



**Interactive European Grid**

# Exploitation Path of Interactive European Grid on User Communities

**EGEE User Forum**

**Clermont-Ferrand, 13th Feb 2008**



- ❑ Achievements
- ❑ Exploitation path:
  - ▶ Middleware consolidation and distribution
  - ▶ RESPECT
  - ▶ Support to user communities
  - ▶ Interoperable Infrastructure
- ❑ Operation Model:
  - ▶ Service Agreements
    - Execution
    - Operation
    - Quality = Service Level Agreement

# Interactive European Grid Project

Project  
acronym  
**int.eu.grid**

**Interactive:** because researchers need answers in seconds, not in hours.

**Grid:** easy, intuitive, transparent BUT distributed, powerful, open.

**For e-Science:** Collaboration.

Contract  
number  
**031857**

Institution  
**IS**

**KEEPING EGEE INTEROPERABILITY!**

“providing transparently  
the researcher’s desktop  
with the power of a supercomputer,  
using distributed resources”

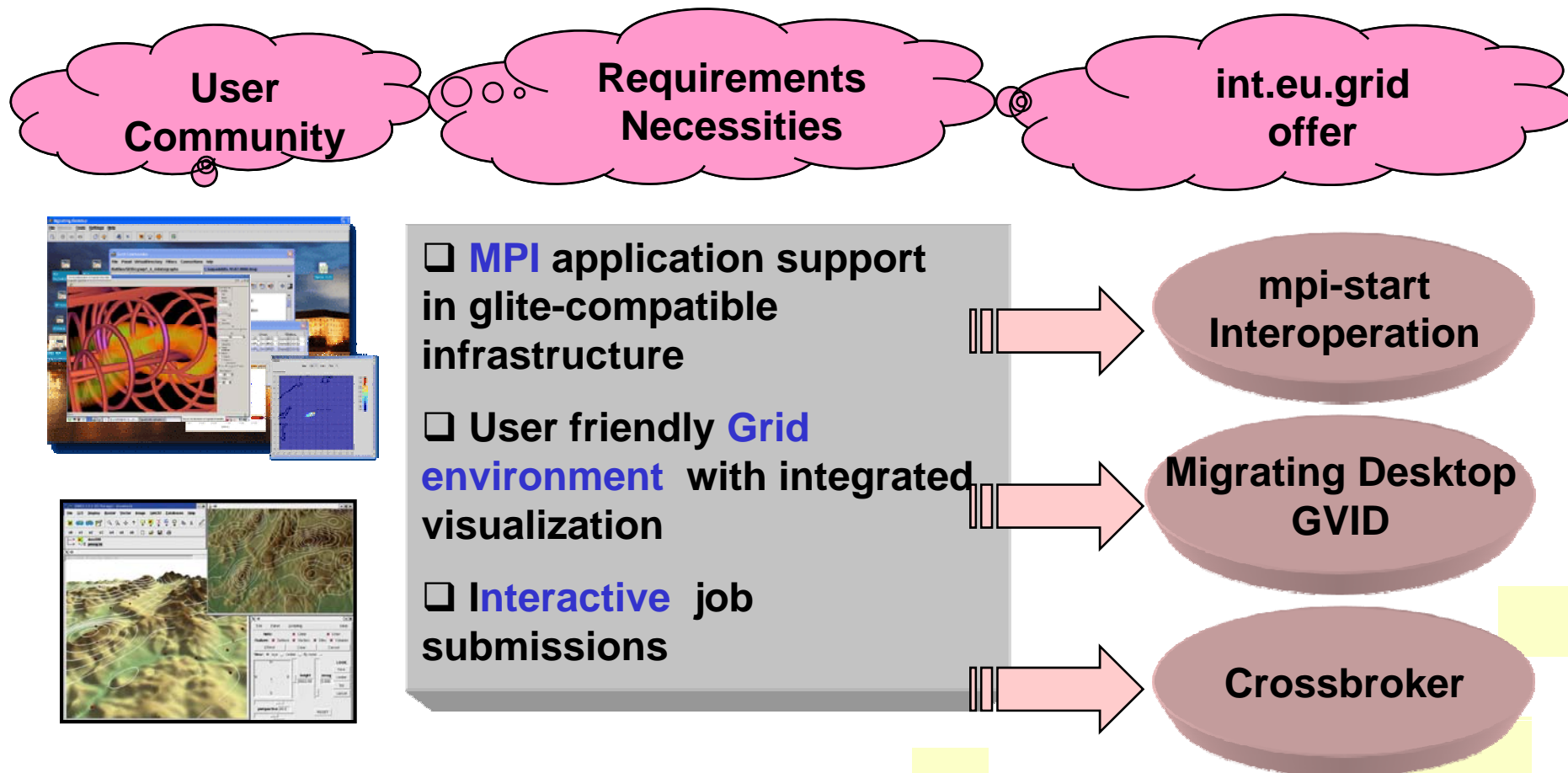
<http://www.interactive-grid.eu>



**User Friendly Access: *Grid Interactive Desktop*  
Distributed Parallel (*MPI*) *Interactive* Computing &  
Storage at the Tera level**

# Erwin asked for some nice slides...

□ ...Isabel prepared one!



