



UNIVERSITY OF WESTMINSTER



P-GRADE Portal:

An easy to use graphical interface for Globus and EGEE Grids



P-GRADE



portal





Production grids

- Enabling Grids for E-Science (EGEE)
- Open Science Grid
- European Supercomputing Grid (DEISA)
- Southern-Eastern European Grid
- ...
- National Grids
 - UK (NGS)
 - Italy (INFN)
 - Germany (D-Grid)
 - Netherlands (DutchGrid)
 - Austria
 - Ireland
 - Hungary (HunGrid, ClusterGrid)
 - ...



National Grid Service
core production computational and data grid





Layered view of Grid systems

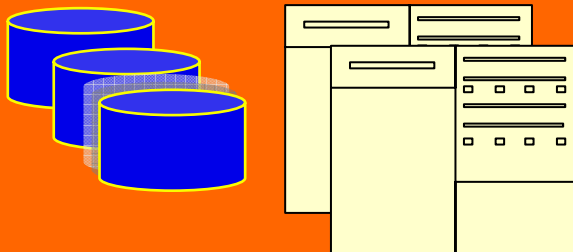


Applications

Application
toolkits, portals

Higher-level grid services:
brokering, data replica, ...

Basic Grid services:
security, job submission, info, ...



End-users:
**High performance &
data intensive computing**

← **Graphical tools:**
P-GRADE Portal

← **Command line grid tools**

← **Grid middleware:**
Globus, gLite, ...

← **Resources to be shared
(computers, storages,
applications)**



Motivation to the P-GRADE Portal

- **Fast evolution of Grid middleware technologies and tools:**
 - **GT2, OGSA, GT3 (OGSI), GT4 (WSRF), LCG-2, gLite, ...**
- **Many production Grids are now freely available for e-Scientists**
 - **EGEE** (LCG-2 → gLite), **UK NGS** (GT2),
US Open Science Grid (GT2 → GT4), **NorduGrid** (ARC), ...
- **The same set of services are available everywhere, but implemented in different ways**
 - Computation services, data services, security services, (brokers)

Let's provide a technology-neutral graphical interface for the most common Grid middleware services!



P-GRADE Portal in a nutshell

- **General purpose, workflow-oriented computational Grid portal.** Supports the development and execution of workflow-based Grid applications.
- **Based on standard portlet framework (Gridsphere)**
 - Easy to expand with new portlets (e.g. application-specific portlets)
 - Easy to tailor to community needs
- **Grid services** supported by the portal:

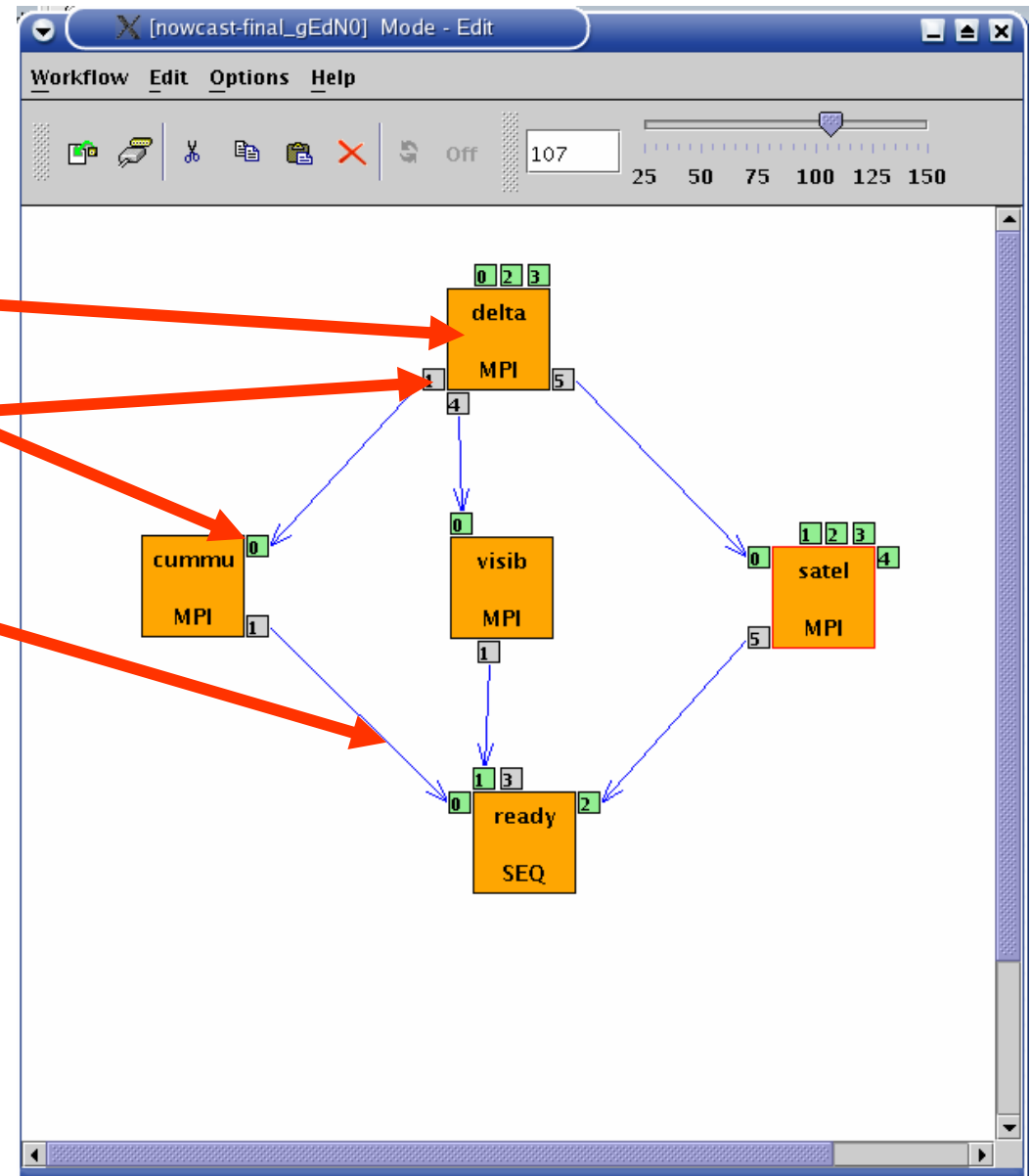
Service	EGEE grids	Globus grids
Job execution	Computing Element	GRAM
File storage	Storage Element	GridFTP server
Certificate management	MyProxy	
Information system	BDII	MDS-2
Brokering	Workload Management System	---
Job monitoring	Mercury	
Workflow & job visualization	PROVE	

The P-GRADE Portal hides middleware technologies and solves Grid interoperability problem at the workflow level



What is a P-GRADE Portal workflow?

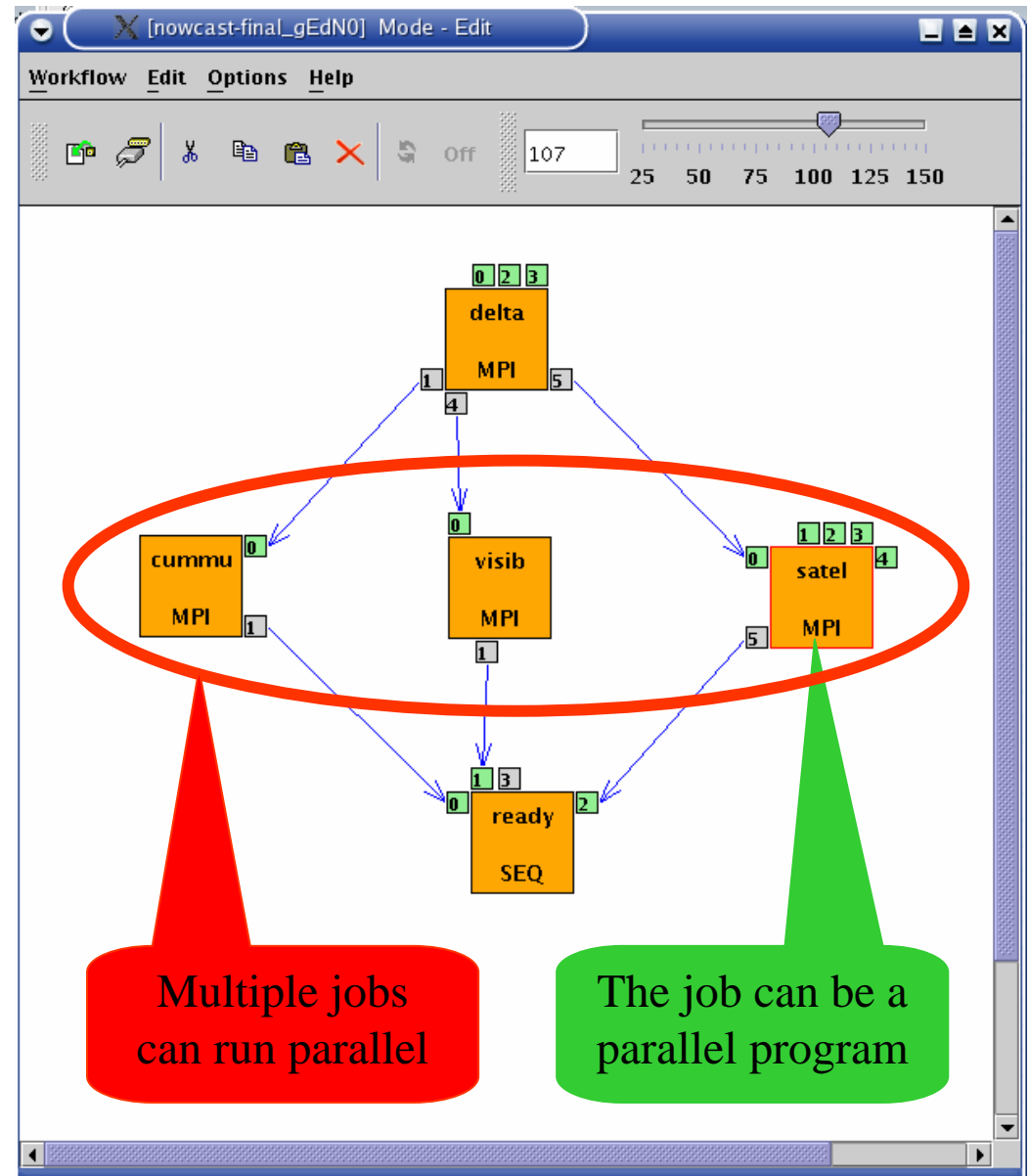
- **a directed acyclic graph where**
 - Nodes represent jobs (batch programs to be executed on a computing element)
 - Ports represent input/output files the jobs expect/produce
 - Arcs represent file transfer operations
- **semantics of the workflow:**
 - A job can be executed if all of its input files are available





