



EOSC-IF

EOSC Helpdesk: Architecture and Interoperability Guidelines

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EOSC-IF / Helpdesk Architecture and Interoperability Guidelines

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This version is to be reviewed by EOSC Interoperability Area Chairs

Dissemination Level of the Document

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Abstract

The EOSC Helpdesk¹ is the entry point and ticketing system/request tracker for issues concerning the available EOSC services. It implements incident and service request management and provides efficient communication channels between users and Providers of the IT resources and services. The EOSC Helpdesk provides several capabilities, which were identified during requirement analysis, such as self-service, reporting and notifications; it helps ensure the integrity of the IT infrastructure and quality of the delivered services. In the EOSC Future project, the Helpdesk is implemented as a distributed multi-tenant system that can be used for efficient support of the EOSC-Core Technical Platform and the EOSC-Exchange services. The EOSC Helpdesk is offered to EOSC Providers as a service to enable dedicated support for users of their services. To achieve this goal, the EOSC Helpdesk supports different levels of integration with Helpdesk components, described in the section High-level Service Architecture.

This EOSC-Core Interoperability Guideline is intended for the technical experts of service and EOSC resource Providers that would like their services and/or resources to be interoperable or integrate with EOSC-Core Services.

¹ <https://eosc-helpdesk.eosc-portal.eu>

Version History

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V0.3	10.11.2021	Pavel Weber (KIT)	Integration Options added
V0.4	3.03.2022	Pavel Weber (KIT)	Input parameters for integration options added
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V0.93	19.03.2023	Pavel Weber (KIT)	response on the reviewers comments
V1.00	31.05.2023	Pavel Weber (KIT)	Final changes according ot the review

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• Glossary

EOSC Future project Glossary is incorporated by reference: <https://wiki.eoscfuture.eu/x/JQCK>

1 Intended Audience

The intended audience for EOSC-Core Interoperability Guidelines are technical experts providing services and resources that would like their services and/or resources to be interoperable or integrated with EOSC-Core Services.

2 Description and main features

The EOSC Helpdesk² is the entry point and ticketing system/request tracker for issues concerning the available EOSC services. It implements incident and service request management and provides efficient communication channels between users and Providers of the IT resources and services. The EOSC Helpdesk provides several capabilities, which were identified during requirement analysis, such as self-service, reporting and notifications; it helps ensure the integrity of the IT infrastructure and quality of the delivered services. In the EOSC Future project, the Helpdesk is implemented as a distributed multi-tenant system that can be used for efficient support of the EOSC-Core Technical Platform and the EOSC-Exchange services. The EOSC Helpdesk is offered to EOSC Providers as a service to enable dedicated support for users of their services. To achieve this goal, the EOSC Helpdesk supports different levels of integration with Helpdesk components, described in the section High-level Service Architecture.

3 Response to Community Need

EOSC Helpdesk provides a helpdesk service with implementation options ranging from simple utilisation of the helpdesk as a web-based service to full integration with third-party helpdesk solutions that can be utilised by Providers for the operation of service request management and incident management processes.

The EOSC Helpdesk service enables fine-grained definition of distinct support groups, allowing each Provider to establish and access support groups only for its own services. Similarly, an EOSC Provider of a Service can define sub-components of that Service, along with different support groups for each sub-component, enabling the tracking of the incidents specifically for each sub-component.

A Provider has access to a range of service customization options, depending on integration scenario and particular use case, ranging from a basic and limited level of customization to a highly flexible configuration that can be tailored to meet the specific needs of the community.

A Provider without a mature support channel for the users could benefit from requesting Helpdesk as service with rich functionality which includes, but not limited to multiple ticket submission methods, automatic escalation procedure, flexible notifications, smart search, custom workflows, modern dashboards and reporting capabilities.

A Provider with an established helpdesk could benefit from integration and interoperability with EOSC Helpdesk, which enables information exchange and collaboration with the whole EOSC.

Guidelines for further customisation of the EOSC Helpdesk workflows and implementation of custom notification management systems are under development.

