



- Introduction to GÉANT
- GÉANT Trust and Identity services
- Short outlook on the Future

Mario Reale

GÉANT

SENIOR RESEARCH ENGAGEMENT MANAGER

GN5-1 WP5.1 eduGAIN Business Development Task & Africa Connect3 WP2.2

Addis Ababa, January 29, 2024

Untunet FedOps Training

1. Introduction to GÉANT

- a. What is it
- b. What it does
- c. What services does it provide
- d. What its core values and strategy are



2. The GÉANT Trust and Identity Services

- a. eduroam
- b. eduGAIN
- c. InAcademia
- d. GÉANT AAI



3. Short outlook on the future of T&I - Core AAI

GÉANT is a Membership Association

GÉANT is the Association of the European National Research and Education Networks (NRENs):
It supports and represents over 38 NRENs + NORDUnet.

Together they support over 10,000 institutions and 50 million academic users.

Mission: To empower Research and Education with an Open, Innovative, and Trusted information ecosystem.



GÉANT membership

NATIONAL MEMBERS

1 per country

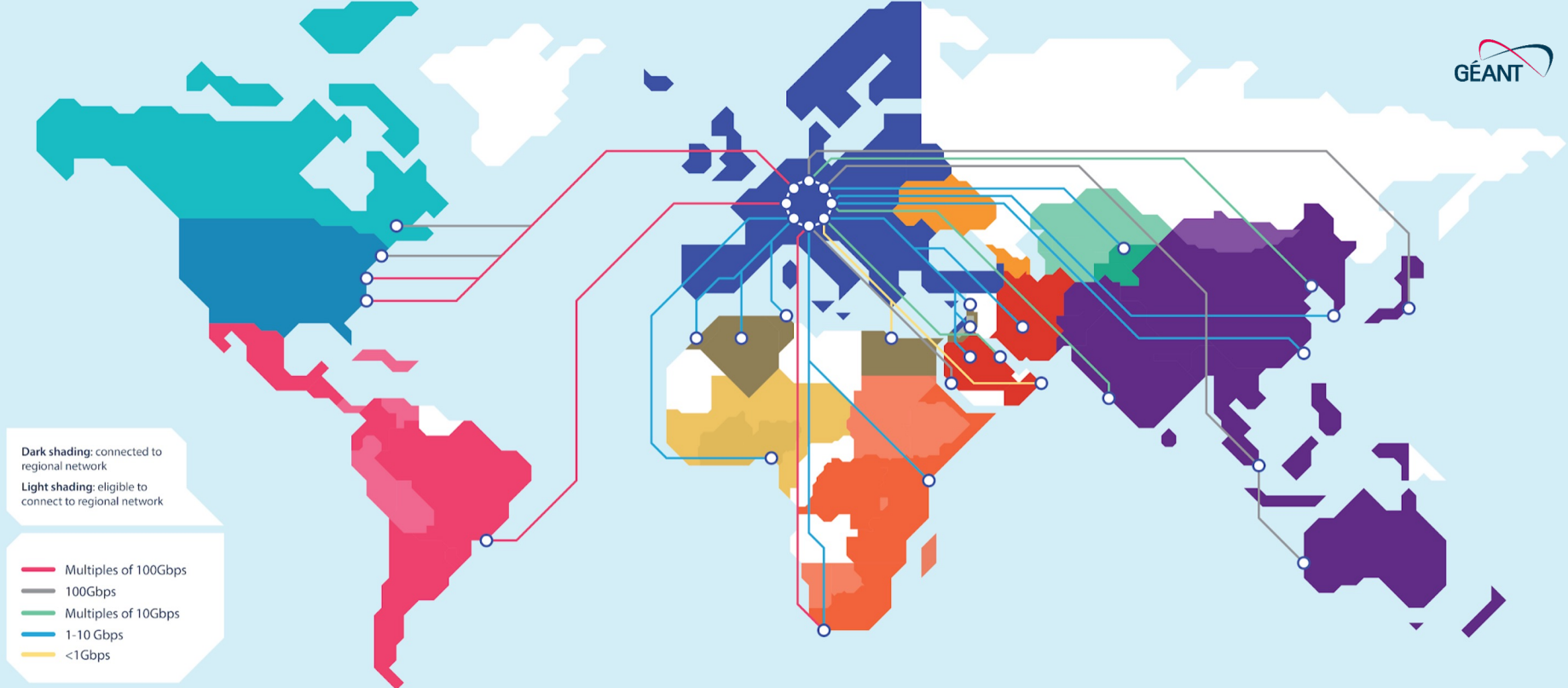
REPRESENTATIVE MEMBER

NORDUnet

ASSOCIATES

CERN
DeiC (Denmark)
European Space Agency
CSC/FUNET (Finland)
RHnet (Iceland)
KREN (Kosovo Research and Education)
SUNET (Sweden)
Sikt (Norway)





January 2023

Canada & USA

Latin America

Europe

North Africa & Eastern Mediterranean

West & Central Africa

Eastern & Southern Africa

Central Asia

Asia-Pacific

Other R&E Networks



What does GÉANT do ?



Runs a membership association for Europe's National Research & Education Networks (NRENs)

GÉANT Association



Coordinates and participates in EC-funded projects

Under Horizon Europe, Digital Europe programmes, and other EC funding programmes, aimed at securing Europe's global competitiveness.



Operates a pan-European e-infrastructure GÉANT network



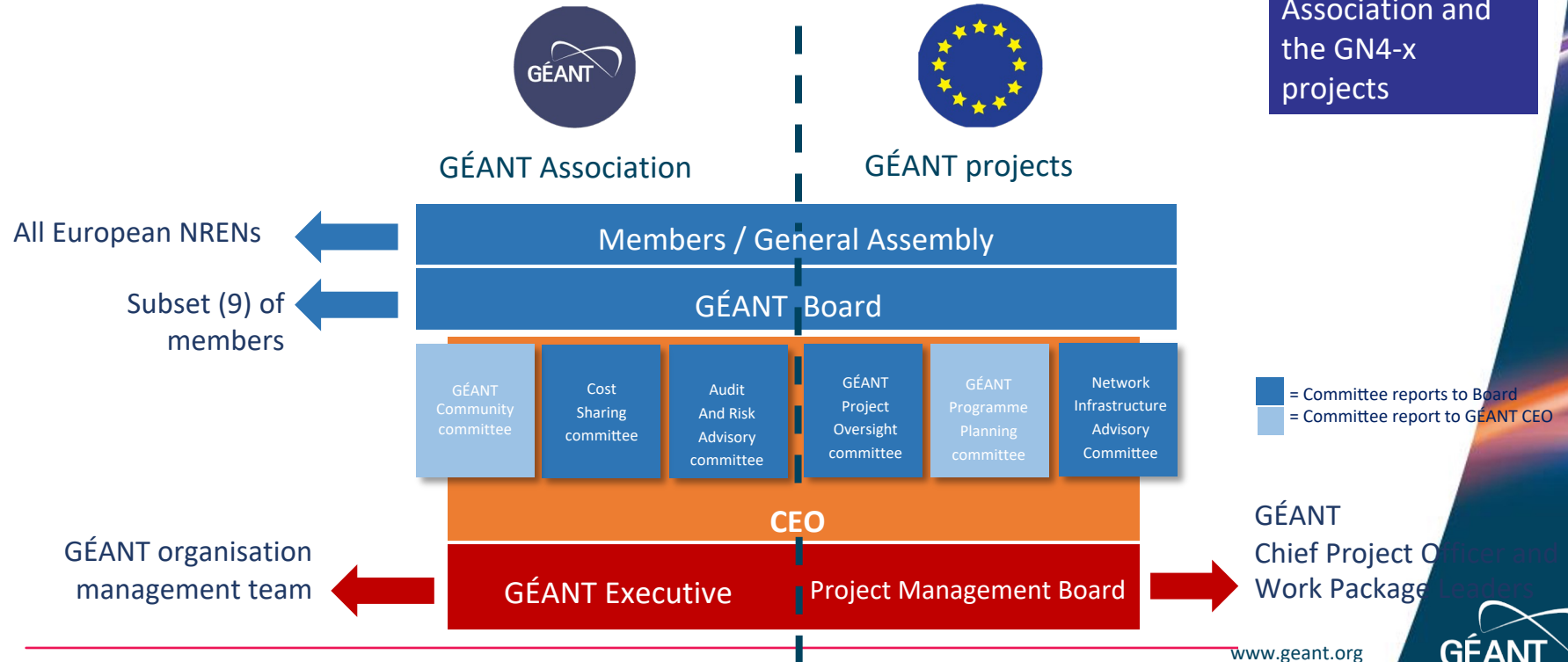
Manages a portfolio of services for research & education
eduX



Organises and runs community events & working groups

TNC, task forces & special interest groups

Governance model



Executive Team

Who is who in GÉANT



Erik Huizer

CEO

Nathalie McKenzie



Executive Secretary

CAT team
GDPR team
HR team

Bram Peters



Chief Network Operations Officer

Klaas Wierenga



Chief Information and Technology Officer

David Wrathmall



Chief Financial Officer(*)

Paul Rouse



Chief Community Relations Officer

Cathrin Stover



Chief Collaboration Officer

Matthew Scott



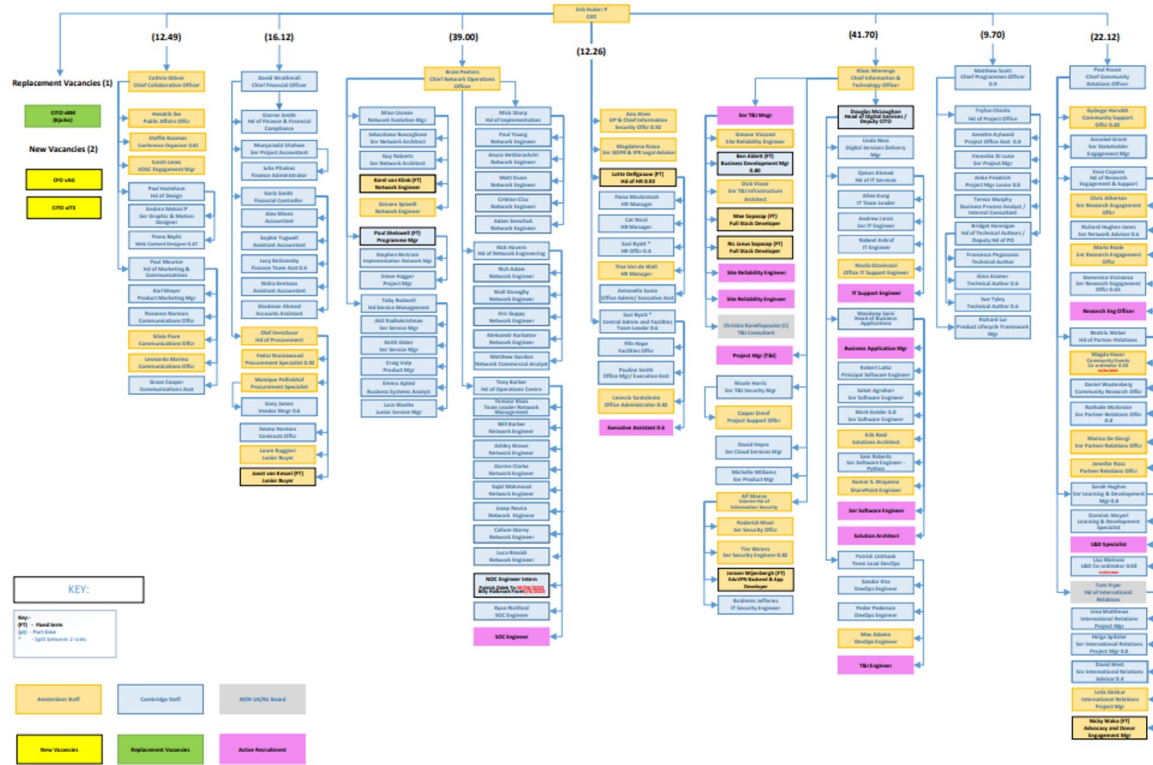
Chief Programme Officer

GÉANT Staff

Circa 40 in Amsterdam
 Circa 105 in Cambridge
 Plus active recruitment
 to reach circa 150

2023 Year End GÉANT Organisation Chart proposed on 1st of March 2023

2023 (draft) Total FTE = 156
 Note: Total FTE includes employees and permanent full time contractors



GÉANT Strategy and Values



Stronger Together



Our Values

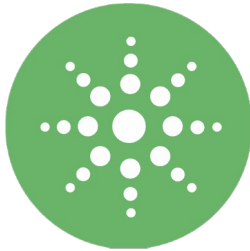


SDGs



Our Strategy

The GÉANT Values



Community



Trust



Innovation



Passion



SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY
EDUCATION



17 PARTNERSHIPS
FOR THE GOALS



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE





The GÉANT Association is the collaboration of European National Research and Education Networks (NRENs), supporting the advancement of research, education, and innovation on a global scale.

Together we deliver an information ecosystem of infrastructures and services used for communication, collaboration, exchange of data, and access to repositories, services and facilities.



VISION

*Collaborate to deliver the infrastructures and services
that enable the R&E community to excel*

Two paw prints are visible in the sand, one above and one below the text. The top paw print is larger and more distinct, while the bottom one is smaller and less defined. The sand is a light brown color with a fine, granular texture.

MISSION

*To empower research and education with an open,
innovative and trusted information ecosystem*

Eight Strategic goals for the GÉANT Association



Network

We are the trusted partner for pan-European and **global advanced R&E networking**



Security

We provide a **safe and secure information ecosystem** for researchers, educators, and students

Innovation

We **continually evolve** key infrastructures, innovate, and develop new services in order to fulfil the needs of the R&E community in a sustainable way



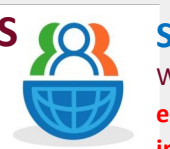
Community

We are acknowledged worldwide as a leader for developing and **supporting R&E networking communities**, and global REN development

THE GÉANT ASSOCIATION IS DRIVEN BY EIGHT STRATEGIC GOALS

European Union

We are seen by the EU as an indispensable **partner** for their vision



Stakeholders

We forge relationships with other **e-infrastructure providers, research infrastructures (RIs)**, and other stakeholders, to benefit the R&E community

Governance

We have a governance structure that is **agile** and benefits from the diversity of our membership



Funding

We will ensure **financial sustainability** to benefit our members

GÉANT

Projects and Services



GÉANT Services

GÉANT develops the specialist services members need to support researchers, educators and innovators – at national, European and international levels.



Network and
Network-centric
services



Security and
Trust & Identity



Community Services &
Procurement Services



European
e-infrastructure projects

Network



GÉANT IP

GÉANT Plus

10G Guaranteed
Bandwidth

L3VPN

MD-VPN

Managed Wavelength

GÉANT Open

GWS

Commercial Peering

MS ExpressRoutes

Oracle FastConnect

Network Support



perfSONAR

perfSONAR PMP

NMaaS

WifiMon (software)

GEANT Operations
Centre

Software Tools e.g.,
BRIAN

Timemap

Argus

Security



NSHaRP:

FoD

*RTBH (Remote
Trigger to Black Hole)*

*Anti-DDoS
NeMo*

eduVPN (software)

Trusted Introducer

TCS

Trust & Identity



eduroam:

Managed IdP

Managed SP

CAT

geteduroam

eduGAIN

eduTEAMS

InAcademia

Campus IdP
Toolkit
(software)

Cloud & RTC



Filesender Demo








IaaS+ Framework

eduMEET
(software)

Bold Type = Not in core package

Network



- Whiteboxing 
- RARE 
- GÉANT P4 Lab 
- QKD 
- OTFN 
- DTN 
- 100+ Network Monitoring and Performance Testing 

Security



Security Management:

- Baselining & Benchmarking 
- Business Continuity 
- Best Practice 


Security Tools:

- Treat Intelligence 
- SOC Tools 
- Vulnerability as a Service 
- DDoS Tooling / NeMo 

Securing High Speed Networks 

Trust & Identity



eduGAIN:
F-ticks for eduGAIN 

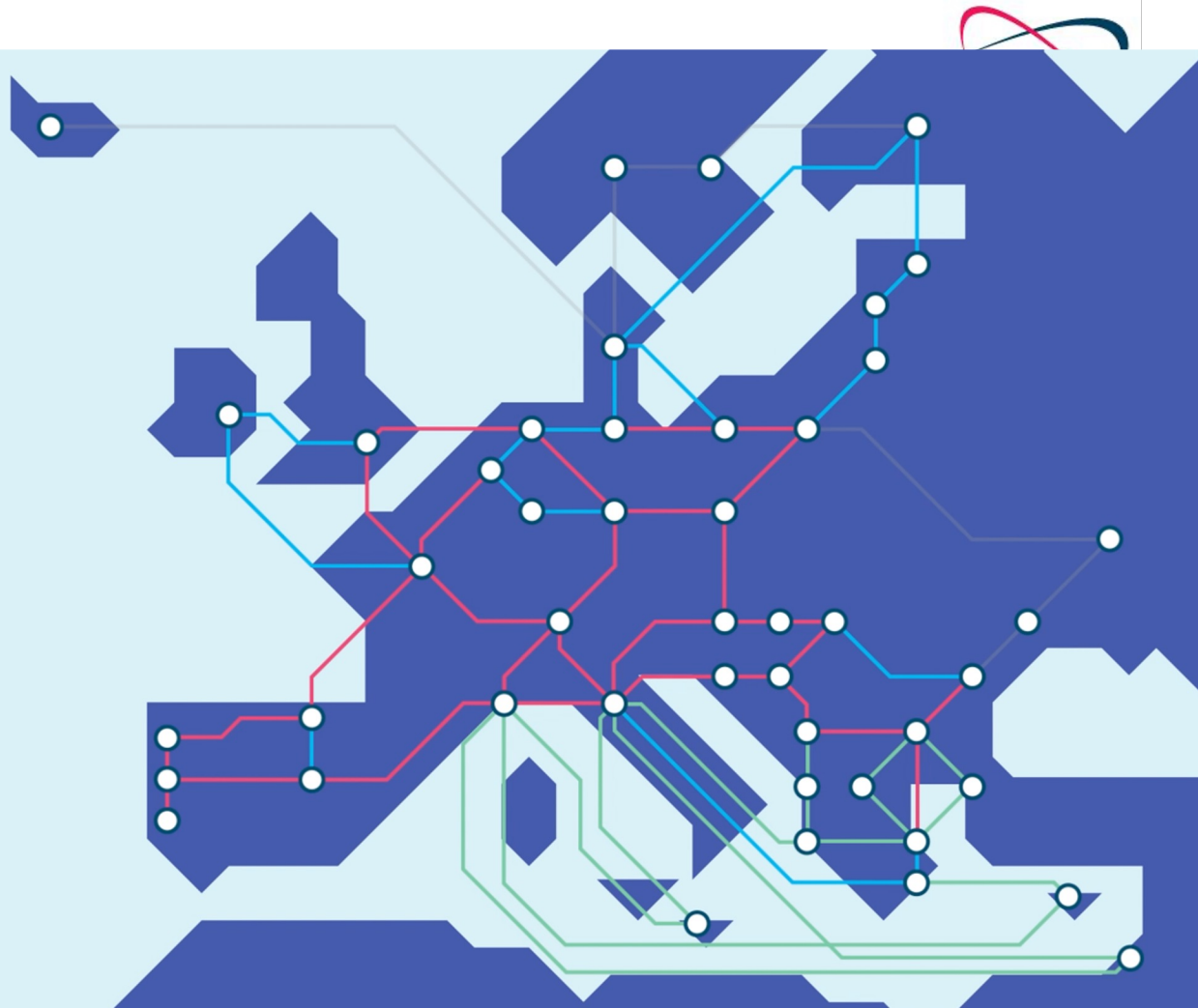
-  Exploration phase
-  Development phase
-  Pilot phase

PLUS Incubators in Trust and Identity, Cloud and Network Support
Submit ideas to the Work Packages!

