

# Interfacce web per risorse di calcolo e storage distribuito

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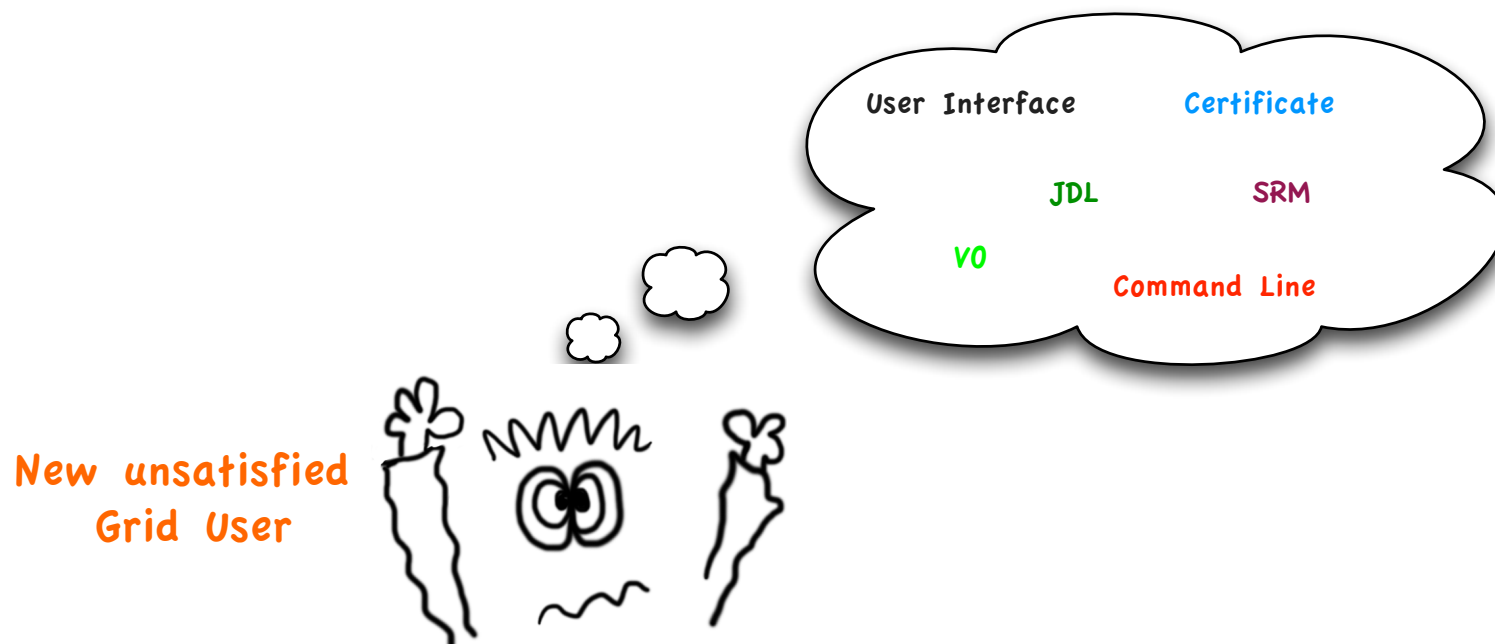
Diego Scardaci (INFN-CATANIA)

GARR-CCR – 2012

Napoli – 14/05/12

# Grid Approach Problem

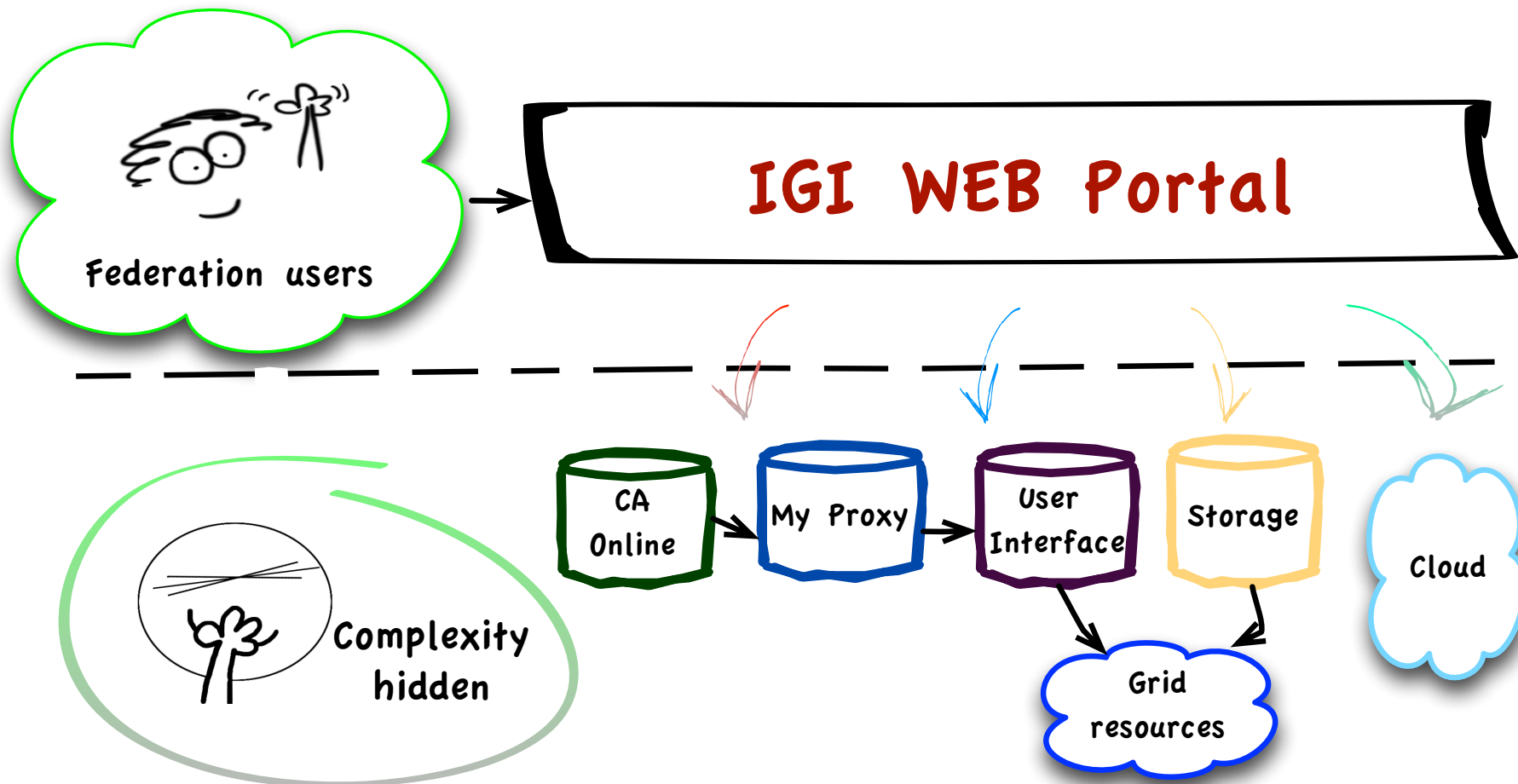
- For new Users Grid is complex, they must:
  - have a recognized **certificate**
  - belong to a **Virtual Organization** (Certificate is necessary)
  - know **JDL** and command syntax



