

HIGHLIGHTS



This document presents the highlights of Period 2 of the EC-funded GN4-2 project, from 1 September 2017 to 31 December 2018. GN4-2 is the second 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 ensure equal network access to the research infrastructures and e-infrastructure resources across Europe

Ready to serve the evolving landscapes of both EDI and EOSC, the GÉANT Consortium of European NRENs provides national access to the Research and Education community. Together with its coordinator, the GÉANT Association, it continues to ensure the knowledge community's demands are fully met and that European research expertise is globally accessible.

The GÉANT project is a core, fundamental element of the European e-infrastructure. Through its connectivity, collaboration and identity services, GÉANT, together with its NREN partners, provides users with highly reliable, unconstrained access to communication, computing, analysis, storage, applications and other resources, whenever and wherever needed.

Over the period, GN4-2 has continued to maintain operational excellence across a portfolio of services and, with increasing collaboration with its users and other e-infrastructures, has developed a range of new or improved services and tools to enable and enhance the capability of research and education.

COLLABORATING WITH NRENS, INDUSTRY, E-INFRASTRUCTURES AND USERS

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, helping deliver real societal benefit. Through close consultation and collaboration with NRENs, large user projects, international networks and e-infrastructures, efforts are being further aligned, relationships continue to be strengthened, NREN satisfaction levels continually improved, and communications channels successfully increased.

- **Closing the digital divide:** focused support for Balkan countries, bringing together regional decision makers facilitating international R&E connectivity and national NREN development.
- **Serving big science:** supported the design of the Square Kilometre Array (SKA) European Regional Data Centre via support to the AENEAS project. Expanded the collaboration and support to PRACE, deployed perfSONAR-based monitoring infrastructure and introduced eduTEAMS in EOSC to support Community AAI requirements.
- **Linking global users:** dedicated R&E connectivity for Copernicus data hub, supporting 65% of Copernicus downloads globally in collaboration with ESA. GÉANT also distributes EUMETCast data (including Copernicus data) to 5 continents, supporting global meteorological services and climate change research. Enhanced participation in Group on Earth Observation (GEO), leading to pilots for eduoam and eduGAIN in Brazil with the World Meteorological Organization (WMO), as well as R&E capacity building in Africa and Asia/Oceania.
- **Cross-e-infra conference:** joint delivery of DI4R 2017 and DI4R 2018 (with 400+ participants).
- **Strong engagement in EOSC and EDI:** through close alignment with e-infrastructure partners, key roles secured in EOSC Executive Board, EOSC Secretariat, EOSCpilot and EOSC-hub, and in PRACE 6IP project and HPC governance.
- **Furthering education:** connected schools through the provision of pan-European insight and knowledge exchange for a growing group of NRENs; enabled transnational education for remote campuses across Europe, China and the UAE, and established a Global NREN Special Interest Group.
- **Building skills:** bi-annual Learning Needs Survey completed, leading to a comprehensive training workplan.
- **Impactful communication:** project participants attended over 300 conferences, workshops and other events, with GÉANT leading 5 major conferences, 42 workshops and over 120 other events; digital engagement expanded to 3,000+ Twitter followers; targeted campaigns implemented to drive engagement; 4 issues of CONNECT magazine were published coinciding with DI4R and TNC events; new impact website launched to reach a wider audience; joint outreach undertaken with key e-infrastructures.



DELIVERING OPERATIONAL EXCELLENCE TODAY; REALISING THE POTENTIAL OF TOMORROW

The GÉANT network continues to deliver cost-effective and extremely high performance for all users, and to support Europe's position at the forefront of research.

- **Cost savings:** re-procurement activity led to savings of up to 50% per Mb on certain routes.
- **Refreshing the network:** five regional connectivity studies were completed and their findings used to inform a high-level plan for connectivity procurement across Europe.
- **Planned fibre expansion:** NREN CTOs consulted on fibre rollout, expanding fibre well beyond current coverage.
- **Enhanced performance:** cost-effective Data Centre Interconnect (DCI) procurement completed and new Coriant devices deployed in London and Amsterdam, delivering increased capacity and improved quality.
- **Industry peering:** new peering points established with Google, Verizon and Dimension Data, leading to improved performance and lower costs for data ingress and egress.
- **Security enhancements:** network security further strengthened and risks minimised through implementation of security plan recommendations, Firewall on Demand (FoD) upgrade and improved DDoS solution.
- **Standards development:** influential in standards development, GÉANT continued leadership roles in standards organisations such as Open Grid Forum, Internet Engineering Task Force and W3C, and active involvement in many more.



EXPANDING A PROFESSIONALLY MANAGED, USER-DRIVEN SERVICE PORTFOLIO

GÉANT follows a Product Lifecycle Management process to ensure services are developed to user requirements and then transitioned to fully supported production services, within a portfolio covering networking, trust and identity, mobility, security and clouds.

- **Delivering the cloud:** 29 services available, 34 NRENs signed up to deliver the GÉANT cloud portfolio in their respective countries; 294 institutions are now consuming cloud services; institutional savings of 30% (€1.5 M+) reported.
- **Extending safe, secure collaboration:** access to eduroam now available in 101 countries, with > 4.3 billion authentications across Europe in 2017/18 academic year (16% year-on-year increase); eduGAIN now available in 59 countries, with > 5,200 entities participating (21% year-on-year increase).
- **Introducing new services:** a range of 'above the net' services launched or piloted, including eduTEAMS, eduroam Managed IdP, InAcademia (first agreements signed for business piloting and pilot infrastructure run on production baseline), and Multi-Domain VPN.
- **Future-proofing connectivity:** 'pathfinder' implementation of 300 Gbps PoP-to-PoP DCI link, reducing costs, increasing capacity and demonstrating technology path for GN4-3N.
- **Meeting support and response needs:** Federation as a Service KPI for availability of user instances exceeded: target 99%, achieved 99.97%.
- **Improving software development:** 6 training courses delivered, including School for Software Engineering (2 instances, benefiting 18 and 20 participants from 7 and 8 NRENs, respectively) and Secure Code Training (2 instances, benefiting 20 participants from 11 NRENs, and PSNC developers).
- **Promoting services uptake:** eduroam #love2eduroam campaign achieved 500,000 impressions, 20% increase in web visitors, strongest uptake (incl. translation) by NREN partners worldwide ever, with 31 NRENs participating; eduGAIN website and marketing push contributed to growth in uptake.
- **Raising awareness:** Network Management as a Service (NMaaS) piloted to the community and demonstrated at SC18 in Dallas and TNC18 in Trondheim.
- **Ensuring synergy:** GÉANT services listed in EOSC catalogue; collaborations, e.g. with AARC, EGI and EUDAT for Life Sciences AAI.
- **Ongoing consultancy:** assisting DG CONNECT in putting forward the appropriate requirements for successful implementation of WiFi4EU.



© GEANT Association on behalf of the GN4-2 project. The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 731122 (GN4-2).

To learn more about GN4-2 and its achievements visit www.geant.org/geantproject or use the QR code →

