



# KER 4: EOSC-hub contribution to the EOSC Core: Internal Services in the Hub Portfolio

Pavel Weber, EOSC-hub WP5 Leader (KIT)

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 [eosc-hub.eu](https://eosc-hub.eu)

 [@EOSC\\_eu](https://twitter.com/EOSC_eu)

**Dissemination level:** Public

Disclosing Party: Project consortium

Recipient Party: European Commission





**Enterprise:** *Boost innovation*



Digital Innovation Hub:  
Platform for industrial  
collaborations with EOSC

EOSC  
Portal  
and  
Marketplace

**EOSC-hub  
Key Exploitable  
Results**



**EOSC Hub Operators:** *Develop the EOSC  
landscape*



**Service Providers:**  
*Provide services for  
Researchers*

**Internal services in the Hub portfolio**

*Educate, inform  
and support my  
team and  
community*



Rules of Participation



Service Management  
System

Business and sustainability models for  
services and the Hub

Training  
courses and  
Materials



Interoperability &  
Integration Guidelines

Services in the EOSC Service  
Portfolio



**Researchers and research communities:**  
*Empower my research*



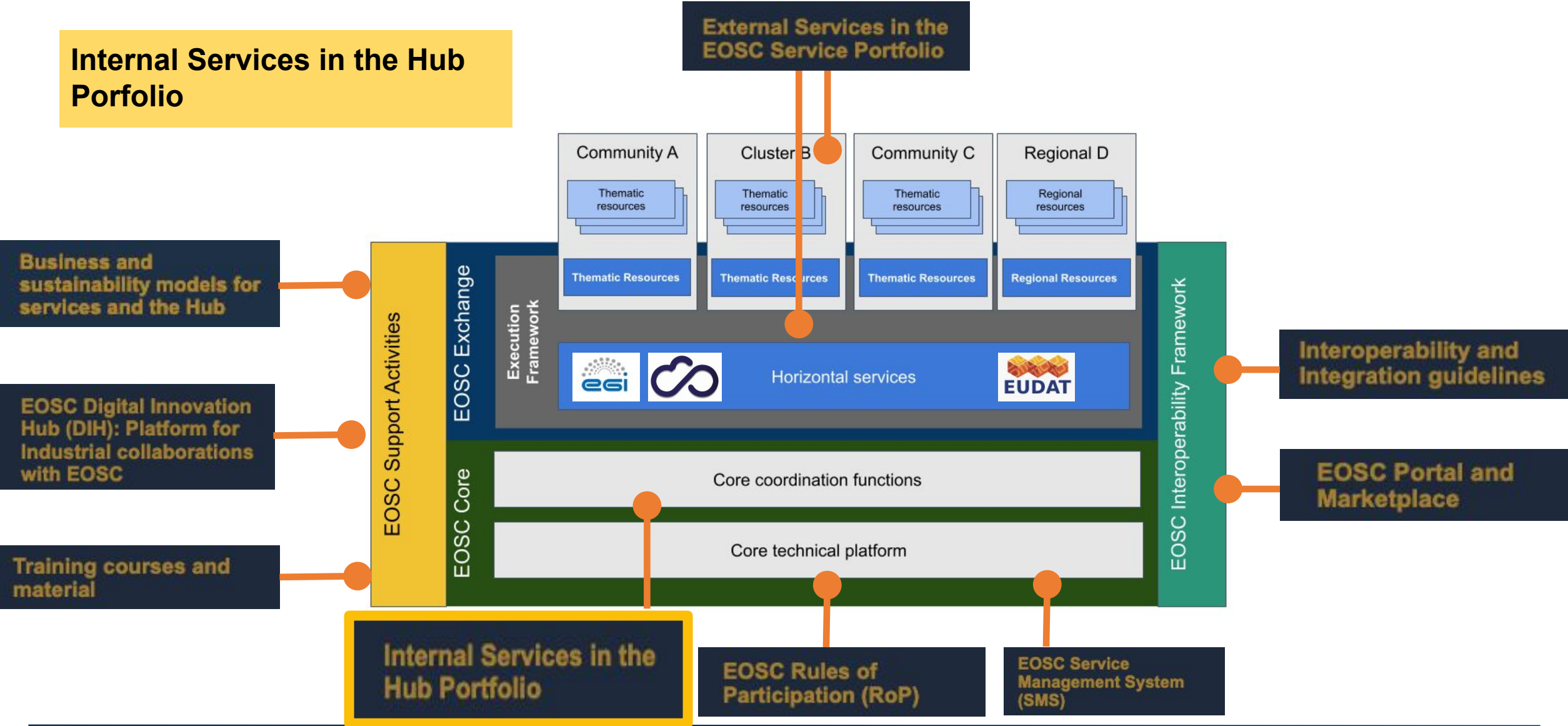
# Description of the KER

<b>Description</b>	<p>The Internal Services offer a set of capabilities such as resource discovery, access, ordering, monitoring, accounting, user support and contribute to the core functions of EOSC, its stable and distributed operation. By providing common and standard interfaces the Internal Services facilitate the onboarding and integration of thematic and researcher-facing resources delivered by various communities in the EOSC.</p>
<b>Type</b>	<p>Collection of software and service components with standard interfaces to provide consistent user experience.</p>
<b>Key innovation</b>	<ul style="list-style-type: none"> <li>• KER provides basic enabling services for EOSC with standardised interfaces</li> <li>• KER improves interoperability e.g. for AAI</li> <li>• KER simplifies integration with EOSC</li> <li>• KER facilitates many EOSC SMS processes by implementation of requested tools and workflows</li> </ul>
<b>Related information</b>	<p>Many services were initially designed within EGI, EUDAT, GEANT e-infrastructures have been enhanced and integrated according to the requirements of EOSC SMS and EOSC communities</p>



**Internal Services in the Hub Portfolio**

**External Services in the EOSC Service Portfolio**

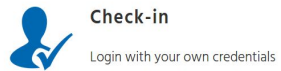




**Innovation**

# EOSC-hub Overview of the Internal Services

## Authentication & Authorisation



## Discovery & Ordering

Welcome to the EOSC Portal Catalogue and Marketplace

Integrated platform that allows easy access to lots of resources for various research domains along with integrated data analytics tools. Browse by scientific domain, resource category or provider and, if you need help, we are here for you!

Find EOSC Resources that suit your use case yourself → Browse through catalogue

Describe your use case and get support from our experts → Go to your projects

### SOMBO - Service Orders



OPERATIONS PORTAL

EOSC Instance

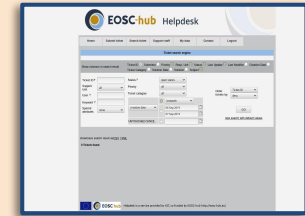


## Software & apps repositories



EGI Community repository

## User & operations support



RT for EUDAT eudat.eu



GGUS - the Helpdesk

Tickets

## Monitoring & Accounting



APEL

ARGO Messaging Service

## Configuration repositories

GOCDB

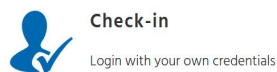


DPMT

SVMON – Service Version Monitoring Framework for ESOC-hub.

