

e-IRG White Paper 2011 released!



e-IRG White Paper 2011

The e-IRG White Paper 2011 addresses some of the most interesting questions related to new and on-going e-Infrastructure challenges. Innovation is the thread throughout the document and a special emphasis has been laid on governance of e-Infrastructures.

It is important that existing e-Infrastructures look with a critical eye at their current governance model when preparing for innovation. It is equally important that emerging e-Infrastructures choose a governance model that will provide for an efficient, effective, transparent and accountable operation while

sustainability should be guaranteed. The governance structure and governance policies have to take into account that pure resource providing will be more and more replaced by the provision of services, often on a pan-European scale. Such services will allow researchers to establish new European virtual teams and organisations and these organisations need to be involved in the governance process.

Funding and financing e-Infrastructures is also closely related to the governance model. Increased user involvement leads to increased contribution to the operation of the e-Infrastructure out of user budgets. Such a change in the financing system should not lead to a cut in funding as funding will be needed to realize innovation and provide advanced services for user communities, and especially for leading edge users that are not commercially available or financially viable. National and international e-Infrastructures are not always aligned at the level of governance policies or at the services levels.

A coordination effort at all levels should reduce the existing barriers. The choice of a governance

model also means the choice of a legal structure. ERIC (European Research Infrastructure Consortium) is the new model of choice but needs to be effective and easy to adopt. Turn to the governance chapter in the White paper 2011 for more food for thought on this subject!

Download the e-IRG White Paper!

Visit the e-IRG website to download the White Paper 2011: www.e-irg.eu/publications/white-papers.html

Here you can also find a summary of comments gathered during the consultation phase in the spring.

Rosette Vandenbroucke, White Paper Editor and e-IRG delegate



Sign up for the next e-IRG workshop in Poznan 12-13 October 2011



The next open e-IRG workshop will take place in Poznań 12-13 October 2011, under the auspices of the Polish EU presidency.

The e-IRG workshops serve as open forums to present, debate, and consolidate best practices and policies in the field of e-Infrastructures and their services for research and education. The workshops are open to all and function as incubators for feeding new information and trends into the e-IRG plenum work.

The Poznań workshop will deal with some of the most relevant topics on the European e-Infrastructure agenda, such as

sustainability, development of regional and local infrastructure, data infrastructures and e-Infrastructure beyond FP7.

The first day will focus on sustainability of the regional and European e-Infrastructure, technology support for national and regional infrastructures and governmental support for infrastructure sustainability. A Polish view on sustainable and reliable local infrastructure will also be presented.

The second day will be devoted to Data infrastructures and a panel discussion, which will elaborate on how to integrate the data infrastructure with the existing grid and HPC

infrastructures as well as users and infrastructure providers - demands versus offers.

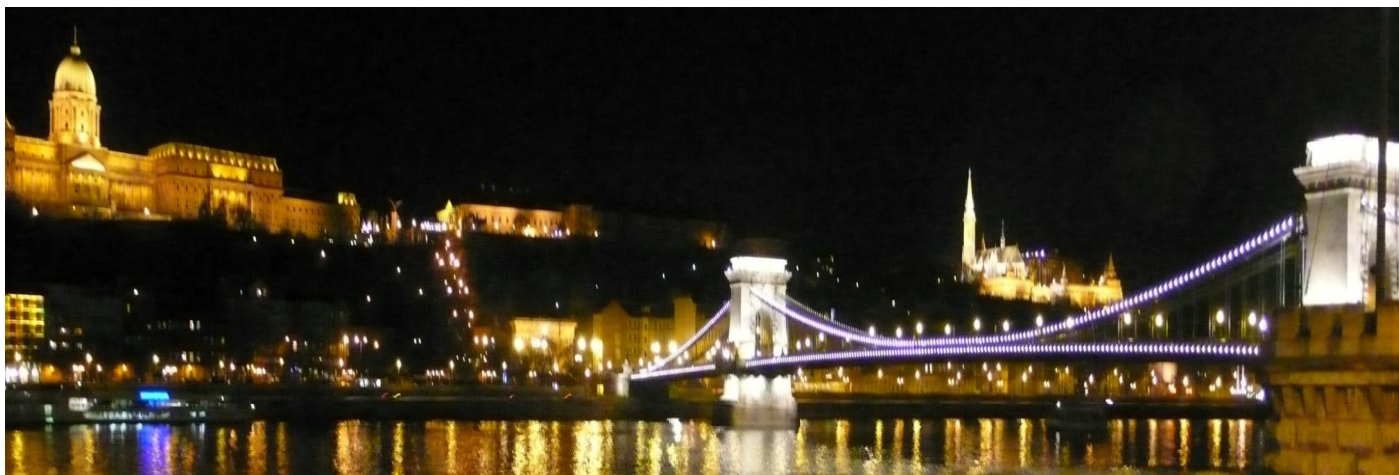
The workshop programme features key speakers from the European Commission and from the e-infrastructure community. The preliminary agenda is available at the e-IRG website:

<http://www.e-irg.eu/e-irg-events/e-irg-workshop-poznan-12-13-october.html>

Here you can also register to attend the workshop and contribute in the future shaping of e-infrastructure!



e-IRG Budapest Workshop 4-5 April 2011



The e-IRG Workshop 4-5 April took place in Budapest

Around 70 participants attended the e-IRG workshop organized by the Hungarian NREN (NIIFI) under the auspices of the Hungarian EU Presidency at the Hungarian Academy of Sciences on 4-5 April 2011. Policy issues related to e-Infrastructures was the main focus of the workshop, with topics such as the role and challenges of e-Infrastructures in the ERA and the increased need for innovation through partnerships between the public and the private sector.

After a warm welcome by e-IRG co-chair **Lajos Balint**, NIIFI, the first keynote speaker, **Norbert Kroó**, Vice President of the Hungarian Academy of Sciences, set the framework for the workshop by reflecting on the past, present and future of ERA and by elaborating on the next European research

programme and the role of Research Infrastructures, including e-Infrastructure. Kroó stated that the European co-operation should be more effective in planning, building and exploiting common RIs and that the establishment of new, major European RIs and their operation should be included in the financing schemes beyond the FP7.

The growing importance of RIs was also highlighted by the second keynote speaker, **Hervé Pero**, European Commission, DG Research and Innovation, who estimated up to 30 new European RIs by 2015. Pero ensured that the next Common Strategic Framework will contribute to fulfill the Innovation Union and the Digital Agenda flagship initiatives. He further elaborated on the 3 main pillars of the next Common

Strategic Framework, which are the Science for innovation (horizontal bottom layer), Innovation for society and Innovation for competitiveness (two vertical layers). RIs and e-Infrastructure are part of the horizontal bottom layer as one of the core drivers.

Neil Geddes, UK Science and Technology Facilities Council, elaborated on what e-Infrastructures provide for the ERA and how to complete the service portfolio. Geddes made clear that we still have a long way to go with data and referred to the recommendations in the e-IRG Data Management Task Force report. User engagement was seen as an essential success factor, where researchers need to be involved in the strategic planning and e-Infrastructure providers need to be equally engaged in the user's needs.



Workshop panel discussions

John Dyer from TERENA presented ASPIRE - the third TERENA/GN3 foresight study (ready by summer 2012), which explore future Internet developments in the context of the research and education community over the next 5-10 years.

Kostas Glinos, European Commission, DG Information Society and Media, gave a presentation on trends and perspectives of e-infrastructures. Regarding HPC, he described a fragmentation of the HPC ecosystem in Europe and pointed out that even if PRACE unites efforts, it is only at the top of the pyramid. Glinos was still positive for Europe to win the race to exascale, but underlined that more investments are needed as well as deploying services for industry and SMEs.

Service Level Management in e-Infrastructures was presented by **Matti Heikkurinen**, gSLM project. Heikkurinen suggested enabling service level management through organizational processes and spoke specifically about the

challenges of *co-evolution*; e-Infrastructure can provide an acceptable level of service, but the model does not scale, and *cross-organisational groups* - with high risk of misunderstandings due to the lack of a lingua franca to describe needs and services.

Antonella Fresca, DC-NET, described the growth of the digitized material in the European Cultural sector, and stated that there is a need for high-quality information technology management, access to facilities offered to the final users and interoperation of cultural heritage data with other research data.