# Our solution



# Our solution



# Starting point

- We have taken WS-Pgrade as a base of our work
  - Liferay based (opensource and modular due portlet concepts)
  - Workflow and data management supported
- We started developing new portlets to integrate new services and customizing WS-Pgrade portlets:
  - Federated Authentication (completed)
  - Advance Data Management (in development)
  - Cloud integration (to be developed)

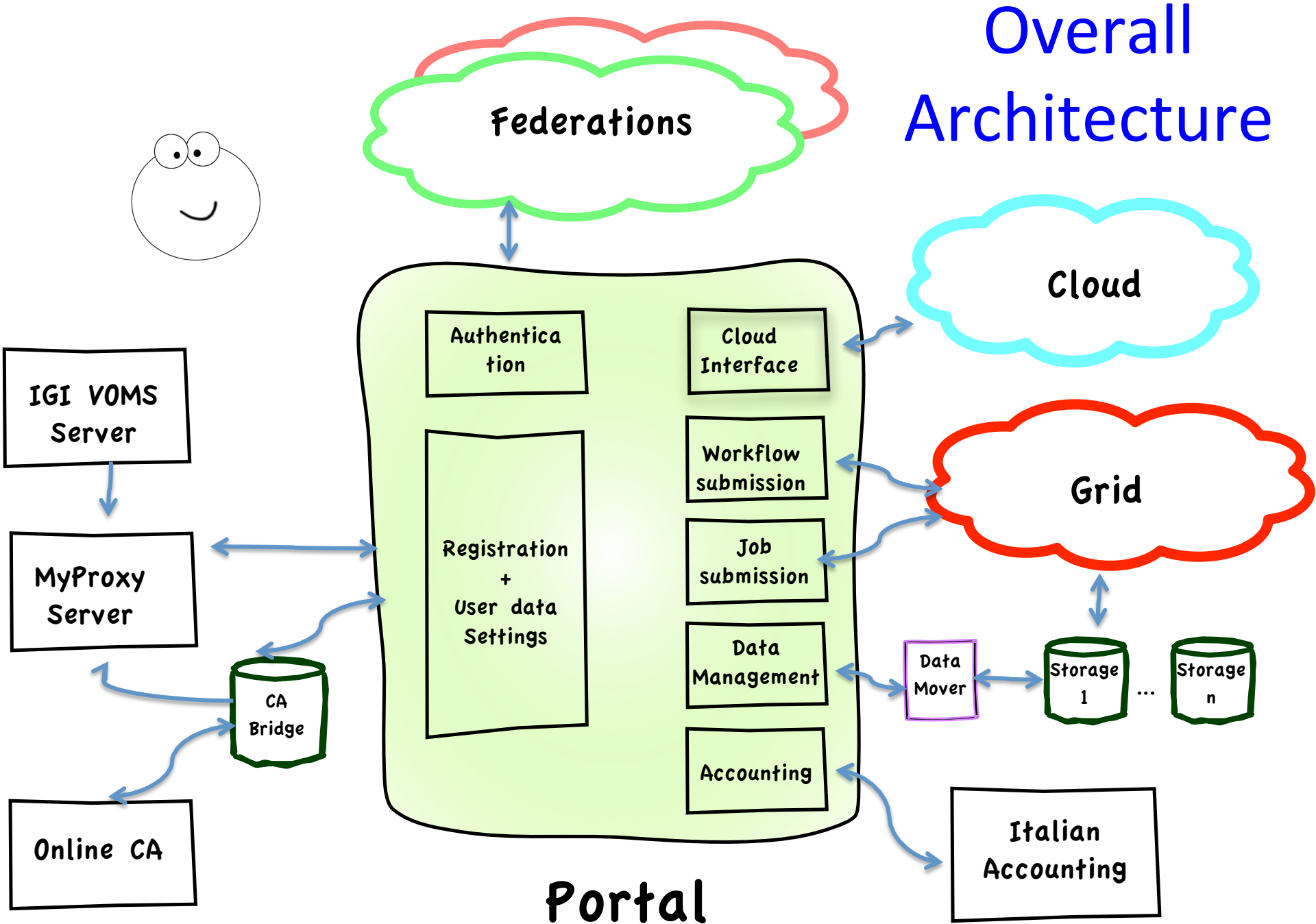
# Sustainability

- In Italy several Grid portals already coexist:
  - Portal General Purpose (Cnaf)
  - Science Gateways (Catania, Bari, ...)
- Have these solutions something in common to establish a shared development?

