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## Funding extension for the NGS

We are delighted to announce that JISC will continue to fund the NGS until the 31st of July 2012.

This will allow the NGS to carry on supporting its broad user base across the UK and to strengthen our links into Europe and beyond. We will not only be able to support users but to also develop further the essential relationship that we have with our

member institutions. This will include further roadshows, training and outreach activities at universities and research institutions with a significant current or prospective user base.

During the coming period we will continue to actively work with large international projects with bases in the UK, e.g. ELIXIR, LifeWatch, SKA and CLARIN. We recently held two workshops to gather their ongoing e-infrastructure requirements, to ensure that the UK can support their ongoing needs and remain a leader in Europe.

In April 2011, the NGS moved to a new model of service. All NGS users were given a moderate allocation of compute resources for free, a lifeline for pump priming novel projects and for early career researchers who might otherwise struggle to receive resources directly from grants. The NGS has been working with larger projects and individuals with more significant requirements and can now offer competitively priced compute and data services through its partner sites.

This phase of the NGS also includes the availability of central services so that remote sites are able to easily monitor, account and control the user base for their services when these users come not only from their own institution but from collaborating institutions. These services are particularly targeted towards the larger national and international projects of which the UK is a significant partner.

David Wallom, Technical Director said "This extension is a further demonstration of the importance of a core research computing service available at a national level, supporting projects from the large international infrastructures through to the small single researcher activity. The NGS supports the federation of resources between institutions and the central services which are essential to avoid duplication of effort in larger projects."



## News From Europe

The NGS is also part of the European Grid Infrastructure as the NGS, in conjunction with GridPP, makes up the UK National Grid Initiative (UK NGI).

### EGI releases the first Unified Middleware Distribution

The software provisioning team at the European Grid Infrastructure (EGI) has released the first version of the Unified Middleware Distribution. This is a major milestone in providing a consistent platform for all researchers in the European Research Area to gain access to suitable and integrated computing resources.



For many years the European grid has been offering researchers a distributed computing system across different middleware solutions and in that time has provided almost 2.5 billion CPU hours to scientists across Europe. EGI has been working with external technology providers to offer a set of well-defined, stable and general-purpose software components to meet their needs. The chosen components are collectively known as the Unified Middleware Distribution (UMD) and have been verified to work in the environment used within EGI. The first version of the UMD that successfully passed all testing procedures was released last week, with further versions anticipated in the near future.

Every research community has different goals and requirements for their computing and data needs and many have developed and maintained their own solutions, which work for them. The goal of the UMD is to provide a system that the community's existing solutions can easily plug in to, not replace, so that these solutions can be deployed at scale across Europe. So for the last year EGI and its partners have been working with technology providers and users to work out what they need to offer as a sustainable base on which users can build.

Leading the work has been Michel Drescher, EGI's Technical Manager, he is excited by what they have achieved. "Just getting this far has been a mammoth task. We have consulted a huge range of stakeholders, reviewed every software package on the grid and come up with what we believe provides the best support structure we can. This is however only a first step, we will learn a lot from this initial deployment to improve future releases".

### Technical Description

UMD 1.0.0 is the first release of UMD-1 (Unified Middleware Distribution) made available for the

European Grid Infrastructure. This initial release will contain only the most critical products from EGI's Technology Providers as agreed by the TCB (Technology Coordination Board) on behalf of the EGI community.

Contact Info: For further information about the UMD, its goals and surrounding processes, and more information about how to engage as a Technology Provider with EGI, please email to: [cto@egi.eu](mailto:cto@egi.eu).

Further links: <http://www.egi.eu/deployed-technology/technology-roadmap/>

<http://repository.egi.eu/2011/07/11/release-umd-1-0-0/>

## New Grid Briefings from EGI

e-Science Briefings are jargon-free summaries of key reports and issues on European e-infrastructure.

Each briefing contains a number of case studies and quotes from experts in the field.

The EGI has recently released several new briefings. These briefings are aimed at policy makers and funders, and are engaging overviews of the e-Infrastructure landscape.

