



Health-e-Child Newsletter



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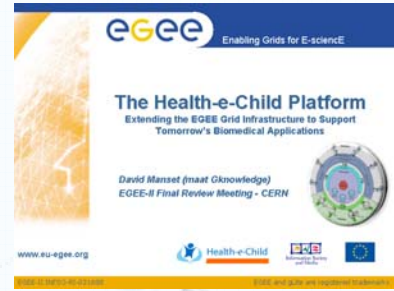
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Health-e-Child showcased at Final Review of EGEE II Project

Readers who have followed Health-e-Child's progress and developments will know by now of the strong relations existing with the EGEE I and II projects, thanks mostly to HeC's uptake and implementation of the EGEE-developed gLite middleware for its grid infrastructure. This collaboration took on even more tangible meaning this past July 8-9 when HeC was invited to present "The



Health-e-Child Platform - Extending the EGEE Infrastructure to Support Tomorrow's Biomedical Applications" at the Final Review of the EGEE II project.

Look for the HeC stand at the EGEE'08 Conference - Istanbul, 22-26/9/2008!

David Manset (flanked by Jerome Revillard) of HeC partner **maat Gknowledge** presented HeC - one of only

two ongoing projects to be selected for demonstration - as a case study for grid middleware validation, highlighting the data-oriented character of the application, the project's high social impact, its industrial application within a production environment (i.e., hospitals), and its collaborative objective to exploit and extend gLite middleware and EGEE services to satisfy domain specific demands.

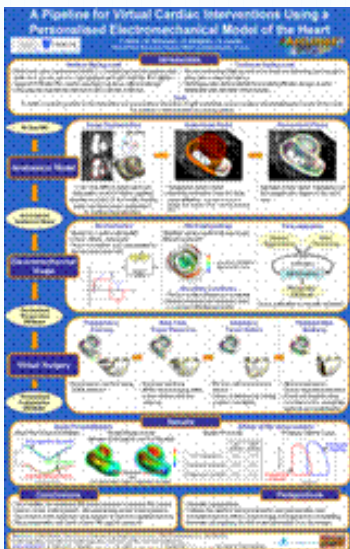
The demonstration went very successfully, with the work achieved by HeC receiving the congratulations of the whole EGEE management team and the project's visibility throughout the community getting a very healthy boost.

Health-e-Child team awarded for disease modelling work

Congratulations are also in store for HeC partner **INRIA**, Leader of Health-e-Child Workpackage 11 on Integrated Disease Modelling, which recently presented its ongoing project-related work at two separate venues, the meeting of the *Société Française Médico-chirurgicales Pédiatrique* (Nantes, June 6th), where it won a special award for best presentation, and at the 8th IEEE International Summer School (Berder, France, June 20th - 28th) where it was acknowledged as Best Poster.

Briefly, the INRIA group tackles the clinical challenge facing paediatric heart surgeons when performing pulmonary valve replacement (PVR), a pivotal treatment for young patients suffering from chronic valvular regurgitations and right ventricular (RV) dilations. Building on an already fast and efficient enough technical background, the French team reported their efforts geared at building a pipeline for interactive and personalised simulation of RV surgery using an EM of the heart.

Working from 4D Cine MRI images of an actual patient's heart to construct an intricately detailed and accurate anatomical model, integrating biomechanics and electrophysiology to develop a personalised preoperative EM, and finally proceeding through a virtual surgery exercise, the INRIA group showed how the EM model, while still simplified, manages to simulate the cardiac function of the patient's heart, with qualitatively similar motion patterns. The long-term perspectives include the possibility to simulate valvular regurgitations, to validate the pipeline using pre- and postoperative data, to simulate the long-term outcome of therapy and myocardial remodelling, and to automatically estimate the EM model parameters from images.





Health-e-Child awarded at HealthGrid 2008

We announced in our last Newsletter (March 2008) that Health-e-Child would be present at the HealthGrid 2008 Conference - the premier conference on the



transformation of biomedical research, education and medical care through the application of Grid technologies, held in Chicago, June 2 - 4, 2008. In addition to co-sponsoring with the FP6 project **SHARE**, in conjunction with HealthGrid, a workshop entitled "Users' Requirements, Data Integration and Archiving in Healthgrids: A comparison of International Experiences", HeC also had a very pleasant surprise when, following its "accidental" entrance in an awards contest,



it came away with the **HealthGrid08 Award for best poster and demonstration!**



Congratulations again to David Manset and the HeC development team on their efforts and continued success.

Research on MRI in JIA awarded in Edinburgh

Health-e-Child's IT teams are not the only ones accruing recognition and prizes: the clinical arm of the project is also beginning to make itself noticed.

In our last issue we reported on a new magnetic resonance imaging (MRI)-based scoring system for rheumatology that has been developed by HeC which measures the synovial membrane volume and bone erosion from MRIs. This work was highlighted in a paper presented by Dr. **Beatrice Damasio** of the Giannina Gaslini Institute of Genoa (IT) that took home the **Jacques Lefebvre award** at the most recent



congress of the European Society of Paediatric Radiology held in Edinburgh from June 4-7, 2008.

