



GEORGE LOFTUS

----- Assoc. Vice President for --
Network Services

AUGUST, 2013

ABOUT INTERNET2: Global Programs



Community Engagement – Mission

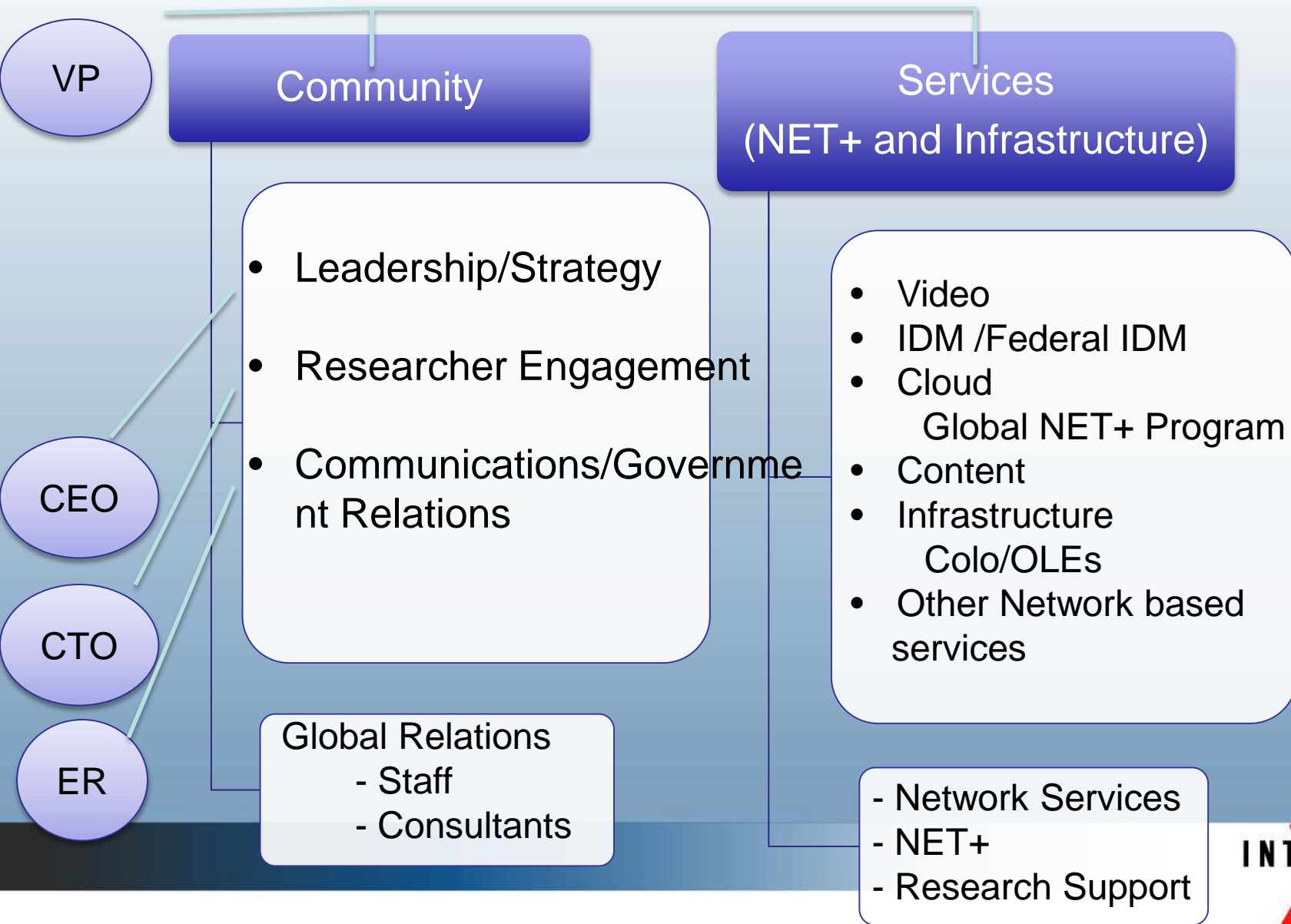
To create, sustain, and expand participation in Internet2, and to build excitement around our programs and services in the global Internet2 community.

