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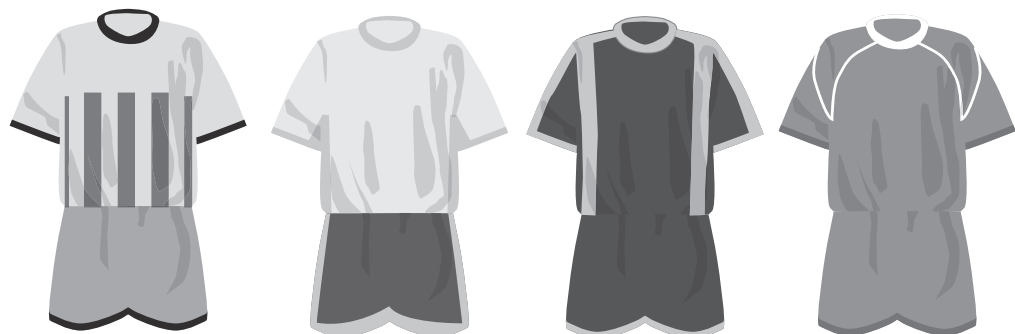
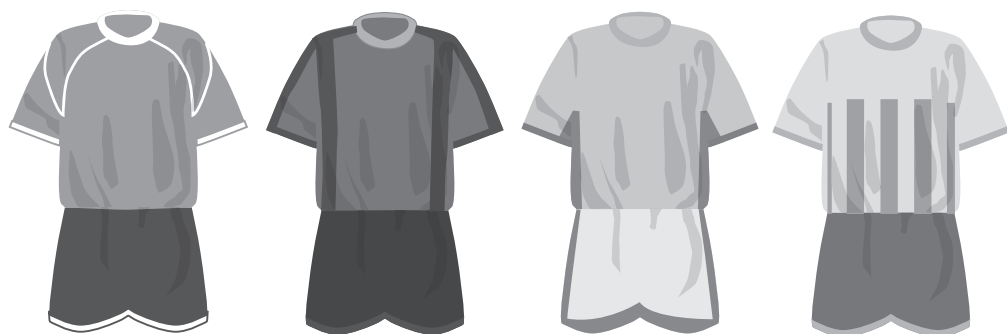
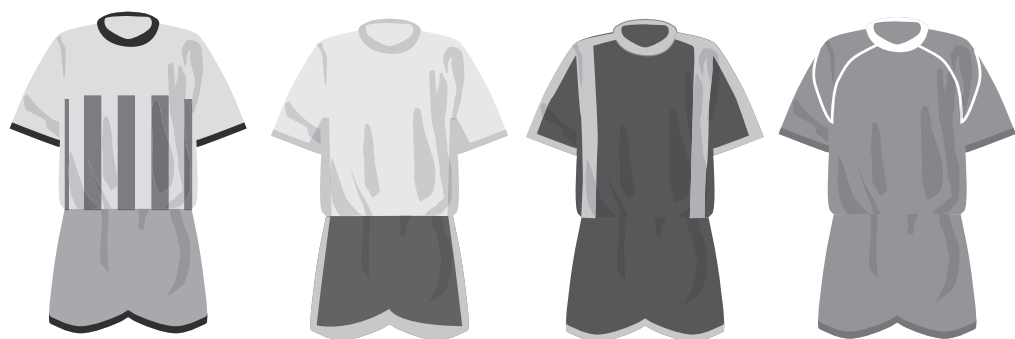
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Virtual Research Environments

Virtual Research Environments (VREs) are a combination of software tools that provide researchers with integrated access to the online services that enable data processing and visualisation activities at a large scale. As the digital research landscape broadens, so more research communities are seeking to establish VREs on top of EGI's resources in order to support multi-national collaborations on a sustainable and long term basis. This track includes workshops, trainings and discussion sessions about topics that are relevant for VRE developers, users and operators: experiences and results from designing, implementing and providing VREs; portal frameworks, workflow systems and other types of building blocks for VREs; support projects and community initiatives for VREs; interfacing and harmonising VREs with EGI services.

Gergely Sipos and Nuno Ferreira

EGI.eu



Standard-based interoperability amongst local, grid and cloud resources distributed worldwide

In this contribution we will present the CHAIN science gateway and the results of its program to demonstrate standard-based interoperability amongst local (clustered or opportunistically exploited), grid and cloud resources distributed worldwide and based on several different middleware.

www.chain-project.eu

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The agINFRA science gateway for the agricultural sciences' virtual research community

In this contribution we will present the science gateway implemented for the agINFRA project using the Catania science gateway framework. Some of the grid and cloud-based applications already integrated in the portal will also be described.

<http://aginfra-sg.ct.infn.it>

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A GÉANT4-based application to support intra-operative electron radio-therapy using the European Grid Infrastructure

Radiotherapy techniques consist in delivering ionizing radiations (X-rays, photons, electrons, protons, etc.) inside cancerous tissues to block abnormal cell growth. Ionizing radiations are mostly produced by conventional linear accelerators (linacs). Radiotherapy related activities, as the optimisation of the therapeutic radiation dose to the patient, worker radioprotection, performance controls and technical innovations of linacs, are strongly based on the ability to predict the dose distribution. Monte Carlo simulations are

the most accurate tools in this field but, unfortunately, require large computing power to achieve accurate results in reasonable times. Therefore, in the last years, cancer treatment research communities have adopted grid infrastructures. In this context, we have developed and tested a grid application to support a new and advanced radiotherapy technique, the Intra-Operative Electron Radio-Therapy (IOERT).

The multi-domain Science Gateway hosting the iort_therapy tool used in this study is available at <http://gw.ct.infn.it>

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VO auger experience with large-scale simulations on the grid

The auger Virtual Organisation (VO) is one of the main users of the EGI grid resources. Computing jobs are managed by the central production team from Granada University, common users use mostly results of official productions. We describe our strategy for job submission and data distribution. Our experience with reliability and usability of various resources and biggest hurdles in every day usage of grid resources. Results of small scale tests of using DIRAC catalogue instead of LFC are reported.

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New developments in the Italian Grid Infrastructure services offered via web for the ANSYS engineering suite

Software packages simulating complex engineering models require a non-trivial amount of computer power. At present, grid infrastructures represent a cost-effective mean to carry out massive calculations in a reasonable time. An added value can be provided by appropriate visual interfaces and tools aiming to minimise the effort and the skills required from the user. This is the case of the IGI web portal, used as a scientific gateway to support the activities of the SPES community in Italy

(located at INFN-Legnaro National Laboratories) whose activity is strongly focused on the electro-thermal design of high temperature devices for the production of Radioactive Ion Beams. The web interface developed for ANSYS via the IGI portal has been extended in order to support different kind of analysis. Moreover, a license handling mechanism has been designed and implemented to solve the issue of accessing commercial licenses stored in a FLEX server.

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BioVeL: Taverna workflows on distributed grid computing for biodiversity

BioVeL is a virtual e-laboratory that supports research on biodiversity issues using large amounts of data from cross-disciplinary sources. BioVeL offers the possibility to use computational workflows to process data, be that from one's own research and/or from existing sources. A researcher can build his own workflow by selecting and applying successive services (data processing) registered in BiodiversityCatalogue.org, or he can re-use existing workflows available from BioVeL's library held in biovel.myexperiment.org.

This e-laboratory cuts down research time and overhead expenses. BioVeL also provides access to a world-wide network of experts and support through a Specific Support Centre. We will present a solution for exploit large and complex computing and storage facilities, behind simple and seamless web services that are able to provide access to a specific application or software executed in a specific computing infrastructure accordingly to the characteristics of the application.
www.biovel.eu

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The Taverna workflow suite: designing, running and sharing workflows for science on the web, grid or cloud

Taverna is a suite of workflow management software designed to combine distributed services into complex analysis pipelines. It supports: the design, execution and sharing of workflows; services; and integration with other platforms (e.g. Eclipse) and infrastructures (e.g. AWS and grid). The Taverna Server is deployed on AWS and EGI resources. The Workbench runs on Linux, OS and Windows. A Taverna Player, command-line tool and a OSGi platform enables integration with third party tools. The myExperiment workflow

repository supports libraries of Taverna workflows and Taverna workflow components (families of packaged workflows used as simplifying 'blocks' in a workflows assembly).