4 High-level Service Architecture

Figure 1 shows the high-level technical architecture being implemented for EOSC Helpdesk as part of the EOSC platform as a whole, developed through the EOSC Future project³. The main component is the Helpdesk Back Office that implements the core functionality of the service: ticket management, user role management, management of the support groups, automatic workflows etc. The Helpdesk main portal provides the UI for both users and helpdesk agents, search functionality based on Elasticsearch engine, reporting and statistics dashboards. It also provides self-service functions like a knowledge base and a search engine for common and resolved known issues and problems, integration with other helpdesks and is

² <https://eosk-helpdesk.eosc-portal.eu>

³ <https://eoscfuture.eu/>

being successfully utilised by e-Infrastructures and research communities as a Helpdesk as a Service tool, as indicated in Figure 1.

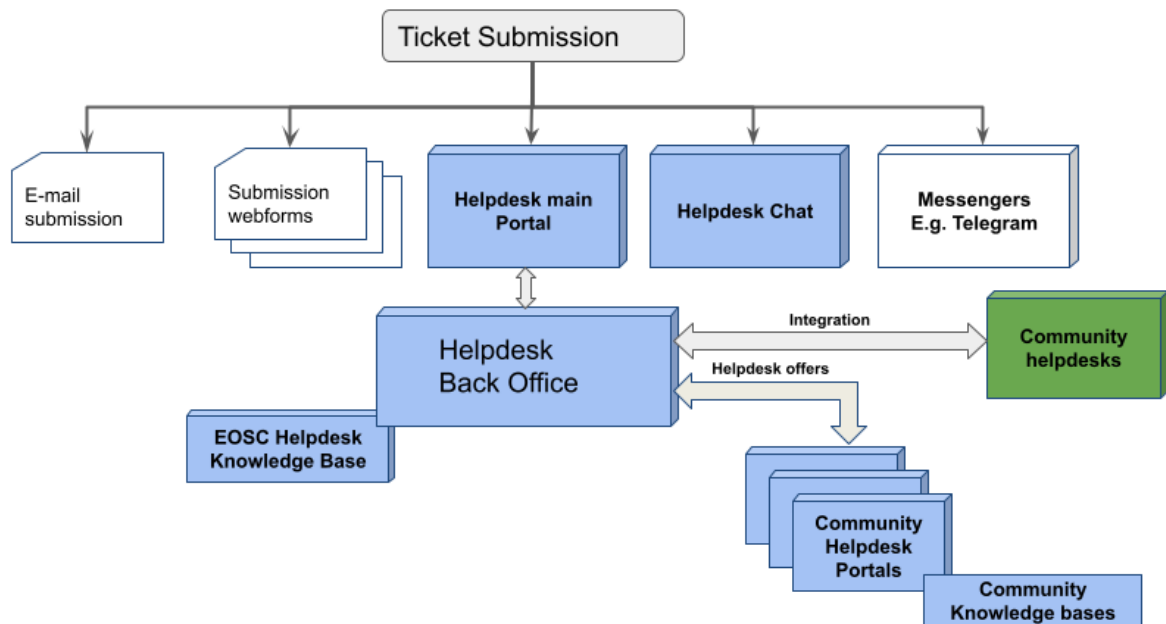


Figure 1: High Level Architecture of the Helpdesk in the EOSC platform

Figure 1 illustrates the EOSC Helpdesk service in its capability of offering a helpdesk service to EOSC service/resource Providers.

The Helpdesk Back Office is integrated with multiple components as depicted on Figure 1: High Level Architecture of the Helpdesk in the EOSC platform above:

- **Submission webforms:** The integration will provide ready to use webforms to be embedded on a Provider's website that will allow its users to easily submit requests and incident reports without needing to log into the helpdesk itself. This is made available to Providers as a ready-to-use JavaScript snippet will be provided upon request for adding it to the web page and enables webform submission.
- **Submission via Messengers:** Providers can integrate a messenger chat bot e.g. Telegram chat bot to enable additional modern communication methods for their users.
- **E-Mail submission:** Providers can interoperate with the helpdesk by specifying a mailbox address that can be offered to users for the purpose of submitting requests or incident reports via e-mail.
- **Integration with third-party helpdesk software:** Integration allows bi-directional synchronisation of user requests and incident reports, where tickets can be created in EOSC Helpdesk for further processing in the integrated helpdesk.
- **Provider-branded Helpdesk Portals:** Helpdesk delivery as a portal that can be branded and hosted under community domains
- **Community Knowledge Bases:** Providers could establish FAQ, documentation sections by enabling Community Knowledge Base integrated with the Helpdesk, meaning instant access to any article from the Helpdesk dashboard. This feature is currently under development and will be provided in future.
- **EOSC AAI integration:** The EOSC Helpdesk is integrated with the EOSC Authentication and Authorisation Infrastructure (AAI) to enable access to the EOSC Helpdesk for EOSC users and agents. The integration with the EOSC AAI has been performed based on SAML protocol.