GÉANT



Funded by the EU



Traffic growth on GEANT Backbone

Long-term Backbone Traffic Growth

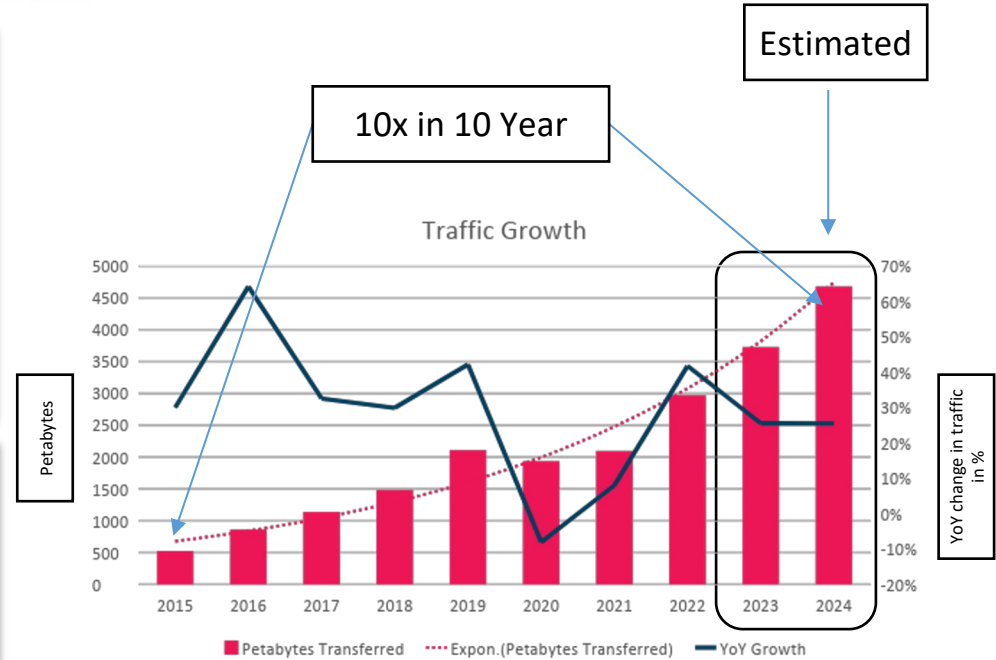
(on GÉANT network driven by scientific instruments)

- **Total: 2010 –2022** growth of over **30% YoY**
- **2015–2019**: Traffic growth of **40% YoY**
- **2015–2022**: Traffic growth of **27% YoY**

Total Backbone Trunk Capacity

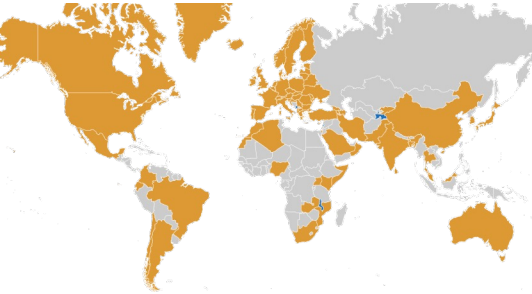
February 2019 **2.7 Tbps**

Now 2022 **9.4 Tbps**



2
7

Federated Identities in Research and Education - Globally



79

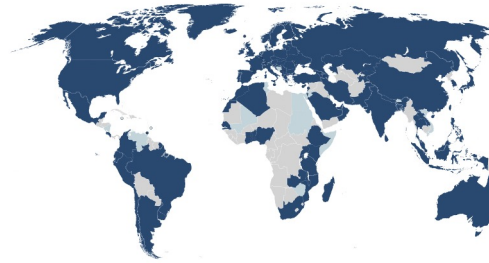
Countries

5000+

Institutions

3500+

Web
Services



110+

Countries

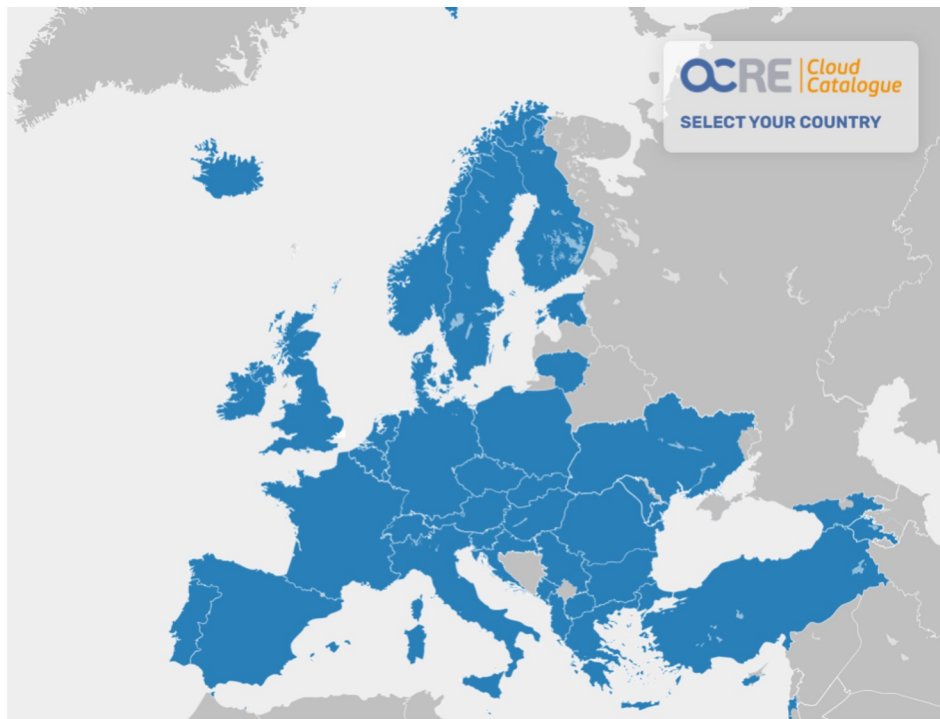
9500+

Institutions

36500+

eduroam WiFi
Locations

Procurement for Universities and Research Institutes in Europe



GÉANT brings down cost of cloud services

36 participating countries

R&E institutions act as a

Single Digital Market

12 different IaaS solutions (providers)

20 suppliers,

incl. Amazon & Microsoft resellers

473 framework contracts

GÉANT Research Engagement

Astronomy/Physics



Earth Observation



eInfras



Life Science



Arts and Humanities



Outreach



Current GÉANT EC Projects overview

GEANT FPA GNx Projects

1. GN4-3N
2. GN5-1
3. GN5-IC1

EOSC Projects

4. EOSC Future

T&I Projects

5. EDSSI2
6. DC4EU
7. AARC TREE

Other Connectivity Projects

7. CLONETS-DS
8. SUBMERSE

International Projects

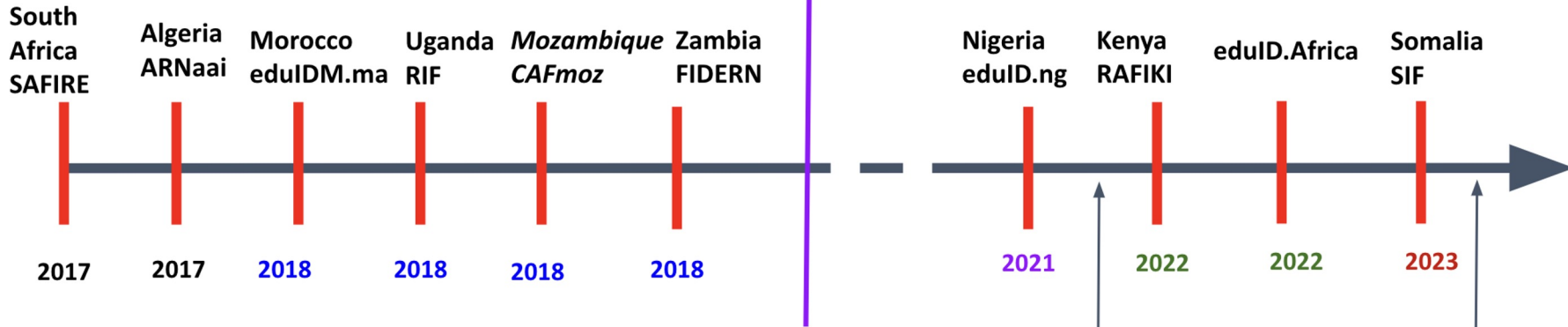
9. EaPConnect2
10. AfricaConnect3

PLUS

Submitted: EOSC Nudge; EOSC Beyond

eduGAIN in Africa

AfricaConnect3
Started Nov 2019



African entities in eduGAIN (June 2022):

- Total of **19** African **SPs** in eduGAIN
- Total of **53** African **IdPs** in eduGAIN
- Total of **7** National **Identity Federations** in eduGAIN

Africa entities in eduGAIN (June 2023):

- Total of **32** African **SPs** in eduGAIN **+68%**
- Total of **61** African **IdPs** in eduGAIN **+15%**
- Total of **10** National **Identity Federations** in eduGAIN **+42%**

- Togo
- Burkina Faso
- Ghana
- Ethiopia
- Malawi
- Tanzania
- [..]

AfricaConnect3 establishing new federations in Africa

Identity Federations in Africa in 2023



2023



4 years ago

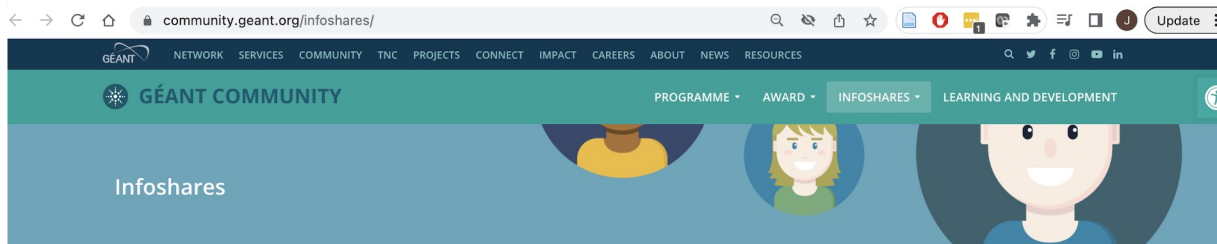


The GÉANT Community Programme

- Main goal is to **exchange experiences, best practices, share hands-on expertise** in various domains involving the NRENs, their services and their connected community of users
- Implemented through **Special Interest Groups and Task Forces**



<https://community.geant.org/>



Infoshares are a series of regular events coordinated by the GÉANT Partner Relations Team. They are complimentary to the GÉANT Community Programme and seek to create a space for engagement, improved knowledge sharing, and open discussion about services and strategic topics, all to strengthen the human network across the Research and Education community. Their purpose can be: "General information", "Consultation/feedback on future work" or "Preparation for decisions".

Public Infoshares are scheduled on Wednesday afternoons and registration is open to everyone. These events will be recorded and made accessible on GÉANT's eAcademy, as well as the relevant Wiki pages within two days. Some Infoshares, which are not meant for the general public, will take place on other days and are restricted to 'invitation only'. This will be clearly indicated.

A full list of future and past Infoshares, both public and restricted, is available on wiki.

Please note that some Infoshares are meant to specific target audiences only and, therefore, their recordings have restricted access (login needed).

[find out more](#)

See : → <https://community.geant.org/infoshares>

Organise your own Infoshare

If you are interested in hosting one please read the instructions outlined [here](#).

Infoshares calendar



perfSONAR 5.0 Infoshare 31/03/23
11:00 CEST
The release of perfSONAR version 5.0 is only a few... [Read more »](#)

Recordings of past Infoshares



GÉANT Infoshare: EUDAT - Empowering NRENs and their Institutions with Data Management Capabilities



GÉANT Infoshare: Quantum Key Distribution

GÉANT Upcoming Events



Networks · Services · People

WELCOME

Welcome to the events management system from GÉANT, powered by CERN's open-source Indico tool.

This service allows you to:

- register for events;
- manage your own events, from simple meetings to complex conferences and workshops;
- see a calendar overview of events in the wider research and education networking community, to help you avoid scheduling your event on dates that clash with other relevant events.

HOW TO...

- To register for events here, please use your federated login.
- To create your own events here and use this as a registration management tool
 - request elevated access rights by contacting the [GÉANT Support Team](#)
 - consult our training [manual](#)" (pdf)
 - view the [training video](#) from our community session on 8 September 2020.
- To help us improve this system and/or our information about it, contribute to the community [wiki page](#).

<https://events.geant.org>



Some events in the list below have been hidden.

There are 472 events in the past.

SHOW

March 2023

- 28 Feb - 02 Mar [REFEDS FEDCM Hackathon \(TBC \)](#)
- 01 Mar - 02 Mar [28th STF, hosted by SURF \(Virtual \)](#)
- 03 Mar [Joint EOSC Future and RESIN workshop on research support services \(Chartered Accountants House, 47-49 Pearse St, Dublin 2, D02 YN40 \)](#)
- 08 Mar [10th SIG-CISS @ CS3 Conference - Barcelona \(Spain\) \(Esade Forum-Pedralbes Campus Building 3 – Room B020 Building 3. Av. Esplugues, 92-96. E-08034 Barcelona. - Tel: +34 93 280 61 62 \)](#)
- 09 Mar [GÉANT Infoshare - Privacy Policy for the GÉANT Project - Follow up \(Virtual \) \(Virtual \)](#)
- 13 Mar - 17 Mar [APAN55](#)

Advanced North Atlantic (ANA) Collaboration

- **ANA:**

- A collaborative effort to provide multiple, diverse links to support R&E collaboration across the North Atlantic
- Individual Transatlantic links are provided on diverse paths by:



100 Gbps

PAR-NY

100 Gbps

AMS-MONT

100 Gbps

LON-WASH

2 x 100 Gbps

NY-LON

NY-AMS

4 x 100 Gbps

WASH-GEN

BOST-AMS

2 x NY-LON

100 Gbps

AMS-NY

CAR-1 and the Asia-Europe Ring

- **CAE-1**

- A 10-year collaboration starting in 2019 to connect Europe and Asia-Pacific at 100 Gbps between London and Singapore



- **Asia-Europe Ring (AER)**

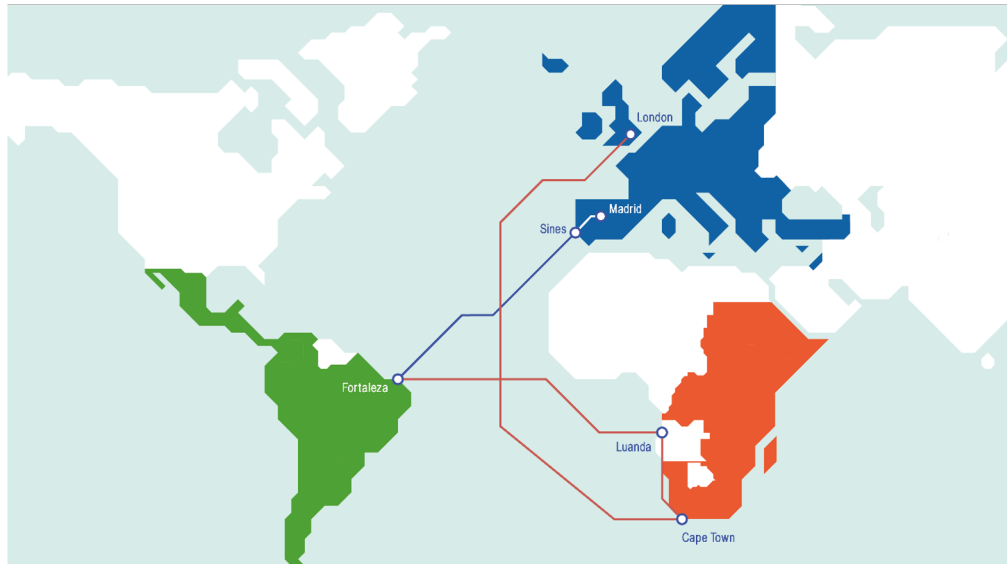
- A collaboration of eight R&E networks to provide mutual back-up between Europe and Asia-Pacific across diverse links



Bridging Europe, Africa and the Americas (BEAA)

BEAA:

- A collaboration of R&E networks in Europe, Africa and the Americas to provide mutual back-up via diverse links in the Southern Atlantic

