

EGI Conference 2022



Report of Contributions

Contribution ID: 2

Type: **not specified**

Welcome by Arjen van Rijn EGI Council Chair (15')

Tuesday, 20 September 2022 12:00 (15 minutes)

Any relevant links

Topic

Presenter: VAN RIJN, Arjen (NIKHEF)

Session Classification: Opening Plenary

Contribution ID: 3

Type: **not specified**

Session: The EGI Community welcomes our new members

Two new NGIs joined the EGI Council in 2022: ACONet and University of Vilnius. In this session we will meet the Council representatives of our two new participants. We will hear about their national initiatives in support to scientific computing and open science and discuss how the EGI Federation can leverage such initiatives to improve its support to international user communities.

ACONet represents Austrian organisations that contribute to facilitating access to general & specialised ICT resources at pan-European scale and to provide high-quality research data (e.g. earth observation and climate data sets, etc.) according to the FAIR principles to facilitate interdisciplinary research and education.

Vilnius University is the reference provider for the Lithuanian academic community, with HPC resources amounting to 0.3 PFlops, that are being procured and set up by the end of 2020 across three different university institutes, including the mathematics department, the informatics department and the physics department. Vilnius University is also participating to EuroCC and Lithuania is a funding organization of EuroHPC.

Any relevant links

Topic

Presenters: SCHRAMM, Matthias (TU Wien); MACERNIS, Mindaugas; FERRARI, Tiziana (EGI.eu)

Session Classification: Welcome to our new members ACONet (Austria) and University of Vilnius (Lithuania)

Contribution ID: 4

Type: **not specified**

EGI Service Strategy 2022-2024

Wednesday, 21 September 2022 09:00 (30 minutes)

Today's EGI services deliver advanced computing services to support scientists, multinational projects and research infrastructures. They are organised in two catalogues: the internal catalogue delivers coordination and federation services to the data centres that are part of the EGI infrastructure, while the external catalogue addresses researchers, scientific communities, and innovators by delivering data-intensive computing, storage, data management, data analytics, trust and identity management, and training. The external catalogue services are also promoted via the EOSC Portal.

The EGI Service Strategy sets the priorities for the investigation of new or improved services considering the needs in data-intensive scientific computing gathered from research infrastructures, scientific collaborations, communities of practice and innovators. The creation of a Service Strategy is part of a larger effort to update the EGI Federation strategy and to define specific plans in selected areas. The EGI Service Strategy supports and complements day-by-day service portfolio management activities of the EGI Federation.

Any relevant links

Topic

Presenter: ANDREOZZI, Sergio (EGI.eu)

Session Classification: Plenary: Setting the future of digital infrastructures for data-intensive computing

Contribution ID: 5

Type: **not specified**

Plenary: International collaboration for excellence in science: opportunities and challenges

Thursday, 22 September 2022 09:00 (1h 30m)

Any relevant links

Topic

Presenter: FAVA, Ilaria

Session Classification: Plenary: International collaboration for excellence in science: opportunities and challenges

Contribution ID: 6

Type: **Lightning Talk 8 mins**

DPM to dCache migration

Wednesday, 21 September 2022 14:30 (8 minutes)

DPM storage support is gradually declining and will be discontinued in the coming years. Computing sites with this grid storage must decide what to use as their future storage technology and each migration strategy comes with different requirements for site administrator expertise, operational effort and expected downtime. We will describe the migration to dCache, which relies on tools distributed with the latest version of DPM and does not need to copy any data files. This method provides a quick and easy way to make one-to-one grid storage replacement transparent to the client applications with less than a day downtime. DPM to dCache migration tools have already been successfully used for production sites with storage sizes up to 5PB and 50M objects and we will briefly describe the experience from the actual migration.

Any relevant links

<https://twiki.cern.ch/twiki/bin/view/DPM/DpmDCache>

Topic

Data Spaces

Primary author: VOKAC, Petr (Czech Technical University in Prague (CZ))

Presenter: VOKAC, Petr (Czech Technical University in Prague (CZ))

Session Classification: EGI-ACE Lightning Talks: Technologies for a Compute Continuum

Track Classification: Data Spaces

Contribution ID: 7

Type: **Lightning Talk 8 mins**

EOSC-FUTURE –ENVRI-FAIR SP Environmental Indicators –Ocean

Thursday, 22 September 2022 12:15 (8 minutes)

In the EOSC-Future project, ENVRI-FAIR partners are involved in developing two Science Projects (SPs), one about Invasive Species, and one about a Dashboard of the State of the Environment. The Dashboard should provide easy means to users to determine the state of the environment and follow trends of our Earth system for a selected number of parameters within the Earth components of Atmosphere, Ocean, and Biodiversity.

MARIS leads the development of the Ocean component in cooperation with IFREMER, OGS and NOC-BODC. It consists of a Map Viewer that displays in-situ measurements of selected Essential Ocean Variables (EOVs), namely Temperature, Oxygen, Nutrients and pH. These measurements are retrieved from selected Blue Data Infrastructures (BDIs) such as Euro-Argo and SeaDataNet CDI using tailor-made APIs for fast sub-setting at data level. The user interface is designed for citizen scientists and allows them to interact with the large data collections retrieving parameter values from observation data by geographical area and using sliders for date, time and depth. The in-situ values are co-located with product layers from Copernicus Marine, based upon modelling and satellite data.

Performance is a major challenge as users should not wait too long for on-the-fly retrieving and displaying the data in the Map Viewer following their selection criteria. This requires intense cooperation between marine researchers and EOSC computing experts.

In-situ data sets are also used in algorithms to generate aggregated values as dynamic trend indicators for sea regions. These are displayed at the Environmental Indicators dashboard and provide ocean trend indicators for the selected EOVs for designated areas. While, users can then click on such an indicator guiding them to the Map Viewer to browse deeper into the data and details facilitating the trends. Also, for this step use will be made of selected EOSC services.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: SCHAAP, Dick (Mariene Informatie Service MARIS BV); Mr KRIJGER, Tjerk (MARIS)

Presenter: SCHAAP, Dick (Mariene Informatie Service MARIS BV)

Session Classification: Lightning Talks: EOSC Compute Platform 2

Track Classification: EOSC Compute Platform

Contribution ID: 9

Type: **not specified**

The Virtual Imaging Platform: tutorial on the use and delivery of scientific applications as a service

Tuesday, 20 September 2022 09:00 (2 hours)

The Virtual Imaging Platform (VIP) [<https://vip.creatis.insa-lyon.fr/>] is a web portal for medical simulation and image data analysis. It leverages resources available in the EGI biomed Virtual Organization to offer an open service to academic researchers worldwide. In May 2022, VIP counts more than 1400 registered users and about 20 applications publicly available.

After a quick overview of the platform, the tutorial will cover two main aspects: (i) the use of VIP for executing one of the scientific applications already available in the platform and (ii) importing a new application into VIP.

The first part will allow participants to get familiarized with the portal, create themselves a standard VIP account, launch an execution, monitor its status and retrieve the results. All this is available through the web browser and requires no prerequisites from the participants.

The second part will allow the participants to obtain an administrator VIP account on a demo instance and import themselves a new application into the VIP demo instance. This will require the manipulation of a Boutiques [<https://github.com/boutiques>] JSON descriptor pointing to a Docker image corresponding to the application to import. A complete example will be available to the participants, making it possible to complete the tutorial without any prerequisites.

Presenter: POP, Sorina (CNRS)

Session Classification: Training

Contribution ID: 10

Type: **Lightning Talk 8 mins**

Low Barrier Sciencemesh User Access to EGI Services

We can say that EOSC has a vision of delivering a Seamlessly Accessible Cloud for Research. An obvious approach, then, is to start with existing systems, and ensure that science users can use them as a joined-up offering, without problems of accessibility, interoperability or eligibility. Two of the best established systems in the pan-european domain are EGI's cloud compute service, and CS3MESH4EOSC's synch&share storage/collab service (the "ScienceMesh").

EGI's compute provides democratised (non-HPC) services; its principal offerings are Virtual Machines and Jupyter Notebooks. CS3MESH4EOSC's ScienceMesh is an emerging federation of synch'n'share systems (e.g. ownCloud, Nextcloud, or Seafile). User access is managed by diverse mechanisms integrated into local infrastructures of each particular provider. Instead of unifying user and group management, ScienceMesh provides an interoperability layer allowing to access, share, and transfer data and access applications based on user invitations and establishing trust between individual users in the federated infrastructure.

This talk describes the joint approach (under the banner of EGI-ACE) taken by EGI and CS3MESH4EOSC to integrate ScienceMesh with EGI's Jupyter Notebooks. The goal is for users to "start a compute job right on top of their data", never bothering with the complexities of their data being inside the ScienceMesh while the compute they want to run is operated by the EGI Jupyter Notebooks. This requires us to perform subtle orchestration around EGI Check-in, with the ScienceMesh acting as a lightweight identity federation. As a corollary, the inverse scenario will be enabled in this manner as well, i.e. allowing for direct access by the EGI service of user data held in the synch'n'share system – all controlled by the end user.

This approach could serve as a blueprint for further development of EOSC in use cases where inter-cloud issues of trust and eligibility need to be mediated.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: Mr ABEN, Guido (AARNet); Dr ANTOS, David; Mr DANECHEK, Milan (CESNET); SUSTR, Zdenek (CESNET)

Presenter: Mr ABEN, Guido (AARNet)

Session Classification: Lightning Talks: EOSC Compute Platform 1

Track Classification: Security, Trust & Identity

Contribution ID: 11

Type: **Poster**

ReproVIP: Enhancing Reproducibility of Scientific Results in Medical Imaging

Tuesday, 20 September 2022 19:00 (1 hour)

Background – VIP (the Virtual Imaging Platform) is a web portal for medical imaging (MI) data analysis (Glatard et al. 2013). By leveraging computational and storage resources from the EGI e-infrastructure, VIP provides MI researchers with end-user services to run MI applications on this large-scale computing infrastructure.

Research Issue – Medical imaging is facing a reproducibility crisis: the increasing complexity of current data processing methods weakens our ability to produce the same results twice, by applying the same treatments to the same sets of inputs. Beyond the trivial influence of the data exploration process on any scientific result (Botvinik-Nezer et al. 2020), there is mounting evidence that computing environments (*e.g.*, library calls, OS kernels, hardware infrastructures) also play a significant role by adding numerical uncertainty (Glatard et al. 2015). Relying on distributed computing resources, the VIP platform is highly concerned by potential versatilities in its digital outcomes.

Project Outline – The ReproVIP project, funded by the French National Research Agency (ANR-21-CE45-0024-01), addresses this reproducibility issue at every level of data analysis, from the exploration process to the computing environment. It is structured around two complementary goals: (i) evaluate the uncertainty of digital outcomes after EGI-based distributed computing, and (ii) enhance the numerical reproducibility of scientific results obtained through the VIP platform.

Available Options – To achieve numerical reproducibility at the computing environment level, we will explore a few different solutions. In addition to the already well-known containers, we also aim at using Guix –a GNU-based Linux distribution for advanced package management (Guix-HPC s. d.). To control the exploration process for MI data analysis, we are interested in the EGI-based solution that proposes Jupyter notebooks able to call EGI resources through the DIRAC framework.

Any relevant links

VIP Website :

<https://vip.creatis.insa-lyon.fr/>

Abstract References :

Botvinik-Nezer, Rotem, Felix Holzmeister, Colin F. Camerer, Anna Dreber, Juergen Huber, Magnus

Glatard, Tristan, Carole Lartizien, Bernard Gibaud, Rafael Ferreira da Silva, Germain Forestier

Glatard, Tristan, Lindsay B. Lewis, Rafael Ferreira da Silva, Reza Adalat, Natacha Beck, Claude

Guix-HPC. s. d. « Reproducible computations with Guix ». Last consulted May 16th, 2022. <http://>

Topic

EOSC Compute Platform

Primary authors: VILA, Gael (CNRS - CREATIS); BONNET, Axel (CNRS - CREATIS); CERVENANSKY, Frédéric (CNRS - CREATIS); MOUTON, Claire (CNRS - CREATIS); GLATARD, Tristan (Concordia University); MEDERNACH, Emmanuel (CNRS - IPHC); PANSANEL, Jérôme (CNRS - IPHC); POP, Sorina (CNRS - CREATIS)

Presenter: VILA, Gael (CNRS - CREATIS)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 12

Type: **Lightning Talk 8 mins**

AI4EOSC

Thursday, 22 September 2022 17:15 (20 minutes)

The AI4EOSC (Artificial Intelligence for the European Open Science Cloud) delivers an enhanced set of advanced services for the development of Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL) models and applications in the European Open Science Cloud (EOSC). These services are bundled together into a comprehensive platform providing advanced features such as distributed, federated and split learning; novel provenance metadata for AI/ML/DL models; event-driven data processing services or provisioning of AI/ML/DL services based on serverless computing. The project builds on top of the DEEP-Hybrid-DataCloud outcomes and the EOSC compute platform and services in order to provide this specialized compute platform. Moreover, AI4EOSC offers customization components in order to provide tailor made deployments of the platform, adapting to the evolving user needs. The main outcomes of the AI4EOSC project will be a measurable increase of the number of advanced, high level, customizable services available through the EOSC portal, serving as a catalyst for researchers, facilitating the collaboration, easing access to high-end pan-European resources and reducing the time to results; paired with concrete contributions to the EOSC exploitation perspective, creating a new channel to support the build-up of the EOSC Artificial Intelligence and Machine Learning community of practice.

Any relevant links

<https://ai4eosc.eu>

Topic

Machine Learning/Artificial Intelligence

Primary authors: LOPEZ GARCIA, Alvaro (CSIC); Dr KOZLOV, Valentin (Karlsruhe Institute of Technology); DONVITO, Giacinto (INFN); MOLTO, German (UPVLC); TRAN, Viet (IISAS); PLOCIENNIK, Marcin (ICBP); DAVID, Mario (LIP)

Presenter: LOPEZ GARCIA, Alvaro (CSIC)

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Contribution ID: 13

Type: **Lightning Talk 8 mins**

Computing at INCDTIM and beyond

Wednesday, 21 September 2022 14:10 (8 minutes)

Grid Computing, Cloud Computing, High-Performance Computing are three different fields with the same underlying idea, namely the processing and storing of data. Grid is standardized, Cloud is one step toward standardization, and HPC is an ongoing project around the world with a lot of in-house possibilities. At the National Institute for Research and Development of Isotopic and Molecular Technologies (INCDTIM) we have been processing data for the last 15 years, at Grid site RO-14-ITIM and at the HPC system of 7 TFlop for the last 8 years, but would like to add a cloud computing system at our Institute. This paper describes what we have at the Institute and what projects we have to fulfill our long-lasting dream of having a public/private cloud at our location.

Any relevant links

Topic

A Federated Compute Continuum

Primary author: Dr FARCAS, Felix (INCDTIM)

Co-authors: Mr NAGY, Jefte (INCDTIM); Dr TRUSCA, Radu Catalin (INCDTIM); Mr LUPSE, Cristian Andrei (INCDTIM); Dr DEHELEAN, Catalin (UBB)

Presenter: Dr FARCAS, Felix (INCDTIM)

Session Classification: EGI-ACE Lightning Talks: Technologies for a Compute Continuum

Track Classification: EOSC Compute Platform

Contribution ID: 14

Type: **Poster**

Cloud development at INCDTIM

Tuesday, 20 September 2022 19:00 (1 hour)

What exactly is cloud computing? Do they mean cloud as weather and then it could be over us, or does it mean processing power cloud and we are on it, hopping to get a special price for our request?

Or it does not matter anymore and cloud is a place on the Internet which could help us store, process or do any simulation online without knowing what is behind the process and action?

Anyway we look to that problem or solution the idea is that it's developing around the clock, and around the globe. In our case at the National Institute for Research and Development of Isotopic and Molecular Technologies we are developing a hybrid cloud and an interface that will be accessed not only privately by our colleagues but also from external sources. The paper will discuss the steps toward the implementation and programming of the future clouditim

Any relevant links

<https://www.itim-cj.ro/poc/clouditim/en/cloud-itim-english/> (the link to the project that we are doing at INCDTIM)

Topic

EOSC Compute Platform

Primary author: Mr LUPSE, Cristian Andrei (INCDTIM)

Co-authors: Dr FELIX, Farcas; Mr NAGY, Jefte (INCDTIM); Dr TRUSCA, Radu Catalin (INCDTIM)

Presenter: Dr FELIX, Farcas

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 15

Type: **Lightning Talk 8 mins**

An Efficient Distributed Storage Solution for Edge Computing Environments

Wednesday, 21 September 2022 14:00 (8 minutes)

Due to the continuous development of Internet of Things (IoT), the volume of the data these devices generate are expected to grow dramatically in the future. As a result, managing and processing such massive data amounts at the edge becomes a vital issue. Edge computing moves data and computation closer to the client enabling latency- and bandwidth-sensitive applications, that would not be feasible using cloud and remote processing alone. Nevertheless, implementing an efficient edge-enabled storage system is challenging due to the distributed and heterogeneous nature of the edge and its limited resource capabilities. To this end, we propose a lightweight hybrid distributed edge/cloud storage framework which aims to improve the Quality of Experience (QoE) of the end-users by migrating data close to them, thus reducing data transfers delays and network utilization.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: Dr MAKRIS, Antonios (Harokopio University of Athens); Prof. TSERPES, Konstantinos (Harokopio University of Athens)

Presenter: Dr MAKRIS, Antonios (Harokopio University of Athens)

Session Classification: EGI-ACE Lightning Talks: Technologies for a Compute Continuum

Track Classification: A Federated Compute Continuum

Contribution ID: 16

Type: **Lightning Talk 8 mins**

Collaborative experiments with HPC Tier-2 sites in Netherlands

Wednesday, 21 September 2022 14:46 (10 minutes)

HPC federation is an important topic for the Tier-2 centres here in the Netherlands. Therefore, SURF (Dutch Cooperative for Education & Research) has put an effort to understand what federation might mean for the SURF member institutes and the SURF organization as a whole.

Our vision is to enable researchers to conduct their research using a federated HPC ecosystem in which they can easily run and migrate their scientific applications & workflows to & from the most appropriate platform while ensuring that the infrastructure is deployed optimally and efficiently to create maximum impact on research. On the other hand, we would like to have optimized use of aggregate compute available in the regional, national & European levels.

To realize the above vision, it is necessary to work on all the aspects of the HPC ecosystem: Technology, Expertise and Governance, in collaboration with stakeholders at different levels.

The Innovation Labs at SURF provide an excellent environment for expertise building (capability) by conducting technical experiments, and proof of concepts in a collaborative setting. In this talk, we will share our approach, ideas for collaborative exploration, challenges & strategy for the topic and also for the future. We would also like to invite international partners to become part of this initiative with Innovation labs at SURF.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: -, Sagar; Mr HINIRCH, Peter (SURF); Mr CODREANU, Valeriu (SURF)

Presenters: -, Sagar; Mr HINIRCH, Peter (SURF); Mr CODREANU, Valeriu (SURF)

Session Classification: Integrated High Performance Compute services for national and international customers

Track Classification: A Federated Compute Continuum

Contribution ID: 17

Type: **Poster**

DBRepo: A Database Repository to Support Research Activities

Tuesday, 20 September 2022 19:00 (1 hour)

Many institutions start having dedicated data stewards curate data in close collaboration with researchers who collect, compute or distribute the data (e.g. as part of supplementary material to a journal article). Contrary to traditional data dumps, this is a challenge for structured data in databases where data evolves over time as tuples are added in data streams, updated or deleted. Outside of large-scale infrastructures designed to host e.g. climate or genome data, researchers usually have to maintain their own, local database and take care of regular software updates, configurations and feeding data, before being able to do research. Curation activities such as collecting metadata or preservation, if at all, happen only after the project is finished when the database is exported to a file repository turning it into a static dump that cannot be trivially queried anymore.

We present DBRepo, a repository for relational databases in a private cloud setting to support research activities in four dimensions: (1) keep research data in relational databases from the beginning of a project and offer application programming interfaces to access the data; (2) provide separation of concerns that allows experts to handle database management tasks and let researchers focus on conducting their research work; (3) improve FAIRness of data (Findability by collecting ontology-mapped metadata centrally and issuing persistent identifiers to queries; Accessibility by providing HTTP/AMQP/JDBC protocols; Interoperability by mapping to controlled vocabularies; and Reusability by offering metadata and attaching a license to each database); and (4) support reproducibility and persistent identification of arbitrary subsets of data by implementing the RDA WGDC recommendations. DBRepo's source code is available in GitLab (<https://gitlab.phaidra.org/fair-data-austria-db-repository/fda-services>), we also operate a public demo instance (<https://dbrepo.ossdip.at>).

Any relevant links

<https://gitlab.phaidra.org/fair-data-austria-db-repository/fda-services>

<https://dbrepo.ossdip.at/>

<https://dbrepo-docs.ossdip.at/>

Topic

Data Spaces

Primary authors: WEISE, Martin (TU Wien); Mr STAUDINGER, Moritz (TU Wien); Mrs MICH-LITS, Cornelia (TU Wien); Mrs GERGELY, Eva (University of Vienna); Mr STYTSENKO, Kirill (University of Vienna); Mr GANGULY, Raman (University of Vienna); Prof. RAUBER, Andreas (TU Wien)

Presenter: WEISE, Martin (TU Wien)

Session Classification: Posters (presenters at poster)

Track Classification: Data Spaces

Contribution ID: 18

Type: **Poster**

EGI-ACE webODV - Online extraction, analysis and visualization of SeaDataNet and Argo data

Tuesday, 20 September 2022 19:00 (1 hour)

In the framework of the EGI-ACE project, we are deploying the webODV application on EGI infrastructure at <https://webodv-egi-ace.cloud.ba.infn.it/> and provide large temperature and salinity datasets from the SeaDataNet (<https://www.seadatanet.org/>) project and the international Argo (<http://www.argo.net/>) program. webODV is the online version of the widely used ODV (Ocean Data View, <https://odv.awi.de/>) software for working with marine observation datasets. The idea is to provide clients with user-friendly interfaces in their web-browser and give access to datasets centrally maintained and administered on a server. Users will always work with the latest version of the datasets and will not have to download and store the data on the local computer. webODV is integrated with the EGI Check-in service and will have a promotional impact on EOSC, broadening and improving the service in cloud environments.

