



Collaboration: The Heart of Global Research and Education Networking

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GÉANT

Internet2 Community Exchange 2024

Tuesday, 5 March 2024

Collaboration – A Longstanding Cornerstone of Global R&E Networking



Building Networks and Communities



Enabling Access

ANA

BEAA

NEA³R

CAE-1

AER

Strengthening Interconnectivity

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

canarie



100 Gbps
LON-WASH



International
Networks
at Indiana University

2 x 100 Gbps
NY-LON
NY-AMS



ESnet
ENERGY SCIENCES NETWORK

4 x 100 Gbps
WASH-GEN
BOST-AMS
2 x NY-LON

NII
国立情報学研究所
National Institute of Informatics



100 Gbps
AMS-NY



No Room to Stand Still...



Credit: <https://flic.kr/p/9ayzRe>: Creative Commons 

Connectivity

Trust & Identity

Security



Connectivity Collaboration

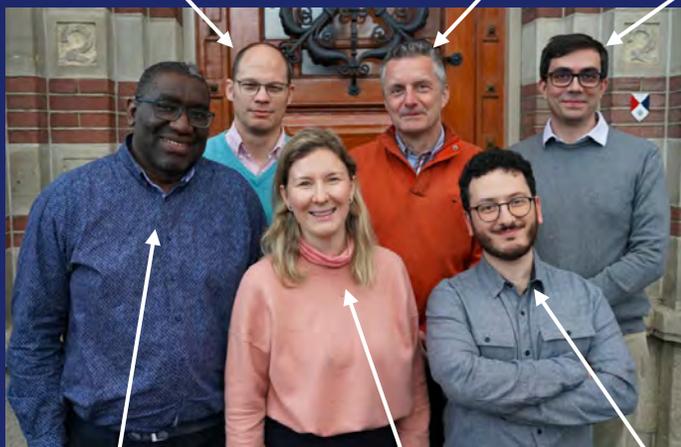
Delivering GÉANT Intercontinental Connectivity for the Future

The GEANT Intercontinental Connectivity Team

International
Liaison

Market
Engagement

Planning



Implementation

Finance

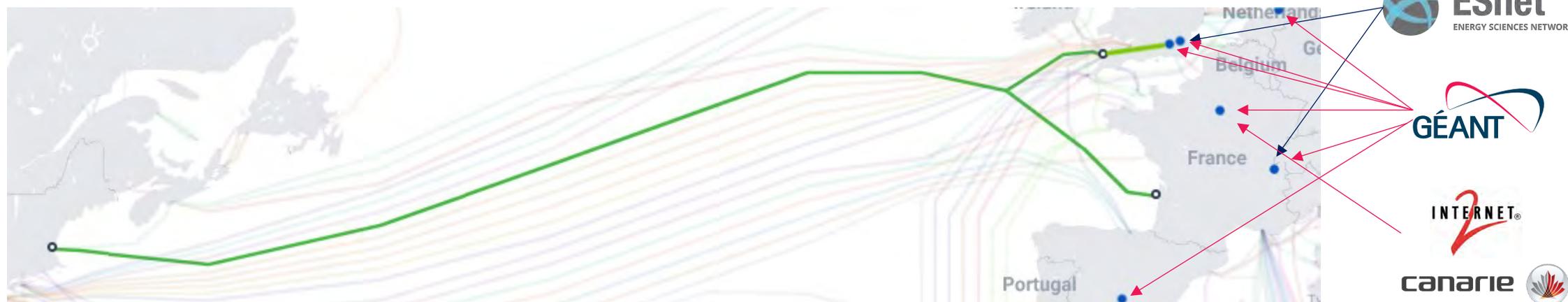
Project
Management

Communications

Mid-2023
GÉANT & CSTNET
interconnection
increased
Tenfold via 100Gbps
peering in Singapore



Collaboration for a Step Change in Transatlantic Connectivity



- ❖ Two separate 400Gbps links on Amitié
 - One lands in UK and is backhauled to Slough near London
 - One lands near Bordeaux, France
- ❖ ESnet wants to reach ESnet PoPs in London Harbour Exchange and Geneva



