UK e-Science All Hands Meeting next week!

The UK e-Science All Hands Meeting, now a regular fixture on the conference calendar, reports the latest results in e-Science and provides a forum for discussion and demonstration of a broad range of e-Science projects from all disciplines. There will be 31 exhibitors at this year’s meeting from the 10-13 September 2007 at the East Midlands Conference Centre, Nottingham and more than 500 delegates, including participants from Australia, Korea, the Netherlands, Japan, and the US.

Highlights include:
- The use of virtual globes, such as Google Earth, to visualise environmental data;
- New techniques to extract more meaningful information from medical images;
- How e-Science techniques are enabling environmental scientists to devise strategies to combat pollution;
- How e-Science enables the delivery of healthcare at home using personal monitors;
- New text mining tools for extracting new, hidden knowledge from vast quantities of published text;
- Sharing virtual reality exhibitions over the grid.

The conference is a forum for all e-Science researchers, developers and users, no matter what their discipline. Sessions will address key grid middleware issues, as well as scientific applications, including how to make e-Science usable, integrating data on the grid, virtual research environments, text and data mining, security, visualisation on the grid, and ontologies and the semantic web. e-Science results and achievements will be demonstrated at a major exhibition throughout the week.

Keynote speakers include:
- Professor Malcolm Atkinson, UK e-Science Envoy, The Future of e-Science
- Mr Satoshi Sekiguchi, National Institute of Advanced Industrial Science and Technology, Japan, A Design of the GEO Grid: Systems of Systems federating Geospatial Data and Services
- Professor Anders Ynnerman, Linkoping University, Sweden, Medical Visualization Beyond 2D Images
- Professor John Wood, Principal Designate, Faculty of Engineering, Imperial College London, Building a UK e-Infrastructure
- Dr Timothy W. Foresman, President International Center for Remote Sensing Education, USA, Digital Earth: The New Digital Commons
- Dr Thomas Hartkens, Chief Technical Officer of IXICO, IXI(CO): Progressing a scientific GRID project to an end-to-end solution

The conference is organised by the National e-Science Centre (NeSC) and co-sponsored by the e-Science Core Programme and the JISC. Other Sponsors include Esteem, Microsoft, GridComputingNow! and Clustervision. The event is supported by the British Computer Society.

Website http://www.allhands.org.uk/

Anthrax bacterium’s deadly secrets probed

New insights into why the bug that causes anthrax behaves in the unusual way that it does have come to light thanks to a development under the UK e-Science Programme.

Researchers at the North East Regional e-Science Centre have found that the proteins the anthrax bacterium secretes equip it to grow only in an animal host and not in the soil.

For the full RCUK release go to: http://www.rcuk.ac.uk/escience/news/anthrax.htm

Grid helps find one picture in a million

Imense Ltd, a high-tech Cambridge start-up, has announced new investment to help them become the ‘Google’ of image searching, using their revolutionary technology. To test their software, they’ve made an unexpected partnership with a group of particle physicists using a massive computer Grid.

For the full STFC release go to: http://www.scitech.ac.uk/PMC/PRel/STFC/imense1.aspx

e-Science points to pollution solutions

Results from a UK e-Science project are helping to solve two pressing environmental problems. One finding could help to avoid arsenic contamination of drinking water extracted from man-made wells. Another could lead to improved methods of removing the now-banned industrial chemical, dioxin, from soil. The results were obtained using e-Science techniques and grid computing.

For the full story go to: http://www.rcuk.ac.uk/escience/news/pollution.htm
The Engineering of Cooperation by Iain Coleman

One of the key facts of human society is that a small number of people working effectively together can outperform a much larger group of disconnected individuals. This is the basis of warfare, party politics, and the Cosa Nostra. It is also the secret of success in technological research - when it can be made to happen.

That was what July’s 2007 International Summer School on Grid Computing, held in Gripsholmsviken, near Stockholm, was all about. The aim was to turn a disparate group of more than sixty bright young researchers from across the globe into a community working together to understand distributed computing. The emphasis, over the two intensive weeks of study, was on learning from one another, developing new skills, and sharing the excitement of e-Science.

