Exposing WS-PGRADE/gUSE for large user communities

http://www.sci-bus.eu

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MTA SZTAKI

e-infrastructure

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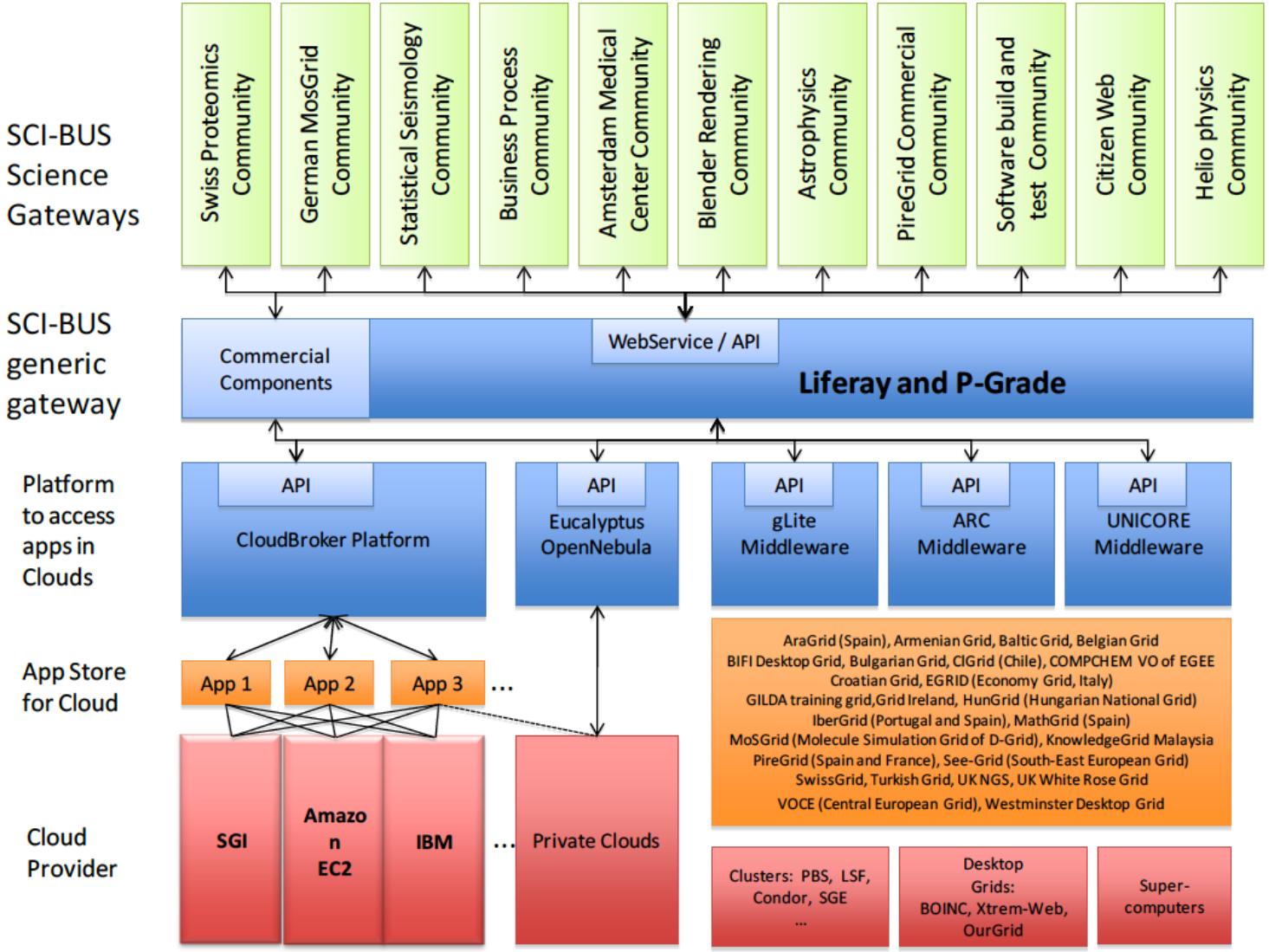
SCI-BUS Architecture

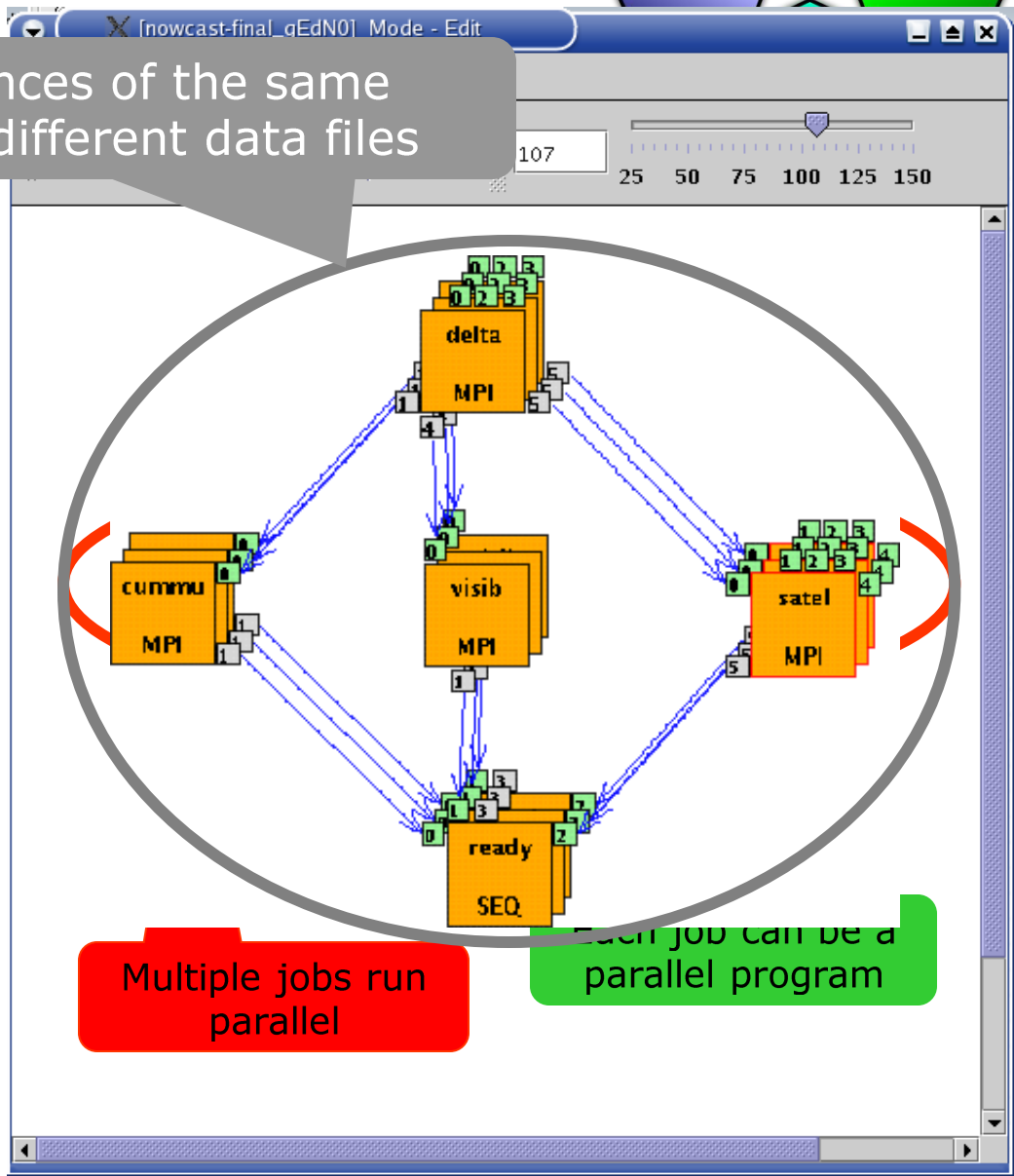


WS-PGRADE/gUSE
Generic-purpose gateway framework

- Based on Liferay
- General purpose
- Workflow-oriented gateway framework
- Supports the development and execution of workflow-based applications
- Supports the fast development of domain-specific gateways by a customization technology
- Most important design aspect is flexibility

