EGI Council Participant: EnhanceR

Participating in EGI Impact Report: Switzerland

2024

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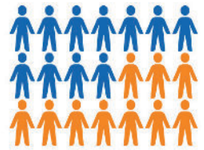
Infographic

936 service users

In 2024, 936 researchers from Swiss institutions used the services provided by the EGI Federation



1,471 publications

The research communities, projects and scientific collaborations from Switzerland supported by the EGI led to 1,470 peer-reviewed scientific publications

13 Supported communities

In 2024, the Swiss infrastructure supported 13 research communities in the following disciplines: Agriculture, Climate Research, Health and Medicine, Linguistics, Physics

Projects

Swiss partners participate in 10 collaboration projects.

Compute Delivery

In 2024, the infrastructure providers from Switzerland federated in EGI delivered 107,476,170 HTC CPU Hours.

Country overview

Number of supported publications	1,471
Number of total service users	936
Scientific Communities supported	13
Data Centres contributing to the Federation	5
Collaboration projects	9
Total HTC CPU hours delivered	107,476,170

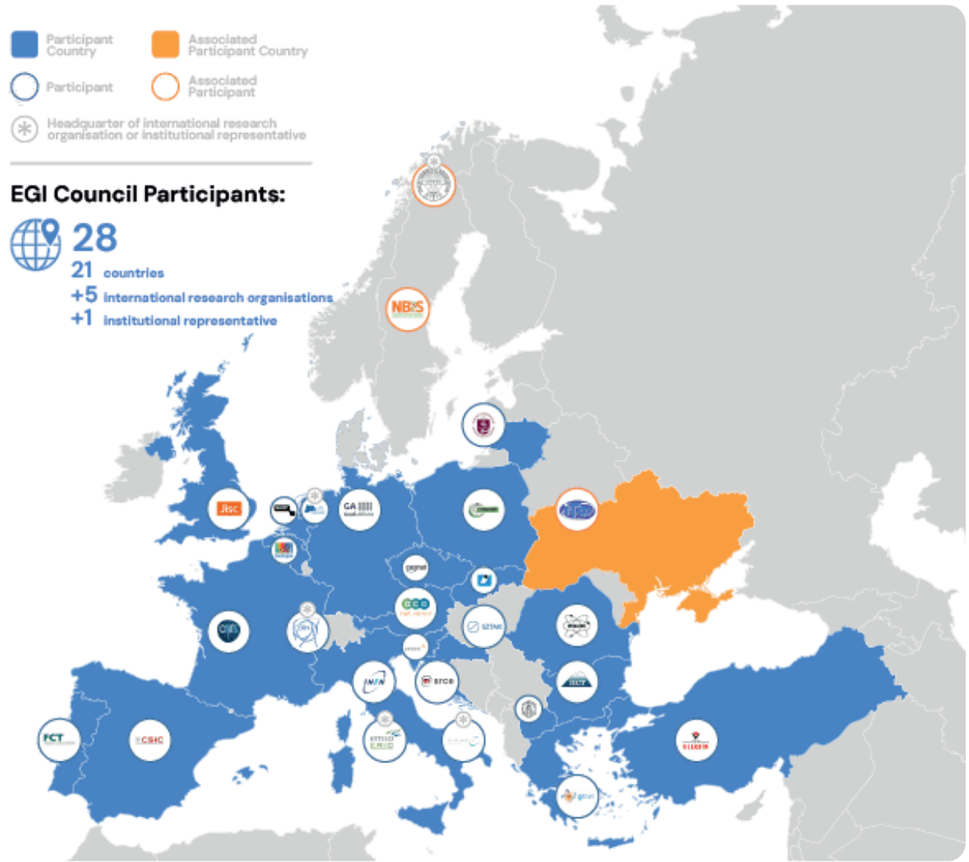
About EGI

EGI is the federation of computing and storage resource providers united by a mission of delivering advanced computing and data analytics services for research and innovation.

The EGI Federation believes that all researchers should have seamless access to services, resources and expertise to collaborate and conduct world-class research and innovation. The EGI Federation is coordinated by EGI Foundation, an organisation with headquarters in Amsterdam. The Foundation offers a service federation and management platform, enabling the data centres to harmonise and integrate their services by connecting to a common hub. Moreover, it engages with international research communities using these services in order to understand and satisfy their demands for advanced computing for research.