The EOSC Helpdesk is based on the open-source helpdesk software Zammad⁴. It provides a powerful REST API for integration with other services.

⁴ <https://zammad.org/>

5 Definitions

Table 1: Definitions

Term	Definition
Agent	An agent is a person who resolves incoming requests to the helpdesk and manages the tickets. Depending on the role an agent could have access to the tickets in one or multiple groups.
Provider	As defined by the EOSC Glossary ⁵ ; for the purposes of this document, a Provider could also be a community.
Support group	A support group is a group of experts who provide support and assistance for defined classes of incoming requests.

6 Licensing Information

EOSC Helpdesk is powered by Zammad, which is a web based open source helpdesk/customer support system with many features to manage customer communication via several channels like telephone, Facebook, Twitter, chat and e-mails. It is distributed under version 3 of the GNU AFFERO General Public License (GNU AGPLv3).

7 Related Guidelines

This table presents any guidelines that are related to the guideline being described as well as where compliance is recommended or required in order to interoperate:

Table 2: Related Guidelines

Resource Type	Title	Short Description	relatedIdentifier
EOSC Interoperability Guideline	EOSC Interoperability Guideline for AAI	Interoperability Guidelines describing policies and best practices for AAI-facilitated interoperability	Pending formal publication
Helpdesk user documentation	EOSC Helpdesk documentation	EOSC Helpdesk documentation for users, agents and Providers	https://eosc-helpdesk.eosc-portal.eu/help/en-us/1-eosc-helpdesk-documentation

⁵ <https://wiki.eoscfuture.eu/x/JQCK>

8 Adopted Standards

Table 3 provides a description of the main standards, protocols, APIs, etc., that are adopted by this Helpdesk Interoperability Guideline and are exposed to the external world. This table includes standards that would influence the manner in which a Provider would interoperate with or integrate the service and lists them with authoritative references.

Table 3: Adopted Standards

Resource Type	Title	Short Description	relatedIdentifier
Protocol – REST API	Zammad API	A REST API is an API that conforms to the design principles of the REST, or <i>representational state transfer</i> architectural style. The Helpdesk service provides a REST API for the synchronisation of tickets.	https://docs.zammad.org/en/latest/api/intro.html
SAML2	SAML V2.0 Standard	Security Assertion Markup Language (SAML) is a login standard that helps users access applications based on sessions in another context.	https://wiki.oasis-open.org/security/FrontPage

9 Integration Options

Four levels of interoperability with the EOSC Helpdesk are available, which are described below:

- **Direct usage:**
 - A Provider organisation is assigned an account with a set of user roles on a multi-tenanted instance hosted by the EOSC-Core. Users at the Provider organisation can login to use the service in a dedicated area for that Provider.
 - There are no technology prerequisites for using the Helpdesk service; users will be able to log into a pre-configured browser and will receive notifications of new tickets via e-mail. Providers are required to specify a limited amount of information that will allow configuration of the service to its requirements.
 - In this scenario the EOSC helpdesk can be used as the ticketing system for the community and their onboarded services. This option requires the Provider to provide the information summarised in Table 4.
- **Ticket redirection:**
 - An organisation can form an agreement with the EOSC-Core Helpdesk Service that allows the organisation to utilise the EOSC Helpdesk as first line user support. In this scenario, the EOSC helpdesk web UI is used as a contact point for the Provider's users to raise requests or incident reports, and any tickets raised will be automatically directed to a specified e-mail address for the organisation to manage the tickets to resolution. There is no feedback loop, so tickets will be closed when they are raised with the customer organisation.
 - There are no technology prerequisites for using the ticket redirection option; tickets are directed to the Provider using an e-mail address specified by the Provider. Providers are required to specify a limited amount of information like a mailing list, that will allow configuration of the service to its requirements.

