EGI Council Participant: CYFRONET

Participating in EGI Impact Report: Poland

2023

egi.eu

Table of Contents

Infographic

+1,000 service users

In 2023, +1,000 researchers from Polish institutions used the services provided by the EGI Federation
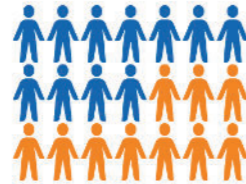
+730 publications

The research communities, projects and scientific collaborations from Poland supported by the EGI led to more than 730 peer-reviewed scientific publications
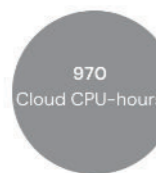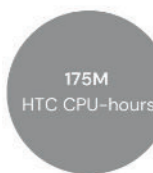
21 Supported communities

In 2023, the Polish infrastructure supported 21 research communities in the following disciplines: Agriculture, Climate Research, Health and Medicine, Linguistics, Physics

Projects

Polish partners participate in 16 collaboration projects + EGI-ACE and interTwin

175M HTC CPU-hours

970 Cloud CPU-hours

5 HTC Data Centres

EGI Federated Cloud member

Country overview

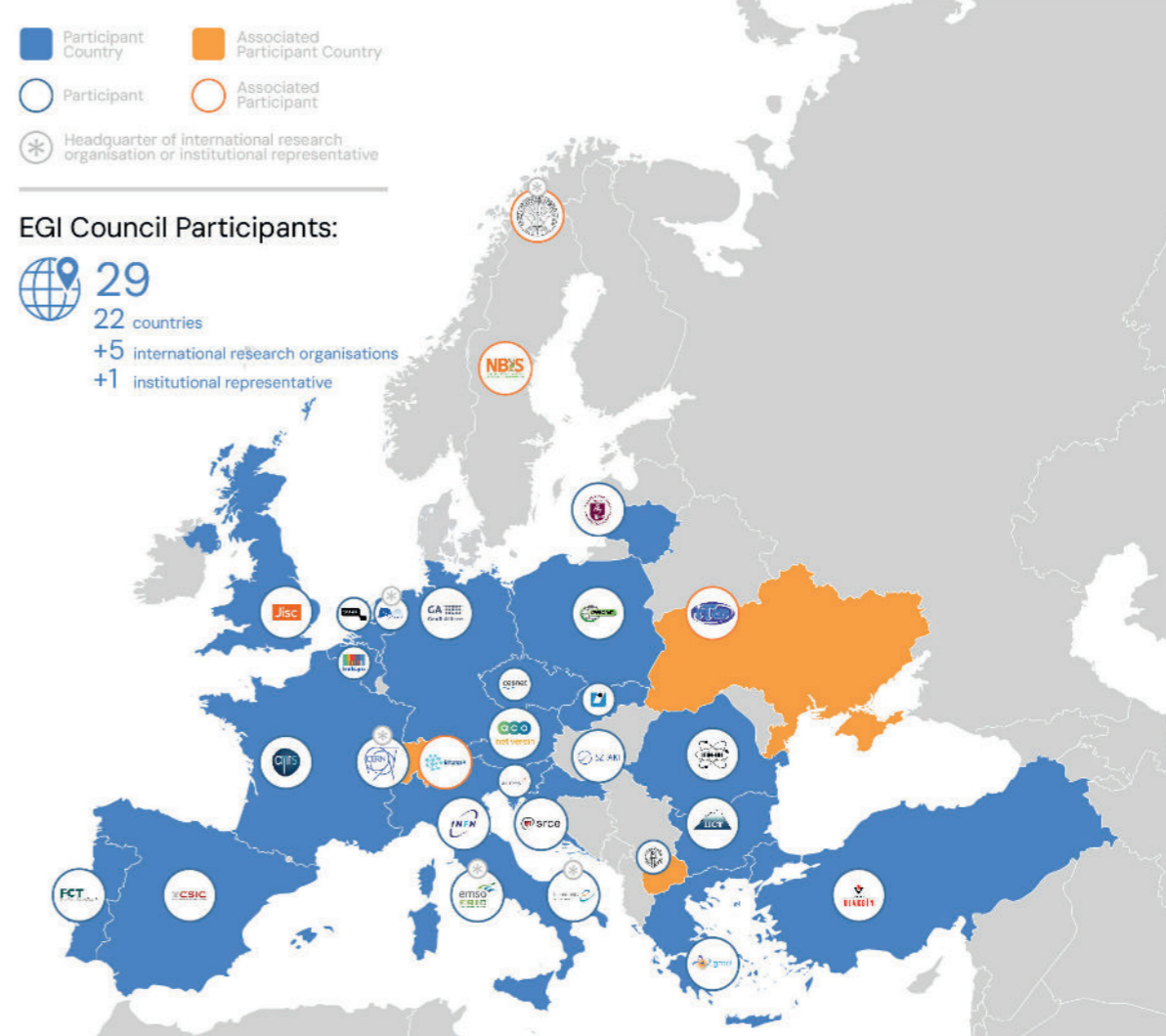|	
Number of supported publications	734
Number of total service users	1015
Scientific Communities supported	21
Data Centres contributing to the Federation	6 (HTC+CLoud)
Collaboration projects	16
Total HTC CPU hours delivered	175,810,197
Total Cloud CPU hours delivered	970