Taverna is widely used in a range of EU projects including Biodiversity, HelioPhysics, Biology, Chemistry and Document preservation. We will present the Taverna Suite and its application to projects relevant to EGI. We will also highlight our requirements for data management relevant to the EUDAT project.

www.taverna.org.uk

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Data management for digital archivists

Archivists have different requirements for the long-term storage of data. Yet they do want to store data on the grid. In this talk we will present a system that was developed for the Dutch Data Archiving and Network Services (DANS) archivists.

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InSilicoLab: from generic solutions to an application-specific science gateway

A temptation of making the computer systems of today as powerful as possible led software architects to building very generic systems, capable of doing different operations on many computational platforms. However, the authors observed that no matter how powerful such systems would be, they usually are unintuitive to their users, who, in reality, need to focus only on a small part of the tool capabilities that would help them to solve their scientific problems and keep track of their everyday work.

This observation was later confirmed by the popularisation of science gateways, which are tailored to a specific user community.

The InSilicoLab environment is a model which instances form gateways specialised for users from different domains of science. Their interface as well as processing routines are fully customised to work of scientists from a concrete domain or community. At the same time, the architecture of the system remains generic enough to make it powerful and its code maintainable.

<http://insilicolab.grid.cyfronet.pl>

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Towards a chemistry and molecular and material science virtual research community

To foster the development of the Chemistry and Molecular and Materials Science and Technology (CMMST) community within EGI, a Grid Framework (GriF) has been developed. Leveraging on the fact that the largest number of CMMST researchers gathered within EGI are aggregated around the COMPCHEM Virtual Organisation and work at the assemblage and development of the components of GEMS (the Grid Empowered Molecular

Simulator) our activity has focused on making GriF facilitate the assemblage of the various packages in a suitable workflow and foster interoperability between HPC and HPC platforms. In doing this GriF, that has been structured in a way that allows the collection of information useful to evaluate quality of services and of the users is used as a means to boost the growth of the CMMST community.

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Virtual storytelling and digital archiving in the cloud: Mah Meri oral tradition

The presentation is about an on-going project on the oral tradition of the Mah Meri people in Carey Island of Malaysia. This project is focused on compiling the stories behind the wooden masks that belong to a collection at the Asian Art Museum on the main campus of the University of Malaya. As the

masks are a precious collection of the cultural heritage of this people, the stories about the spirit, or 'moyang', of each mask is just as valuable to their cultural heritage. Once compiled, the project hopes to create a repository of the audio recordings of the oral tradition. www.um.edu.my

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Experiences from workflow sharing using the SHIWA workflow repository for application porting to DCI

AutoDock Vina is an open-source program for drug discovery, molecular docking and virtual screening and experiments with this tool demand large computing power.

Computer Scientists at the University of Westminster wrote an Autodock Vina workflow for scientists from the School of Life Sciences.

At the Academic Medical Center in Amsterdam, scientists of the department of Medical Biochemistry also used Autodock Vina for virtual screening experiments. They contacted the e-bioscience group to run this application on the Dutch grid.

Although the workflow developed by Westminster was designed to run on a different infrastructure, modifying it to meet the local requirements was a reasonable task.

Our experience shows that workflows provide a suitable level of abstraction for describing complex experiments on DCIs and that a workflow repository can effectively support the sharing and re-using of scientific data processing pipelines between different communities and infrastructures.

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Simplify big data sharing with Globus Online

Globus Online recently added a sharing functionality to its file transfer and synchronisation service, allowing researchers across institutions to easily share their big data with their collaborators. Researchers now have the ability to share directly from their own file systems, with high performance, security,

and reliability. Another major new feature is peer-to-peer data transfer and sharing between researcher desktops and laptops. In this presentation, Steve Tuecke will demonstrate this new Globus Online functionality.

www.globusonline.org

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Grid computing and data sonification tools as SaaS for supporting neuroscientists in analysing EEGs of patients affected by drug-resistant epilepsy

Notwithstanding the recent improvement of technology in the pharmacological approach, epilepsy is still one of the most common, though serious, neurological disorders. One of the main characteristics of epilepsy is represented by seizures and each type of epilepsy has its own unique combination of seizure type, age of onset, EEG findings, treatment, and prognosis. In this work, interictal EEGs (i.e., EEG recording done sufficiently far from a seizure) have been analysed for the first time using a sonification technique and exploiting the European

Grid Infrastructure in order to identify a baseline condition (hopefully, a marker). The identification of this marker through data sonification may help highlighting and characterising the temporal patterns embedded in the EEGs of epileptic patients, providing a powerful tool for seizure prevention, hence improving the quality of life of people and promoting the research for new therapeutic interventions.

The multi-domain science gateway hosting the data sonification tool used in this study is available at <http://gw.ct.infn.it>.

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Community Platforms

Community platforms encompass all tools and middle-ware services used by user communities to access federated resources. This track focuses on the evolution of the existing tools, in terms of new features and new use cases, and on new services making their first appearances in the infrastructure. The main topics covered by the track are multiple updates from the technology providers and their service portfolio – including tools to enable access to distributed storage, compute and desktop grid resources – and workshops on data management and federated identity management.

By attending the track, delegates will learn about bleeding edge technologies available for user communities to be integrated in their workflows. The workshops are great opportunities to have the finger on the pulse of the EGI technological strategies and to have a direct communication channel with the technology providers who release the services used for the federation of the resources.

Peter Solagna and Michel Drescher
EGI.eu



Automatic testing and certification procedures for IGI products in the EMI era and beyond

In order to enable EGI, PRACE and other European distributed computing and data infrastructures to provide their communities with sustainable and reliable services in their day-to-day work, grid middleware services must play an important role and mark a clear transition from ad-hoc development, maintenance and support models to more standard, sustainable and professional models by adopting best-practice service provision methods. During the EMI project the development, integration, maintenance and testing activities were under

the responsibility of Product Teams and were guided through Quality Assurance procedures that ensured all EMI components satisfy well-defined certification and validation criteria. We present the automatic testing and certification procedures implemented for the Italian Grid Initiative (IGI) grid middleware services, developed as part of EMI project, consisting in the use of a common test automation framework and different virtualisation techniques for the on-demand provisioning of testing nodes.

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Managing middleware maintenance, support and release activities in the EMI project

The European Middleware Initiative (EMI) is a close collaboration of four major European technology providers: ARC, gLite, UNICORE and dCache. Its main objective is the delivery of a consolidated and harmonised set of components for deployment in EGI, PRACE and other DCIs production environments. We will present the fundamental principles, policies and procedures

that guided the Software Maintenance, Release and User Support activities within the EMI project. The objective of this talk is to provide an overview of the achievements and the lessons learned during the project and give recommendations on how maintenance, support and release should be handled in the post-EMI future.

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Scaling campus grids using ontologies in a modified EMI-WMS system

In an effort to deliver HPC services to the research community at the University of Huddersfield, many grid middlewares have been deployed in parallel to assess their effectiveness and efficiency along with their user-friendliness. With a disparate community of researchers spanning but not limited to, 3D art designers, architects, biologists, chemists, computer scientists, criminologists, engineers (electrical and mechanical) and physicists, no single solution works well. As

HPC is delivered as a centralised service, an ideal solution would be one that meets a majority of the needs, most of the time. The scenario is further complicated by the fact that the HPC service delivered at the University of Huddersfield comprises of several small high-performance clusters, a high-throughput computing service, several storage resources and a shared HPC services hosted off-site.

http://qgg.hud.ac.uk/public/Scaling_Campus_Grids_Abstract.pdf

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Middleware support for decision support tools in water engineering

Water distribution networks are large and complex engineering structures that require maintenance and intelligent operation to prevent customer complaints and wastage of an increasingly precious resource. This paper describes a collaboration between water distribution companies and grid researchers to apply methods of distributed computing to monitor and control water networks. This involves the integration of data from sensor networks with grid computing resources and the development

of middleware that can enable field engineers working with mobile devices to access and visualize information from the processing of the sensor data to support them in their engineering decisions. This involves answering 'what-if' questions, e.g. 'what would happen if I open this valve?', 'at what speed should I open this valve so that I do not increase the flow too abruptly causing contamination by sediment?'

www.cs.manchester.ac.uk/~jbrooke/water

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EMI testbed improvements and lessons learned from the EMI 3 release

The European Middleware Initiative (EMI) project has succeeded in merging into a set of releases (EMI 1 Kebnekaise, EMI 2 Matterhorn) more than fifty software products from four major European technology providers (ARC, gLite, UNICORE and dCache). To satisfy end-user expectation in terms of functionality and performance, the release process implements several steps of certification and verification. The final phases of certification are

aimed at harmonising the strongly interdependent products coming from various development teams through parallel certification paths. This paper introduces the new approach in the design and management of the release process envisaged for the EMI 3 release according to the requirement of a more effective integration strategy emerged during the first two EMI releases.

