**MEMORANDUM OF UNDERSTANDING**

**Between**

**EGI Foundation**

**and**

**Institute of Mathematics and Computer Science, University of Latvia**

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This Memorandum of Understanding (“MoU”) is made between:

EGI Foundation, a not-for-profit foundation established under the Dutch law to coordinate the EGI federation (abbreviated as “EGI”)

and

Institute of Mathematics and Computer Science, University of Latvia (abbreviated as IMCS UL).

EGI and IMCS UL shall hereinafter be referred to individually as a “Party” and collectively as the “Parties.”

The MoU is composed of:

* Article 1. Parties
* Article 2. Purpose and Scope
* Article 3. Communications
* Article 4. Rights and Responsibilities
* Article 5. Funding
* Article 6. Entry into Force, Duration and Termination
* Article 7. Amendments
* Article 8. Annexes
* Article 9. Miscellanea
* Annex 1. EGI Foundation
* Annex 2. IMCS UL
* Annex 3. Joint Work Plan

# Article 1. Parties

**(a) EGI Foundation**

The EGI Foundation is a not-for-profit foundation established under the Dutch law to coordinate the EGI federation (abbreviated as “EGI”), an international collaboration that federates the digital capabilities, resources and expertise of national and international research communities in Europe and worldwide. The main goal is to empower researchers from all disciplines to collaborate and to carry out data- and compute-intensive science and innovation.

The EGI Foundation has participants and associated participants drawn from representatives of national e-infrastructure consortiums (NGIs), EIROs, ERICs, and other legal entities. These entities provide the physical resources and shared services that enable EGI to deliver, improve and innovate services for communities.

A more detailed description of EGI Foundation is attached as Annex 1.

**(b) Institute of Mathematics and Computer Science, University of Latvia**

IMCS UL is a leading research institute in the fields of E-infrastructure, cyber security, artifical intelligence and real-time systems in Latvia. In 2008 it built first infrastructure cloud for science and has been active in cloud research and implementation since then. It’s current cloud deployment is called E-spiets2 and it is used by multiple Latvian education and science institutions and their departments.

A more detailed description of Institute of Mathematics and Computer Science, University of Latvia is attached as Annex 2.

# Article 2. Purpose and Scope

(1) The purpose of this Memorandum of Understanding (MoU) is to define a framework of collaboration between the Parties to enable the vision of jointly providing sustainable e-Infrastructure services for European and Latvian scientists and supporting international scientific research activities.

(2) More specifically the parties will collaborate on:

1. Coordinated offering of cloud resources and user support for open science via EGI and European Open Science Cloud (EOSC).
2. Exchange applications and scientific datasets that facilitate open science with e-infrastructures.
3. Exchange information about the impact of e-infrastructure services and offerings on science and showcase these at relevant events

A detailed collaboration plan (the “Joint Work Plan”) is defined in Annex 3.

# Article 3. Communications

(1) The Parties shall keep each other informed on all their respective activities and on their progress and shall consult regularly on areas offering potential cooperation. Joint working groups may be established to examine in detail proposals in areas assigned to them by the Parties referred to in Annex 3 (Joint Work Plan) and to make recommendations to the Parties.

(2) The Parties acknowledge their obligations taken by this MoU and by the Joint Activity Plan (Annex 3) to disseminate their results, and the task to support and promote the coherent and coordinated dissemination of information on activities such as joint events and workshops. The Parties shall support efforts by providing relevant inputs and ensuring attendance at events.

(3) No Party is allowed to publish or allow the publishing of the other Party’s results unless the owner Party agrees to the publication.

(4) Each Party shall designate a “point of contact” that shall be responsible for monitoring the implementation of this MoU and for taking measures to assist in the further development of cooperative activities. Such points of contact shall be the ordinary channel for the Parties' communication of proposals for cooperation.

