



Training Outreach and Education

<http://www.nesc.ac.uk/training>



<http://www.ngs.ac.uk>

The National Grid Service

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PPARC

<http://www.pparc.ac.uk/>

eGEE

<http://www.eu-egee.org/>

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- Thank you!!

Acknowledgements



- Some NGS slides are taken from talks by Stephen Pickles and Andy Richards
- Also slides from Malcolm Atkinson on the UK e-Science programme

Overview



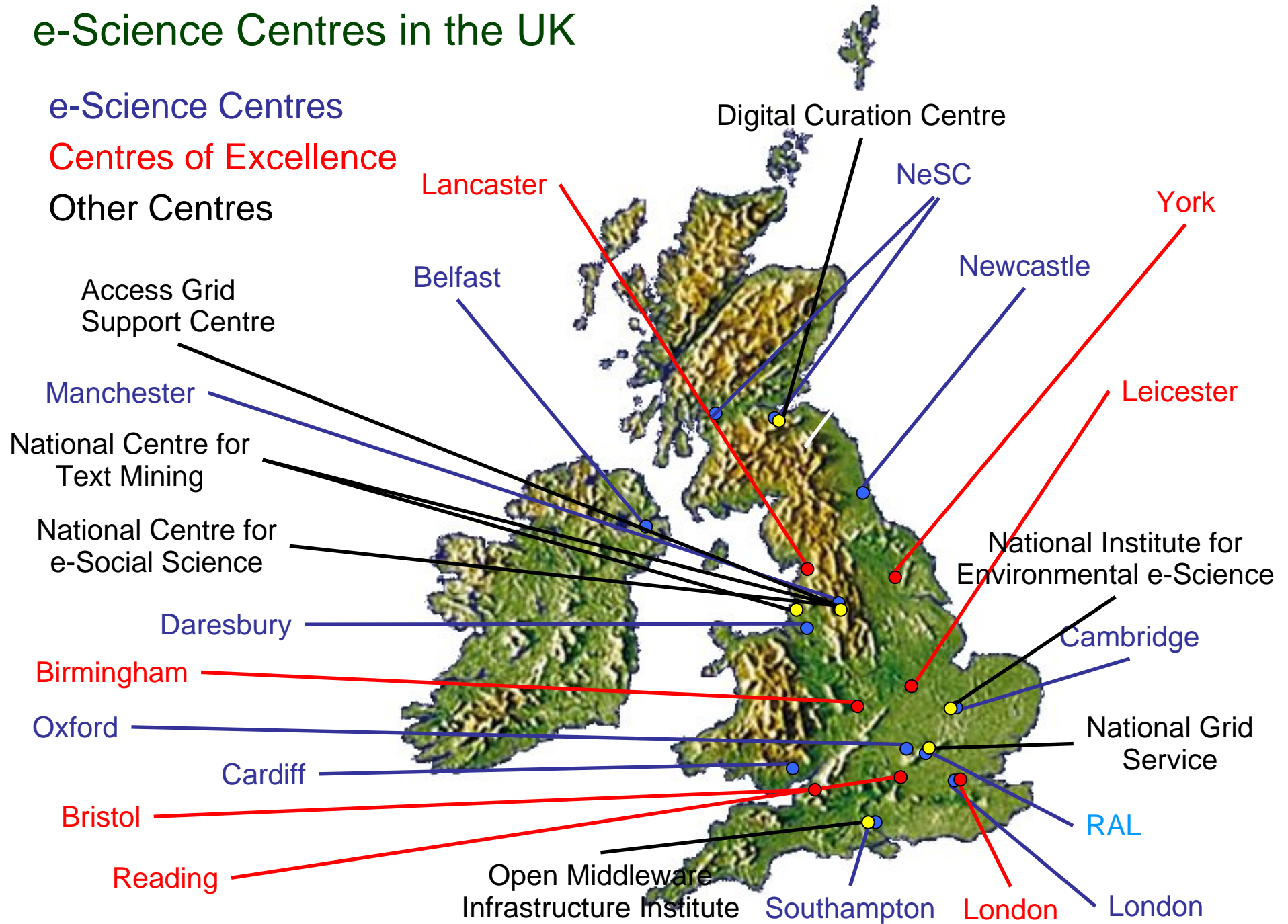
- e-Infrastructure in the UK
- The National Grid Service