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Performance study of ARC middleware components

The goal of the presentation is to show the results of the performance study of ARC middleware components (v EMI-3.0.0). Potential users of distributed resources cannot at the moment easily compare the performance of different computational distributed resources, for example grid infrastructures. One of reasons is a missing commonly accepted approach on how to define the test cases and how to evaluate the results. We used proprietary test cases to study

the performance of the job submission process between clients and a few computer elements and the performance of the information systems. From previous studies we concluded that the performance of the information system is a limiting factor to increase the performance of job submission. The data were collected using proprietary and standard (ARC Nagios probes) tools.

<http://arc-emi.grid.upjs.sk>

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Support to Next Generation Sequencing applications within the Italian Grid Infrastructure

Next generation sequencing (NGS) is a highly parallelised approach for quickly sequencing new genomes, re-sequencing large numbers of known genomes, or for rapidly investigating transcriptomes under different conditions. This technology is producing data for the biomedicine and molecular life science communities on an unprecedented scale. Therefore, to facilitate NGS data analysis, improved approaches are needed. The Italian Grid Infrastructure (IGI) User Support Unit set up a series of collaborations to

gather use cases from different research groups on this field. Starting from the analysis of their computational and data management requirements, this paper shows how the distributed infrastructure can be efficiently used to run NGS related applications, since basic data analysis processes, such as quality control algorithms, sequence corrections normalisation and mapping against reference sequences, although CPU and storage demanding, are also highly parallelisable processes.

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EGI software vulnerability handling after EMI and IGE

The goal of the EGI Software Vulnerability Group (SVG) is "to eliminate existing software vulnerabilities from the deployed infrastructure and prevent the introduction of new ones, thus reducing the likelihood of security incidents".

The largest activity of the SVG is to handle vulnerabilities reported according to an agreed procedure and clearly defined process. The emphasis is on software vulnerabilities in grid

middleware which are not handled elsewhere, and the majority of the work concerns European Middleware Initiative (EMI) and Initiative for Globus in Europe (IGE) software. The need for this activity will continue after the end of EMI and IGE. This talk will describe what is likely to remain the same and what is likely to change after the end of the EMI and IGE projects.

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StoRM: simplify grid storage by using WebDAV

StoRM, a storage element solution, is evolving to simplify the traditional approach of grid users to grid storage. Currently, users interact with the storage by means of the SRM implementation of the SRM interface. This approach, although it is the standard way to access grid storage elements, has a few considerable drawbacks that can undermine the users' experience. Amongst those

there are the lack of standard GUI clients, the requirement for x.509 proxies and the three steps file transfer workflow. All these disadvantages can frighten new user communities when evaluating the adoption of grid middleware and its Storage elements. StoRM aims at solving these issues by exposing a WebDAV interface, that comes abreast of the SRM interface.

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Ugr: a dynamic storage federation based on open protocols

The convergence of the different distributed storage systems to open protocols like HTTP and Webdav offers new possibilities in terms of storage aggregation and storage federation.

The major cloud storage systems and the different grid storage systems, after the standardisation effort of the European Middleware Initiative (EMI), can now be part of the same storage federation, providing an unique and consistent view to the final user.

We report here the work made on our high performance dynamic storage federation solution: the Uniform Generic Redirector (Ugr).

Ugr offers the possibility to have a unique view of a set of distributed storage systems in a dynamic and scalable manner, without requiring a centralised index or a catalogue of metadata, thus it simplifies the data access, improves the global resilience and opens new possibilities in term of data placement, data migration and data management.

[https://svnweb.cern.ch/trac/
lcgdm/wiki/Dynafeds](https://svnweb.cern.ch/trac/lcgdm/wiki/Dynafeds)

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Getting citizen scientists on your team

When you are working with EGI chances are you are working on a team of scientists. Perhaps you are working together with a dozen other scientists, perhaps even a hundred, or maybe you are working on one of those experiments with a few thousands other scientists. Did you know however, you could enlarge your team with thousands of new scientists? Citizen scientists as they are called could help you with their computing time and add vast resources to your infrastructure. More importantly, perhaps, they learn about your research

and they can explain it to other citizens. But they can also teach you, by performing important work and by asking questions. This presentation will walk you through the possibilities and pitfalls when you want to work together with citizen scientists. It will also tell you about the help available through organisations already collaborating in this way and that are member of the International Desktop Grid Federation.

<http://desktopgridfederation.org>

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Achievements of the ATLAS Distributed Analysis during the first run period

In the 'LHC operations'-era, analysing the large data by the distributed physicists becomes a challenging task. The computing model of the ATLAS experiment at CERN's LHC was designed around the concepts of grid computing. Large data volumes from the detectors and simulations require a large number of CPUs and storage space for data processing. To cope with these challenges, a global network known as the Worldwide LHC Computing Grid (WLCG) was built. This is the most sophisticated data taking and analysis system ever built.

Since the start of data-taking, the ATLAS Distributed Analysis (ADA) service has been running stably with huge amounts of data. The reliability of the ADA service is high and steadily improving; grid sites are continually validated against a set of standard tests, and a dedicated team of expert shifters provides user support and communicates user problems to the sites. The ATLAS grid computing model is reviewed in this talk. Emphasis is given to ADA system.

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Quality Control in EMI

The goal of this presentation is to provide an overview of the Quality Control task within the EMI project concerning the verification of released software products, the monitoring of internal procedures, the measurements of quality parameters. More precisely, Quality Control pertains with the monitoring and verification of project outcomes in order to see whether they comply with

quality standards set out in the EMI Quality Model. Operating throughout the project, its aim is to identify unacceptable or non-conformable results and inform project executive boards about their existence so that corrective actions can be undertaken to prevent possible negative impacts on project's results.

<https://twiki.cern.ch/twiki/bin/view/EMI/TSA27>

Giuseppe Fiameni
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Vulnerability assessment: the assessor's experience

In this talk I will share our experience when interacting with different groups whose software we assessed. I will comment on the effect assessment has on the groups and the process they go through when vulnerabilities start to be reported.

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Data Life Cycle Labs, a new concept to support data-intensive science

The German Helmholtz Association has started the Large Scale Data Management and Analysis (LSDMA) project. The project aims to develop and structure data handling methods through close cooperation with the communities in Data Life Cycle Labs (DLCL). Several labs are already active and more will follow in the near future, thereby offering support for, in principle, all scientific disciplines. Development in

the laboratories is community specific but is based on a common set of services developed and integrated by a team of experts in grid, cloud and HPC storage and computing. Four centres of the Helmholtz association, KIT, FZJ, DESY, GSI, the German Climate Research Centre (DKRZ) and six German universities collaborate in this project.
www.helmholtz-lsdma.de

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Future-proof storage with DPM

The Disk Pool Manager (DPM) is a lightweight and proven solution for grid-enabled disk storage management. It has emerged from EMI with strong standards support, in particular concerning HTTP access, and is now supported by an international collaboration of stakeholders. We present the advantages of DPM as a storage system for distributed scientific computing, explain its role in an ecosystem of HTTP solutions for data management, and report on future plans.

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A gridified version of rsync

The data recorded by the Xenon dark matter collaboration resides on a single server in Italy. As this is not desirable, a fully automated system was developed to upload this data to the grid by performing an 'rsync-for-the-grid'-like operation

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The quality assurance metric infrastructure in the EMI project

The definition and implement of metrics across a large set of product teams in multiple institutions is a very complicated problem to both conceptualise and implement. Within the EMI project the integration of more than one system and bug-trackers further complicates the generation of a set of understandable metrics. A quality assurance group endeavours to obtain unbiased metrics by examining all available data in the same format from all software code or change management tracker. This is made possible using

strictly controlled XML schemas adhered to by each product team according to policy guidelines set down by the quality assurance group.

Defining strict policies implemented through schemas paved the way for building a metric framework using as input: change management information, static analysers and product-to-tracker category mapping functions to produce meaningful results per product. The results are presented using dashboards and automatically generated plots.

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EGI compliant access of volunteer Desktop Grid resources offered by IDGF-SP

Desktop grids, aggregating the otherwise unused computing power of large numbers of desktop computers from volunteers (globally) and campus-wide (locally), form a fast growing segment of the Distributed Computing Infrastructure (DCI) for science in Europe.

