GÉANT in a nutshell – how we support science in the European Research Area

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CCO, GÉANT

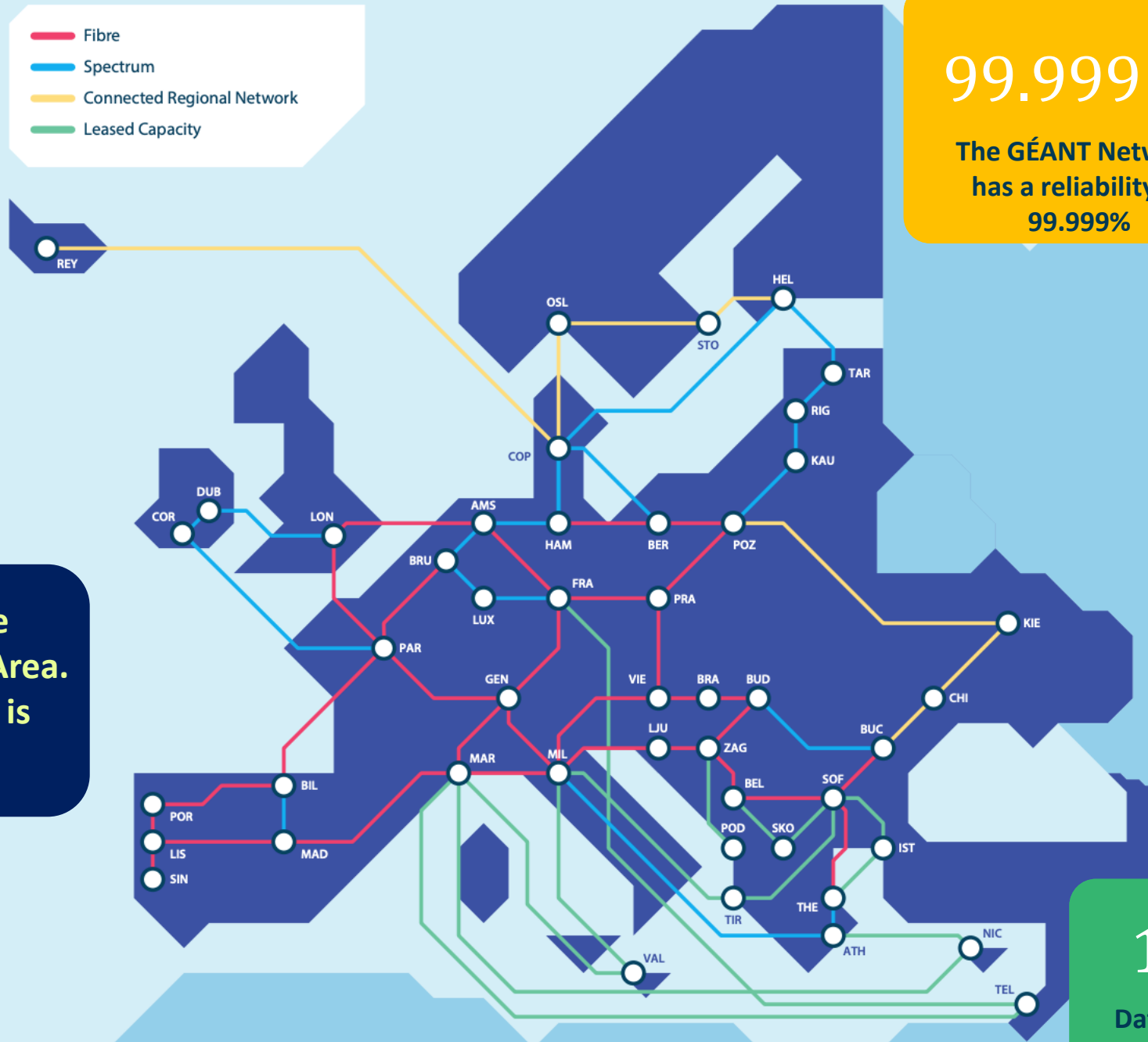
Humboldt-Universität zu Berlin | Computer and Media Service | Research Data Management | Online Event Series, 31 March 2026

Public

GÉANT – a Bottom-Up Membership Association since 1993

We represents 42 NRENs and NORDUnet across Europe. Together we support over 10,000 institutions and 50 million academic users.

Fibre capacity for the European Research Area. The GÉANT Network is Terabit ready.



99.999 %

The GÉANT Network has a reliability of 99.999%

30,928 km

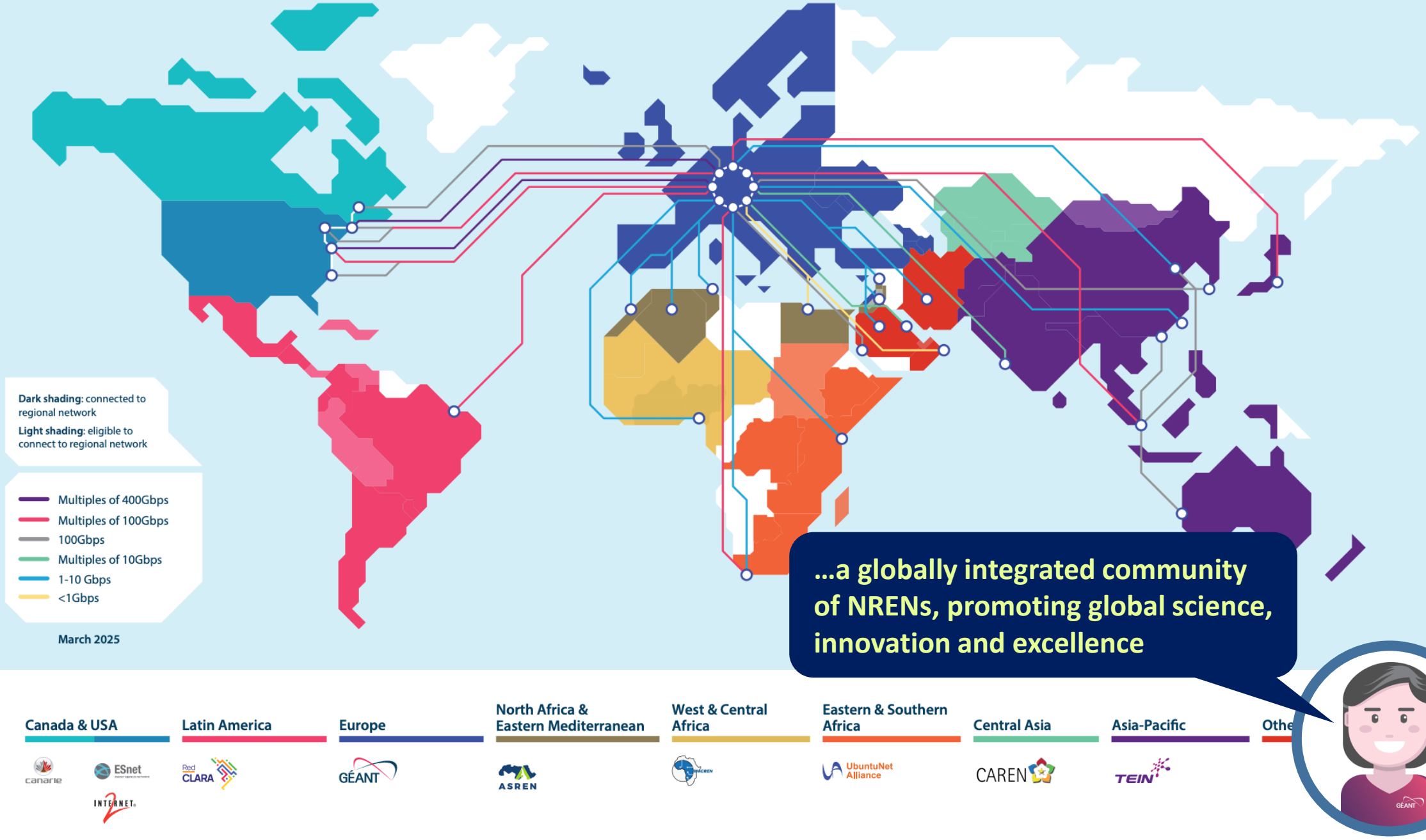
The length of the GÉANT Network, connecting 32 European countries

