GReIC Service
(TSA3.2.3 Services)

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Outline

GRelC Service (TSA3.2.3)

Introduction about the GRelC Project

- GRelC Project and GRelC service
- Architecture and main features
- Security support

SA3.2.3 Activity in EGI

- DoW
- Activity in Q1
- Foreseen activity in Year1

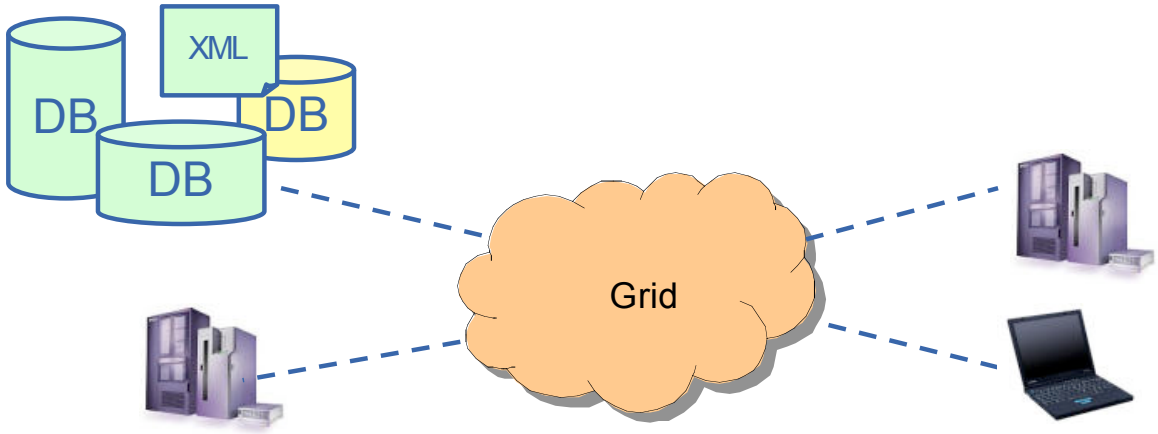
Website, tutorials and portal

- User support through GILDA
- The GRelC website
- The GRelC Portal

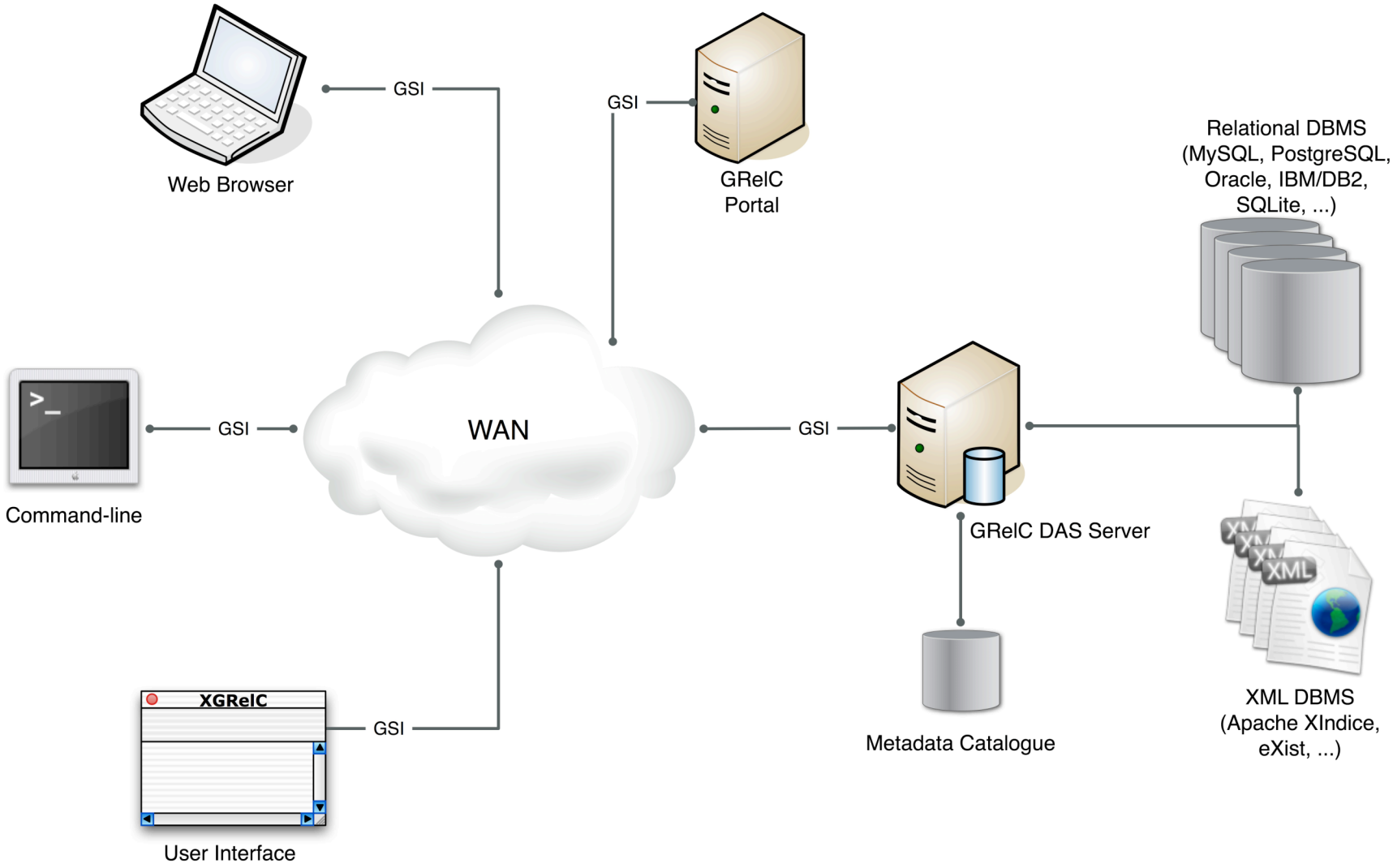
Introducing the GReIC Project

- Grid Relational Catalog is a project which aims at designing and developing a set of efficient, secure and transparent Data Grid Services (Starting date, January 2001).

