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D4.13 End-user guide to the system

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Abbreviations

Terms	Definitions
AAI	Authentication and Authorisation Infrastructure
Al4HI	AI4HI AI for Health Imaging Network
API	Application Programming Interface
Auth	Authentication
BBMRI-ERIC	European Infrastructure for Biobanking - European Research Infrastructure Consortium
DCAT-AP	Data Catalogue vocabulary Application Profile
DICOM	Digital Imaging and Communication In Medicine
DNS	Domain Name System
EduGain	Global interfederation service that interconnects multiple identity federations
EGI	European Grid Infrastructure
ELK	Elasticsearch, Logstash, Kibana
EOSC	European Open Science Cloud
EU	European Union
EUCAIM	European Federation for Cancer Images
FAIR	Findable, Accessible, Interoperable, Reusable
FDP	FAIR Data Point
GDPR	GDPR General Data Protection Regulation
GPU	Graphics Processing Unit
Guacamole	A clientless remote desktop gateway
GUI	Graphical User Interface
ldP	Identity Provider
LS-AAI	Life Sciences Authentication and Authorisation Infrastructure
MOLGENIS	A modular web application for scientific data, initially focused on molecular genetics research (molecular genetics information system) but expanded to other disciplines.

Negotiator	BBMRI-ERIC service for structured negotiator for biomedical resources
PV	Persistent Volume object
PVC	Persistent Volume Claim
QUIBIM	Spanish company on AI applied to Image Biomarkers
RIS	Radiological Information System
UPV	Universitat Politècnica de València (Valencia University of Technology)
VAULT	Hasihcorp identity-based secrets and encryption management system
VO	Virtual Organisation
WP	Work Package

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1. Introduction

EUCAIM is a federated digital infrastructure for the management of medical images in the scope of oncology. EUCAIM aims at addressing the challenges of the European Cancer Imaging Initiative. There are imaging datasets for different types of cancer, but they are widely distributed and they are not easily accessible. EUCAIM aims at addressing the following challenges:

- Foster the use of digital technologies for developing better diagnosis, treatment and prediction in cancer.
- Integrate resources, data and tools in an open infrastructure of cancer imaging for the development and validation of new tools and strategies.
- Guarantee privacy, security and trustworthiness in the access and usage of medical images.
- Contribute to the implementation of the European Health Data Space (EHDS) and the European Open Science Cloud (EOSC).

The benefits of EUCAIM are expected at four levels:

- Researchers will be able to access a digital infrastructure to access, share and process cancer medical imaging and associated data in a pan-European scope.
- Innovators will be provided with a reference framework with standardised data and state-of-the-art tools to facilitate the benchmarking and certification of new products.
- Physicians will be able to experiment and clinically validate new tools for diagnosis, prognosis and treatment of cancer.
- Citizens' quality of life will be improved by means of early diagnosis, more accurate and personalised treatments.

The platform provides a set of components that facilitate preserving, sharing, accessing and processing medical images, especially in the context of AI development. EUCAIM offers a flexible model for supporting data holders with different levels of maturity, as well as reference storages for those data holders who cannot set up a dedicated federated node, but are able to transfer the data to a reference storage.

This document constitutes the first end-user guide to the platform, especially dedicated to the data users, researchers or innovators who would be interested in accessing the platform to browse and search for data, request access to it and process it.

2. Updated Architecture

The EUCAIM architecture focuses on a federated model in which nodes connect to the central core services but which also keep a reasonable degree of independence and autonomy. The technical requirements for the integration in the federated infrastructure relies on the model of tiers:

- Tier 1: Compliance with the metadata model for the datasets.
- Tier 2: Compliance with the data model for searching purposes, considering the use of a mediator component that translates the queries to the specific format of the data holder.
- Tier 3: Direct (through adoption) or indirect (through a mediator component) compliance with the data model for processing purposes.

Figure 1 shows a simplified diagram of the architecture explaining the interactions among the components according to the tier model.



Figure 1. Simplified architecture diagram of EUCAIM.

The core services for the federation are shown in the upper part of the figure. The lower part represents a node that connects to the federation. The three tier levels described above are related to the following federation concepts:

- Tier 1: The datasets hosted by the federated node are registered in the central catalogue. Ideally, this is done through the exposure of FAIR Data Points that are used by the central catalogue to harvest the dataset's metadata, although manual registration is also feasible for tier 1. Users can explore the metadata of the datasets registered in EUCAIM's platform.
- Tier 2: The data of the federated node is searchable through its local searching service, which is queried by the federated search system through a Query Mediator component that transforms the query from EUCAIM's model to the local model and vice-versa for the results. In case the local model already complies with EUCAIM's one, the mediator component is still necessary for transforming the results and utilising the network communication middleware. The users can explore the actual number of studies fulfilling the search criteria defined by the user.
- Tier 3: The federated node has a materialisation component that makes the data available to the federated processing, according to EUCAIM's model. The user will be able to run processing actions on the actual data, if the access to them is granted.

Components in grey relate to the node local services and components. Components in purple are tier-independent components of EUCAIM core services, and the LS-AAI component is an external entity that manages the common authentication model.

The following URLs forward to the EUCAIM Platform services

- Dashboard (<u>dashboard.eucaim.cancerimage.eu</u>)

- Catalogue (<u>catalogue.eucaim.cancerimage.eu</u>)
- Federated Search (<u>explorer.eucaim.cancerimage.eu</u>)
- Negotiator (negotiator.eucaim.cancerimage.eu)
- Helpdesk (helpdesk.eucaim.cancerimage.eu)
- Reference Node at UPV (<u>eucaim-node.i3m.upv.es</u>)

3. Components of the platform

This section briefly describes the components of the platform, updating the descriptions provided in deliverables *D5.1 Early release of the Data Federation Framework* and *D4.3: First rules for participation report.* The deliverable is not an extensive description of the architecture, which is kept continuously updated in an online document (https://eucaim.gitbook.io/architecture-of-eucaim/).