# Points of convergence

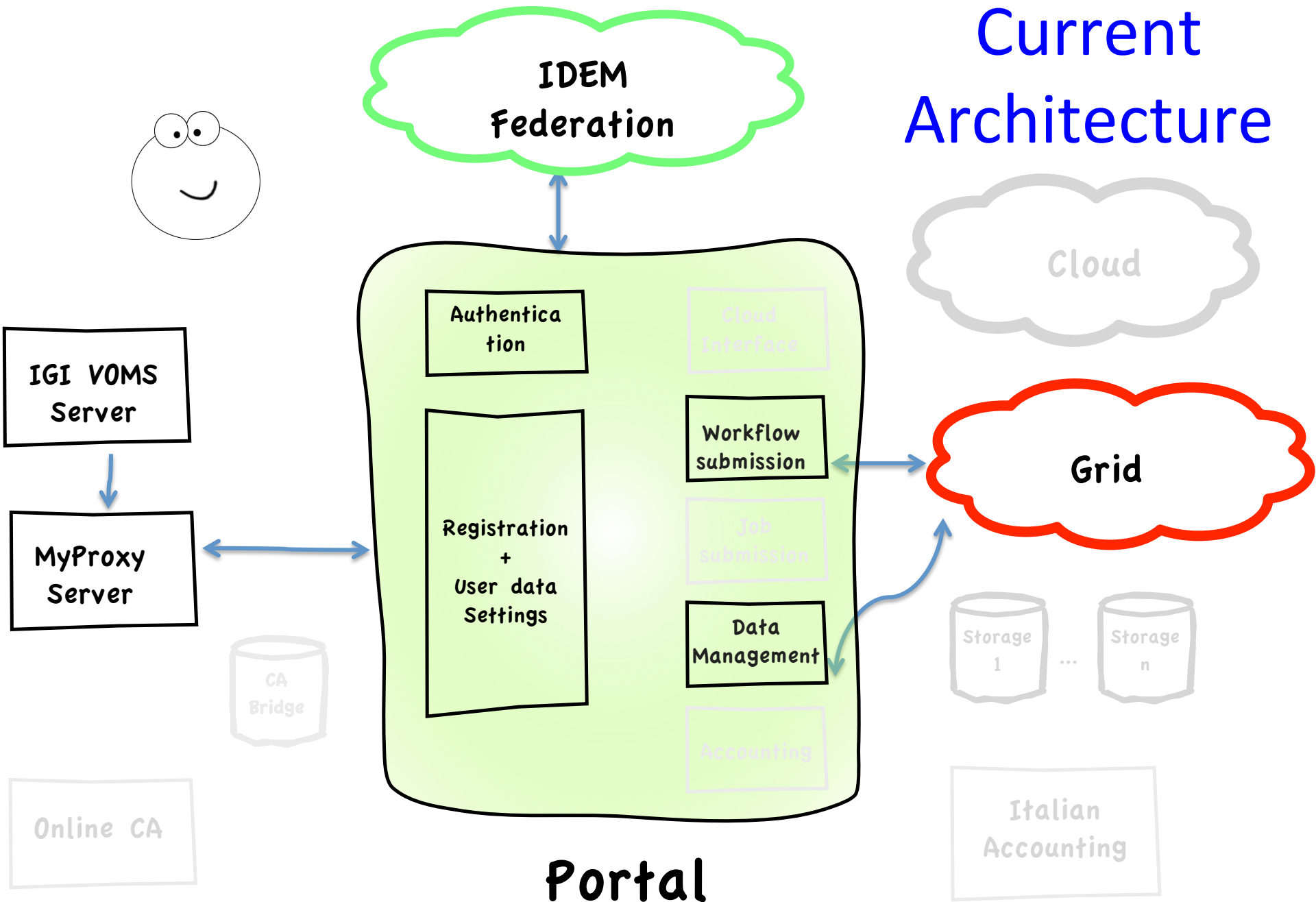
- 3 Task Forces to look for common points in 3 marco areas:
- **Authn/Authz** → the same library for a Shibboleth based authentication (Catania)
- **Job Submission** → the same Grid Engine JSaga based for Job Submission (Catania)
- **Data Managament** → Only some aspects of the upload mechanism

# Overall Architecture



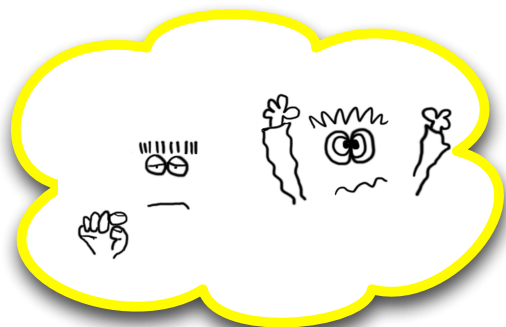


# Current Architecture



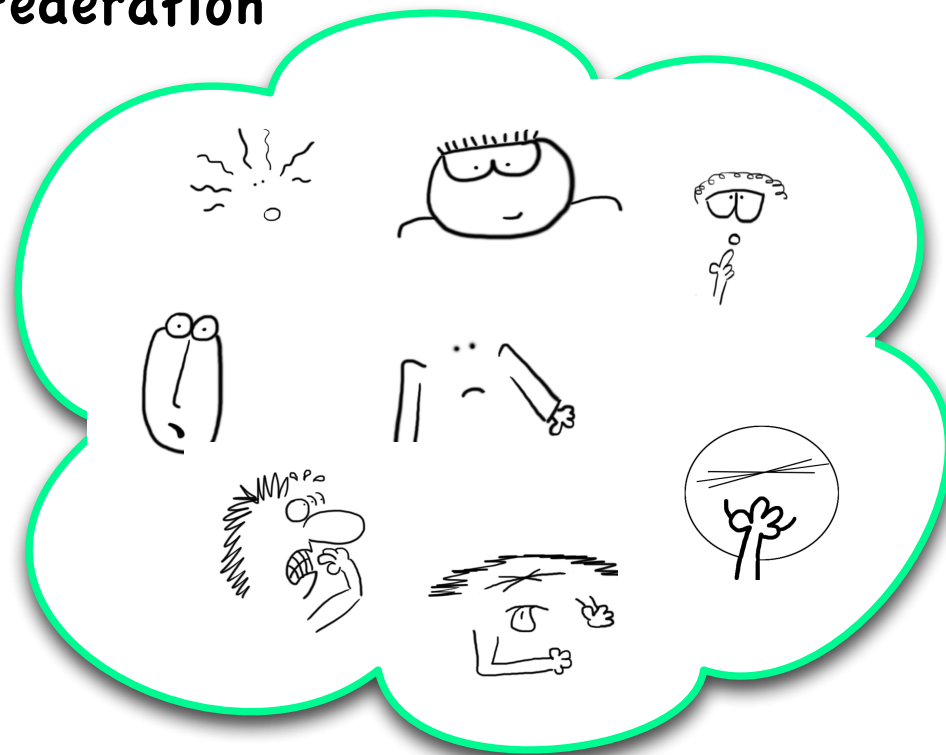
# Federated authentication

- Few users have a certificate
- Many users belong to a Federation



Users with IGTF accredited  
x.509 certificate

VS



Federation Users (with or without  
IGTF accredited x.509 certificate)