The mission of EGI is pursued by coordinating and provisioning an international federated infrastructure that pools together service providers from both the public and private sectors in Europe to develop, integrate and deliver digital services for compute and data-intensive research and innovation. As an open initiative with a global outlook, the EGI Federation also connects service providers beyond Europe, following the collaboration needs of the served communities.

The latest Annual Report provides an extensive overview of the results that have been achieved through our collaborative efforts in 2024.



Approved EGI Council map from 2024

About EnhanceR

EnhanceR is a nationally and internationally recognized network for Swiss research IT expertise. It is an association according to Swiss law.

The association's goal is facilitating research excellence in Switzerland to ensure it maintains its leadership position. It achieves this goal by federating Research IT specialist groups at various academic institutions across Switzerland. It creates value by allocating its expertise where and when it is most needed, the interests of the community of users and support teams of scientifi c computing applications nationally and internationally.

EnhanceR builds on the foundation of the Swiss National Grid Association (SwiNG) and continues the national and international roles and mandates of the former association. It is the legal entity sustaining the outcomes of the completed swissuniversities EnhanceR project.

As of 2024, it counts 10 Swiss higher her education, infrastructure and research institutions as members. Membership is open according to its articles. EnhanceR is supported by Swissuniversities.

Overall EGI impact

The EGI Federation is composed of e-infrastructure providers from national and community initiatives, forming one of the largest distributed computing infrastructures for researchers in the world, integrating about 1,243,400 CPU cores and over 1,4 Exabyte of storage space from hundreds of data centres.

In 2024, the EGI Federation served around 116,000 users (+23%). EGI users consumed 7,4 Billion HTC CPU hours (+5.7%), 62,7 Million Cloud CPU hours (-23,5%), ran over 402 M computational jobs (+8%) and published over 2,560 open access publications.

As of the previous year, the research community with the largest number of users is Medical and Health Sciences, while the community with most extensive HTC CPU/h consumption is CMS.

From the scientific communities engaged in 2024, the one with most extensive Cloud CPU/h consumption is WeNMR.

Moreover, EGI engaged with a total of 249 scientific communities; 11 SMEs and business pilots, and 2 additional Research Infrastructure included in the ESFRI Roadmap, raising the total of number of ESFRI partners/users of EGI to 25.

EGI contribution to Swiss excellence in science

The Swiss participation in the EGI Federation is coordinated by EnhanceR (Enhancing Research through IT Expertise), the nationally and internationally recognized network for Swiss research IT expertise. This report provides an overview of the activities of EnhanceR in EGI, and the impact that was achieved thanks to this participation. The annual membership fee contributed by EnhanceR to the EGI Foundation in 2024 was 27,500 EUR.

EGI federates hundreds of resource centres that are located at participant countries, organizations and at collaborating e-Infrastructures worldwide. This federated infrastructure supports data- and compute-intensive research across Europe and the world. In 2024, our federation was used by over 260 scientific communities, and has been accessed by around 116.000 users.

Research Infrastructures and multi-national research collaborations are the largest adopters of EGI Services, the main contributors of thematic portals, and operate community-specific compute, storage and data systems based on EGI federation capabilities.

The services of the EGI federation have been used by 936 researchers from Switzerland in 2024. The estimated annual scientific output in 2024 produced by research communities, projects and scientific collaborations from Switzerlandand supported by the EGI Federation is estimated to amount to more than 1,470 peer reviewed scientific publications.

The EGI Federation is currently working with over 40 Research Infrastructures, 13 of which include Swiss partners. These EGI-enabled research infrastructures, their Swiss members and their 2024 scientific output (publications) are detailed in the following pages of the report.