Presently, webODV provides two complementary services, webODV Data Extractor and webODV Data Explorer. Users select between these services after choosing a dataset. The goal of the extraction service is to provide an easy and intuitive data subsetting procedure, where data can be downloaded as text files, ODV collections or netCDF files. The explore service provides "ODV-like" functionality in the user's web-browser for creating maps, surface-plots, section-plots, scatter-plots, filtering data etc. Users can download high-resolution images of the entire canvas or individual windows and can export the data of the current station set or of individual data windows. Analyses and visualizations can be fully reproduced by using the so-called xview files e.g. for sharing. In addition to the public webODV version, we are working on a prototype of a webODV-on-demand solution, integrated with the EOSC PaaS orchestrator (<https://marketplace.eosc-portal.eu/services/paas-orchestrator>). Users can request private webODV instances and workspaces to create their own ODV data collections or to work with private data in read-write mode.

Any relevant links

Topic

EOSC Compute Platform

Primary author: MIERUCH-SCHNUELLE, Sebastian (Alfred-Wegener-Institut)**Co-authors:** Prof. SCHLITZER, Reiner (Alfred-Wegener-Institut); ANTONACCI, Marica (INFN); SCHAAP, Dick (Mariene Informatie Service MARIS BV); THIJSSE, Peter (MARIS); MANZI, Andrea (EGI.eu)**Presenter:** MIERUCH-SCHNUELLE, Sebastian (Alfred-Wegener-Institut)**Session Classification:** Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 19

Type: **Lightning Talk 8 mins**

WeNMR under the hood: How to operate a complex collection of scientific web services.

Thursday, 22 September 2022 12:45 (8 minutes)

Under the WeNMR banner various scientific web services are provided to the community such as DisVis, HADDOCK, PDBTools-Web, Prodigy, Whisky, proABC-2 and Prodigy, all operating under the Utrecht University WeNMR portal - wenmr.science.uu.nl. Over the years, our aim has been, next to the now standard practice of simply providing the community with the source code for such tools, to also provide intuitive web graphical user interfaces and the means to access computational resources. The heterogenous development processes and standards of each tool pose complex operational challenges, due to factors such as their own intricacies (extensive calculations, high I/O, etc.) their state (third-party dependencies, code interpreter versioning, etc.) or usability curve (high number of parameters, input conditionalities, etc.). The WeNMR services are accessible via the main web portal, which acts as the hub for the interconnected apps. Each individual service has its own graphical frontend, tailored to its specific user input needs and software capabilities of each codebase. For accounting and reporting purposes, job executions coming from any service are added to a central SQL database that also hosts the user information for services in which registration is required (GDPR compliant). The backend of the portal is tightly coupled with an in-house middleware that orchestrates the submission and retrieval of jobs prepared via the web interface to the appropriate computing resources, either local HPC cluster or distributed HTC EOSC resources (via the EGI Workload Manager). The development operations have been recently reviewed and are being optimized to match the high load of the WeNMR services, some of which have almost tripled in usage because of the COVID19 pandemic. Over the past decade, we have served a worldwide community of over 28 500 users that have submitted over 434 000 jobs.

Any relevant links

<https://wenmr.science.uu.nl/>

Topic

EOSC Compute Platform

Primary authors: VARGAS HONORATO, Rodrigo (Utrecht University); BONVIN, Alexandre (eNMR/WeNMR (via Dutch NGI))

Presenter: VARGAS HONORATO, Rodrigo (Utrecht University)

Session Classification: Lightning Talks: EOSC Compute Platform 2

Track Classification: EOSC Compute Platform

Contribution ID: 20

Type: **Poster**

Deploying container-based applications on EGI with VIP

Tuesday, 20 September 2022 19:00 (1 hour)

The Virtual Imaging Platform (VIP) leverages resources available in the EGI biomed Virtual Organisation to offer open services for medical image data analysis to academic researchers worldwide. VIP relies on Boutiques to facilitate application installation and sharing. Boutiques applications are installed through software containers described in a rich and flexible JSON language.

Docker containers are nowadays very popular, but the Docker daemon requires root privileges, preventing its support on HPC and HTC infrastructures. Singularity has emerged as an alternative allowing users to run containers without root privileges. However, on a very large and heterogeneous infrastructure such as EGI, resource providers may have different Singularity versions and configurations which may hinder the seamless deployment of container-based applications. Another alternative is udocker, which is a tool that can be installed on the fly for the execution of containers in user space without requiring root privileges.

Last but not least, the availability of the image/container on the EGI worker node is also important. The common/standard image pull from a central hub may cause network issues if we have a large number of jobs pulling images at the same time on the same computing cluster. One alternative is to pre-deploy images/containers on the biomed CVMFS (CernVM File System) shared folder, commonly used for software deployment in EGI. Another alternative (not yet available at the moment we write this abstract) would be a dedicated EGI hub. They both have their advantages and limitations, that will be further discussed on the poster.

The poster will thus present the work and conclusions of the VIP team with respect to efficiently deploying and executing container-based applications on EGI HTC resources.

Any relevant links

1. VIP : <https://hal.archives-ouvertes.fr/inserm-00762497>
2. Udocker : <https://github.com/indigo-dc/udocker>
3. Boutiques : <https://academic.oup.com/gigascience/article/7/5/giy016/4951979>

Topic

EOSC Compute Platform

Primary authors: PATIL, Sandesh (INRIA, CNRS); BONNET, Axel (CNRS); POP, Sorina (CNRS); GLATARD, Tristan (Concordia University)

Presenter: PATIL, Sandesh (INRIA, CNRS)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 21

Type: **Demonstration**

Onedata and OpenFaaS Lambdas for data processing

Wednesday, 21 September 2022 17:00 (25 minutes)

Distributed data management is getting more and more critical in EOSC environments. Recently long term preservation in the distribution has become more critical than ever before. So this demo will demonstrate new functionalities of the Onedata platform to execute custom processing workflows based on FaaS services.

The processing will be demonstrated in the context of the long term preservation and archications tasks. Still, the solution is generic and might be used for other purposes, especially for data reproducibility problems where the easiness of the distribution of the data computation tools is a crucial challenge these days.

Any relevant links

Topic

Data Spaces

Primary authors: DUTKA, Lukasz (CYFRONET); KRYZA, Bartosz (CYFRONET); ORZECZOWSKI, Michal (CYFRONET)

Presenter: DUTKA, Lukasz (CYFRONET)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 22

Type: **Poster**

Exploring reference data through existing computing services for the bioinformatics community : an EOSC-Pillar use-case

Tuesday, 20 September 2022 19:00 (1 hour)

Galaxy is a widely adopted workflow management system for bioinformatics, aiming to make computational biology accessible to research scientists that do not have computer programming or systems administration experience.

How can scientists connect this useful, reproducibility-oriented tool seamlessly with many data sources? How can they do so in a coherent way using different instances of Galaxy? Can they run it locally or on a secured infrastructure that handles patient data? Can they compare the results of those different scenarios?

The proposed poster presents the work done as part of one of the EOSC-Pillar project's scientific use-cases to address those questions, achieving the following objectives:

- Allow access to reference data from different Galaxy deployments to all EOSC users.
- Facilitate the deployment of Galaxy instances in the same infrastructure hosting the data to analyse
- Provide coherency in the deployment of different Galaxy instances
- Ensure sensitive (e.g., health) data security requirements are met throughout the process

The poster describes four scientific scenarios based on concrete needs from the ELIXIR community. It also describes the technical services the use-case is relying on, namely: Laniakea (Galaxy as a service provided by IBIOM-CNR and INFN), Inserm data repository, IFB cloud Galaxy instances and the INDIGO-IAM authentication service provided by INFN. It demonstrates the interest of EOSC Pillar's Federated Data Space (F2DS) for connecting different data sources to the Galaxy in a simple and coherent way.

The poster also highlights the need to conform to data protection regulations concerning health personal data, by deploying Galaxy in a private, secured environment while still ensuring the data analysis workflow remains similar to its public counterpart.

Finally, it shows proposed solutions to provide access to the service to all users within the EOSC community through roles management and by integrating it into a global authentication framework.

Any relevant links

<https://eosc-pillar.eu/use-cases/exploring-reference-data-through-existing-computing-services-bioinformatics-community>

Topic

Data Spaces

Primary authors: MATHIEU, Gilles (INSERM); Mrs SANAA, Yosra (Inserm); BLANCHET, Christophe (French Institute of Bioinformatics - CNRS UMS3601); Mr MANDREOLI, Pietro (CNR-IBOM, University

of Milan); TANGARO, Marco Antonio (CNR); DONVITO, Giacinto (INFN); Mrs FOGGETTI, Nadina (INFN); ANTONACCI, Marica (INFN); Mrs BELHAJ SALEM, Marwa (Inserm)

Co-authors: Mrs BURLLOT, Laura (French Institute of Bioinformatics (IFB)); Mr LORENZO, Jonathan (French Institute of Bioinformatics (IFB)); Mr COLOMBO, Daniele (University of Milan); ZAMBELLI, Federico (CNR (ELIXIR-ITA)); Mr SALGADO, David (Inserm, Aix-Marseille University)

Presenter: MATHIEU, Gilles (INSERM)

Session Classification: Posters (presenters at poster)

Track Classification: Data Spaces

Contribution ID: 23

Type: **not specified**

Session: Disruptive technologies accelerating data-driven policymaking in the public sector

Tuesday, 20 September 2022 15:45 (2h 30m)

Disruptive technologies accelerating data-driven policymaking in the public sector

The convergence of Cloud, Big Data and AI has already resulted in major transformation across Government services, yet the process of policy making itself is often left behind. Digital technologies have changed the world. Today people expect faster, seamless, on-demand services from their providers, and the Government is no exception. For effective urban operations which make life easier for residents, workers and visitors, Public Sector decision making needs to become more agile, breaking down data silos to combine day-to-day tactical decisions with longer term policies and strategies. Disruptive technologies such as Digital Twins, Artificial Intelligence (AI) and High Performance Computing (HPC) unlock new opportunities for sustainable decision making through visualisations, simulations and predictions that enhance transparency, increase public support and involvement, and optimise resources.

To support this transformation, Policy Cloud, Decido, AI4PublicPolicy, DUET and Intelcomp pan-European projects and initiatives dedicated to using cloud for data-driven policy, have joined forces in the Data Driven Policy Cluster. Together they explore major challenges, trends and opportunities to improve public sector decision making that will deliver healthier, happier places to live and work.

During the EGI 2022 workshop the cluster will demonstrate technologies developed to advance decision making in the public sector. The cluster will engage the EGI2022 attendees in discussion on the state of the art of these technologies and their adoptability.

This session aims to raise awareness on the cluster of projects and disruptive technologies they develop for the public sector. In addition, the session will foster collaboration between the EGI researchers and the public authorities in the decision making with the use of research data and advanced tools for the benefit of society.

The Data Driven Policy Cluster showcases the joint network of:

AI4PublicPolicy: AI for Public Policy (AI4PP) project is a joint effort of policy makers and Cloud/AI experts to unveil AI's potential for automated, transparent and citizen-centric development of public policies. The project will deliver, validate and promote the AI4PublicPolicy Platform, offering innovative policy management on unique AI technologies. The AI4PublicPolicy Virtualized Policy Management Environment (VPME) integrated with EOSC facilitates access to the Cloud and HPC resources required to enable the project's AI tools and to a wider use of the project's developments. **DECIDO:** the evidence and Cloud for more Informed and effective policies (DECIDO) project aims to boost the use of EOSC by Public Authorities enabling innovation in the policy-making sector allowing cross-support and cross-collaboration, using secure compute and data intensive services. Decido involves citizens and local communities through co-creation activities for better targeted policies.

DUET: the Digital Urban European Twins (DUET) project is a EU initiative which leverages the advanced capabilities of cloud, sensor data and analytics in Digital Twins, to develop more democratic and effective public sector decision-making. DUET Digital Twins provide virtual city replicas which simplifies the understanding of complex interrelation between traffic, air quality, noise and other urban factors. Powerful analytics predict the impacts of potential change to make better evidence-based operational decisions and long-term policy choices.

IntelComp: develops a Competitive Intelligence Cloud/HPC Platform for AI-based Science, Technology and Innovation Policy-Making. Multi-disciplinary teams will co-develop analytics services, Natural Language Processing pipelines and AI workflows, exploiting EOSC open data and

resources, HPC environments and federated operations at the EU, national and regional level. Ensuring a cooperative environment, different actors visualize, interact and analyze information. Through co-creation, IntelComp will adopt a living labs approach, engaging public policy makers, academia, industry, SMEs, local actors and citizens to explore, experiment with and evaluate STI policies. IntelComp is targeting domains aligned with the European Agenda and the Horizon Europe Missions: AI, Climate Change and Health.

PolicyCloud: exploits the potential of digitisation, big data and cloud to improve the modelling, creation and implementation of policies. Delivering a unique, integrated environment of datasets, data management, and analytic tools it addresses the full lifecycle of policy management in four thematic-areas (radicalisation, food-value chain, city environment, city services), leveraging the data management capabilities of the EOSC Initiative. The Project empowers the Citizens to contribute to data and policies related to their everyday-life. The onboarding of these solutions in the EOSC Portal offers a great opportunity to reach a wide audience.

https://docs.google.com/document/d/1yLkTPN91TIIaXxFK8N7xiAgrV6Rno_hN5qnCn865c9U/edit#

Any relevant links

Topic

Session Classification: Disruptive technologies accelerating data-driven policymaking in the public sector- jointly organised by PolicyCloud, DECIDO, AI4PublicPolicy, IntelComp, DUET

Contribution ID: 24

Type: **Demonstration**

FAIR and reproducible data management and analysis with openBIS

Wednesday, 21 September 2022 12:15 (25 minutes)

Research data management (RDM) in line with the FAIR (Findable, Accessible, Interoperable and Reusable) data principles is increasingly becoming an important aspect of good scientific practice. In experimental disciplines, FAIR RDM is challenging because every step of the research process needs to be accurately documented, and data needs to be securely stored, backed up, and annotated with sufficient metadata to ensure reusability and reproducibility. The use of an integrated Electronic Lab Notebook (ELN) and Laboratory Information Management System (LIMS), with data management capabilities, can help researchers to achieve this goal. In close collaboration with scientists, the Scientific IT Services (SIS) of ETH Zürich have developed and operated such an integrated solution, openBIS, for more than 10 years. As part of the EGI-ACE project, SIS offers the openRDM.eu service since 2021. openRDM.eu supports European research groups with installation, on-boarding and use of openBIS.

Recently, SIS has been collaborating with scientists from experimental labs at ETH Zürich to enable analysis of their research data managed with openBIS in a reproducible, scalable and collaborative way. To this end, we have developed a platform that provides a connection between openBIS and established open-source tools such as Git for code management, Binder for reproducible computing environments, JupyterLab for interactive computational notebooks, Kubernetes for scalability. This presentation will provide an overview of the openBIS software as well as the openRDM.eu service, followed by a demonstration of how data stored with openBIS can be processed and analysed in a FAIR-compliant and reproducible way.

Any relevant links

<https://openbis.ch/>
<https://openrdm.eu/>

Topic

Data Spaces

Primary authors: Dr BARILLARI, Caterina (Scientific IT Services, ETH Zürich); Dr LÜTCHE, Henry (Scientific IT Services, ETH Zurich)

Presenters: Dr BARILLARI, Caterina (Scientific IT Services, ETH Zürich); Dr LÜTCHE, Henry (Scientific IT Services, ETH Zurich)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 25

Type: **Demonstration**

EOSC-Performance: compare EOSC sites for your needs

Thursday, 22 September 2022 11:45 (25 minutes)

EOSC-Performance is a platform available on the EOSC Marketplace to search and compare multiple computing sites, including those available to the EOSC community. Users can visually compare benchmarks results from a wide range of computing resources, covering cloud and HPC. Users and service providers can contribute to the platform by adding new benchmarks or uploading results for the computing resources of their interest. This upcoming autumn update includes an improved Web GUI with a number of new features: enhanced visual comparison of benchmark results, e.g. by allowing data regression analysis, data export, and a few more.

The EOSC-Performance service leverages OIDC and EGI-Check-In for authentication, a Dynamic DNS service from EGI Federated cloud, and applies the SQAaaS best practices from the EOSC-Synergy project. The service implies API-First approach to build the frontend, which is provided for users following OpenAPI version 3 specification.

The service features, typical use cases, and highlights on the internal architecture will be demonstrated.

Any relevant links

<https://performance.services.fedcloud.eu/>

Topic

EOSC Compute Platform

Primary authors: ESTEBAN SANCHIS, Borja (KIT); Dr HARDT, Marcus (KIT-G); Dr KOZLOV, Valentin (Karlsruhe Institute of Technology); LAURES, Christophe (KIT)

Presenter: Dr KOZLOV, Valentin (Karlsruhe Institute of Technology)

Session Classification: Demonstrations

Track Classification: EOSC Compute Platform

Contribution ID: 26

Type: **Demonstration**

FAIR EVA: Evaluator, Validator & Advisor

Wednesday, 21 September 2022 10:35 (25 minutes)

FAIR EVA (Evaluator, Validator and Advisor) has been developed to check the FAIRness level of digital objects from different repositories or data portals. Developed within the EOSC-Synergy project it aims at helping data producers and data managers to evaluate the adoption of the FAIR principles based on the Research Data Alliance indicators, although the architecture is capable of adapting to new indicators. It requires the object identifier and the repository to check and it can be adapted to different contexts and environments. This demo will present the tool itself, how it can be deployed, how the different tests works and how it can be adapted to different data systems using the plugin system.

Any relevant links

https://github.com/EOSC-synergy/FAIR_eva

Topic

Data Spaces

Primary author: AGUILAR, Fernando (CSIC)

Presenter: AGUILAR, Fernando (CSIC)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 27

Type: **Poster**

Managed Kubernetes —Next Gen Academic Infrastructure?

Tuesday, 20 September 2022 19:00 (1 hour)

Academic infrastructures and institutions continuously develop new computing services to support research and education. These services are traditionally based on HPC batch systems and cloud services. Recently, a new computing paradigm based on containerization of applications has been adopted across the scientific community. Computations executed in containers are becoming increasingly popular because of their ease of use –the user encapsulates the entire environment (including software, its dependencies, and optionally data) into a single package that can be run independently of hardware and operating system. Such computations can be run on traditional HPC systems and virtual servers. However, running containerized computations in the Kubernetes (K8S) orchestration tool simplifies the execution and management of containers significantly.

Running the Kubernetes infrastructure is a challenging task that requires non-negligible know-how and resources dedicated to its operation and maintenance. Therefore, it is reasonable to offload this line of work to dedicated IT professionals positioned within research infrastructures, NRENs, and other similar institutions providing IT environments to support research.

Czech NREN “CESNET” embraced the opportunity presented by containerization by offering its own managed Kubernetes platform. Resources required to develop and maintain the platform, together with the operation of all the underlying IT layers such as hardware and networking, are fully realized by CESNET. Such an environment allows the researchers to focus solely on executing the containerized computation workflows.

The viability of the Kubernetes infrastructure for research was verified on several use-cases traditionally run on HPC or IaaS, demonstrating the advantages of the managed K8s infrastructure in research applications. It covers use-cases such as scalable Jupyter notebooks, RStudio servers, personalized storage, true 3D game streaming (low-latency virtual desktops), and more. These use-cases make a strong argument for establishing the federated managed Kubernetes sites, which could be provided within the EGI to the broad scientific community.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: Mrs SPIŠAKOVÁ, Viktória (Masaryk University); Mr ROSINEC, Adrian (CESNET); Dr HEJTMÁNEK, Lukáš (CESNET); Dr ANTOL, Matej (Masaryk University)

Presenters: Mrs SPIŠAKOVÁ, Viktória (Masaryk University); Mr ROSINEC, Adrian (CESNET)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 28

Type: **Lightning Talk 8 mins**

Exploring trust for Communities - Building trust for research and collaboration

Tuesday, 20 September 2022 17:40 (8 minutes)

When exploring the (sometimes) intimidating world of Federated Identity, research communities can reap considerable benefit from using common best practices and adopting interoperable ways of working. EnCo, the Enabling Communities task of the GEANT 4-3 Trust and Identity Work Package, provides the link between those seeking to deploy Federated Identity Management and the significant body of knowledge accumulated within the wider community. Individuals from EnCo aim to ensure that outputs from projects (e.g. AARC) and groups (e.g. WISE, FIM4R, IGTF, REFEDS) are well known, available and kept up to date as technology changes. Since many of these groups are non-funded, it's vital for their survival that projects such as GN4-3 sponsor individuals to drive progress and maintain momentum. The ultimate aim is to enhance trust between identity providers and research communities/infrastructure, to enable researchers' safe and secure access to resources.

In this lightning talk we will focus on assurance. EnCo has on one hand been leading and participating in several activities on assurance like the REFEDS Assurance Suite. On the other hand, EnCo is active in the Federated Identity Management for Research (FIM4R) community. FIM4R is a forum where Research Communities meet to establish common requirements, combining their voices to send a strong message to FIM stakeholders. In 2021 FIM4R started work on requirements specific on assurance. We will provide a short overview of all these activities.

Our target audience are the communities and the infrastructures providing their services.

