



Connect. Communicate. Collaborate

GÉANT2 Network Update

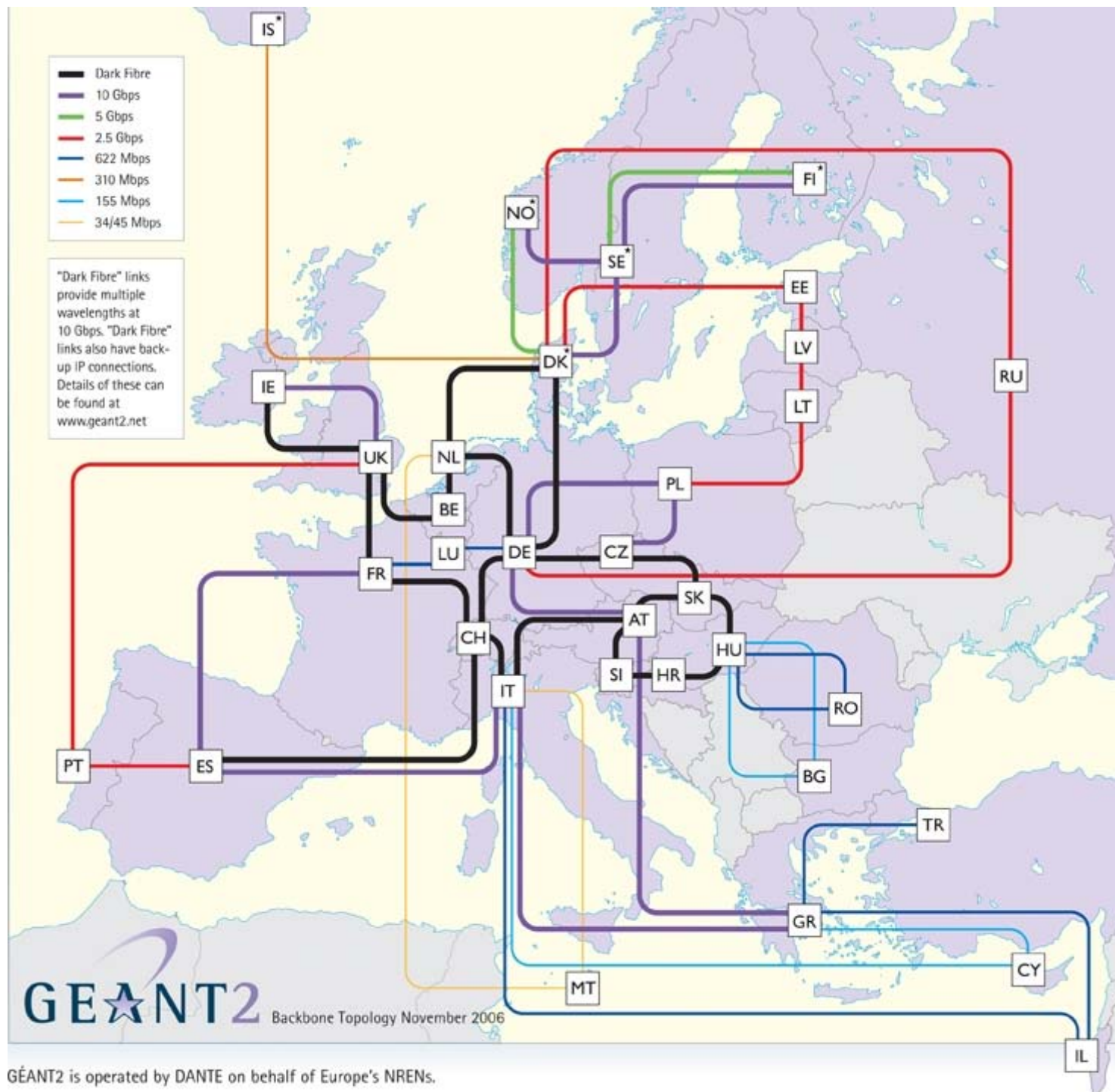
Hans Döbbeling, DANTE

ENPG, Dublin, 28.11.2006



GÉANT2

Topology Nov 2006



GÉANT2 is operated by DANTE on behalf of Europe's NRENs.