- ❑ Support for different types of parallel jobs
  - ▶ MPI implementations: Open MPI, PACX-MPI, MPICH and MPICH-G2
  - ▶ MPI-START configured automatically
  - ▶ Generic parallel jobs (user defines how to use the resources)
- ❑ Support for interactive jobs
  - ▶ Injection of interactive agents that enable communication between user and job
  - ▶ Transparent to the user
  - ▶ Full integration with glogin & gvid

## New CrossBroker Features

- ❑ Intelligent job retrieval
  - ▶ disables submission to failing sites temporarily
- ❑ Fast notification of job status
  - ▶ better interaction with the application
- ❑ Fast selection of resources
  - ▶ Local caching
- ❑ gLite interoperability
  - ▶ accepts jobs from gLite's UI
  - ▶ able to submit jobs to gLite resources
- ❑ Full glidein support
  - ▶ Time-sharing of remote WN with direct control of CrossBroker

# Glide-in mechanism

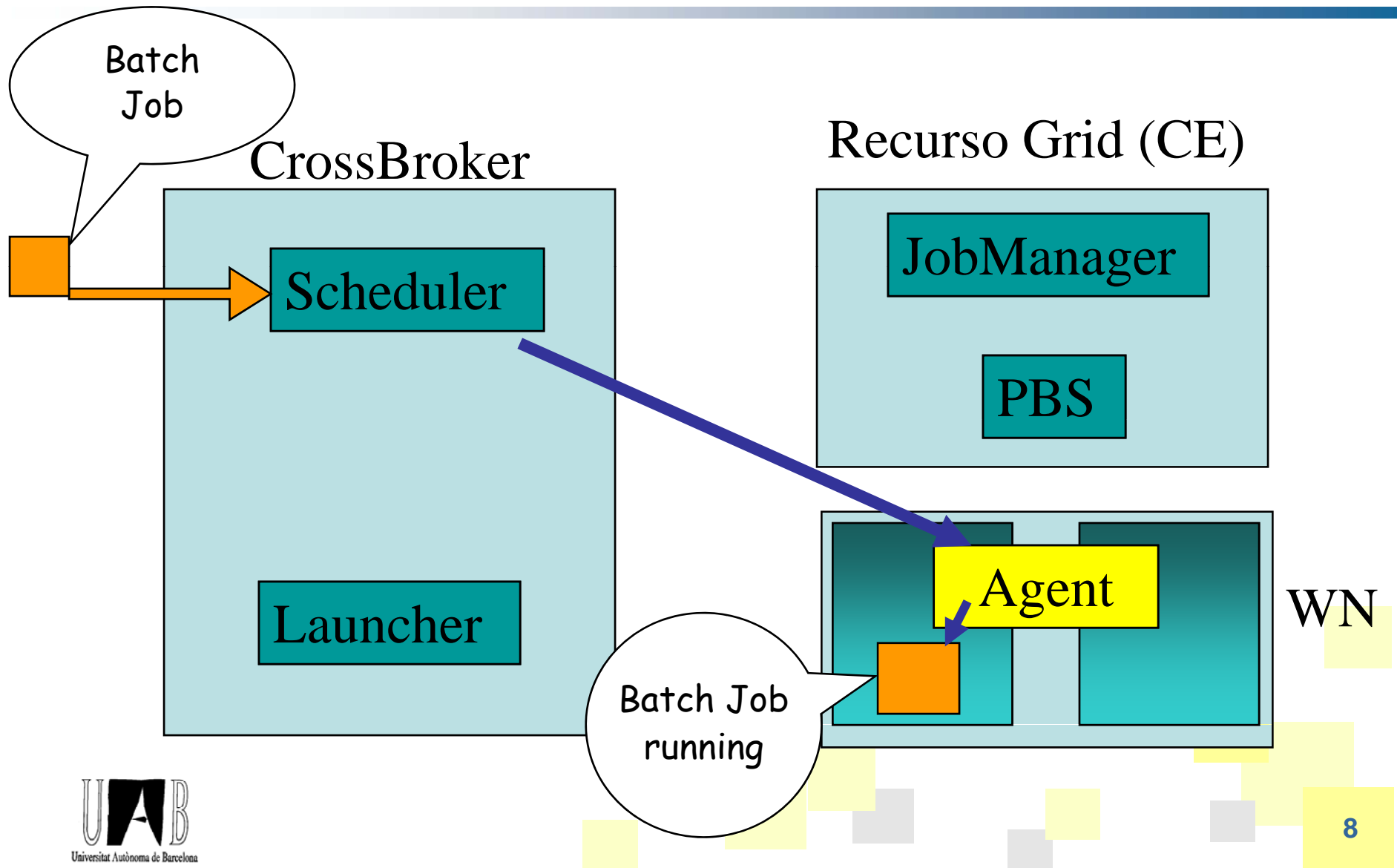
## □ Basic Idea:

- Batch jobs are encapsulated with an agent that will take control of a remote machine independently to the Local Resource Manager.

