The EOSC Future, C-Scale, DICE, EGI-ACE, OpenAIRE-Nexus, Reliance and ARCHIVER projects are funded by the European Union Horizon Programme calls INFRAEOSC-03-2020 and INFRAEOSC-07-2020 and H2020-ICT-2018-20.
Outline

- Intro to the EOSC-Core
  Mark van de Sanden, SURF/EUDAT

- AAI
  Christos Kanellopoulos, GEANT

- Monitoring
  Kostas Koumantaros, GRNET

- Accounting for Services
  Kostas Koumantaros, GRNET

- Accounting for Research Products
  Andreas Czernia, Bielefeld University

- Order Management
  Roksana Wilk, Cyfronet

- Helpdesk
  Pavel Weber, Karlsruhe Institute of Technology

- Q&As
Intro to the EOSC Core

Mark van de Sanden, SURF/EUDAT
Minimal Viable EOSC

MVE includes:

- EOSC Core and subsets of EOSC Exchange, Federation
- EOSC resources (services, research products) required to “market” the EOSC
- Subset of the R&I community (showcases, e.g., COVID-19)
Guiding principles

• The EOSC Future core platform federates existing and new infrastructures into a system of systems.
• EOSC Future delivers the ‘glue-layer’ that allows for the composition of resources across infrastructures by:
  - Providing APIs and metadata
  - Providing Interoperability Frameworks
  - Providing portal capabilities
• Setup the EOSC-Core
• Populating the EOSC-Exchange with Services and Research Products
• Technical roadmap is driven by user requirements and implemented as an, over time increasing in complexity, set of user capabilities
EOSC Architecture
EOSC Architecture - Core

- Core platform
- Portal
- AAI
- Config management
- Service management
- Helpdesk
- Services & research products catalogue
- ...

- Coordination
- Policies
- Security
- ...

EOSC Core

- Rules of Participation
- Security Coordination
- PID Policy
- Onboarding
- Knowledge base
- Procurement

EOSC Support Activities

- Training and education
- Engagement and promotion
- Business collaboration & the Digital Innovation Hub

EOSC Exchange

- Core platform
- Configuration Management
- Service PIDs
- Service Catalogue
- Monitoring & accounting
- AAI
- Marketplace/Order Management
- Validation/usage stats of sources
- Resources/Res. Prods Catalogue
- Open Science Monitor

Horizontal services from wider community
- Expanded horizontal services from clusters
- 07 horizontal services
- e-Infra horizontal services

Coordination
- Policies
- Security
- ...
EOSC Architecture - Exchange

- Community
- Resources
- Portal
- Thematic services
- Horizontal execution layer
  - 07 Projects
  - e-Infra
  - Clusters
  - Community
Community view: different modes of collaboration

Organised Community

- Community consensus tools, portals, workflows and resources.

Thematic Provider A
- Community Platform
- Tools
- Workflows

Thematic Provider B
- Community Platform
- Tools
- Workflows

Community Platform
- Access portals, tools and workflows from other communities a researcher is a member of - e.g. national

Comprehensive Resource Catalogue
- Offer discovery of a comprehensive set of resources + experiments in resource composability

EOSC Core Platform
- Integrate:
  - Resources from EOSC, making them available to community members: services, data, other research products
  - Core services to add extra basic functionalities to community platforms

Emerging community
- Offer a space for emerging research communities.

Researcher
- Researcher
- Researcher
- Researcher
- Researcher
- Researcher
- Researcher
- Researcher
- Researcher
- Researcher
Different levels of integration with EOSC Core Platform

1) Onboard service into the EOSC Service Catalogue
2) Make your data discoverable via EOSC Research Product Catalogue
3) Provider joins the EOSC AAI Federation to allow easy access of EOSC users
4) Publish research product metrics to show OS impact
5) Allow availability monitoring
6) Connect Provider Helpdesk to EOSC Helpdesk to improve support channel
7) Allow service request and delivery through EOSC
8) Publish service usage figures for VA reporting

EOSC AAI Federation

Resource Catalogue (EOSC Exchange)

Research Product Catalogue
- Datasets
- Publications
- Software

Service Catalogue
- Services
- Data Sources

EOSC Resource Catalogue is main interface to discover Services and Research Products