European Footprint



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- SI-HR & HR-HU handed over and accepted, backups
- SI-AT (Fin) waiting for fibre (MTAG)
- UK-IE fibre contract with GX and BT-ESAT
CBF backup with SJ5/HEAnet
- Relocation of London PoP ongoing
- DK-RU & FR-RU upgrade to 2.5 Gb/s mid Nov 06
- MT dual links
- CY capacity upgrade



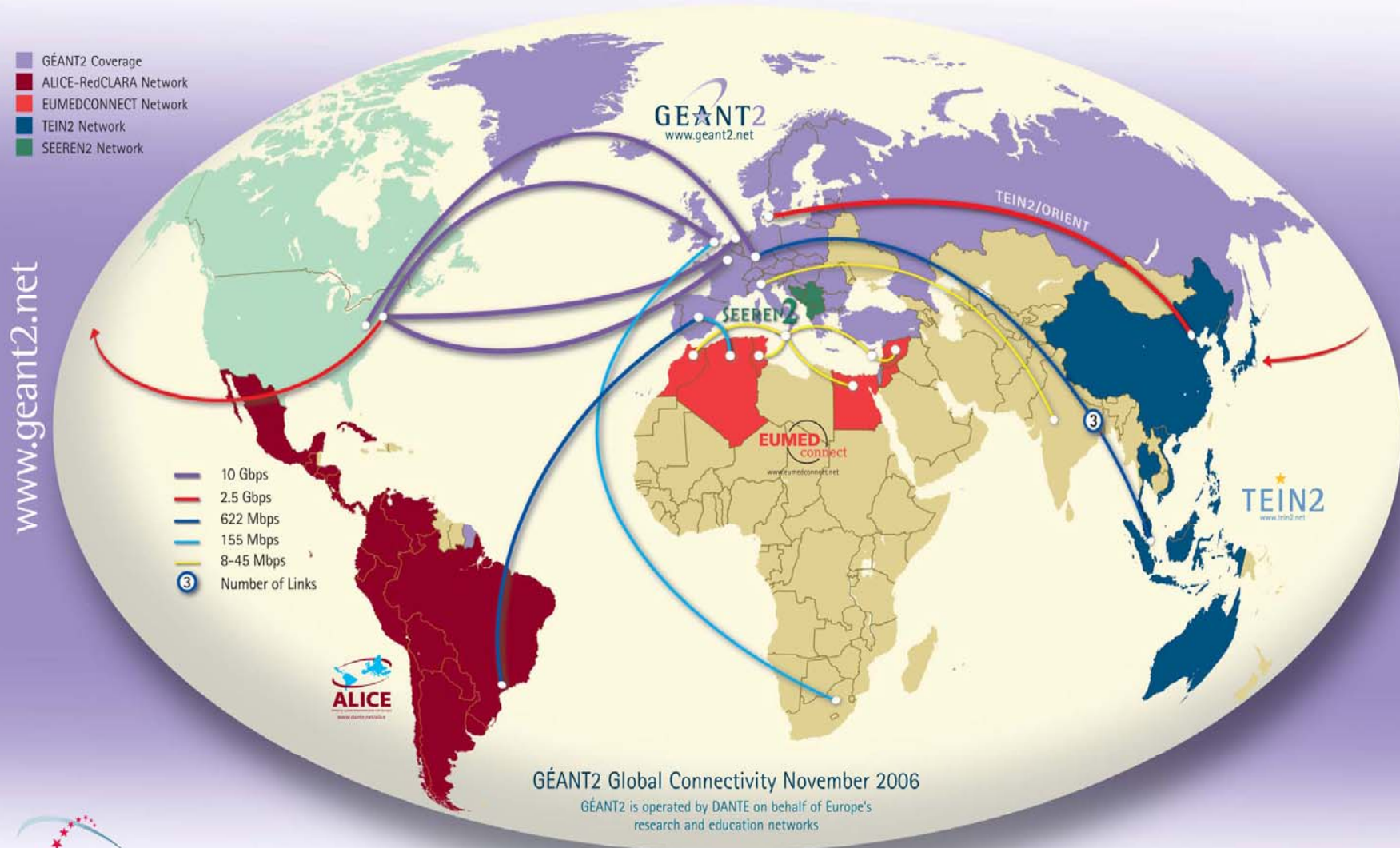
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GN2 Developments