## □ Goal:

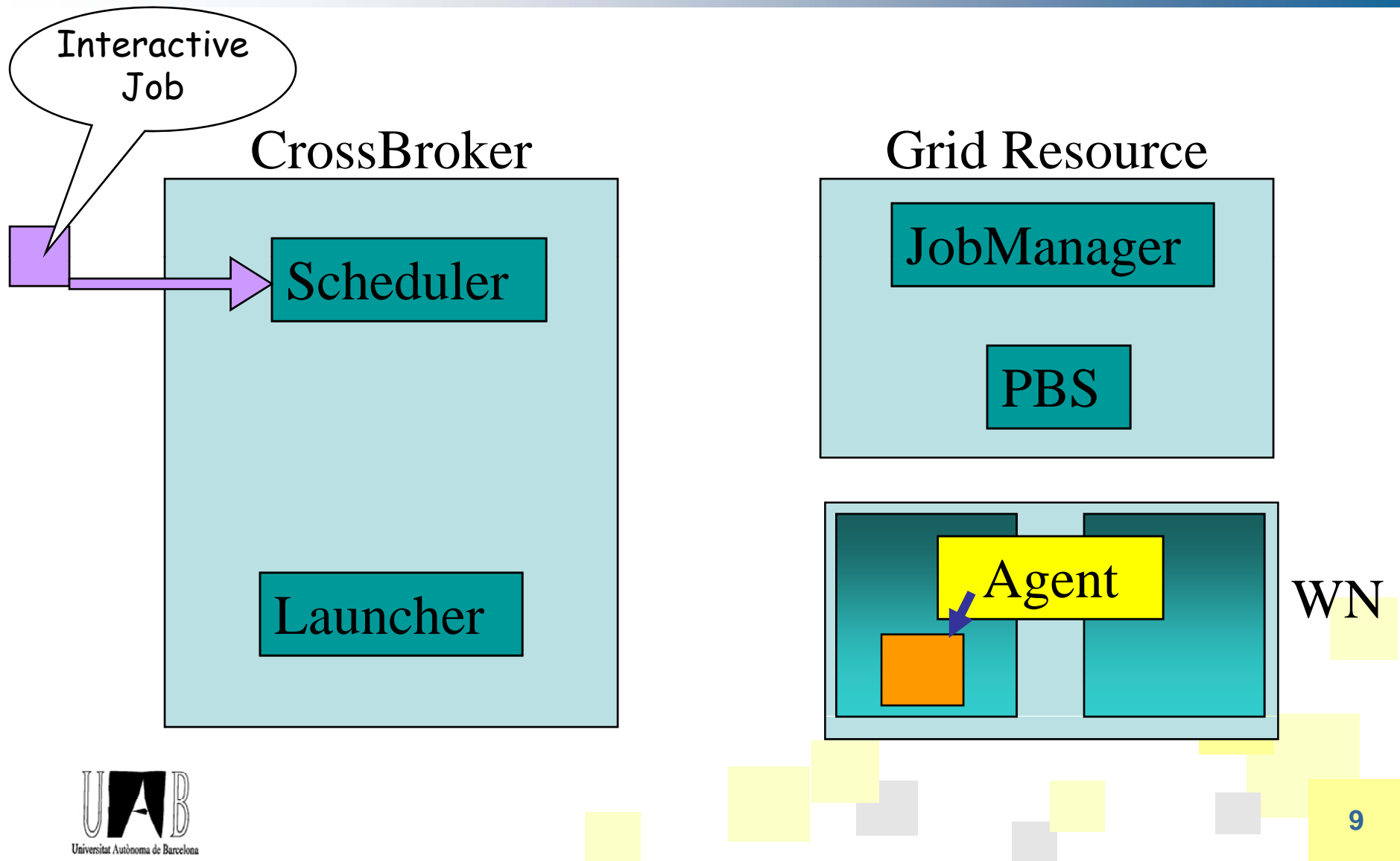
- The agent:
  - Will split the machine in 2 (N) “virtual” machines.
  - Manages execution of independent jobs in each VM.
  - Implements multiprogramming between all jobs
  - Will be used as a fast start up mechanism