3.1. The Dashboard

The Dashboard is the entrypoint to the platform and contains the general information about the available datasets and the links to the different services of EUCAIM's architecture. The Dashboard includes the main information and the links to the different services and applications, although it does not exchange information from the rest of the services. A detailed description of the functionality of the Dashboard is provided in D4.7 First EUCAIM Dashboard.

3.2. The Catalogue

The catalogue contains the metadata of the datasets within EUCAIM. Through the filtering of and the browsing through the public catalogue entries, a user can freely look for datasets that are relevant to their research. Only after they have found a suitable dataset, a request can be made to access the actual data through the Negotiator.

3.3. The AAI

Some services in EUCAIM allow anonymous access (Dashboard and the Catalogue). Those services provide access to general information, onboarding processes and aggregated data. Finer-grain searching and data access require authentication and authorisation.

Authentication and Authorisation in EUCAIM relies on the Life Sciences AAI¹. LS AAI is the commonly agreed AAI framework for Life Sciences Research Infrastructures. It relies on the AARC blueprint² and supports the EDUGain Federation (which serves most academic and research organisations in Europe), as well as other public Identity Providers. The process of registering in EUCAIM involves two steps:

- Creating an account on the LS-AAI environment. This enables linking your institutional or public credentials to an LS-AAI account so you can use your institutional IdP for authenticating.

¹ <u>https://lifescience-ri.eu/ls-login/</u>

² https://aarc-20240213064542.local/wp-content/uploads/2019/05/AARC2-DJRA1.4_v2-FINAL.pdf

- Enrolling in the EUCAIM VO Group. Federated search and negotiator services of the EUCAIM platform are available only to the members of the EUCAIM VO group.

The instructions for the sign up and enrollment of users are described in Annex I of this document.

3.4. The Federated Search

Federated search enables users to retrieve the number of subjects that fulfil a specific criteria. The federated search provides a user interface that interacts with a broker that distributes the query to the different providers registered. The federated search results are linked to the catalogue through hyperlinks. Figure 2 shows a schema of the interaction among the three above components.

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Figure 2. Schema of interactions among the components of the Federated Search. The Federated Search cores services sends the queries to the registered data holders and retrieve the aggregated results from them. The results are shown in the federated search GUI which links the results to the additional information on the datasets available in the catalogue.

The federated search will incorporate progressively more providers and datasets, as well as more searching criteria.

3.5. The Access Request

Access request is initiated from the catalogue and it is managed by the negotiator component. Information about the datasets that a user would like to access is transferred from the catalogue to the negotiator tool, where the data requester can submit an application, which is processed by the EUCAIM manager and the dataset responsible, on behalf of the access committee who is the body that effectively performs the evaluation of the application. Information is exchanged through the negotiator communication system, including the access link to the dataset. Figure 3 shows the interactions among the components.



Figure 3: Interactions in the access request process. Access request starts from the catalogue, which triggers the connection to the negotiator passing all the information needed through. Interactions between the dataset responsible (on behalf of the Access Committee) and the data requester are performed through the negotiator, ending up with the transfer of the access link to the dataset in the data holder.

4. User guide for Researchers

This guide is designed to help researchers navigate the platform, access data, and understand the procedures in place. The EUCAIM platform facilitates data sharing, reuse, and collaborative research within a governed framework to ensure transparency and compliance.

4.1. Platform access

The access to the platform is managed through the dashboard component, exposed in the <u>https://dashboard.eucaim.cancerimage.eu/</u> URL, which can be opened in a browser on your computer or mobile device (tablet or smartphone). You can also access the dashboard through the EUCAIM project main website by clicking on "Visit the new dashboard preview!" available at <u>https://cancerimage.eu/</u>. Figure 4 shows a snapshot of the dashboard landing page and the cancerimage.eu main page.



Figure 4. EUCAIM Dashboard, anonymous access (left) and EUCAIM project main webpage (right).

4.2. Anonymous Users

4.2.1. Collection Summary

As soon as you access the dashboard, you will find some summary diagrams that allow you to monitor the EUCAIM data population in real time. By hovering over each diagram, you can see information about the available datasets and subjects in each one, the number of studies for each imaging modality, and details of the main body parts to which the images correspond. Figure 5 shows a snapshot of those dynamic graphs.



Figure 5. EUCAIM Dashboard, collection summary.

4.2.2. Roles information

If you continue browsing the dashboard, you will find different *'Become a'* sections corresponding to the four main roles that can be part of EUCAIM (see figure 6):

- Users are researchers or innovators with a clinical scientific or clinical question wishing to develop, train, benchmark or validate AI algorithms.
- Software providers are researchers or innovators who want to contribute with image processing tools to the marketplace of solutions of EUCAIM.
- Data holders are data providers who would like to contribute with data either through a Data Transfer Agreement, depositing the data in a reference node of EUCAIM or through a Data Sharing Agreement setting up a federated node at the data holder's premises.
- Members are organisations, institutions, or companies interested in collaboration with the EUCAIM consortium which are not yet an official partner. Members will have the opportunity to participate in the observational project calls.

This user guide is centred on the role of the users. Therefore, by choosing the "Become a User icon", you will obtain detailed information on which data EUCAIM provides, how the data request process is, the rules of participation and how to log in the platform.



Figure 6. EUCAIM Dashboard, user roles information.

4.2.3. Public Catalogue

As a user of the platform, even before registering, you can browse our Public Catalogue, where you will find information about all the available datasets, without requiring authentication. As shown in figure 7, you have two options to access the Public Catalogue:

1. Click the "PUBLIC CATALOGUE" button in the top right corner of the header



2. Select the "Explore Public Catalog" Highlighted link

Figure 7. EUCAIM Dashboard, how to explore the public catalogue.

Both options will replace the current page with the Public Catalogue site. You can always return back to the dashboard main page by clicking on "Dashboard EUCAIM" option on the header. Figure 8 shows a snapshot of the catalogue landing page.