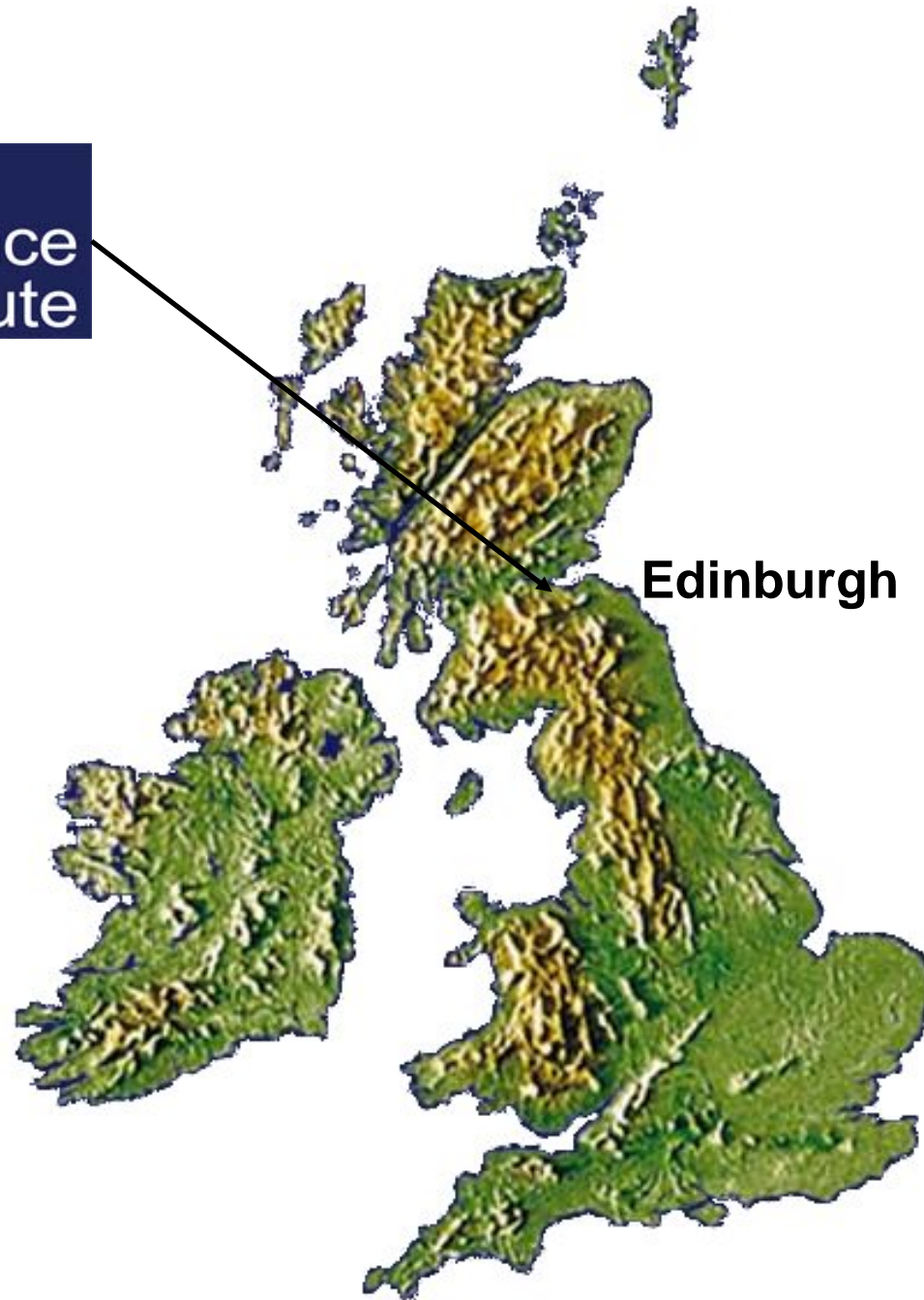
e-Science Centres in the UK

e-Science Centres

Centres of Excellence

Other Centres





OMII-UK nodes

EPCC & National e-Science Centre

School of Computer Science
University of Manchester

myGrid



Edinburgh

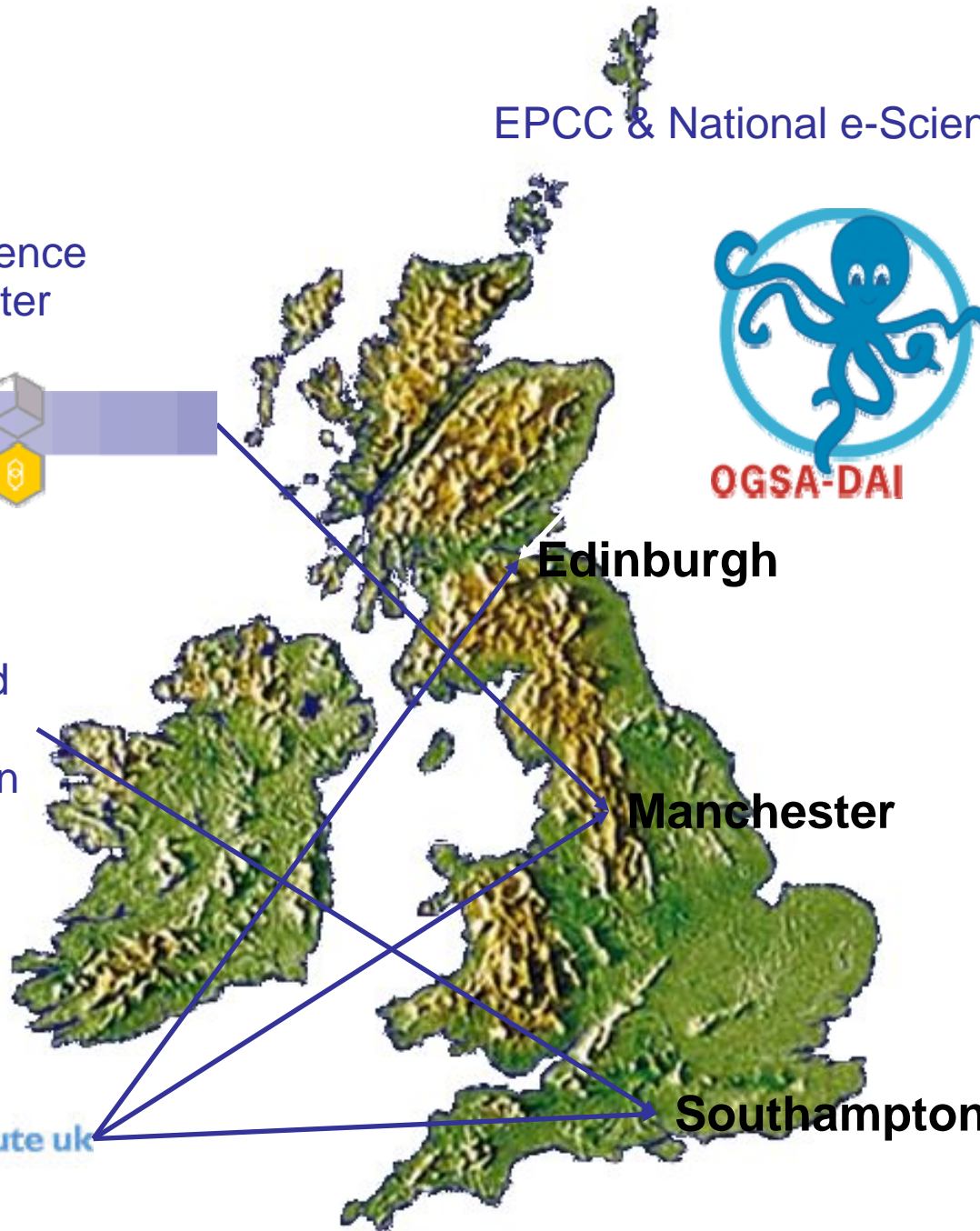
School of Electronics and
Computer Science
University of Southampton