9.1 PB each day

The GÉANT Network carries 3.3 Exabytes of Data per year, ca. 9.1 Petabytes per day

1 Tbit/s

Data transfer rate our network tackles with ease – Terabits per second


Dark shading: connected to regional network
Light shading: eligible to connect to regional network
Multiples of 400Gbps
Multiples of 100Gbps
100Gbps
Multiples of 10Gbps
1-10 Gbps
<1Gbps
March 2025
...a globally integrated community of NRENs, promoting global science, innovation and excellence
Canada & USA
Latin America
Europe
North Africa & Eastern Mediterranean
West & Central Africa
Eastern & Southern Africa
Central Asia
Asia-Pacific
Othe
canarie
ESnet
INTERNET2
Red CLARA
GÉANT
ASREN
UbuntuNet Alliance
CAREN
TEIN

How do NRENs work with each other?

2001
EUMEDCONNECT

2003
ALICE

2004
TEIN2

2008
EUMEDCONNECT2
TEIN3
ALICE2 managed by (Red)CLARA

2009
CAREN

2011
EUMEDCONNECT3
AfricaConnect

2012
TEIN4 managed by TEIN*CC

2013
CAREN2

2015
CAREN3
AfricaConnect2
EaPConnect

2016
Asi@Connect managed by TEIN*CC
BELLA-T managed by RedCLARA

2019
AfricaConnect3
CAREN3 ends

2020
EaPConnect2

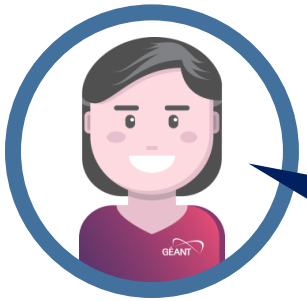
2021
EUMEDCONNECT3 ends

2022
BELLA-II managed by RedCLARA

2023
Medusa

2025
Blue Raman

EUMEDplus

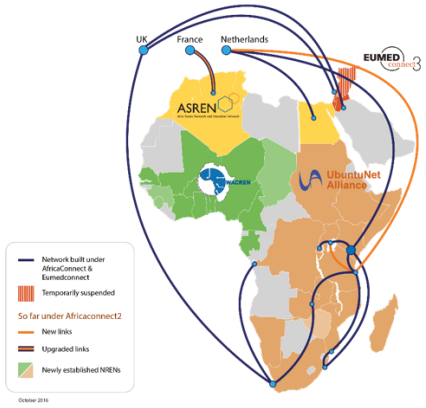


25 Years of Building R&E networks globally

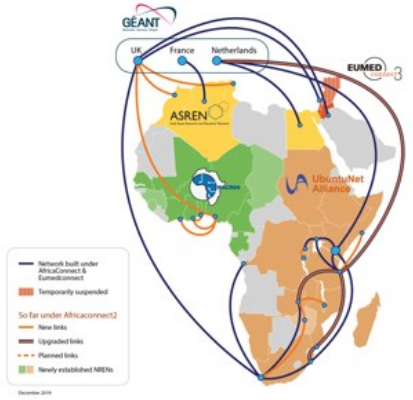
Co-funded by the European Union

Connectivity of NRENs in Africa

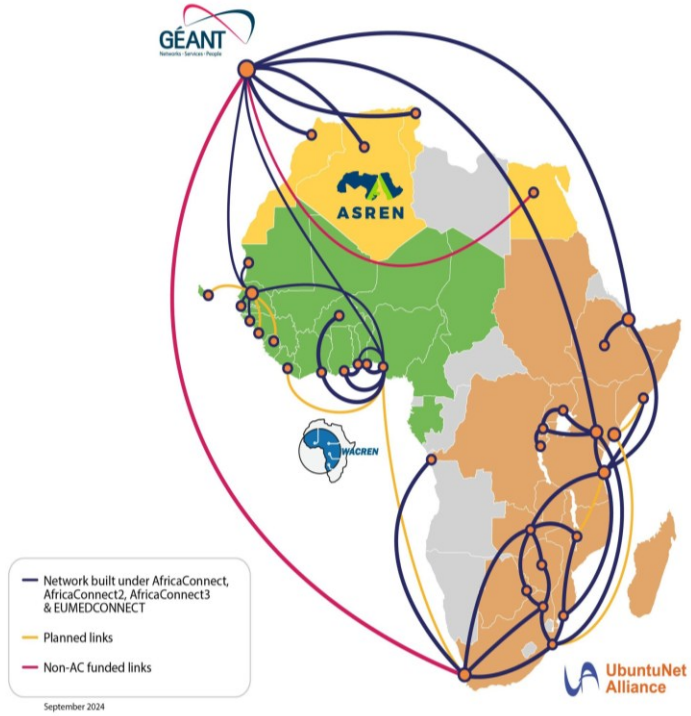
Before
AfricaConnect - 2010
5 Countries Connected



End of
AfricaConnect1 -2015
9 Coutries connected



End of
AfricaConnect2 -2019
19 countries connected



Since AfricaConnect started in 2011, **24 out of 38 African** NRENs have been connected to their regional network reaching over 9 million users at 3,000 institutions.

UbuntuNet Alliance 14: Botswana, Burundi, DRC, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Somalia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

WACREN 6: Ghana, Nigeria and Togo, Benin, Burkina Faso and Côte d'Ivoire.