Péter Stefán, NIIFI, **Péter Kacsuk**, MTA-SzTAKI, and **Imre Szeberényi**, BME, gave an overview of e-Infrastructure development trends in the Area of grids, clouds, HPC, storage, virtualization and IaaS. The importance of volunteering desktop grids was highlighted and regarding scientific computing on clouds, the IaaS benefits was mainly referred to. They also described regional infrastructure solutions for serving scientific

computing, e.g. virtualization via the NIIF cloud - designed to be a private cloud that can be transformed to public.

Regional and cohesion aspects
How to create e-Infrastructure development by using the Structural Funds was described by **Tamas Maray**, NIIFI. In Hungary, Operational Programmes supported NIIF with significant funding. Despite some difficulties, a lot of achievements have been accomplished, like renewal of the NREN backbone and the national HPC infrastructure.

Marko Bonac, Arnes, focused on cost sharing principles and practice in developing and using e-Infrastructure facilities and services. He described the challenges and principles of cost sharing in the GEANT project consortium, where partners from both small and big countries participate.

Aneta Karaivanova, BAS Institute of ICT, described the SEE project model with joint communication & service

infrastructure initiatives for South-East Europe, as a successful model for regional development of e-Infrastructures. It has facilitated the integration of SEE countries to European initiatives in multiple e-Infrastructure components, such as network, grid and HPC.

Bernard Marechal, CETA-CIEMAT, spoke about grid computing in Latin America and the project GISELA which ensures the long-term sustainability of the LA e-Infrastructure and provides full support to VRCs, spanning LA and Europe. Marcheal concluded that the continuity of the EC support is of most importance for LA e-Science sustainability.

Partnerships and relations
The role of e-Infrastructures in PPP activities in ICT and in Future Internet R&D was described by **Mauro Campanella**, GARR. To reach the ERA goal of a 'smarter' environment, all the layers (communication, computing, data and services) must be used. Campanella noted that the RIs constant need for evolution and a long set-up period makes the establishment and management of a PPP a high risk for the private partners and advised to agree on the main principles like openness, transparency, neutrality and IPR before a PPP is set-up.

Alfons Hoekstra, University of Amsterdam, presented the MAPPER project (Multiscale applications on European e-Infrastructures) and pointed

out that he spoke from a user's point of view. The project will develop computational strategies, software and services for distributed multiscale simulations across disciplines, using existing and evolving European e-Infrastructures. Hoekstra concluded that there is a need to change a range of EU policies related to access and use of e-Infrastructures to support Distributed Multiscale Computing DMC.

Beyond FP7 - stability and sustainability of leading edge e-Infrastructure services in the ERA

Vasilis Maglaris, NTUA focused on "NRENs and GÉANT - Europe's Research & Education Community Road towards ICT Convergence". The key challenge of NRENs and GÉANT is the data deluge. NRENs/GÉANT are about to merge the Next Generation Networks to Future Internet platforms and Maglaris elaborated on the sustainability of FI experimental platforms, e.g. the active endorsement of diverse user communities. Maglaris summarised that Europe is ready for FI but there is a need for concerted planning at European and global levels.

Peter Wittenburg, Max Planck Institute for Psycholinguistics, gave a description on how humanities and social sciences join forces to link with e-Infrastructures. He presented the DASISH cluster proposal between a number of social science and humanities ESFRI Roadmap projects. One shared topic is the lack of quality of data and how



Presentation by Mauro Campanella

to improve the quality of data to enable advanced and cross-disciplinary access.

Fotis Karayannis, Independent consultant, on behalf of GRDI2020 consortium, presented GRDI2020 - towards a 10-Year Vision for Global Research Data Infrastructures. GRDI2020 contributes to defining a future Roadmap on GRDIs in close collaboration with the European Commission, policy groups and research user communities. The goal is to identify and address the open research problems which currently hinder the development of theoretically founded Global Research Data Infrastructures,

and to indicate new research directions to address these problems. The final roadmap is to be delivered in January 2012 and a draft version can be found on <http://pakag.it/road>.

In the following panel discussion, the e-IRG chair **Gudmund Høst** initiated a discussion on the importance of multi-scale thinking and multi-scale innovation, instead of locking into a particular scale. The new concept “multi-scale policies for research” was established.

Norbert Meyer closed the e-IRG workshop in Budapest by informing about the plan for the next e-IRG workshop 12-13 October in Poznan, during the Polish presidency (see separate article in this newsletter).