Manchester

Southampton



open middleware
infrastructure institute uk
www.omii.ac.uk



UK e-Infrastructure

Users get common access, tools, information, Nationally supported services, through NGS



HRCx + **HECtoR**

ScotGRID

 Regional and Campus grids

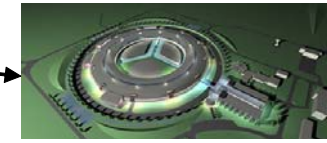
GOSC

NGS

 Integrated internationally

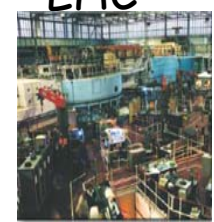
VISTA

ALMA



diamond

LHC



ISIS TS2

GridPP
 UK Computing for Particle Physics

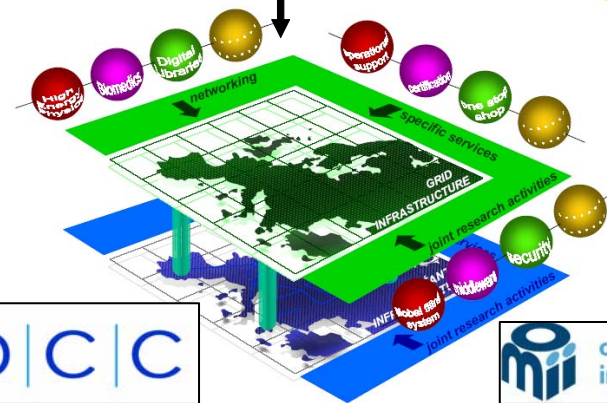
eMinerals
BRIDGES
 Community Grids

EMBL-EBI
 European Bioinfo

JISC
 VRE, VLE, IE

EDINA
MIMAS

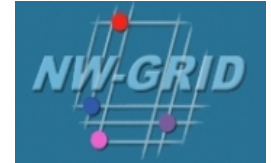
D|C|C



open middleware infrastructure institute

The National Grid Service

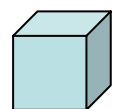
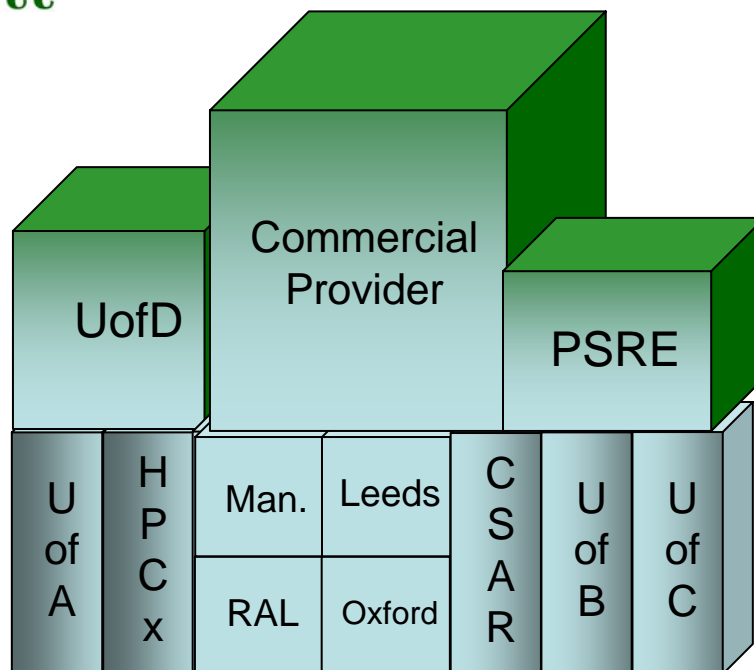
The National Grid Service



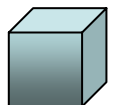
- The core UK grid, resulting from the UK's e-Science programme.
 - Grid: virtual computing across admin domains
- Production use of computational and data grid resources.
- Supported by JISC
 - Entering 2nd phase of funding



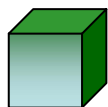
**National
Grid
Service**



NGS Core Nodes: Host core services, coordinate integration, deployment and support
+free to access resources for all VOs. Monitored interfaces + services



