



Networking the Networkers

Global Network Collaboration Groups

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RIPE SEE 11, Split, Croatia

05 April 2023

Agenda

- GÉANT
 - Special Interest Groups
 - NETDEV Open Forums
- Global
 - GNA-G - Global Network Advancement Group
 - Global Research Platform
- NOG.HR

PSNC - Poznań Supercomputing and Networking Center, Poland

Center of e-Infrastructure

- National Research and Education Network PIONIER
- Research Metropolitan Area Network - POZMAN
- HPC Center
- Data repositories and Digital Libraries Federations

Center of Research and Development

- HPC, Grids and Clouds
- New media and visualisation technologies
- Knowledge platforms
- Future Internet - Technologies, Applications and Services
- Cyber Security
- Quantum Communication and Computing
- Optical Time and Frequency Networks



PSNC in numbers



470

employees



20

laboratories



29

years of operation



16+

fields of activity



75

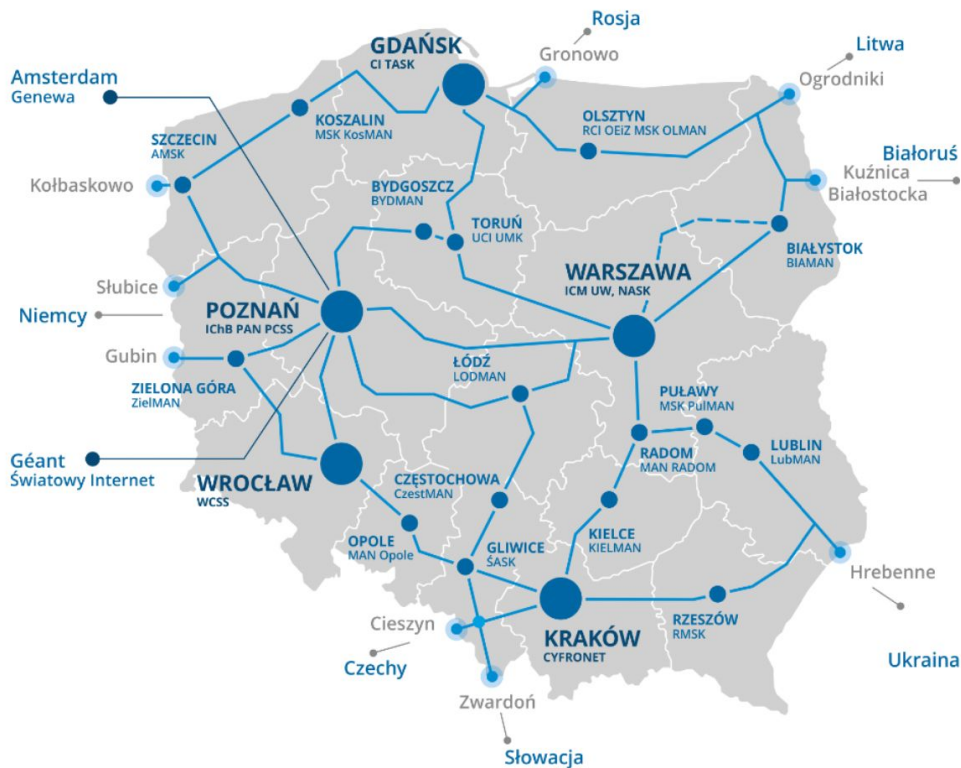
current projects



80+

projects in Horizon
2020

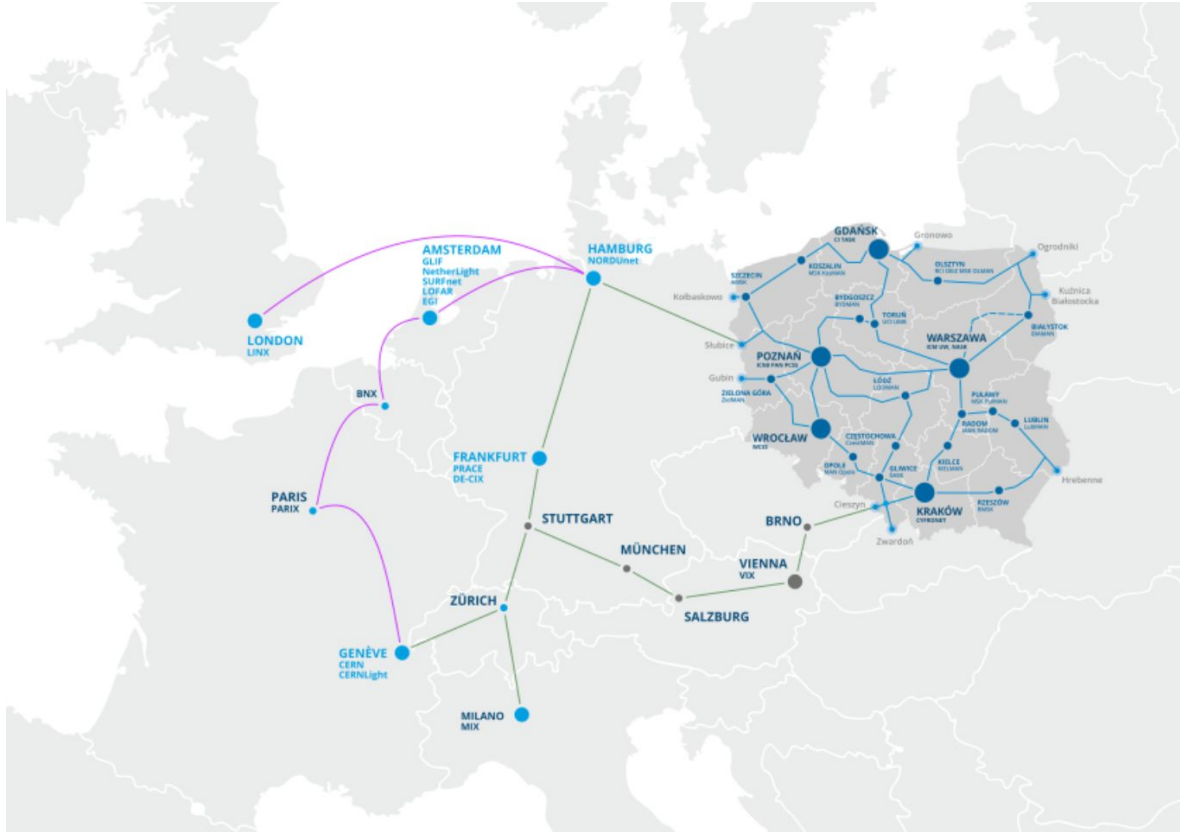
PSNC Network - PIONIER in Poland



Type of connected unit	Number of units
Research institutions	221
Universities	196
Post-secondary schools	21
High schools, secondary schools, primary schools and vocational schools	234
Healthcare	59
Public safety	27
Government administration	27
Provincial administration	59
District, municipality and city administration	73
Other administration	9
Court and public prosecutor's office	26
Cultural institutions	104
Other educational	27

~10 000 km of fiber in total

PIONIER Connectivity in Europe



The GÉANT Project



GÉANT's vision is to ensure equal network access for all scientists across Europe to the research infrastructures and the e-infrastructure resources



The GÉANT Project is a part of the European Union's Horizon Europe research and innovation programme under the seven-year Framework Partnership Agreement (FPA)