Figure 8. EUCAIM Public Catalogue, anonymous view

The Public Catalogue offers basic search and filtering options to help you find relevant datasets that align with your research interests and objectives. Filters are available in the panel on the left side of the screen. When applying filters, the datasets meeting your criteria will be displayed, as shown in figure 9,

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► Sex	INCISIVE Prostate	Prostate	Computed 3 Tomography, Magnetic	387
 Vendor 			Resonance, Positron emission tomography (PET)	

Figure 9. EUCAIM Public Catalogue, how to perform filters.

By selecting a dataset, clicking on its name, you can view all its relevant information, helping you understand it better. Although you cannot access or visualise the data at this point, thanks to the Public Catalogue, you will be able to see relevant metadata that provides significant information about them. Figure 10 shows a snapshot of the dataset metadata.



Figure 10. EUCAIM Public Catalogue, dataset metadata overview.



Figure 11. EUCAIM Public Catalogue, datasets overview (left) and data relations (right). The repository has several networks, each network has several imaging biobanks, each imaging biobank can have several datasets, and so on.

This structure allows you to efficiently explore the resources and understand the potential of the platform before committing to the registration process. Research datasets are organised according to the minimal units in which they can be accessed. In some cases, datasets correspond to all the data in a repository related to a specific cancer type. In other cases, datasets correspond to individual data holders, depending on the conditions of the data transfer or data sharing agreements.

Additionally, you will see a special dataset in the catalogue called "Build an Observational Study with RWD." The purpose of this dataset is to provide you with a way to create your own observational study by collecting data that is not yet available in the catalogue through our stakeholders network.

RW	D	onal study with	Collection types: Annotated datasets, Processed datasets, Original datasets Image access: By request Provider: EUCAIM Observational Studies				
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Figure 12. EUCAIM Public Catalogue, dataset for building an observational study.

Note that the observational study dataset does not contain information by itself, which will be collected on demand.

3.2.4 Other relevant information

Additionally, in the dashboard main page (see figure 13), you can watch our latest platform webinar, held in March 2024, which provides a comprehensive tutorial on how to use the platform and access the components, as well as addresses several interesting questions from participants.



Figure 13. EUCAIM Dashboard's webinar.

It is important to state that EUCAIM is a federation that uses several applications and services from a widespread community. As shown in figure 14, you can explore and learn more about the technologies our platform relies on, by clicking on each logo. These technologies are developed by key collaborations as well as by third parties.



Figure 14. EUCAIM Dashboard, anonymous access.

4.3. User's registration

After exploring the Dashboard and the Public Catalogue, you can proceed to the login screen to register, to get access to all the components available at the platform. There are three ways to do so (see figure):

- 1. Access the "My Profile" area of the Dashboard
- 2. Scroll to the bottom of the "Become a User" section and click on the "Become a User now" button.

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The	Dashboard of the European	CAIM IMAGE EUROPE Federation of Cancer Imag	es
	*		16 1
Become a	Become a Software Provider	Become a Data Holder	Become a
E	thical requirements for Users You should describe how you p Provide a certificate from an e with ethical standards. Provide an Al risk analysis.	olan to use the data ethically. thics committee, confirming tha	t your data usage aligr
		BECOME A USER NOW	

Figure 15. EUCAIM Dashboard, user's registration through "My Profile" area (top) and from "Become a User" area (bottom).

Annex I. Registration of Users in EUCAIM shows how to create an account in the AAI system in EUCAIM through the EUCAIM Dashboard. It describes in detail the process of creating a Life Science AAI account and the request for membership in the EUCAIM Group.

4.4. Accessing the components

As an authenticated user, you can now access all the components available in the platform, from the header of the dashboard (see figure 16).

+ EUCAIM	PUBLIC CATALOGUE FEDERATED QUERY NEGOTIATOR HELPDESK	
		Links to the core services and the restricted area.
	he Dashboard of the European Federation of Cancer Images	

Figure 16. EUCAIM Dashboard, authenticated access.

4.5. Searching data

As an authenticated user, a deeper search of the data can be done using the Federated Query component. This component allows for an advanced search across multiple sources.



Figure 17. EUCAIM Federated Query

The Federated Query component provides various filters to refine your search (see figure 17). These filters are available at the right panel and include:

- Patient information
 - Gender
 - Age at diagnosis
- Clinical Parameters
 - Diagnosis
 - Year of diagnosis
- Image Parameters
 - Modality
 - Body Part
 - Manufacturer

As a result, you will obtain the collections with the total amount of studies and subjects fulfilling your search criteria. Additionally, clicking on the name of the dataset, you will be redirected to its entry in the Public Catalogue, where you will be able to request access to it (see figure 18).

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female other unknown	Studies per collection	Collections	Provider	Studies	Subjects			Prost phase	ate cano e V4	cer cham	pionship
> Age at Diagnosis Clinical Parameters		OpenChallenge Training Dataset (New Patient Cases) for Prostate OpenChallenge	CHAIMELEON	280	201	~		Add Description: Dataset	CHAIMELEON Oper	n Challenge Prostate	Dataset(s) CHAIMELEON – Prostate Cases
Diagnosis Year of Diagnosis		Championship Training Dataset for Prostate Cancer Prostate Cancer (April 2024) Prostate cancer	CHAIMELEON	446 919	446 837	ž		Subjects: Studies: Series:	732 subjects 736 studies undefined series		Imaging and clinical Data European Union
mage Parameters	nge Training Dataset (New Patien ige Championship Training Datase Prostate Cancer (April 202- Prostate cancer championship pl	championship phase V4		433	431	~		Sex: Collection method:	Male Disease specific		CHAIMELEON – Prostate Cases Imaging and
	UC1 UC2	UC2	ProCancerl	5434	5432	~		Dataset type: Imaging modality:	Annotated datasets Magnetic Resonance		clinical Data Website Provider(s)
								Body part: Access type: Diagnosic:	Chest Neck Head	Pelvis Abdomen	Name: ChAimeleo n View

Figure 18. How to access the EUCAIM Public Catalogue information from the federated query.

So once you have found the datasets that meet your search criteria for your study, you can download a report of the results by clicking on the download button and then return to the Public Catalogue to initiate the data access request. This report contains the details of the query and the results obtained, and it will be used to narrow down the details of the access request. Data is coded into JSON format.