Flexibility in exploiting parallelism

Multiple instances of the same workflow with different data files



– Parallel execution inside a workflow node

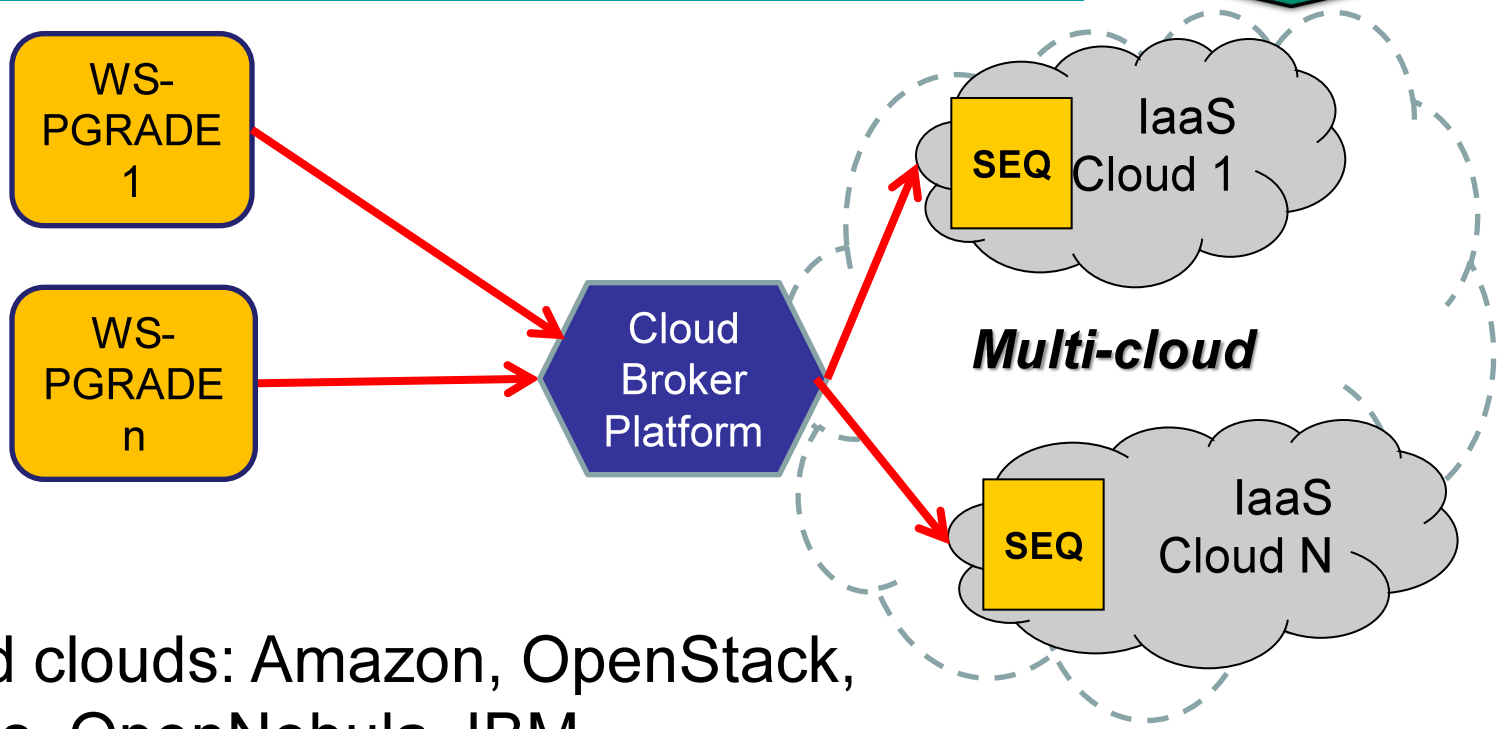
– Parallel execution among workflow nodes

– Parameter study execution of the workflow

Flexibility of using various DCIs

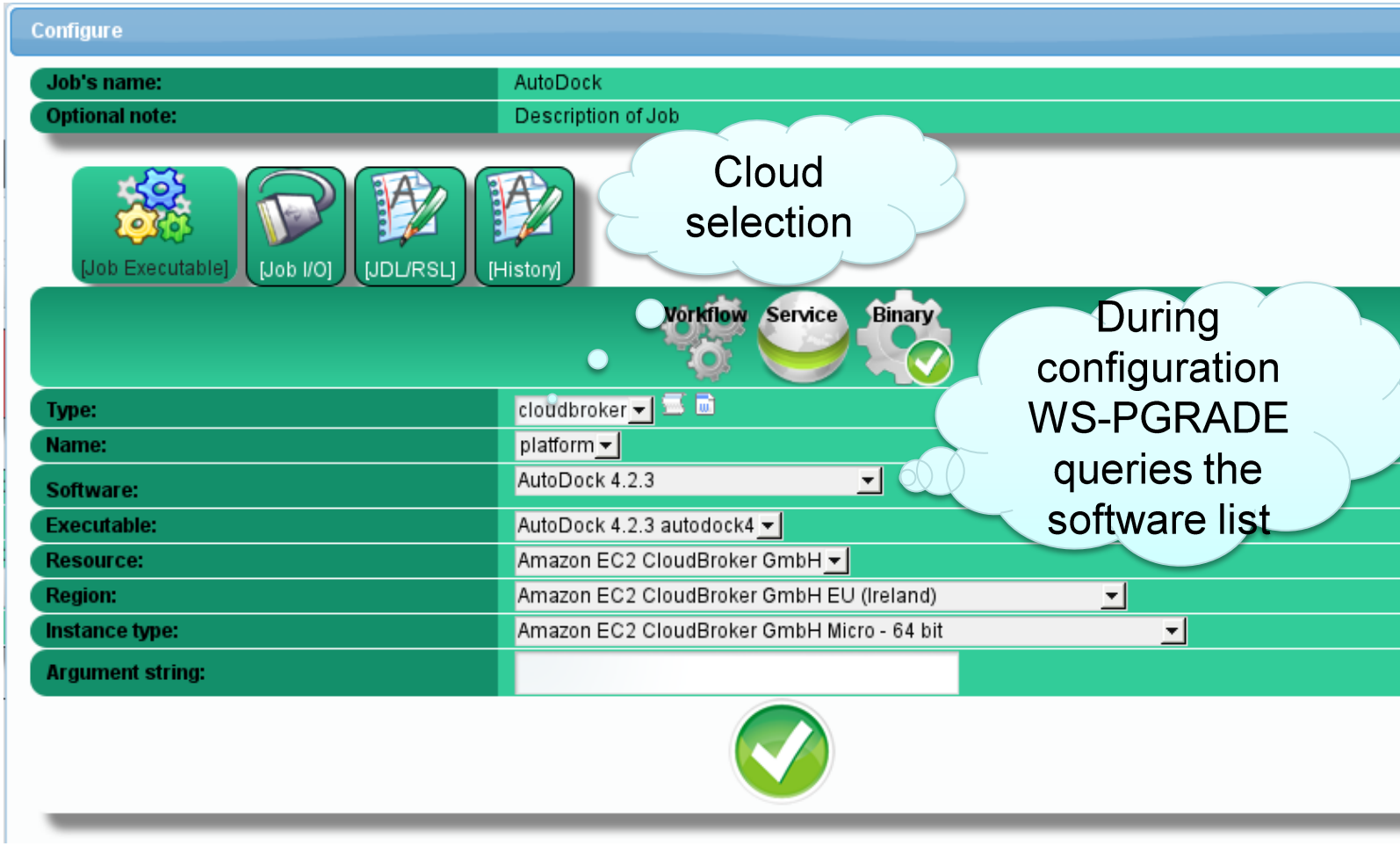
- Flexible management of Security:
  - Individual users' certificate
  - Robot certificates
- Flexible access to various types of DCIs:
  - Clusters (PBS, LSF, MOAB, SGE)
  - Cluster grids (ARC, gLite, GT2, GT4, GT5, UNICORE)
  - Supercomputers (e.g. via UNICORE)
  - Desktop grids (BOINC)
  - Clouds (Via CloudBroker Platform)

Integrated WS-PGRADE/CloudBroker Platform to access multi-clouds



- Supported clouds: Amazon, OpenStack, Eucalyptus, OpenNebula, IBM
- **SaaS solution**:
  - Preregistered services/jobs can run
- **IaaS solution**:
  - any services/jobs can run

WS-PGRADE UI to configure nodes for cloud services



Support for commercial clouds with costs

- Estimated job cost before submission

Type:	cloudbroker
Name:	platform
Software:	AutoDock 4.2.3
Executable:	AutoDock 4.2.3 autodock4
Resource:	Amazon EC2 CloudBroker GmbH
Region:	Amazon EC2 CloudBroker GmbH EU (Ireland)
Instance type:	Amazon EC2 CloudBroker GmbH Micro - 64 bit
Argument string:	M