Aims of the Lightning Talk:

- Raise awareness of the availability of common resources, including those owned by WISE, FIM4R, REFEDS, IGTF;
- Focus on work available on assurance in Federated Identity Management (like the REFEDS Assurance Framework) and raise awareness for the FIM4R requirements work on Assurance.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: KREMERS, Maarten (SURFnet); KELSEY, David (STFC); SHORT, Hannah (CERN); NEILSON, Ian (STFC); Mrs ZIEGLER, Jule Anna; GROEP, David (Nikhef)

Presenter: KELSEY, David (STFC)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 29

Type: **Lightning Talk 8 mins**

Towards an Interdisciplinary Citizen Science Interoperable Service in EOSC

Thursday, 22 September 2022 11:45 (8 minutes)

Citizen Science data is being split across very many different portals, each portal operated by a small community with different APIs for fetching the data programmatically and returning data in a specific structure. Several efforts are done to integrate these disparate projects into useful open datasets. An example in biodiversity is the Global Biodiversity Information Facility dataset that aggregates many data sources. Still, most of these aggregated resources are served by specific thematic APIs. This makes re-use of the data a real challenge, in particular when it comes to interdisciplinary knowledge building where merging data from different themes is required.

In Cos4Cloud we have developed one approach based on the Internet of Things. Our approach –called STAplus –uses an extension to the existing Open Geospatial Consortium standard SensorThings API. STAplus aims to reinforce the FAIR’s aspects of Interoperability and Reusability. To add the necessary elements for considering the citizens and their recognition, we propose a generic data model that supports additional business logic. Because our extended data model is backwards compatible to the existing SensorThings API v1.1, it can be applied to already existing deployments and thereby offering a wide potential uptake. The approach was already validated with Cos4Cloud implementations using use cases such as camera traps and Pl@ntNet data.

In addition, we evaluated this approach to existing biodiversity citizen observatories by conducting a feasibility study using EGI infrastructure where we operated a cloud based service. In this service we hosted a meaningful snapshot of the Natusfera observations (Natusfera is a fork of iNaturalist) and we make that available via STAplus.

In our talk we will introduce the approach and present quantitative results of our feasibility story.

(This work has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no 863463.)

Any relevant links

Topic

EOSC Compute Platform

Primary authors: Dr MATHEUS, Andreas (Secure Dimensions); Dr MASO, Joan (CREAF); Dr OTSU, Kaori (CREAF)

Presenter: Dr MATHEUS, Andreas (Secure Dimensions)

Session Classification: Lightning Talks: EOSC Compute Platform 2

Track Classification: EOSC Compute Platform

Contribution ID: 30

Type: **Lightning Talk 8 mins**

E-Science Centre with EGI resources for the Plasmasphere, Ionosphere and Thermosphere research community

Wednesday, 21 September 2022 17:10 (15 minutes)

PITHIA-NRF (Plasmasphere Ionosphere Thermosphere Integrated Research Environment and Access services: a Network of Research Facilities) is a project funded by the European Commission's H2020 Programme to build a distributed network of observing facilities, data processing tools and prediction models dedicated to ionosphere, thermosphere and plasmasphere research. One of the core components of PITHIA-NRF is the PITHIA e-Science Centre that supports access to distributed data resources and facilitates the execution of various models on local infrastructures and remote cloud computing resources. The University of Westminster team, together with EGI is responsible for the development of the e-Science Centre within the project. Resources in the e-Science Centre are registered using a rich set of metadata that is based on the ISO 19156 standard on Observations and Measurements (O&M), and specifically augmented and tailored for the requirements of space physics. When it comes to the execution of Models, the PITHIA e-Science Centre supports three main types of model execution and access scenarios: models can be executed on resources of the various PITHIA nodes, can be deployed and executed on EGI cloud computing resources, or can also be downloaded and executed on the users' own resources. This presentation will report on the current state of the development work, after the first year of the project and will also outline the development roadmap. A first prototype of the e-Science Centre is now available supporting resource registration and ontology-based search functionalities. Additionally, proof of concepts of the various execution mechanisms have also been implemented.

Any relevant links

<https://pithia-nrf.eu/>

Topic

EOSC Compute Platform

Primary authors: KISS, Tamas (University of Westminster, London, UK); Dr PIERANTONI, Gabriele (University of Westminster); Mr CHAN YOU FEE, David (University of Westminster); Mr DIMITRIS, Kagialis (University of Westminster); Dr ANNA, Belehaki (NOA); Dr IVAN, Galkin (Bolearis Global Design); CHEN, Yin (EGI.eu); FARKAS, Levente

Presenter: KISS, Tamas (University of Westminster, London, UK)

Session Classification: Lightning Talks: EOSC Compute Platform 1

Track Classification: A Federated Compute Continuum

Contribution ID: 31

Type: **Lightning Talk 8 mins**

e-IRG White Paper 2022

As a follow-up to the e-IRG online workshop, e-IRG plans to issue its next topic of the White Paper as part of its 2022 version. The title is “Realisation and enhancement of coordination and collaboration in the e-Infrastructure landscape covering the full spectrum of e-Infrastructures (networking, computing, data) and related services”. The aim of this forward-looking topic is to address the effective collaboration and coordination of all the e-Infrastructure components, i.e. networking, computing (both HTC and HPC) and data infrastructures, and reflect on some possible approaches, paradigms and impacts. The ultimate goal of bridging the gaps across e-Infrastructures is to provide integrated user-friendly services towards researchers, easing their work and deliver to them added value, so that they can focus on the disciplinary or cross-disciplinary research, and not on the infrastructures and tools. In September a draft version of the White Paper is expected and the EGI conference can act as a means of feedback from the community.

Any relevant links

https://docs.google.com/document/d/1r_pB1AmTnRc4OFAqE6-5ED1e90LnfGAuZMtenwYInzM/edit#heading=h.gijhuyh8u
(draft version to be discussed in the e-IRG delegates meeting - please keep internal)

Topic

Policy & Business Models

Primary authors: Dr KARAYANNIS, Fotis (Innov-Acts Ltd); WIEBELITZ, Jan (Leibnitz University of Hannover)

Presenter: Dr KARAYANNIS, Fotis (Innov-Acts Ltd)

Contribution ID: 32

Type: **Lightning Talk 8 mins**

Big data in livestock genomics can feed new concepts in One Health

Wednesday, 21 September 2022 12:53 (8 minutes)

Epidemiological, biological and virological characteristics of many viruses, including their potential ability to cross species barriers and become zoonoses, suggest that livestock species living close to humans should be considered as part of a global control in a renewed One Health concept. In this context, it is important to comprehensively evaluate if animals could represent risk factors for human health (and vice versa) considering their genetic susceptibility to the diseases and their potential role as reservoir of infecting agents. Here, we mined more than 30 TB of DNA sequences from 1471 animals, including cattle, pigs, rabbits, and avian species to mine these datasets from these two perspectives: (i) evaluation of the variability in genes that are directly involved in the progress of the host infections from viruses; (ii) to obtain a first global landscape unconventional picture of the animal virome contained in these datasets. Genomics data were from publicly available resources and derived from several breeds/populations and different sequencing projects around the world. Variants from the host genome datasets were compared with those present in humans to infer susceptibility/resistance to virus infections. The results can help to design genetic conservation strategies of animal genetic resources. Moreover, the virome characterization from these whole-genome sequencing datasets from the host livestock species can help to evaluate viruses that silently circulate helping the establishment of a risk evaluation system. Overall, the possibility to rapidly obtain, store and process genomics data as in the AnGen1H project, led to discover new elements to consider as potential risk factors to be included in One Health perspectives.

Any relevant links

Results of the study are available at:

<https://www.sciencedirect.com/science/article/pii/S088875432200057X?via%3Dihub>

<https://www.mdpi.com/2076-2615/12/7/838>

<https://www.nature.com/articles/s41598-021-82956-0>

Topic

EOSC Compute Platform

Primary authors: Dr BOVO, Samuele (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna); Prof. FONTANESI, Luca (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna)

Co-authors: Dr SCHIAVO, Giuseppina (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna); Dr BOLNER, Matteo (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna); Dr BALLAN, Mohamad (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna); Dr RIBANI, Anisa (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna); Dr

TAURISANO, Valeria (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna)

Presenter: Dr BOVO, Samuele (Department of Agricultural and Food Sciences, Division of Animal Sciences, University of Bologna)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: A Federated Compute Continuum

Contribution ID: 33

Type: **Demonstration**

Serverless workflows along the computing continuum with OSCAR/SCAR: Use cases from AI/ML inference

Wednesday, 21 September 2022 12:30 (25 minutes)

OSCAR is an open-source platform that supports serverless computing for event-driven data-processing applications. It abstracts away the deployment and management of computing resources through elastic Kubernetes clusters. Thanks to its integration with the Infrastructure Manager (IM), deployed as part of the European Open Science Cloud (EOSC), users can self-deploy these clusters on public and on-premises Clouds, including the EGI Federated Cloud.

It supports object-storage systems such as MinIO to trigger the execution of container-based services on file uploads, and the EGI DataHub, for mid-term data storage based on Onedata. Moreover, OSCAR can run on minified ARM-based clusters via K3s, thus making it possible to run it on the Edge.

Last year, we created new use-case examples and added new functionalities, such as the integration with Knative to improve auto-scaling in synchronous invocations, integration with Apache YuniKorn, support for private registries, and the ability to re-schedule jobs to service replicas.

OSCAR is integrated with SCAR, an open-source tool that pioneered the usage of containers within AWS Lambda. A common YAML-based Functions Definition Language (FDL) is available to define workflows, with a composer tool that simplifies its production. Latest releases of SCAR include support to mount EFS volumes and the usage of Amazon ECR to support larger container images.

In this contribution, we plan to demonstrate the benefits of the combination of OSCAR/SCAR to support event-driven data-processing workflows along the computing continuum, where partial processing can take place in the Edge and additional compute-intensive processing can take place on the EGI Federated Cloud and AWS. For this, several use cases will be demonstrated from the field of AI/ML, such as text-to-speech conversion, synchronous inference of ML models existing in the Deep Open Catalog or mask detection in public crowds, the latter exemplified as part of the AI-SPRINT project.

Any relevant links

OSCAR (web) - <https://oscar.grycap.net>

OSCAR (web - use cases) - <https://oscar.grycap.net/blog/>

OSCAR (GitHub repo) - <https://github.com/grycap/oscar>

FDL Composer - <https://composer.oscar.grycap.net>

Infrastructure Manager (Dashboard) - <https://apps.grycap.i3m.upv.es:31443/im-dashboard/login>

DEEP Open Catalog - <https://marketplace.deep-hybrid-datacloud.eu>

SCAR (web) - <https://scar.readthedocs.io>

SCAR (GitHub repo) - <https://github.com/grycap/scar>

Topic

A Federated Compute Continuum

Primary authors: RISCO, Sebastián (Universitat Politècnica de València); Dr MOLTO, German (Universitat Politècnica de València); Dr CABALLER, Miguel (Universitat Politècnica de València); ALARCÓN, Caterina (Universitat Politècnica de València); LANGARITA, Sergio (Universitat Politècnica de València)

Presenter: RISCO, Sebastián (Universitat Politècnica de València)

Session Classification: Demonstrations

Track Classification: A Federated Compute Continuum

Contribution ID: 34

Type: **Lightning Talk 8 mins**

Developing a distributed and fault tolerant Dataverse architecture.

Thursday, 22 September 2022 11:15 (8 minutes)

Dataverse is an open source data repository solution with increased adoption by research organizations and user communities for data sharing and preservation. Datasets stored in Dataverse are catalogued, described with metadata, and can be easily shared and downloaded. However, despite all its features, Dataverse is still missing an architecture that ensures a distributed, fault tolerant, highly available and out-of-the-box service deployment.

In this presentation we will report the efforts by the Portuguese Distributed Computing Infrastructure (INCD), to address these current limitations by creating a dataverse deployment architecture that is easy to set-up, portable, highly available and fault tolerant.

We tackled this objective, following a DevOps approach, resorting to a wide range of open software tools such as Linux containers, source code repositories, CI/CD pipelines, keepalived in conjunction with Virtual IPs (VIPs), pg_auto_failover for database replication and high availability object storage as scalable data storage backend. The solution is implemented on top of the Openstack cloud management framework, while the authentication is performed through the egi-checkin.

This architecture, is therefore capable of providing a stable and fault tolerant Dataverse installation, while keeping a flexible enough set-up to allow for the expansion of the storage and facilitate the upgrade to new versions.

The deployment architecture is currently under testing and will be used to support a catchall data repository for the Portuguese research and academic community. Furthermore, we expect that this solution can be deployable in EGI fedcloud resources to support FAIR data both for thematic services and generic use.

Any relevant links

Topic

Data Spaces

Primary author: BENTA, Zacarias

Co-authors: GOMES, Jorge (LIP); DAVID, Mário (LIP); FERREIRA, César (LIP); PINA, João (LIP)

Presenter: BENTA, Zacarias

Session Classification: Lightning talks: Data Spaces & Data Lakes

Track Classification: Data Spaces

Contribution ID: 35

Type: **Lightning Talk 8 mins**

A Brief Overview of Token Based AAI Development at STFC

Tuesday, 20 September 2022 18:20 (8 minutes)

STFC's Scientific Computing Department is currently engaged in the development and operation of several different token-based authentication and authorization services, using OpenID Connect.

Central to this is the development of the IRIS IAM (Identity and Access Manager), an implementation of the INDIGO IAM software which forms a core component in the IRIS digital research infrastructure. The IRIS IAM provides centralised AAI tools to services and science communities, allowing for granular community managed authorization and single-sign-on with institutional identities.

The team at STFC also participate in the development of the new WLCG Authorization infrastructure and have recently taken a leading role within the prototyping of the AAI solution for the SKA SRCnet.

This lightning talk will give a brief overview of the AAI implementations at STFC, as well as progress and updates in the recent months.

Any relevant links

Topic

Security, Trust & Identity

Primary author: DACK, Thomas (STFC)

Presenter: DACK, Thomas (STFC)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 36

Type: **Poster**

Blue-Cloud: Your Open Science platform for collaborative marine research

Tuesday, 20 September 2022 19:00 (1 hour)

The H2020 project Blue-Cloud is developing the thematic EOSC for ocean science, through a collaborative virtual environment to enhance FAIR and Open Science.

Blue-Cloud federated leading European marine Research Infrastructures and e-Infrastructures, allowing researchers to combine, reuse, and share quality data across disciplines and countries with their existing MarineID account.

The project has developed three main assets:

- The Blue-Cloud Data Discovery and Access Service (DD&AS) facilitates access to 10+ million multi-disciplinary datasets. The DD&AS functions as a broker both for metadata and for data access, interacting with web services and APIs from each of the Blue Data Infrastructures federated in Blue-Cloud. This way, it enables users to discover first at the collection level which infrastructures might have data sets interesting for their use case, and next, to identify and download relevant data sets at granule level from those selected infrastructures, by means of a common interface.
- The Blue-Cloud Virtual Research Environment (VRE) enhances collaborative research. Services include Data Analytics (Data Miner, Software and Algorithms Importer (SAI), RStudio, JupyterHub), facilitating to build and run analytical pipelines, Spatial Data Infrastructure to store, discover, access, and manage vectorial and raster georeferenced datasets, and services for provenance, documenting, and either sharing with selected colleagues or make available online any generated product (e.g. analytical methods, workflows, data products, publications, notebooks). The VRE is also accessible through the EOSC federated login.
- This innovation potential is explored by a series of domain-specific Virtual Labs developed by five teams of experts, addressing societal challenges related to biodiversity, genomics, marine environment, fisheries, and aquaculture.

These assets, including specific services developed within the VLabs, are also available via the EOSC Marketplace.

The poster highlights key services developed within the Blue-Cloud technical framework and their potential impact on marine research, ultimately promoting a sustainable and data-driven ocean management.

Any relevant links

<https://blue-cloud.org/>

Topic

A Federated Compute Continuum

Primary authors: DRAGO, Federico (Trust-IT Services); PAGANO, Pasquale (CNR); SCHAAP, Dick (Mariene Informatie Service MARIS BV)

Presenter: SCHAAP, Dick (Mariene Informatie Service MARIS BV)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 37

Type: **Lightning Talk 8 mins**

Data spaces for climate data analysis

Thursday, 22 September 2022 11:00 (8 minutes)

Climate change, both natural and anthropogenic, is a pressing issue of today, for which data-based models and decision support techniques offer a more comprehensive understanding of its complexity. The understanding of climate change is critical for supporting the needs of an ever broadening spectrum of society's decision-makers, as they strive to deal with the influences of Earth's climate at global to local scale. To this purpose, climate data analysis is facing new challenges as the growth in the size of the datasets increases and a growing gap between technological sophistication of industry solutions and scientific software arises. Contributions to the increase in climate data volume include the systematic increase in model spatial and temporal resolution; number of components on model output; number of simulations to sample uncertainties; developments in the field of data-driven climate models that enable the creation of rapid and inexpensive, large-ensemble forecasts with thousands of ensemble-members and new sources of observational data. In order to provide new approaches to data analysis that accommodate this data volume, research is moving towards a notion of data space integrated systems, targeted for decision support, and to the deployment of Climate Analytics-as-a-Service (CAaaS) based on cloud native data repositories. The purpose of this work is to describe the current state of the art of climate data analysis, the challenges that the community is facing, and provide a vision on data analysis solutions based on data spaces, in an attempt to find synergies between diverse disciplines and research ideas that must be explored to gain a comprehensive overview of the challenge.

Any relevant links

Topic

Data Spaces

Primary authors: Mr CIMADEVILLA, Ezequiel (Instituto de Física de Cantabria (IFCA, CSIC-UC, Spain)); Dr COFIÑO, Antonio S. (Instituto de Física de Cantabria (IFCA, CSIC-UC, Spain))

Presenters: Mr CIMADEVILLA, Ezequiel (Instituto de Física de Cantabria (IFCA, CSIC-UC, Spain)); Dr COFIÑO, Antonio S. (Instituto de Física de Cantabria (IFCA, CSIC-UC, Spain))

Session Classification: Lightning talks: Data Spaces & Data Lakes

Track Classification: Data Spaces

Contribution ID: 38

Type: **Demonstration**

What's New with Globus

Wednesday, 21 September 2022 12:00 (25 minutes)

Globus is a widely used platform for research data management among EU institutions. While many institutions have traditionally used Globus primarily for reliable file transfer, the platform has evolved to provide a comprehensive set of data management capabilities.

We will describe and demonstrate the major enhancements made over the past two years, and illustrate how new features and APIs can support the development of applications in service of research. Topics covered will include the new architecture for Globus Connect Server, support for additional storage systems, services for data search and discovery, and various capabilities for automating large-scale data flows. We will also provide a preview of services that support remote computation and an overview of our product roadmap for the coming year.

Any relevant links

Topic

Data Spaces

Primary author: VASILIADIS, Vas (University of Chicago)**Presenter:** VASILIADIS, Vas (University of Chicago)**Session Classification:** Demonstrations**Track Classification:** Data Spaces

Contribution ID: 39

Type: **Poster**

Analysis of Pierre Auger Observatory open data using EGI Jupyter notebooks

Tuesday, 20 September 2022 19:00 (1 hour)

Secondary school students learn about astroparticle physics in the scope of Open Science project of the Czech Academy of Sciences. Examples of analyses of open data published by Pierre Auger Observatory are provided on Kaggle platform. We compare this platform with local environment on desktop and with usage of EGI Jupyter notebooks. Effort to gain access, ease of use, stability, performance and availability of hardware resources will be presented. Full dataset of published Auger events consisting of 22731 showers measured with the surface detector array and of 3156 hybrid events in pseudo-raw data JSON format was used in this work together with more compact summary file in CSV format.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: CHUDOBA, Jiri (CESNET); Mrs MARŠÁLKOVÁ, Jana (Gymnázium Jana Nerudy); Mr NEUBAUER, Filip (Akademické gymnázium); ZAJAC, Václav (SPŠST Panská)

Presenters: CHUDOBA, Jiri (CESNET); Mrs MARŠÁLKOVÁ, Jana (Gymnázium Jana Nerudy); Mr NEUBAUER, Filip (Akademické gymnázium); ZAJAC, Václav (SPŠST Panská)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 40

Type: **Demonstration**

ENES Data Space: an EOSC-enabled Data Space Environment for Climate Science

Wednesday, 21 September 2022 17:30 (25 minutes)

The scientific discovery process has been deeply influenced by the data deluge started at the beginning of this century. This has caused a profound transformation in several scientific domains which are now moving towards much more open and collaborative approaches.

In the context of the European Open Science Cloud (EOSC) initiative launched by the European Commission (EC), the ENES Data Space represents a domain-specific implementation of the data space concept, a digital ecosystem supporting the climate community towards a more sustainable, effective, and FAIR use of data.

More in detail, the ENES Data Space aims to provide scientists with an open, scalable and cloud-enabled science gateway for climate data analysis on top of the EGI Federated Cloud infrastructure. The service, developed in the context of the EGI-ACE EU project, provides ready-to-use compute resources and datasets, as well as a rich ecosystem of open source Python modules and community-based tools (e.g., CDO, NCO, Xarray, Dask, PyOphidia, Cartopy, Matplotlib, etc.), all made available through the user-friendly JupyterLab interface. In particular, the ENES Data Space provides access to a multi-terabyte set of specific variable-centric collections from large-scale global experiments to support researchers in realistic climate model analysis experiments. The data pool consists of a mirrored subset of the CMIP (Coupled Model Intercomparison Project) climate model datasets from the ESGF (Earth System Grid Federation) federated archive. Results and output products as well as experiment definitions (in the form of Jupyter Notebooks) can be easily shared among users through data sharing services integrated in the infrastructure.

This demonstration will showcase how scientific users can benefit from the ENES Data Space and practically exploit its main features and capabilities for research purposes.

Any relevant links

<https://enesdataspace.vm.fedcloud.eu>

Topic

Data Spaces

Primary author: Mr ANTONIO, Fabrizio (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici)

Co-authors: Mr ELIA, Donatello (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici); Mr LEVAVASSEUR, Guillaume (Institut Pierre Simon Laplace, Centre National de Recherche Scientifique); Mr BEN NASSER, Atef (Institut Pierre Simon Laplace, Centre National de Recherche Scientifique); Mrs NASSISI, Paola (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici); Mr D'ANCA, Alessandro (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici); Mrs NUZZO, Alessandra (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici); Prof. FIORE, Sandro (Department of Information Engineering and Computer Science, University of Trento); Mrs

JOUSSAUME, Sylvie (Institut Pierre Simon Laplace, Centre National de Recherche Scientifique); Prof. ALOISIO, Giovanni (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici)

Presenter: Mr ANTONIO, Fabrizio (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 41

Type: **Demonstration**

Using your MATLAB license on EGI services

Wednesday, 21 September 2022 10:35 (25 minutes)

This demonstration will provide tutorials on how MATLAB users can connect to various EGI services with their own licenses to share, collaborate and access data and compute across the European Open Science network.