The work presented by Dr. Damasio compared the sensitivity of MRI, sonography (US) and conventional radiography (X-Ray) to evaluate bone erosions in patients with juvenile idiopathic arthritis (JIA) and to relate imaging results with clinical parameters. The conclusions thus far reached by the rheumatology teams working in HeC (**Istituto Giannina Gaslini, Hôpital Necker-Enfants Malades, and Great Ormand Street Hospital**) is that MRI appears to be the most sensitive modality to capture bone erosion compared to US and X-Ray, especially in early JIA.



The Jacques Lefebvre award is given to the best scientific paper presented at the annual ESPR conference, chosen by a jury of between 7-10 independent senior radiologists.

Congratulations to Beatrice and the HeC rheumatology teams!





2nd Health-e-Child Training Course

From June 7 - 10, 2008, Health-e-Child's Training Workpackage Leader, the [European Genetics Foundation](#) (EGF), held the 2nd HeC Training Course "Cardiogenesis and Congenital Cardiopathies: from Developmental Models to Clinical Applications" c/o the G. Levi & V.A. McKusik EuroMediterranean Center for Genetics & Medicine in Ronzano (Bologna) Italy.

Health-e-Child Clinical Coordinator and the Course Director, Prof. Giacomo Pongiglione of the [Istituto Giannina Gaslini](#) of Genoa (IT), opened the event by illustrating the HeC project and its ongoing work with vertical data integration, disease modelling and knowledge discovery in the field of paediatric cardiology, in particular on the disorders of right ventricular overload and cardiomyopathies.

Twenty-one speakers and 19 attendees converged on the hills surrounding Bologna for the 4-day course, whose sessions focused on the clinical, genetic and molecular aspects of congenital heart diseases, tackling these disorders from a translational medicine perspective. More specifically, the topics included:



- Embryology of the heart
- Congenital Heart Diseases
- Cardiac Syndromes
- Genomic variation
- Prenatal Diagnosis of Congenital Heart Diseases
- Embryology of the Vascular tissue (Vasculogenesis)
- Vascular Malformative Defects and clinical aspects of Vascular Malformations
- Gene Signalling Pathways
- Tetralogy of Fallot
- Hypertrophic Cardiomyopathies
- Atrial Septal Defects
- Dilated Cardiomyopathies
- Noonan Syndrome
- Heart Hand Syndromes
- Rendu Osler Syndrome in the Pediatric Age Group.

Proceedings of the course will be available in the very near future. Interested readers are invited to contact [Giuseppe Curcio](#) at the EGF for further details.

First Announcement: The 3rd Health-e-Child Training Course — "Infantile Brain Tumours and the use of Integrated Databases" (April 2009). The first demonstration of the outcomes of the Health-e-Child project using the results achieved in the field of infantile gliomas. Further details coming soon!





Data Collection Update

Gathering as comprehensive as possible biomedical data - clinical, imaging and genetic - for each patient entering the HeC system is critical. This exercise not only serves the purpose of testing the data integration mechanism, but also provides training and testing data for the construction of integrated disease modelling, decision support, and knowledge discovery systems, i.e., three of HeC's chief objectives.

During the project's first 30 months of activity, data collection and annotation (Workpackages 9 and 10) were entrusted entirely to the [Istituto Giannina Gaslini \(IGG\)](#), the [Hôpital Necker-Enfants Malades \(Necker\)](#), and the [Great Ormond Street Hospital \(GOSH\)](#). While all three hospitals are involved in collecting patient data for the disease domains of paediatric heart diseases (right ventricular overload [RVO] and cardiomyopathies [CMPs]) and paediatric inflammatory diseases (juvenile idiopathic arthritis [JIA]), only the IGG is responsible for the collection of data on paediatric brain tumours (primarily gliomas). Over the first 30 months of activity, however, it has become increasingly clearer that to achieve project objectives, more patient data had to be gathered.

As was announced in our last Newsletter, an important step in this direction was finalized in March 2008 when the HeC Consortium welcomed another leading children's hospital, the [Ospedale Pediatrico Bambino Gesù \(OPBG\)](#), as a new clinical partner. Located in Rome, OPBG joins HeC and has committed itself to providing full data sets for the cardiology and rheumatology arms of the study. Patient enrolment at OPBG started in April 2008 following approval of the project by the OPBG institutional review board on March 18th, 2008.



In June 2008 (Month 30), patients with paediatric heart diseases are being enrolled in all four centres; thus far, the clinical and imaging data from a total of 325 patients (270 with RVO and 55 with CMPs) have been collected by the cardiac teams. Crucial follow-up data has been gathered for 76 of the enrolled patients, and magnetic resonance imaging (MRI) has been carried out on a total of 134 Tetralogy of Fallot patients. Moreover, genetic data collected from CGH analysis on samples from 88 RVO patients is also now available in the HeC system.

The paediatric inflammatory diseases arm also has all four centres collaborating on the recruitment of patients. At the 30 month point, a total of 223 patients have been enrolled in the study, with 71 of these have already completed 1-year follow-up. In addition, genetics investigations have already been conducted on the blood samples of 65 patients, as have proteomics studies on the synovial fluid samples of 15 patients.