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 2023.

Participant Country
Associated Participant Country
Participant
Associated Participant
Headquarter of international research organisation or institutional representative

EGI Council Participants:

29
22 countries
+5 international research organisations
+1 institutional representative

Approved EGI Council map from 2023

Impact Report 2023 – Poland

egi.eu

About CYFRONET

The Academic Computer Centre CYFRONET AGH was established 40 years ago, in 1973. Foundation of the Centre was given by the Krakow University Rectors' College members, which in 1971 put forward a proposal to the state authorities to purchase a modern, large and multi-access computer for the Krakow scientifi c community and create the interuniversity computer centre.

Formally, the Centre was established on March 23, 1973 by the Minister of Science and Higher Education under the name Community Computational Centre CYFRONET KRAKOW.

Under this name the Centre operated until 1992, when it was renamed to the Academic Computer Centre CYFRONET-KRAKOW. Another name change took place in December 1998. ACK CYFRONET-KRAKOW converted to the Academic Computer Centre CYFRONET of the University of Science and Technology (ACK CYFRONET AGH). The Centre, which is organizationally and financially an autonomous unit of the AGH-UST in Krakow, is now one of the largest supercomputing and networking centers in Poland.

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 2023, the EGI Federation served around 95,000 users (+12%) from over 260 research communities. EGI users consumed 7 Billion HTC CPU hours (–1.04%), 12 Million Cloud CPU hours +17%), ran over 372 M computational jobs (+13.4%) and published over 2,900 open access publications.

As of the previous year, the research community with the largest number of users is Medical and Health Sciences (+43% annual increase in 2023), while the community with most extensive HTC CPU/h consumption is WLCG.

From the scientific communities engaged in 2023, the one with most extensive Cloud CPU/h consumption is Pangeo (+2959% annual increase in 2023).

Moreover, EGI engaged with a total of 265 scientific communities (10 new communities); 19 SMEs and business pilots, and 1 additional Research Infrastructure included in the ESFRI Roadmap, raising the total of number of ESFRI partners/users of EGI to 23.

EGI contribution to Poland excellence in science

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 2023, our federation was used by over 260 scientific communities, and has been accessed by around 95,000 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 1015 researchers from Poland in 2023. The estimated annual scientific output in 2023 produced by research communities, projects and scientific collaborations from Poland and supported by the EGI Federation is estimated to amount to over 730 peer reviewed scientific publications. The EGI Federation is currently working with over 40 Research Infrastructures, 21 of which include Polish partners. These EGI-enabled research infrastructures, their Polish members and their 2023 scientific output (publications) are detailed in the following pages of the report.

