GÉANT & RedCLARA:
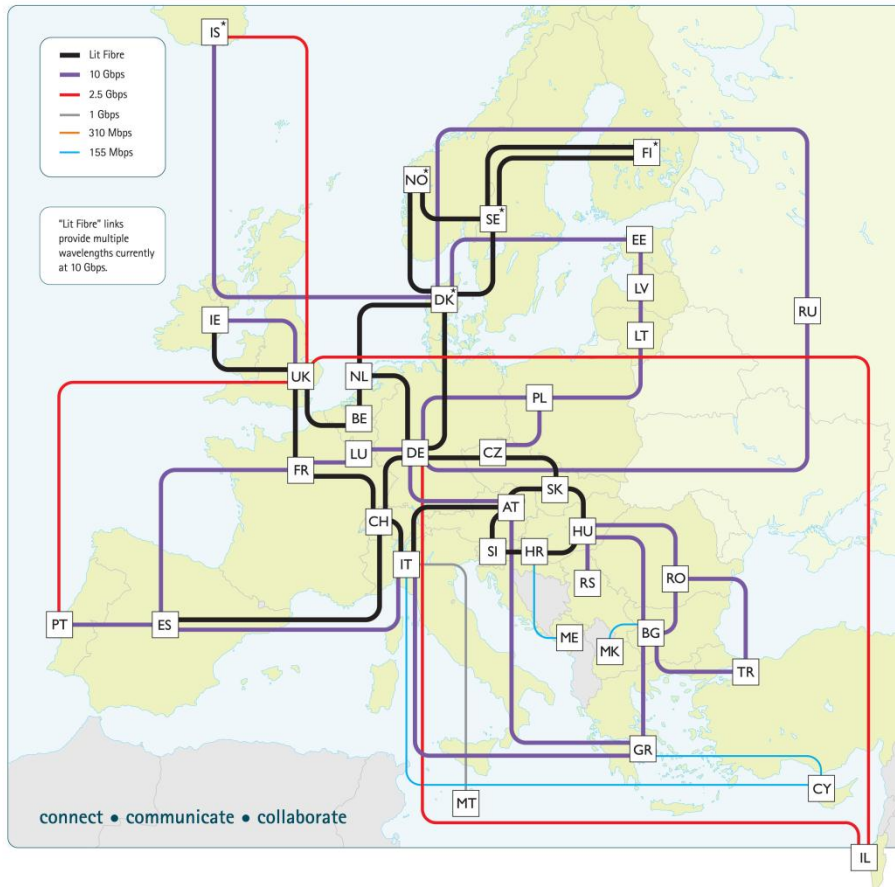## Interconnecting the science and education communities of Europe and Latin America

- 7º Encuentro Internacional de Investigadores de la Red Americolatina de la Cooperación Universitaria
- Friday, 14th October 2011
- Tom Fryer, International Relations Officer, DANTE

connect • communicate • collaborate

The GÉANT Network

GÉANT topology – End 2010

- 7th generation of the pan-European Research and Education Network infrastructure – continuation of a success story

- Connects 40 European countries through 32 NREN Project Partners & 4 NREN Associates

- Serves over 8,000 research and education establishments across Europe

- 40 million users
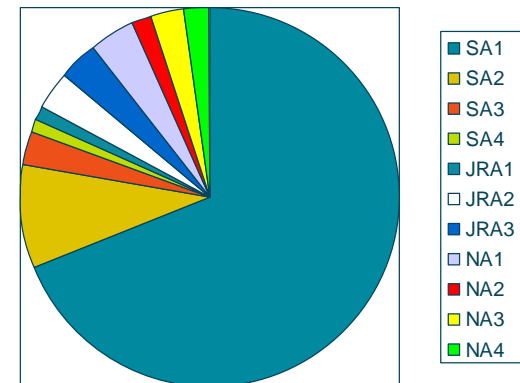
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GN3 – The GÉANT Funding Project

- Four-year project which commenced on 1 April 2009

- Partners are NRENs across Europe plus TERENA and DANTE

- Total Budget of €181M
  - €93M contributed by the EC
  - €88M contributed by the partners
  - 2/3 of the budget dedicated to the GÉANT backbone

GN3 Budget split

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GÉANT NRENs:
Partners & Associates