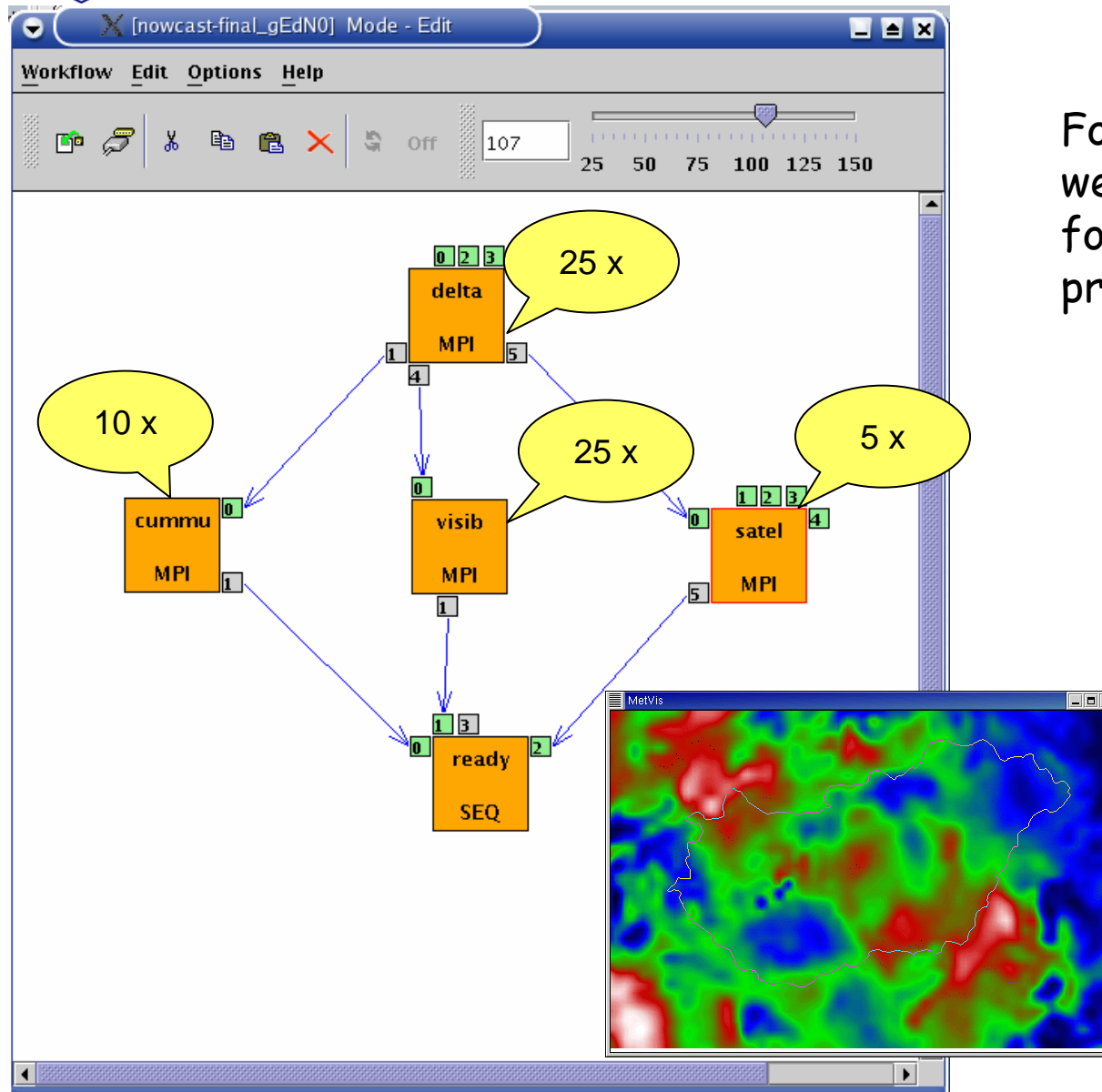
Two levels of parallelism by a workflow

- The workflow concept of the P-GRADE Portal enables the **efficient parallelization of complex problems**
- Semantics of the workflow enables two levels of parallelism:
 - **Parallel execution inside a workflow node**
 - **Parallel execution among workflow nodes**





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

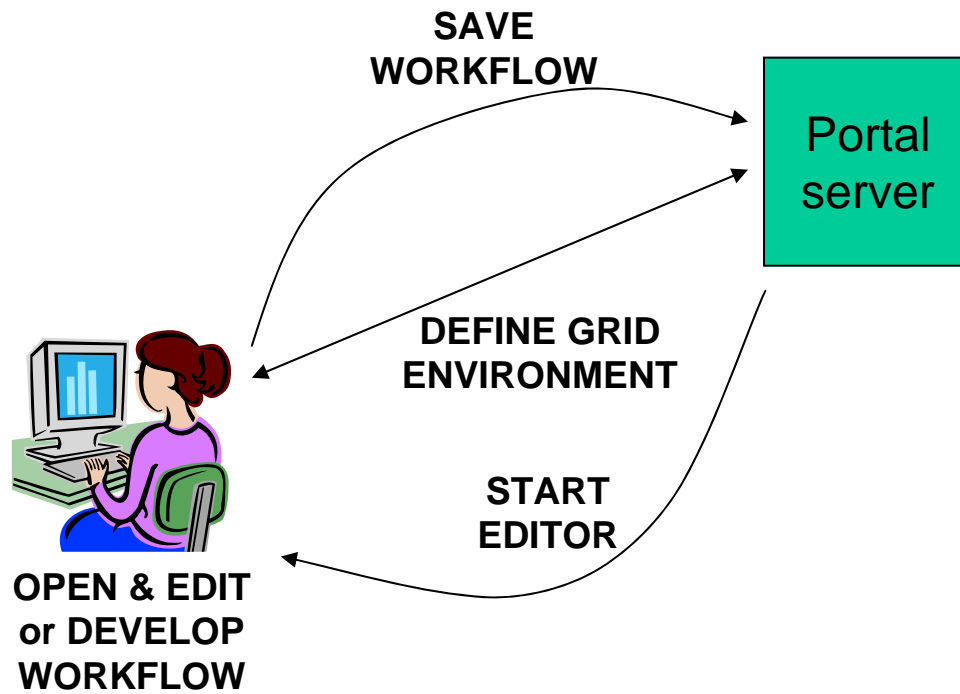
- Requirements:
- Execution time < 10 min
 - High resolution (1km)



The typical user scenario

Part 1 - development phase

Certificate servers

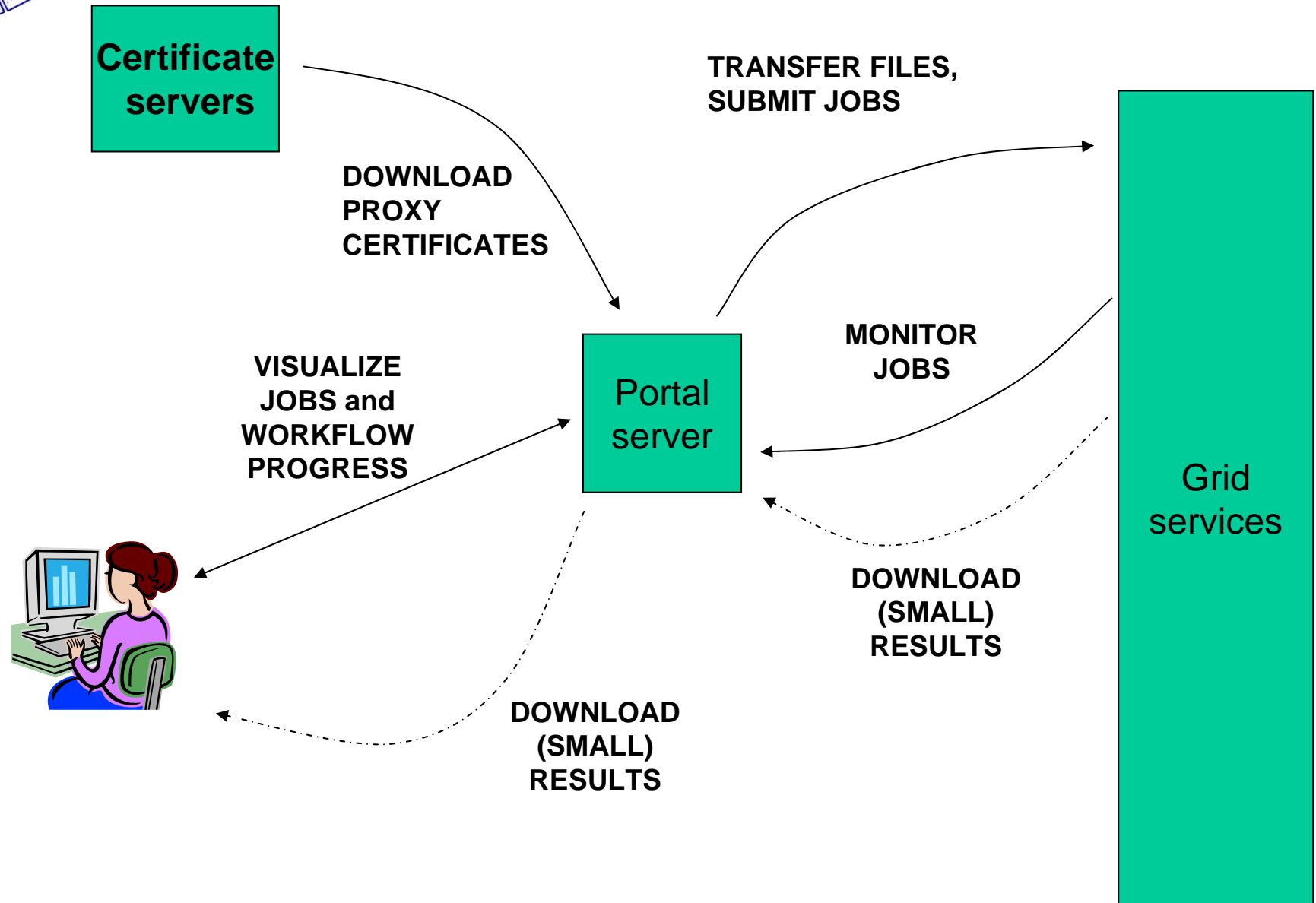


Grid services



The typical user scenario

Part 2 - execution phase





0. step: login

Portal can be configured to use **http** or **https**

GridSphere
Home

RELEASE 2.2

P-GRADE

MTA SZTAKI

English

portal

GridSphere

Home

Login

User Name

Password

Remember my login

Login

[Forget your password?](#)

powered by gridsphere

Internet



Developing workflows with the P-GRADE Portal

Main steps

- 1. Open the workflow editor**
- 2. Define workflow**
 - 1. Define graph structure**
 - 2. Define jobs and input/output data**
 - 3. Save workflow**



Opening the workflow editor

The editor is a Java Webstart application
download and installation is only a click!

Workflow Manager

Workflow Editor Refresh

Workflow	Status	Size	Quota (10 Mb)	[Output]	[View]	[Action]
WF1	finished	26 KB	0.26%	✓	Details	Submit Attach Delete
		26 KB				

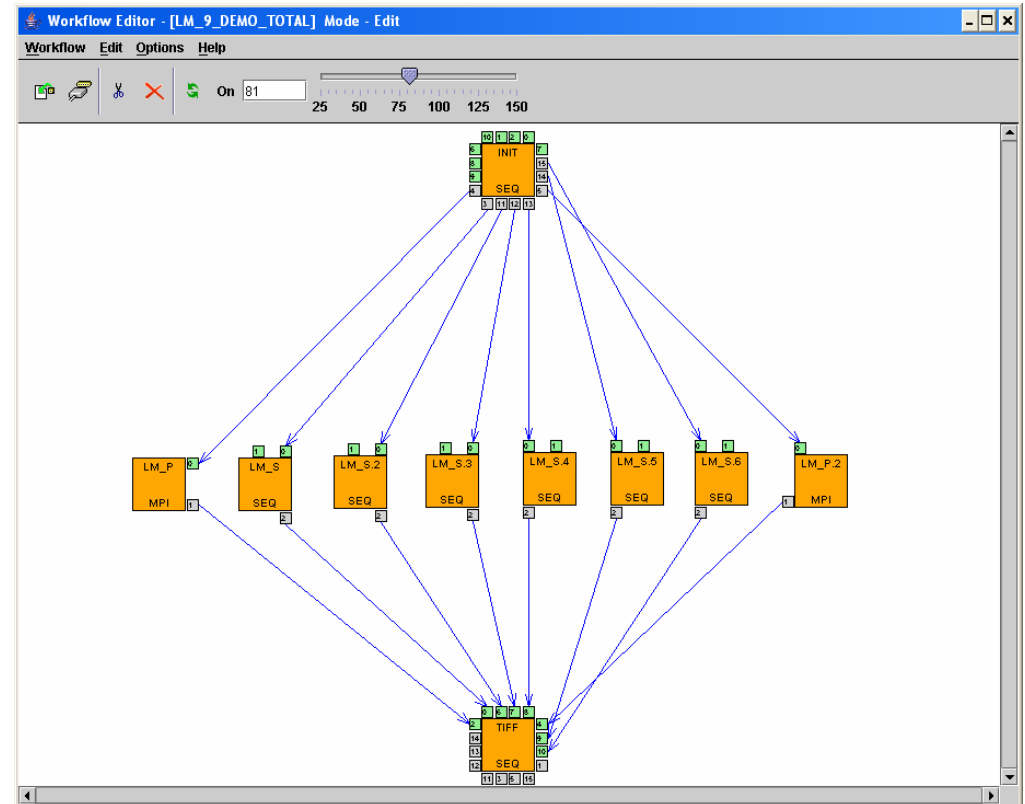
Message: Job list refreshed.



