



September 18, 2012

INTERNET2 GLOBAL PARTNERS UPDATE

EDWARD MOYNIHAN

PROGRAM MANAGER, GLOBAL PROGRAMS

Update: Global Challenges

- Ensure access to globally distributed science facilities (LHC, ITER, Gemini)
- Support Internet2 members deploying campuses overseas
- Facilitate development of coherent, global network capabilities, architectures that support growing collaborations
- Strengthen and support existing global partnerships and projects
- Expand support for development of national R&E networks in countries important to members



Internet2 Global Programs

- 2012 – “Repositioning” of Internet2 International Relations as Internet2 Global Programs.
 - Reviewing and repositioning staff and key projects
 - Ann Doyle as Interim Director
 - Management: Edward Moynihan, Dale Finkelson
 - Expanded consulting pool for strategy and for geographic focus
 - » Europe - Erik-Jan Bos
 - » Asia/Pacific Rim – Jim Williams, Shuigen Xiao
 - » Middle East – John Chapman
 - » Latin America/Caribbean – Heidi Alvarez
 - » Africa – ? (Bos and Doyle for now)

AMERICAS

CANARIE (Canada)
CEDIA (Ecuador)
CNTI (Venezuela)
CR2Net (Costa Rica)
CUDI (Mexico)
INNOVA|RED (Argentina)
REUNA (Chile)
RNP [FAPESP] (Brazil)
SENACYT (Panama)

MULTI-NATIONAL

AAU (Africa)
APAN (Asia - Pacific)
CKLN (Caribbean)
CLARA (Latin America and Caribbean)
DANTE (Europe)
NORDUnet (Nordic Countries)
TERENA (Europe)
UbuntuNet Alliance (Africa)
University of the West Indies (Caribbean)

EUROPE

ARNES (Slovenia)
BELNET (Belgium)
CARNET (Croatia)
CESnet (Czech Republic)
DFN (Germany)
FCCN (Portugal)
GARR (Italy)
RENATER (France)
GRNET (Greece)
HEAnet (Ireland)
HUNGARNET (Hungary)
JISC, JANET (United Kingdom)
PSNC, PIONIER (Poland)
RedIRIS (Spain)
RESTENA (Luxemburg)
RIPN (Russia)
SANET (Slovakia)
SURF (Netherlands)
SWITCH (Switzerland)

ASIA and PACIFIC RIM

AARNet (Australia)
ANF (Korea)
CDAC, ERNET (India)
CERNET, CSTNET, NSFCNET (China)
JAIRC (Japan)
JUCC (HongKong)
MYREN, MDeC (Malaysia)
NECTEC, UniNet (Thailand)
NREN (Nepal)
PERN (Pakistan)
REANNZ (New Zealand)
SingAREN (Singapore)
TWAREN (Taiwan)
VinaREN (Vietnam)