- In this scenario the EOSC helpdesk is used only as a contact point to redirect the initial request to the Provider’s mailing list without further integration.
- **Full integration:**
 - A Provider can integrate its own helpdesk software with the EOSC Helpdesk, which enables full synchronisation between EOSC Helpdesk by way of an API and is technology-agnostic of the Provider’s Helpdesk solution. The exact integration will be determined based on multiple options and workflows.
 - The Provider will be asked to specify its mapping requirements relating to the various standard ticket attributes, such as category, priority, and so on. Refer to the procedures below.
- **Dedicated instance:** it is also possible to deploy a dedicated instance of Zammad and to integrate that with the EOSC helpdesk. The deployment of the dedicated instance could be performed at KIT datacenter on behalf of Provider. This scenario will require bilateral discussion between the Provider and the EOSC Helpdesk operator.

The Provider can choose one of the four options during the process of onboarding a new service or upon later request, via EOSC Helpdesk.

10 Interoperability Guidelines

Please note that the Interoperability Guidelines are not intended to replace instruction manuals or help documentation.

For more detailed assistance please refer here:

<https://eoscfuture.eu/help/en-us/1-eosc-helpdesk-documentation>

This section describes the interoperability guidelines and information which is required to enable each of the integration options listed in the previous section.

10.1 Prerequisites for Direct Usage

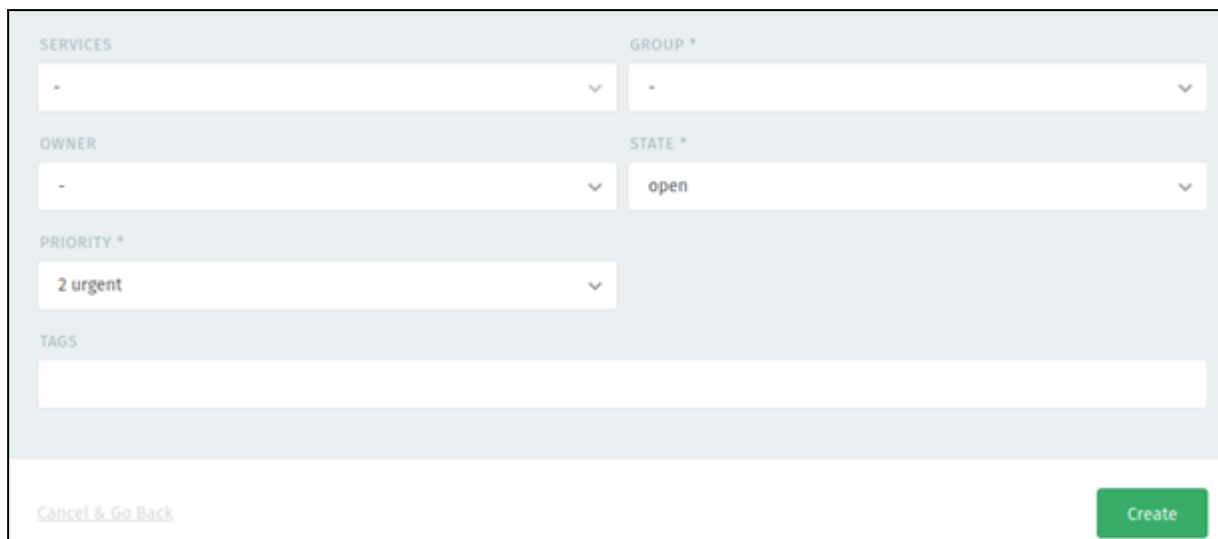
In order to enable the **direct usage**, the EOSC service Provider has to specify a set of parameters which are summarised in Table 4.

Table 4: Information required to enable Direct Usage of the EOSC Helpdesk as a service.