- Mapping the e-Infrastructure Landscape <http://www.e-sciencetalk.org/briefings/EST-Briefing-15-Landscape-Newt.pdf>
- Supercomputing: Empowering research <http://www.e-sciencetalk.org/briefings/EST-Briefing-16-SuperComp-HD.pdf>
- Cloud computing: What's on the horizon? <http://www.e-sciencetalk.org/briefings/EST-Briefing-17-Cloud-Web.pdf>
- Asia Pacific Special Issue <http://www.e-sciencetalk.org/briefings/EST-Briefing-18-Asia-Web2.pdf>

## Winner of the NGS user change survey

The NGS recently ran a user survey to find out how the changes to the NGS, mainly the regarding the availability of cpu hours, earlier this year affected our users.

We had a very good response and we would like to thank everyone who completed the survey.

The winner of the £50 Amazon voucher drawn at random from all completed surveys was Mahmoud Ibrahim from the University of Manchester.

Congratulations Mahmoud!



## NGS Applications Corner

In each edition of NGS News we will give an introduction to developments from the NGS. In this issue Akay Ockun from NGS, STFC Rutherford Appleton Laboratory introduces the new Certificate Wizard.

### The New Certificate Wizard

The NGS users can now use the new Certificate Wizard to apply for, renew and revoke their UK e-Science certificates instead of using the CA Web Interface. The tool is available for download on <http://www.ngs.ac.uk/tools/certwizard>.

The main tutorial for using the new Certificate Wizard can be found on <http://ngs.ac.uk/cert-wizard-tutorial>.



### The Problem

Users find applying for and renewing of their certificates hard. One third of the tickets on the NGS Helpdesk in the last year have been related to certificates - a common theme being browser issues. As browsers have evolved there have been a variety of incompatibilities in the way they handle certificates and our list of unsupported browsers has grown.

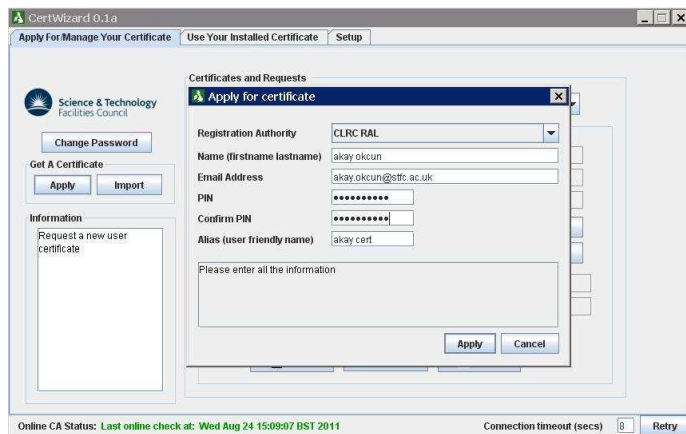
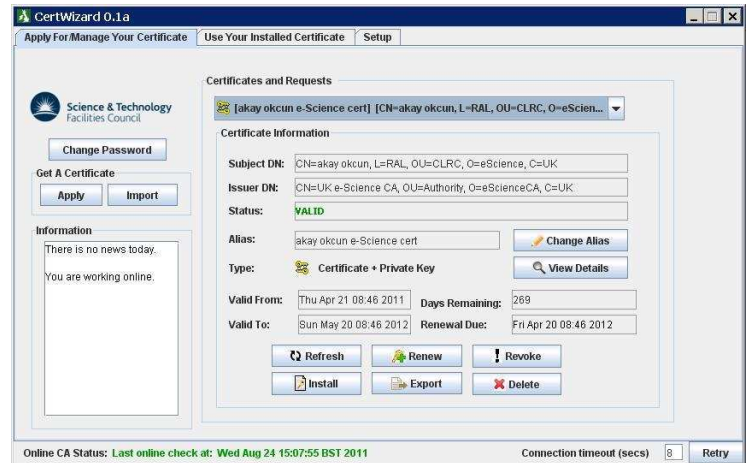
### The Solution

NGS staff have produced a browser-independent stand-alone tool for managing the certificates of the UK NGI user community, without involving a browser. This tool, combined with other service improvements, provides a simpler-to-use interface which is more efficient and fully integrated with our already established certificate tools. Up until now, users have used their browser to apply for and renew their certificates.

