Edinburgh e-Science TOE

Training Outreach and Education

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

NGS National Grid Service

http://www.ngs.ac.uk

P-GRADE and GEMLCA

PPARC

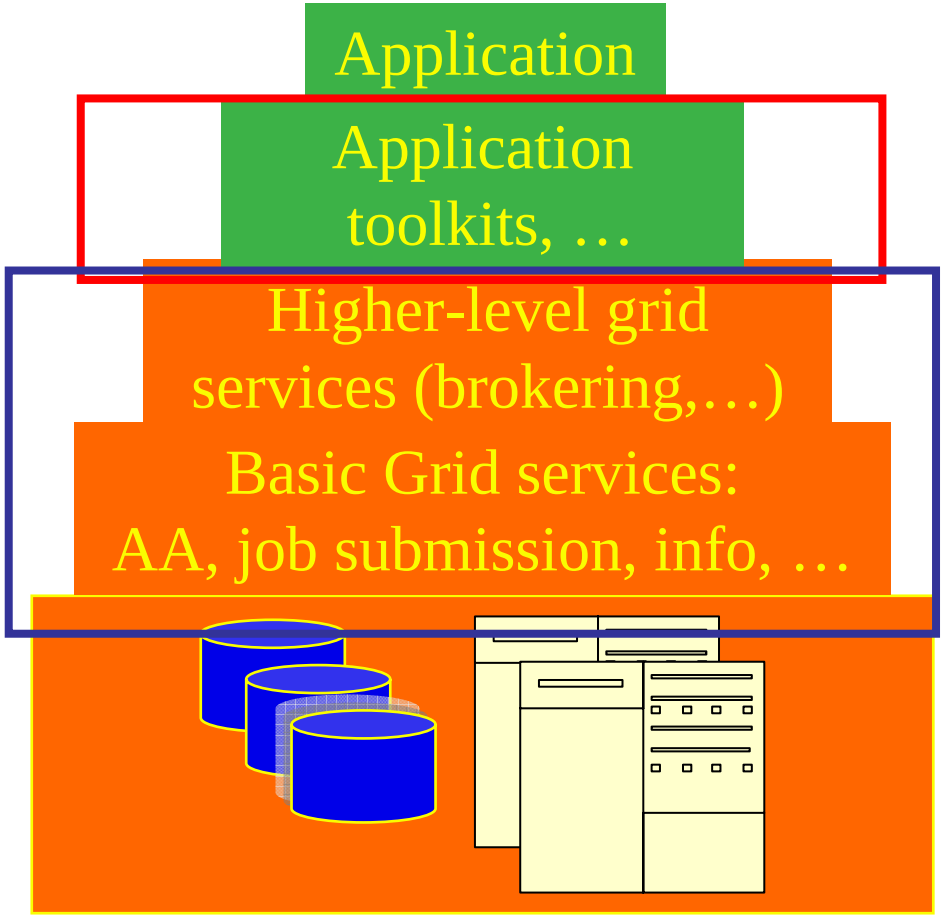
http://www.pparc.ac.uk/

egee

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

NGS National Grid Service

Empowering VO's



Where computer science meets the application communities!

VO-specific developments:

- Portals
- Virtual Research Environments
- Semantics, ontologies
- Workflow
- Registries of VO services

Production grids provide these services.

NGS
National Grid Service

Enhancing useability

- NGS has deployed low-level tools: these are reliable and give a production service
- Consequently an application developer interacts at a low level with grid services
- Role of application developer: build higher abstractions & tools
  - Specific to a community (MyGrid was developed for bioinformatics)
  - Generic

    Example: P-GRADE and GEMLCA, developed at SZTAKI, Hungary and University of Westminster are made available to NGS users
    - www.cpc.wmin.ac.uk/gemlca
    - www.lpds.sztaki.hu/pgportal
    - www.cpc.wmin.ac.uk/ngsportal