Each day focused on a different aspect of e-Science, with the morning presentations covering principles, architectures and models, and the afternoons devoted to hands-on practical sessions. These covered not only the core techniques of grid computing, such as distributed data management and middleware toolkits, but also the emerging higher level scientific structures of semantic grids and workflows.

The lecturers at the school were drawn from the ranks of leading e-Science practitioners in academia and industry. This gave the school the air of an esoteric initiation ceremony, the experienced elders inducting a new generation into the inner sanctum. A recurring theme was that many of the problems that face e-Science are not new, although they may be expressed in novel terminology or a modern context. The accounts of how various parts of the field have developed, and the enduring issues that are still relevant today, effectively provided students with a useful perspective on the problems they will face in the years to come.

There were also reports, doubtless born of bitter experience, about the fallacies about distributed computing that lie in wait to trap the unwary.

These very practical presentations were complemented by deeper discussions of the intellectual underpinnings of the field. Malcolm Atkinson stressed the fundamental and unavoidable fact that in distributed computing you never have complete knowledge of the system you are working with. This lack of knowledge can be technical in origin, such as latency, heterogeneity of platforms and unanticipated failure modes, or it can be due to human factors such as lack of understanding, poor communication, or commercial confidentiality. The challenge for grid computing is to develop effective counter-strategies to tackle these problems. Miron Livny described grid computing as a movement, not a technology.

Building pervasive and dependable software is a harder problem than creating high-performance systems, he said, and the social structures of distributed computing are much more important than the hard numbers about latency and processing speed. He charged the students with always remembering that they are in the business of solving problems, not providing technologies, and emphasised the point that not only are today’s problems similar to those of three decades ago, so are many of the purportedly “new” solutions. The opening quotation of his lecture made the point in the words of Qoheleth from the Book of Ecclesiastes:

What has been is what will be, and what has been done is what will be done, and there is nothing new under the sun.

But summer schools aren’t just about wise advice and training for young researchers. They’re about forming communities. Often this is a by-product of a school, but in this case the organisers went out of their way to promote community building. From the questionnaire game on the first night, to the formation into teams for tasks that ran throughout the fortnight, the students were encouraged to get to know one another’s strengths,
experience and interests, and to form friendships and collaborations that may last well beyond this school, often between people from different backgrounds who might not otherwise meet. Even the first teamwork task – producing a slide about the team – was aimed at this goal. It may sound trivial, but the mere fact of having to accomplish a somewhat stressful task – making a presentation to a large audience – under severe time pressure helps to bond a team together, and the fact that the task necessitated finding out the background and skills of each team member jump-started the process of getting to know one another, not just as fellow students but as professional colleagues.

Putting together such a rich and varied summer school is an achievement, but the real test of its value is in what the students got out of it at the end of the fortnight. In a detailed feedback questionnaire, 95% of respondents rated the school overall as good to excellent, and the presentations and training sessions were individually well regarded. Interestingly, for all the practical training that the students received, the sessions that they seemed to value most were those that delved most deeply into the intellectual and philosophical underpinnings of e-Science. This is understandable. The hands-on training in grid systems will be very useful to the students in the coming years, but few of them will use all the systems on which they were trained, and in the course of time these technologies will become obsolete, replaced by new systems that demand new skills. But a single deep insight into a fundamental issue can stay with a researcher for their whole life, profoundly affecting not just their own career, but the work of everyone who they influence.

Next year’s summer school will be held near Budapest. If it meets the standards set this year in Sweden, it will be an immensely stimulating and enriching two weeks in the sun.
What happens when humanity’s newest technology collides with its oldest culture? And how can performing artists and scholars make use of e-Science to create, document and preserve their work? The e-Science Institute workshop on Digital Representations of Performing Arts, held on 18th-20th July, sought to provide some answers.