Polish research collaborations in EGI

ALICE (High-Energy Physics)
- The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences
- AGH University of Science and Technology
- National Center for Nuclear Studies Warszawa,
- –Warsaw University of Technology

ATLAS (High-Energy Physics)
- Institute of Nuclear Physics Polish Academy of Sciences
- AGH University of Science and Technology,
- Jagiellonian University

EGI supported activities and services

ALICE 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)

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)

Number of scientific papers published in 2023

65

111

Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
AUGER (Astronomy) • Institute of Nuclear Physics PAN • University of Łódź	The Pierre Auger Observatory has been using compute resources from EGI partners for more than a decade. The services of the EGI federation that the Auger observatory benefits from 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)	**8**
BELLE (High-Energy Physics) • Institute of Nuclear Physics PAN	The BELLE experiment has been using compute resources from EGI partners since 2016. The services from the EGI federation that BELLE benefits from 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)	**21**

Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
CLARIN (Linguistics) • CLARIN PL, Wroclaw Uni of Technology	CLARIN thematic services has been supported by EGI since 2018. CLARIN has a Service Level Agreement with EGI, using the following services: EGI services: • EGI Cloud (Compute + Online Storage) for hosting the Virtual Language Observatory (VLO) • Technical support • Service integration	**38**
CMS (High-Enery Physics) • National Centre for Nuclear Research • AGH University of Science and Technology • University of Warsaw	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)	**117**
CTA (Astronomy) • CYFRONET AGH • Polish Academy of Sciences • University of Science and Technology, Kraków • Jagiellonian University • University of Zielona Góra • University of Lódź • University of Warsaw • National Centre for Nuclear Research, Warsaw • Nicolaus Copernicus University • University of Białystok • Warsaw University of Technology	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**

Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
DUNE (Astroparticle Physics) • Institute of Nuclear Physics (IFJ PAN) • National Centre for Nuclear Research (NCBJ) • University of Warsaw • University of Wroclaw • Warsaw University of Technology	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)	20
ELI-NP (Nuclear Physics) • Institute of Plasma Physics and Laser Microfusion, Warsaw • University of Warsaw • Polish Academy of Science • National Centre for Nuclear Research	ELI has been working with EGI since 2016 on exploring and validating approaches for off-site computing and data management. ELI-NP setup a High Throughput Compute Service on EGI resources and works with EGI providers on: • Refining the user requirements and translating these to e-infrastructure requirements, and • Identifying and validating services from EGI that can be relevant for ELI (besides HTC and compute). • Mobilising already existing HTC compute, cloud compute and storage resources from EGI for ELI piloting and demonstration activities	48
EMPHASIS (Agriculture) • Research Center for Cultivar Testing (COBORU)	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

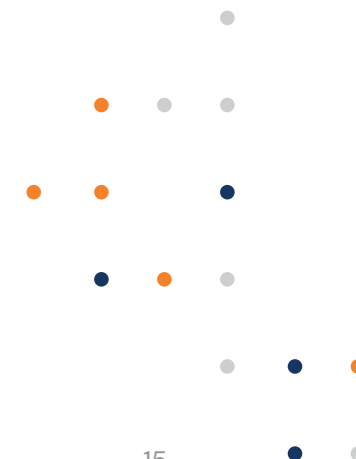| Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
FUSION (Fusion) • PSNC	The Fusion community has been using compute resources from EGI partners since 2018. The services from the EGI Federation used by the community include: • EGI Cloud Compute • EGI Online Storage	0
HESS (Astroparticle Physics) • Nicolaus Copernicus Astronomical Center • University of Warsaw • Instytut Fizyki Jcadrowej PAN • Uniwersytet Jagiellonski • Nicolaus Copernicus University	The HESS experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that HESS uses include: • EGI HTC services from 3 EGI participant countries (DE, FR, PL) • 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)	8
icarus.exp.org (Physical Sciences) • Institute of Nuclear Physics, Kraków • National Centre for Nuclear Research • University of Silesia • Warsaw Univ. of Technology	The collaboration with EGI started back in 2019. The services from the EGI federation that the experiment uses include: • EGI HTC services from 2 EGI federated sites from IT • 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

Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
ILC (High-Energy Physics) • Mickiewicza Cracow, • University of Warsaw • Warsaw University of Technology • National Center of Nuclear Research (NCBJ) • Technical University of Lodz • Polish Academy of Sciences (IFJ PAN)	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)	**43**
KM3NET (Neutrino Observatory) • NCBJ – National Centre for Nuclear Research	The Km3Net experiment has been using compute resources from EGI partners since 2013. The services from the EGI federation that Km3Net uses include: • EGI HTC services from 2 EGI federated sites from IT and PL • 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)	**58**
LHcB (High-Energy Physics) • AGH Univ. of Science and Technology • HN Inst. for Nuclear Physics • NCBJ	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)	**44**