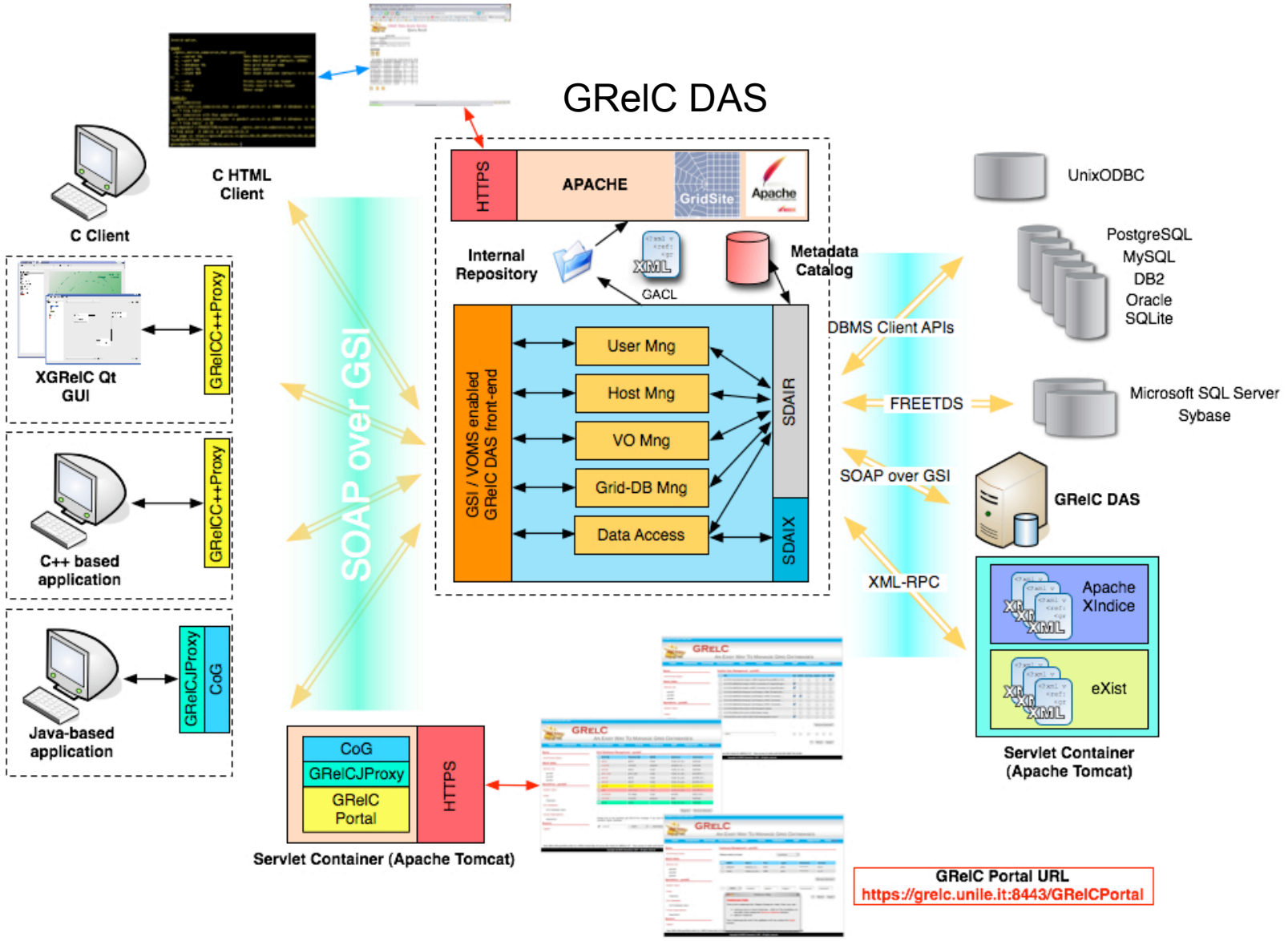
- **GReIC Data Access Service** aims at providing a large set of functionalities to access both relational and non relational DataBases in a grid environment.



GRelC DAS Architecture (in the large)



Architecture in the small



GReIC DAS: Main Features

- Entirely based on C programming language (server side)
- Multithreaded web service
  - Next releases will be pre-threaded

- It exposes the **web service interface GSI enabled** and WS-I compliant
  - Compatibility with XML, SOAP, WSDL standards

- **Mutual authentication** based on GSI (X.509v3 digital certificates)
- Combined Authorization mode
  - GReIC DAS **local authorization** based on ACL
    - Wide set of data access control policyies
  - VOMS Support for **global authorization**
    - Wide set of roles on the VOMS server side
      - *Mapping role <-> set of privileges*

- Information System Support (**BDII** compliant schema extensions)
- **Full GSI support**: data encryption, data integrity, protection against replay attacks and detection of out of sequence packets