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### SOMBO - Service Orders

### OPERATIONS PORTAL

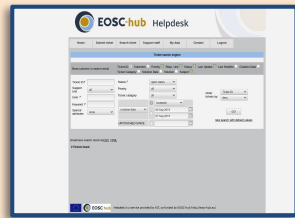
EOSC Instance

# EOSC Portal

## Software & apps repositories

### EGI Community repository

## User & operations support



### RT for EUDAT eudat.eu

### GGUS - the Helpdesk

Tickets

## Monitoring & Accounting



### The EGI Accounting Portal

### ARGO Messaging Service

## Configuration repositories

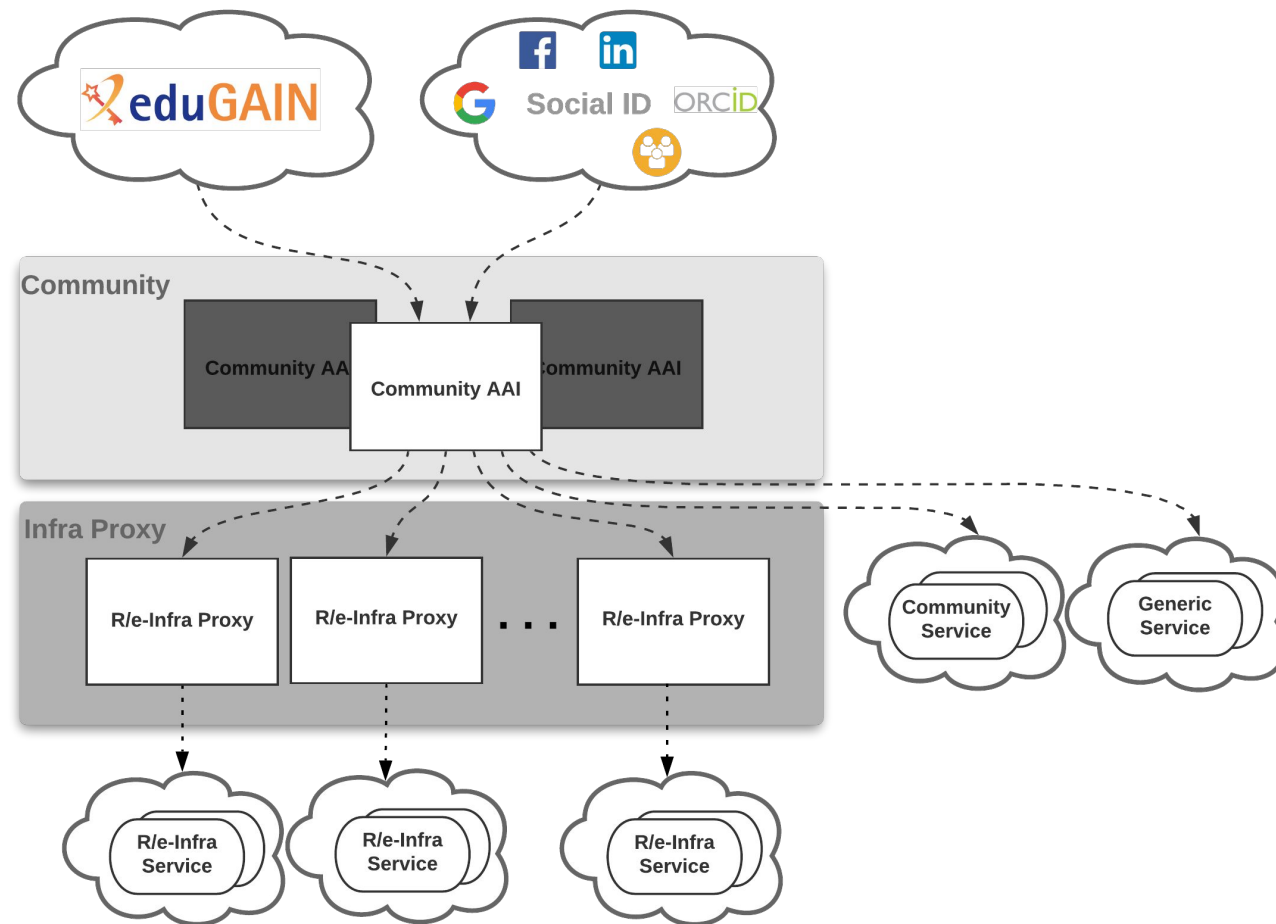
### GOCDB

# DPMT

### SVMON - Service Version Monitoring Framework for ESOC-hub.

## EOSC-hub AAI:

- **Provides**
  - An infrastructure for **seamless access** and authorisation against EOSC resources based on existing community identities.
- **Consists** of major AAI services ( Idp/SP Proxies):
  - Check-In (EGI)
  - B2ACCESS (EUDAT)
  - INDIGO-IAM (Indigo community)
  - eduTEAMS (GEANT)
- **Offers**
  - For communities: Management of **community members' identities** to access underlying resources
  - For resource providers: Connect the resources to EOSC AAI and make them **available** for research communities using any supported protocol ( OpenID, OAuth2, SAML2)