As a result of the EDGI EU-funded FP7 project, new technologies have been developed to support the easy access and efficient use of volunteer and private resources of the emerging desktop grid systems. The

IDGF-SP EU-funded project – as a continuation of EDGI and DEGISCO – provides numerous tools and mechanisms (e.g. submission, monitoring, accounting, virtualisation, application tuning) for EGI's scientific groups to seamlessly access volunteer resources of Desktop Grids handled by the project and the IDGF organisation. The presentation will give an overview of the latest results, technologies and tools of the IDGF-SP infrastructure offered to EGI users.

<http://idgf-sp.eu>

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Modelling and simulation of complex human physiology systems

Modelling and simulation may improve understanding of complex human physiology and it can bring a new knowledge hidden in number of details of complex reality. It is used to teach students of medicine the topic of physiology and pathological physiology. And it is also used in a research to understand the complex functionality of human body with specific focus on selected functionality, e.g. in the process of so called 'model identification' to verify the model with reality and to compute immeasurable data and model parameters.

Current effort is to build web-based simulations with distributed design where demanding simulation is performed on a server and visualisation is provided by clients which may be classical desktop PCs, notebooks and mobile devices like smartphones or tablets.

www.physiome.cz/atlas

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iCOMCOT: real-time tsunami simulation based on parallelised COMCOT

Tsunami simulation requires a large amount of computation resources. Lacking resources might impede the real-time simulation for hazard mitigation. In this study, a cloud service for real-time tsunami simulation was established, especially for Southeast Asia countries. The system is fast and user-friendly. COMCOT (Cornell Multi-grid Coupled Tsunami Model) was chosen as the kernel to provide functions such as source modelling, nested grids, propagation, etc. After optimisation and parallelisation, the revised COMCOT version

has improved its performance up to 32 times faster than the original one. In addition, a flexible portal service was built by using grids/clouds. The web-based iCOMCOT portal allows users to create their own nested grids, input the fault parameters, set up tidal gauges, and perform the tsunami simulation. Users will get results of the maximum wave height, the inundation area, the maximum flux, the time-series gauge data, and the map of arrival time.

<http://worker01.grid.sinica.edu.tw/icomcot>

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Support for researchers and infrastructure operators available through IDGF

Desktop Grids (DGs), aggregating the otherwise unused computing power of large numbers of computers from volunteers and campus-wide, form a fast growing segment of the Distributed Computing Infrastructure (DCI) for science in Europe.

The number of donated computers by volunteers was above 700,000 in the FP7 DEGISCO supported infrastructure, and gLite-based grid centres of Desktop Grid Virtual Organisations donated already more than one million CPU hours per month for the scientific user communities of supported DGs. The FP7

EDGI project successfully developed further the necessary bridging technologies, and interoperation with clouds as well; this combined DCI and its technology have been demonstrated and available for the EGI community. In both projects the number of trained developers as well as ported applications increased significantly.

The presentation will summarise the latest progress, plans, and achievements of the recently launched IDGF-SP project; focusing on the support activities.

<http://idgf-sp.eu>

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Federated grid access using EMI security token service

On the security and particularly the digital identity management side, the highlight of the final EMI release (EMI-3 Monte Bianco) is the Security Token Service (STS): a new general purpose service for transforming the existing user credentials from a certain format to another format. The service is based on open Web

Services (WS) standards (WS-Trust and WS-Security) in order to enable wide set of both web browser and non-browser based use cases. This talk focuses on the use cases where users can obtain their grid credentials using existing federated identities.

<https://forge.switch.ch/redmine/projects/sts/wiki>

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dCache: dependable storage for new distributed communities

The dCache storage project is a collaboration between DESY, Fermilab and NDGF. The software is mature and stable. dCache software is deployed on many sites and currently provides more storage capacity for CERN Large Hadron Collider (LHC) experiments than any other software.

New technologies are allowing different scientific communities to generate vast amounts of data. Most of these scientists have no experience with grid computing, yet they require storage capacity of comparable

scale to LHC experiments, or exceeding it. They are also often form short-lived collaborations, which is distinct from current grid practise.

Over its lifetime, the dCache project has been evolving to provide storage for different groups of users. This has resulted in a software framework that is very flexible. We present how dCache is continuing to adjust, so it can satisfy the demands from these new communities.

www.dcache.org

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Patrick Fuhrmann
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Cloud computing for ecological Modelling in the D4Science infrastructure

Species distribution models aim to predict the distribution of species in geographic areas on the basis of environmental parameters including climate data. In order to further promote the diffusion of such an approach it is fundamental to develop a flexible, comprehensive, and robust environment enabling practitioners to produce species distribution models more efficiently. A promising way to build such an environment is offered by modern

infrastructures promoting the sharing of resources, including hardware, software, data and services. We describe an approach to species distribution modelling based on the D4Science Infrastructure that can offer a rich array of data and data management services by leveraging other infrastructures (including Cloud), by discussing the services needed to support the phases of such a complex process.

<http://i-marine.eu>

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Research advances through European computing and data technologies

Europe is a major technology provider for a wide variety of IT infrastructures with geographically dispersed computational resources and data storages. The mature IT technologies developed, maintained, and deployed throughout the world from the European Middleware Initiative (EMI) serve the demands of those IT infrastructures since over a decade. This talk will present different case studies that demonstrate research advances in a wide area of

scientific fields such as physics, biomedicine, neuroscience, fusion science. This included the view on the scientific data that is used in these different case studies and how this data is used, preserved, and exchanged among scientific research groups worldwide. In addition, the talk will outline potential case studies in commercial environments and provided one specific example how EMI products can be exploited by companies.

www.eu-emi.eu

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Build and Test Services of the EMI project: lessons learned and perspectives

The EMI Build and Test Services task has been a key activity to reach the major goal of releasing a single consistent set of packages with uniform distributions and repositories within the EMI project. Achieve this goal has required a wide effort of integration, coordination and standardisation. The EMI

Quality Assurance activity has been the responsible for providing, maintaining and improving all the build and test services needed for building, packaging, testing and obtain quality control information about the EMI software packages and the EMI development process.

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An unattended, fault-tolerant approach for the execution of distributed applications

In this work, the authors present a set of tools, the DistributedToolbox, designed to overcome the problem of executing distributed applications on dynamic environments. By employing an extremely simple interface to specify the characteristics and requirements of the tasks to be executed on the distributed infrastructure, the code developers can easily build distributed and portable applications.

The defined tasks can be executed either on local clusters (PBS and SGE out of the box, other alternatives are easy to implement) or on grid infrastructures on a completely unattended way. Within this approach, a task is considered to be executed when the desired output files are provided, ensuring that the distributed application will receive the required partial results.

www.ciemat.es

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Trends in CPU design and its impact on the grid

This presentation will look at the current state-of-the-art in modern silicon process engineering and its direct relationship with modern CPU design. It will give an overview of the changes in modern processor design and an understanding of the

industry's focus on multi-core architectures. It will outline how changes in architecture design will impact the amount and diversity of processing power that is available on the grid and how users can best leverage this.

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FTS3 and gfal2

The File Transfer Service (FTS) provides reliable file transfer for the distribution of the LHC data, managing transfers and optimising the use of storage and network resources. In 2012 alone FTS handled over 25PB of LHC data. The Grid File Access Library 2.0 (GFAL2) provides a unified and protocol-generic API for file access, file transfer and file management operations in grid and cloud environments. GFAL 2.0 allows the easy development of applications

using diverse grid technologies (file, GridFTP, RFIO, Dcap, SRM, LFC, Http/Dav, xrootd) in a transparent manner.

GFAL2 is the 'workhorse' of FTS3, providing all the access and transfer plugins for FTS3 (e.g. SRM, GSIFTP, HTTP). Here we report on the latest version of the FTS, FTS3, and the generic file management library GFAL2 on which it is based.

<https://svnweb.cern.ch/trac/fts3>

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Small fish in a big data pond: data storage and distribution strategies for new VOs

While most of the data currently moved over the EGI grid is owned by the four LHC experiments, an increasing number of non-LHC, and non-HEP Virtual Organisations (VOs) have emerging non-trivial storage and data transfer needs.

Most of these VOs have significantly lower staffing levels than ATLAS and CMS, and economies of scale therefore make managing their growing storage and network needs

disproportionately difficult.

This talk aims to provide some background and suggested strategies for such VOs: common, non-proprietary protocols; data transfer scheduling and automation; metadata management and so on. We will also discuss which tools and changes small VOs may need made in the infrastructure to better support their needs.