1. **MATLAB on EGI JupyterHub:** Users will learn how they can use their own MATLAB licenses to access and analyze public datasets from hundreds of data providers via the EGI JupyterHub. Users can share research output between diverse user groups, call other languages (eg. Python) from MATLAB and save data in widely accessible formats. Research communities can also leverage this service to have their own custom-built JupyterHub with MATLAB to allow users access to their cloud data. One such community, **EISCAT3D** will demonstrate how they are successfully taking advantage of MATLAB on this service

1. **MATLAB on EGI HPC services:** Users will also learn how they can scale up their computing needs by using High Performance Computing services offered by the various EGI Council members. Using MATLAB Parallel Computing Toolbox and MATLAB Parallel Server users can access multiple compute nodes at their HPC provider of choice. **Ghaith Makey and Michaël Barbier** from the Simply Complex Lab at Bilkent University in Turkey, will present research and demonstrate their use of parallel computing workflows with MATLAB

Any relevant links

Topic

Data Spaces

Primary authors: Dr CHAKRABARTI, Shubo (MathWorks); HAGGSTROM, Ingemar (EISCAT); Dr MAKEY, Ghaith (Simply Complex Lab, Bilkent University); Dr BARBIER, Michaël (Simply Complex Lab, Bilkent University)

Presenters: Dr CHAKRABARTI, Shubo (MathWorks); HAGGSTROM, Ingemar (EISCAT); Dr MAKEY, Ghaith (Simply Complex Lab, Bilkent University); Dr BARBIER, Michaël (Simply Complex Lab, Bilkent University)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 42

Type: **Poster**

iImagine: Imaging data and services for aquatic science

Tuesday, 20 September 2022 19:00 (1 hour)

iImagine is an EU-funded project providing a portfolio of image datasets, high-performance image analysis tools empowered with Artificial Intelligence (AI), and Best Practice documents for scientific image analysis 'free at point of use'. These services and materials enable better and more efficient processing and analysis of imaging data in marine and freshwater research, accelerating our scientific insights about processes and measures relevant to healthy oceans, seas, and coastal and inland waters.

By building on the Compute platform of the European Open Science Cloud (EOSC) the project delivers a generic framework for AI model development, training, and deployment, which can be adopted by researchers for refining their AI-based applications for water pollution mitigation, biodiversity and ecosystem studies, climate change analysis and beach monitoring, but also for developing and optimising other AI-based applications in this field.

The iImagine compute layer consists of providers from the pan-European EGI federation infrastructure, collectively offering over 132,000 GPU hours, 6,000,000 CPU hours and 1500 TB-month for image hosting and processing.

The iImagine AI framework offers neural networks, parallel post-processing of very large data, and analysis of massive online data streams in distributed environments. 12 RIs will share over 9 million images and 8 AI-powered applications through the framework. Having representatives of so many RIs and IT institutes, developing a portfolio of eye-catching image processing services together will also give rise to Best Practices. The synergies between aquatic use cases will lead to common solutions in data management, quality control, performance, integration, provenance, and FAIRness, contributing to harmonisation across RIs and providing input for the iImagine Best Practice guidelines. The project results will be integrated into and will bring important contributions from RIs and e-infrastructures to EOSC and AI4EU.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary authors: FAVA, Ilaria; SIPOS, Gergely (EGI.eu)

Presenter: SIPOS, Gergely (EGI.eu)

Session Classification: Posters (presenters at poster)

Track Classification: Machine Learning/Artificial Intelligence

Contribution ID: 43

Type: **Lightning Talk 8 mins**

The PHIRI project: advances towards an infrastructure for population health research

Wednesday, 21 September 2022 12:35 (8 minutes)

The secondary use for research purposes of health data originated in health systems imposes a series of challenges: it has legal and organisational access constraints due to its high sensitivity; as its primary purpose is the caregiving, there is a lack of semantic and syntactic interoperability, i.e., the use of common data models and codifications, making hard to combine and exploit the datasets; and, last but not least, the technical interoperability is hardly addressed when defining the analysis tools and environments.

The technological packages of the PHIRI are producing a series of prototypes of a federated analysis infrastructure for population health research that face the above challenges in a *private-by-design* manner, following a *data-centric* approach, i.e., minimising the movement of personal data. Prototypes' design and implementation is driven by four use-cases that use real-world data from healthy systems to study the COVID-19 pandemic effects in four aspects of the population health: mental health, delayed cancer treatments, inequalities in the access to treatments and perinatal health. The prototypes will set the basis of a fully operational research infrastructure to be adopted in the ESFRI Roadmap.

The first successfully delivered PHIRI prototype is based on a containerised solution. Containers encapsulate the analytics algorithms using a common data model defined for each use case. The containers are deployed at the premises of those partners that act or interact with data processors (in terms of GDPR) and produce "local" results that are manually sent to a coordination node that performs the meta-analysis.

Current work focuses on the automation of container deployment and node coordination, the selection of a single common data model and the development of federated learning algorithms. For its production version, the PHIRI infrastructure is intended to be deployed using the EOSC infrastructure and to interact with the future EHDS infrastructure.

Any relevant links

<https://www.phiri.eu/>

Topic

Data Spaces

Primary authors: Dr GONZALEZ-GARCIA, Juan (Instituto Aragonés de Ciencias de la Salud); Dr DERYCKE, Pascal (Sciensano); Mr TELLERIA-ORRIOLS, Carlos (Instituto Aragonés de Ciencias de la Salud); Mr GONZALEZ-GALINDO, Javier (Instituto Aragonés de Ciencias de la Salud); Mr ESTUPIÑAN-ROMERO, Francisco (Instituto Aragonés de Ciencias de la Salud); Dr BERNAL-DELGADO, Enrique (Instituto Aragonés de Ciencias de la Salud)

Presenter: Dr GONZALEZ-GARCIA, Juan (Instituto Aragonés de Ciencias de la Salud)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: Data Spaces

Contribution ID: 44

Type: **Lightning Talk 8 mins**

Cybersecurity in state of emergency: technical and legal issues

Tuesday, 20 September 2022 18:10 (8 minutes)

A state of emergency is a legal regime designed for extraordinary circumstances, that enables the government to act in ways that it could not under the ordinary Legal framework.

The measures adopted in emergency situations, in accordance with International Law, must comply with some characteristics including: the legislative provision; the need to pursue a legitimate goal, being necessary. This last feature inevitably implies a balance between the right subject to limitation and the interest that the limitation intends to safeguard.

Cyberspace has become a scenario of cyber-attacks by directly addressing problems connected to the cyber security of computer systems.

In Italy, the Decree-Law 21 March 2022, n.21 includes measures to strengthen the cyber discipline, necessary because of the protracted Ukrainian-Russian conflict. In particular, the National Cybersecurity Agency, having consulted the Cybersecurity Nucleus, recommends urgently proceeding with an analysis of the risk deriving from the IT security solutions used and to consider the implementation of appropriate diversification strategies as regards, in particular devices including anti-virus, anti-malware and endpoint detection and response applications; Web application firewall; e-mail protection; protection of cloud services; managed security service.

The Statement on Research of 3 March 2022 of the European Commission, the note of MUR (Ministry of Universities and Research) prescribes “to suspend all activities aimed at the activation of new double degree or joint degree programs” and recalled that “those research projects underway with institutions of the Russian Federation and Belarus that involve transfers of goods or dual use technologies or are otherwise affected by the sanctions adopted by the EU”.

The objective of the work is to examine which limits and characteristics these limitations may have in order to operate a balance between the protection of rights and cybersecurity, with particular reference to cloud-based infrastructures, network and HPC.

Any relevant links

https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_22_1528

<https://www.mur.gov.it/it/news/sabato-12032022/ucraina-le-indicazioni-del-mur-il-sistema-della-formazione-superiore-e-della>

Topic

Security, Trust & Identity

Primary author: FOGGETTI, Nadina

Co-authors: SPINOSO, Vincenzo (INFN); DONVITO, Giacinto (INFN)

Presenter: FOGGETTI, Nadina

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 45

Type: **Poster**

European computing infrastructures for digital twins: the EGI project 'interTwin'

Tuesday, 20 September 2022 19:00 (1 hour)

Modern data-intensive and compute-intensive science from all domains involves modelling and simulation at very high resolution for prediction and inference workflows. Given the complexity of the computing workflows and the data required by models which can vary from Gigabytes to Petabytes of information per day to be processed, the ability to deploy ready to use tools that federate the access to resource to run complex AI-based processing workflows federating access to heterogeneous and distributed computing architectures is required. This requires ground-breaking innovation in computational and data handling capacity needs. The EGI Federation ambition is to develop a Digital Twin blueprint architecture and an interdisciplinary Digital Twin Engine (DTE) that will deliver generic capabilities for high volume and high and high speed data acquisition-volume and high-speed data acquisition and pre-processing, big data assimilation into model, forecast production by different simulation models, real-time processing of data, and validation of accuracy in modelling and simulation. These functions, delivered by generic Digital Twin Engine modules, will be demonstrated in the context of different DT applications and the modularity will be demonstrated with a set of specific simulation and modelling capabilities that are tailored to the needs of multiple adjacent scientific communities in four different scientific domains. In this context, the interTwin project will demonstrate the federation of research data from High Energy Physics, Radio Astronomy, Gravitational-wave Astrophysics, Climate research and Environmental monitoring.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary authors: FRANCK, Gwen; MANZI, Andrea (EGI.eu)**Presenter:** FRANCK, Gwen**Session Classification:** Posters (presenters at poster)**Track Classification:** Machine Learning/Artificial Intelligence

Contribution ID: 46

Type: **Lightning Talk 8 mins**

Next generation of the EOSC Portal - ML/AI enhanced user interface

Thursday, 22 September 2022 16:35 (20 minutes)

EOSC is a pan-European initiative that offers access to resources and services that foster scientific research. It involves various stakeholders, from researchers, providers, facilitators, up to commercial users. As a result, EOSC provides variety of resources for an open science market in Europe. Currently, it provides access to diverse and large data sources, comprising research papers, access to specialized infrastructure, datasets, research projects etc. To find relevant and interesting items, the user must understand what they need quite well, either by specifying expressive search queries or navigating through ontologies of resources and services, which could be overwhelming. An AI/ML-enhanced recommender system will provide assistance by combining different sources of data together, offering each user a personalized and customized view on the resources that they could be interested in. These features would not only facilitate discoverability of resources offered in EOSC Portal, but also extract and exploit relevant relationships among them, to deliver concise, data-supported information to the user. It is particularly important both for large research institutes, and users representing a long-tail of science, i.e., not affiliated to large and well-funded organizations, conducting research niche domains, or just not aware of the existing European resources. Moreover, EOSC is a dynamic and evolving environment, any implemented feature has to take into account the possibilities of further co-creation and advances to address needs unforeseen at the inception. The demonstration will feature the overall user interface for EOSC, featuring a weighted search, based on various criteria. We will introduce the use-cases, concepts, and classifications of information in the next-generation user interface, we'll also demonstrate and explain the components and interactions of the RS, specifically with the outlook into flexibility of the overall system and possible evolution.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary authors: MARTYN, Krzysztof; TUMINAUSKAS, Raimundas; Mr WOLSKI, Marcin (PSNC); Mr WALTER, Bartosz (PSNC)

Presenter: MARTYN, Krzysztof

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Track Classification: Machine Learning/Artificial Intelligence

Contribution ID: 47

Type: **Demonstration**

OPENCoastS+: on-demand forecast of circulation and water quality in coastal regions

Wednesday, 21 September 2022 17:00 (25 minutes)

OPENCoastS+ (<https://opencoasts.a.incd.pt/>) is an online service that assembles on-demand coastal dynamics forecast systems for selected areas and keeps them running operationally for a period defined by the user. This service provides a tool that targets the needs of different users, from researchers to coastal managers, anticipating natural disasters and contamination events from anthropogenic sources, helping in search and rescue operations, and supporting a better understanding of the physical and ecosystem dynamics in coastal areas, among other applications.

OPENCoastS+ extends from OPENCoastS to integrate water quality, and generates 2-day forecasts of water dynamics circulation variables (water levels, velocities, temperature, salinity, wave parameters) and water quality variables (Escherichia coli and enterococcus, or a user-specified generic tracer). The relevant physical and water quality processes are simulated using the modeling suite SCHISM.

The service integrates three main features: i) “Configuration Assistant”, guiding the user in the creation of a new forecast system following 7-8 simple steps; ii) “Forecast Systems”, which allows the users to manage their forecast systems; and iii) “Outputs Viewer”, where the user visualizes the daily predictions for each forecast and compares model predictions with observations from EMODnet monitoring stations.

OPENCoastS+ service is provided through the European Open Science Cloud (EOSC) computational resources. All software pieces of the OPENCoastS+ service are open-source (Apache license) and available in the <https://gitlab.com/opencoasts> repositories.

Herein, we will demonstrate the main features of OPENCoastS+ through selected coastal applications, as well as details about the service automated deployment using an Infrastructure as Code (IaC) approach.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: RODRIGUES, Marta (LNEC - Laboratório Nacional de Engenharia Civil); OLIVEIRA, Anabela (National Laboratory for Civil Engineers); ROGEIRO, Joao (LNEC - Laboratório Nacional de Engenharia Civil); ROCHA, Miguel (National Laboratory for Civil Engineering); Dr FORTUNATO, André B. (National Laboratory for Civil Engineering)

Presenter: RODRIGUES, Marta (LNEC - Laboratório Nacional de Engenharia Civil)

Session Classification: Demonstrations

Track Classification: EOSC Compute Platform

Contribution ID: 48

Type: **Lightning Talk 8 mins**

Blue-Cloud Data Federation

Thursday, 22 September 2022 11:30 (8 minutes)

The Blue-Cloud project makes substantial progress providing a collaborative cyber platform with smart federation of an unprecedented wealth of multidisciplinary data, analytical tools, and computing facilities to explore and demonstrate the potential of cloud-based Open Science and address ocean sustainability. Blue-Cloud is undertaken within the “Future of Seas and Oceans Flagship Initiative” of EU HORIZON 2020 programme and is deploying the thematic EOSC for the marine domain.

Federation of data resources has been achieved by developing and deploying the Blue Cloud Data Discovery and Access service (DD&AS). It facilitates sharing of datasets from blue data infrastructures (BDIs) with a common interface. The DD&AS uses web services and APIs, as provided and maintained by BDIs. M-to-M interactions serve harvesting metadata, submitting queries, and retrieving resulting metadata, data sets and data products. The DD&AS has broker components for metadata and data and a common interface for discovery and retrieval of data sets and data products from each of the federated BDIs. The query mechanism has a two-step approach:

- Firstly, interesting data are discovered at collection level in a common metadataformat, with free search, geographic and temporal criteria;
- Secondly, users drill down within identified collections to get more specific data at granule level, by including additional search criteria;
- Finally, users can retrieve the data sets using a shopping mechanism.

Currently, the DD&AS gives access to more than 10 Million data sets for physics, chemistry, geology, bathymetry, biology, biodiversity, and genomics from EMODnet, CMEMS, SeaDataNet, Argo, EuroArgo, ICOS, SOCAT, EcoTaxa, ELIXIR-ENA, and EuroBIS.

The DD&AS can be expanded by federating additional BDIs, this way providing a harmonised and easy discovery and access for the European ocean and marine data space. Moreover, it is planned to expand the functionality with sub-setting at data level, require additional APIs at each of the BDIs.

Any relevant links

<https://data.blue-cloud.org>

Topic

Data Spaces

Primary author: SCHAAP, Dick (Mariene Informatie Service MARIS BV)

Presenter: SCHAAP, Dick (Mariene Informatie Service MARIS BV)

Session Classification: Lightning talks: Data Spaces & Data Lakes

Track Classification: Data Spaces

Contribution ID: 49

Type: **Demonstration**

Unified access to multiple clouds and HPC clusters

Thursday, 22 September 2022 12:35 (25 minutes)

The PROMINENCE platform, originally developed in the Fusion Science Demonstrator in EOSC-pilot and extended in the Fusion Competence Centre in EOSC-Hub, was designed to allow users to transparently run batch workloads on clouds. All infrastructure provisioning and failure handling is fully automated and is totally invisible to users. Any number of clouds can be used simultaneously and opportunistic usage of idle resources is supported, allowing usage of clouds to be maximised and users to gain access to additional resources.

In EGI-ACE PROMINENCE has been extended to support traditional HPC clusters as a backend in addition to clouds, enabling users to leverage an even wider range of resources. This is particularly important to some communities, such as the fusion energy research community, where access to HPC clusters is more prevalent than clouds.

Here we will demonstrate running both HTC and true HPC jobs using PROMINENCE, in addition to running hybrid workflows which make use of both cloud and HPC resources.

Any relevant links

Topic

EOSC Compute Platform

Primary author: LAHIFF, Andrew (CCFE / UK Atomic Energy Authority)

Presenter: LAHIFF, Andrew (CCFE / UK Atomic Energy Authority)

Session Classification: Demonstrations

Track Classification: EOSC Compute Platform

Contribution ID: 50

Type: **Lightning Talk 8 mins**

Distributed Deep Learning by Horovod - a new EOSC service

Thursday, 22 September 2022 16:55 (20 minutes)

The “Distributed Deep Learning by Horovod” EOSC service provides the infrastructure, resources and libraries to its users in order to perform effective distributed training of deep neural networks. Access to a ready-to-use Horovod cluster is provided through Jupyterlab. The talk will give a short introduction of the service developed and recently onboarded by the Neanias EU project and supported by the Hungarian ELKH cloud.

Any relevant links

Topic

EOSC Compute Platform

Primary author: Dr KOVACS, Jozsef (SZTAKI)

Co-authors: Mr FARKAS, Attila (SZTAKI); Mr PORA, Krisztian (SZTAKI); Dr LOVAS, Robert (SZTAKI)

Presenter: Dr KOVACS, Jozsef (SZTAKI)

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Track Classification: EOSC Compute Platform

Contribution ID: 51

Type: **Lightning Talk 8 mins**

Towards an european e-infrastructure for plant phenotyping

Wednesday, 21 September 2022 11:55 (10 minutes)

In recent years, technological progress has been made in **plant phenomics** (major improvements concerning imaging and sensor technologies). Various initiatives have helped to structure the european phenotyping landscape (EMPHASIS, EPPN) and enable researchers to use facilities, resources and services for plant phenotyping across Europe.

The **EGI-ACE project** has given us the opportunity to develop data services and build a federated and interoperable e-infrastructure allowing researchers to share and analyze phenotyping data. Access to the services operated by the EGI Federation made it possible to set up this infrastructure.

We have taken advantages of the **EGI Cloud service** to host the open-source *Phenotyping Hybrid Information System PHIS* (Neveu et al, 2019; www.phis.inra.fr). The information system is connected with the **EGI Check-In** service for federated authentication.

We also plan to use other services provided by the EGI-ACE project, such as **DataHub**, the distributed storage service and **Deep Hybrid DataCloud** the deep learning and machine learning portal for the EOSC.

The European plant phenotyping community will benefit from this e-infrastructure. **Early adopter users** are researchers using the phenotyping platforms at UCPH, UHEL and other universities participating in the **NordPlant hub** (a climate and plant phenomics university hub for sustainable agriculture and forest production in future Nordic climates) and researchers from the French plant phenomic Infrastructure **PHENOME-EMPHASIS**.

Any relevant links

Topic

EOSC Compute Platform

Primary author: NEGRE, Vincent (INRAE)

Co-authors: Ms ALIC, Isabelle (INRAE); Mr WESTERGAARD, Jesper Cairo (University of Copenhagen, UCPH); Mr POLVINEN, Tatu (University of Helsinki, UHEL); Mr POQUE, Sylvain (University of Helsinki, UHEL); Ms HIMANEN, Kristiina (University of Helsinki, UHEL); Prof. ROUSSEAU, David (Angers university); Mr LAMBOEUF, Mickael (INRAE); Mr POMMIER, Cyril (INRAE); Mr WARRIS, Sven (Wageningen University & Research and Utrecht University); Mr VAN DE ZEDDE, Rick (Wageningen University & Research and Utrecht University); Mr MANZI, Andrea (EGI fundation)

Presenter: NEGRE, Vincent (INRAE)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: EOSC Compute Platform

Contribution ID: 52

Type: **Demonstration**

Towards Reference Architectures: A Cloud-agnostic Data Analytics Platform Empowering Autonomous Systems

Wednesday, 21 September 2022 17:30 (25 minutes)

In this demo we would like to present a scalable, cloud-agnostic and fault-tolerant data analytics platform for state-of-the-art autonomous systems that is built from open-source, reusable building blocks. As a baseline for further new reference architectures [2,3] it represents an architecture blueprint for processing, enriching and analyzing various feeds and streams of structured and unstructured data from advanced Internet-of-Things (IoT) -based use cases.

Reference architectures have the potential to increase the efficiency and reliability of the development process in many application domains. In our demo, we would like to present how Reference Architectures can be applied to develop cloud-based applications. High abstraction-level reference architectures typically incorporate state-of-the-art approaches and system design principles but lack references to particular implementations. Contrary, low-level architectures focus on the implementation details. An example of a high-level reference architecture is the Lambda Architecture [4] and the Kappa Architecture [5], whereas [6] is an example for a low-level architecture offered by a public cloud provider promoting its services. Our approach [10] was developed within the DIGITbrain 1 European project.