GÉANT Partners

• ACOnet	Austria		• NORDUnet	Nordic region (Denmark, Finland, Iceland, Norway, Sweden
• Belnet	Belgium			
• BREN	Bulgaria		• PSNC	Poland
• CARNet	Croatia		• FCCN	Portugal
• CYNET	Cyprus		• RoEduNet	Romania
• CESNET	Czech Republic		• AMRES	Serbia
• EENet	Estonia		• SANET	Slovakia
• RENATER	France		• ARNES	Slovenia
• DFN	Germany		• RedIRIS	Spain
• GRNET	Greece		• SWITCH	Switzerland
• NIIF	Hungary		• ULAKBIM	Turkey
• HEAnet	Ireland		• JANET	United Kingdom
• IUCC	Israel			
• GARR	Italy		**Associate NRENs**	
• SigmaNet	Latvia		• BASNET	Belarus
• LITNET	Lithuania		• JSCC	Russia
• RESTENA	Luxembourg		• RENAM	Moldova
• MARNet	Macedonia		• URAN	Ukraine
• University of Malta	Malta			
• MREN	Montenegro			
• SURFnet	Netherlands			

http://www.geant.net/About_GEANT/Partners/pages/home.aspx

Not Just Connectivity:
Services to Benefit End Users

- Network monitoring perfS●NAR MDM

- Static and bandwidth-on-demand point-to-point connectivity

- eduroam: roaming service

- eduGAIN: Federated Authentication and Authorisation Infrastructure

- educonf: European videoconferencing service

Regional Projects
EUMEDCONNECT2

- **EUMEDCONNECT2** benefits seven NRENs across North Africa and the Middle East:
    - **ARN** (Algeria)
    - **EUN** (Egypt)
    - **CCK** (Tunisia)
    - **JuNet** (Jordan)
    - **MARWAN** (Morocco)
    - **Birzeit University**/**Al Quds Open University** (Palestinian Territories)
    - **SHERN** (Syria)

- Approximately 2 million users in around 700 institutions across North Africa and the Middle East.

- EC provides €4m (approx. 50%) towards the costs of EUMEDCONNECT2. Remaining funds are provided by the Mediterranean partners.

- Project continues to mid-2011.

- Arab-lead Arab States Research and Education Network (ASREN) initiative was launched in 2010

- EC has confirmed its intention to fund a further 3-year phase of EUMEDCONNECT
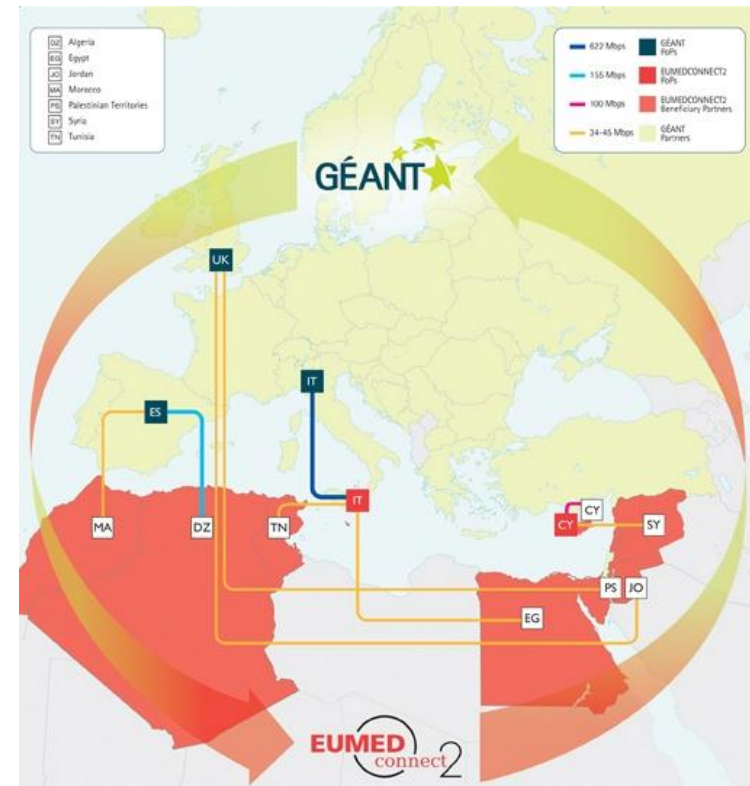
Regional Projects
CAREN

- Central Asia Research and Education Network

- Launched in 2009, currently interconnecting Kyrgyzstan, Turkmenistan and Tajikistan (Kazakhstan and Uzbekistan also eligible to join)

- Replaces low-capacity satellite with fibre optic connectivity (interconnection to GÉANT via TEIN3)

- Serves half a million users at over 500 institutions

- CAREN receives 80% (€5m) of its €6.25m budget from the EC

- Supports applications very relevant to the region, such as seismology, textile research etc.