Estimated Cost

Per submission [USD] : 0

Per GB input data [USD] : 0,289

Per GB output data [USD] : 0,289

Per hour [USD] : 0,17

VAT [USD] : 0

Total for first hour [USD] : 0,17

- Actual job and workflow cost after execution

Job Status

Show 10 entries

PID	Resource
0	scibus.cloudbrok DETAILS!)
PID	Resource

Showing 1 to 1 of 1 entries

arch:

wnload file output

Previous Next

```
Fee type
compute data in fee [U
compute runtime fee [U
compute data out fee [
Total [USD]:
```

Workflow cost

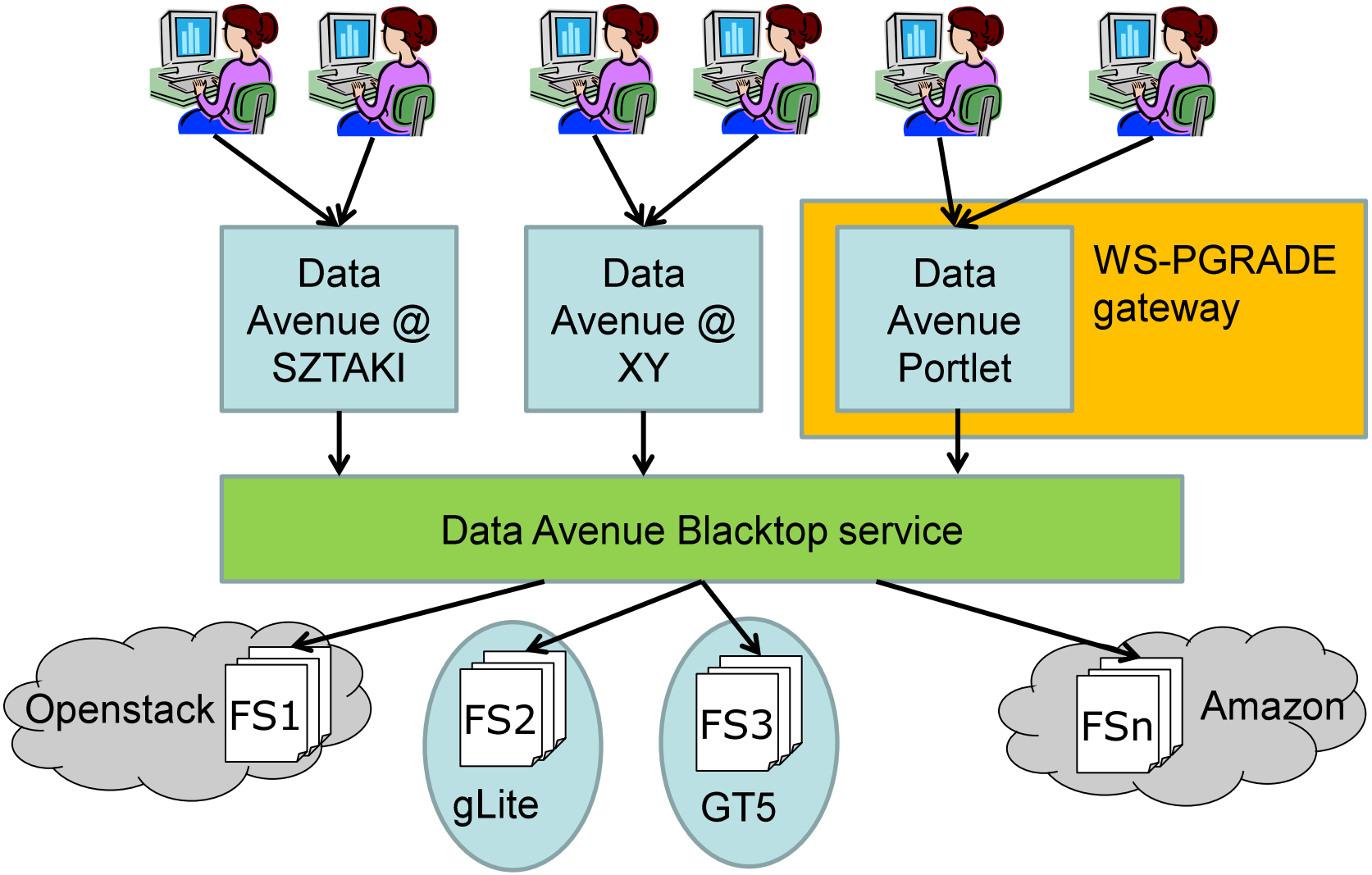
Workflow name	Cost [USD]
CB_J3_PS_100_2013-02-12-105300	3

Job	Instance	Cost [USD]
work	10	2.5
Gen	1	0.25
Coll	1	0.25

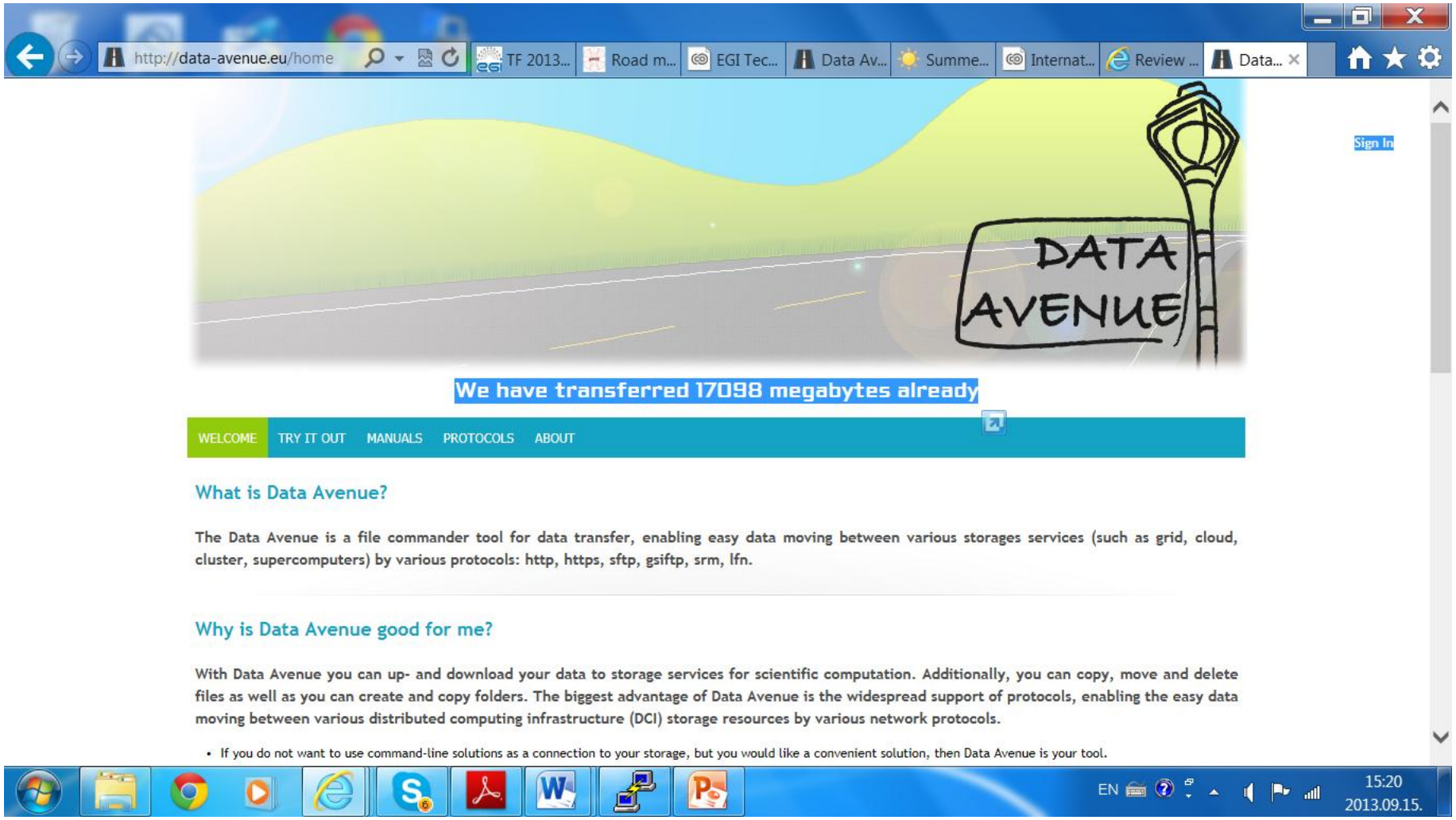
Flexibility in data storage access

- **Use Data Avenue Blacktop service**
  - To access data storages in different DCIs
  - To transfer files among the storages of different DCIs
  - To upload/download files to/from the storages of different DCIs
- **Data Avenue Liferay portlet** to access the data transfer services of Data Avenue Blacktop
- See details: http://data-avenue.eu/home
- Currently supported protocols:
  - http, https, ftp, gsiftp, srm
- Soon coming protocols:
  - iRODS, LFC, cloud storage protocols

