http://www.grid-support.ac.uk

http://www.ngs.ac.uk

P-GRADE and GEMLCA

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

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

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

Enhancing useability

- NGS has deployed low-level tools: these are reliable and give a production service but a user interacts at a low level with resources.

- GOSC had no adequate alternatives.

- Need for higher abstractions & tools is evident

- 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

- Important to Grid Alliance: Brunel - Westminster

P-GRADE Portal and GEMLCA

Grid Execution
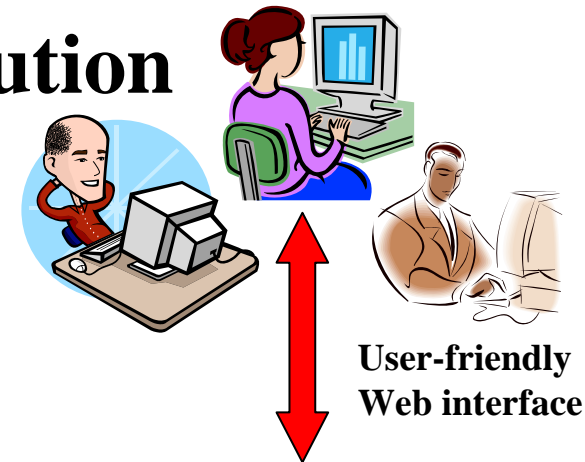**Management** for **Legacy**
Code **Applications**

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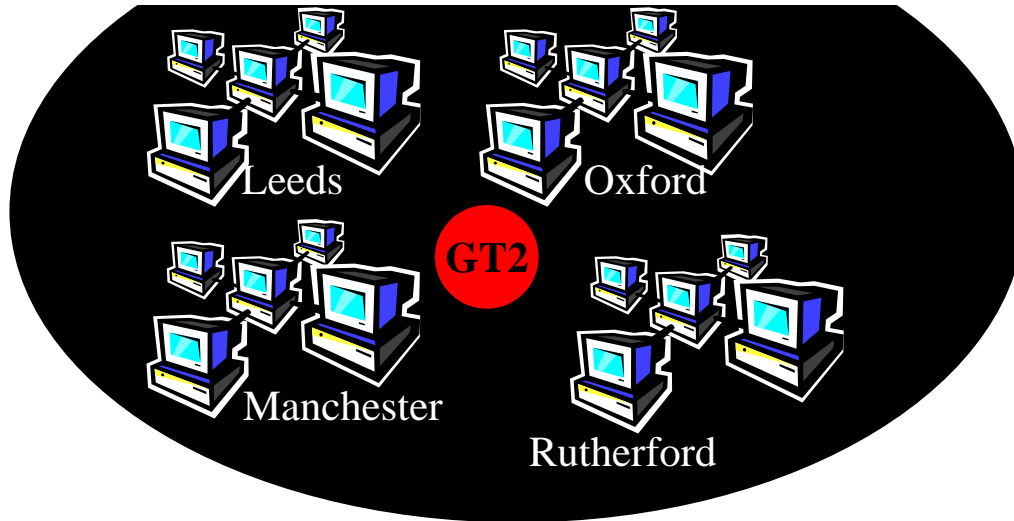Centre for Parallel Computing
University of Westminster
kisst@wmin.ac.uk

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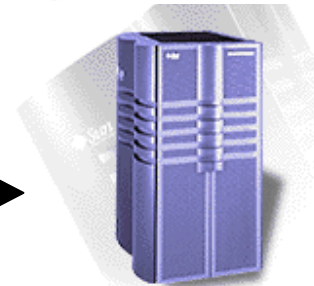SZTAKI Hungary
University of Westminster
kacsuk@sztaki.hu

