

# Inspired

ISSUE 32  
OCTOBER 2018

*news from the EGI community*



## TOP STORIES

### EGI Strategic & Innovation Fund: 2nd call

*page 1*

### How EGI services support ENVRplus

*page 2*

### The status of the Asian infrastructure

*page 4*

### EGI & Terradue: a lasting partnership

*page 5*

### Federation models of the EGI cloud

*page 6*

## MORE

- 07 DI4R 2018: What to do & where to eat in Lisbon
- 08 Collaborate on a survey: e-Infrastructure in Europe



[www.egi.eu](http://www.egi.eu)

# Welcome to issue 32!

This edition of the newsletter is focused on updates from the EGI infrastructure, current projects and the business programme.

Your feedback and suggestions are always welcome!

Send an email to Sara & Iulia at:

[press@egi.eu](mailto:press@egi.eu)



## The 2nd call for the EGI Strategic and Innovation Fund is now open: apply by 18 November!

We launched a 2nd call for the **EGI Strategic & Innovation Fund**.

The Fund was established by the EGI Council to stimulate targeted actions that bring benefits within the EGI Community in the short to medium term.

The 2nd call of the Strategic and Innovation Fund can be accessed by the EGI Council participants. In addition, the call is open to all organisations based in countries represented in the EGI Council who receive a letter of support by EGI Council participants.

Project proposals should align with the vision, mission and strategy of the EGI Federation and create changes in the production environment or validate concepts that justify investments.

Applications can be submitted by 11 November 2018.

The first call of the EGI Strategic and Innovation Fund ended earlier this year and resulted in the selection of two projects:

**1. "Elastic Serverless Platform for High Throughput Computing Scientific Applications"**

(prototype category) - a project developed by the Technical University of Valencia, with a goal to create a prototype of an elastic serverless platform for High Throughput Computing Scientific Applications on top of the EGI Federated Cloud.

**2. "Native OpenID Connect Implementation for OpenStack Cloudsc"** - (major innovation category) - a project developed



by the Spanish National Research Council (CSIC) that proposes to implement a native OpenID Connect plugin for OpenStack-based clouds to be certified by the OpenID Connect Foundation and available to providers of the EGI Federated Cloud.

### **Will you be the next winner?**

Read more information on the **EGI Strategic & Innovation Fund** and apply by 11 November 2018.

# How EGI services support the ENVRIplus project

*Yin Chen reports on the progresses made by four ENVRIplus Science Demonstrators*



The ENVRIplus project is now entering its final stage, being due to end in April 2019.

The objective of ENVRIplus has been to provide solutions to shared challenges for European Environmental and Earth System Research Infrastructures (RIs) in their efforts to deliver new services for science and society.

The project now reports seven Science Demonstrators showcasing implementation results of community use cases, and serving as evidence of the added value brought to RIs.

EGI has been providing full support to the project's service development and use case implementations. Four of the science demonstrators are now fully integrated with EGI services.

Here is an overview of the work done so far:

## Cross Research Infrastructure improvements

The first Science Demonstrator addresses a common problem for ENVRIplus RIs: the preparation of data transfer prior to data transmission is often not yet sufficiently standardised. This hinders the operation of efficient cross-RI data processing routines, e.g., for data quality checking.

The demonstrator introduces a service prototype that allows to submit and publish raw observational environmental time series data in common standard formats (T-SOS XML & SSNO JSON). The EGI Monitoring service (ARGO) is used as a messaging API to perform Near Real Time

(NRT) quality control procedures by an Apache Storm NRT QC Topology deployed on the EGI Federated Cloud, which in turn publishes the quality controlled and labelled data via a messaging output queue.

## Watch demo.

## EuroArgo Data Subscription Service

The Euro-Argo ERIC coordinates the European contribution to the international Argo programme for marine science observation. The EuroArgo Data Subscription Service allows researchers to subscribe to customised views of Argo data, select specific regions and time-spans, and choose the frequency of updates. Tailored updates are then provided to researchers' private storage.



Environmental Research  
Infrastructures Providing Shared  
Solutions for Science and Society





The demo shows an integration solution that combines the EuroArgo community data portal with the EGI Federated Cloud for computing data product for each subscription. The pilot activity was initiated by the marine research community. RIs can benefit from the subscription services, e.g., to create more elaborated data products by requesting data from other sources, and can optimise their internal workflows by signing up for automatic updates.

**Watch demo.**

### Transferable data analytics

The third Science Demonstrator describes a service prototype that supports aerosol scientists in studying new atmospheric particle formation events by moving data analysis from local computing environments to interoperable infrastructures. This results in harmonising data analysis and more importantly the syntax and semantics of data derived from analysis.

The demonstrator showcases a possible architecture of a socio-technical infrastructure that transforms data into knowledge.

