# THE GÉANT PROJECT (GN4-3 AND GN4-3N)
# HIGHLIGHTS

This document presents the highlights of Period 1 of the EC-funded GN4-3/GN4-3N projects, from 1 January 2019 to 30 April 2020. GN4-3/GN4-3N form the last of three phases implementing the actions defined in the 68-month Framework Partnership Agreement, established between the GÉANT Consortium and the European Commission that started with GN4-1 in May 2015.

## GÉANT's vision is to provide users equal, high-performance network access to the research infrastructures and e-infrastructure resources across Europe.

The GÉANT projects are a fundamental element of the European e-infrastructure. Through its integrated catalogue of connectivity, collaboration and identity services, GÉANT, together with its National Research and Education Network (NREN) partners, provides users with unconstrained access to communication, computing, analysis, storage, applications and other resources, whenever and wherever needed.

In a rapidly changing environment, GÉANT and its NREN partners are responding to the challenges posed by pandemics and the resultant global, economic and political crises by ensuring connectivity despite changing traffic profiles. GN4-3 also continues to deliver excellence in networking services, enables integrated High Performance Computing, and supports open science, which reinforces Europe as a global research hub. The data demands of the research and education community are evolving faster than ever, and GÉANT's flexible, agile and long-term approach remains vital.

## SUPPORTING THE KNOWLEDGE COMMUNITY

*By interconnecting Europe's NRENs and facilitating high-speed links with other global regions, GÉANT connects schools, universities and the world's largest research projects, enabling scientific discoveries, supporting remote learning and upskilling communities.*

- **Supporting NRENs in a changing landscape**: extensive requirements gathering, service outreach and proactive engagement activities to support NRENs during uncertain times, ensuring a range of services they and their users need.

- **Global collaboration and service leadership**: enhancing relationships, global connectivity and services to support international users; building network capacity and connectivity, including new 100Gbps links between Japan and Europe, and Asia and Europe, and providing a 10Gbps link with China.

- **Building the community:** the highest Community Programme attendance reported, with 36 meetings and 1900+ attendees; a virtual Community Café set up during the COVID-19 pandemic to provide additional community support.

- **Engaging with EOSC**: led multiple sessions to support NREN involvement in the European Open Science Cloud (EOSC), worked closely with EOSC Cluster projects, including: EOSC-Life, ENVRI-FAIR, FENIX, ESCAPE, SSHOC and PANOSC, to ensure GÉANT services fit user requirements.

- **Linking EuroHPC centres**: workshop organised with five, major high-performance computing centres to identify requirements and future strategies for networking needs, enabling pre- and exascale projects.

- **Closing the digital divide**: specialist support for South East Europe (SEE) in tandem with the World Bank, aimed at furthering collaboration across the region and introducing new project partners.

- **Communicating with audiences**: streamlined communications channels now include CONNECT community website, magazine and weekly newsletter; the IMPACT website showcases user communities supported by GÉANT and its NREN partners; social media raises awareness and drives traffic.

- **Outreach through events**: exhibited to the HPC community at SC19; flagship TNC19 was successfully held in Tallinn, Estonia in June 2019, and received multiple awards from the Estonian Convention Bureau (ECB) in the Conference of the Year and Smart Technical Solution categories.

- **Upskilling the community**: GÉANT's Learning and Development (GLAD) team increased number of videoconferences, online workshops and training events to support remote learning requirements; Emerging NREN Programme supported development of new NRENs; Future Talent Programme mentored selected students at TNC19; CLAW workshops successfully held, equipping NREN staff with crisis communications skills.

