EGI Council Participant: ACONET

Participating in EGI Impact Report: Austria

2023

egi.eu

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Infographic

+1,500 service users

In 2023, +1,500 researchers from Austrian institutions used the services provided by the EGI Federation

+420 publications

The research communities, projects and scientific collaborations from Austria supported by the EGI led to more than 420 peer-reviewed scientific publications
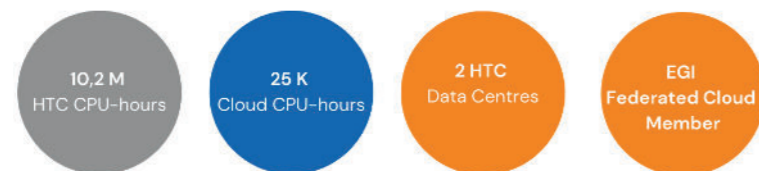
6 Supported communities

In 2023, the Austrian infrastructure supported 6 research communities in the following disciplines: Agriculture, Health and Medicine, Physics

Projects

Austrian partners participate in 18 collaboration projects + EGI-ACE and interTwin

10,2 M HTC CPU-hours

25 K Cloud CPU-hours

2 HTC Data Centres

EGI Federated Cloud Member

Country overview

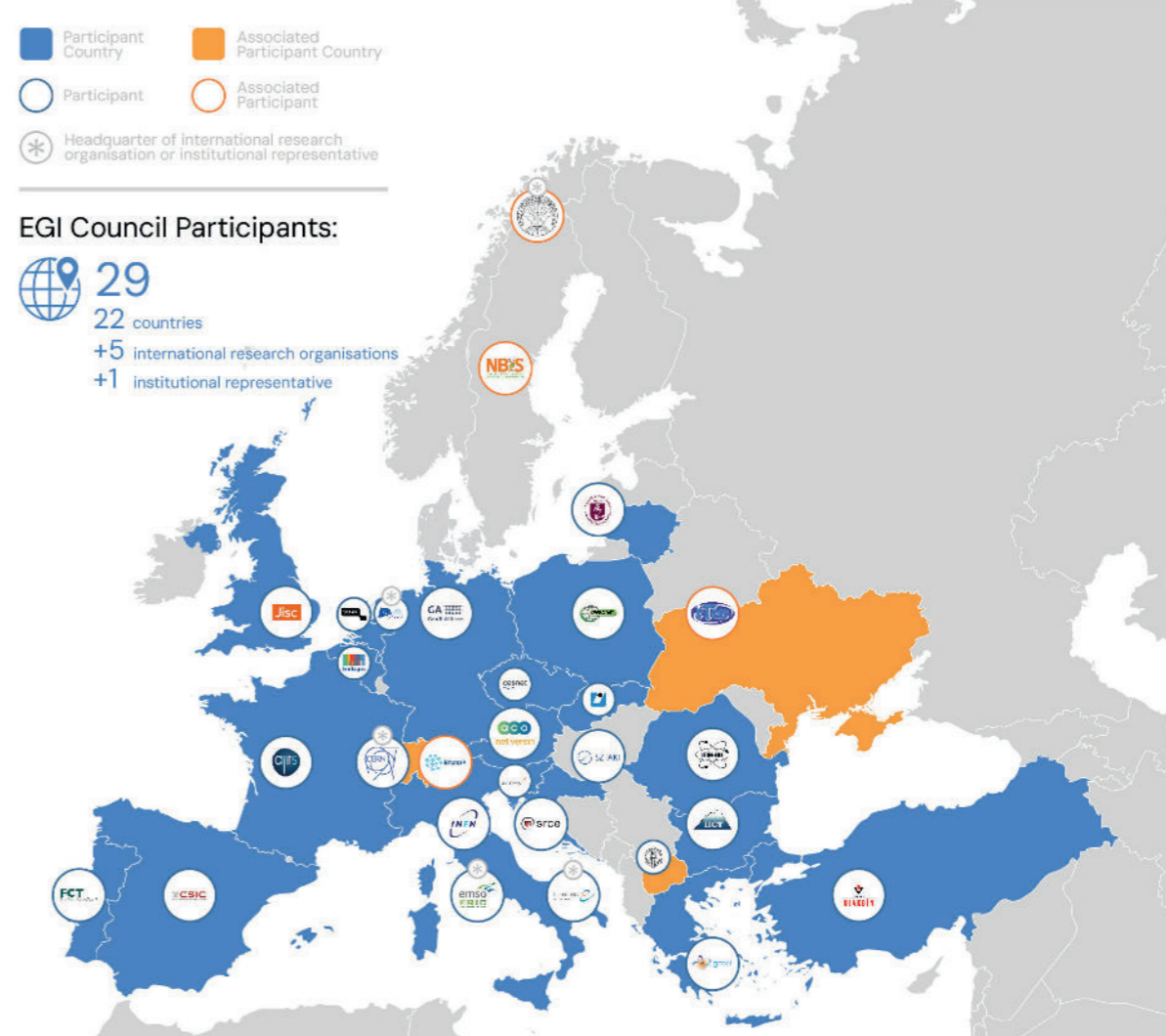|	
Number of supported users	1,505
Number of supported publications	408
Scientific Communities supported	6 (Agriculture, Health and Medicine, Physics)
HTC CPU hours delivered	10,210,590
Cloud CPU hours delivered	25,461

