

# Design, implement and deploy Grid oriented applications in a cooperative way: a biomedical use case

*Tuesday, February 12, 2008 4:00 PM (0 minutes)*

Nowadays, many biomedicine studies are dealing with large, distributed, and heterogeneous repositories as well as with computationally demanding analyses. Complex integration techniques are more often required to handle this complexity, even if for small sized applications, when they are intrinsically distributed: this particular scenario is frequently found in medical informatics applications, where the health care provider is not a single institution but a collection of actors that play different roles in the territory.

The BMPortal is a platform thought to promote collaboration and cooperation among scientists and health-care research groups, enabling the remote use of resources integrated in complex software platform services forming a virtual laboratory. It is designed to host several

medical use cases and it is able to deploy several analysis that can be combined in large applications using a workflow strategy: here, the engineering of BIOLAB SPM Alzheimer application is presented

## 1. Short overview

The BMPortal is a flexible Grid application container designed and developed at BIOLAB, DIST, University of Genoa. The project was born in early 2007 as a container for Bioinformatics application and then evolved in a more general biomedical portal. Furthermore, it is currently used to re-engineer previously developed biomedical applications. The Grid is presented here not only as the underlying technical infrastructure but also as a new paradigm shift in software development.

## 3. Impact

The work is undertaken at BIOLAB with the cooperation of some Italian SMEs (AITEK, NICE, IR&T, UNICO) and the INFN (Department of Catania) as well as the Official Training and Support Team of EGEE.

A set of independent applications could be published on the portal sharing a common data and metadata infrastructure based on gLite. Data Management capabilities are made up by the adoption of the GSAF software layer developed and the Data Violation is avoided thanks to the interoperation with the Secure Storage Service. Security, data and metadata management components are developed by researchers and SMEs in Catania while the overall platform, interfaces and application deployment is performed in Genoa (researchers and SMEs too). Researchers and SMEs work at the development deploying services in their laboratories and contributing to a distributed build of the project in a really collaborative and secure way, sharing the gLite security context.

## URL for further information:

<http://grid.bio.dist.unige.it>

## 4. Conclusions / Future plans

The BMPortal provides tools for accessing distributed data in a secure way without moving files on the net, for managing related metadata, for building and maintaining catalogues, for submitting jobs to the Grid and to local computing cluster, for organizing services into workflows. The scope of this work is both to present a Grid application with its own medical use case and empathize the benefit that a new design paradigm based on Grid could provide to distant research groups.

## Provide a set of generic keywords that define your contribution (e.g. Data Management, Workflows, High Energy Physics)

Data and metadata Management, Workflows, Portal, cooperative development

**If demonstration is requested please explain what visual or interactive aspects of the contribution necessitate a demonstration rather than a presentation or poster?**

The work presented here is basically a development work where some new technologies (e.g Google Web Toolkit) are used to provide usable interfaces to users. It is therefore better to visually explain their usability and to show user interaction and application interactivity, instead of presenting a static slide show.

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