Our platform builds on industry best practices, leverages on solid open-source components in a reusable fashion and is based on our experience gathered from numerous IoT and Big Data research projects [7,8,9]. Our platform is container-based, built using orchestration tools and utilizes reusable building blocks. The platform consists of two main parts. The first part contains the custom components of the different use cases, whereas the second part hosts the core components shared between all use cases.

The platform is currently used in the framework of the National Laboratory for Autonomous Systems in Hungary (abbreviated as ARNL). We would like to demonstrate the platform through a selected use case from ARNL involving data collection from autonomous vehicles.

Any relevant links

- 1 Digitbrain H2020 project (2020). <https://digitbrain.eu/>.
- 2 What is a reference architecture? -<https://www.hpe.com/us/en/what-is/reference-architecture.html>.
- 3 Pekka Pääkkönen and Daniel Pakkala. Reference architecture and classification of technologies, products and services for big data systems. *Big Data Res.*, 2(4):166–186, dec 2015.
- [4] Nathan Marz. How to beat the cap theorem. <http://nathanmarz.com/blog/how-to-beat-the-cap-theorem.html>, 2011.
- [5] Jay Kreps. Questioning the lambda architecture. <https://www.oreilly.com/radar/questioning-the-lambda-architecture/>, 2014.
- [6] Azure iot reference architecture. <https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/iot>.
- [7] Attila Csaba Marosi, Róbert Lovas, Ádám Kisari, and Ernő Simonyi. A novel iot platform for the era of connected cars. In 2018 IEEE International Conference on Future IoT Technologies (Future IoT), pages 1–11, 2018.
- [8] Attila Csaba Marosi, Attila Farkas, and Robert Lovas. An adaptive cloud-based iot back-end architecture and its applications. In 2018 26th Euromicro International Conference on Parallel,

Distributed and Network- based Processing (PDP), pages 513–520, 2018.

[9] Róbert Lovas, Attila Csaba Marosi, Márk Emödi, Ádám Kisari, Ernő Simonyi, and Péter Gáspár. Paas-oriented iot platform with connected cars use cases. In 2018 International Conference on Sensor Networks and Signal Processing (SNSP), pages 409–420, 2018.

[10] Marosi, Attila Csaba, et al. “Interoperable Data Analytics Reference Architectures Empowering Digital-Twin-Aided Manufacturing.” Future Internet 14.4 (2022): 114.

Topic

Data Spaces

Primary author: Dr MAROSI, Attila Csaba (SZTAKI)

Co-authors: Dr HAJNAL, Ákos; Mr KISARI, Ádám; Mr EMÓDI, Márk (SZTAKI); Mr FARKAS, Attila (SZTAKI); Dr LOVAS, Róbert

Presenter: Dr MAROSI, Attila Csaba (SZTAKI)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 53

Type: **not specified**

Demonstration of a C-SCALE workflow solution

Wednesday, 21 September 2022 16:35 (25 minutes)

The C-SCALE project is leveraging cross-disciplinary open-source technologies available through the European Open Science Cloud to develop an open federation of compute and data providers to provide homogenous access to resources, thereby enabling its users to generate meaningful results quickly and easily.

To facilitate community co-design of the open compute and data federation, its functional specifications are derived from community use cases that determine user requirements for the federation members to implement collaboratively with its users.

Additionally, the use cases test the efficacy of the federation tools and services, thereby providing feedback to the federation members on improvement opportunities to ensure the infrastructure meets its user's needs.

Here, we demonstrate the first release of the hydrodynamic and water quality modelling workflow solution which is intended to give users a template and reusable components to develop coastal ocean modelling and forecasting applications for their area of interest.

Topic

EOSC Compute Platform

Any relevant links

<https://c-scale.eu/>

<https://www.deltares.nl/en/software/delft3d-flexible-mesh-suite/>

Primary author: Dr BACKEBERG, Bjorn (Deltares)

Co-authors: LUNA VALERO, Sebastian; SUSTR, Zdenek (CESNET); MESZAROS, Lorinc (Deltares)

Presenter: Dr BACKEBERG, Bjorn (Deltares)

Session Classification: Combining Copernicus data and EGI services for Earth Observation at scale

Track Classification: A Federated Compute Continuum

Contribution ID: 54

Type: **Lightning Talk 8 mins**

Expanding the capacity and capabilities of an Earth Observation application by means of the European Open Science Cloud

Wednesday, 21 September 2022 17:35 (8 minutes)

Scientific services are becoming increasingly data intensive, not only in terms of computationally intensive tasks but also in terms of storage resources. In this scenario, Earth observation applications handle huge amounts of data, mainly large satellite imagery, to perform a wide variety of studies: from the monitorization of different land and water variables to the prediction of the evolution of an Earth area in a given period of time. For this kind of services, the usage of the Cloud Computing paradigm allows them to meet these demands. However, adapting applications and services to this set of complex technologies and solutions is not trivial.

In the context of the EOSC-Synergy project, there has been an effort with ten different thematic services in refactoring their architecture and integrating EOSC services from the EOSC marketplace, leading to increased performance and capacity and enhanced functionality. SAPS is one of these thematic services, an Earth observation application that employs Energy Balance algorithms to estimate evapotranspiration, a value that can be applied to analyze, among other aspects, the evolution of forest masses and crops. The output of this service is especially relevant for researchers in Agriculture Engineering and Environment, because it depicts the impact of human and environmental actions on vegetation, leading to better forest management and analysis of risks.

Furthermore, thanks to the EGI ACE project and its open call for use cases, SAPS is enjoying the EOSC cloud infrastructure (involving both computational and storage resources), and several platform services, like the EGI Checkin to manage authentication and authorization of its users, and the EC3 tool to dynamically manage the underlying Kubernetes cluster where SAPS is deployed. This contribution provides a summary analysis of the adaptations made in the SAPS thematic service to take advantage of the EOSC ecosystem, including infrastructure, services and tools.

Any relevant links

SAPS service in EOSC Synergy: <https://www.eosc-synergy.eu/supporting-science/saps/>

EC3 - <https://marketplace.eosc-portal.eu/services/elastic-cloud-compute-cluster-ec3>

Topic

EOSC Compute Platform

Primary authors: Dr CALATRAVA, Amanda (UPVLC); Dr PEREIRA, Thiago Emmanuel (Federal University of Campina Grande); BRASILEIRO, Francisco (Universidade Federal de Campina Grande); BLANQUER, Ignacio (UPVLC)

Presenter: Dr CALATRAVA, Amanda (UPVLC)

Session Classification: Lightning Talks: EOSC Compute Platform 1

Track Classification: EOSC Compute Platform

Contribution ID: 56

Type: **Poster**

Processing large datasets using EGI-ACE EOSC resources for the climate community

Tuesday, 20 September 2022 19:00 (1 hour)

Many end users of climate change information often need specialized products to perform their research, impact study or data analysis. For example, climate indices, like the standard ones defined by ECA&D and ETCCDI, cover most of the general needs. However, datasets provided on the climate data infrastructure ESGF are climate model output and only provide standard variables, such as temperature and precipitation, and not climate indices, such as the number of “Summer days” or the “Maximum consecutive dry days”, for example.

A python package to calculate climate indices, called iclim, is currently developed within the H2020 IS-ENES3 project. This package is using xarray and dask for very fast parallel execution and smaller memory footprint. But with data volumes as well as the number of datasets increasing very rapidly, it becomes very time consuming and uses a lot of computing and storage resources to calculate specific climate indices, even with iclim.

Providing those users datasets of climate indices pre-computed on CMIP6 simulations would be very valuable. Of course all specific needs cannot be taken into account (such as specific seasons, specific reference periods, etc.), but the most general ones can be fulfilled. The European Open Science Cloud (EOSC) is providing computing and storage resources through the EGI-ACE project and periodic Use Case calls, enabling the possibility to compute all those climate indices. In this EGI-ACE Use Case, iclim will be used to compute 49 standard climate indices on a large number of CMIP6 simulations and experiments, starting with the most popular ones. It could also be extended, time permitting, to the ERA5 reanalysis, CORDEX and CMIP5 datasets. The resulting climate indices datasets will later also be made available in the IS-ENES3 climate4impact (C4I) portal.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: PAGE, Christian (CECI, Université de Toulouse, CNRS, Cerfacs, Toulouse, France); AOUN, Abel (CECI, Université de Toulouse, CNRS, Cerfacs, Toulouse, France)

Presenter: PAGE, Christian (CECI, Université de Toulouse, CNRS, Cerfacs, Toulouse, France)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 57

Type: **Lightning Talk 8 mins**

ELKH Cloud: milestones towards EOSC and ESFRI

Thursday, 22 September 2022 15:45 (8 minutes)

The federated science cloud of the Eötvös Loránd Research Network, *ELKH Cloud* is one of the award-winner research infrastructures in Hungary. Members of the scientific community are not only using but are also developing and operating the cloud services: the Institute for Computer Science and Control (SZTAKI) and the Wigner Research Centre for Physics provide the computing and data services to more than 200 research projects since 2016 (the inauguration with the support from the Hungarian Academy of Sciences).

Based on positive feedback received in recent years, as well as growing demand for artificial intelligence applications, the cloud capacity was significantly expanded by 2022 with support from ELKH. As a result, 5900 vCPU, max. 500+ vGPUs, 28 TB RAM, 338 TB SSD storage, 1.25 PB HDD storage and 100 Gbps network capacities have become available to the users.

Research often requires complex, large-scale platforms based on the coordinated operation of multiple components. The ELKH Cloud therefore provides customisable, reliable and scalable reference architecture templates, among others with the help of cloud orchestration methods.

In addition to operating systems and basic IaaS level cloud functionalities, the most popular artificial intelligence research and data ingestion frameworks are also available at PaaS level. The enhanced ELKH Cloud provides a competitive research infrastructure that also welcomes projects initiated by universities and national laboratories.

ELKH aims to make the enhanced ELKH Cloud an integral part of the *European Open Science Cloud* (in the EGI-ACE project) and the *SLICES ESFRI* initiatives (in the SLICES-SC and SLICES-PP projects).

Any relevant links

<https://www.egi.eu/article/inauguration-of-the-enhanced-elkh-cloud-infrastructure/>

<https://science-cloud.hu>

Topic

EOSC Compute Platform

Primary authors: Dr LOVAS, Robert (SZTAKI); Prof. KACSUK, Peter (SZTAKI); RIGO, Erno (SZTAKI); TENCZER, Szabolcs (SZTAKI)

Presenter: Dr LOVAS, Robert (SZTAKI)

Session Classification: Global Open Science Cloud Workshop - International Cloud Integration

Track Classification: EOSC Compute Platform

Contribution ID: 58

Type: **Poster**

Metrics Framework: Measuring the Success of a Recommendation System

Tuesday, 20 September 2022 19:00 (1 hour)

A Recommender System (RS) is designed to suggest relevant content or products to users that might like or purchase. RS are growing more popular both commercially and in the research community, by offering personalized experiences to unique users. EOSC is also using a modern RS in EOSC Marketplace.

Measuring the success of a RS is a very important and laborious task. We introduce an independent metrics framework as a service to support the evaluation and adaptation of recommendation mechanisms. The evaluation is quantitatively being performed by processing information such as resources, user actions, ratings, and recommendations in order to measure the impact of the AI-enhanced services and user satisfaction as well as to incorporate this feedback and improve the services provided, via a user-friendly API and dashboard UI. The framework consists of 3 components. Preprocessor which tasks are: (i) data retrieval through a connector module that claims and transforms data from various sources, (ii) service-associated knowledge, (iii) dissociated and dummy data removal, (iv) relation tags dispatch to information that marks various associations in the data, i.e. registered or anonymous -related users and services, (iv) statistics information. RSmetrics responsible for processing the data, computing the designated evaluation metrics, and producing the necessary information in a homogenized manner. A web service presenting reports through a rich UI/dashboard and a rest API. This work is part of the Developments for the EOSC Core RS by WP5 of the EOSC Future Project.

The current version of the implementation features: (i) simple metrics and statistics (ii) complex ones, such as diversity, that indicates if services are recommended equally often; Novelty,; Hit Rate, and Click-Through Rate. The RS evaluation framework is constantly expanding with new features, metrics, and utilities, in order to lead to more robust, data adaptable, and good quality RS designs.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary authors: ZAMANI, Themis (GRNET); Mr KAGKELIDIS, Kostas (National Infrastructures for Research and Technology - GRNET. (Greece)); Mr TRIANTAFYLLIS, Nikolaos (National Infrastructures for Research and Technology (GRNET)); KOUMANTAROS, Kostas (GRNET)

Presenter: ZAMANI, Themis (GRNET)

Session Classification: Posters (presenters at poster)

Track Classification: Machine Learning/Artificial Intelligence

Contribution ID: 59

Type: **Demonstration**

How to access and use the PaaS Orchestrator Service in the EOSC Marketplace

Wednesday, 21 September 2022 12:45 (25 minutes)

The **PaaS Orchestrator** is one of the services available to research communities through the EOSC Marketplace: it allows access to distributed cloud compute and storage resources in a transparent and federated way. Users can easily deploy services without having to worry about where the resources are available and how to create and configure the resources they need: as a matter of fact, all these problems are automatically solved by the PaaS Orchestrator that is able to identify the federated providers where the user is entitled to consume resources thanks to the agreements established between the Virtual Organisations and the providers. Moreover, a set of “pre-cooked” service templates are available through the Orchestrator Web Dashboard: once the user is logged in, she/he can access the service portfolio that includes different categories of services: from the instantiation of virtual machines (with or without additional block storage), to the automatic installation of softwares like docker, docker-compose, elasticsearch and kibana, to the deployment of complex architecture such as kubernetes clusters. Moreover, recently new functionalities have been implemented in the PaaS in order to provide solutions for delivering trusted environments for data analysis (e.g. deployments on private networks, automatic disk encryption).

The demo will highlight the main functionalities of the PaaS and will show how users can easily interact with the orchestration system using both the command line interface and the web dashboard.

Scientific communities are encouraged to explore the PaaS Dashboard: if the available services do not fit their requirements, they can contact the support team explaining their use-case. The development team will help them to exploit the PaaS Orchestrator functionalities and, if feasible, new services will be included in the catalogue as a result of these interactions with the research communities.

Any relevant links

<https://marketplace.eosc-portal.eu/services/paas-orchestrator>

Topic

EOSC Compute Platform

Primary author: ANTONACCI, Marica (INFN)

Co-authors: DONVITO, Giacinto (INFN); GAIDO, Luciano (INFN); SPIGA, Daniele (INFN)

Presenter: ANTONACCI, Marica (INFN)

Session Classification: Demonstrations

Track Classification: EOSC Compute Platform

Contribution ID: 60

Type: **Lightning Talk 8 mins**

MATRYCS: A Big Data Platform for Advanced Services in the Building domain

Wednesday, 21 September 2022 12:05 (8 minutes)

MATRYCS is an European Commission co-funded project, started in October 2020, with a duration of 3 years; goal of the project is the design and develop an ICT platform for Big Data management in the building domain. The MATRYCS platform allows the stakeholders to create new business models and business opportunities relying on the value extracted from shared data.

The platform is deployed by leveraging on the cloud capabilities of EGI infrastructure, provided in the context of the Call for Use Case in the EGI-ACE project. The possibility to use the EGI infrastructure allows a better allocation of resources and an effective definition of the MATRYCS architecture build over the EGI infrastructure; this architecture is based on three software layers on top of the physical layer, which can be directly mapped to the different stages of the Big Data Value Chain.

MATRYCS Governance layer: it is composed of those services that realize the middleware needed for acquiring, managing and exposing the data. It includes the services required to guarantee data interoperability, cleaning, validation and storage.

MATRYCS Processing layer: it includes the components needed for the modelling, training, testing and validation of AI and ML based algorithms.

MATRYCS Analytics layer: it includes the set of services and tools offered to end-users for implementing complex building management applications. As the architecture aims at supporting end-users in the creation of innovation and business, the available services/tools are exposed through the MATRYCS toolbox via different business model options, which include SaaS, PaaS and IaaS.

The MATRYCS experience demonstrates how it is possible develop industrial oriented applications based on the EGI infrastructure, creating new value added business opportunities.

Any relevant links

www.matrycs.eu

Topic

Data Spaces

Primary authors: PELLEGRINO, Dario (Engineering); NUCCI, Francesco Saverio (Engineering SpA); FIORENTINO, Giampaolo (Engineering)

Presenter: PELLEGRINO, Dario (Engineering)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: Data Spaces

Contribution ID: 61

Type: **Lightning Talk 8 mins**

Photon and Neutron (PaN) Community: Beyond ExPaNDS and PaNOSC

Thursday, 22 September 2022 12:00 (8 minutes)

As the projects ExPaNDS and PaNOSC are reaching the end of their terms, the PaN facilities are acquiring FAIR principles enabling the PaN community and scientists in general access and reuse of a wealth of data for multidisciplinary use cases.

The two projects have established firm foundations for the deployment and adoption of federated services to allow facilities and scientists to exploit the PaN data beyond their original intended use. EOSC and the horizontal e-infrastructure providers such as EGI, have provided a strong basis to facilitate PaN services and data to the wider community via the EOSC Marketplace, OpenAire and B2FIND data explorers.

The pandemic experience has only raised the importance of the fundamental need of federated infrastructures allowing standardised remote access for scientists to be able to execute beam line experiments remotely, data post-processing workflows as well as data curation practises in a harmonised way across facilities. The emergence of the PaN Open Data Commons is an outstanding result of the projects that will allow the European and National facilities across Europe access to FAIR PaN data.

In this abstract, the ExPaNDS project summarises the work done on standardised analysis pipelines, common APIs, reference metadata framework, cataloguing and PaN training services via implementation and deployment of real life use cases.

Any relevant links

www.expands.eu

Topic

EOSC Compute Platform

Primary authors: Mr FUHRMANN, Patrick (DESY); Mrs GUTIERREZ, Marta (EGI); Mr LA ROCCA, Giuseppe (EGI); MARAUSKA, Juliane (Deutsches Elektronen Synchrotron, DESY); Mr MATTHEWS, Brian (STFC); Mr MILLAR, Paul (DESY); Mr MINOTTI, Carlo (PSI); Mrs ROARTY, Kat (Diamond)

Presenter: IVANOICA, Teodor (IFIN-HH/ELI-NP)

Session Classification: Lightning Talks: EOSC Compute Platform 2

Track Classification: EOSC Compute Platform

Contribution ID: 62

Type: **Lightning Talk 8 mins**

Secret management service for EGI Infrastructure

Tuesday, 20 September 2022 17:30 (8 minutes)

Applications in EGI Infrastructure may need different secrets (credentials, tokens, passwords, etc.) during deployments and operations. The secrets are often stored as clear texts in configuration files or code repositories that expose security risks. Furthermore, the secrets stored in files are static and difficult to change/rotate. The secret management service for EGI Infrastructure is developed to solve the issues.

The secret management service is designed as follows:

- **Non-intrusion:** Operates as a stand-alone service, no extra efforts from site admins to support the service, no additional permissions are needed for users.
- **Simple usage:** Authentication via OIDC tokens from EGI Check-in, no extra credentials are required. The service is based on Hashicorp's Vault which is well-known in industry, with many client tools and libraries.
- **High-availability:** Service instances are distributed on different sites, without single point of failure. A generic endpoint <https://vault.services.fedcloud.eu:8200> is dynamically assigned to a healthy instance via Dynamic DNS service.

At the moment, the service is in public beta testing, full production operation is expected in September 2022.

The service is available at the generic endpoint <https://vault.services.fedcloud.eu:8200/>. The detailed design of the service is available at 1, and user guide is available at 2.

1. <https://docs.google.com/document/d/18uqpZ2AkdAm9WMsDfQgDnv4Y4qMyoUpBilsLiHPfvk/edit?usp=sharing>
2. <https://docs.google.com/document/d/11QKGQjJFGiTYCrS2fLazrFBEG2lfOgzpcJluIKq02CE/edit?usp=sharing>

Any relevant links

Service endpoint: <https://vault.services.fedcloud.eu:8200/>

Service design: <https://docs.google.com/document/d/18uqpZ2AkdAm9WMsDfQgDnv4Y4qMyoUpBilsLiHPfvk/edit?usp=sharing>

User guide: <https://docs.google.com/document/d/11QKGQjJFGiTYCrS2fLazrFBEG2lfOgzpcJluIKq02CE/edit?usp=sharing>

Topic

A Federated Compute Continuum

Primary authors: TRAN, Viet (IISAS); ANTONACCI, Marica (INFN); LOPEZ GARCIA, Alvaro (CSIC)

Presenter: TRAN, Viet (IISAS)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 63

Type: **Poster**

Augmenting the EGI Monitoring based on the ARGO Monitoring framework with functionalities such as Service Trends and Status pages.

Tuesday, 20 September 2022 19:00 (1 hour)

EGI Monitoring is the key service needed to gain insights into the Services that are part of the EGI Infrastructure. It is based on ARGO Monitoring Service that provides a flexible and scalable framework for monitoring status, availability and reliability of a wide range of services and is able to quickly detect, correlate, and analyze data for the detection of errors. Service Providers are able to make use of the EGI Monitoring Service via various sources of truth (e.g. CMDB, EOSC Resource Catalogue) so that they are able to get notifications when a problem occurs or ARGO reports to advertise with confidence the stability and reliability of their services. Similarly Researchers or Research communities are able to gain insights about the Services they want to use.

Two new functionalities will enable gaining even better insights into Services: Service Trends and Status Pages. Via the constant monitoring of the services, we have the ability to analyze service trends and provide insights such as lists of top services with Critical, Warning or Unknown status or top services with authentication problems. Whether it's a server issue, bug in production, the simple truth is that a problem happens. The main idea of Status Pages is to build communities' trust and inform in real time about the status of the services in one simple view.

We plan to streamline the process of registering new metrics and probes thus allowing faster inclusion of new metrics into ARGO reports. We provide a new all-inclusive report that includes all deployed metrics by default. Finally, EGI Monitoring is capable of exporting Monitoring Results via API or ARGO Messaging to 3rd Party dashboards and to EOSC Exchange Monitoring so as to further promote the Availability and Reliability of services that comprise the EGI Service Portfolio.