ASREN 4: Algeria, Egypt, Morocco and Tunisia.

www.africaconnect3.net

Medusa

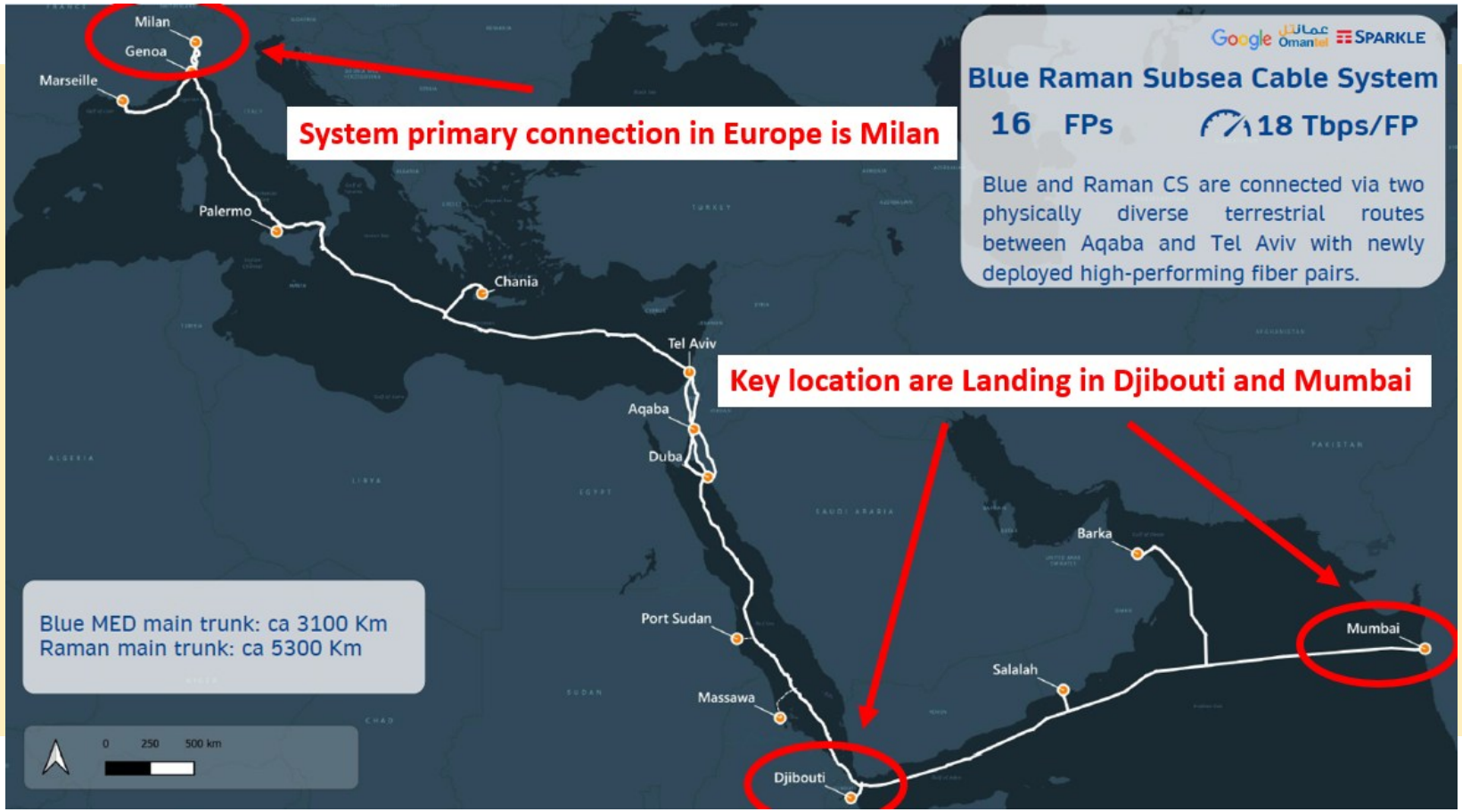
- First implementation of EU's digital global gateway strategy for R&E networking
- Phased implementation Q3 2025-Q3 2026
- Overall build cost approx. €340m
- 25 years of design life

Connectivity on Medusa for R&E:

Managed by: EUMED plus — Bridging the Mediterranean

- €40m EU funding
- Includes deployment of 200Gbps end-to-end international connectivity for Algeria, Egypt, Morocco & Tunisia
- EU landing points: Marseille (France) and Yeroskipou (Cyprus)
- 10-year O&M covered by EU funding, as well as IRU (for cable lifetime) and initial deployment of 200Gbps.
- EU Grant funds channelled through EIB to Medusa operator

The Blue Raman system



2 sections

Blue cable (Mediterranean):

- Connects Italy, France, Greece & Israel
- Terrestrial leg from Tel Aviv to Red Sea Aqaba Digital Hub in Jordan
- Largely built already

Raman cable (eastern leg):

- Aqaba to Mumbai via Saudi Arabia, Oman and Djibouti
- Construction underway RFS: Q1 26*

