



# UK NGS

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*pretending to be*

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## Overview

- Our Mission and Goals
- Services and Resource Providers
- Supporting User Communities

Connecting Infrastructure

Connecting Research



# NGS

## NGS Mission and Goal

*To enable coherent electronic access for UK researchers to all computational and data based resources and facilities required to carry out their research, independent of resource or researcher location.*

### Goal:

- To enable a production quality e-infrastructure
  - Expand towards all Higher Education Institutes and UK based research institutions
  - Continue to support cutting edge research
- To deliver core services and support
  - Research computing groups within universities and research organisations to help them support users
  - Highlight Collaborative research in key communities
- Integrate with international infrastructures following user community demand

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# NGS

## Vision / What we do

- Enable Collaborative Research
- Support HEIs and Research Facilities
  - Enable sharing of resources
  - Tools / Services to integrate resources
- Gateways to European (international) e-infrastructure (NGI)
- Investigate new technologies and develop into production
- Centre of Excellence
  - Support Centre
  - Training
  - Outreach Activities
  - Deployment Expertise / Trial services
  - Standards engagement

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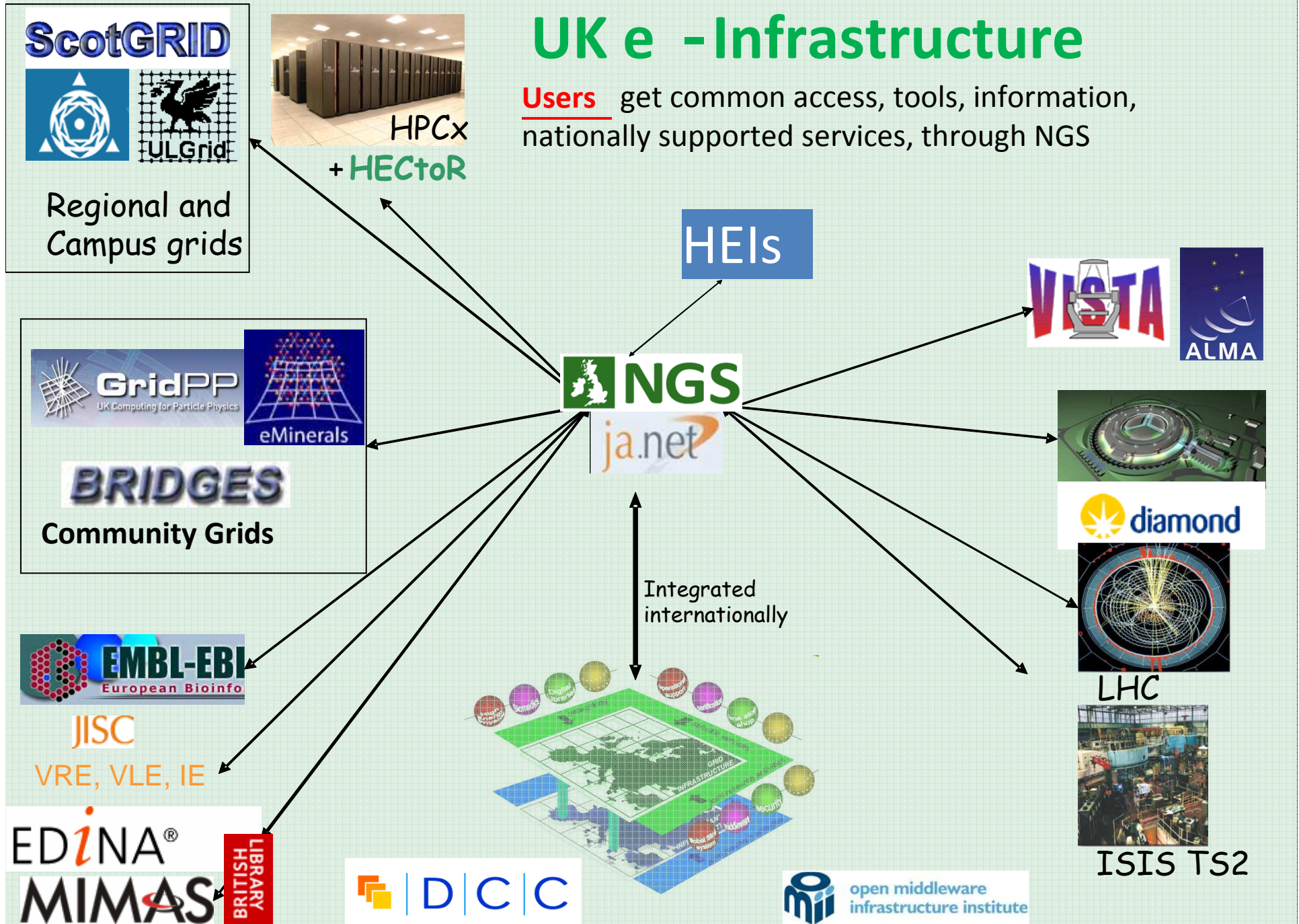


