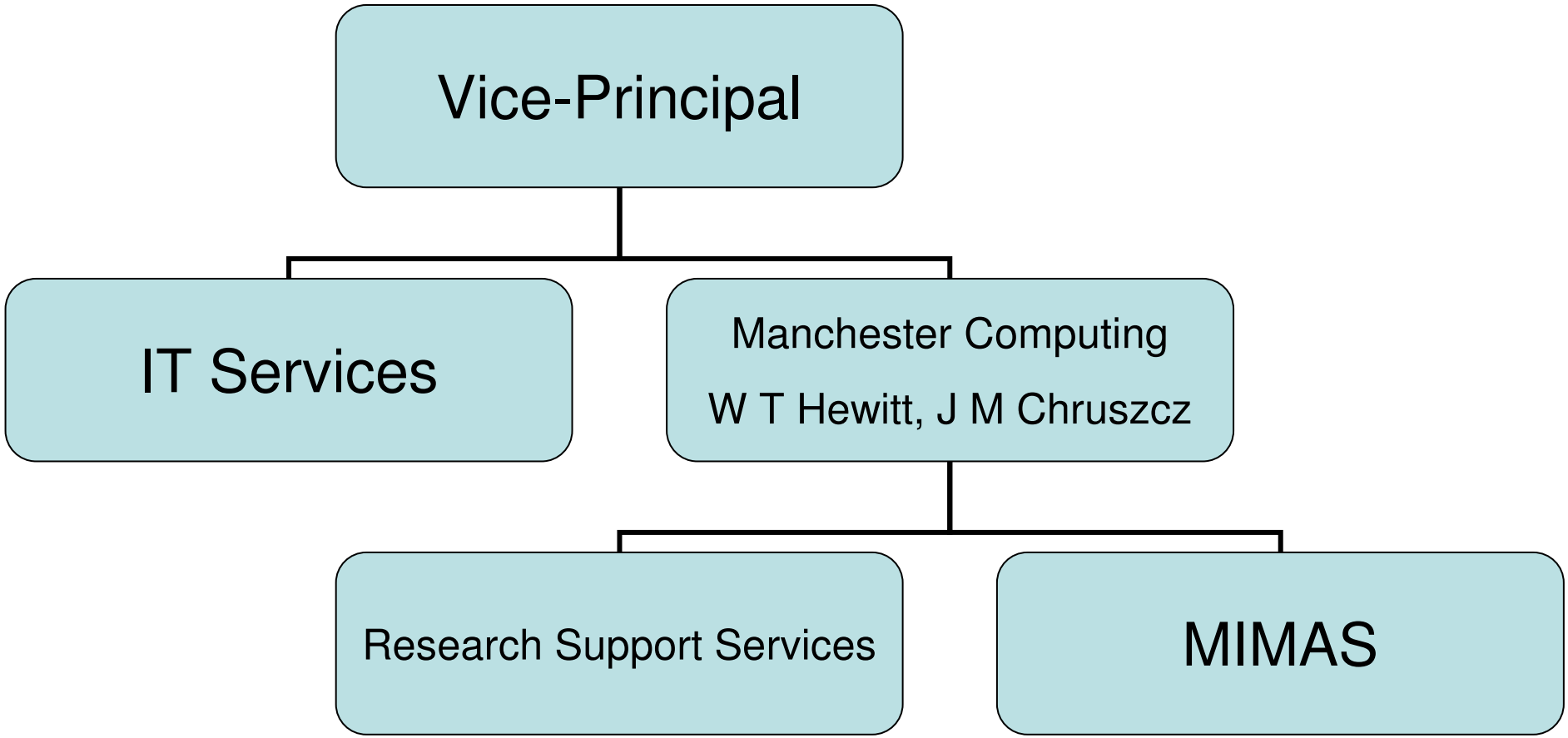
MANCHESTER 1824

The University of Manchester

Manchester Computing Who and What?