- DF link to Ireland
- Fibre from Global Crossing and BT ESAT
- Optical equipment delivery in wk 50,
- commissioning in January

- Relocation of the GÉANT2 UK POP in London

GEANT2 At the Heart of Global Research Networking



Global Connectivity



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- ORIENT:
 - DK-Beijing/CN 2.5 Gb/s delivered
- GN2/SA4:
 - Milano-Mumbai 45 Mb/s operational
 - Frankfurt-Washington 10 Gb/s production (IP) peering with Abilene
 - Paris-New York 10 Gb/s production (circuits)
- I2/HOPI: New York-London 10 Gb/s production (circuits)
- NSF/IRNC: NYC-Amsterdam 10 GB/s production (IP)

Wavelengths on GÉANT2



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- **LHC-OPN (CBF not shown here)**
 - CNAF-CERN prod.
 - GRIDKA-CERN prod.
 - SARA-CERN prod.
 - RAL-CERN monitoring
 - NDGF-CERN GN2 part in place
 - PIC-CERN GN2 part in place
 - NL-CERN for TRIUMF/CA end Oct 2006
 - NL-CERN for ASCC/TW end Nov 2006



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E2E Layer1/2 circuit Monitoring

http://cnmdev.lrz-muenchen.de/e2e/lhc/G2_E2E_index.html

Wavelengths on GÉANT2



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- **DEISA**

- **DEISA operate a CISCO Catalyst 6509 collocated with GN2 and DFN in Frankfurt**
- Simple star topology
- Jülich (NIC) and München (LRZ,RZG) already connected with WL on DFN X-WIN
- SARA/NL-LRZ/DE on CBF DFN/SURFnet

- BSC/ES-Frankfurt handover planned January 07
- SARA/NL-Ffm handover planned for 15.12.2006
- IDRIS/FR-Frankfurt receiving order

Wavelengths on GÉANT2



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- Other
- CZ-NL committed delivered
- UK-NL light-to-light order being prepared
- DK-NL backup for NORDUnet-SURFnet fibre (endpoints within the two NRENs) ordered
- Test-bed (JRA4, SA2) ordered, delivery Jan 07

GN2 Wavelength.jpg



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Graphics GN2, NREN, CBF



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GE and LSP Circuits required



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- GE LHC Univ. Praha-GRIDKA GN2/CZ part available
- LSP Grids Grid5000/FR-Naregi/JP waiting for NII/SINET
- LSP LHC IN2P3/FR-IHEP/CN waiting for CAS/CSTNET
- GE HEP IN2P3/FR-FNAL/US production
- GE HEP IN2P3/FR-FNAL/US production
- GE Brno/CZ-Baton Rouge/US John Vollbrecht/I2
- GE exp. München-Philadelphia deferred

- In control of GE/GÉANT+ services!

