

# D4.4 Research Community Dashboard: specification and release plan



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OpenAIRE-CONNECT

## Open Access Infrastructure for Research in Europe towards 2020

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This deliverable includes the results of the functional requirements, a specification of the software, and a release plan for the user interface functionalities of the Research Community Dashboard Service.



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# Document Description

## D4.4 Research Community Dashboard: specification and release plan

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	Name	Organisation	Date
<b>From</b>	Katerina Iatropoulou	ARC	30/06/2017
<b>Edited by</b>			
<b>Reviewed by</b>	Markus Stocker Miriam Baglioni		
<b>Approved by</b>			
<b>For delivery</b>			

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# Table of Contents

1	INTRODUCTION .....	6
1.1	System Overview .....	6
1.2	Users Overview .....	7
1.2.1	Researchers .....	7
1.2.2	Research Operators .....	7
2	FUNCTIONAL REQUIREMENTS .....	8
2.1	Format .....	8
2.2	Functional Requirements .....	9
3	SYSTEM ARCHITECTURE .....	17
4	RELEASE PLAN .....	19
4.1	Release Process .....	20



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# 1|INTRODUCTION

The main concept behind OpenAIRE–Connect is to realize, operate, and leverage the uptake of two new services that build on and extend the existing OpenAIRE technical and networking infrastructure, to stimulate a technical and cultural shift towards a scholarly communication ecosystem supporting more effective/transparent evaluation and reproducibility of research results. Services will be conceived that contribute to the realization of a common scientific communication ecosystem in support of Open Science publishing principles. As such, this effort will strongly ground on an end-user driven approach, to deliver services that bring immediate benefits to demanding users and can therefore appeal to others.

## 1.1 System Overview

OpenAIRE-Connect extends the technological services and networking bridges (human/social/support) currently offered by the OpenAIRE infrastructure to foster the expansion of an Open Science publishing paradigm and facilitate the emergence of shared solutions for it. OpenAIRE-Connect introduces three classes of new services:

- Research community services: offering support for a uniform transition of research communities towards Open Science publishing;
- Content provider services: leveraging the transition of content providers towards Open Science publishing;
- Support services: building community capacities for European and global alignment on Open Science publishing

The OpenAIRE Research Community Dashboard Service will offer a dedicated portal for each research community as one-stop solution, with a portfolio of common functionalities that are configured and adapted to the community's research production and practices. For the configuration of the dedicated portal, each community will be provided with an administration tool. Communities will be able to configure the portal through this administration tool and deploy on-demand a portal that meets its specific needs.

