

Public Summary - 28th e-IRG Delegates Meeting

Copenhagen, March 20th, 2012

*The 28th e-IRG delegates meeting was held under the auspices of the Danish EU Presidency. At the meeting the main elements of the e-IRG strategy were discussed. Other major topics were the progress of the e-IRG policy papers and Task Forces. The document **e-IRG's reaction on the findings and recommendations of the report of the GÉANT Expert Group** was approved.*

Reports and News from the e-IRG

The e-IRG chair **Gudmund Høst** welcomed **Ian Meli** and **Saviour Zammit**, the new e-IRG delegates from Malta. Gudmund Høst reported about the meetings he had recently attended in which he gave a presentation on e-IRG. He noted that several South East European countries will probably apply individually for e-IRG membership. **Dana Petcu** has given a presentation at CLOUDSCAPE IV where the interesting discussion afterwards provided input for the Task Force on Cloud Computing. **Rene Belsø** presented at the DC-NET Final Conference e-IRG and discussed e-infrastructure trends. He noted that the cultural heritage community finds it difficult to communicate with e-infrastructure providers about their need for e-infrastructure services.

News from the Commission

Pekka Karp updated the delegates on Horizon 2020. Horizon 2020 has three action lines for Research Infrastructures (RIs): Development of European



RIs, Reinforcing the RI innovation potential and their human capital, and Supporting consistency/efficiency of Member States and EU RI policies. Two EC consultation meetings on e-infrastructure in Horizon 2020 took place (GÉANT; Industry and Innovation) and three more are planned (Open infrastructures for Open Science; Human Capital; Distributed Computing, Grids and Clouds). EC will involve e-IRG in the organisation of the last two. He presented the key policy actions related to the EC Communication on HPC adopted on 15.2.2012. The Communication has been sent to the Council and Parliament and their conclusions will prob-

ably be received under the Cyprus EU Presidency. End of March there will be a meeting on the RI Work Programme 2013 dedicated to GÉANT and the expectation is that the GEG report will inspire the outcome. The ICT Work Programme 2013 is being drafted.

Report from the e-IRGSP3

Rossend Llurba reported the main support activities since the previous delegates meeting which included support of: the document "e-IRG's reaction on the findings and recommendations of the report of the GÉANT Expert Group", the Task Forces (Cloud Computing, European Software Strategy),



the Blue Paper, the Roadmap 2012 and the Strategy Working Group. The support project was reviewed on 31.1.2012 with assessment "good progress". The recommendations received included three that belong to the competence of e-IRG: use of social media by e-IRG, liaison with FIRE and its projects, and taking into account emerging new directions of ICT infrastructure.

e-IRG Strategy

Gudmund Høst informed that the strategy has been discussed in the Strategy Working Group and the Executive Board as well as informally with DG INFSO. DG INFSO has offered to host a meeting with the Executive Board on the e-IRG strategy. The main elements of the strategy are: strengthening the role of e-IRG as advisory body on e-infrastructures in Europe and as coordination platform for European e-infrastructures. In the discussion that followed it was first established that both the approach, structure and content of the strategy document provided a good basis to discuss upon. The topics of discussion were: the stakeholders, increasing the weight of e-IRG policy documents, the global role of e-IRG, engagement with national ministries, and involving experts.

e-IRG Action Plan

Rosend Llurba presented the updated Action Plan and reported the status of the actions. It was decided to remove or postpone until after the summer of 2012 several actions that are not urgent or directly related to the e-IRG policy work.

e-IRG Policy Papers

Fotis Karagiannis reported the status of the **Data Management Blue Paper**. An integrated version will be available in May 2012 for public consultation.

The aim is to produce the final document before the June e-IRG delegates meeting.

Gudmund Høst introduced **e-IRG's reaction on the GEG report** with the slides he used at the EC GÉANT consultation meeting which convey the basic message which is also in the paper. He stressed that the paper should go to print quickly. After discussing several topics, the document was approved. It will be printed in A5 format and disseminated.

Anton Frank presented the status of the **e-IRG Roadmap 2012**. The Editorial Board, editors and contributors are in place. There is a first draft of the document structure with proposed topics. A second draft of the Roadmap is planned for June 2012, the pre-final version for public consultation in September 2012 and the final document should be ready in November 2012. Unlike what was done in the previous Roadmap, the topics now address issues that concern all e-infrastructures similarly. It was decided to proceed with the proposed approach and structure and to elaborate in the next draft of the Roadmap 2012 on the data concept and the synchronisation with the Blue Paper on Data Management.