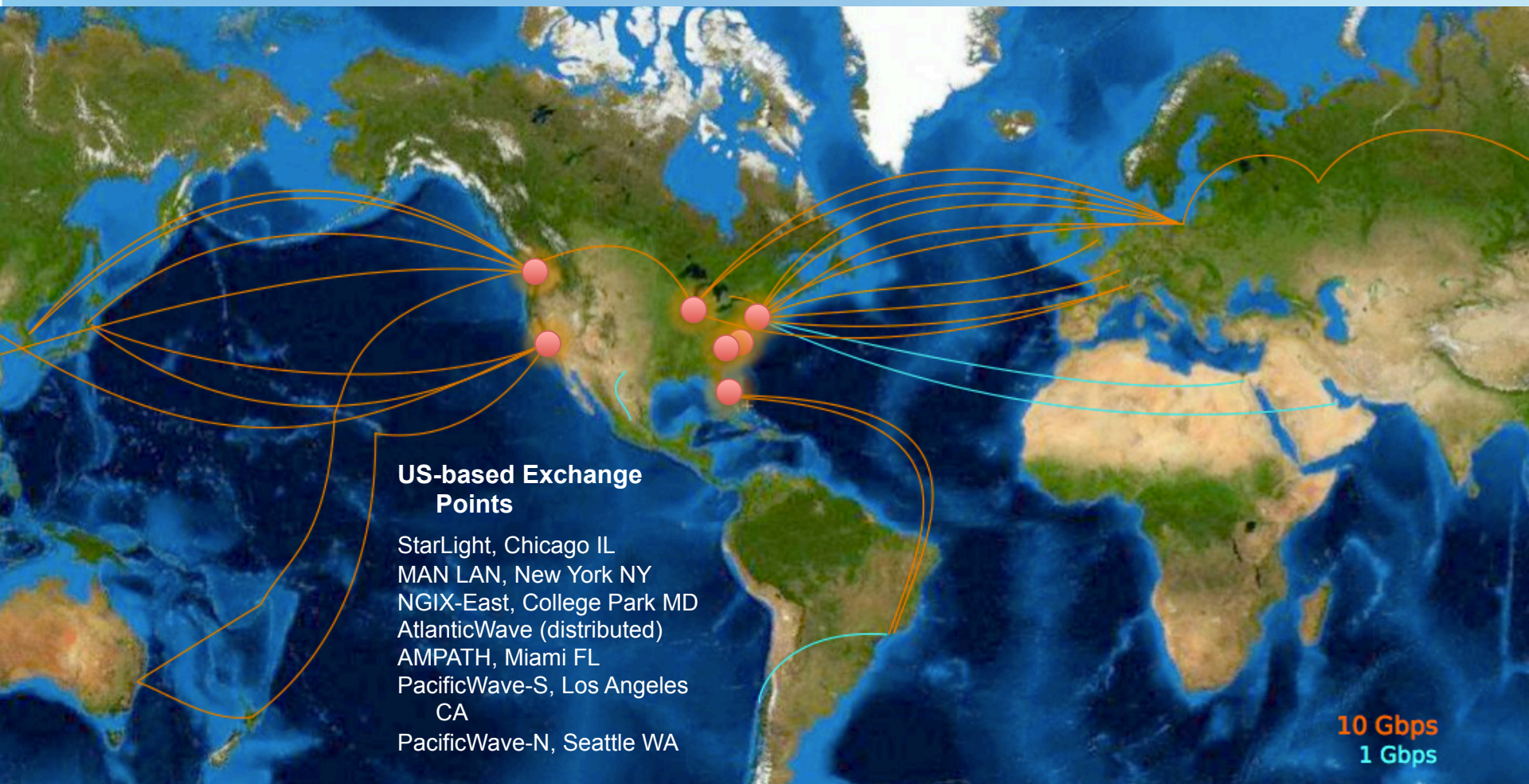
MIDDLE EAST and GULF STATES

ANKABUT (UAE)
Israel-IUCC (Israel)
MCIT [EUN, ENSTINET] (Egypt)
Qatar Foundation (Qatar)
KACST (Saudi Arabia)

AFRICA

TENET (South Africa)
TERNET (Tanzania)
NUC (Nigeria)

US-based International Exchange Points



Current Networks Reachable

AFRICA

Algeria (ARN)
Egypt (EUN / ENSTINET)
Kenya (KENET)
Morocco (MARWAN)
South Africa (TENET)
Tanzania (TERNET)
Tunisia (CCK)
Uganda (RENU)

AMERICAS

Argentina (INNOVA|RED)
Brazil (RNP2/ANSP)
Canada (CANet 4)
Chile (REUNA)
Colombia (RENATA)
Costa Rica (CR2Net)
Ecuador (CEDIA)
El Salvador (RAICES)
Guatemala (RAGIE)
Mexico (CUDI)
Panama (RedCyT)
Peru (RAAP)
Trinidad (UWI)
Uruguay (RAU2)
Venezuela (Reacciu2)

ASIA and PACIFIC

Australia (AARNet)
Bhutan (BdREN)
Cambodia (CamREN)
China (CERNET2, CSTNET, NSFCNET)
Hong Kong (HARNET)
India (ERNET)
Indonesia (ITB)
Japan (SINET3, WIDE, JGN2)
Korea (KOREN, KREONET2)
Laos (LERNET)
Malaysia (MYREN)
Nepal (NREN)
New Zealand (KAREN)
Pakistan (PERN)
Philippines (PREGINET)
Singapore (SingAREN)
Sri Lanka (LEARN)
Taiwan (TANet2, ASnet)
Thailand (UniNet, ThaiSARN3)
Vietnam (VinaREN)

CENTRAL and SOUTHWEST ASIA

Armenia (ASNET-AM)
Azerbaijan (AzRENA)
Georgia (GRENA)
Kyrgyz Republic (AKNET)
Tajikistan (TARENA)
Turkey (ULAKBIM)
Turkmenistan (TuRENA)

EUROPE

Albania (ASA / INIMA)
Andorra (Univ. of Andorra)
Austria (ACOnet)
Belarus (BASNET, UNIBEL)
Belgium (BELNET)
Bosnia-Herzegovina (BIHARNET)
Bulgaria (ISTF)
Croatia (CARNET)
Cyprus (CyNET)
Czech Republic (CESnet)
Denmark (Forskningsnettet)
Estonia (EENet)
Finland (Funet)
France (RENATER)
Germany (X-WiN)
Greece (GRNET)
Hungary (NIIF/HUNGARNET)
Iceland (RHnet)
Ireland (HEAnet)
Italy (GARR)
Latvia (LATNET)
Lithuania (LITNET)
Luxembourg (RESTENA)
Macedonia (MARNet)
Malta (UofM/RicerkaNet)
Moldova (RENAM)
Montenegro (MREN)
Netherlands (SURFnet)