Accounting for Products

Accounting for Services

Monitoring

Helpdesk

Order management

AAI Proxy

Data Source

Provider

Helpdesk

Service Delivery

Order management
<table>
<thead>
<tr>
<th>EOSC Future High Level Roadmap</th>
<th>User Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M6</strong></td>
<td><strong>M18</strong></td>
</tr>
<tr>
<td>1. Researchers can access and combine:</td>
<td>1. Researchers can orchestrate data analysis on computing resources provided by multiple e-Infra resource providers</td>
</tr>
<tr>
<td>a. EOSC Compute &amp; Storage resources</td>
<td>2. Integration with researchers’ storage systems</td>
</tr>
<tr>
<td>b. Horizontal services</td>
<td>2. Integration with researchers’ storage systems</td>
</tr>
<tr>
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**EOSC Future High Level Roadmap**

**User Experience**

**M6**

1. Researchers can access and combine:
   a. EOSC Compute & Storage resources
   b. Horizontal services

2. Researchers can see examples of complex workflows
   a. using multiple resource providers

**M18**

1. Researchers can orchestrate data analysis on computing resources provided by multiple e-Infra resource providers
2. Integration with researchers’ storage systems

**M30**

1. ‘Composability indicators’ associated to EOSC resources
2. Researchers can access fully integrated/end-to-end workflows for various research topics
3. Execution framework
AAI

Christos Kanellopoulos, GEANT
What is the AAI?

- AAI stands for Authentication and Authorization Infrastructure
- **Science Clusters, Research Infrastructures** and **e-Infrastructure Providers** have been implementing their AAI through the AARC Blueprint Architecture in order to manage their users and the access rights to resources.
  - The AARC Blueprint Architecture (BPA) provides a set of building blocks for software architects and technical decision makers who are designing and implementing access management solutions for international research collaborations.
What is the EOSC AAI?

- The goal for the EOSC AAI is to provide the trust mortar with which we join the many bricks of the current set of scientific communities, collaborations and infrastructures together.
  - The term “EOSC AAI” has sometimes been interpreted as a singular instance of the EOSC AAI Architecture. Nothing could be further from the truth. The EOSC AAI is a set of principles and governance structures for how the architecture evolves and grows over time.

- The EOSC AAI is comprised of the AAIs of the Science Clusters, Research Infrastructures and e-Infrastructure Providers, which are being brought together through the EOSC AAI Federation.
What is the EOSC AAI?

- Community AAIs and Infrastructure Proxies connect once with the EOSC AAI Federation (register metadata, URN namespaces, policies etc).
- Technical interoperability conformance tested and monitored by the EOSC AAI Federation.
- GDPR and Security Policy conformance (Policy Notices, Acceptable Use Policy etc) assessed by the EOSC AAI Federation.
- Community AAIs and Infrastructure Proxies discovery and establish trust with the rest of the Community AAIs and Infrastructure Proxies through the EOSC AAI Federation.
- The EOSC AAI Federation participates in the eduGAIN Inter-Federation to discovery and establish trust with Identity Providers and Services Providers that the EOSC AAI Federation requirements.
Integration options for Providers

National Academic Federations
Integration options
For Providers

National Academic Federations

Infrastructure Proxies
operated by Research Infrastructures
Integration options
For Providers

National Academic Federations

Infrastructure Proxies
operated by Research Infrastructures

Infrastructure Proxies
operated by e-Infrastructures
EOSC AAI Roadmap

- October 2022
  - The EOSC AAI Federation is fully operational. EOSC AAI e-Infrastructure SP-proxies and cluster community AAI services fully integrated to EOSC AAI Federation. Community AAI services can integrate.
  - Initial technical guidelines to connect IdP and AAI proxies from public and private sector service providers to the EOSC Federated AAI
  - Use case: A researcher from PaNOSC can access an ESCAPE resource with the PaNOSC (UmbrellaID) identity. Cross Research Infrastructure Access.
EOSC AAI Roadmap

- October 2023
  - A researcher can do the full lifecycle of data processing, storage, analysis, and publishing supported by resources available and transparently integrated through EOSC.
  - Community AAIs seamless integration with EOSC AAI federation through self-service onboarding.
  - Technical interoperability guidelines for supporting cross-sector access to the EOSC Federated AAI.
Monitoring

Kostas Koumantaros, GRNET
EOSC Monitoring Service

EOSC Monitoring Service is trying to emulate the user behaviour and constantly monitor the Services to provide:

- Real time status reports
- Availability and reliability reports
- Real time alerts
EOSC Monitoring

EOSC Core Monitoring:
https://eosccore.ui.argo.grnet.gr/

EOSC Exchange Monitoring:
https://argo.eosc-portal.eu/
Integration Option 1

Monitor an Onboarded Service (central one)

https://argo.eosc-portal.eu/
Integration Option 2
Monitor an Infrastructure (community)
Integration Option 3