All the presentations and a more extensive summary can be found on the e-IRG website: <http://www.e-irg.eu/e-irg-events/events-archive/e-irg-meetings-in-2011/e-irg-workshop-budapest-4-5-april.html>.

Main points from e-IRG delegates meetings in Budapest

The 24th e-IRG delegates meeting (6 April) and the 25th delegates meeting (1 June) both took place in Budapest, Hungary, under the auspice of the Hungarian EU-Presidency.

In the 24th e-IRG delegates meeting 6 April, a Task Force on Cloud Computing was established, which will investigate the policy aspects of cloud computing. It was also decided that e-IRG would provide feedback to the EC Green Paper on a Common Strategic Framework for EU Research and Innovation funding (see separate article in this newsletter on the written response to the CSF Green Paper). Various aspects of the e-IRG White Paper 2011 were also discussed during this meeting, in particular the consultation phase which was about to be opened in April.

In the 25th e-IRG delegates meeting 1 June, further elements of the Task Force on Cloud Computing were discussed. The Task Force will provide a holistic view of clouds, which is relevant for all e-Infrastructure providers and a report will be produced by June 2012.

The on-going preparations for the next e-IRG open Workshop in Poznan, Poland 12-13 October 2011, were also presented (see separate article of the e-IRG Poznan Workshop in this newsletter). The progress of the White Paper 2011, and the outcome of its consultation phase, was also discussed among the delegates.

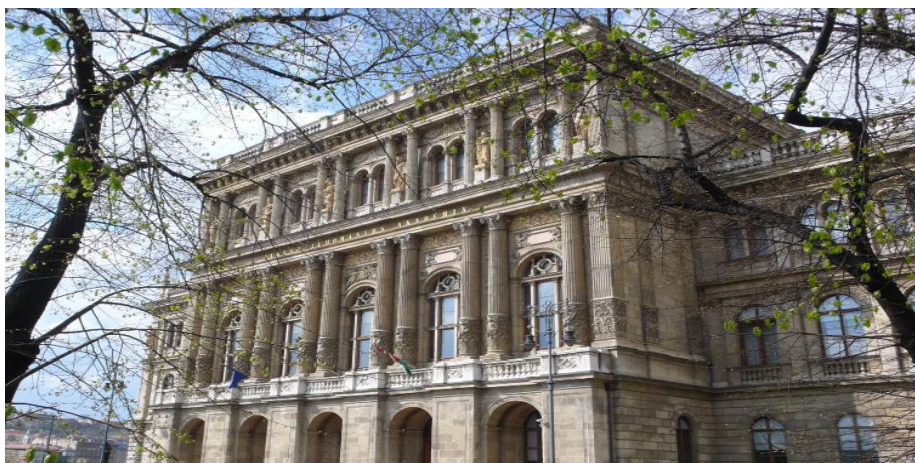
More extensive summaries of the e-IRG delegates meeting can be found on the e-IRG website, <http://www.e-irg.eu/e-irg-events.html>.

e-IRG contribution to the CSF Green Paper consultation

The EC Common Strategic Framework Green Paper had its consultation phase during spring and stakeholders across Europe were encouraged to give their opinions and recommendations. The Green Paper proposed major changes to EU research and innovation funding, to be introduced in the next EU budget after 2013.

e-IRG was one of the over 750 organisations submitting their written responses. The e-IRG recommendations to the CSF Green

The beautiful Hungarian Academy of Sciences





Paper are based on reflections from the e-IRG Budapest Workshop in April and on recent e-IRG documents (Roadmap, White Paper, Blue Paper). Focus was put on question 25 of the consultation process: “How should research infrastructures (including EU-wide e-Infrastructures) be supported at EU level?”

e-IRG highlights the key role that e-Infrastructure plays in fuelling and facilitating the change in the conduct of scientific research and engineering, and in achieving an “online” ERA where knowledge flows freely. e-IRG chose to focus on increasing the awareness of the outstanding economic role and societal impact of the e-Infrastructure and to make sure that in the 2014-2020 period the development and operation of that e-Infrastructure would receive due EU (CSF) and MS funding, in accordance with its outstanding role and impact. The written response was summarised as seven recommendations, shown in the text box below.

