A refresher – what is GÉANT?

- Local campus networks link to national research networks (EU NRENS) that interconnect via the GÉANT backbone.
- Offers data transfer speeds of up to 10Gbps across 50,000 km of network infrastructure, of which 12,000 km is based on own lit fibre.
- 25 Points of Presence (PoPs), 44 routes incl 18 dark fibre routes.
- Trial of 40Gbps lambda over 1,400 km Frankfurt-Geneva-Milan route completed. 40 Gbps in production from Amsterdam to Geneva now planned.
The GN3 project

- Just starting 2\textsuperscript{nd} year of 4 year programme
- Partners are EU NRENs across Europe plus TERENA and DANTE (as coordinator)
- 500 individuals contributing to project equivalent to \(\sim 150\) FTEs per year
- Total Budget of \(\€181\text{M}\)
  - Roughly 50\% funding from EC, 50\% from NRENs
  - 2/3 of the budget dedicated to the GÉANT backbone
  - 90\% dedicated to operational service and devt activities
GN3 Mission

- Maintain and develop the high-speed pan-European network
- Develop innovative services
  - support existing users and
  - encourage new ones to join
- Develop new and existing partnerships worldwide to enhance connectivity and collaboration
- Bridge the digital divide and provide equal access to the European research area
- Participate in developing the future internet, providing the platform on which to foster innovation
Project Challenges

- Regional differences and geographic divide
- Balancing service delivery and continuous innovation
- Common service concept in the GÉANT Service Area
- Providing a common support interface for European and global organisations
- Defining appropriate identity service components and trust models for remote access and distributed virtual organisations
- Shaping the new GN3 architecture
12 months into GN3 – how are we doing?

- Digital divide issues
  - Some significant improvements in commercial conditions to bridge Digital divide
  - Still not a ‘level playing field’ by any means
  - Distance/geographic dependent pricing
  - Cost sharing still a vital part of the collaboration

- Balancing service delivery and continuous innovation
  - Much greater focus on Services
    - Service portfolio and catalogue
    - ‘Business case’ justification before service roll out
    - Service life cycle (produce, maintain, review, improve)
    - Common service concept in the GÉANT Service Area
  - Better coordination between service provisioning and development
12 months into GN3 – how are we doing?

- Providing a common support interface for European and global organisations
  - Coordinated approach (NRENs and DANTE) to serve users with multiple service delivery points
- Defining appropriate identity service components and trust models for remote access and for distributed virtual organisations
  - Most services need AAI for users to access. Advanced AAI pilot services planned for 2010
- Shaping the new GN3 architecture: much discussion, many ideas under investigation, no decisions made yet
# GN3 Service portfolio

## IP
- GÉANT IP Access
- GÉANT Plus
- GÉANT Lambda
- GÉANT MPVPN

## Multi-domain Capacity

## Managed Services
- Optical private networks

## Operations support services
- perfSONAR MDM
- eduPURT
- Multi Domain Security

## Roaming &AAI
- eduroam
- eduGAIN
- eduPKI

---

### Value Added functions

<table>
<thead>
<tr>
<th>IPv6</th>
<th>Multicast</th>
<th>10G circuits</th>
<th>1G circuits</th>
<th>cNIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premium IP/AMPS</td>
<td>i-SHARE</td>
<td>autoBAHN</td>
<td>perfSONAR</td>
<td></td>
</tr>
</tbody>
</table>

### Value Added functions

<table>
<thead>
<tr>
<th>cNIS</th>
<th>perfSONAR</th>
</tr>
</thead>
</table>

### Value Added functions

<table>
<thead>
<tr>
<th>PMA</th>
<th>TACAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catch-All CA</td>
<td>WSSO</td>
</tr>
</tbody>
</table>

---

connect • communicate • collaborate
GN3 Service Management framework

- Monitor and report
- Take corrective action

User requirements
- Define service
- Build business case

Design and develop the service solution
- Design measurement methods and metrics

Build & test service solution
- Set up change management
- Release and deployment management

Set-up Service Desk
- Service portal & access

* Picture ITIL
EUMEDCONNECT Network Update

Connects:

• 7 MED countries
• 700 academic and research sites
• 2m + users

• Still 34 – 155 Mbps capacities

• Telco markets are still largely uncompetitive

• EUMEDCONNECT provides The only R&E links to GEANT
EUMEDCONNECT Funding

- EUMEDCONNECT 2004 – 2007
  - EC funding 10M Euro, 80% share of costs

- EUMEDCONNECT2 Q2 2008 – Q1 2011
  - EC funding 4M Euro, 54% share of costs

- Possible EUMEDCONNECT3 support being considered by EC, unknown outcome
  - Formation of Arab States Research and Education Network (ASREN) just announced: best chance for sustainability
  - Supported by UN Global Alliance for ICT and Development
  - Interest in extending network into Gulf States
TEIN project overview

- TEIN2 network 2006 – 2008
  - 10 East Asian countries
  - 10M Euro EC funding (80% funding for beneficiaries)

- TEIN3 network 2009 – 2011
  - 19 East and South Asian countries
  - 11.4M Euro EC funding (beneficiaries funding increasing over time)

- Over 45 M users connected
• TEIN3 runs to end 2011

• New organisation being formed to take on TEIN programme, lead by Korea with support of TEIN partners and APAN

• Possible TEIN4 programme funded by EC working with Korea being considered
Connectivity being provided for Kyrgyzstan, Tajikistan and Turkmenistan, aiming for mid 2010. Initial circuits link to Global R&E community via Hong Kong.

- Kazakhstan and Uzbekistan may join later.
- Replacing Silk programme.
- See http://caren.dante.net/
And other new developments for 2010..

- Caribbean
  - C@ribnet aims to interconnect the Caribbean islands to each other, to RedCLARA and GÉANT (managed by CKLN and the World Bank)

- Sub-Saharan Africa: AfricaConnect
  - Following completion of Feasibility study, AfricaConnect contract being negotiated with EC
Maps and More Information

- www.geant.net
- http://global.dante.net

- Or an email to
  - irm@dante.net

Thanks for your attention!