Swiss research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
ATLAS (High-Energy Physics) • Albert Einstein Center for Fundamental Physics and Laboratory for High Energy Physics, University of Bern • Université de Genève, Département de Physique Nucléaire et Corpusculaire, • CERN	ATLAS has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federated services delivered in the context of the WLCG MoU, including: • Software support (consultancy to users and system administrators, (software maintenance and validation) • Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	126
CMS (High-Enery Physics) • Paul Scherrer Institut • ETH Zürich, Institute for Particle Physics and Astrophysics (IPA) • Universität Zürich	CMS has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federated services delivered in the context of the WLCG MoU, including: • Software support (consultancy to users and system administrators, (software maintenance and validation) • Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	109

Swiss research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
CTA (Astronomy) • ETH Zurich • ISDC Data Centre for Astrophysics, Université de Genève • Université de Genève, Département de physique nucléaire et corpusculair • Universität Zürich	The CTA experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that CTA uses include: • EGI HTC services from 9 EGI participant countries (CZ, DE, IT, FR, ES, NL, RO, PT, SI) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	0
DUNE (Astroparticle Physics) • ETH Zürich • Universität Basel • Albert Einstein Center for Fundamental Physics and Laboratory for High Energy Physics, University of Bern	The DUNE experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that DUNE uses include: • EGI HTC services from 6 EGI participant countries (CH, CZ, ES, FR, NL, UK) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	37
EMPHASIS (Agriculture) • Agroscope • University of Bern • Universität Zürich • ETH • Université de Lausanne • Université de Genève	EMPHASIS has been supported through the establishment of a Data Space in the EGI-ACE project. Since 2017 EMPHASIS using the following services from EGI: • EGI Check-in • EGI Cloud Compute • EGI Online Storage • EGI DataHub • Technical support • Software integration and piloting	0

Swiss research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
IceCube (Neutrino Observatory) • Université de Genève	The IceCube experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that IceCube uses include: • EGI HTC services from 8 sites of 4 EGI participant countries (Belgium, Denmark, Germany and UK) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution) • EGI is currently expanding its resource pledge to IceCube with an increase of GPU capacity.	22
ILC (High-Energy Physics) • ETH Züich, Institute for Particle Physics (IPP) • ETH Zürich, Institute for Theoretical Physics (ITP)	The ILC experiment has been using compute resources from EGI partners since 2004. The services from the EGI federation that ILC experiments uses include: • EGI HTC services from 27 EGI federated sites from IL, DE, FR, ES, NL, PL, UK • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	75

Swiss research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
LHcB (High-Energy Physics) • EPFL • Universität Zürich	LHCb has been supported since 2012 as part of the EGI WLCG collaboration, formally agreed in an MoU. Federating services delivered in the context of the WLCG MoU, including: • Software support (consultancy to users and system administrators, (software maintenance and validation) • Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	49
LSST (Astronomy) • ETH Zurich, Institute for Astronomy	The LSST survey federates High Throughput Compute (HTC) resources from France and the UK and run an analysis campaign in 2020 to prepare for the opening of the Vera C. Rubin Observatory. The campaign consumed over 11 million CPU-hour in 2020 to analyse generated images, imitating the telescope images that are expected to become available from 2023. The LSST compute federation benefited from the following EGI services: • Software support (consultancy to users and system administrators, (software maintenance and validation) • Infrastructure and operations Services (infrastructure catalogue, accounting repository and portal, helpdesk, monitoring, operations portal, AAI) • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	11

Swiss research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
SKA (Radioastronomy) • EPFL	LOFAR has been supported by EGI partners in the EOSChub project in the setup and validation of a data access and transformation workfl ow on High Throughput Compute (HTC) resources. Since 2021 LOFAR (represented by ASTRON) participates in the EGI-ACE Horizon 2020 project where SURF (EGI member from NL) supports the setup, operation and promotion of the LOFAR Data Space, an online service that produces and make 'LOFAR science ready data' available in EOSC for broad uptake. The setup will rely on EGI HTC, Check-in, Helpdesk and consultancy/ technical support services.	91
WeNMR (Structural Biology) • Friedrich Miescher Institute (FMI)for Biomedical Research • Universität Zürich • ETH Zürich • Université de Fribourg • EPFL • Université de Genève • University of Bern • Université de Lausanne • Paul Scherrer Institute • ZHAW Zürcher Hochschule für Angewandte Wissenschaften • Universität Basel	WeNMR is supported by EGI since 2011 and has a Service Level Agreement since 2016. The EGI Services used by the community include: • High-Throughput, Cloud + Online Storage services from 23 EGI federated sites from the Netherlands, Italy, France, Germany, UK, Poland, the Asia Pacific region, IberGrid (Spain and Portugal), Italy, the Latin America region. • EGI Workload Manager • Trust and identity management with Check-in • Technical support: WeNMR benefited from continual support through dedicated support activities in various EGI flagship projects: EGI-Engage, EOSC-hub and EGI-ACE.	939
XENON (Dark Matter Physics) • Universität Zürich	The XENON experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that XENON uses include: • EGI HTC services from 4 EGI federated sites from France, Italy, the Netherlands and Israel • Software distribution services (UMC, CMD, operations documentation) • Operations coordination (middleware deployment campaigns, procedures, innovation of tools) • Security services and activities (CSIRT, Software vulnerability group, international security coordination, policies, IGTF distribution)	11