Regional Projects
TEIN3

TEIN3 Backbone Topology June 2010
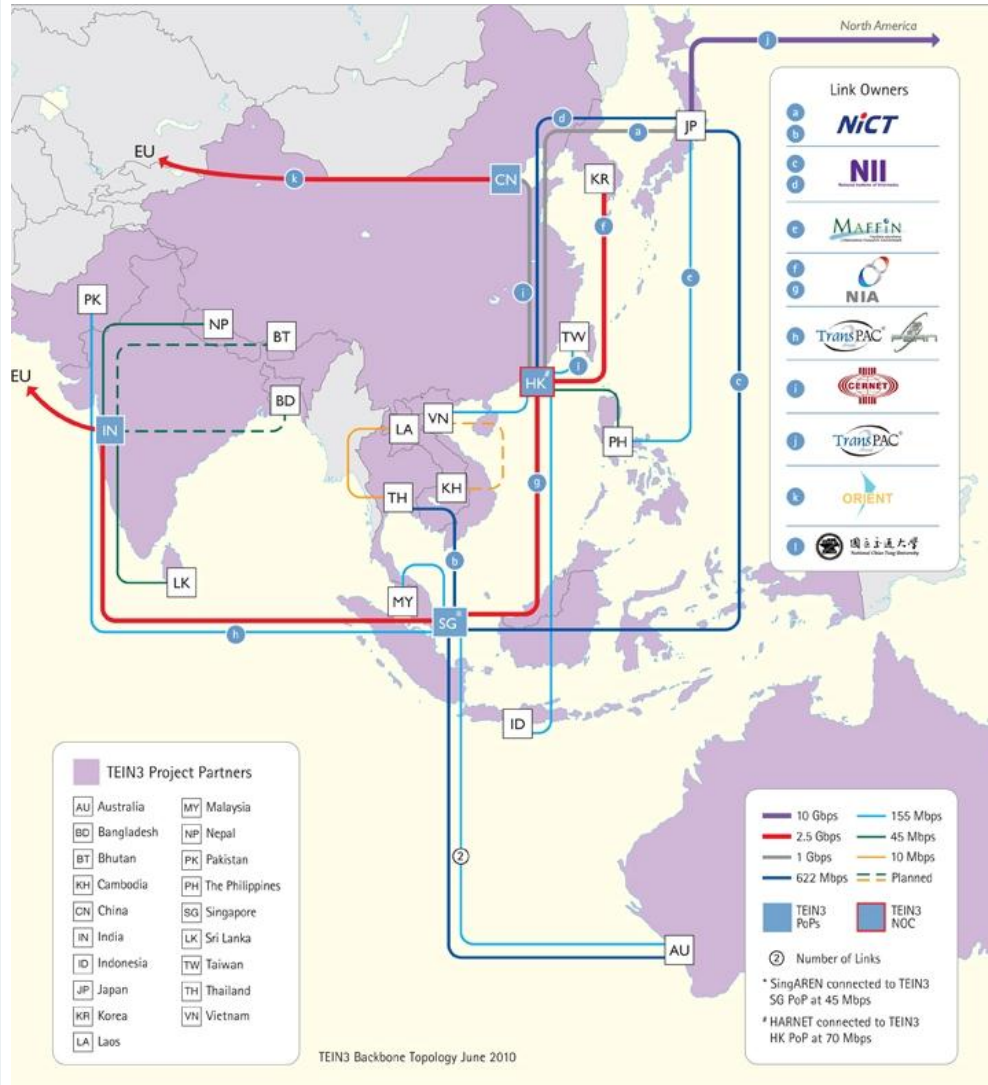
- 13 beneficiary partners **(BD, BT, KH, IN, ID, LA, MY, NP, PK, PH, LK, TH, VN)**

- 6 non-beneficiary partners **(AU, CN, JP, KR, SG, TW)**

- 45M+ connected users

- 4 network hubs

- 21.4M Euro EC funding TEIN2/3 + significant contributions from non-beneficiary partners and TransPAC2

