TERENA Briefing

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THE TERENA NETWORKING CONFERENCE 2005
The World of Pervasive Networking

A preliminary assessment of the evaluation forms of the TERENA Networking Conference 2005 clearly indicates that the conference was rated by participants as the best ever TERENA conference - in particular for the conference programme.

It was certainly the biggest. The actual conference programme began on Monday afternoon, 6 June and ended on Thursday noon 9 June with over 130 presentations in five parallel sessions for participants to choose from, and with six prominent keynote speakers to open on Monday, Tuesday and Wednesday and, finally, to close the conference on Thursday. With approximately 480 participants, there was a record crowd of over 520 in the building during the days of the conference.

Events, workshops and meetings planned in conjunction with the conference started as early as Saturday, with the annual meeting of the CCIRN (Co-ordinating Committee for Intercontinental Research Networking) and a TF-PR hands-on workshop on usability testing of websites. The TERENA Task Forces on PR, Mobility and European Middleware Coordination and Collaboration held meetings on Sunday, along with a workshop on Voice over IP, organised by the TERENA Task Force on Voice, Video and Collaboration and well-attended by over 80 participants. An unprecedented number of other meetings and workshops were held in the evenings, on Monday morning, on Thursday afternoon and continuing through Friday.
(**http://www.terena.nl/conferences/tnc2005/meetings/**).

The TERENA Technical Advisory Council meeting before TNC 2005.

Delegates discussed several of the important special interest areas to be focussed on in the coming year in the TERENA technical programme.

Ed Seidel addresses the opening plenary session

The keynote speaker in the opening plenary session, Ed Seidel of Louisiana State University challenged the network community to build the networks that scientists want to have. These networks would not only be bigger and faster, but pervasive; available anywhere, at any time and offer a large new range of applications. But they must also be simple, with easy-to-use toolkits and end-to-end quality of service, so that they can connect even to Grids and high-speed optical networks as if "connected with a wire". This transforming technology would enable scientists to work in large collaborative environments and to do work they could not do before, with complex applications using vast amounts of data, such as those required to produce complicated simulations. And scientists would eventually like these applications to be developed into on-demand services, like the "black hole finder" and tools for earthquake predication.

In his keynote address, Dai Davies of DANTE described the new GÉANT2 European backbone network, which will be rolled out between mid 2005 and mid 2006, the most visible result of the EU-sponsored GN2 project that will strive to provide European research and education with just the sort of backbone network and services as on Ed Seidel's wish-list. Many of the applications and services under development were presented in 14 additional GN2 presentations, included in the appropriate topic sessions throughout the conference. This distributed form of the workshop encouraged a broad range of conference participants to learn about the activities of the project.

Grids will play an increasingly important role in facilitating the large applications that scientists and researchers want, and four sessions were devoted to advances in Grid technology, Grid access and the administration of Grids. Optical networks are also poised to play a key role in delivering network facilities on the scale required for big, distributed scientific collaborations and advanced e-Science applications, and two conference sessions heard presentations on advances in new transmission and switching technologies, the VIOLA testbed for advanced networks services, the development of optical fibre itself as well as on projected timeframes for deployment.

Two EU-funded projects, MOME and LOBSTER, held workshops in the form of a dedicated stream throughout one whole day, including presentations and panel discussions on network monitoring; two further sessions were also devoted to network performance. The bigger, faster networks create new opportunities in many fields such as realtime streaming, conferencing and multicast, and the challenges were addressed in two sessions on the new technology and management systems required. Middleware becomes an even more vital element to paste it all together and two sessions were devoted to technology and applications to deliver all of these services to the user in a pervasive way. The often neglected third A of middleware AAA (Authentication, Authorisation and Accounting) was also addressed.

Mobility was the subject of three popular sessions at the conference including talks on future directions, on academic roaming with Eduroam and Edupass and on the deployment and management of large-scale wireless networks.

Bob Cowles, Stanford Linear Accelerator Center lectures worldwide on computer security. In his keynote talk, he warned that security is an ongoing struggle: your computer cannot ever be secure, only more secure. The hackers and attackers are getting smarter and the frequency and scope of attacks is increasing (fake service providers, phishing, pharming, spyware, Google-hacking, backdoor key logging, etc.). Co-ordinated international efforts, a global approach to information sharing and some practical research are required to protect the networks, which now offer the hackers even more vulnerabilities than before because of increased mobility and wireless networks, Bluetooth, insecure protocols, new VoIP services and large collaborative environments and Grids, to name a few.

Two sessions on security reinforced the messages from this keynote talk. Pervasive core security is now required, as the hackers are not just attacking the servers but also the network devices and the whole Internet. The GN2 project is assisting the national research and education networks to provide the security services they need to meet these threats.