- ❖ One 400Gbps link on Amitié
 - Lands near Bordeaux, France
- Internet2/CANARIE want to reach GÉANT Open in Paris



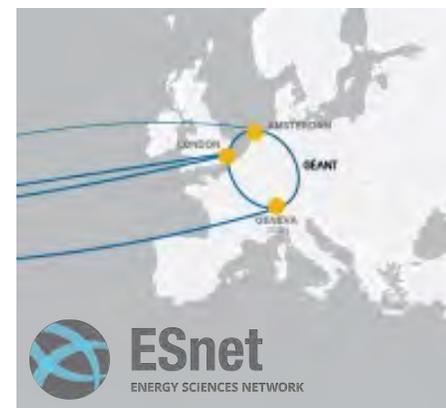
Collaboration for a Step Change in Transatlantic Connectivity



- GÉANT is present in both Slough (London)
- GÉANT fibre Bilbao-Paris via Bordeaux



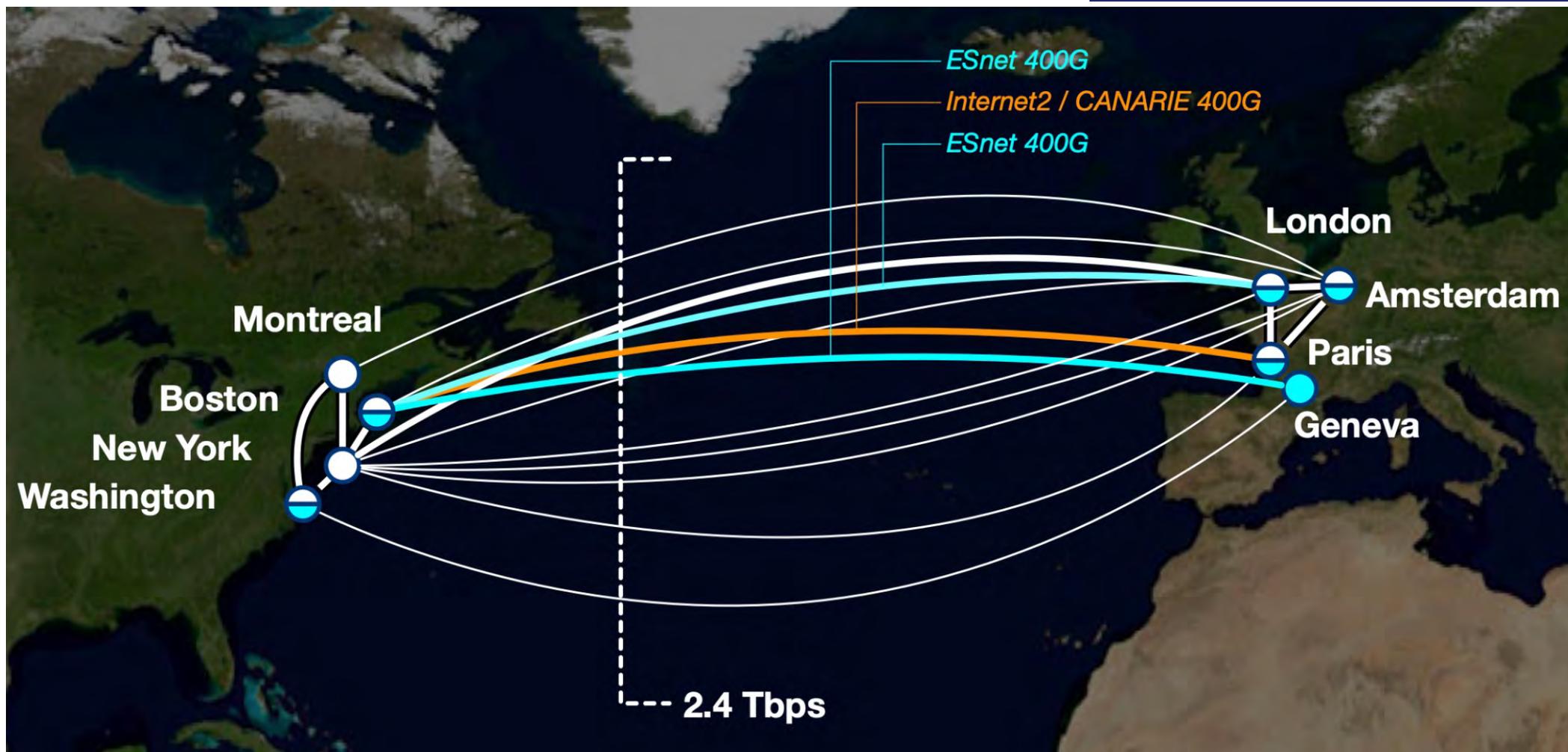
- GÉANT long-standing collaboration with Internet2, CANARIE and ESnet, e.g.:
 - ANA collaboration