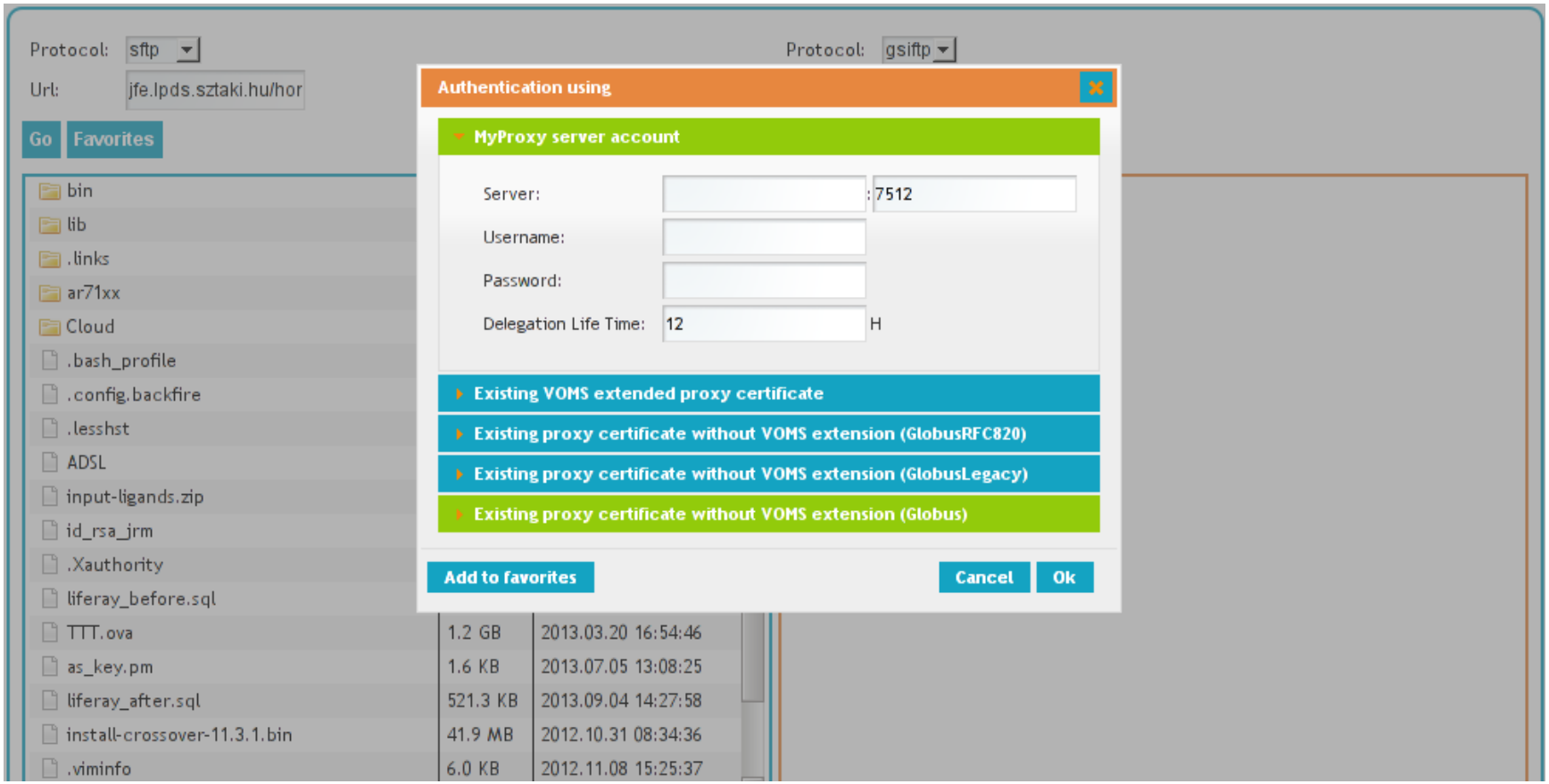
Data Avenue services



Data Avenue @ SZTAKI



Data Avenue Liferay portlet



Data Avenue Liferay portlet

Protocol: sftp
Url: jfe.lpds.sztaki.hu/hor
Go Favorites

Name	Size	Last modified
..		
No data available in table		

Protocol: gsiftp
Url: dpm.hpcc.sztaki.hu:2
Go Favorites

Name	Size	Last modified
..		
mc-root		2013.09.12 16:19:20
hermann		2013.09.12 08:37:02
.X11-unix		2013.09.12 12:43:39
Destination		2013.09.12 11:18:01
		2013.09.12 12:44:02
		2013.09.12 12:43:39
		2013.09.11 13:51:06
	GB	2013.09.15 21:42:12
		2013.09.12 15:55:13
	MB	2013.09.12 12:29:19
	0 MB	2013.09.14 11:23:10
databridge.ods	20.1 KB	2013.09.12 16:35:42
x509up	6.8 KB	2013.09.12 16:31:50
100mb.dat	200.0 KB	2013.09.14 11:20:02
DataBridgeUI-1.0.war	5.2 MB	2013.09.03 09:42:16
ingatlan2.pdf	1.3 MB	2013.09.04 02:31:52