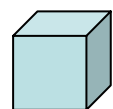
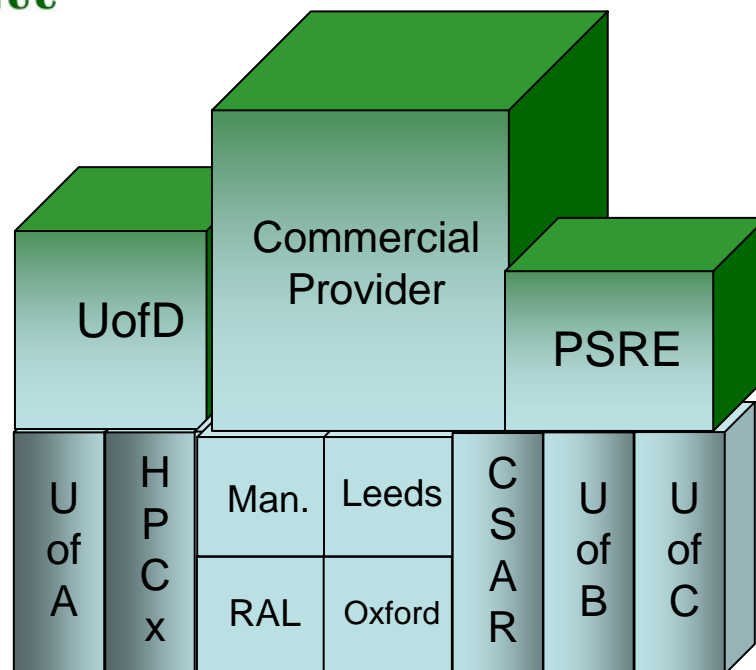
NGS Partner Sites: Integrated with NGS, some services/resources available for all VOs
Monitored interfaces + services



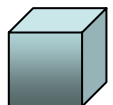
NGS Affiliated Sites: Integrated with NGS, support for some VO's
Monitored interfaces (+security etc.)



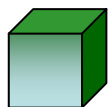
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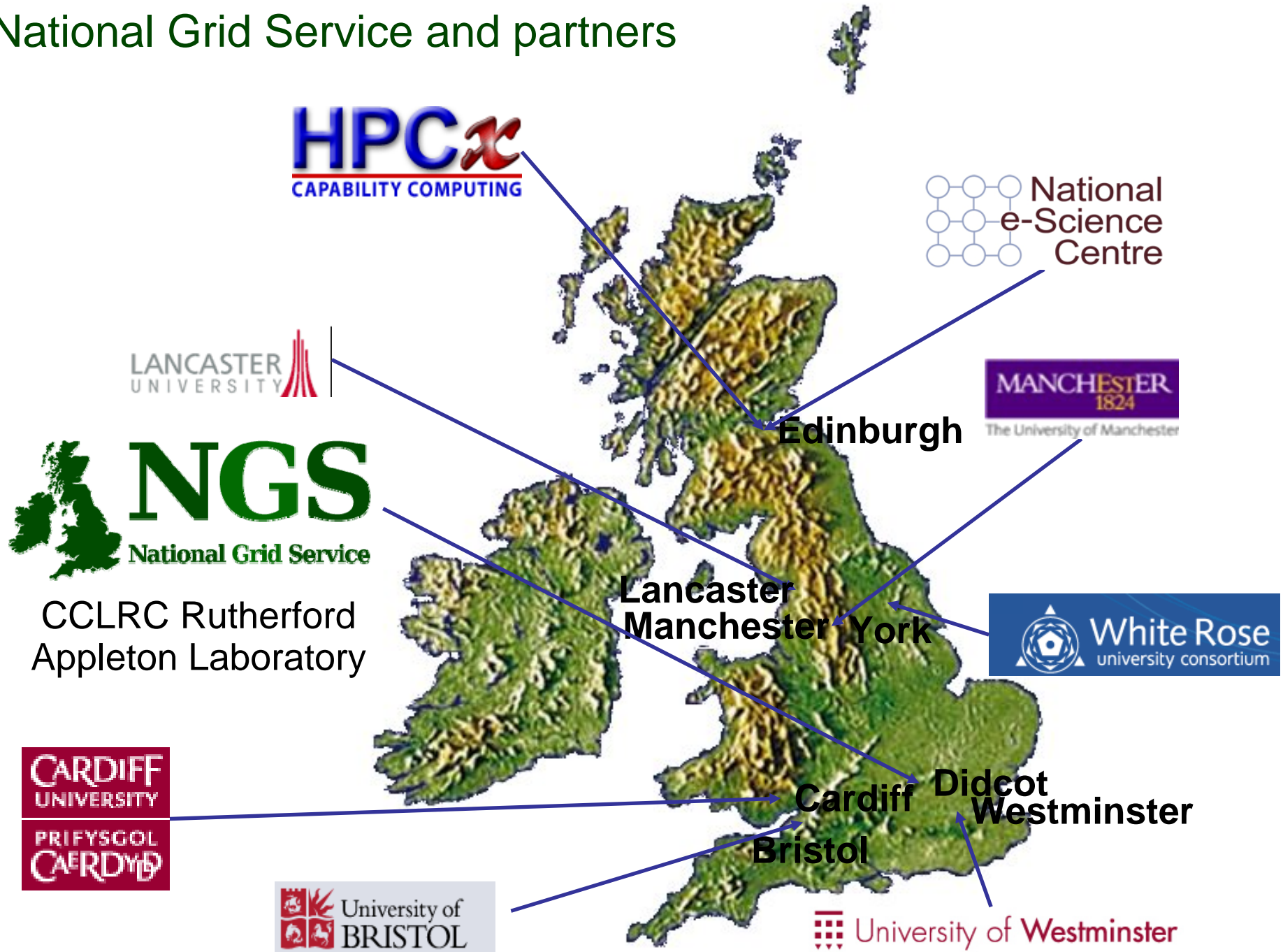