From optical perspective to musique concrète, artists have been quick to exploit new technology for their own creative ends. e-Science is no exception. The AccessGrid may have been developed as a tool for audiovisual conferencing, but that didn’t stop Helen Bailey (Bedfordshire) from using it to create virtual dance performances, in which a live dancer performs a duet with the stereoscopic image of a dance partner in a distant performance space. Motion capture technology is also being widely used in dance, and the resulting records of movement can form the basis for new visual art. The knowledge transfer from engineering to art is not all one way, though. Lizbeth Goodman (East London) showed how conventional motion capture rigs are unsuitable for disabled performers who may have shortened limbs or be confined to a wheelchair. She is actively seeking a technology that will satisfactorily capture her group’s explorations of physical expression by bodies with diverse abilities. The motion capture envelope was also pushed by Sally Jane Norman (Newcastle), when she incorporated the technology into live puppetry performances. The advanced techniques of the puppeteers, such as three-person puppetry, went far beyond anything the motion capture technologists had seen before.

The most complete closing of the loop between art and technology was presented by Sita Popat (Leeds). She took part in a collaboration between performers and robot engineers, in which a dancer’s embodiment of the motion of a multi-legged robot gave the engineers new insights into how to improve their design for more efficient walking. And a performance in which dancers performed with moving lights, called sprites, brought the computer operator virtually onto the stage. The sprites were controlled live by an off-stage operator, and the experience of making the lights dance with the live performers was so immersive that the operators came to feel that they themselves were no longer sitting at a desk, but were on stage with the dancers.

Having created the performance, the next question is what, if anything, of it you should try to record. For most performing artists, the performance itself is the least interesting part to document. Even high quality video recordings cannot capture the experience of being physically present at a live performance. Practitioners in this field are much more interested in documenting the creative process leading up to the performance, and the cultural context in which the performance is situated. Sophia Lycouris (Nottingham Trent) is interested in documenting her own creative process, in order to better understand her own ways of working. This can provide both a record and a tool for making decisions about the nature of the work, allowing it to move into different performance spaces without losing its integrity. This kind of documentation is still rare: Susan Melrose (Middlesex) argued that universities privilege the point of view of the expert observer over that of the creative practitioner, and hence it is usually the finished product that is documented rather than the process of production. What universities call “performance studies” are really observer studies, misnamed for marketing purposes. Daisy Abbott (Glasgow) gave a thorough analysis of the gaps in existing performance data sources. There is considerable recorded material showing performances, and a great deal of information on the wider social context of the work, but little on how the art was created.

Not that context isn’t important - indeed, it is crucial. The cultural influences that went into the work’s creation, the social, physical and economic environment in which it was created, the nature of audiences and their reaction to the work, the influence the performance had on culture and society: all these are of intense interest to scholars studying the performing arts. The breadth and depth of material that needs to be collated in order to fully understand a performance was demonstrated when the workshop participants went to the Edinburgh Playhouse to see a live performance of the Walt Disney musical Beauty and the Beast. The following day’s discussion about how the previous night’s performance might be digitally represented focused on the nature of the show as an adaptation of an animated film, the production decisions and the commercial and artistic constraints upon them, and how the visual effects are situated within the history of stage and screen technology. Interviews with the cast and crew might be valuable, much in the spirit of DVD extras, but even more important would be an account of the audience, and a record of their reaction to the show. Disney fans who have perhaps never visited a theatre before would experience...
the performance in a very different way than experienced practitioners and theorists of the performing arts, as was evident from the audience comments overheard during and after the show. Documenting the audience was seen in this case as much more important than documenting the performance itself.

Of course, there’s no point recording information unless it is preserved and made available for study and reuse. Documentation and curation are not independent issues: what is worth documenting depends to some extent on what can be preserved, and vice versa. Richard Rinehart (Berkeley) discussed these issues from the point of view of curating a digital art archive. If a work of art is created as a computer program, how should this be preserved? The computer it runs on could be archived, much as paintings are stored as physical objects of canvas and wood, but unlike paintings computers quickly become obsolete and impossible to maintain. Another option would be simply to preserve the code, by analogy with a musical score or the text of a play, but that too is problematic. Code is generally too hardware-specific to be independently preserved such that it remains useable in the long term. To solve these problems, Rinehart has developed the Media Art Notation System. This allows digital art to be represented in an algorithmic form, such that the creator can specify those elements of the piece that are important to the integrity of the work, and those that can be changed from instance to instance. This is fundamentally an artistic decision rather than a technical problem - if a computer-generated light display is shone onto a box of sand, does the colour of the box matter? - but the notation system allows these decisions to be represented in a consistent and accessible format.

