

Uppsala, Wednesday, 14 April 2010

Cancer, heart and circulatory system diseases cause two thirds of all deaths in Europe. Three research projects at this week's Enabling Grids for E-science (EGEE) User Forum in Uppsala, Sweden, are demonstrating ways that modern computing techniques can investigate today's biggest killers.

As it becomes increasingly sophisticated, the field of medicine is grappling with unprecedented data demands. EGEE, providers of the world's largest multi-disciplinary computing grid, help scientists from all fields manage their work quickly and efficiently, with medical researchers and doctors increasingly joining their ranks. Grid computing can connect doctors and researchers to both computing power and remote databases of medical information. It has the added benefit of an inbuilt secured system preventing unauthorised access to any sensitive patient information.

The HeMoLab project is interested in the heart as well as the system that it is connected to. They are working on developing models, techniques and tools for simulating the entire cardiovascular system. The first accurate description of how the heart pumps blood around the body was published by Arabic physician Ibn al-Nafis in 1242. Since then our knowledge of the way our heart works has expanded to fill volumes. The main motivation for this project is the deeper understanding about the complex physiological interactions in the human body and their role in the onset and progress of several cardiovascular diseases. Moreover, with this study it is also possible to provide relevant information so as to use it as complementary data for medical training, diagnosis and eventually surgical planning.

The simulation of a single heart beat can take up to 20 days in a single computer depending on the degree of approximation considered for problem. Using the grid computing infrastructure offered by the EELA-2 project it is now possible to perform the execution of multiple simulations at the same time. Paulo Ziemer from the HeMoLab team worked on getting the application up and running on the grid. "Porting the application was a great experience, that certainly helped us a lot to understand how grid computing could help the simulation of models that demand high computing power. Further tests need to be made yet, but I think the first step was accomplished successfully."

In Europe cancer is responsible for 1 in 4 deaths and is the single greatest killer of people aged 45-64<sup>1</sup>. Again early diagnosis is the best way of helping people with the disease. However doctors frequently face problems in accessing the abundance of data that is constantly generated by labs, hospitals, doctors and health authorities.

Another project, Sentinel, centred in France, brings together many areas of cancer research: screening structures, medical laboratories and both regional and national public health authorities. It aims to enable secured medical data exchanges between cancer screening organisations and cancer analysis laboratories. Grid technology – which easily connects data sources and provides a secure framework – is particularly well suited for this situation, where patient data must only be available to authenticated and authorised users.

Starting in 2009, Sentinel's first objective was to offer access to electronic pathology reports for cancer screening. Since then, Sentinel has been expanded to allow the French national health organisation access to the medical data in order to produce statistics on cancer within the Auvergne region. Recently the team has added a module to allow health professionals to use their smartcards to gain access to the data and are hoping to expand the system nationwide.

Improving the speed of diagnosis and finding areas to focus on in order to treat an illness is essential in tackling cancer and heart disease. All of these projects demonstrate where medical research is going in their use of computers. EGEE has worked for the last 6 years to provide the tools to create a platform for the medical profession and Sentinel, HeMoLab and Gwendia have proven not only its usefulness but also its flexibility.

IMAGES AVAILABLE ON REQUEST

<sup>1</sup> <http://www.who.org/a/2352>

## Notes for Editors

The 5th EGEE User Forum will be held in collaboration with EGI and NDGF in Uppsala, Sweden, April 12-15, 2010, hosted by SNIC, UPPMAX and PDC. The main sponsor of the event is Microsoft. Media sponsors are *HPCwire*, *International Science Grid This Week* and GridCast.

EGEE 5<sup>th</sup> User Forum runs from the 12<sup>th</sup> to 15<sup>th</sup> of April 2010, at the University of Uppsala, Uppsala. If you are interested in attending or covering the conference please contact EGEE's press and events manager, Neasan O'Neill [n.oneill@qmul.ac.uk](mailto:n.oneill@qmul.ac.uk).

For more information on the project, visit the conference media room at: <http://egee-uf5.eu-egee.org/index.php?id=703>

If you can't make it to the conference we have many online ways of keeping up-to-date with the proceedings:

**User Forum Blog** - <http://gridtalk-project.blogspot.com/search/label/egeeuf10>

EGEE is teaming up with the GridTalk project to bring you live news from the conference on the GridCast blog.

**Conference Pictures** – <http://www.flickr.com>

Just search flickr for images tagged egeeuf10 once the conference has begun.

**Twitter** – <http://www.twitter.com/enablinggrids>

Others at the conference will be using the #egee hashtag.

### About EGEE:

The Enabling Grids for E-science (EGEE) project is co-funded by the European Commission. The project aims to provide researchers, in both academia and industry, with access to major computing resources, independent of their geographic locations.

EGEE's main aims are:

1. To build a secure, reliable and robust grid infrastructure
2. To supply a computing service for many scientific disciplines
3. To attract, engage and support a wide range of users from science and industry, and provide them with extensive technical and training support.

<http://www.egee-eu.org>