On 10 June 2011 the outcome of the consultation on future EU research and innovation funding was discussed at a major conference in Brussels. The summary analysis of the Green Paper public consultation shows that large scale research infrastructures, including e-Infrastructures, are judged to be a core element of the EU’s research and innovation landscape and support to them should therefore be strengthened both financially and strategically. Many respondents also highlighted

e-Infrastructures as enablers for new ways of conducting research across scientific communities and geographic and administrative boundaries.

The full e-IRG response to the Green Paper and more

information on the CSF (later renamed to Horizon 2020) as well as on the outcome of the consultation phase can be found at the following address: http://ec.europa.eu/research/csfri/index_en.cfm?pg=home

e-IRG recommendations wrt. question No.25 of the CSF Green Paper Consultation

1. High priority support for research infrastructures and e-Infrastructure is strongly recommended by taking into account that existence of world-class research infrastructures and especially e- Infrastructure is a necessary and increasingly important condition for fostering scientific excellence in Europe and solving societal and economic problems.
2. Separate funding of (discipline-independent) e-Infrastructure development and operation within the CSF is suggested, rather than ad-hoc competition between them and the (discipline-oriented) research infrastructures. This recognises the universal cross-cutting and innovating nature of the e-Infrastructure and avoids insufficient piecemeal (sometimes duplicate) funding across a large number of separate initiatives.
3. A dedicated “e-Infrastructure Programme” within the CSF (similar to the “Capacities Programme” in FP7) is to be launched – either in separate form or as a component of a “Research infrastructures and e-Infrastructure Programme”.
4. CSF funding for e-Infrastructure (within the above “e-Infrastructure Programme”) should triple compared to the FP7 level and grow constantly to fully support the achievement of the ERA, to meet the increasing demands of the broad European research and innovation communities as well as the challenges and needs of the society at large. On top of this increased funding for e-Infrastructure development and operation, additional funding should be directed through the budgets of user communities to stimulate user-centric offering of e-Infrastructure services.
5. CSF funding for e-Infrastructure development should complement and match MS (member state or, in general, national) funding and efforts with the objective of creating a seamless European e-Infrastructure and thus, support cohesion.
6. SF (structural fund or any other kind of cohesion funds) should be allocated to e-Infrastructure developments to address the digital divide, especially in less developed countries (although it should be emphasised that SF must not be considered as a substitute for CSF funds).
7. The role of e-IRG should be further exploited for e-Infrastructure related activities within the CSF, according to the related 3 December 2009 Conclusion of the Competitiveness Council.



The PRACE Summer School takes place at CSC in Espoo, Finland. © Heikki Helin / CSC

PRACE arranges HPC summer school in August in Finland

PRACE, the Partnership for Advanced Computing in Europe organizes a High Performance Computing (HPC) summer school on 29 August – 1 September 2011 in Espoo, Finland.

In this four-day event the participants will learn advanced parallel programming skills, which are necessary for taking the most out of the largest (Tier-0) supercomputers the PRACE Research Infrastructure is offering for European scientists and engineers.

The speaker list includes **William Gropp** (University of Illinois Urbana-Champaign), one of the key authors of MPI

(Message Passing Interface) programming paradigm, who will talk about advanced features of the MPI; and **Rolf Rabenseifner** (HLRS), one of the most renowned researchers of hybrid parallel programming models. In addition, the following topics will be covered: programming GPGPU clusters with CUDA+MPI, low-level single-core performance optimization as well as using Python programming language in supercomputing.

The largest supercomputers in Scandinavia, i.e. the brand new Cray XE6 system at PDC/KTH and CSC's Cray XT4/XT5 system Louhi will be in disposal of the participants.

Attendance is free for all academics affiliated to PRACE member countries. For further details and a registration form please see <http://www.csc.fi/courses/archive/prace-summer-school>

[csc.fi/courses/archive/prace-summer-school](http://www.csc.fi/courses/archive/prace-summer-school)

Registration is open until 1 August, 2011.

The school is hosted by CSC – IT Center for Science Ltd., Finland and co-organized together by CSC and SNIC/PDC - Center for High Performance Computing at KTH, Sweden.

More information:

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EGI on a virtual road

The European Grid Infrastructure (EGI) supports the work of about 12,000 researchers and scientists across Europe, coordinating over 300,000 processors and more than 100 PB of storage space located at 350 sites in 50 countries. But we don't intend to stop there – we aim to extend the reach of EGI beyond the esta

lished user communities and connect with researchers in all fields of science.