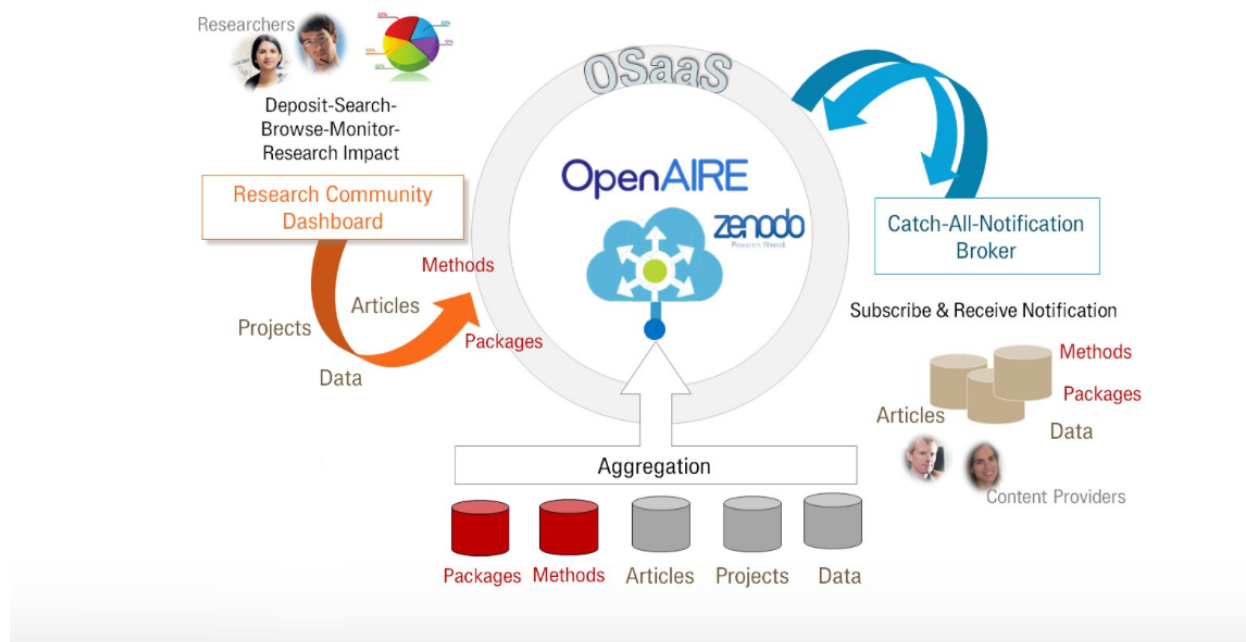


Figure 1 - Research Community Dashboard and Catch-All Notification Broker Service

## 1.2 Users Overview

The Research Community Dashboard aims to serve the needs of Research Communities, i.e. the needs of researchers and research operators. In general, these users need to share, re-use, promote, monitor report and evaluate scientific results related to the subject of their research. The scientific results are all intermediary and final research artefacts. In addition to scientific literature, artefacts include research data, software, and other research products (e.g. workflows, protocols, scripts, algorithms, etc.).

For the Research Community Dashboard, we have 2 kinds of users: the researchers and the research operators.

### 1.2.1 Researchers

Researchers need to share (for “discovery” and “transparent evaluation”) and re-use (for “reproducibility”) their scientific results.

### 1.2.2 Research Operators

Research operators need to promote, monitor, report and evaluate scientific results of research within their community.



## 2| FUNCTIONAL REQUIREMENTS

*Functional requirements/specifications* specify the functions that a system must perform to meet the user's needs. The user's needs, i.e. what a user would expect from a software/system to do, are described by the *user requirements*. In the next section, we present the functional requirements of OpenAIRE-Connect, together with the user requirements that imply them.

### 2.1 Format

Each functional specification is described by the following fields:

- **Functional Specification ID** is the unique ID of the functional specification. The format of the ID is prefixed with "FS", followed by an acronym of the corresponding service and by an incremental number.
- **Functional Specification Name** is the name of the specification.
- **Functional Specification Priority** is the level of importance of the specification.

Each user requirement is described by the following fields:

- **User Requirement ID** is the unique ID of the user requirement. The format of the ID is prefixed with "FL", followed by an acronym of the corresponding service and by an incremental number.
- **User Requirement Name** is the name of the requirement.
- **User Requirement Priority** is the level of importance of the requirement.
- **Description** explains the specification in more detail.
- **Constraints and Assumptions** detail the conditions under which a functional specification has meaning or not (if any).

Each functional specification is recorded using the following format:

Functional Specification ID	Functional Specification Name	Functional Specification Priority
<b>User Requirement ID 1</b>	User Requirement Name 1	User Requirement Priority 1
...	...	...
<b>User Requirement ID n</b>	User Requirement Name n	User Requirement Priority n

Figure 2 - Functional specifications format

The priorities assigned are:

- **Mandatory:** functionalities that are fundamental for the OpenAIRE-Connect Community Dashboard Service.
- **Important:** functionalities that will make the system more appealing to end users.
- **Interesting:** functionalities that will bring an added value to the system, but their absence does not make the product less appealing to its potential users.