Any relevant links

[HTTPS://Argo.EGI.eu](https://Argo.EGI.eu)

Topic

EOSC Compute Platform

Primary authors: KOUMANTAROS, Kostas (GRNET); LORPHELIN, Cyril (CNRS); VRCIC, Daniel (SRCE); IMAMAGIC, Emir (SRCE); ZAILAC, Katarina (SRCE); KAGKELIDIS, Konstantinos (GRNET); ZAMANI, Themis (GRNET); THERMOLIA, Chryssa

Presenters: IMAMAGIC, Emir (SRCE); KAGKELIDIS, Konstantinos (GRNET); ZAMANI, Themis (GRNET)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 64

Type: **Demonstration**

motley-cue: SSH access with OIDC tokens

Wednesday, 21 September 2022 11:30 (25 minutes)

OpenID Connect (OIDC), an authentication protocol that allows users to be authenticated by an external trusted identity provider, is becoming the de-facto standard for modern Authentication and Authorisation Infrastructures (AAI). Although typically used for web-based applications, there is an increasing need for integrating shell-based services, such as Secure Shell (SSH), with federated AAIs.

SSH requires local identities that need prior provisioning, and additional credentials such as SSH keys. Using OIDC for SSH can simplify user management for service administrators, and eliminate the need for SSH key management for users.

Our solution for SSH access via OIDC enables on-the-fly account provisioning and provides a flexible authorisation concept, without modifying existing SSH software or requiring additional service credentials. We developed a set of client and server-side tools that seamlessly integrate with existing SSH software and local identity management policies.

The client-side tools allow users to directly log into a server with their federated credentials via valid OIDC tokens, without any prior application for an account.

This contribution aims to present the server-side component, its architecture, and latest developments. The server-side consists of a custom PAM module and a daemon for mapping OIDC identities to local identities (motley-cue). motley-cue uses federated authorisation models for configuring user access, based on Virtual Organisation membership and assurance levels. Moreover, it provides an extensible interface able to forward provisioning events into any local user management system – support exists for Unix accounts, LDAP, and KIT user management, but admins can extend this to plug in their custom systems. Most recent developments include LDAP integration and support for approval-based provisioning of local accounts.

All software is free to use and is available on GitHub under MIT license, with support for the major Linux distributions. The software was tested with several major AAIs, such as EGI-Checkin or Helmholtz AAI.

Any relevant links

<https://github.com/EOSC-synergy/ssh-oidc>

<https://motley-cue.readthedocs.io>

Topic

Security, Trust & Identity

Primary authors: GUDU, Diana (KIT); HARDT, Marcus (KIT-G); ZACHMANN, Gabriel (Karlsruhe Institute of Technology)

Presenters: GUDU, Diana (KIT); HARDT, Marcus (KIT-G); ZACHMANN, Gabriel (Karlsruhe Institute of Technology)

Session Classification: Demonstrations

Track Classification: Security, Trust & Identity

Contribution ID: 65

Type: **Poster**

jUMP-Modeling-Portal: a new service for simulating sound propagation in the ocean

Tuesday, 20 September 2022 19:00 (1 hour)

Effects of anthropogenic noise on marine species were already recognized as a threat by the United Nations. Therefore, considering the 14th development goal (conservation and sustainable use of the oceans and marine resources), the proper management and reduction of underwater noise is a relevant contribution to the aimed sustainable management and protection of marine and coastal ecosystems. By avoiding significant adverse impacts, strengthening their resilience, and taking action for their restoration, it is possible to achieve healthy and productive oceans.

The Portuguese coast is subjected to increasing pressure due to maritime transport, recreational and touristic activities, fishing efforts, and operating industrial units. Underwater noise is one of the adverse sub-products of these activities, with detrimental consequences to noise-sensitive species and the related ecosystems. Therefore, to address this theme and in the scope of the project “jUMP - Joint Action: A Stepping-stone for underwater noise monitoring in Portuguese waters”, LNEC has developed a modeling portal to simulate the sound propagation in the ocean and support the monitoring activities along the Portuguese Exclusive Economic Zone (EEZ).

In the present publication, the authors introduce a web portal that enables the users to set sound propagation simulations on-demand, with specific configurations such as the depth of the sound source, the frequency, and source and receptor positions. The jUMP modeling platform retrieves the oceanic stratification and bathymetry data from European data services like Copernicus and EMODnet to establish the underwater sound velocity profiles used by the model. The service will be freely available to the research community and incorporates several technologies and services from the European Open Science Cloud (e.g., Federated authentication, Workload managers, Infrastructure Managers, and computational resources). The authors believe that the platform can enhance the research on our oceans’ underwater sound propagation thematic area.

Any relevant links

<http://jump-app.lnec.pt/index/>

Topic

EOSC Compute Platform

Primary authors: AZEVEDO, Alberto (LNEC - Laboratório Nacional de Engenharia Civil); Mr MARTINS, Ricardo (LNEC); Dr OLIVEIRA, Anabela (LNEC)

Presenter: Dr OLIVEIRA, Anabela (LNEC)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 66

Type: **Lightning Talk 8 mins**

Enabling quantum computation for EOSC users

Wednesday, 21 September 2022 17:00 (8 minutes)

Quantum computing is a new emerging paradigm allowing the solution of problems not resolvable with traditional computing approaches. With hardware resources becoming available, interested researches have the possibility to experiment with quantum resources at small scale. Providers like D-Wave (Leap) or AWS (Braket) offer cloud-like access to their quantum resources. Different types of quantum hardware is available: annealing systems, trapped-ion quantum computers (gate-based machines), or computers using superconducting qubits. Access to these resources is usually available by using some sort of API or SDK, depending on the provider. For example, D-Wave offers the Python-based Ocean SDK, while AWS has the Python-based Braket SDK. Beyond APIs and SDKs offering access to these services, additional libraries were created in order to support a given scientific domain over quantum resources. For example PennyLane is a Python library for differentiable programming of quantum computers.

The presentation gives an overview of the above technologies, and shows a container-based reference architecture providing playground for quantum computing. The RA has JupyterLab deployed with a number of quickstart examples showing the usage and advantage of quantum computing, along with all the necessary dependencies deployed. Using this RA, EOSC users can start experimenting with quantum resource within minutes.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: FARKAS, Zoltan (SZTAKI); LOVAS, Robert (SZTAKI)**Presenter:** FARKAS, Zoltan (SZTAKI)**Session Classification:** Lightning Talks: EOSC Compute Platform 1**Track Classification:** EOSC Compute Platform

Contribution ID: 67

Type: **Lightning Talk 8 mins**

OIDC support for Windows using PuTTY

Tuesday, 20 September 2022 17:50 (8 minutes)

Relying on OpenID Connect (OIDC) for identity and access management can significantly simplify the process of providing access to users, especially for non-web applications such as Secure Shell (SSH) where the management of typically used SSH keys is often laborious and error-prone.

As a counterpart to the server-side components that enable SSH via OIDC \[1], the client-side tools allow users to directly log into a server with their federated credentials via valid OIDC Access Tokens, without any prior application for an account:

- `oidc-agent` is a set of command-line tools that enable users to obtain and manage OIDC Access Tokens. It follows the design of the `ssh-agent` and, as such, it can be easily integrated into the user's flow.
- `mccli` is a command-line wrapper for the SSH client that is able to retrieve OIDC tokens and use them to log into the SSH server without further user interaction.

These tools are developed for Linux and macOS. This contribution aims to present the efforts to fill in the gap of missing OIDC client functionality for Windows, with potentially major impact due to the widespread use of Windows in the target user communities (e.g. HPC).

The project consists of two parts. First, the `oidc-agent` was ported to Windows. This subtask is significant since the `oidc-agent` is a tool with broad applicability, for any use case that involves programmatic use of OIDC tokens. In the second part of the project, we integrated the `oidc-agent` with PuTTY – one of the most famous SSH clients for Windows. Users are able to choose between using SSH with `pageant` (PuTTY's `ssh` key manager), or using SSH with OIDC-tokens against an OIDC-capable `ssh-server`.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: ZACHMANN, Gabriel (Karlsruhe Institute of Technology); GUDU, Diana (KIT); HARDT, Marcus (KIT-G); SCHMITT, Jonas (Karlsruhe Institute of Technology)

Presenters: ZACHMANN, Gabriel (Karlsruhe Institute of Technology); GUDU, Diana (KIT); HARDT, Marcus (KIT-G); SCHMITT, Jonas (Karlsruhe Institute of Technology)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 68

Type: **Lightning Talk 8 mins**

A drug discovery pipeline integrating the processing and analysis of NMR spectra and the identification of lead compounds.

Wednesday, 21 September 2022 12:45 (8 minutes)

In this work we present a web service that allows users to execute the full workflow that enables a Nuclear Magnetic Resonance (NMR)-based drug discovery pipeline. NMR spectroscopy has been widely used in the early steps of drug discovery. It is especially suited to the structure-based approach in lead design and is the most powerful method for studies of structure, dynamics, and the interactions of molecules in solution. The NMR-based drug discovery pipeline starts with the acquisition of 2D ¹H-¹⁵N heteronuclear single quantum correlation (HSQC) spectra on the free protein target, followed by the acquisition of the same experiments for the protein in the presence of different ligands. The changes in the chemical environment of the protein nuclei near the drug binding site induce detectable chemical shift perturbations (CSPs). The measurement of CSPs indicates whether a binding event has occurred at all and, if yes, can provide information on the ligand affinity for the target. Here we have developed a workflow that take as input a HSQC peak assignment of the free protein and a series of raw experimental HSQC data for the screening of a library of candidate ligands. The spectra are automatically processed and assigned; this data is then evaluated to identify the peaks shifted due to the presence of the ligand. This workflow is made available via a web user-friendly interface that is publicly available. The workflow was developed as a Nextflow pipeline and all software was translated to Docker Images. For the front-end and back-end services we have used respectively JavaScript React JS framework and Java Spring Boot framework.

Any relevant links

Topic

EOSC Compute Platform

Primary authors: Dr GIACHETTI, Andrea (CIRMMP); Prof. ROSATO, Antonio (University of Florence)

Presenter: Dr GIACHETTI, Andrea (CIRMMP)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: A Federated Compute Continuum

Contribution ID: 69

Type: **Lightning Talk 8 mins**

The EGI Software Vulnerability Group - evolving

Tuesday, 20 September 2022 18:30 (8 minutes)

The purpose of the EGI Software Vulnerability Group (SVG) is “To minimise the risk of security incidents due to software vulnerabilities.”

The EGI SVG and its predecessors have been dealing with software vulnerabilities for about 15 years. Initially, the group was set up to address the lack of vulnerability management in Grid Middleware, and its tasks included fixing security issues and ensuring that all sites in the relatively uniform EGI environment addressed the most serious vulnerabilities.

Now, things are different: the inhomogeneity has increased within the infrastructure, there is a greater proliferation of software installed, and the majority of software vulnerabilities affecting EGI infrastructure are announced by software vendors. This means that the methods for dealing with software vulnerabilities have been changing and need further change.

One extreme is to say that service providers are wholly responsible for ensuring their software is up to date, which to the first order is true. Rather like people’s mobile phones, we just assume that sites update themselves.

But EGI can do better than that.

EGI helps sites become aware of and address serious vulnerabilities that are within the scope of the EGI portfolio of distributed computing services, so that all parties concerned have confidence in the security of the infrastructure. Vulnerabilities may be reported by EGI participants or become known through third party reports. Analysis of the impact of a vulnerability within EGI may lead to its risk level being elevated or reduced compared to conclusions applicable elsewhere.

This short talk will briefly describe the evolving software vulnerability management for EGI.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: CORNWALL, Linda (STFC); THE EGI SOFTWARE VULNERABILITY GROUP

Presenter: CROOKS, David (STFC)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 70

Type: **Lightning Talk 8 mins**

Service migration and high availability via Dynamic DNS service

Wednesday, 21 September 2022 14:40 (8 minutes)

Nowadays, more and more services are dynamically deployed in Cloud environments. Usually, the services hosted on virtual machines in Cloud are accessible only via IP addresses or pre-configured hostnames given by the target Cloud providers, making it difficult to provide them with meaningful domain names. The Dynamic DNS service for EGI Infrastructure is developed for solving the problem.

The Dynamic DNS service provides a unified, federation-wide Dynamic DNS support for VMs in EGI infrastructure. Users can register their chosen meaningful and memorable DNS hostnames in given domains (e.g. my-server.vo.fedcloud.eu) and assign to public IPs of their servers.

By using Dynamic DNS, users can host services in EGI Cloud with their meaningful service names, can request valid server certificates in advance (critical for security) and many other advantages.

This talk is devoted to special use cases of the Dynamic DNS service: service migration and high availability. There are many software solutions for developing high availability services but they are mostly designed for a single site or relying on load balancers. If the entire site hosting the services is down, e.g. due to power outage, software solutions like keepalived/haproxy cannot help.

The Dynamic DNS service can be used to achieve high availability for critical services that need to operate even a whole cloud site hosting the services are down. Critical services may have backup instances deployed on other sites located on other regions to minimize the risks that all instances of the services are down at the same time. Simple scripts will check the health of instances and assign the service endpoint to a working instance via Dynamic DNS service. Implementation of such a solution via Dynamic DNS is very simple and without single point of failure. The EGI secret management service 1 is the example of the solution.

1. <https://docs.google.com/document/d/18uqpZ2AkdAm9WMsDfQgDnv4Y4qMyoUpBilsLiHPfvk/edit?usp=sharing>

Any relevant links

Dynamic DNS service: <https://nsupdate.fedcloud.eu/>

Vault's design: <https://docs.google.com/document/d/18uqpZ2AkdAm9WMsDfQgDnv4Y4qMyoUpBilsLiHPfvk/edit?usp=s>

Topic

A Federated Compute Continuum

Primary author: TRAN, Viet (IISAS)

Presenter: TRAN, Viet (IISAS)

Session Classification: EGI-ACE Lightning Talks: Technologies for a Compute Continuum

Track Classification: EOSC Compute Platform

Contribution ID: 71

Type: **Poster**

The AI4PublicPolicy Virtualized Policy Management Environment (VPME) with fully-fledged policy development/management functionalities based on AI technologies

Tuesday, 20 September 2022 19:00 (1 hour)

AI4PublicPolicy is a joint effort of policymakers and Cloud/AI experts to unveil AI's potential for automated, transparent and citizen-centric development of public policies. To this end, the project will deliver a novel Open Cloud platform for automated, scalable, transparent and citizen-centric policy management. The AI4PublicPolicy platform, i.e. the Virtualized Policy Management Environment (VPME) will provide fully-fledged policy development/management functionalities based on AI technologies such as Machine Learning, Deep Learning, NLP and chatbots, while leveraging citizens' participation and feedback.

More specifically, within the framework of the VPME, the following components are being developed:

- Data Management Toolkit (UPM)
- Policy & Dataset Catalogue (UNP)
- Policy Extraction Toolkit (GFT)
- Policy Interpretation Toolkit (INTRA)
- Interoperability Toolkit (UNP)
- Policy Evaluation Toolkit (GFT)

The abovementioned technologies will be deployed in the scope of the five real life pilots of the project, i.e.:

- Athens, Greece: Policies for Infrastructures Maintenance and Repair, Parking Space Management and Urban Mobility
- Genoa, Italy: Policies for Citizens and Business Services Optimization
- Nicosia, Cyprus: Policies for Holistic Urban Mobility and Accessibility
- Lisbon, Portugal: Energy Management and Optimization Policies
- Burgas, Bulgaria: Data-Driven Water Infrastructure Planning and Maintenance Policies

The VPME will be integrated with EOSC in order to facilitate access to the Cloud and HPC resources of EOSC/EGI that are required to enable the project's AI tools, and second to boost the sustainability and wider use of the project's developments.

Any relevant links

<https://ai4publicpolicy.eu/the-vpme-2/>

Topic

Machine Learning/Artificial Intelligence

Primary authors: PELLUMBAJ, Ada (ViLabs); AMICONE, Alessandro (GFT Italy)

Presenter: AMICONE, Alessandro (GFT Italy)

Session Classification: Posters (presenters at poster)

Track Classification: Machine Learning/Artificial Intelligence

Contribution ID: 72

Type: **Lightning Talk 8 mins**

FedCloud client: the powerful client for EGI Federated Cloud

Wednesday, 21 September 2022 14:20 (8 minutes)

EGI Federated Cloud consisted of many different OpenStack sites from different organizations. In the past, users are often advised to access the IaaS services via the official endpoints of the sites. It is desired to have a universal client tool that can operate with all sites in the federation.

The FedCloud client is a high-level Python package for a command-line client designed for interaction with the OpenStack services in the EGI infrastructure. The client can access various EGI services and can perform many tasks for users including managing access tokens, listing services, and mainly execute commands on OpenStack sites in EGI infrastructure.

Although using OpenStack client as the backend, the FedCloud client uses high-level abstractions of the federation: site and VO names as the main inputs for most of operations. From the view of users, site/VO names are much more friendly and memorable than site endpoints and project IDs in OpenStack commands. Furthermore, FedCloud client can perform federation-wide operations, e.g. listing all VMs in a VO on all sites.

The FedCloud client can be considered at the shell for EGI Federated Cloud. It is designed to be used in scripts for automation or called directly from Python codes. With native support for JSON format, the outputs from the clients can be processed easily in scripts that enables developing powerful tools like listing all owned VMs in simple way.

Any relevant links

<https://fedcloudclient.fedcloud.eu/>

Topic

A Federated Compute Continuum

Primary author: TRAN, Viet (IISAS)

Presenter: TRAN, Viet (IISAS)

Session Classification: EGI-ACE Lightning Talks: Technologies for a Compute Continuum

Track Classification: A Federated Compute Continuum

Contribution ID: 73

Type: **Poster**

Access EGI resources through the ESCAPE developed ESFRI Science Analysis Platform

Tuesday, 20 September 2022 19:00 (1 hour)

The EU ESCAPE project is developing ESAP, ESFRI's scientific analysis platform, as an API gateway that enables the seamless integration of independent services accessing distributed data and computing resources. At ESCAPE we are exploring the possibility of exploiting OpenStack EGI's cloud computing services through ESAP. As a use case, we are considering one of the studies known as Data Challenges used to prepare the community to work with the data to be generated by the Square Kilometer Array (SKA).

In our contribution, we describe the technical steps performed: we registered to the Virtual Organisation `vo.access.egi.eu` to count on the necessary development and test resources and we automated the creation of a Virtual Machine through the EGI `fedcloud` client. We automated the installation on a cloud virtual machine instance of the suitable analysis software through a software framework developed at IRA-INAF, called `ira-init`. We plan to provide ESAP's users with resources access writing an ESAP connector.

In this first prototype data access is simplified through NFS mounted storage or a cloud data volume. Data transfer tests are being conducted using `storm-webdav` to provide users with the ability to analyze the data both locally and remotely.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: BERTOCCO, sara (INAF); SANCHEZ, Susana (CSIC); MANUEL, Parra (CSIC); MORRIS, Dave (Edinburgh University); TINARELLI, Franco (INAF); BEDOSTI, Francesco (INAF); STAGNI, Matteo (INAF); GALLUZZI, Vincenzo (INAF)

Presenter: BERTOCCO, sara (INAF)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 74

Type: **Poster**

Network technologies in the I.Bi.S.Co. Napoli HPC hybrid cluster

Tuesday, 20 September 2022 19:00 (1 hour)

The work aims to describe the architectural characteristics, and especially the local network, of a new hybrid cluster of 128 GPUs set up in the Data Center of the Monte Sant'Angelo complex of the "Federico II" University of Naples. Its hybrid features allow you to use its resources in different scenarios: from parallel computing, to GP-GPU accelerated workload, to their combinations. The cluster consists of 36 nodes and 2 switches that perform two functions: computing and storage. To maximize the efficiency of the cluster and to accommodate the multiple needs of users, the local network uses two distinct architectures:

- intra-node: characterized by the combination of NVLink and PCI-e
- inter-node: characterized by the combination of InfiniBand and Ethernet

The setting up was possible thanks to funds financed by the I.Bi.S.Co. project (Infrastructure for Big data and Scientific Computing), of the PON 2017-2022.

This infrastructure will enter the establishing National Center for Computing, financed by the funds of the PNRR.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: SABELLA, Gianluca (Univeristy of Naples Federico II); SPISSO, Bernardino (Federico II Napoli and INFN)

Presenter: PARDI, Silvio (INFN)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 75

Type: **Demonstration**

Automatic storing, sharing and archiving datasets with Onedata

Wednesday, 21 September 2022 11:45 (25 minutes)

In many scientific disciplines, expensive equipment is shared nowadays. The users –scientists, request specific experiments from facilities that perform them on their behalf. The outcome of such an experiment is a dataset, which can be quite huge in many cases. Our introduced system provides an easy way to make data produced by such specialized devices available to the scientific community. It is used to manage the storage of experimental data between several tiers of physical data storage consisting of the experimental facilities where data are acquired, national or scientific domain data storage services, and computing facilities provided on both national and European levels.

The software is built on the top of the Onedata system. It supports the whole process, from storing produced data from the device, setting up all necessary Onedata options, publishing the datasets, and archiving in permanent storage. It implements varying policies of handling the data, e.g., expiration at the acquisition facility, archiving in multiple copies, and data publication after an embargo period. It can also export datasets to supported repositories or metadata to metadata catalogues. The demonstrated application automatically controls the whole data workflow according to the defined Data Management Plan, which is attached to the dataset in a YAML file.

We are going to cover in our demonstration:

- briefly set up and run Oneprovider,
- setup our application,
- create a test dataset with metadata,
- run the data workflow with several configuration possibilities,
- access the dataset through Onedata web interface and CLI Oneclient,
- presentation of processing CryoEM data in Scipion adapted to run with Onedata in container and Kubernetes.