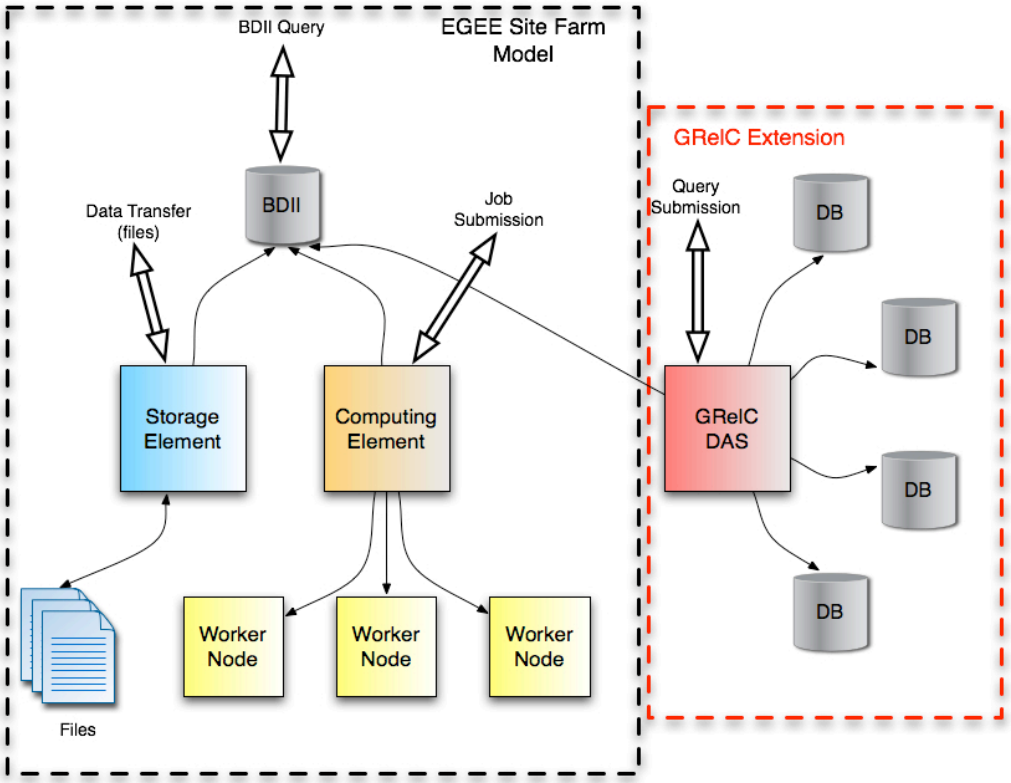
GReIC DAS: Main Features

- Support for heterogeneous **data models** (relational and hierarchical)
- Support for **synchronous** and **asynchronous** queries
- Dynamic binding to **heterogeneous RDBMSs** and **XML-DB engines**
- **Two levels logging** for users, connections, queries, etc.
  - Server Level
    - Management activities performed on the server side
  - Grid-Database Level
    - Queries, connections, etc.
- GSI enabled remote administration tools and remote log
- **Compression**, **chunking**, **prefetching** and **streaming** to enhance performance on a WAN
- Wide **SDK** for developers (mainly C, and Java)
- **No dependencies** concerning other middleware (only GSI)
  - Globus and gLite compatibility