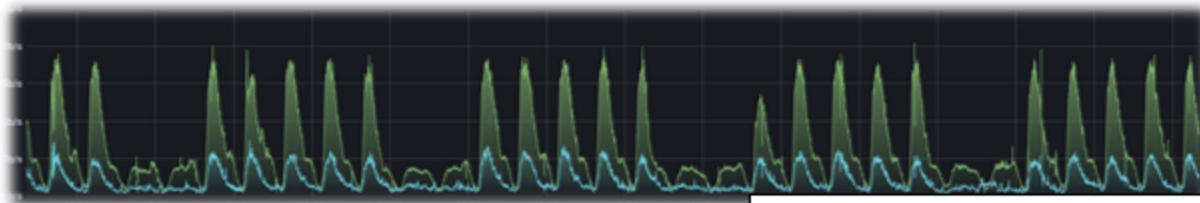


Networks for European, American, African, and Arctic Research (NEA3R)

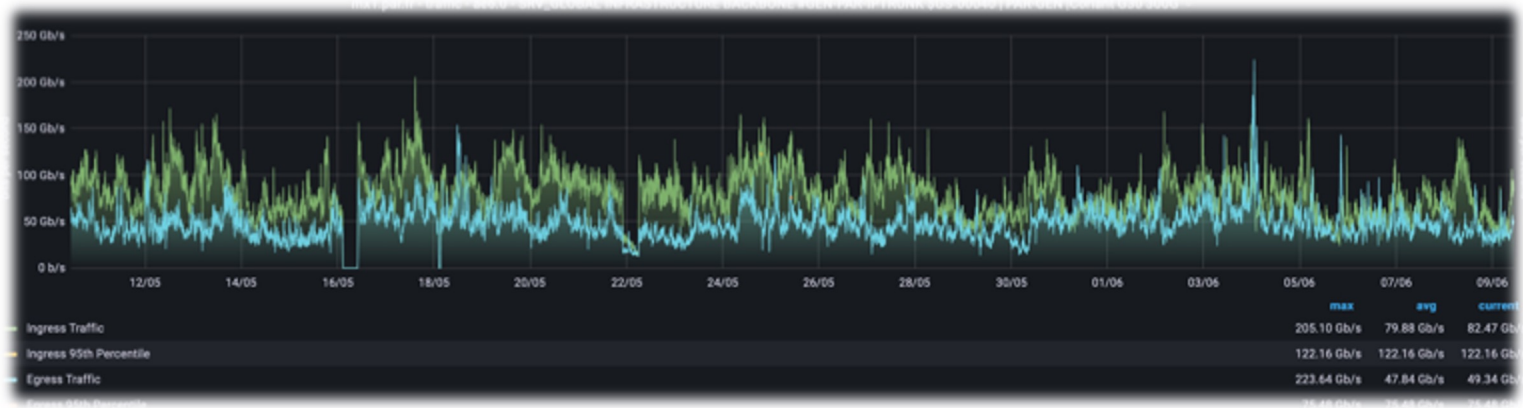
Funding Source:	US National Science Foundation <ul style="list-style-type: none">International Research Network Connections (IRNC) programme (Core: Improvements)
Objective:	Support R&E collaboration between the US and Europe, Africa and the Arctic
Activities:	<ul style="list-style-type: none">Delivers 2x 100Gbps transatlantic connectivityNetSage Measurement and Monitoring FrameworkScience EngagementRouting Anomaly detectionSupport for Network Experimentation
Duration:	Five years (2020-2025)
Budget	US\$ 4.75 million
Web Presence:	https://internationalnetworking.iu.edu/projects/NEA3R/index.html http://portal.netsage.global
Coordinator:	International Networks at Indiana University
Supporting Partners	GÉANT; NORDUnet; UbuntuNet Alliance



Unpredictable Traffic

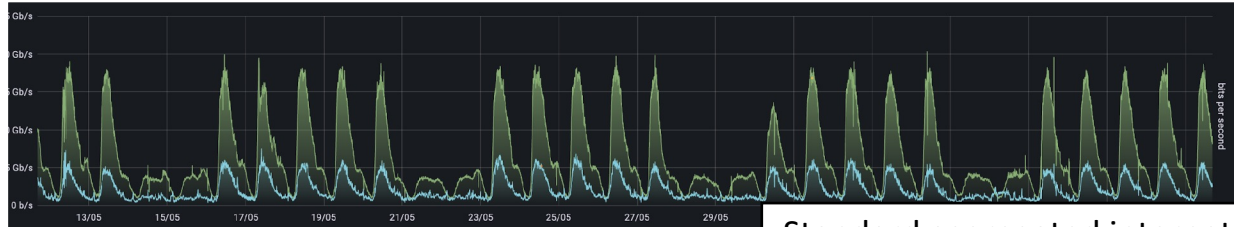


Standard aggregated internet traffic

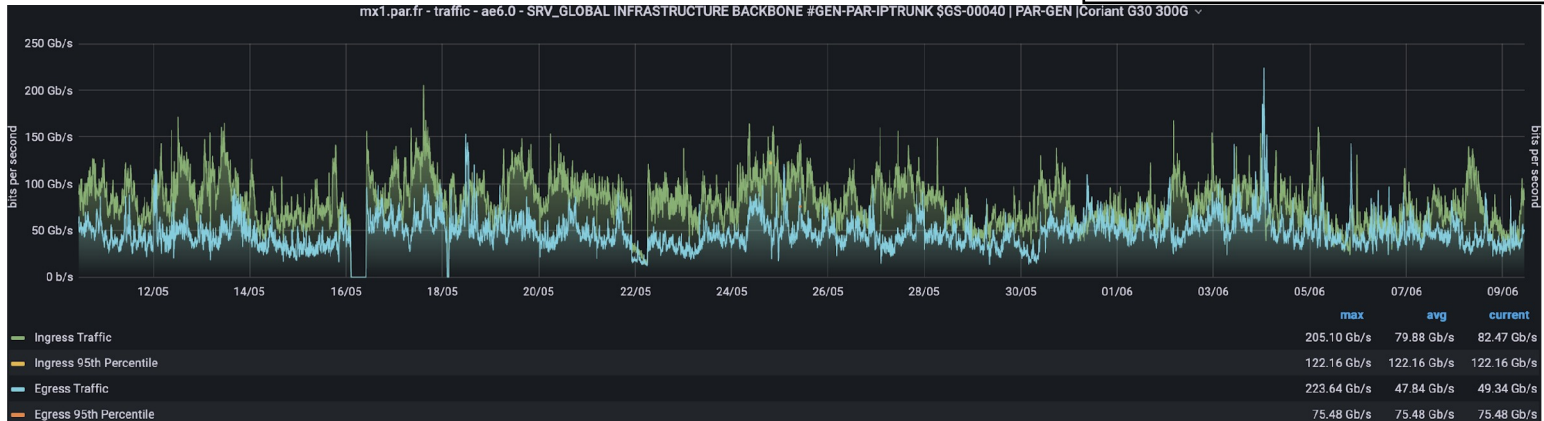


GÉANT aggregated network traffic

Unpredictable Traffic

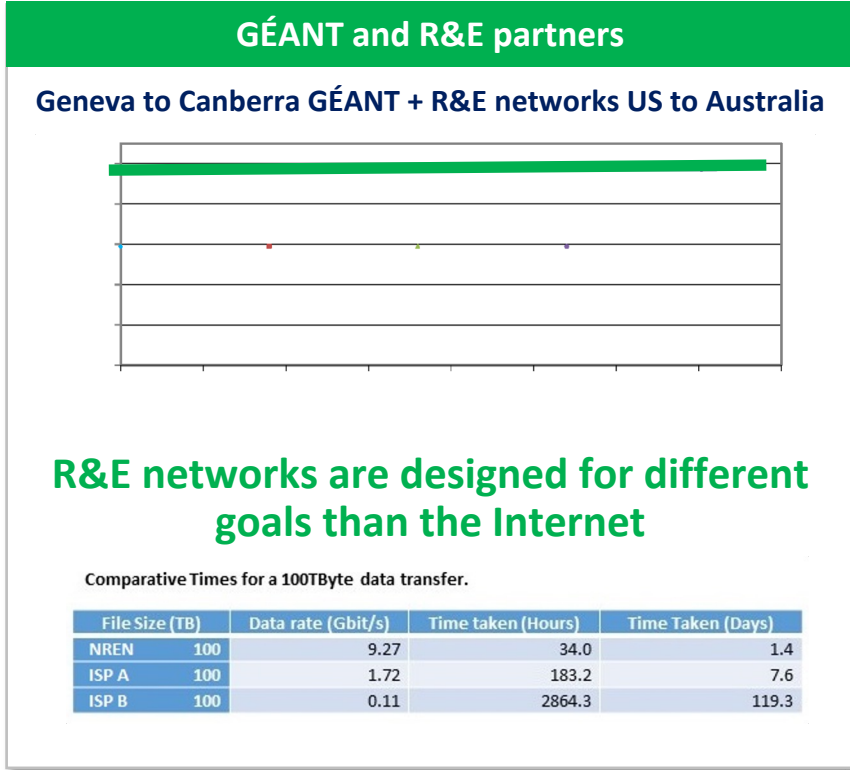
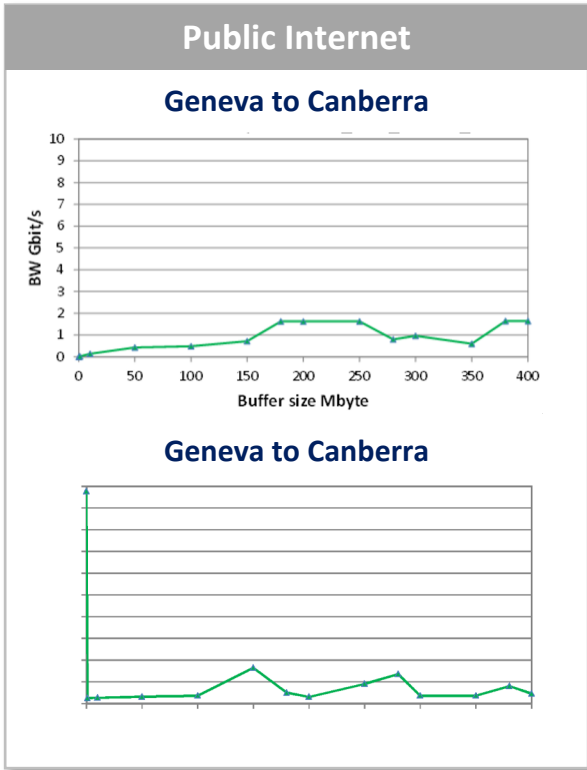


Standard aggregated internet traffic

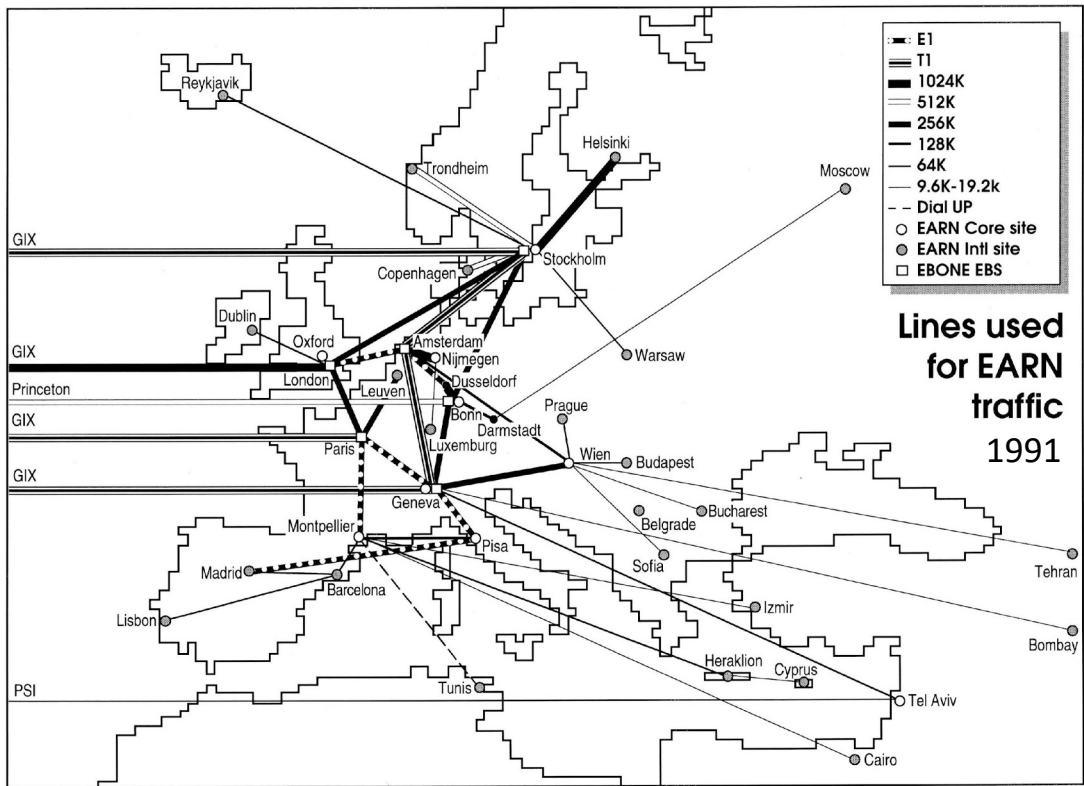


GÉANT aggregated network traffic

Optimised for research data transfers (2017)



Where GÉANT came from

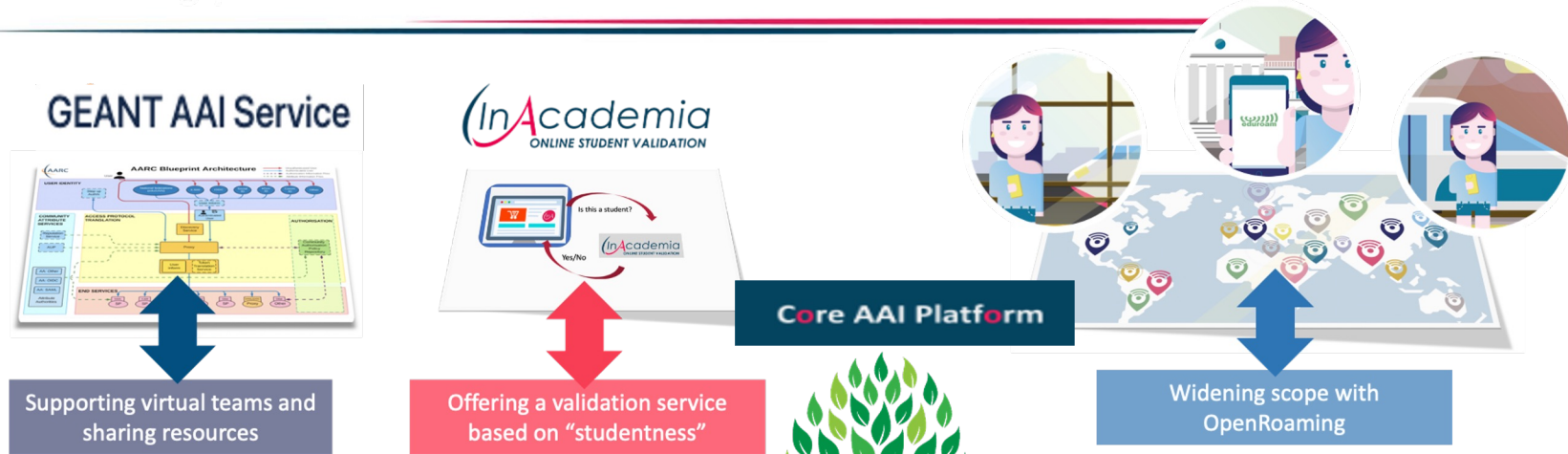


GÉANT Trust and Identity Services

TRUST & IDENTITY

T&I Service Portfolio

The big picture



eduroam




eduroam

- Being online is ever more important
- eduroam is a blueprint for deploying WiFi (which is likely present)
- Clear what to expect
- Good connection, no portal/Ads, reputation
- Secure and easy
- **Open up your laptop and bang! You're online!**
- Based on mutual access, hospitality: give and take
- Based on future proof standards



eduroam is big and global

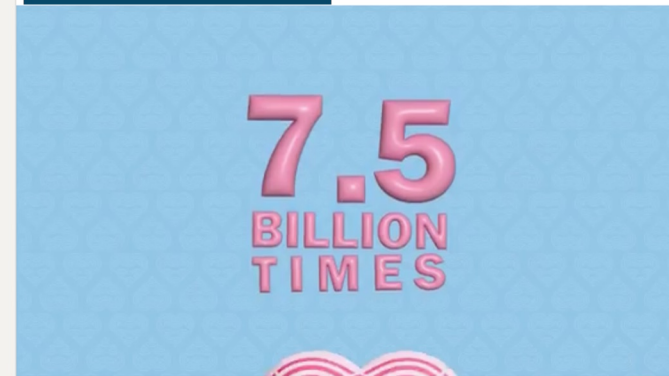


- eduroam is the biggest federated roaming-infrastructure

- 7200 IdPs
- 30000 locations
- 110 countries

- Service we all build together

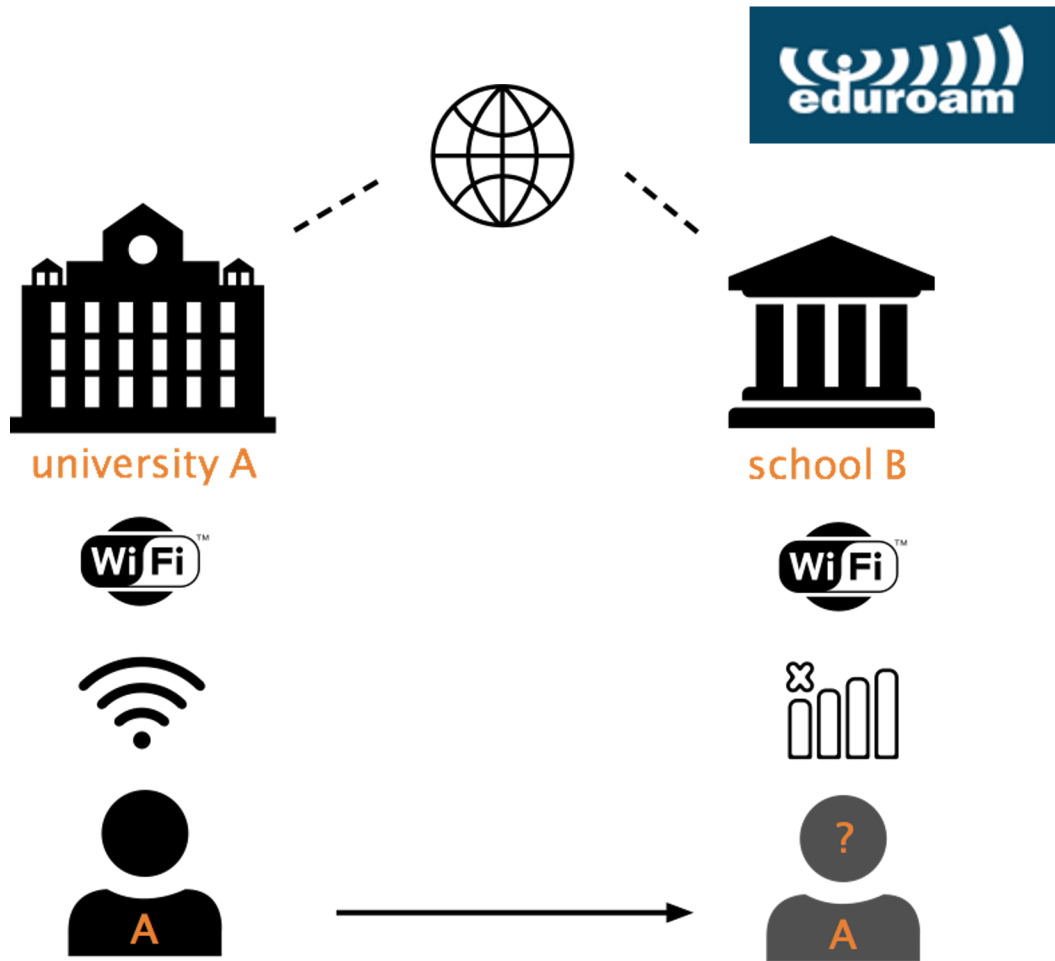
- Campuses, IdPs, SPs
- National Roaming Operators
- Regions
- Global eduroam, governance