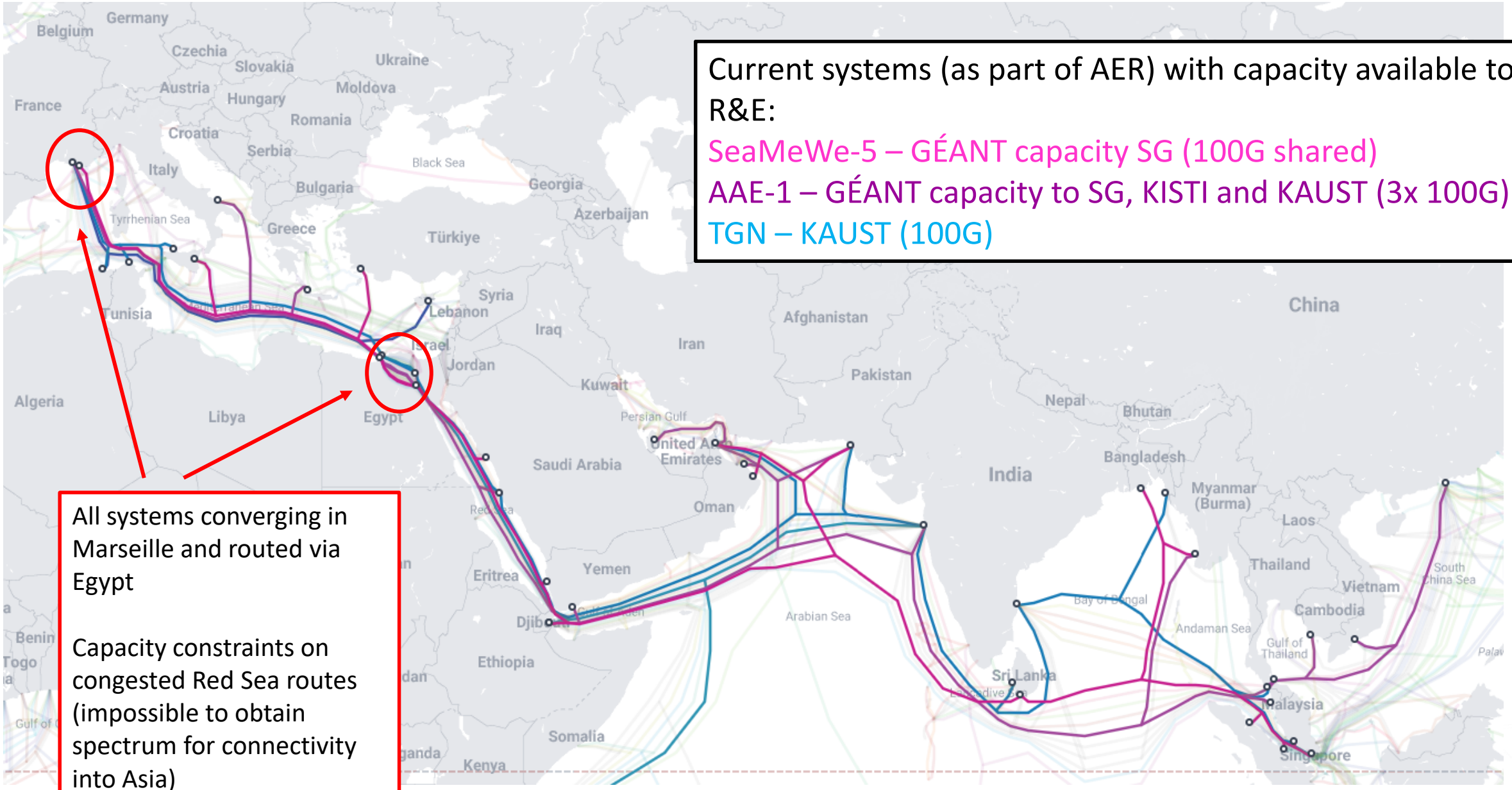
€23M EU Funding for R&E (Global Gateway)

15% spectrum → 3Tbps

Capex and 10y Opex covered

** Dates are current best understanding, geopolitical situation might lead to delays/variations*

Diversity from current systems



Current systems (as part of AER) with capacity available to R&E:

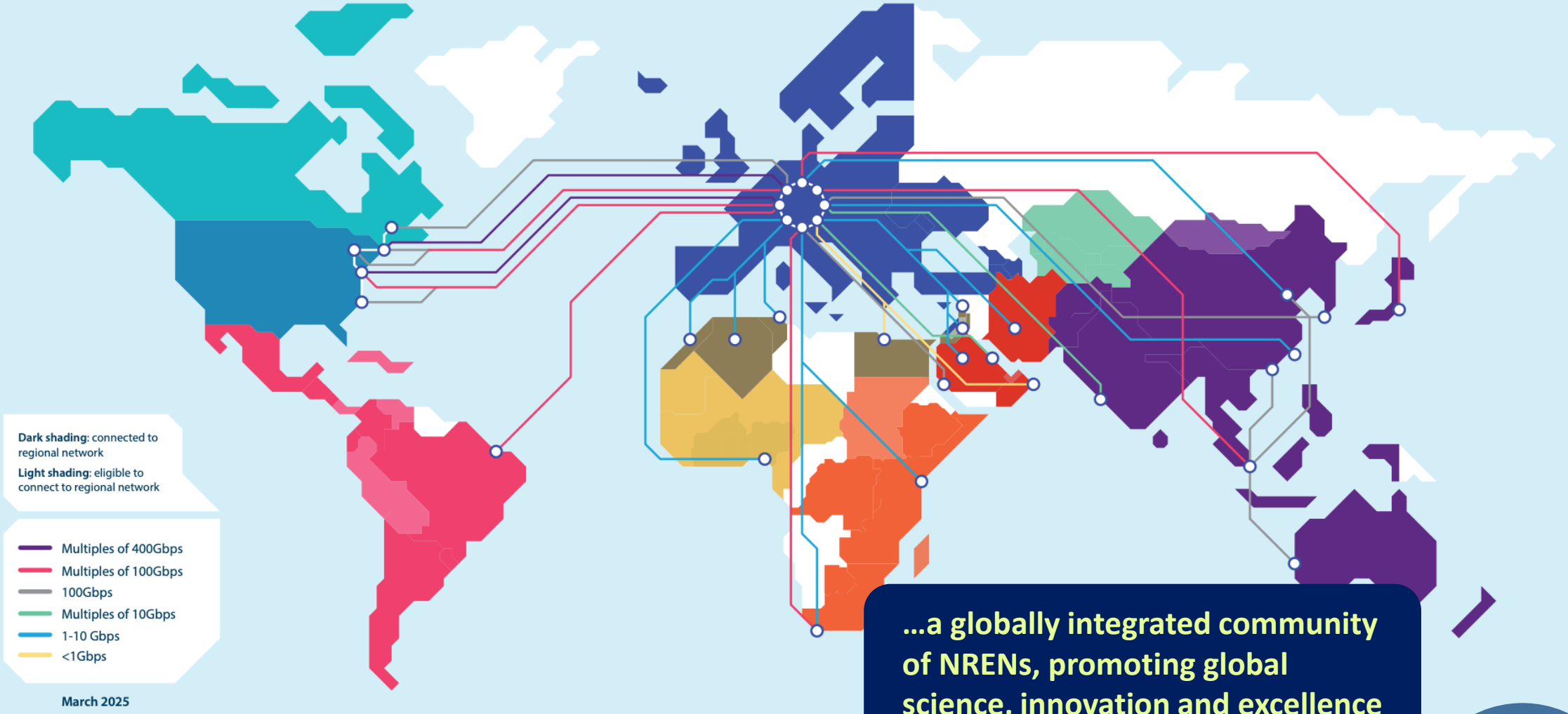
SeaMeWe-5 – GÉANT capacity SG (100G shared)

AAE-1 – GÉANT capacity to SG, KISTI and KAUST (3x 100G)

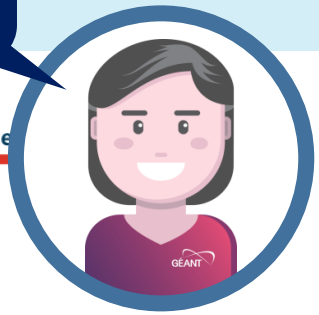
TGN – KAUST (100G)

All systems converging in Marseille and routed via Egypt

Capacity constraints on congested Red Sea routes (impossible to obtain spectrum for connectivity into Asia)



…a globally integrated community of NRENs, promoting global science, innovation and excellence



Canada & USA | Latin America | Europe | North Africa & Eastern Mediterranean | West & Central Africa | Eastern & Southern Africa | Central Asia | Asia-Pacific | Othe

GÉANT Services

GÉANT develops the services its members need to support students, researchers, educators and innovators - at national, European and international levels.