- The TEIN* Cooperation Center is being established to take responsibility for a 4th phase of the TEIN programme from 2012
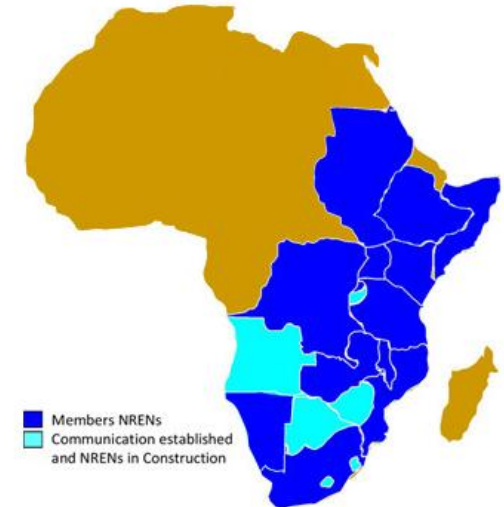
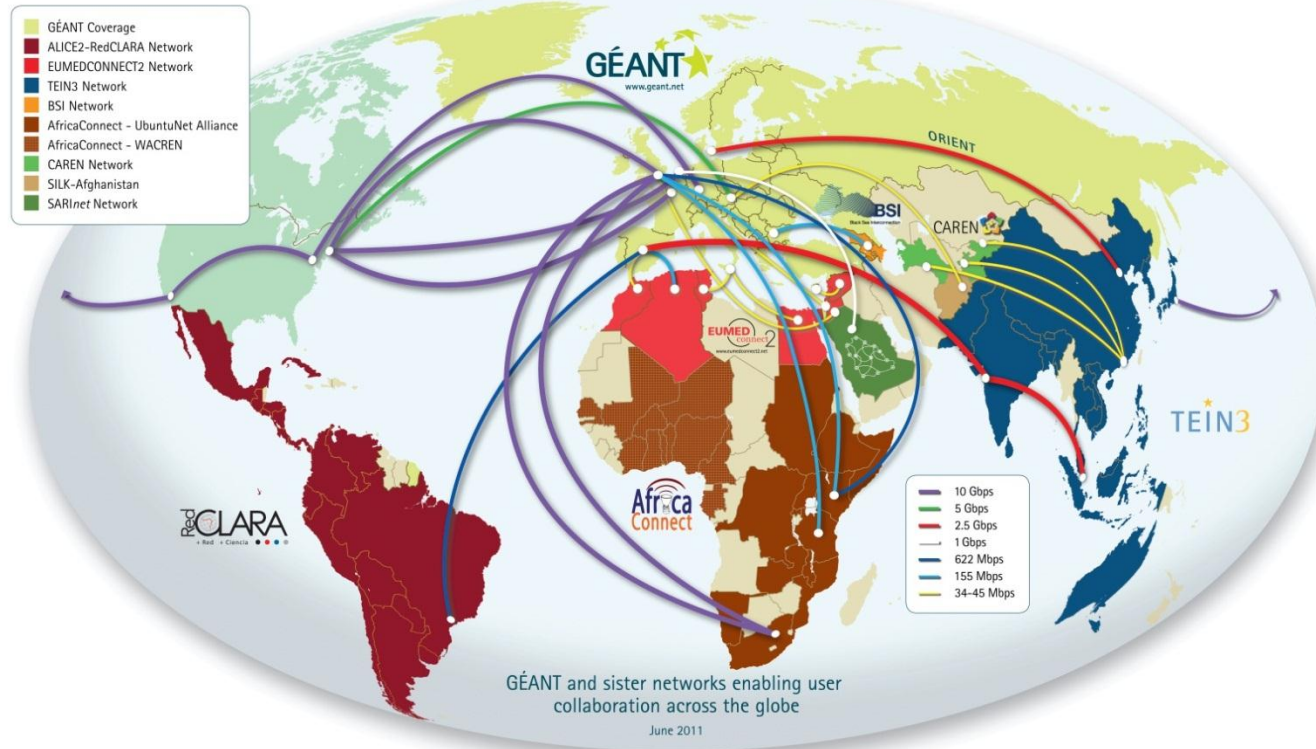connect • communicate • collaborate

Regional Projects
AfricaConnect

- 4-year project divided in Planning/Procurement Phase and Operational Phase
  - Started in May 2011
  - Planning and Procurement (up to 12 months)
  - Operational Phase (months 13-48)
- Total Budget of 15 M Euro (divided in 80:20) for AfricaConnect

- Partners:
  - UbuntuNet Alliance
  - UbuntuNet Alliance member NRENs
  - WACREN and Association of African Universities
  - DFN, GARR, FCCN, HEANET, JANET, SURFnet
  - DANTE as the Coordinating Partner

Members NRENs
Communication established
and NRENs in Construction

GÉANT At the Heart of Global Research Networking

GÉANT and sister networks enabling user collaboration across the globe

June 2011

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GÉANT is co-funded by the European Commission within its 7th R&D Framework Programme.
This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of DANTE and can under no circumstances be regarded as reflecting the position of the European Union.