IN2P3-FERMILab 2xGE Path setup

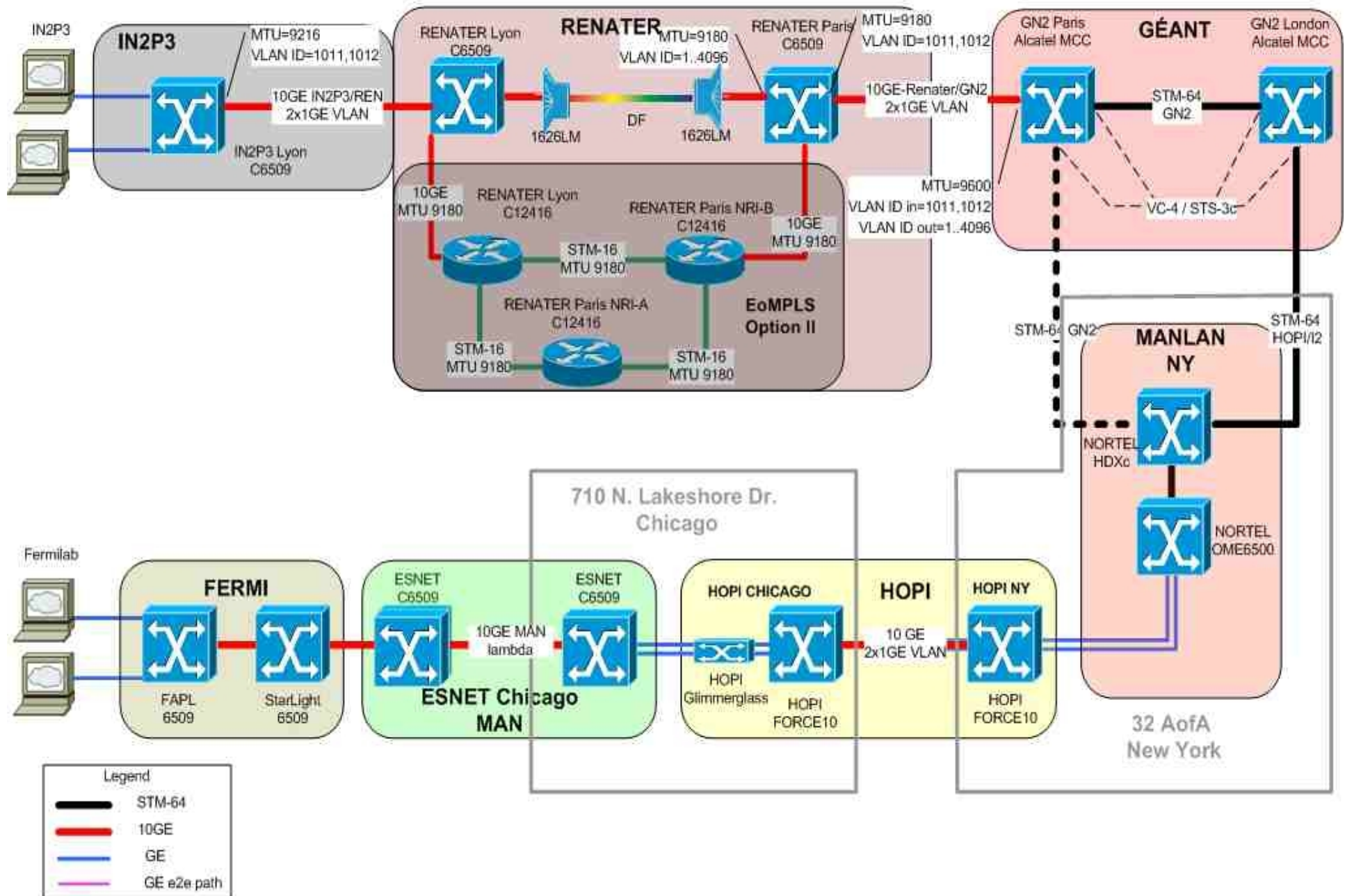


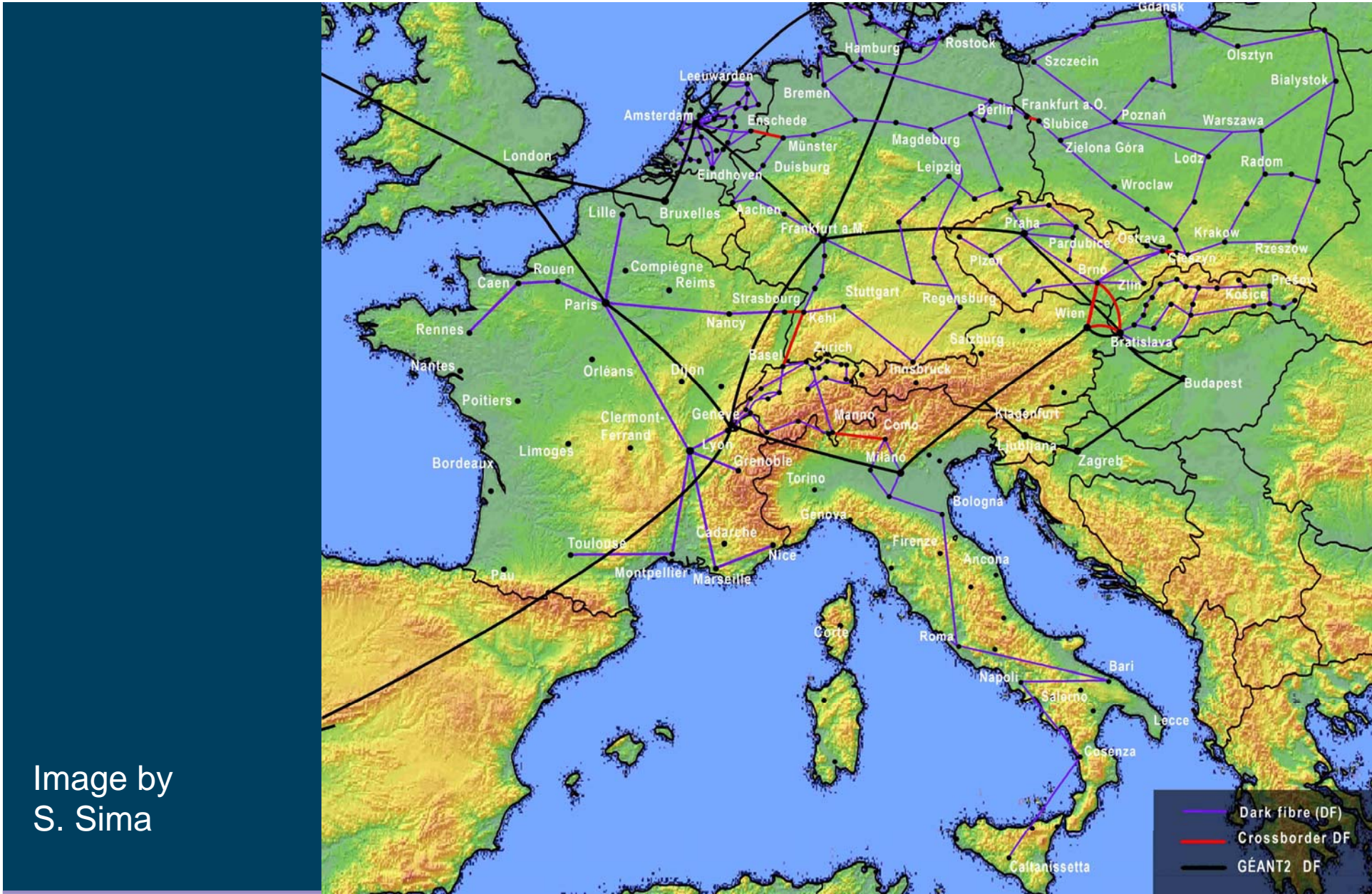
Image Operations Database



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Services based on Cross Border Fibre



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- Drivers
 - Economy to the Project
 - Refinement of mesh
 - Enlargement of fibre footprint (PL, PT)
 - Dedicated project OPNs
- MoU between NRENs and DANTE
- Inclusion into GN2 financial framework