500 contributors from 37 partners - European R&E Institutions

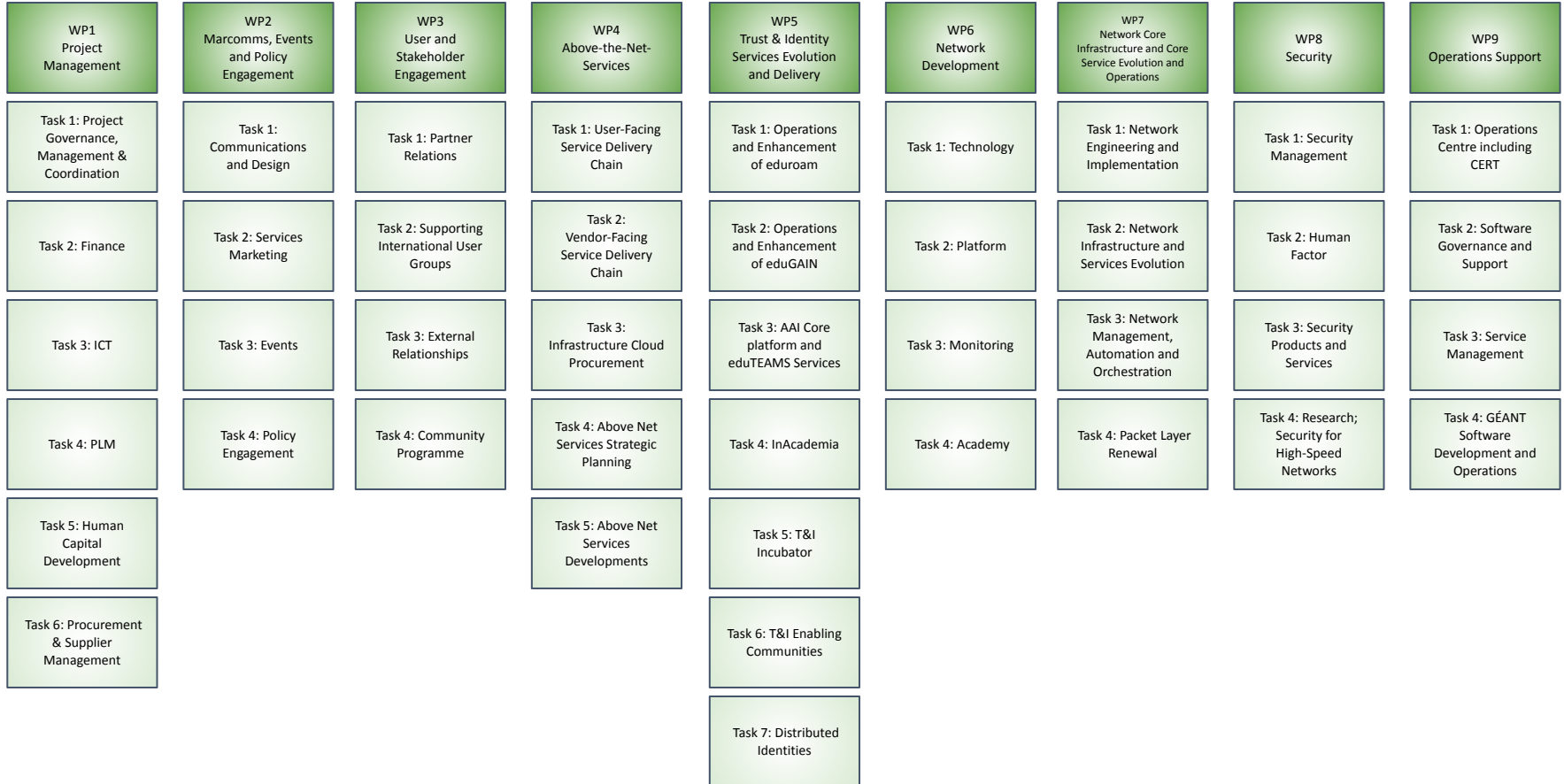


50 M users



GÉANT 5-1 (GN5-1) Project duration: 1 Jan 2023 – 31 December 2024

The GÉANT 5-1 Project Structure



The GÉANT Project Structure



GÉANT Groups and Forums

GÉANT Community Program

- Special Interest Groups

GÉANT Project Network Development Work Package

- NETDEV Open Forums



GÉANT SIGs

GÉANT Special Interest Groups - SIGs are established under the auspices of GÉANT in order to create an

open forum

where experts from its community

exchange information, knowledge, ideas and best practices

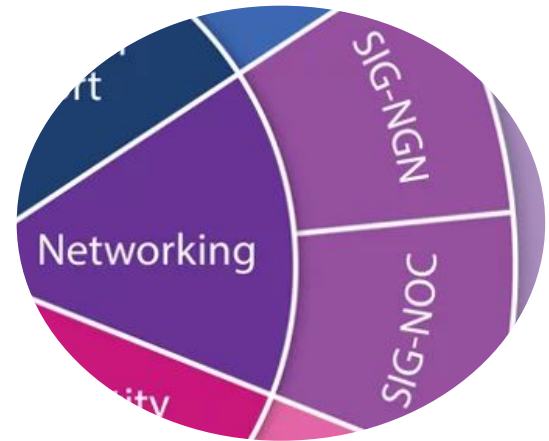
about specific **technical or other areas** of business relevant to the research and education networking community.



GÉANT SIGs - Network

2 Network-related SIGs:

- **Network Operations Centre - SIG-NOC**
- **Next Generation Networks - SIG-NGN**



SIG-NOC = Special Interest Group - Network Operations Centre

The main topics covered by the new SIG would include, but would not be limited to

- To facilitate **knowledge exchange and collaboration** for leading NOC staff and network engineers involved in the integration and optimization of **NOC tools and processes** in order to foster the **development and improvement** of NOCs, primarily within the research and education community.
- To explore and get an understanding of the **taxonomy** of Network Operation Centres, collecting information on how NOCs do things and then discuss how to enhance them and document this for future reference.
- To offer a **forum for exchanging and promoting ideas**, experience and knowledge on NOC tools, functions, workflows, procedures and best practices, making communication easier.
- To **facilitate the inter-NOC discussions** in case of multi-domain services.
- To liaise with GÉANT Operations, and other e-infrastructures.
- To **foster face-to-face and online meetings**, providing a breeding ground to discuss, elaborate and disseminate early thoughts, brought in by members of the research and education community that can evolve into projects or services.