The ID of the Research Community Dashboard services are:

- **PT** stands for Portal look and feel
- **SB** stands for Search and Browse
- **CL** stands for Claim
- **MN** stands for Mining
- **DP** stands for Deposition
- **MT** stands for Monitoring
- **USM** stands for User Management
- **-A** stands for the Administration related functionality that will be offered to configure the parts of the Dashboard mentioned above.

## 2.2 Functional Requirements

FS/SB/01	Search/Browse allow community specific searches	Mandatory
FL/SB/01	<b>Everyone</b> runs keyword queries on the community specific content	Mandatory
FL/SB/02	<b>Everyone</b> runs advanced queries using AND/OR/NOT operators on the community specific content.	Mandatory
FL/SB/03	<b>Everyone</b> runs browse queries on the community specific content	Mandatory

- **Description** The Research Community Dashboard search and browse functionalities will give access to the community related products. Users will be able to browse, to do keyword search, and to create complicated queries (keywords + AND/OR/NOT operators).
- **Constraints and Assumptions** The OpenAIRE entities are tagged as being part of the community. These tags are made available through the Index & Search Services.

FS/SB/02	Search/Browse allow searches overall OpenAIRE content	Mandatory
FL/SB/04	<b>Everyone</b> runs keyword queries on the overall OpenAIRE content	Mandatory
FL/SB/05	<b>Everyone</b> runs advanced queries using AND/OR/NOT operators on the overall OpenAIRE content.	Mandatory
FL/SB/06	<b>Everyone</b> runs browse queries on the overall OpenAIRE content	Mandatory

- **Description** The Research Community Dashboard search and browse functionalities will give access to the overall OpenAIRE content. Users will be able to browse, to do keyword search, and to create complicated queries (keywords + AND/OR/NOT operators).
- **Constraints and Assumptions** The OpenAIRE content is made available through the Index & Search Services.

FS/SB/03	Search/Browse provides filters for the community scientific products	Important
FL/SB/07	<b>Everyone</b> narrows down search results by selecting special content-related filters	Important

- **Description** The Research Community Dashboard search and browse functionalities will provide content-tailored filters to limit the search results.
- **Constraints and Assumptions** Categorization of community products will be provided. These categories will be made available as facets from Index and Search Services.

FS/SB/04	Provide application boxes where CSV files containing the scientific products can be downloaded	Important
FL/SB/08	<b>Everyone</b> downloads CSV files containing the scientific products of the community	Important

- **Description** The community products will be provided as CSV files to every user.
- **Constraints and Assumptions** Search Service will provide CSV formatting for the available content.

FS/SB/05	Provide downloadable CSV files containing search/browse results	Important
FL/SB/09	<b>Everyone</b> downloads CSV files containing the results of their search/browse queries.	Important

- **Description** The search/browse results will be provided as CSV files to every user.
- **Constraints and Assumptions** Search Service will provide CSV formatting for the returned search results.

FS/SB-A/01	Define searchable subsets of OpenAIRE content for each community	Mandatory
FL/SB-A/01	<b>Research Operators</b> indicate OpenAIRE content providers that have data relevant to the community	Mandatory
FL/SB-A/02	<b>Research Operators</b> indicate projects in OpenAIRE that have research results relevant to the community	Mandatory
FL/SB-A/03	<b>Research Operators</b> indicate a subset of the OpenAIRE content as relevant to the community	Important
FL/SB-A/04	<b>Research Operators</b> indicate a subset of an OpenAIRE content provider as relevant to the community	Interesting
FL/SB-A/05	<b>Research Operators</b> indicate/propose external content providers with data relevant to the community	Interesting

- **Description** The administration tool will give research operators the possibility to indicate which content providers and projects in OpenAIRE contain content relevant to their community. There will also be the possibility to indicate a subset of OpenAIRE content or of an OpenAIRE content provider, as related to their community. Additionally, we will investigate how to give them the possibility to propose content providers external to OpenAIRE.  
**Constraints and Assumptions** There will be the possibility for OpenAIRE/OpenAIRE-Connect entities to be tagged. Those entities are the content providers, the projects and the research results. This tagging could be provided as an offline procedure, during the aggregation phase, where all the aggregated records will be enhanced with the community information.