4.6. Requesting Access

Now that you have identified the datasets valuable for your project, you can start the negotiation process to request access to them. Here's how:

- 1. Return to the Public Catalogue (see figure 19):
 - Go back to the Public Catalogue and add the selected datasets as shown in the figure, by clicking on the 'Add' button.
- 2. Review Your Selection (see figure 20):
 - After selecting all desired datasets, review your selection in the menu located at the top right. You can select as many datasets as desired for your Research project, under the same proposal.
 - Ensure your selection is accurate and remove any dataset if needed.
- 3. Send selection for negotiation:
 - Once satisfied with your selection, click on the "Send to the negotiator" button to initiate the negotiation process.



Figure 19. How to add datasets for requesting access to them.

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CANCER IMAGE EUROPE Catalogue Dashboard EUCAIM	Help Sign in	
Home / CHAIMELEON – Prostate Cases Imaging and clinical Data / Prostate cancer championship phase V4	Selection	
Dat CHAIMELEON – Prostate Cases Imaging and clinical Data Prostate cancer championship phase V4	Remove the date from your select needed	ataset
Dest Subj Remove all 1 collection(s) selected Close Stud Series: Undefined series Sex: 1/ale Collection method: Dataset type: Annotated datasets Imaging Mdgmetic Resonance modality: Crash Undefined profile (1997/97)	Send to the negotiator European Chaixe View CHAIMELEON - Prostate Cases Imaging and clinical Data Website Provider(s) Name: ChAImeleon	olication gotiator

Figure 20. How to start the negotiation process.

After sending your selection to the negotiator, you will be redirected to the Negotiator component webpage, where you can complete your submission by preparing and providing all the required documents and information about your R&D project.

First, a brief summary of your request will be displayed (see Figure 21). By clicking "Next," you can start filling out the mandatory information and uploading the required documents.

CANCER	IMAGE EUROPE 🖄 Review requests 💬 Your negotiations 🏦 Your biobank		iblanque I B
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	Title *	0	
	Give a title	li.	
	Cover letter • Provide a cover letter for your application (no more than 500 words)		
	Work team *	li li	
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Figure 22. Negotiator Access Form.

More information about these documents can be found in Annex II. Documentation Required by the negotiator for existing datasets. You can also access this information on the negotiator documentation in the "Become a User" section of the dashboard. Note that for the submission, you need an already approved project with a favourable Ethics Committee report, which justifies the request for accessing the data (see figure 23).



Figure 23. How to access the documentation required by the negotiator for existing datasets.

Moreover, bear in mind that if you are seeking to build your own Observational Study with RWD, you can make a proposal by selecting the "Build an Observational Study with RWD" dataset. By sending it to the negotiator, you will be able to fill out the request, including the documents described in Annex III. Documentation Required by the Negotiator for building datasets, regarding your proposal (see figure 24). You can also access this information on

the negotiator documentation in the "Become a User" section of the dashboard.We will then share it with our network of clinical data holders to make your project a reality.



Figure 24. How to access the Documentation Required by the negotiator for building datasets.

An overview of the Access Form submission is shown before you submit the request. Once submitted, it will undergo an evaluation process. First, the application will undergo an administrative review to ensure all information is valid. Then, it will be reviewed by the Access Committee, which will conduct a technical and scientific evaluation.

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	Overview*
	Upon confirmation, your request will undergo content review. Our reviewers may contact you via email for further details. Upon approval, the respective biobanks you wish to contact will be notified of your request. Please click 'Submit request' and then 'Confirm' to proceed.
	APPLICATION DOCUMENTS
	Title: Automatic segmentation of prostate gland
	Cover letter: Very relevant for data annotation
	Work team: my-work-team.pdf
	Hypothesis: Al can automatically extract the shape of the prostatic glande
	Objectives: Train algorithms for segmentation
	Materials and Methods: Data, GPUs and storage
	Expected results: A trained AI algorithm for segmentation with higher accuracy
	Funding: National and European
	Supporting documentation: Negotiator_documentation_v2.pdf
	Supporting documentation: Approved proejcts

Figure 25. Negotiator application overview before submitting.

Finally you can review your requests and check your open negotiations, tracking their status and modifications (see Figure 26). The EUCAIM team will respond to your submitted requests as soon as possible, enabling a smooth negotiation process to grant you access to the valuable selected datasets and allowing you to start your project.



Figure 26. Overview of a submitted application.

The lifecycle of negotiations is described in figure 27, and comprises the following statuses:

- Under Review. The application proposal has been submitted and the eligibility is being evaluated by the Access Committee.
- In Progress. The application proposal has been approved and the availability of data and access conditions are being collected. The positive progressing sub-statuses that the application goes through are:
 - Representative Contacted: The dataset representative has received the request.
 - Checking availability: The dataset representative is checking that the data request matches the data available in the dataset.
 - Resource Available: An intermediate step to inform the data requester that the data holder has the data requested before the access conditions are communicated back.
 - Access conditions indicated: The dataset responsible provides the access conditions for the specific use case of the data requester. General access conditions are provided before the negotiation starts, but depending on the purpose the data holder may require additional guarantees.

- Access conditions met: This sub-status is triggered by the data requester when the access conditions are received and are acceptable by the user.
- Resource Made Available: This sub-status is the final one of the "In-progress" status and indicates that the access to the data has been granted. The dataset representative will send the access procedure and will ensure that the user account in LS-AAI is valid for accessing the data. This is an intermediate status triggered by the dataset responsible.
- Started: This status indicates that the application submission has been successfully evaluated and access to the data is granted.
- Concluded: This status indicates that the project that supported the access to the data has been completed and access to data is not anymore available.
- Abandoned or declined: Both statuses lead to the termination of the data access request application process. Abandoned status is triggered by the user and Declined status is triggered by the EUCAIM side.



Figure 27. Application workflow.