EUROPE cont'd

Norway (UNINETT)
Poland (PIONIER)
Portugal (FCCN)
Romania (RoEduNet)
Russian Federation (RBnet, RUNNET)
Serbia (AMRES)
Slovakia (SANET)
Slovenia (ARNES)
Spain (redIRIS)
Sweden (SUNET)
Switzerland (SWITCH)
Ukraine (URAN)
United Kingdom (JANET)

MIDDLE EAST and GULF STATES

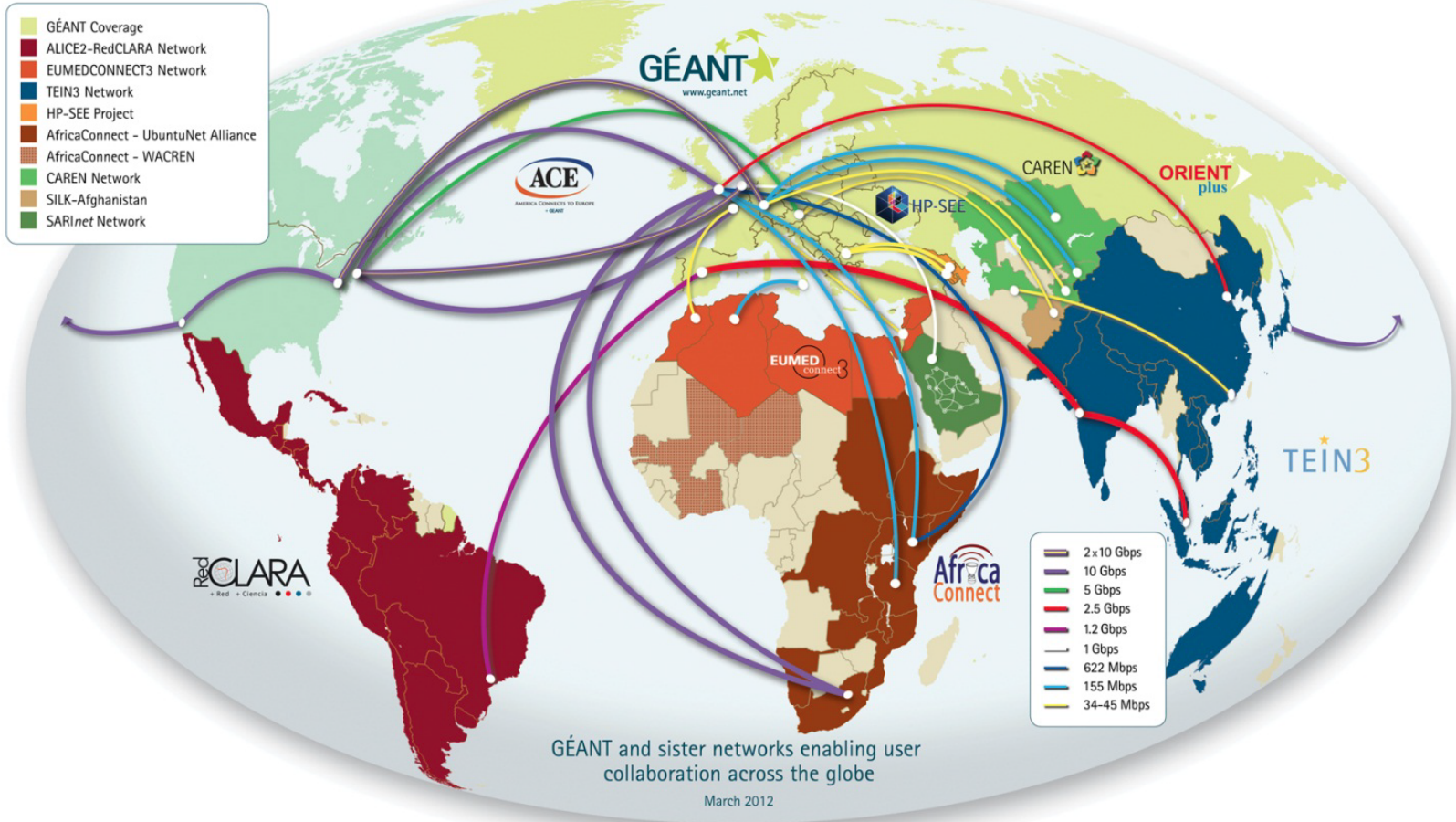
Israel (IUCC)
Jordan (JUNet)
Palestinian Territories (Birzeit Univ./
Al-Quds Open Univ.)
Qatar (Qatar FN)
Syria (HIAST)
United Arab Emirates (ANKABUT)