Participated projects

The EGI Foundation leads five Horizon Europe Projects, three of which started in 2024:

- iMagine (September 2022-December 2025)
- interTwin (September 2022-August 2025)
- ENVRI-Hub NEXT (February 2024-January 2027)
- EOSC Beyond (April 2024-March 2027)
- SPECTRUM (January 2024-June 2026)

Furthermore, the EGI Federation was involved in 3 additional projects, increasing the innovation potential of its participants.

The EGI Federation participates in Horizon 2020 and Horizon Europe projects together with Austrian institutions to facilitate the uptake and use of e-infrastructure services for science. A summary of these projects, the involved institutes and the scope of the collaboration is provided in the next table.

Project title	Scope of collaboration	Participating beneficiaries from the country
SOBIGDATA	EGI leads the work on Services Provision, which collects information about the services that the RI can provide and creates a plan for a unified single access point RI, including access policies for the distributed resources. EGI also contributes to the development of the financial aspect of the future RI, defines the business cases and the cost book, supports the strategy and enhance the impact of the RI, contributes to the Dissemination and Communication plans (WP5), and to the creation of the Italian central Hub for the preparation phase.	• ETH - Eidgenössische Technische Hochschule Zürich
SoBigData	EGI is one of the main contributors to the design and definition of the EOSC architecture and the federated service management framework, and coordinates service pilots participates by the scientific demonstrators. EGI also contributed to the definition of the governance framework and to the works on Rules of Participation. In the project EGI will enhance the SoBigData platform with two services: Jupyter Notebooks and the Workflow manager Galaxy	• ETH - Eidgenössische Technische Hochschule Zürich
EOSC EuroScienceGateway	In the project, EGI will develop a workflow-based Gateway to computing and storage infrastructures and services for European scientists, contributing an innovative and customizable service for EOSC that enables operational open and FAIR data and data processing.	• VIB VZW Ecole Polytechnique Federale de Lausanne
EOSC Future	EGI contributed to the design, operation and interoperability of EOSC Core services, to running the EOSC Digital Innovation Hub, as well as to resource strategy and the processes for onboarding new groups to EOSC. EGI was responsible for requirements collection and analysis for both the EOSC Back Office and Front Office. It also leads all operational aspects of the EOSC Portal. Finally, EGI played a leading role in developing the EOSC SMS.	• Paul Scherrer Institut
PHENET	In the project, EGI co-designs and deploys AI models on edge resources, enhancing capacity through its federation's computational and storage resources. EGI expands resource allocations, provides a two-tier e-infrastructure for validation and large-scale data processing, and ensures sustainable setups by coordinating national funding. EGI addresses data management challenges, integrates distributed storage solutions, and connects PHENET with the European Open Science Cloud.	• ETH - Eidgenössische Technische Hochschule Zürich • Eidgenössisches Departement für Wirtschaft, Bildung und Forschung