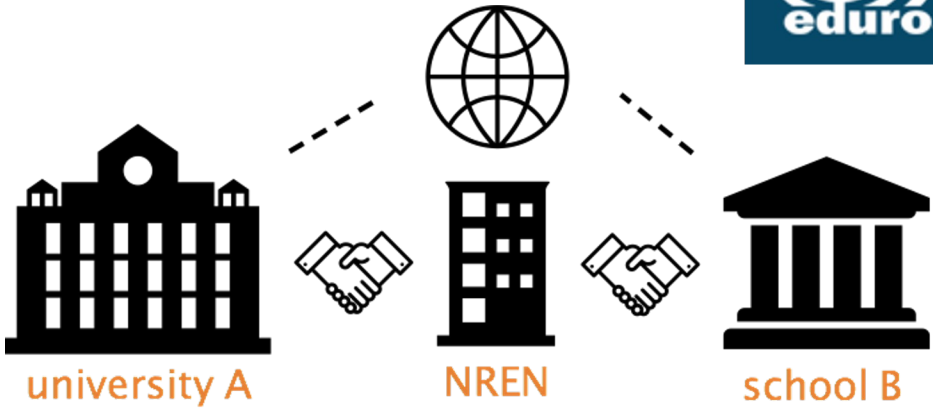


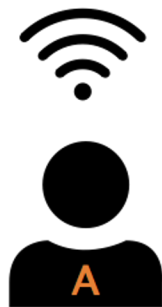
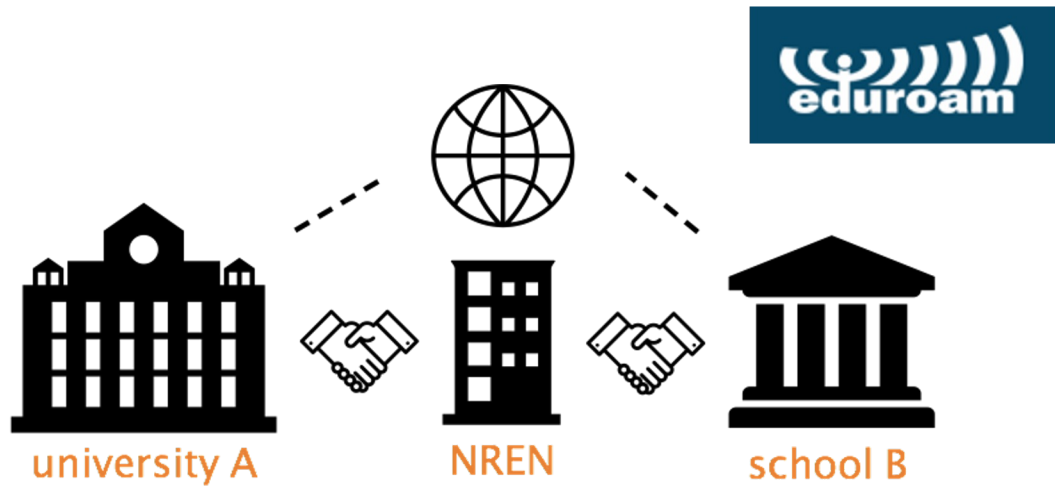
Last year, [#eduroam](#) was used over 7.5 billion times in over 100 countries! As staff, researchers and students resume travel and collaborations then eduroam becomes even more important to help users stay connected.

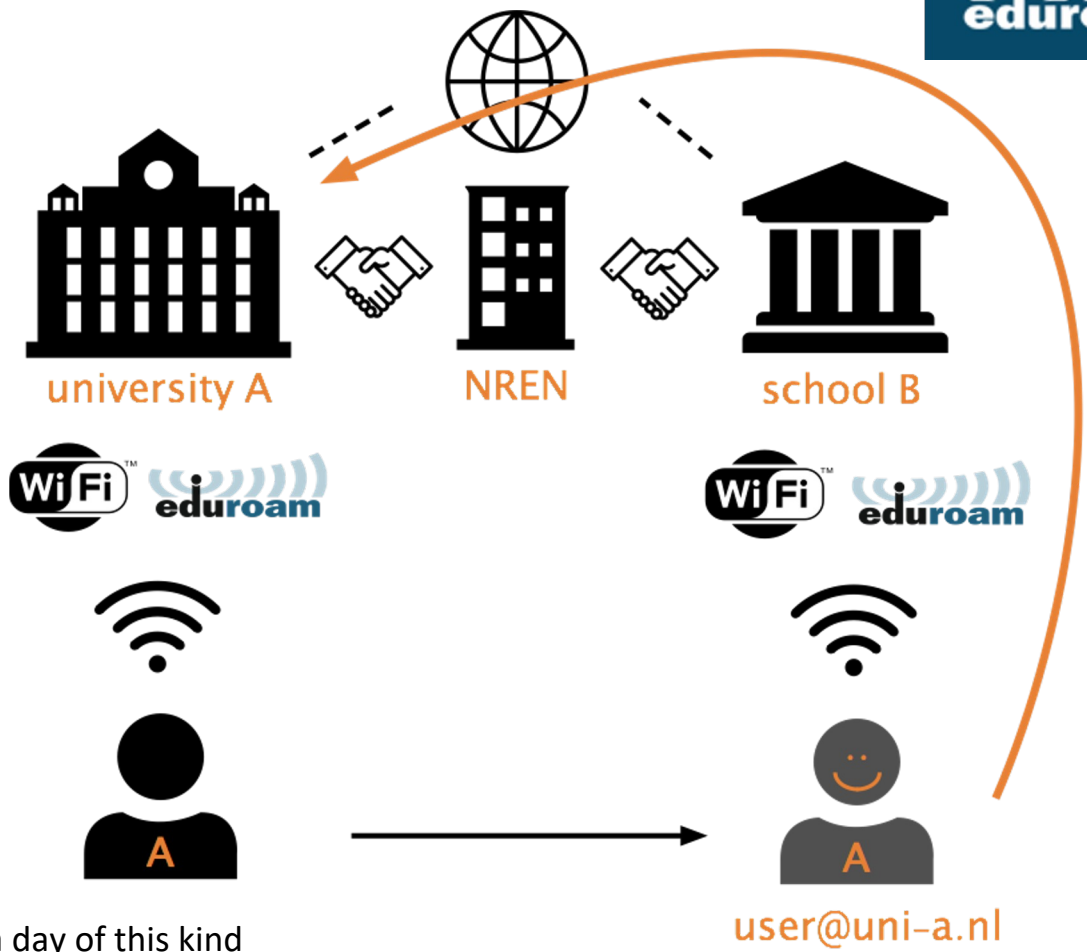
To find out more about where you can eduroam visit <https://eduroam.org/where/>

[#love2eduroam](#) [#research](#) [#education](#)
[#academia](#) [#HigherEducation](#) [#connectivity](#)
[#students](#) [#university](#) [#universities](#) [#NRENs](#)



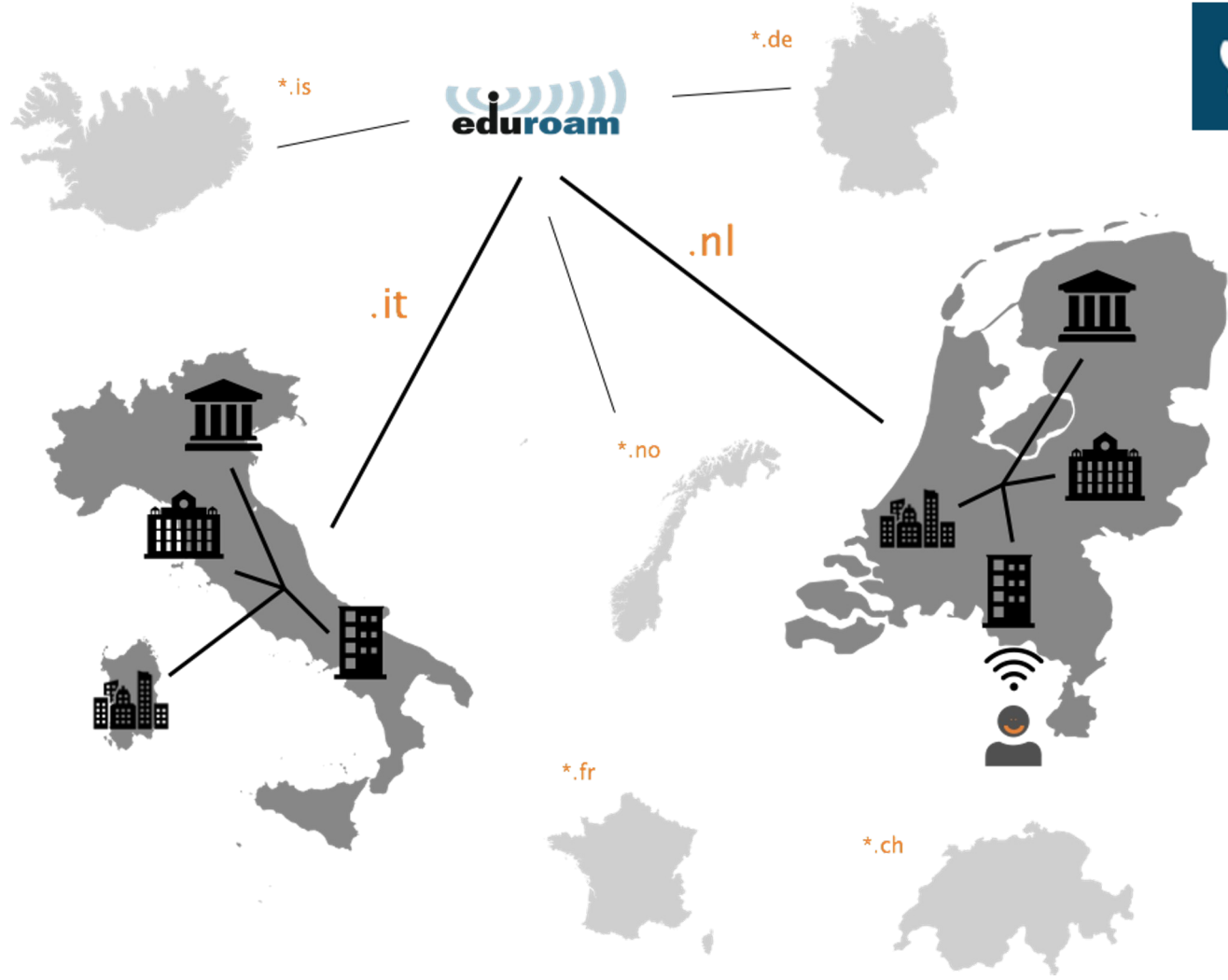






In NL:
10 million authentications a day of this kind

user@uni-a.nl





- Concept originated at SURFnet, developed with international TERENA (now Géant) community in 2003.
- In use at primary-, secondary-, academic- and research
- Large community, working on blueprints, knowledge, documentation, ...
- Mutual access with eduroam participants:
authentication using existing account at home-institution
authorization is easy: just one single purpose
- Future-proof technology, tried and true concept.

- **Security problems,**
traditional wireless LAN is not safe:
 - who is (ab)using the (wireless) network?
 - are people eavesdropping?
 - weak (or no) encryption, no authentication
- Difficult to allow guests
 - User-identification
 - Distribute secrets? Maybe not.
- **Users are mobile, across borders**



- **Ease of use!**

Always connected (like 2/3/4/5G? *)

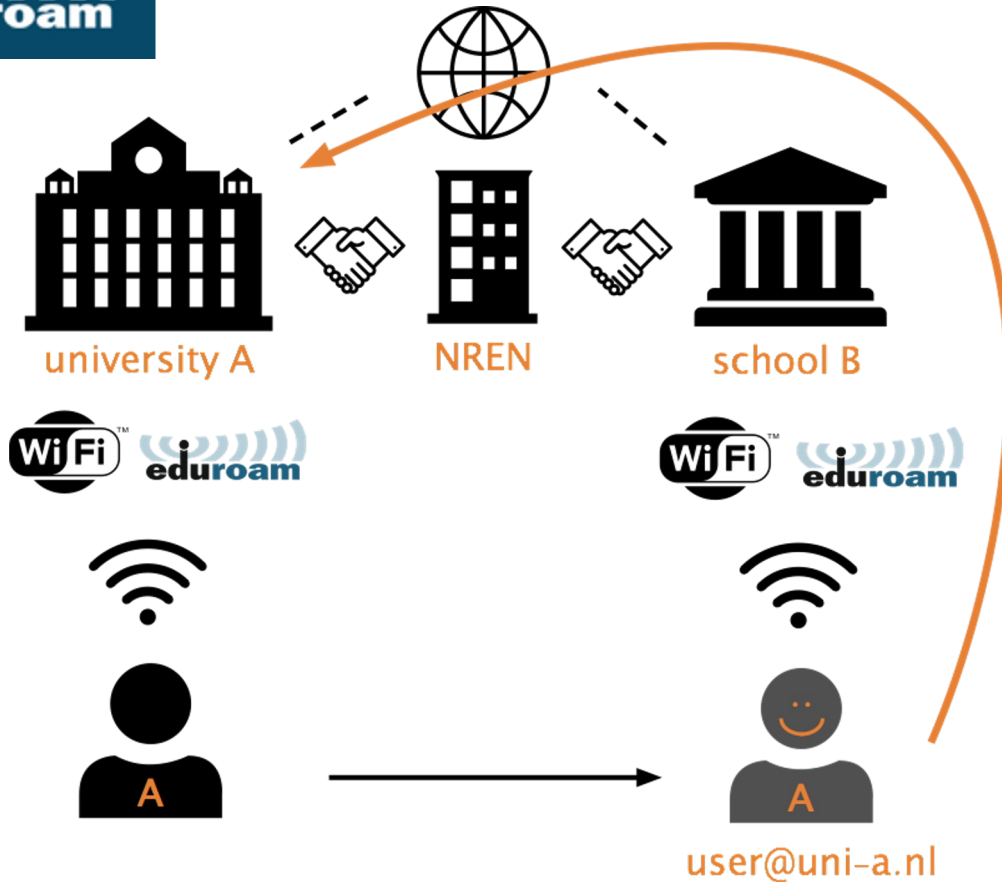
Even on busy places, in cities, ...