Task Forces

Rosette Vandenbroucke informed that the report of the **Task Force on Cloud Computing** is subject to a final review. The next steps are to first send a complete draft with recommendations to the delegates for their comments, then prepare a final draft which will be sent to a selected group of stakeholders for comments, and to submit the final document for approval at the delegates meeting in June. Dana Petcu presented the draft recommendations.

It was decided that a new version of the document with draft (bold) recommendations will be sent to the delegates for comments.

Sverker Holmgren reported that while the **Task Force on Scientific Software** had had a slow start now the first draft of the document is planned end April and it will be short, around 20 pages including the recommendations. It will focus on scientific software with as major topic applications.

Activities during the Danish EU Presidency

Rene Belsø mentioned that ICRI 2012 will be the major event during the Danish EU Presidency and that there will be a Future Internet Conference on 10 May in Aalborg. The e-IRG workshop will be on 11–12 June from lunch to lunch in the city centre of Copenhagen. The title of the workshop will be: European Research Infrastructure Strategy.

Activities during the Cyprus EU Presidency

The tentative date for the delegates meeting to be hosted by Greece and Cyprus in Athens is Friday 14 September. The workshop and the second delegates meeting will be held in Amsterdam either end November or begin December.

Rosend Llurba, e-IRGSP3



e-IRG workshop in Copenhagen focuses on research strategy

The next e-IRG open workshop will be held in Copenhagen, Denmark, on 11–12 June 2012. The workshop is co-hosted by the e-IRG **Danish delegation, now the Danish e-Infrastructure Cooperation (DeIC)**, together with the Nordic e-Infrastructure Collaboration (NeIC), consisting of the five Nordic e-Infrastructure providers – i.e. from Sweden, Norway, Denmark, Finland and Iceland. The workshop will be organised under the auspices of the Danish Presidency of the European Union.

The title of the workshop is **European e-Infrastructure Research Strategy**.

Whereas the workshop will cover a wide range of topics from a diversity of application areas, the focus in the

presentations will be on the strategic questions related to e-Infrastructures and the way to deal with the strategic challenges.

The workshop will end with the closing debate “What are the Greatest European e-Infrastructure Challenges – Policy; Legal; Economic; Technological?” that will address the questions and strategic challenges presented during the workshop.

e-Infrastructure users, providers and policymakers are cordially invited to attend the e-IRG workshop and to take part in the debates.

The program of the workshop and practical information can be found at:

<http://www.e-irg.eu/e-irg-events/workshop-11-12-june-copenhagen.html>

Please register at:

<http://www.e-irg.eu/e-irg-events/workshop-11-12-june-copenhagen/registration.html>

The e-Infrastructure Reflection Group was founded to define and recommend best practices for the pan-European electronic infrastructure efforts. It consists of official government delegates from all the EU countries. The e-IRG produces white papers, roadmaps and recommendations, and analyses the future foundations of the European Knowledge Society.

<http://www.e-irg.eu/>

TERENA Networking Conference (TNC2012) in Iceland

Through keynote speeches by renowned specialists and many parallel sessions, the conference with the theme ‘**Networking to Services**’ presented an overview of the latest developments in research networking, both in the technical field and in the areas of application and management.

The TNC2012 was hosted by the Icelandic National Research and Education Network (RHnet) and the University of Iceland and held in the picturesque city of Reykjavik in Iceland from 21–24 May 2012. RHnet provides network connectivity to all state universities and research institutes. With respect to its research activities and accomplishments, RHnet represents Iceland in the development of the Nordic network, NORDUnet, that

takes part in the pan-European network GÉANT and participates actively in the project implementation. This sets the perfect scene for TNC2012.

More than 600 people were attending the conference, which also featured online presentation materials for those who cannot be there in person.

The opening plenary presentation was given by **Hilmar Petursson** of CCP GAMES, Iceland, who shared experiences from managing the massive 400,000 person multiplayer game EVE-Online. The closing plenary was delivered by **Leslie Daigle**, Chief Internet Technology Officer of the Internet Society.

Each day included parallel sessions of presentations on a diverse



range of topics, and there were four more plenary talks, on Tuesday and Wednesday.

All streams were available live and will be made available in archive form immediately after each session. Most of the slides and some of the papers can be downloaded by clicking on the relevant session in the programme, at <https://tnc2012.terena.org/core/schedule/list>.



e-ScienceTalk were out in force for the European Grid Infrastructure's 2012 Community Forum

Set high on the Bavarian plains, in the Leibniz Supercomputing Centre at Garching, near Munich this remarkable building's most striking feature was a pair of slides snaking from the third floor to the base of the atrium, ready to deliver delegates briefly delayed by opportunistic discussions snatched in corridors and seminar rooms to the lecture halls below. From grid to cloud to HPC, the power and promise of distributed computing was evident in the quality of the talks and demonstrations on offer, with strong beer and fine Bavarian fare to sustain the great and good of e-Science in Europe and beyond along the way. As usual, you can find blog posts, including some thoughts on Professor of Computing History **Horst Zuse's** closing keynote at www.gridcast.org or relive the experience on the twittersphere by searching for #egicf12.