Workflow Editor

Define DAG of batch jobs:

- 1. Drag & drop components:**
jobs and ports
- 2. Connect ports by channels**
(no cycles, no loops)
- 3. Define job and port properties**





Job property window

Workflow Editor - [LM_9_DEMO_TOTAL] Mode - Edit

Workflow Edit Options Help

LM_P properties

Name: LM_P

Job Type: SEQ MPI PVM

Job Executable: LM_5.bin
File Browser
 Instrument

Process Number: 7

Attributes: -n -m

Grid: SEE-GRID

Monitor:

Resource: n40.hpcc.sztaki.hu:jobmanager-fork
ce01.grid.acad.bg:jobmanager-fork
grid-ce.ii.edu.mk:jobmanager-fork
grid1.irb.hr:jobmanager-fork
grid1.netmode.ece.ntua.gr:jobmanager-fork
n40.hpcc.sztaki.hu:jobmanager-fork
prof.salla6.inima.al:jobmanager-fork

Properties of a job:

- Binary executable
- (Type of executable)
- (Number of processors)
- Command line parameters
- The resource to be used for the execution:
 - Grid
 - Broker / resource



Support for manual resource selection: information system browser

The information system portlet can query EGEE and Globus information systems

GridSphere Portal - Microsoft Internet Explorer

Address: http://fn1.hpc.sztaki.hu:8080/gridsphere/gridsphere?cid=90&gs_mode=view&gs_state=normal&gs_action=doChangeGrid

portal

Welcome Workflow Certificates Settings **Information System** Help

MSDSMonitor LCGMonitor

Monitor

Select Grid: EGEE View

Select VO: All View

Grid: EGEE VO: All

Sites

Site Name	Computing Element				Storage Element				
	total	Free	Usage	Running	Waiting	Load	Total	Available	Usage
aegis01-phy	32	10	69%	12	0	0%	106.971 GB	79.263 GB	26%
alberta-lcg2	50	0	100%	0	0	0%	1.221 TB	308.592 GB	75%
beijing-cnic-lcg2-ia64	32	32	0%	0	0	0%	62.87 GB	56.992 GB	9%
beijing-lcg2	8	8	0%	0	0	0%	2 KB	1 KB	50%
belgrid-ucl	12	12	0%	0	0	0%	N/A	N/A	-
bg-inrne	20	20	0%	0	0	0%	37.355 GB	37.299 GB	0%
bg01-ipp	19	1	95%	13	5	28%	N/A	N/A	-
bg02-im	4	4	0%	0	0	0%	32.944 GB	20.169 GB	39%
bg04-acad	11	11	0%	0	0	0%	32.844 GB	27.149 GB	17%
bham-lcg2	132	107	19%	0	0	0%	1.639 TB	1.518 TB	7%
bifi	2	2	0%	0	0	0%	103.52 GB	98.274 GB	5%
bitlabgs	101	99	2%	0	4	100%	417.777 GB	407.123 GB	3%
bristol-pp-lcg	2	2	0%	0	0	0%	174.885 GB	164.261 GB	6%
budapest	95	24	75%	70	0	0%	1.36 TB	1.305 TB	4%



Support for manual resource selection: Settings portlet

- **Here you can define those computing elements that your jobs can **access directly** (*by skipping the broker*)**
- **Two levels:**
 - 1. Define grids** → portal administrator
 - 1. Name** (*e.g. gridats*)
 - 2. Information system** (*e.g. egrid-2.egrid.it*)
 - 2. Define Computing Elements for each grid:**
 - 1. Default list can be set by the portal administrator**
 - 2. Users can customize the list**



Support for manual resource selection: Settings portlet

List of available grids

The screenshot shows a web browser window displaying the 'settings' portlet. The portlet has tabs for 'Certificates', 'Settings', 'Information System', and 'Help'. The 'Settings' tab is active, showing a table of grid configurations. Below the table, there are input fields for 'Default visualization size' (Width: 600, Height: 350) and an 'OK' button. The browser address bar shows 'http://www.lpds.sztaki.hu/pgportal/'.

Name	Information System				[Actions]
	Type	Host	Port	BaseDn	
GRIDLAB-GRID	MDS2	mds.gridlab.org	2135	mds-vo-name=gridlab,o=grid	Resources
HUNGRID	LCG2	grid152.kfki.hu	2170	mds-vo-name=local,o=grid	Resources
SEE-GRID	LCG2	bdii.phy.bg.ac.yu	2170	mds-vo-name=local,o=grid	Resources
SZTAKI-GRID	MDS2	n0.hpcc.sztaki.hu	2135	mds-vo-name=SzuperGRID,o=Grid	Resources
UK-NGS	LCG2	ngsinfo.grid-support.ac.uk	2135	mds-vo-name=ngsinfo,o=grid	Resources
hungrid_LCG_2_BROKER			N/A		Resources

Default visualization size
Width:
Height:
 (Accept values between 150-1000.)



Support for manual resource selection:

Support for manual resource selection:
Computing resources of such a grid

The screenshot shows the GridSphere Portal interface in Microsoft Internet Explorer. The page title is "GridSphere Portal - Microsoft Internet Explorer". The address bar shows the URL: http://hgportal.hpcc.sztaki.hu:9080/gridsphere/gridsphere?cid=77&gs_mode=view&gs_state=normal&gs_...

The main content area is titled "settings" and displays "Resources for 'SZTAKI-GRID' GRID". It contains a table with the following data:

URL	Job manager	[Actions]
n0.hpcc.sztaki.hu	jobmanager-condor	Delete
n0.hpcc.sztaki.hu	jobmanager-fork	Delete
n0.hpcc.sztaki.hu	jobmanager-grd	Delete
n0.hpcc.sztaki.hu	jobmanager-sge	Delete
n0.ikpc.iit.bme.hu	jobmanager-fork	Delete
n20.hpcc.sztaki.hu	jobmanager-fork	Delete
n23.hpcc.sztaki.hu	jobmanager-fork	Delete
parsifal.wmin.ac.uk	jobmanager-fork	Delete

Below the table, there are input fields for "URL:" and "Job manager:" with an "Add" button. At the bottom, there are buttons for "Load default", "Load resources from MDS2", and "Back".

The "Default visualization size" section shows input fields for "Width: 600" and "Height: 350", with an "OK" button and a note: "(Accept values between 150-1000.)".

A message at the bottom states: "Message: Default configuration successfully loaded."

The date "August 24, 2005" is displayed at the bottom of the page.

A red arrow points from the "Delete" button in the table to a "Resources" button in a sidebar on the right.



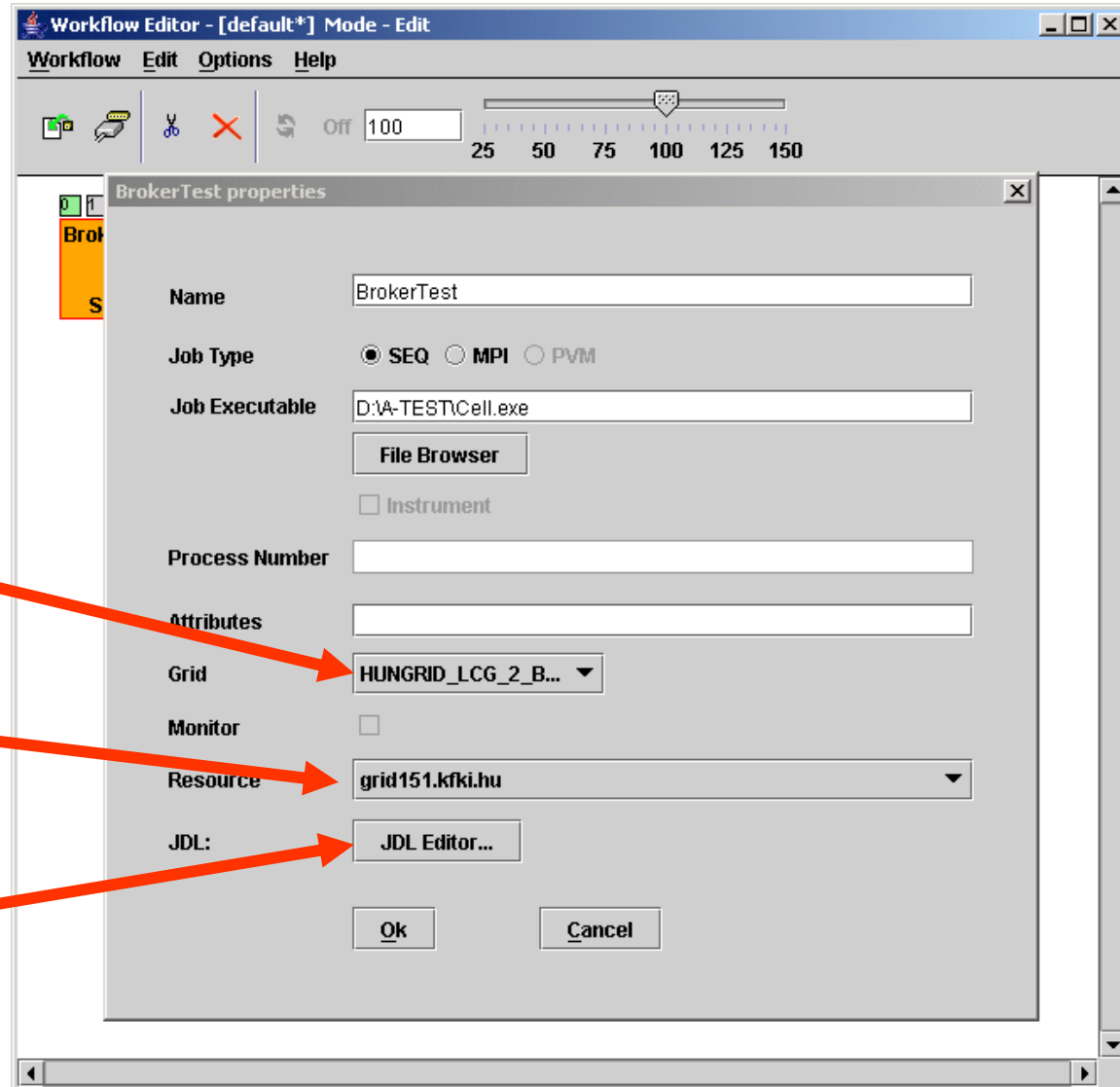
Support for broker-based resource selection

(on EGEE Grids)

- 1. Select a broker Grid for the job**
2. (Specify extra ranks & requirements for the job in Job Description Language)
- 3. The broker will find the best resource for your job!**



Support for broker-based resource selection



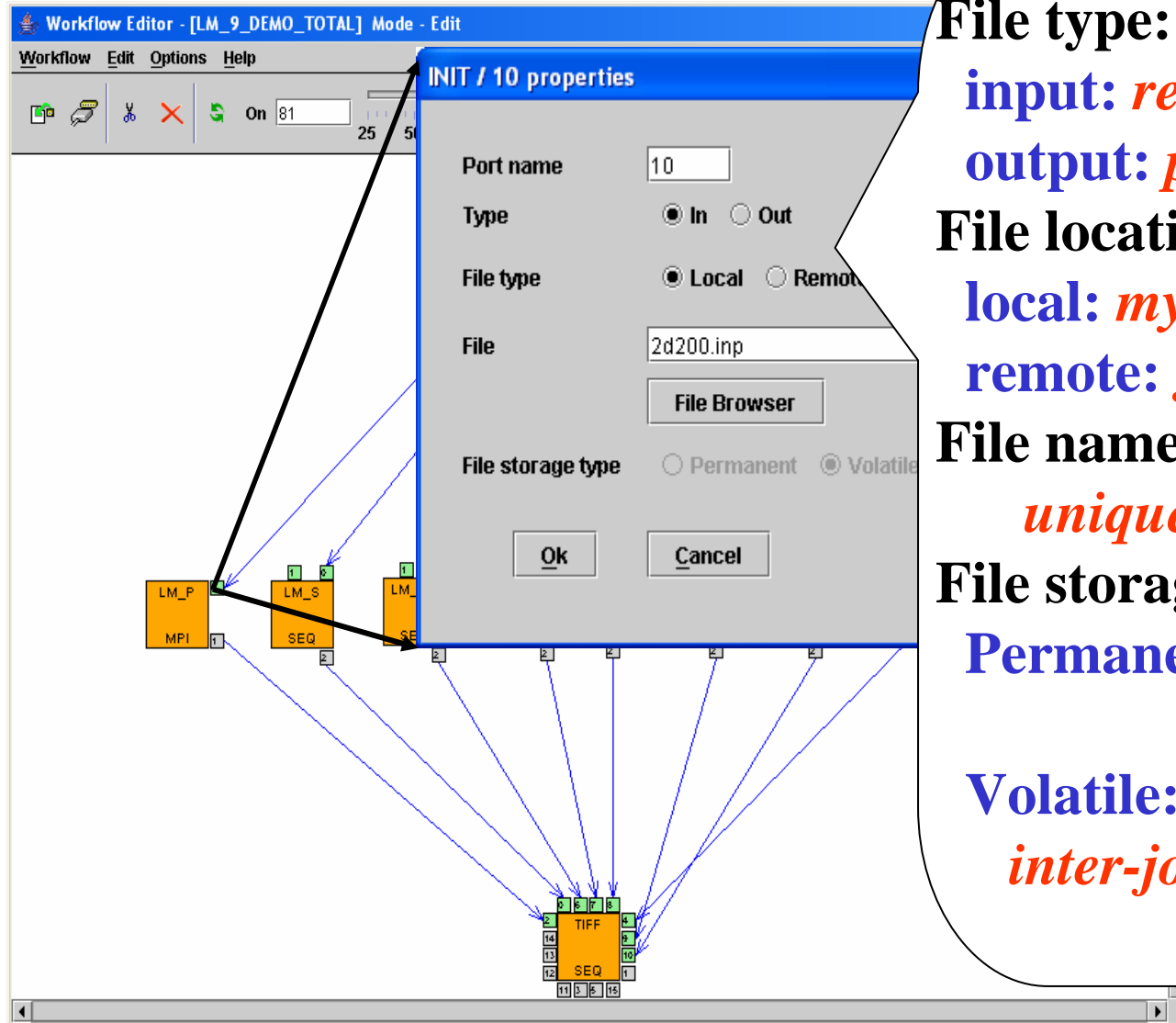
Select a Grid with broker!
(*_BROKER)