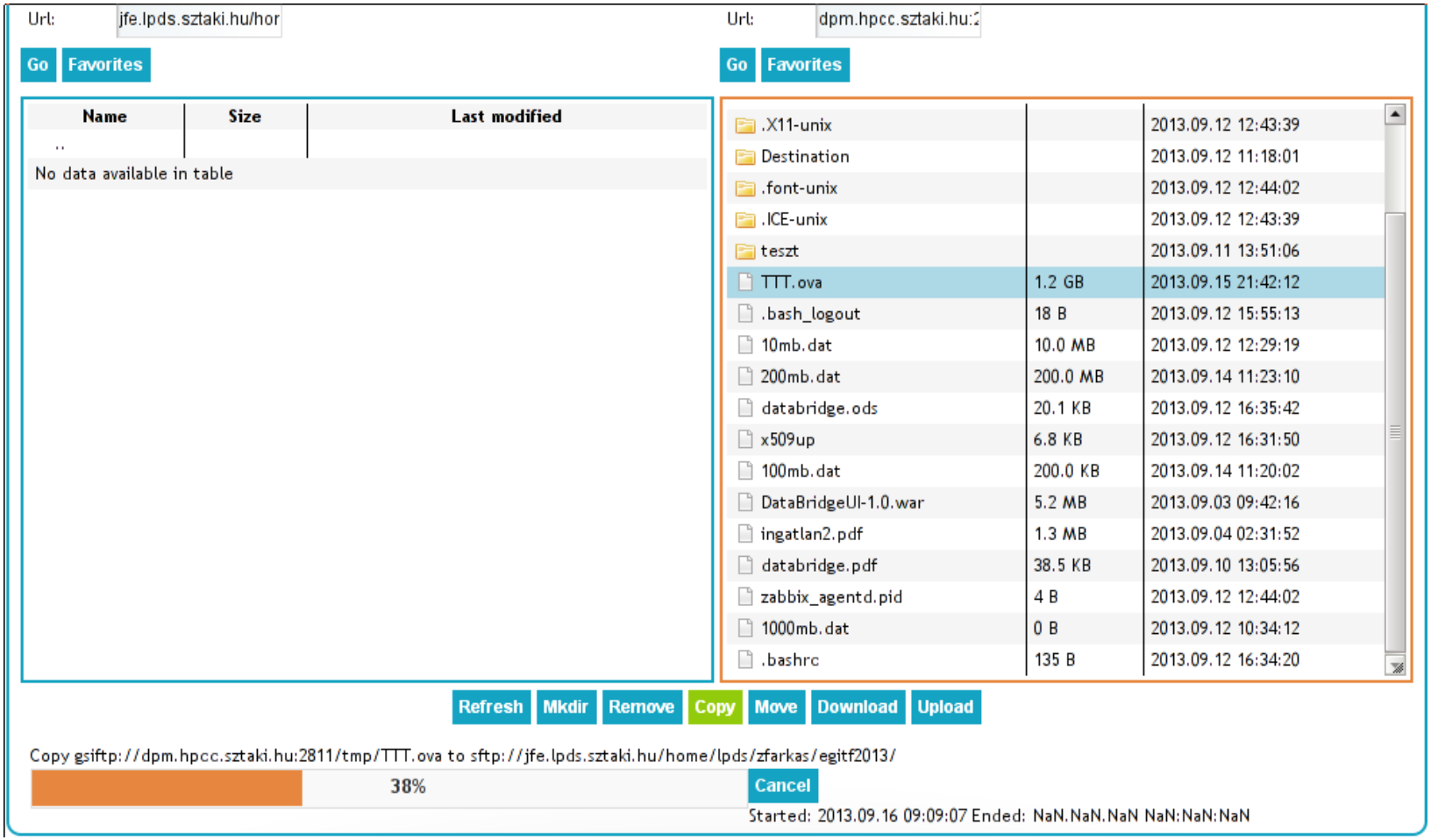
Copy

Copy TTT.ova to sftp://jfe.lpds.sztaki.hu/home/lpds/zfarkas/egitf2013/?