Integrate External Monitoring service

Predefined data

Instance
Integration Option 3

Third-party services exploiting EOSC Monitoring data

API for A/R Results
API for Status Results
Real Time status results via AMS

EOSC-Exchange Monitoring
RoadMap

- Allows checking of services based on availability of their web pages/endpoints. Can support better integration via specific metrics. (Oct 22)
- Automated/self-service integration of monitoring probes and metrics offered to providers. Monitoring can track availability and reliability and accounting of usage based on parameters in provider and resource profiles (location, sector, organisation type). (Sep 22)
- Automated monitoring includes automated thresholds, raising issues, or alarms in the Service Management System based on results. (Sep 23)
Documentation & Contact Info

- Documentation: https://argoeu.github.io/argo-monitoring/
- Contact: https://eosc-helpdesk.eosc-portal.eu
One of the major gaps identified is the need to aggregate, exchange and visualise Virtual Access (VA) metrics between different e-infrastructures, service providers and INFRAEOSC-07 projects so that they can be presented to different Stakeholders (Service Providers, EC Projects, Research Communities, EC and Consumers/Researchers).

- Define VA Accounting record format:
  - Should likely hold as a minimum: KPIs, description/definition of the KPIs, time period, service type, service endpoint, service provider
  - Should be in a machine-readable format (e.g. JSON, XML)

- Define VA Accounting Transport/API Architecture:
  - Should be able to accept input from a number of different sources (e.g. all INFRAEOSC-07 projects)
  - Should be able to offer VA accounting records to a number of different clients - dashboards (external or internal)

- Define VA accounting storage and analysis mechanism:
  - Should be scalable
  - Should make basic associations between metrics and providers;

- Define a presentation layer for the VA accounting for:
  - Service providers
  - EC/projects/officials
  - Consumers
# Accounting for Services - Model

## Metrics Definitions

### Metrics Table

<table>
<thead>
<tr>
<th>Resource Id</th>
<th>Start</th>
<th>End</th>
<th>Value</th>
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<td>2022-01-08T09:14:07Z</td>
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<tr>
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<td>2022-02-02T23:59:59Z</td>
<td>301.0</td>
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<td>msg.argo.grnet.gr</td>
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<td>msg.argo.grnet.gr</td>
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<td>2022-02-04T23:59:59Z</td>
<td>303.0</td>
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<tr>
<td>msg.argo.grnet.gr</td>
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</tr>
</tbody>
</table>
Accounting for Services (WiP)

Proof of Concept available at https://acc.devel.argo.grnet.gr/

The PoC supports

- OIDC to handle Authentication/Authorisation
- Support the capability to Create/Update/Delete Metric Definitions
- Support the capability to Create/Update/Delete Metrics

Road Map

- Demo Instance Available by June 2022
- Beta Version Available by September 2022
Accounting for Research Products
Andreas Czerniak, Bielefeld University Library
Accounting for Research Products

- Research Products accounting service is able to aggregate (push and pull) usage indicators for different types of EOSC research products, like datasets, articles, books, etc.

- Collects usage data or usage statistics reports for EOSC research catalogue products and from the distributed network of Providers using open standards and protocols.

- Generates reliable, consolidated and comparable usage metrics, compatible with the COUNTER Code of Practice standards.

- Research Products accounting is provided by OpenAIRE UsageCounts Service.
Accounting for Research products

Resource Provider

part of

EOSC Core Service
Research Product Accounting
(NEXUS UsageCounts)

part of

Push Component

Pull Component
Accounting for Research products Architecture
Accounting for Research Products FactSheet

- Statistics on usage activity of Research Products
- Provision of standardized usage statistics reports via SUSHI-Lite API
- Complements existing citation mechanisms and assists stakeholders like (institutional repository managers, research communities, research organizations, funders, and policy makers) to track and evaluate research from an early stage
- Enrichment of EOSC Resource Catalogue with usage statistics indicators visible to end-users
Accounting for Research Products Roadmap

- WP4
  - M18: Usage statistics for datasets (views, downloads) will be collected and made available.
  - M18: Research Product Usage Stats integrated with EOSC Resource Catalogue
Order Management

Roksana Wilk, Cyfronet
What is it all about

- For EOSC Exchange **providers** and **provider communities** to attract, support and serve the EOSC users

- For **EOSC users** a unified channel to discover, access, order and compose EOSC Resources gaining support from their providers
User’s perspective
**Provider’s perspective**

### Parameters and offers

#### General purpose

Base performance instant in opportunistic or reserve overcommitted. Ideal for Development...