Attribute Name	Definition	Type	Multiplicity	Required	Example
Service	Name of the resource or service to be presented to the user in the helpdesk fields	String	Multiple	Optional	B2DROP
Group	Provider’s Support Group name to be created in the helpdesk	String	Multiple	Mandatory	CommunityXL1 support
Organisation	Name of the Provider organisation	String	1	Optional	CommunityA
E-mail	e-mail associated with support group (where	String	Multiple	Optional	support@community.eu

	tickets will be directed)				
Agent	The name of an individual that will be responsible for managing the Provider's tickets.	String	Multiple	Mandatory	Name Surname
Signature	Automatic signature to be used in the answers to the tickets	String	Multiple	Optional	Your support team
Webform	Webform required to generate ticket directly on webpage	Bool	Multiple	Optional	Webform "Feedback" with fields: Your name: You e-mail: Subject: Message:

This is the minimum set of the attributes that are required for the initial setup of the EOSC Helpdesk support groups for a new Provider. Some of these attributes will be used in the ticket form for assignment of service, group and owner as shown in Figure 2.



The screenshot shows a form with the following fields:

- SERVICES**: A dropdown menu with a '-' symbol.
- GROUP ***: A dropdown menu with a '-' symbol.
- OWNER**: A dropdown menu with a '-' symbol.
- STATE ***: A dropdown menu with 'open' selected.
- PRIORITY ***: A dropdown menu with '2 urgent' selected.
- TAGS**: A text input field.

At the bottom of the form, there is a 'Cancel & Go Back' link on the left and a green 'Create' button on the right.

Figure 2: Ticket form in the EOSC Helpdesk.

EOSC Helpdesk enables fine-grained definition of distinct support units, allowing each Provider to establish and access support units only for its own services. For example, the list of the support units depicted in Figure 3 will be visible to EOSC Helpdesk agents and supporters but not to others that are not involved in the support of these services.

Similarly, a Provider of a Service can define sub-components of that Service, along with different support units for each sub-component, enabling the tracking of the incidents specifically for each sub-component.

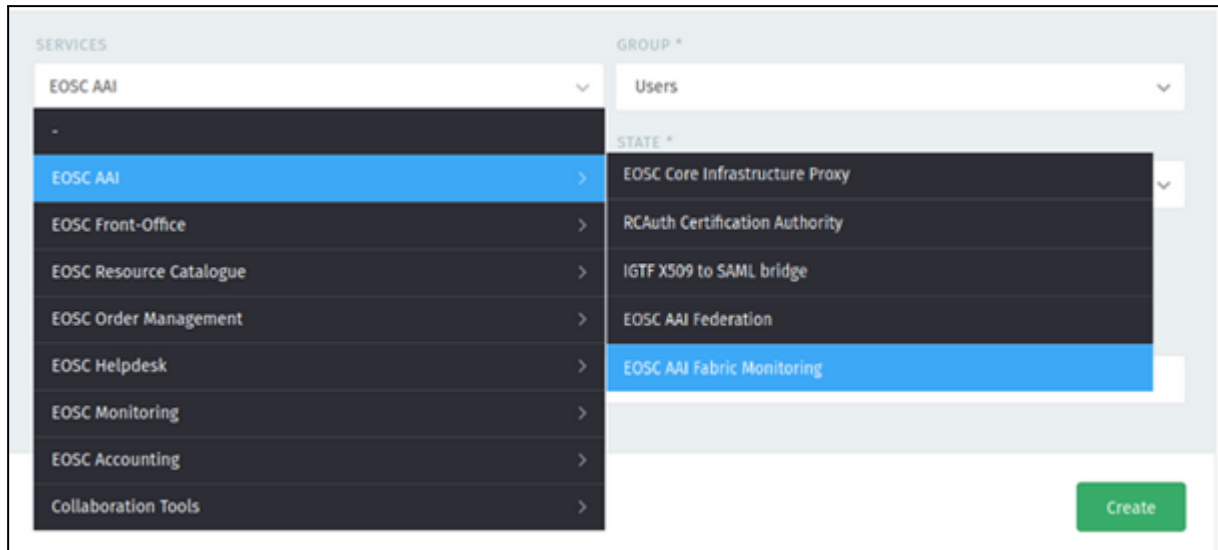


Figure 3: EOSC-Core Services and service components assignment in the EOSC Helpdesk.