Ignore the resource field!

If default is not sufficient
define ranks & requirements
using the built-in JDL editor!



Defining input/output data for jobs



File type:

input: *required by the job*

output: *produced by the job*

File location:

local: *my desktop*

remote: *grid storage resource*

File name:

unique name of the file

File storage type:

Permanent: *final result of the WF*

Volatile: *only used for inter-job data transfer*



Possible values for file location

Input file

Output file

Local file

- **Client side location**

`c:\experiments\11-04.dat`

- **Client side location**

`result.dat`

- **Grid Unique Identifier (GUID)**

(In any EGEE Grid)

`guid:1fd75fdf-dccc-4603-998b-e17facb0d034`

- **LRS logical file name**

(In RMC-enabled EGEE Grids)

`lfn:/sipos_11_04.dat`

- **LFC logical file name**

(In LFC-enabled EGEE Grids)

`lfn:/grid/egrid/sipos/11-04.dat`

- **GSIFTP reference**

(In Globus Grids)

`gsiftp://lpds.sztaki.hu/sipos/11-04.dat`

- **LRS logical file name**

(In RMC-enabled EGEE Grids)

`lfn:/sipos_11_04_-_result.dat`

- **LFC logical file name**

(In LFC-enabled EGEE Grids)

`lfn:/grid/egrid/sipos/11-04_-_result.dat`

- **GSIFTP reference**

(In Globus Grids)

`gsiftp://lpds.sztaki.hu/sipos/11-04_-_result.dat`

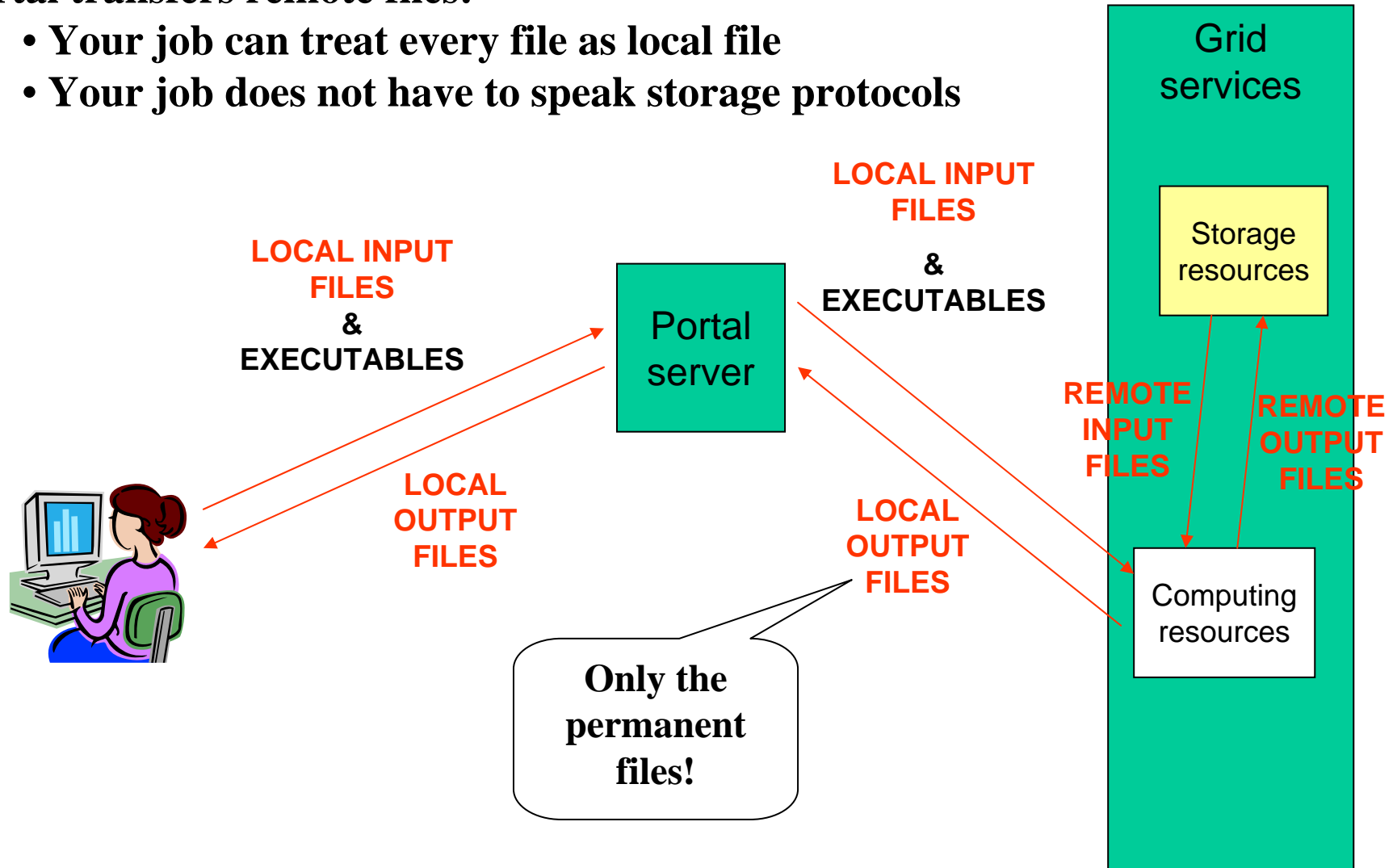
Remote file



Local vs. remote files

Portal transfers remote files:

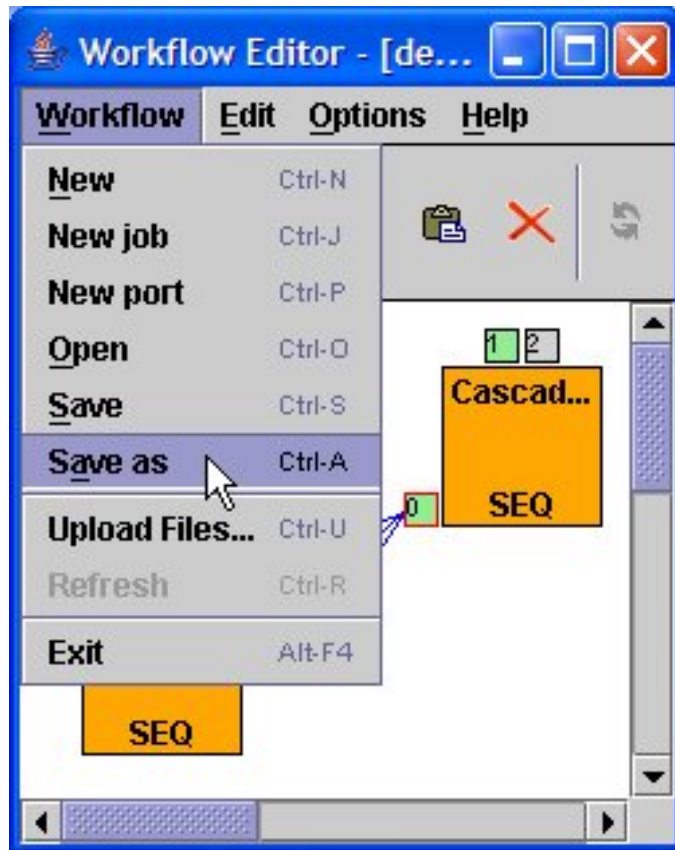
- Your job can treat every file as local file
- Your job does not have to speak storage protocols





Workflow Editor

Saving the workflow



Workflow is defined!

Let's execute it!



Executing workflows with the P-GRADE Portal

Main steps

- 1. Download proxies**
- 2. Submit workflow**
- 3. Observe workflow progress**
- 4. If some error occurs correct the graph**
- 5. Download result**



The typical user scenario

Execution phase – step 1:

Certificate servers

DOWNLOAD
PROXY
CERTIFICATES

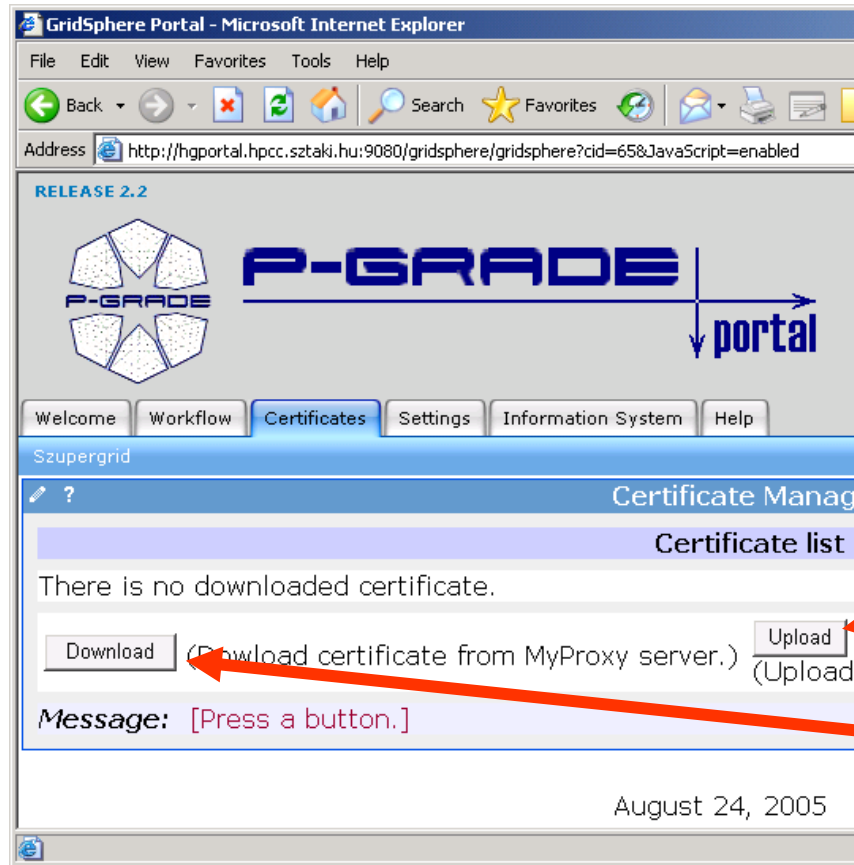
Portal
server

Grid
services





Certificate manager portlet



- To access GSI-based Grids the portal server application needs proxy certificates

- “Certificates” portlet:

- to upload X.509 certificates into MyProxy servers

- to download short-term proxy credentials into the portal server application



Certificate manager portlet

Downloading a proxy

1. MyProxy server access details:

- Hostname
- Port number
- User name (from upload)
- Password (from upload)

2. Proxy parameters:

- Lifetime
- Comment

The screenshot shows the GridSphere Portal interface in Microsoft Internet Explorer. The browser address bar displays the URL: `http://hgportal.hpcc.sztaki.hu:9080/gridsphere/gridsphere?cid=70&gs_mode=view&gs_state=normal&gs...`. The page header includes the P-Grade logo and the text "RELEASE 2.2". Below the header is a navigation menu with tabs: "Welcome", "Workflow", "Certificates", "Settings", "Information System", and "Help". The "Certificates" tab is active, and the "Certificate Manager" portlet is displayed. The portlet title is "Certificate Manager" and the sub-header is "Download from MyProxy server". The form contains the following fields:

hostname	<input type="text" value="cvs.lpds.sztaki.hu"/> *	port	<input type="text" value="7512"/> *
login	<input type="text" value="C123456"/> *	password	<input type="password" value="....."/> *
lifetime (hours)	<input type="text" value="100"/> *	description	<input type="text"/>

*: Cannot be left empty.