The P-GRADE solution

User-friendly Web interface

NGS **National Grid Service**
core production computational and data grid

Leeds

Oxford

GT2

Manchester

Rutherford

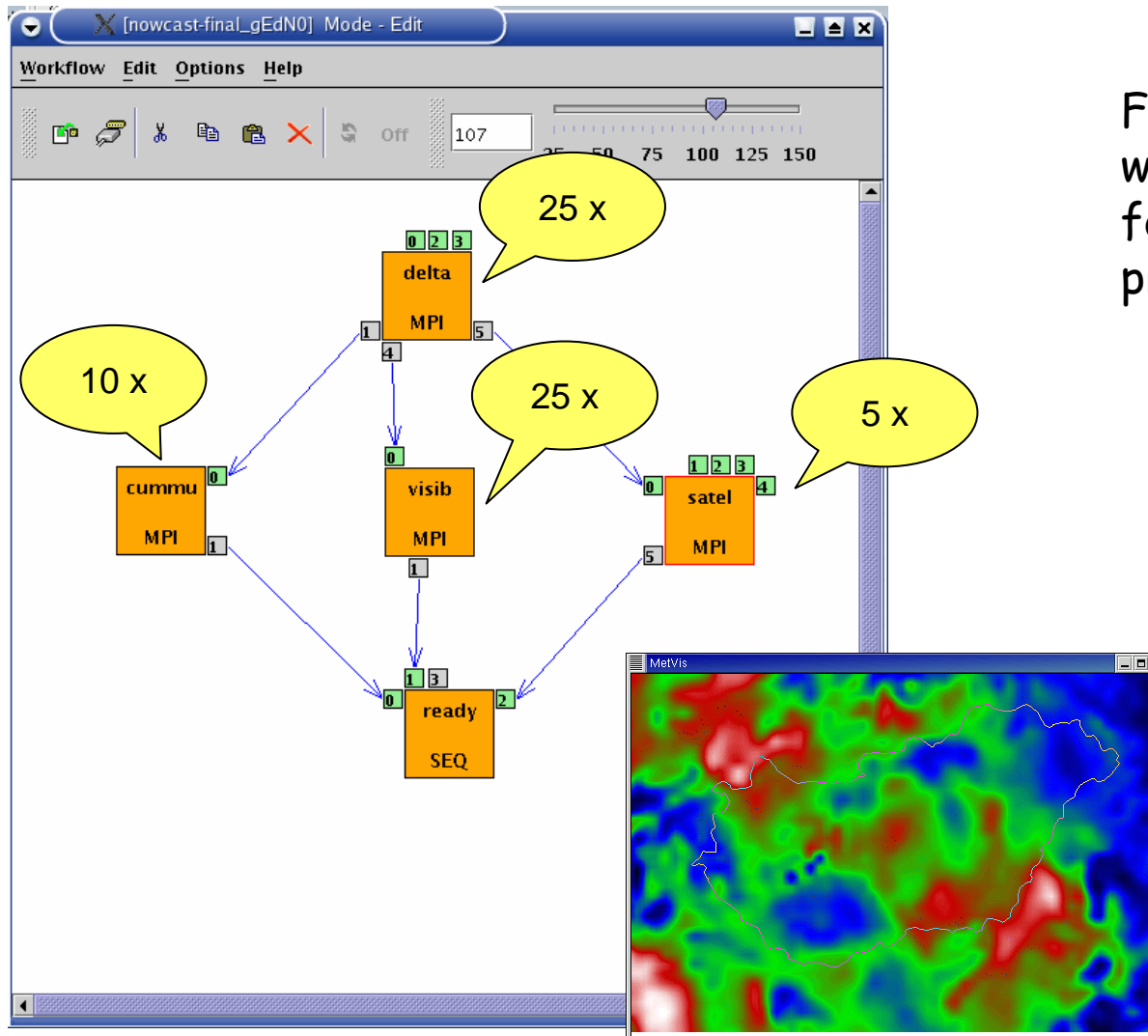P-GRADE portal

Portal server at UoW

GEMLCA

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
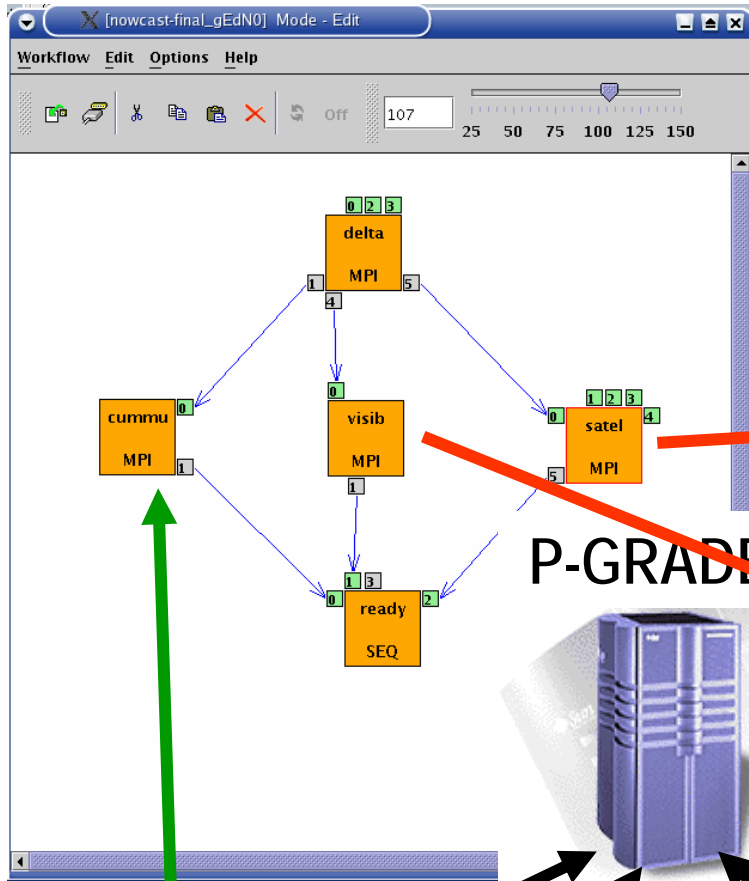 - Arcs represent file transfer between the jobs