Foundation → **broad engagement**

We articulate **what it means** to be a participant or member in Internet2 for each of the communities that comprise the whole of Internet2:

*Higher Education, Affiliate, Industry, and **Global Entities***

Internet2 Global Programs



Global Team

Executive Lead:	Ana Hunsinger
Director:	Ann Doyle
Program Manager:	Edward Moynihan
Communication Specialist:	Di Lu
China program expert:	Shuigen Xiao

Services:	
Network Services:	Rob Vietzke, Finkelson, Loftus
NET+/Federation Services:	Shelton (Shel) Waggener

Other	
CEO/President:	Dave Lambert
Gov't Relations/Legal Lead:	John Morabito
Chief Technical Officer:	Steve Wolff

Regional Consulting Team

South East Asia/India:

Jim Williams

Middle East/Gulf States:

John Chapman (Georgetown University – Qatar)

Latin America/Caribbean:

Heidi Alvarez (Florida International University)

Europe and Africa:

Erik-Jan Bos (Independent Consultant)

China:

Shuigen Xiao (Georgetown), Jim Williams

Partner Consultant:

Greg Bell (ESnet)

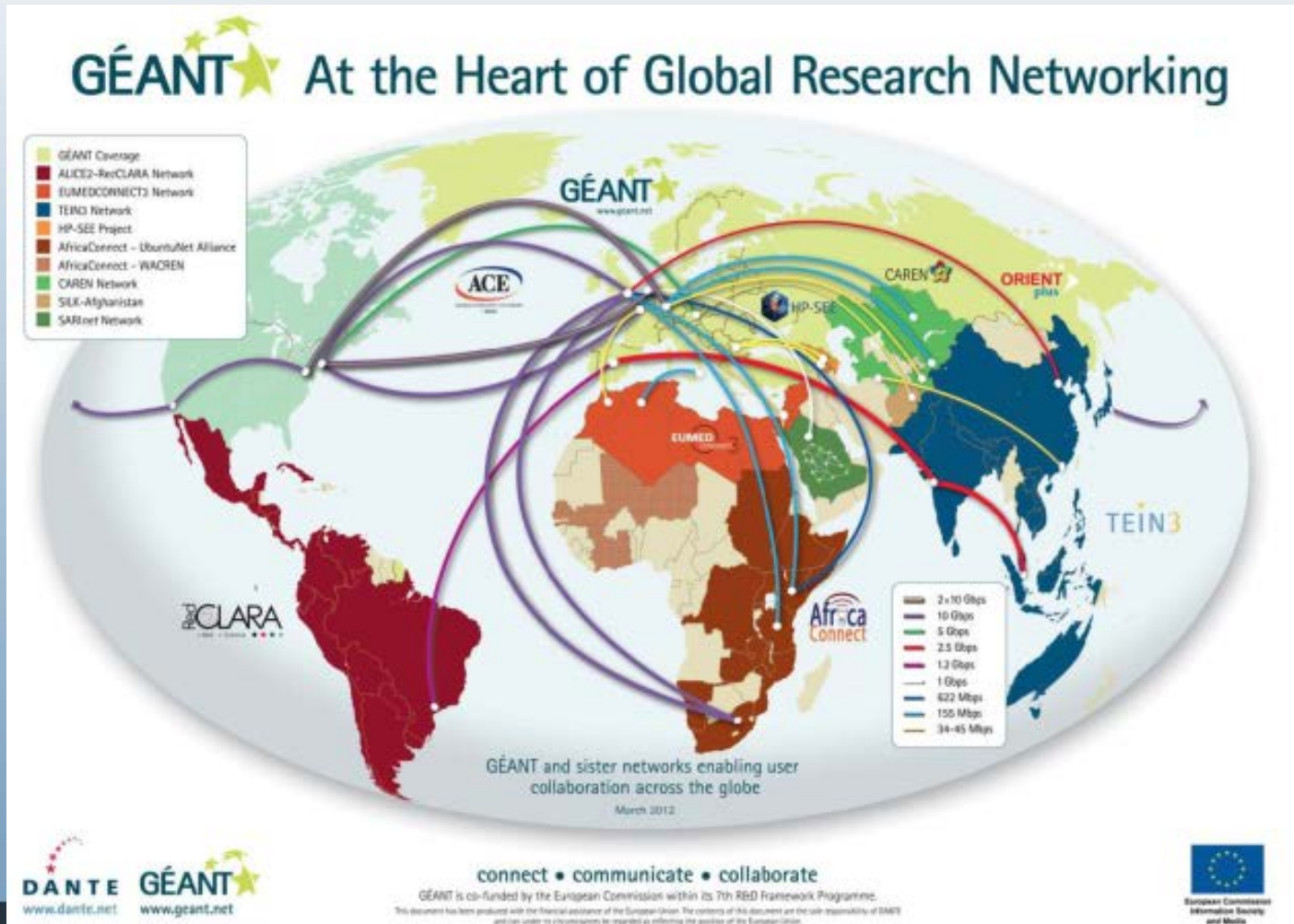
Global Programs

- Global NREN CEO Forum - building consensus on global strategies.
 - Defining, coordinating, and ensuring funding for an integrated, rationally architected and funded global infrastructure.
 - Internet2 CEO, Dave Lambert, representing U.S. interests and working with U.S. funding agencies to garner support.

