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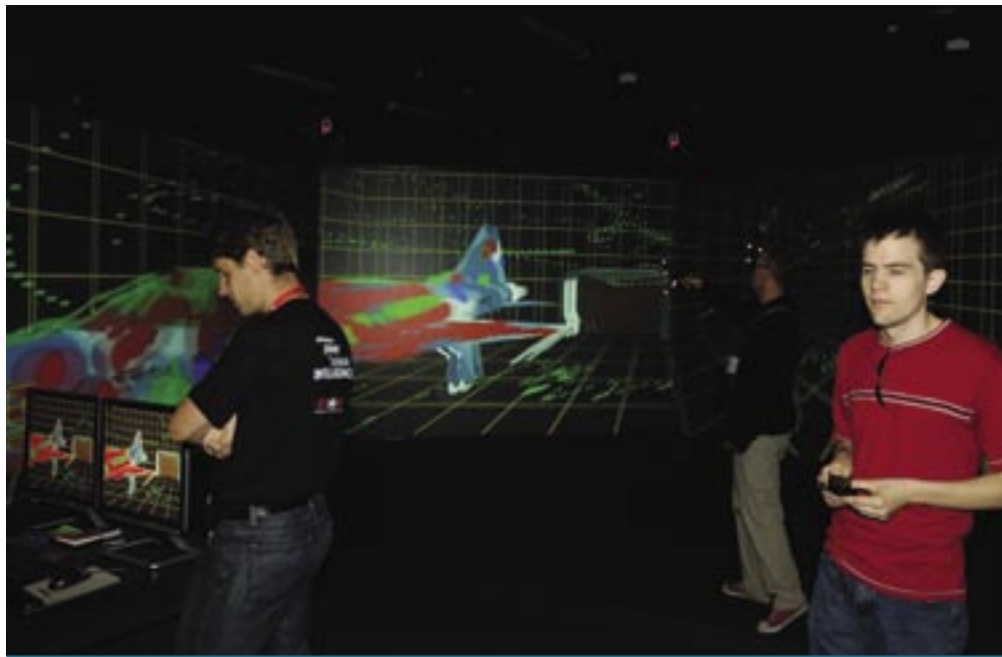
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Above: VisionSpace Centre, HIT Lab NZ, University of Canterbury

KAREN has only been live for a few weeks and already our members are exploring the possibilities their connections bring.

One of the most popular early uses of KAREN has been for video conferencing. Scion recently held a five hour video conference between Rotorua and the US to further a research collaboration. Scion Chief Executive Dr Tom Richardson remarked on the quality and reliability of the connection, 'This has simply not been possible before, the call didn't drop once'.

AUT successfully launched their new access grid suite, allowing staff and students to engage with colleagues around New Zealand and the world without leaving Auckland. Around 150 people participated over the 2-day event.

The University of Auckland used a portable access grid to work with colleagues from Oxford University on

mathematics education. Participants remarked that 'it was very exciting to be able to talk about ideas as they were being developed and to be part of the thinking process...'

HIT Lab NZ took part in an international music collaboration with several Australian and UK institutions using KAREN-enabled video links. A musician was stationed at each site and together they brought a new meaning to the term 'World Music' by playing as an ensemble, despite being separated by thousands of miles.

Given the emerging importance of video conferencing as a key KAREN-enabled application, we will be inviting observers to 'real-life' and virtual sessions of various video conferencing techniques over the coming months. We will also be introducing a dedicated website section with more information and discussion fora.

Donald Clark
Chief Executive

Profile: Paul Bonnington, Director of eResearch, University of Auckland



Above: Paul Bonnington

Paul's recent appointment to the position of Director of eResearch at the University of Auckland and his role as a KAREN champion is a match made in heaven.

As the Director of eResearch, Paul is leading the charge in assisting the University of Auckland to develop ways to use eResearch in its activities and to implement eResearch infrastructure.

eResearch is research enhanced by advanced Information Technology, particularly data capture and storage, computational processing and simulation, and advanced collaborative tools (such as, multi-point video conferencing and web portals).

'The aim of eResearch is to do 'faster, better and different' research, and KAREN (as New Zealand's high speed advanced network) is the key infrastructure underpinning this development', says Paul.