Polish research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2023
LSST (Astronomy) • National Centre for Nuclear Research (NCBJ)	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**
SeaDataNet (Oceanography) • Institute of Oceanology, Polish Academy of Sciences (IOPAN)	SeaDataNet has been supported by EGI partners in the EOSC-hub project in the setup and validation of a data access service on federated cloud resources. Since 2021 the SeaDataNet community is represented in the EGI Council by MARIS, and works with several EGI members in the EGI-ACE Horizon 2020 project. In EGI-ACE, SeaDataNet and EGI partners from Spain are setting up and operating a WebOcean Data Analysis service in the EGI cloud federation, and deliver the service in EOSC.	**1**

Polish research collaborations in EGI

EGI supported activities and services

Number of scientific papers published in 2023

VIRGO (Astrophysics)
- CYFRONET
- Warsaw University
- Jagiellonian University
- Polish Academy of Sciences
- University of Wroclaw
- National Center for Nuclear Research
- University of Białystok
- University of Science and Technology in Cracow

The Virgo experiment has been using compute resources from EGI partners for more than a decade. The services from the EGI federation that VIRGO uses include:

- EGI HTC services from 8 data centres from France, Italy, The Netherlands, Spain 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)
- Since 2021 Virgo works with EGI in the EGI-ACE Horizon 2020 project to evaluate and adopt data analysis, federated authentication–authorisation and data management services for thematic applications.

5

WeNMR (Structural Biology)
- UNIVERSITY OF GDANSK
- POLISH ACADEMY OF SCIENCES
- WROCLAW MEDICAL UNIVERSITY
- Uniwersytet Poznańskiego,
- UNIVERSITY OF WARSAW
- Silesian University of Technology
- INSTITUTE OF PLANT PROTECTION
- DEPARTMENT OF BIOSTATISTICS AND TRANSLATIONAL MEDICINE
- MAŁOPOLSKA CENTRE OF BIOTECHNOLOGY
- WARSAW UNIVERSITY OF LIFE SCIENCES

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, Poland, 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.

136

Service Level Agreements

During 2023, CYFRONET supported 2 Service Level Agreements for international scientific communities via EGI, delivering Cloud Computing, Online Storage and DataHub services.
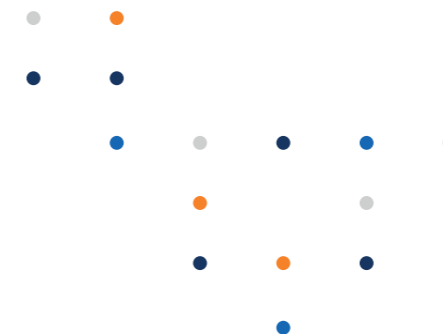
Participated projects

The EGI Foundation coordinated one Horizon 2020 projects, EGI ACE (January 2021–June 2023). Moreover, it leads two Horizon Europe Projects, iMagine (September 2022–December 2025) and interTwin (September 2022–August 2025).

Furthermore, the EGI Federation was involved in 8 additional projects, increasing the innovation potential of its participants.

The EGI Federation participates in Horizon 2020 and Horizon Europe projects together with Polish 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 collaborationis provided in the next table.
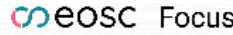
Project title	Scope of collaboration	Participating beneficiaries from the country
eosc Blue-Cloud2026	EGI contributes with the services Cloud computing, Notebooks and Applications on demand, FTS, data archiving. It participates to the EOSC Integration processes and the sustainability business plan.	• IO PAN
C-SCALE	EGI the project coordination and led the activity to setup the C-SCALE Compute Federation, leveraging on its exstensive experience on setup and managing large distributed infrastructures. EGI also took care of the interactions with other EOSC initiatives and projects and had a leading role on defining C-SCALE business and sustainability.	• CLOUDFERRO
CRAFT-OA eosc	EGI coordinates the task dedicated to the Single Sign-On access with the EGI Check-in service.	• University of Warsaw • IBL PAN
	EGI is involved in developing a detailed roadmap, analyzing state-of-the-art technology, and designing a modular architecture framework. Morever, It works to improve data monetization strategies for EU companies and define KPIs for fair dataset valuation. EGI will help develop business cases for data sharing platforms, explore non-monetary data value dimensions, and prepare pilots for framework deployment. Demonstration and validation tests will be conducted at pilot sites. Additionally, EGI contributes to disseminating results, managing innovation and sustainability, participating in standardization activities, and coordinating with the Data Spaces Support Centre.	• WODR Poznań • IDFS SPOLKA ZOO • ICHB PANI