- GÉANT supplies European ring connectivity to ESnet

The End Result

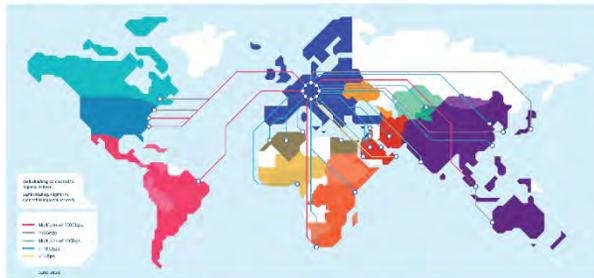
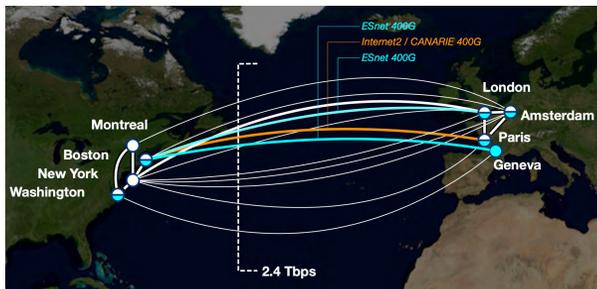
Going live imminently...



Where to Now?



New ANA incl. Amitié



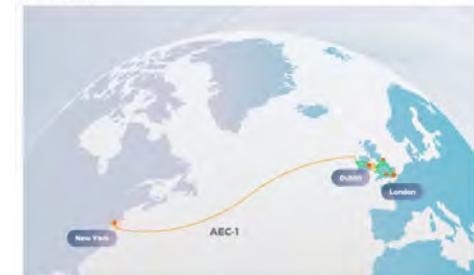
Preparations underway to procure transatlantic spectrum

❖ New opportunities...?