'Faster' in that data is able to be exchanged among collaborators quicker; 'better' by providing a mechanism to collect, analyse and process much more data than before; and 'different' in that it enables greater

cross-discipline activity and has spawned the emergence of new disciplines.

'We must develop eResearch ability and do it with some urgency if our science and technology is to remain competitive in an international context.'

eResearch technologies enabled via KAREN allow researchers to participate in virtual research environments or 'collaboratories'. Taking advantage of advanced networking technologies, collaboratories (such as NEES - Network for Earthquake Engineering Simulation) enable collaboration between researchers distributed by geography and discipline by providing virtual environments (often a web portal) featuring communication tools such as forums and Wikis. They also allow for storage and sharing of data and

resources, and collaborative tools such as shared 'virtual' whiteboards.

Paul says, 'This is how many international science and engineering researchers are working now - on large-scale collaborative projects based on global eResearch collaboratories. We have also seen a simultaneous movement in Europe and North America towards funding of collaboratories. We have to participate in and be members of this international community.'

'Our late entry on the world stage of advanced networking means we have the opportunity to not repeat the same mistakes of other National Research and Education Networks. However, the KAREN network is only a highway. It is now up to us to put cars on the road.'

Paul is an Associate Professor (Mathematics) and was previously Associate Dean for IT in the Faculty of Science before his appointment to the position of Director of eResearch. He has been lecturing at Auckland University since 1994 and has led many High Performance Computing developments there related to his own mathematical research interests.

Paul is also the director of BeSTGRID (www.bestgrid.org) - a TEC funded capability development project involving University of Auckland, University of Canterbury and Massey University which is largely modelled on similar overseas initiatives. BeSTGRID will deliver mechanisms, methods and tools that facilitate cross-institutional collaboration on shared information, sharing of computational resources and online visualisation of instruments and experiments.

Building Networking Muscle

REANNZ's Capability Build Advisory Panel identifies opportunities to facilitate and fund training and pilot activities. Consisting of two separate funds – the Working Group and Development Fund and the Event Support and Travel Fund – the Capability Build Fund (CBF) is designed to help raise awareness and use of KAREN and advanced networking techniques.

Significant interest was shown in the first round of the CBF, with a total of 31 applications received for the Working Group and Development Fund and nine for the Event Support and Travel Fund. The results of the Working Group and Development Fund will be announced in the next issue of *hyphen*.

"The high quality and relevance of the majority of applications received is an incredibly positive sign for the enhancement of the KAREN network and the future of eResearch in New Zealand", says John Hine, Capability Build Advisory Panel Chair.

Event Support and Travel Fund

The successful applications to the Event Support and Travel Fund come from members across the KAREN community, and span fields as diverse as bioinformatics, earthquake engineering, grid computing, and particle physics.

The Event Support and Travel Fund enables New Zealand members to attend national and international events. It is also available to support the travel of overseas-based leaders in networking technologies to and around New Zealand. A total of \$82,000 was awarded to seven successful applications to this fund.

"The successful projects exemplify the type of collaboration and sharing of expertise and ideas between organisations and countries this fund is here to support", says John.



Above: Access grid enabled eResearch collaboration between mathematics colleagues from the University of Auckland and Oxford University

Successful Applications

Project: e-Science

Leader: Dr Kris Bubendorfer, Victoria University of Wellington

Description: This grant will enable Dr Kris Bubendorfer and PhD student Kyle Chard to visit Professor Ian Foster (one of the fathers of grid computing) at the Argonne National Laboratory (ANL), Chicago. Professor Foster will then host Kyle at ANL to work on a collaborative project on Utility Grid Computing for 3 months. This visit will cement a working collaboration with the most significant grid computing research centre in the world.

Project: Networks in Geographical Education

Leader: Lex Chalmers, University of Waikato

Description: Funding will support travel activities to establish and develop an international access grid

research community in the area of geographical education. This will include the presentation by Lex Chalmers of a keynote address at the International Geographical Union meeting in London (April 07) to promote the research benefits of advanced network computing and catalyse interest in access grid participation.

Project: Earthquake Engineering on KAREN

Leader: Jason Ingham, University of Auckland

Description: The Earthquake Engineering research group is extending its remote data viewing capability to include a Mobile Field Laboratory (MFL).