# Glide-In: used with interactivity (1)

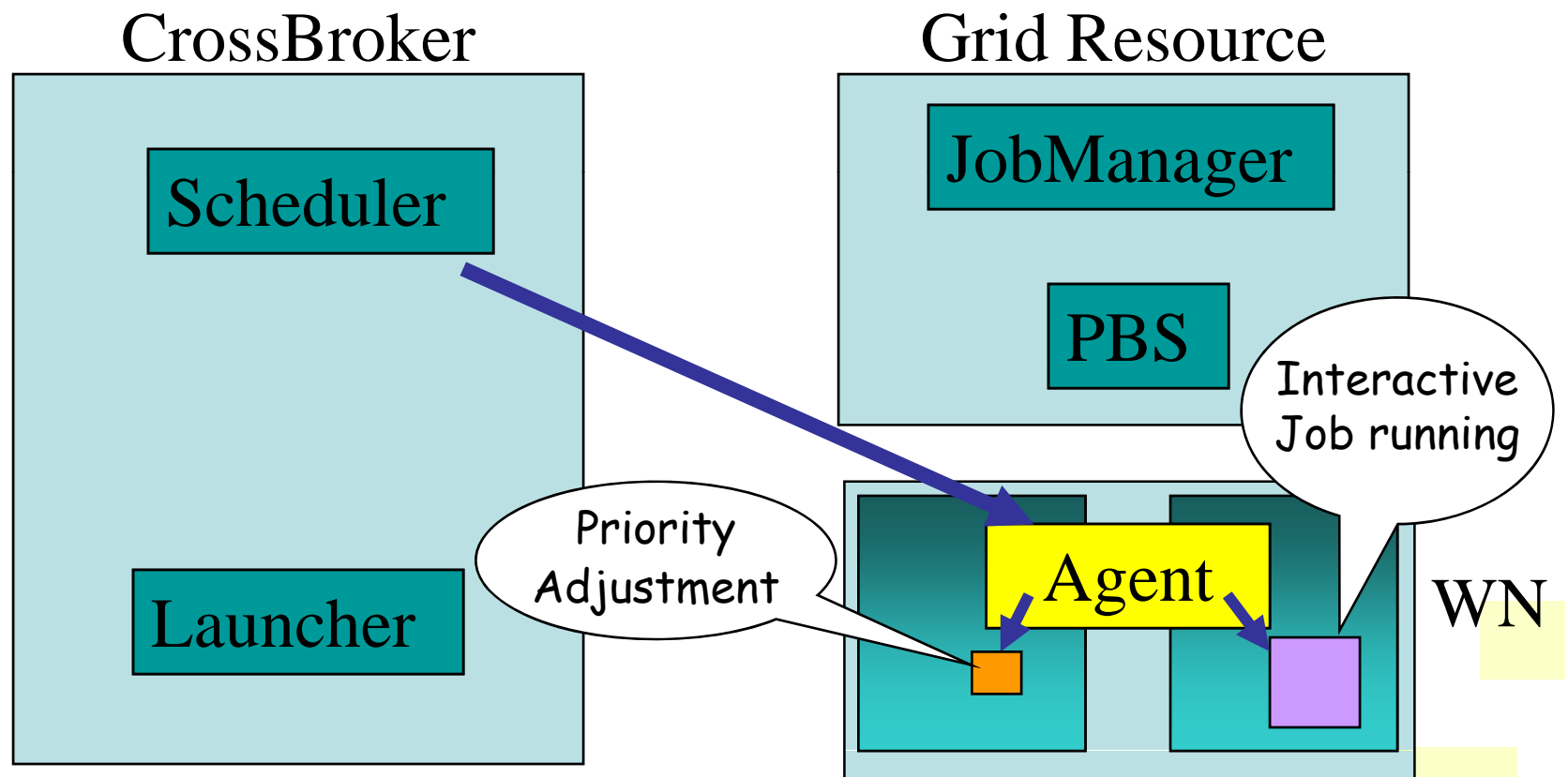




## Glide-In: used with interactivity (2)

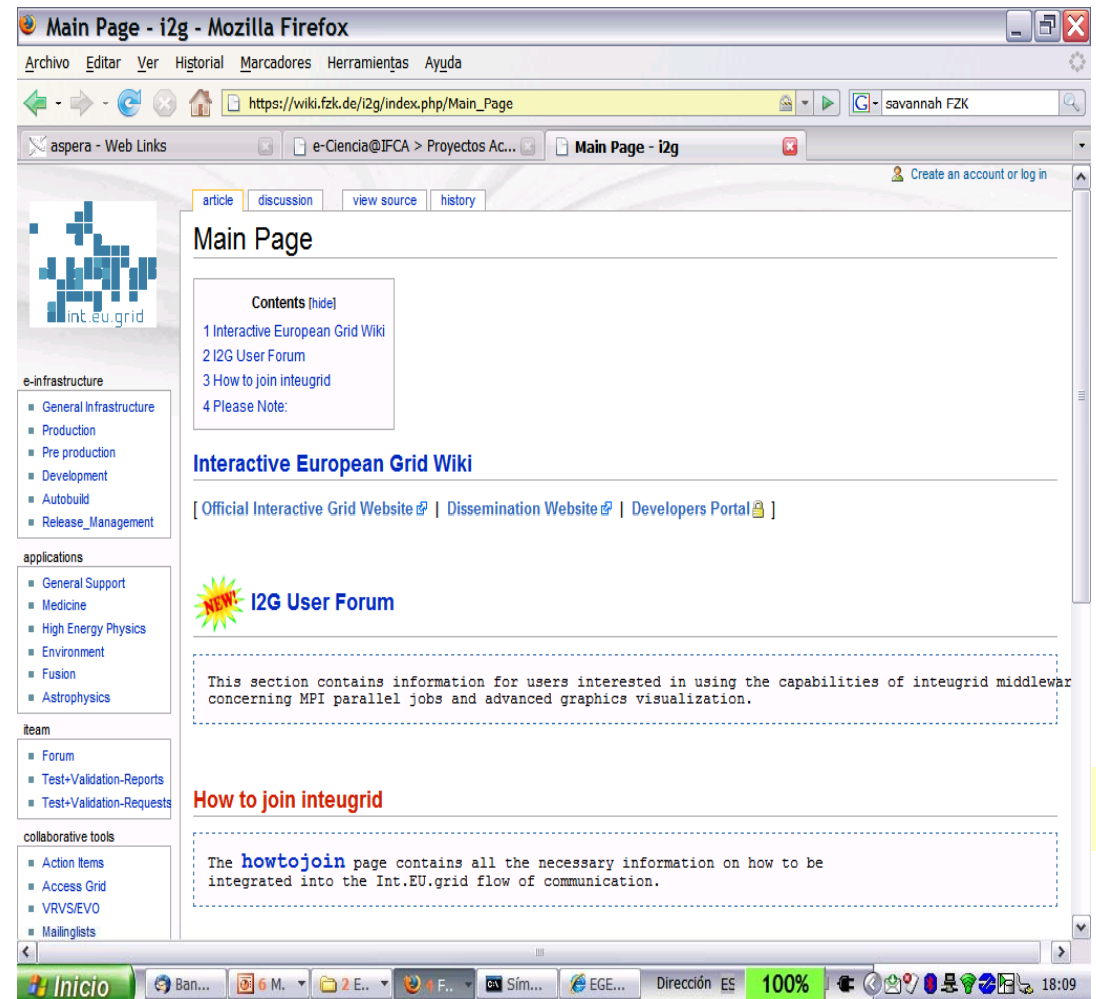


## Glide-In: used with interactivity (and 3)



# Middleware Consolidation

- Support Tools
  - ▶ Savannah
  - ▶ Repository
  - ▶ Test & Validation



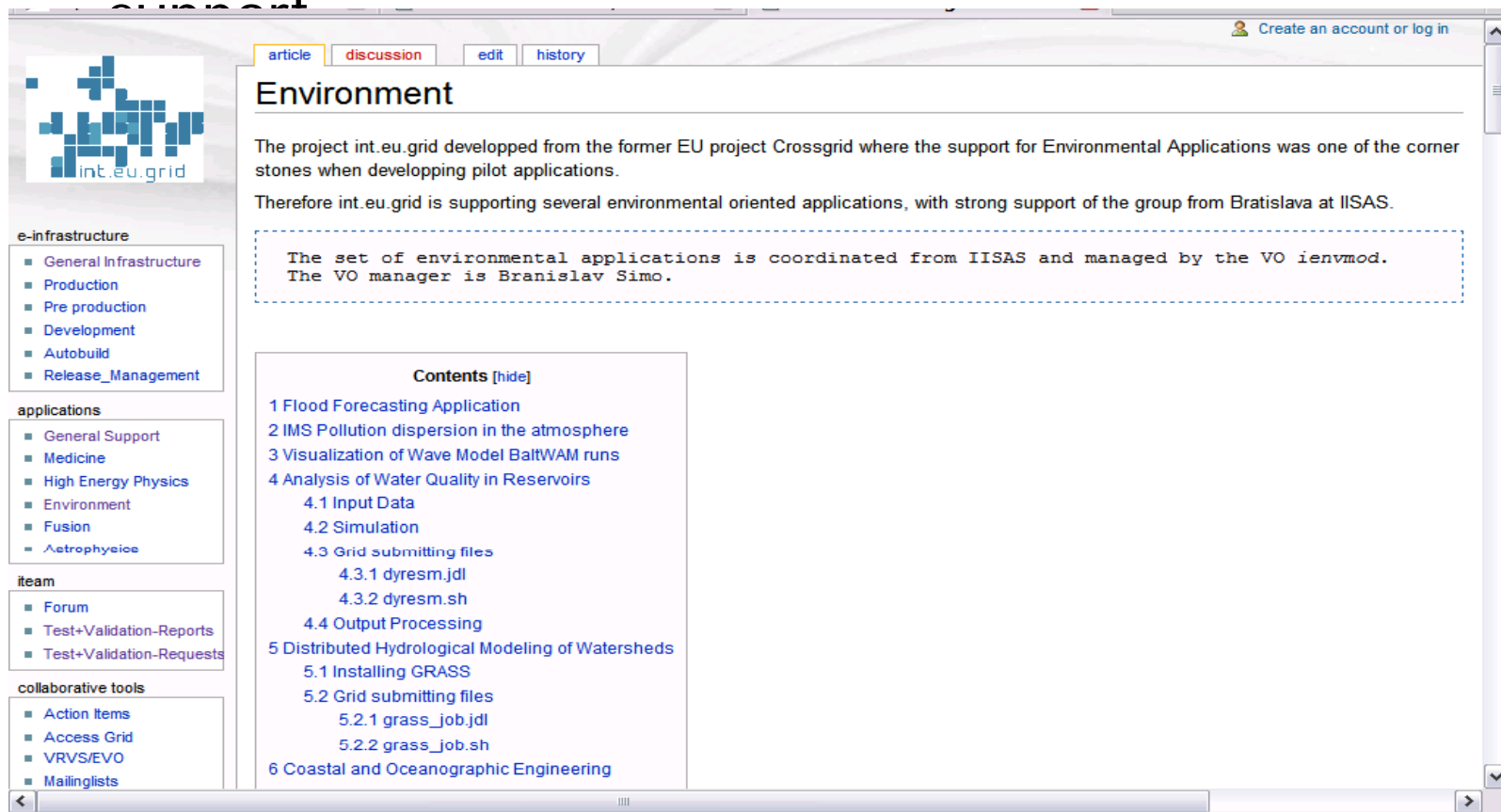
## ❑ Not an exhaustive list:

- ▶ mpi-start, mpi support (*contact: Kiril Dichev HLRS*)
- ▶ i2glogin (*contact: Herbert Rosmanith GUP*)
- ▶ Migrating Desktop (*contact: Marcin Plociennik PSNC*)
- ▶ Crossbroker (*contact: Miquel Senar UAB*)
- ▶ Active Security (*contact: Stuart Kenny TCD*)
- ▶ "interoperability" (*contact: Jorge Gomes LIP*)

# Support to User Communities

## □ Key point

- ▶ Need to extend from current wiki to full VO oriented



The screenshot shows a web browser window displaying a wiki page for 'int.eu.grid'. The page title is 'Environment'. The content describes the project's history and its focus on environmental applications. A sidebar on the left lists various categories: e-infrastructure, applications, team, and collaborative tools. The main content area includes a 'Contents' section with a list of topics and sub-topics.

**Environment**


The project int.eu.grid developed from the former EU project Crossgrid where the support for Environmental Applications was one of the corner stones when developing pilot applications.

Therefore int.eu.grid is supporting several environmental oriented applications, with strong support of the group from Bratislava at IISAS.

The set of environmental applications is coordinated from IISAS and managed by the VO ienvmod. The VO manager is Branislav Simo.