ESnet Announces First Trans-Atlantic Subsea Spectrum Agreement

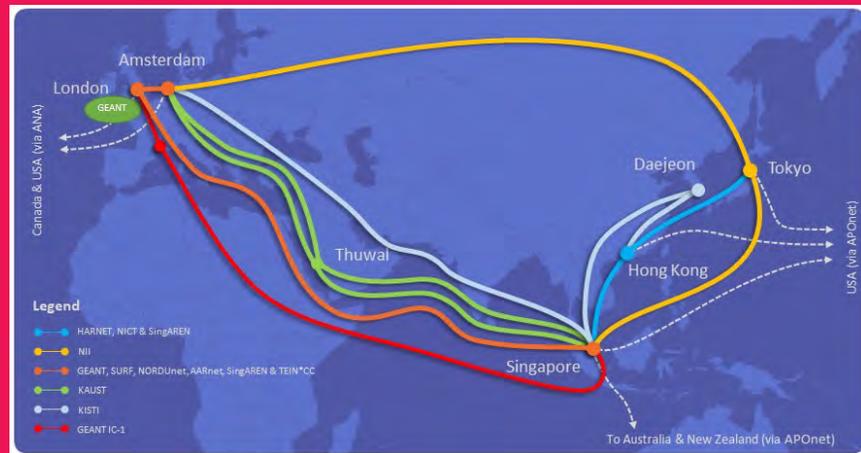
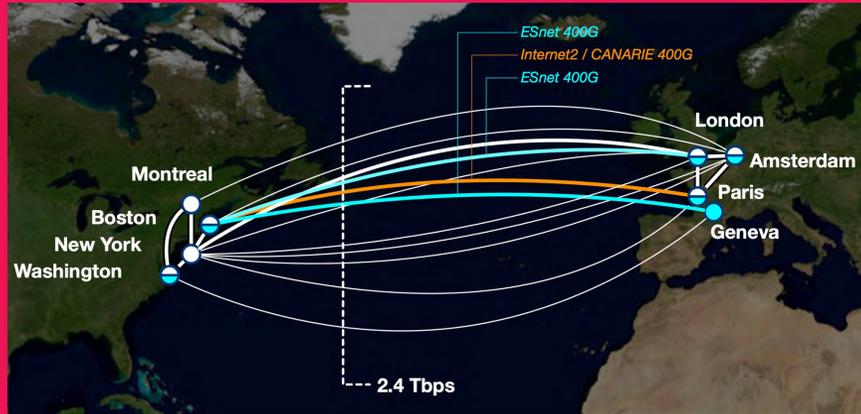
FEBRUARY 6, 2024



ESnet has signed a long-term lease agreement with Aqua Comms for 25% of a fiber pair linking New York, Dublin, and London — ESnet's first trans-Atlantic spectrum acquisition. Secured for 15 years, this quarter-fiber-pair will provide a dedicated 5 terabit per second data pipe that will be a foundational element of ESnet's long-term trans-Atlantic strategy to accommodate rapid increases in data traffic from DOE science collaborations and facilities, including ramping up for the high luminosity upgrade of CERN's Large Hadron Collider.



Multiple Collaborations Creating a Truly Global Mesh



It Doesn't Stop There...

Connecting North Africa



- €40m EU funding
- 200Gbps End-to-end international connectivity for Algeria, Egypt, Morocco & Tunisia
- EU landing points: Barcelona and Cyprus
- 10-year system paid for including O&M
- EU Grant funds channelled through EIB to Medusa operator (along with EIB loans)

Europe to Japan via the Arctic



<https://nordu.net/polar-connect>

NORDUnet Vision 2030 White Paper:
<https://nordu.net/Vision2030WhitePaper>



Trust and Identity: Moving Forward



The only real problem for
the Internet is scaling!

Mike O'Dell



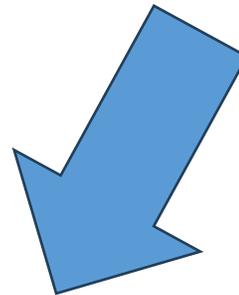
Trust does not scale!