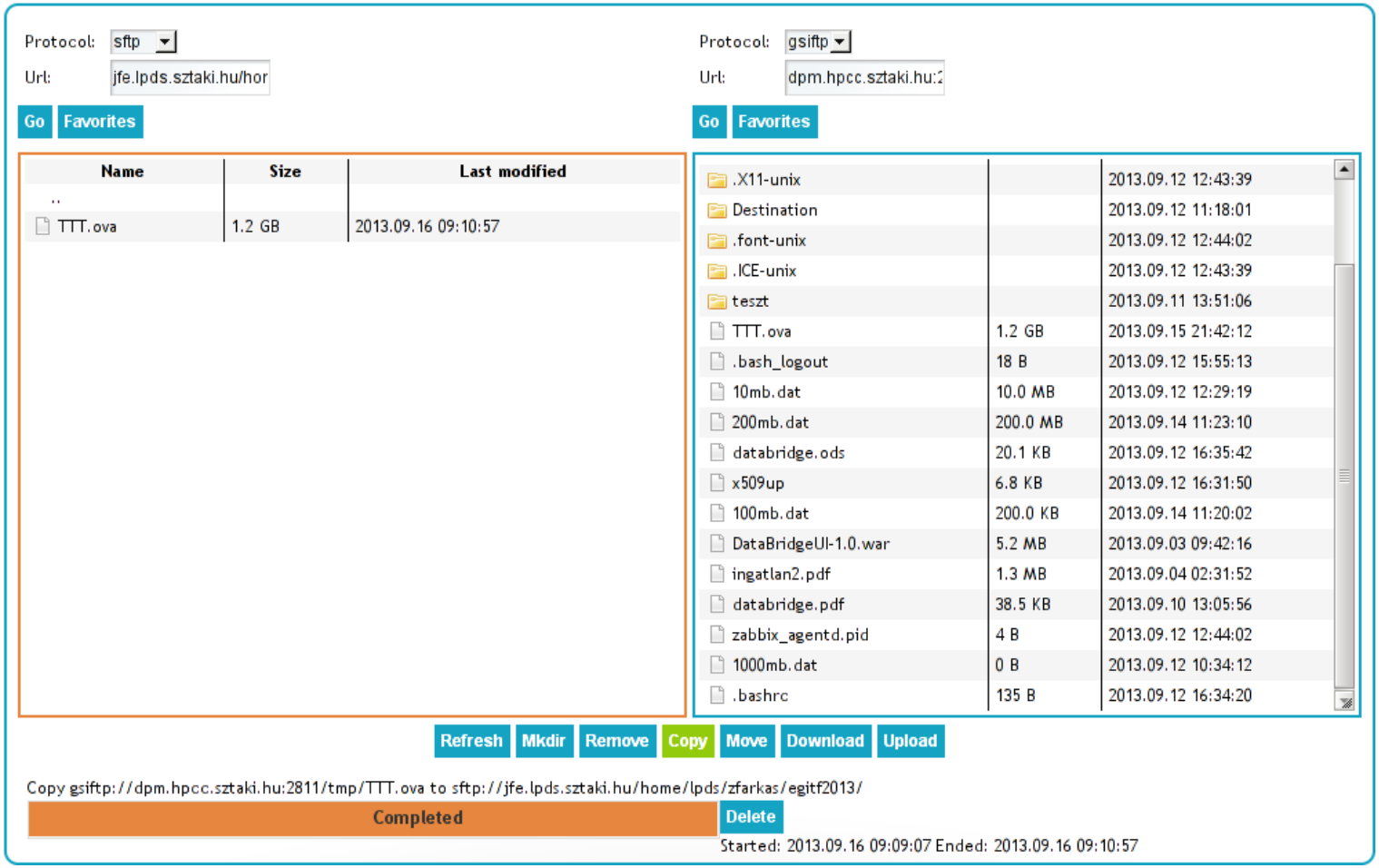
Copy Cancel

Refresh Mkdir Remove Copy Move Download Upload

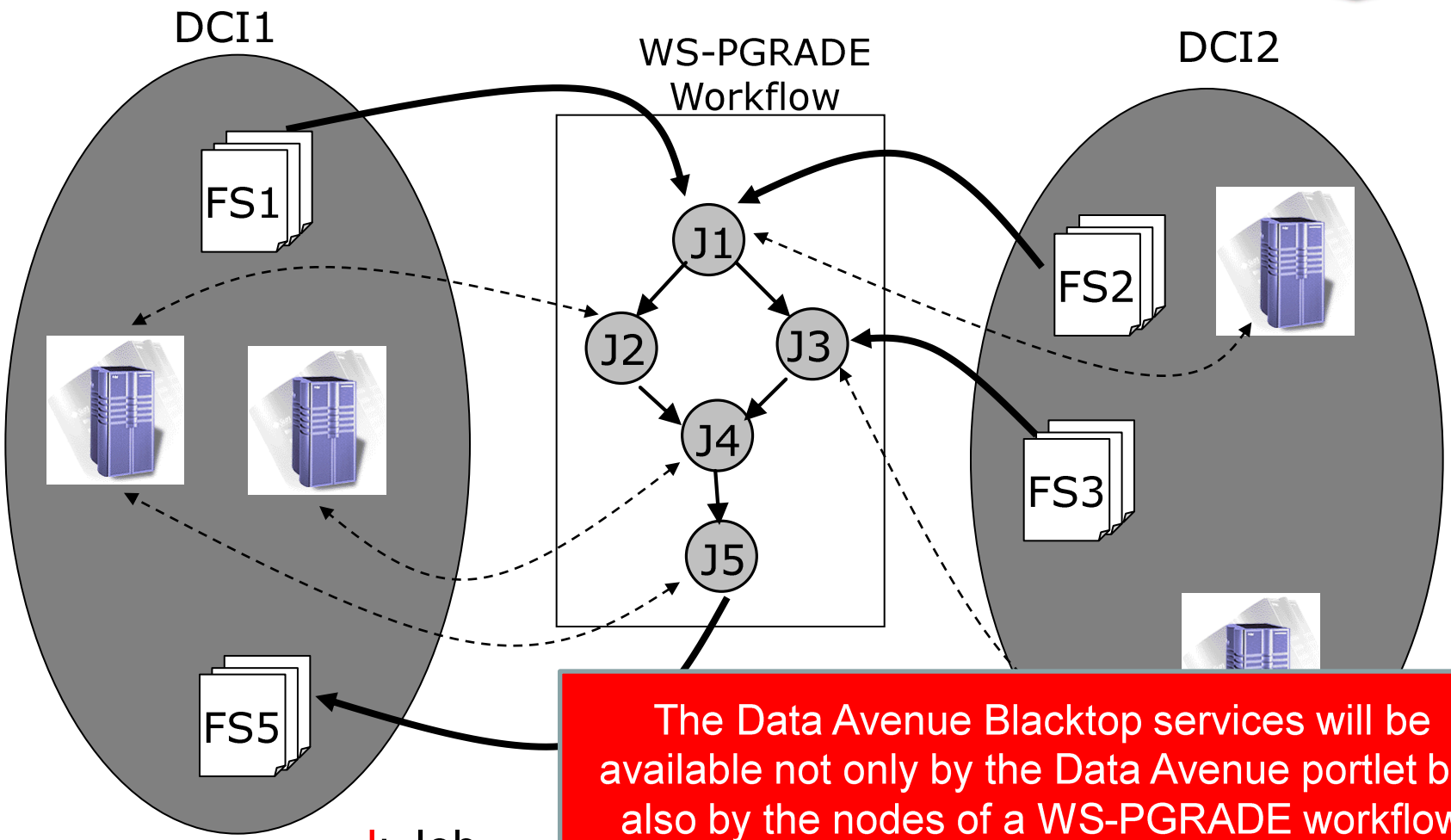
Data Avenue Liferay portlet



Data Avenue Liferay portlet



Generic data transfer among WS-PGRADE workflow nodes

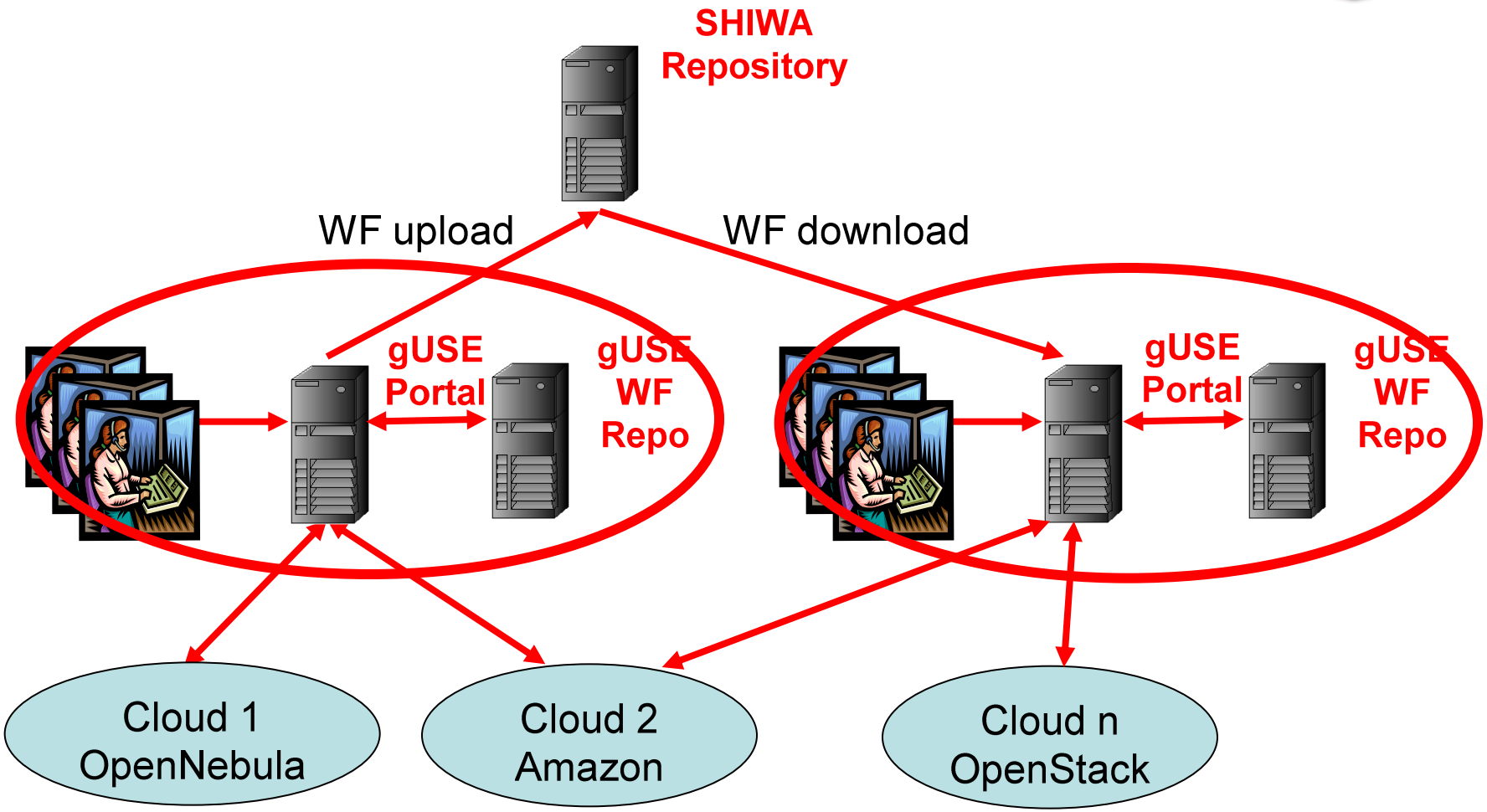


The Data Avenue Blacktop services will be available not only by the Data Avenue portlet but also by the nodes of a WS-PGRADE workflow