10.2 Prerequisites for Ticket Redirection

In order to enable the **ticket redirection** option the service Provider or the community has to provide a list of attributes listed in Table 5:

Table 5: Information required to enable Ticket Redirection to any community e-mail address for further processing

Attribute Name	Definition	Type	Multiplicity	Required	Example
Service	Name of the resource or service to be presented to the user in the helpdesk fields	String	Multiple	Optional	B2DROP
Organisation	Name of organisation	String	1	Optional	CommunityA
E-mail	e-mail for the purposes of ticket redirection, (this will bypass the EOSC Helpdesk L1 support)	String	Multiple	Mandatory	support@community.eu
Ticket preservation	Provider to specify whether the tickets be stored in the helpdesk system in a dedicated group	Bool	1	Optional	Yes/No
Webform	Webform required to generate ticket directly on webpage The example of the webform https://eosc-portal.eu/contact-us	Bool	1	Optional	Yes/No

10.3 Prerequisites for Full Integration with EOSC Helpdesk

In order to enable **full integration** option the service Provider or the community has to provide a list of attributes listed in Table 6:

Table 6: Information required to enable Full Integration of the EOSC Helpdesk.

Attribute Name	Definition	Type	Multiplicity	Required	Example
Provider's helpdesk URL	The web address of the Provider's instance to be integrated with EOSC Helpdesk	String	1	Mandatory	Helpdesk.community.eu
Technology of Provider's helpdesk	The technology and software of the helpdesk instance	String	1	Mandatory	OTRS Community Version 6
REST API	If the helpdesk supports REST API. The support of the REST API is the prerequisite to perform the full integration	Bool	1	Mandatory	Yes/No
Group	Support group to be created in the EOSC helpdesk. The tickets created in this group will be synchronised with Providers' helpdesk	String	1	Mandatory	CommunityXL1 support
User account	The generic user account to be created in the Provider's helpdesk which will act on behalf of EOSC Helpdesk	String	1	Mandatory	eosc-user
Mapping scheme	The scheme defines which fields of the Provider's helpdesk to be synchronised	String	Multiple	Mandatory	
Public comment	Field provided by EOSC Helpdesk which stores the answer in the ticket, visible for requester for synchronisation. The answer Yes/No means that Provider would	Bool	1	Mandatory	Yes/No

	like to synchronise with this field				
Private note	Field provided by EOSC Helpdesk which stores the answer in the ticket, not visible to requester for synchronisation. The answer Yes/No means that Provider would like to synchronise with this field	Bool	1	Mandatory	Yes/No
Ticket state	Ticket states in the Provider's helpdesk to be mapped to EOSC Helpdesk ticket states which are: new open pending close pending customer reply pending reminder merged closed	String	Multiple	Mandatory	new ↔ new open ↔ assigned pending close ↔ assigned pending customer reply ↔ assigned pending reminder ↔ assigned merged ↔ assigned closed ↔ closed
Ticket priority	Low Medium High	String	Multiple	Mandatory	low ↔ less urgent medium ↔ normal high ↔ very urgent
Ticket type	Ticket types in the Provider's helpdesk to be mapped to EOSC Helpdesk ticket types which are: Incident Requirement Service Request	String	Multiple	Mandatory	
Organisation	Name of organisation	String	1	Optional	CommunityA

10.4 Guidelines for implementing a Dedicated Instance

Providers that would prefer to install their own dedicated instance of Zammad and integrate that with the EOSC helpdesk, should request it by EOSC Helpdesk help@eosc-portal.eu, or, if they would like to install it

themselves, in their own infrastructure they should refer to the documentation available here: <https://docs.zammad.org/en/latest/install/package.html>.

After installation of the instance we offer a possibility to connect it via API with EOSC Helpdesk according to the Providers' requirements.

In this scenario, the prerequisites for the Full Integration scenario also apply.