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Community Coordination and Communication

Coordination and communication is one of the main pillars of EGI's 2020 Strategy, therefore this dedicated track focuses on improving communication and outreach, establishing key partnerships and continuing to evolve the future of the EGI federation. Topics that will be covered comprise sustaining EGI beyond EGI-InSPIRE, cooperating with and analysing commonalities between EGI and XSEDE, implementing pay-for-use models within EGI, interoperating and integrating with Helix Nebula, providing a complete look at the champions scheme for local outreach, evolving the EGI supply management structure after EMI/IGE and demonstrating tools and software for better client management. Participants of this track can expect to gain further insight into the evolution of EGI and on key strategic areas as well as improving communication and outreach with current and potential users.

Sergio Andreozzi and Catherine Gater

EGI.eu



EGI Scientific Publications Repository and OpenAIRE collaboration

The ultimate goal of EGI is to support scientific communities with easy access to federated computational and storage capacity which enables them to address advanced challenges and hence benefit society as a whole. In order to demonstrate the scientific impact, it is of utmost importance to track all the scientific publications that have been possible thanks to EGI. Tracking the scientific outputs based on EGI has been always difficult because of the geographically dispersed communities that use the infrastructure and the lack of well-defined processes and tools. The Scientific

Publications Repository Virtual Team was created in June 2012 to mitigate this issue by analysis and recommending policies, procedures and tools to improve the process of collecting scientific publications that used EGI resources for better demonstrating the EGI impact on science. This presentation provides an update on the implementation of the recommendations defined by the Virtual Team including the on-going collaboration activities with the OpenAIRE project.

<http://go.egi.eu/1369>
www.openaire.eu

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Extending the CHAIN-REDS knowledge base to open access document repositories using KLIOS services

One of the major problems in scientific collaboration lies in the wealth of heterogeneous data and information that very often consists of rather unstructured documents as well as structured but heterogeneous scientific data. While unstructured documents, by their very nature, are not machine-processable, structured data sets usually follow heterogeneous schemas which limit very much their interoperability. The semantic web allows to efficiently integrate heterogeneous data into a coherent whole and to provide description of data elements.

Exploiting Semantic Web, the 'Knowledge Linking and sharing in research dOmainS' (KLIOS) research project is developing an open access, participatory infrastructure for linking scientists and scientific data/information/resources.

In this contribution we will present KLIOS and how its services will be re-used to extend the CHAIN knowledge base to Open Access Document Repositories (OADRs).

<http://klios.ct.infn.it>

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Building sustainable software for science: why good code is only the beginning

There is huge investment in applications, tools and middleware services to support the different European research communities. However, investment alone is not enough to ensure the construction and delivery of community platforms that enable extension, reuse and sustainability. What is even more striking is that having technically good

code is not enough. This presentation describes the work of the Software Sustainability Institute and its international collaborators in supporting sustainable software for science, drawing on examples in different research communities including chemistry, climate policy and particle physics.
www.software.ac.uk

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The SciencePAD Incubation Laboratory

SciencePAD (Science Platforms, Applications and Data) is an initiative promoted by the EMI project to support the use, reuse and preservation of software for scientific applications and define its relationships with people, organisations, data and publications. As part of its sustainability goals

SciencePAD is proposing to set up an incubation laboratory to promote new ideas for innovative software and services and explore their potential use in commercial applications. This presentation will describe the main goals and plans of this activity.

Alberto Di Meglio
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EGCF – the future of Globus in Europe

The European Globus Community Forum (EGCF) is the organisational body of the Globus community in Europe. Its goal is to boost an integrated approach to collaboration on Globus development and to provide an organisational platform to foster cooperation within Europe and beyond. Its members are users, administrators, and developers, who are applying the Globus Toolkit as their middleware or are interested in doing so.

The EGCF:

1. informs the community about European and international developments in the wider context of Globus software;
2. arranges and coordinates meetings and workshops for users, developers, and administrators;
3. connects projects and communities within Europe and beyond for exchanging knowledge and sharing experience with Globus software.

The EGCF is the sustainability offshoot of the Initiative for Globus in Europe project (www.ige-project.eu) which will end in April 2013.

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EGI Scientific Discipline Classification Virtual Team

EGI is a multidisciplinary e-infrastructure where users belong to a variety of different scientific disciplines. EGI needs to categorise these users by disciplines through a number of tools (e.g., AppDB, operations portal, training marketplace, CRM). Although a legacy classification was inherited from previous projects, different tools have adopted different classifications. As EGI now operates within an open ICT ecosystem, it has

become essential to agree on a common, coherent classification that is not only consistent across all tools, but allows for smooth inclusion of future user communities as well. This presentation provides a summary of the results from the established Virtual Team and offers a proposal for a new classification of scientific disciplines for EGI.

http://wiki.egi.eu/wiki/VT_Scientific_Discipline_Classification

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EGI.eu Service Portfolio

As EGI-InSPIRE gets closer to the end, it is essential to refactor the project activities into a clear and well-defined service portfolio that is maintained by EGI.eu and that reflects the services being provided regardless the underlying project structures supporting them. In collaboration with the FedSM project, a refactoring of the various activities has been performed based on the best practices defined by ITIL 2011 and ISO 20000.

This presentation will offer participants the methodology used in defining the new service portfolio, the new service structure and experiences gained that can be used by other organisations throughout the EGI Community to establish a similar process.

<http://go.egi.eu/Evolving-EGI-WS-2013>

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The EMI Technical Collaboration

The EMI project will end its operations in April 2013. However, the need to keep the technical collaboration active among the partners and extend it to additional middleware providers is vitally important. EMI is establishing an open collaboration, tentatively named Open Middleware Collaboration Group, to discuss shared interests, preserve and

grow the existing network of contacts, provide coordination of common activities and act as a single entry point for relations with users and infrastructures. Software developers/providers should attend this session – the status of the group will be briefed and discussions will cover its proposed structure and goals.

Balazs Konya
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Engaging the software in research community

'How do we know what the users want?' is one of the recurrent questions faced by technology-focused organisations working in academia. This can also be phrased as 'Are we doing the right thing for our users?'. The Software Sustainability Institute is such an organisation and our strategy has been to 'recruit' amenable members of the research community to help us be effective and set the right priorities. In this presentation we focus on the Community engagement activities of the Software Sustainability Institute

in 2011 to 2013, specifically the Agents and SuperPals of 2011-2012, the Fellowship programme in 2013, and the SelUCCR network run with the UK National e-Infrastructure Service (previously the National Grid Service). We will cover various aspects of this 'recruitment' from its purpose, what makes a good recruit, how do you know you have a representative set, what we hope to get from the recruits, what they gain from being involved and the outcomes of having them aboard.

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Cloud Platforms

The cloud platform sessions track provides interested researchers, software architects and developers with the latest developments in the field of cloud computing for science. The track is divided into three themes aligning with the morning, noon and afternoon sessions: starting the day with domain-specific cloud computing exploitation in the Bioinformatics field, the noon session features presentations on management and operational aspects of cloud computing for research communities. The track's afternoon session looks at the current state of the EGI Federated Clouds test bed with live demonstrations of a number of supported research domains. After examining convergence aspects between grids and clouds, the track closes with an open, walk-in style EGI Federated Clouds meeting where interested researchers and community representatives will learn about the test bed and collaboration activities.

Michel Drescher
EGI.eu

Matteo Turilli
Oxford e-Research Centre



Using the EGI Federated Cloud for the provisioning of grid worker nodes

We showcase the usage of a cloud infrastructure for the on-demand provisioning of additional worker nodes under an EMI-based grid infrastructure. The need of being able to add computing resources on-the-fly has gradually emerged over the years as a way to leverage the large number of jobs that may

occasionally be routed towards a grid site. After considering several PaaS based alternatives that could be used to harness such a need we decided to use the EGI Federated Cloud for our purposes by developing an OCCl interface for our service.

<https://github.com/auth-scc/emi-grid-scaler>

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CloudQTL: Evolving a bioinformatics application into the clouds

A timeline is presented which shows the stages involved in converting a bioinformatics software application from a set of standalone algorithms through to a simple web based tool then to a web based portal harnessing grid technologies (GridQTL) and on to its latest inception as a cloud based bioinformatics web

tool (CloudQTL). The nature of the software is discussed together with a description of its development at various stages and the resulting successful increase in the user base. A discussion is then made detailing the latest idea to achieve a paid for service using cloud technologies.

www.gridqtl.org.uk

John Allen
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Providing bioinformatics services on cloud

Improvements of experimental technologies forces biologists to face a deluge of data that requires relevant tools and sufficient resources to be analysed. The cloud helps bioinformatics experts to define virtual appliances with pre-installed tools and workflows, and helps scientists to deploy them, on demand, on national research infrastructures.