<https://wiki.geant.org/display/SIGNOC/SIG-NOC+Special+Interest+Group+-+Network+Operations+Centre>
[Subscribe to the mailing list...](#)

SIG-NOC Meetings

(At least) twice a year

In person + online

SIG-NOC recent topics

- Risk Management
- NOC Tools
- 5G
- Energy optimisation
- Green solutions
- Telemetry
- Orchestration and Automation
- ...

18th SIG-NOC meeting - Stockholm, Sweden

Created by Magda Haver, last modified by Jonny Lundin on Mar 17, 2023



Theme 16&17 May 2023 in Stockholm

The insights of your network. Do you see what I see?

Venue/Location

The SUNET office is conveniently located within a walking distance (~10 minutes) of the Stockholm Central Train Station.

Tulegatan 11

113 86, Stockholm, Sweden

Next Meeting

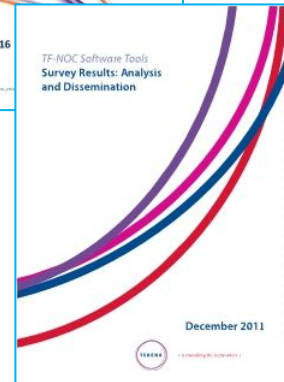
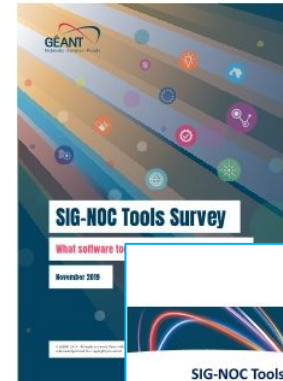
SIG-NOC Tools Survey

Covers 16 NOC functions

- Monitoring
- Problem Management
- Ticketing
- Reporting and Statistics
- Configuration Management and Backup
- Knowledge Management and Documentation
- Performance Management
- Security Management
- Inventory Management
- Communication, Coordination and Chat
- Out-of-band Access Management
- Resources Management
- Change Management
- DDoS Mitigation
- Data Aggregation, Representation, Visualisation
- Orchestration, Automation and Virtualisation

**Coming
Soon!**

Survey 2023!
Join us in
Stockholm for a
discussion and to
shape the new
survey together!



SIG-NGN = Special Interest Group - Next Generation Networks

SIG-NGN is a community for knowledge exchange and collaboration on developments in networking technologies.

SIG Objectives

- To **facilitate knowledge exchange and collaboration** on developments in networking technologies.
- To promote and coordinate **development and testing** of innovative networking technologies.
- To define, develop and test **new networking services**, which can subsequently be introduced by national research and education networks and/or the European backbone infrastructure.
- To provide a forum for wider discussion of the work of the GÉANT “Joint Research Activities” and “Service Activities”. This might include active collaboration on GEANT related research with organisations who are not GÉANT partners.

<https://wiki.geant.org/display/SIGNGN/Next+Generation+Networking+Home>

[Subscribe to the mailing list...](#)

SIG-NGN Meetings and Topics

(At least) twice a year

In person + online

SIG-NGN recent topics

- Big Science:
users, use cases, requirements, networks
- Programmable platforms:
FPGA / P4 / Control plane - vision and reality
- Future network architectures
- ...

11th SIG-NGN Meeting

Created by Gyongyi Horvath, last modified on Mar 28, 2023

Thursday 20th April 2023

SIG-NGN is the Special Interest Group on Next Generation Networks.

This meeting of the 11th meeting of the SIG will be held in Prague, Czech Republic.

Venue:

FZU

Pod Vodárenskou Věží 1

182 00 Prague 8

Czech Republic

<https://www.fzu.cz/en/about-fzu/contact>

Meeting room: Solid/1.NP/P.23/1 (Solid Sál - 1)

This SIG-NGN meeting is a co-located event with the LHCONE meeting:

<https://indico.cern.ch/event/1234127/>

Theme

"Large science experiments and networking futures"

Next Meeting

NETDEV Open Forums

Motivated by the need from the community to:

- Share knowledge and experience and
- Learn more about NETDEV project work

Open Quantum Group Meetings

- Every first Friday in a month at 2pm CE(S)T
- Round table updates from different organisations and projects

RARE Community calls

- Every Tuesday at 4pm CE(ST)
- Providing help and support in deploying RARE/FreeRtr