Any approvals, notices, and other communications between the Parties under this MoU shall be sent to the applicable Party as follows:

|  |  |  |
| --- | --- | --- |
| **EGI Foundation Liaison:**Enol FernandezEGI FoundationScience Park 140.Amsterdam 1098XGenol.fernandez@egi.eu +31 6 15411698 | **CNIC Liaison:**Inara OpmaneInstitute of Mathematics and Computer Science of University of LatviaRaina bulvaris 29, Riga, LV-1459, LATVIAimcs@lumii.lv+371 67224730 |  |

Questions of principles or problems that cannot be solved at primary contact level are escalated to the director of two parties *or Highest Role applicable.*

# Article 4. Rights and Responsibilities

1. GENERAL
2. Each Party agrees to adhere to applicable policies and procedures relating to the use of the production infrastructure.
3. A Party which makes material, equipment or components available to the other Party, for the purposes of activities under this MoU, shall remain the proprietor of such material, equipment or components.
4. Each Party shall remain fully responsible for its own activities, including the fulfilment of its obligations.
5. PERSONNEL
6. Each Party shall be solely responsible for any personnel hired to carry out work under this MoU.
7. In case personnel employed by one Party temporarily carry out work under this MoU on the premises of another (hereafter referred to as “secondment”), the following provisions shall apply:
	1. The personnel seconded shall be subject to all regulations, including, in particular, safety regulations, applicable on the site of the Party they are seconded to.
	2. The personnel seconded by a Party to another shall remain employees of the Party having seconded them and such Party, as employer, shall bear exclusive responsibility for the payment of salary and for the procurement of adequate social security and insurance, including third-party liability insurance and health insurance.
	3. Unless otherwise agreed by the Parties concerned, Intellectual Property Rights generated by personnel seconded by a Party to another shall be owned by the Party having seconded such personnel.
8. INTELLECTUAL PROPERTY RIGHTS AND LICENCE
9. “Intellectual Property Rights” shall mean all intellectual creations including but not limited to inventions, know-how, layouts, drawings, designs, specifications, computer programs, reports, processes, protocols, calculations and any other matter and protected by intellectual property rights, whether registered or not, including patents, registered designs, copyrights, design rights and all similar proprietary rights and applications for protection thereof.
10. Intellectual property rights generated by a Party under this MoU shall be the property of that Party who shall be free to protect, transfer and use such Intellectual Property Rights as it deems fit.
11. Notwithstanding the foregoing, each Party shall grant the other a non-exclusive royalty-free, licence to use the Intellectual Property Rights generated by the Party under this MoU for the implementation of the Joint Work Plan (Annex 3). Such licence shall include the right to sublicense the entities involved in the Joint Activity Plan.
12. OWNERSHIP OF RESULTS
13. Results are owned by the Party that generates them.
14. The Parties give each other – under fair and reasonable conditions – access to results of this MoU needed for exploiting their own results.
15. Results that were jointly generated by both Parties will be jointly owned by the Parties, hereinafter referred to as (“Jointly Owned Results”) and each of the Parties shall be free to use these Jointly Owned Results for non-commercial research activities on a royalty-free basis, and without requiring the prior consent of the other joint owner(s).
16. Each of the joint owners shall be entitled to otherwise commercially exploit the jointly owned Results and to grant non-exclusive licenses to third parties (without any right to sub-license), if the other joint owners are given: (a) at least 45 calendar days advance notice; and (b) Fair and Reasonable compensation. Each Party shall be entitled to disclose such Jointly Owned Results without restrictions unless such Jointly Owned Results are confidential information or contain a Joint Invention in which case no disclosure must be made prior to the filing of a priority application.
17. With respect to any Joint Invention resulting from this MoU (i.e. any invention jointly made by employees of both Parties), the features of which cannot be separately applied for as Intellectual Property Rights and which are eligible for statutory protection requiring an application or registration (herein referred to as “Joint Invention”), the Parties shall agree on which Party will carry out any filling as well as any further details with regard to persecuting and maintaining relevant patent applications.
18. PUBLIC RELATIONS
19. Any publication by a Party resulting from the activities carried out under this MoU shall be subject to prior agreement of the other Party which should not be unreasonably withheld.
20. The Parties may each release information to the public, provided it is not confidential and related only to its own part of the activities under this MoU. In cases where the activities of the other Party are concerned, prior consultation shall be sought. In all relevant public relations activities, the contribution of each Party related to activities covered by this MoU shall be duly acknowledged.
21. CONFIDENTIALITY OF INFORMATION
22. The Parties may disclose to each other information that the disclosing Party deems confidential and which is (i) in writing and marked “confidential”, or (ii) disclosed orally, and identified as confidential when disclosed, and reduced in writing and marked “confidential” within fifteen (15) days of the oral disclosure (hereafter referred to as “Confidential Information”). Confidential Information shall be held in confidence and shall not be disclosed by the receiving Party to any third party without the prior written consent of the disclosing Party.
23. Notwithstanding the foregoing, a Party is entitled to disclose Confidential Information which it is required by law to disclose or which, in a lawful manner, it has obtained from a third party without any obligation of confidentiality, or which it has developed independently from any Confidential Information received under this MoU, or which has become public knowledge other than as a result of a breach on its part of these confidentiality provisions.
24. LIABILITY
25. Each Party shall use reasonable endeavours to ensure the accuracy of any information or materials it supplies to the other Party and of any other contribution it makes hereunder and promptly to correct any error therein of which it is notified. The supplying Party shall be under no obligation or liability other than as stated above and no warranty or representation of any kind is made, given or to be implied as to the sufficiency, accuracy or fitness for a particular purpose of such information, materials or other contribution or as to the absence of any infringement of any proprietary rights of third parties through the possession or use of such information, materials or other contribution. The recipient Party shall be entirely responsible for its use of such information, materials or other contribution and shall hold the other Party free and harmless and indemnify it for any loss or damage with regard thereto.
26. Except in case of gross negligence or wilful misconduct, neither Party shall be liable for any indirect or consequential damages of the other Party, including loss of profit or interest, under any legal cause whatsoever and on account of whatsoever reason.
27. PARTICIPATION IN SIMILAR ACTIVITIES
28. Parties are not prevented by this MoU from participating in activities similar to those described in this document with third parties. There is no obligation to disclose any similar activity to the other Party. However, when considered of mutual benefit, both Parties are encouraged to involve the other Party in similar activities to the goal of disseminating the knowledge about both Parties.