W T Hewitt

Structure


Vice-Principal
IT Services
Manchester Computing
W T Hewitt, J M Chruszcz
Research Support Services
MIMAS

Strategic Computing Resources

- Computing resources
  - people, expertise, facilities, technologies, software
  - critically enable or advance a research discipline to produce a “beyond normal evolution” impact on research outputs and the economy
- specific technologies change over time, and between disciplines, but current key technologies include among others:
  - Supercomputing
  - Datasets and databases
  - Data interaction, management, exploration, and mining
  - High performance visualization
  - Grid & e-Research
  - Collaborative Working
- MC is a nationally and internationally recognised centre of excellence in supporting and managing strategic computing resources

MC does …

- Local HPC & HPV services
- hosts and develops access to strategic datasets (MIMAS);
- leadership of the UK National Grid Service, including hosting two of the major nodes;
- the CSAR national supercomputer service on behalf of the UK RCs;
- UK Access Grid Support Centre
- NCeSS
- undertakes collaborative research in a number of areas

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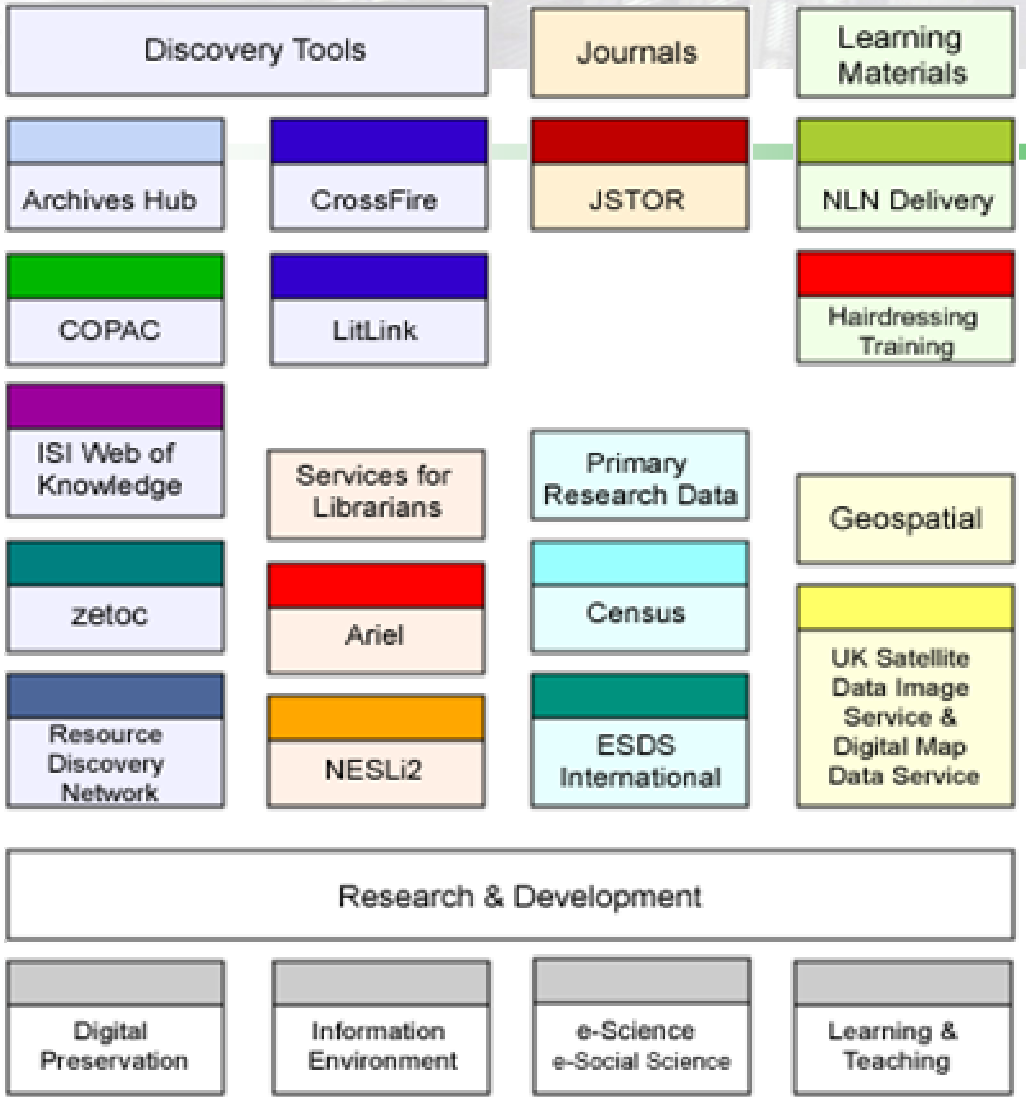
MIMAS