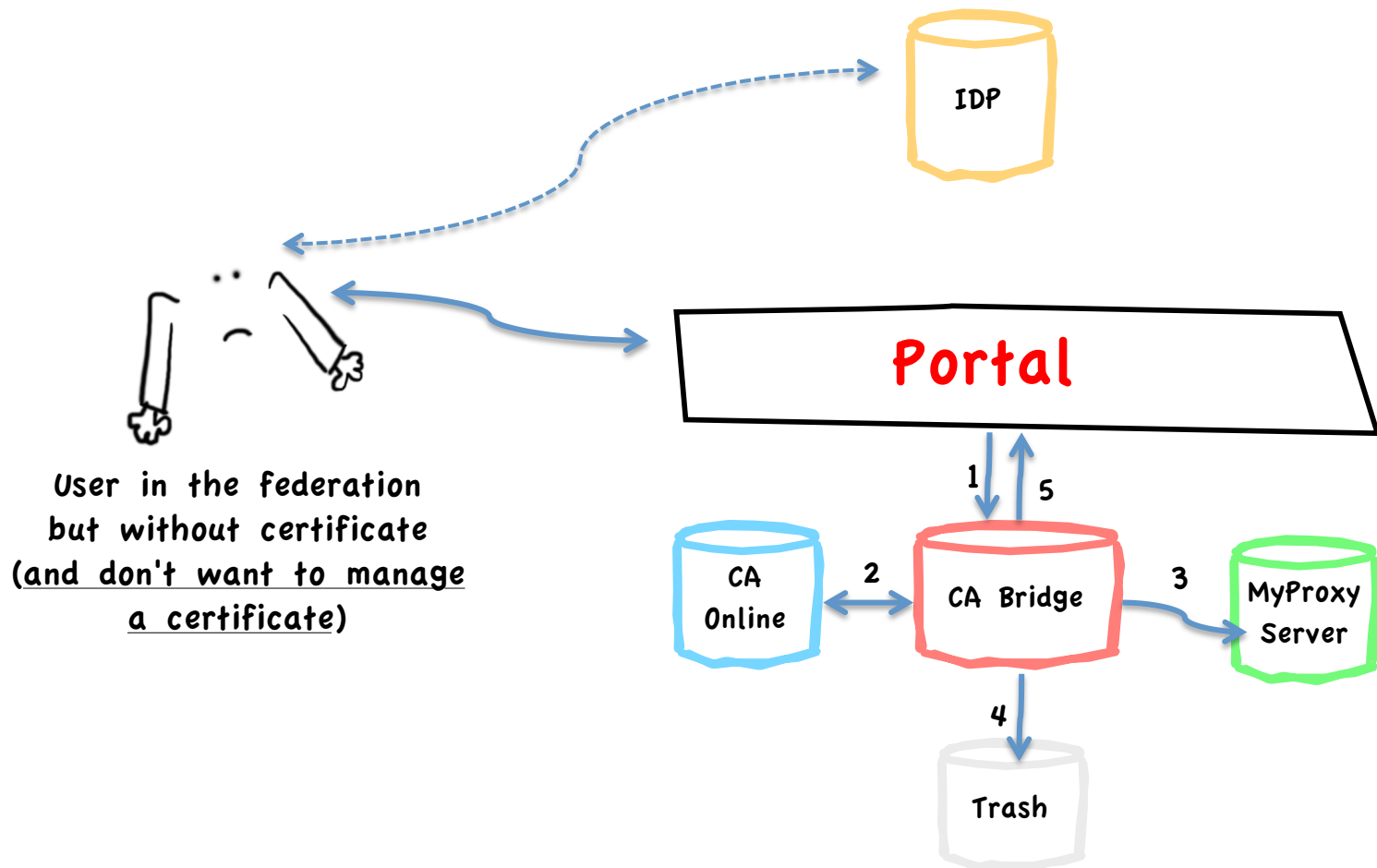
# Online CA

- A user with certificate → use it

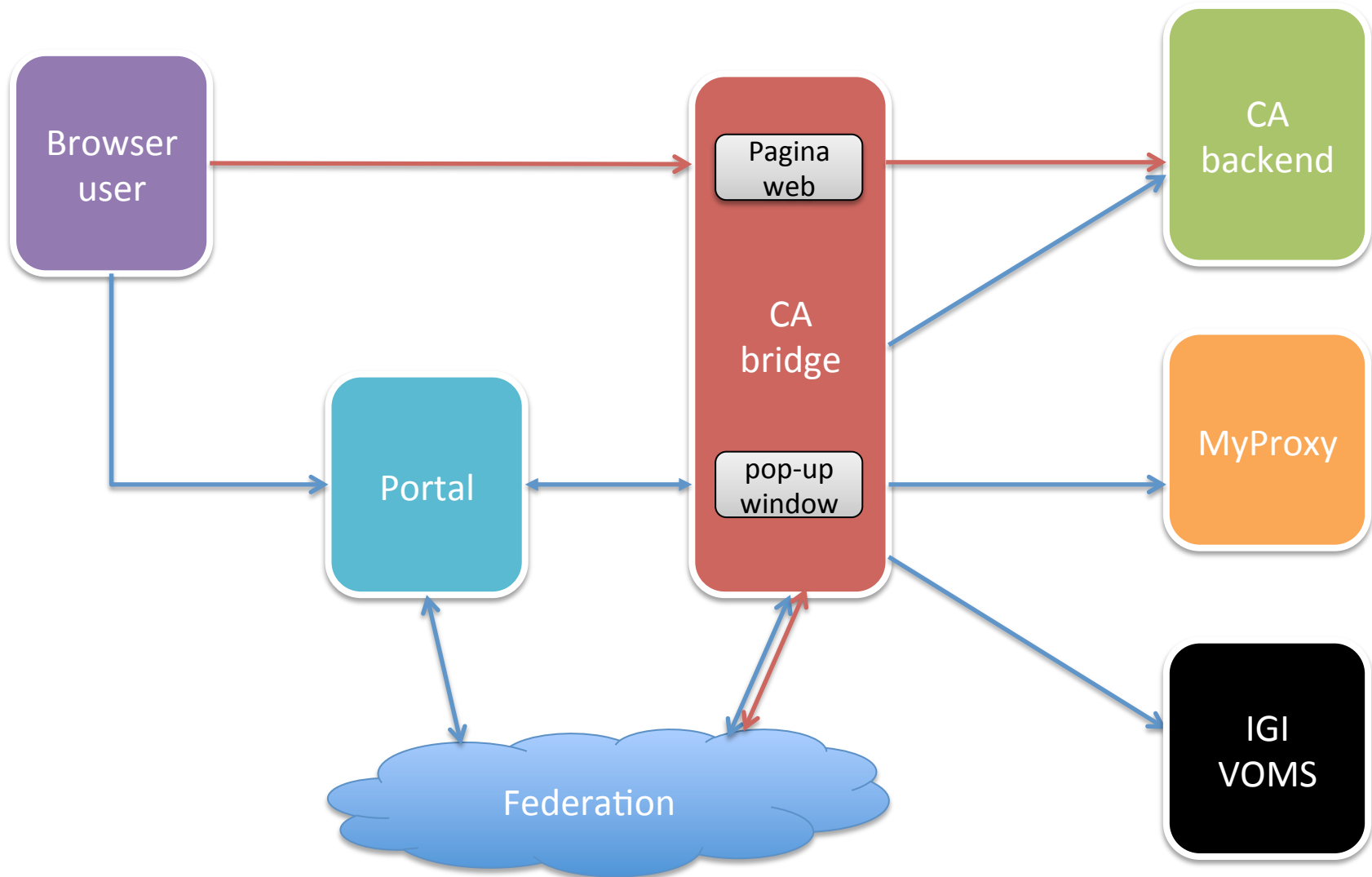
<http://www.eugridpma.org/guidelines/pkp/pk-protection-1.1-20100921.pdf>

- A user without certificate → provided by online CA
  - We use the strong IDP based identification to provide users a certificate in a completely transparent way
- In this way, in both cases, the user is totally identified in any GRID environment and can use the Grid resources without (legal) limitations