Taylor Swift

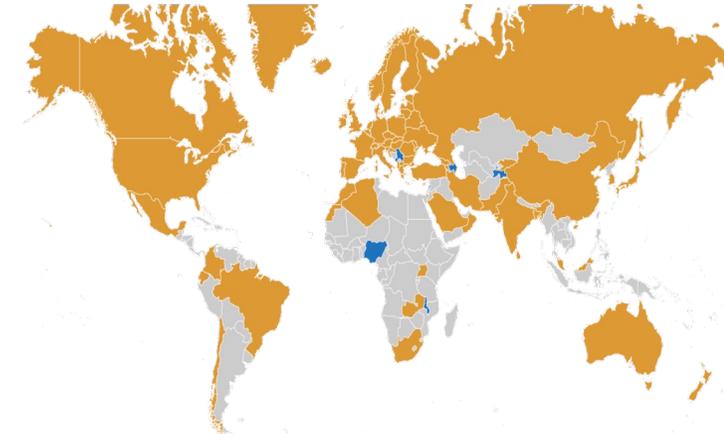
2002

GEANT

NREN



eduGAIN

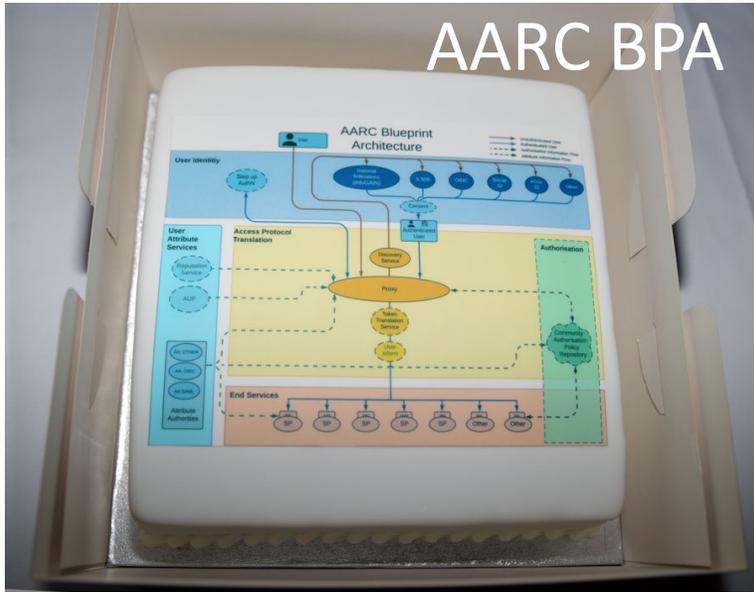


2022

- 80 identity federations
- 5000 IdPs
- 3590 SPs



AARC BPA



Federated Identity Management for Research Collaborations

Paper Type: Research paper

Date of this version: 28 August 2013

Abstract

Federated identity management (FIM) is an arrangement that can be made among multiple organisations that lets subscribers use the same identification data to obtain access to the secured resources of all organisations in the group. Identity federation offers economic advantages, as well as convenience, to organisations and their users. For example, multiple institutions can share a single application, with resultant cost savings and consolidation of resources. In order for FIM to be effective, the partners must have a sense of mutual trust.

A number of laboratories including national and regional research organizations are facing the challenge of a deluge of scientific data that needs to be accessed by expanding user bases in dynamic collaborations that cross organisational and national boundaries.

Driven by these needs, representatives from a variety of research communities, including photon/neutron facilities, social science & humanities, high-energy physics, atmospheric science, bioinformatics and fusion energy, have come together to discuss how to address these issues with the objective to define a common policy and trust framework for Identity Management based on existing structures, federations and technologies.

This paper will describe the needs of the research communities, the status of the activities in the FIM domain and

2011-2013

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“Advancing technologies and Federating communities”