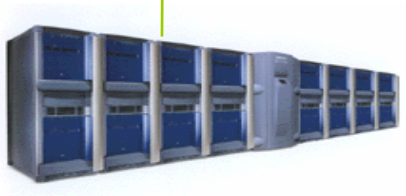


Supercomputing - Local & National HPC services since 1972, unique in the UK

Newton
SGI Altix®

Faraday
Origin 300

Green
Origin3000



Fermat

Origin2000

Seamless, Low-Cost Near-Line
Storage (DMF)

Wren
SAN Server™, CXFS™

Centralized Management

Bezier
Onyx300

National User Base

- Academic Users (>500)
  - climate modelling, high energy physics
  - computational chemistry and materials modelling
  - biochemical modelling and protein folding
  - turbulence modelling, aerospace modelling
- Collaborations with international centres
  - Stuttgart, Pittsburgh, San Diego, NASA Ames, NCSA, Earth Simulator
- Collaboration with vendors
  - Cray, SGI, HP
- Industrial users

High Performance Computing

- Procurement just finished (10 day cooling off period)
- Compute Nodes – 208 Itanium2 Cores
  - 26 Bull Lynx (50GFlops each)
    - 4 x Intel Itanium2 Montecito Dual Core 1.6GHz/8M (effectively 8-way/4M)
    - 16GB RAM (4 nodes have 32GB)
    - 1TB Disc
    - Quadrics Interconnect
    - Ethernet
- Administration Node + Lustre File system (3TB)

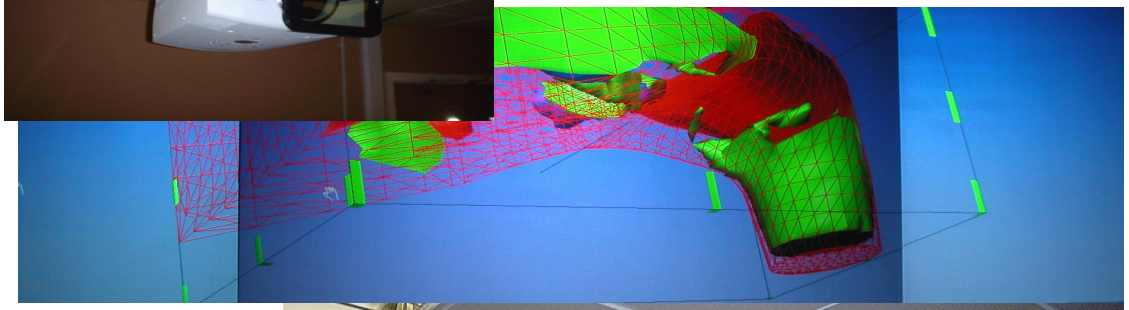
High Performance Visualization

- SGI Altix
  - 8 Itanium2 Processors
  - 16 GB Memory
  - 4 Graphics Pipelines
  - 520 GB Disc
  - Linux
- Six channel surround sound audio system
- Panoram Integrator 3 control
- Active matrix stereographic glasses and emitters
- Polyhemus 3D tracking system
- **Haptic Device**
- **Integration with Access Grid**

- Research & Teaching
- Application – straight forward

Passive Stereo Laboratory

- The Passive Stereo facility consists of:
  - Four Dell Precision 650 workstations cluster to drive the display
    - 1 master, 3 slaves
    - Dual Xeon Processors 3.06GHz
    - The slaves have nVidia QuadroFX 3400 graphics cards (dual output)
    - 1 GB Ram
  - 8m x 2m stereoscopic surface
  - Six Christie Digital LX32 projectors
  - Resolution – currently working at 1024x768
  - Matrix switching control for input source selection
  - Surround sound audio system