Additionally, there are three sub-statuses of the "In progress" status that holds or terminates the process due to different conditions:

- Resource unavailable, when the data requested does not match the data available. For example, the data request may include clinical information that is not available.
- Resource unavailable but willing to collect, when the dataset responsible considers that the request can be addressed but it will require additional actions (e.g. additional processing resources, software packages) or data that can be obtained in an observational study.
- Resource not made available, triggered by the data requester when the access conditions for the data cannot be accepted.

The information exchange among the different actors for each one of the stages is shown in detail in the negotiation application and through e-mail. Figure 28 shows a snapshot of the user requester and admin panels.



Figure 28. Overview of all submitted applications from a user (left) and control panel from the dataset responsible person.

4.7. Accessing Data

Data can be accessed under different conditions, depending on the licence and traceability requirements of the data. In this context, EUCAIM differentiates among three models:

- 1. Datasets can be downloaded for off-line processing. This is only possible for datasets with low traceability restrictions, as EUCAIM cannot trace the data beyond the boundaries of the platform.
- Datasets that cannot be downloaded but data can be visualised and processed using on-site Virtual Research Environments. Users will access the data remotely and major interactions (data visualisation, access, processing and release) are monitored by the EUCAIM platform.
- Data that cannot be visualised and can only be processed remotely through batch jobs. In this case EUCAIM will provide an interface to run processing jobs on the data available in the providers of the federation. In this case, EUCAIM will register all the interactions with data.

This guide covers mainly the first two cases, as the federated processing will be ready later in the project.

The access to the data is performed through the nodes of the federation. Two reference nodes have been set up to store data from the centres who cannot implement a federated node and area allowed to transfer the data to the reference nodes, as well as to provide computing resources. Each reference node is based on a different technology to maximise flexibility. This document contains two subsections, each one for a different reference node.

4.8. Reference Node at UPV

The UPV reference node is based on an evolution of a technology developed in the CHAIMELEON (<u>https://chaimeleon.eu/</u>) project. This technology has been enhanced in three directions:

- To provide multi-tenant support, allowing multiple projects and a finer granularity of the access permissions through Access Control Lists.
- Integrated with a totally renewed image workstation software from QUIBIM (QP-Insights).
- Supporting the federated core services of EUCAIM (LS-AAI, FAIR Data points, federated search mediator and a materialisation component for distributed processing.

The UPV reference node is mainly intended for Data Scientists and supports both in-situ and federated processing.

The entry point to the UPV reference node is the local catalogue. The local catalogue describes the datasets stored in the reference node and feeds the EUCAIM platform repository. Figure 29 shows the view of this catalogue with the information of one of the subprojects of CHAIMELEON.

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		OpenChallenge Championship Training Dataset for Prostate Cancer (b875a59a-32f0-4e47-9da6- 1e635a85b370 (*))	Published	Ana Jimenez- Pastor	OPENCHALLENGE	23/04/2024, 12:28:13 CEST	446	446	M
		OpenChallenge Championship Training Dataset for Breast Cancer (b66781db-8b21-4a30-ac0d- 8eaa2a4c0ecc (;))	Published	Ana Jimenez- Pastor	OPENCHALLENGE	23/04/2024, 12:25:51 CEST	411	411	M
		OpenChallenge Championship Training Dataset for Lung Cancer (5e8a4b13-8c92-40dd-9d4c- 0412440(43a (2))	Published	Ana Jimenez- Pastor	OPENCHALLENGE	23/04/2024, 12:13:39 CEST	559	559	M

Figure 29: Reference UPV node, view of the CHAIMELEON OpenChallenge project.

The aggregated information is publicly available and it is stored in Zenodo too. Figure 30 shows a snapshot of the details page of one of the datasets, accessed by clicking on the "More" link.





The access to the dataset requires valid credentials. Users that have received a positive evaluation of the data access request will have access granted through her LS-AAI account. Once logged in (see figure 31), the user will see more information on the dataset and will be able to use the data on the Application Dashboard.



Figure 31: Reference UPV node, view of the aggregated data from the reference node catalogue (left) and Zenodo (right).

The user can deploy a Virtual Research Environment (VRE) through the App Dashboard. Four environments are provided with two different AI frameworks (Pytorch and Tensorflow) each one with or without a Jupyter notebook server (see figure 32). Users can find a previously deployed VRE environment or deploy a new one.

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Figure 32: Catalogue of VRE applications (left) and applications deployed by the user (right).

The deployment of a VRE from the catalogue provides the user the way to visualise and process the data. The deployment of a VRE through the catalogue only requires providing a valid name for the environment (only lower letters, a hyphen and numbers). The access to the VRE is performed through a reverse proxy in the platform. Figure 33 shows both actions.

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Figure 33: Deploying a VRE (left) and accessing the VRE link through the Reverse proxy (right).

Access to the data is performed through the GUI of the VRE. The VREs are based on Ubuntu 22.04 LTS workstations with LXDE as GUI. This environment is provided with tools, services and software libraries, as well as batch queues for non-interactive jobs. Detailed information on the usage of the job queues is provided in the platform documentation³. Figure 34 shows a snapshot of an instance of a VRE environment with access to the prostate data. This is accessed through a web browser, minimising the requirements of the user.

³ <u>https://github.com/chaimeleon-eu/jobman</u>



Figure 34: GUI of the UPV reference node, showing a Jupyter notebook and a fileserver window.

The user is provided with three directories:

- Persistent home, restricted to the user, and where the user can store the data that she would like to preserve.
- Dataset, read-only folder with the information on the datasets, stored following the hierarchical model of the data shown in the green bubbles of figure 11.
- Persistent-shared-folder

Any other folder is considered as volatile and data stored on it will disappear once the job has finished or the VRE is deleted. Data stored in the persistent home directory will remain available across the lifetime of the applications.

4.9. Reference Node at the Euro-BioImaging Medical Imaging Repository

The Euro-Biolmaging Medical Imaging Repository (a reference node in EUCAIM) focussed on storing data for Data Holders. The Euro-Biolmaging Medical Imaging Repository service is an XNAT instance operated by Health-RI. To access the data that is on the Euro-Biolmaging Medical Imaging Repository, the first step that you should do is to request an account for the Euro-Biolmaging XNAT (<u>https://xnat.bmia.nl</u>). This can be done at the EUCAIM Helpdesk (Section 3.9) who will forward the request to the Health-RI helpdesk at <u>https://trait.topdesk.net/</u>. You will receive an email asking to agree with the Health-RI data access policy and will receive your credentials. The Euro-Biolmaging XNAT is currently in the process of implementing single sign-on which will allow using the same credentials as the ones used in EUCAIM in the future.