## Impact

- Improve accessibility to local resources
- Widen accessibility to local resources
- Use once Use anywhere
- Share/Trade/Buy/Sell resources
- Facilitate collaboration nationally and internationally

# UK e - Infrastructure

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





# NGS

## Organisational Membership

- Personnel
  - Appointment of an institutional Campus Champion
  - Liaison between HEI/research organisation and NGS
- Resource Exchanging
  - Regularly tested installation of NGS defined interfaces as described in the NGS Site Level Services Document
  - Partner
    - Supporting access by a significant body of NGS users
    - Publish a service level description (SLD) detailing the services offered
  - Affiliate
    - Maintains control over permitted users



# NGS

## NGS Member Institutions, Autumn 2009



MANCHESTER  
1824



Imperial College  
London

Royal Holloway  
University of London

HPCx  
CAPABILITY COMPUTING

University of  
BRISTOL



Science & Technology Facilities Council  
Rutherford Appleton Laboratory

University of Westminster



UNIVERSITY OF  
Southampton

CARDIFF  
UNIVERSITY



University  
of Glasgow



The University of Reading



Brunel  
UNIVERSITY  
WEST LONDON



KEELE  
UNIVERSITY



Durham  
University



UNIVERSITY OF  
BIRMINGHAM



UNIVERSITY OF  
LIVERPOOL



The  
University  
Of  
Sheffield.

THE UNIVERSITY of York

welcome trust  
sanger  
institute

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# NGS

## What does the NGS offer users?

- Compute services
  - Access to more and different resources
  - Different ways of running jobs e.g. multi site MPI
- Data services
  - Access to data storage
  - Support and advice
  - New ways of accessing data
- Access Services
  - User facing services providing methods to use available resources
- Central Support services
  - Individual services needed to support user access, control and management



# NGS

## NGS Site Level Services

- Description of the different solutions to service requirements challenges
- A set of different modules describing a particular function, each with a number of solutions which are grouped together as profiles
- Supported interfaces are community driven, we will not/cannot dictate what we make available.
- Computational interfaces:
  - VDT
  - gLite
  - Globus 4
  - GridSAM
- Data Services
  - Databases (Oracle), SRB, global filesystems, Service access to structured data (OGSA-DAI)

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# NGS

## Specialist services

### Westminster

- Operates and supports P-GRADE portal and GEMLCA legacy application support services



### Belfast e-Science Centre

- Web Service Hosting Container Service
  - Web service containers into which projects or VOs can deploy their own Web or Grid services, using automatic deployment technology

### Oxford e-Research Centre

- OMII-UK GridSAM
  - OGF HPC-Basic Profile compliant Job submission
  - Promoting interoperability with international grids
- Eucalyptus Cloud system
  - Exposing AWS compatible interfaces and functionality to NGS users

### Edinburgh

- Eucalyptus Cloud system

### STFC Rutherford Appleton Laboratory

- Visualisation using specialised cluster from within the STFC e-Science Viz group