# Workflow to have a certificate

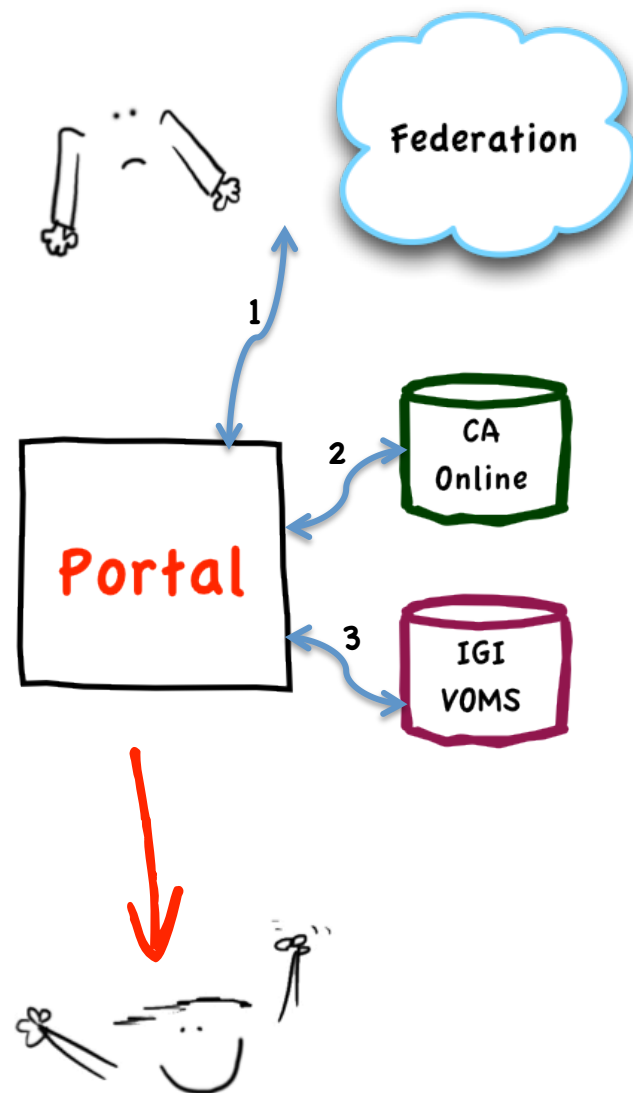


# CA Online Architecture

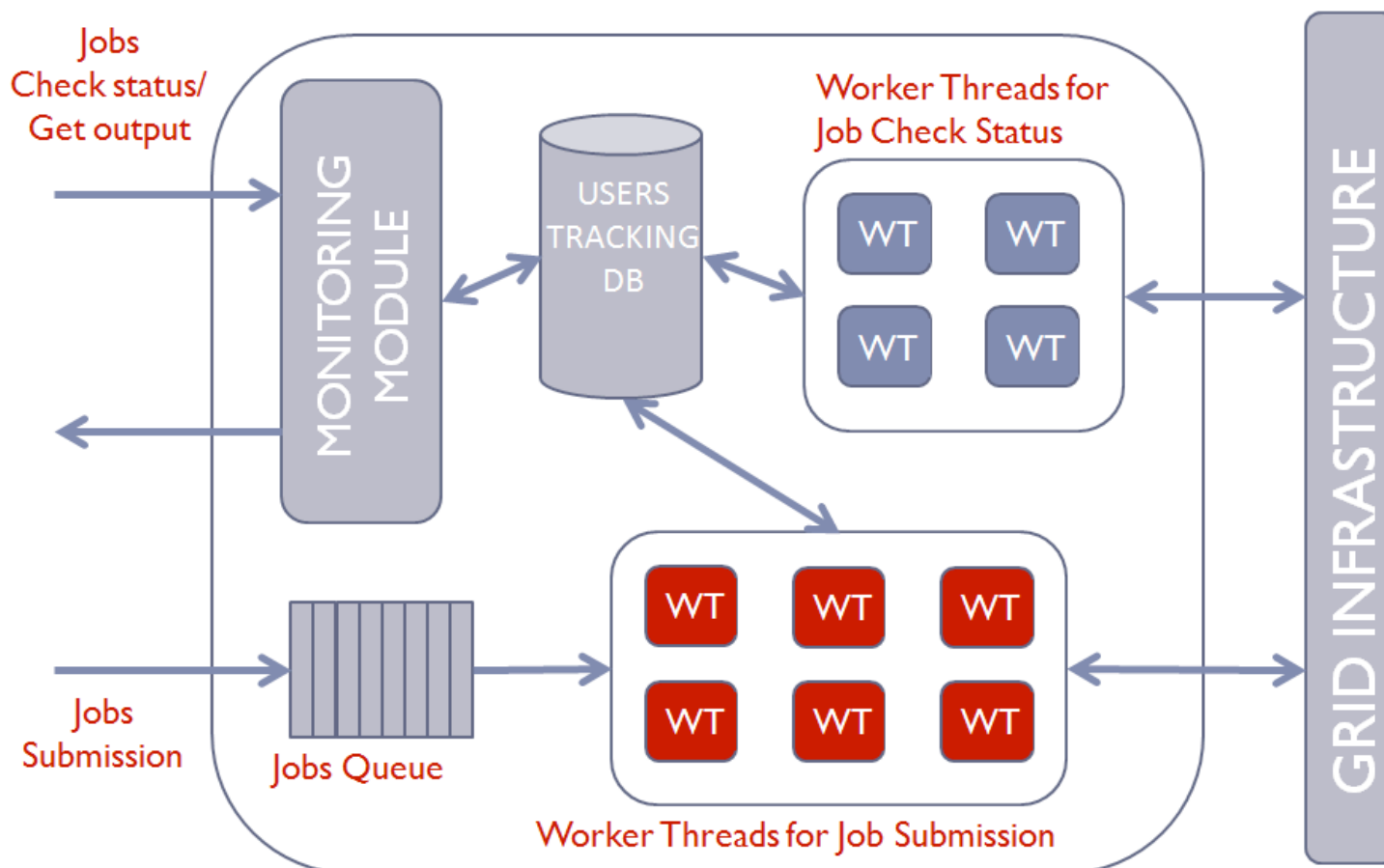


# Virtual Organization

- Through CAonline we provide users with a certificate
- These users automatically belong to IGI Virtual Organization
- In future they can ask to belong to other VOs through the portal
- Users who are already members of one or more VOs can specify for each one Roles and Groups they want to use



# Job Submission Architecture



Architecture developed by  
Diego Scardaci (INFN-CT)

# Job Engine: JSAGA

**SAGA (Simple API for Grid Applications)** is an API that provides the basic functionality required to build distributed applications, tools