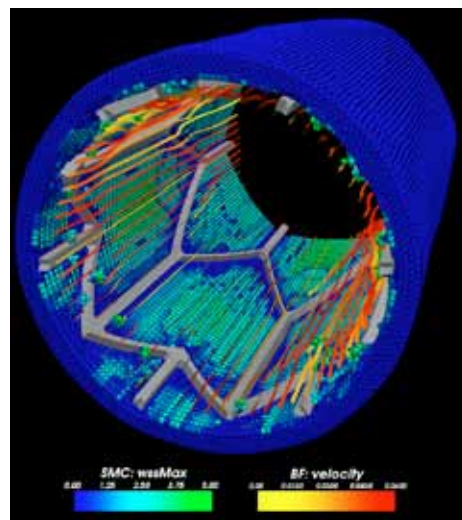
e-Science Briefings: Visualisation

From understanding relationships between complex phenomena and illuminating obscured patterns in big data, to increasing interdisciplinarity between the sciences and communicating ideas to non-science audiences, visualisation is critical in advancing how science is being done in the 21st Century. Maps, perhaps our oldest means of representing information, are taking on a new significance. The falling entry costs of network- and GPS-enabled devices allow citizens in the urban global north, and remote villagers of the global south, to track their own environment and coordinate action to improve their lives, as covered in our

report on Extreme Citizen Science. The human world of course layers itself – sometimes somewhat precariously – on the physical world beneath. Seismic shifts, floods, and atmospheric degradation threaten our population centres, but visualisation holds the key to understanding where problems are, and hopefully where they will strike next, allowing preparations to be made.

Moving from the global to the molecular, visualisation is helping life scientists to delve into the complex interactions of biological molecules, unravelling diseases and aiding the design of drugs to treat them. It's an effort that requires not only a new wave of applications that open up e-science to biological and molecular scientists, but the necessary e-infrastructure, and the pan-European collaborative effort it entails, to support it. The project MAPPER (also covered more extensively in iSGTW) is delivering to scientists a simple, seamless access point to distributed computing systems across Europe for modelling physical phenomena spanning a range of size scales, including visualising blood flow in atherosclerosis patients. Finally, making the visual journey from inner to outer space, VisIVO is bringing visualisation to astrophysics, helping scientists to delve into the workings and origin of the universe. You can find this and previous briefings here: v.gd/sciencebriefings

Stefan Janusz,
e-ScienceTalk



The mechanical stresses in a stented blood vessel. MAPPER is a project for helping to determine which atherosclerosis patients are likely to experience excessive scar tissue development after having a stent – an artificial tube – inserted into their arteries. This problem can usually only be solved by further surgery. By identifying those patients whose genetics and physiology make them more likely to experience this problem, thus a more personalized approach involving drugs and special stents can be taken. BF is blood flow, SMC: wssMax is smooth muscle cell maximum wall shear stress.



EGI events: Autumn in Prague to follow Munich in the Spring

EGI's next flagship event – **the Technical Forum 2012** – will be held in Prague, Czech Republic between 17–21 September. The conference will be hosted by EGI.eu in partnership with CESNET, the consortium of Czech universities and the Czech Academy of Sciences that represents the country in the EGI Council.

Contributors are welcome to submit abstracts of proposed presentations, workshops, training events, demonstrations, posters and sessions to be included in the following five tracks:

- EGI Operations
- Resource Infrastructure services
- Virtualised Resources: challenges and opportunities
- Virtual Research Environments
- Community and Coordination

The deadline for submissions is 11 June 2011.

The tracks reflect a continuing evolution of the infrastructure towards a sustainable layered model but authors should also think in terms of the values that underpin Open Science – the pub-



lic availability and reusability of both scientific data and experimental methodologies.

“I am looking forward to the Prague Forum being a lively market place where technology designers, resource managers and service providers interact with user community representatives to create open and sustainable solutions for distributed research computing across the EGI landscape,” says **Steve Brewer**, chair of the Programme Committee.

The Prague event will continue the ecosystem-building trend that started at the EGI Community Forum which was held at the Leibniz Supercomputing Centre (LRZ) in Munich, Germany between 26-30 March 2012. The event was hosted by EGI.eu in partnership with the Munich Network Management, a consortium of four German research institutions.

The Community Forum showcased the role that EGI plays in enabling innova-

tion across the European Research Area, in particular by highlighting the services, technologies and tools available to, and also provided by, scientific communities to support their research.