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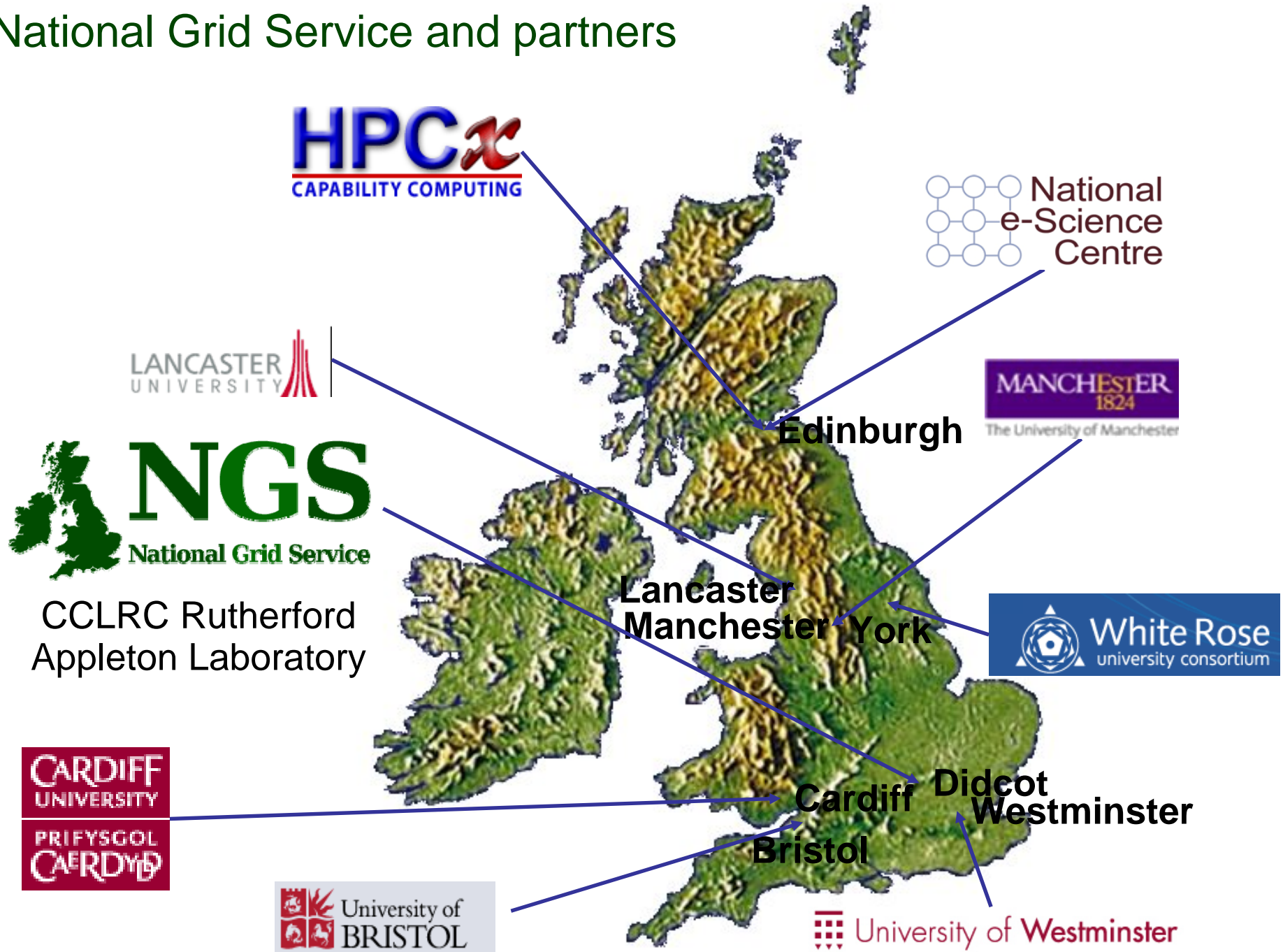


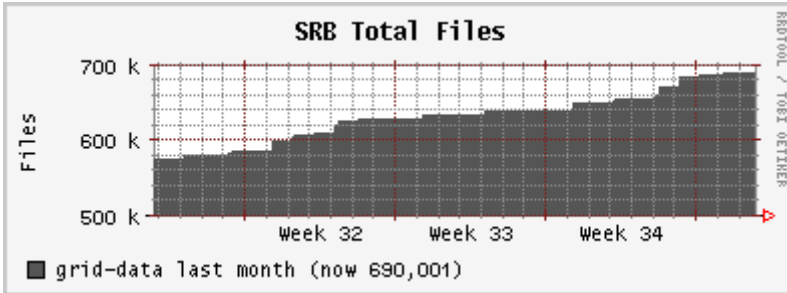
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National Grid Service and partners



National Grid Service and partners

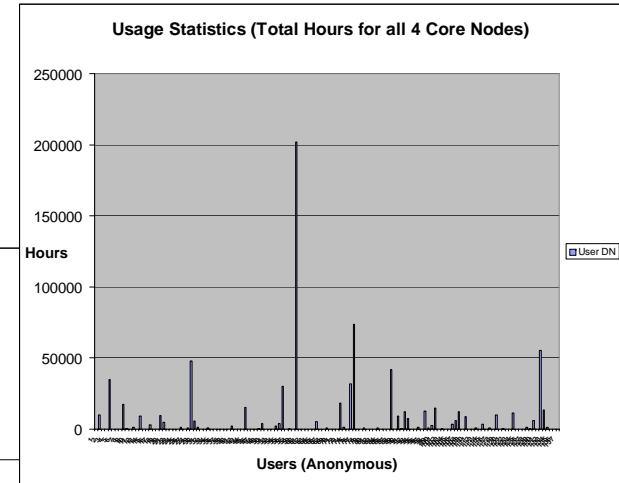
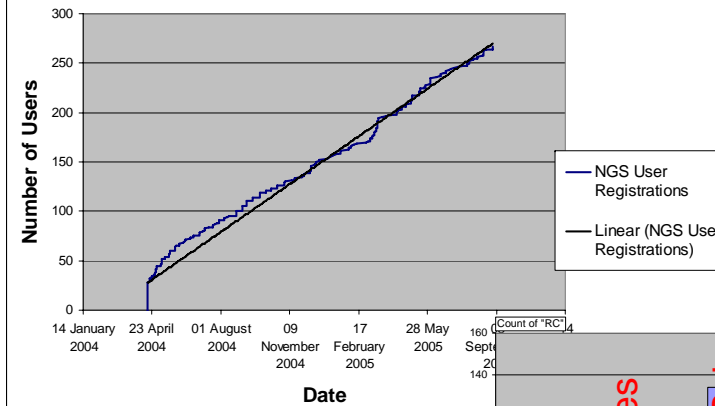