# Article 5. Funding

Each Party shall bear the costs of discharging its respective responsibilities under this MoU, including travel and subsistence of its own personnel and transportation of goods and equipment and associated documentation, unless otherwise agreed in this MoU or by the parties on a case-by-case basis.

Each Party shall make available free of charge to the other Party any office space or meeting facility needed for the joint activities.

The Parties’ obligations hereunder are subject to their respective funding procedures and the availability of appropriate funds. Should either Party encounter budgetary problems in the course of its respective internal procedures that may affect the activities carried out under this MoU, the Party shall notify and consult with the other Party in a timely manner in order to minimise the negative impact of such problems on the cooperation. The Parties shall jointly look for mutually agreeable solutions.

In order to reduce the impact on travel costs, face-to-face meetings should be co-located with other events that participants are likely to attend. Meeting via teleconferences should be considered when the nature of the discussion does not strictly require a face-to-face presence.

# Article 6. Entry into Force, Duration and Termination

This MoU will enter into force when signed by the authorised representatives of the Parties.

Either Party may terminate this MoU for any reason upon 30 days written notice to the other Party.

In the event of termination, the Parties shall endeavour to reach agreement on terms and conditions to minimise negative impacts on the other Party. In the event of the continuation of the present cooperation, the MoU may be extended and/or amended by mutual agreement in writing.

# Article 7. Amendments

The MoU may be amended only by written agreement of the Parties. Amendments shall be valid only if signed by the authorised representatives of the Parties.

# Article 8. Annexes

Annexes 1, 2, 3 attached hereto, have the same validity as this MoU and together constitute the entire understanding and rights and obligations covering the cooperation accepted by the Parties under this MoU. Annexes may be amended following the provisions of Article .

# Article 9. Miscellanea

1. Notwithstanding anything in this MoU to the contrary, neither Party shall have any legally binding obligation to the other Party as a result of the execution of this MoU, or otherwise relating to this MoU or the subject matter hereof. Although the Parties will try to reach one or more future agreements as to the matters described herein, this MoU shall not require the Parties to reach any future agreement, and, notwithstanding anything in this MoU to the contrary, neither Party shall have any liability to the other Party as a result of the Parties’ failure to reach one or more future agreements.
2. Neither Party shall reassign this MoU or any of its responsibilities without the other Party’s prior written consent.
3. The failure of either Party to enforce any term hereof shall not be deemed a waiver of any rights contained herein.
4. If any provision of this MoU is determined to be invalid or unenforceable under any controlling law, the invalidity or unenforceability of that provision shall not affect the validity or enforceability of the remaining provisions of this MoU.

**Memorandum of Understanding between EGI Foundation and**

**Institute of Mathematics and Computer Science, University of Latvia**

IN WITNESS WHEREOF, the Parties have caused their duly authorised representatives to sign two originals of this Memorandum of Understanding.