and frameworks

**SAGA is an Open Grid Forum standard**

<http://www.gridforum.org/documents/GfD.90.pdf>

The purpose of the SAGA standard is two-fold:

Provide a standardized, **common interface across various grid middleware** (independent of the underlying infrastructure)

Provide a **simple API** that can be used with much less effort **compared to the interfaces of existing grid middlewares**

Several implementations are available:

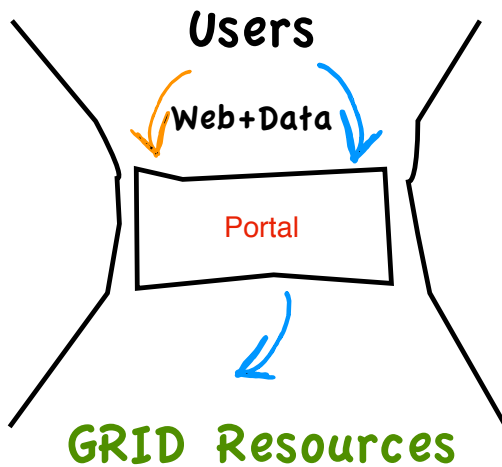
We adopted **JSAGA** the Java implementation developed at CCIN2P3 (<http://grid.in2p3.fr/jsaga/>)



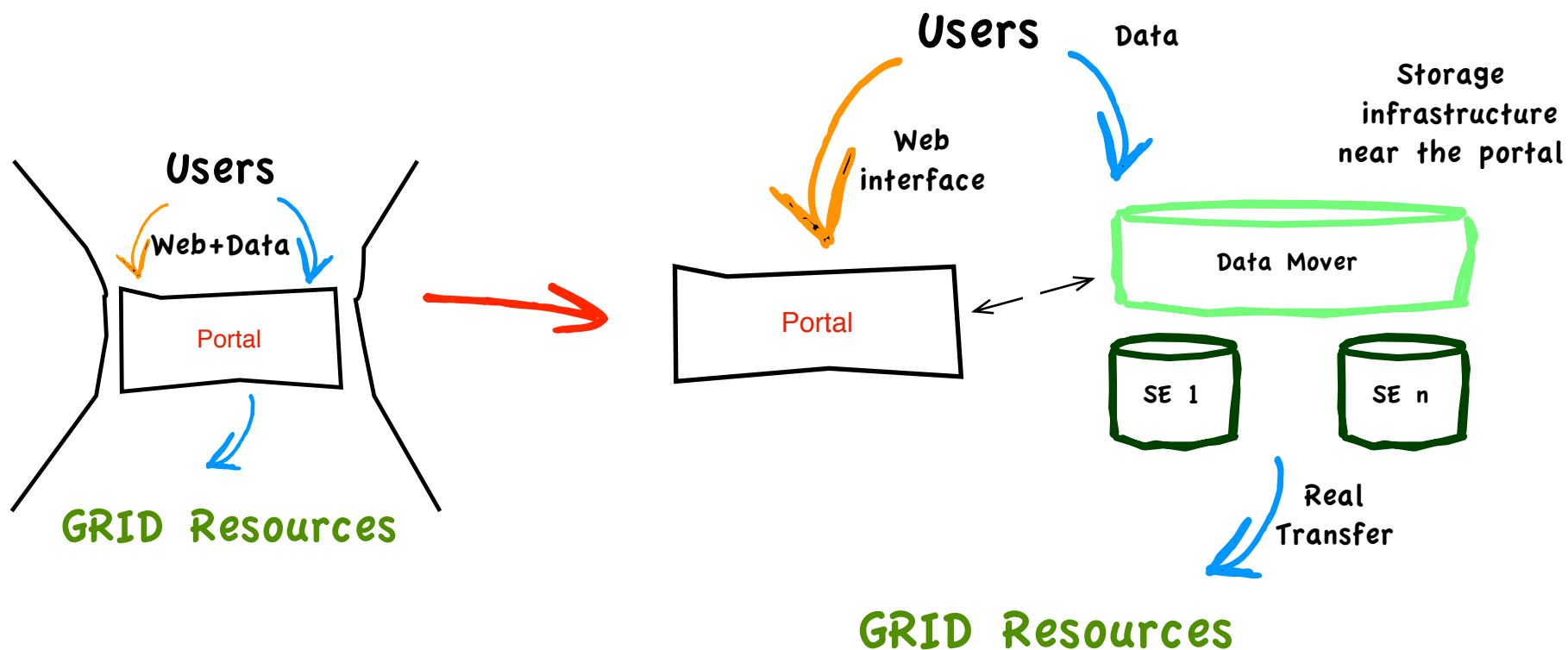
- The Job Engine has been designed with the following requirements in mind:

Feature	Description	Status
<b>Middleware Independent</b>	Capacity to submit job towards resources running different middleware	<b>DONE</b>
<b>Easiness</b>	Create code to run applications on the grid in a very short time	<b>DONE</b>
<b>Scalability</b>	Manage a huge number of parallel job submissions fully exploiting the HW of the machine where the Job Engine is installed	<b>DONE</b>
<b>Performance</b>	Have a good response time	<b>DONE</b>
<b>Accounting</b>	Register every grid operation performed by the users	<b>DONE</b>
<b>Fault Tolerance</b>	Hide middleware failure to the final users	<b>ALMOST DONE</b>

# Data Management Problem



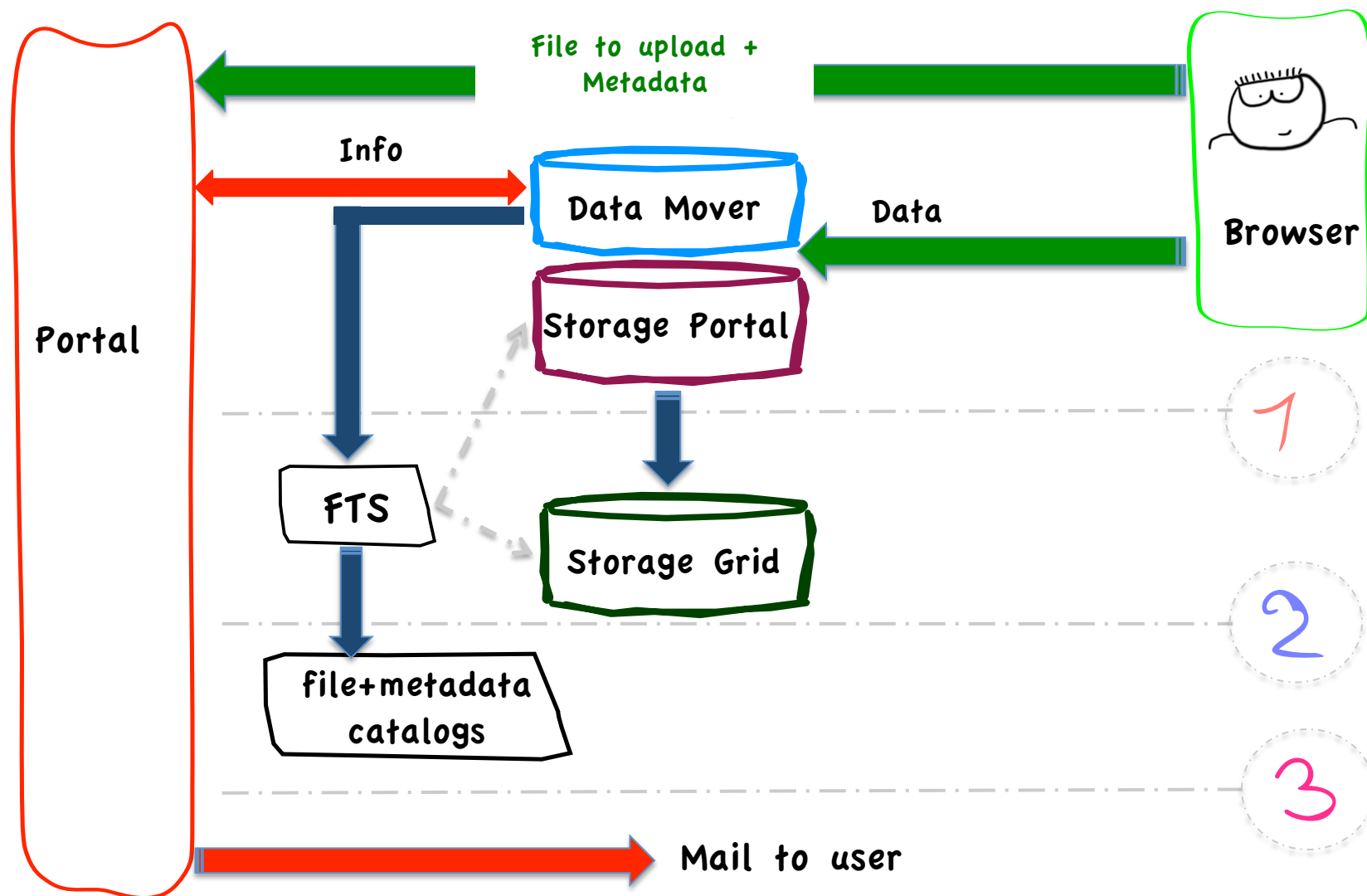
# Data Management Solution



# Data Management Requirement

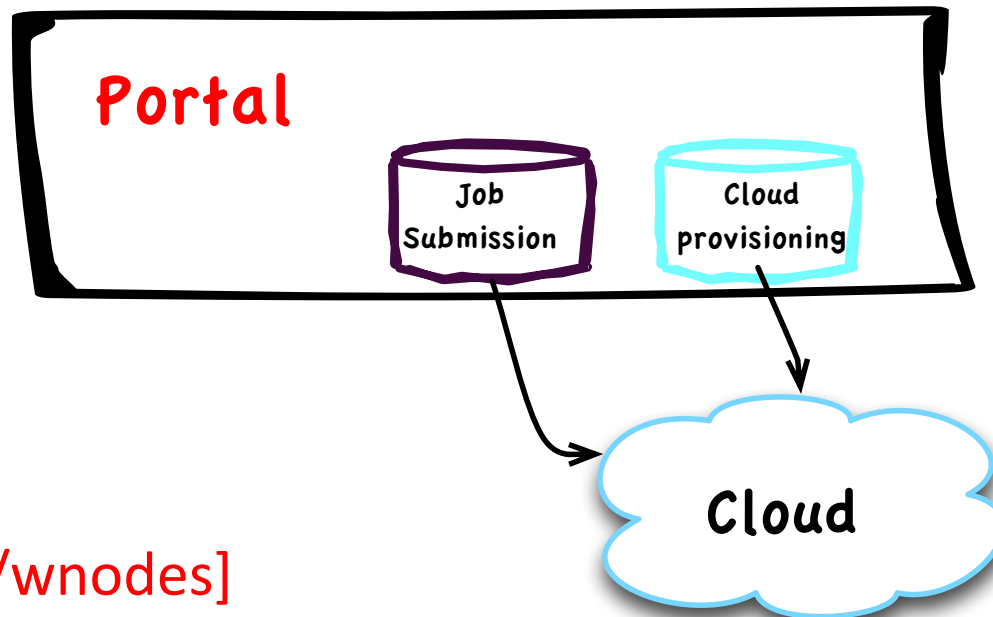
- **Upload**
  - From local PC or remote Server
  - Very large files ( 10 GB)