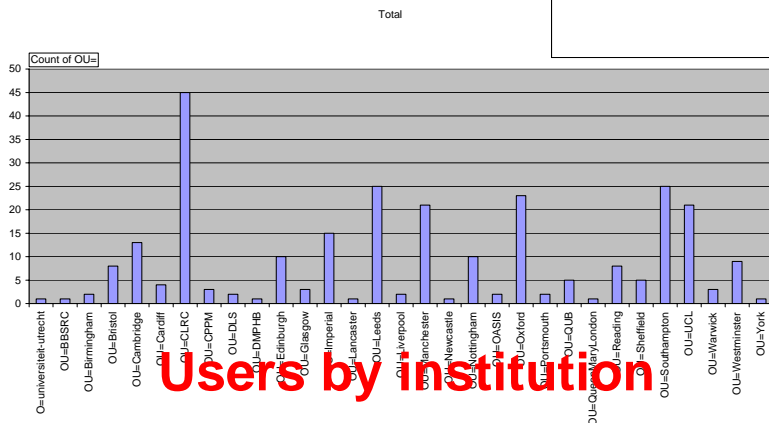
Files stored

~400 users

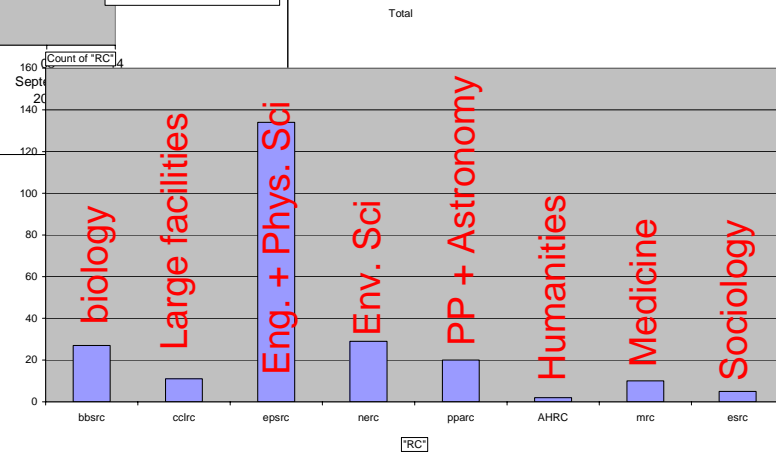
Number of Registered NGS Users



CPU time by user



Users by institution



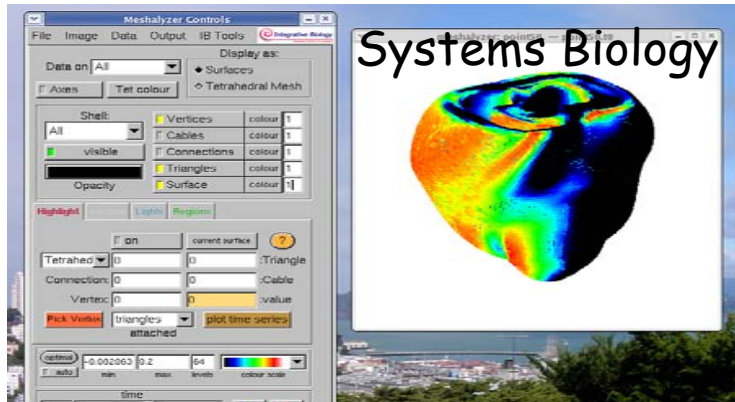
Users by discipline

Supporting Services

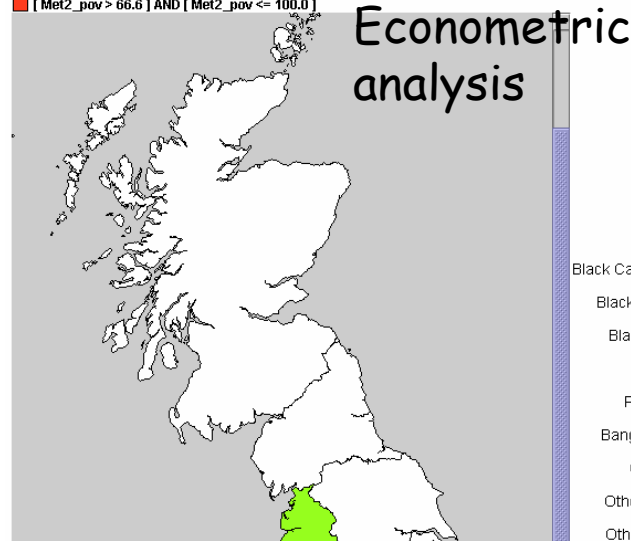


- UK Grid Services
 - National Services
 - Authentication, authorisation, certificate management, VO registration, security, network monitoring, help desk + support centre.
 - NGS Services and interfaces
 - Job submission, simple registry, data transfer, data access and integration, resource brokering, monitoring and accounting, grid management services, workflow, notification, operations centre.
 - NGS core-node Services
 - CPU, (meta-) data storage, key software
 - Services coordinated with others (eg OMII, NeSC, EGEE, LCG):
 - Integration testing, compatibility & Validation Tests, User Management, training
- Administration:
 - Policies and acceptable use
 - Service Level Agreements and Definitions
 - Coordinate deployment and Operations
 - Operational Security