Network eAcademy

- Every first Tuesday in a month or ad-hoc

For more info:

netdev@lists.geant.org

<https://wiki.geant.org/display/NETDEV>



[Open Quantum Group Meeting](#)

join us

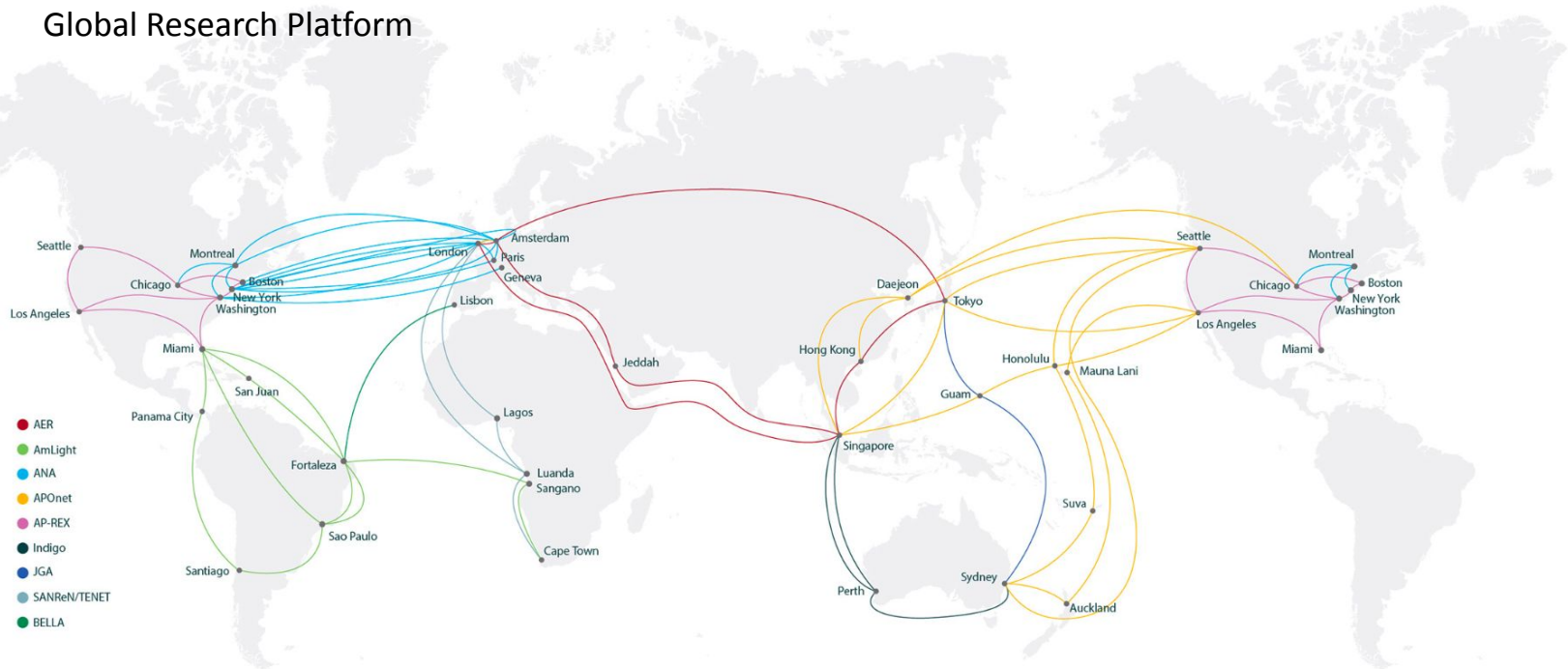
every 1st Friday at 14:00 CEST/CET

More info:

quantum-discuss@lists.geant.org

Going Global

- GNA-G - Global Network Advancement Group
- Global Research Platform



GNA-G = Global Network Advancement Group

A community of network professionals from the R&E networking organisations worldwide



The GNA-G goal

Work together to better align resources and make the continent-to-continent interconnections more efficient for global science collaborations and transnational education