FS/SB-A/02	Share searchable subsets between different communities	Important
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FL/SB-A/06	<b>Research Operators</b> will indicate other communities whose content/scientific products can be shared	Important
FL/SB-A/07	<b>Research Operators</b> will indicate a subset of other communities' content/scientific products which can be shared	Interesting

- **Description** The administration tool will give research operators the possibility to indicate whether the searchable content of different communities (as a whole or a subset of it) is also of interest to their community.
- **Constraints and Assumptions** The Research Community Profile will express inheritance of the community categories and contexts.

FS/CL/01	Allow implicit linking of scientific products to a community	Mandatory
FL/CL/01	When claiming, <b>researchers</b> will be prompted with their community-specific categories.	Mandatory

- **Description** When claiming, i.e. when linking scientific products with other OpenAIRE Connect entities, researcher will be able to indicate which community category they would like to link their research products with.
- **Constraints and Assumptions** The hierarchy of community categories and contexts to be provided by community operators.

FS/CL-A/01	Curate and manage links of scientific products to a community	Mandatory
FL/CL-A/01	<b>Research operators</b> will be able to view all the community links	Mandatory
FL/CL-A/02	<b>Research operators</b> will be able to filter all the community links	Mandatory
FL/CL-A/03	<b>Research operators</b> will be able to mark community links as invalid	Mandatory

- **Description** The research operators will be able to view all community claims and mark them as invalid (if applicable). For better visualization of the claims, filters will be available (e.g. by date, category, etc.)

- **Constraints and Assumptions** Claims Service will support filtering of all the available links. Claims service will also be enhanced by a “marking” functionality that will allow research operators to mark links as invalid (if applicable).

FS/DP/01	Deposit of research products	Important
FL/DP/01	<b>Everyone</b> will be able to upload their research community products in Zenodo.	Important
FL/DP/02	<b>Everyone</b> will be able to upload their research community products in other repositories than Zenodo.	Interesting

- **Description** All users will be able to deposit research community products to Zenodo seamlessly from the Research Community Dashboard. This functionality could be opened to other repositories.
- **Constraints and Assumptions** Zenodo will provide deposition APIs. The Research Community Dashboard and Zenodo will share community information. We will also investigate if repositories that are used by the communities offer APIs that could be integrated.

FS/MN-A/01	Configure Mining Algorithms	Mandatory
FL/MN-A/01	<b>Research operators</b> will be able to configure mining algorithms	Mandatory

- **Description** Research operators will be able to configure mining algorithms. The purpose of these algorithms is to identify links from literature to research communities. The administration tool allows users to configure and customize mining algorithms and run them on their test datasets.
- **Constraints and Assumptions** We will provide an interactive system where the users will be able to configure the algorithms, run them on their datasets, examine and evaluate the results and reconfigure if necessary. The reader is referred to D4.3 “Configurable mining algorithms: specification and release plan” for more information.

FS/USM/01	Register for the Research Community Dashboard	Mandatory
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FL/USM/01	<b>Everyone</b> will be able to register for the Research Community Dashboard	Mandatory
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- **Description** All users will be able to register for the Research Community Dashboard.
- **Constraints and Assumptions** An OpenAIRE/OpenAIRE-Connect Identity Provider (IdP) will be available for user registration.

FS/USM/02	Third party sing-in into the Research Community Dashboard	Important
FL/USM/02	<b>Everyone</b> can sign-in with their social networks accounts	Important
FL/USM/03	<b>Everyone</b> can sign-in with their eduGAIN account	Important

- **Description** Everyone will be able to login with the credentials they have in the research/education organization they are affiliated with. This is provided by eduGAIN<sup>1</sup>. Users should be able to login with third party accounts' credentials. More precisely they should be able to login using credentials from social networks and communities (Google+, ORCID, Facebook).
- **Constraints and Assumptions** For the third party and the eduGAIN login, an authentication and authorization proxy will be used that is developed by GRnet<sup>2</sup>. For a successful login it is important that a minimum user information will be provided by third parties (e.g. an e-mail).