Bob Kvavik, University of Minnesota spoke for the network administrators, explaining the current state of practice and expectations for the (very near) future. At present, results from his survey of a selection of universities in Canada and the USA indicate that 80% of a university network is used for administrative and communication activities and only 20% for academic and research purposes. The new networks coming on line are expected to be used 80% for academic and research activities and will change the way research is done, empowering researchers to do things they never dreamt of. The challenge for network administrators will be to provide, organise and manage the new services that the users require.

Consequently, user issues are becoming more important for the national research and education networks. With the launch of the new GÉANT2 backbone network as well as the availability of Grids and optical networks, bigger, faster networks and an explosion of new applications mean that the NRENs need to manage the services they offer and to communicate with the institutions, scientists and researchers and students, government and funding bodies, other stakeholders and the world at large. Three sessions at the conference were dedicated to the subject of broadening the research network user community, reaching the users and managing the products and services offered.

Sessions on new global connectivity and networking in other world regions provided participants with an international look at initiatives like GLIF (the Global Lambda Integrated Facility) and GLORIAD, which will build a network ring for advanced applications in the northern hemisphere. Shigeki Goto, chairman of APAN, outlined the work being done in the Asia-Pacific Region to provide data-intensive scientific applications for a broad range of research areas, including applications to support collaborations of many researchers in joint research projects such as tsunami prediction. Special attention was paid this year to networking in Eastern Europe, including a panel discussion on future developments in the countries in the region.

Jochen Schiller, Free University Berlin gave a fascinating keynote talk on (ad hoc, multi-hop) sensor networks, their uses, the technology involved and future requirements. Production sensor networks are already in use in such areas as monitoring environmental changes for agriculture and for nature studies, the safety of firemen and disaster relief personnel, the temperature-loss of buildings, and water temperature and movement. Future research is needed to make the networks self-healing, and also on routing and management issues, on the use of energy, data transfer and on new applications and tools.

In the closing plenary session, Kevin Warwick of the University of Reading challenged his audience with some ideas that seemed to be almost science-fiction, but will, in reality be influencing our lives in the near future. His research into connecting the human brain to computers and sending the neuro-signals over the Internet will offer the possibility of giving people new senses such as infrared vision, ultrasound hearing or the ability to calculate as fast and as accurately as a mainframe computer. It opens up the possibilities for soldiers to fight a war while not actually being on the battlefield or men to explore space without physically leaving earth. It can also guide rats to find and disable bombs. At present, electronic drugs or medicines are being developed as well as wheelchairs and prosthetic arms and legs that can be operated by the person's thoughts. Food for thought to end the conference, but hardly comfort food . . . . .

The social events in Poznań were planned to provide lots of opportunities for discussion and for the 'other kind of networking' essential to a TERENA conference. The new, state-of-the-art Congress Centre of the Technical University of Poznań provided generous facilities and further opportunities to talk with colleagues, meet old friends and make new ones. Many considered this to be the most important and enjoyable activity of the conference (http://www.terena.nl/conferences/tnc2005/social/).

"The other kind of networking" at the Opening Reception in the National Gallery

The conference programme committee, under the experienced leadership of Olivier Martin of CERN was composed of a hard-working group of European and international experts in their field.

The best and most representative papers presented at the conference, selected by the programe committee will be published in a special edition of Computational Methods and as a Web publication in the library of the TERENA Webstie (ISBN 90-77559-05-3)

Conference participants were welcomed by the Mayor of Poznań, Ryszard Grobelny and by Grzegorz Zbikowski on behalf of the Minister of Science and Information Technologies.

The conference was organised by TERENA and hosted by the Poznań Supercomputing and Networking Centre (PSCN), operators of the Polish Research and Education Network, PIONIER, with local support from IKANOR. TERENA is grateful to the following companies and organisations for their generous sponsorship: ALMA and Cisco Systems who were the main sponsors and also sponsored the Gala Evening and by Juniper Networks, IBM, ADVA, ATM, COLT, EXATEL, Intel, TELE-PERN, TeliaSonera, Nortel, Extreme Networks, Global Crossing, Level3, Sun Microsystems, GLIMMERGLASS, TANDBERG, ERICCSON and PSNC. A very well-attended press conference followed the plenary session on Tuesday morning, and the media sponsors who supported the conference are also listed on the 'sponsors' page of the conference website.

More information about the conference can be found on the conference website: **http://www.terena.nl/conferences/tnc2005/**, including a photo gallery and the complete conference programme, with links to the slide presentations, speaker information and the video archive of the live stream.

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