This funding will enable three inter-related trips:

- Professor Michael Pender and a colleague will travel to the University of Nevada at Reno,

Building Networking Muscle (cont)

to finalise the research agenda for a project using the MFL to collect data on the response of bridge foundations

- University of Auckland researchers will attend the ANCER Conference in Hong Kong in May 2007 to publicise NZNEES in an international arena and
- Lead investigators from UK-NEES working on a comparable initiative to the NZNEES Distributed Hybrid Testing project will visit New Zealand.

Project: NZ-BioGrid

Leader: Dr Murray Grigor, University of Auckland

Description: The NZ-BioGrid initiative is coordinated by researchers at the University of Auckland, University of Canterbury, and Massey University, and will provide grid computing power designed by bioinformaticians and tailored for researchers in bioinformatics and the biological sciences. There have been similar projects implemented overseas, particularly the APAC GRID project in Australia. This grant will fund the hosting of Australian expertise in New Zealand to consult on the development of the NZ-BioGrid initiative.

Project: Access Grid NZ

Leader: Nathan Gardiner, HIT Lab NZ, University of Canterbury

Description: This funding will support the HIT Lab NZ in hosting two one day educational workshops on Next Generation Teleconferencing for current and new access grid users across the New Zealand universities and institutions. These workshops will provide valuable knowledge and practical skills for node operators who will be using their access grids via the KAREN network.

Funding will also enable the HIT Lab to be represented at the 2007 Access Grid Retreat in Chicago, Illinois, bringing together access grid coordinators / developers from around the world.

These activities will result in increased skill with teleconferencing hardware and software among users in New Zealand, and will enable better connections into the global conferencing community.

Project: NZCMS

Leader: Dr David Krofcheck, University of Auckland

Description: Dr Krofcheck is the Auckland project leader of the NZCMS, a collaboration of New Zealand scientists working on the CERN Compact Muon Solenoid (CMS) experiment at the Large Hadron Collider (LHC).

Funding enables New Zealand based collaborators to attend the World Large Hadron Collider Computing Grid workshop in Mumbai and an upcoming workshop in Taiwan.

These activities will assist with the establishment of CERN LHC Grid Computing architecture in New Zealand.

Project: Initiating IceCube High Performance and Grid Computing at the University of Canterbury

Leader: Dr. Surujhdeo Seunarine, University of Canterbury

Description: IceCube is a neutrino telescope currently under construction at the South Pole. When completed it will be the largest particle detector ever built.

This project will enable University of Canterbury researchers to visit an overseas IceCube collaboration institute to train in the use of IceTray - a simulation, reconstruction and analysis framework for IceCube.

A key outcome of this project will be to bring the University of Canterbury's IceCube group to par with overseas collaborators and to enable them to efficiently carry out IceCube research.



Above: The Crystal Palace, IceCube (image courtesy of the National Science Foundation)

Working Group and Development Fund

The purpose of the Working Group and Development Fund is to fund development and training activities that enhance advanced networking techniques among KAREN members.

The evaluation of applications to the Working Group and Development Fund is near completion, and you can read about the successful projects in the next issue of *hyphen*.

The next round of the CBF will open later this month. Information on the criteria and application process can be found at <http://www.rsnz.org/funding/karen>

23rd APAN Meeting, Manila

Asia Pacific Advanced Network (APAN) is the Asia Pacific region advanced networking body. APAN meetings are attended by eResearch practitioners, application and technical specialists from the region, with some representation from the US. These meetings have a high profile within the community and are an excellent occasion for researchers, educators and networking people in Asia and the Pacific Rim to meet, discuss and organise collaborations and to demonstrate research projects using advanced networking capability.

The 23rd APAN meeting held in Manila on 23 – 26 January this year included working groups and workshops covering a diverse spectrum of interests from earth monitoring, e-culture, e-science, middleware, Grid applications, agriculture, and medical applications. IPv6, network research and network engineering were also covered; all highly applicable areas for KAREN and its members. Donald Clark and Julie Watson from REANNZ attended along with Paul Bonnington, Director, eResearch at Auckland University.