The forum was held in conjunction with the 2nd EMI Technical Conference and co-located with the 2nd Annual European Globus Community Forum (26 March). In total, 421 delegates registered for the event that featured 171 contributions and many keynote speakers including **Alexander Bonvin** project leader of WeNMR, **Steven Neuhause**, Director for EGI.eu and **Kostas Glinos**, Head of the GÉANT and e-Infrastructures Unit at the European Commission.

The week ended with a special talk by Professor **Horst Zuse** about the origin and history of the first computer functional computer, which was built by his own father, **Konrad**.

Catherine Gater, EGI.eu





EUDAT focusing on research communities' needs

The first EUDAT User Forum took place on 7–8 March 2012 in Barcelona and gathered more than 60 participants, including representatives from 18 research communities across Europe.

Since its start on 1st October 2011, EUDAT has been reviewing the approaches and requirements of research communities regarding the deployment and use of a cross-disciplinary and persistent data e-Infrastructure. This analysis initially focused on a first subset of communities from linguistics (CLARIN), earth sciences (EPOS), climate sciences (ENES), environmental sciences (LIFEWATCH), and biological and medical sciences (VPH). The preliminary results of this analysis were presented at the User Forum. Several user communities outside the EUDAT consortium also participated, presenting their data architectures and sharing the functionalities they would require from a common layer of data services.

“The User Forum demonstrated once again that the way data is organized

differs from one community to another,” said EUDAT Scientific Coordinator **Peter Wittenburg**, from the Max Planck Institute for Psycholinguistics at Nijmegen, the Netherlands. “EUDAT must acknowledge this heterogeneity, while looking at the same time for some degree of integration and possible common solutions and services. It was encouraging to see that new user communities saw many of the service cases we identified in EUDAT as very relevant.”

EUDAT has shortlisted six service cases identified by user communities as priorities: safe replication of data sets among different sites, data staging to compute facilities, easy data storage, metadata, single sign-on, and persistent identifiers. In each case, a multi-disciplinary taskforce involving representatives from communities and data centers has been set up to plan for the deployment of these services on the EUDAT infrastructure. The first pilots are expected to be delivered in 2012.

More information about EUDAT's collaboration with communities on <http://www.eudat.eu>.

EUDAT training event: Building Blocks of Data Infrastructures 25th-26th June 2012 Amsterdam

EUDAT project will hold its first training course on 25th-26th June in Amsterdam offering theoretical knowledge about data architectures, and practical experience of concrete implementation work. The course will consist of:

- Policy-Rule based Data Management
- Use of Handles (EPIC, DataCite) for Persistent Identification
- Distributed Authentication and Authorization

For more information and registration for this training activity, please visit: <http://www.eudat.eu/1st-eudat-training-days-0>.

Riina Salmivalli, EUDAT



Géant announces terabit research network for Europe

40 million researchers and millions of students across Europe are set to benefit from the fastest available data transfers, thanks to a major investment in the pan-European GÉANT research and education network. The migration to the latest transmission and switching technology is designed to support up to 2Tbps (terabits per second) capacity across the core network, effectively future-proofing Europe's critical network up until 2020. 500Gbps capacity will be available across the core network from first implementation, delivering circuits across Europe that will allow individual users to transfer data at speeds of up to 100Gbps, thereby enabling faster collaboration on critical projects and

meeting the rapidly increasing demand for data transfer.

To achieve this major step forward GÉANT, built and operated by DANTE on behalf of Europe's National Research and Education Networks (NRENs), has awarded four-year contracts to Infinera and Imtech, to respectively provide the transmission equipment and switching platform to comprehensively upgrade the 50,000km GÉANT backbone network.

The network architecture is based on two types of equipment – optical transmission and data packet switching. The procurement was therefore split into

two groups. Infinera was selected to provide optical transmission equipment lighting all the dark fibre in the GÉANT backbone network, whilst Imtech will provide the data packet switching platform using Juniper equipment. These contracts follow extensive architectural and design work, technology investigation, and a rigorous evaluation and procurement process involving DANTE and its NREN partners that began in 2011. Rollout of the new technology will begin in Q2 2012.