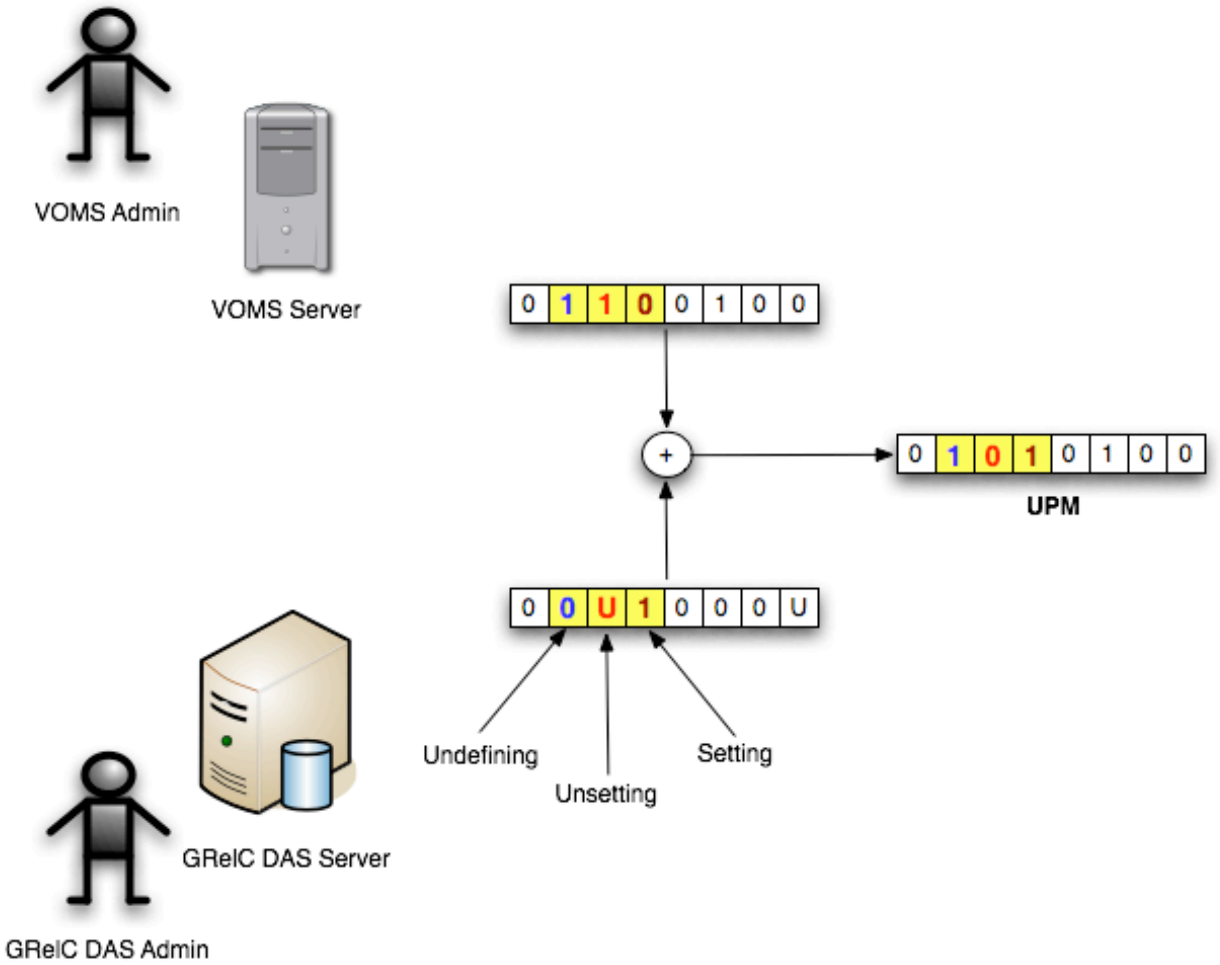
GReIC on gLite: A New Service

- Straighforward integration within the EGEE farm model
- GReIC DAS provides fine grained data mng service
- This service can be used both as farm service and as VO service depending on the context, the database policies/constraints