Before the access is granted, the responsible person of the dataset has to update the profile in the XNAT to give access to the specific dataset. They can also contact the Health-RI helpdesk for further assistance.

You will need to be logged in to the Euro-BioImaging XNAT to access most image datasets. If you are not logged in or do not have access granted to your account, figure 35 shows it up, indicating there is no access to the project data:

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Logging in can be done at the homepage, or by clicking "Login" at the top-right corner of the screen. Use your Euro-BioImaging XNAT credentials to log in (see figure 36).

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and analysing clinical imaging data. More information	in on using Health-RI XNAT.			
Important: This service is meant for storage of pro Questions?	erly anonymised medical imaging data.	Forgot login or password? Login		

Figure 36: Logging the platform.

Once logged in, you can access the project data. The top grey box displays generic information about the project, like the description and investigators working on it. The bottom table shows a list of subjects, with each row containing information about the data contained

in them. This information can be different for each dataset, but generally includes the number of imaging sessions per modality. (figure 36)

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Figure 37: Information per dataset.

Clicking on the subject ID reveals a screen with additional information on the subject. For example, it shows the date the subject was added to the Euro-BioImaging XNAT data repository, as well as all imaging sessions (called "Experiments"), modalities and their dates associated with the subject (see figure 38).

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Figure 38: Detailed information of a subject.

By clicking on an experiment, more information will show up, like the time and date of acquisition and a summary of the DICOM headers. Depending on the degree of anonymization, the gender and age of the subject could also be shown.

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Figure 39: Detailed information of a study.

From here, there are many things you can do. The "Download" button gives you access to raw DICOM files, if present. You will be asked to select the series you would like to download, after which you can click "Download". The images will first be combined on the server into a zip file before being downloaded onto your local hard drive.

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Figure 40: Downloading data from the platform.

XNAT also has a built-in DICOM viewer, i.e. the OHIF viewer by the Open Health Imaging Foundation⁴. Note: this viewer is not certified for clinical use and is meant for investigational and research purposes only. The viewer can be accessed by clicking "View Images" on the right-hand side. The first time an image is viewed by anyone, the viewer will need to do some preparing. This can take some time (multiple minutes) and it may seem like nothing is happening. After these minutes, the image will show up.

⁴ <u>https://ohif.org/</u>

By default, holding the left mouse button can be used to adjust the window width and level. The scroll wheel can be used to scroll through slices, holding the right mouse button is for zooming in/out. At the menu bar you can select multiple controls, for example to change the left mouse button to "stack scroll" instead of "window" akin to a radiological PACS. In the left column, multiple series are shown of the same experiment (if available).



Figure 41: visualisation of images in the EuroBioImaging reference node.

4.10. Helpdesk

The EUCAIM helpdesk is a single point of contact to collect and reply to questions, incidents, requests, etc. The software responsible for the EUCAIM helpdesk is Zammad and an independent instance has been provided for the project.

Currently, only authenticated/authorised users can access the helpdesk system. Therefore, it is necessary to authenticate yourself at the system so you can be authorised to use the helpdesk.

This is done through LS AAI (Authentication and Authorization system), clicking at this link: <u>https://help.cancerimage.eu/#login</u>.

The first page that appears is this:

Log in to help.cancerimage.eu	
SIGN IN USING	
🛆 Connect to LS AAI	
Powered by Zammad	

Figure 42: Helpdesk access page.

You have to click at the "Connect to LS AAI" in order to authenticate yourself. That will lead you towards the page where you should choose the company/institute/account you are linked to.

This is a "new" Authentication/Authorization technology where it is not necessary anymore to have your personal/individual certificate, instead of this, the institute you work with or your account in several providers, will identify yourself into the system with an individual token.

The process of logging in is quite similar to the rest of the EUCAIM core services. If you do not have a valid account you should check it with your account provider, registration is described in Annex I.

You have to choose the institute you are related with or an account at several service providers, as shown in this page. There is also an option for "LifeScienceHostel".

After choosing the institute or account you will be taken to the proper authentication place where you can provide your username and password. Of course, only valid credentials at institutes and accounts will be accepted.

Once you are authenticated, the next times you access the system, you will have your institute shown at the page shown above. You still can use another institute/account if you want. When entering your institute name you can search for it using a partial entry for its name. Before going ahead, you should read the AUP (Acceptable Policy Usage) document, which can be found at the link in your screen as <u>Privacy policy for the service EUCAIM</u> <u>Helpdesk</u>, as described in figure 43.



Figure 43: Privacy policy for the Helpdesk.

You will be prompted to see and confirm your information, sent from your institute to the EUCAIM Helpdesk. If the data displayed is your data and is correct, you can click at the end of the page "YES, Continue", which will lead you to the EUCAIM Helpdesk system. You can also "cancel" this access operation. After confirming, you will be at the EUCAIM Helpdesk instance provided by zammad.

You can create/add a new ticket to the system by clicking at the green "plus" button, at the left bottom of the page, where you will be prompted to fill in the content for each corresponding field. Ticket fields (see figure 44) with an asterisk ("*") are mandatory. To conclude the creation of a new ticket you should click at the create button.

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сс	
ТЕХТ	
select attachment	

Figure 44: Form for the creation of a ticket.

Every ticket has an unique identification number, displayed on the top left of the ticket. You can also use the URL for this ticket.

Every new ticket is assigned to the First Level Support Unit Team. This EUCAIM First Line SU is a group of people who may:

- 1. reply to you requesting for more information or,
- 2. Solve this ticket, replying with the solution for the ticket or,
- 3. Assign your ticket to another Support Unit. Each assigned <u>SU</u> has specialised people on the matter your ticket is related to. They will reply to you in the ticket.