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# NGS

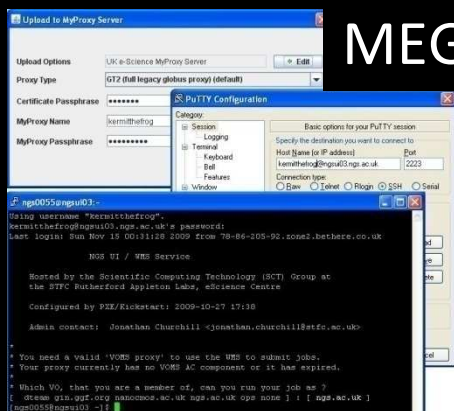
# User access



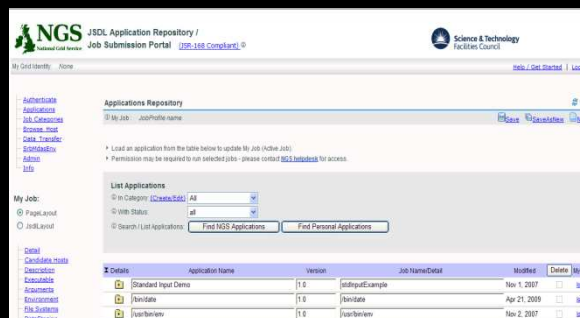
Direct access



GSI-SSH terminal



MEG



NGS Portal/  
Applications  
Repository

- SARoNGS
- WMS
- Application Hosting Environment (AHE)



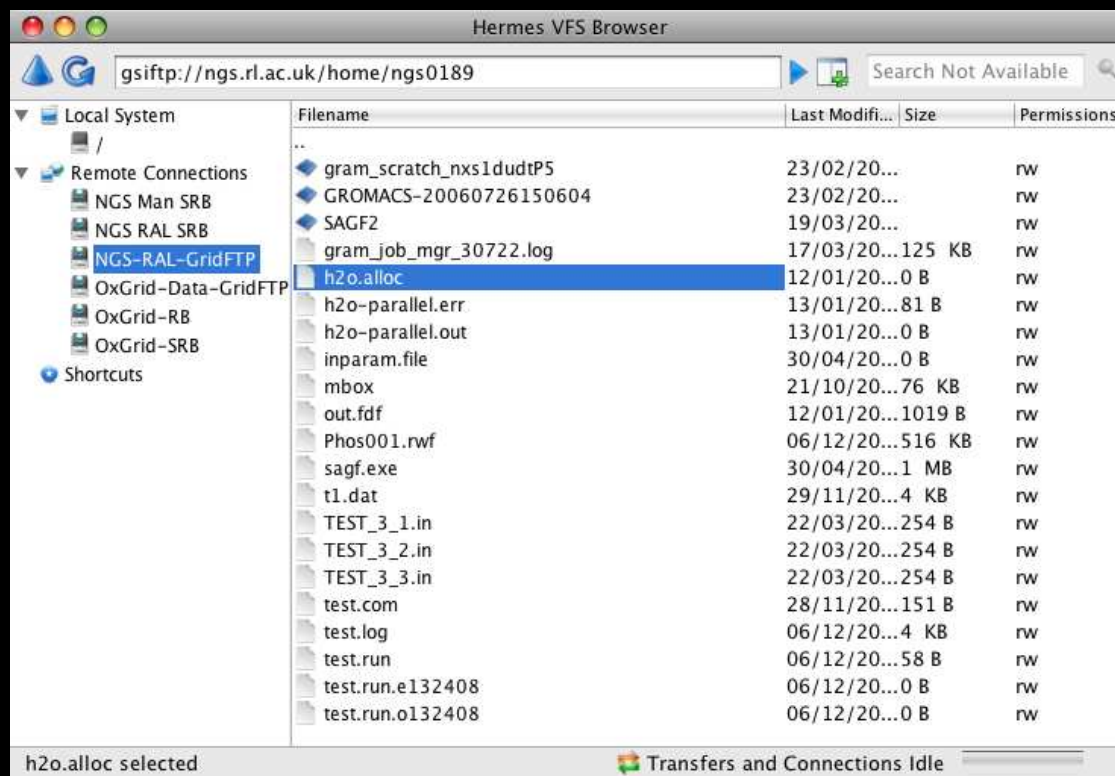
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## HERMES data client