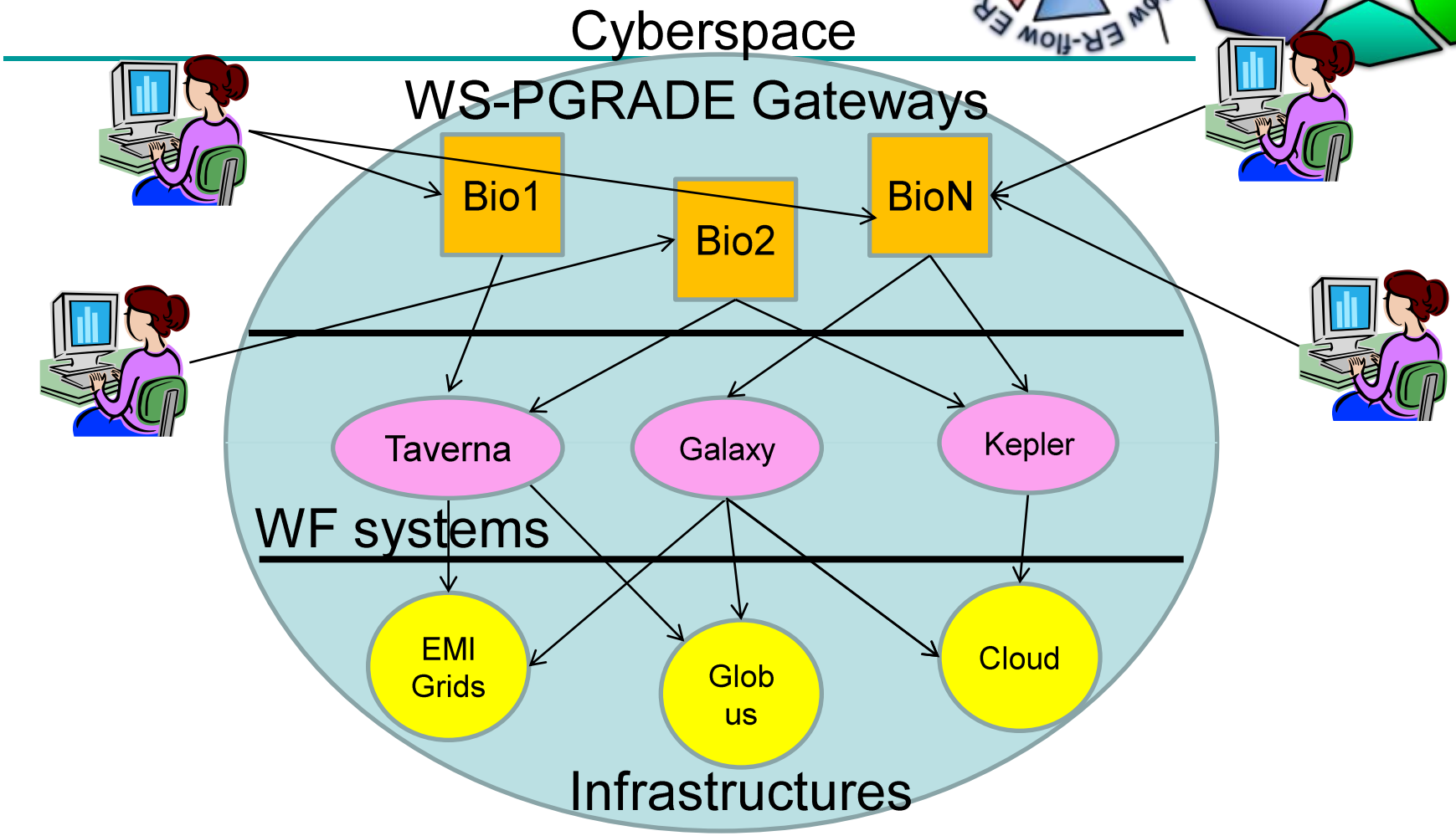
J: Job

FS: File storage system, e.g. gsiftp, iRODS, SRM

Flexibility for collaboration among community members



Flexibility in using different workflow systems

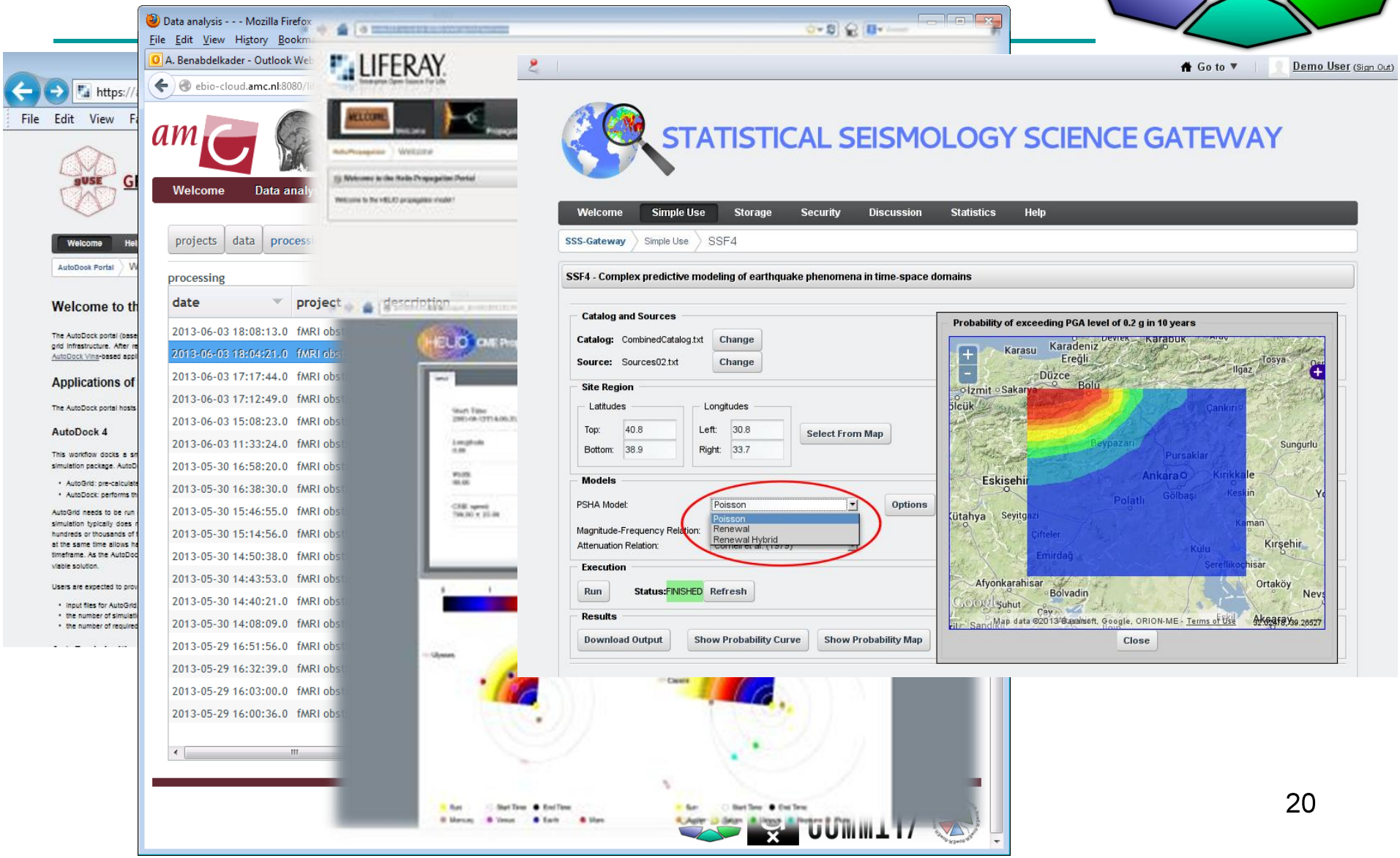


Combining SCI-BUS and SHIWA technologies (supported by ER-Flow) users can access and use many WFs and many infrastructures in an interoperable way no matter which is their home WF system

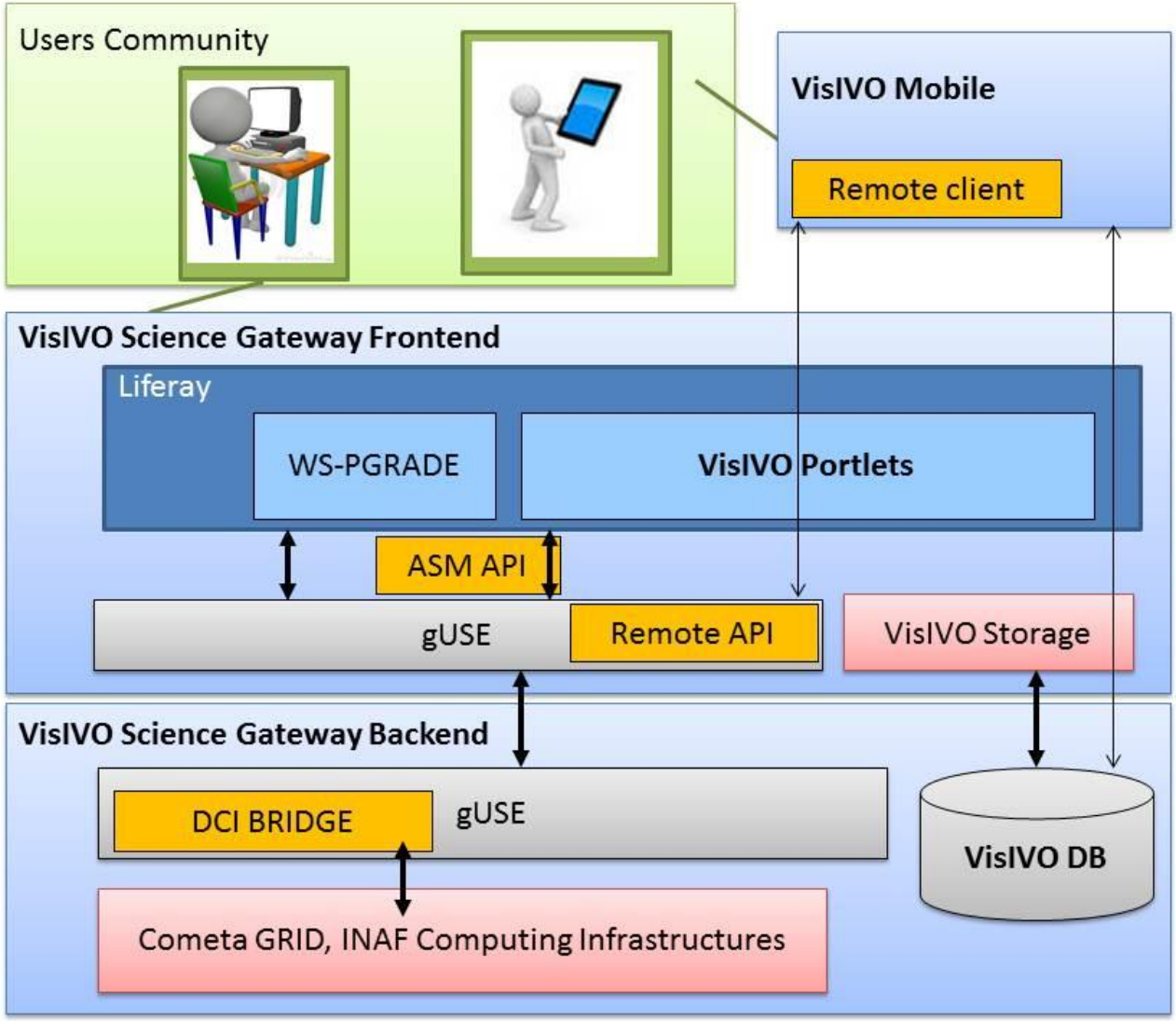
Flexibility of gateway types and user views

1. Generic purpose gateways for clouds (workflow view)
   - Core WS-PGRADE/gUSE (e.g. Greek NGI)
2. Generic purpose gateway for specific technologies (workflow view)
   - SHIWA gateway for workflow sharing and interoperation
3. Domain-specific science gateway instance
   - Autodock gateway (end-user view)
   - Swiss proteomics portal (customized GUI using ASM API)
   - VisIVO Mobile (use of Remote API)