<http://idee-b.ibcp.fr>

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Phenomenology tools on a OpenStack cloud infrastructure

We present a new environment for computations in particle physics phenomenology using a cloud computing model. On this environment users create and manage virtual machines which get contextualised in an automated way with the phenomenology codes/tools needed for their computations. We analyse the performance of the virtual machines versus the utilisation of real physical hardware.

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VOMS-aware identity service for Openstack

Cloud testbeds are being deployed more and more by EGI resource providers, creating an heterogeneous ecosystem with different middleware stacks.

The software used across the sites is normally non designed to be operated in a federated way, such as the EGI grid testbed is

currently used. In this work we present the implementation of a VOMS-aware Openstack identity service (keystone) and the deployment in a federated testbed with different resource providers and middleware stacks.

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Bringing cloud technology to distributed data infrastructures

The talk presents ongoing work in the research and development part of EUDAT to integrate next generation storage concepts into distributed data stores. We show three projects: using iRods, the main storage component of the EUDAT

infrastructure, to integrate S3 storage; another approach for doing this using DPM; and using iRods storage with HDFS and hadoop to query the storage, compute and make the results available in the native iRods name space.

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Support to data infrastructures in CHAIN-REDS

During the last two years, the CHAIN project has supported several Virtual Research Communities (VRCs) and published a roadmap of requirements to be provided by the Distributed Computing Infrastructures mainly based on sustainability and adoption of standards. Such a philosophy was demonstrated during the EGI TF 2012 by means of the interoperability demo.

Once that CHAIN is over and reached its objectives, CHAIN-REDS, tries to enhance the previous VRCs achievements focusing now on data infrastructures. The new aims and objectives of its associated work package will be presented, i.e. its collaborative data infrastructures and the work that will be done through the CHAIN-REDS lifetime by the adoption of standards for allowing the interoperability of data infrastructures.

www.chain-project.eu

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Demonstration of the Federated Clouds Task Force test bed and services

The Federated Clouds Task Force will demonstrate the most recent proceedings in setting up a federated cloud infrastructure in EGI, so that team leaders and representatives of research collaborations can evaluate the advantages of a federated public sector cloud

infrastructure over a full-time full-fee commercial cloud integration. The demonstration will include a presentation about the functional components and services that comprise the federated cloud infrastructure and the areas that will be technically demonstrated.

Matteo Turilli
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Monitoring virtual machines with L&B: the FedCloud experience

The Logging and Bookkeeping service (L&B), traditionally used to monitor grid computing jobs, has been recently extended to support also monitoring of virtual machine status. Aiming at capitalising on the wide range of communication channels supported by L&B, it has been invited to provide cloud monitoring and notification services within EGI's Federated Cloud (FedCloud) task. The FedCloud environment comprises different virtualisation stack implementations

and deployment scenarios, requiring a common tool to monitor status and propagate standardised notifications in case of certain occurrences within the environment. Experimental use of L&B for that purpose started on national level, supporting only a limited subset of available solutions, and was already publicised. This talk details the experience made in extending the support to additional virtualisation stacks and information sources.

<http://egee.cesnet.cz/en/JRA1/LB>

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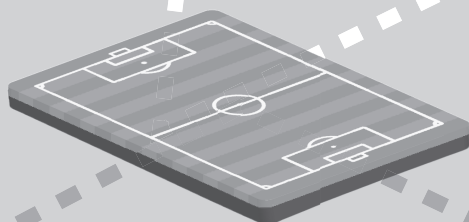
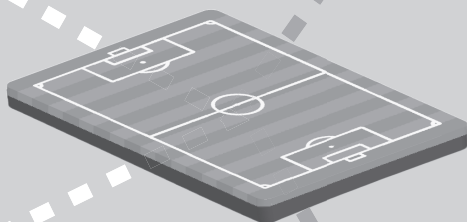
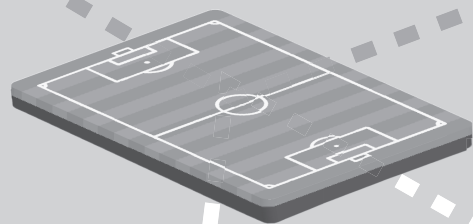
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Operational Services

This track covers the operational services and tools used by EGI to deliver a federated infrastructure composed of a multitude of national resource providers. The track will comprise a series of community events and workshops to address specific technical areas and shape the future of operations. The main themes of the track are:

- the EGI accounting infrastructure and its evolution towards an integrated system for multiple resource types;
- the EGI operational tools and their adoption by other resource infrastructures for the support of new user communities;
- the processes, roles and support tools needed for the implementation of a coordinated federated resource pool;
- the discussion of the operational needs of the major user communities;
- the adoption of service management best practices in a federated infrastructure to better manage EGI services, which will improve customer experiences.

Tiziana Ferrari and Małgorzata Krakowian
EGI.eu



CVMFS scalable software distribution – extending beyond WLCG

CernVM-FS (CVMFS) has hugely simplified the distribution of experiment software across the Worldwide LHC Computing Grid (WLCG). CVMFS is starting to be used by non-LHC Virtual Organisations on the WLCG grid. The same model could be used across a wider range of computing resources – perhaps most usefully for the range of cloud platforms being developed and used. This session will discuss what would be required both by users and resource providers.

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Building a grid cluster from the ground up

We report on our experiences of recent infrastructure upheaval and the corrective work that was carried out. We discuss the results of our investigation on building a custom grid facility from the ground up, with particular focus on power, heat and loading issues. We discuss the difficulties in retrofitting an existing facility to allow for the efficient operational management of these areas.

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GGUS infrastructure

There are different ways to think about how to construct highly available ICT systems. Global Grid User Support (GGUS) has a requirement to be highly available. This presentation is about the GGUS infrastructure and its environment system that provides a convenient way to deploy GGUS and archive the high availability requirements.

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A review of usage accounting and charge models in the UK NGS

We present the experiences of the UK National Grid Service (NGS) in its pursuit of accounting and charging models over the last ten years. We describe the modelling of the community as individuals, members of organisations and members of Virtual Organisations. We describe how the NGS supported both 'charged' and 'free' heterogeneous grid resources. We describe the tools chosen and developed to

meet the needs of our resource providers so that grid usage could be controlled and where necessary policed. We describe the formation of Virtual Organisations and how they were expressed and handled within the infrastructure. We describe the technologies and models developed in the pursuit of a UK National Grid Service and we present some of the concepts still missing from the overall environment.

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Dealing with a decommissioned Storage Element

In 2012 one of the BiG Grid Storage Elements (SEs) was decommissioned. End-users were asked to migrate away all their data to other SEs. This turned out to be a non-trivial exercise. In this talk, we will list the steps taken to migrate the data and will show which commands are missing from the set of end-user commands such as lfc-ls, lcg-cp, lcg-lr etc.

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ROC CookBook: a guide to kick-start a ROC/NGI

In this paper we present the ROC CookBook, a detailed guide that aims to assist National Grid Initiatives (NGI) and Regional Operation Centres (ROC) to set up Operations Centres and the corresponding management functions. The cookbook is aimed at the emerging NGIs around the world as well as regional bodies coordinating the operations in different world regions which interact with EGI.

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D-MON: a federated information system for distributed e-infrastructures

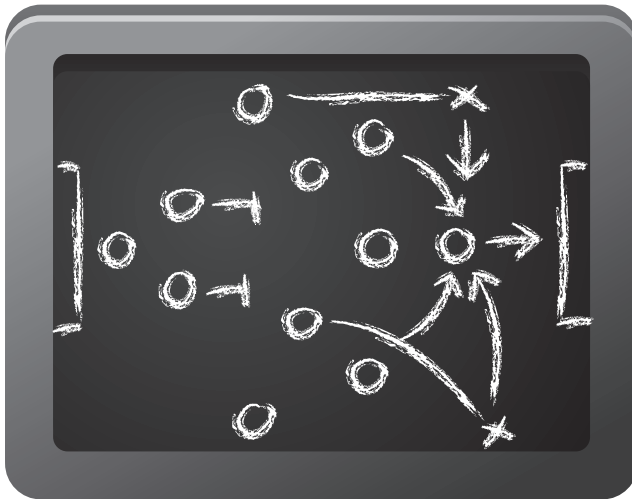
D-MON is a federated information system that provides e-infrastructure stakeholders with precise and reliable information on state and functionality of resource and services in a distributed computing environment. D-MON focuses on satisfying requirements of individual stakeholders, such as academic users and infrastructure

operators, by using robust algorithms for combining and analysing data to provide accurate reviews while filtering out unnecessary details. D-MON avoids duplicating functionalities implemented in existing information services and provides an added value by federating existing information providers and using information available in an e-infrastructure.