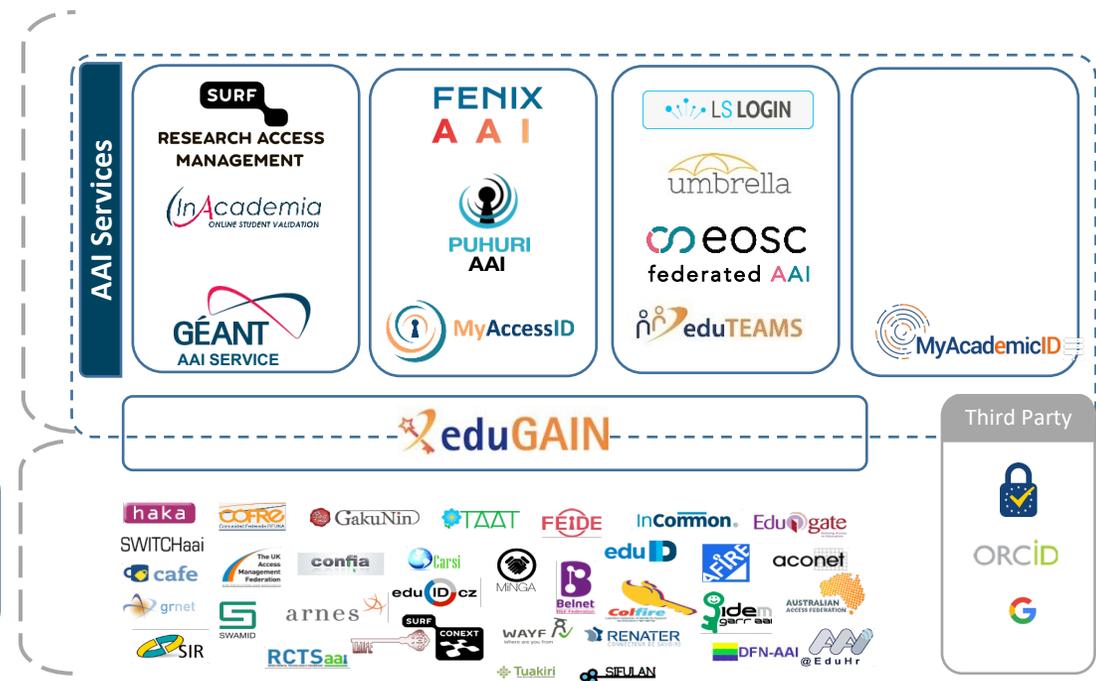
Study on Authentication, Authorization and Accounting (AAA) Platforms For Scientific data/information Resources in Europe

GEANT NREN Infrastructures High Performance Computing European Research Infrastructures Education