MULTINATIONAL NETWORKS

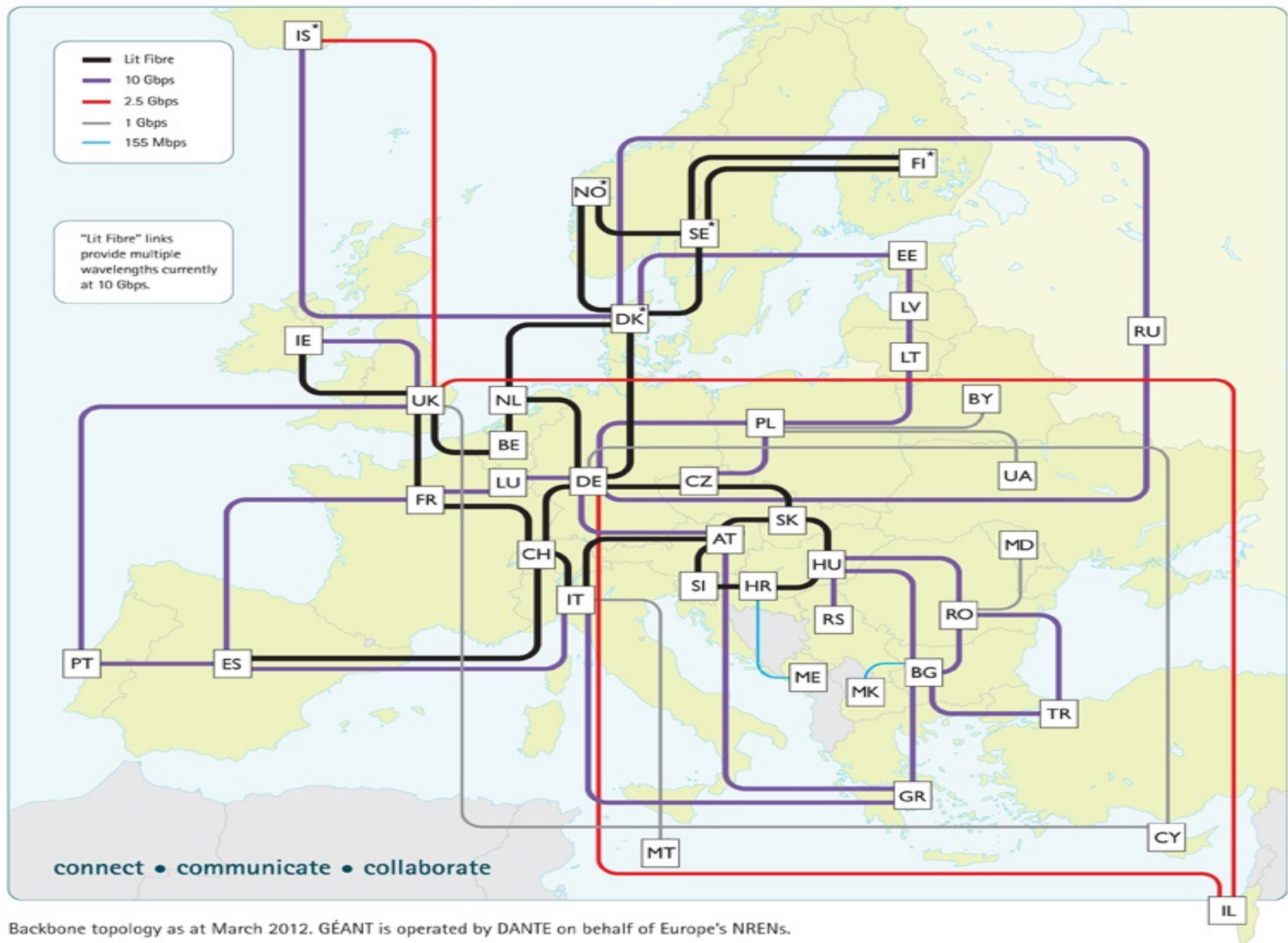
APAN
GEANT2
NORDUnet
redCLARA
UbuntuNet



GEANT International



GEANT



European Highlights

- Over the past two years, the capacity of GEANT's global IP interconnections increased from ~34Gbps to nearly ~73Gbps.
 - The growth arises from upgrades or new IP interconnections with North America (ACE), Latin America, Sub-Saharan Africa, the South Caucasus, Central Asia and Taiwan.
 - Global point-to-point connectivity also rose from 20Gbps to 30Gbps following the implementation of point-to-point connectivity to the UbuntuNet Alliance in Africa
- London Open LightPath Exchange is progressing – equipment has been delivered –installation is happening any day, including new gear at the London POP