Open up your laptop and bang! You're online

*) mobile data doesn't always work well on crowded locations or in buildings,

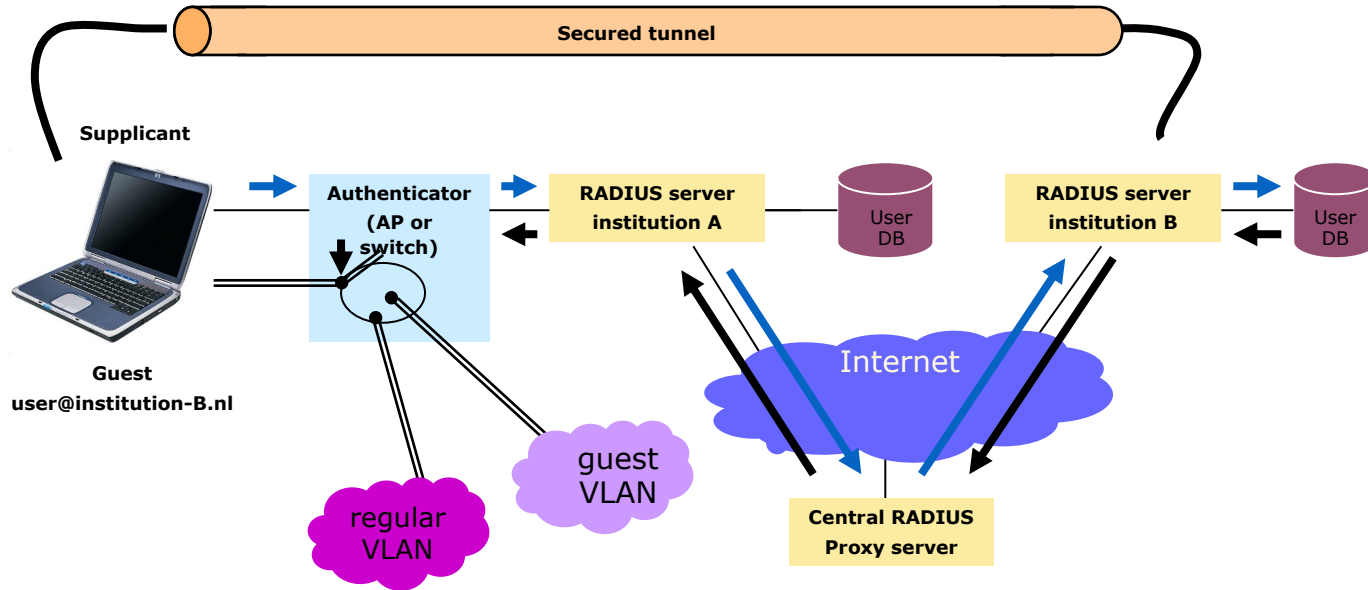
Wi-Fi / eduroam can be used for seamlessly offloading data

4G, 5G won't replace Wi-Fi, they both have their own roadmap



- WiFi name is “eduroam”
- Security settings the same (WPA2-Enterprise)
- Username is like e-mail user@institution.tld
- Authentication is forwarded
- Give and take
 - A provides eduroam
 - A uses eduroam
 - B provides eduroam
 - B uses eduroam
- Global trust agreements, policies

Bolting technologies together: Eduroam end-to-end security, mutual authentication

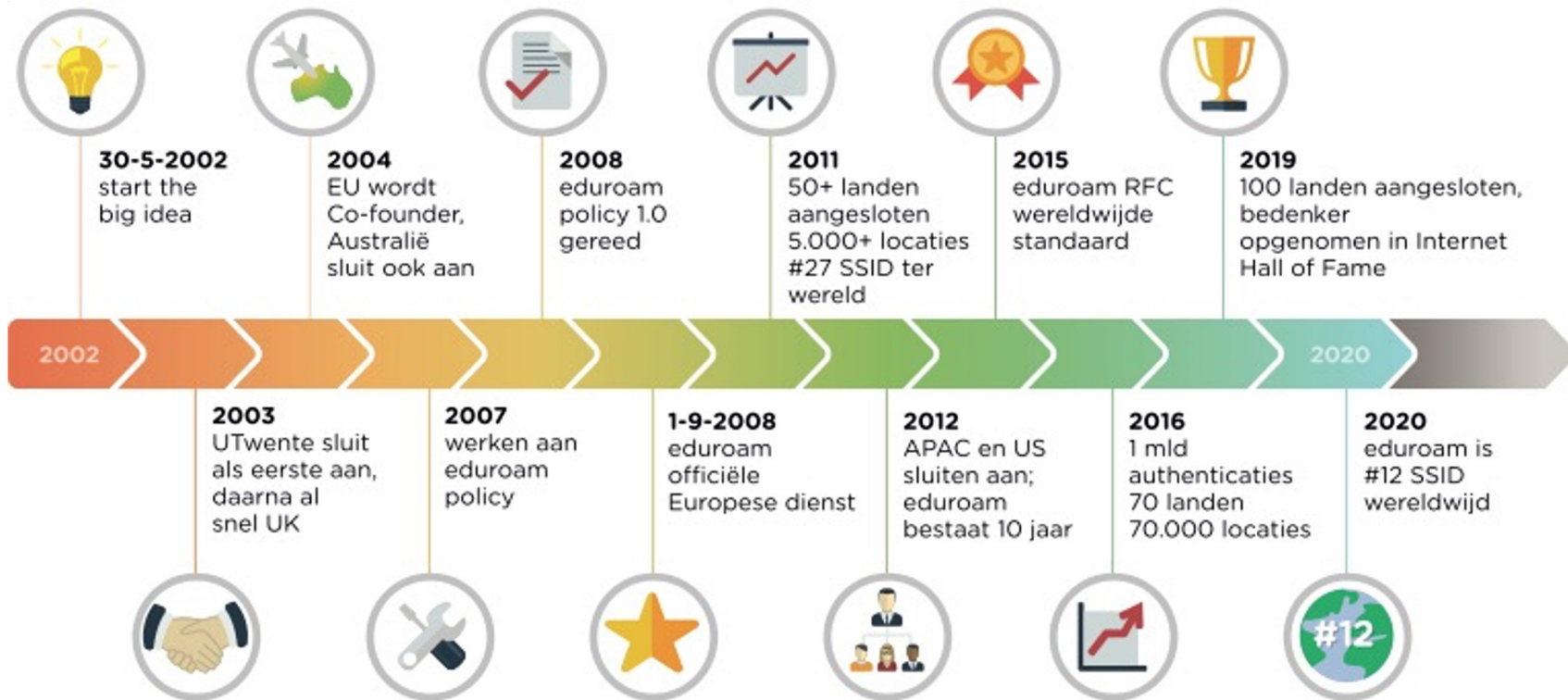


A secure tunnel is established from the user's computer to his home institution through which the **actual authentication information (username/password etc.) will be carried (EAP-TTLS or PEAP)**

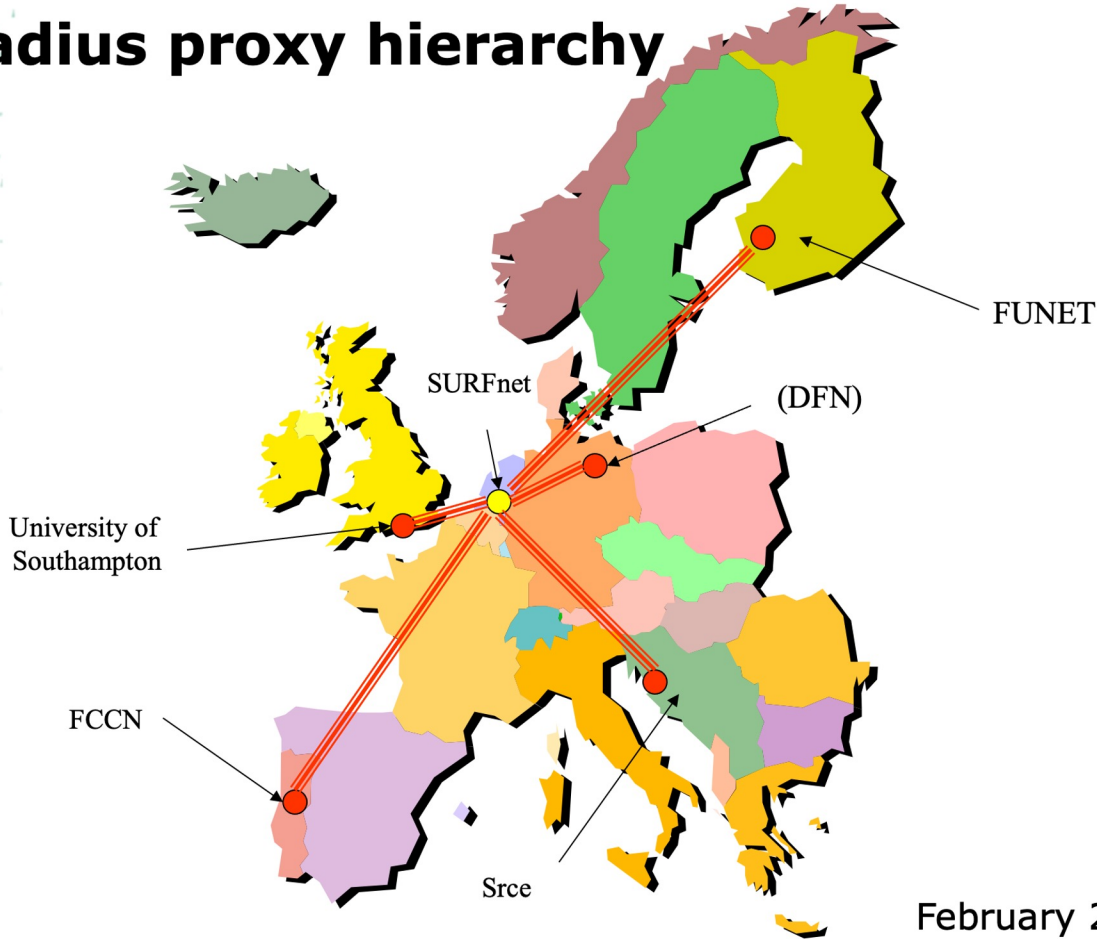
- In fact, 802.1x port-based authentication was designed for wired: just not very popular, used in very few places



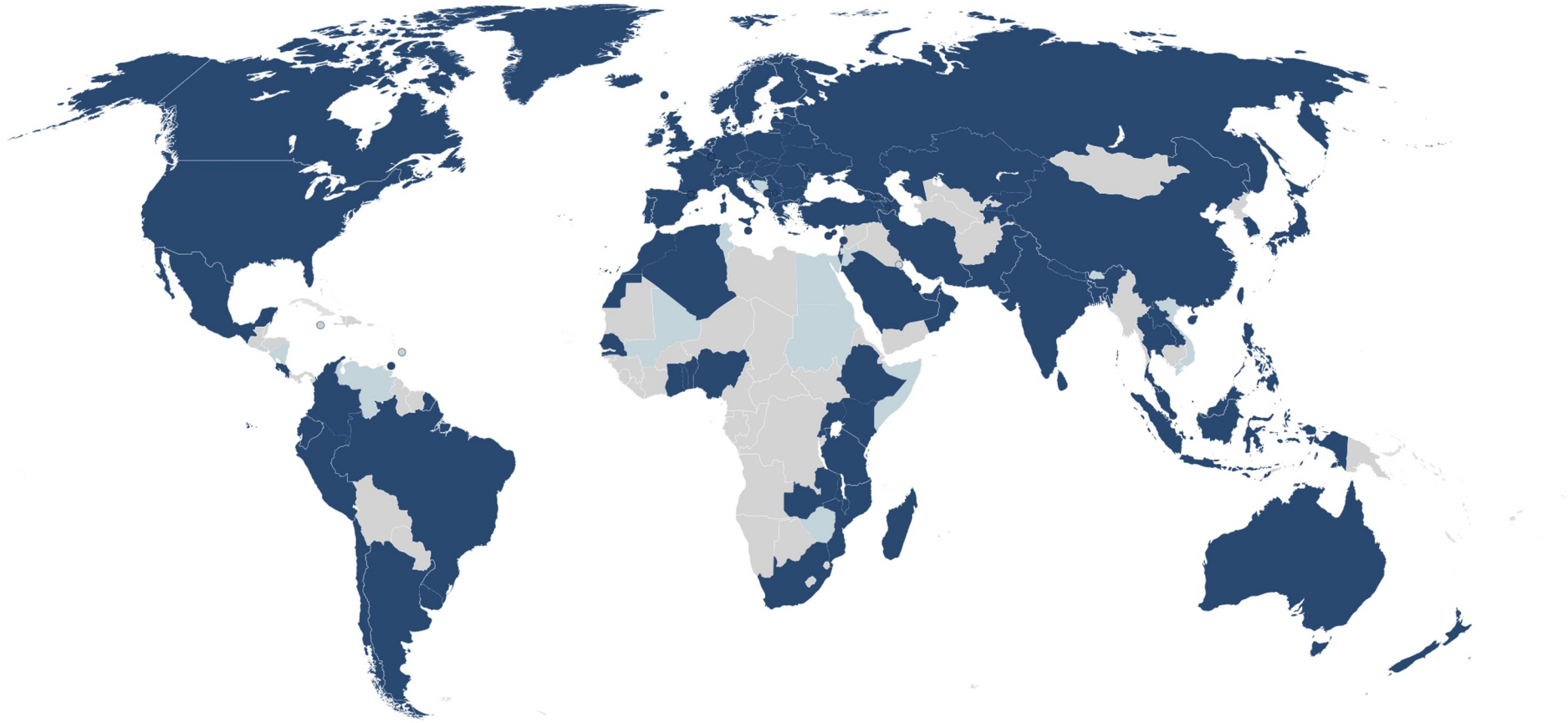
eduroam's history until now



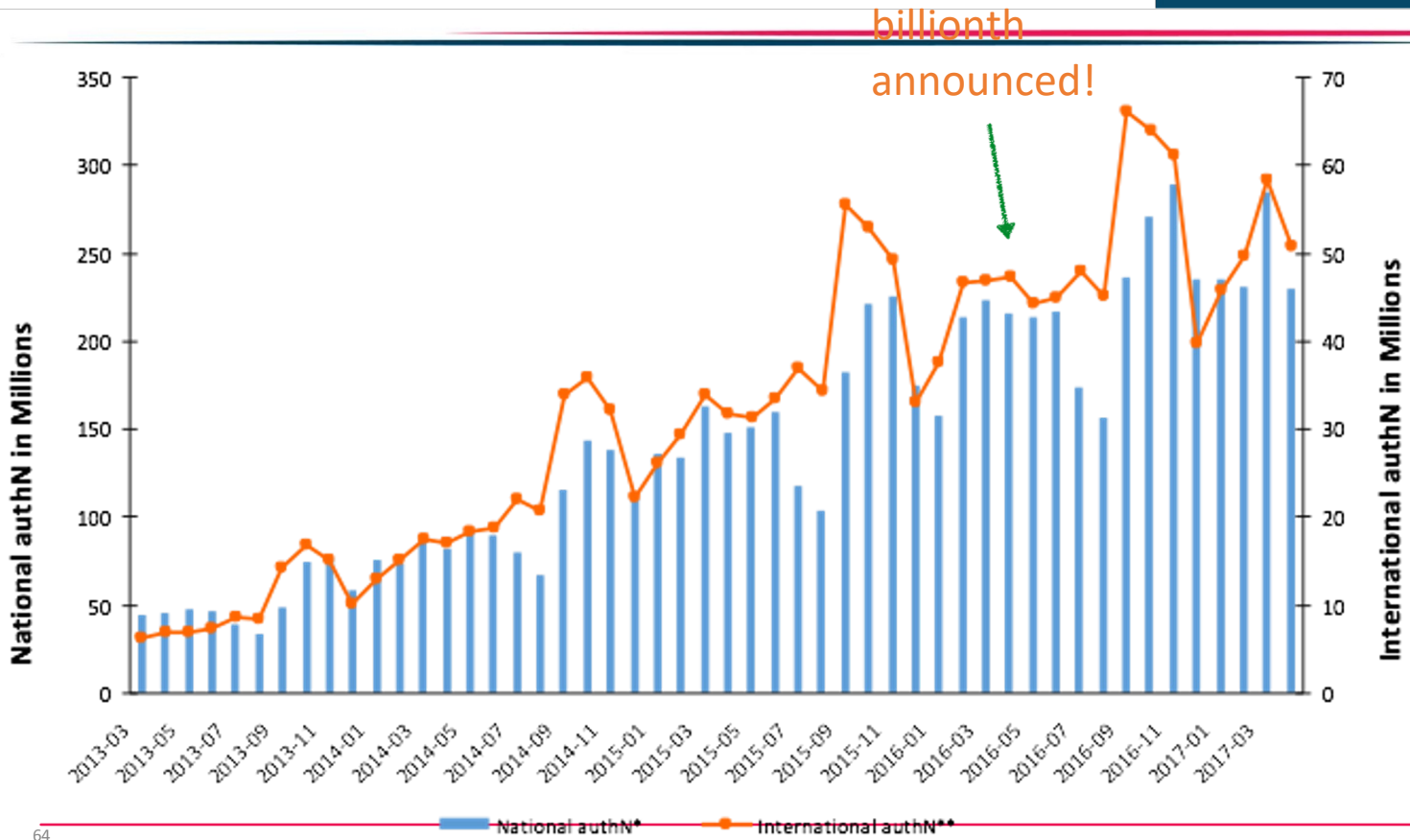
Radius proxy hierarchy

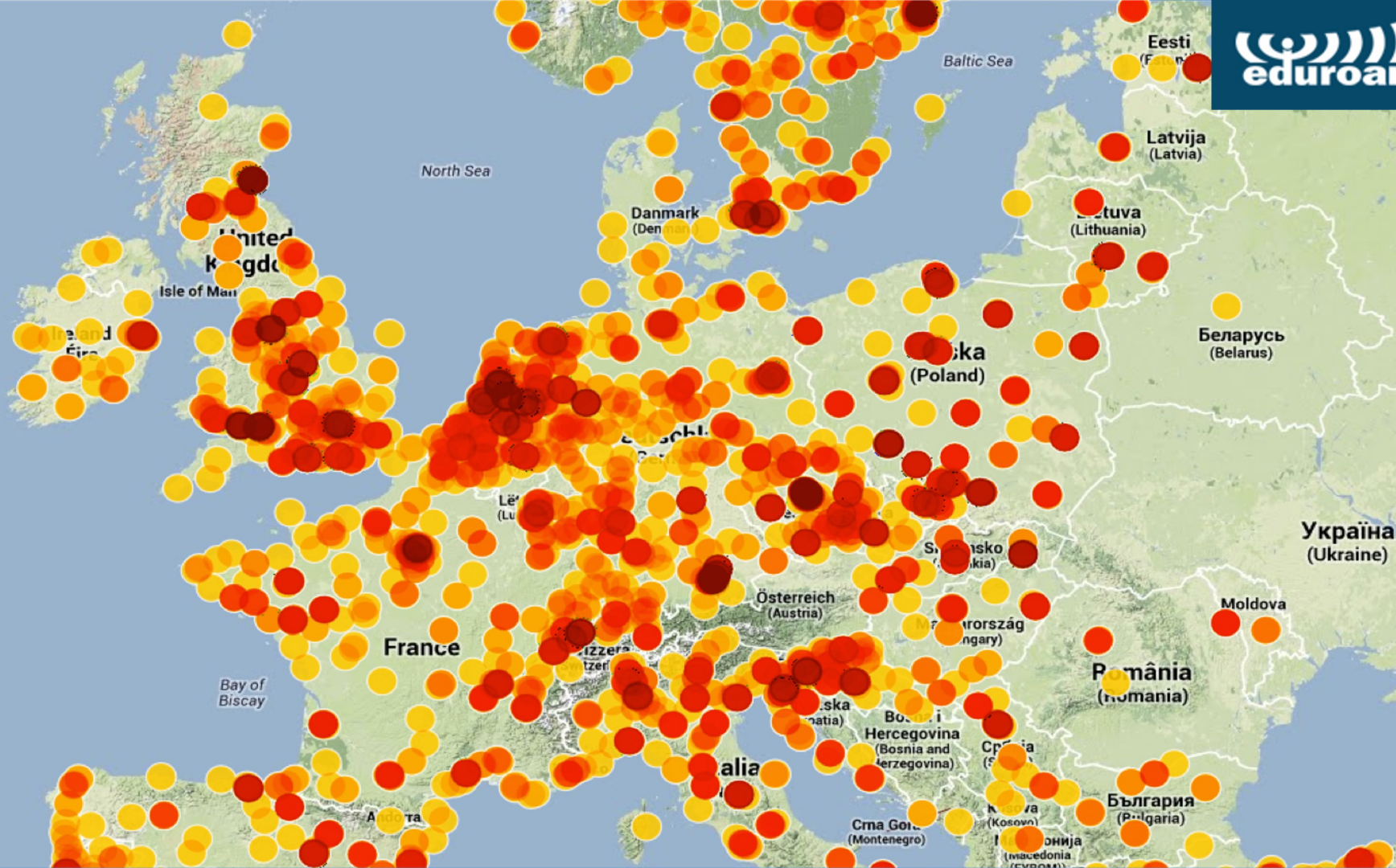


Now: 110 countries, 30.000 locations, 23 million users



Huge international growth





eduroam is visible



eduroam is welcoming



- eduroam outside research and education:
cities, libraries, shops, hotels, restaurants, at 36 airports, train stations, busses, ...
- Digital divide, education everywhere
often receives support from the government