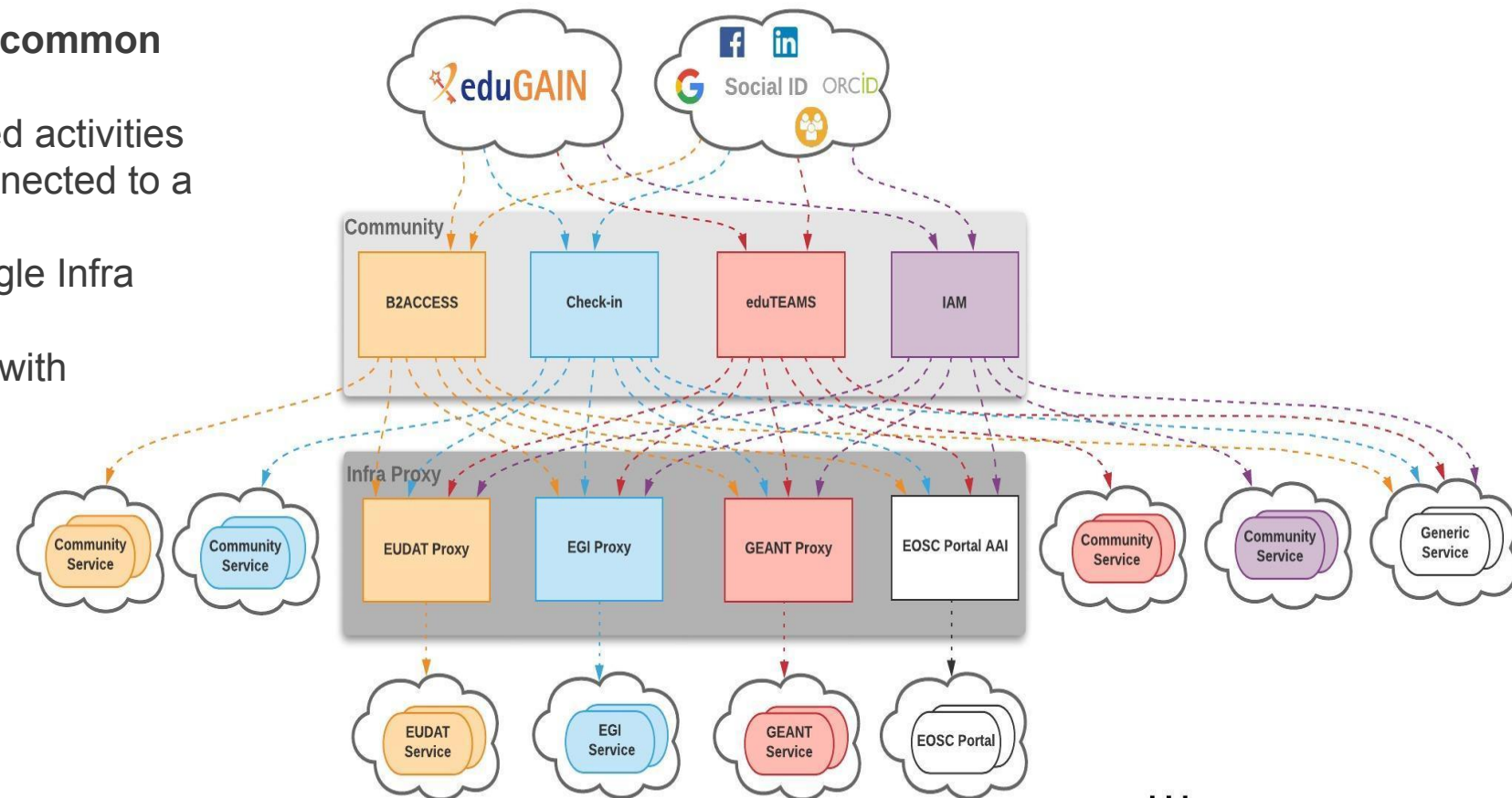
High-level AAI architecture for access to EOSC resources



# AAI achievements: common interfaces to multitude of services

## Implementation of AAI architecture via common interfaces and protocols:

- Technical alignment and policy related activities
- Community-specific services are connected to a single Community AAI
- e-Infra services are connected to single Infra Proxy
- Community AAIs are interconnected with e-Infra Proxies



*Implementation of AAI architecture for access to EOSC resources*

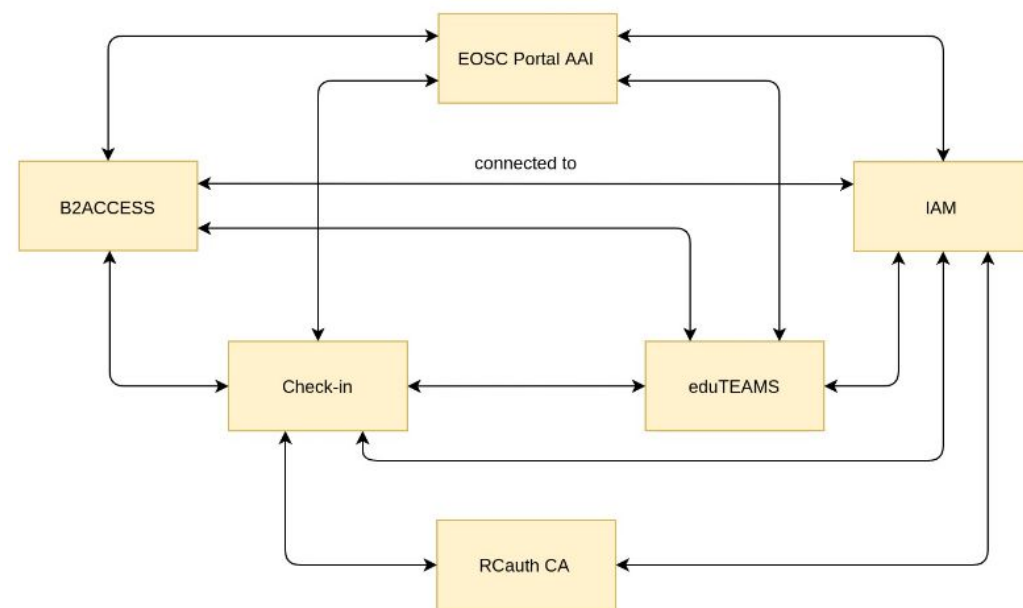
## Achievements:

**Easy & uniform access has been enabled to a multitude of EOSC services with credentials from different home organisations by deployment of scalable, interoperable and trusty AAI framework**

- Alignment and harmonization of User Attributes across major AAI Services.
- Interoperability of AAI services by adoption of standard protocols ( SAML2.0, OIDC, OAuth 2.0)
- Delivery of **EOSC Portal AAI**
- Consultancy, support and guidelines
- **153 services** have been integrated during project phase.
- Contribution to AAI task force of EOSC Architecture Group

## Challenges

- **Trust** between communities holding the AAI services
- **Scalability** of M:N relationships and interconnections
- **Cross-infrastructure workflows**