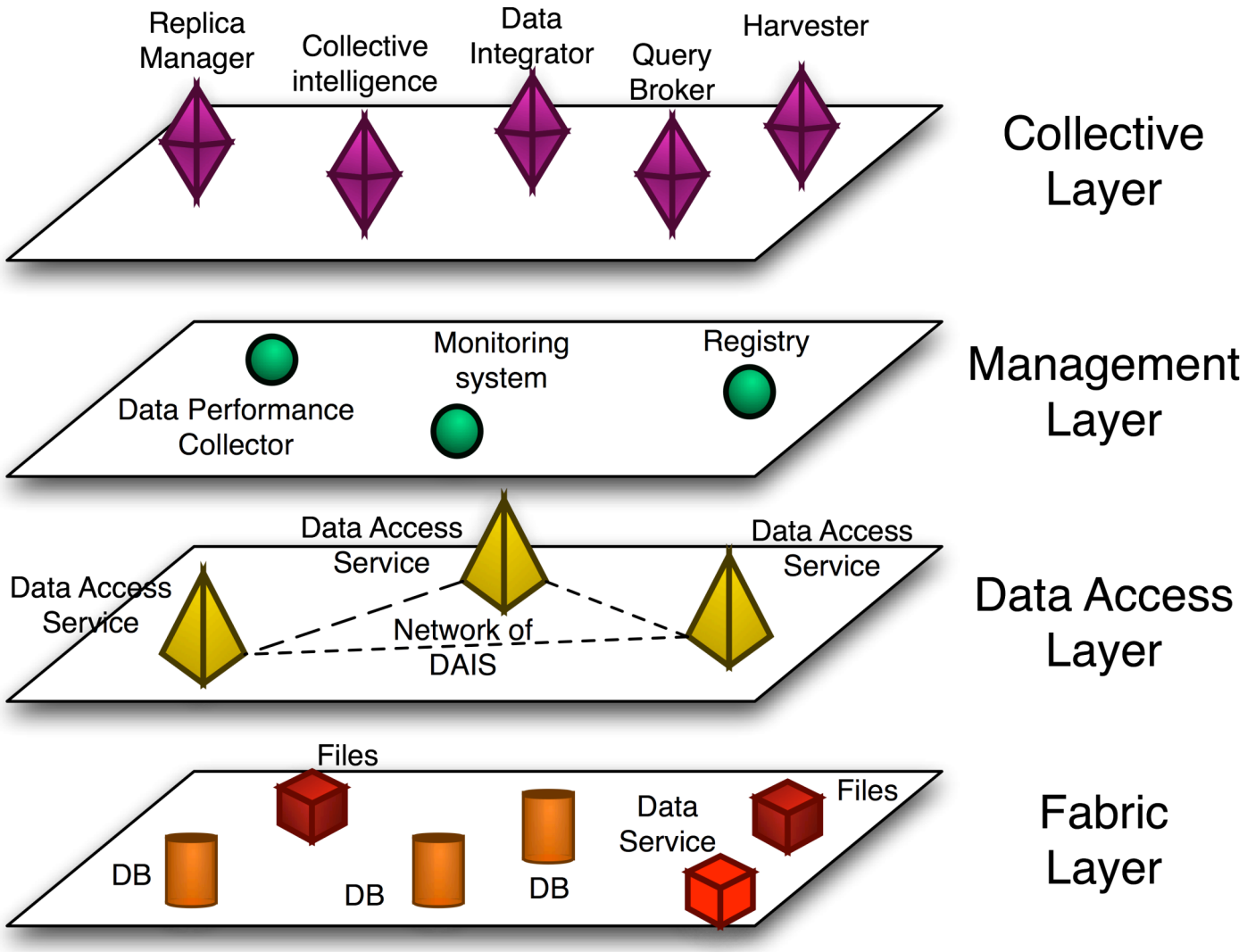
Extended EGEE Farm Model



Security support



GRelC Data Management System Stack

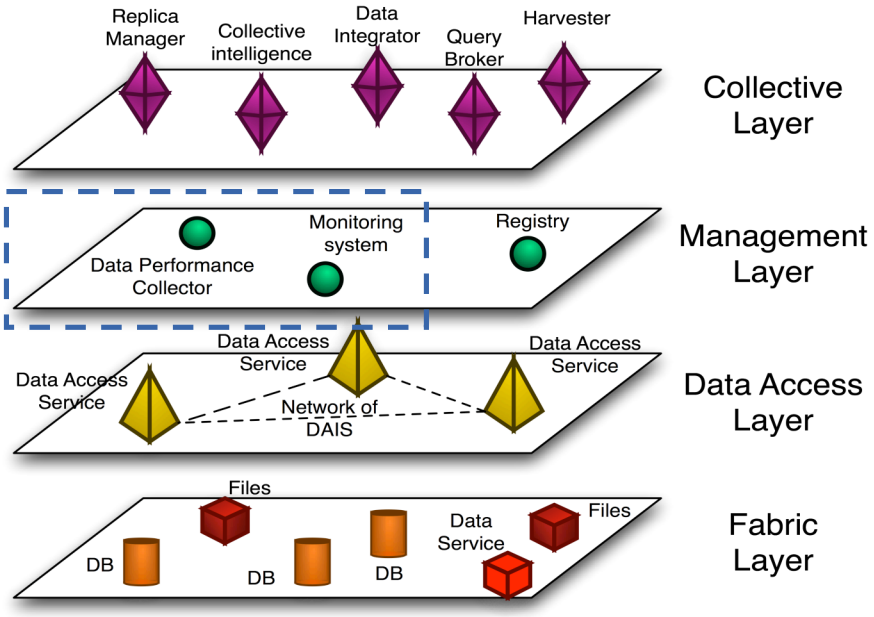


S. Fiore, A. Negro, G. Aloisio, "The Data Access Layer in the GRelC System Architecture", Future Generation Computer System, Special Section Data Management for eScience.http://dx.doi.org/10.1016/j.future.2010.07.006

DoW (I) - “Management Layer”

- Management layer, control and monitoring functionalities available through a dashboard-based application and including charts, diagrams, tables, etc.

- Support to port in grid existing databases. It will be available through the GRelC Portal and will help users in avoiding to use the CLI

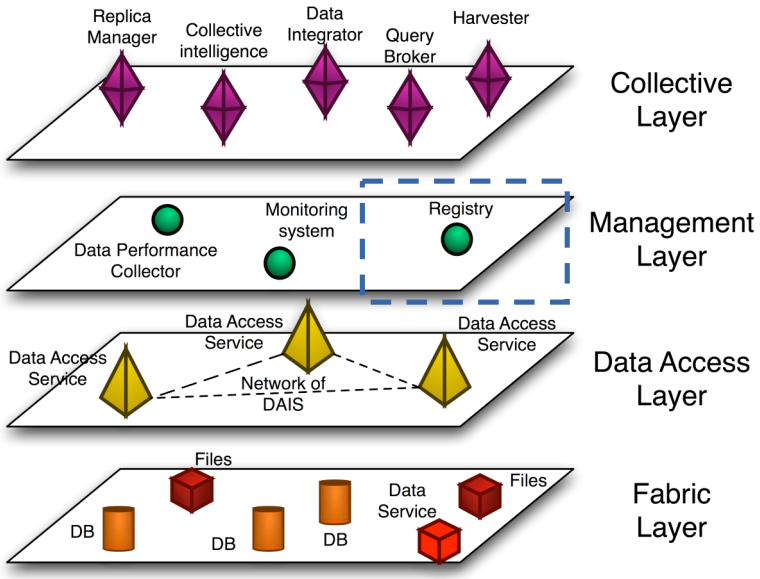


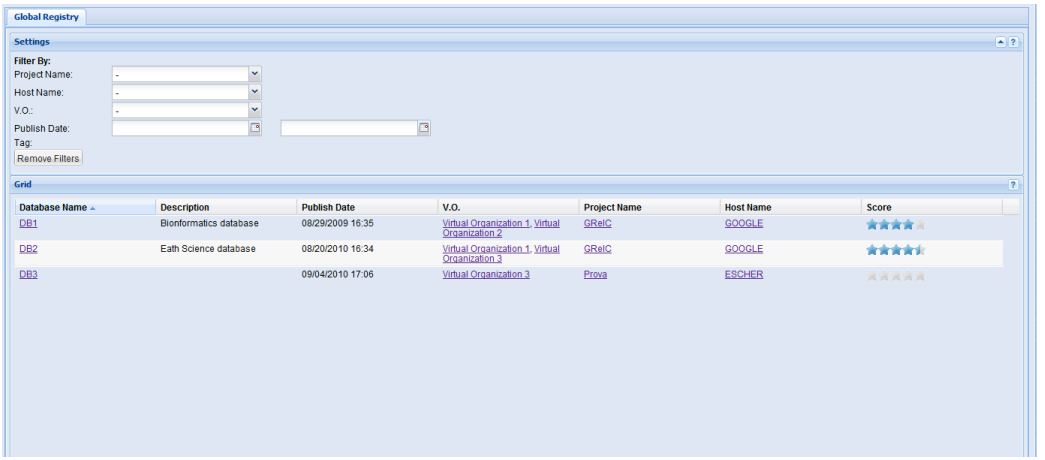
DoW (II) - “Management Layer”

- Registry database will store information about the available grid databases
- Cross-VO support that will help people in discovering existing data sources, join the database, search by tag, VO, etc.