Any relevant links

Topic

Data Spaces

Primary authors: SVOBODA, Tomáš (Masaryk University); KRENEK, Ales (CESNET); Mr HANDL, Josef (Masaryk University)

Presenter: SVOBODA, Tomáš (Masaryk University)

Session Classification: Demonstrations

Track Classification: Data Spaces

Contribution ID: 76

Type: **Lightning Talk 8 mins**

Quantum-notebook: a Docker stack for quantum computing

Wednesday, 21 September 2022 17:25 (8 minutes)

Activities on Quantum computing are increasing thanks to the push of large investments promoted by Governments, Industries, and international actors of research. This environment stimulates the creation and integration of tools and components to design and simulate quantum circuits.

At the current state of the art, there are several different languages and frameworks for programming quantum computers, among them some of the most famous are Qiskit, Cirq, QASM, Q# and others.

In this work is presented a Quantum-Notebook built as a ready-to-deploy Docker image, based on JupyterHub technologies which implements a set of largely used tools for simulation or quantum programming.

Built on top of Jupiter Docker stack, the Quantum-Notebook provides a ready to use web-app to start directly programming in the preferred language, simplifying the installation steps. The image can be pulled and run on any device, such a laptop, server, or a cloud VM thanks to the versatility of docker.

Finally the Quantum-Notebook is easy to extend with additional libraries and is reusable in different contexts for development, simulation or training sessions.

The goal of this work is to give a contribution for helping, researchers, students, teachers and interested people to approach quantum programming.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary author: PARDI, Silvio (INFN)

Co-authors: DELL'AGNELLO, Luca (INFN); FALABELLA, Antonio (INFN); GIACOMINI, Francesco (INFN)

Presenter: PARDI, Silvio (INFN)

Session Classification: Lightning Talks: EOSC Compute Platform 1

Track Classification: Machine Learning/Artificial Intelligence

Contribution ID: 77

Type: **Poster**

An Open Ecosystem for European Computing Continuum

Tuesday, 20 September 2022 19:00 (1 hour)

To regain European competitiveness in Internet infrastructures, Europe cannot simply try to catch up with current Cloud hyperscalers: a bolder, forward-looking approach is needed.

Both Cloud technologies and IoT technologies have steadily moved towards a technical and business convergence often labelled as Cloud-Edge-IoT continuum, with Edge Computing becoming both the target and the battleground of this convergence process. Under the name of computing continuum, an even broader scope including HPC, hardware devices, and 5G/6G networks, is understood.

The Digital Compass emphasises clear and measurable targets for 2030 that are however systemic and challenging (e.g., 75% of European enterprises have taken up cloud computing services, or 10,000 climate neutral, highly secure edge nodes have been deployed in the EU).

There is a need to guide computing continuum stakeholders towards defining and addressing the conceptual, technical, and community challenges raised by such targets (e.g., how will the thousands of edge nodes interoperate? How will their climate neutrality goal affect the energy industry?).

In this poster, we present OpenContinuum, Open Ecosystem for European strategic autonomy and interoperability across the computing continuum industry.

OpenContinuum will:

- Promote the establishment of a European industrial Open Ecosystem based on Open Source and Open Standards
- Map and analyse the supply-side landscape of the European emerging Computing Continuum
- Engage the EU industrial and research actors to create a supply-side community that spans the whole Computing Continuum
- Coordinate the relevant EU project portfolio towards an open European ecosystem for the cloud-edge-IoT continuum

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: RIMASSA, Giovanni (Martel Innovate); PRASAD, Amrita (Martel Innovate)

Presenter: RIMASSA, Giovanni (Martel Innovate)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 78

Type: **Poster**

Perun Comprehensive AAI solution

Tuesday, 20 September 2022 19:00 (1 hour)

Perun covers all technical and non-technical aspects of an Authentication and Authorization Infrastructure (AAI). The technical part is designed in a modular way, so it can be deployed as a standalone solution or can be incorporated into existing infrastructure. Different components provide technical solutions, as well as easy to use functions for dealing with non-technical features, like policy handling, trust models or consent management.

The poster illustrates the depth and broad reach of the AAI area by listing individual topics that AAI needs to solve in seven categories. Perun AAI provides support and tools for handling activities in the mentioned areas. The content is attuned to a broad audience. Therefore, the technical details are omitted. The poster also provides a small listing of significant scientific communities, infrastructures and projects where Perun AAI solution is successfully deployed.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: BUCIK, Dominik Frantisek (Masaryk University); LICEHAMMER, Slavek (CESNET)

Presenters: BUCIK, Dominik Frantisek (Masaryk University); LICEHAMMER, Slavek (CESNET)

Session Classification: Posters (presenters at poster)

Track Classification: Security, Trust & Identity

Contribution ID: 79

Type: **Demonstration**

User-Driven Consent Management for Identity Provisioning

Thursday, 22 September 2022 12:10 (25 minutes)

The protection of personal information represents a crucial aspect of Authorization and Authentication Infrastructures (AAIs). Moreover, as GDPR compliance has stepped forward during the last years, the focus needs to be also put on users' consent to provision their data outside AAI.

The majority of the current AAI implementations in research and education are focused on SAML and OIDC protocols and therefore allow users to decide if their data can be released to end services during the authentication process. However, the same problem has to be solved for the provisioning process that happens without the direct user interaction (usually authentication) with the AAI service.

In the Perun AAI, we wanted to craft a complete solution providing VO managers with rights to control user access whilst giving end-users the ability to control what information is released to a particular service they have been authorized to. That led us to the implementation of a user consent management toolkit, which gathers a list of available services, including what attributes they consume. Using this toolkit, the provisioning is completely controlled from the user side, by deciding if the provisioning consent is granted or not on a per-service basis.

The main challenge was to design a user-friendly way of gathering the consent when the new access is assigned by a VO manager or the attribute list required by service changes. Also, we had to present the choices to the user in a comprehensible way with straightforward management options.

In this demonstration, we would like to show the initial implementation of the users' consent management toolkit in the Perun AAI which is already used in production. We want to present our approach and gather feedback and additional use-cases for this feature.

Any relevant links

Topic

Security, Trust & Identity

Primary authors: BALCIRAK, Peter (CESNET); LICEHAMMER, Slavek (CESNET)

Presenter: BALCIRAK, Peter (CESNET)

Session Classification: Demonstrations

Track Classification: Security, Trust & Identity

Contribution ID: 81

Type: **Poster**

Poster: The Training Portal for Photon and Neutron Data Services

Tuesday, 20 September 2022 19:00 (1 hour)

Education is becoming an increasingly important topic to help scientists work on photon and neutron sources. Other relevant areas such as advanced quantum technologies will also play a key role in the future. One of the goals of ExPaNDS (European Open Science Cloud (EOSC) Photon and Neutron Data Service) is to train research scientists in order to better understand the issues, methods and available computational RI infrastructures to address critical research questions.

The ambitious ExPaNDS and PaNOSC projects are a collaborations between 16 national Photon and Neutron Research Infrastructures (PaN RIs). The projects are delivering standardised, interoperable, and integrated data sources and data analysis services for Photon and Neutron facilities. Our PaN-training portal provides a one-stop shop for trainers and trainees to discover online information and content: For trainers the catalogue offers an environment for sharing materials and event information. For trainees, it offers a convenient gateway via which to identify relevant training events and resources, and to perform specific, guided analysis tasks via training workflows to provide FAIR research.

Our associated e-learning platform hosts free education and training for scientists and students with an integration of Jupyter notebooks. The e-Learning platform hosts free education and training for scientists and students. It includes courses on both the theory of photon and neutron scattering and how to use python code or software for data reduction and modeling.

Any relevant links

Topic

EOSC Compute Platform

Primary author: KNODEL, Oliver (Helmholtz-Zentrum Dresden-Rossendorf)

Presenters: KNODEL, Oliver (Helmholtz-Zentrum Dresden-Rossendorf); GUTIERREZ DAVID, Marta (EGL.eu)

Session Classification: Posters (presenters at poster)

Track Classification: EOSC Compute Platform

Contribution ID: 82

Type: **Lightning Talk 8 mins**

Bridging Cloud and HPC towards High Performance Data Analytics for climate science

*Wednesday, 21 September 2022 12:25 (8 minutes)*D. Elia¹, F. Antonio¹, C. Palazzo¹, A. D'Anca¹, S. Fiore² and G. Aloisio^{1,3}¹ Euro-Mediterranean Center on Climate Change (CMCC) Foundation, Lecce, Italy² University of Trento, Trento, Italy³ University of Salento, Lecce, Italy

The Big Data revolution started at the beginning of this century has been propelled also by the advent of cloud computing solutions, which provided an efficient and cost-effective model for accessing resources on-demand according to the application workload and functional requirements. These new technologies have been gradually exploited in several scientific domains to address the issues associated with large data volumes, besides the more traditional use of High Performance Computing (HPC), which is still required for several compute-intensive applications. The next natural step in this evolution concerns the integration of the Big Data (cloud-based) and HPC software ecosystems for supporting High Performance Data Analytics (HPDA) scientific scenarios at extreme scale. However, the two software ecosystems rely on very different service usage models

and target different application requirements, making their mixed usage complicated. Software containers can represent the layer for supporting software portability and transparent deployment of scientific HPDA solutions over multiple platforms, allowing developers to bundle the application and all its dependencies (including data dependencies) into a single software image. In this regard, the recent emergence of HPC-friendly container technologies (e.g., udocker, Singularity, Sarus) can actually enable the use of this model also on HPC infrastructures, thus providing a bridge between Cloud and HPC-based solutions and enabling new paradigms such as HPC as a Service (HPCaaS). In the context of the EGI-ACE project, a HPC pilot concerning the use of data science, management and HPDA solutions for climate science applications is being developed. The pilot is aimed at understanding how containerization technologies can support the integration of cloud and HPC infrastructures to support large-scale data analytics and management. This contribution presents the container-based solutions explored and implemented in the context of the HPC pilot towards transparent and portable deployment of HPDA solutions for climate science on top of the resources made available in the EGI infrastructure.

Any relevant links

Topic

A Federated Compute Continuum

Primary authors: ELIA, Donatello (CMCC Foundation); ANTONIO, Fabrizio (CMCC Founda-

tion); PALAZZO, Cosimo (CMCC Foundation); D'ANCA, Alessandro (CMCC Foundation); FIORE, Sandro (University of Trento, Trento, Italy); Prof. ALOISIO, Giovanni (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici)

Presenters: ELIA, Donatello (CMCC Foundation); ANTONIO, Fabrizio (CMCC Foundation); PALAZZO, Cosimo (CMCC Foundation); D'ANCA, Alessandro (CMCC Foundation); FIORE, Sandro (University of Trento, Trento, Italy); Prof. ALOISIO, Giovanni (Advanced Scientific Computing Division, Centro Euro-Mediterraneo sui Cambiamenti Climatici); FERNANDEZ, Enol (EGI.eu)

Session Classification: EGI-ACE Lightning Talks: Compute continuum use cases

Track Classification: A Federated Compute Continuum

Contribution ID: 83

Type: **Lightning Talk 8 mins**

Using European Open Science Cloud infrastructure for rapid simulations of large-scale global reservoirs

Wednesday, 21 September 2022 12:15 (8 minutes)

A.H. Weerts, Jaap Langemeijer, Pieter Hazenberg

Water reservoirs play an important role in relation to water security, flood risk, agriculture production, hydropower, hydropower potential, and environmental flows. However, long-term daily information on reservoir volume, inflow and outflow dynamics are not publicly available. To enable deriving long-term reservoir dynamics for many reservoirs across the globe using a distributed hydrological model, large amounts of computer power are needed. Therefore, these types of simulations are generally performed on super computers. Nowadays, public cloud computing infrastructure offers interesting alternative and allows one to quickly access hundreds to thousands of computer nodes. The current work presents an example of making use of the EOSC by simulating the dynamics of 3236 headwater reservoirs on a Kubernetes Cluster. Within the cloud, distributed model forcing and hydrological parameters at a 1-km grid resolution can be derived using HydroMT, which subsequently are used by wflow_sbm to perform long-term hydrological simulation over the period 1970-2020. To enable operation in the cloud, usage is made of the Argo workflow engine, that is effective able to schedule the sequential execution of the HydroMT and wflow_sbm containers. We will present the executed modeling setup within the public cloud as well as present some of the results derived in this manner by comparing observations with in situ and satellite observations.

Any relevant links

Topic

EOSC Compute Platform

Presenter: BACKEBERG, Bjorn (DELTA RES)**Session Classification:** EGI-ACE Lightning Talks: Compute continuum use cases**Track Classification:** EOSC Compute Platform

Contribution ID: 84

Type: **Demonstration**

openEO Platform: Large-scale Earth Observation Analysis on a federated compute infrastructure

Wednesday, 21 September 2022 10:35 (25 minutes)

Benjamin Schumacher

Earth Observaton satellites create a growing data archive enabling environmental monitoring services which advance the knowledge about planet earth significantly. openEO Platform builds upon this data archive and allows users to access and process Earth Observation data for their needs on a federated infrastructure. This approach exhibits several advantages: Firstly, the user does not need to download, store, and handle large amounts of Earth Observation data. Secondly, the federated compute platform enables the user to process data fast and facilitates computations at large scale. Lastly, users can easily share their analysis with other uses which simplifies the reproducibility of scientific projects.

openEO Platform builds on the successful development of the openEO Application Programming Interface (API) which was developed in the Horizon 2020 project openEO (2017–2020, see <https://openeo.org/>)

The openEO project defined a common set of analytic operators for Earth Observation analysis which was implemented by several backends. This common architecture was expanded by an aggregation layer to openEO Platform, an operational, federated service running at EODC, VITO and Sinergise. openEO Platform is currently built with a strong focus on user co-creation and input from several use-cases from a variety of disciplines. The use-cases include CARD4L compliant ARD data creation with user defined parameterisation, forest dynamics mapping including time series fitting and prediction functionalities, crop type mapping including EO feature engineering supporting machine learning based crop mapping and forest canopy mapping supporting regression-based fraction cover mapping. Three programming interfaces (R, Python and JavaScript) are available to interact with openEO Platform and perform an Earth Observation analysis. EGI Checkin is implemented as the authentication mechanism to enable easy access to users. In this demonstration session we will showcase the use of the platform via Python Jupyter Notebooks and a graphical user interface. The session will cover: Sign up, Sign in, submitting first small jobs and short introduction to larger scale processing.

Any relevant links

Topic

Data Spaces

Primary author: SCHUMACHER, Benjamin (EODC)**Presenter:** SCHUMACHER, Benjamin (EODC)**Session Classification:** Demonstrations

Track Classification: Data Spaces

Contribution ID: 85

Type: **Demonstration**

EOSC DIH Demo's: OiPub and 4Science

Wednesday, 21 September 2022 17:00 (1 hour)

Any relevant links

Topic

Policy & Business Models

Primary author: CAUHE, Elisa (EGL.eu)

Presenter: CAUHE, Elisa (EGL.eu)

Session Classification: Demonstrations

Track Classification: Policy & Business Models

Contribution ID: 86

Type: **Lightning Talk 8 mins**

Collaborative Operational Security

Tuesday, 20 September 2022 18:00 (8 minutes)

Our modern cybersecurity landscape requires that we work collaboratively to effectively defend our community. In this talk we explore activities in this area and ways in which sites, organisations and infrastructures can get involved in our shared response to cyberattacks

Any relevant links

Topic

Security, Trust & Identity

Primary author: CROOKS, David (STFC)

Presenter: CROOKS, David (STFC)

Session Classification: Lightning Talks: Security, Trust & Identity

Track Classification: Security, Trust & Identity

Contribution ID: 87

Type: **not specified**

The e-IRG White Paper 2022 on Coordination and Collaboration in the e-Infrastructure landscape

Fotis Karayannis, Coordinator of the e-IRG Secretariat, will present the objectives of the upcoming e-IRG White Paper 2022 on Coordination and Collaboration of e-Infrastructures, the motivation and the early findings based on the feedback received from e-Infrastructure representatives will be presented.

The audience will be given an opportunity to provide feedback to the e-IRG White Paper 2022.

Any relevant links

Topic

Presenter: KARAYANNIS, Fotis (Innov-Acts Ltd)

Session Classification: Closing plenary: Pathways for improved coordination and cooperation among e-infrastructures

Contribution ID: 88

Type: **Lightning Talk 8 mins**

At the heart of future computing centers: research on algorithms

Thursday, 22 September 2022 12:30 (8 minutes)

Hermann Heßling, Michael Kramer, Stefan Wagner:

At the heart of future computing centers: research on algorithms

Future research facilities like the Square Kilometre Array Observatory (SKAO) are confronted with zetta-scale computing: only a tiny fraction of the data collected by the thousands of telescopes and antennas can be archived in the long term. Consequently, the relevant information must be extracted in real time out of huge data streams. While we have described the technical challenges of SKAO and the implications for a “Smart Green Computing” in our contributions to the last two EGI conferences, we now address the aspect of how data centers could be organized to address the challenges at hand. Data centers play a critical role in scaling existing community analysis tools, which have often been designed for rather small to medium data sets and computing systems. Further development of existing methods and algorithms requires cooperative interaction at the European level.

Any relevant links

Topic

Primary author: HESSLING, Hermann (University of Applied Sciences (HTW) Berlin)**Presenters:** HESSLING, Hermann (University of Applied Sciences (HTW) Berlin); KRAMER, Michael (Max-Planck-Institut fuer Radioastronomie)**Session Classification:** Lightning Talks: EOSC Compute Platform 2

Contribution ID: 89

Type: **Poster**

The Jonas VRE: a science gateway for noise map visualization and data processing in the North-East Atlantic region

Tuesday, 20 September 2022 19:00 (1 hour)

The objective of this poster is to summarize the process of development of the JONAS VRE, which consisted of three main parts:

1. Capitalization requirements
2. Capitalization development
3. Legacy

For developing the capitalization requirements, we started by presenting the definition of VRE and its main characteristics. The four different steps described in the literature for VRE development were explained. Also, some of the key requirements of VREs were described. The use cases derived from the JONAS workshop were developed. The functional and non-functional requirements were detailed. The architecture of the JONAS VRE and the development plan were presented. Finally, the binding and optional requirements of the VRE were described.

The capitalization development began with some background information on Kubernetes, k3s, JupyterHub and QGIS, which are layers under the JONAS VRE. Then, a brief description of the deployment of the Kubernetes cluster, JupyterHub and QGIS on the EGI infrastructure were presented. The development of the Jupyter notebooks, with emphasis on processing the netCDF files was given. Also, the folder structure of the VRE was presented. Finally, the functional requirements as described in the Capitalization requirements were presented and it was explained how the VRE fulfilled each requirement.

For the JONAS VRE legacy, we first cited its overall objective. and a simplified diagram of the JONAS VRE was presented. This simplified diagram displays the inputs to the VRE, the two VRE applications (JupyterHub and QGIS), and the VRE outputs. Each of the VRE inputs were described, emphasizing the data format, what was provided to the VRE by the different JONAS WPs, and the required user inputs. The VRE processing capabilities were explained. Also, each of the VRE outputs were detailed, showing typical images of the VRE graphic outputs. Finally, a summary of the results of the VRE pilot test was provided.

Any relevant links

Topic

Presenter: DÍAZ, José Antonio (PLOCAN)

Session Classification: Posters (presenters at poster)

Track Classification: A Federated Compute Continuum

Contribution ID: 90

Type: **Lightning Talk 8 mins**

BLACK SEA OPEN SCIENCE CLOUD FOR THE BLUE GROWTH IN THE BLACK SEA REGION

Authors: Eden MAMUT, Andreea PRESURĂ

Black Sea Universities Network, International Permanent Secretariat, <https://bsun.org/>

Abstract

The Black Sea Open Science Cloud (BSOSC) has been initiated as an activity included in the implementation plan of the project BS CONNECT. The development of the concept of the BSOSC started during the process of drafting the Strategic Research and Innovation Agenda (SRIA) on Blue Growth for the Black Sea. In 2018, the Vision Paper of the SRIA was presented during the European Maritime Day in Burgas, Bulgaria and the first draft of the document has been presented in 2019, in Bucharest. Since 2019, the implementation of the SRIA is supported by the European Commission through the project BS CONNECT.

The paper is presenting the architecture of the BSOSC on Blue Growth and the strategy for integration in the EOSC. There are presented the databases, the web-based services, and the interfaces. The hardware architecture and the connectivity with the repositories are presented in detail.

The BSOSC Observatory has been also developed within the framework of the BS CONNECT project as a connecting and communication interface for BSOSC.

Any relevant links

Topic

Presenters: PRESURA, Andreea (Black Sea Universities Network, International Permanent Secretariat.); Prof. MAMUT, Eden (Ovidius University of Constanta)

Contribution ID: 91

Type: **not specified**

C-SCALE project introduction

Wednesday, 21 September 2022 15:30 (10 minutes)

Presenter: CHATZIKYRIAKOU, Charis (EODC Earth Observation Data Center for Water Resources Monitoring GmbH)

Session Classification: Combining Copernicus data and EGI services for Earth Observation at scale

Contribution ID: 92

Type: **not specified**

Metadata Query Service

Wednesday, 21 September 2022 16:10 (20 minutes)

Presenter: Sustr, Zdenek (CESNET)

Session Classification: Combining Copernicus data and EGI services for Earth Observation at scale

Contribution ID: 93

Type: **not specified**

Earth System Simulation and Data Processing Platform

Wednesday, 21 September 2022 15:40 (25 minutes)

Presenters: FERNANDEZ, Enol (EGI.eu); OONK, Raymond (SURFsara BV)

Session Classification: Combining Copernicus data and EGI services for Earth Observation at scale

Contribution ID: 94

Type: **not specified**

HPC in EGI-ACE

Wednesday, 21 September 2022 14:00 (15 minutes)

The EOSC Compute Platform, delivered by the EGI-ACE project, is a system of federated compute and storage facilities, complemented by diverse access, data management and compute platform services.

This session will focus on how HPC systems are made available by EGI-ACE to serve both national and international open science projects. The content will cover:

- EOSC-compliant federated user access management on HPC systems.
- Availability and reliability monitoring of federated HPC sites.
- Integrated usage accounting across HPC, cloud and HTC sites.
- Access to distributed, federated data from HPC systems.
- Portable container-based applications for cloud compute, HTC and HPC systems.