The service allows researchers to access JupyterLab operated on the EGI e-Infrastructure to analyse primary data for the purpose of new particle formation, event detection & description.

JupyterLab is accessible from the corresponding D4Science Virtual Research Environment (VRE).

This approach shows a range of novel possibilities, in particular enabling researchers to focus on data analysis and interpretation while leaving data access & transformation from & to systems to interoperable infrastructure.

The demonstrator contributes to implementing the global agenda of FAIR data by promoting the notion of “FAIR by Design”, weaving data FAIRness into the fabric of infrastructures. It builds on the principle not to leave making data FAIR to researchers but to guarantee it by design of well-engineered infrastructures.

**Watch demo.**

### LifeWatch

LifeWatch is a Research Infrastructure set up to support the fields of ecosystems research and biodiversity by equipping scientists with access to data, analytical tools and state-of-the-art virtual laboratories. The last Science Demonstrator illustrates how a LifeWatch researcher can easily upload and integrate an analysis algorithm in D4Science, & share it with other researchers in a VRE. The use case proposed is an integration solution that links the D4Science/gCube VRE to the LifeWatch RI and to the EGI e-Infrastructure.

This integration enables individual researchers to repeat and reuse algorithms, run trend analysis, and add new parameters and custom data.

The VRE provides provenance registration that improves reproducibility and also allows retention of computation results in the user’s workspace.

This facilitates the editing and adaptation of algorithms, features that are not provided by the existing LifeWatch ICT.

**Watch demo.**

### More information

**Yin Chen** is Senior Technical Outreach Expert at the EGI Foundation and working in WP9 of the ENVRIplus project.

**ENVRIplus**

[www.envriplus.eu](http://www.envriplus.eu)



# The status of the Asia Regional infrastructure

*Eric Yen and Simon Lin on the successes and challenges of the Asian e-infra*

The e-Science & e-Infrastructures are having profound impacts in Asia. They are now moving towards open science supported by the EOSC-Hub project, which is coordinated by EGI.

The e-Science infrastructure in Asia was established in 2005 for WLCG collaborations in the beginning, supported by the Asia Pacific Regional Operation Centre via the Academia Sinica Grid Computing Centre in Taiwan.

Based on the common needs for user communities in this region, the infrastructure was extended to support drug discovery (for avian flu for example), seismic wave propagation, tsunami wave propagation, weather simulation, chemical compound property analysis, long-term data preservation and other physics and high-energy physics researches.

**Disaster mitigation** is one of the primary e-Science collaborations in Asia. We aim to develop knowledge-oriented hazard risk assessment prototypes based on deeper understanding of root causes and drivers of a hazard.

Science gateways of targeted disaster types which integrate hazard metadata, innovative simulation models, and analysis workflow from case studies will provide high-performance simulation services to all partners over the regional EGI-compatible e-Infrastructure.

As a result, detailed, quantitative scientific understandings are becoming possible.

In addition to capturing the precise scientific processes of the hazard event, the science gateway also permits analysis, reuse, and reproducibility of the case studies and their data.

Furthermore, through the collaboration framework composed by the science gateway, case studies and knowledge base, discoverable and shareable data can enable collaborations for and cross-disciplinary research and new discoveries.

The extension and diversity of the Asia Pacific region has a lot of advantages. We have engaged collaborations not only between experts of grids and clouds, but also among scientists, at an international level. Operation towards a sustainable and easy to use e-Infrastructure has been coordinated by ASGC and incorporated with EGI in the past decade. In the future, a lot of bottom-up regional collaborations will be carried out over the e-infrastructure with EGI's help.

The experiences and requirements of regional e-Science applications will facilitate the advancement of technologies, platforms and collaboration models.

## Challenges lying ahead for the regional collaborations on e-Science include:

1) effective collaboration model: the user community has to conclude the common requirements, priority, workflow and directions by working with infrastructure and application support teams.



2) make the computing model adapted to the right technology, new hardware and changing networking environment.

3) regional infrastructure has to support multi-disciplinary applications with simplified infrastructure building, intelligent middleware & automatic forward scalability.

We are confident that the continuous enhancement of Asia-Global infrastructure will benefit all worldwide partners by economies of scale, capability of global optimisation and flexibility via collaborations.

## More information

**Eric Yen** is Associate Research Scientist at Academia Sinica Grid Computing Centre (ASGC) in Taiwan.

**Simon Lin** is Project Director of the Academia Sinica Grid Computing Centre (ASGC) in Taiwan.

**ASGC**

[www.sinica.edu.tw](http://www.sinica.edu.tw)

# EGI & Terradue: a long-lasting partnership

*Giuseppe La Rocca outlines the benefits of the agreement*

EGI's main goal is to empower researchers from all disciplines to carry out data and compute intensive science. We are also committed to foster relationships with industry and SMEs.