Buttons: Download, Cancel

Message: Fill in the fields for download!

August 24, 2005



Certificate manager portlet

Associating the proxy with a grid

GridSphere Portal - Microsoft Internet Explorer

Address http://hgportal.hpc.sztaki.hu:9080/gridsphere/gridsphere?cid=70&gs_mode=view&gs_state=normal&gs_action=doGoMapProxy

RELEASE 2.2

P-Grade portal

Welcome | Workflow | **Certificates** | Settings | Information System | Help

Szupergrid

Certificate Manager

Setting certificate for GRID

Certificate details

Downloaded from: cvs.lpds.sztaki.hu
Issued by: C=HU,O=KFKI RMKI CA,OU=SZTAKI,CN=Hermann Gabor,CN=proxy
Subject: C=HU,O=KFKI RMKI CA,OU=SZTAKI,CN=Hermann Gabor,CN=proxy,CN=...
Timeleft: 99:56:12
Proxy type: full legacy globus proxy
Strength [bits]: 512
Description:

Select GRID

Select from the list:

Message: Map proxy for an

August 24, 2005

This operation displays the **details of the certificate** and the **list of available Grids**



Certificate Manager

browsing proxies

Issuer	Set for Grids	Time left	[Actions]
DC=ORG,DC=SEE-GRID,O=People,O=SZTAKI,CN=Jozsef Patvarczki,CN=proxy	SEE-GRID	99:50:24	Details Set for Grid Delete
C=HU,O=KFKI RMKI CA,OU=SZTAKI,CN=Patvarczki Jozsef,CN=proxy	HUNGRID	99:57:25	Details Set for Grid Delete

Refresh

Download (Download certificate from MyProxy server.) Upload (Upload authentication data to MyProxy server.)

Message: Certificate successfully set for HUNGRID.

SEE-GRID resources

HUNGRID resources

Multiple proxies can be available on the portal server at the same time!



The typical user scenario

Execution phase - step 2:

Certificate servers

TRANSFER FILES,
SUBMIT JOBS

Portal server

Grid services





Workflow Management

(workflow portlet)

- The portlet presents the status, size and output of the available workflow in the “**Workflow**” list
- It has a Quota manager to control the users’ storage space on the server
- The portlet also contains the “**Abort**”, “**Attach**”, “**Details**”, “**Delete**” and “**Delete all**” buttons to handle execution of workflows
- The “**Attach**” button opens the workflow in the Workflow Editor
- The “**Details**” button gives an overview about the jobs of the workflow

Welcome Workflow Certificates Settings Information System Help

Workflow Manager Storage Upload

Workflow Manager

Workflow Editor Refresh

Workflow	Status	Size	Quota (10 Mb)	[Output]	[View]	[Action]
WF1	init	26 KB	0.26%	N/A	Details	Submit Attach Delete
		26 KB				

Delete all

Message: Job list refreshed.

Internet



Workflow Execution

(observation by the workflow portlet)

The screenshot shows a web browser window titled "PGrade Portal - Microsoft Internet Explorer". The address bar shows the URL: `http://hgportal.hpcc.sztaki.hu:7080/gridsphere/gridsphere?action=doShowWorkflowDetails&cid=2`. The page features a navigation menu with "Workflow", "Certificates", "Settings", "Information System", and "Help". Below the menu is a "Workflow Manager" section with "Refresh" and "Back" buttons. A table titled "Job list" displays the following data:

Workflow	Job	Gridname	Hostname	Status	[Logs]	[Output]	[Visualization]
LM_9_DEMO_TOTAL				submitted	-	N/A	<input type="button" value="Visualize"/> <input type="button" value="All"/> <input type="button" value="Abor"/>
	INIT	SEE-GRID	ce01.grid.acad.bg	init	-	-	-
	LM_P	SEE-GRID	n40.hpcc.sztaki.hu	init	-	-	-
	LM_P.2	SEE-GRID	n40.hpcc.sztaki.hu	init	-	-	-
	LM_S	SEE-GRID	grid-ce.ii.edu.mk	init	-	-	-
	LM_S.2	SEE-GRID	grid1.irb.hr	init	-	-	-
	LM_S.3	SEE-GRID	grid1.netmode.ece.ntua.gr	init	-	-	-
	LM_S.4	SEE-GRID	grid1.irb.hr	init	-	-	-
	LM_S.5	SEE-GRID	testbed001.grid.idi.ro	init	-	-	-
	LM_S.6	HUNGRID	grid109.kfki.hu	init	-	-	-
	TIFF	HUNGRID	grid109.kfki.hu	init	-	-	-

A message at the bottom of the table reads: "Message: Workflow details successfully displayed."

White/Red/Green color means the job is initial/running/finished state



Workflow Execution

(observation by the workflow portlet)

The screenshot shows the P-Grade Portal interface in Microsoft Internet Explorer. The main content area is titled "Workflow Manager" and contains a "Job list" table. The table has columns for Workflow, Job, Gridname, Hostname, Status, Logs, Output, and Visualization. The "Status" column uses color coding: white for "init", red for "running", and green for "finished".

Workflow	Job	Gridname	Hostname	Status	[Logs]	[Output]	[Visualization]
LM_9_DEMO_TOTAL				running	-	N/A	<input type="button" value="Visualize"/> <input type="button" value="All"/> <input type="button" value="Abort"/>
	INIT	SEE-GRID	ce01.grid.acad.bg	running	-		-
	LM_P	SEE-GRID	n40.hpcc.sztaki.hu	init	-		-
	LM_P.2	SEE-GRID	n40.hpcc.sztaki.hu	init	-		-
	LM_S	SEE-GRID	grid-ce.ii.edu.mk	init	-		-
	LM_S.2	SEE-GRID	grid1.irb.hr	init	-		-
	LM_S.3	SEE-GRID	grid1.netmode.ece.ntua.gr	init	-		-
	LM_S.4	SEE-GRID	grid1.irb.hr	init	-		-
	LM_S.5	SEE-GRID	testbed001.grid.icl.ro	init	-		-
	LM_S.6	HUNGRID	grid109.kfki.hu	init	-		-
	TIFF	HUNGRID	grid109.kfki.hu	init	-		-

Message: Job list refreshed.

White/Red/Green color means the job is initial/running/finished state



Workflow Execution

(observation by the workflow portlet)

The screenshot shows a web browser window titled "PGrade Portal - Microsoft Internet Explorer". The address bar shows the URL: <http://hgportal.hpcc.sztaki.hu:7080/gridsphere/gridsphere?action=doGotoPage&cid=2>. The page content includes a navigation menu with "Workflow", "Certificates", "Settings", "Information System", and "Help". Below this is a "Workflow Manager" section with "Refresh" and "Back" buttons. A "Job list" table is displayed with the following data:

Workflow	Job	Gridname	Hostname	Status	[Logs]	[Output]	[Visualization]
LM_9_DEMO_TOTAL				running	-	N/A	<input type="button" value="Visualize"/> <input type="button" value="All"/> <input type="button" value="Abort"/>
	INIT	SEE-GRID	ce01.grid.acad.bg	finished	- -		-
	LM_P	SEE-GRID	n40.hpcc.sztaki.hu	init	- -		-
	LM_P.2	SEE-GRID	n40.hpcc.sztaki.hu	init	- -		-
	LM_S	SEE-GRID	grid-ce.ii.edu.mk	running	- -		-
	LM_S.2	SEE-GRID	grid1.irb.hr	finished	<input type="button" value="Out"/>	-	-
	LM_S.3	SEE-GRID	grid1.netmode.ece.ntua.gr	running	<input type="button" value="Out"/>	-	-
	LM_S.4	SEE-GRID	grid1.irb.hr	finished	<input type="button" value="Out"/>	-	-
	LM_S.5	SEE-GRID	testbed001.grid.ici.ro	running	<input type="button" value="Out"/>	-	-
	LM_S.6	HUNGRID	chemgrid3.chemres.hu	finished	<input type="button" value="Out"/>	-	-
	TIFF	HUNGRID	grid109.kfki.hu	init	- -		-

Message: Job list refreshed.

White/Red/Green color means the job is initial/running/finished state



Workflow Execution

(observation by the workflow portlet)

PGrade Portal - Microsoft Internet Explorer

http://hgportal.hpcc.sztaki.hu:7080/gridsphere/gridsphere?action=doGotoPage&cid=2

Workflow Manager

Refresh Back

Workflow	Job	Gridname	Hostname	Status	[Logs]	[Output]	[Visualization]	
LM_9_DEMO_TOTAL				running	-	N/A	Visualize All Abort	
	INIT	SEE-GRID	ce01.grid.acad.bg	finished	-	-	-	
	LM_P	SEE-GRID	n40.hpcc.sztaki.hu	running	Out	-	Visualize	
	LM_P.2	SEE-GRID	n40.hpcc.sztaki.hu	running	Out	-	Visualize	
	LM_S	SEE-GRID	grid-ce.ii.edu.mk	finished	Out	-	-	
	LM_S.2	SEE-GRID	grid1.irb.hr	finished	Out	-	-	
	LM_S.3	SEE-GRID	grid1.netmode.ece.ntua.gr	finished	Out	-	-	
	LM_S.4	SEE-GRID	grid1.irb.hr	finished	Out	-	-	
	LM_S.5	SEE-GRID	testbed001.grid.ici.ro	finished	Out	-	-	
	LM_S.6	HUNGRID	chemgrid3.chemres.hu	finished	Out	-	-	
	TIFF	HUNGRID	grid109.kfki.hu	init	-	-	-	

Message: Job list refreshed.