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

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About ACONET

The ACONET Association represents a consortium of Austrian universities and research organisations. With a combination of a powerful backbone and services highly focussed on customers' needs, ACOnet (the Austrian NREN) provides its participants many possibilities for scientific, innovative communication, cooperation and further development at a national and international level. The ACONET Association supports the forming of communities of participants with similar needs and goals. Community building is the basis for mutual trust, which again is a prerequisite for secure and efficient communication as well as for the implementation of services. The ACONET Association, as a neutral and non-commercial expert institution, offers its know-how to the community and cooperates with relevant organisations and institutions in Austria and beyond.

Overall EGI impact

The ACONET Association coordinates the Austrian participation to the EGI Federation. It supports Austrian universities and research organisations according to their demands regarding national and international data networking and services.

The annual membership fee contributed by the ACONET Association to the EGI Foundation in 2023 was 55,000 EUR.

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's contribution to Austrian 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 1505 researchers from Austria in 2023. The estimated annual scientific output in 2023 produced by research communities, projects and scientific collaborations from Austria and supported by the EGI Federation is estimated to amount to more than 420 peer reviewed scientific publications.

The EGI Federation is currently working with over 40 Research Infrastructures, 7 of which include Austrian partners. These EGI-enabled research infrastructures, their Austrian members and their 2023 scientific output (publications) are detailed in the following pages of the report.

Research Infrastructures collaborating with EGI – Austrian partners

EGI supported activities and services

Number of scientific papers published in 2023

ALICE (High-Energy Physics)
- Stephen-Meyer-Institut für Subatomare Physik, Österreichische Akademie der Wissenschaften, Wien

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)

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ATLAS (High-Energy Physics)
- Institut für Astro- und Teilchenphysik, Universität Innsbruck, Innsbruck
- Fachhochschule Wiener Neustadt, Wiener Neustadt

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)

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Research Infrastructures collaborating with EGI – Austrian partners

EGI supported activities and services

Number of scientific papers published in 2023

CMS (High-Enery Physics)
- Institut für Hochenergiephysik, Österreichische Akademie der Wissenschaften, Wien

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)

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CTA (Astronomy)
- Institut für Astro– und Teilchenphysik, Universität Innsbruck, Innsbruck

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

Research Infrastructures collaborating with EGI – Austrian partners

EGI supported activities and services

Number of scientific papers published in 2023

EMPHASIS (Agriculture)
- Vienna Biocenter Core Facilities GmbH, Wien
- Gregor Mendel Institute of Molecular Plant Biology, Austrian Academy of Sciences, Wien
- University of Vienna, Ecogenomics and Systems Biology, Wien
- University of Natural Resources and Life Sciences, Department of Crop Sciences, Wien
- University of Natural Resources and Life Sciences, Department of Forest- and Soil Sciences, Wien
- University of Innsbruck, Institute of Botany, Innsbruck
- Austrian Agency for Health and Food Safety GmbH, Wien

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

WeNMR (Structural Biology)
- Graz University of Technology, Graz
- Medical University of Innsbruck, Innsbruck
- Institute of Science and Technology Austria, Klosterneuburg
- Department of Analytical Chemistry, Johannes Kepler University Linz, Linz
- Austrian Centre of Industrial Biotechnology
- University of Natural Resources and Life Sciences, Wien
- Research Center for Molecular Medicine, Austrian Academy of Sciences, Wien
- Research Institute for Molecular Pathology, Wien
- Max Perutz Labs Support GmbH, Wien
- Medical University of Vienna
- University of Veterinary Medicine, Vienna

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.

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Community Engagement

On 27 April 2023, EGI and the ACONET Association organised a workshop about distributed computing and related technologies for Austrian scientists and scientific projects. The purpose of the event was to bring together relevant service providers and scientists to exchange information and needs relating to big data processing and big analytics in science. The workshop demonstrated the capabilities offered by Austrian and European cloud platforms to scale up scientific processes, workflows, data analysis. Also, the workshop facilitated the discussion on the needs and future demands of Austrian scientific users in this area.