2015-2020

GEANT

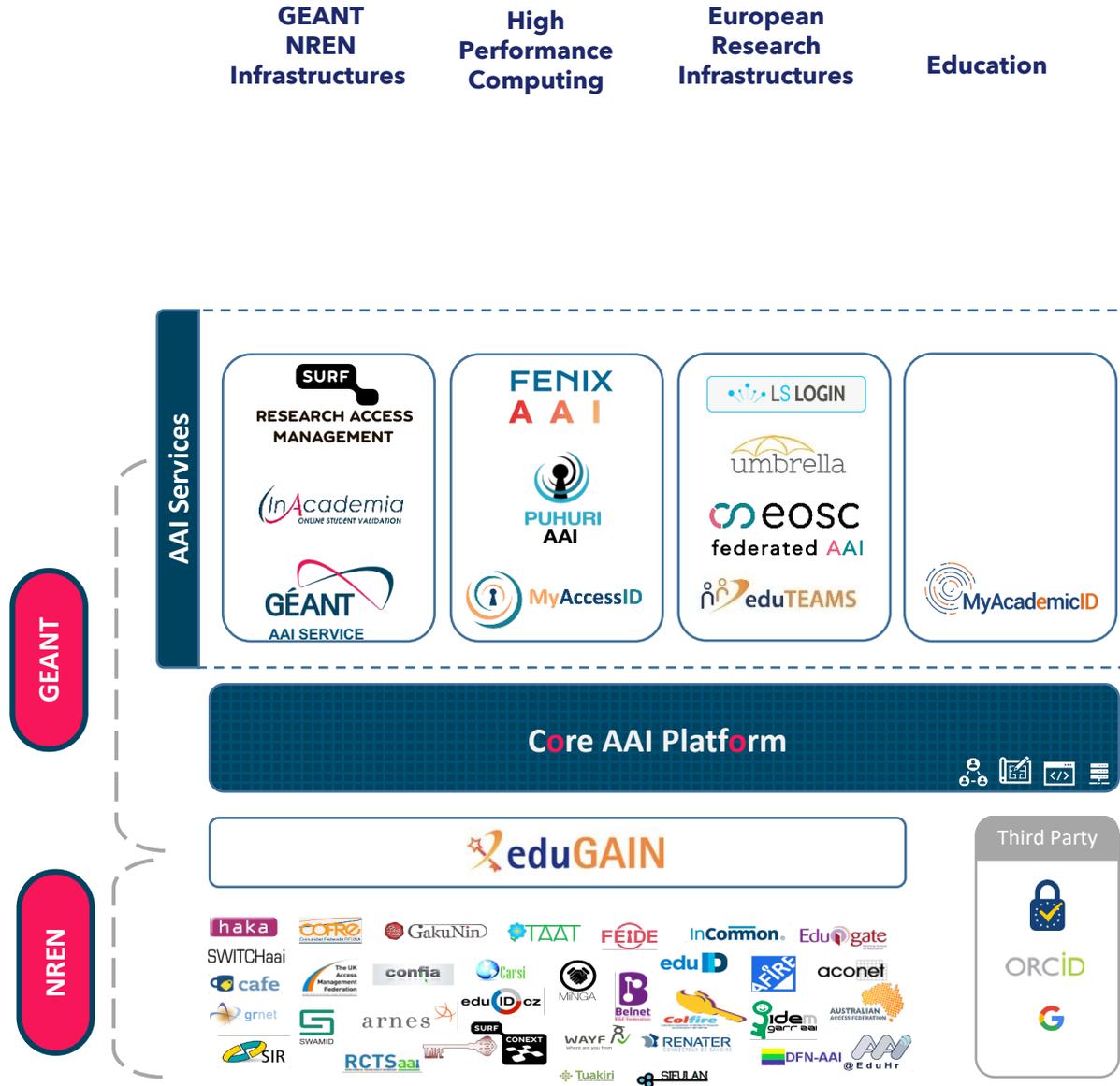
NREN



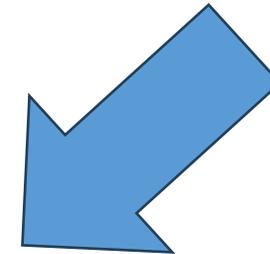
eduTEAMS



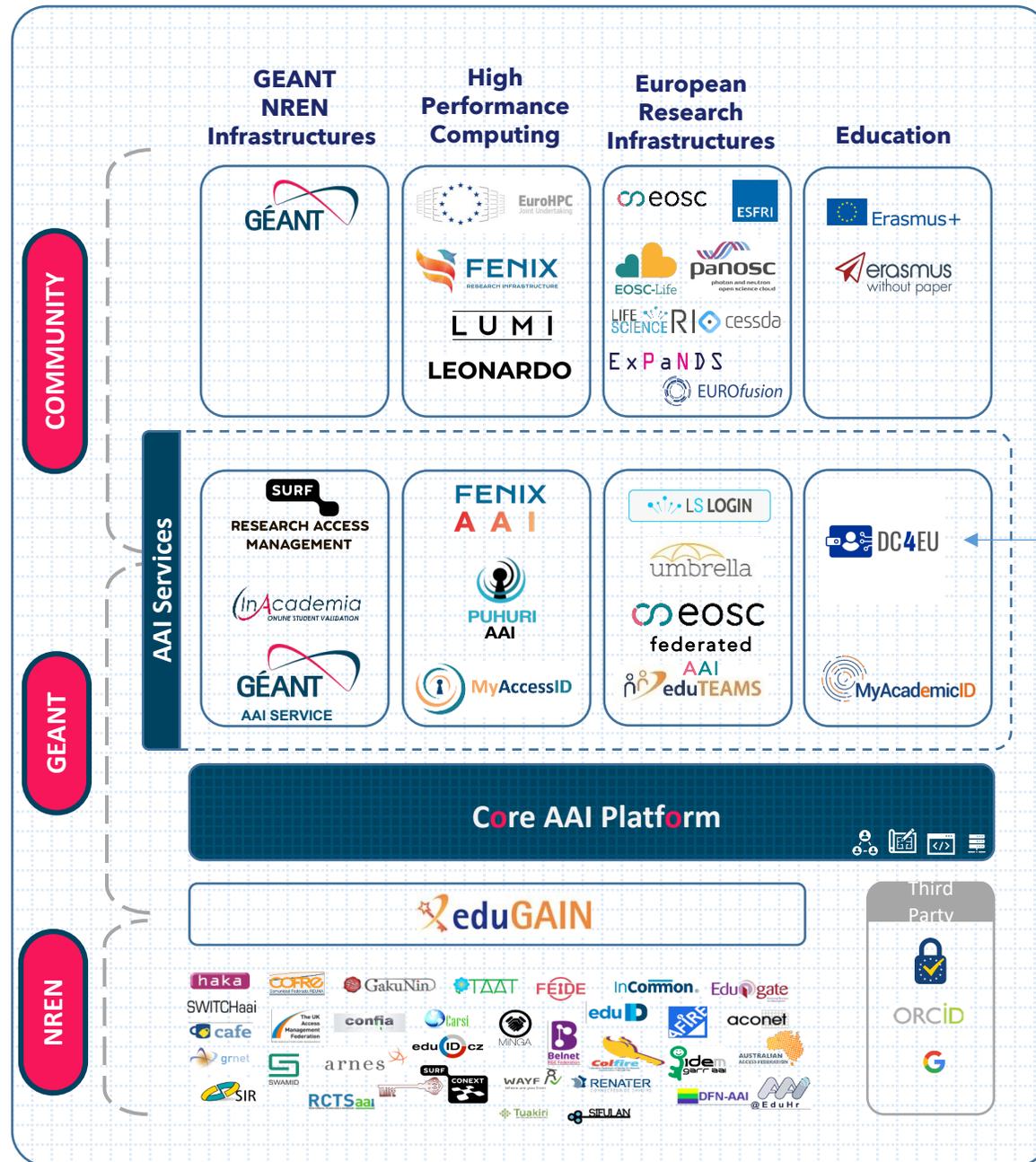
2022



- Common platform
- Group management
 - Third party IDs
 - Protocol translation



2024



EUDI Wallet



Take-aways

- It took us over 20 years to build a (human) trust infrastructure
- This infrastructure serves billions of users each month
- It is integrated with (educational and research) business processes
- It is capable of responding to emerging new requirements
- The GÉANT core AAI platform allows for seamless integration across domains
 - While preserving the autonomy of communities to select their own (AARC BPA compliant) AAI

Core AAI is a **scalable**, independent, **trusted** and privacy-preserving integration layer of a wide range of AAI services!



Security & Privacy Bootcamps: Developing Skills and Systems

NREN Security Bootcamps

- ❖ Cybersecurity threats evolving rapidly
- ❖ Small and Medium NRENs increasingly targeted
- ❖ Bootcamp concept developed by GÉANT to enhance security maturity of small and medium-sized NRENs in the GÉANT Community.

- Three-day tailor-made in-person workshop tailor made
- Two privacy and security professionals to focus on the NRENs specific needs
- Groups up to four NRENs with similar security maturity level



- First bootcamp to start in mid-March 2024 for Eastern Partnership countries
- Planning for other GÉANT NRENs in the works

What and How?

❖ Security

- Security Baseline implementation
- Policies and Governance
- Training & Awareness
- Monitoring and Auditing process

❖ How – Three Stages

1. One-hour online evaluation & kick-off
2. Two-hour online assessment
3. Three-day in-person bootcamp

❖ Privacy

- Planning (Strategy, Structure, Training & Awareness)
- Data Protection Policy
- Inventory of Processing Activities
- Templates
 - ✓ Privacy Notice
 - ✓ Data Processing Agreements
 - ✓ Consent form
 - ✓ Incident / Data Breach reporting
 - ✓ And more ...

Going Global

❖ Global awareness of security importance is high.

❖ But knowledge and implementation have room for growth.

❖ Security Bootcamp is Going Global.

- Pilot for Latin America in development with RedCLARA.
 - Same trainers and methodology.
- Afterwards, will gather wider global interest.
 - If interest is high, process for prioritisation will be developed.

For more information, speak to Ana Alves here in Chicago,
or contact IR@geant.org



Thank you!

www.geant.org



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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).