Our portfolio of advanced services covers connectivity and network management, identity & access, security, real-time communications, cloud, procurement services.

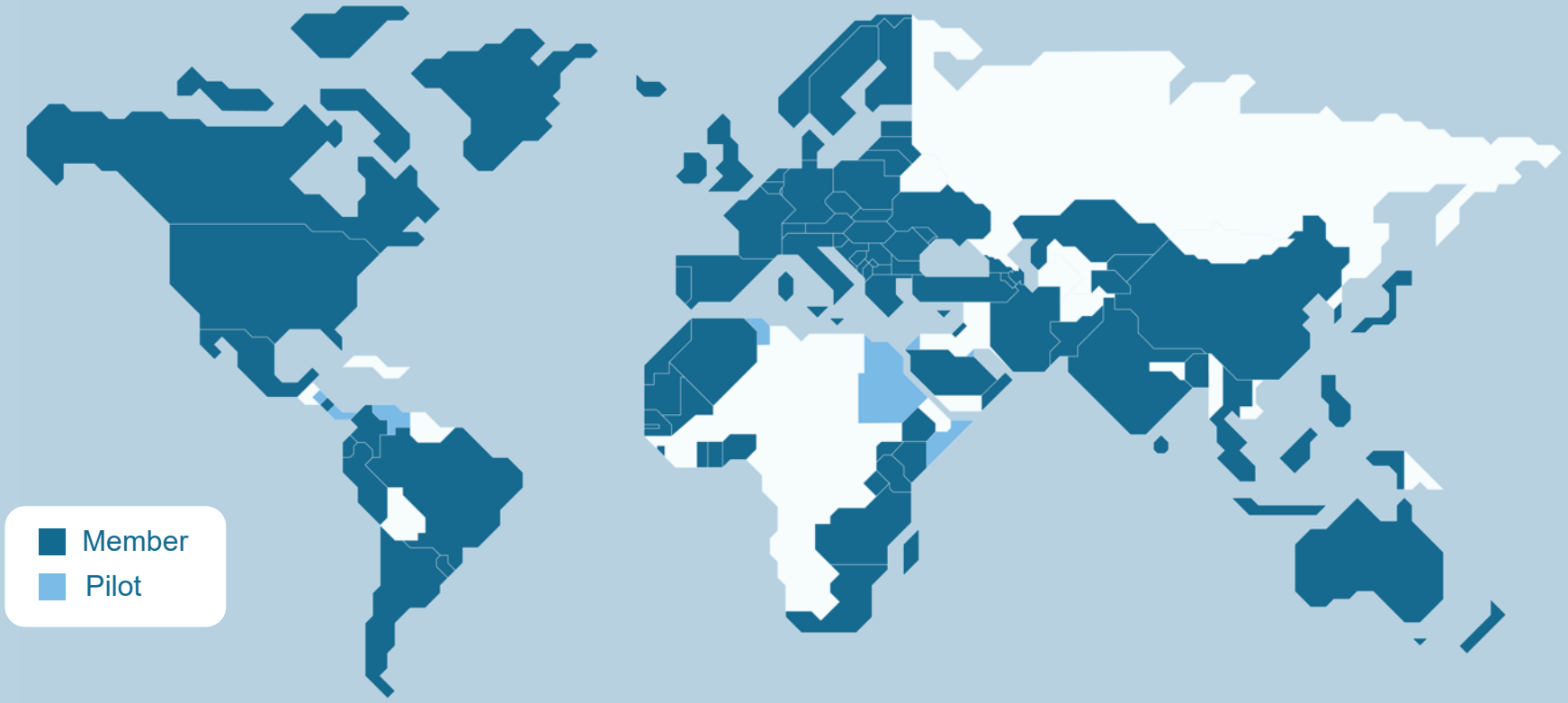
Network & connectivity

Identity & Access

Security

Cloud

eduroam Service uptake:
National and International Roaming Operators (NROs)