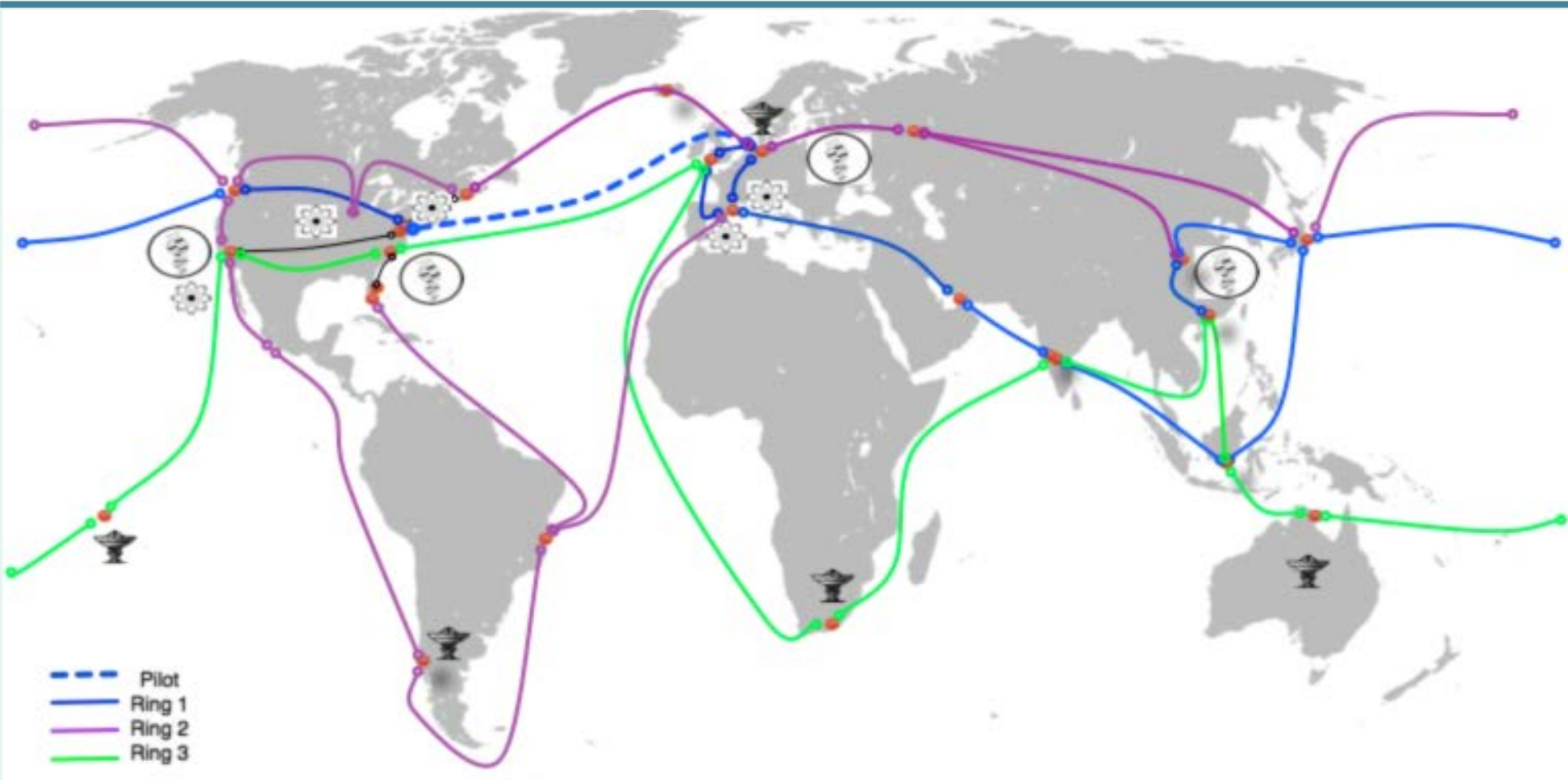
The spaghetti bowl of global networking



A viewpoint of global networking

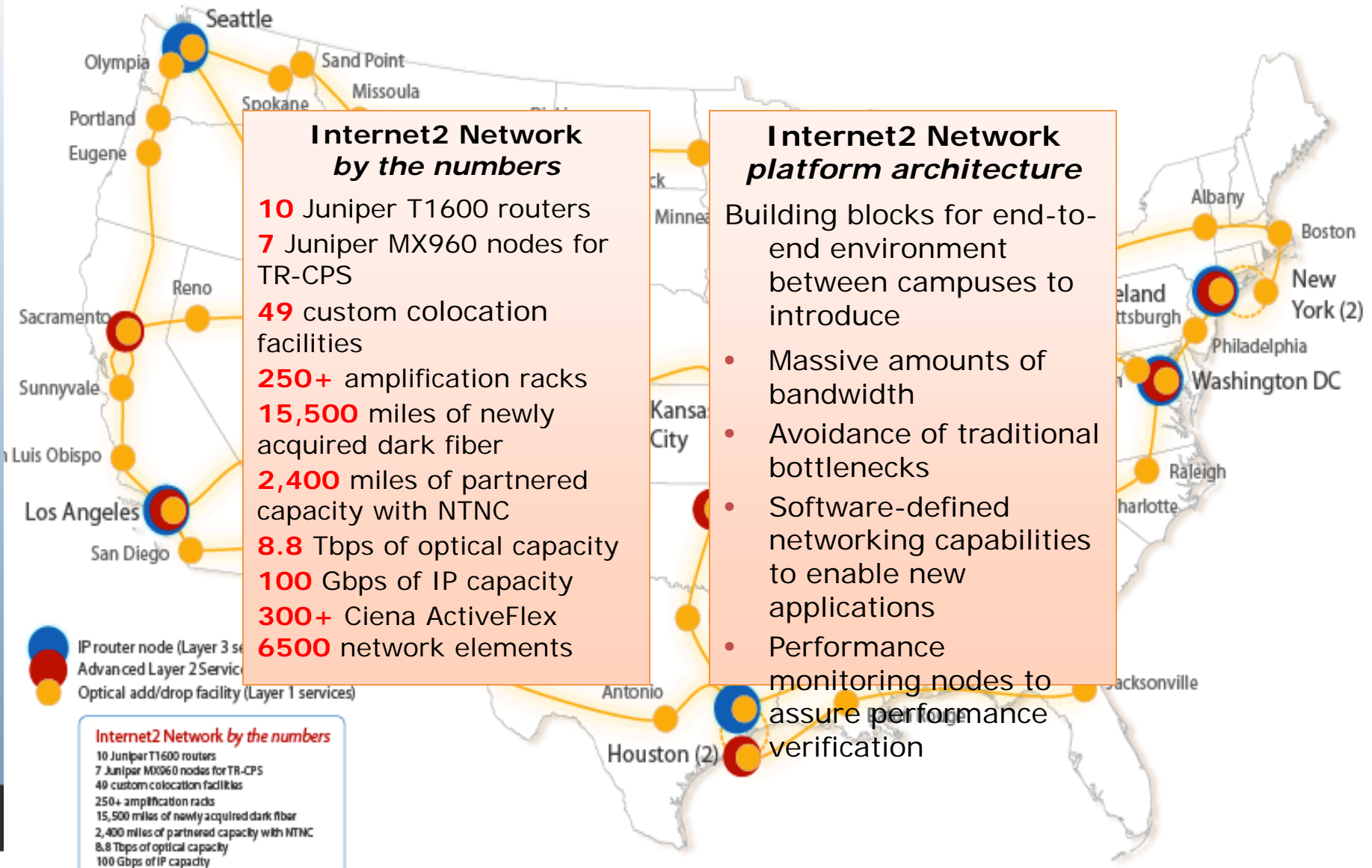


A cohesive global architecture – conceptual





The New Internet2 Network



Middleware Initiative

- Simplifies secure access to online resources
- Projects include:
 - Shibboleth® Federated Single Sign-On software
 - Grouper™ Groups Management Toolkit
 - COmanage collaborative organization management platform
- MACE advisory group forms working groups



Internet2 NET+ Global Programs

“Dedicated to the widespread adoption of *federated cloud services* that benefit the global research and education community. In partnership with those we serve, the NET+ provides simple, consistent and streamlined access to highest value cloud services, offered at the best possible terms and conditions, to all participating institutions.”



Globalization Is a Reality in Education & Research

The Cloud (and campuses and learns) will think and act Global. Local matters – when connected globally.

- Leveraging National Research and Education Networks and international exchange facilities for global connections
- Offering courses and services to broader national and international markets
- Extending services throughout global R&E community with minimal investment but significant increase in benefit
- Leveraging connections throughout community for more efficient, effective solutions

Global Cloud Working Group

Volunteer charter member National R&E networks representing Europe, Americas, Asia-Pacific, dedicated to the widespread adoption of federated cloud services that benefit the global R&E community

Networks for R&E today

Within a country or a region:

- Dark fiber infrastructures
- Self-owned and operated optronics
- Operations under own control
- 100G production, trials at 400G

Between continents:

- Leased capacity as a service
- Often mission oriented, limited in time
- 10G production as the norm