Construction completed in March 2005 @ Manchester

Small Scale Portable Visualization aka Geowall or Agave

Virtual Research Environment

- Build a GeoWall/Agave
- Source/Evaluate UK Suppliers

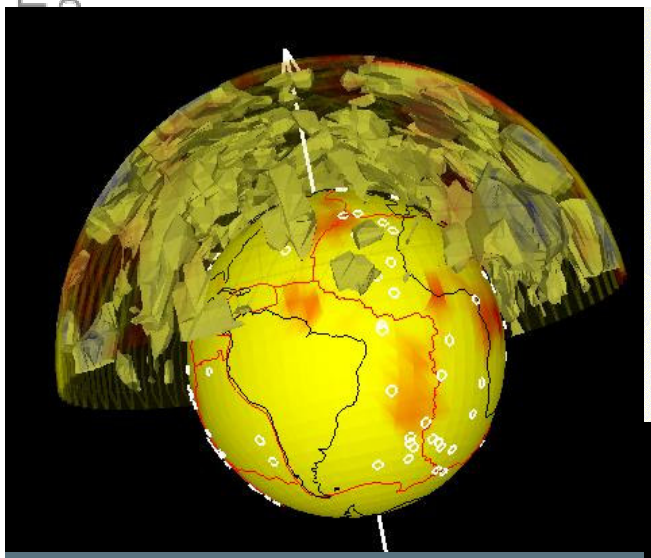
JISC funded project

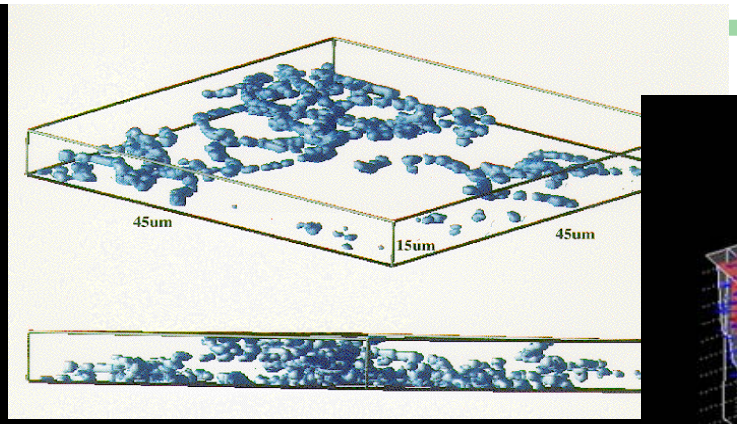
CSAGE – colloborative Stereoscopic Access Grid Environment

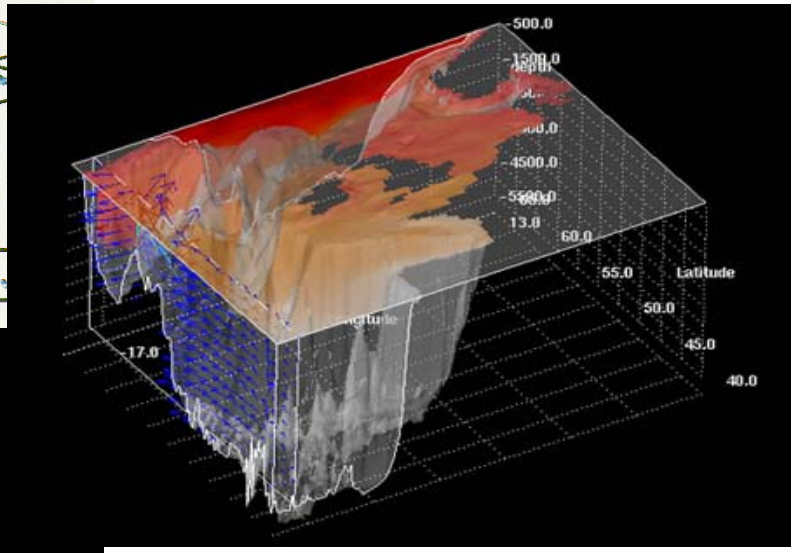
http://kato.mvc.mcc.ac.uk/sve-wiki/SAGE

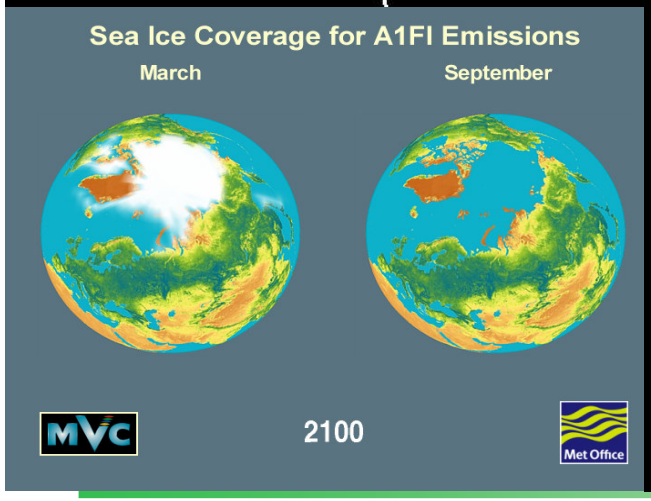
Portable GeoWall – University of Manchester