10.5 Integration Procedure

This section defines a high-level procedure that is followed in order to enable one of the chosen integration options listed above. The overview of the procedure and single steps is shown in Table 7:

Table 7: Integration steps

Integration Steps	Description
1. Selection of the integration option	The Provider selects the required integration option via Providers dashboard Helpdesk extension or by submitting a ticket directly to help@eosc-portal.eu requesting the integration option.
2. Relationship between Provider and Helpdesk attributes is defined	The Provider and EOSC Helpdesk operator agree on the final parameters set (and any attribute mapping in the case of Full Integration).
3. Integration specification	Helpdesk owner prepares the specification that will set out the agreed implementation design for the synchronisation, such as attribute mapping for utilisation of the API.
4. Roadmap and implementation plan	Helpdesk owner and Provider agree on roadmap, implementation time and milestones for completing the integration and legal documents to ensure GDPR compliance.
5. Approval and agreement	The implementation plan and specification is finalised.
6. Implementation	The implementation is carried out.
7. Validation	Testing and validation of the implementation together with Helpdesk owner.

11 Privacy and Data Protection

EOSC Helpdesk ensures that all communications are secure at all times. The EOSC Helpdesk, which is located in a highly secure KIT datacenter⁶, provides advanced security features such as:

- E-mail encryption based on S/MIME (Secure/Multipurpose Internet Mail Extensions) standard for high-security e-mail communication
- Strict password policy, when applicable
- Token Access: Generation of personal access tokens for third-party applications to use EOSC Helpdesk API
- Information about connected Devices: Every user can see all devices logged in user's helpdesk account with possibility to revoke access

⁶ <https://www.scc.kit.edu>

- Role based access for EOSC Helpdesk agents: Agents can access and manage only tickets for their organisation. The access to other groups and areas, which are not related to the agents' organisation is phobiden.

The EOSC Helpdesk login page contains links to:

- Privacy Policy: <https://eosc-helpdesk.scc.kit.edu/privacy-policy>
- Acceptable Use Policy: <https://eosc-helpdesk.scc.kit.edu/aup>

All integrations offered by the Helpdesk should be compliant with General Data Protection Regulation (GDPR) as defined in EU law. Thus any technical integration with third-party system implies the processing of personal data which is carried out with the cooperation of third parties and should be controlled by Data Processing Agreement (DPA) to govern the relationship between KIT (EOSC Helpdesk Provider) as the controller and the collaboration of third institutions as processors.

In addition, according to Article 4(1) Nr.7 GDPR, if the involvement of third-parties in the processing of personal data results in a joint determination of the scope and means, KIT and the integrated third helpdesk should be considered as joint controllers, since they converge on the same general objective (to provide to users with a helpdesk) and jointly determine the essential elements of the means (each integrated ticketing system) to carry out the processing operation. Thus, KIT and the integrated helpdesk must sign a Joint Controller Agreement to determine their respective responsibilities for compliance with data protection obligations pursuant to Article 28(1) GDPR.

The templates of DPA and Joint Controller Agreement will be provided and discussed with any community during the integration process. Only after signing the agreed documents the integration, if implemented technically, could be enabled for production.

12 Examples of solutions implementing this specification

Direct usage:

CESSDA

URL: <https://helpdesk.cessda.eu>

10 support groups, currently 8 agents, 1st line support, separate e-mail, separate submission form placed at CESSDA Catalogue page⁷, e-mail filters for automatic redirection, custom escalation procedures implemented.

C-Scale

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

15 support groups, 1st line support, separate e-mail,

3DBionotes-WS

URL: <https://eosc-helpdesk.eosc-portal.eu/>

1 support group, dedicated e-mail

Ticket redirection:

EUDAT

⁷ <https://datacatalogue.cessda.eu/>

A ticket allocated to the EOSC Helpdesk group "EUDAT Support" automatically redirected to EUDAT Helpdesk with: e-mail of submitter, text, link of the ticket in the EOSC helpdesk.

Full integration:

EGI/GGUS

Full synchronisation, mapping between ticket fields in GGUS and EOSC Helpdesk, when ticket moved in EOSC Helpdesk to "GGUS Support" groups that triggers creation of the ticket in GGUS and further synchronisation of ticket attributes upon updates in both systems. The closure of the ticket in one or another helpdesk systems results in the end of synchronisation (although the history is retained).

OpenAIRE

The integration is based on the "Full Integration" option in the test environment. The integration will be switched to production, after signing the legal documents according to GDPR requirements.

LifeWatch

The integration is based on the "Full Integration" option in the test environment. The integration will be switched to production, after signing the legal documents according to GDPR requirements.

Dedicated instance:

OpenAIRE

The instance is deployed by OpenAIRE and currently in production.