*Major AAI services and their relationships*

# Discovery and Ordering: Objectives and service description

## Order Handling System:

- **Provides**

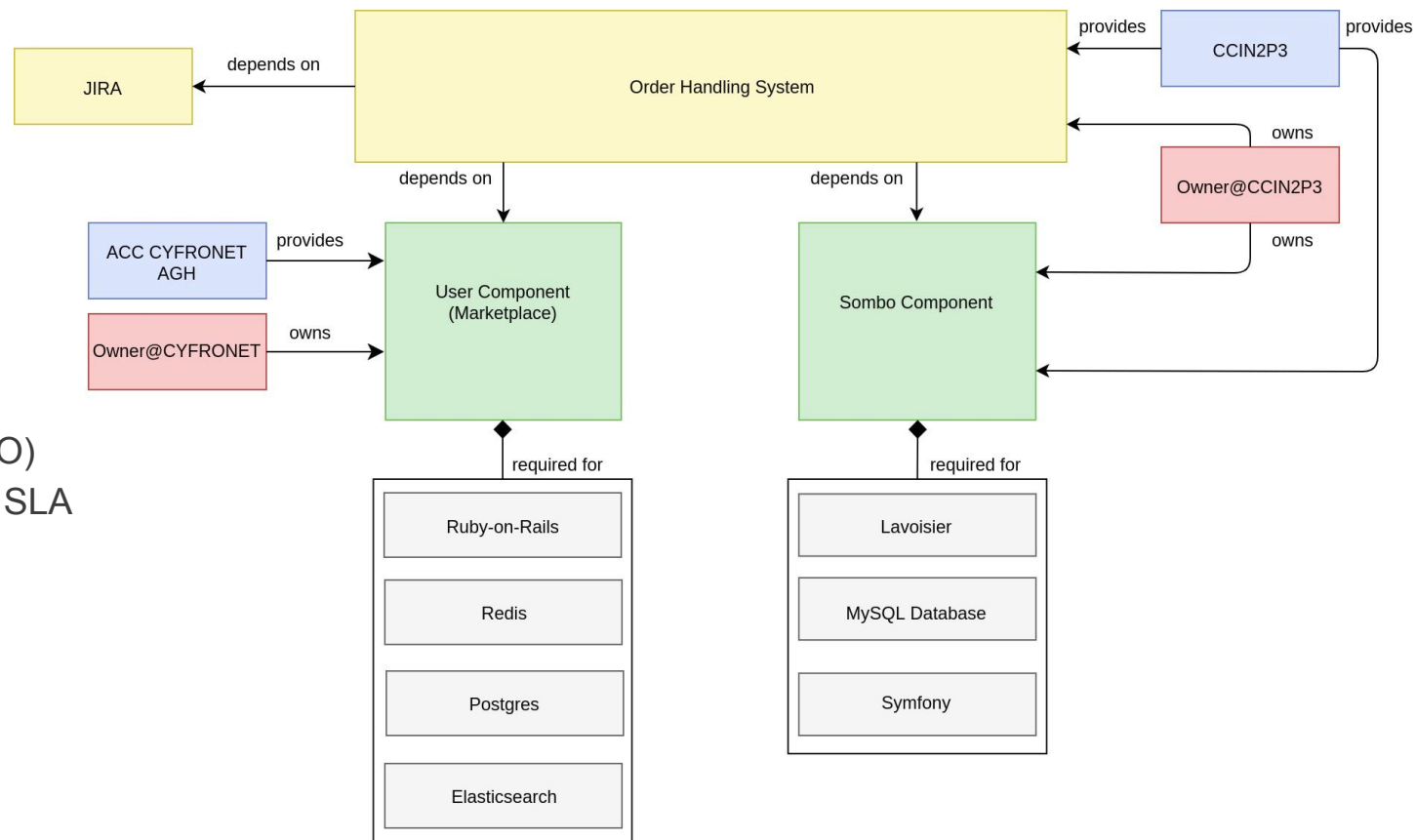
- An interoperable platform with support of complex procedures within Service Order Management Process.

- **Consists of:**

- EOSC Catalogue and Marketplace
- Service Order Management Back Office (SOMBO)
  - Web interface to handle orders and define SLA
  - Interface towards third-party order management systems

- **Offers:**

- Resource discovery, ordering and deployment
- Integration with other systems
- Statistics and metrics



*Order Handling System and its components*

## Service Order Management Back Office:

- Multiple dashboards
  - Top views for order
    - Search
    - Sort
    - Select
  - Detailed order views
    - Update order information
    - Contact customer
    - Assign orders to resource providers
    - Negotiate order implementation
    - Generate OLA and SLA

Service order, *Minina Minina*, EGI Cloud compute

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**Access type :** opportunistic

**Start date :** 07/10/2020

**End date :** 08/10/2020

**Service Area :** Processing & Analysis

**ServiceOption :** EGI Cloud compute

**Service :** General purpose

**Generic provider :**


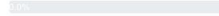
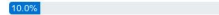




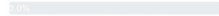
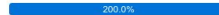



**Email :** support@egi.eu,

**Site :** <https://www.egi.eu/services/cloud-compute/>

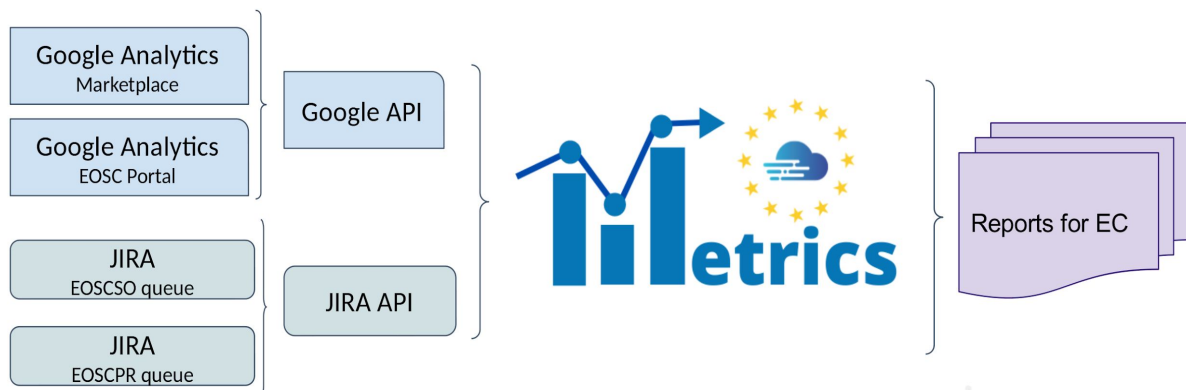
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Request	Value	Total
Number of CPU Cores	1	200.0%
Amount of RAM per CPU core	1	200.0%
Local disk	10	10.0%
Number of VM instances	1	200.0%
Start of service	10/07/2020	

+ Add provider
✉ Contact provider
📄 Generate OLA/SLA

Id	Resource center	Contact	Resources Type	Start	End	Ava	Rel	Validation	Action
1158	TU-Heine	gpi@eg.eu	Number of CPU Cores : 2  Amount of RAM per CPU core : 0  Local disk : 1  Number of VM instances : 1 	07/10/2020	08/10/2020	90%	95%	validated by Cyril Lorphelin   2020-10-27 10:39:07	  
1164	ROC_Canada_SERVICES	roc@eg.eu	Number of CPU Cores : 0  Amount of RAM per CPU core : 2 	07/10/2020	08/10/2020	90%	95%	waiting for validation	  

*Dashboard for management of service orders*



*Architecture of EOSC Metrics Module*

EOSC Metrics module to collect metrics from

- EOSC Portal usage
- Order Handling System



EC REPORT    EOSC SERVICE ORDER    EOSC SERVICE PROVIDER

Reports    Google Analytics Details

## EOSC Portal Metrics

### Service and providers

269	Number of services in the EOSC Marketplace	Total number at the report time
121	Number of request from providers about new service	Total number of services providers published during the period

### Visitors and views

2,372	Number of visitors of EOSC Portal	average/month
7,853	Number of page views for EOSC Portal	average/month
6,246	Number of unique page views for EOSC Portal	average/month
<b>Top 10</b>	EOSC Portal Visitors / country	List of countries
	Italy Germany Belgium France Spain Netherlands United Kingdom United States Ukraine Greece	