**Contents [hide]**

- 1 Flood Forecasting Application
- 2 IMS Pollution dispersion in the atmosphere
- 3 Visualization of Wave Model BaltWAM runs
- 4 Analysis of Water Quality in Reservoirs
  - 4.1 Input Data
  - 4.2 Simulation
  - 4.3 Grid submitting files
    - 4.3.1 dyresm.jdl
    - 4.3.2 dyresm.sh
  - 4.4 Output Processing
- 5 Distributed Hydrological Modeling of Watersheds
  - 5.1 Installing GRASS
  - 5.2 Grid submitting files
    - 5.2.1 grass\_job.jdl
    - 5.2.2 grass\_job.sh
- 6 Coastal and Oceanographic Engineering



Int.eu.grid

**e-infrastructure**

- General Infrastructure
- Production
- Pre production
- Development
- Autobuild
- Release\_Management

**applications**

- General Support
- Medicine
- High Energy Physics
- Environment
- Fusion
- Astrophysics

**iteam**

- Forum
- Test+Validation-Reports
- Test+Validation-Requests

**collaborative tools**

- Action Items
- Access Grid
- VRVS/EVO
- Mailinglists

article discussion edit history

## Inter-operability between I2G and EGEE

**Contents** [hide]

- 1 About the Document
- 2 Motivation and Technical Documentation
- 3 An interoperability example: Deploy Int.EU.Grid UI software on top of an EGEE UI
  - 3.1 Introduction
  - 3.2 Packages
  - 3.3 Instalation
  - 3.4 Configuration

[edit]

### About the Document

*This WIKI addresses on how to provide inter-operability between Int.EU.Grid and EGEE infrastructures.*

*Author: Goncalo Borges*

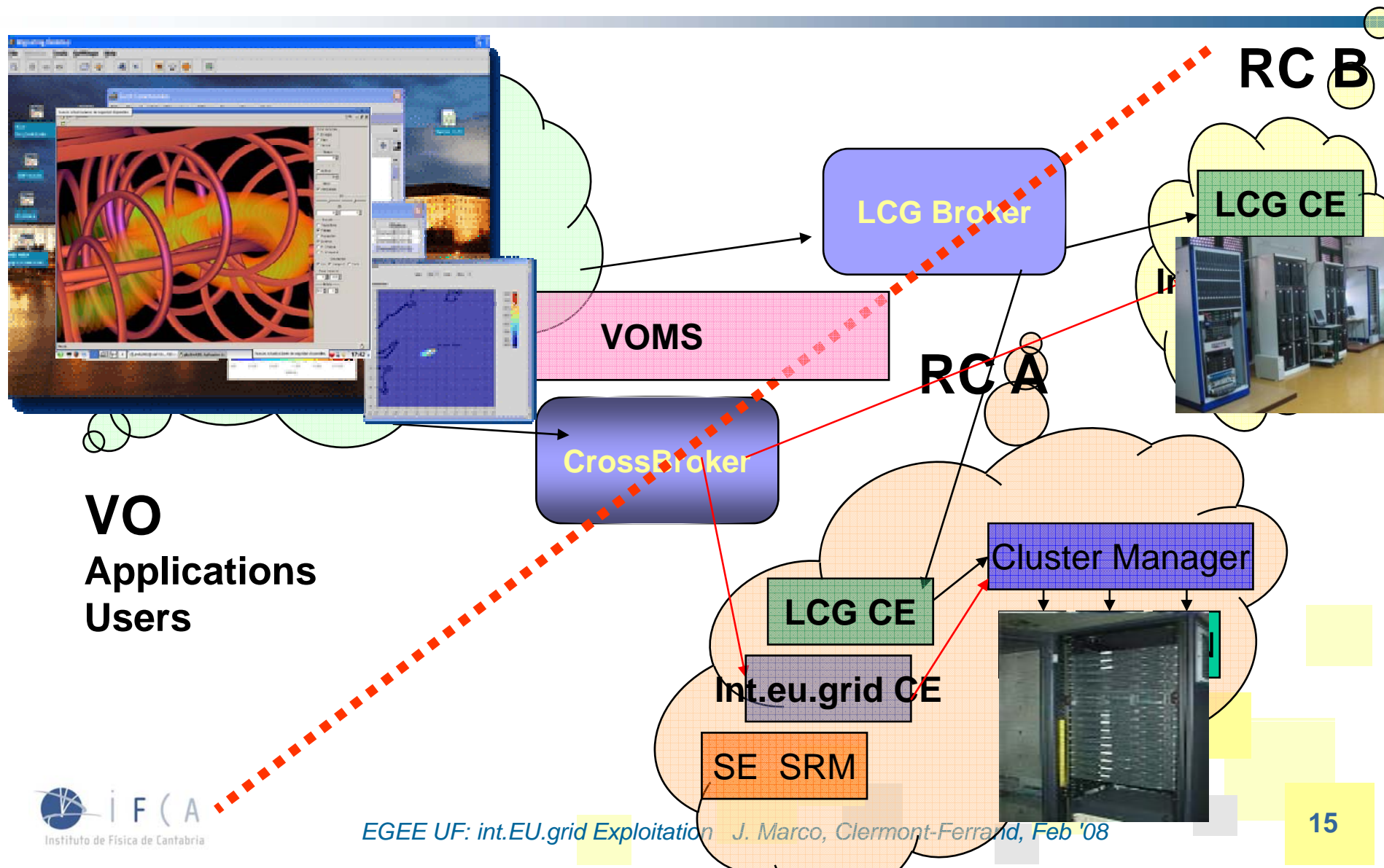
*Last changes: 17th September 2007*

[edit]