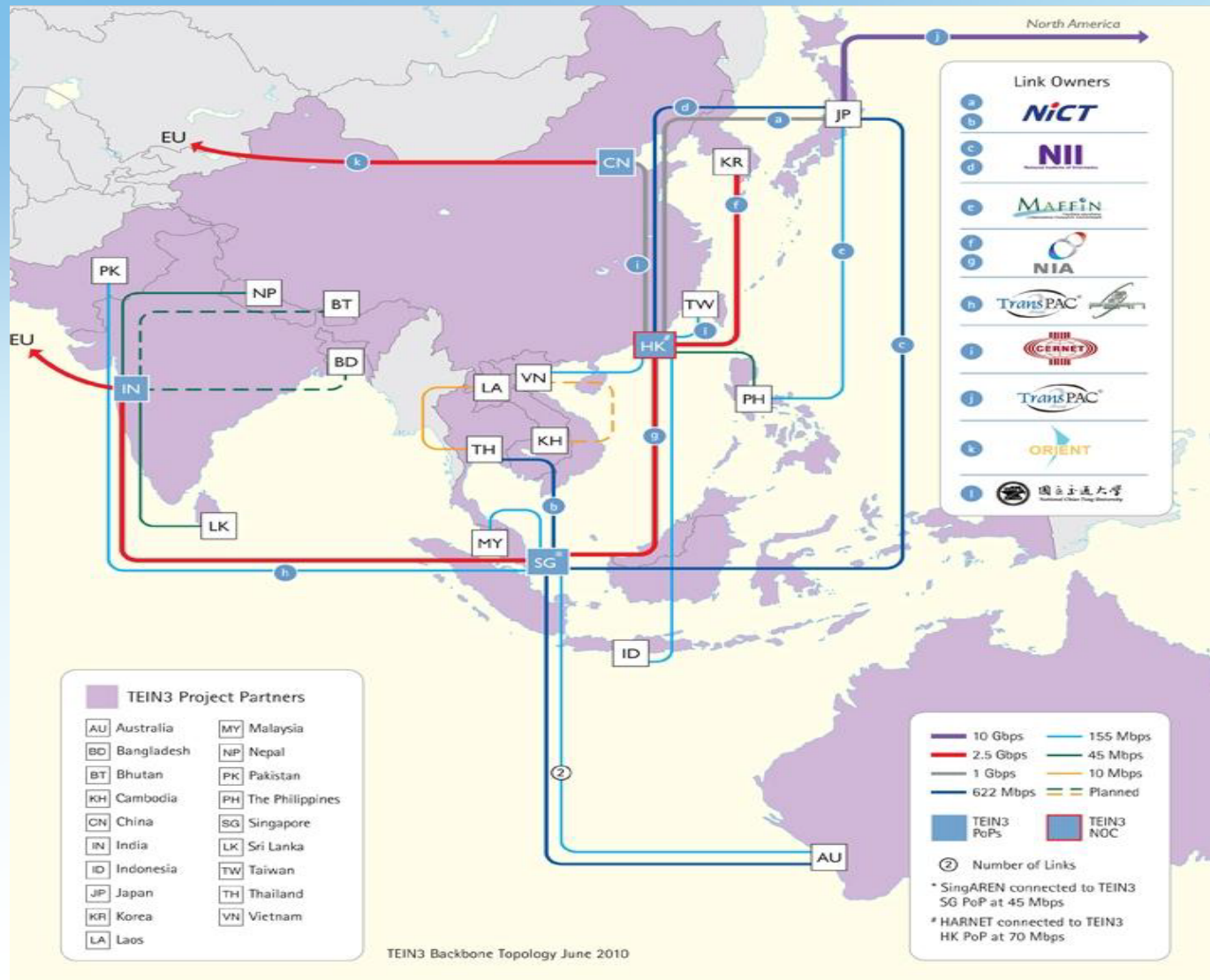
APAN

Asia-Pacific Backbone Topology
by funding source



As of Jan. 5th 2011

TEIN3/TEIN4



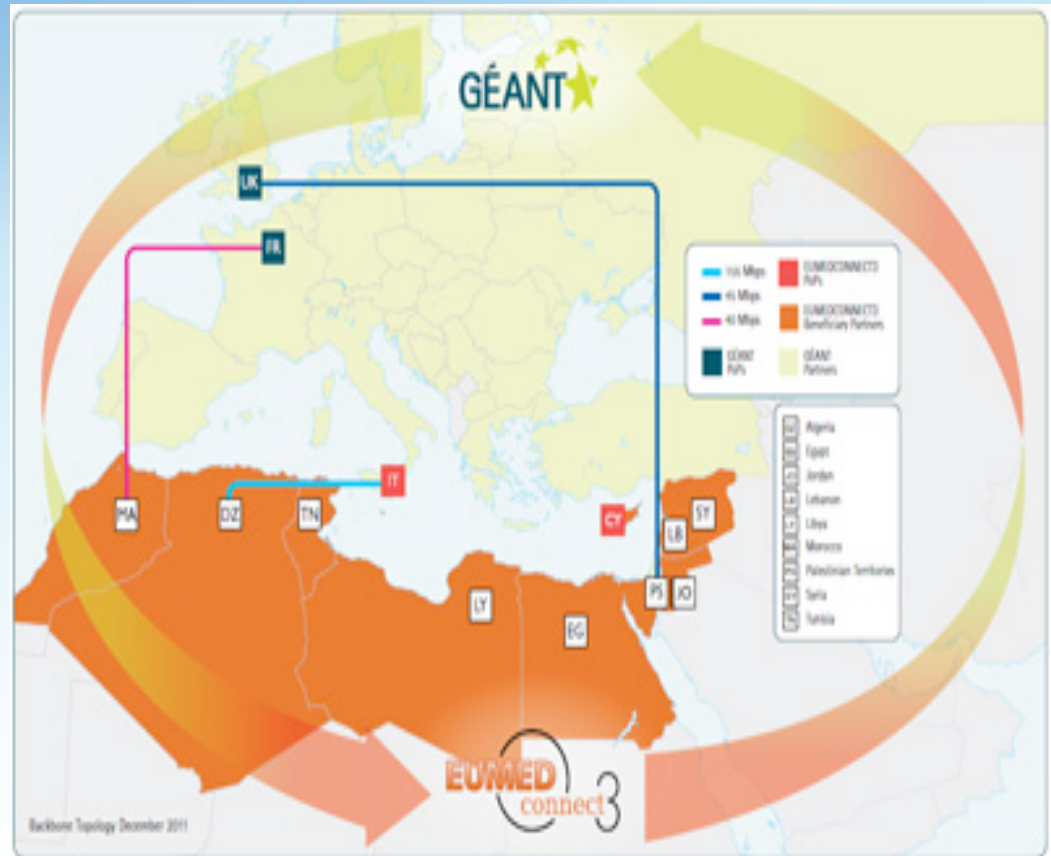
Asia/Pacific Highlights

- The EU has relinquished TEIN to its user members; TEIN4
- 10gb connection from Los Angeles to Beijing – successful demo of this link in June – CANS meeting in October as a follow-up