Project title	Scope of collaboration	Participating beneficiaries from the country
EOSC Focus	EGI works on the activities related to the SRIA update and technical development, in particular, interacting with the EOSC task forces and liaising with European partnerships and other initiatives. Moreover, EGI works on the sustainability of the EOSC, with specific actitvities towards the definition of the EOSC rules of participation, the collaboration expansion.	• National Science Centre (Narodowe Centrum Nauki)
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.	• Akademia Gorniczo-Hutnicza Im Stanislawa Staszica w Krakowie • Instytut Chemi Bioorganicznej Polskiej Adademii Nauk
EOSC SYNERGY	EGI contributes to the project activities related to innovation management, policy development, and project activities and results communications and dissemination.	• CYFRONET • PSNC
EUCAIM	Within EUCAIM, EGI works on the development of the platform core services in addition to supporting the creation of the platform central storage and infrastructure. Moreover, EGI leads the activities around the design and implementation of a federated learning and data analysis infrastructure, and ensures access to HPC/Cloud resources across Europe.	• Medical University of Gdansk • Łukasiewicz – PORT
EUH4D	EGI contributes to the Federation sustainability model and the expansion of the DIH ecosystem. Moreover, it collaborates to the development and maintenance of the service catalogue, to the training programme, and to the dissemination and outreach of the project activities and results.	• ICHB PAN
EUREKA3D	EGI Foundation collaborates to the definition of the technical requirements, to the authentication and authorisation infrastructure of the project, and will support the project services onboarding to the EOSC Marketplace.	• CYFRONET
EOSC EuroScienceGateway	EGI leads the development of new functionality to bring support for new computing and storage systems and to deliver meta scheduling of computing jobs in a distributed infrastructure delivered by EOSC providers and beyond. EGI also leads the activities for the development of a sustainability model to maximize the project and collaborates in the activities to integrate EuroScienceGateway in EOSC.	• AGH University of Science and Technology • ICHB PAN
GREAT Green Deal Data Space	EGI was involved in coordinating the Green Deal Data Space, establishing a stakeholder network, and managing dissemination and online presence. Also. EGI contributed to developing the Technical Architecture. Moreover, EGI coordinated efforts on Governance and Business Models, analyzing current governance schemes and proposing appropriate governance for the Green Deal Data Space. Additionally, EGI contributed to the implementation roadmap for the Green Deal Data Space.	• IGF PAN
PITHIA-NRF	The EGI Foundation supports the project in defining interoperability standards among the participating facilities, and with the broader landscape, including EOSC, and leads the design of sustainable services and activities that will last beyond the project. EGI members deliver a federated cloud environment with a cloud-based 'EGI Notebooks' service for the PITHIA e-science centre to offer a scalable and customisable web environment for writing workflows, exchanging workflows, accessing, analysis and sharing of data.	• Space Research Centre PAS
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.	• Institute of Bioorganic Chemistry of the Polish Academy of Sciences EGI
STAIRWAI	The EGI Foundation is leading the technical requirements, service layer design and integration with the platform defining and describing. Additionally, EGI Foundation participates to build Vertical Matchmaking and hardware marketplace and to Open Call Management.	• Fundingbox Accelerator Sp Zoo
Triple	EGI is involved in the work ensuring the integration of the TRIPLE solution into the EOSC; also, it collaborates to the sustainability and innovation activities by setting up the processes to prepare maturity assessment and innovative agile management. Last but not least, it guides the implementation of the EGI AAI service in TRIPLE.	• IBL PAN

Infrastructure contributions

The EGI Federation offers two complementary compute capabilities: the High-Throughput Compute (HTC) federation and the Cloud federation. 6 Polish data centres contribute to these federations:

HTC Federation:
- CYFRONET-LCG2 (ACK CYFRONET AGH)
- CYFRONET-PROMETHEUS (ACK CYFRONET AGH)
- NCBJ-CIS (National Centre for Nuclear Research, Otwock, Poland)
- PSNC (Poznan Supercomputing and Networking Center)
- WUT

Cloud Federation:
- CYFRONET-CLOUD (ACK CYFRONET AGH)

The data centres provided 32 service endpoints and delivered 175,810,197 CPUhours in total to EGI

communities in 2023. The data centres responded to 72 support tickets through the EGI Helpdesk.

The most active international user groups of the Polish compute resources were:

- ALICE 4.12%,
- ATLAS 42%,
- CMS 29.16%,
- LHCB 24.42%

With the help of the EGI Security Vulnerability Group, the Polish sites avoided 46 critical vulnerabilities in foundational software systems during 2023.

Storage takes into account both online and archival storage provided by the data centres.

Methodology

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

- Infrastructure contributions, infrastructure usage by research communities: EGI Accounting System
- List of research publications by supported research communities (table 1)

AMS-02
https://ams02.space/publications

ILC
https://inspirehep.net/literature?sort=mostrecent&size=25&page=1&q=international%20Linear%20Collider%20&earliest_date=2021--2021

ALICE
https://alice-publications.web.cern.ch/publications

INSTRUCT
https://instruct-eric.eu/content/publications-list

ATLAS
https://cds.cern.ch/collection/ATLAS%20Papers?ln=en

JUNO
https://inspirehep.net/

AUGER
https://www.auger.org/science/publications/journal-articles

KM3NET
https://www.km3net.org/about-km3net/publications/pubblication/;
https://inspirehep.net/literature?q=collaboration:KM3NeT year:2021

BELLE
https://belle.kek.jp/belle/publications.html; https://inspirehep.net/literature?q=collaboration:belle year:2021

LifeWatch
https://www.lifewatch.eu/catalogue-of-virtual-labs/medobis/publications/

BIOMED
https://vip.creatis.insa-lyon.fr/documentation/

LOFAR
http://old.astron.nl/radio-observatory/lofar-science/lofar-papers/lofar-papers; https://lofar-surveys.org/publications.html, or https://ui.adsabs.harvard.edu/search/q=full%3A(%22designed%20and%20constructed%20by%20ASTRON%22)%20OR%20title%3A%22LOFAR%22%20year%3A2021-2021%20property%3Arefereed%20-bibstem%3A(%22AN%22%20OR%20%22MNRAS.tmp%22)&sort=date%20desc%2C%20bibcode%20desc&p_=0

CTA
https://www.cta-observatory.org/science/library/

LCHb
https://cds.cern.ch/collection/LHCb%20Papers?ln=en

CLARIN
https://beta.clarin.openaire.eu/search/advanced/research-outcomes?sortBy=resultdateofacceptance,descending&type=publications&year=range2021:2021

LSST
https://ui.adsabs.harvard.edu/ with year:2021 author:("LSST*" OR "Vera C. Rubin*") collection:astronomy property:refereed

CMS
http://cms-results.web.cern.ch/cms-results/public-results/publications/CMS/index.html

NA62
https://cds.cern.ch/collection/NA62%20Papers?ln=en

DUNE
https://inspirehep.net/literature?q=collaboration:DUNE year:2021

OPENCOASTS
http://opencoasts.lnec.pt/index_en.php

EISCAT_3D
https://eiscat.se/scientist/publications/

PANOSC
https://www.panosc.eu/publications/

ELI-BEAM
https://www.eli-beams.eu/publikace/

SeaDataNet
https://www.seadatanet.org/Publications/Scientific-publications

ELI-NP
https://www.eli-np.ro/scientific_papers.php

SKA
https://ui.adsabs.harvard.edu/search/fq=%7B!type%3Daqp%20v%3D%24fq_database%7D&fq_database=database%3A%20astronomy&q=pubdate%3A%5B2021-01%20TO%202021-12%5D%20title%3A(SKA)&sort=date%20desc%2C%20bibcode%20desc&p_=0