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Workshops

10



Explore the latest grid issues
and make the best move forward

★ **KNOWLEDGE** ★

Tutorial

11



Training sessions to
give you useful new skills

★ **KNOWLEDGE** ★

Contrail cloud middleware support for EGI community platforms



Operators and users of EGI Community Platforms are always looking for better tools to help researchers using their platform and tools that make administration of the platform easier, while maintaining interoperability with the EGI core infrastructure. The Contrail project has developed several tools that can be used by Community Platforms. This includes a cloud file system

(XtreemFS), a Platform-as-a-Service service (ConPaaS) and a federated identity management toolkit. Several use cases show real-life application of these tools. Contrail experts are involved in EGI infrastructure development work groups so they know about the EGI developments and requirements.

<http://contrail-project.eu>

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Federated Clouds open meeting



After the demonstration of the latest Federated Clouds technology and testbed, an open meeting will be held to reflect the current status and to elicit requirements to satisfy stakeholder use cases and goals for engaging with a Federated Clouds infrastructure. Resource Providers will be able to evaluate which further actions need to be taken before they can join the cloud infrastructure federation, both on the federation's side and the

provider's side. Commercial cloud providers may learn about which services and technical interfaces they need to support to allow seamless cloud bursting from a federated public sector infrastructure to commercial providers and vice versa. This workshop is intended for resource providers, their stakeholders in the scientific research community and commercial cloud providers.

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EMI, SciencePAD and collaborations workshop



The EMI (European Middleware Project) is coming to an end in April 2013. During its three year duration, EMI has established a number of initiatives and performed collaboration activities in different software-related areas. This workshop will present the different initiatives and collaborations that will continue beyond the end of the project and carry out the vision of innovating distributed computing and

data management services for research infrastructures, with particular focus on the Open Middleware Collaboration Group (OMCG) initiative and the SciencePAD initiative.

Expert contributions will be invited to provide descriptions of current and planned work and stimulate discussions and collaboration.

<http://sciencesoft.org>

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EMI Trainings: EMIR, ARGUS, EMI-ES



The European Middleware Initiative (EMI) is a close collaboration of the three major middleware providers, ARC, gLite and UNICORE, and other specialised software providers like dCache. Beside harmonising the middleware products, EMI is putting a strong emphasis on promoting interoperability, via adoption of standards, development of interfaces common to the different

middleware stacks. This session will introduce some of the key developments brought by the EMI third release, MonteBianco, like the EMI Registry, ARGUS and the EMI Execution Service. The session is aimed to experts within the NGIs, either system administrators or advanced users eager to know in advance more details about these new, production-ready, features.
www.eu-emi.eu

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Software Carpentry workshop



EGI.eu, together with the UK Software Sustainability Institute, will run three Software Carpentry sessions for researchers. These sessions are drawn from Software Carpentry's highly successful and popular boot camps which teach basic software development skills to researchers, enabling them to do more, in less time and with less pain.

The three sessions are:

1. Using revision control to back-up files, record provenance and collaborate.
2. How automated testing can save you time and help ensure the correctness of your software.

3. Approaches to data management.

The only prerequisite is knowledge of a programming language and some familiarity with using the command line (e.g. a Linux shell or the DOS prompt). Though we'll be using Python for the latter two sessions, we'll provide a quick introduction to the key syntax in each case.

Workshop material will be available at
<http://github.com/swcarpentry>

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Workshop on CA client software



There are a variety of user interfaces for national Certification Authorities (CAs) across the NGIs. In the last couple of years, several communities worked on graphical front-ends to their CA service using java technologies.

It is our aim to bring these communities together and 'compare notes' so we can see what could be done to make our current software more reusable and seek compatible interfaces.

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Federated identity management workshop



This workshop aims to bring together the various communities working on federated identity management solutions that simplify or hide from their users their certificate-based authentication and authorisation infrastructure.

The objective will be to share our experiences and technologies so we can identify areas for reuse (whether architecture, APIs or pluggable components) across the NGLs.

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Globus tools for grid users and administrators



The tutorial will provide first-hand practical information about Globus Toolkit v.5 and a suite of community tools of great value to resource providers, computing site administrators, end-users of the grid and scientific application developers.

The focus of the tutorial is set on the latest version 5 of the toolkit, including GridFTP, GRAM5 or MyProxy. Globus services included in the Unified

Middleware Distribution of EGI will be presented as well. Furthermore, the Globus Online cloud service for reliable file transfer will be demonstrated, together with its latest features. A selection of community tools are included in the training, such as GridWay, GridSAM, AdHoc-VOMS, GridSafe, LCAS/LMAPS security integration, Globus Online Client.

www.ige-project.eu

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Globus Online training



The goal of this contribution is to give scientific end-users users and administrators of e-infrastructures a hands-on experience with the Globus Online service (GO) for reliable, high-performance, and secure file transfer (www.globusonline.eu). New features such as data sharing will also be demonstrated. At the end of the training, the participants are expected to be able to manage their own endpoints with Globus Online, to submit and monitor their data transfers.

www.ige-project.eu

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Molecular dynamics simulations on grid and HPC systems



The training event includes tutorials on basic and advanced usage of two major packages for Molecular Dynamics simulations – GROMACS and AMBER – with focus on their application to modelling of biomolecular systems. The following sessions will include the presentation of two portals for automated submission of jobs developed by the WeNMR (wenmr.eu) and ScalLife (scalalife.eu).

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Big Data access, management and analysis in earth sciences



Services for open, flexible, scalable, and user-friendly access to, and processing of, earth science data are becoming increasingly important. An important milestone in the domain has been the recent release of the OGC WCS 2.0 Standard which for the first time allows to provide a comprehensive portion of earth science data categories through one powerful, coherent, implementation independent, and concisely testable service interface. This standard allows implementing matching client

and server technologies with unprecedented capabilities giving access, through strictly standards-based service interfaces, to huge earth science repositories, be they file-based or database-oriented.

The workshop assesses the status of activities in this domain within the earth science Virtual Research Community and see how the European Grid Infrastructure services can be of help for the community.

www.earthserver.eu

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Science Gateways Workshop



The Science Gateways Workshop aims to discuss the experiences of the different working groups currently participating in the development and use of this technology. Although the workshop sessions will be targeted according to the field of knowledge, a final global session will get requirements from the groups and will try to set up the layouts for the future of Science Gateways.

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Digital Cultural Heritage: state of the art and future developments



Digital Cultural Heritage is producing a large amount of digital content that need to be safely stored, permanently accessed and easily re-used by the humanities researchers. Important initiatives and projects are developing in Europe and in the other regions of the world in the domain of the e-infrastructures for digital humanities. Particularly relevant are DCH-RP where e-infrastructure providers and cultural institutions work together on these matters, as well as EUDAT, DARIAH,

CLARIN and DASISH that already signed MoU with EGI. Further, the experiences of virtual and distributed performances are also demonstrating some aspects of the enormous potential that the e-infrastructures can represent for the digital arts. The scope of the workshop is to get together projects and initiatives world-wide in the domain of the digital cultural heritage, digital arts, digital performances and digital humanities to discuss opportunities of cooperation.
www.dch-rp.eu

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Computing on a big scale with OpenMOLE



OpenMOLE is based on a black box approach to embed applications based on different technologies: e.g. java, scala, C, C++, fortran, scilab, octave, netlogo. Once embedded in the platform, OpenMOLE automatically distributes numerous executions of the application on a distributed environment specified by

the user, such as a cluster or even on the 100,000+ cores available on the European Grid Infrastructure. The platform deals with software installations, file transfers, job failures, rendering the distributed execution entirely transparent for the user.

www.openmole.org

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Collaboration between scientific workflow user communities



Scientific workflow (or e-science workflow) emerged as a paradigm to formalise and structure complex scientific experiments supported by Distributed Computing Infrastructures. An e-science workflow is a formal specification of a scientific process to capture and to automate the analytical and computational steps from a simulation.