The problem statement

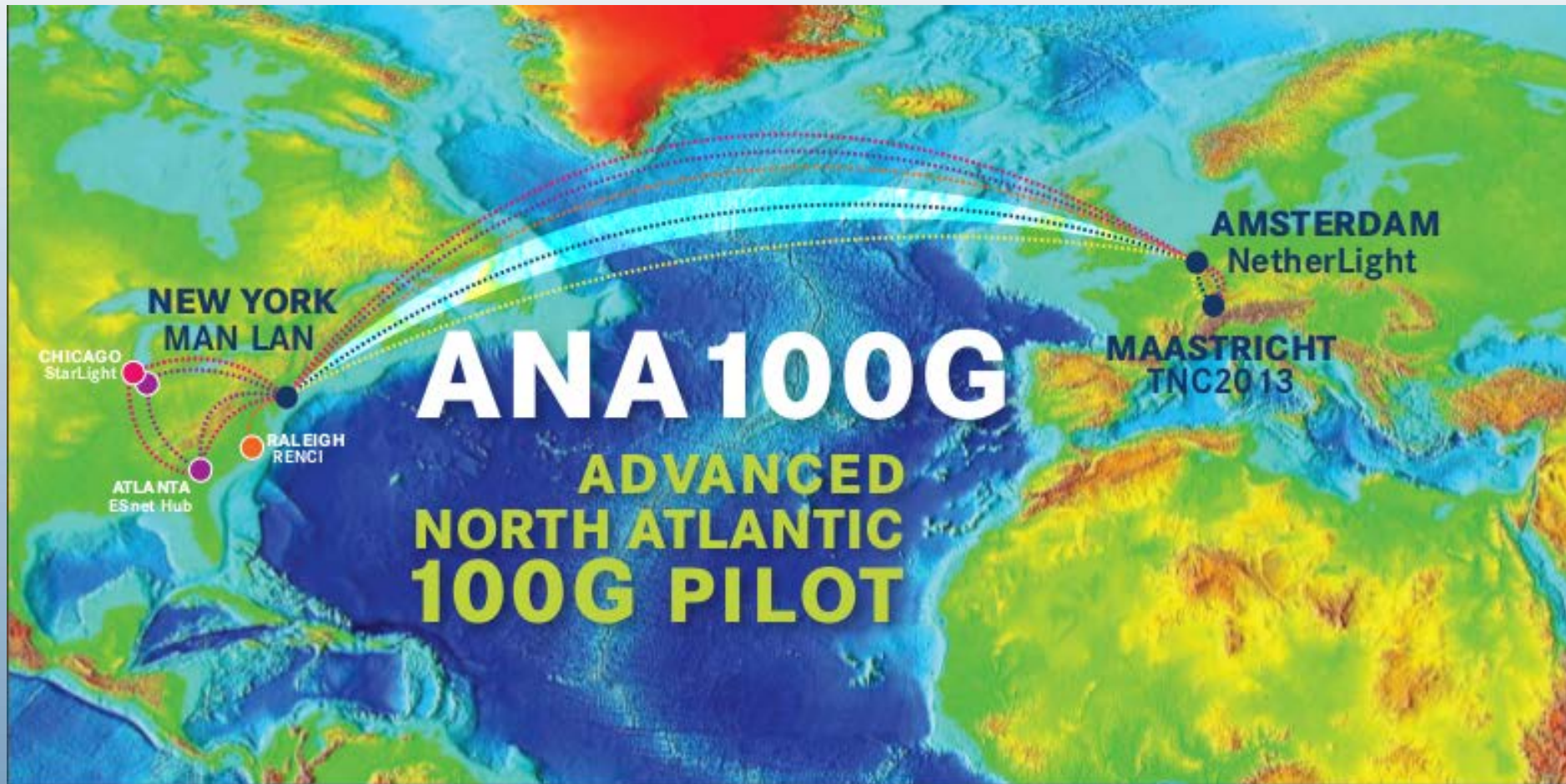
New links so far are incremental additions,
with limited scope, purpose and/or timeline

Hard (if not impossible) to coordinate routing
→ suboptimal use

Big science applications generate flows
>10G and (soon) >40G

No market for 100G or above yet

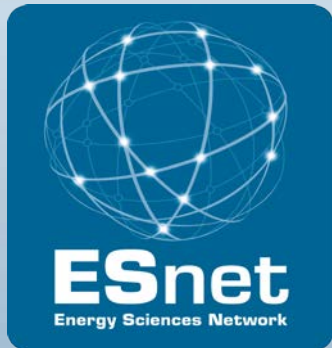
North Atlantic 100G Announced



Introducing ANA-100G

Collaboration between six R&E Networks

Announced on April 24, 2013



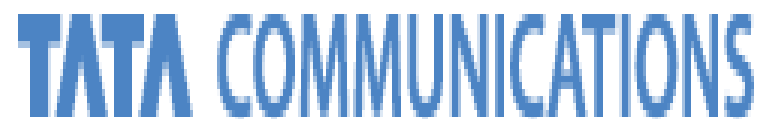
ANA-100G aims to test...

