" (partially cut off), and "The sister organisation of GOC, the UK e-Science Engineering services via the e-Science research grid."

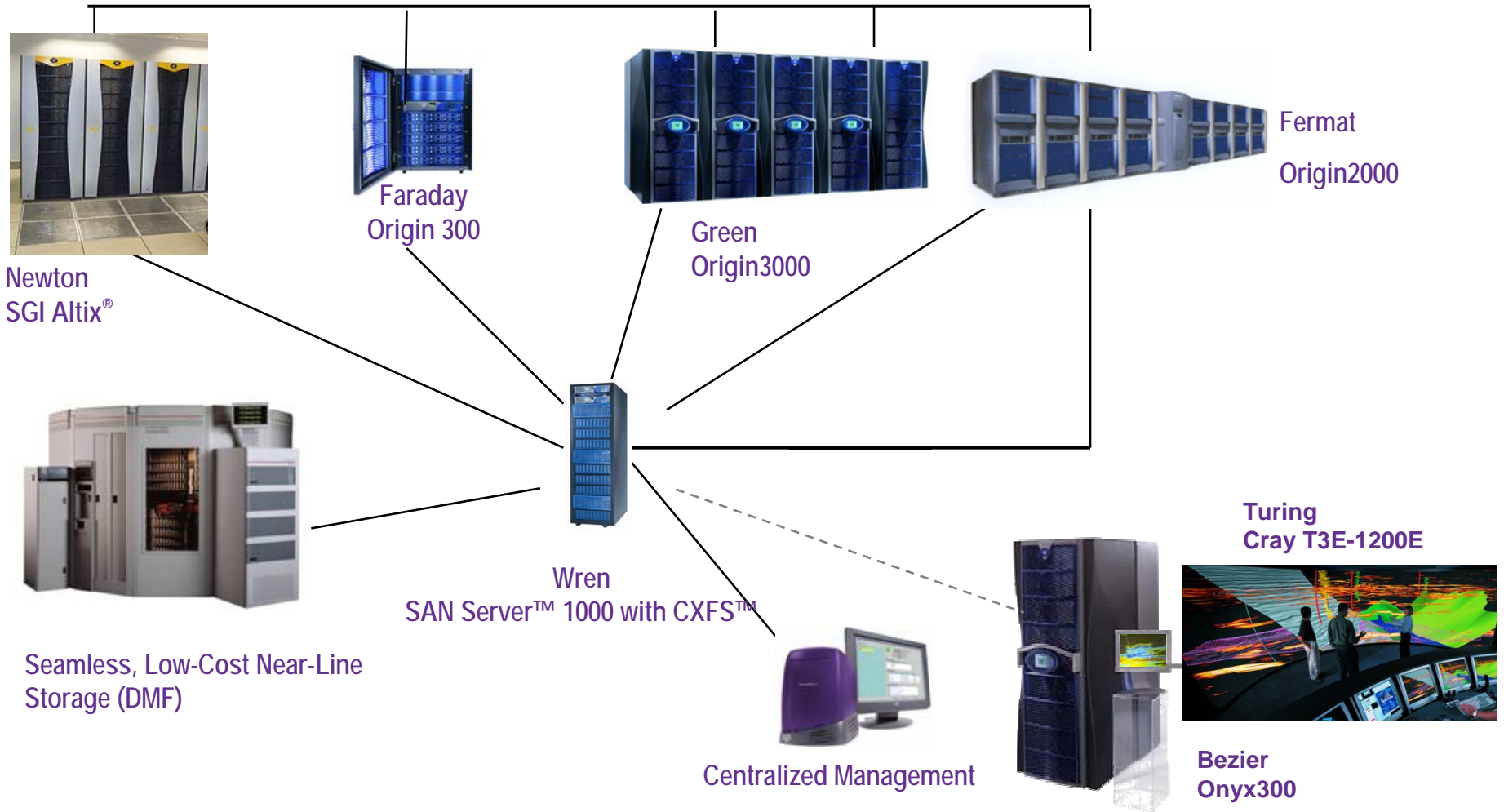


National Grid Service

- CSAR
- HPCX
- Oxford and Leeds (White Rose Grid)
 - Compute Nodes, JISC Funded
- Manchester and RAL
 - Data Nodes, JISC & CCLRC funded
- Bristol
- Cardiff

- Will be open to more “volunteer” Nodes
 - Through Service Level Definitions

CSAR



- 1600 IBM p690+ (Power4)



Oxford & White Rose Grid (Leeds)

- 64 dual CPU Intel 3.06 GHz (1MB cache) nodes
- 2GB memory per node
- 2x 120GB disks
- Gigabit network & Myrinet
- Disk server 4.2TB Disk
- PGI compilers
- Intel Compilers, MKL
- PBSPro
- TotalView Debugger
- RedHat ES 3.0



Manchester & RAL

- 20 dual CPU Intel 3.06 GHz nodes
- 4GB memory per node
- 2x120GB disks
- Gigabit network & Myrinet
- 18TB Fibre SAN

- PGI compilers
- Intel Compilers, MKL
- PBSPro
- TotalView Debugger
- Oracle 9i RAC
- Oracle Application server
- RedHat ES 3.0



National Grid Service

- Thus, the NGS provides access to
 - over 3,000 processors,
 - over 36TB of "data-grid" capacity,
 - common scientific applications
 - and extensive data archives.
- Must be used through a grid interface
- Peer Review
- Other resource providers anticipated to join in the future ...

More than just compute & data...

■ Some Core Services

- Job submission/batch service
- Authorisation
- Certificate management
- Virtual Organisation management
- Data access/integration services (SRB/OGSA-DAI/DQPS)
- Information service
- National Registry (of registry's)
- Data replication
- Data caching
- Grid monitoring
- Accounting

Applications

- Mathematical Libraries
- Databases
 - Oracle, OGS-DAI, OGSA-DQP
- Classical Applications available through the Grid
 - E.g., Gaussian
- New (Grid) Applications
 - SAMD

Conclusions



Summary

- Huge worldwide research activity
- Push towards standardisation and intersection with e-Business (web services)
- Increasing grid infrastructure deployed
- www.ngs.ac.uk

'[The Grid] intends to make access to computing power, scientific data repositories and experimental facilities as easy as the Web makes access to information.'

Tony Blair, 2002

Acknowledgements

- Carole Goble
- Stephen Pickles
- Keith Cole
- John Brooke
- Paul Jeffreys

- University of Manchester
- Academic collaborators

- Industrial collaborators

- Funding Agencies: DTI, EPSRC, NERC, ESRC, PPARC, JISC



World Class Service



SVE @ Manchester Computing

World Leading Supercomputing
Service, Support and Research

*Bringing Science and
Supercomputers Together*

www.man.ac.uk/sve
sve@man.ac.uk



THE UNIVERSITY
of MANCHESTER