- eduroam is a popular and rewarding service; everybody needs and loves Wi-Fi, strong community
- Can't go wrong going eduroam
 - a lot of international support and knowledge
 - Immediate benefit for end-users
 - Just little extra work for administrators
- NRENs, NROs required to operate eduroam



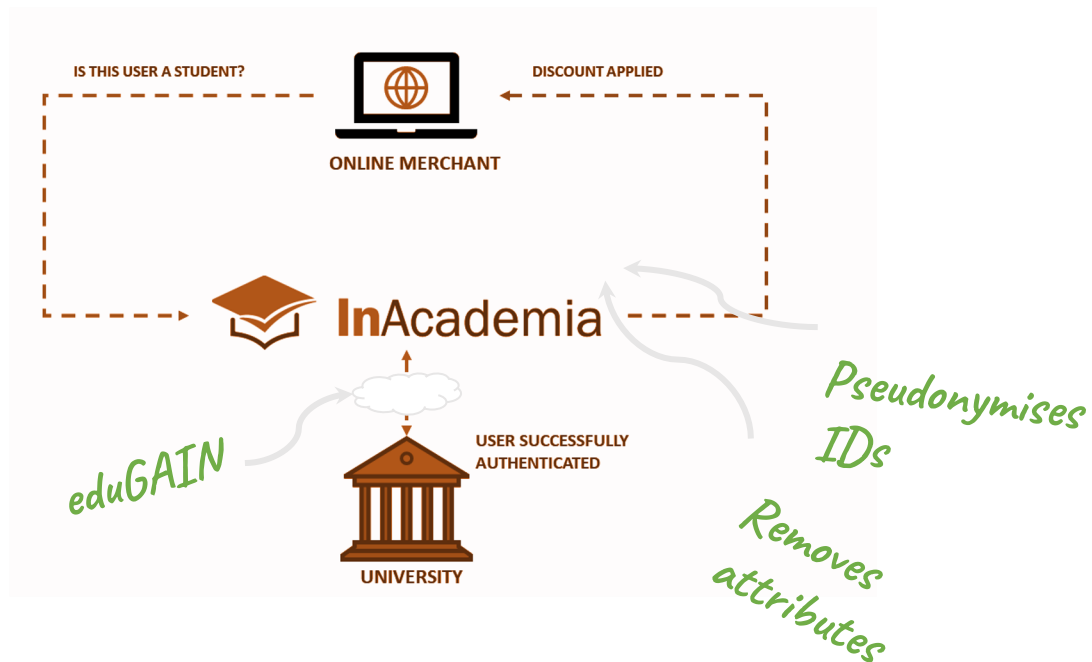
InAcademia



What is InAcademia?



- SP proxy
- A service in eduGAIN
- Connects OIDC-based services
- ...pseudonymises eduGAIN persistent identifiers towards retail services
- Non-linear: InAcademia cannot see the user's shopping cart

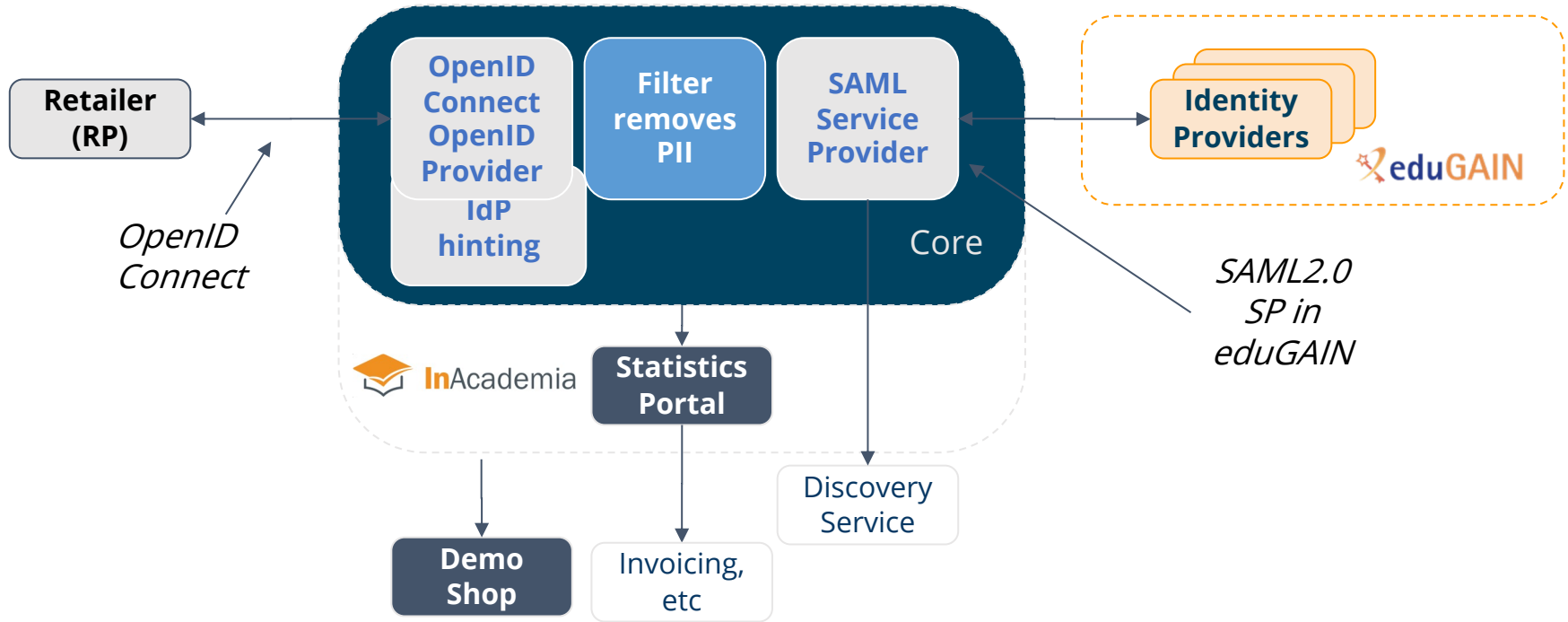


Why InAcademia ?



- Protects user privacy:
 - helps IdPs minimise PII sacrificed by users in return for discounts
- Lightweight option: when services only need validation of user's affiliation
- Helps identify non-conformity
- Alternative source of sustainability for T&I (we hope!)

Architecture



Downstream Services



Bloomberg



Back Market



edustore

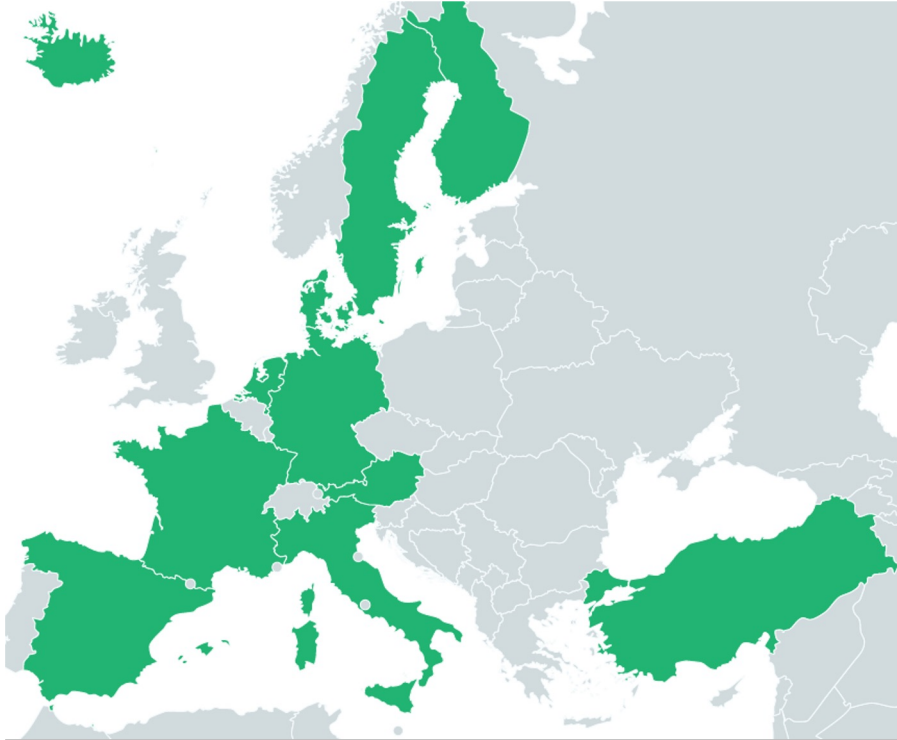
SLIDEMAGIC



KB } national library of the netherlands



Independent
S



Operating in:

- SURF/the Netherlands
- DFN/Germany
- WAYF/Denmark, Iceland, Greenland
- SIR/Spain
- RENATER/France
- IDEM/Italy
- SWAMID/Sweden
- YETKIM/Turkey
- eduID.at/Austria
- HAKA/Finland

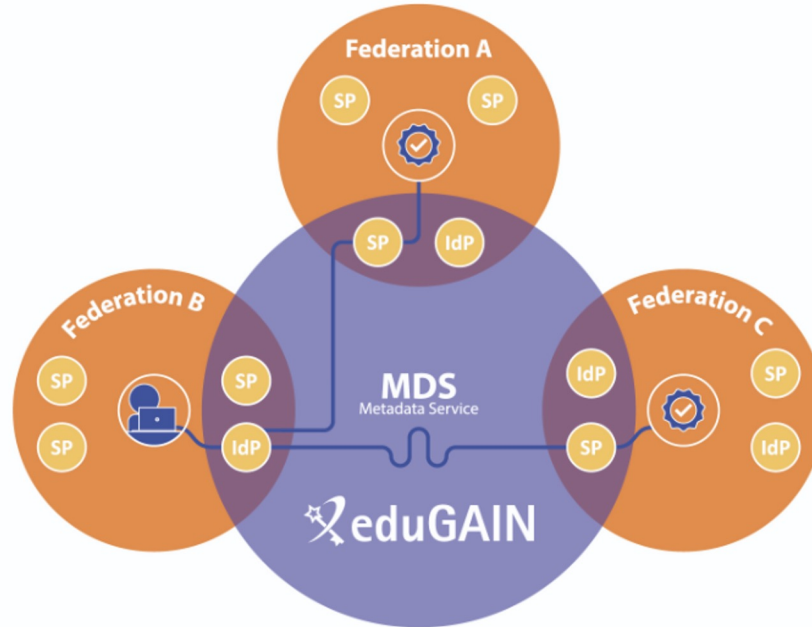
Also registered in:

- GRNET
- Feide

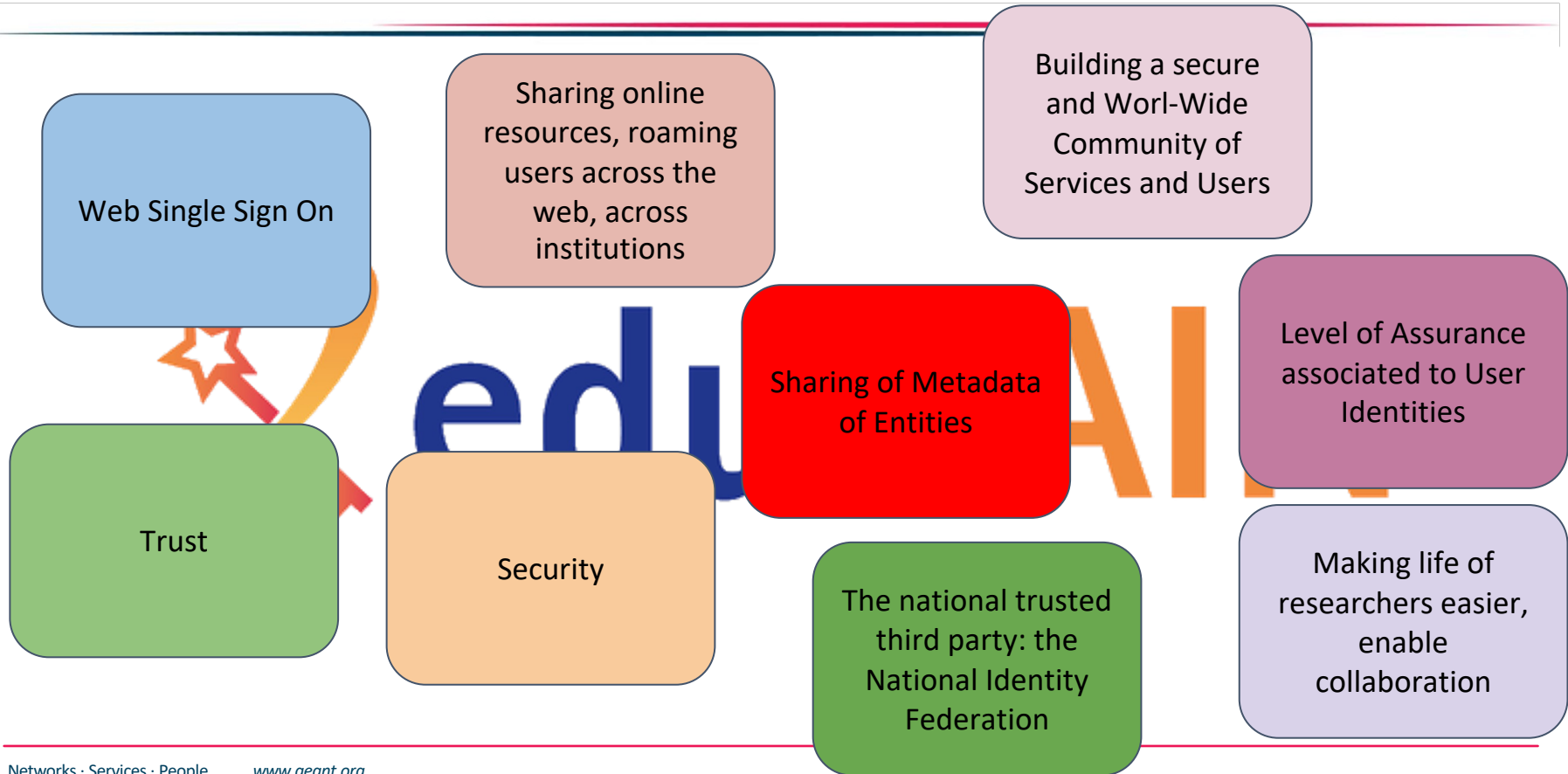


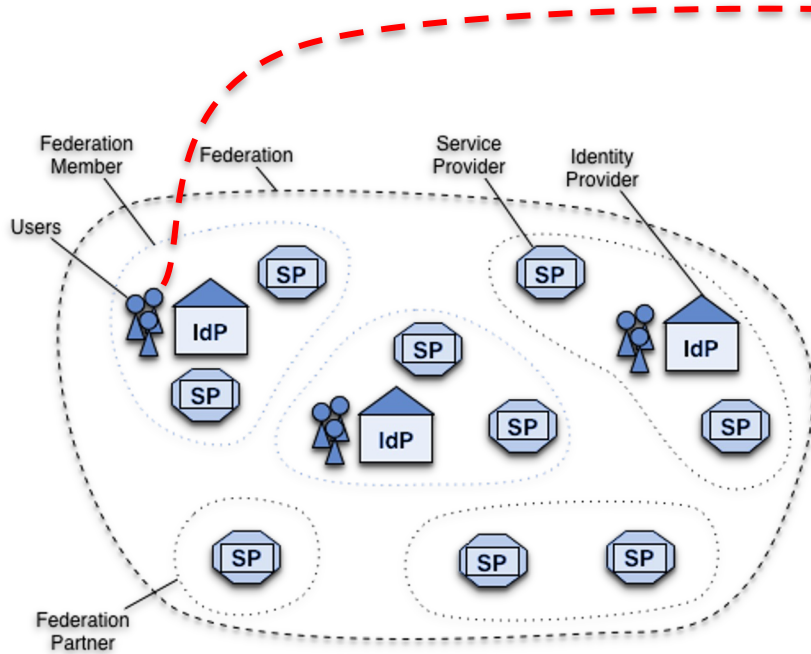
*“eduGAIN **interfederation service** connects identity federations around the world, simplifying **access** to content, services and resources for the **global** research and education community”*

eduGAIN is an inter-federation service

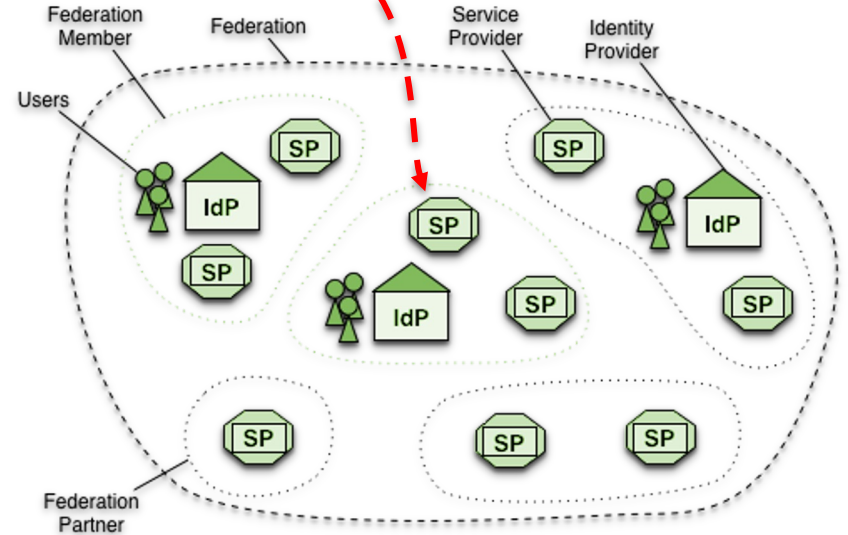


What is eduGAIN about ?