### Features

The tool allows the user to Apply, Renew, Export, Import and Revoke their e-Science certificates. The tool also provides a clear interface to view certificate information such as the status of the Certificate (e.g. VALID, REVOKED, etc), expiry date, days remaining until the certificate expires, and also the certificate renewal due date. Users are no longer required to manually download their certificates into their browser

when the certificate has been signed by e-Science CA. The users can simply click on “Refresh” button on the interface on prompt of receiving the “Certificate Ready” e-mail from e-Science CA. Users will be able to distinguish between different certificates in the dropdown list easily by assigning a friendly “alias” to each certificate, which should be unique.



The tool allows users to import their existing e-Science certificates and perform manipulations such as Renew and Revoke, just like how the CA Web Interface would do. Users will also be able to import other types of certificates (non e-Science) into the tool. The entire collection of certificates in Certificate Wizard is protected by a global password, which the user gets to create

when the tool has been run for the first time. This password can be changed later.

The tool has also been merged with our existing VOMS-enabled MyProxy Upload Tool so that a single tool can be used to manage all the user's certificate interactions. The users can simply Apply for a new certificate, or import their existing one, and then hit the Install button to allow them to make use of the MyProxy Upload Tool.

### Future Development

Further work is already underway to add the facility to renew a recently expired certificate and change details such as the user's email address without having to revoke it and apply for a new one like now. Functionality will also be added in the future to provide analogous support for host certificates and for RA Operators to approve both user and host certificate requests.

## Championing e-Research and e-infrastructure

Dr David Wallom, NGS Technical Director, introduces the Community Champions and Campus Champions and explains how they are working together to raise the profile of the NGS in institutions across the UK.

### The Community and Campus champions of SeiUCCR and UK NGS

As we move to create an integrated e-infrastructure it is important that we bring two of the essential groups along with us. First and foremost the researchers and secondly their hosting institutions.

To help get the research community on-board, we have selected a group of advocates within a number of different EPSRC funded research areas through the new SeiUCCR project (Supporting

e-Infrastructure Uptake through Community Champions for Research; <http://www.ngs.ac.uk/seiuCCR/home>). These are our Community Champions (<http://www.ngs.ac.uk/seiuCCR/meetthechampions>), leading researchers from the fields of Bio Physics, Chemistry, Materials, Computer Science, Astro Physics and Energy. All of these researchers have made significant utilization of e-infrastructure ranging from local to national and international resources.



The aim of their recruitment is not only for them to be able to provide input into the continued development of e-infrastructure, but also as advocates to their own community. They can show how they have used the NGS and other national facilities, how it has transformed the research they have been able to do and how it has been of significant personal benefit. These new advocates offer a missing link, bridging the gap between academic researchers and the e-infrastructure providers.

The Community Champions receive a level of funding to ensure they are able to attend major conferences at which they can demonstrate how they have used e-infrastructure in their research and to spread the message to other researchers in their community. They also provide valuable advice to the SeiUCCR project in developing summer schools aimed at reaching early career researchers and Doctoral Training Centre students.

As a group these Community Champions also provide general improvements in support for the research community by illustrating the increasing importance to their institutions of the shared and collaborative research that underpins high impact science. Community Champions will drive institutional developments and involvement in national and international activities.

The current Community Champions are;

- Prof. Simon Cox - Engineering & Computer Science - Southampton
- Dr Philip Fowler - Computational Biophysics - Oxford
- Dr Nick Holliman - Physics - Durham
- Dr Pamela Greenwell - Bio medical - Westminster
- Dr Zhongwei Guan - Engineering - Liverpool
- Dr Rebecca Notman - Chemistry - Warwick
- Dr David Wallom - Energy and Computer Science – Oxford



Though these are the initial set of Community Champions we are already looking to engage others that, though unfunded, will further represent the Cross Council themes, such as the Digital Economy and Environmental change . This will ensure that these programs are able to get the most out of e-infrastructure and that they will have a specific champion who is also able to represent them and their requirements to various infrastructure providers such as the NGS and EGI.