Any relevant links

Topic

Presenter: FERNANDEZ, Enol (EGI.eu)

Session Classification: Integrated High Performance Compute services for national and international customers

Contribution ID: 95

Type: **not specified**

Bridging Fenix and EOSC from Data Transfer Interoperability

Wednesday, 21 September 2022 14:17 (15 minutes)

Enabling accessibility of HPC resources to its end users is one of the strategic aims of EOSC, and Fenix, a collaboration of six leading European HPC centers, aims to harmonize and federate e-infrastructure services to support a variety of user communities. In this context, connecting Fenix archival data repositories to the ESCAPE data lake was proposed as a first step towards a broader collaboration between EOSC and Fenix. This presentation will briefly introduce the AAI integration behind the scenes and demonstrate a Fenix-ESCAPE data transfer using FTS.

Any relevant links

Topic

Presenter: Mrs LONG, Shiting (FZJ)

Session Classification: Integrated High Performance Compute services for national and international customers

Contribution ID: 96

Type: **not specified**

C-SCALE HPC

Wednesday, 21 September 2022 14:34 (10 minutes)

Any relevant links

Topic

Presenter: OONK, Raymond (SURFsara BV)

Session Classification: Integrated High Performance Compute services for national and international customers

Contribution ID: 97

Type: **not specified**

HPC use case

Session Classification: Integrated High Performance Compute services for national and international customers

Contribution ID: 98

Type: **not specified**

EGI Infrastructure status and internal services

Wednesday, 21 September 2022 14:00 (10 minutes)

Any relevant links

Topic

Presenter: PAOLINI, Alessandro (EGI.eu)

Session Classification: Operational tools and processes - NGIs reports and discussion

Contribution ID: 99

Type: **not specified**

NGI Liaison meetings summary

Wednesday, 21 September 2022 14:10 (10 minutes)

Presenter: VILJOEN, Matthew (EGI.eu)

Session Classification: Operational tools and processes - NGIs reports and discussion

Contribution ID: **100**

Type: **not specified**

NGI_IT status

Wednesday, 21 September 2022 14:20 (15 minutes)

Any relevant links

Topic

Presenters: MICHELOTTO, Diego (INFN); DUMA, Doina Cristina (INFN)

Session Classification: Operational tools and processes - NGIs reports and discussion

Contribution ID: **101**

Type: **not specified**

NGI_TR status

Wednesday, 21 September 2022 14:35 (15 minutes)

Any relevant links

Topic

Presenter: BAYINDIR, Hakan (TUBITAK)

Session Classification: Operational tools and processes - NGIs reports and discussion

Contribution ID: **102**

Type: **not specified**

Discussion

Wednesday, 21 September 2022 14:50 (10 minutes)

Session Classification: Operational tools and processes - NGIs reports and discussion

Contribution ID: **103**

Type: **not specified**

Overview of CODATA Global Open Science activities and the WorldFAIR project

Thursday, 22 September 2022 11:00 (30 minutes)

Presenter: Dr HODSON, Simon (CODATA executive director)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: **104**

Type: **not specified**

What users' need? –GOSC Radar Case Study Working Group

Thursday, 22 September 2022 11:30 (15 minutes)

Presenter: HAGGSTROM, Ingemar (EISCAT)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: 105

Type: **not specified**

What users' need? –GOSC SDG-13 Case Study Working Group

Thursday, 22 September 2022 11:45 (15 minutes)

Presenter: Dr ZHANG, Lili (Research Scientist, CNIC, China)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: 106

Type: **not specified**

What can GOSC help? –GOSC Technical Infrastructure Framework

Thursday, 22 September 2022 12:00 (20 minutes)

Presenter: Prof. LI, Jianhui (Director, CNIC/CAS, China)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: **107**

Type: **not specified**

How to implement? –EOSC AAI experiences for GOSC AAI

Thursday, 22 September 2022 12:20 (15 minutes)

Presenter: LIAMPOTIS, Nicolas (GRNET)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure,
Data and Cloud integration efforts

Contribution ID: **108**

Type: **not specified**

How to implement? –International Cloud Federation

Thursday, 22 September 2022 12:35 (15 minutes)

Presenter: FERNANDEZ, Enol (EGI.eu)

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: **109**

Type: **not specified**

How to implement? –GOSC Data Interoperability Working Group

Thursday, 22 September 2022 12:50 (10 minutes)

Presenter: Dr OJSTERŠEK, Milan

Session Classification: Global Open Science Cloud Workshop - International Infrastructure, Data and Cloud integration efforts

Contribution ID: 110

Type: **not specified**

Introduction to EGI Authentication and Authorization Infrastructure (AAI)

Tuesday, 20 September 2022 15:45 (15 minutes)

Presenter: ARDIZZONE, Valeria (EGI.eu)

Session Classification: Authentication and Authorisation in federated environments

Contribution ID: 111

Type: **not specified**

Community success stories on adopting EGI AAI services

Tuesday, 20 September 2022 16:50 (20 minutes)

Any relevant links

Topic

Primary author: LAMATA MARTINEZ, Ignacio

Co-author: ARDIZZONE, Valeria (EGI.eu)

Presenters: LAMATA MARTINEZ, Ignacio; ARDIZZONE, Valeria (EGI.eu)

Session Classification: Authentication and Authorisation in federated environments

Contribution ID: 112

Type: **not specified**

Welcome and introduction by the EGI Council Chair

Any relevant links

Topic

Presenter: VAN RIJN, Arjen (NIKHEF)

Session Classification: Closing plenary: Pathways for improved coordination and cooperation among e-infrastructures

Contribution ID: 113

Type: **not specified**

Panel of e-Infrastructure representatives and scientific communities

- Chiara Ferrari, Director of SKA-France and European SKA Forum Chair
- Tiziana Ferrari, Director, EGI Foundation
- Maria Girone, CTO, CERN OpenLAB
- Natalia Manola, CEO, OpenAIRE AMKE
- Antti Pursula, Head of Secretariat, EUDAT CDI
- Paul Rouse, Chief Community Relations Officer, GÉANT
- Matthias Schramm, Big Earth Observation Data for Environment, Vienna University of Technology
- Josephine Wood, Senior Programme Office, EuroHPC JU

Any relevant links

Topic

Presenters: PURSULA, Antti (CSC); FERRARI, Chiara (Observatoire de la Côte d'Azur); WOOD, Josephine (EuroHPC JU); GIRONE, Maria (CERN); SCHRAMM, Matthias (TU Wien); MANOLA, Natalia (University of Athens, Greece); ROUSE, Paul (GÉANT); FERRARI, Tiziana (EGI.eu)

Session Classification: Closing plenary: Pathways for improved coordination and cooperation among e-infrastructures

Contribution ID: 114

Type: **not specified**

Introduction to Operational IT Security

Friday, 23 September 2022 09:30 (1 hour)

In this introductory session we will discuss the needed basis for security operations and how to use the results of risk management for the security architecture.

Presenter: GABRIEL, Sven (NIKHEF)

Session Classification: Workshop

Contribution ID: 115

Type: **not specified**

Security Architecture

Friday, 23 September 2022 11:00 (1 hour)

Presenter: KOURIL, Daniel (CESNET)

Session Classification: Workshop

Contribution ID: **116**

Type: **not specified**

SOC

Friday, 23 September 2022 12:00 (1 hour)

Presenter: CROOKS, David (STFC)

Session Classification: Workshop

Contribution ID: **117**

Type: **not specified**

Conclusion

Tuesday, 20 September 2022 17:10 (5 minutes)

Presenter: ARDIZZONE, Valeria (EGI.eu)

Session Classification: Authentication and Authorisation in federated environments

Contribution ID: 118

Type: **not specified**

The EGI Identity and Access Management service: Check-in status and roadmap

Tuesday, 20 September 2022 16:00 (25 minutes)

Any relevant links

Topic

Primary author: LIAMPOTIS, Nicolas (GRNET)

Co-author: ARDIZZONE, Valeria (EGI.eu)

Presenters: LIAMPOTIS, Nicolas (GRNET); ARDIZZONE, Valeria (EGI.eu)

Session Classification: Authentication and Authorisation in federated environments

Contribution ID: 119

Type: **not specified**

The EGI Attributes Management service: PERUN and its combining features in LS AAI service

Tuesday, 20 September 2022 16:25 (25 minutes)

Any relevant links

Topic

Primary author: LICEHAMMER, Slavek (CESNET)

Co-author: ARDIZZONE, Valeria (EGI.eu)

Presenters: LICEHAMMER, Slavek (CESNET); ARDIZZONE, Valeria (EGI.eu)

Session Classification: Authentication and Authorisation in federated environments

Contribution ID: 120

Type: **not specified**

Introduction to EGI Authentication and Authorization Infrastructure (AAI)

Friday, 23 September 2022 09:30 (10 minutes)

Presenter: ARDIZZONE, Valeria (EGLeu)

Session Classification: Training: Authentication and Authorisation Infrastructure

Contribution ID: **121**

Type: **not specified**

Introduction

Wednesday, 21 September 2022 15:30 (10 minutes)

Presenter: CONDURACHE, Catalin (EGI.eu)

Session Classification: Green Computing

Contribution ID: 122

Type: **not specified**

Identifying the impact of policy decisions on energy consumption in the Energy Data Centre

Wednesday, 21 September 2022 15:40 (20 minutes)

Catherine Jones leads the UK based Energy Data Centre, a capability of the UK Energy Research Centre. The EDC holds a variety of research outputs relevant to energy research, some of which have a long-term preservation remit. The EDC undertook a short project in 2021 to understand the impact of preservation and collection management policies on EDC procedures and whether energy used for routine activities were detectable in the energy consumption of the EDC. This talk discusses the approach, findings, lessons learnt and what we did after the project had reported.

Presenter: JONES, Catherine (UKRI-STFC)

Session Classification: Green Computing

Contribution ID: 123

Type: **not specified**

Jisc Industrial Internet of Things (IIoT) & Building Management Services (BMS) PoC with Honeywell Forge

Wednesday, 21 September 2022 16:00 (15 minutes)

Any relevant links

Topic

Presenter: STOKES, Paul (Jisc)

Session Classification: Green Computing

Contribution ID: 124

Type: **not specified**

Moving to a more eco-friendly data center in France: possibilities and constraints

Wednesday, 21 September 2022 16:15 (15 minutes)

The management of data center in French public research institutes is subject to a regulatory framework that defines and sets out several policies, such as equipment purchasing procedures, the supply of fluids, etc.

This presentation will briefly detail this framework and how a policy to improve the environmental footprint of a data center can be conducted in France.

Presenter: PANSANEL, Jerome (CNRS)

Session Classification: Green Computing

Contribution ID: 125

Type: **not specified**

Q&A session

Wednesday, 21 September 2022 16:30 (30 minutes)

This session will be moderated by a panel of experts:

- Catherine Jones (UKRI-STFC)
- Sagar Dolas (SURF)
- Shaun de Witt (UKAEA)

Session Classification: Green Computing

Contribution ID: 126

Type: **Lightning Talk 8 mins**

iImagine - Imaging data and services for aquatic science

Thursday, 22 September 2022 17:35 (20 minutes)

iImagine is a new EU HORIZON project, coordinated by EGI, which aims to deploy, operate, validate, and promote a dedicated iImagine AI framework and platform, connected to EOSC and AI4EU, giving researchers in aquatic sciences open access to a diverse portfolio of AI based image analysis services and image repositories from multiple RIs, working on and of relevance to the overarching theme of healthy oceans, seas, coastal and inland waters. The presentation will go deeper into the backgrounds, objectives, and planned approach for this challenging new project.

Any relevant links

Topic

Presenters: SCHAAP, Dick (Mariene Informatie Service MARIS BV); LOPEZ GARCIA, Alvaro (CSIC)

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iImagine

Contribution ID: 127

Type: **not specified**

Welcome address

Tuesday, 20 September 2022 14:00 (10 minutes)

Presenter: FERRARI, Tiziana (EGI.eu)

Session Classification: Plenary: Welcome to EGI new members AConet (Austria) and University of Vilnius (Lithuania)

Contribution ID: 128

Type: **not specified**

ACOnet contribution to scientific computing

Tuesday, 20 September 2022 14:10 (25 minutes)

the “Association for the Promotion of an Austrian National Research and Education Network (NREN)” –was founded in 1986 as a consortium of Austrian universities. Today, all Austrian public universities, the majority of universities of applied sciences, and some federal universities participate in the ACONET association. It does act as a strategic user advisory board for ACONet –the Austrian Academic Computer Network –a high-performance network infrastructure and identity federation, using 10 resp. 100 Gbps Ethernet over DWDM technology. Currently, an Austrian Quantum Fiber Network is set up; its connection to a German network is planned in the short term. ACONET plans to provide access to HPC capacities and ICT capabilities of de-centralised IT departments.

Presenter: SCHRAMM, Matthias (TU Wien)

Session Classification: Plenary: Welcome to EGI new members ACONet (Austria) and University of Vilnius (Lithuania)

Contribution ID: 129

Type: **not specified**

Vilnius University contributions to scientific computing

Tuesday, 20 September 2022 14:35 (25 minutes)

Lithuanian Open Access National Computational Center is located in Vilnius university over two faculties:

Faculty of Physics (Saulėtekis) and Faculty of Mathematics and Informatics. The supercomputer "VU

HPC" has over 0.5 Pflops infrastructure while its Sauletekis location achieved 0.3 PFlops real HPLin-pack

speed up. The most important research communities are from universities, research institutes, public

sector and occasionally business in Lithuania. From EGI federating research data and computing facilities

at European level could benefit small and middle size business, public sectors.

For Lithuania the main reason to join EGI was to become EU level HPC infrastructures by adapting local

HPC infrastructures and providing HPC knowledge and international experience locally.

EGI federation could help to do research studies for user communities from various Lithuanian sectors

by providing higher level HPC access, gathering and sharing the HPC related information.

Any relevant links

Topic

Presenter: MAČERNIS, Mindaugas (University of Vilnius)

Session Classification: Plenary: Welcome to EGI new members AConet (Austria) and University of Vilnius (Lithuania)

Contribution ID: 130

Type: **not specified**

e-Infra CZ: national plans for EGI and EOSC

Tuesday, 20 September 2022 12:20 (20 minutes)

Ludek Matyska will present how the e-INFRA CZ, the Czech national e-infrastructure, plans its future in the context of EOSC implementation in Czechia. We will show how the long involvement in the EGI federation helps define this role and the implications the EOSC implementation could have for e-INFRA CZ and its continued existence within the EGI ecosystem.

Presenter: MATYSKA, Ludek (CESNET)

Session Classification: Opening Plenary

Contribution ID: 131

Type: **not specified**

The EGI Federation and its support to open science

Tuesday, 20 September 2022 12:40 (20 minutes)

How did research communities change the way the EGI Federation is operating over the last 12 years? Who are the scientific communities that EGI supports and what is the contribution to the advancement of scientific computing EGI is making?

You will hear about all of this from Tiziana Ferrari, Director of the EGI Foundation.

Presenter: FERRARI, Tiziana (EGI.eu)

Session Classification: Opening Plenary

Contribution ID: **132**

Type: **not specified**

Introduction

Thursday, 22 September 2022 16:25 (10 minutes)

Presenter: RORRO, Marco (EGLeu)

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Contribution ID: 133

Type: **not specified**

StAIrwAI, LETHE and AI4PublicPolicy

Thursday, 22 September 2022 17:55 (20 minutes)

Presenters: TENHUNEN, Ville; RORRO, Marco (EGI.eu); CRISTOFORI, Andrea

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Contribution ID: 134

Type: **not specified**

Closing discussion about future challenges

Thursday, 22 September 2022 18:15 (10 minutes)

Session Classification: Artificial Intelligence and Machine Learning - jointly organised by EGI-ACE, AI4PublicPolicy, StairwAI, LETHE, iMagine

Contribution ID: 135

Type: **not specified**

EIRENE RI –European Research Infrastructure for Human Exposome Research

Wednesday, 21 September 2022 09:30 (30 minutes)

Research infrastructures (RIs) are key entities enabling high-level research and fostering innovations in any research area. They provide an access to necessary capacities, innovative technologies, and expert human resources. Numerous research infrastructures have been developed in Europe during the last decades but none of them addressed chemical exposures. EIRENE RI (Research Infrastructure for EnvIRonmental Exposure assessmeNt in Europe) fills this gap in the European infrastructural landscape and pioneers the first EU infrastructure on human exposome. EIRENE will provide harmonised workflows covering all processes between the sample collection, data acquisition, and knowledge provided to the end users accessible to academic researchers, private companies, public authorities, and citizens. Linking interdisciplinary (environmental, clinical, socio-economic) data coming from multiple sources will enable large-scale research activities and advance new scientific developments. This will lead to improved understanding of an impact of exposome on the European population, characterization of the risk factors behind development of chronic conditions, and discovery of novel tools for their prevention and treatment.

Any relevant links

Topic

Presenter: Prof. KLANOVA, Jana (Masaryk University)

Session Classification: Plenary: Setting the future of digital infrastructures for data-intensive computing

Contribution ID: 136

Type: **not specified**

EC commitment to Open Science

Wednesday, 21 September 2022 10:00 (30 minutes)

Science today is in a full digital transition and producing massive quantity of data and digital outputs. It is facing several challenges that are connected to criteria that do not match such transformation.

Open Science has the potential to increase quality and efficiency of research and innovation, enhance creativity, collaboration and transparency, bringing back the trust in science through openness.

The European Commission policy and commitments on Open Science (set out in the ERA policy agenda, in the Pact for R&I in Europe and in different EU Council conclusions) aim at supporting the digital transition of science and making Open Science the new normal. They see a process to reform the research assessment, a future for scholarly communication that is fit for the modern research and a wider promotion of citizen and societal engagement. Nevertheless, the OS policy foster the consolidation of OS enables that are key and foundation to make Open Science the modus operandi for researchers. The main enabler is the European Open Science cloud accompanied by support actions to implement FAIR data management in the research process.

Any relevant links

Topic

Presenter: CUCINIELLO, Christian (European Commission)

Session Classification: Plenary: Setting the future of digital infrastructures for data-intensive computing

Contribution ID: 137

Type: **Lightning Talk 8 mins**

Low Barrier Sciencemesh User Access to EGI Services

Wednesday, 21 September 2022 17:45 (8 minutes)

We can say that EOSC has a vision of delivering a Seamlessly Accessible Cloud for Research. An obvious approach, then, is to start with existing systems, and ensure that science users can use them as a joined-up offering, without problems of accessibility, interoperability or eligibility. Two of the best established systems in the pan-european domain are EGI's cloud compute service, and CS3MESH4EOSC's synch&share storage/collab service (the "ScienceMesh").

Presenter: DANECEK, Milan

Session Classification: Lightning Talks: EOSC Compute Platform 1

Contribution ID: 138

Type: **not specified**

Intro to ITSM and FitSM Standard incl. General Aspects and Requirements

Monday, 19 September 2022 11:00 (1h 20m)

Any relevant links

Topic

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 139

Type: **not specified**

Service Management Processes: Service Portfolio Management (SPM), Service Level Management (SLM)

Monday, 19 September 2022 12:30 (30 minutes)

Any relevant links

Topic

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 140

Type: **not specified**

Service Management Processes: Service Reporting (SRM), Service Availability and Continuity (SACM), Capacity (CAPM), Information Security (ISM), Customer (CRM) and Supplier Relationship Management (SUPPM)

Monday, 19 September 2022 14:00 (1h 20m)

Any relevant links

Topic

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 141

Type: **not specified**

Service management Processes: Incident and Service Request (ISRM), Problem (PM), Configuration (CONFM), Change (CHM), Release and Deployment Management (RDM)

Monday, 19 September 2022 15:40 (1h 20m)

Any relevant links

Topic

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 142

Type: **not specified**

Continual Service Improvement (CSI), Benefits/Risks/Challenges of implementing ITSM, and Related standards/frameworks

Monday, 19 September 2022 17:20 (40 minutes)

Any relevant links

Topic

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 143

Type: **not specified**

Exam Prep / Training Wrap-up / Discussion

Tuesday, 20 September 2022 09:00 (50 minutes)

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: **144**

Type: **not specified**

Exam setup / log-in

Tuesday, 20 September 2022 10:00 (15 minutes)

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 145

Type: **not specified**

Exam

Tuesday, 20 September 2022 10:15 (45 minutes)

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 146

Type: **not specified**

Exam setup / log-in

Session Classification: Training: FitSM Foundation - a pragmatic standard for IT Service Management

Contribution ID: 147

Type: **not specified**

DIRAC: Introduction and ongoing developments

Tuesday, 20 September 2022 09:00 (30 minutes)

Presenter: Dr STAGNI, Federico (CERN)

Session Classification: Platform for distributed, big computing - DIRAC User Group meeting

Contribution ID: 148

Type: **not specified**

DIRAC for Space Science

Tuesday, 20 September 2022 09:30 (20 minutes)

Any relevant links

Topic

Presenter: HAGGSTROM, Ingemar (EISCAT)

Session Classification: Platform for distributed, big computing - DIRAC User Group meeting

Contribution ID: 149

Type: **not specified**

Using DIRAC for CTAO large-scale data processing

Tuesday, 20 September 2022 09:50 (30 minutes)

Presenter: Ms FAURE, Alice (LUPM, CNRS)

Session Classification: Platform for distributed, big computing - DIRAC User Group meeting

Contribution ID: **150**

Type: **not specified**

EGI Workload Manager service

Tuesday, 20 September 2022 10:20 (30 minutes)

Presenter: TSAREGORODTSEV, Andrei (CNRS)

Session Classification: Platform for distributed, big computing - DIRAC User Group meeting

Contribution ID: 151

Type: **not specified**

**Welcome by Mr. Lukáš Levák - Director of
Department for Research and Development. Czech
Ministry of Education, Youth and Sports.**

Tuesday, 20 September 2022 12:15 (5 minutes)

Session Classification: Opening Plenary