EGI Council Participant: BITP

Participating in EGI Impact Report: Ukraine

2024

egi.eu

Table of Contents

Infographic

135 service users

In 2024, 135 researchers from Ukrainian institutions used the services provided by the EGI Federation

1,284 publications

The research communities, projects and scientific collaborations from Ukraine supported by the EGI led to 1,284 peer-reviewed scientific publications

10 Supported communities

In 2024, the Ukrainian infrastructure supported 10 research communities in the following disciplines: Climate Research, Health and Medicine, Physics

Compute Delivery

In 2024, the infrastructure providers from Ukraine federated in EGI delivered 4,231,887 HTC CPU Hours and 99,510 Cloud CPU Hours.

Country overview

Number of supported publications	1,284
Number of total service users	135
Scientific Communities supported	10
Data Centres contributing to the Federation	15
Total HTC CPU hours delivered	4,231,887
Total Cloud CPU hours delivered	99,510

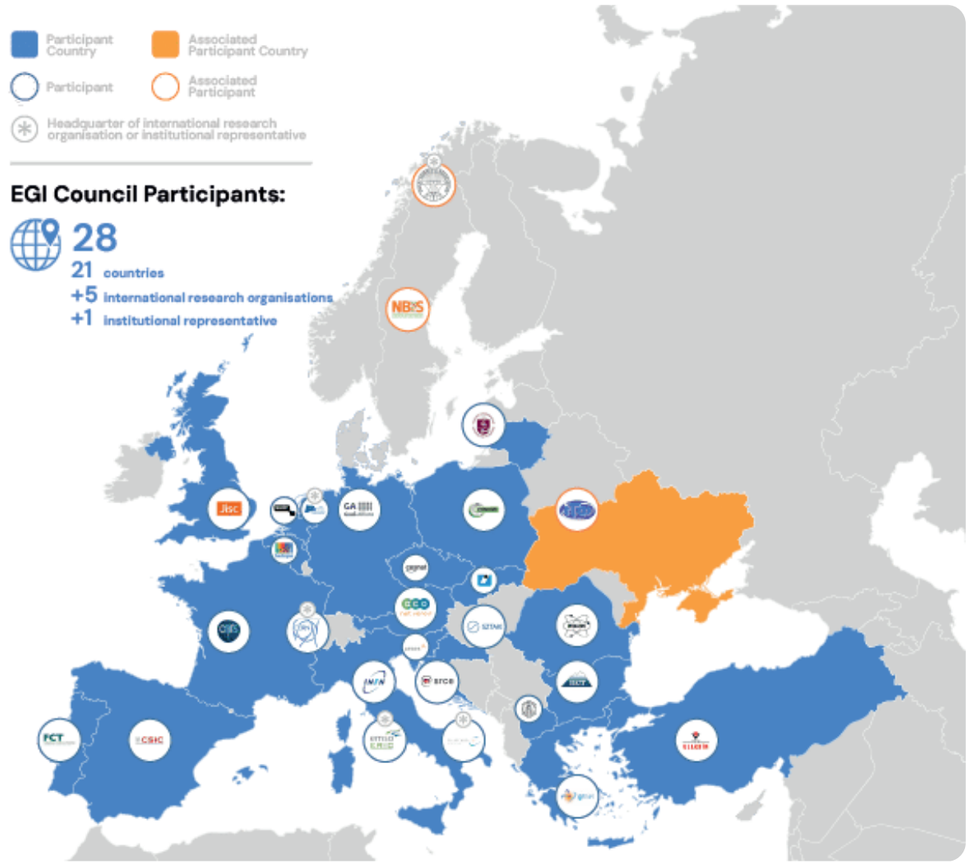
About EGI

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 BITP

Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine is a leading scientific center in fundamental problems of theoretical, mathematical, and computational physics.

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 Ukraine excellence in science

The Ukrainian participation (as associated participant) in the EGI Federation is coordinated by BITP (Bogolyubov Institute of Theoretical Physics of the National Academy of Science), representing UNG (Ukrainian National Grid). UNG promotes the building and operation of a multidisciplinary national Distributed Computing Infrastructure open to all sciences and to developing countries in Ukraine. This report provides an overview of the activities of UNG in EGI, and the impact that was achieved thanks to this participation. The annual membership fee contributed by UNG to the EGI Foundation in 2024 has been suspended.