The outcomes were to facilitate the establishment of a holistic infrastructure federation of local and international data and compute infrastructures, combining relevant capabilities that matches end user needs.
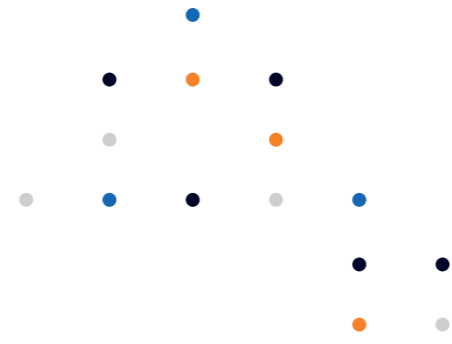
Participated projects

The EGI Foundation coordinated one Horizon 2020 project, 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 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.
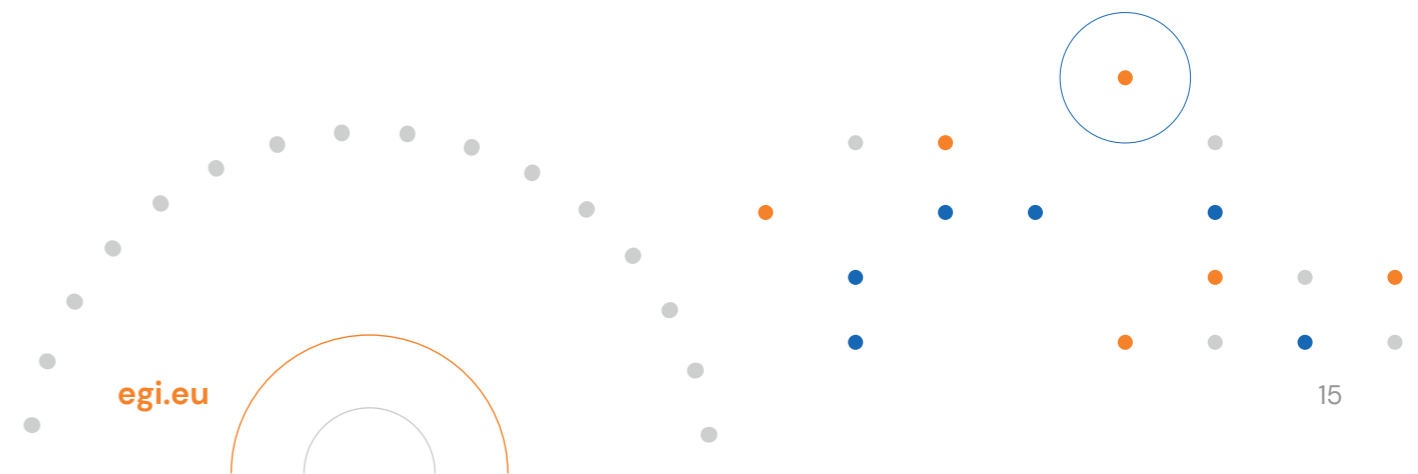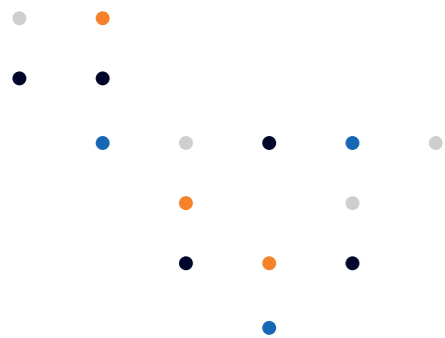
Project title	Scope of collaboration	Participating beneficiaries from the country
EOSC-Life	EGI contributes to EOSC-LIFE by supporting the creation and operation of a life science AAI (LS AAI) that is fully interoperable with the EOSC AAI.	• BBMRI-ERIC • Medizinische Universität Graz • TU Wien
Triple	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.	• KNOW Center • Open Knowledge Maps
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	• CEU Gmbh
SoBIGDATA	EGI's role in the project spans from the activities related to market analysis and business modeling, to those about the definition of the strategy and impact of the RI. EGI leads the service provision activities and the creation of the service portfolio and catalogue.	• CEU Gmbh
openEO PLATFORM	EGI contributes to the project with the AAI service and Markeplace integration. Moreover, it collaborates to the project's outreach activities. NB. The project is funded by the European Space Agency.	• EODC Gmbh
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.	• KNOW Center