P-GRADE Portal and GEMLCA

Grid Execution Management for Legacy Code Applications

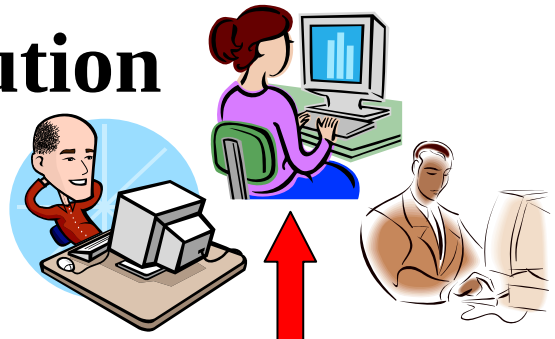
P-GRADE portal

MTA SZTAKI

Tamas Kiss, Gabor Terstyanszky
Centre for Parallel Computing
University of Westminster
kisst@wmin.ac.uk

Peter Kacsuk
SZTAKI Hungary
University of Westminster
kacsuk@sztaki.hu

The P-GRADE solution



User-friendly
Web interface

NGS National Grid Service
core production computational and data grid

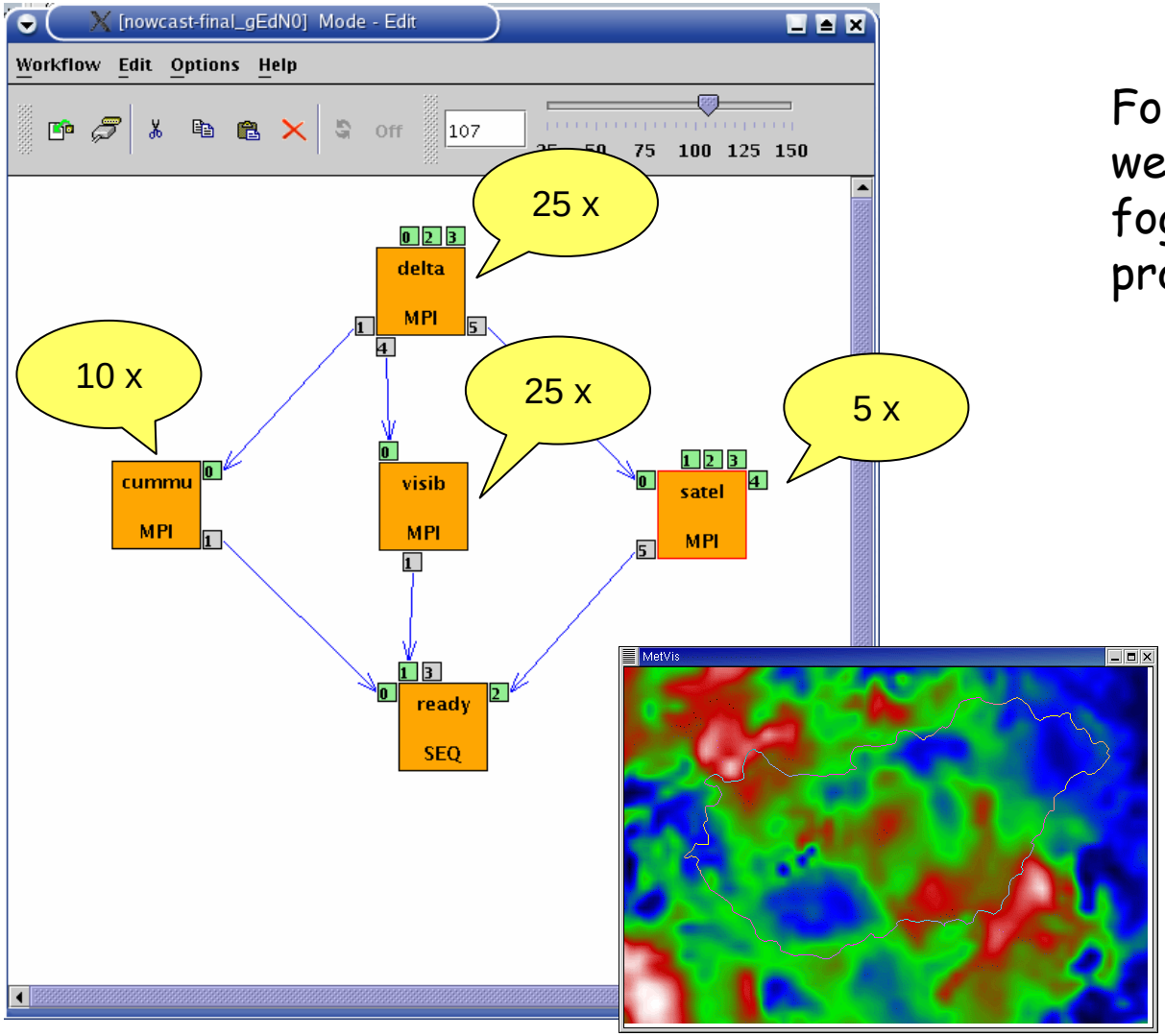
Leeds
Oxford
GT2
Manchester
Rutherford

P-GRADE portal

Portal server at UoW

Ultra-short range weather forecast

(Hungarian Meteorology Service)



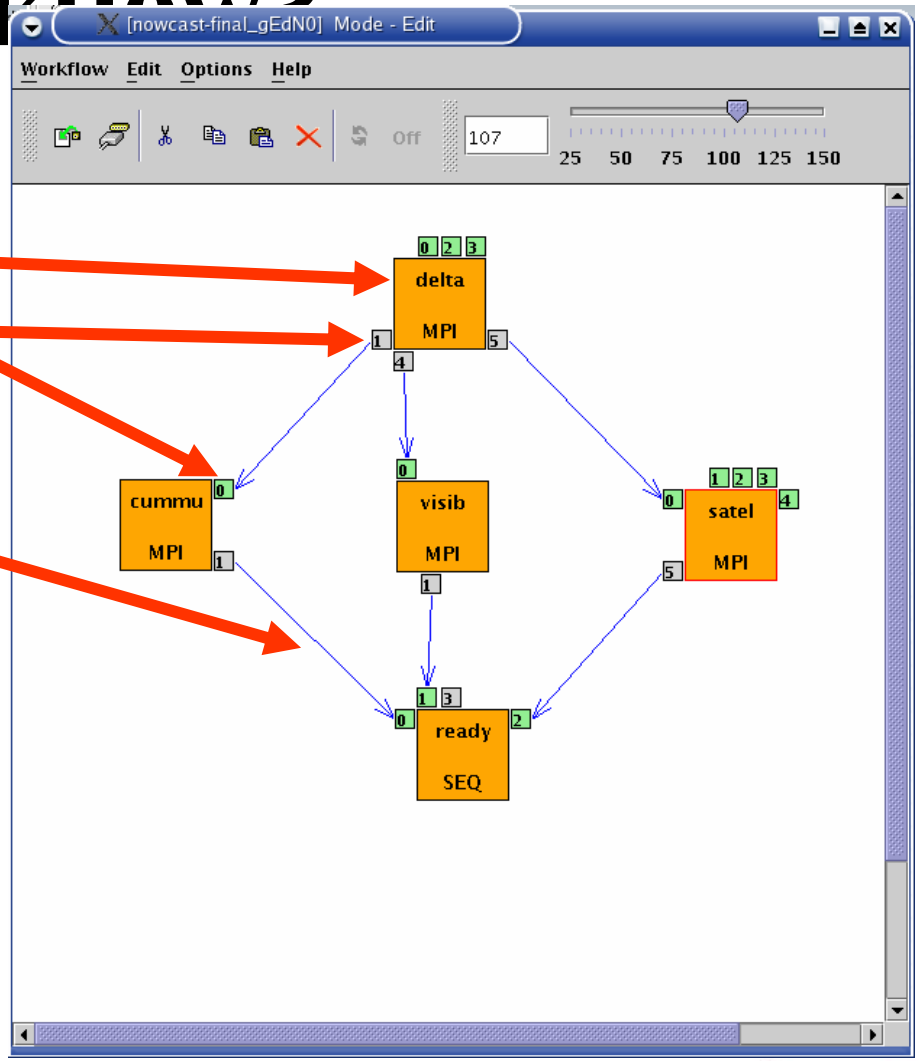
Forecasting dangerous weather situations (storms, fog, etc.), crucial task in the protection of life and property