The GNA-G Vision

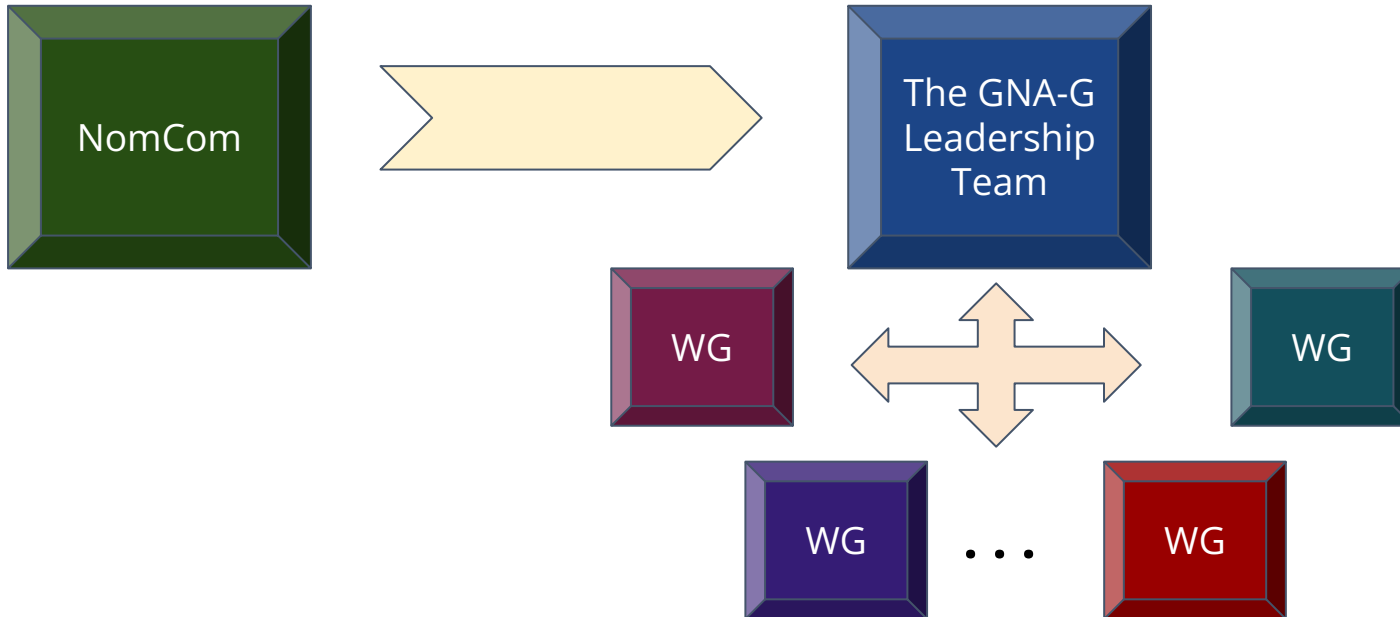
The international collaboration of national R&E networks on more effective use of resources and interconnection of R&E networks for science and future development of these networks

The GNA-G Mission

Ensure the technologies, infrastructures and investments of the partners and participants are utilised for interconnecting R&E networks on a global scale.

GNA-G Structure

- NomCom elects members of the GNA-G Leadership team
- The GNA-G work is organised in Working Groups (WGs)
- The GNA-G Leadership Team (LT) establishes, oversees and closes the WGs and organises community meetings



GNA-G Modus Operandi

- The work is taking place within Working Groups
 - Regular meetings - weekly, bi-weekly, monthly
 - Work per objectives and expected outcomes
- Working groups
 - Proposed through a charter
 - Established and closed by the Leadership Team
- Community meetings
 - Working group results report
 - Presentations on a specific topic from several organisations / regions
- Each community meeting organised in two sessions, e.g.:
 - 6am - 8am UTC, suits Asia, Australia, New Zealand, Africa, and Europe
 - 8pm - 10pm UTC, suits North America, Latin America, Africa, and Europe

Communicate, Contribute, Collaborate

GNA-G Working Groups

Established:

- AutoGOLE/SENSE
- Data Intensive Science
- GREN Map
- Network Automation
- GNA-G Routing WG
- NomCom - Nomination Committee

Changes in Feb 2023:

New: GREN Engineering Advancement

Proposed:

- Subsea cable sensing and smart cables
- GREN vulnerability risk review

Closed: GREN Connecting Offshore Students



David Wilde, Chair
AARNet (Australia)



Harvey Newman
Caltech (USA)



Buseung Cho
KISTI (South Korea)



Ivana Golub
PSNC (Croatia/Poland)



Marco Teixeira
RedCLARA (Latin America)



Alex Moura
KAUST (Saudi Arabia)



AutoGOLE/SENSE

- AutoGOLE = **Automated Global Lambda Integrated Facility (GLIF) Open Lightpath Exchanges**
- SENSE = **Software-defined Network for End-to-end Networked Science**
- **Intelligent network services for Science Workflows**
- **Collaboration of open exchange points and R&E networks to deliver services end-to-end in a fully automated way using Network Service Interface Connection Service (NSI-CS)**

Objectives:

- **Delivering automated network (de)provisioning on the trans-Atlantic ANA fibre system**
- **Researching and Implementing of SENSE within the AutoGOLE networks, exchanges and end points**
- **Building a persistent infrastructure for science on top of dedicated connectivity, NSI and SENSE**