- Drag and drop file movement between local filesystem, SCP, GridFTP, and SRB
- Java based desktop application
- Authentication and authorisation using UK e-Science certificates

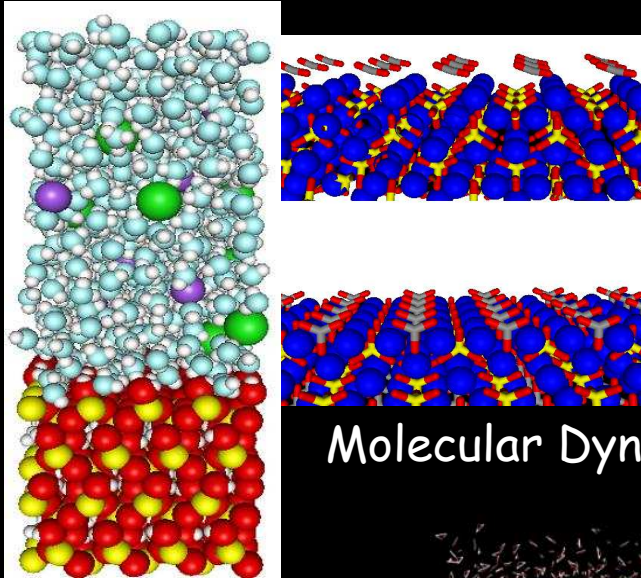




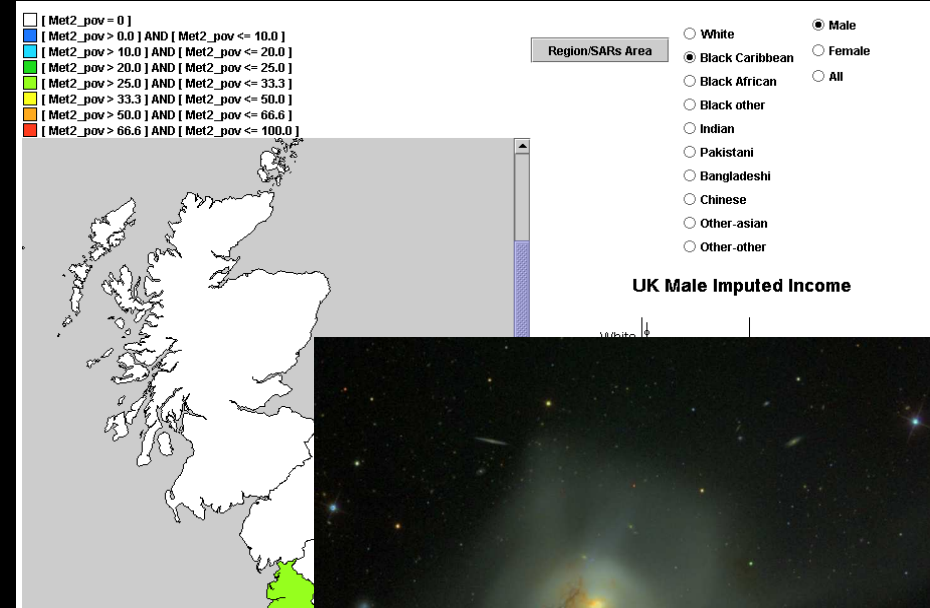
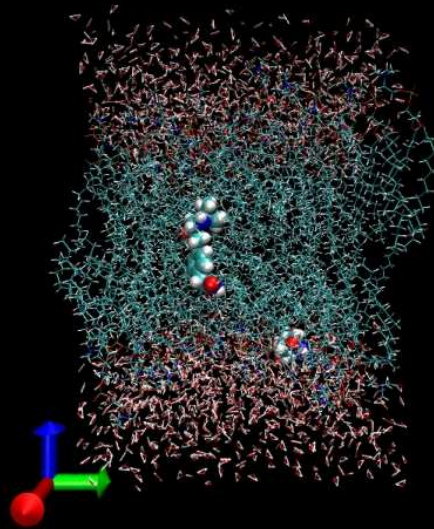
# NGS