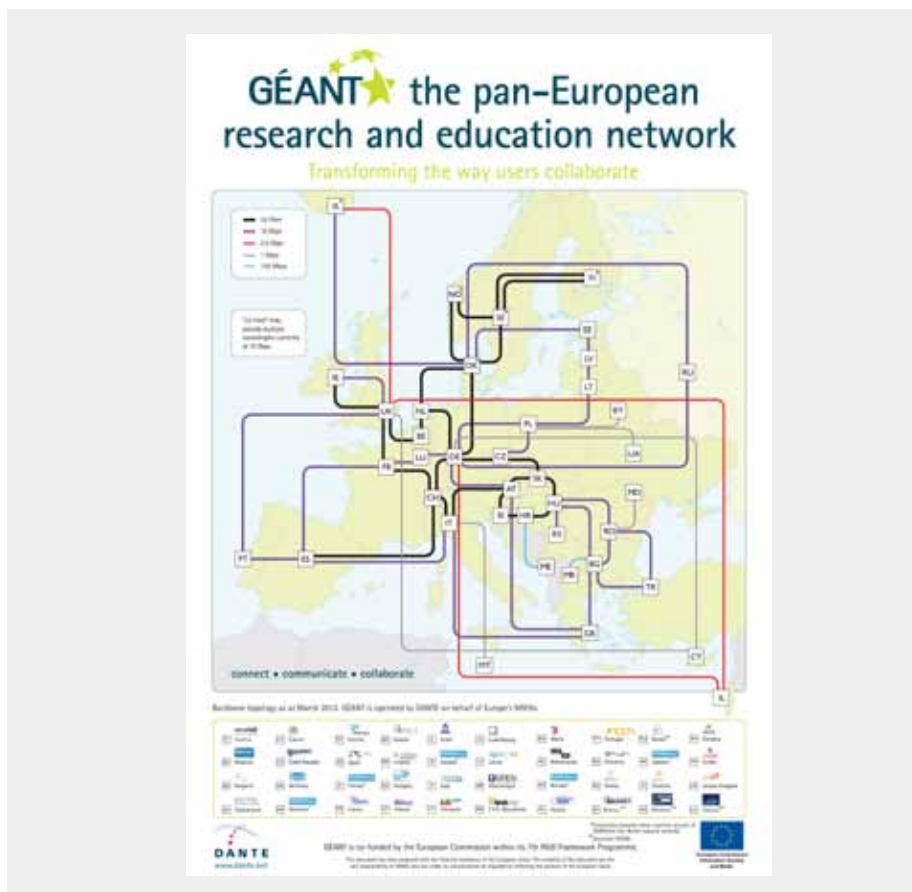
A number of factors are combining to drive a data deluge that is impacting research networks, high performance computing (HPC) and grids – collectively known as e-infrastructures. Major projects involving partners worldwide, such as CERN's Large Hadron Collider, generate enormous amounts of data that needs to be distributed, analysed, stored and accessed for analysis. The need for high speed, stable transfer of data depends heavily on the high speed and dedicated bandwidth offered by research networks.

In the new network, data flows of up to 100Gbps per user will be supported, with the added benefit of making it easier for users to dynamically access the bandwidth they need, speeding up data transfer, collaboration and consequently the research results.

Paul Maurice

For more information, see:

<http://www.geant.net>





Cultural Heritage going digital: a strong need of infrastructure services and a big opportunities for innovation

Digital evolution of the Cultural Heritage field has accelerated rapidly in the past few years. Massive digitization and annotation activities are in progress all over Europe and the world; furthermore, the strong involvement of companies like Google, together with the positive reaction and increasing support of the European Union, have led to a variety of, rather converging, actions towards multimodal and multimedia cultural content generation from all possible sources (i.e. galleries, libraries, archives, museums, audiovisual archives etc.).

The matter has 2 faces: on one side, the Memory Institutions (museums, archives and libraries at first, but also Archaeological sites and Audiovisual repositories) feel the unavoidable need of digitizing their content, both for preserving it in a digital format and for granting and enlarging the access to them by researchers, students and citizens. On the other side, our society is like never before accumulating a huge amount of digital-born material (result data from the research, materials' analysis, digital art, bibliographies and so on). The digital-born heritage is therefore adding data and content to the digitization process output.

The volume of digital cultural heritage data is incredibly growing year after year, so that it became immediately necessary to reflect upon the tools which permit to manage such a huge amount of data in an efficient and selective way, in order to make the data available to the researchers and the

citizens in a European dimension, and towards a global dimension too.

The first issue which was felt of immediate importance, also considering that each of the Member States had its own methodology and procedures, had been building a shared platform of recommendations and guidelines and developing common data models and services. To this aim, Minerva and Michael projects permitted to have the proper basis from which two branches had started. First branch, towards citizens: **Europeana** is the flagship project to give access to digital cultural collections throughout Europe. Second branch, towards researchers: the research in the humanities is rapidly transforming into a data-based science and therefore it is becoming more and more crucial to develop dedicated e-infrastructures which will enhance the research and will facilitate the researchers' workflow.

Three projects funded under the e-Infrastructure program of FP7 are coping with this challenge.