FS/USM/03	Manage user profile	Mandatory
FL/USM/04	<b>Everyone</b> will be able to change or reset their passwords	Mandatory
FL/USM/05	<b>Everyone</b> will be able to add additional information to their profile	Mandatory
FL/USM/06	<b>Everyone</b> will be able to request for additional privileges	Mandatory

<sup>1</sup> [https://www.geant.org/Services/Trust\\_identity\\_and\\_security/eduGAIN](https://www.geant.org/Services/Trust_identity_and_security/eduGAIN)

<sup>2</sup> <https://grnet.gr/en/>

- **Description** Apart from the reset and forget your password functionalities, users will be able to add additional information about them (e.g. affiliation information), and ask for additional privileges.
- **Constraints and Assumptions** An OpenAIRE/OpenAIRE-Connect Identity Provider (IdP) will be available for editing the user profile. The different privileges of users will be implemented by assigning to each user different roles.

FS/USM-A/01	Manage Community Users	Mandatory
FL/USM-A/01	<b>Research operator</b> will be able to view the users of the Research Community Dashboard	Mandatory
FL/USM-A/02	<b>Research operator</b> will be able to assign the research operator role to other users of the Research Community Dashboard	Mandatory
FL/USM-A/03	<b>Research operator</b> will be able to invite users to the Research Community Dashboard	Important

- **Description** Research operators will be able to manage the users of their community. They will be able to view them, assign them roles and send invitations to new users.
- **Constraints and Assumptions** The authentication and authorization proxy will support roles.

FS/MT-A/01	Define statistic charts relevant to a community	Mandatory
FL/MT-A/01	<b>Research operator</b> will be able to indicate which charts will be available in the Research Community Dashboard from a predefined list of charts	Mandatory
FL/MT-A/01	<b>Research operator</b> will be able to create/suggest charts to be visible in the Research Community Dashboard	Interesting

- **Description** Research operators will be able to indicate which charts will be available in the Research Community Dashboard. These charts will give statistical data on the content of each community. For example, there could be pie charts presenting how many “open access”, “closed access”, “embargoed”, etc. research products a community has; timelines of how many research products there are through the years; column charts with the number of research products per project or per content provider and much more. These charts can be selected from a predefined list of charts. The possibility to suggest or even



create a chart that the research operator would like to be available for the community in the Research Community Dashboard will be examined.

- **Constraints and Assumptions** Embeddable charts will be available.

FS/PT/01	Configure the look and feel of the Community Research Dashboard	Mandatory
FL/PT/01	Research operator will add the community logo	Mandatory
FL/PT/02	Research operator will change the fonts and colours of the pages	Important
FL/PT/03	Research operator will add help texts in the Community Dashboard pages	Important

- **Description** Research operators will be able to customize the dashboard for the community by adding a logo, change the predefined fonts and colours of the portal and indicate what texts should be introduced in which pages.
- **Constraints and Assumptions** The Community Research Dashboard portal will be configurable in a way that will allow a dynamic loading of both presentation and content aspects.