>106
Countries

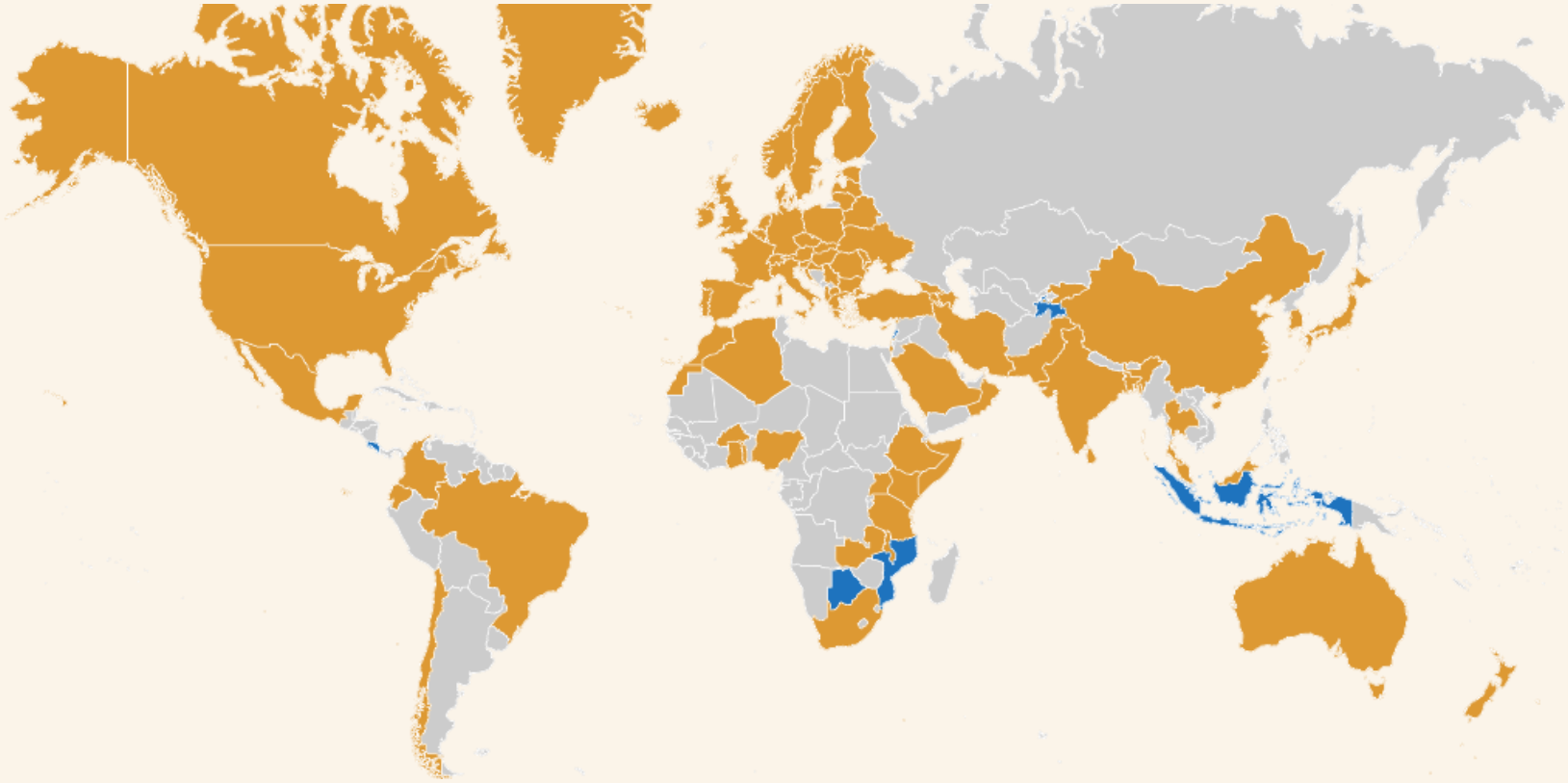
10,500+
Institutions

44,600+
Service Locations

25,000,000+
Authentications per day

The growth of eduGAIN federations

eduGAIN



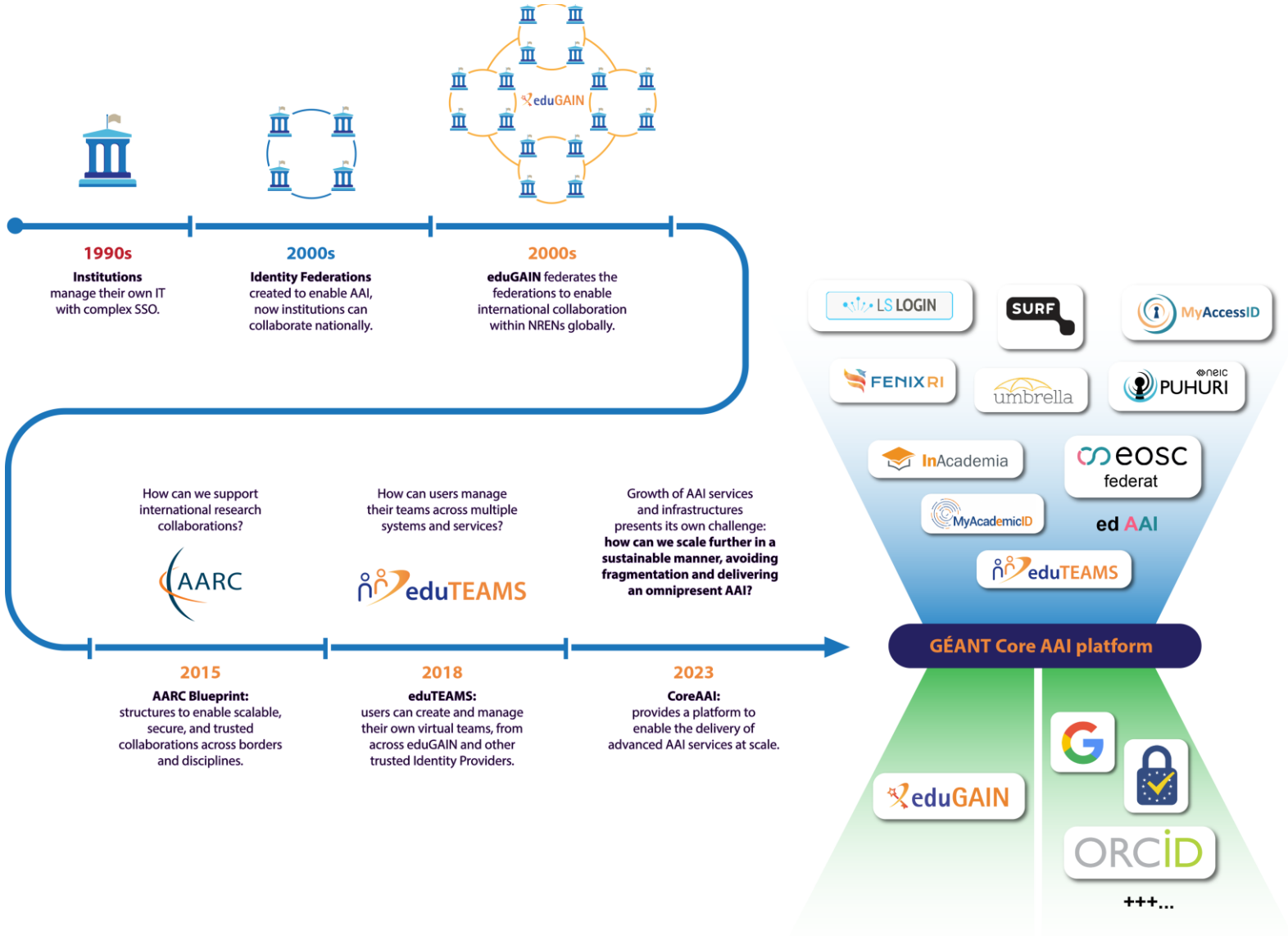
edugain.org

83
Countries

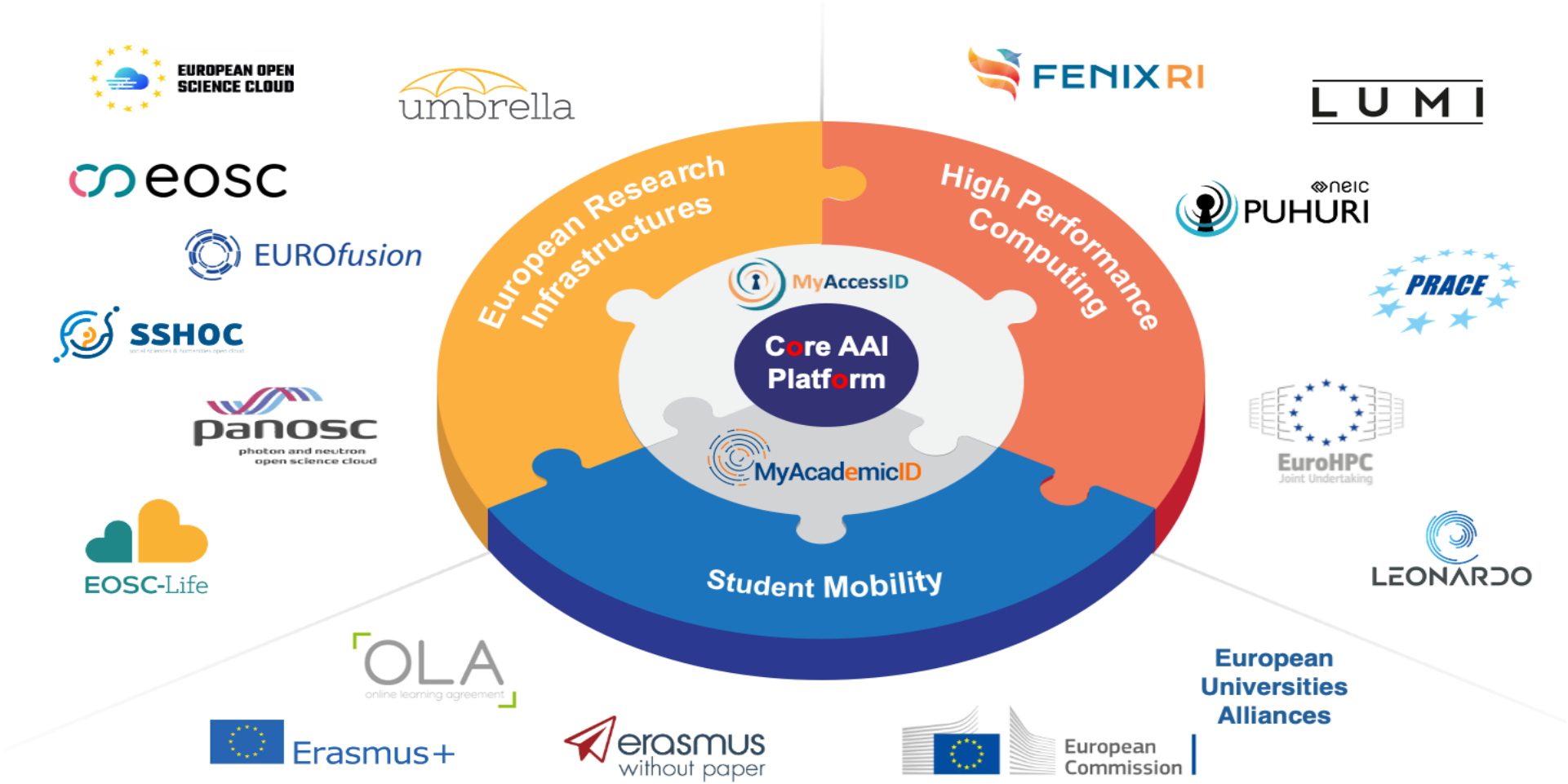
6,090+
Institutions

3,800+
Service Locations

Trust and Identity Services for the European Research Community



Adapting T&I Services to ever complex needs.


EUROPEAN OPEN SCIENCE CLOUD
umbrella
FENIX RI
LUMI
eosc
EUROfusion
neic PUHURI
PRACE
SSHOC
panosc
photon and neutron open science cloud
EuroHPC
Joint Undertaking
EOSC-Life
LEONARDO
European Research Infrastructures
High Performance Computing
MyAccessID
Core AAI Platform
MyAcademicID
Student Mobility
OLA
online learning agreement