DC-NET: ERA-NET for Digital Cultural Heritage (<http://www.dc-net.org>)

The project just celebrated its final conference in Rome on 8/3/2012. Thanks to DC-NET an operative dialogue between cultural heritage and e-Infrastructures communities has been established in Europe and a Joint Activities Plan has been designed and agreed.

DC-NET will continue beyond the funding period on the basis of the interest of the participating partners to implement joint activities toward the implementation of the digital cultural heritage infrastructure.

INDICATE: A concrete approach within an international dimension (<http://www.indicate-project.eu>)

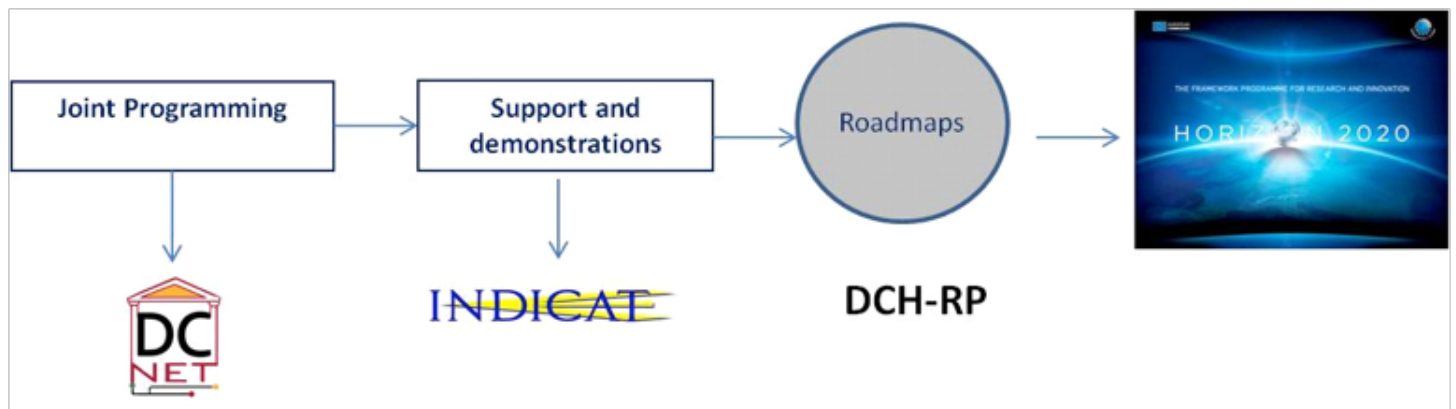
INDICATE implements concrete and real experimentations in countries of the Mediterranean region and internationally, to validate the priorities established by DC-NET.

Workshops, case studies and pilots are organised on long-term preservation, virtual exhibitions, management of geo-coded cultural content, as well as semantic search and federated access to distributed repositories stored on the grid. The final conference of INDICATE is planned in Cairo on 9-10 July 2012.

DCH-RP: Digital Cultural Heritage Roadmap for Preservation

DCH-RP will start in October 2012 and last 2 years, with the aims to harmonise data storage and preservation policies in the DCH sector at European and international level, to identify the most suitable models for the governance, maintenance and sustainability of an integrated infrastructure for digital preservation of cultural content.

DCH-RP Roadmap is intended as the first instance of the Open Science Infrastructure for DCH in 2020.



The experience so far has demonstrated that one very important step is to develop a dialogue among people and organizations who are not familiar to work together: museums, libraries, archives, ICT research centers and e-Infrastructure providers. To this regard, it is worth to mention www.digitalmeetsculture.net, a communication platform that provides common spaces and tools to share best practices, develop cooperation, and get DCH projects to be visible and well disseminated in a global dimension.

The screenshot shows the homepage of digitalmeetsculture.net. At the top, there is a navigation bar with links like Home, Our Mission, Events, Register, etc. The main header features the site's logo and navigation tabs for Digital Heritage and Digital Art. The content area is divided into several sections: a login status box, a 'Send your NEWS' button, a 'VISIBILITY' section, a 'REPOSITORY' section, and a 'Search & Offers' section. The central part of the page features a large image of a nautilus shell with the text 'Welcome to digitalmeetsculture!' and a 'Continue reading' link. To the right, there are sections for 'EDITORIALS', 'INTERVIEWS', and 'Upcoming Events', which lists several international conferences and symposiums. At the bottom, there are 'DIGITAL HERITAGE SHOWCASES' and logos for 'CIP ICT-PIIP' and 'Europeana'.