White/Red/Green color means the job is initial/running/finished state



Workflow Execution

(observation by the workflow portlet)

PGrade Portal - Microsoft Internet Explorer

http://hgportal.hpcc.sztaki.hu:7080/gridsphere/gridsphere?action=doGotoPage&cid=2

Workflow Certificates Settings Information System Help

Workflow Manager

Refresh Back

Workflow	Job	Gridname	Hostname	Status	Job list		
					[Logs]	[Output]	[Visualization]
LM_9_DEMO_TOTAL				finished	Err	Being zipped..	Visualize All S
	INIT	SEE-GRID	ce01.grid.acad.bg	finished	-	-	-
	LM_P	SEE-GRID	n40.hpcc.sztaki.hu	finished	Out	-	Visualize
	LM_P.2	SEE-GRID	n40.hpcc.sztaki.hu	finished	Out	-	Visualize
	LM_S	SEE-GRID	grid-ce.il.edu.mk	finished	Out	-	-
	LM_S.2	SEE-GRID	grid1.irb.hr	finished	Out	-	-
	LM_S.3	SEE-GRID	grid1.netmode.ece.ntua.gr	finished	Out	-	-
	LM_S.4	SEE-GRID	grid1.irb.hr	finished	Out	-	-
	LM_S.5	SEE-GRID	testbed001.grid.ici.ro	finished	Out	-	-
	LM_S.6	HUNGRID	chemgrid3.chemres.hu	finished	Out	-	-
	TIFF	HUNGRID	grid109.kfki.hu	finished	Out	-	-

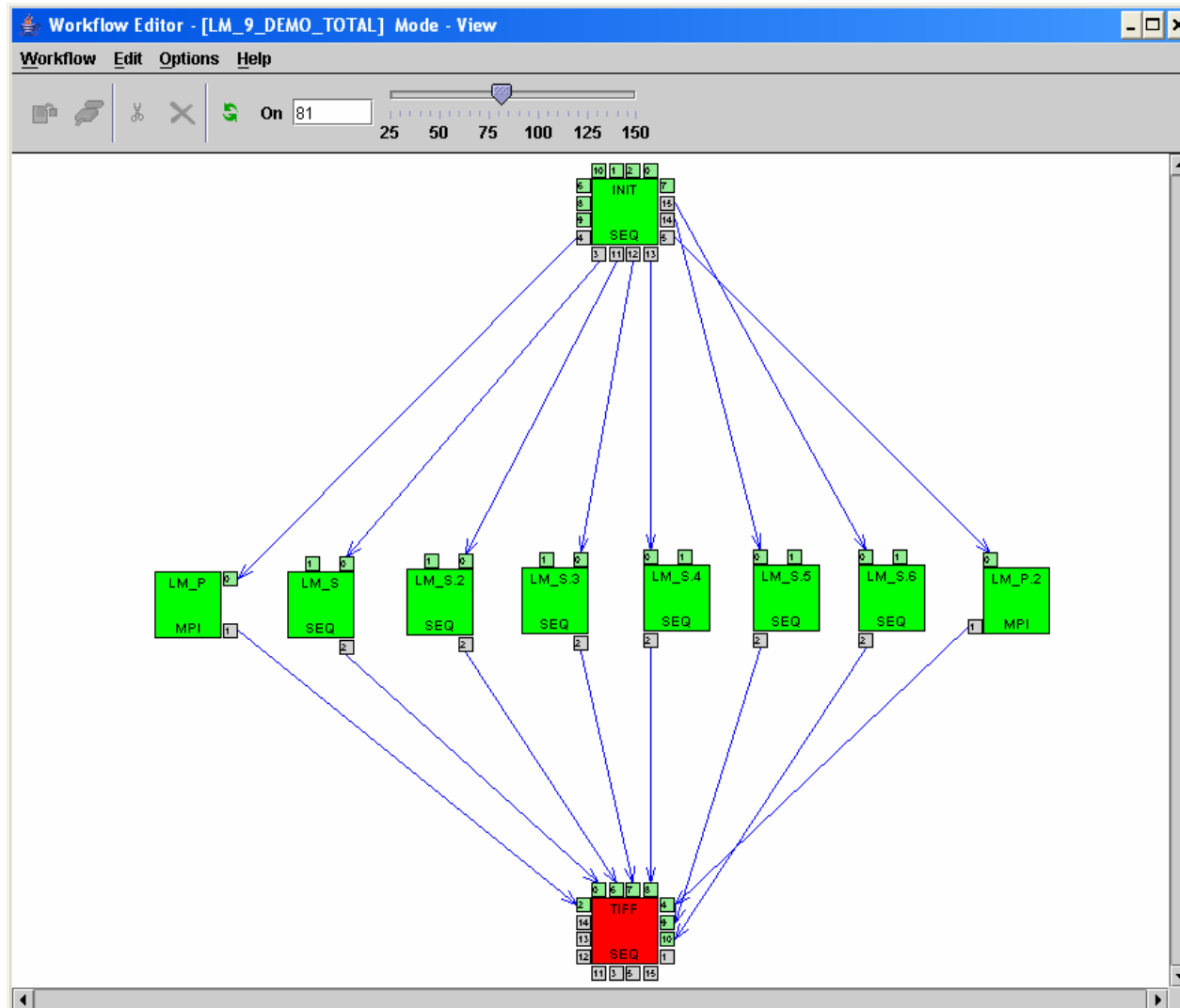
Message: Job list refreshed.

White/Red/Green color means the job is initialised/running/finished



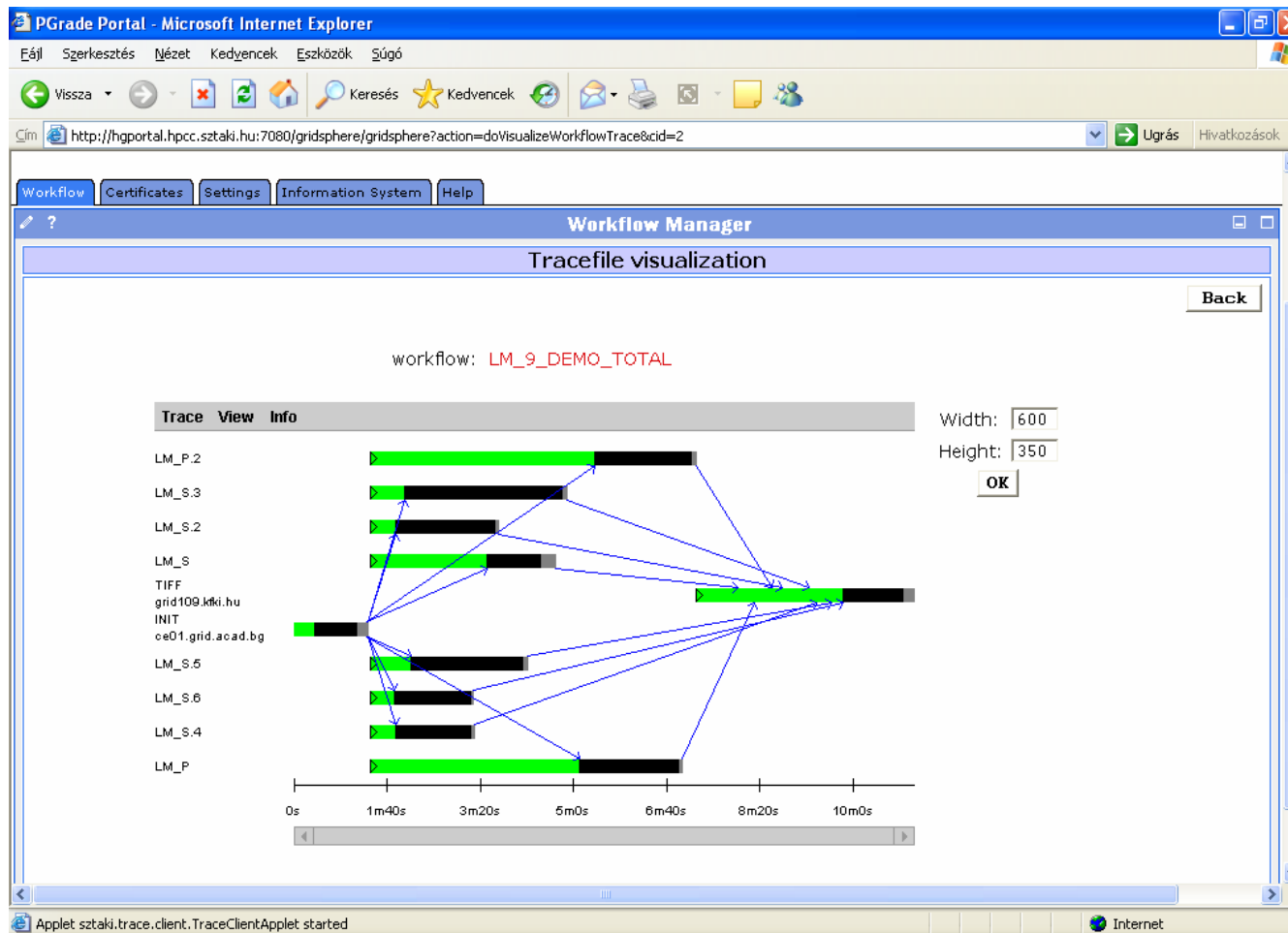
Workflow Execution

(observation by the workflow editor)





On-line application monitoring: workflow and job level

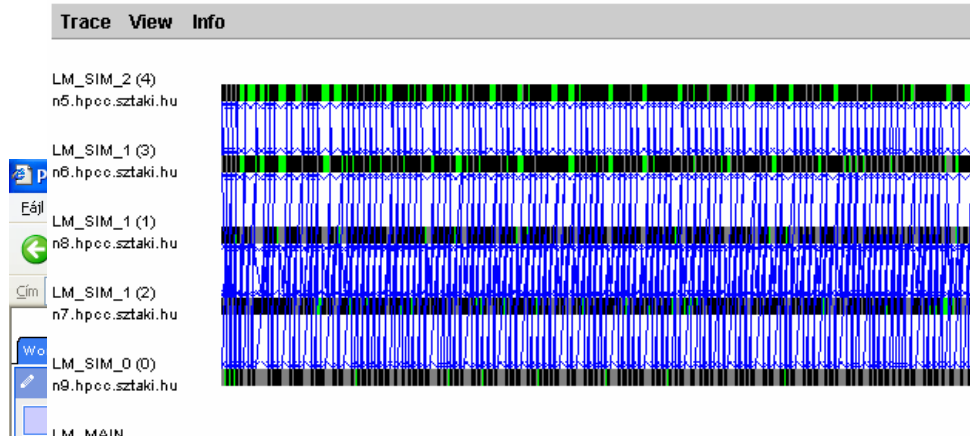


- The portal monitors and visualizes workflow progress



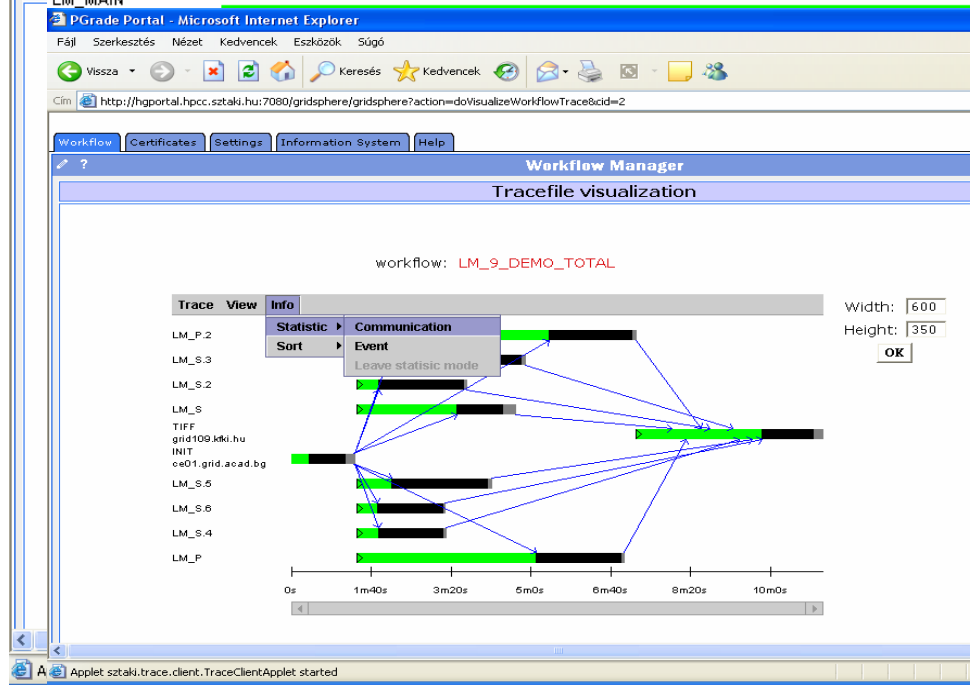
On-line application monitoring: workflow and job level

workflow / job: LM_9_DEMO_TOTAL / LM_P

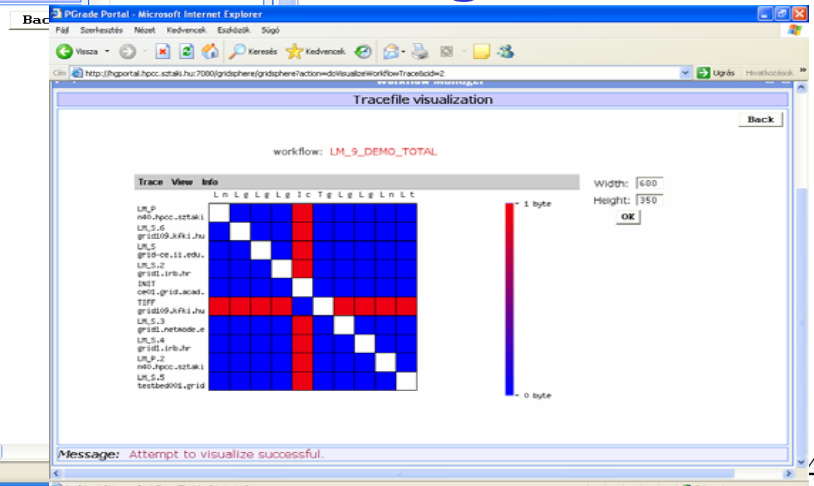


Width: 600
Height: 350
OK

- The portal monitors and visualizes parallel jobs (if they are prepared for Mercury monitor)



- Statistical views can also be generated





Rescuing a failed workflow 1.