Note: Plan for connecting South Pacific Islands and Lower Mekong underway

Middle East

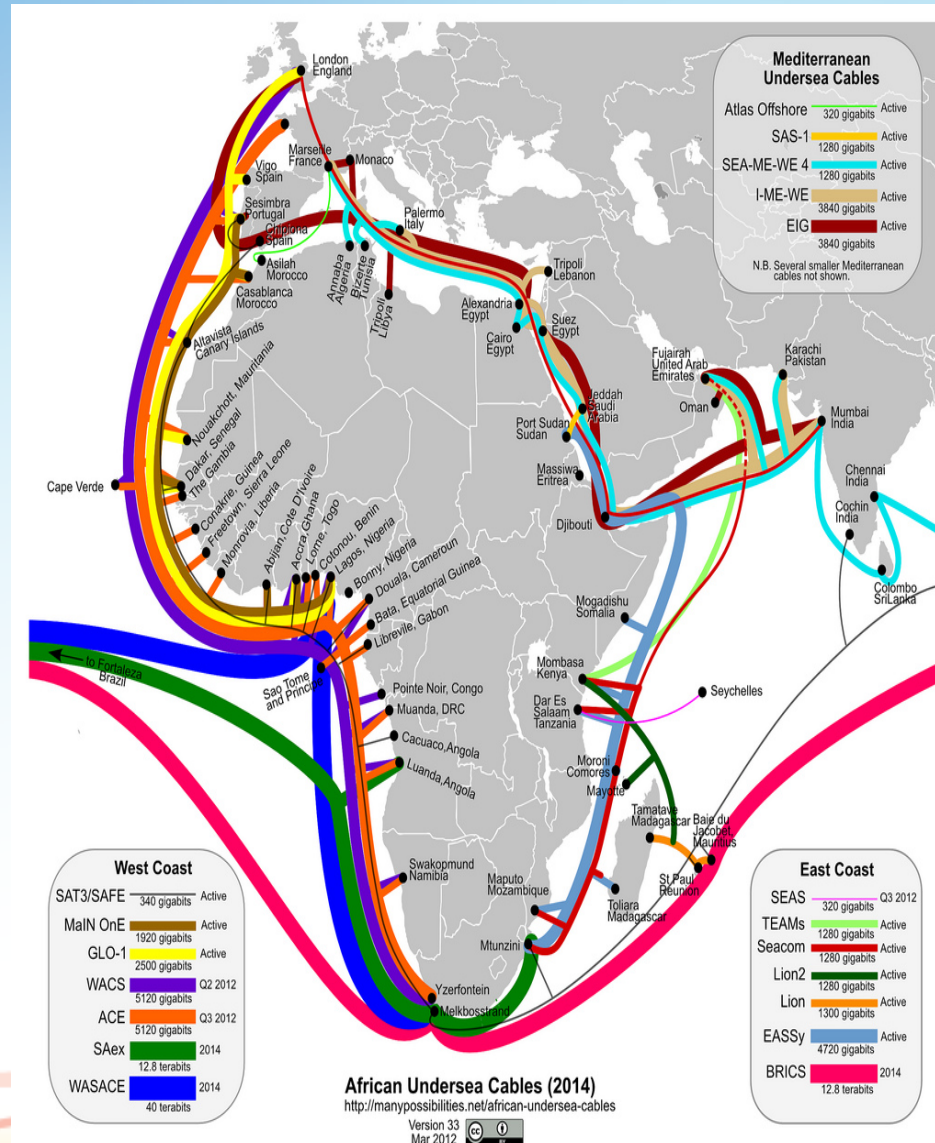
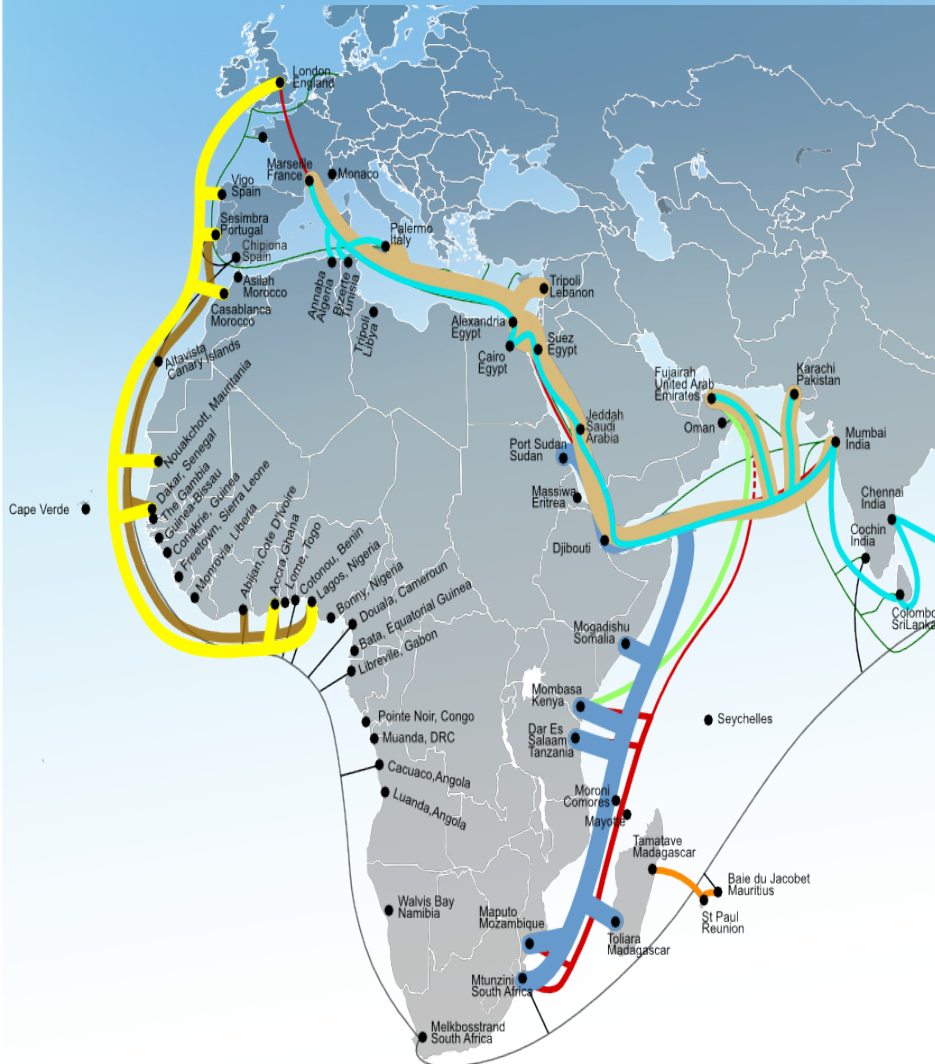
- EUMedConnect
 - project funded by the EU; direct links from participating NRENs to GEANT
- ASREN - Arab States Research and Education Network
 - Launched in December 2010
 - Can be considered as expansion of EUMedConnect (connection of Mediterranean countries to GEANT)



Middle East Highlights

- Most noteworthy happening is the SIG meeting (Sept. 17th) along with Ankabut and EUMedConnect meetings (Sept. 18th-19th).
- Oman is making progress towards an NREN
- New Partner Saudi Arabia has been quiet.
- Jordan- JUnet cannot connect to EUMedconnect until government becomes more stable.