and also

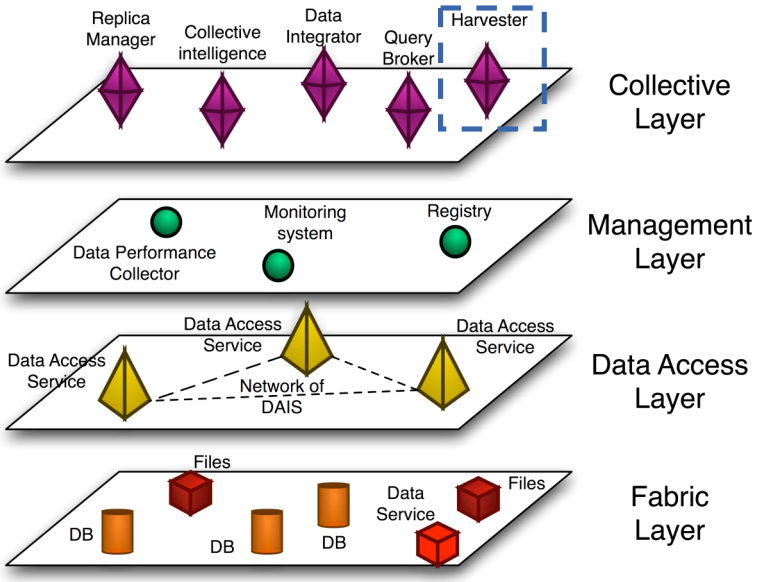
- post comments, rate resources, etc., that is creating a “community” around the available resources following Web2.0 apprach

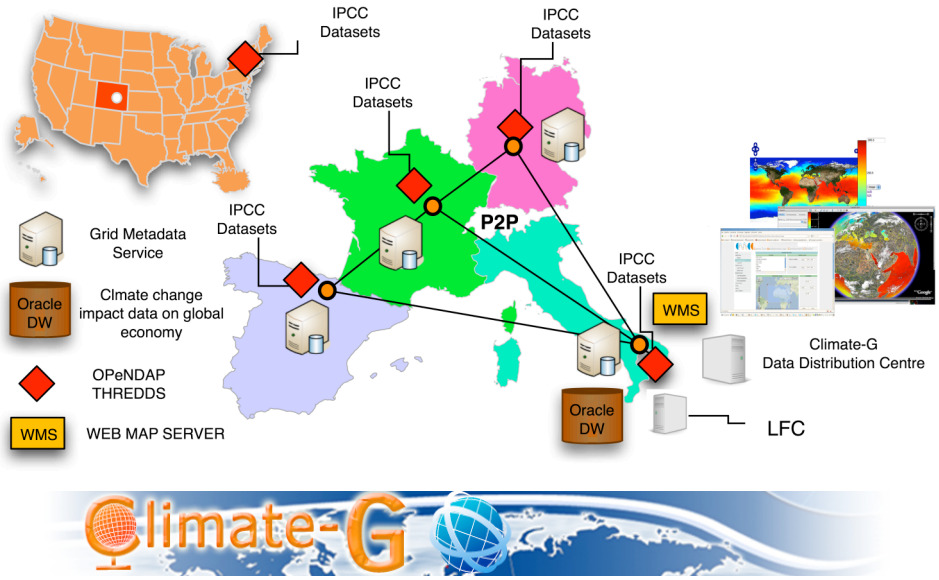




DoW (IV) - “User Support”

- As part of the SA3 activity will provide support to the user communities, defining some use cases and trying to support them as much as possible
- An example is the Climate-G testbed, an ongoing work started in 2008 in the context of the Earth Science Cluster Community
- A GReIC service instance has been already deployed in our site to provide support also in terms of resources



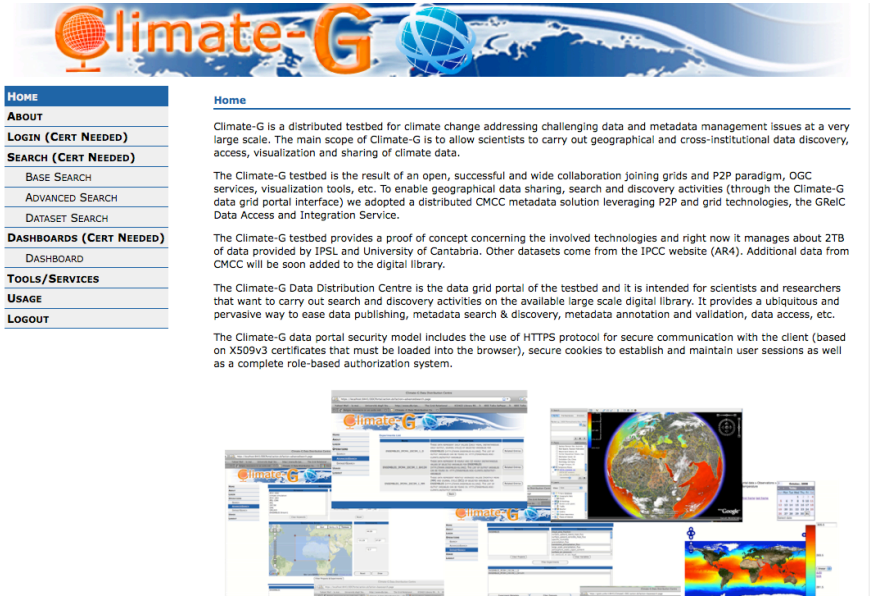


Activities in the Q1 (I)

- Identification of the most important classes of information related to **management layer** (monitor and registry).
- First version of the **Entity/Relationship diagram** modelling such concepts and of the associated logical schema. First implementation (MySQL based) of the system database. Preliminary tests and bug fixing.
- Extension of the system database to include a **registry section**. New classes of information concerning the grid-databases managed by the GRelC services have been identified and modelled. An extended version of the E/R model, a new logical schema and the related MySQL implementation have been provided. This work represents a core part of the **registry database** described in the DoW.
- Design and preliminary implementation of the management **client** performing the **publication task** into the system database. The client has to take care of the databases and the GRelC services availability and status.