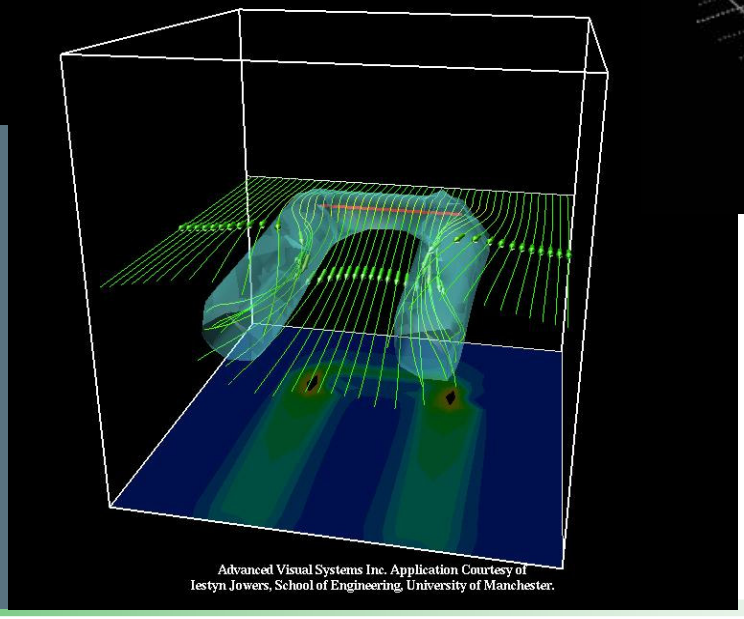
Some visualization projects

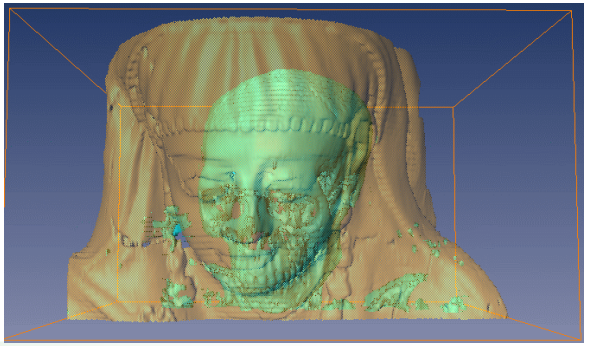






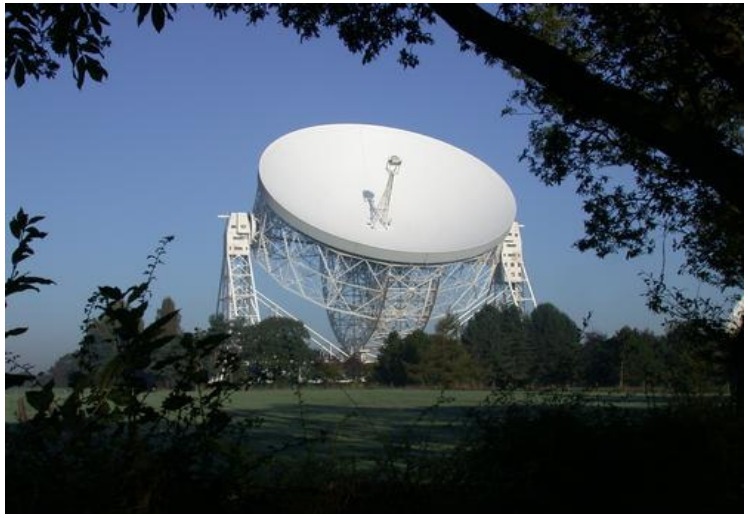


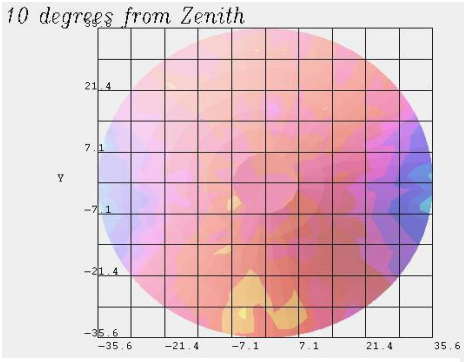


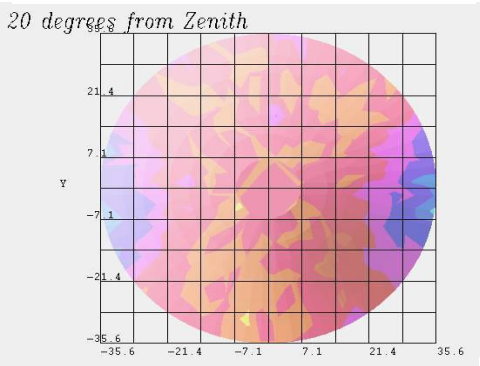


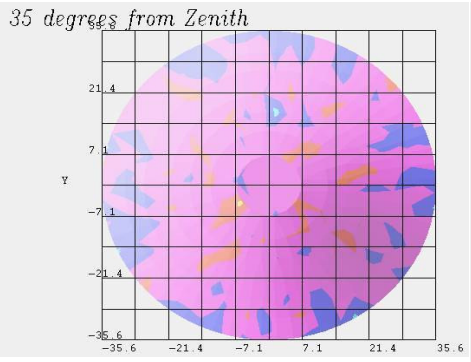
Lovell Telescope – Jodrell Bank Observatory