To connect directly with institutions, the NGS has been running the Campus Champions program (<http://www.ngs.ac.uk/campus-champions>). The Campus Champions program aims to support individuals who act as the local source of knowledge about the NGS in a specific institution. Campus Champions can be based in IT Services, Research Computing Services or research departments that make extensive use of research computing. This ensures that NGS services are well connected to local resources and that we can directly tap into the needs and requirements of institutions. The aims of the Campus Champion are:

- A source of information regarding the NGS and any other resources that will aid research and education on their campus;
- Able to grant NGS user accounts on their campus, allowing researchers and educators to quickly begin using their allocations of time on NGS resources;
- A conduit for the campus e-Infrastructure needs, requirements and challenges, with direct access to NGS staff.

Campus Champions are the face of the NGS within the institution and a trusted link between the NGS and local users. This gives institution's users the power to directly influence the future development of the NGS.

Campus Champions are fully supported by the NGS through training and direct links with NGS staff. They can make use of the wide range of training and documentation provided by the NGS, both for themselves and for their local users.

Together the Community Champions and Campus Champions provide the NGS with direct feedback and interaction with two very important stakeholders and enable the NGS to be flexible in the services it supports and connects to from the many different resources available. The champions can work together within an institution to raise awareness of the NGS and to demonstrate the benefits of joining and using the NGS to a wide range of audiences including researchers, IT services and institutional management

If you are interested in becoming a Community Champion, please contact the NGS Helpdesk (support@grid-support.ac.uk) or David Wallom directly (david.wallom@oerc.ox.ac.uk).

## **NGS plays an active role in HealthGrid 2011**

The HealthGrid 2011 conference took place in Bristol, UK on the 27<sup>th</sup> – 28<sup>th</sup> June. The conference is the annual meeting of the HealthGrid initiative which was created to bring long-term continuity, to reinforce and to promote awareness of the possibilities and advantages linked to the deployment of Grid technologies in health at the planet level.

The NGS gave several presentations covering areas such as what the NGS can offer the Bio- and Health sciences, the NGS cloud and examples of usage by Bio- and Health researchers.

“Using e-infrastructure and particularly clouds” was a simple tutorial on how users are able to get access to cloud resources and introduced the NGS cloud, Eucalyptus and the user communities that are currently taking advantage of the service.

<http://www.ngs.ac.uk/sites/default/files/file/11-06-26-Wallom-Cloud-Tutorial2.pdf>

“UK NGS / NGI and linking to Europe” was in partnership with the EGI and gave a more detailed presentation on services the NGS has available for the bio- and health sciences.

<http://www.ngs.ac.uk/sites/default/files/file/11-06-28-Wallom-NGS-EGI-Healthgrid.pdf>

“Health and Bio-Users of the NGS” showcased the NGS Health and Bio related user case studies during the HealthGrid Showcase.

<http://www.ngs.ac.uk/sites/default/files/file/11-06-28-Wallom-NGS%20Health-Bio-casestudies.pdf>

## Case Study

Case studies featuring research carried out by NGS users are regularly featured on the NGS website but in NGS News we will bring one of the case studies directly to you! If you would like your research to be featured on the NGS website and in NGS News as a case study then please contact the NGS Liaison Officer, Gillian Sinclair ([Gillian.sinclair@manchester.ac.uk](mailto:Gillian.sinclair@manchester.ac.uk)).

### Using the NGS to model the climate impact of aircraft emissions

The contribution of water vapour emissions to the impact of aviation on climate has not been assessed for a number of years and is often assumed to be negligible. However, this assumption may not be robust when the variability of the atmospheric circulation is taken into account.

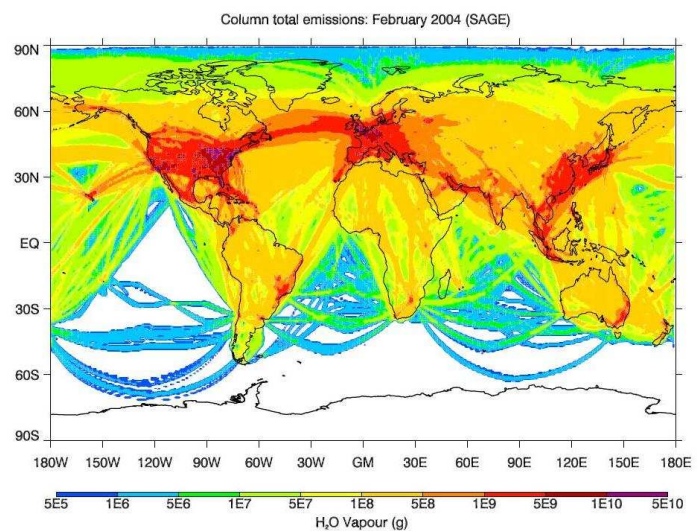
The aim of Laura's research is to quantify the climate impact of water vapour emissions from aircraft by modelling the four-