Applications: 2

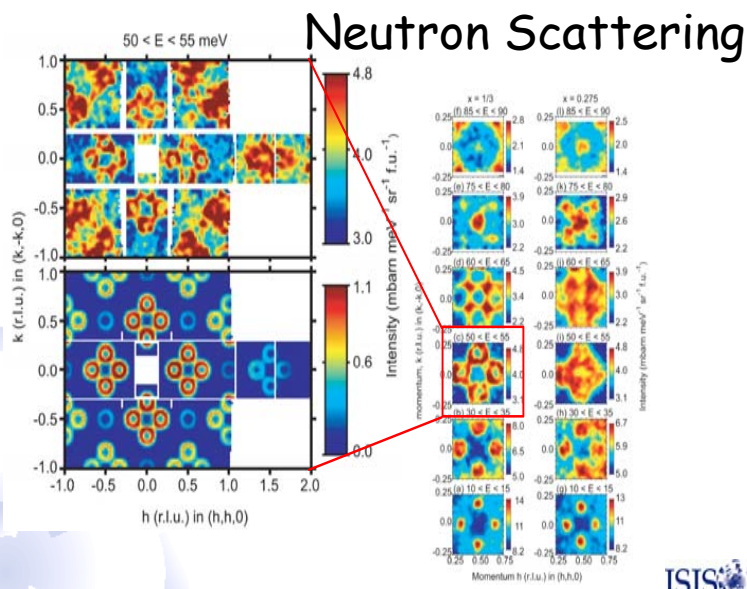
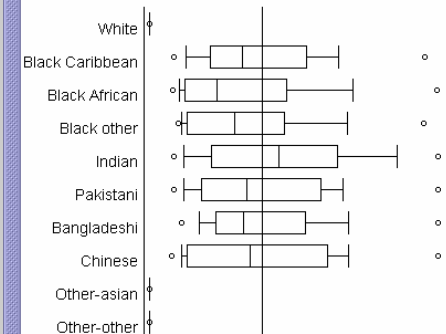


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- [Met2_pov > 0.0] AND [Met2_pov <= 10.0]
- [Met2_pov > 10.0] AND [Met2_pov <= 20.0]
- [Met2_pov > 20.0] AND [Met2_pov <= 25.0]
- [Met2_pov > 25.0] AND [Met2_pov <= 33.3]
- [Met2_pov > 33.3] AND [Met2_pov <= 50.0]
- [Met2_pov > 50.0] AND [Met2_pov <= 66.6]
- [Met2_pov > 66.6] AND [Met2_pov <= 100.0]

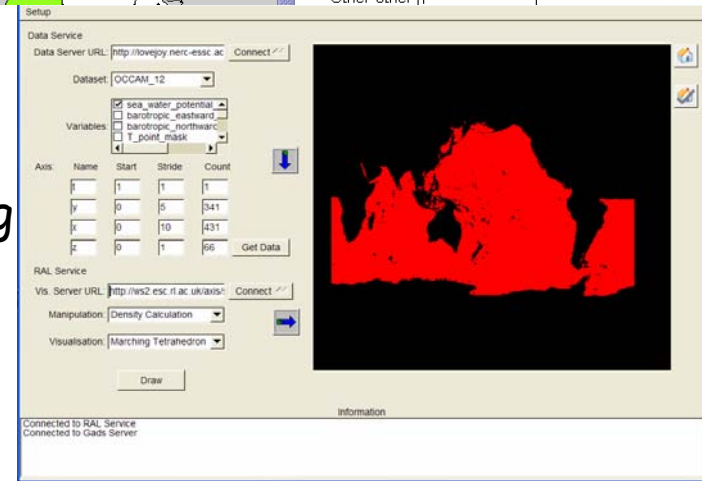


- Region/SARs Area
- White
 - Black Caribbean
 - Black African
 - Black other
 - Indian
 - Pakistani
 - Bangladeshi
 - Chinese
 - Other-asian
 - Other-other

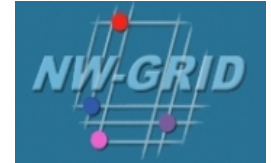
UK Male Imputed Income



Climate modelling



Membership options



Two levels of membership (for sharing resources):

1. Affiliates

- run compatible stack, integrate support arrangements
- adopt NGS security policies
- all access to affiliate's resources is up to the affiliate
 - except allowing NGS to insert probes for monitoring purposes

2. Partners also

- make “significant resources” available to NGS users
- enforce NGS acceptable use policies
- provide accounting information
- define commitments through formal Service Level Descriptions
- influence NGS direction through representation on NGS Technical Board

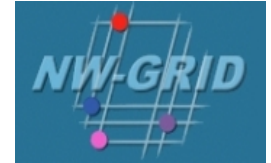
Membership pipeline



September 2006 (not a complete list)

- Partners
 - GridPP sites, initially Imperial, Glasgow
 - Condor/Windows at Cardiff
 - Belfast e-Science Centre (service hosting, GridSAM,...)
- Affiliates
 - NW-Grid/Manchester SGI Prism
 - SunGrid
- Data partners (early discussions)
 - MIMAS and EDINA
- Others in discussion