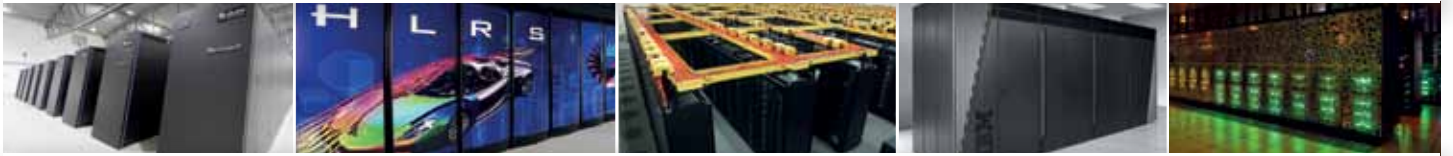
Conclusions

The work done in the last 10 years paved the way to build the e-Infrastructure dedicated to the Digital Cultural Heritage, which will allow the arts and the humanities to participate at full to the global open science. Achieving this goal is a complex process that however is needed to be developed and a large network of people, organizations and enterprises is ready to cope with it, committing towards creative and innovative solutions.

dr. **Antonella Fresa**,
Promoter S.r.l.



PRACE Scientific Conference 2012 presents first scientific results of using tier-0 systems



The PRACE Scientific Conference 2012, hosted by the Partnership for Advanced computing in Europe (PRACE) will be held on Sunday 17th June 2012 at the Radisson Blu Hotel in Hamburg, Germany.

Top European scientists will highlight advances in large scale simulation and key results obtained with support from PRACE. The European Commission and PRACE director Dr. **Maria Ramalho** will present their visions for HPC in Europe. **Yves Ineichen**, Paul Scherrer Institut, from this year's PRACE Award winning team will give a keynote speech about their project entitled "A Fast and Scalable Low Dimensional Solver for Charged Particle Dynamics in Large Particle Accelerators".

Top European scientists will highlight advances in large scale simulation and key results obtained with support by PRACE, the Partnership for Advanced Computing in Europe. The European Commission and the PRACE director will present Europe's vision for HPC.

Scientists and researchers from academia and industry are cordially invited to participate, learn from colleagues what can be achieved using PRACE services and identify opportunities for future PRACE supported projects. The

programme will include a short meeting of the User Forum which will provide an opportunity for users and those considering applying for PRACE resources to discuss issues with the PRACE management and members of the Scientific Steering Committee.

Other projects to be presented are:

Paolo Carloni (German Research School for Simulation Sciences GmbH): Excess proton at water/hydrophobic interfaces: A Car-Parrinello MD study

Bing Liu (Max-Planck-Institut für Eisenforschung): A dislocation dynamics study of dislocation cell formation and interaction between a low angle grain boundary and an in-coming dislocation

Jeremie Bec (Observatoire de la Côte d'Azur): Droplet growth by coalescence in turbulent clouds: kinetics, fluctuations, and universality

Ricardo Fonseca (Instituto Superior Técnico, Lisbon): Predictive full-scale fast ignition with PW plasma amplified laser pulses

Maarten van Reeuwijk (Imperial College London): Turbulent entrainment due to a plume impinging on a density interface

Frank Jenko (Max Planck Institute for Plasma Physics): Ab initio Simulations of Turbulence in Fusion Plasmas

This year PRACE partners with ISC, the International Supercomputing Conference, maximizing the value for PRACE and ISC'12 attendees. Participation in the PRACE programme on Sunday is free of charge.

However, all participants should register via the ISC registration

<https://www.isc-events.com/ir/registration.php>

The conference takes place at the Radisson Blu Hotel close to the Congress Center Hamburg. Registration opens at 8:30 am. The full programme is published on <http://www.prace-ri.eu/PRACE-Day-2012>.



CO2 free energy

Nuclear fusion is a promising carbon-free option to meet the increasing global demand for electricity in the future. A world-wide consortium including the European Union is currently constructing the flagship fusion facility ITER, one of the most challenging scientific projects ever undertaken. Construction of the facility began in 2007 and the first plasma is expected in 2019.

Turbulence simulations, carried out in the framework of the PRACE Research Infrastructure, have provided new insights into the fundamental processes of turbulent transport. This research is contributing to the understanding and optimisation of magnetic confinement in fusion devices. Ultimately, the goal is to be able to make predictions for ITER

“The research conducted in our team is part of a world-wide effort to understand and predict turbulent transport in magnetically confined fusion plasmas. Our work is contributing to a better grasp of the underlying processes and helping to establish predictive and control capabilities,” tells Professor **Frank Jenko** at the Max Planck Institute for Plasma Physics (IPP) in Garching,

Germany. Professor Jenko headed the team from several European research institutes, including the IPP, the Ecole Polytechnique Fédérale in Lausanne in Switzerland and the University of Oxford in England.