For every reply you have in each ticket you will get an email from the EUCAIM Helpdesk system, informing you of all new activities related to each ticket. In order to leave the system, click in your initials icon, at the bottom left corner and in the "Sign out" button.

For more information about EUCAIM Helpdesk, please refer to the EUCAIM Helpdesk End-User Guidelines at <u>https://confluence.egi.eu/display/EUCAIM/EUCAIM+Helpdesk+End-User+Guide/display/EU</u> CAIM/EUCAIM+-+Helpdesk

4. User guide for Data holders

This guide is designed to help Data holders navigate the platform and understand the procedures in place. The EUCAIM platform facilitates data sharing, reuse, and collaborative research within a governed framework to ensure transparency and compliance.

To access the platform, you can use the URL <u>https://dashboard.eucaim.cancerimage.eu/</u> in a browser on your computer or mobile device (tablet or smartphone). If you keep browsing the dashboard, you will find different *'Become a'* sections corresponding to the four main roles that can be part of EUCAIM.



Figure 45. EUCAIM Dashboard, user roles information.

By choosing the Become a Data Holder icon, you will obtain detailed information about why becoming a Data Holder, the types of Data Holders expected in the platform and the rules of participation.

Finally, at the end of the page, you will have the opportunity to start the process of becoming a Data Holder by fulfilling the Expression of Interest for new Stakeholders (see figure 46).



Figure 46. EUCAIM Dashboard, how to become a Data Holder.

In this case, by choosing one of the two first main interests of the list you will let us know the reasons that motivate you to share your valuable data with us.

S E U C A I M					HOME F	PUBLIC CATALOGUE MY PROFILE
	Expressi	ion of Interest	from new Stak	ceholder	rs	
	This form asks for your contact details, and for more s	specific information on your of	capabilities, experience and l	how your organ	ization could join the EUCAIM project.	
	Date					
	Lunes, 3 de junio de 2024					
	Contact person for the work/project, full name		Gender			
	Mr. V		Prefer not to say ~			
	E-mail address	Telephone number				
	lah titla	Organization full legal par		Department	0000	
	Street	Town	Post code		Country	
	Main interest (select one or more)					
	1. Data Holder (Primary Use Clinical Repositor)	y and Hospital, Data Wareho	use architecture)			
	2. Repository (Secondary Use Research Repos	sitory)				
	3. Technical Resources and Expertise (Storage	e / Computation / Services /	Interoperability)			
	4. AI Tools and Solutions					
	6. Dissemination and Communication					
	v. procernmenton and communication					

Figure 47. EUCAIM Dashboard, Expression of Interest.

Once we receive this Expression of Interest, the Engagement Team will contact you to assist you in the data transfer or data sharing process. They will send you a self-assessment questionnaire to evaluate your current state and organise meetings if necessary for guiding you in the process together with the Technical Support Team.

5. User guide for Software providers

This guide is designed to help Software providers navigate the platform and understand the procedures in place. If you keep browsing the dashboard, you will find different *Become a'* sections corresponding to the four main roles that can be part of EUCAIM.



Figure 48. EUCAIM Dashboard, user roles information.

By choosing the Become a Software Provider icon, you will obtain detailed information about EUCAIM software specifications and the rules of participation.

Finally, at the end of the page, you will have the opportunity to start the process of becoming a Software provider by fulfilling the Expression of Interest for new Stakeholders.

3 Rules (nf Participation
J. Nules (
To become a	Software Provider with EUCAIM, entities must adhere to the following rules of participation:
• Infrastruc with the c	ture and Technical Requirements: Software must be provided as containerized images, typically using technologies such as Docker, to ensure compatibility entral node and federated nodes via container orchestrators like Kubernetes.
• EUCAIM 1 requireme	Terms of Usage: Software must comply with technical guidelines and terms of usage provided by EUCAIM, including data handling and documentation ints.
User Supp	port and Software Maintenance: Software Providers must offer user support and commit to long-term maintenance to ensure secure and stable functionality.
Minimum technical	Documentation Required: Provide essential documentation, including user manuals, license agreements, data usage policies, security information, and support details.
Traceabili	ty Mechanisms: Software must register relevant user actions and provide logs to monitor usage and identify incidents.
Monitorin	g Capabilities: Software should offer monitoring capabilities to enable EUCAIM to track their status and performance.
Benchman performant	rking: Software Providers must communicate essential information about their software, including descriptions, training datasets, software types nee metrics, input requirements, and more.
Quality Co	ontrol: Implement quality control measures, including code-related quality controls, functional validation, and external assessments if applicable.
Complian related to	ce with Security and Privacy Requirements: Software handling sensitive data must comply with GDPR guidelines and other legal and ethical requirements data protection.
Complian force duri	ce with Applicable Legislation: All software must comply with current European and national legislation, as well as upcoming regulations that may come into ng the EUCAIM Project.
Becoming a standards for	Software Provider with EUCAIM offers a unique opportunity to contribute to groundbreaking cancer research while adhering to essential guidelines and r software development and deployment. Join us in our mission to transform cancer management through innovation and collaboration.
	BECOME A SOFTWARE PROVIDER NOW

Figure 49. EUCAIM Dashboard, how to become a Software Provider.

C EUCAIM					HOME PUBLIC CATALOGUE	MY PROFILE
	Expressi	on of Interest	from new Stak	ceholders		- 2
	This form asks for your contact details, and for more s	pecific information on your	capabilities, experience and l	now your organization could join the EUCAIM pr	oject.	
	Date Martes, 4 de junio de 2024					
	Contact person for the work/project, full name		Gender			
	E-mail address	Telephone number	Treat for to day			
	Job title	Organization, full legal na	me	Department name		
	Street	Town	Post code	Country		
	Main interest (select one or more)					
	1. Data Holder (Primary Use Clinical Repositor) 2. Repository (Secondary Use Research Repos 3. Technical Resources and Expertise (Storage	y and Hospital, Data Wareho itory) / Computation / Services /	use architecture) Interoperability)			
	 4. AI Tools and Solutions 5. ELSI - EHDS 6. Dissemination and Communication 					
	Capabilities and functionalities					

Figure 50. EUCAIM Dashboard, Expression of Interest.