  - Many little files (10000 files)
- **Download**
  - My job output
  - To local PC or remote Server
- **Management**
  - Move, replicate, delete Grid files
  - Interacts to File and Metadata Catalogs
- **Notifications**
  - User has to be notified: Mail, RSS, SMS ecc

# Data Management Architecture



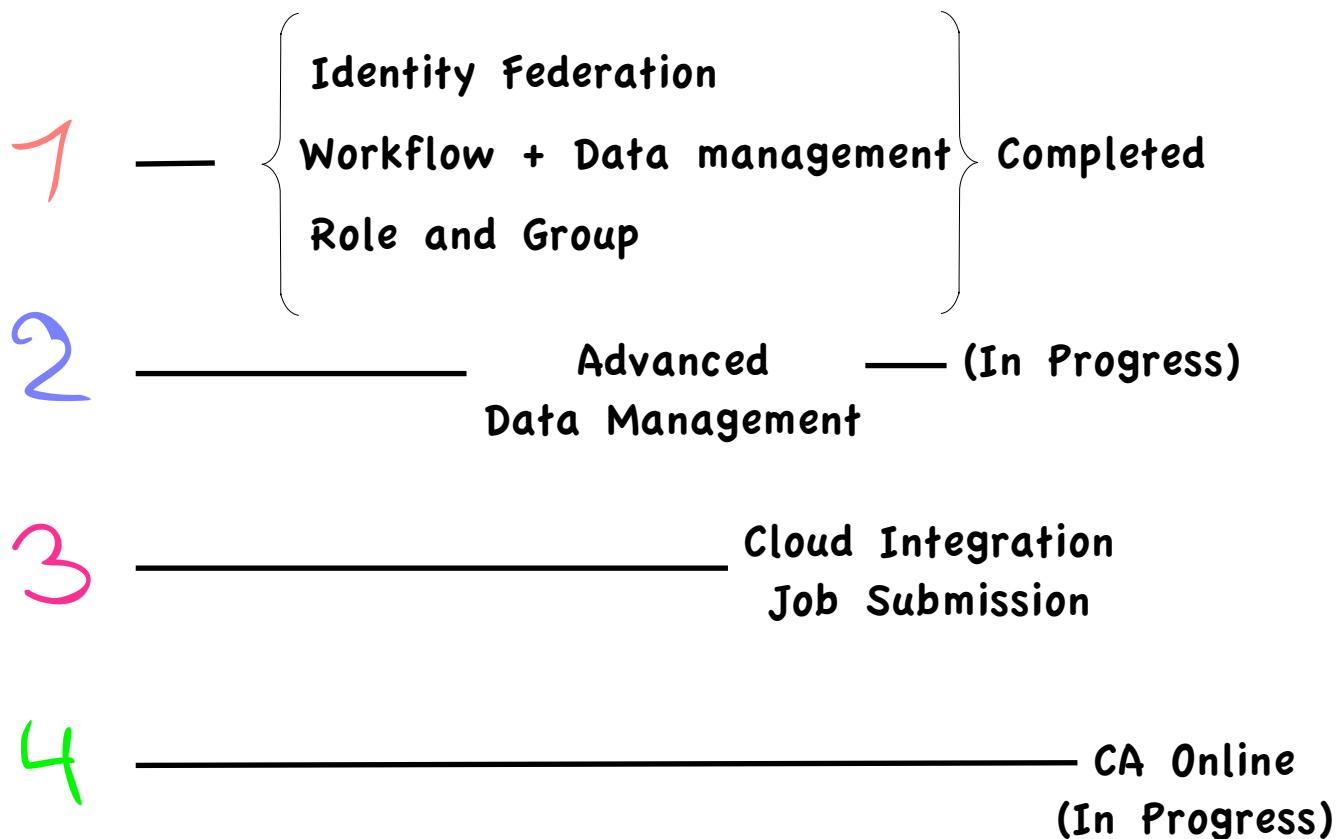
# Cloud

- WNoDeS integration
- Possibility to submit Grid jobs in a Cloud Environment
- Interactive Cloud resources provisioning



[[web.infn.it/wnodes](http://web.infn.it/wnodes)]

# 2012 (quarterly) - Roadmap



# Release 0

- Release 0 is in pre-production mode
- Some experts and not experts grid users of different communities are submitting their jobs using the IGI portal to provide feedbacks
- In the near future the portal will be put in production mode



# Thanks



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