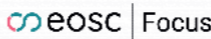| Project title	Scope of collaboration	Participating beneficiaries from the country
lethe Digital Cognitive Biomarkers	EGI Foundation is leading the design of LETHE system architecture and building a data collection and big data framework, including set-up of the LETHE big data infrastructure, set-up the authentication scheme for the LETHE project and registration of the LETHE infrastructure and services in EOSC.	• Medizinische Universität Wien • FH JOANNEUM Gesellschaft mbH
BD4NRG Big Data for Next Generation Energy	The EGI Foundation delivers a reference architecture for Smart Energy and extend COSMAG specification to enable B2B multi-party data exchange, while providing full interoperability of leading-edge big data technologies with smart grid standards and operational frameworks; evolve and upscale a number of TRL 5-6 technology enablers; delivers a TRL8 open modular big data analytic toolbox as front-end for one-stop-shop analytics services development by orchestrating legacy and/or third party assets (data, computing resources, models, algorithms); validates such framework through the delivery of predictive and prescriptive edge AI-based big data analytics on 13 large scale pilots, deployed by different energy stakeholders.	• UBIMET GmbH
HEALTHYCLOUD	EGI Foundation leads the task on the analysis of the existing computation infrastructures with a special view on health research and will propose a reference architecture for computational services to serve the Health Research and Innovation Cloud ecosystem.	• BBMRI-ERIC • Gesundheit Österreich GmbH (GÖG)
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.	• TU Graz • TU Wien
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.	• VIB VZW

Project title	Scope of collaboration	Participating beneficiaries from the country
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.	• BBMRI-ERIC • Österreichische Akademie der Wissenschaften • Universität Wien
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.	• SeaScape • EARSC • EODC GmbH
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.	• TU Wien • EODC GmbH
	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.	• ZSI - Zentrum für Soziale Innovation

Project title	Scope of collaboration	Participating beneficiaries from the country
EUCAIM (Cancer Image Europe)	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.	• BBMRI-ERIC • European Institute for Biomedical Imaging Research - EIBIR • Medical University of Innsbruck • Medical University of Vienna
PHENET (Phenotyping & Envirotyping Solutions for Agroecology)	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, in	• Universität für Bodenkultur Wien

Infrastructure contributions

The EGI Federation offers two complementary compute capabilities: the High-Throughput Compute (HTC) federation and the Cloud federation. 3 Austrian data centres contribute to these federations:

HTC Federation

- HEPHY-UIBK (University of Innsbruck, Institute for Astro- and Particle Physics)
- HEPHY-ÖAW (Institute of High Energy Physics, Austrian Academy of Sciences)

Cloud Federation:

- eval.c-scale.eu (EODC)

The data centres provided 4 service endpoints and delivered 10,210,590 CPUhours in total to EGI communities in 2023. The data centres responded to 23 support tickets through the EGI Helpdesk.

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

- CMS 57.35%
- ALICE 24.69%
- BELLE 17.95%
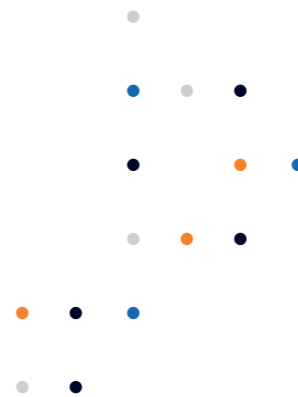
Methodology

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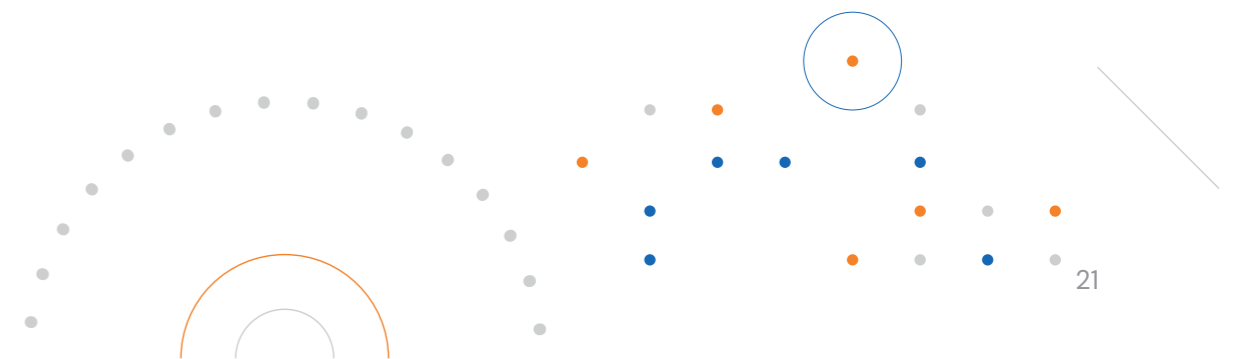
INSTRUCT
https://instruct-eric.eu/content/publications-list

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

egi_einfra   **EGI Foundation**   **EGI**

www.egi.eu