A job failed during workflow execution

Read the error log to know why

Workflow	Job	Gridname	Hostname	Status	Log	Output	View	Action
demo-RESCUE	Count1	SZTAKI-GRID	n0 .hpc.sztaki.hu	finished	Out	-	-	-
	Count2	SZTAKI-GRID	n0 .hpc.sztaki.hu	finished	Out	-	-	-
	Count3	HUNGRID	chemgrid3 .chemres.hu	error	- Err	-	-	Err
	Count4	SZTAKI-GRID	n0 .hpc.sztaki.hu	submitted	--	-	-	-

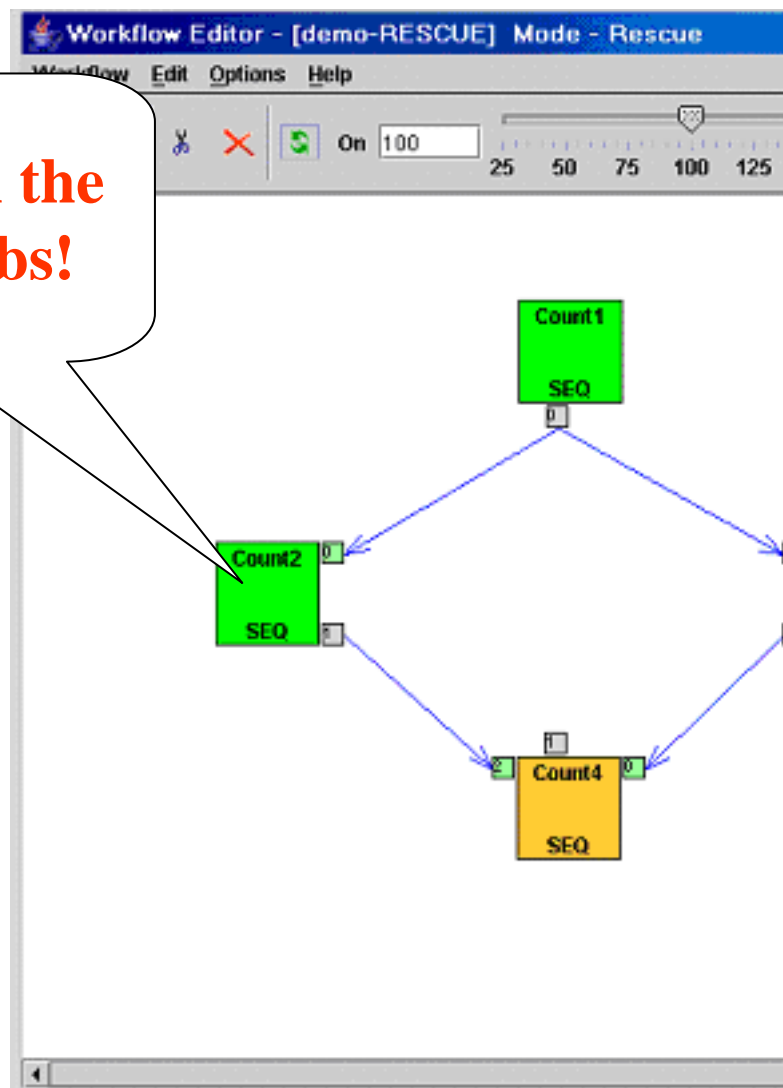
Message: Workflow details successfully displayed.

July 29, 2005



Rescuing a failed workflow 2.

Don't touch the finished jobs!



Map the failed job onto a different resource/grid or download a new proxy for it.

The execution can continue from the point of failure!



The typical user scenario

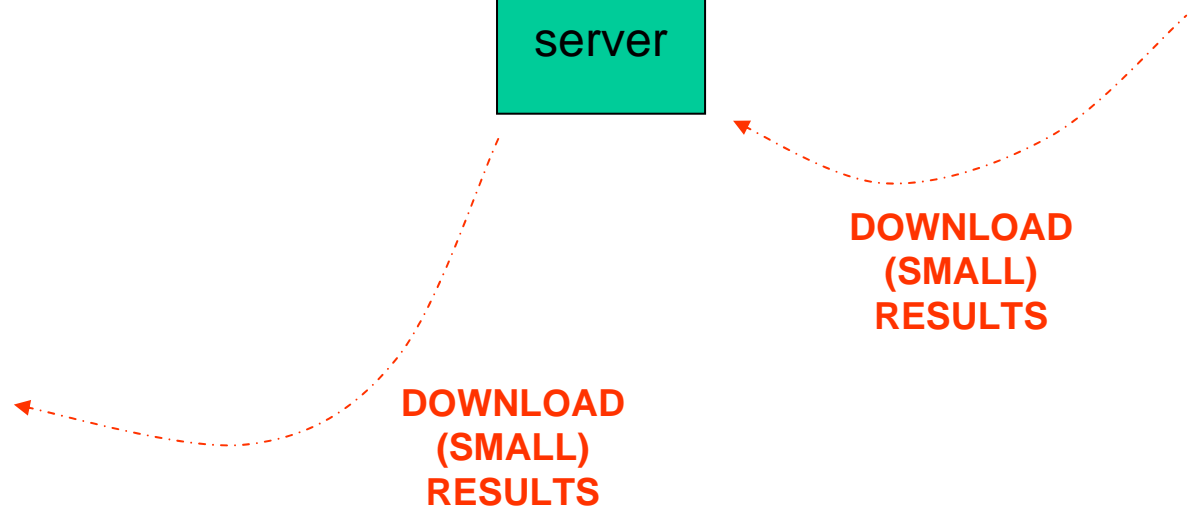
Execution phase – step 5

Certificate servers



Portal server

Grid services





Downloading the results...

The screenshot shows the GridSphere Portal interface in Microsoft Internet Explorer. The main content area displays a 'Workflow Manager' window with a 'Job list' table. The table has columns for Workflow, Job, Gridname, Hostname, Status, Logs, Output, Visualization, and Action. Two jobs are listed, both with a status of 'finished'. A red arrow points from the 'Output' column of the second job to a file download dialog box titled 'Opening nowcast_final_g.zip'. The dialog box contains the following text: 'The file "nowcast_final_g.zip" is of type application/x-zip-compressed, and Mozilla does not know how to handle this file type. This file is located at: e:\pri\mc04'. Below this text are three radio button options: 'Open it with the default application', 'Open it with' (with an empty text box and a 'Choose...' button), and 'Save it to disk' (which is selected). There is also a checkbox for 'Always perform this action when handling files of this type' and 'OK' and 'Cancel' buttons at the bottom.

Workflow	Job	Gridname	Hostname	Status	[Logs]	[Output]	[Visualization]	[Action]			
WF1				finished	-	✓	Visualize	All	Submit	Attach	Delete
	Cascade1	SZTAKI-GRID	n0.hpcc.sztaki.hu	finished	Out	-	-	-	-	-	-
	Cascade1.2	SZTAKI-GRID	n0.hpcc.sztaki.hu	finished	Out	-	-	-	-	-	-

- Download small files in a single ZIP file

- Keep large files in the Grid for future analysis!



Extra features

- **Workflows and traces** can be exported from the portal server onto your client machine
- **Workflows and traces** can be imported into the Portal



- **Share your workflows or results with other researchers!**
- **Migrate your application from one portal into another!**



References

- **P-GRADE Portal service is available for**
 - **UK National Grid Service** (with GEMLCA support)
 - **SEE-GRID infrastructure**
 - **HUNGRID VO of EGEE**
 - **Central European VO of EGEE**
 - **GILDA: Training VO of EGEE**
- **Under preparation for**
 - **US Open Science Grid, Economy-Grid, Swiss BioGrid, Bio and Biomed EGEE VOs**
- **P-GRADE portal can be installed for any public/private EGEE or Globus Grid/VO**

Please contact us!





How to get access?

- Take a look at www.lpds.sztaki.hu/pgportal
(*manuals, training events, client & server requirements, installation procedure, etc.*)
- **Visit or request a training event!** (pgportal@sztaki.hu)
 - Lectures, demos, hands-on tutorials, application development support
- **Get an account for one of its production installations:**
 - **NGS portal – University of Westminster** } www.cpc.wmin.ac.uk/gngsportal
 - VOCE portal - SZTAKI
 - SEEGRID portal – SZTAKI
 - HUNGrid portal – SZTAKI } www.lpds.sztaki.hu/pgportal
- **If you are the administrator of a Grid/VO then contact SZTAKI to get your own P-GRADE Portal!**
- **If you know the administrator of a P-GRADE Portal you can ask him/her to give access to your Grid through his/her portal installation! (*Multi-Grid portal*)**



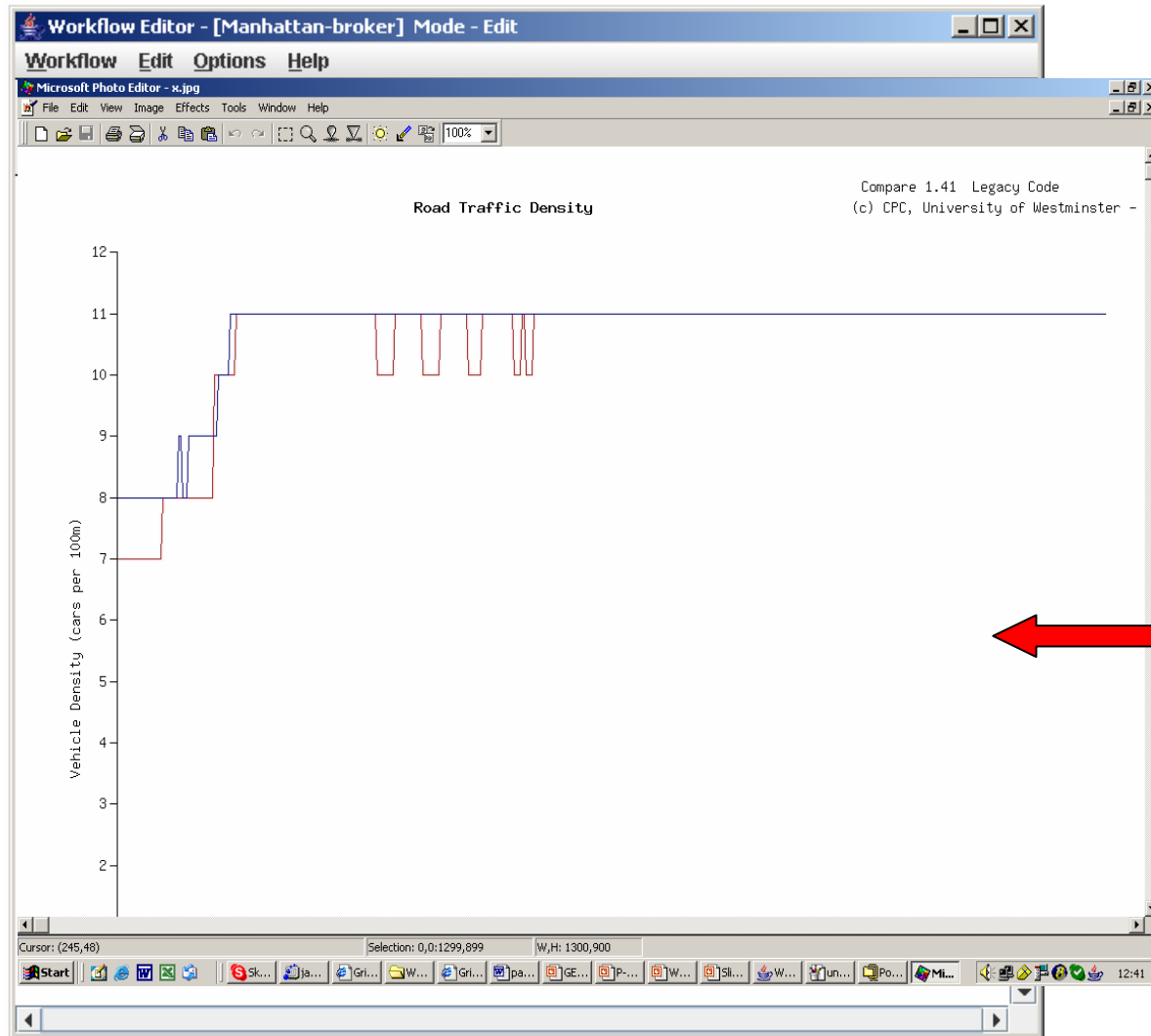
Conclusion: ***Easy-to-use, technology-neutral Grid portal for e-Scientists***