The following agree to the terms and conditions of this MoU:

|  |  |
| --- | --- |
| Tiziana FerrariDirector EGI Foundation ­­­­­­­­­­­Date | Inara OpmaneDirectorIMCS UL­­­­­­­­­­­Date |

Annex 1. EGI Foundation

The Stichting EGI (also known as the EGI Foundation and abbreviated as EGI.eu) is a not-for-profit foundation established under the Dutch law to coordinate the EGI federation (abbreviated as EGI), an international collaboration that federates the digital capabilities, resources and expertise of national and international research communities in Europe and worldwide. The main goal is to empower researchers from all disciplines to collaborate and to carry out data- and compute-intensive science and innovation.

The EGI Foundation has participants and associated participants drawn from representatives of national e-infrastructure consortiums (NGIs), EIROs, ERICs, and other legal entities. These entities provide the physical resources and shared services that enable EGI to deliver, improve and innovate services for communities. The EGI Foundation coordinates areas such as overseeing infrastructure operations, user community support, contact with technology providers, strategy and policy development, flagship events and dissemination of news and achievements.

The EGI Federation – coordinated by EGI.eu – is one of the largest distributed computing infrastructure for researchers. It leverages the local investments of national research funding agencies by bringing together hundreds of data centres worldwide. It also includes the largest research cloud federation in operations in Europe with tens of participating cloud providers across most of the European countries offering IaaS cloud and storage services.

The EGI offering includes a federated IaaS cloud to run compute- or data-intensive tasks and host online services in virtual machines or docker containers on IT resources accessible via a uniform interface; high-throughput data analysis to run compute-intensive tasks for producing and analysing large datasets and store/retrieve research data efficiently across multiple service providers; federated operations to manage service access and operations from heterogeneous distributed infrastructures and integrate resources from multiple independent providers with technologies, processes and expertise offered by EGI; consultancy for user-driven innovation to assess research computing needs and provide tailored solutions for advanced computing.

The EGI Cloud Federation aggregates resources by defining a set of standard open-source interfaces and protocols to access the different cloud functions - such as resource discovery, user authentication, compute and data access services - in a uniform way at all the sites, enabling workloads to span and seamlessly migrate across resource centers. Through the EGI Virtual Machine image library – the Application Database – EGI offers the possibility to share and reuse virtual appliances and to dynamically deploy them in a federated cloud infrastructure. Besides cloud compute and storage services, the cloud will offer the capability of accessing open datasets of public and commercial relevance for scalable access to big research data, fostering a culture and environment for sharing and reuse of open research data. EGI supports the implementation and adoption of cloud open standards.

The EGI technical platforms are co-developed with research communities and technology providers. In order to do so, EGI has established processes and technical infrastructures for requirements gathering, software validation, verification and distribution through the Unified Middleware Distribution.

Over the last decade, EGI has built a federation of long-term distributed compute and storage infrastructure that has delivered unprecedented data analysis capabilities to tens of thousands of researchers from many disciplines (e.g., Medical and Health Sciences, Natural Sciences, Engineering and Technology, Agricultural Sciences, and Art and Humanities).

Examples of the supported research include the search for the Higgs boson at the Large Hadron Collider particle accelerator at CERN; the search for gravitational waves of the LIGO-VIRGO collaboration, finding new tools to diagnose and monitor diseases such as Alzheimer’s, or the development of complex simulations to model climate change.

Further information (e.g. governance; services) can be found at: [www.egi.eu/about/](http://www.egi.eu/about/)

Annex 2*.* IMCS UL

Description of the legal entity and activities, its cloud infrastructure and user communities that are relevant for the MoU.

IMCS UL was established on 11th November 1959. Implementing changes in policy on the status of scientific institutions in Latvia, the IMCS UL has been re-registered several times.

In 2008, IMCS UL was registered in the EU Register of Scientific Institutions - PIC number 999645723.

On 24th of November 2015 with the Cabinet of Ministers order about the UL Agency - Scientific Institute "UL Institute of Mathematics and Computer Science" transformation into the University of Latvia Scientific Institute - a derived public person - "The Institute of Mathematics and Computer Science of the University of Latvia".

On 14th of December 2015, IMCS UL was registered in the Register of Scientific Institutions of the Ministry of Education and Science of the Republic of Latvia with a new Certificate number - No. 381013.