EMSO-ERIC
from the community representative; SLA https://documents.egi.eu/document/3539

SNO+
https://snoplus.phy.queensu.ca/results/collaboration-papers.html

FUSION
https://documents.egi.eu/public/ShowDocument?docid=3484

VIRGO
https://pnp.ligo.org/ppcomm/Papers.html

HESS
https://www.mpi-hd.mpg.de/hfm/HESS/pages/publications/

WeNMR
https://explore.openaire.eu/ advanced search project outcomes. field to search "project" enter project name; Citation of HADDOCK web server: https://scholar.google.nl/scholar?hl=en&as_sdt=2005&cites=10355645612647046441&scipsc=&as_ylo=2021&as_yhi=2021; Citations of the AMBER web portal publication: https://scholar.google.com/scholar?as_ylo=2021&hl=en&as_sdt=0,5&sciodt=0,5&cites=6696812766870837905&scipsc=; Citations of the FANTEN web portal publication: https://scholar.google.com/scholar?as_ylo=2021&hl=en&as_sdt=0,5&sciodt=0,5&cites=10578718345045994565&scipsc=; Citations of the DISVIS/POWERFIT web portals publication: https://scholar.google.com/scholar?as_ylo=2021&hl=en&as_sdt=2005&cites=648211450124494720&scipsc=; Citations of the SpotON web portal: https://scholar.google.com/scholar?as_ylo=2021&hl=en&as_

Ice-Cube
https://icecube.wisc.edu/science/publications/

XENON
https://inspirehep.net/literature?q=collaboration:XENON year:2021

National institutional members of supported research communities (table 2)

AMS-02
https://ams02.space/collaboration/institute

ILC
https://linearcollider.org/team/

ALICE
https://alice-collaboration.web.cern.ch/General/Members/List_Institutes.html

INSTRUCT
https://instruct-eric.eu/countries

ATLAS
https://atlas.cern/discover/collaboration

JUNO
https://juno.ihep.ac.cn/collaboration.php

AUGER
https://www.auger.org/collaboration/institutions, https://www.auger.org/collaboration/funding-agencies

KM3NET
https://www.km3net.org/about-km3net/collaboration/members/

BELLE
https://belle.kek.jp/bdocs/collaboration.html

LifeWatch
https://www.lifewatch.eu/organisation-governance/

BIOMED
https://vip.creatis.insa-lyon.fr/

LOFAR
https://www.astron.nl/telescopes/

CTA
https://www.cta-observatory.org/about/cta-consortium/

LCHb
https://lhcb-public.web.cern.ch/en/collaboration/Collaboration-en.html

CLARIN
https://www.clarin.eu/content/participating-consortia

LSST
https://www.lsstcorporation.org/international-contributors

CMS
https://cms.cern/collaboration/cms-institutes

NA62
https://greybook.cern.ch/experiment/detail?id=NA62

DUNE
https://lbnf-dune.fnal.gov/about/countries-and-institutions-participating-in-dune/

OPENCOASTS
http://opencoasts.lnec.pt/index_en.php

EISCAT_3D
https://eiscat.se/wp-content/uploads/2016/12/EISCAT-Organogram-202x.jpg; https://eiscat.se/scientist/document/information/

PANOSC
https://www.panosc.eu/partners/

ELI-BEAM
https://www.eli-beams.eu/about/cooperation/science/

SeaDataNet
https://www.seadatanet.org/About-us/SeaDataNet-AISBL/Members

ELI-NP
https://www.eli-np.ro/scientific_collaborations.php

SKA
https://www.skatelescope.org/participating-countries/

EMSO-ERIC
http://emso.eu/organization/

SNO+
https://snoplus.phy.queensu.ca/collaboration.html

FUSION
https://documents.egi.eu/public/ShowDocument?docid=3484

VIRGO
https://apps.virgo-gw.eu/vmd/public/institutions

HESS
https://www.mpi-hd.mpg.de/hfm/HESS/pages/collaboration/

WeNMR
https://documents.egi.eu/document/2751

Ice-Cube
https://icecube.wisc.edu/collaboration/institutions/

XENON
https://science.purdue.edu/xenon1t/?page_id=27

egi.eu

EGI Membership
Impact Report