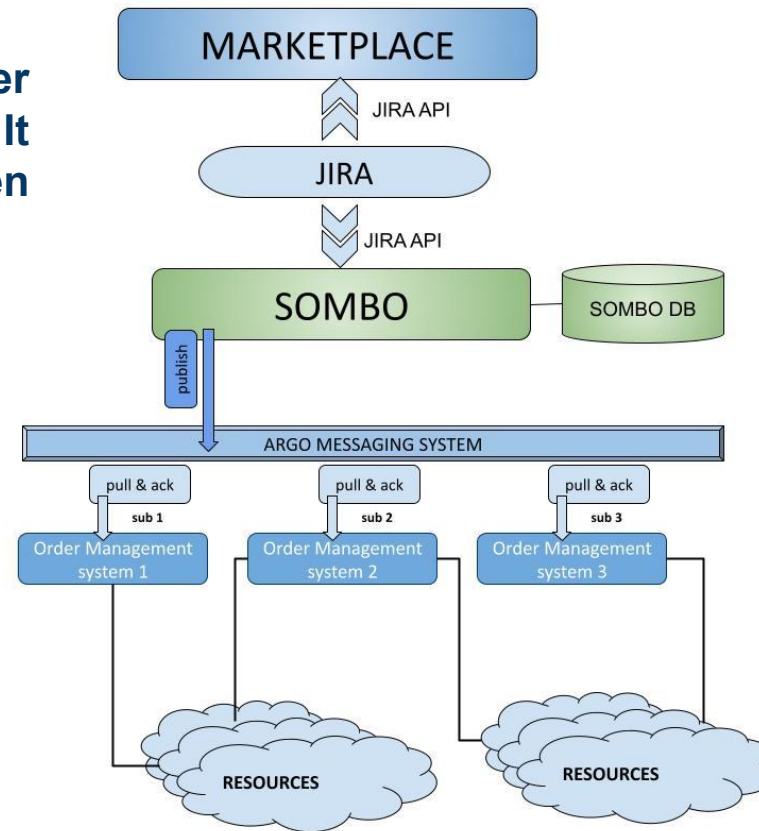
## Achievements:

Deployed Order Handling system supports the automatic order propagation to service provider and flexible order management. It implements an efficient communication channels between customers and service providers.

- **Enhancement of Marketplace** and its integration with EOSC Portal
- Development of **White labeled Marketplace** to support communities
- Deployment of Service Order Management Back Office ( **SOMBO** )
- Implementation of Order Management Procedures (WP4,WP5)
- Integration with Argo Messaging Service **to support integration** with external order management systems
- Deployment of **metrics module** to collect EOSC Portal usage statistics and orders statistics

## Challenges:

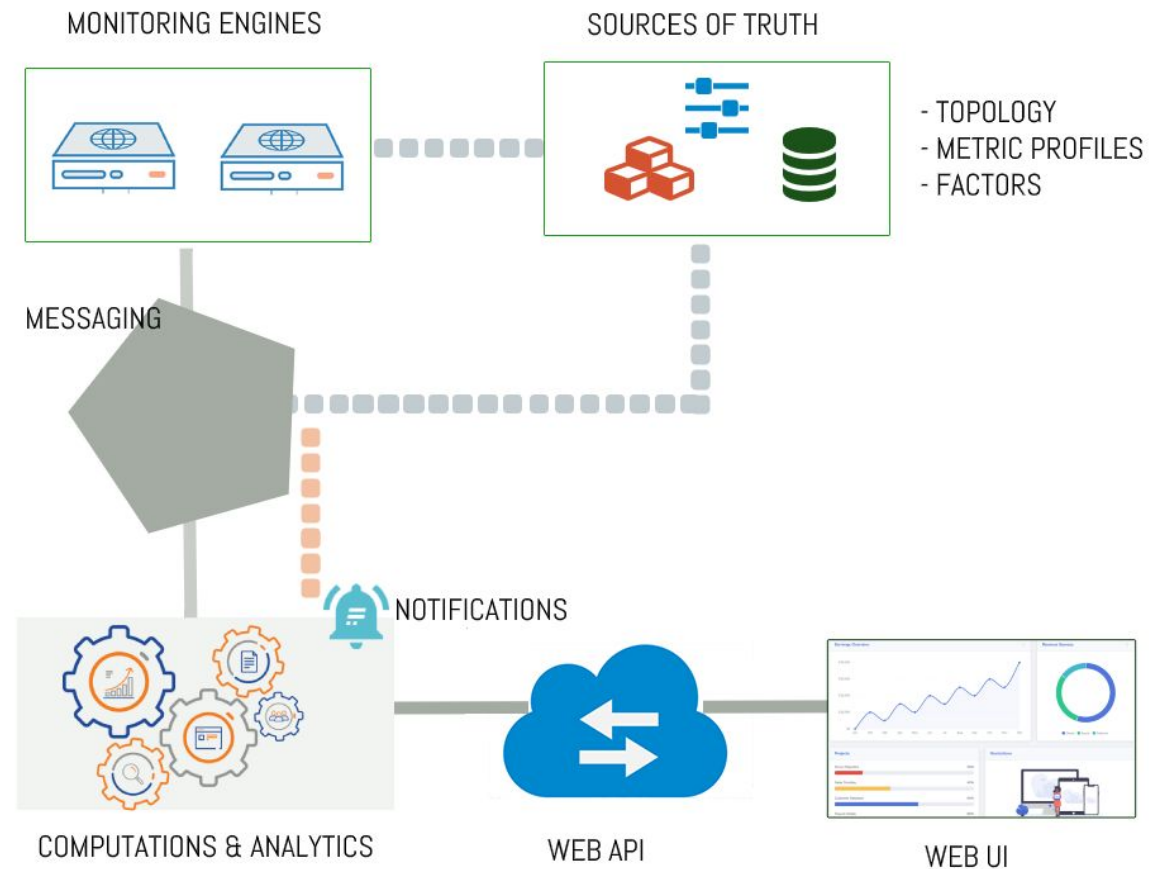
- Scalability
- Attempts of Integration with external order management systems failed
  - Interoperability issues
  - Absence of common information and configuration layer
  - Absence of external order management systems



*High-level diagram of SOMBO integration with multiple Order Management Systems based on ARGO Messaging System*

## ARGO Monitoring System:

- **Provides** a service to detect and identify problems in the infrastructure, perform an analysis of metric data and send real-time alerts.
- **Consists of:**
  - Topology databases
  - Monitoring engines
  - Messaging service
  - Computation component
  - Web API & Web UI
- **Offers:**
  - Unified Web UI with EOSC, EGI and EUDAT dashboards
  - Availability/Reliability reports, real-time alerts
  - Probe management
  - SLA Threshold management
  - Integration for service providers