SMEs are considered one of the key drivers for economic growth and innovation. Over the past years, the European Commission has been putting SMEs in the lead for delivering innovation to the market.

EGI is supporting this objective by exploring opportunities for strategic partnerships with SMEs.

For example, during the EGI-Engage project, a dedicated team was setup to establish a Business Engagement Programme for developing relationships with SMEs to co-develop support solutions for their computing needs. This resulted in the accomplishment of 11 business use cases, with many more still in progress.

One example is our work with Terradue, a SME based in Rome, Italy. The company specialises on challenges associated with the handling of massive and complex data streams that can support thematic expertise. Terradue Cloud Platform is addressing this topic with solutions to transfer Earth Observation (EO) processing algorithms to cloud infrastructures.

The platform also provides services to optimise the connectivity of the data centres with integrated discovery & processing methods.

The Terradue & EGI collaboration started in 2012-2014 as part of the European Commission's support action "Helix Nebula - The Science Cloud". In September 2016, a first agreement between a group of EGI Resource Centres and Terradue was established.

Terradue has since then been working with EGI Cloud resources and teams, extending Terradue's offer to users, by integrating their services on the Terradue Cloud Platform for the processing of satellite data.

## Here are some highlights:

- Terradue's participation in the EC H2020 NextGEOSS encompasses 10 Pilots, innovating services as part of the Group on Earth Observations support to UN's Sustainable Development Goals (e.g. Food Security to achieve zero hunger, Solar Energy for affordable and clean energy).
- Also, Terradue's leading role in the ESA Thematic Exploitation Platform for Geohazards and for Hydrology encompasses data processing services contributed to the Committee on Earth Observation Satellites goals (e.g. DLR's InSAR Browse service at 200m resolution covering the world tectonic areas, and at 50m resolution covering volcanoes worldwide) and to European international cooperation (e.g. Niger River).

One key benefit of the renewed MoU is, for Terradue, to further

integrate TEP services with the EGI infrastructure using the allotted resources provided by the selected EGI cloud providers as described in the related Operations Level Agreements (OLAs) and Service Level Agreement (SLA). Six of them will be contributing as part of this MoU a capacity of 538 CPU cores, 14TB of RAM and 10TB of storage.

Based on initial proof of concepts, Terradue and EGI will also refine a business model for long-term service delivery and support, and continuous operations that will provide a direct benefit for Terradue Cloud Platform users.



TERRADUE

## More information

Giuseppe La Rocca is Technical Outreach Expert at the EGI Foundation.

**Terradue**

[www.terradue.com](http://www.terradue.com)

# Federation models of the EGI Cloud Compute service

*Enol Fernandez introduces new ways of engaging with the cloud service*

The **EGI Cloud Compute service** is part of the EGI service catalogue as a federation of Infrastructure as Service (IaaS) cloud providers, where each IaaS is operated by different institutes according to agreed principles & regulations.

These principles and regulations require providers' IaaS clouds to connect with central EGI services (e.g. accounting), and expose their cloud to users through commonly agreed interfaces.

This model has proven to be successful to support several user communities, but after years of production we have found some limitations:

- Reaching a uniform behaviour and interfaces at multiple, independently operated IaaS providers is not realistic in practice. Achieving fully distributed, multi-cloud workloads requires higher-level tools or a lot of customisation and site-specific considerations in the user code.
- Joining the EGI Cloud infrastructure comes with an extra complexity in the operation of IaaS providers. This often causes a decrease in service reliability.
- Only a small fraction of the scientific workloads need access to multiple cloud sites. Most workloads fit into a single cloud and non-federated clouds can be more reliable, so users don't want to migrate workloads across sites.

Given these findings, we propose three alternative implementations to be considered for inclusion in the EGI Cloud Compute service:

## Application Services

This implementation enables 'Software as a Service' (SaaS) providers to join the service, this can be done via the EGI Check-in and Marketplace: the SaaS application offerings should be integrated with Check-In to enable Single Sign-On and consistent authorisation across the applications, then registered in the EGI Marketplace for visibility.

## IaaS alliance

This model would allow IaaS providers to expose their services in the Marketplace if they meet a simple set of requirements. The minimum requirement is to integrate with EGI Check-In and to register in the EGI Marketplace. Integration with additional, centrally provided EGI operational services & adoption of operational practices would be not mandatory.

## Application Platforms

This implementation would allow application and IaaS service providers to join if they support one of the recognised 'application deployment platforms', such as Kubernetes for container-based applications or IM for VM-based applications. These technologies enable applications from providers to be shipped and instantiated for/by users at the IaaS sites.

This type of model can nicely support cloud-bursting of applications from national clouds to the federation by using higher-level deployment platforms that hide the complexity of a hybrid cloud setup.



These new implementations will introduce a wider range of options, with advanced functionality that can attract new users.