dimensional motion of emissions after their release into the atmosphere. This allows the perturbation to the natural background humidity and the radiative effects of this to be calculated. Laura is also examining the role of the variability of the atmospheric circulation on these impacts.

The outcome of the research will be a revised estimate of the climate impact of water vapour emissions which will allow for more informed policy and operational choices. The work will also provide improved guidance on the impact of changes in routing and cruise altitude of aircraft on the climate impact of water vapour emissions.

To run her models, Laura uses a straight forward scientific code written in FORTRAN and compiled when needed. However the code reads large amounts of pre-prepared data while it runs and therefore needs a comparatively large amount of disk space and memory to do so. This is when Laura turned to the NGS.

Laura identified NGS sites with enough capacity to run the code and built copies of her program at each of these sites. she could then copy the wind and related data that drives the model to that site and submit jobs into the local batch system to process it. When the jobs were completed, the results could be copied back.





Explaining the benefits of using the NGS Laura said “Using the NGS allows enough simulations to be run in parallel that we have not had to compromise the resolution of our work in order to complete the simulations in a reasonable amount of time”.

The speed of her research as increased considerably as “without the NGS, it would take 2 years to model the motion of water vapour emissions during one winter. To complete all the model runs that we hope to perform on the NGS over the next few months would take 10 years on our department computers”.

Laura’s research was funded by the United States Federal Aviation Administration (US FAA) and the project PI was Professor Keith Shine.

## NGS Collaboration Board input to the NGS Technical Roadmap

**Steven Young, NGS, University of Oxford**

The NGS Collaboration Board was formed in late 2009 and features representatives of all NGS member sites. The board is important to the NGS as it provides a mechanism by which NGS members can guide and influence the direction of the NGS and the services that it provides. More information about the NGS Collaboration Board is available at <http://www.ngs.ac.uk/collaboration-board>.

At the most recent meeting of the Board in July 2011, input was sought on the NGS Technical Roadmap. A NGS technical roadmap had been discussed previously with representatives of National and International (ESFRI; [http://ec.europa.eu/research/infrastructures/index\\_en.cfm?pg=esfri](http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri)) projects and this was an ideal opportunity for our member sites to have their say. The input to the NGS Technical Roadmap formed the basis of an NGS response to the Town Hall Meeting discussing the UK Strategy for a Research Computing Ecosystem and the Future of e-Science ([http://wikis.nesc.ac.uk/escienvoy/Town\\_Meeting](http://wikis.nesc.ac.uk/escienvoy/Town_Meeting)).

The NGS response was given by the NGS Technical Director, Dr David Wallom. The response contains a summary of the feedback from the Collaboration Board can be found at the following web pages:

<http://www.ngs.ac.uk/collaboration-board/ngs-cb-meeting-4-2011-07-06>

[http://www.ngs.ac.uk/sites/default/files/file/NGS\\_CB/11-07-08-NGS\\_Townhall.pdf](http://www.ngs.ac.uk/sites/default/files/file/NGS_CB/11-07-08-NGS_Townhall.pdf)

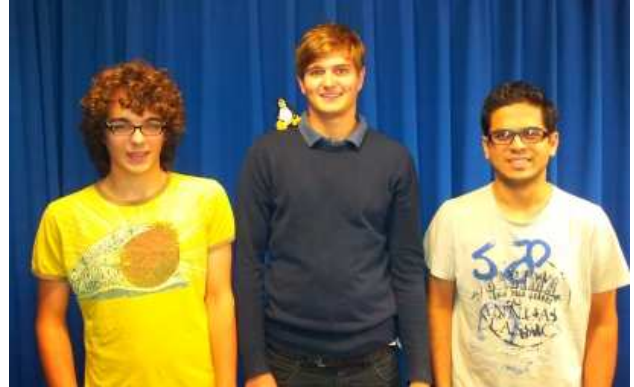
## NGS presents...