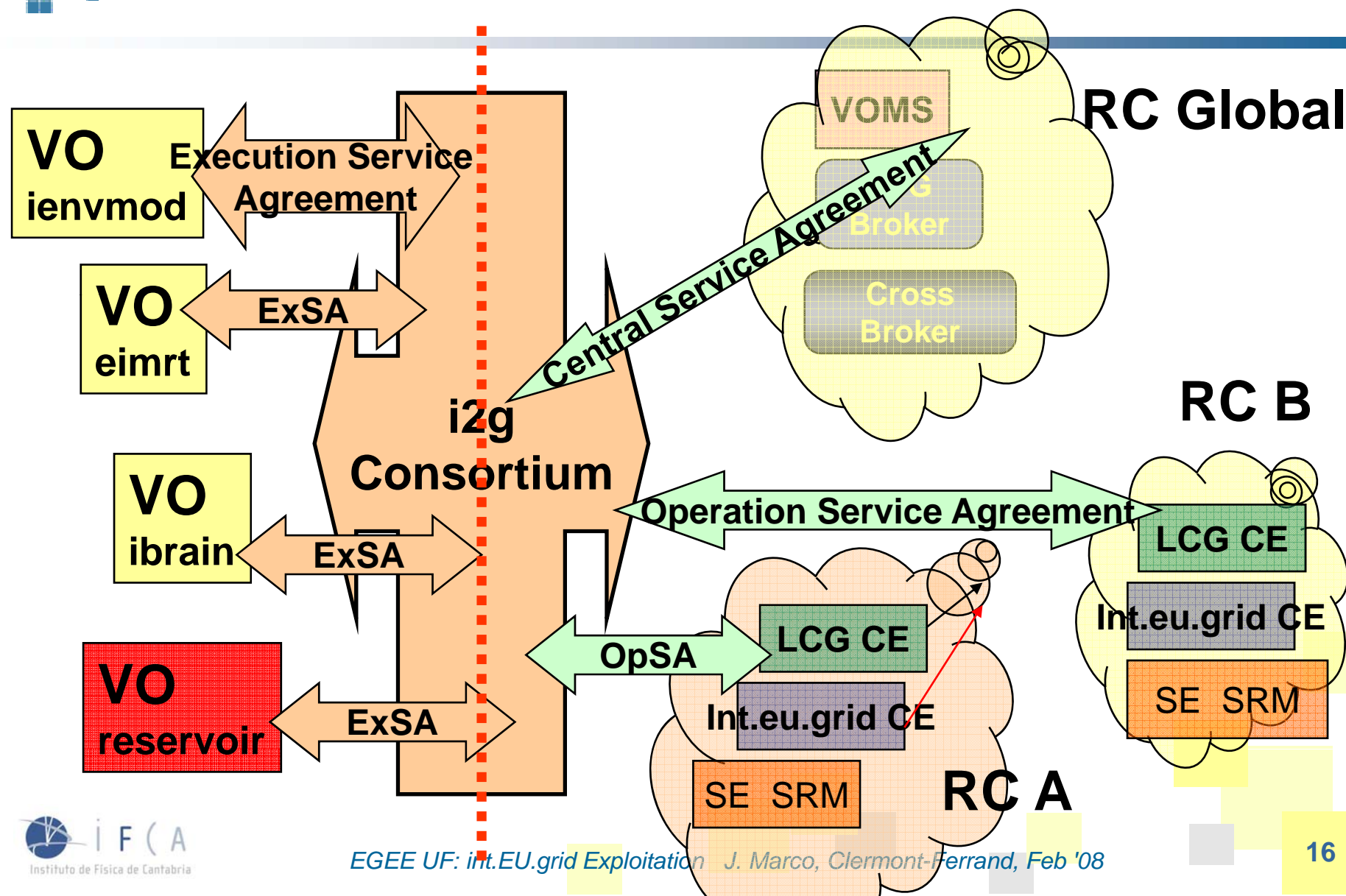
### Motivation and Technical Documentation

The interoperability between two Grid projects such as Int.EU.Grid and EGEE is something which is not obvious and Int.EU.Grid project has been doing a major effort to propose best practices on this sense. The suggestions here presented enable interoperability until a certain level between different Grid Infrastructures such as EGEE and Int.EU.Grid. The implementation of such principles will allow that sites belonging to one of the projects may also deploy and use resources from the other infrastructure in an independent way. Moreover, sites which are members of both Int.EU.Grid and EGEE projects may share the same resources (WNs) to run jobs, minimizing in this way the administrative effort on resource management. Enabling previous features may be especially important to EGEE sites which are now able to take full advantage of Int.EU.Grid capabilities, namely parallelization and visualization, though the deployment of simple Int.EU.Grid middleware components. Therefore, from the I2G infrastructure point of view, the challenge is to support the execution of EGEE applications, submitted through EGEE User Interfaces and under EGEE VO rights. An increasing level of interoperability can be achieved following one of the following proposals:

# An OPEN (Inter) Operational Model!



# Proposal for Services





## i2g SERVICES ON THE GRID – Beta

January, 2008

i2g Grid Services Offer includes:

- i2g Try & See Service (i2g TRY)
  - for new users, or users with limited requests
- i2g Storage Service (i2g STORAGE)
  - for handling medium to large storage requests
- i2g CONSOLIDATION Service (i2g CONSOLIDATION)
  - long term storage or archiving
- i2g Batch Service (i2g BATCH)
  - to support execution of high throughput jobs
- i2g Interactive Service (i2g INTERACTIVE)
  - immediate execution, steering and visualization
- i2g MPI Service (i2g MPI)
  - supporting parallel programs
- i2g Interactive MPI Service (i2g INTERACTIVE MPI)
  - interactive execution of parallel programs
- i2g PACX-MPI Service (i2g PACX-MPI)
  - distributed parallel programs to use all available resources

The i2g Consortium is launching a Beta Offer for providing a suite of services oriented to support e-Science work for research communities in academy and industry.