European Universities Alliances
Erasmus+
erasmus without paper
European Commission

OCRE2024 – GÉANT's cloud framework

Building cloud services

Our community has experience and expertise, but…

Building takes time and effort, and institutions often need out-of-the-box solutions…

can be pursued in parallel

Buying cloud services

Apparently, an easy solution, but have you considered…

- Costs?
- Compliance?
- Procurement regulations?
- Bureaucracy and administration?
- Which service to choose?
- Security and privacy?
- Terms and conditions?
- Environmental impact?

Pan-European Scale of OCRE 2024

39 Countries

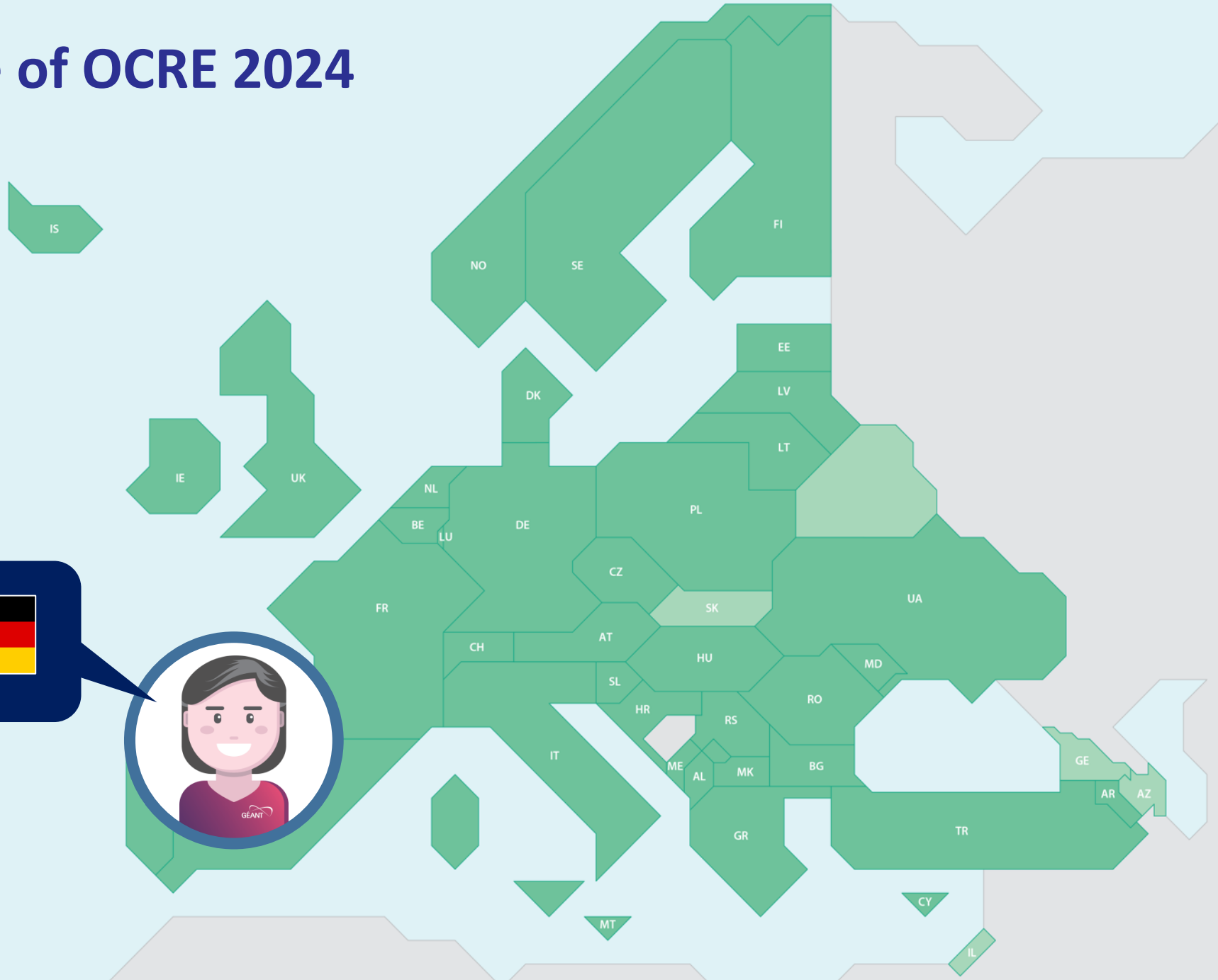
39 NRENs + GÉANT

Around 25,000 Participating entities

Out of which over 900 Institutions only in Germany!