Africa: Emerging Quickly 2011 - 2014



UbuntuNet Alliance



Eb@le, DRC
EthERNET, Ethiopia
*KENET, Kenya
*MAREN, Malawi
*MoRENet, Mozambique
XNet, Namibia
*RwEdNet, Rwanda
SomaliREN, Somalia
SUIN, Sudan
*TENET, South Africa
TERNET, Tanzania
RENU, Uganda
ZAMREN, Zambia

UbuntuNet Highlights

- KENET has a new connection coming into Amsterdam – 600MB
- ZAMREN and TENET form the first UbuntuNet cross-border link
- Push for local exchange points

WACREN

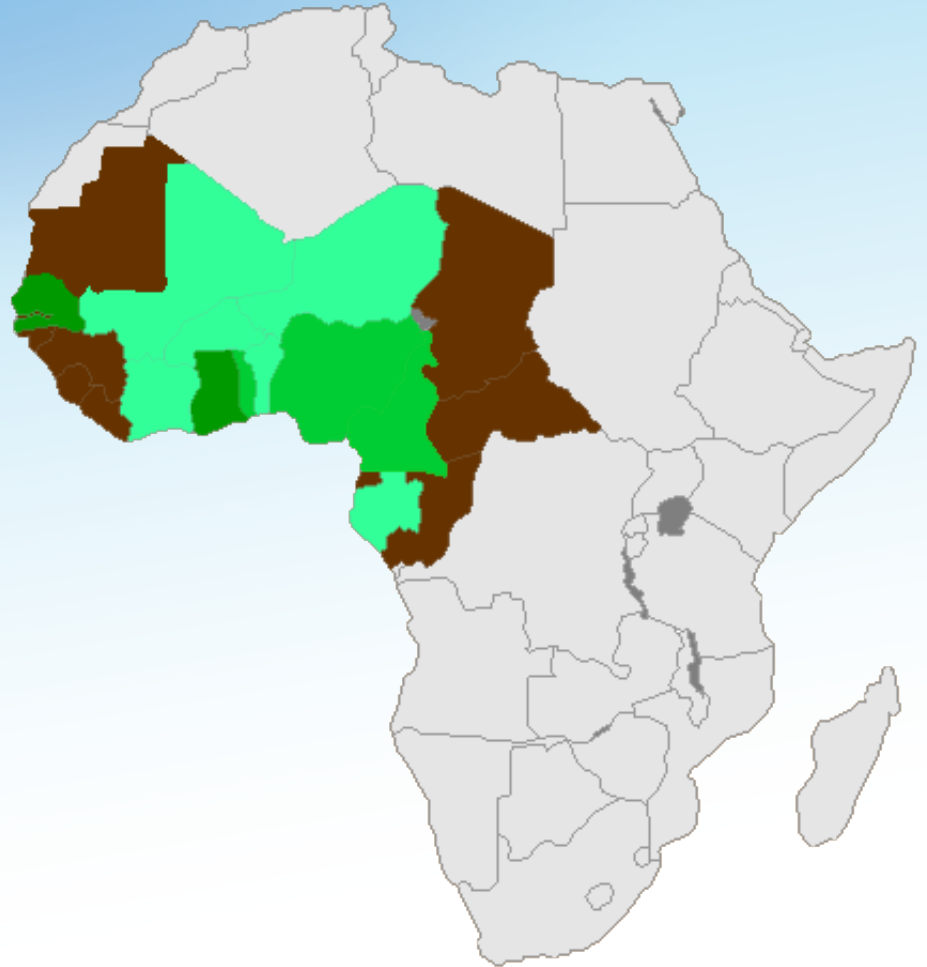
WACREN: West and Central
African Research and Education
Network

Potential membership base:
NRENs in the 22 West and Central
African countries

WACREN formally registered in
August 2010

Board elected in March 2011

Strategic Plan being developed



WACREN Highlights

- WACREN NOC to GEANT through RENATER (French NREN) now functional out of Senegal
- TogoREN launched July 2012

South America- RedCLARA/Alice2



C@ribNET



Member States

Anguilla
Antigua & Barbuda
Bahamas
Barbados
Belize
Bermuda
British Virgin Islands
Cayman Islands
Dominica
Dominican Republic
Grenada
Guyana
Haiti
Jamaica
Montserrat
St. Kitts & Nevis
St. Lucia
St. Vincent
Suriname
Trinidad & Tobago
Turks & Caicos

Latin and South America Highlights

- CKLN completed the construction of C@ribNET and linked the Caribbean to the global community of research and education networks
- Trinidad and Tobago Research and Education Network, TTRENT launched
- OpenFlow now being deployed on AmLight East between Miami and Sao Paulo.
- Cudi (Mexico) connectivity plans to move from San Antonio to El Paso to co-located with the US-UCAN PoP. This will be discussed with interested parties in Philadelphia at the I2 Fall Members Meeting.

Summary

- Global R and E connectivity continues to grow
 - Greater focus on global required to serve members needs
 - Opportunities exist for the US to become a global leader
- * Challenge – Creating a collaborative environment for solving common challenges, developing common solutions

Thanks!

- Questions, Corrections, Concerns?
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