**COLLABORATION AGREEMENT Between**

**EGI FOUNDATION**

**and**

**THE UNIVERSITY OF CAPE TOWN THROUGH THE**

**INTER-UNIVERSITY INSTITUTE FOR DATA INTENSIVE ASTRONOMY (“IDIA”)**

**TABLE OF CONTENTS**

[Article 1. Parties 4](#_Toc42604371)

[Article 2. Purpose and Scope 4](#_Toc42604372)

[Article 3. Communications 4](#_Toc42604373)

[Article 4. Rights and Responsibilities 5](#_Toc42604374)

[Article 5. Funding 7](#_Toc42604375)

[Article 6. Entry into Force, Duration and Termination 8](#_Toc42604376)

[Article 7. Amendments 8](#_Toc42604377)

[Article 8. Annexes 8](#_Toc42604378)

[Article 9. Dispute Resolution 8](#_Toc42604379)

[article 10. Miscellanea 9](#_Toc42604380)

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This collaboration agreement (hereinafter referred to as “Agreement”) is made between:

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

and

The University of Cape Town through the Inter-University Institute for Data Intensive Astronomy IDIA, a university incorporated in terms of the Higher Education Act, 1997, and the statute of the University of Cape Town, promulgated under GovernmentNotice No. 1199 of 20 September 2002**,** as amended, herein represented by Professor Susan Harrison, in her capacity as Deputy Vice-Chancellor of the University of Cape Town and she being duly authorized thereto, having its principal place of business at Bremner Building, Lower Campus, Lovers’ Walk, Rondebosch, 7700

(hereinafter referred to as “UCT/IDIA”)

EGI and University of Cape Town/IDIA shall hereinafter be referred to individually as a “Party” and collectively as the “Parties.”

# 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 Annexure 1.

(b) University of Cape Town/IDIA

The Inter-university Institute for Data Intensive Astronomy is a partnership of three South African universities, the University of Cape Town, of the University of the Western Cape and the University of Pretoria. IDIA also has an industry partner in SAP. The overarching goal of IDIA is to build within the South African university research community the capacity and expertise in data intensive research to enable global leadership on MeerKAT large survey science projects and large projects on other SKA pathfinder telescopes, leading to leadership on SKA phase 1 Key Science programs.

A more detailed description of the University of Cape Town and IDIA Cloud infrastructure is attached as Annexure 2.

# Article 2. Purpose and Scope

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

(2) The Parties will collaborate on:

1. Cloud resources integration;
2. Applications deployment and sharing of datasets pertaining to Radio Astronomy;
3. Impact assessment and dissemination.

A detailed collaboration plan (the “Joint Work Plan”) is set out in Annexure 3 attached hereto.

# 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 Annexure 3 (Joint Work Plan) and to make recommendations to the Parties.

2. The Parties acknowledge their obligations in terms of this Agreement and within the Joint Activity Plan (Annexure 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 Agreement 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 Agreement shall be sent to the applicable Party as follows:

|  |  |  |
| --- | --- | --- |
| EGI Foundation Liaison:  Gergely Sipos  EGI Foundation  Science Park 140.  Amsterdam1098XG gergely.sipos@egi.eu  +31 630 373 096 | University of Cape Town/IDIA Liaison:  Kechil Kirkham  Department of Astronomy / IDIA  University of Cape Town  R W James Building, Bldg,  Rondebosch, Cape Town, 7700  South Africa  kechil@idia.ac.za  +27 21 650 5273 |  |

Questions of principles or problems that cannot be solved at primary contact level shall be escalated to the directors of the Parties *or* their nominee*.*

# 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 Agreement, 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 Agreement.
7. In case personnel employed by one Party temporarily carry out work under this Agreement 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 Agreement 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 Agreement for the implementation of the Joint Work Plan (Annexure 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 shall give each other – under fair and reasonable conditions – access to results of this Agreement 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. Should either of the joint owners wish to commercially exploit the Jointly Owned Results, the Parties shall enter into negotiations to conclude an agreement which will specify the terms for the commercialisation of the Jointly Owned Results.
17. With respect to any Joint Invention resulting from this Agreement (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 filing for protection as well as any further details with regard to prosecuting and maintaining relevant patent applications.
18. PUBLIC RELATIONS
19. Any publication by a Party resulting from the activities carried out under this Agreement 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 Agreement. 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 Agreement 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 Agreement, 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 Agreement 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 Agreement, including travel and subsistence of its own personnel and transportation of goods and equipment and associated documentation, unless otherwise agreed in this Agreement 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 Agreement, 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 Agreement will enter into force when signed by the authorised representatives of the Parties.

Either Party may terminate this Agreement 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 Agreement may be extended and/or amended by mutual agreement in writing.

# Article 7. Amendments

The Agreement 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

Annexures 1, 2 and 3 attached hereto, have the same validity as this Agreement and together constitute the entire understanding and rights and obligations covering the cooperation accepted by the Parties under this Agreement. Annexes may be amended following the provisions of Article 7: Amendments.