Finally, the brain tumour component of the project (conducted only at the IGG) has complemented the data of the original 49 patients with the addition of 28 tumour tissue samples (from the IGG tissue bank), bringing the total number of patient data sets to 77. Expression studies (using Affymetrix Gene-Chip U133 Arrays) will be conducted on all 77 cases.

In general, although some issues remain and some pitfalls are emerging - namely, the activation of HeC servers and the effective sharing of all data, both among the clinical teams and with the IT teams, the standardisation of scoring systems for JIA MRI, the exportation of data in flexible formats, patient compliance - the Workpackages can be viewed as making the progress needed to reach target numbers for the data to populate the HeC prototype. Indeed, January 2009 - when the IT teams foresee delivering an operational demonstrator to clinicians - is just around corner.

For further details contact [Prof. Giacomo Pongiglione](#), the HeC Clinical Coordinator, at the IGG





Health-e-Child selected for display at ICT 2008

The biennial **ICT Event** (formerly the "IST Event") is the most important forum for direct exchange on research and public policy in information and communication technologies at the European level. The Event brings together researchers and innovators, policy and business decision-makers working in the field of digital technologies. To be held in Lyon, France, from November 25-27 of this year, the ICT Event:

- Presents Europe's future priorities for research funding in the ICT area
- Examines crucial issues of public policy for stimulating innovation through ICT development and uptake
- Creates opportunities to establish research and business partnerships and simply keep up to date in what is happening in various ICT research fields.



Following the call for exhibition proposals, the Selection Committee has now completed its work. ICT 2008 will host a bumper crop of exhibits; almost 200 individual stands featuring seven research villages, SMEs, international initiatives and Commission stands.

And one of the selected displays will be HeCs!

Further details on exactly where HeC will be on display and to which technological village it will belong will be available soon. Check our [website](#) in September for an update. We'll look forward to seeing you in Lyon!



Concertation planned at ICT-BIO 2008

Ever intent to stimulate crosstalk among the projects that it underwrites, the European Commission through its "ICT for Health" Unit is convening the ICT-BIO 2008 conference **"Computer modelling and simulation for improving human health"** for this coming October 23-24, 2008 in Brussels.



"A pivotal future healthcare challenge is to integrate - by exploiting the new generation of multidisciplinary science emerging at the crossroads of IT, medicine and biology - the knowledge of the complex environmental, lifestyle, ageing and genetic components characterizing major diseases into robust and fully reliable "in silico" environments that yield multi-scale modelling and simulation tools for the development and testing of new approaches for disease prevention and early detection, patient safety and personalised medicine."

Preceding the two-day event will be a Concertation Day bringing together nearly 100 representatives of ongoing FP6- and FP7-sponsored actions in order to facilitate the networking between projects, experts and the Networks of

Excellence in the field of e-health.

Health-e-Child is already on-board at this event with a demonstration, as well as an invited presentation on the "Grid for healthcare ICT".





Health-e-Child FactSheet

Health-e-Child in figures

Project Identifier	IST-2004-027749
Timeframe	January 1, 2006 to December 31, 2009
Total cost	16.7 million €
European Union funding	12.2 million €
Number of partners	15
Number of Workpackages	16
Number of Deliverables	91
Total estimated efforts (in man/months)	2363



Who's Who in Health-e-Child

Coordinator and Executive Board Chairman	Jörg Freund - Siemens Medical Solutions
Governing Board Chairman	Dorin Comaniciu - Siemens Corporate Research
Project Management Team Leader	Edwin Morley-Fletcher - Lynkeus, S.r.l.
Scientific Committee Chairman	Dorin Comaniciu - Siemens Corporate Research
Technical Coordinator	Martin Huber - Siemens Corporate Technology
Clinical Coordinator	Giacomo Pongiglione - Istituto Giannina Gaslini
Ethical and Legal Issues Committee Chairman	Alberto Martini - Istituto Giannina Gaslini
Intellectual Property Rights Committee Co-Chairmen	Yannis Ioannidis - University of Athens Alessandro Verri - University of Genoa

Health-e-Child Workpackages and Workpackage Leaders

WP1	Project Management	Siemens Medical Solutions
WP2	User requirements specifications	University of the West of England
WP3	Legal, Ethical and regulatory issues	Istituto Giannina Gaslini
WP4	Privacy and security	Siemens Medical Solutions
WP5	Grid platform	maat GKnowledge
WP6	Medical knowledge representation—ontologies	University of the West of England
WP7	Data management layer and data integration mechanisms	maat GKnowledge
WP8	Medical query processing algorithms	University of Athens
WP9	Data collection	Istituto Giannina Gaslini
WP10	Ground truth and clinical knowledge gathering	Istituto Giannina Gaslini
WP11	Integrated disease modelling	INRIA, Sophie Antipolis
WP12	Decision support systems	Siemens Medical Solutions
WP13	Biomedical knowledge discovery	University of Athens
WP14	Deployment of data management system and grid gateway	maat GKnowledge
WP15	Training	European Genetics Foundation
WP16	Dissemination	Lynkeus, S.r.l.

Health-e-Child Project Support

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