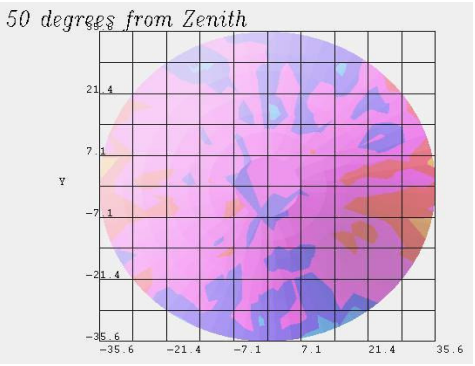
- Full 3D Alignment Visualization
- Errors within the radio telescope dish relating to angle of operation











Central & Remote Visualization e.g., Department of Surgery

Vizserver software

Compressed Video

Network

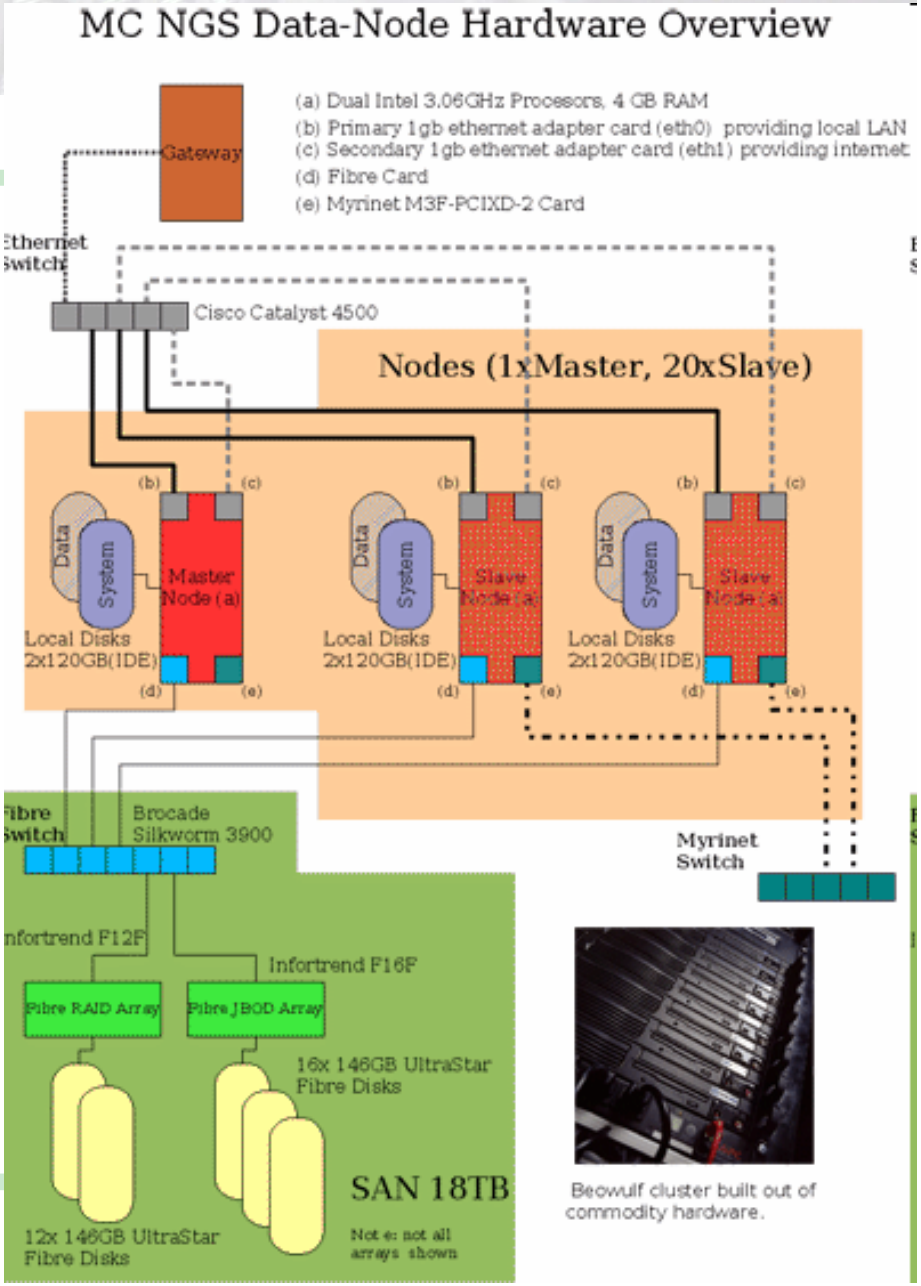
Direct Connection
Multiple RGB Channels
<= 22m