*High-level architecture of a Monitoring service*

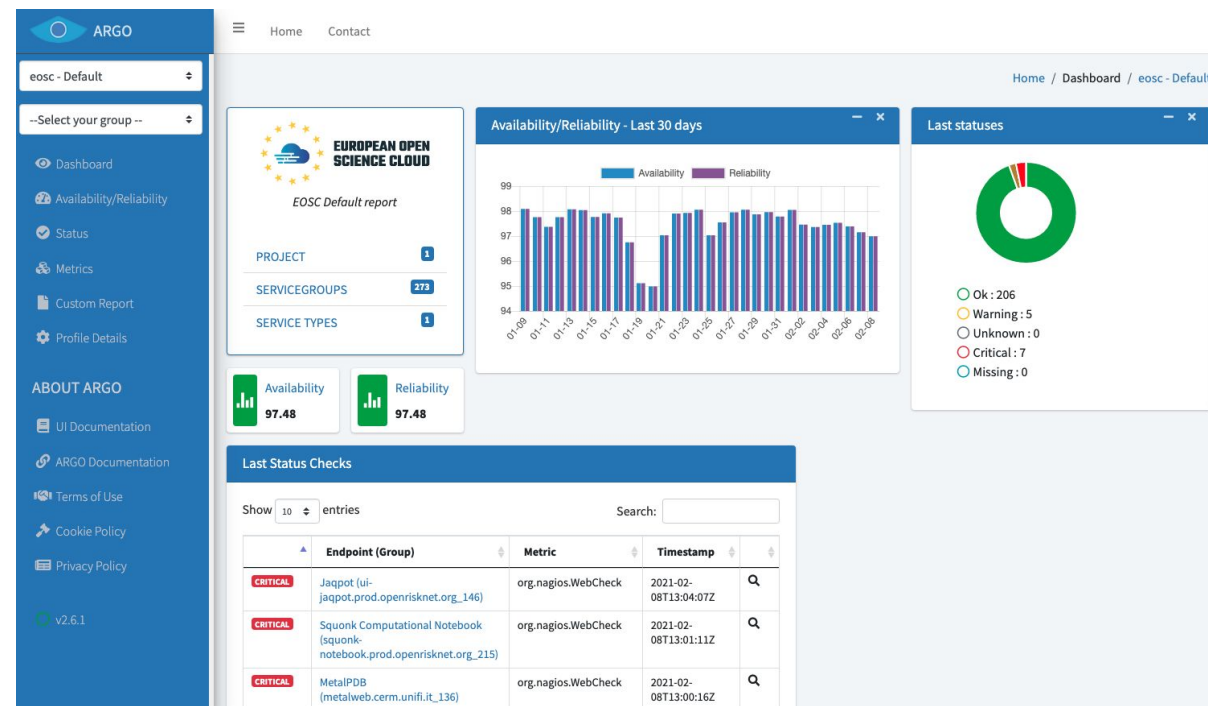
## Achievements:

The enhancement of One Stop Shop ARGO Monitoring simplifies and automates the operation and configuration of ARGO components performed by customers according to their predefined cases

- Initial integration with EOSC Portal
- Deployment of **ARGO Web-API** for unification of information flow and topology sources in the system
- **Unified web-portal** with multiple dashboards from different providers/infrastructures
- Increased number of monitored services: **500→1300**

## Challenges:

- Development of monitoring probes could be cumbersome for some specific services
- Provide and manage order-related monitoring information ( e.g. Availability reports for resources within order, which has been executed).