Some examples of SCI-BUS domain-specific gateways

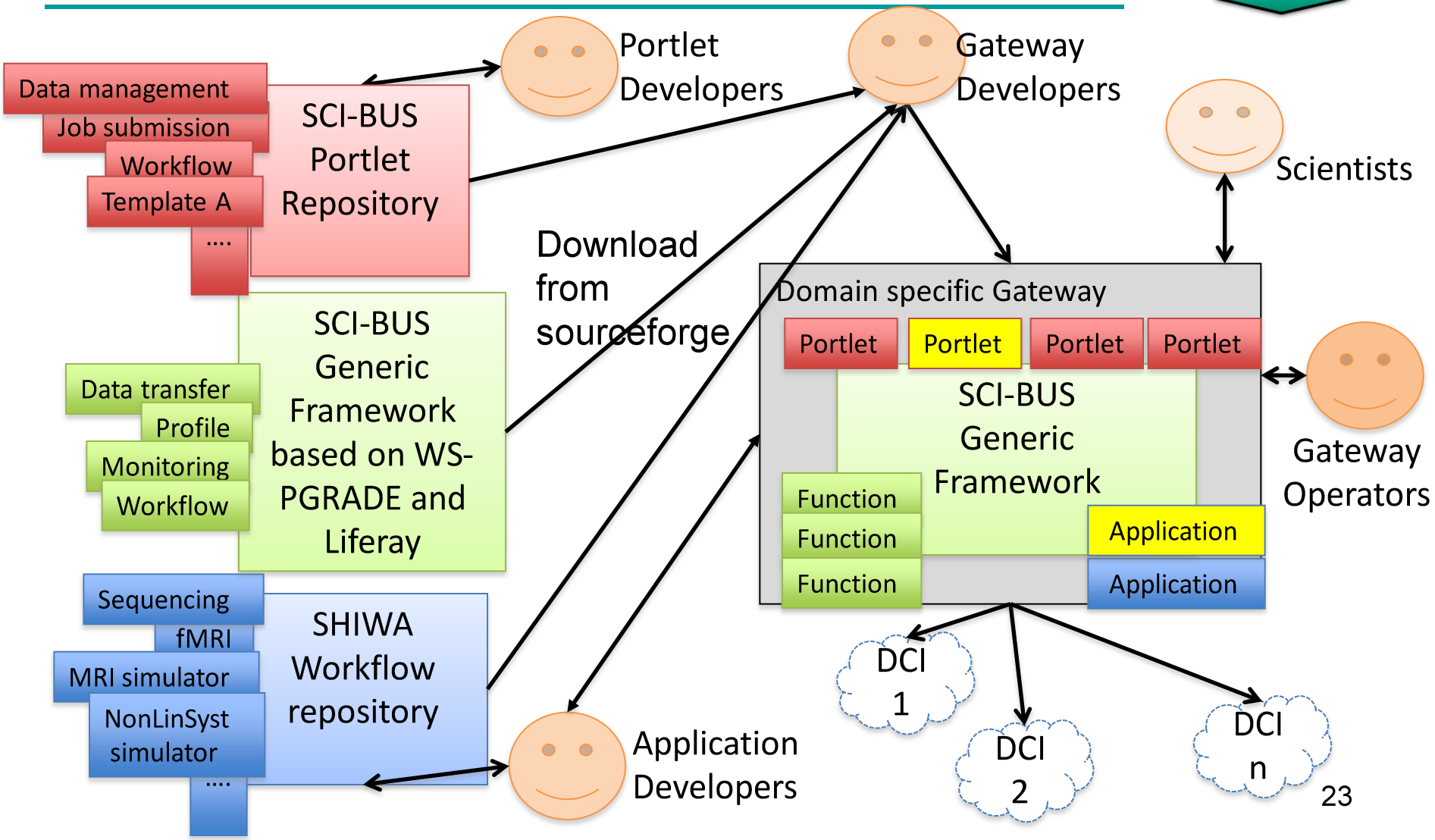


VisIVO Astrophysics Science Gateway Architecture

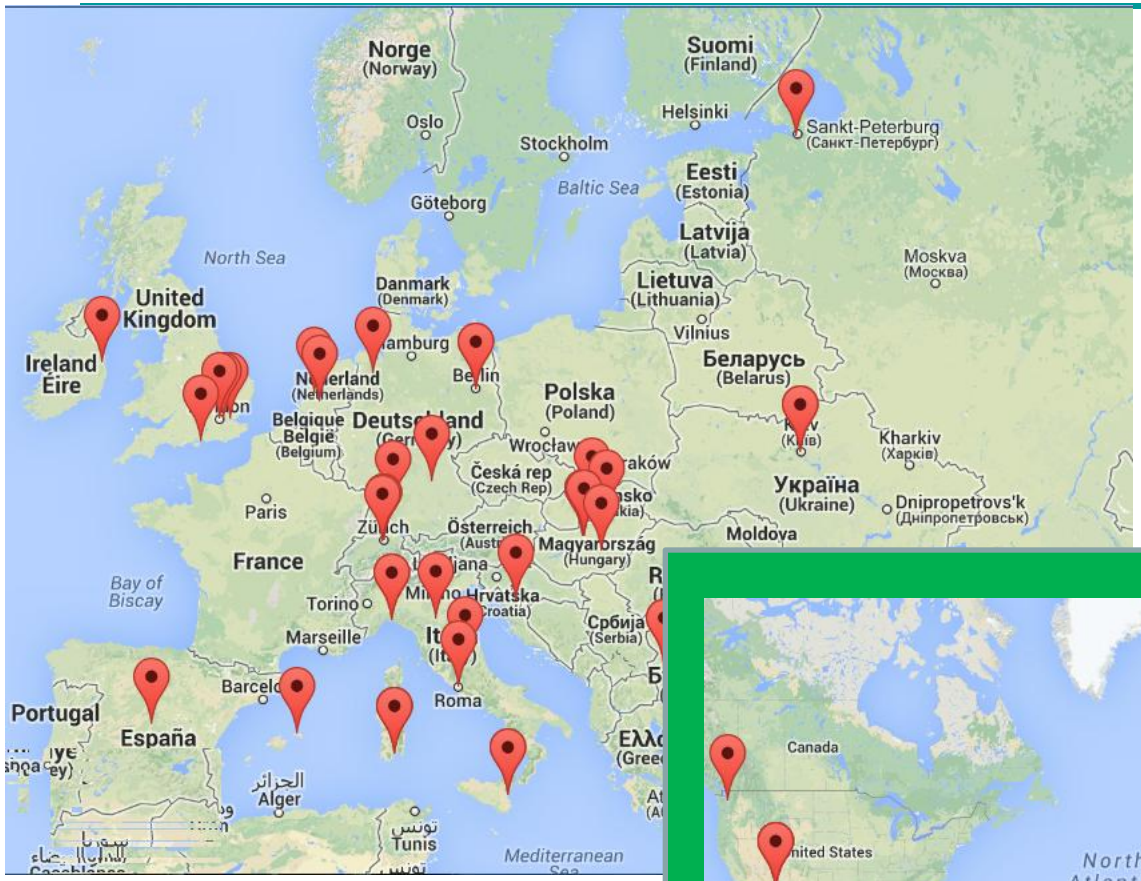


VisIVO Mobile

SCI-BUS vision to build science gateways by communities



gUSE based gateways



- Close to 60 deployments world-wide
- More than 11.000 downloads from sourceforge

Conclusions

Join SCI-BUS as associated member

Why to select WS-PGRADE/gUSE and join the SCI-BUS community?

1. Robustness
   - Already large number of gateways used in production
2. Sustainability
   - The SCI-BUS project and its sustainability and commercialization plan guarantees it
3. Functionalities
   - Rich functionalities that are growing according to the SCI-BUS and sourceforge community needs
4. How easy to adapt for the needs of the new user community?
   - Already large number of gateways customized from gUSE/WS-PGRADE
5. You can influence the progress of WS-PGRADE/gUSE

Where to find further information?

- SCI-BUS web page:
  - http://www.sci-bus.eu/
- gUSE/WS-PGRADE:
  - http://www.guse.hu/
- gUSE on sourceforge
  - http://sourceforge.net/projects/guse/
  - http://sourceforge.net/projects/guse/forums/forum/
  - http://sourceforge.net/projects/guse/develop