- **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
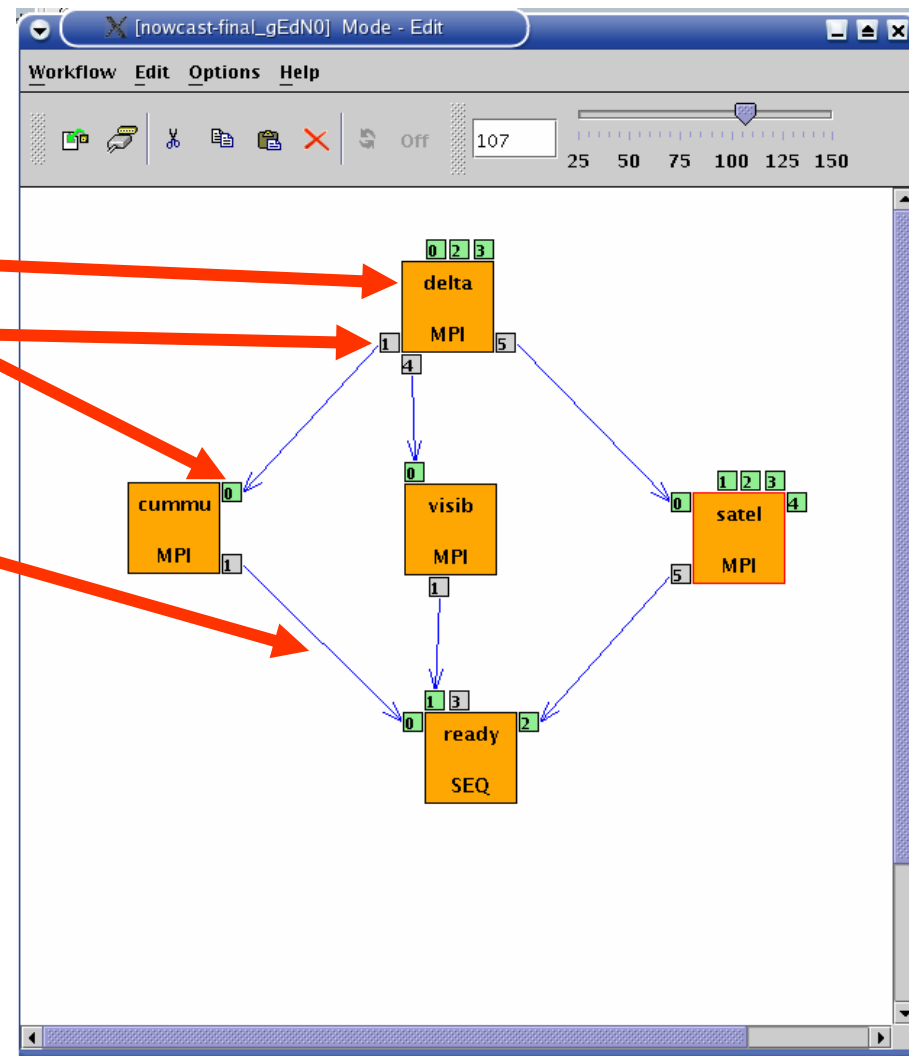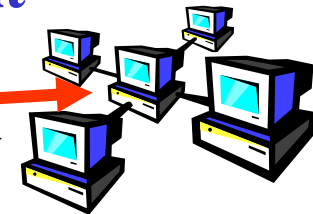
Multi-Grid P-GRADE Portal

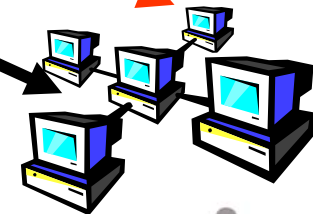**Different jobs of a workflow can be executed in different grids**

EGEE Grid e.g. VOCE

P-GRADE-Portal

The portal can be connected to multiple grids

UK NGS

London

Rome

Athens

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

3rd party service provider (UoW)

Workflow definition

user

P-Grade Portal

GEMLCA resource (GT4 + GEMLCA classes)

Central repository
legacy code$_1$
legacy code$_2$
....
legacy code$_n$

job submission

NGS site$_1$ (GT2)

NGS site$_2$ (GT2)

NGS site$_n$ (GT2)