Why is this important? Well, as Paul Stapleton (Queen’s University Belfast) pointed out, an ephemeral performance generates new knowledge, but only when it is archived can it contribute to the ongoing culture. A form of archival happens in the memories of the audience, of course, and some artists would insist that should be the end of the matter, but perceptions are subjective, memories fade, and people die. How much poorer would our culture be if Shakespeare’s plays had not been documented in the Quartos and First Folio? How much richer would be our understanding of these great works if we had first-hand documentation of their writing and production, of the audience and their society? This is the kind of resource that we can now bequeath to our cultural successors. We cannot say which of our works of art they will value, but we can ensure they have all the information they require if they want to understand why we made them, and what we made of them.

Material from this event can be downloaded from http://www.nesc.ac.uk/esi/events/784/

NeSC News

Developing and running MPI applications on the EGEE and int.eu.grid infrastructures

10-11 September
Trinity College Dublin, Ireland

This course is aimed at existing users of the Grid who want to run MPI parallel applications more effectively.

The course will have a substantial practical component, with exercises being run on EGEE and int.eu.grid infrastructures. It would be ideally suited to all users who want to develop MPI applications to run on the EGEE infrastructure, and to those who are interested in the advanced MPI support being provided by int.eu.grid. It should be of particular relevance to VO managers for communities that require parallel job support.

Further information and registration can be found at: http://www.grid.ie/mpi/wiki/MpiGridUserCourse07
Space, Time and Power by Iain Coleman

Organisation is over-rated. Ever since Adam Smith it has been understood that individuals following their own motivations without regard to the wider world can create immensely complex structures of knowledge and energy, far beyond anyone’s capacity to consciously design. Now, distributed computing allows us to extend this principle into areas of knowledge that have previously suffered the limitations of structures imposed from above.

No field of study more strongly exemplifies this shift than geospatial research. As knowledge is increasingly created from the bottom up, the authority of traditional forms of geospatial understanding is eroding. For practitioners in the field, embracing this new approach may provide insights that were never before possible - but there may be dangers as well as opportunities.

The AHRC ICT Methods Network workshop on “Space and Time: Methods of Geospatial Computing for Mapping the Past”, held at eSI on 23rd-24th July, provided a forum for researchers from the geospatial community to examine these issues. It was an event held in the long shadow of Google Earth.

The geospatial mashups that Google Earth and similar web services make possible have proved to be revolutionary. Rich resources of spatially organised data can be created by the aggregated micro-efforts of thousands of strangers, and while their accuracy and reliability might be questioned, the results are manifestly useful. The consensus of the workshop was that there is no point in fighting the rise of the mashup: that battle is already lost, and researchers have to adjust to new ways of thinking about their data. This means worrying less about what people are going to do with the data, and concentrating more on getting it to them in the first place. It also means trusting that users are intelligent enough to realise there is plenty of poor quality information in the world.

Yet concerns about data quality are not the only obstacle. Researchers are often much more restricted by the need to respect intellectual property rights than are the creators of mashups, as William Kilbride (Glasgow Museums) pointed out. This can be frustrating enough when faulty data is being propagated, but it becomes infuriating when serious fallacies are being spread and the research community is unable to marshal the counter-arguments in public. This is the down side to giving up control of data: it also leads to the loss of authority. Archaeology and history in particular are prone to being abused for political ends, or distorted in the service of fantasies. In discussions of these issues, workshop participants insisted that for all the advantages of giving up control of geospatial information, researchers still have a responsibility to assert the correctness of their own data in the face of challenge and controversy.

It’s not just amateurs who can benefit from a bottom-up approach to knowledge generation. The same techniques can be exploited by professional researchers, such as Tom Elliot (North Carolina) who has used mashups to create historical digital gazetteers, annotated maps conveying historical information. And computing technology now makes possible a new approach to building historical and archaeological understanding that starts with individual people and works up.