Several departments and laboratories of IMCS UL focus on their respective fields of research:

Knowledge Engineering with Models, Ontologies and Diagrams is conducted at the Research Laboratory of System Modelling and Software Technologies.

Research in Machine Learning and Computational Linguistics is conducted at the Artificial Intelligence Laboratory (with participation of Research Laboratory of System Modelling and Software Technologies).

Research in Bioinformatics is conducted at the Research Laboratory of System Modelling and Software Technologies.

Research in Real-Time and Autonomous Systems is conducted at the Real Time Systems Laboratory.

Research in Mathematical Modelling and Numerical Analysis is conducted at the Mathematical Technologies Laboratory.

Research on Many-valued Mathematical Structures is conducted at the at the Mathematical Technologies Laboratory.

Large scale computing infrastructure architecture is designed to address a wide range of research tasks and provide opportunities to address new challenges: Big Data, In Memory Computing, HPC, Data Streaming, Batch stream computing, GPU Computing, Data intensive computing. Virtualization with the ability to select the virtual server with required processor power, RAM, storage, and unified access to data resources is central in the Cloud Computing services and implemented with the OpenStack platform. The cloud is called E-spiets2. It’s total capacity is: 1760 CPU cores, 28TB RAM, 1PB storage, 10Gbps internal network and 10Gbps connections to the Latvian Academic Network (LAT), GEANT and largest Latvian telecommunication operators.

Some of the cloud users are:

* Latvian Biomedicine Research and Study Centre, running genome sequence analyses and supporting computations.
* Ventspils International Radio Astronomy Centre, using cloud as a cache system for high bandwidth (usual observations are 4Gbps, 24h continuos streams) storage, synchronisation and post-processing.
* Artificial Intelligence Laboratory, training and running Machine Learning and Natural Language Processing systems.
* Faculty of Computing of University of Latvia, assigning cloud resources to students and staff to develop and deploy various IS and IT configurations for research and education purposes.

IMCS UL was partner in EGI-InSPIRE and BalticGrid (I and II) projects. IMCS UL is also part of the GEANT project and managing GEANT access to members of LAT and other Latvian research and education institutions.

Annex 3. Joint Work plan

To support the collaboration objectives defined in article Article 2 (“Purpose and scope”), a joint work plan is defined and will be regularly reviewed and updated at least annually.

The Parties will jointly deliver e-infrastructure services and support the needs of global scientific communities. The cooperation is focused, but not limited to the following areas:

1. Coordinated offering of cloud resources and user support for open science via EGI and European Open Science Cloud (EOSC).
2. Exchange applications and scientific datasets that facilitate open science with e-infrastructures.
3. Exchange information about the impact of e-infrastructure services and offerings on science and showcase these at relevant events.

**Joint Activity 1. Coordinated delivery of cloud and user support**

EGI will support IMCS UL to connect with the user access services of EGI and EOSC, particularly to

* Catalogue/onboard the UL Cloud in the EOSC Cloud catalogue, indicating its availability for Latvian researchers and international projects with Latvian members.
* Integrate the UL with the EGI Check-in service to enable single sign-on across the EOSC Portal, Marketplace and the cloud itself, and to comply with the EGI Security Policies.
* Deliver user support and training for national and international communities based on matching interest and skills. Specific focus will be on …

Duration 12 months

**Joint Activity 2. Exchange applications and data**

EGI will support IMCS UL to connect with the content distribution services of the EGI Cloud, particularly to

* Connect the UL Cloud with the EGI AppDB Virtual Machine Image Marketplace to enable the staging of Virtualized applications and tools to the UL Cloud for the benefit of Latvian researchers.
* Connect the UL Cloud to the EGI DataHub to enable the replication of scientific datasets to the UL Cloud for the benefit of Latvian researchers.
* Share relevant Latvian applications and datasets with EGI and EOSC users via the EGI AppDB and DataHub.
* Facilitate cross-infrastructure data processing and analytics workflows as demanded by user communities.

Duration 18 months

**Joint Activity 3. Impact of e-infrastructure services**

EGI and IMCS UL will align and connect their customer relationship management (CRM) process

* to share EGI and EOSC user feedback and to feed this into their continuous improvement processes.
* To share success stories, to prepare joint articles, publications, presentations and demonstrations and to present/distribute these at high impact events and through EGI and UL dissemination channels.

Duration 36 months