Processed information: surface level measurements, high-altitude measurements, radar, satellite, lightning, results of previous computed models

Requirements:
- Execution time < 10 min
- High resolution (1km)

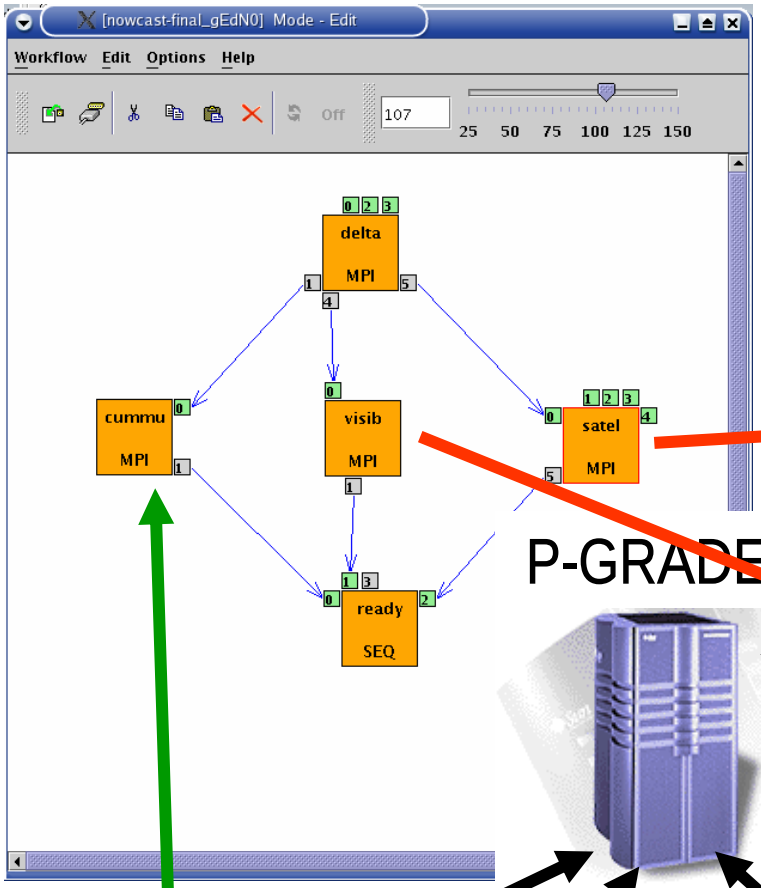
What is a P-GRADE Portal workflow?

- **a directed acyclic graph (DAG) where**
  - Nodes represent jobs (executable batch programs)
  - Ports represent input/output files the jobs expect/ produce
  - Arcs represent file transfer between the jobs



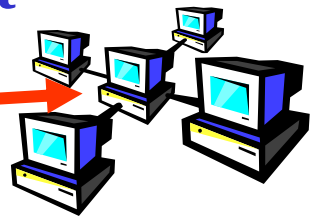
- **semantics of the workflow:**
  - A job can be executed if all of its input files are available
    - **local input files**: on the portal server
    - **remote input files**: at Grid storage service providers