New partners



Over the last year, several new full partners have joined the NGS:

- Bristol, Cardiff, Lancaster and Westminster
- Further details of resources can be found on the NGS web site: www.ngs.ac.uk.
- Resources committed to the NGS for a period of at least 12 months.
- Heterogeneity introduced by these new services

NGS Facilities

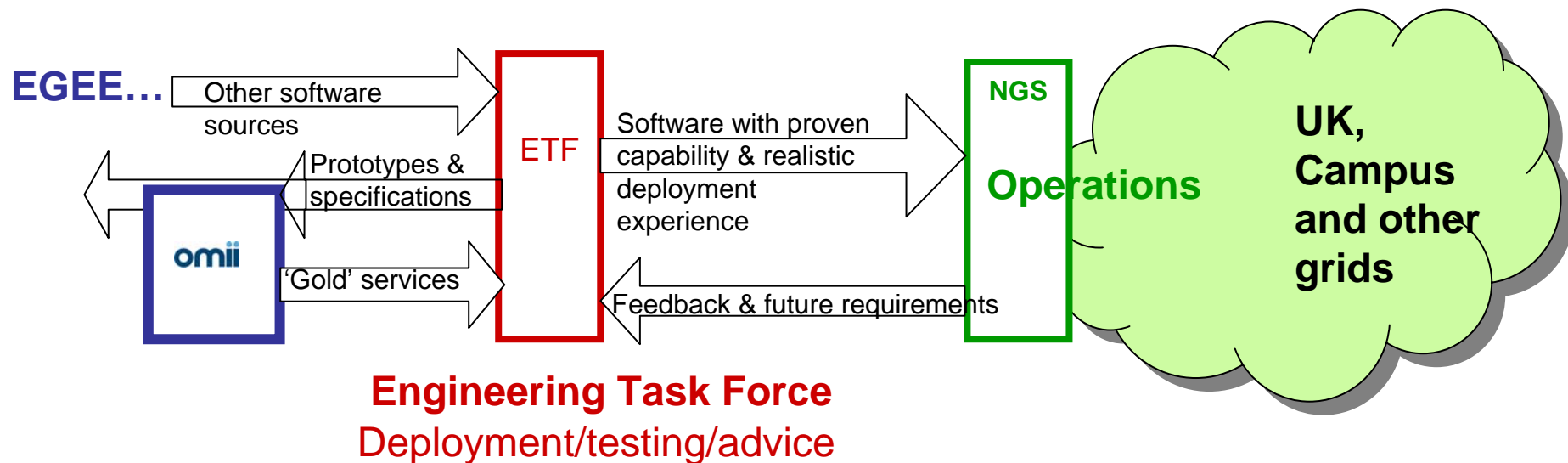
- **Leeds and Oxford (core compute nodes)**
 - 64 dual CPU intel 3.06GHz (1MB cache). Each node: 2GB memory, 2x120GB disk, Redhat ES3.0. Gigabit Myrinet connection. 2TB data server.
- **Manchester and Rutherford Appleton Laboratory (core data nodes)**
 - 20 dual CPU (as above). 18TB SAN.
- **Bristol**
 - initially 20 2.3GHz Athlon processors in 10 dual CPU nodes.
- **Cardiff**
 - 1000 hrs/week on a SGI Origin system comprising 4 dual CPU Origin 300 servers with a Myrinet™ interconnect.
- **Lancaster**
 - 8 Sun Blade 1000 execution nodes, each with dual UltraSPARC IIIc processors connected via a Dell 1750 head node.
- **Westminster**
 - 32 Sun V60 compute nodes
- **HPCx**
 - ...

For more details: <http://www.ngs.ac.uk/resources.html>

- **Computation services based on Globus Toolkit version 2**
 - Use compute nodes for sequential or parallel jobs, primarily from batch queues
 - Can run multiple jobs concurrently (be reasonable!)
- **Data services:**
 - **Storage Resource Broker:**
 - Primarily for file storage and access
 - Virtual filesystem with replicated files
 - **“OGSA-DAI”: Data Access and Integration**
 - Primarily for grid-enabling databases (relational, XML)
 - **NGS Oracle service**

Managing middleware evolution

- Important to coordinate and integrate this with deployment and operations work in EGEE, LCG and similar projects.
- Focus on deployment and operations, NOT development.



Gaining Access



Free (at point of use) access to core and partner NGS nodes

1. Obtain digital X.509 certificate
 - from UK e-Science CA
 - or recognized peer
2. Apply for access to the NGS

National HPC services

- HPCx 
- Must apply separately to research councils
- Digital certificate and conventional (username/password) access supported

Key facts

- **Production:** deploying middleware after selection and testing – major developments via Engineering Task Force.
- **Evolving:**
 - Middleware
 - Number of sites
 - Organisation:
 - VO management
 - Policy negotiation: sites, VOs
- **International commitment**
- **Gathering users' requirements – National Grid Service**

Web Sites

- NGS
 - <http://www.ngs.ac.uk>
 - To see what's happening: <http://ganglia.ngs.rl.ac.uk/>
 - New wiki service: <http://wiki.ngs.ac.uk>
 - Training events: <http://www.nesc.ac.uk/training>

- HPCx
 - <http://www.hpcx.ac.uk>

Summary



- NGS is a production service
 - Therefore cannot include latest research prototypes!
 - Formalised commitments - service level agreements

- Core sites provide computation and data services

- NGS is evolving
 - OMII, EGEE, Globus Alliance all have m/w under assessment for the NGS
 - Selected, deployed middleware currently provides “low-level” tools
 - New deployments will follow
 - New sites and resources being added