More information via DFN
cloud@dfn.de

Full list at:
clouds.geant.org/ocre2024entities



Selected Platforms and Service Providers

17 Platforms

Hyperscalers

aws
Google Cloud
ORACLE Cloud Infrastructure
IBM Cloud
Azure

European Platforms

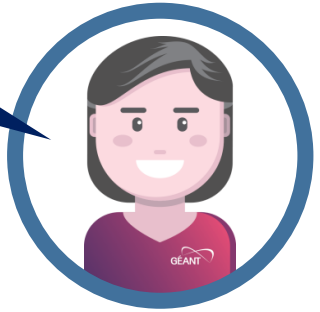
CloudFerro
OVHcloud
proximus NXT cloud
PROACT
safespring
SETCOR Set your business free
tet
Vancis
IONOS
EXOSCALE
Open Telekom Cloud
whitesky.cloud

Service Providers (all European)

academic software
advania
bechtle
CGI
devoteam
dsp
endava
inetum
MCX
Micromail
PHOENIX
Public Cloud Group
QUISTOR An ITG Company
robotron
SEIDOR
Softcat
one
span
SPARKLE
Telefónica
TRANSFER SOLUTIONS

CloudFerro
OVHcloud
proximus NXT
PROACT
safespring
SETCOR Set your business free
tet
Vancis
bechtle
A1
VSHN
T
educloud
VARITY

How do you handle Validation and Trust?



TRUST =

CREDIBILITY + RELIABILITY + INTIMACY

SELF-ORIENTATION (EGO)

Top Down or Bottom Up?

Who validates your organisation?

How does our Validation work?

- Daily bottom-up validation by our users
  - A network that is never full and never sleeps
  - 9.2B eduroam authentications
  - 27M eduGAIN users globally

- Top-down validation
  - Recognition of our existence!
  - EU and Global Policy Goals
  - Certifications

SUSTAINABLE DEVELOPMENT GOALS

Co-funded by

$$\text{TRUST} = \frac{\text{CREDIBILITY} + \text{RELIABILITY} + \text{INTIMACY}}{\text{SELF-ORIENTATION (EGO)}}$$

Developed by Charles Green and Colleagues (Trusted Advisor Associates)

TNC – a History of Strengthening the Community since 1997

The reason for connectivity, clouds, and access, is **people**.

Our flagship conference, the world's largest research and education networking event, brings together over 800 people from more than 70 countries – representing national and regional research and education networks, schools and universities, technology providers, and many of the world's most exciting scientific projects, for a uniquely collaborative experience.

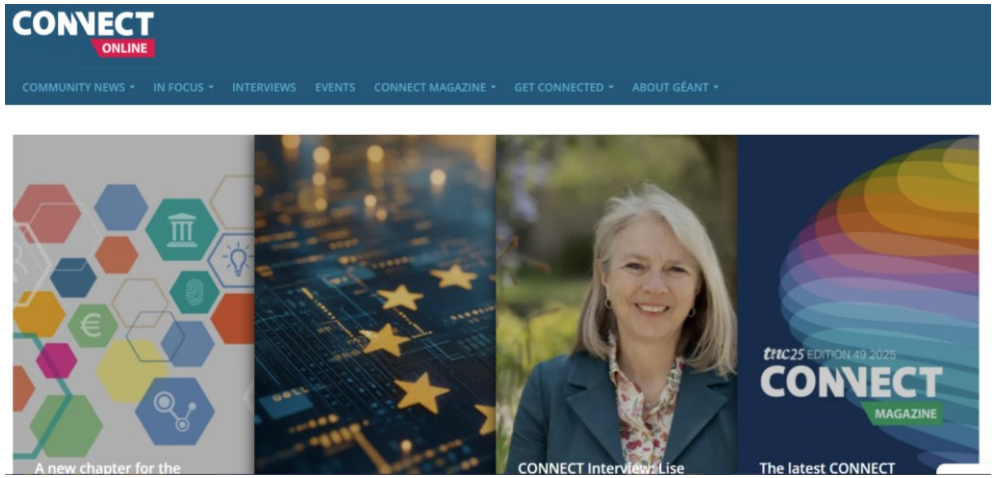
This year, TNC26 will take place 8 -12 June in Helsinki, hosted by CSC, our Finnish partner.

tnc26
DIGITAL SISU
Helsinki, Finland | **8-12 JUNE 2026**

linkedin.com/company/geantnetworks/

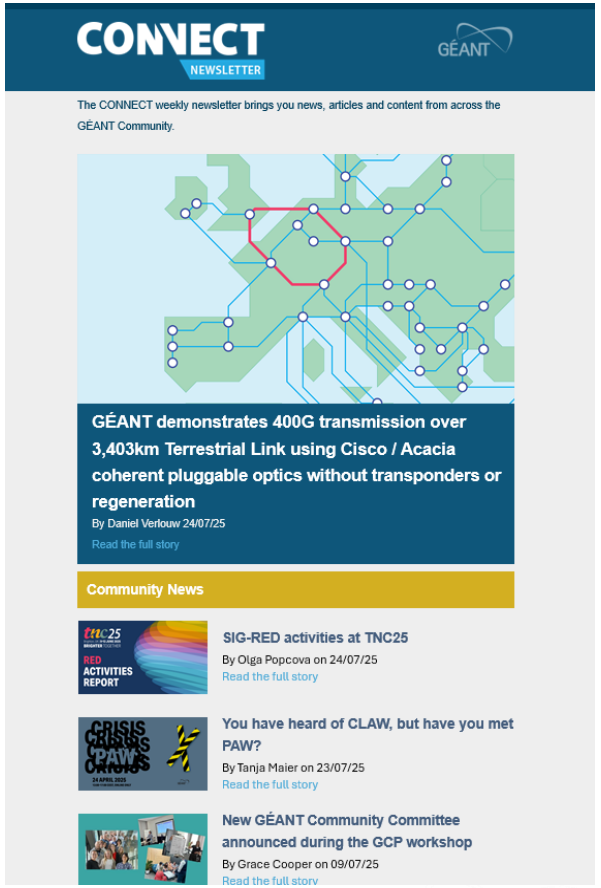
geant@mstdn.social

youtube.com/user/GEANTtv



CONNECT Website

CONNECT Magazine



CONNECT Newsletter

Thank you!

Any questions?

cathrin.stover@geant.org

www.geant.org

Co-funded by
the European Union