- **The P-Grade Portal hides differences of Grids**
 - **Globus X – LCG2 – gLite Grid interoperability**
 - **Transparent switching between Grid technologies**
- **Graphical tools for application development, execution and monitoring**
 - **Sequential & parallel components can be integrated into large Grid applications**
 - **Manual or broker based resource allocation**
- **Your code does not have to contain grid specific calls**
- **Support for collaborative research**
 - **Share workflows**
- **Built by standard portlet API**
 - **customizable to specific application areas and user groups**



Live Demonstration

Workflow to analyse road traffic



Manhattan road network generator

Traffic simulators

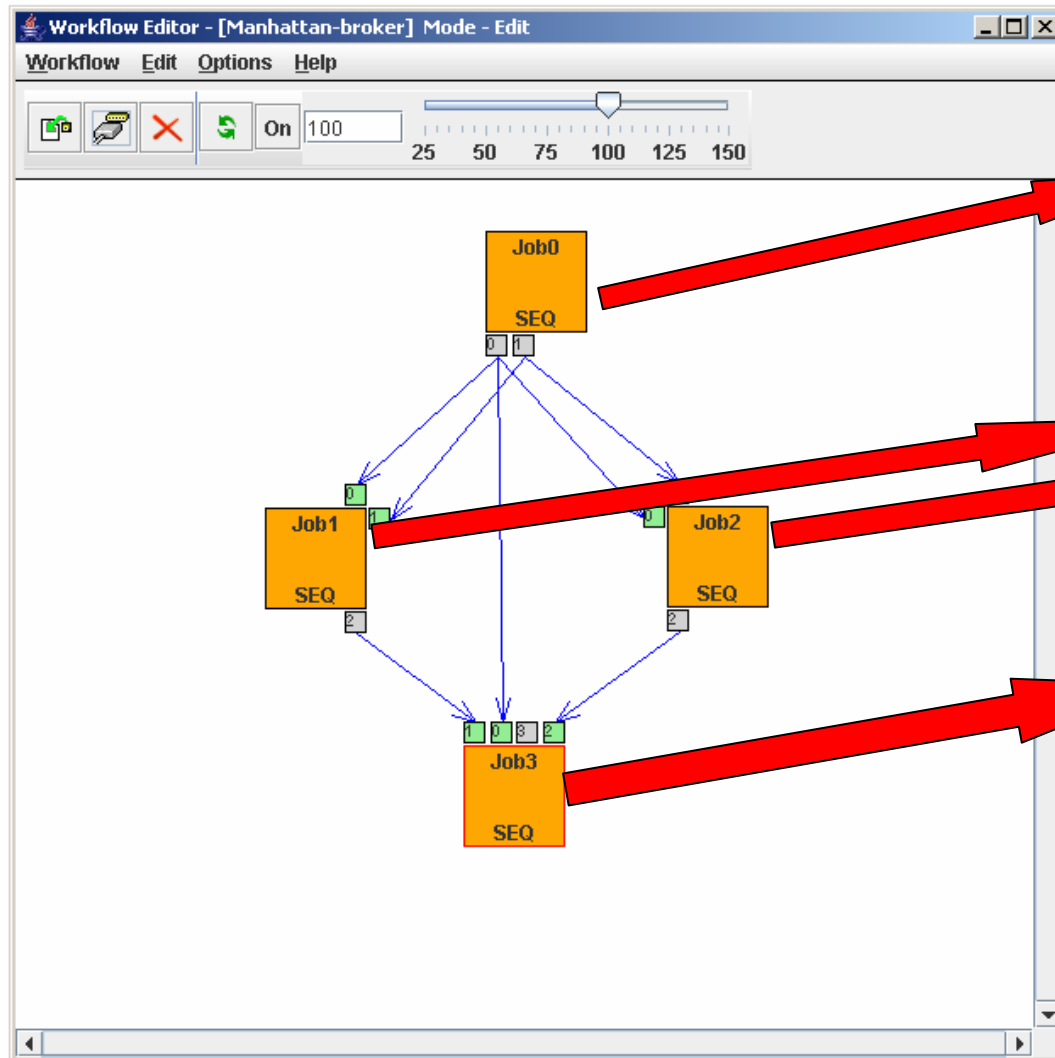
Analyser





Live Demonstration I.

Workflow to analyse road traffic

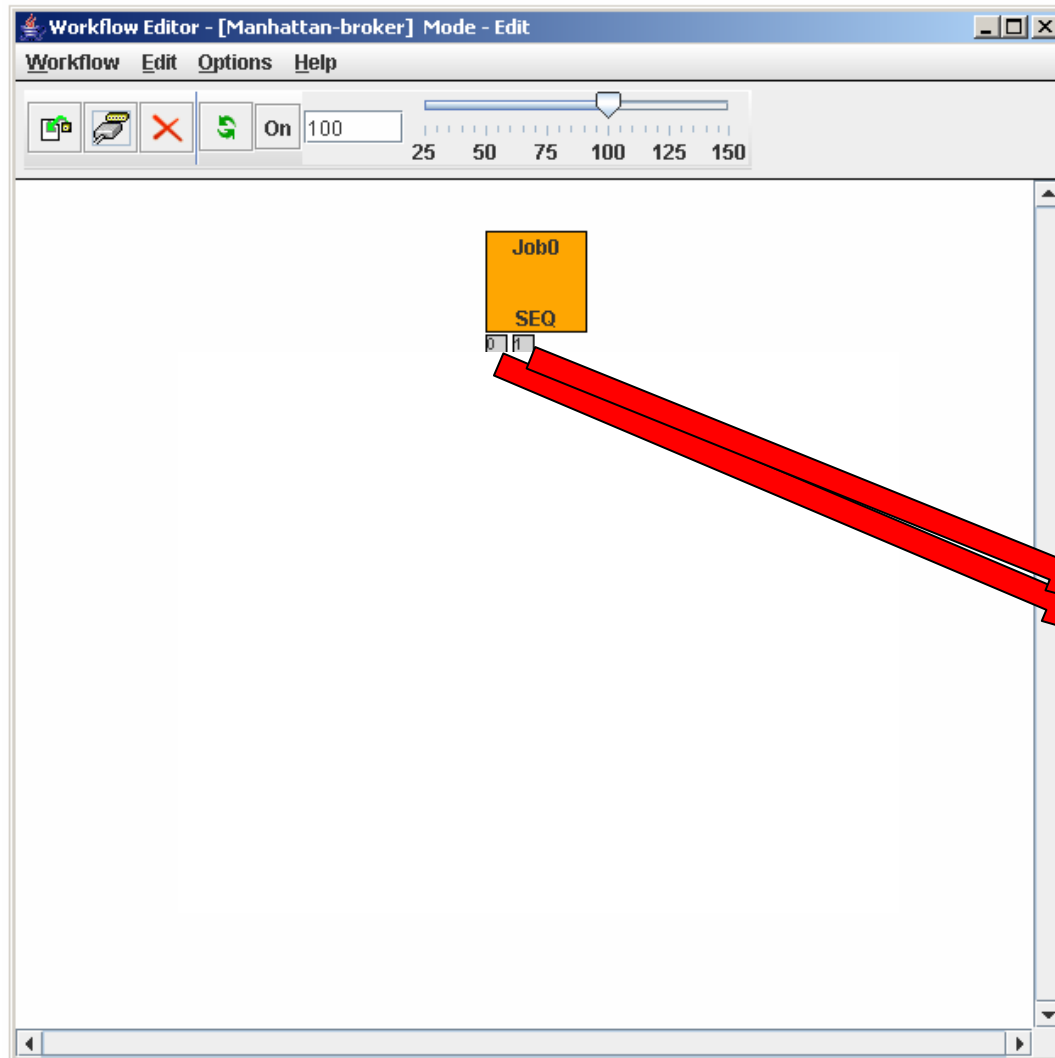


Broker



Live Demonstration II.

Workflow to analyse road traffic

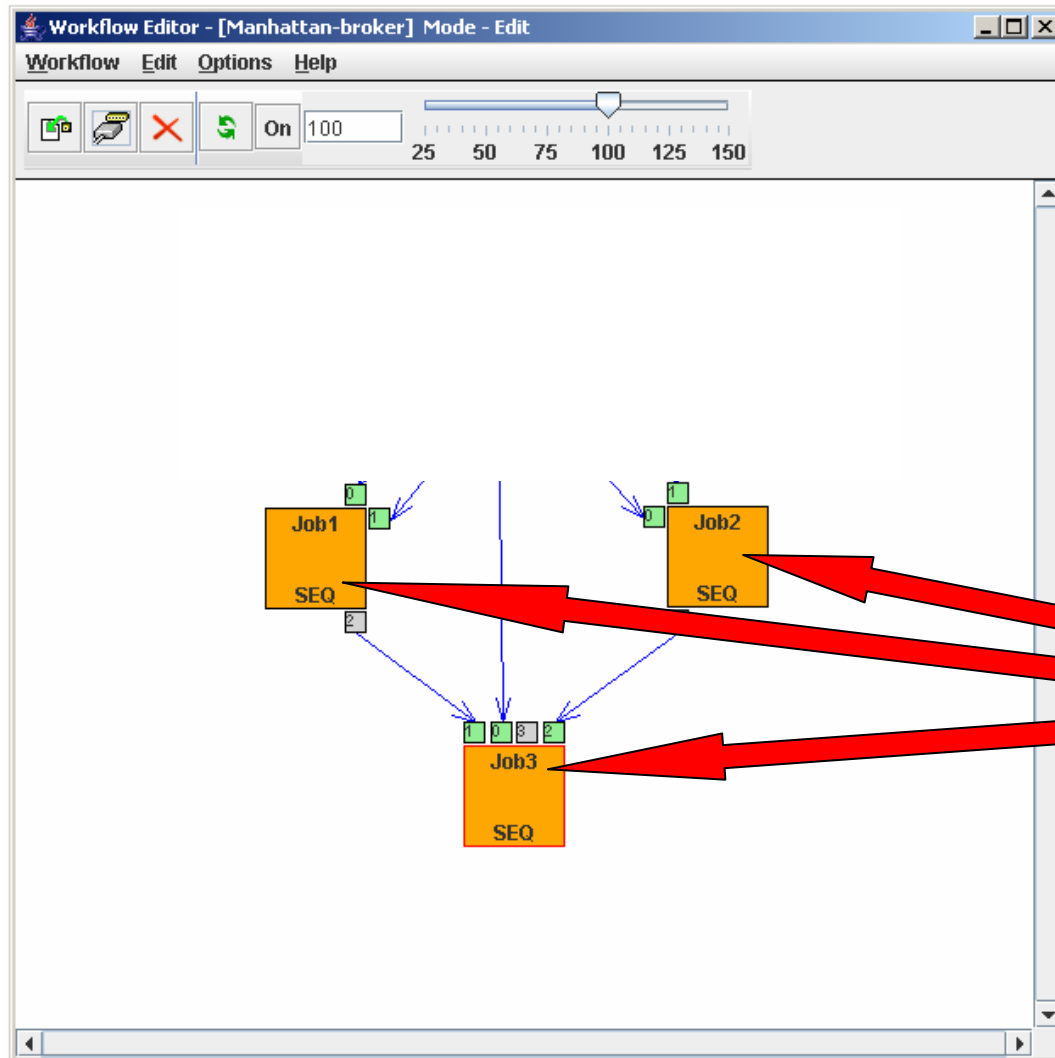


Storage



Live Demonstration III.

Workflow to analyse road traffic



Storage



Learn once, use everywhere
Develop once, execute anywhere

Thank you!

www.lpds.sztaki.hu/pgportal
pgportal@lpds.sztaki.hu



Hands-on material

<http://agenda.cern.ch/fullAgenda.php?ida=a062422>

14:30 Hands-on tutorial with the P-GRADE Portal pt.1 (1h00')
(transparencies)