New models for collaboration

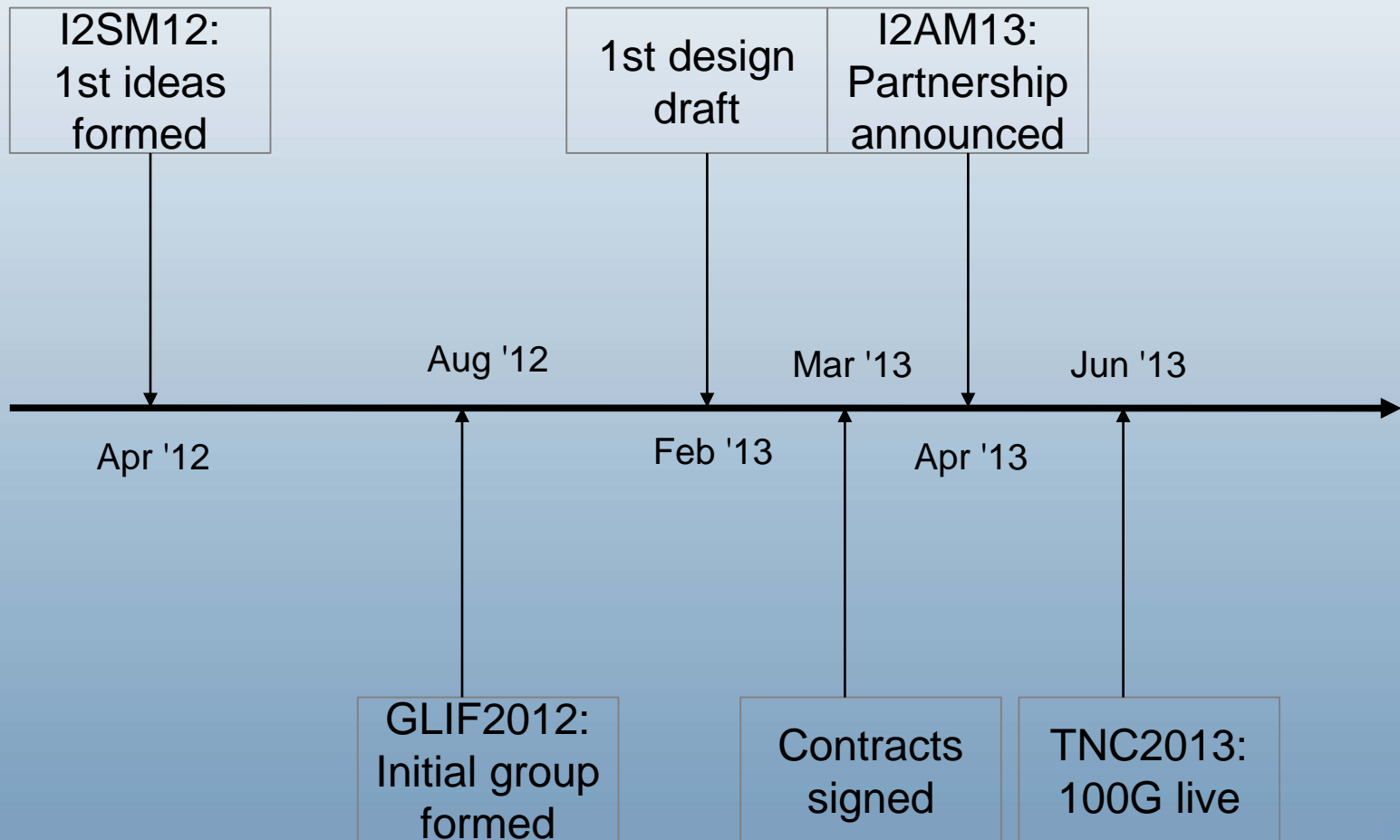
New governance

New technologies

In public-private partnership with Industry

The logo for Ciena, featuring the word "ciena" in a bold, red, lowercase sans-serif font with a registered trademark symbol (®) to the right.The logo for Tata Communications, featuring the words "TATA COMMUNICATIONS" in a bold, blue, uppercase sans-serif font.The logo for Internet2, featuring the word "INTERNET" in a black, uppercase sans-serif font with a registered trademark symbol (®) to the right, and a large, stylized red number "2" below it.