# Examples

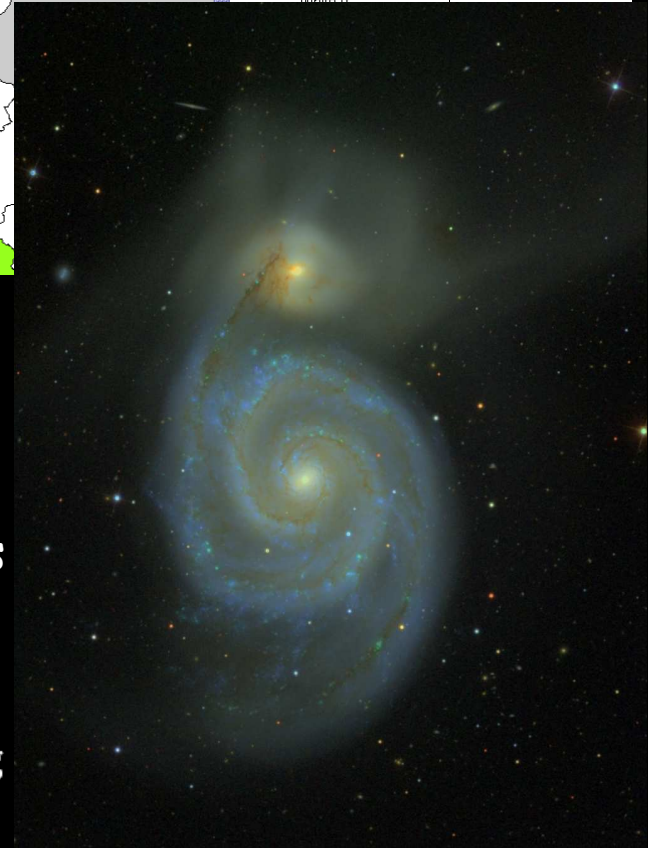
Econometric analysis



Protein - drug interactions



Astrophysics data storage and analysis

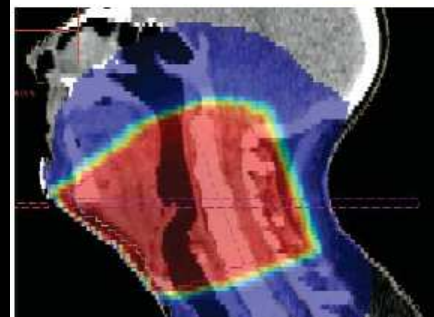
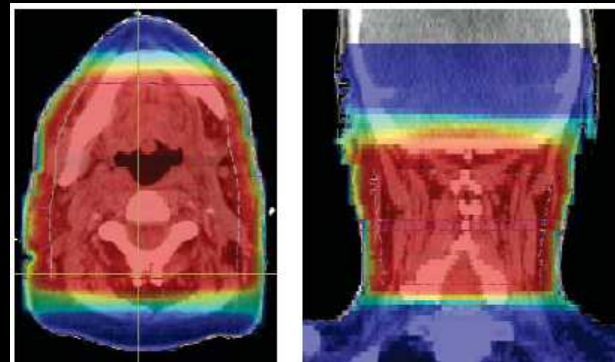
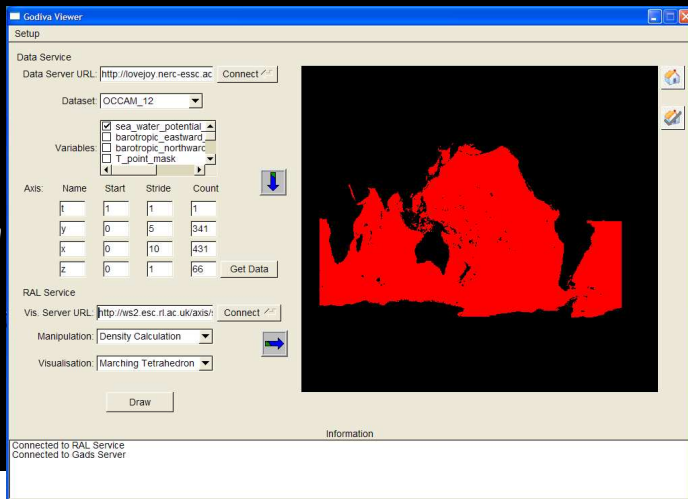