To achieve this vision, we need to improve the flexibility of EGI by addressing requirements of new and existing user communities. The ultimate goal is to build a sustainable infrastructure based on users' needs, where virtual research communities have direct control over the service environments they offer to their end-users.

Virtualisation provides a technology solution to meet this goal and cloud computing (flexible on-demand elastic resource provisioning) a promising operational model for delivering it to the virtual research communities. EGI.eu has been leading the discussions within EGI as to how new technologies can enable dynamic execution environments or deploy on-demand elastic services on resources provided by research or commercial resource providers.

One of the first steps on the road to a virtual world was the User Virtualisation Workshop on 12-13 May 2011, hosted by EGI.eu in its Amsterdam offices. The meeting brought together over 70 participants representing the three groups that are critical to the development of a sustainable production infrastructure: representatives of the end-users, resource infrastructure providers and technology providers.

The workshop started by clarifying the use cases coming from the community and followed with four breakout sessions organised to address specific questions in key areas: monitoring, accounting, virtual machine management, and information services.

The consensus emerging from the workshop was to promote the introduction of virtualised resources alongside the current grid services. This approach will increase the infrastructure's flexibility while retaining the current federated model used within EGI. More importantly, it does not require a potentially disruptive 'Big Bang' migration. The model favours a gradual change, transparent to the end-user, where current services could continue with no change. This will be accomplished by establishing a 'test-bed' environment, leveraging existing expertise and activity in the community.

The discussion over the

integration of virtualisation technology in the grid infrastructure will continue in the months to come. In the meantime, several technology providers have agreed to share their expertise on virtualisation technologies to understand the best way to integrate them into EGI, while a number of resource infrastructure providers have informally committed a part of their infrastructure for virtualisation efforts.

The next stop on the road to virtualisation will be at the EGI Technical Forum in Lyon this September (<http://tf2011.egi.eu/>).

Full minutes (<http://go.egi.eu/535>) and a brief overview (<http://go.egi.eu/559>) of the User Virtualisation Workshop are available online.

Sy Holsinger, EGI.eu Policy Development Officer



GÉANT Projects Liaison team works hand-in-hand with projects to ensure optimal solutions

GÉANT is a highly collaborative project rooted in cooperation, and its success is closely bound to that of the user community it serves in collaboration with the European NREN partners. To effectively address the demands of almost 40 international projects - each with their unique structure, commitment, outcomes, technical needs - and maximising their involvement and the benefit they receive from GÉANT, a special task was created.

Liaising with target user groups, NRENs and users of the GÉANT product portfolio with the aim of understanding end user needs (and converting them into network specifications), encourage productive use of the network for new users and applications are the main objectives of the Projects Liaison team, part of the Liaison and Support Activity of GÉANT.

This Activity works to support and help both existing and new members of the target groups to get the best out of the network for their needs and the requirements of their applications. It has helped with running proofs of concept and

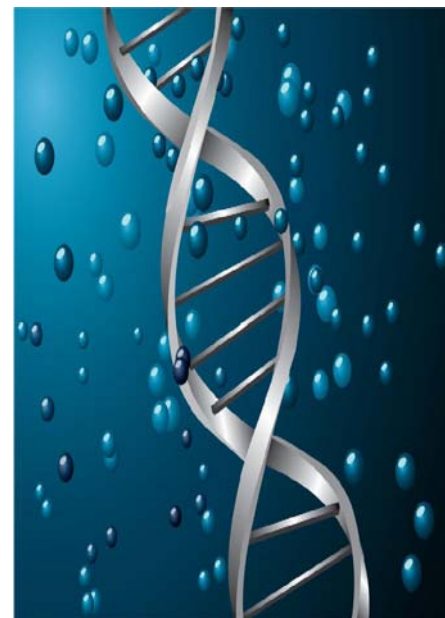
network assessment for new protocols, working alongside researchers and scientists to understand how to improve their network experience. Finally the support team gives special technical support to NRENs where appropriate to increase digital and geographic inclusion across the GÉANT community.

Support examples:

Two recent projects in particular covering different subjects illustrate the range of activities carried out by the GÉANT Project Liaison team. The first is related to the field of bioinformatics, enabling scientists to access – and upload – data and information quickly and easily. The second reports on the collaboration work performed with the arts & humanities community, in particular supporting the LOLA (Low Latency) project, which enables musicians to perform together in real time as though in the same room.