ANA-100G Time Line



Collaboration & Governance

Lightweight Memorandum of Understanding
Steering Group and Project Group
Subgroups on PR, demos, operations

Technology

Historic: Leased capacity

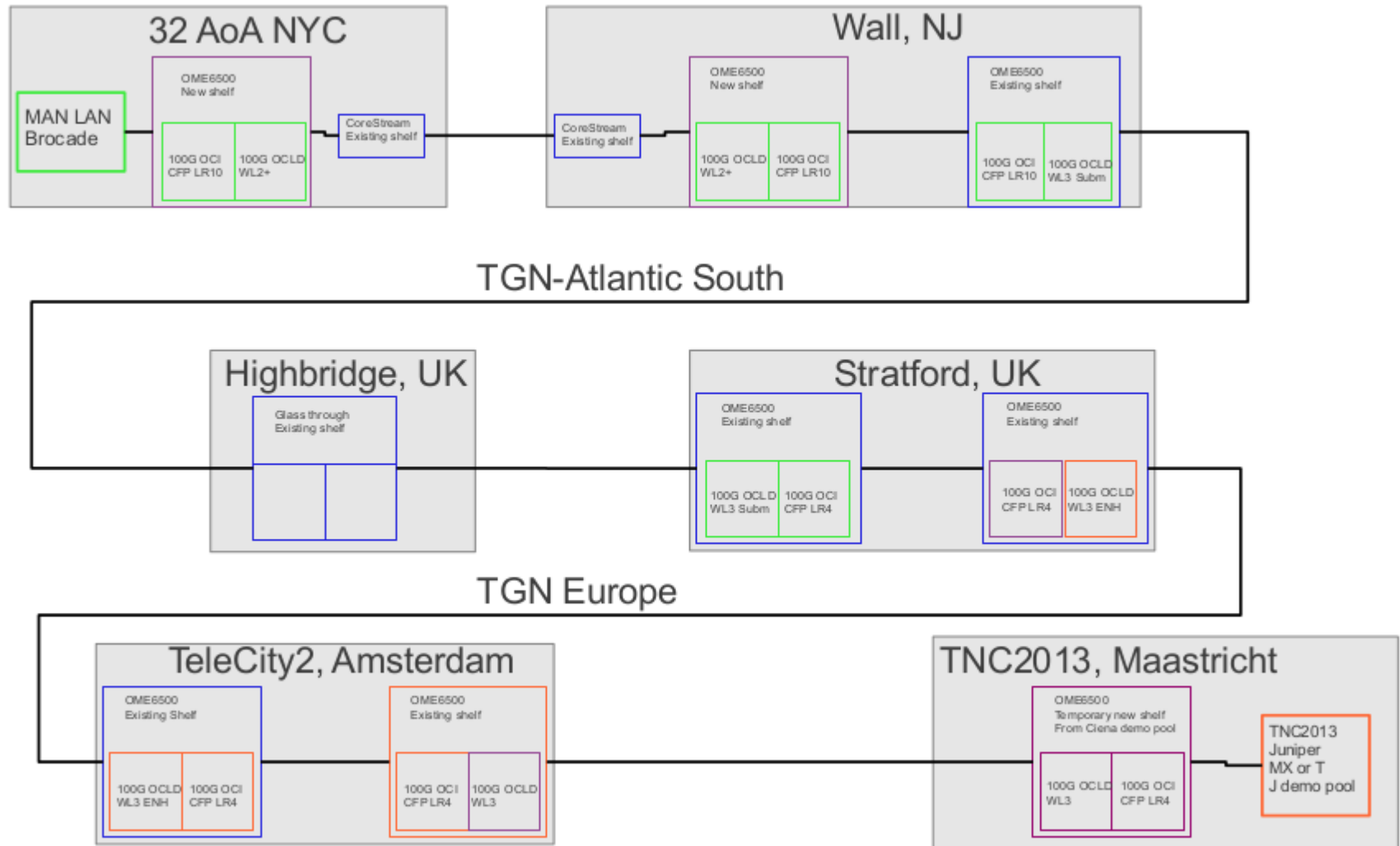
Today: Dark fiber nationally/regionally & leased capacity between continents

Future?: Owned spectrum & open exchanges & rings around the world

ANA-100G is path finder, today using:

- Spectrum
- Open Exchanges

ANA-100G TNC2013 implementation



Building a Global Community of Collaborators