WG Chairs: ESnet, KISTI, RNP, SURF

Data Intensive Science

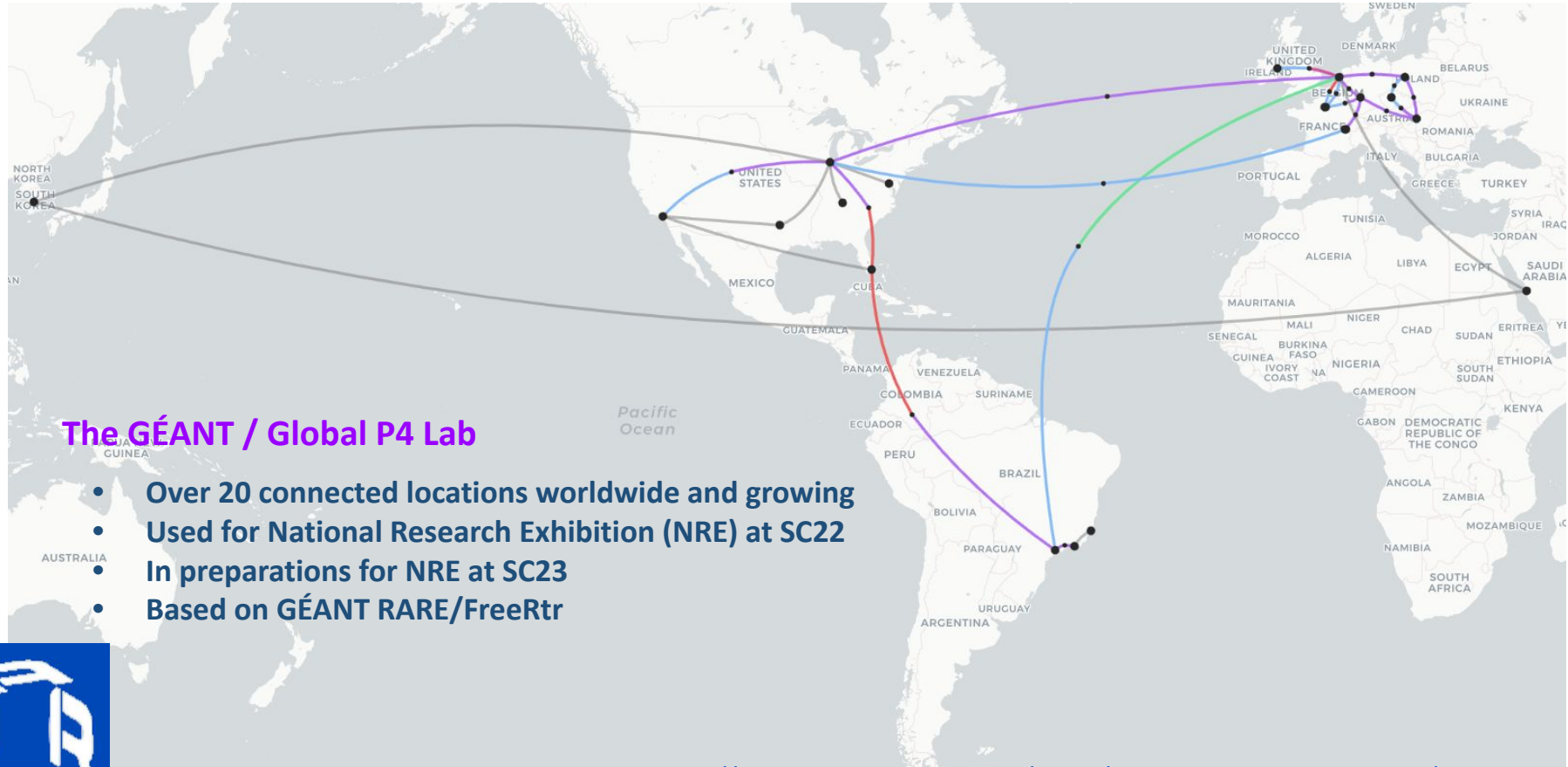
- Collaboration between science and network communities on addressing the growing demand for network—integrated workflows, cross-institution data management, automation, resource management, etc.

Objectives:

- Share, deploy, develop tools and services, provide a forum to support science programs across network and science communities
- Looks for new tools and services, new modes of R&E network operations
- Moving towards (globally) federated infrastructures including networking, compute and storage

WG Chairs: Caltech, ESnet, AmLight/FIU

Joint AutoGOLE/SENSE and Data Intensive Science Testing Platform



The GÉANT / Global P4 Lab

- Over 20 connected locations worldwide and growing
- Used for National Research Exhibition (NRE) at SC22
- In preparations for NRE at SC23
- Based on GÉANT RARE/FreeRtr

<https://sc22.supercomputing.org/scinet/network-research-exhibition/>



GREN Map

- Guiding the development of a unified system for visualizing the high-level connectivity of and participation in the community of R&E networks around the globe
- Achieving a dynamic visualization, without maintenance activities
- A joint development of a reference data model used also for other visualizations