GÉANT2 Workplan



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CBF 2006

Re-tender early 2007

– Routers, additional areas

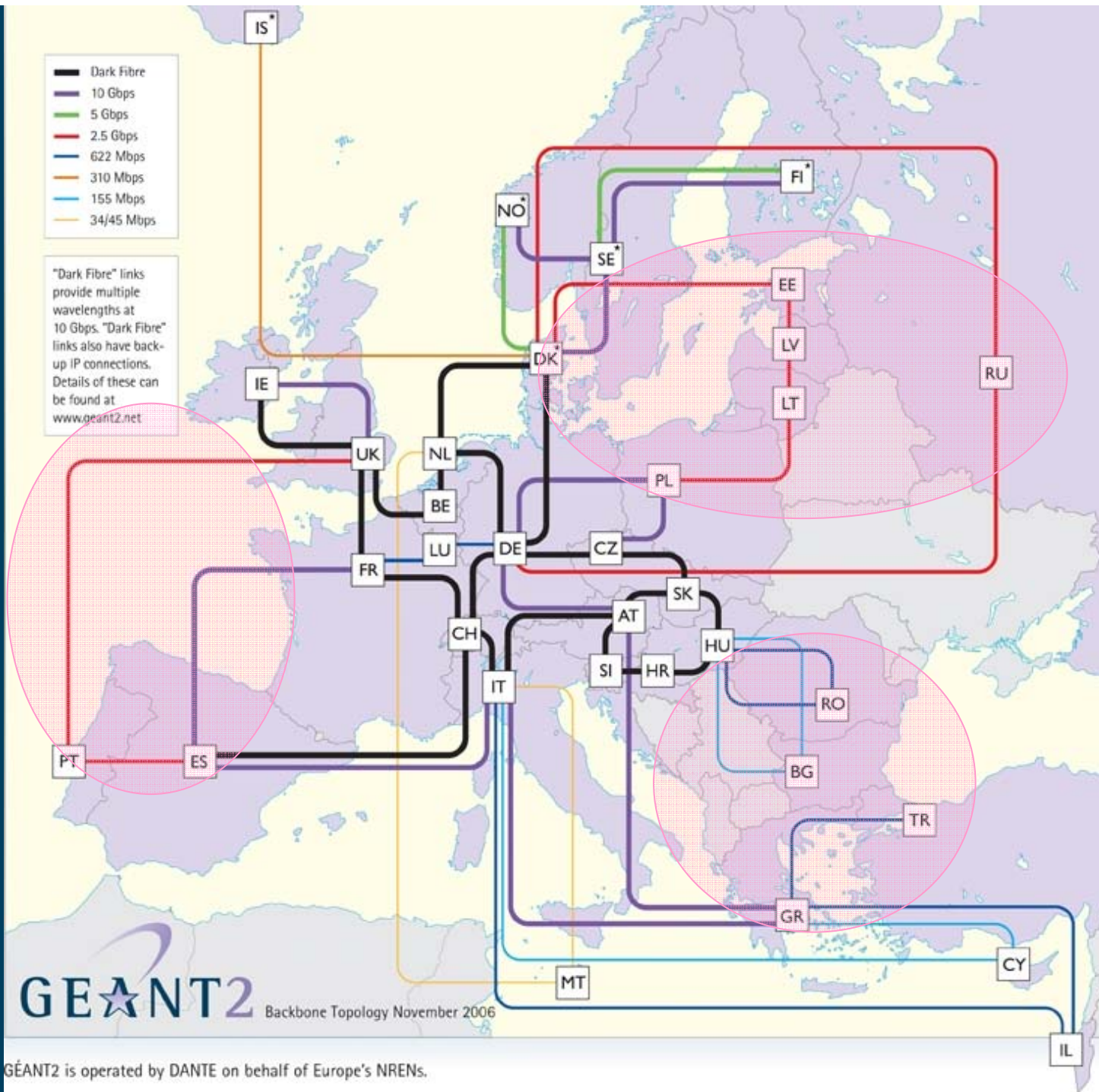
Foresight Study 2006-2007

JRAs 1,2,5 Transition to Service in 2007

Multi-domain Operational procedures

NA8 training activities





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Future of GÉANT - GÉANT3



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- Slowly shrinking funds in FP7, call in 2008
- Restructuring in INFOSOM
(GÉANT & Infrastructures, Testbeds)
exchange of project officers ?
- Growing geographical coverage (SEE*)
- Growing importance of operational / technical skills
- Growing importance of global connectivity

