Contribution ID: **59** Type: **Poster**

Searching for Similar Patients in Health-e-Child - An Innovative Translational Biomedicine Grid Platform for Clinical Decision Support and Knowledge Discovery in Paediatrics Diseases

Tuesday 23 September 2008 16:33 (1 minute)

Describe the activity, tool or service using or enhancing the EGEE infrastructure or results. A high-level description is needed here (Neither a detailed specialist report nor a list of references is required).

HeC aims to integrate 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 gLite-based platform that can federate distributed data sources over the Grid, where it also serves as a technological glue and collaboration facilitator.

Report on the impact of the activity, tool or service. This should include a description of how grid technology enabled or enhanced the result, or how you have enabled or enhanced the infrastructure for other users.

The HeC prototype is the result of 2.5 years of active research,which has matured inside a private infrastructure.Amongst the contributions,a security prototype was delivered as well as innovative domain specific 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 anonymously store patient records and also allows further manipulations on these data.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.

Abstracts for online demonstrations must provide a summary of the demo content. Places for demos are limited and this summary will be used as part of the selection procedure. Please include the visual impact of the demo and highlight any specific requirements (e.g. network connection). In general, a successful demo is expected to have some supporting material (poster) and be capable of running on a single screen or projector.

We propose a poster illustrating our platform and gLite-based infrastructure, when jointly used to perform similarity search. It will be given with an accompanying presentation providing explanations on the technical

details of the formerly described components of the system. This poster would require roughly 20 minutes of jury's attention to explore the rich functionality of underlying prototype system and highlighted scenario. The poster emphasizes one of the main goals of the HeC project, which is to provide a Decision Support System (DSS) to the clinicians. This latter constitutes a DSS subclass known as Case-Based Reasoning (CBR) systems –systems that have reasoning by similarity as the central element of decision support. HeC's CaseReasoner is a CBR tool for clinical decision support intended for performing similarity search on heterogeneous patient data, visualization of inter-patient similarity, and integration of shape similarity measures over the Grid.

Describe the added value of the grid for your activity, or the value your tool or service adds for other grid users. This should include the scale of the activity and of the potential user community, and the relevance for other scientific or business applications.

HeC uses the gLite Grid middleware and extends it with advanced biomedical utilities through its Gateway software. The resulting platform can be compared to a distributed Picture Archiving and Communication System, with additional capabilities such as medical image processing, patient similarity search and a distributed DBMS for federating multi-centre data. To do so, the project exploits most of the gLite services by running its own private infrastructure. 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 services ranging from CE,to SE, to WN. Those are exploited through the Gateway, which materialises under the form of a SOA of biomedical utilities delivering meaningful functionality to our physician's community, such as searching heterogeneous data on the Grid as a first step towards clinical decision support.

Authors: Mr TSYMBAL, Alexey (SIEMENS); Mr MANSET, David (maat Gknowledge); Mr REVILLARD, Jerome (maat Gknowledge); Mr LYNCH, Michael (SIEMENS)

Presenters: Mr TSYMBAL, Alexey (SIEMENS); Mr LYNCH, Michael (SIEMENS)

Session Classification: Demos and Posters

Track Classification: Poster