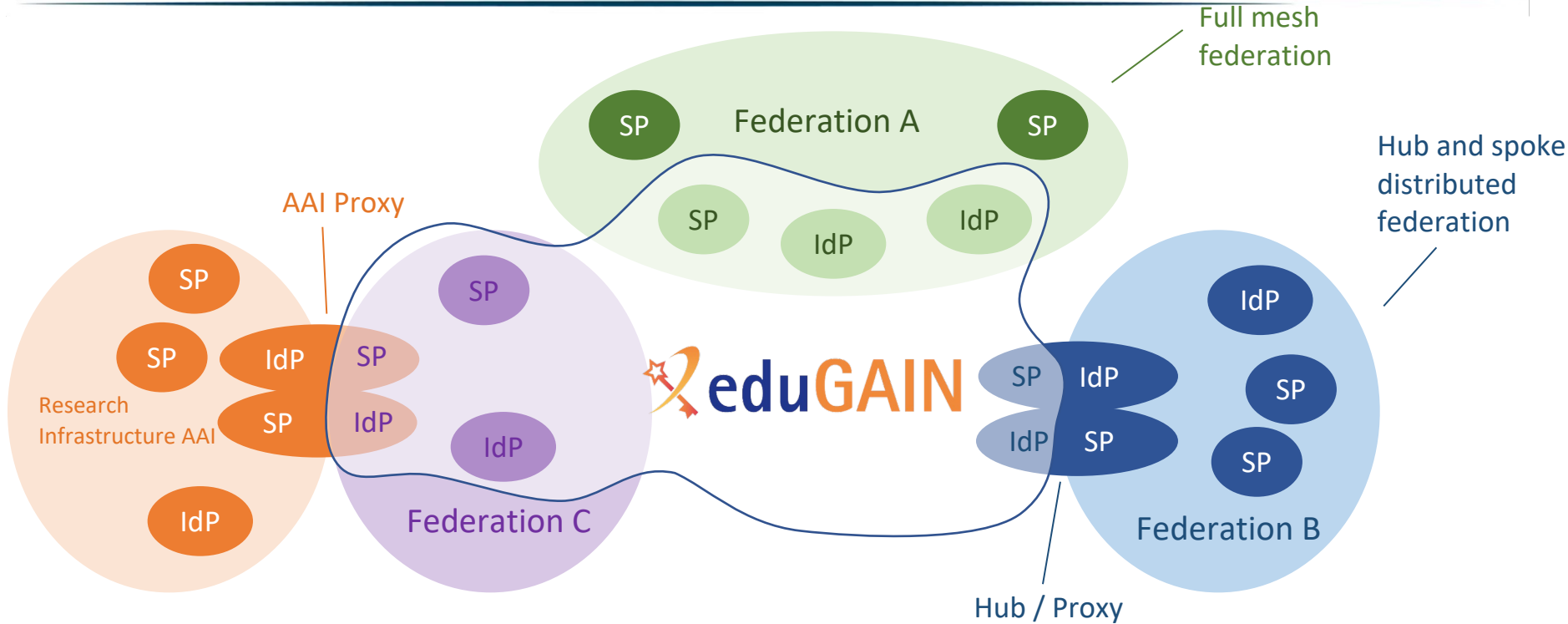


Federation Blue



Federation Green

A complex ecosystem



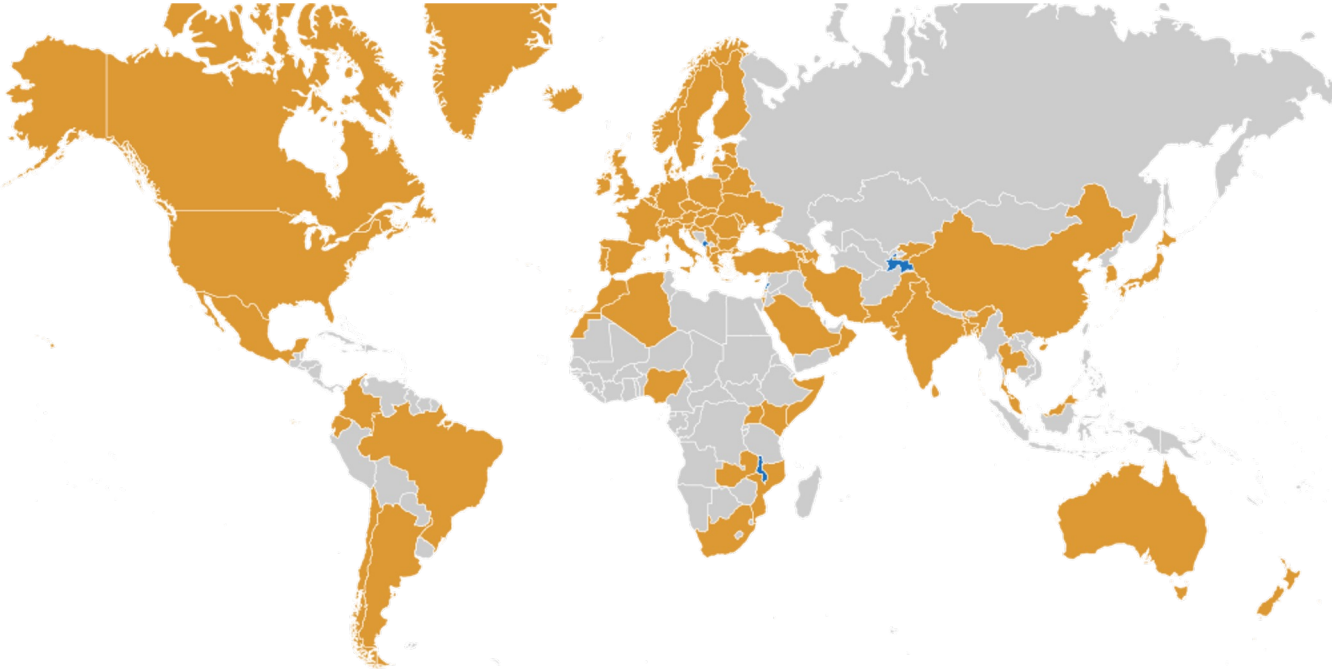
The eduGAIN contributors & stakeholders



FIM4R



eduGAIN Global Coverage



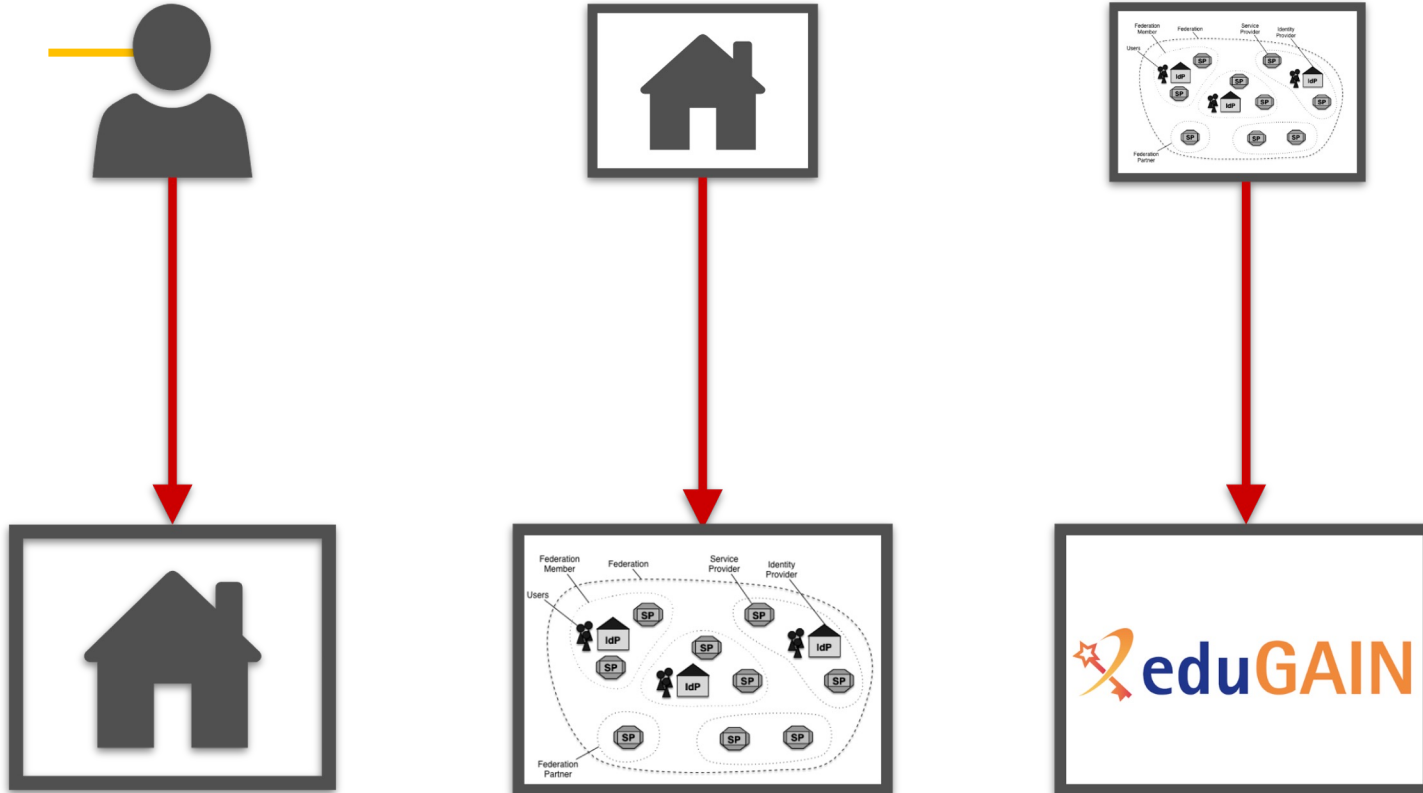
79 Federations

9059 Entities

5456 Identity Providers

3622 Service Providers

eduGAIN Trust model

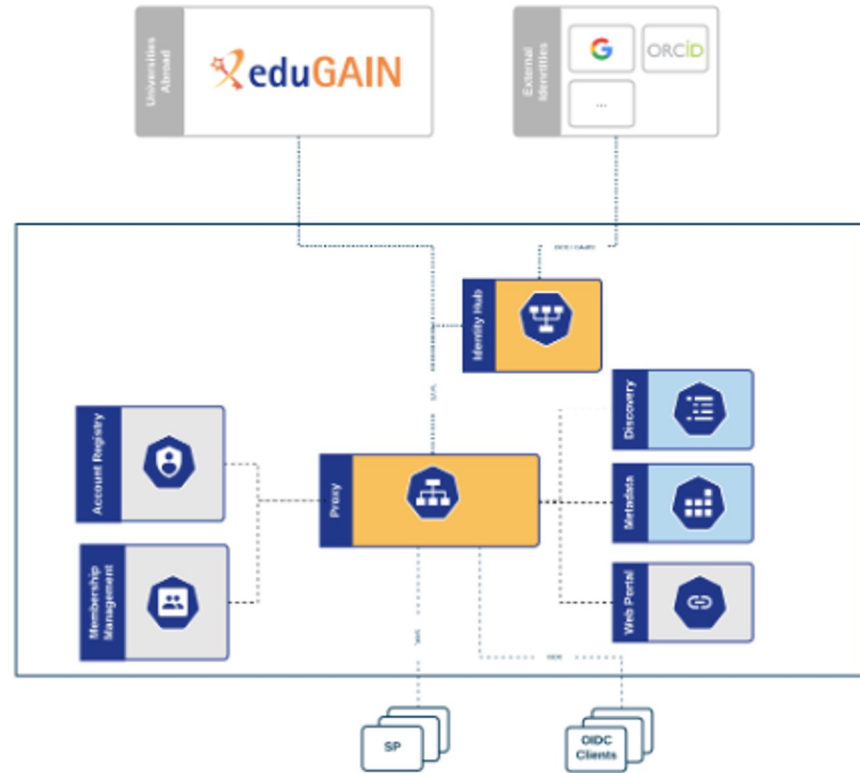


Users trust Home Organisation

HomeOrg/Providers trust Federations

Federations trust eduGAIN

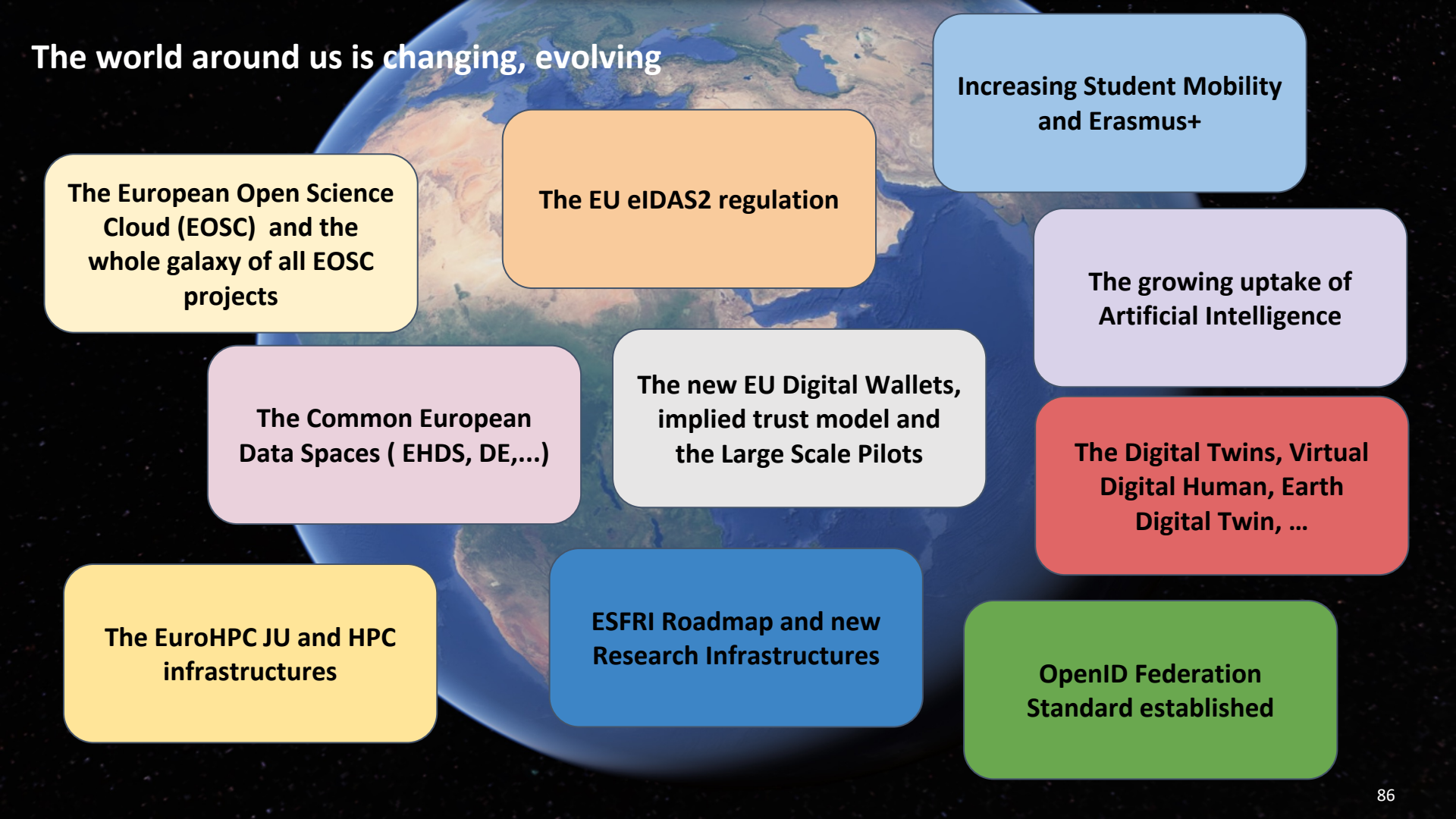
The GEANT Service Provider Proxy (**GEANT SP Proxy**) is a service provided by GEANT that allows GEANT Services to use federated authentication for identifying users from **Academic Identity Providers**.





Ongoing and future T&I developments in the GÉANT R&E Community

The world around us is changing, evolving



The European Open Science Cloud (EOSC) and the whole galaxy of all EOSC projects

The EU eIDAS2 regulation

Increasing Student Mobility and Erasmus+

The Common European Data Spaces (EHDS, DE,...)

The new EU Digital Wallets, implied trust model and the Large Scale Pilots

The growing uptake of Artificial Intelligence

The Digital Twins, Virtual Digital Human, Earth Digital Twin, ...