PORTA OPTICA

distributed optical gateway
to Eastern Europe



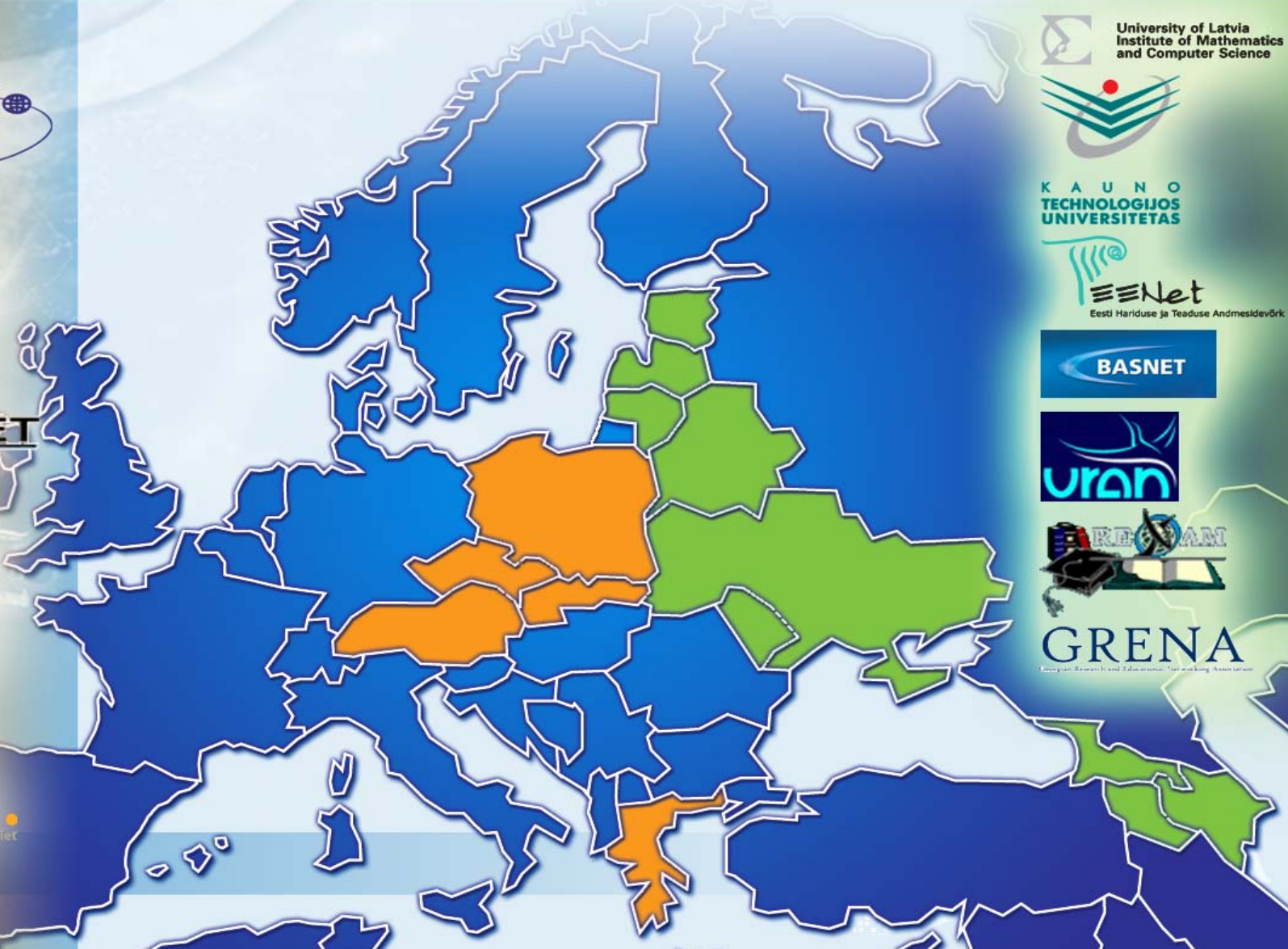
KAUNO
TECHNOLOGIJOS
UNIVERSITETAS



Eesti Hariduse ja Teaduse Andmesidevõrk



GRENA
European Research and Educational Networking Association



GÉANT Challenges



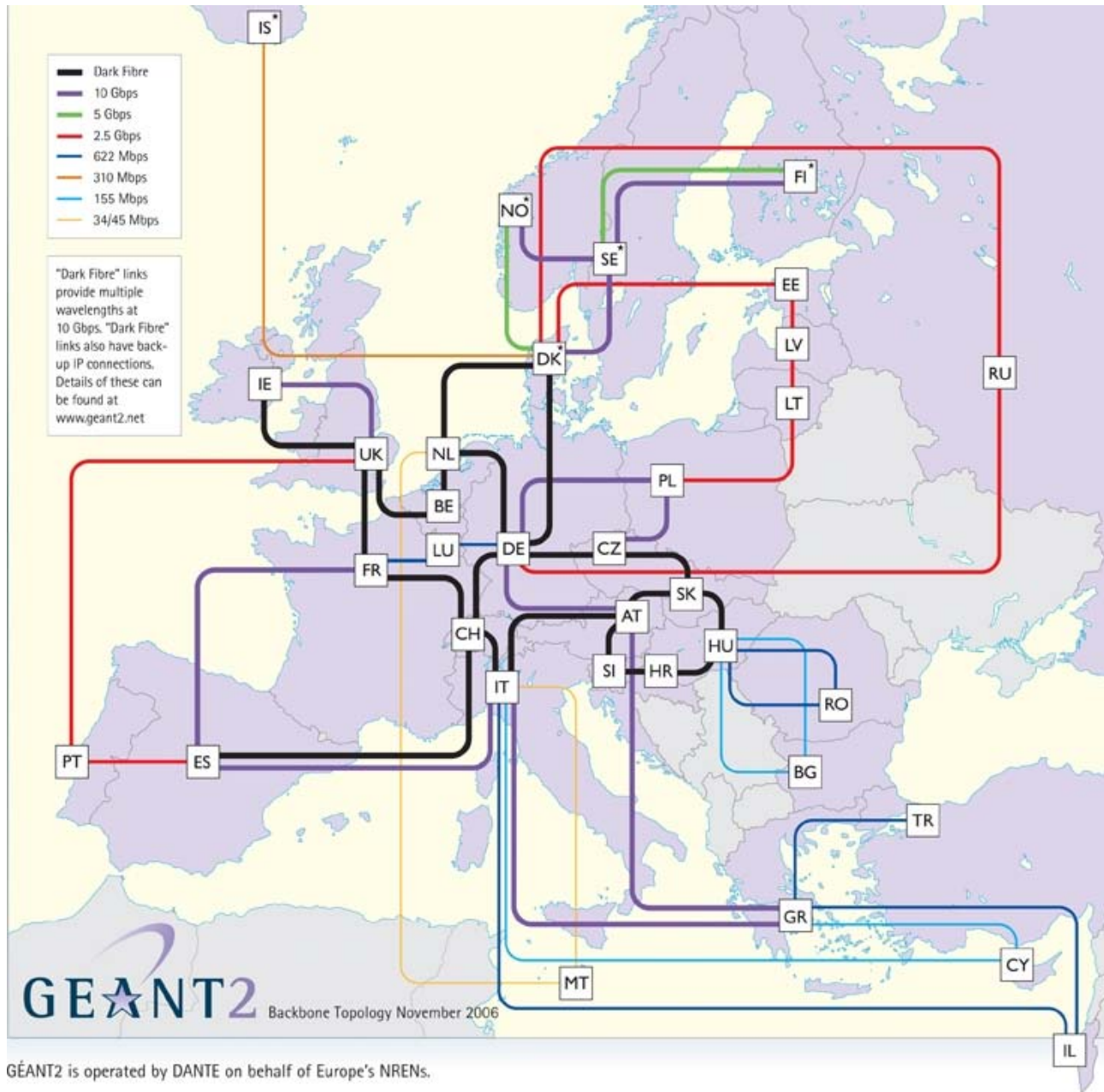
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- DANTE shareholders (15) are a subset of GN2 consortium Partners (30)
- Different national funding situations
- Formation of regional groups
- A new DF oriented cost-sharing
- How many OPN customers will there be?
- Acceptable Use Policies and Commodity IP
- Technology steps: 40G, 100G, ROADM,
- Digital Inclusion - limits of eastern expansion



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GÉANT2 Topology November 2006



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