### 3| SYSTEM ARCHITECTURE

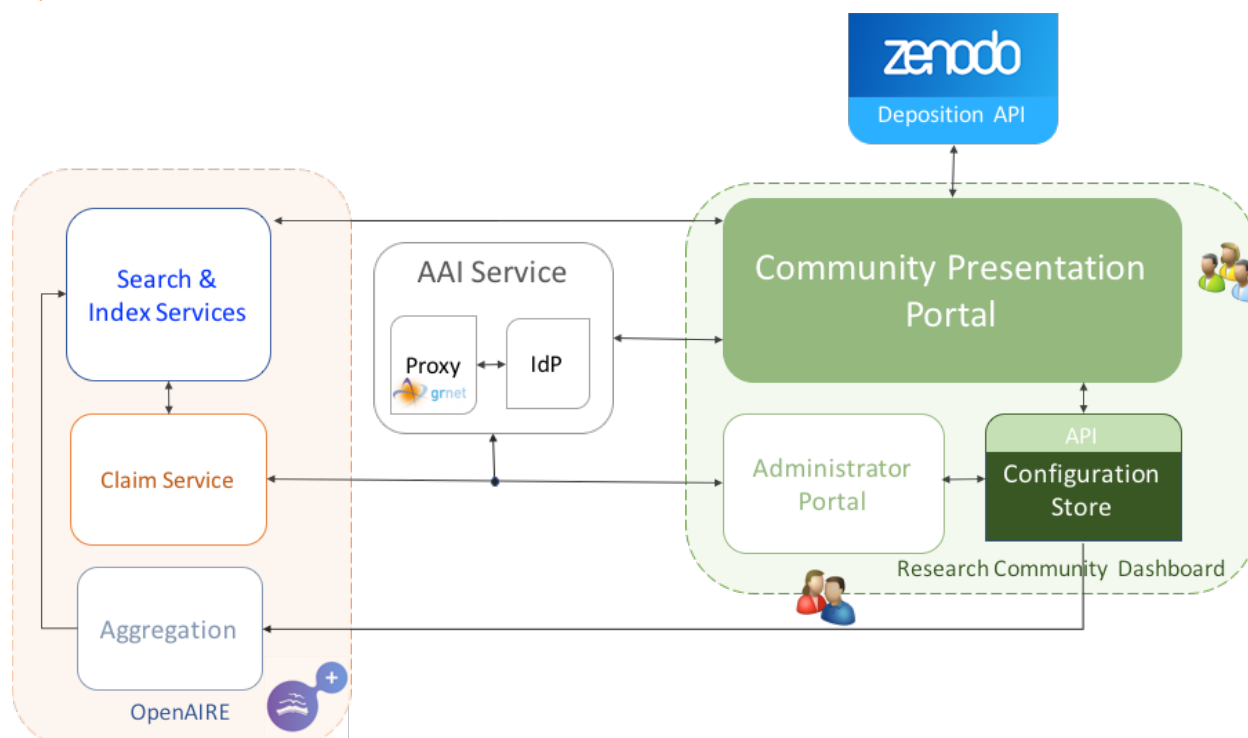


Figure 3 - System Architecture

The **Community Presentation Portal** is the core part of the Research Community Dashboard that will be accessible to all community users. It will be a web application, developed in Angular2, that will offer a portal where all the functionalities that allow users to discover, access and enhance the community's content will be available.

For the configuration of the Community Presentation Portal, each community will be provided with an administration tool. This administration tool will also be an Angular2 web application with a user interface, the **Administrator Portal**, accessible only to research operators. The research operators will be offered, through the **Administration Portal**, all the administrator functionalities.

For the storage of the community specific preferences, the **Configuration Store** will be provided. The Administration Portal and the Presentation Portal will share the configuration information through a REST API that will expose the contents of the Configuration Store. This store will most probably be a Mongo DB<sup>3</sup> database.

In the Configuration Store, research operators will be able to store information on which OpenAIRE entities are related to a community. This information will be made available to the **Aggregation Service** of OpenAIRE. In that way, during the aggregation phase, the OpenAIRE system will be aware of which entities can be tagged with the community

<sup>3</sup> <https://www.mongodb.com>

specific identifier. These tags will be made available through Index and Search Services to the Presentation Portals.

For researchers to be able to upload or acknowledge a research product linked to a community, the Deposition and the Claiming mechanisms will be available. More specifically, for deposits, the Research Community Dashboard will use the **Zenodo Upload API**<sup>4</sup> to make direct requests for upload and publishing of files. For the claiming process, the Research Community Dashboard will use the **Claim Service REST API**, to link research results and communities.