Agent based modelling involves simulating the behaviour of people in some place and time, then integrating the results to give an overall picture of how a community might evolve. Tony Wilkinson (Durham) showed one example: a project to study ancient communities in the north of Syria. He showed how individual households were modelled over a period of years: their births, marriages and deaths, and their responses to economic and environmental conditions. By scaling up from households to a community to a regional network of communities, he was able to study how the society would be affected by events such as a prolonged drought or a difficult harvest.

Assumptions about the resilience of communities under these conditions can be critical in assessing possible explanations for archaeological data, and this method allows the information to arise naturally from the smallest possible scale.

This approach provoked considerable discussion, particularly about the issue of how well agent based modelling can account for apparently irrational social factors such as the taboo on eating seal meat, even in famine, that led to the collapse of colonies in Greenland. The value of this modelling approach in a case like this may be that it would allow the simulation to be run both with and without the taboo, to examine whether or not it was the key factor. While you can’t re-run the past, you can examine what kinds of processes lead to what kinds of outcomes, experimenting on the simulation much as physicists might probe the behaviour of a magnetohydrodynamic code whose behaviour is too complex for analytical calculations.

None of these methods for generating emergent knowledge is guaranteed to give the truth, and all have their potential failure modes. They are very useful nonetheless to an increasing number of people, both within and outwith the geospatial research community. This workshop showed that community determined to welcome the advantages of mashups, models, and bottom-up knowledge creation, while working to improve the reliability and intellectual rigour of the ever-increasing quantity of information about space, time and society.

Material from this event can be downloaded from http://www.nesc.ac.uk/esi/events/772/
An Introduction to Grid Computing and the National Grid Service

Monday 10 September 2007
10:00 to 15:30
De Montfort University

This event is an orientation for researchers and others who wish to understand the concepts and current status of Grid Computing.

The goal of the day is to help participants to answer the question: “Does Grid Computing open new horizons for my research, my School, and my University?”

The day is given by Mike Mineter and Guy Warner from the Training Outreach and Education team of the National e-Science Centre.

The event is hosted by De Montfort University, in Gateway House, The Gateway, Leicester.

Guidance to find this is at: http://www.cse.dmu.ac.uk/STRL/about/directions/index.html

Advanced Visualization for High-End Computing

Monday 24th September 2007
STFC Daresbury Laboratory

STFC Daresbury Laboratory will be hosting a one day conference on visualization in association with HPCx and vizNET. The course will take place on Monday 24th September 2007 in the Tower Seminar Room at the Laboratory, commencing at 10:00am and concluding at 4:00pm.

http://www.cse.scitech.ac.uk/events/Visualisation2007/

gLite Training Event

This event will be organised in conjunction with the EGEE’07 Conference on 29 & 30 September 2007 in Budapest. The event will interest those who are seeking to develop applications and managing jobs and advanced workloads on EGEE. The focus is primarily on different techniques for creating, submitting and orchestrating workloads on EGEE:

- Scripting to interact with gLite and higher level services
- GANGA tool to manage jobs
- P-GRADE Portal to develop and manager workflows and parameter studies
- GridWay metascheduler to broker resources and manage jobs

The course will provide brief introduction session on the security and job management capabilities of the gLite middleware for those who are not familiar with the EGEE grid. More advanced job management examples and higher level tools will demonstrate advanced EGEE workloads.

Members of the EGEE Application Porting Support Group will also attend the event and will provide face to face consultancy for those who wish to port applications to the EGEE Grid.

To learn more about the event and to register please visit: http://indico.cern.ch/conferenceDisplay.py?confId=18939


Grid Computing and the National Grid Service - Induction

Thursday 27 September 2007
(09:30) to Friday 28 September 2007 (17:00)
e-Science Institute, Edinburgh

Grid computing empowers collaborations across different institutions by enabling them to share resources of data and computation. Current developments using grid computing are in research (‘e-Research’), engineering, public service, provision of digital data libraries.

The National Grid Service (NGS) is the core UK grid service resulting from the UK’s e-Science program. It is intended for the production use of computational and data grid resources for scientific and academic research purposes. Use of the NGS is available to members of the UK academic and scientific communities. Projects involving large data volumes, high computation requirements or geographically widespread collaborators may benefit from using the NGS.