**157 FTEs**
500+ contributors
39 partners
42 countries

**50M users**

**tnc 805 attendees**

CONNECT MAGAZINE #27 #28 #29 #30 **500+ articles** on connect.geant.org

EUROPEAN OPEN SCIENCE CLOUD
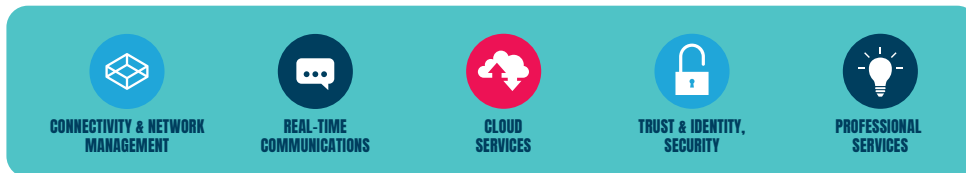
SUSTAINABLE DEVELOPMENT GOALS
impact.geant.org

# OPTIMISING THE NETWORK FOR ALL USERS

*The GÉANT network continues to deliver excellent service and extremely high performance for all users, while implementing the largest network refresh of a generation to maintain and strengthen European and international high-speed networking for the research and education community.*

- **Future-proofing the network**: procurement and implementation of a major, pan-European network refresh (GN4-3N) to create a more resilient infrastructure, increase network footprint, and future-proof connection speeds.
- **Decreasing the digital divide**: GN4-3N will bring dark fibre to more European regions.
- **Cost-effective**: Data Centre Interconnects (DCIs) deployed on dark fibre routes enable cost-effective IP trunk capacity upgrades to meet growing data requirements.
- **Prototyping components, modules, services, and applications**: Delivering new monitoring tools, investigating Quantum Key Distribution (QKD).
- **Pushing performance to the limit**: Low-Latency (LoLa) applications for e-health and real-time performances to support distanced analyses and learning.
- **Procurement expertise**: Dynamic Procurement System successfully set up to support large scale tendering for new routes; improved processes help to lower costs without compromising quality of service.
- **GÉANT Connection Service**: used to provision all Layer 2 circuits.

| CONNECTIVITY & NETWORK MANAGEMENT | REAL-TIME COMMUNICATIONS | CLOUD SERVICES | TRUST & IDENTITY, SECURITY | PROFESSIONAL SERVICES |
|---|---|---|---|---|

# DEVELOPING SERVICES FOR A RAPIDLY CHANGING WORLD

*GÉANT's range of user-focused connectivity, collaboration and identity services remain vitally important to research, education and an evolving European e-infrastructure. Shorter and more agile development cycles ensure services continue to meet user needs in a rapidly changing environment.*

- **Services of the future**: highly successful workshop on Future Service Strategy held for 70 attendees from project partners, supporting development of future services.
- **Accelerated development**: eduMEET service launch brought forward to meet rapidly growing demand for remote learning applications.
- **eduroam**: global Wi-Fi roaming service reached 1 billion international authentications in 2019, marking a 33% year-on-year increase.
- **Increased eduVPN uptake**: a valued service, providing more secure access to public and private networks, eduVPN experienced increased interest and uptake in line with remote learning growth.
- **eduTEAMS**: providing a platform to enable communities and research projects to create and manage their virtual teams and manage secure, group- and role-based access to shared resources and services, using existing federated identities.

- **Growing cloud usage**: IaaS framework services now consumed by 340 institutions, to a value of €27.6M.
- **InAcademia**: online student validation service launched, allowing growing number of merchants to validate whether a customer is a student or affiliated to education institute.
- **Leadership in cyber security**: many project partners took part in Cyber Security Month awareness-raising campaign; workshops organised on DDoS Mitigation and Security Operations Tools.
- **Trust & Identity Mentorship**: new initiative seeks to develop new AAI services and support talent in community.
- **Network monitoring**: new versions of the production perfSONAR and NMaaS software released.

**3.65 exabytes**
TOTAL TRAFFIC VOLUME

**€27.6M** value services

**340 INSTITUTIONS** using the IaaS offerings

**eduTEAMS**

**eduVPN**

**InAcademia** ONLINE STUDENT VALIDATION

**TRUST & IDENTITY INCUBATOR**

**WiFiMon**

**CONNECT ONLINE**

**GÉANT IMPACT** impact.geant.org

To learn more about GN4-3/GN4-3N visit www.geant.org/geantproject or use the QR code →

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