The workshop will present how the different workflows and their execution engines can be integrated to support the next level of collaboration among developers, users and providers of workflow systems and aims to promote workflow sharing to build a European research community. This workshop will present the most important workflow systems, workflows and support projects from the EGI community and beyond, and will give us opportunity to discuss and exchange experiences, best practices and issues of building 'communities of interest' through workflows.

www.erflow.eu

www.shiwa-workflow.eu

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Interoperability and integration of EGI with Helix Nebula: workshop



Helix Nebula - the Science Cloud is working to establish a sustainable European cloud computing infrastructure, supported by industrial partners, which will provide stable computing capacities and services that elastically meet demand. The Blue Box is a Service Enabling Framework that will enable users to interact in a central and transparent manner with multiple commercial cloud providers. On the other side, EGI is working to evolve the current production infrastructure

with a federated cloud IaaS layer available to the users. It is wished to create synergies between the two initiatives and enable them to integrate and interoperate for the benefit of the research communities.

EGI.eu is working on an interoperability and integration roadmap that will touch business, organisational and technical aspects. The workshop will be the occasion to present and discuss a mature document of with integration scenarios and interoperability requirements.

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EGI CRM training



The EGI-InSPIRE project is under the process of promoting an optimised management of relationships between EGI.eu, NGIs and their potential users. Under such context, a CRM system was deployed by the project for the EGI community in March 2012. The CRM system simplifies the process of identifying, contacting, following-up and evaluating new user community needs and mapping those needs to EGI services.

This EGI CRM training session at EGI Community Forum 2013 targets EGI.eu and NGI members who work in the community outreach and technical outreach areas. During the training, through use case-oriented hands-on exercises, attendees will perform real outreach activity and learn how to continue this activity from their home institute using the EGI CRM system.

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Champions



This workshop will cover the different Champion schemes across the EGI community.

The aim is to bring together the champions from different projects, as well as the organisers of those schemes, to:

- provide insight into what EGI has to offer (and induction for the EGI Champions)
- learn from the established Champions about their experiences
- give the Champions an opportunity to shape a policy paper of how to engage with new communities

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EGI pay-for-use



In late 2012, the EGI Council endorsed a thought experiment on how pay-for-use models could be implemented and how users could be billed for their usage of EGI resources. To explore these options, EGI.eu is running a 'proof of concept'-style experiment with NGIs, resource centres and user communities to define areas such as accounting, pricing, invoicing, payments and service level management.

This workshop offers an opportunity to present the pay-for-use model and provide an update regarding the current results of the experiment achieved to date.

<http://go.egi.eu/1391>

<http://go.egi.eu/Evolving-EGI-WS-2013>

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EGI Compendium - improving the EGI knowledge base



Would you like to know more about the status of NGI infrastructures and technologies, their list of services and supported research areas, or about their strategy and sustainability?

The EGI Compendium Workshop will focus on presenting the first edition of the EGI Compendium for 2011 and the preliminary findings for 2012. We will also discuss future developments and plans for setting up a dedicated online tool. In addition, participants will learn more about and

discuss the challenges of creating a functional EGI knowledge base. Ultimately, the EGI Compendium increases the transparency of EGI's activities, supports the strategic planning and long-term development of EGI and provides an essential body of information for the various EGI stakeholders.

<http://go.egi.eu/EGI-Compendium-2011>

<http://documents.egi.eu/document/1424>

http://wiki.egi.eu/wiki/VT_EGI_Compendium

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EGI Virtual Team (VT) projects - the beauty of small goals



Expanding EGI's user-base is a daunting goal unless broken down into bite-sized chunks. In 2011, EGI-InSPIRE defined a new Virtual Team (VT) project framework that would reach out and engage with new scientific user communities. More than a dozen VTs have already concluded successfully. This workshop:

- provides meeting point for VT members;
- a platform for VT leaders to present their achievements and explain how they progress from a 'manageable' goal to a final result;

- cover techniques and best practices that can help simplify the task of managing projects as well as the monitoring and reporting procedures that are currently in place.

The session is targeted at those who wish to learn of new developments and communities in EGI, and especially for those who want to be part of new development paths for EGI.

http://wiki.egi.eu/wiki/Virtual_Team_Projects

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XSEDE and EGI common use cases workshop



Steven Newhouse (EGI.eu) and John Towns (XSEDE) will lead a workshop on Collaborative Use Examples (CUEs) – a joint initiative between EGI and the US XSEDE programme, launched to help European and American scientists to share data across the Atlantic.

The workshop will focus on the CUEs submitted by international teams during a call which was open earlier in 2013. The CUEs report the practical experiences of using services provided by both infrastructures

(EGI and XSEDE) and highlight the areas where integration can be improved.

The Collaborative Use Examples will help EGI and XSEDE to better understand the breadth of research activities underway on both infrastructures and the requirements of international collaborations. This will lead to stronger collaborative relationships across all levels (e.g. operations, policy, user support) and an improved EGI and XSEDE service offer.

www.xsede.org

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Implementing service management for EGI services



To make EGI's services, more sustainable and predictable, some form of the IT Service Management (ITSM) is necessary. This workshop will describe how this can be achieved in the EGI community.

The approaches will be based on the work of the FedSM project. The techniques proposed aim to achieve a set of requirements based on the international service management standard ISO/IEC 20000. These are selected to reflect the needs of federated e-infrastructures, and tuned to their management challenges.

This workshop will give operational staff context for the ITSM improvement,

a general understanding of how the service management initiative supports EGI's plans for sustainability and a specific understanding of what is going to change to improve service management in EGI. The outcome of this workshop is:

- The understanding of service management
- The understanding the importance of ITSM for quality, efficiency, user-orientation and sustainability
- The awareness of the role of the FedSM project in this context
- The knowledge of the EGI general plans for change to improve service management

www.fedsm.eu

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Coordinated offering of a federated resource pool



The EGI Council has adopted a policy to explore how excellent European science can be supported through a European-level review and resource allocation process of pooled NGI resources. This session will expand on the initial discussion moving forward to an implementation roadmap.

During the workshop we will discuss the proposed resource brokering model, the related procedures and support tools and the roles of EGI.eu, the NGIs and the Resource Providers.

This session is aimed at Resource Centre representatives willing to participate to the EGI experimental activities around coordinated resource provisioning, NGI operators and user communities interested in exploring this resource provisioning approach.

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EGI Accounting



This workshop will cover recent developments in EGI Accounting, including the new APEL Client, the Regional APEL Server, the Cloud Accounting Portal and Application Accounting.

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Evolving operational tools



EGI operational tools are part of the EGI infrastructure and collaboration platform, are technology agnostic and they can be easily extended to meet the operational needs of any distributed Research Infrastructures (RI). The adoption of EGI operational tools, deployed and developed within EGI-InSPIRE, allows the reuse of existing solutions that address the typical needs of any distributed RI.

This session is aimed at NGI operators, Research Infrastructure operators and user communities interested in learning about the incident management tool of EGI (GGUS).

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Regional Operator on Duty workshop



This session is aimed at personnel contributing to NGI Regional Operator on Duty activities (ROD). During this workshop we will discuss status and issues of the grid oversight activity. The session will close with a Question and Answer session, which will give attendees the opportunity to ask any questions about grid oversight activities.

This session is particularly recommended to ROD personnel, in particular from NGIs that recently joined the production infrastructure.

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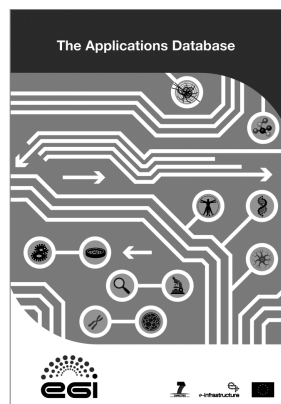
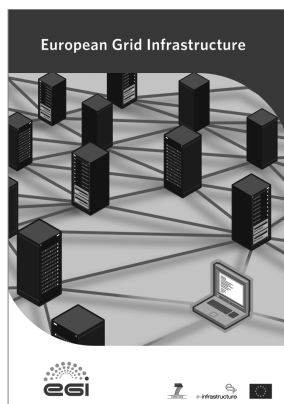
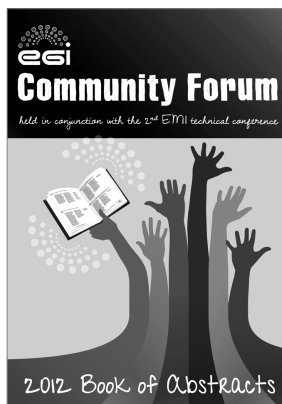
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