# Article 9. Dispute Resolution

1. If the Parties are unable to resolve the dispute through their respective Executive Directors, then any Party may refer the dispute for resolution by arbitration. Such arbitration shall be held in Cape Town under the rules and procedures of the International Chamber of Commerce (“ICC”) and shall be heard by an arbitrator to be agreed between them, failing which one shall be nominated by the ICC. Such arbitrator shall be appointed within 30 (thirty) days of the dispute being referred to arbitration.

2. The arbitration shall commence within 30 (thirty) days of the appointment of the arbitrator.

3. The decision of the arbitrator shall be final and binding, and may at the request of any of the Parties be made an Order of Court, in a Court of competent jurisdiction.

4. The arbitration tribunal shall not award punitive damages. The expenses of the arbitration, including the arbitrator’s fees, expert witness fees, and attorney’s fees, may be apportioned between the Parties in any manner deemed appropriate by the arbitrator; however, in the absence of any formal ruling by the arbitrator, each Party shall share equally in the payment of the arbitrator’s fees and bear its own costs, expert witness fees, and attorney’s fees. The arbitration award shall be final and binding, shall be the sole and exclusive remedy regarding any and all claims and counterclaims presented, and may not be reviewed by or appealed to any court except for enforcement. Nothing in this Agreement shall prohibit either Party from seeking to prevent any unauthorized copying, disclosure, use, retention or distribution of its intellectual or other property by injunctive relief or otherwise in a court of law.

# article 10. Miscellanea

1. Notwithstanding anything in this Agreement to the contrary, neither Party shall have any legally binding obligation to the other Party as a result of the execution of this Agreement, or otherwise relating to this Agreement or the subject matter hereof. Although the Parties will try to reach one or more future agreements as to the matters described herein, this Agreement shall not require the Parties to reach any future agreement, and, notwithstanding anything in this Agreement 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 Agreement 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 Agreement 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 Agreement.

**Memorandum of Understanding between EGI Foundation and**

**University of Cape Town**

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 Agreement:

|  |  |
| --- | --- |
| Tiziana Ferrari  Director  EGI Foundation  Date | Julie Nadler-Visser  Contracts Manager  IDIA / UCT  Date |

**Annexure 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 centres. 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/)

**Annexure 2*.* University of Cape Town/IDIA**

Description of the legal entity and activities, its infrastructures and user communities that are relevant for the Agreement.

The Inter-university Institute for Data Intensive Astronomy is a partnership of three South African universities, the Universities of Cape Town, of the Western Cape and of Pretoria. IDIA also has an industry partner in SAP. The overarching goal of IDIA is to build within the South African university research community the capacity and expertise in data intensive research to enable global leadership on MeerKAT large survey science projects and large projects on other SKA pathfinder telescopes, leading to leadership on SKA phase 1 Key Science programs.

One of the first elements to reach this goal was for IDIA to set up a data-intensive research cloud facility to service its scientific community, now operational and called *ilifu*. Currently, ilifu is the primary platform to service five out of eight MeerKAT large survey projects.

This project aims to deploy technologies that will demonstrate the use of distributed cloud compute and data management solutions and be useful to users of the MeerKAT radio telescope data in the near term. It also aims to showcase these technologies as viable solutions for providing access to globally distributed resources (compute, storage, data, scientific applications etc.) that will be used for the analysis of SKA data. The technical solution aims to provide a way to deploy radio astronomy processing stacks to resources engaged in the federation.

**Annexure 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. Cloud resources integration;
2. [Radio Astronomy] Applications deployment and shared datasets;
3. Exchange information about the impact of e-infrastructure services and offerings on science and showcase these at relevant events.

**Joint Activity 1. Federate cloud resources**

EGI will support IDIA in federating its Ilifu (cloud) resources within the EGI Federation, enabling it to be accessed by South Africa researchers and EGI users that had been added to appropriate Virtual Organizations (VOs), with the appropriate authorization roles. To achieve this goal, both parties will undertake to:

* provide Local and Global operational services as needed to support the international user community and the EGI operational needs;
* subscribe to a mandatory set of policies, procedures and OLAs;
* comply to the operations interfaces required by the EGI Operations Architecture, which are needed to ensure access to resources;

IDIA aims to use the EGI federation to enhance collaboration with scientific partners in Europe and to make it easier to have new users access the IDIA Cloud resources.

Timeline: 2-3 months

**Joint Activity 2. Application deployment and shared datasets**

IDIA has developed the toolset required to analyse the data being produced by the MeerKAT telescope. The toolset and workflow tools together are described at the IDIA Pipeline in keeping with the terminology used within the radio astronomy community. The aim of the partnership with EGI is to make the tool available and deployable on EGI cloud resources.

IDIA further work focusing on data, improving the transparency with which datasets distributed between collaborations can be found and accessed.

Timeline: 6-8 months

**Joint Activity 3. Impact assessment and dissemination**

EGI and UCT/IDIA will:

* exchange information on impact of the services developed and deployed in the scope of this agreement
* share success stories and, prepare joint publications, deliver presentations/demonstrations based on these at high impact events
* promote the activities and outcomes of this agreement with visits to each other, and publications in the EGI and IDIA dissemination channels.

Timeline: Agreement duration