Multi-Grid P-GRADE Portal

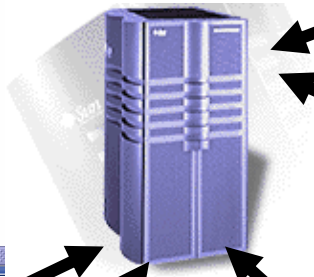


Different jobs of a workflow can be executed in different grids

EGEE Grid
e.g. VOCE

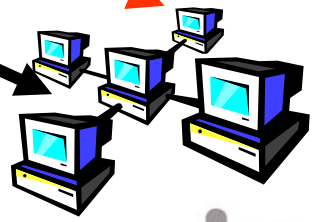


P-GRADE-Portal

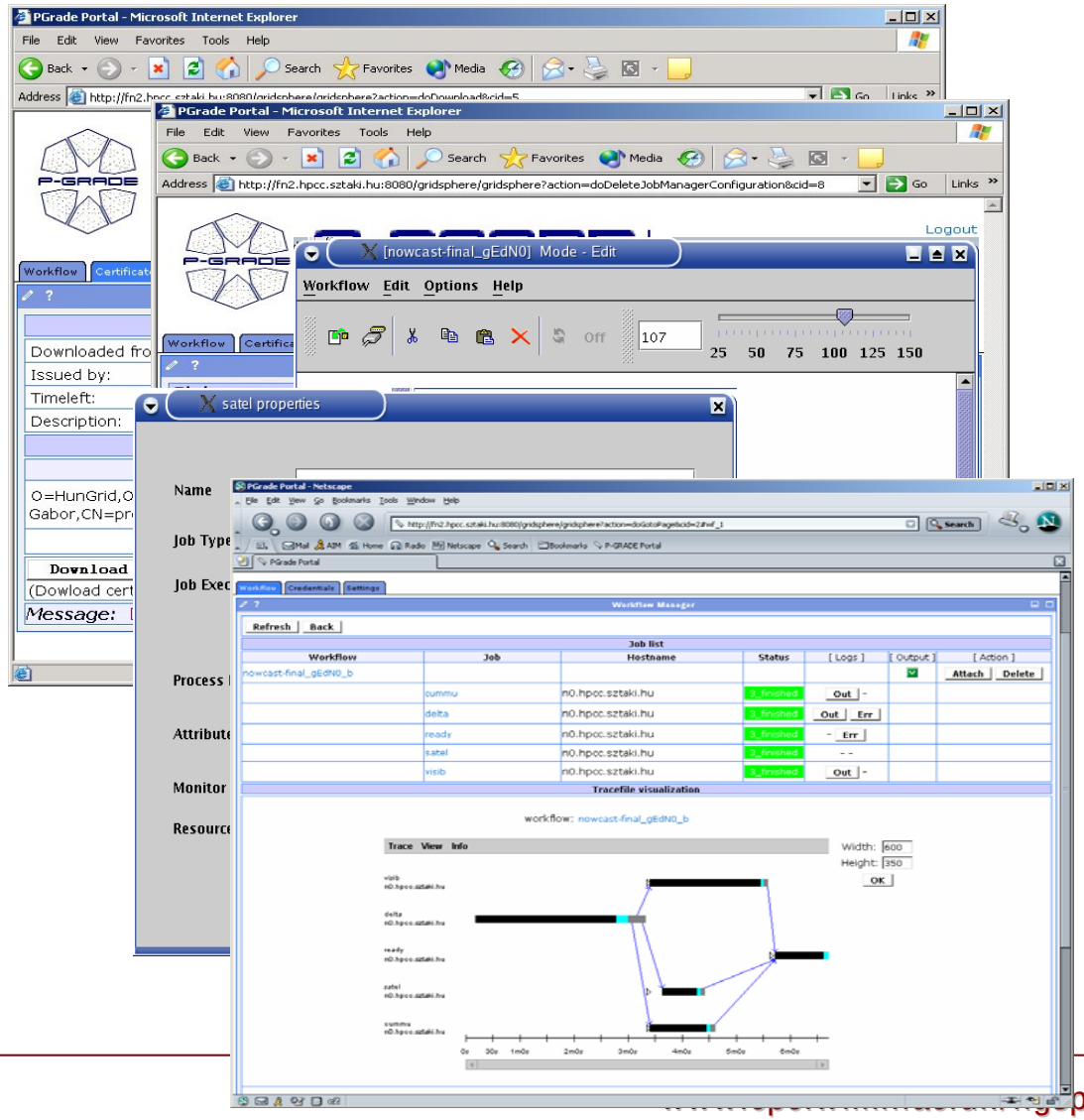


The portal can be connected to multiple grids

UK NGS



P-GRADE portal in a nutshell



Proxy management

Grid resources management

Workflow creation

Job mapping to Grid resources