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 135 researchers from Ukraine in 2024. The estimated annual scientific output in 2024 produced by research communities, projects and scientific collaborations from Ukraine and supported by the EGI Federation is estimated to amount to 1,284 peer reviewed scientific publications. The EGI Federation is currently working with over 40 Research Infrastructures, 10 of which include Ukrainian partners. These EGI-enabled research infrastructures, their Ukrainian members and their 2024 scientific output (publications) are detailed in the following pages of the report.

Ukrainian research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
ALICE (High-Energy Physics) • National Scientific Centre 'Kharkov Institute of Physics and Technology', Ukrainian Academy of Sciences, • Scientific Research Technological Institute of Instrument Engineering (SRTIIE) • Bogolyubov Institute for Theoretical Physics, Ukrainian Academy of Sciences	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)	47
BELLE (High-Energy Physics) • Taras Shevchenko National Univ. of Kyiv	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)	9

Ukrainian research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
CMS (High-Enery Physics) • Kharkov State University • National Scientific Center, Kharkov Institute of Physics and Technology • Institute for Scintillation Materials of National Academy of Science of Ukraine	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
CTA (Astronomy) • NSC Kharkiv Institute of Physics and Technology (NSC KIPT) • Institute for Nuclear Research of the National Academy of Sciences (KINR)	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

Ukrainian research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
DUNE (Astroparticle Physics) • Taras Shevchenko National University of Kyiv (KNU)	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
ELI-NP (Nuclear Physics) • Taras Shevchenko National University of Kyiv (KNU)	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	19
ILC (High-Energy Physics) • National Science Center - Kharkov Institute of Physics and Technology (NSC KIPT), Kharkov • Institute for Scintillation Materials (ISMA)	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

Ukrainian research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
LHcB (High-Energy Physics) • Kharkiv, NSC KIPT • Kyiv, INR	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
SeaDataNet (Oceanography) • Ukrainian scientific center of Ecology of Sea (UkrSCES)	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.	0

Ukrainian research collaborations in EGI	EGI supported activities and services	Number of scientific papers published in 2024
WeNMR (Structural Biology) • IMBIG NASU • BPCI NAS OF UKRAINE • BOGOLYUBOV INSTITUTE FOR THEORETICAL PHYSICS	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, Ukraine, 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

Service Level Agreements

During 2023, Ukrainian institutions supported 1 Service Level Agreement for service provision.

Discipline	Community	Service	Provider
Structural Biology	**WeNMR**	Cloud, Storage, AAI, HTC, Workload Manager, Content Distribution	**UA-BITP**

Infrastructure contributions

The EGI Federation offers two complementary compute capabilities: the High-Throughput Compute (HTC) federation and the Cloud federation. 12 Ukrainian data centres contribute to these federations:

HTC Federation:

- UA_ILTPE_ARC (B.Verkin Institute for Low Temperature Physics and Engineering NAS of Ukraine - ILTPE)
- UA_ICYB_ARC (V.M. Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine - ICYB)
- UA_ICMP_ARC (Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine - ICMP)
- UA_BITP_ARC (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine - BITP)
- UA-PIMEE (Pukhov Institute for Modelling in Energy Engineering Academy of Sciences of Ukraine)
- UA-NSCMBR (National Scientific Centre for Medical and Biotechnical Research)
- UA-KNU (Taras Shevchenko National University of Kyiv)
- UA-ISMA (Institute for Scintillation Materials of the National Academy of Sciences of Ukraine)
- UA-IRE (Usikov Institute of Radiophysics and Electronics National Academy of Sciences of Ukraine (IRE))
- UA-IFBG (Institute of Food Biotechnology and Genomics NAS of Ukraine)
- UA-BITP (Bogolubov's Institute for Theoretical Physics)
- Kharkov-KIPT-LCG2 (NSC Kharkov Institute of Physics and Technology)

Cloud Federation:

- Kharkov-KIPT-LCG2 (NSC Kharkov Institute of Physics and Technology),
- UA-BITP (Bogolubov's Institute for Theoretical Physics)

The data centres provided 15 service endpoints and delivered 4,231,887HTC CPUhours and 99,510Cloud CPUHours to EGI communities in 2023. The data centres responded to 22 support tickets through the EGI Helpdesk.

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

- CMS 99.99%

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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