Each issue we introduce a member of NGS staff who will explain their role within the organisation. In this edition we are introducing and saying farewell to 3 Year In Industry students who have been working for the NGS based at STFC RAL over the past year.

**Ahmed Sajid was a placement student from Coventry University where he is doing a BEng in Communications.**

Working at STFC has been a great learning experience for me. My time at RAL allowed me to develop technical skills such as Java programming, Content Management System web development and PHP. However, one project which was a “big one”

for me was working as web developer on Training Marketplace for the EGI.eu ([http://www.egi.eu/user-support/training\\_marketplace/](http://www.egi.eu/user-support/training_marketplace/)). The most enjoyable time of my placement was when I was invited to attend meeting at EGI.eu headquarters in Amsterdam regarding the Training Marketplace. I am very grateful for the opportunity and also very thank to everyone for all the help provided throughout the year. I would also like to wish NGS best of luck for the future.



**Thomas Byrne, James Scott, Ahmed Sajid**

**James Scott was with us for a year before beginning his course at the University of Cambridge.**

As a Year In Industry Student based at STFC for the past year, I have had the opportunity to learn a great many skills valuable to my course at Cambridge beginning in October. I have particularly enjoyed helping to manage and further develop the NGS website, as well as the challenge involved in the organization of the 2010 NGS Innovation Forum. STFC has been a fantastic environment to work in and I've had great fun learning about all the technologies involved in running the NGS. Thanks to everyone on the NGS team and at STFC for a brilliant year!

**Thomas Byrne was a placement student from the University of Leeds where is studying Physics.**

My year at STFC was one of the busiest, most interesting and technically challenging years of my life. I was involved in a number of tasks for the NGS, including integrating the new load monitor into the NGS website and writing an application testing suite for the NGS cluster based at RAL. Many of my projects required learning new skills, some of which will be very useful. For instance, the programming techniques I have picked up will be invaluable on my degree course. I had a truly enjoyable time at STFC and I am very grateful for the opportunity.

Event	Date	Location	Website	NGS Presence
EGI Technical Forum	19 <sup>th</sup> – 23 <sup>rd</sup> Sept 2011	Lyon, France	<a href="http://tf2011.egi.eu/">http://tf2011.egi.eu/</a>	NGS staff will be attending and there will be a UK NGI exhibition stand.
12th IEEE/ACM International Conference on Grid Computing (Grid2011)	21 <sup>st</sup> – 23 <sup>rd</sup> Sept 2011	Lyon, France (in conjunction with the EGI Technical Forum)	<a href="http://grid2011.mnm-team.org/">http://grid2011.mnm-team.org/</a>	NGS staff will be attending and there will be a UK NGI exhibition stand.
UK e-Science All Hands Meeting	27 <sup>th</sup> – 29 <sup>th</sup> Sept 2011	York, UK	<a href="http://www.allhands.org.uk/">http://www.allhands.org.uk/</a>	NGS staff will be attending and there will be a UK NGI exhibition stand.
3rd IEEE International Conference on Cloud Computing Technology and Science	29 <sup>th</sup> Nov – 1 <sup>st</sup> Dec 2011	Athens, Greece	<a href="http://2011.cloudcom.org/">http://2011.cloudcom.org/</a>	
7th IEEE International Conference on e-Science	5 <sup>th</sup> – 8 <sup>th</sup> Dec 2011	Stockholm, Sweden	<a href="http://www.escience2011.org/">http://www.escience2011.org/</a>	

## How to get involved

We hope you have enjoyed this latest edition of NGS News. If you have any NGS-related or grid computing news that you would like to see published in the next edition (December 2011) then please contact Gillian Sinclair ([gillian.sinclair@manchester.ac.uk](mailto:gillian.sinclair@manchester.ac.uk)).

If you are a researcher currently using the NGS or if you have recently used the NGS, we would like to feature your research as a case study for our website and to possibly use it as promotional literature for the NGS. We are also looking for research papers, conference presentations and posters to feature on our website. If you are interested in distributing your research findings to a wide UK and international audience then please contact Gillian at the address above.