

# NW-GRID Future Developments

### R.J. Allan CCLRC Daresbury Laboratory

NW-GRID Training Event 26<sup>th</sup> January 2007

Rob Allan Daresbury Laboratory

- We expect a growing number of "hosted" applications
- academic and open source is not a problem
- commercial licensed software may be more difficult – we are discussing with vendors on a case-by-case basis
- Tell us what applications you need
- Can you provide any?

Rob Allan **Daresbury Laboratory** 

- The project is structured around three major testbed milestones:
  - Testbed 1 (2006): High-performance and parametric applications – we have been doing this as already presented
  - Testbed 2 (2007): Safe, bookable and accountable Grid
  - Testbed 3 (2008): Collaborative real-time
    Grid
- For both academic and commercial users

# **Emerging Middleware**

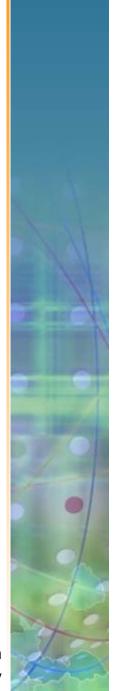
- To respond to the requirements of these testbeds and applications we will be developing or evaluating new middleware components
- T1: we have demonstrated RMCS and GROWL during this course and are evaluating AHE
- T2: we will be deploying a portal, similar to the NGS portal. We are also evaluating user and VO management, resource allocation and co-scheduling software, e.g. GOLD and HARC
- T3: we are looking for software for a collaborative realtime Grid, which will include visualisation, steering and job migration
- We will move forward with the latest middleware technology to remain compatible with NGS and Grid worldwide

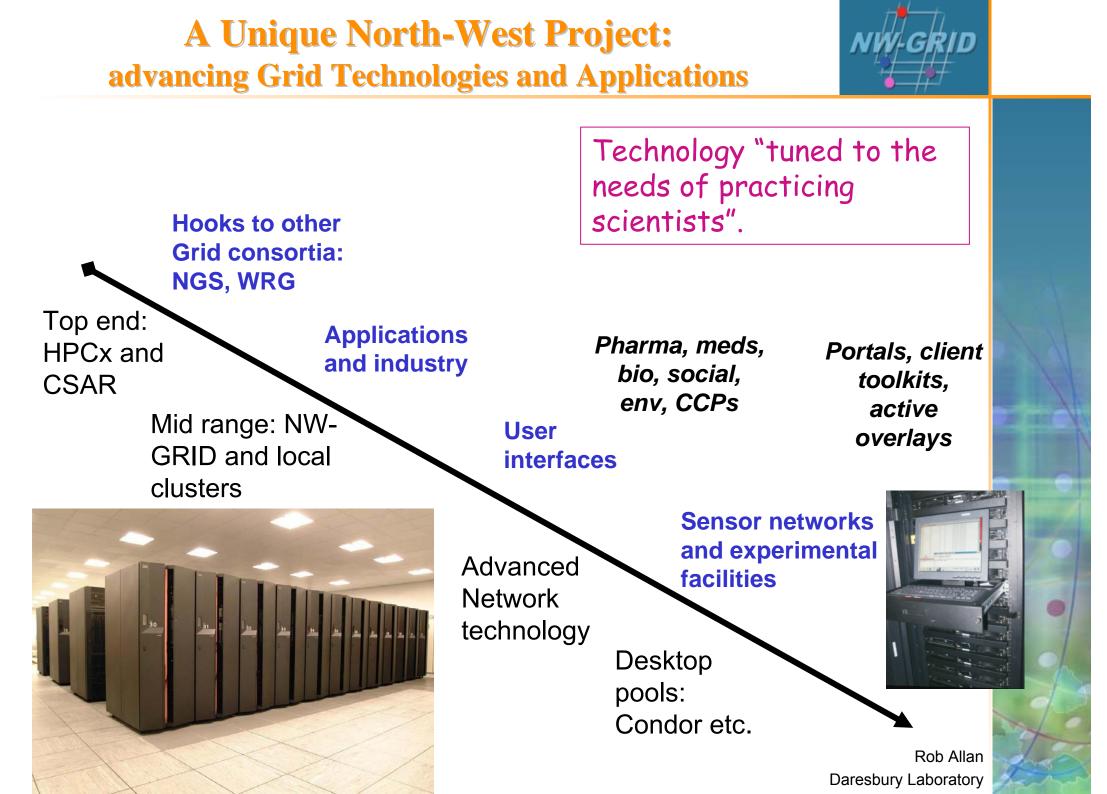
NW-GRID Training Event 26<sup>th</sup> January 2007

Rob Allan Daresbury Laboratory

#### Hardware

- NWGRID
- Some additions to the Grid infrastructure from partners have already been mentioned
- We have a refresh phase coming up and are gathering requirements
- NW-GRID will no longer be a homogeneous system, but will consist of the 4 core clusters plus special-purpose facilities accessible to all users



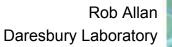


# **Range of Resource Types**

- National Class Supercomputers (CSAR and HPCx)
- Advanced architecture development systems (BlueGene-L)
- Commodity Clusters (NW-GRID core, POL, etc.)
- Mid range systems (SGIs, e.g. for visualisation)
- Campus Grid pools (Condor DL internal, Liverpool)
- Desktop client systems Windows, Linux, Mac
- Philanthropic computing (e.g. seti@home)
- Mobile devices Nokia770, PDAs
- Sensor Grid networks Lancaster

This brings interesting challenges!

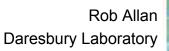
NW-GRID Training Event 26<sup>th</sup> January 2007



# **Some Challenges**

- New scalable algorithms
  - should include steering and checkpointing capabilities
  - make use of intergrid networks with high latencies (like our fibre network)
  - scale to 1000s of processors BlueGene may be upgraded to 4000...
- Resource brokering and matching requirements to appropriate platforms
  - efficient use of resources
  - scheduling requirements high priority, backfill, etc.
- Lightweight Grid computing
  - improve client access, static and mobile
- Dynamic Grid configurations and VOs
- Inter-working Grids, e.g. GridPP, CampusGrid

NW-GRID Training Event 26<sup>th</sup> January 2007



#### **Possible e-Environment Grid Services**

#### **Architecture**