Workflow management and

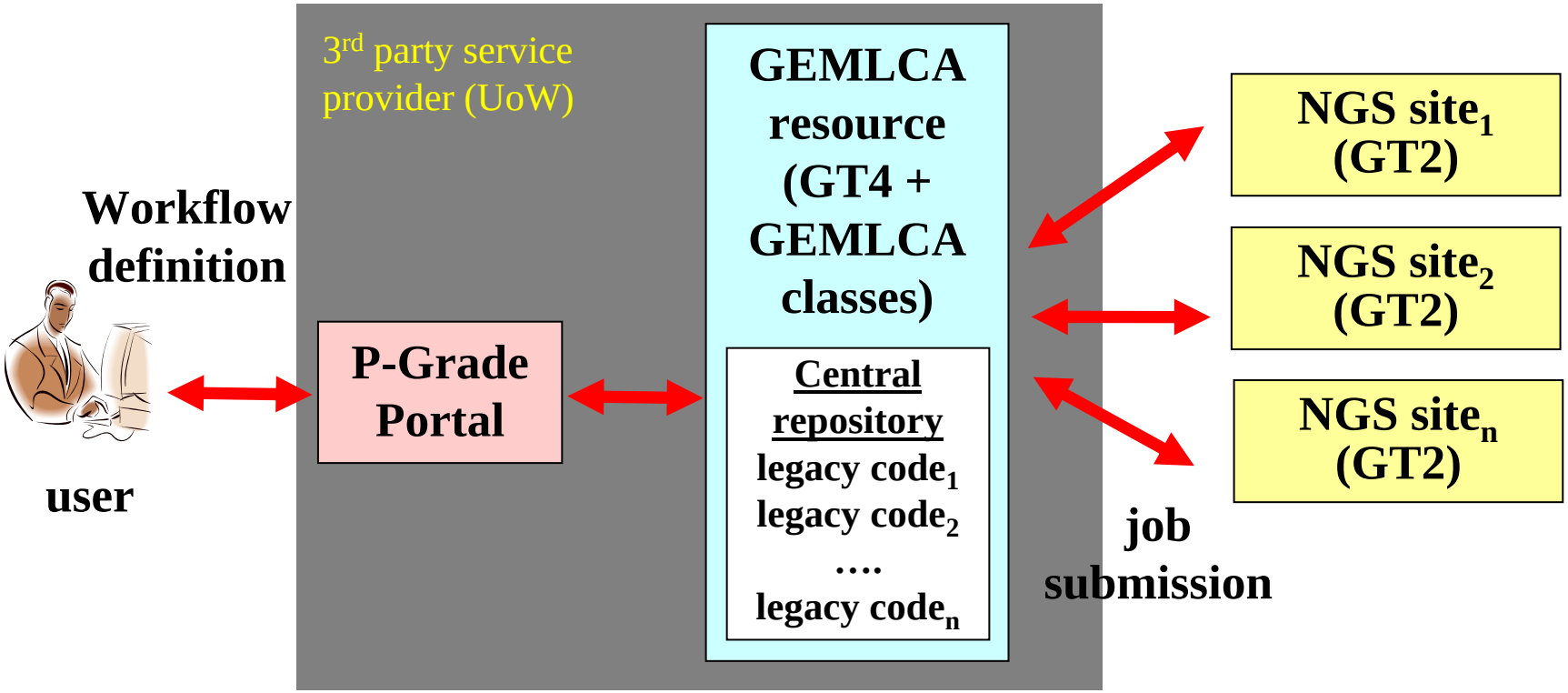
execution visualization

GEMLCA objectives

- **To deploy legacy code applications as Grid services without reengineering the original code and minimal user effort**

GEMLCA

- **To create Grid workflows where components can also be legacy code applications**
- **To make these functions available from a Grid Portal**

GEMLCA & P-GRADE Portal Integration

GEMLCA repository