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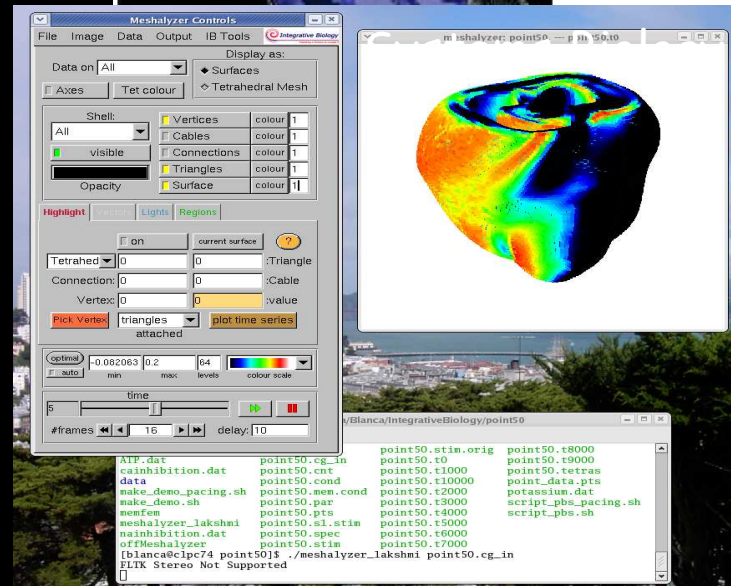
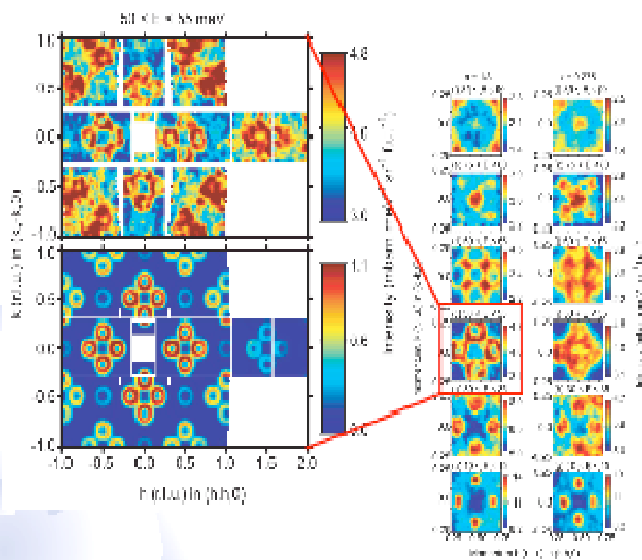
## Prediction of dose in radiotherapy patients

### Climate modelling



**FIGURE 1:** Clockwise from top left: tomographic, coronal and sagittal views of a 3-D dose distribution for a head-and-neck cancer treatment. Radiation dose has been color-coded from low (blue) to high (red).

### Example: $La_{2-x}Sr_xNiO_4$



### Connecting Research





# NGS

## Conclusions

- NGS is here to support university research computing services support their research communities by making connection of ITS enabled resources easier
- Existing usage models of NGS enabled resources can be reused quickly and easily by different communities
- Connectivity using standard interfaces will include national data sources including EDINA, MIMAS, as well as experimental facilities such DIAMOND, e-Merlin, ISIS and JET
- The NGS should be a first port of call for large inter-institutional collaborative projects who require ITS enabled services



[Thank You](#)

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