

The Health-e-Child (HeC) Gateway and Case Reasoner, a Concrete Implementation and Use-Case of a gLite-based Healthgrid for European Paediatrics

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

The HeC prototype is the result of 2 years of active R'nD, which has matured inside a private grid infrastructure. Amongst the 1st contributions, a security prototype was delivered as well as innovative domain specific client applications. Through a user-friendly single sign-on, clinicians access resources independently of their geographical location and connectivity. It allows them to enter, from within their hospital, the large grid spread over Europe to store anonymously patient records and further manipulate these. Medical images are processed, stored in the grid and referenced within the integrated case database. The system enables clinicians to look for similar patients and further process corresponding images, e.g. to extract 3D and 4D models of the heart, useful for better making decisions over particular cases. In cardiology, a 4D-mesh representing the right ventricle is computed and stored in the grid, from which various clinically relevant parameters can be further derived.

3. Impact

The HeC project uses the gLite grid middleware. As it is used and functionally-augmented through the Gateway, it can be compared to a distributed Picture Archiving and Communication System (PACS), with additional capabilities such as medical image processing, patient similarity search as well as a distributed database management system for structuring and federating multi-centre data. The grid technology makes use of the shared medical centres' computing resources to solve clinicians' requests and is made available through the so-called Gateway installed at each institution. HeC therefore makes use of most of the gLite grid middleware services since it runs its own private grid infrastructure. The middleware core services such as tBDii, LFC, VOMS, WMSLB have been deployed and a proper VO created. Every site is featured with a common set of gLite site services ranging from CE, to SE, to WN. The Gateway materialises under the form of a SOA.

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

We propose a highly visual demo of our platform and gLite infra, with accompanying presentation and posters illustrating ongoing project research work. This demo would require roughly 30 minutes of jury's attention to explore the rich functionality of this prototype system. It is highly interactive and eye catching. Please note that this demo is a follow-up to the one given in Budapest with exciting new features.

URL for further information:

www.health-e-child.org

4. Conclusions / Future plans

From intensive prototyping efforts, HeC has started materializing in several concrete outcomes. It has demonstrated at the hospital Necker in Paris, its first prototype of the Gateway and gLite-based Grid infrastructure. The proposed demo illustrates the successful port of similarity search and grid-based feature extraction over different data sources ranging from clinical records to medical images. It also introduces a framework for simplifying gridification of complex applications.

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

Healthgrid, gridification, distributed data, security, privacy, image processing, data mining

1. Short overview

HeC aims to integrate and exploit heterogeneous biomedical information for improved clinical practice, medical research and personalized healthcare. It brings together 3 major paediatric medical centres with several European institutions specialized in grid biomedical technologies. Aiming at turning the healthgrid vision into reality, it is developing a platform that can federate distributed data sources over the Grid, where the Grid also serves as a technological glue and collaboration facilitat

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