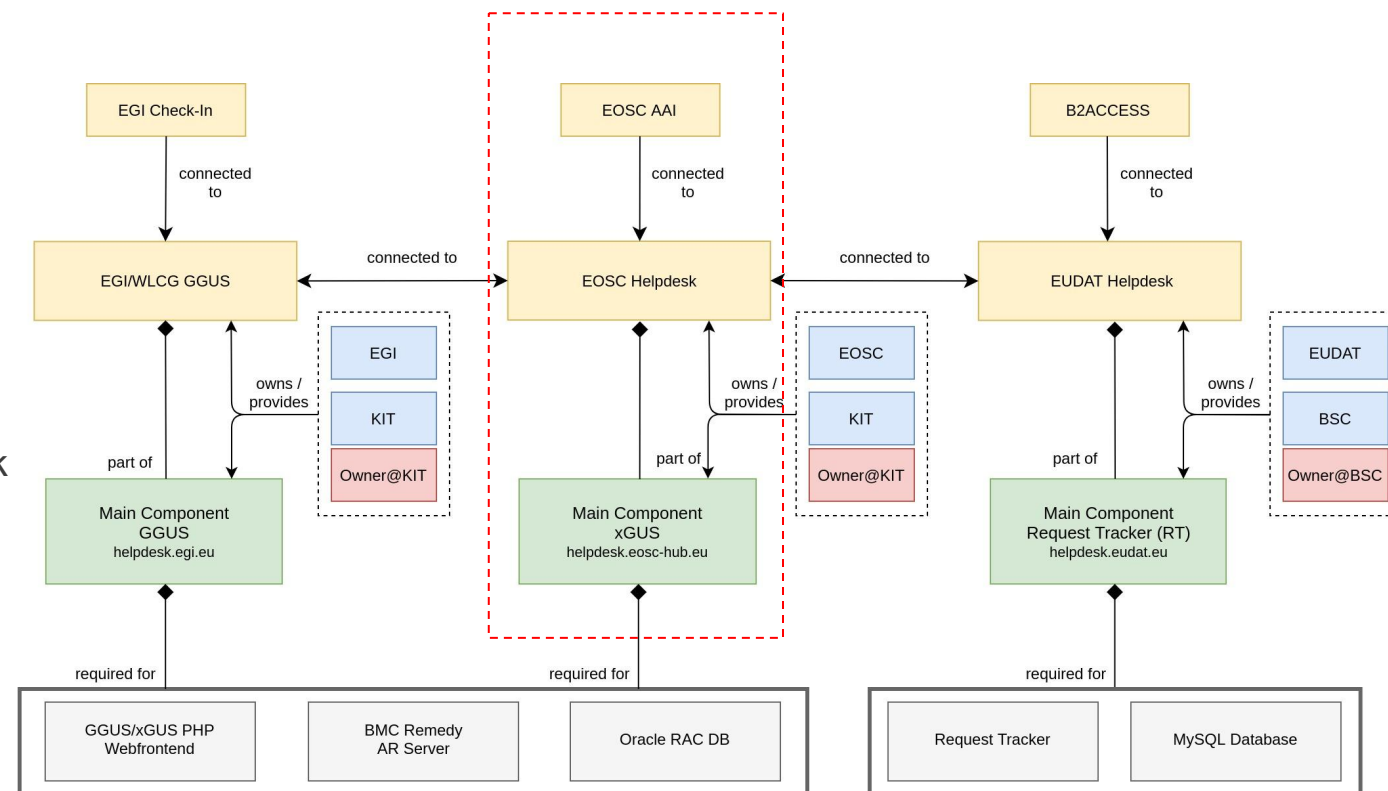


*ARGO monitoring dashboard for on-boarded services*

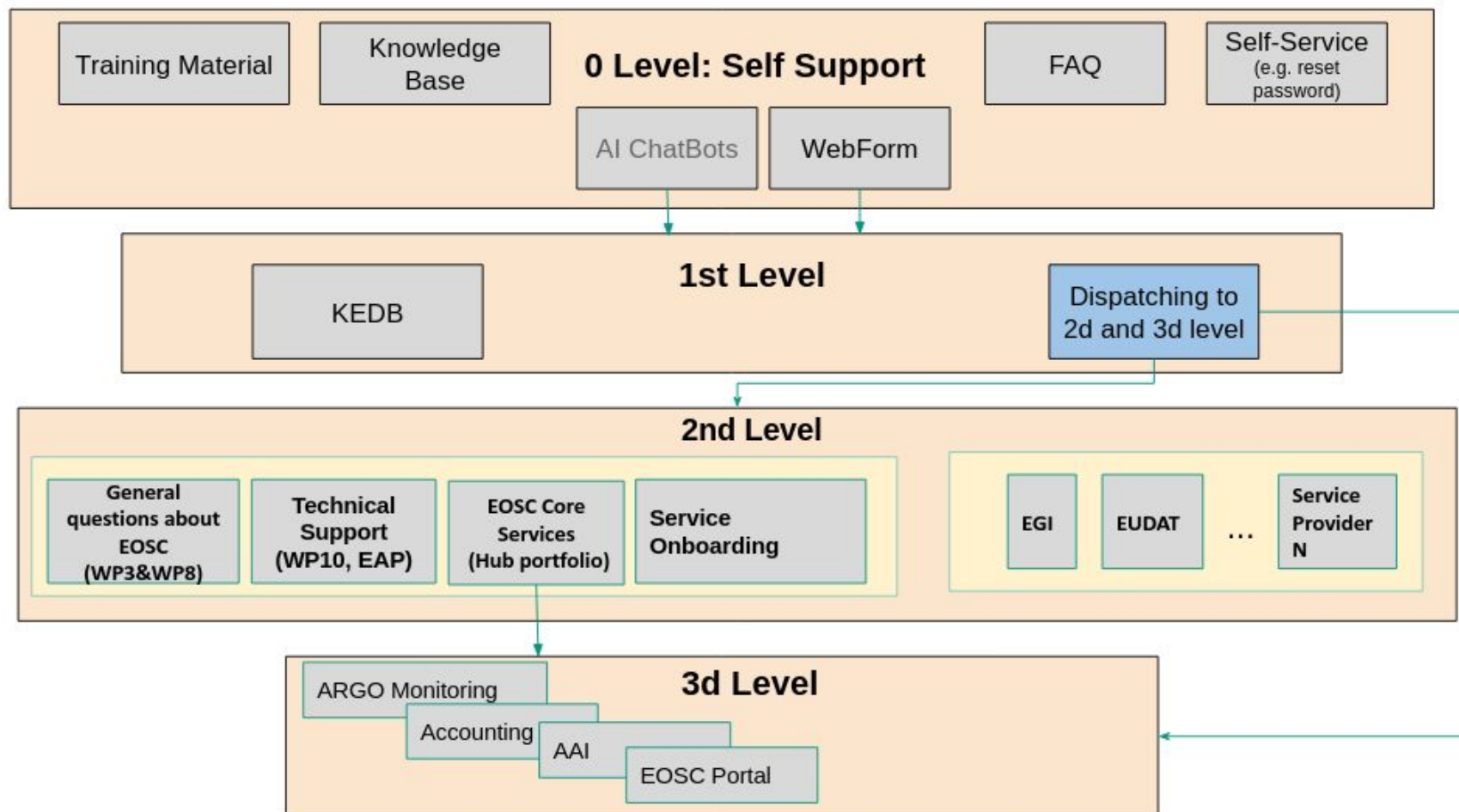


## Helpdesk System:

- **Provides**
  - Support and communication channel for EOSC users & providers
- **Consists of:**
  - EOSC-hub central xGUS Helpdesk, which is integrated with EGI Helpdesk and EUDAT Helpdesk
- **Offers:**
  - For users:
    - Submission
    - Access all tickets
    - Notification
  - For resource providers:
    - Ticket management
    - Support unit management
    - Several integration possibilities



*Configuration Diagram of EOSC Helpdesk integrated with EGI and EUDAT helpdesks*



*Implemented Helpdesk Support Units*

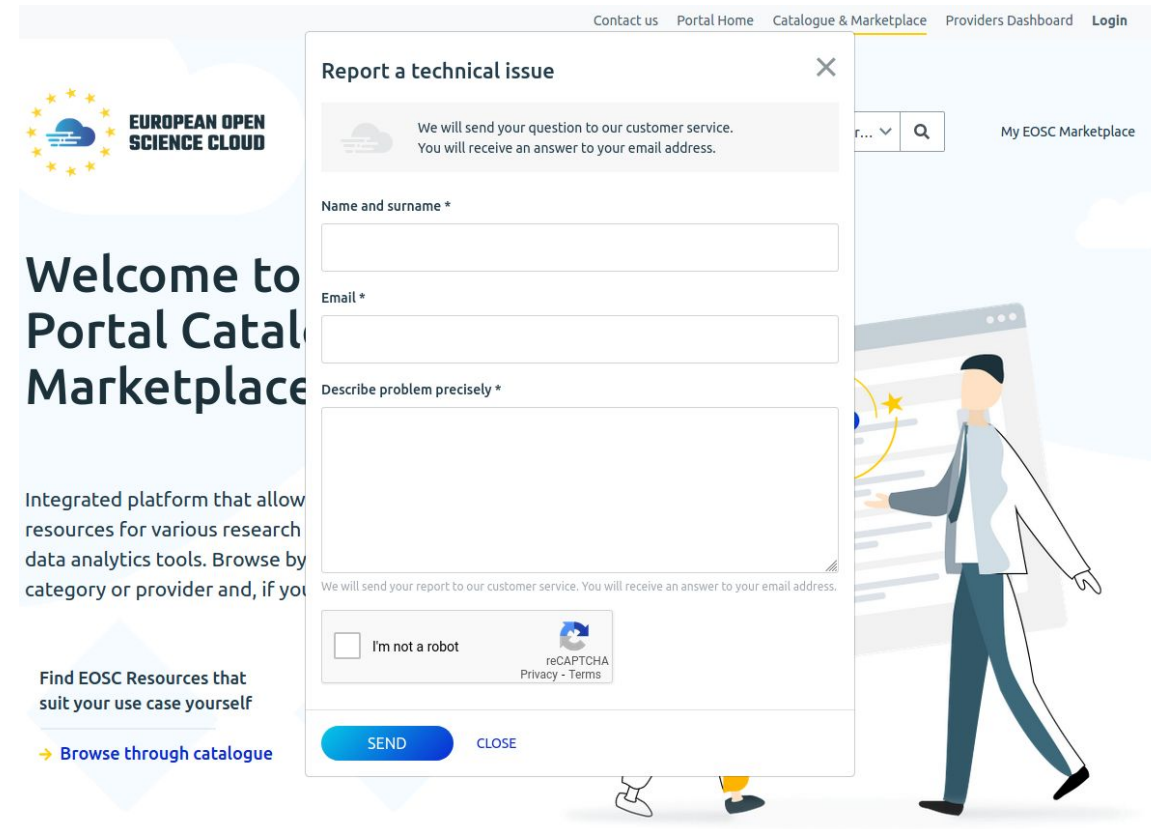
## Achievements:

**EOSC Helpdesk provides a unified interface for the users of the different infrastructures integrated in EOSC, facilitating their access to support units and providing a unified system to store, classify and escalate the incidents and problems.**

- Integration with EGI and EUDAT Helpdesks
- Webforms EOSC Portal, EOSC-hub website
- **Integration offers** for Communities

## Challenges:

- Full integration with external helpdesks based on current technology is complicated
- Slow response of some support units
- Integration with topology & configuration databases
- Development of Self Support, connection to Knowledge Base
- Requirements from communities to provide multiple community-based Helpdesk Portals



*Helpdesk Webform in EOSC Portal*



Candidate services that shape the Beta EOSC-Core:

Service	Instance URL
<b>EOSC Portal AAI</b>	<a href="https://aai.eosc-portal.eu/proxy">https://aai.eosc-portal.eu/proxy</a>
<b>EOSC Helpdesk</b>	<a href="https://helpdesk.eosc-portal.eu/">https://helpdesk.eosc-portal.eu/</a>
<b>EOSC Marketplace</b>	<a href="https://marketplace.eosc-portal.eu">https://marketplace.eosc-portal.eu</a>
<b>EOSC Operations Portal</b>	<a href="https://opsportal.eosc-portal.eu">https://opsportal.eosc-portal.eu</a>
<b>EOSC Monitoring</b>	<a href="https://argo.eosc-portal.eu">https://argo.eosc-portal.eu</a>
<b>EOSC Configuration Repo</b>	<a href="https://gocdb.eosc-portal.eu">https://gocdb.eosc-portal.eu</a>



# Exploitation

# Who can exploit the result? What benefits does it bring?

Exploitation audience (remove rows that are not relevant)	Benefit
EOSC-CORE and EOSC Operators	<ul style="list-style-type: none"><li>• KER contributes to the establishment of EOSC-Core by providing multiple services to facilitate EOCS-Core operation</li><li>• Onboarding and integration of services in EOSC</li><li>• Automation of processes and procedures.</li><li>• User support</li></ul>
Service Providers	KER delivers a toolset for providers to integrate their services in EOSC in order to streamline discovery, access and efficient usage of services
Researchers and research communities	Researchers and research communities benefit from simplified access to EOSC services and e-infrastructure resources required for their research.

- KER is being used by other EOSC-related projects such as EOSC-Enhance, EOSC Future, DICE and EGI-ACE
- Some of the services -such as AAI or Monitoring have become commonly used, general-purpose components that have been exploited in a wide range of projects, also beyond the EOSC context
- Many services in the KER will shape EOSC-Core in EOSC Future project

- Tools supporting the KER are licensed under a number of different open-source licenses. This ensures that irrespective of ownership, the software is available to EOSC in the future.





- EOSC-hub delivers a well-defined set of **internal services** together with interoperability guidelines, documentation, open standards and APIs to shape EOSC-Core.
- Vast multiplicity of new functionalities, integrations etc. for internal services has been implemented **to support different requirements** of stakeholders, thematic services, internal EOSC processes and procedures in compliance with the roadmap and primary objectives.
- In the next EOSC related projects it's important to focus on definition of **“cross-functional, multi-tenant business processes”**, a good examples are Onboarding, resource ordering in order to consolidate the efforts on further development and shaping of EOSC Core.

<b>EOSC-hub website</b>	<ul style="list-style-type: none"> <li>• <a href="https://www.eosc-hub.eu/news/sombo-order-management-system-eosc-portal-now-production">https://www.eosc-hub.eu/news/sombo-order-management-system-eosc-portal-now-production</a></li> <li>• <a href="https://www.eosc-hub.eu/news/argo-service-monitoring-has-pilot%C2%A0integration-eosc-portal">https://www.eosc-hub.eu/news/argo-service-monitoring-has-pilot%C2%A0integration-eosc-portal</a></li> <li>• <a href="https://www.eosc-hub.eu/news/meeting-argo-team-zagreb">https://www.eosc-hub.eu/news/meeting-argo-team-zagreb</a></li> <li>• <a href="https://www.eosc-hub.eu/news/eosc-hub-marketplace">https://www.eosc-hub.eu/news/eosc-hub-marketplace</a></li> <li>• <a href="https://www.eosc-hub.eu/news/first-integration-results-collaborative-and-federation-services">https://www.eosc-hub.eu/news/first-integration-results-collaborative-and-federation-services</a></li> <li>• <a href="https://www.eosc-hub.eu/news/eosc-hub-releases-documentation-its-federation-services-let-us-know-what-you-think">https://www.eosc-hub.eu/news/eosc-hub-releases-documentation-its-federation-services-let-us-know-what-you-think</a></li> </ul>
<b>Magazine</b>	<a href="https://www.eosc-hub.eu/news/eosc-hub-magazine-issue-7">https://www.eosc-hub.eu/news/eosc-hub-magazine-issue-7</a>
<b>Selected presentations at events</b>	<ul style="list-style-type: none"> <li>• Session “EOSC Core and the Service Management System” Realising the European Open Science Cloud, Online event 2020</li> <li>• Session “Training on the EOSC-hub AAI: the service provider perspective”, EOSC-hub Week, Prag, 2019</li> <li>• Presentation “AARC Blueprint Architecture and its evolution – towards the EOSC AAI for research communities”, ESFRI RIs and EOSC, 2019, London</li> <li>• Session “The EOSC-hub proposal for the EOSC AAI”, EOSC-hub Week, Malaga 2018</li> <li>• Many webinars and online training sessions</li> </ul>



<b>WPs in leading roles</b>	WP5
<b>WPs providing contributions</b>	<p>WP4: Process &amp; procedures requirements</p> <p>WP6: Requests for integration for common services</p> <p>WP7, WP8: research communities' requirements</p> <p>WP10: Technical coordination, technical requirements</p>
<b>Other information</b>	<p>Deliverables:</p> <ul style="list-style-type: none"> <li>• D5.1 Initial maintenance and integration plan for federation and collaboration services</li> <li>• D5.2 First release of federation and collaboration services and tools</li> <li>• D5.3 1st Report on maintenance and integration of federation and collaboration services</li> <li>• D5.4 Second release of federation and collaboration services and tools</li> <li>• D5.5 2nd Report on maintenance and integration of federation and collaboration services</li> <li>• D5.6 Final release of federation and collaboration services and tools</li> <li>• <a href="#">Technical specifications for federation services</a></li> <li>• <a href="#">EOSC-hub Configuration Management Plan</a></li> </ul>



**Thank you  
for your attention!**

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*Questions?*



**EOOSC-hub**

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