Empowering the global scientific community

The life sciences have undergone a revolution over the past 20 years. Sequencing the DNA of thousands of organisms, including humans and agriculturally relevant species, is generating unprecedented volumes of data in hundreds of research organisations around the world. This disruptive technology has changed the face of research: what used to



take years of work can now be done in minutes – and cheaply. Because of this, bioinformatics – the science of storing, managing and integrating data from biological experiments – has become a fundamental component of modern research. EMBL-EBI is leading this revolution in information sharing. Part of the European Molecular Biology Laboratory (EMBL), the European Bioinformatics Institute (EBI) is the European node for many global projects, and has worked with JANET (the UK NREN) and GÉANT to share this data across Europe and beyond. Further details are available from the case study: GÉANT and EMBL-EBI: Empowering the global scientific community.

Enabling real-time remote musical collaboration

Driven by a pressing demand from musicians and performers,

the LOW LATency (LOLA) project has been developed by the Conservatorio di Musica Giuseppe Tartini, Trieste, and the Italian research and education network GARR. Working together they have created completely new software that enables performers to play together, as if they are in the same location, with both pictures and sound shared across the network in real-time. Removing jitter and bringing latency down to less than 60 milliseconds for the round trip from instrument to human ear and back fools the ear into believing that all the musicians are in the same room. Achieving this level of performance requires high speed, reliable and stable networks providing guaranteed bandwidth of up to 500 Mbps. These demanding requirements can currently only be cost-effectively met through research networks, such as the pan-European GÉANT network and GARR in Italy. Further details are available from the case study: GÉANT and LOLA: Enabling real-time remote musical collaboration

For more information, see www.geant.net and the forthcoming Connect newsletter, available at <http://connect.geant.net>

Paul Maurice, Senior Communications Officer, DANTE



News from eScienceTalk

The e-ScienceTalk project supports grid and high performance computing reporting across Europe, targeting an audience of scientists, policy makers and the general public.

As a small project team, collaborations with other projects are key for e-ScienceTalk to disseminate how e-Infrastructures are aiding scientific research across Europe and beyond. The e-ScienceTalk project has already signed MoU's with e-IRGSP3, as well as the EUIndiaGrid2 and LINKSCEEM2 projects. We now are pleased to announce a further three MoU's, signed during the EGI User Forum in Vilnius in May. The new MoUs include WeNMR, a worldwide e-infrastructure for NMR and structural biology, GISELA, which coordinates grid initiatives for e-science communities in Europe and Latin America, and CHAIN, which coordinates and harmonises advanced e-infrastructures in many regions. An additional MoU, with the EMI project, was signed at the EGI User Virtualisation Workshop.

Over the last few months, the e-ScienceTalk team have also exhibited and reported from a number of conferences

including ISGC2011, Fet11 and TNC2011. Our latest 'GridCast blog' comes from the ICTP conference on e-Infrastructures for Climate Change in Trieste, where we spoke to a number of policy makers and researchers about how e-science can help in climate research. To read the reports on the conference see <http://bit.ly/climatechangeresearch>

Release of e-Science Briefing

e-ScienceTalk are pleased to announce the release of the latest e-ScienceBriefing on the topic of grids and clouds in the Asia-Pacific. The document, which provides a snapshot of distributed technologies in the region, aims to give a jargon-free summary for policy makers, and at the same time showcases how researchers are putting e-Infrastructures to best use. You can find a copy of the article at the e-ScienceTalk website: <http://www.e-sciencetalk.org/briefings.php>



UPCOMING EVENTS

1st Workshop on Managing and Delivering Grid Services
Bordeaux, France, 29 August 2011
<http://www.gslm.eu/mdgs2011>

EGI Technical Forum
Lyon, France, 19-23 September 2011
<http://tf2011.egi.eu/>

9th e-Concertation meeting
Lyon, France, 22-23 September 2011

Nordic conference on eScience
Helsinki, Finland, 29-30 Sept 2011
<http://www.csc.fi/english/pages/escience/>

e-IRG open workshop - see article in this newsletter
Poznan, Poland, 12-13 October 2011
www.e-irg.eu

SC11
Seattle WA, USA, 12-18 November 2011
<http://sc11.supercomputing.org/>



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