Access Grid is about less of this …

… and more of this

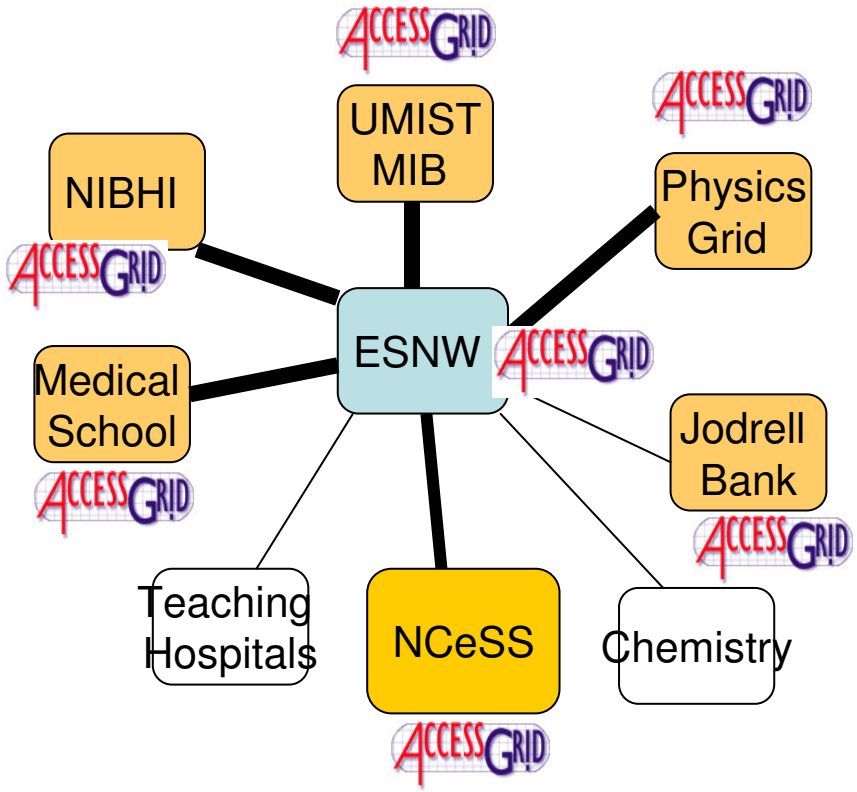
Manchester Node of UK National Grid Service

- Data Node
- Used through a Grid interface
  - Globus
- www.ngs.ac.uk



ESNW led by Manchester Computing & Computer Science

- Service
  - CSAR & Local GRID
  - UK Access Grid Support Centre – First UK Site
  - UK National Grid Service (and JISC Data Node)
- Research:
  - EU: EUROGRID and GRIP
  - NERC: GODIVA
  - EPSRC: Reality Grid (led by UCL)
  - ESRC: SAMD
  - ESRC/JISC: FASTTRACK
  - EPSRC: CS for e-Science
  - PPARC: GridPP
  - EU: EGEE
  - LCG
  - NW-GRID
- National Centre for e-Social Science (NCeSS)
- National Text Mining Centre



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