The EuroHPC JU and HPC infrastructures

ESFRI Roadmap and new Research Infrastructures

OpenID Federation Standard established

Outlook on the future:



- **eduGAIN** is the current **Global Trust Fabric for Research & Education**
- Specific Identity Layers have/are-being developed for HPC (**MyAccess ID**), for Student Mobility (**MyAcademicID**)
- The **GEANT AAI** is omnipresent in the European Research & Education space
- **EU Identity Wallets** and the **eIDAS2.0 regulation** will provide a new Identity model for online Trust, impacting on the online life of millions of European Citizens
- **GÉANT** and the NRENs will keep providing a **Data Infrastructure for education is delivered by the NRENs**
- The EOSC will establish its **EOSC federation** making use of the services provided by the R&E Community (won't re-invent the wheel)
- A new standard has been established for **OIDC based federation**

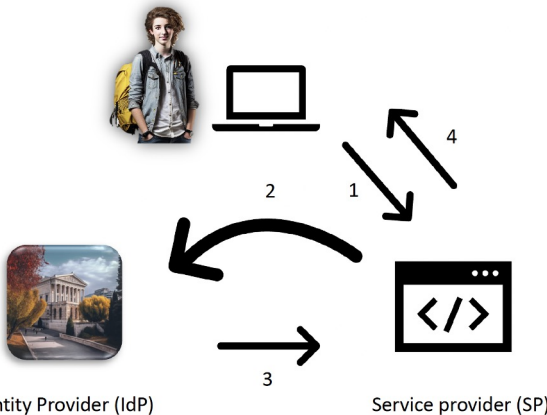
The eIDAS2 Regulation and the EU Identity Wallets



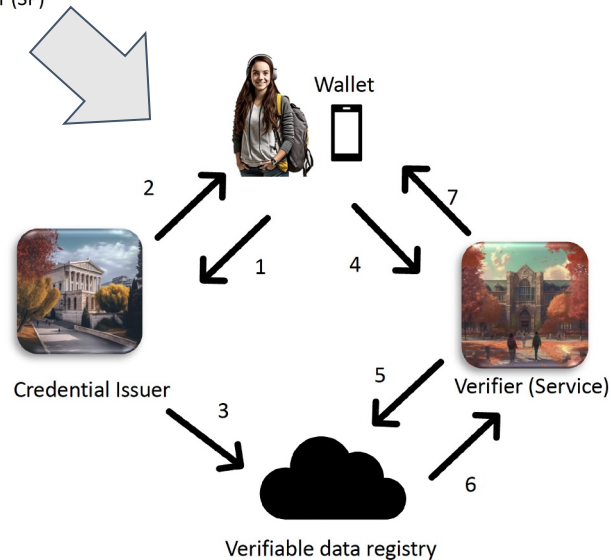
electronic identification and trust services



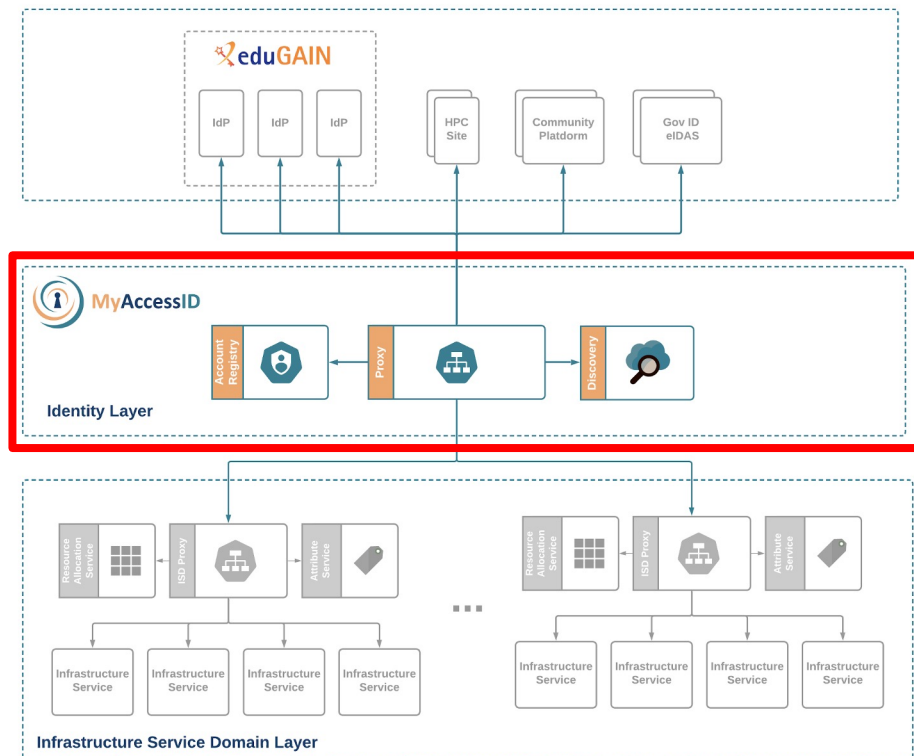
eIDAS 2.0 – European Digital Identity Wallet – EUDIW



Large Scale Pilots



- HPC Data Centers are in the process of transforming to **Infrastructure Service Providers** with a diverse Service Portfolio
- These infrastructure services become available in different administrative and policy domains, which we call **Infrastructure Service Domains**
- A **common Identity Layer** enables uniform accessibility to scientists and engineers at European scale

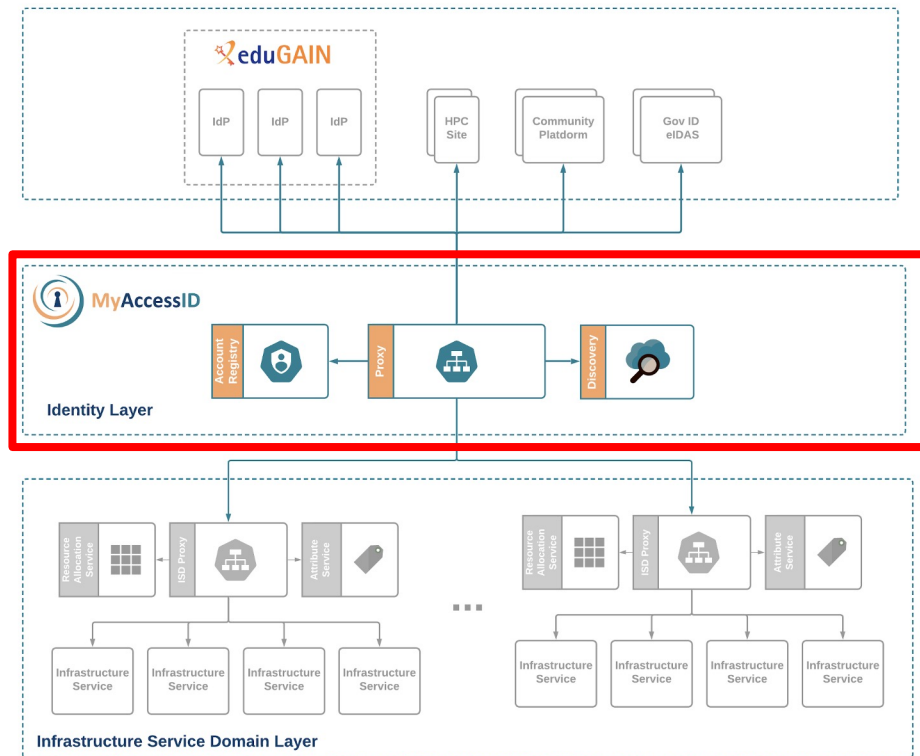


- **For users**

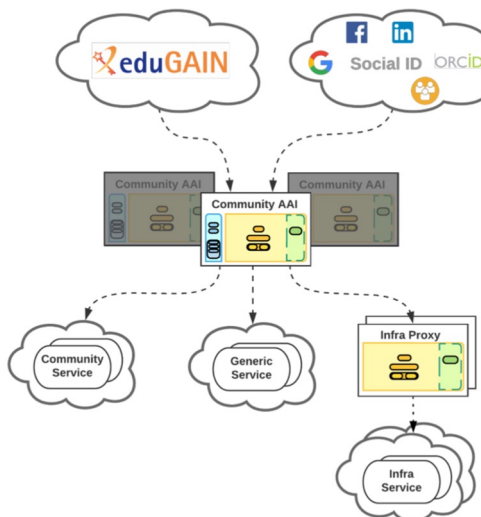
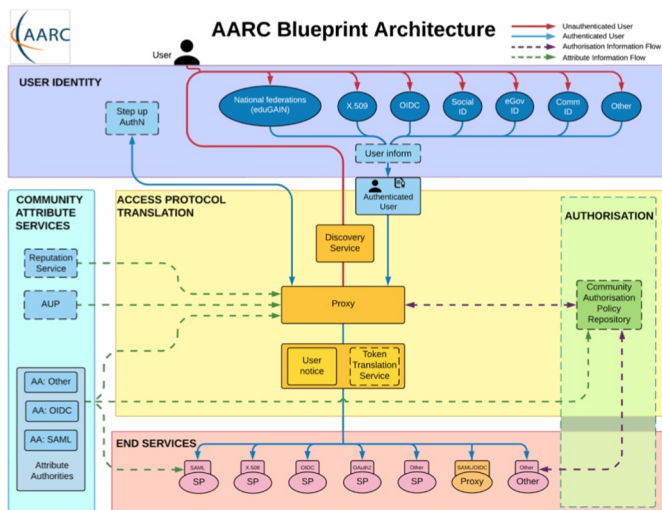
- One identity to access resources across HPC sites and other infrastructures
- Ability to link multiple external identities (e.g. institutional accounts, national eIDs etc)
- Easy for novice users, unlocks new capabilities for advanced users.

- **For Infrastructures:**

- A common way of authenticating users
- Strong identity assurance
- Multi-factor authentication
- Multi-protocol support (OIDC, SAML)
- Improved access management including



Based on the AARC Blueprint Architecture



Community AAI

The purpose of the Community AAI is to streamline researchers' access to services, both those provided by their own infrastructure as well as the services provided by infrastructures that are shared with other communities.

Infrastructure Proxy

The Infrastructure Proxy, enables Infrastructures with a large number of resources, to provide them through a single integration point, where the Infrastructure can maintain centrally all the relevant policies and business logic for making available these resources to multiple communities

GÉANT
NREN
Infrastructures

High
Performance
Computing

European
Research
Infrastructures

Education

InAcademia
ONLINE STUDENT VALIDATION

GÉANT
AAI Service

GÉANT Community

MyAccessID

FENIX
RESEARCH INFRASTRUCTURE

PUHURI

e-Science

eOSC
Federated AAI

eduTEAMS

MyAcademicID

Student Mobility

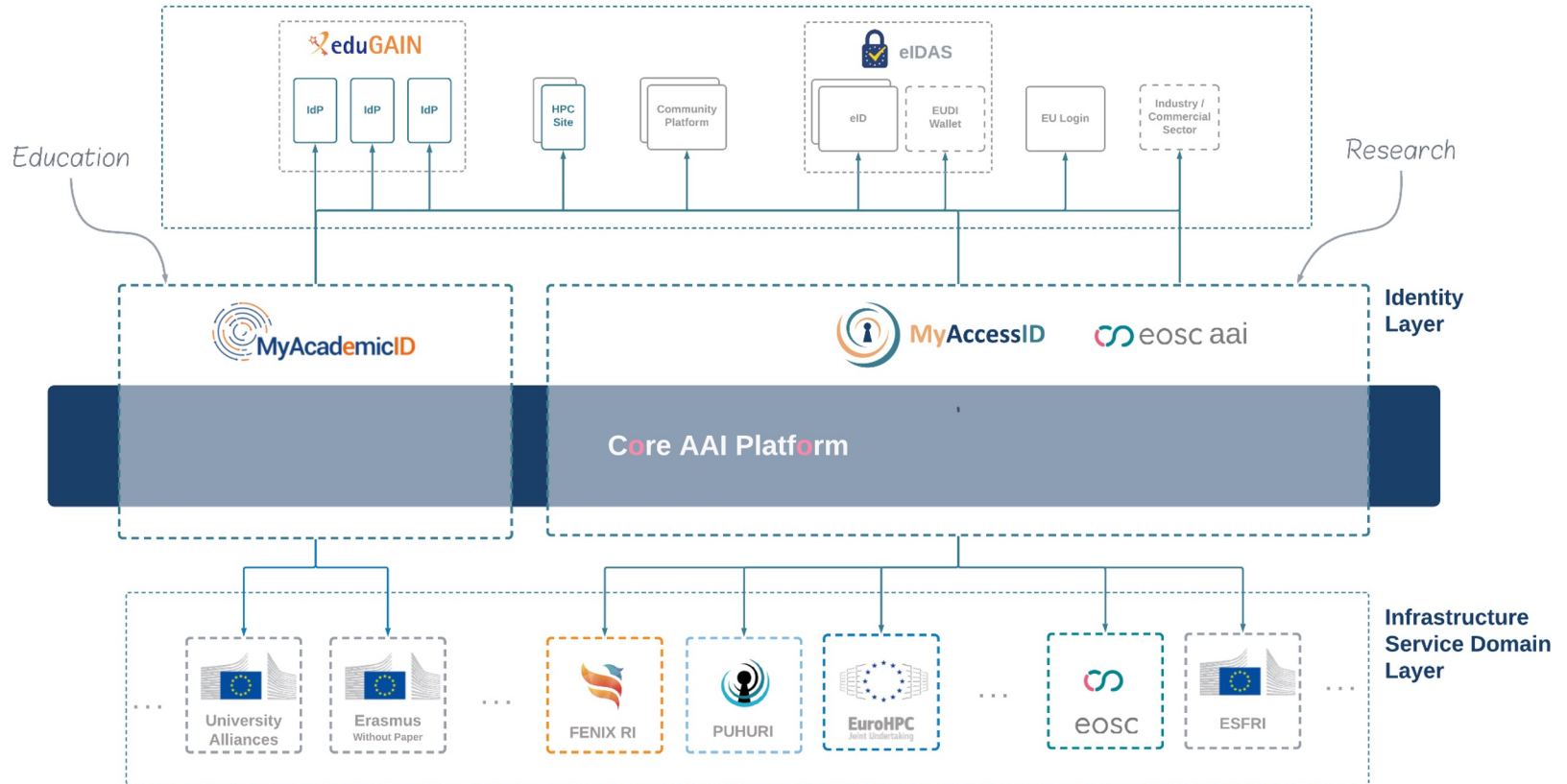
Core AAI Platform

eduroam

eduGAIN

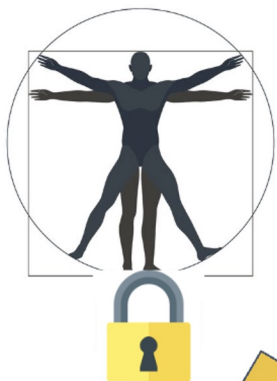


3rd Party
(ORCID, eIDAS,
EUDI, Google
etc.)



Federated Identity Management and eduGAIN are useful !

Your Identity Provider Released Credentials



Student mobility services	MyAcademic	Core AAI
Online publishers, public SaaS/PaaS/IaaS providers Vendors		
Research Collaborations services		Core AAI
e-Infrastructure services	MyAccessID	Core AAI
eduGAIN interfederation services		
National Identity Federation services		
Local Campus services Local Federation of Campuses		



Some popular federated-access online services and platforms

(not claiming exhaustiveness!)



Joomla!



EZproxy®



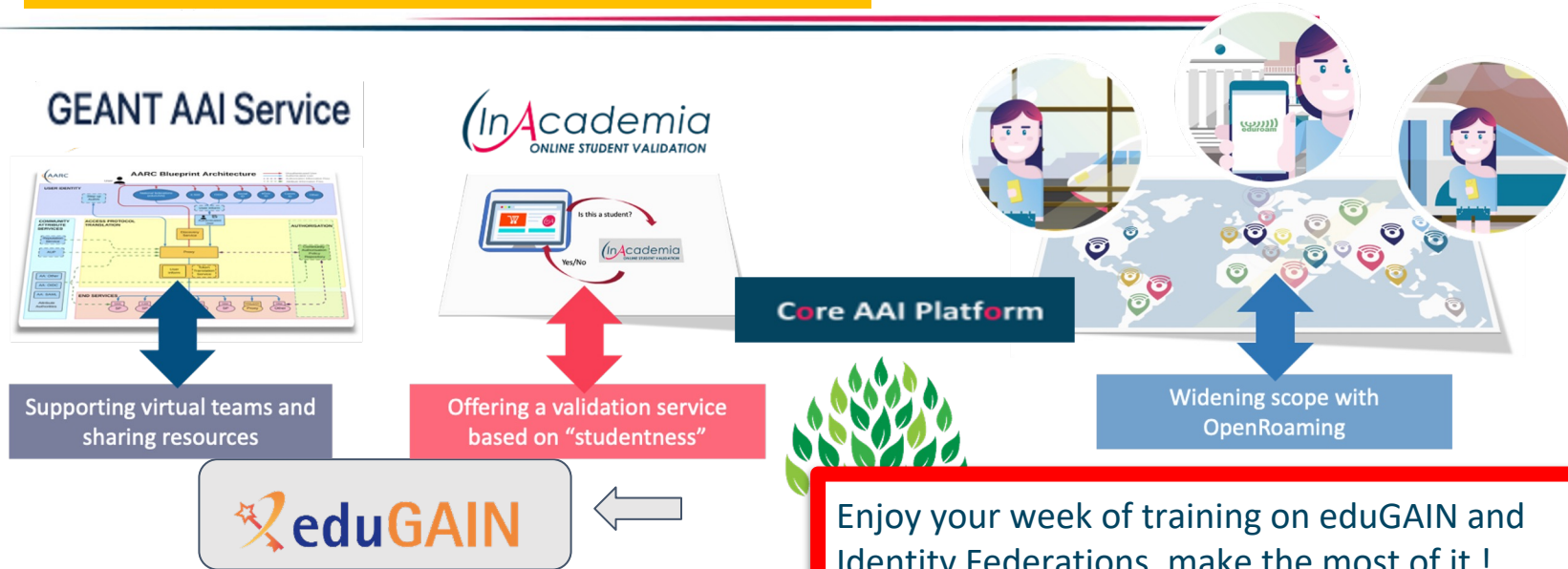
Connecting Research and Researchers



FILESENDER



Welcome to eduGAIN and a world of R&E Services around it !



Acknowledgements/Credits for some of the slides I've presented:

GÉANT: Klaas Wierenga, Michelle Williams, Chris Atherton, Beatrix Weber, Jennifer Ross, Leila Dekkar, Casper Dreef, Nicole Harris

GARR: Davide Vagheti

SURF: Paul Dekkers

SUNET: Stefan Liström

Questions ?

mario.reale@geant.org

www.geant.org



© GÉANT Association
As part of the GÉANT 2020 Framework Partnership Agreement (FPA),
the project receives funding from the European Union's Horizon 2020
research and innovation programme under Grant Agreement No. 856726
(GN4-3).