The Claim Service will also be responsible for exposing to the Administrator portal, through its API, the research products linked with communities. In that way, the research operators will be able to curate and manage the links that are related to their community.

**OpenAIRE/OpenAIRE-Connect IdP** will be available for users to be registered in the OpenAIRE/OpenAIRE-Connect system, edit their profile and reset their password. The IdP will be in Shibboleth<sup>5</sup>, a single sign-on (SSO) system. It allows users to sign in using just one identity to various systems run by federations of different organizations or institutions. The OpenAIRE/OpenAIRE-Connect IdP will be also integrated in the **AAI Proxy** implemented by GRNet. This proxy will allow the SSO with third parties such as social networks and communities such as ORCID, and GEANT's eduGain inter-federation service. The Proxy will interact with the Research Community Dashboard platform following the OpenID Connect standard<sup>6</sup>, an authentication layer on top of OAuth 2.0<sup>7</sup>.

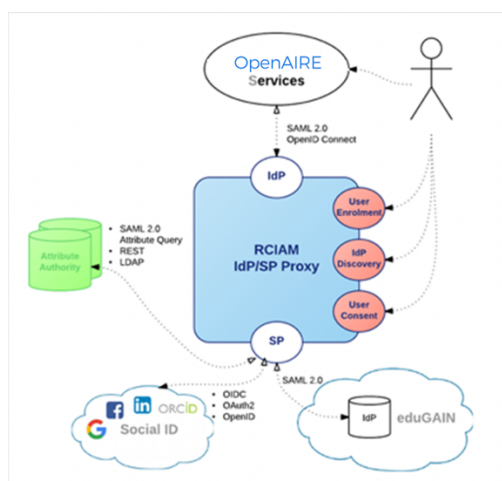


Figure 4 - AAI proxy architecture (by GRNet)

<sup>4</sup> <http://developers.zenodo.org/#quickstart-upload>

<sup>5</sup> <https://shibboleth.net>

<sup>6</sup> <http://openid.net/connect/>

<sup>7</sup> <https://oauth.net/2/>

## 4| RELEASE PLAN

The first BETA release of the Research Community Dashboard is planned to be realized by M16. For this first phase the available functionalities will be:

- Search and browse overall OpenAIRE and by community content
- Search and browse filtering for the scientific products made available by M12
- Search and browse results downloadable in CSV format
- Downloadable CSV community reports
- Linking to a community
- Basic user registration and user profile
- Third party sign-in
- Basic layout configuration (logo, template, simple texts)

For the second BETA release by M23, the comments received during the first testing period will be integrated. In addition,

- Search and browse filtering for the scientific products made available by M20
- Extended layout and content configuration
  - o Selection of statistics charts to appear
  - o Selection of OpenAIRE Content to be tagged
- Curation of community links
- Management of community users
- Mining configuration
- Depositing in Zenodo

For the first production release by M27, the comments received during the second testing period will be integrated. Also, the interesting aspects of the functional specifications will be examined and decided whether they will be integrated or not in the Research Community Dashboard. These aspects are:

- Indicate a subset of an OpenAIRE content provider as relevant to the community
- Indicate/propose external content providers with data relevant to the community
- Indicate a subset of other communities' content/scientific products which can be shared
- Upload research community products in other repositories than Zenodo.
- Create/suggest charts to be visible in the Research Community Dashboard.

By M30 the final comments will be integrated.

## 4.1 Release Process

- **Regular deployment:** The regular deployment of the platform is always scheduled together with ICM and the process starts 2 or 3 months before the actual release. This helps us identify new system requirements and deployment issues that might appear in a BETA/PRODUCTION environment, due to the various services running.
- **Hotfix deployment:** Hotfixes will be made immediately and deployed depending on urgency.