Activities in the Q1 (II)

- New release of the GRelC service (3.1.3)
  - bug fixing (memory leaks in the dime query have been removed)
  - log mechanism improved
- New release of the Climate-G portal addressing users' feedback and comments about the search & discovery interface (user support activity)
- A GRelC service has been deployed in our site to support LS database registration (user support activity)



Foreseen Activities in Year1

- New release of the GRelC service supporting the registration functionality (at catalog, service and CLI level)
- New release of the GRelC Portal:
  - supporting the “porting in grid” of existing data sources
- Design and preliminary implementation of the monitoring and registry interface to implement the web application related to the “Management layer”
- Implementation of the client devoted to the “Management layer”.
- User support
  - map-enabled distributed search and discovery interface in the Climate-G Portal
  - search & discovery by model and scenario added to the Climate-G Portal
  - upgrade of the GRelC service devoted to user support activities
  - participation in “user community oriented” activities (i.e. ES, LS), initiatives and conferences (AGU2010, EGU2011, etc.)

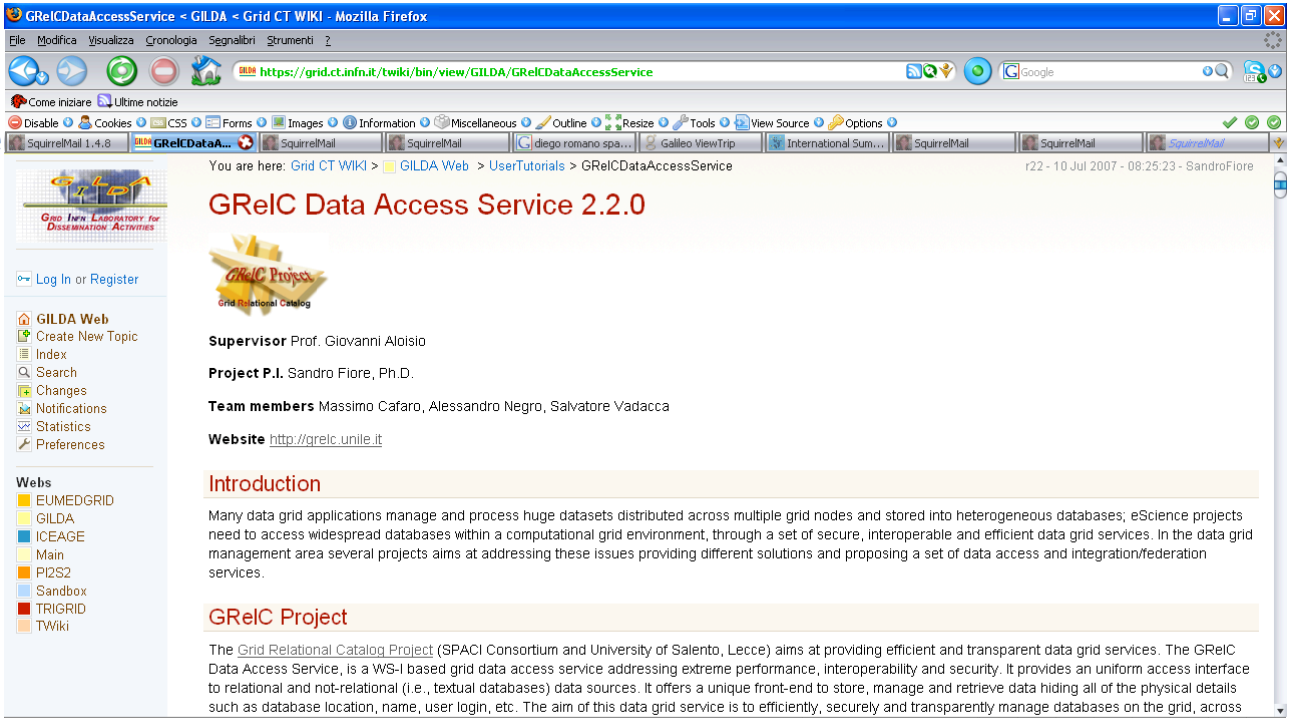
User support: tutorials on GILDA

GRelC DAS User Tutorial

on GILDA Grid CT Wiki Website

Info about:

- Log in to the grid
- Query Submission



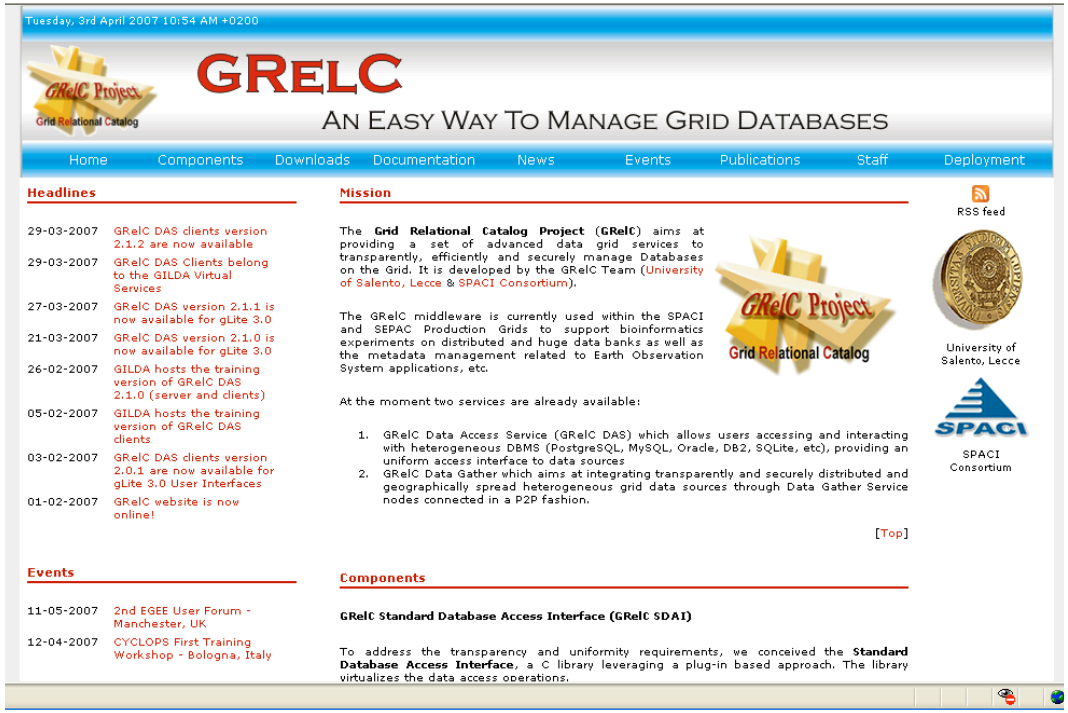
For any information about GILDA t-Infrastructure please contact roberto.barbera@ct.infn.it & grid-prod@ct.infn.it

GRelC DAS Tutorial link:

https://grid.ct.infn.it/twiki/bin/view/GILDA/GRelCProject

Special thanks to the GILDA Staff for their support

User support: the GRelC WebSite



Main sections:

- Download **(rpms available)**
- News
- Publications
- Events
- Deployment
- Documentation
- Components
- …..

GRelC Website

URL: http://grelc.unile.it/

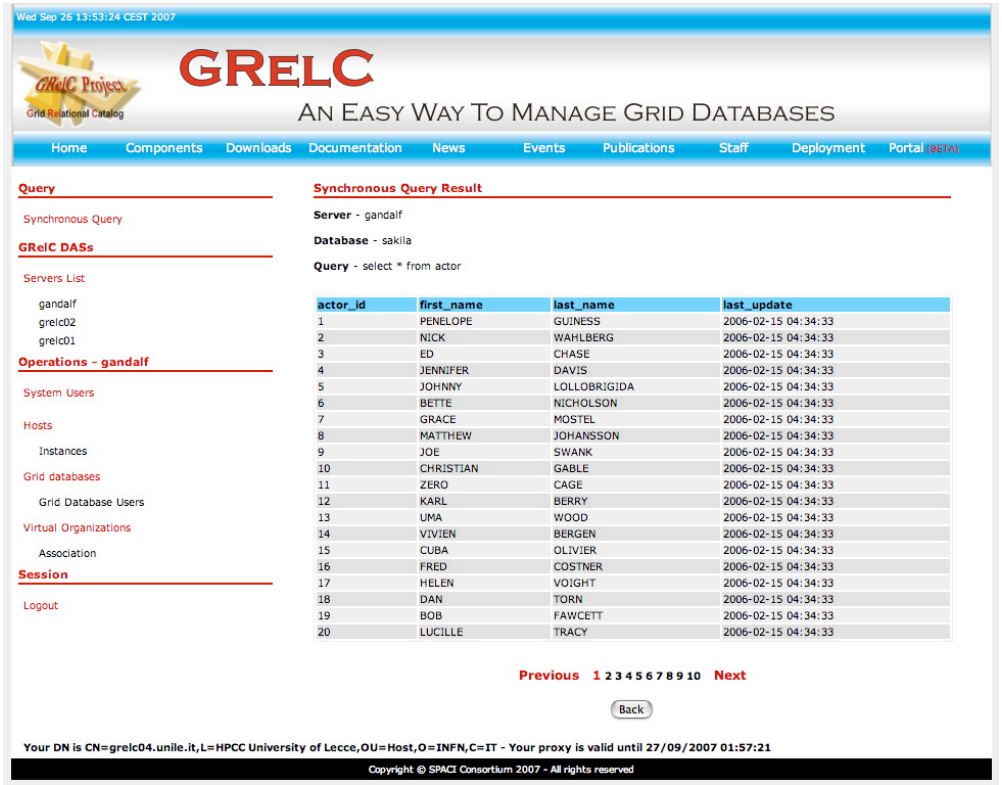
Mailing List

mail: grelc-user@sara.unile.it

User support: the GRelC Portal

Functionalities:

- Login
- GRelC DAS Registration
- Host Management
- Instance Management
- User Management
- Query submission
- Deployment Map



Features:

- **Seamless** and **ubiquitous** access to GRelC DAS enabled resources
- **No additional software** installation / configuration is required
- **Complete** and **user-friendly** Grid Data Portal Interface (It entirely replaces CLI)

GRelC Portal: Some Snapshots

For any information

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Project P. I.: Ph. D. Sandro Fiore (sandro.fiore@unile.it)

GRelC WebSite: http://grelc.unile.it
GRelC Portal: https://gandalf.unile.it:8443/GRelCPortal-v2.0/upload_proxy.jsp
GILDA support: https://grid.ct.infn.it/twiki/bin/view/GILDA/GRelCProject

Mailing lists: grelc-user@sara.unile.it