The REANNZ Trip Report covering items of interest for New Zealand at this meeting can be found at <http://www.karen.net.nz/community-reports/>

REANNZ will be hosting the 26th APAN meeting, 3 – 7 August 2008, at the



Above: Bird influenza international collaboration demonstration workshop 23rd APAN Meeting

Millennium Hotel Conference Centre in Queenstown. Hosting this conference in New Zealand will provide significant opportunities for local researchers, educators and network engineers and specialists to learn from the Asia Pacific community at a conference they might not otherwise 'naturally' attend.

See www.apan.net

Events 2007

April

17 – 19 April
6th Annual PKI R&D Workshop,
Gaithersburg, Maryland, USA

19 – 20 April (tbc)
IPv6 hands on workshop, hosted by
REANNZ

22 – 26 April
Internet2's Spring Member Meeting,
Arlington, Virginia, USA

May

21 – 24 May
TERENA Networking Conference 2007 will
be hosted by UNI.C, the Danish IT Centre for
Education and Research, Copenhagen

June

27 – 29 June
eResearch Australasia 2007, Brisbane

July

2 – 5 July
KAREN international event and workshops
week 'Building KAREN Communities for
Collaboration' see below

10 – 13 July
QUESTnet 2007 Conference, Cairns

August

27 – 31 August
24th APAN Meeting, Xi'an, China

Building KAREN Communities for Collaboration

Dates for your Diary

2 – 5 July

Building KAREN Communities for Collaboration

Auckland (venue tba)

Planning is underway to host the first KAREN forum aimed at growing a shared understanding of networking techniques to support and augment research and education.

This forum is aimed at researchers, scientists, and academics with an interest in network-based tools to advance their projects.

Sessions will cover collaboration tools, sharing computational data and other resources, building capability and demonstrations using case studies.

The forum will cover a range of disciplines including, social sciences, arts and humanities, bioinformatics,

bioengineering, computer science, GIS research and medical and health sciences.

Presentations and case studies will be given by both international and New Zealand based participants.



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BGP and Multicast Workshops

REANNZ is running a series of hands-on BGP and Multicast workshops to help organisations to connect to and utilise KAREN to its potential.

The second workshop, held in Wellington on 15 February, was attended by representatives from NIWA, AgResearch, Otago Polytechnic and education networks.

BGP or Border Gateway Protocol is the routing protocol used to advertise routes between institutions and the KAREN network and through which users can connect to KAREN. It maintains a table of known routers, the addresses they can reach, and makes routing decisions so that the best available route is chosen.

Multicasting is a new communication technology, now possible in New Zealand through KAREN, allowing the simultaneous delivery of information from one source to groups of receivers or destinations. Via multicast, information is sent only once to members on the network, over the most efficient pathway.

Video conferencing is a common use of multicast. However, multicast enables not just live video and audio also but

multiple simultaneous streaming of numerous applications, such as data, PowerPoint presentations and virtual whiteboards.

The first two workshops have been run by François Prowse from Juniper Networks along with Clayton and David, Technical Specialists at REANNZ. François brings to the workshops specific expertise in carrier routing. While coming from a background of working with telecommunications companies, he sees these workshops as an excellent opportunity to connect with the education and research sector.

'Juniper Networks is dedicated to providing a cost-competitive solution. The advantage of products such as the Juniper J6350 series router is that there is no additional licensing needed to satisfy all KAREN requirements, meaning there are lower on-going costs,' says François.

Further workshops are likely to be held over the coming months. Keep an eye on our website for updates.



Contact Vicki Lindsay,
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Above: 15 February workshop participants



Above: François Prowse, Juniper Networks

Host your own Community Site at karen.net.nz

The new and improved KAREN website will soon be live and ready to host and develop communities of specialist expertise and discovery.

The key development you will notice is the creation of a facility to host community specific sub-sites, providing KAREN communities with their own online space.

The site also boasts a redesigned homepage to improve access to information and the addition of an events calendar.

These sub-sites provide a centralised interactive space for communities to share and discuss their ideas and

experiences in advanced networking. Features will include email listservs, events calendar and a booking facility.

Communities can own and manage their own site by appointing moderators and administrators. We have already had expressions of interest in owning a site by people from the video conferencing and high performance computing communities, so you can expect to see these communities (and your opportunity to participate) develop over the coming weeks.

The KAREN team is on the look out for people who are interested in establishing a community and / or taking on the

role of a community moderator or administrator. Get in touch with us if this sounds like you.



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