“We hope that ITER will, in a few years, help us to demonstrate the physical feasibility of power plants based on fusion which is the process that powers the stars. Given the predicted rise in energy demands over the next few decades, the world will need safe, carbon-free power plants.” The fusion of magnetically confined hydrogen plasma at a temperature of 100 million degrees offers a very interesting way of meeting these challenges. “In order for ITER to achieve its main goal – the creation of a self-sustaining or “burning” plasma – the unavoidable heat losses induced by turbulent flows have to be kept in check.

Understanding turbulent flows and their behaviour is a challenging task. “Turbulence has often been called one of the most important unsolved problems of classical physics,” states professor Jenko. Many famous physicists have

attempted to tackle turbulence using analytical tools but with only limited success. Today, modern supercomputers offer a different approach to investigating these phenomena. “We can make progress in this area by state-of-the-art simulations on some of the world’s most powerful supercomputers. Simulations are especially useful for studying turbulence in hot plasmas, which must be described by means of five-dimensional kinetic models.” A single simulation aiming to be as physically comprehensive as possible could take several months or even a year, if run on medium-size computers. With PRACE offering the most powerful hardware available today in Europe, investigation of turbulence becomes feasible in a reasonable time. “We have performed plasma turbulence ab initio simulations with the sophisticated plasma turbulence GENE code on the JUGENE supercomputer, which is one of the Tier-0 systems of the pan-European Supercomputer Research Infrastructure created by PRACE. It lets us investigate important physical effects at a level that had not been possible before. These simulations are closely linked to the ITER experiment.”



Snapshot from an ab initio simulation of the ITER-like fusion device. Understanding turbulent flows and their behaviour is a challenging task. “Turbulence has often been called one of the most important unsolved problems of classical physics,” states Professor Frank Jenko, one of the speakers of PRACE Day.



PRACE 4th Call for Proposals accepted 43 applications and granted 1.134 million core hours on Tier-0 systems: a record!

For the PRACE Project Access 4th Call for Proposals on Tier-0 systems, 1136 million core hours on 5 Tier-0 machines were made available by PRACE hosting members – the largest number of supercomputers for any PRACE call so far. PRACE received 78 applications requesting 1.927 million core hours. The peer review process for the project applications allocated 1134 million core hours to 43 proposals. Researchers awarded access to the infrastructure will start using their allocated core hours from 1st May 2012 until 30th April 2013.

The 43 proposals that were awarded access to the research infrastructure are at the highest level of scientific and technical maturity. The results of these projects will be published in one or more high-quality scientific journals. The proposals demonstrated scientific excellence and focus on topics of major relevance for European research. This underlines the need for Tier-0 resources and an integrated system for access to these resources, as provided by PRACE. The details of the 43 successful applications will be available via <http://prace-ri.eu/PRACE-Projects> or the 'How to apply' menu.



be fully deployed with 6 Tier-0 centres and a computing power of 10 Pet-aFlops approximately. For more information, see: <http://www.prace-ri.eu/Call-Announcements>.

The 5 Tier-0 machines available under the 4th Call are: IBM Blue Gene/P "JUGENE" (GCS@Jülich, Germany); Bull Bullx cluster "CURIE" (GENCI@CEA, France); Cray XE6 "HERMIT" (GCS@HLRS, Germany); SuperMUC (GCS@LRZ, Germany); FERMI (CINECA, Italy). SuperMUC and FERMI are currently in their final installation phase, and will become operational in September and August, respectively.

The 5th PRACE Call for Proposals for Project Access opened on 17th April 2012. The computing resources for this call are available from 1st November 2012 to 31st October 2013. The new call will feature additional Tier-0 systems with new computing architectures, with 1336 million core hours available. By end of 2012, the infrastructure will



NEWS AND UPCOMING EVENTS

e-IRG workshop and meeting
11–13 June 2012
Copenhagen, Denmark,
<http://www.e-irg.eu/e-irg-events.html>

PRACE Scientific Conference
17 June 2012, Hamburg, Germany
<http://www.prace-ri.eu/PRACE-Day-2012>

ISC 2012
17-21 June 2012
Hamburg, Germany,
<http://www.isc-events.com/isc12/>

Building Blocks of Data Infrastructures
25–26 June 2012 Amsterdam, Netherlands
<http://www.eudat.eu/news/building-blocks-data-infrastructures-25th26th-june-2012-amsterdam>

The EGI Technical Forum 2012
17-21 September 2012 in Prague, Czech Republic.

The 27th NORDUnet Conference
18–20 September 2012 in Oslo, Norway.

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e-IRG secretariat
c/o Netherlands National Computer Facilities Foundation (NCF)
P.O. Box 93575
NL-2509 AN The Hague
The Netherlands

Phone: +31 (0)70 344 0526
Fax: +31 (0)70 344 0946
secretariat@e-irg.eu



www.e-irg.eu