Objectives:

- Provide dynamic visualization of the GREN that is perpetually up-to-date without requiring parallel data collection and maintenance activities

WG Chairs: CANARIE, GÉANT

Network Automation

- Develop a catalogue of tools to drive automation in network configuration, security auditing, change control activities and intra-domain automation activities
- Facilitate collaboration on common tools and practices

Objectives:

- Create a standardised glossary of network automation tools
- Create and maintain a catalogue of network automation tools
- Set up network automation training
- Identify a common set of network automation activities each NREN could re-use
- Identify common APIs that NRENs use
- Identify and agree on a common API set for communicating between NRENs

WG Chairs: AARNet, SURF

GNA-G Routing WG

- Optimal data routing, good performance, determined/expected data paths in single and multi-domain networks
- Engages network owners and NRENs to discuss and address ineffective routes and act proactively across community to systematically create policies to prevent ineffective routes

Objectives:

- **Engineering** – promoting and supporting advanced tools to identify and resolve routing issues
- **Collaboration** between network owners and operators to resolve network issues
- **Policy** – collaboration with higher-level networking operators to detail their routing policies and be able to check if the traffic follows the policy

WG Chairs: Indiana University, AARNet

GREN Engineering Advancement WG

- The aim of this workgroup pioneer, try, test, experiment with solutions to better/more efficiently/redundantly run services over links part of the GNA-G.

Objectives:

- **To enhance operation** on systems between production networks.
- Effective and efficient **multi-domain** service orchestration.
- Disseminate gather knowledge and work results.

WG Chairs: SURF

GNA-G Forthcoming Meetings

GNA-G Automation Working Group f2f meeting

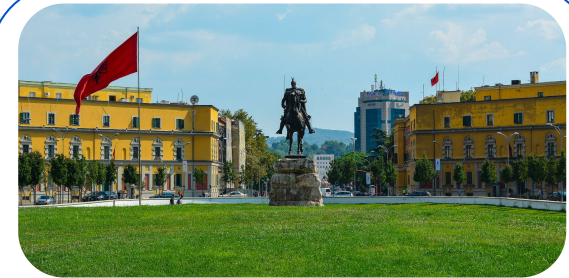
- 2 June 2023 Utrecht, Netherlands



GNA-G Community Meeting

- 6 June 2023 Tirana, Albania - TNC23 side meeting
<https://tnc23.geant.org/programme/>

More info: <https://www.gna-g.net/meeting/>



tnc23
Tirana, Albania | 5-9 JUNE 2023

GRP = The Global Research Platform

An international scientific collaboration led by:

- The International Center for Advanced Internet Research (iCAIR) at Northwestern University,
- the Electronic Visualization Laboratory (EVL) at the University of Illinois Chicago,
- the Qualcomm Institute–Calit2 at UC San Diego, and
- its partners worldwide.



<https://www.theglobalresearchplatform.net/>

GRP = The Global Research Platform Objectives

- Create one-of-a-kind **advanced** ubiquitous **services** that **integrate resources around the globe** at speeds of gigabits and terabits per second.
- Focus on design, implementation, and operation strategies for
 - Next-generation distributed services and infrastructure
 - High-performance data gathering, analytics, transport, computing, and storage, at 100 Gbps or higher.
- Global partnering for distributed cyberinfrastructure to support data-intensive scientific workflows

<https://www.theglobalresearchplatform.net/>



Source. Avatar

GRP Meetings and Topics

Often collocated with some other event (IEEE, SC, SCA...)

Topics:

- Large-Scale Global Science
- Next-Generation Research Platforms
- Orchestration Among Multiple Domains
- Large-Scale Data WAN Transport
- High-Fidelity Data Flow Monitoring
- Visualization, Analytics, Diagnostic Algorithms,
- Event Correlation AI/ML/DL

The Global Research Platform

The **4th Global Research Platform Workshop (4GRP)** will take place October 9-10, 2023 in Limassol, Cyprus, co-located with the **19th IEEE International Conference on e-Science**. 4GRP and eScience attendees share common interests, content and culture. Co-location provides 4GRP and eScience attendees with the option to register for both events. **The 4GRP website is under construction.**



Next Meeting

Croatian Network Operators Group - NOG.HR

NOG.HR

- Established in 2022
- Gathers Croatian Network Experts
- Exchanging knowledge, experience
- Collaboration within Croatia and with other NOGs

Goals:

- Enable and support communication and information exchange channels (mailing list, forum...)
- Organise meetings around NOG topics
- Share information about NOG and its activities

Next Meetup: 20 April 2023, Zagreb ([Topics](#), [Registration](#))

More info: nog.hr



Thank You!

igolub@man.poznan.pl