The offer is supported by a pan-European distributed e-Infrastructure providing a significant computing and storage capacity able to satisfy medium-size demands (typically 100 processors and 10 Terabytes).

It is specially designed to make demanding and interactive computing in the Grid easier for developers and friendly for final users.

# Service Agreement with Users (YOU)

## EXAMPLE OF i2g SERVICE AGREEMENT

Updated January 28, 2008

PLEASE READ CAREFULLY - THIS IS A BINDING CONTRACT

THIS **i2g** SERVICES CUSTOMER AGREEMENT ("AGREEMENT" OR "**i2g** SERVICES CUSTOMER AGREEMENT") IS A BINDING AGREEMENT BETWEEN **i2g** CONSORTIUM ("**i2g**") AND YOU AND, IF APPLICABLE, THE COMPANY, COLLABORATION, OR OTHER LEGAL ENTITY YOU REPRESENT (COLLECTIVELY, "YOU"). THIS AGREEMENT INCORPORATES BY REFERENCE (1) THE PRIVACY NOTICE ("PRIVACY NOTICE") AND (2) THE CONDITIONS OF USE ("CONDITIONS OF USE") POSTED ON WWW.i2g.EU, AS THEY MAY BE MODIFIED BY US FROM TIME TO TIME.

BY SENDING THE "ACCEPT" FOR THIS AGREEMENT OR ACCEPTING ANY MODIFICATION TO THIS AGREEMENT IN ACCORDANCE WITH SECTION 2 BELOW, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU ARE ENTERING INTO THIS AGREEMENT ON BEHALF OF A COMPANY OR OTHER LEGAL ENTITY, YOU REPRESENT THAT YOU HAVE THE LEGAL AUTHORITY TO BIND THE LEGAL ENTITY TO THIS AGREEMENT, IN WHICH CASE "YOU" SHALL MEAN SUCH ENTITY.

## Services based on Accounting

### ACCOUNTING RECORD FOR VIRTUAL ORGANIZATION *RESERVOIR*

Period: 1-Feb-2008 to 29-Feb-2008

Company/Collaboration: *ECOHYDROS SL*

Contact person: *FCO (fco [at] ecohydros.com)*

Users: *FCO,ALEX,AGUS,CARLOS*

Service	Initial Estimation	Actual usage	Fee	Total Cost	Description of Use
TRY	100HR 10GB	87HR 2GB	0€	0€	Test first executions of SMDR
STORAGE	10000GB	780GB	1€	780€	Store maps for Cuerda del Pozo
CONSOLIDATION	5000GB	300GB	1€	300€	Archive maps + output
BATCH	10000HR	7532HR	0,1€	753€	Compute 10m grid for Itoiz
INTERACTIVE	1000HR	466HR	0,5€	233€	Display maps
MPI	1000HR	371HR	0,2€	74€	Compute 5m grid for Cuerda del Pozo
INTERACTIVE MPI	5000HR	298HR	1€	298€	6 pretests for 5m grid for Cuerda del Pozo
PACX-MPI	5000HR	728HR	0,2€	155€	Compute at 2m grid in 2 days
TOTAL				2593€	

# And Service Level Agreement...

## i2g Service Level Agreement

**Effective Date: February 1, 2008**

The **i2g** Service Level Agreement (SLA) is a policy governing the use of the i2g Grid Services that include Distributed Computing, Storage, Transfer and Archive, by the users of these services.

This SLA applies under the terms of the i2g Customer Agreement between the i2g Consortium (“i2g”, “we” or “us”) and the users of these services (“you”).

This SLA applies separately to each Virtual Organization (VO) using i2g Grid Services.

Unless otherwise provided herein, this SLA is subject to the terms of the **i2g Service Agreement** and capitalized terms will have the meaning specified there.

We reserve the right to change the terms of this SLA in accordance with the i2g Agreement.

### Service Commitment

Making full usage of its distributed infrastructure, i2g will make available the i2g Basic Grid (BATCH, MPI, STORAGE, ARCHIVING) Services with a weekly uptime percentage (as defined below) of at least 99.99% during any weekly virtual billing cycle (“The Service Commitment”). This means that the Basic Grid Services will be unavailable one minute per week at most. In the event i2g does not meet this Service Commitment, you will be eligible to receive a Service Credit as described below.

Making usage of its Interactive Broker capabilities, i2g will guarantee that any “priority” job (INTERACTIVE, MPI-INTERACTIVE) will be scheduled and launched in less than 10 minutes at least 99% during any weekly virtual billing cycle (“The Priority Service Commitment”). This means that a Priority Job may not be scheduled and launched in less than 10 minutes in a period covering 100 minutes per week at most. In the event i2g does not meet this Service Commitment, you will be eligible to receive a Service Credit as described below.

# Conclusions

- We have planned an exploitation path:
  - ▶ Support our “final and consolidated” release middleware
  - ▶ Promote components to RESPECT program
  - ▶ Keep infrastructure compatible with EGEE
    - INTEROPERABILITY
  - ▶ Support existing communities
    - including new projects: DORII, EUFORIA
  - ▶ Start and test the service agreement scheme