The Application Services and Application Platforms implementations allow users to focus on research instead of managing low level infrastructure components, while power users can still benefit from the IaaS Alliance to get the full capabilities of an IaaS.

Read more about this proposal and bring your comments in the **dedicated document** (preferably by 30 November).

### More information

**Enol Fernández** is Cloud Technologist at the EGI Foundation.

### EGI Cloud Compute

[egi.eu/services/cloud-compute/](https://egi.eu/services/cloud-compute/)



# DI4R 2018: What to do & where to eat in Lisbon

*A few tips & tricks from our Portuguese colleague, Sara Coelho*

The third edition of the annual **DI4R conference** is just around the corner, and will take place at the University of Lisbon campus in Lisbon, from 9-11 October.

Apart from an excellent event venue, Portugal's capital is an elegant and vibrant city, so don't miss the opportunity to stroll its streets and discover its wonders.

Here are a few not-to-miss attractions of Lisbon:

## What to see:

### • Tram 28

A true landmark of Lisbon, the wooden tram 28 roars through Lisbon's most historic streets and passes through the popular tourist districts of Graça, Alfama, Baixa and Estrela.

### • Castelo São Jorge

The ancient castle dates back to the ninth century and rules over the city, being visible from almost every street in Lisbon.

### • Praça do Comércio

The Praça do Comércio is the largest of Lisbon's plazas, with traditional painted buildings along the sides and a statue of King José I as a centrepiece of the ensemble. This was where the old royal palace was, before being destroyed in the 1755 earthquake. Not to be missed!

### • Torre de Belém

A 16th-century fortified tower and a symbol of maritime Lisbon. The tower is located in Belém, very close to two architectural landmarks built 500 years apart: the Mosteiro of Jerónimos and the Centro Cultural of Belém.



## Where to eat:

- The **Mercado da Ribeira** is a collection of market stalls with everything from ice cream and pastries, snacks, tapas, fancy chef food & vegetarian options.

- Go to a **Pastelaria** for pastries and coffee. Every street has one and everyone has a local (mine is Pastelaria Vitória in Estefânia). The most famous Lisbon pastry is the pastel de nata (custard tarts) but that is just the tip of the iceberg. A few of the most traditional Pastelarias are the Versailles, the Mexicana, the Confeitaria Nacional.

- **Restaurants:** you will have plenty of choice. Here are a few:

- **Galeto** is a gorgeous place decorated exactly as it opened in the '50s. They serve uncomplicated food, steak sandwiches, burgers at the counter (no tables!)

- **Brasserie de l'Entrecote** is a fancy place to eat steak, hasn't changed since the first time I went there with my father (really not for vegetarians!)

- **Alfaia** is a restaurant in Bairro Alto that serves traditional Portuguese food. It's in a middle of a touristy area so it's best to make a reservation.

- **Santa Clara dos Cogumelos**, strictly for mushroom lovers, everything in the menu is cooked with them. Their crème brulee with truffles is like nothing else (it's best to make a reservation).

- **Honorato** is a hipster burger place, with a gin menu and all, a bit over the top, but the burgers are well worth it.

- **Marisqueira do Liz** is a perfect place to eat seafood.

- **Portugália** is an old school beer-house, where you can have a steak, seafood and beer.

- **PSI** and **Os Tibetanos** are two vegetarian restaurants with lots of vegan options.

## More information

Sara Coelho works as Communications Manager at the EGI Foundation.

DI4R 2018

[digitalinfrastructures.eu](http://digitalinfrastructures.eu)

# Collaborate on a short survey: e-Infrastructure in Europe - attributes and metaphors for diffusion



Why are some e-science tools adopted by a large community, while others are ignored? Why do some e-science teams collaborate well while others struggle? How can teams come to a shared understanding of the e-science tools they are developing?

These and other questions were discussed by dr. Kerk Kee (School of Communication, Chapman University), dr. Christian Burgers and Ellen Droog, MSc (Dept. of Communication Science, VU Amsterdam) in a webinar at the EGI Foundation office on 18 September 2018 in Amsterdam.

They reported on a first pilot test conducted at two conferences (EOSC-hub in Malaga, April 2018 and ENVRIplus in Zandvoort aan Zee, May 2018).

The study's goal was to provide cross-cultural validation of an approach to successful diffusion of e-infrastructure tools and application, that was originally developed in a US context (XSEDE).

In the webinar, they provide an overview of the most important tool attributes and team characteristics to stimulate adoption beyond the initial user base.

They now seek to expand the first pilot test to a larger sample, and would like to ask you for help as a member of the e-infrastructure community.

## Do you want to help?

Please take a few minutes to contribute to the **short survey** and share your thoughts.

Listen to the webinar:

- Part I: **Tool Attributes**
- Part II: **Attributes of the Virtual Organisation**
- Part III: **Metaphors of e-infrastructure**