Global Connectivity – NRENs

GÉANT

Americas

• CANARIE	Canada
• CEDIA	Ecuador
• CoNARE	Costa Rica
• CUDI	Mexico
• ESNet	USA
• INNOVA|RED	Argentina
• Internet2	USA
• NISN (NASA)	USA
• NLR	USA
• RAAP	Peru
• RAGIE	Guatemala
• RAICES	El Salvador
• RAU2	Uruguay
• REACCIUN2	Venezuela
• RedCyT	Panama
• RENATA	Colombia
• REUNA	Chile
• RNP	Brazil
• USLHCNet	USA

Middle East & Africa

• ANKABUT	United Arab Emirates
• ARN	Algeria
• Birzeit University/	Palestinian Territories
• Al Quds Open University	
• EUN	Egypt
• JuNet	Jordan
• KENET	Kenya
• MARWAN	Morocco
• Qatar Foundation	Qatar
• CCK	Tunisia
• SARInet	Saudi Arabia
• SHERN	Syria
• TENET	South Africa
• TERNET	Tanzania

Asia & Oceania

• AARNet	Australia
• AfRENA	Afghanistan
• AM NREN	Armenia
• AzRENA	Azerbaijan
• CERNET	China
• CSTNET	China

Asia & Oceania (cont.)

• GRENA	Georgia
• INHERENT/ITB	Indonesia
• JGN2plus/NICT	Japan
• HARNET	Hong Kong
• KOREN/NIA	Korea
• KRENA-AKNET	Kyrgyzstan
• KREONET2	Korea
• LEARN	Sri Lanka
• LERNET	Laos
• MAFFIN	Japan
• MYREN	Malaysia
• NKN	India
• NREN	Nepal
• PERN2	Pakistan
• PREGINET	Philippines
• SINET3/NII	Japan
• SingAREN	Singapore
• TANET/NCTU	Taiwan
• TARENA	Tajikistan
• ThaiREN/ThaiSARN	Thailand
• ThaiREN/UniNet	Thailand
• TuRENA	Turkmenistan
• VINAREN	Vietnam

61 NRENs reached outside Europe via the major regional R&E infrastructures

GÉANT Global Connectivity Website

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Astronomy

Large Hadron Collider

Treating epilepsy
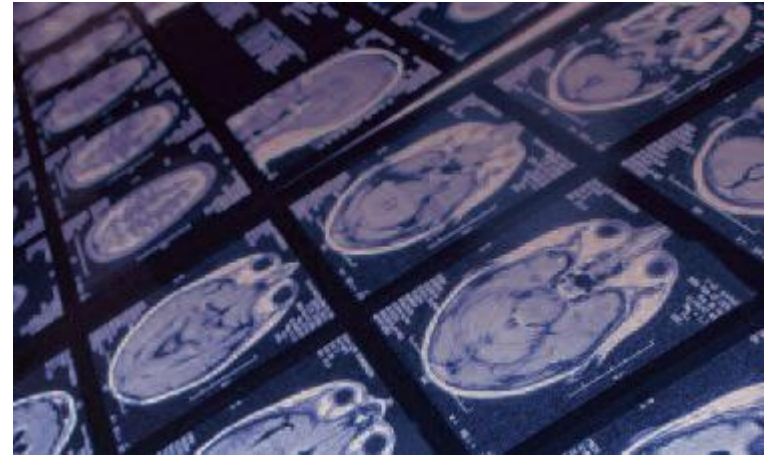
Research for the early diagnosis of neuro-degenerative diseases

Who uses GÉANT and its Global Links? e-learning

- Universities in Europe link up with academic institutions in Jordan and Palestine to improve and foster higher education in the Middle East by means of distance learning

- Schools link up by videoconference to enable joint project work, cultural exchanges, etc.

Who uses GÉANT and its Global Links?
Disaster Warning and Crisis Support

Wildfire management

Typhoon forecasting

- Tsunami early-warning system
- Post-earthquake relief efforts

Digital recreation of lost instruments:

- Epigonion & barbiton – Ancient Greece
- Quena de hueso - Nasca culture (southern Peru)
- Tambor – Gentilar culture (northern Chile)

Music and dance performances created from volcano seismic data

Latin America and Europe: Research and Education Collaborations

GÉANT

- R&E network connectivity can help collaboration by supporting:
    - Data transfer
    - Distributed data storage
    - Grid computing
    - Videoconferencing
    - Remote instrumentation

- FP7-funded projects involving Latin American and European participants
- RedCLARA & GÉANT connectivity can help these and other collaborations achieve their goals

Thank you for your attention!

Tom.Fryer@dante.net