**Show more**

#### TECHNICAL PARAM

- **Number of CPU Cores**
- **Amount of RAM per CPU core**
- **Local disk**
- **Number of VM instances**
- **Access type**
- **Start of service**
- **Number of days**

**Edit Offer**

- **Base prefor Accessible if Ideal For: Wi Building ser**

**ORDER TYPE**

- **Order required**

**Order url**

URL should start with...
Offering API

EOSC Marketplace Offering API

Documentation of the EOSC Marketplace REST API for integration of other software systems

Order Management interoperability patterns
Order management interoperability patterns

- The back-office service resource orders management with no adoption cost
- On-premise Jira integration - a reference for other integrations
- Tailor-made provider / community order management system - with the use of REST API, or a reference Python client
  Support for custom order processing workflows
Integration V3 with the ordering process
EOSC Order Management: The Future

NEXT STEPs

- Virtual Access and other procurement models support
- EOSC Service Accounting Integration
- EOSC Service Monitoring Integration

Use Cases
Cooperation
We build EOSC together!

r.wilk@cyfronet.pl
a.pulapa@cyfronet.pl

M30

1. ‘Composability indicators’ associated to EOSC resources
2. Researchers can access fully integrated/ end-to-end workflows for various research topics
3. Execution framework
EOSC Helpdesk

Pavel Weber, KIT
The Helpdesk in the EOSC ecosystem is a backbone service which facilitates:

- Instant communication
- Proactive support for EOSC customers/users
- Stable operation of EOSC Services
- Support for the users of EOSC service providers and research communities
# EOSC Helpdesk

## Reference card

<table>
<thead>
<tr>
<th>Helpdesk URL</th>
<th><a href="https://eosc-helpdesk.eosc-portal.eu">https://eosc-helpdesk.eosc-portal.eu</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Helpdesk Email</td>
<td><a href="mailto:eosc-support@scc.kit.edu">eosc-support@scc.kit.edu</a></td>
</tr>
<tr>
<td>Helpdesk page in EOSC Portal</td>
<td><a href="https://eosc-portal.eu/contact-us">https://eosc-portal.eu/contact-us</a></td>
</tr>
<tr>
<td>Interoperability guidelines</td>
<td><a href="https://confluence.wiki">Confluence wiki</a></td>
</tr>
</tbody>
</table>
EOSC Helpdesk: Major Features

- User friendly Customer Interface
- Dashboard for helpdesk stuff
- Smart search
- Customizable fields
- History of changes
- Escalation
- Reporting
- Flexible notifications
- Integration via REST API
EOSC Helpdesk: Benefits for Providers

EOSC Helpdesk is available as-a-service for EOSC Providers

The main benefits are:

- No need to maintain own helpdesk
  - EOSC Helpdesk offers providers to support their users
  - Single/Multiple Support Groups
- Branded provider/community portal (currently in development)
- If provider has a helpdesk it can be integrated in multiple ways with EOSC Helpdesk (more on that in the next slide)
- Multiple ways for customers to contact provider (email, via portal, webform, chat if requested)
- Channel of instant communication with whole EOSC Community

Support Group - is a group of experts who provide support and assistance for defined class of incoming requests
EOSC Helpdesk: Integration Options for Provider

Three main integration options for Providers:

- **Direct usage (as-a-service):**
  - Support group or multiple groups
  - Implementation of custom workflows

- **Ticket redirection:**
  - EOSC Helpdesk just a contact point which redirects tickets to provider’s mailing list or ticket system

- **Full integration**
  - Bidirectional synchronization of tickets in EOSC and provider’s helpdesk

**Prerequisite:** provider’s helpdesk API in place
1. Users contacts central EOSC entry point

EMail: eosc-support@scc.kit.edu

2. Users contacts directly provider, no EOSC 1st line involvement

EMail: provider-support@provider.com

Answer to User

Provider Support Group

EOSC 1st line Support

EOSC Support Group A
EOSC Support Group B
EOSC Support Group N
EOSC Helpdesk: Roadmap and Next Steps

- EOSC Helpdesk is in production for EOSC and ready for providers

**Short term plan (2022)**
- Integration with EGI and EUDAT Helpdesks
  - Full synchronization
  - Ticket redirection
- Enable Helpdesk-as-a-service pilots for providers and research communities
  - Request -> Analysis of requirements -> Specification -> Deployment
  - Customization
- Helpdesk Offers for Providers in EOSC Portal during onboarding process

**Next year 2023**
- Dedicated branded portals for providers and research communities
EOSC Helpdesk: Where to Start

If you as Service Provider would like to learn more about integration:

- Open ticket at [https://eosc-helpdesk.eosc-portal.eu/](https://eosc-helpdesk.eosc-portal.eu/)
- Request access to Helpdesk Test Instance as agent
- Examine features and functions, test workflows
- Start integration with production EOSC Helpdesk

Thank you!