Advanced Visualization for High-End Computing

Monday 24th September 2007
STFC Daresbury Laboratory

Advanced Visualization for High-End Computing

Third EELA Conference

Department of Physics and Astronomy of the University of Catania (Italy)
December, 3-5, 2007

The Third EELA Conference is meant to be an "open conference" devoted to the scientific results attained by EELA, EGEE and all related projects.

http://www.eu-eela.org/conference3/
This will be my last NeSC Newsletter, hope you have enjoyed reading it!

From next month the NeSC Newsletter will be produced by Gillian Law, email glaw@nesc.ac.uk

The deadline for the October Newsletter is: 25th September 2007

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Forthcoming Events Timetable

<table>
<thead>
<tr>
<th>September</th>
<th>Event</th>
<th>Location</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 13</td>
<td>UK e-Science All Hands Meeting - Registration Now Open!</td>
<td>East Midlands Conference Centre, Nottingham</td>
<td><a href="http://www.allhands.org.uk/">http://www.allhands.org.uk/</a></td>
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<td>10 - 14</td>
<td>5th International GridKa School</td>
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<td><a href="http://www.fzk.de/gks07">http://www.fzk.de/gks07</a>.</td>
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<td>15</td>
<td>HiPerGRID</td>
<td>Brasov, Romania</td>
<td><a href="http://pact07.cs.tamu.edu/">http://pact07.cs.tamu.edu/</a></td>
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<tr>
<th>October</th>
<th>Event</th>
<th>Location</th>
<th>URL</th>
</tr>
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<tbody>
<tr>
<td>1-5</td>
<td>EGEE07 Conference</td>
<td>Budapest</td>
<td><a href="http://www.eu-egee.org/egee07/registration">http://www.eu-egee.org/egee07/registration</a></td>
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<tr>
<td>7-9</td>
<td>Third International Conference on e-Social Science</td>
<td>Ann Arbor, Michigan, US</td>
<td><a href="http://ess.si.umich.edu/">http://ess.si.umich.edu/</a></td>
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<tr>
<td>22-24</td>
<td>PhylolInformatics Workshop</td>
<td>e-Science Institute</td>
<td><a href="http://www.nesc.ac.uk/esi/events/710/">http://www.nesc.ac.uk/esi/events/710/</a></td>
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Staff Changes at NeSC

Welcome to:
- Luke Humphry (ICEAGE Online Content Editor) and Elizabeth vander Meer (ICEAGE Policy Support Officer) will start to work for ICEAGE on 3 September and 12 September respectively
- Robin McConnell will replace Brendan Hamill as the EGEE2 NA3 Project Manager as of 10 September
- Prof Jon Weissman from University of Minnesota is a visitor at NeSC for a year
- Attila Gyenesei is working as Research Engineer for the EGEE project for 4 months

And Goodbye to:
- Yvonne Anderson, left NeSC 31 August for a new position at the NHS
- Jennifer Jamieson, finished her secondment at NeSC on 31 August
- Alison McCall, will leave NeSC on the 14th of September for a new position in the West of Scotland

Forthcoming NeSC Training Events

- Grid Computing and the National Grid Service
- Induction: 27 - 28 September, 2007
- An Introduction to Grid Data Services using OGSA-DAI 11 - 12 October, 2007
- Data and Storage on the National Grid Service 19 October, 2007
- Deploying Grid Data Services using OGSA-DAI 1 - 2 November, 2007

For details follow links from: http://www.nesc.ac.uk/training/events/index.html#mostrecent

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This is only a selection of events that are happening in the next few months. For the full listing go to the following websites:

- Events at the e-Science Institute: http://www.nesc.ac.uk/esi/esi.html
- External events: http://www.nesc.ac.uk/events/ww_events.html

If you would like to hold an e-Science event at the e-Science Institute, please contact:
Conference Administrator,
National e-Science Centre, 15 South College Street, Edinburgh, EH8 9AA
Tel: 0131 650 9833 Fax: 0131 650 9819
Email: events@nesc.ac.uk

This will be my last NeSC Newsletter, hope you have enjoyed reading it!  
From next month the NeSC Newsletter will be produced by Gillian Law, email glaw@nesc.ac.uk  
The deadline for the October Newsletter is: 25th September 2007