Project title	Scope of collaboration	Participating beneficiaries from the country
CRAFT-OA eosc	EGI coordinates the task dedicated to the Single Sign-On access with the EGI Check-in service.	• Universität Bern
AARC	EGI Foundation leads the activities on Communication Dissemination and Exploitation Management and significantly contributes to the technical guidance and architecture definition, trust policy harmonisation and interoperability, validation activities, and to the preparation of the Compendium and recommendations.	• Paul Scherrer Institut
GreenDIGIT	*EGI conducts an environmental impact landscape assessment to identify best practices and opportunities related to environmental sustainability. EGI develops an environmental metrics publication system for digital service providers and energy-aware brokering logics for scientific workflows running on EGI HTC, cloud, container and AI services. Also, EGI develops an environmental impact self-assessment questionnaire for Research Infrastructures.	• Mandat International
eosc Blue-Cloud2026	EGI contributes with the services Cloud computing, Notebooks and Applications on demand, FTS, data archiving. It participates to the EOSC Integration processes and the sustainability business plan.	• ETH - Eidgenössische Technische Hochschule Zürich

Overview of Supported Science Topics and Related Communities and Initiatives

Science Topic	Community or Initiative
Particle Physics	CMS, ATLAS, LHCb, DUNE
Future Accelerator Projects	ILC
Astronomy	CTA, LSST, SKA
Astroparticle Physics	IceCube, XENON
Agriculture	EMPHASIS
Agroecology AI	PHENET
Structural Biology	WeNMR
Biomedical Research	EOSC-Life
Social Mining Data Analysis	SoBigData++, SoBigData RI PPP
Open Data, FAIR Data, Open access, Open Science	EOSC, EOSC-Future, CRAFT-OA, EuroScienceGateway, AARC TREE, EOSC Beyond

Infrastructure contributions

The EGI Federation offers two complementary compute capabilities: the High-Throughput Compute (HTC) federation and the Cloud federation. 5 Swiss data centres contribute to these federations:

- CSCS-LCG2 (CSCS, Swiss National Supercomputing Centre)
- T3_CH_PSI (HPCE Group, NES/LSM, Paul Scherrer Institut, CH-5232 Villigen PSI, CH)
- UNIGE-DPNC (Grid computing cluster of the DPNC department at the University of Geneva)
- UNIBE-ID (HPC cluster of the IT Services Office at the University of Bern)
- UNIBE-LHEP (Grid computing cluster of the LHEP department at the University of Bern)

The data centres provided 17 service endpoints and delivered 107,476,170 CPUhours to EGI communities in 2024. The data centres responded to 65 support tickets through the EGI Helpdesk. The most active international user groups of the Swiss compute resources were:

- ATLAS 50.25%
- CMS 27.09%
- LHcB 22.66%

Methodology

Data for this impact report has been collected from the following sources.

Users

EGI uses the following methodology to capture the number of EGI users who rely on EGI services

- EGI serves users in the form of 'communities', called 'Virtual Organisations' (VO in short). A VO's members can range from one to tens of thousands. Members of a VO benefit from and use EGI services in different ways (e.g., by using Services for Federation or Services for Research).
- EGI establishes knowledge about its VOs as part of the user community support lifecycle; therefore, baseline information about VOs is collected through the Customer Relationship Management process (CRM).

At the end of 2024, there were 135 VOs in EGI.

EGI Virtual Organisations (VOs) can rely on different technical and non-technical mechanisms to manage their own members. Depending on their choice, the EGI Federation coordinator (EGI Foundation) has to follow different, corresponding approaches to know the number of members in a given VO, and to obtain additional information about these members (e.g. their 'country'). The EGI Foundation uses the following mechanisms to obtain information about the VO users:

- Obtain user number statistics from the EGI Operations Portal for VOs, where the members register personally in a 'VO membership management' system that is either operated by EGI or can be accessed by EGI.
- Obtain user number statistics from Community VRE REST APIs for VOs that operate Virtual Research Environments (VREs) on top of EGI resources. Those VREs implement a specific API to report users (e.g., WeNMR, Virtual Imaging Platform (VIP), NBIS).
- Obtain user number statistics from interviews with VO coordinators for VOs coordinated by one person.

Publications

Publications are collected from each community's public repository, if existing. Additional details are checked with the VO coordinators during the interviews to complement this information. EGI also consults OpenAIRE services to countercheck the data. You can check the list of repositories for each VO here (requires login): https://operations-portal.egi.eu/vo/#collapseVoListOther.

Institutional members supporting research communities

EGI relies on the information on each community's website to list institutions supporting research communities at the national level. Additionally, EGI appreciates the feedback from its national representatives to refine and improve those lists.

EGI Membership Impact Report

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