Once you have expressed the interest to become a software provider, you will be invited to submit an application that will be reviewed by the access committee. Additional information about the requirements of applications running in the EUCAIM platform can be found in https://github.com/chaimeleon-eu/workstation-images. The Technical Team will contact you, by means of the Helpdesk, to assist you in the preparation and validation of your tools.

6. User guide for Members

This guide is designed to help users wishing to become a new member to navigate the platform and understand the procedures in place. The EUCAIM platform facilitates data sharing, reuse, and collaborative research within a governed framework to ensure transparency and compliance. If you keep browsing the dashboard, you will find different *'Become a'* sections corresponding to the four main roles that can be part of EUCAIM.



Figure 51. EUCAIM Dashboard, user roles information.

By choosing the *Become a Member* icon displayed on the homepage, you will have the opportunity to start the process of becoming a stakeholder and to fulfil the Expression of Interest for new Stakeholders.

There are several ways of collaboration: General Collaboration, Collaboration with Hospitals, Collaboration with Cancer Screening Programs, and Collaboration with Research Projects.

Detailed information on these collaboration opportunities is provided in the Proposals to stakeholders seeking collaboration with EUCAIM, available by clicking on each option.

Proposals to stakeholders seeking collaboration with EUCAIM		 2. Join EUCAIM as a Stakeholder If you are looking to actively contribute to EUCAIM, be it in the realm of research or clinical initiatives, consider becoming a stakeholder. Stakeholders within EUCAIM encompass entities like hospitals, cancer screening programs, clinical trials, imaging biobanks, societies, universities, infrastructures or any other institution with approved projects or research initiatives, as well as companies, such as pharmaceutical industry or medical imaging companies. In other words, any organization seeking collaboration by sharing valuable data and tools, or simply looking to be part of a network of contacts to initiate new projects. By becoming a stakeholder, you will need to complete an Expression of Interest with your entity's contact information, description, experience and capabilities. Also, a Collaboration Agreement between parties must be signed. Vou can consult the document that best suits your situation in the following links: Collaboration with Cancer Screening Programs. Collaboration with Research Projects 	Expression of Interest from new Stakeholders
--	--	---	--

Figure 52. EUCAIM Dashboard, how to become a Stakeholder.

These documents outline all the benefits of becoming a stakeholder in each specific category, helping you choose the best fit for your organisation.

Now, you can send us your willingness to become a new stakeholder by clicking on the ' BECOME A STAKEHOLDER' button. The Expression of Interest from new Stakeholders will then be displayed. This form allows you to provide us with your essential details, including your entity's contact information, a brief description of your organisation, and insights into your main interests, capabilities and functionalities. Additionally, you will be asked to give a brief explanation on your experience, network of collaboration and potential contributions to EUCAIM.

EUCAIM					HOME PUBLIC CATALOGUE	MY PROFILE
Expre	ession of Inter	est f	rom new S	takel	holders	- 1
This form asks for your contact details, and for r	nore specific information or	n your ca	pabilities, experience	and how	your organization could join the EUCAIM project.	
Date						
Viernes, 14 de junio de 2024						
Contact person for the work/project, full name			Gender			
Mr. 🗸			Prefer not to say	~		
E-mail address	Telephone number					
Job title	Organization, full le	gal nam	е	D	epartment name	
Street	Town		Post	code	Country	
Main interest (select one or more) 1. Data Holder (Primary Use Clinical Rep 2. Repository (Secondary Use Research 3. Technical Resources and Expertise (S 4. AI Tools and Solutions 5. ELSI - EHDS 6. Dissemination and Communication Capabilities and functionalities	ository and Hospital, Data V Repository) torage / Computation / Serv	Varehou: vices / In	se architecture) teroperability)			

Figure 53. EUCAIM Dashboard, Expression of Interest.

Once the Expression of Interest has been submitted, our team will conduct an internal review, evaluating the application to ensure alignment with EUCAIM's goals and initiatives. In case your application meets the necessary criteria, a Collaboration Agreement will be sent out to you.

Upon receiving the Collaboration Agreement, you will need to review and sign it to formalise your membership. Following the completion of this step, you will receive a welcome package from EUCAIM. This package includes an official welcome letter confirming your membership, details on how to access member resources and tools, and key contact information within EUCAIM for ongoing support.

Furthermore, you will be automatically subscribed to the EUCAIM newsletter immediately once filling out the expression form. The newsletter will provide you with regular updates on the latest news, events, and opportunities within the network. Membership also grants access to a broad network of stakeholders, facilitating collaboration and the initiation of new projects.

7. Annex I: Registration of Users in EUCAIM

This annex shows briefly how to create an account in the AAI system in EUCAIM through the EUCAIM Dashboard. It describes the process of creating a Life Science AAI account and the request for membership in the EUCAIM Group. The annex has been extracted from the document Registration of Users in EUCAIM v0.2 11/06/2024, available in https://drive.google.com/file/d/1EsFYxbzqpyYKggyeKrKkw3FkVecDby8P/view .

7.1. Introduction

EUCAIM services have public (anonymous) and restricted (requiring authorisation) services. Public services can be accessed without an account. Access to restricted services requires valid and duly authorised credentials.

The Authentication and Authorisation Infrastructure (AAI) used in EUCAIM uses the Life Sciences AAI (LS-AAI) developed in the frame of the EOSC Life project. The LS-AAI is described in detail in <u>https://lifescience-ri.eu/ls-login/</u> and uses institutional Identity Providers from the EduGAIN (<u>https://technical.edugain.org/status</u>) federation to authenticate the users.

The authentication consists of the process of verifying that a user is who declares to be. The authorisation is the process of granting the authenticated user the access to a resource according to a policy. Users in EUCAIM will need a valid LS-AAI account and the membership in the EUCAIM Group to get access to the restricted area of the services.

7.2. The Procedure

A user in EUCAIM will need to create a LS-AAI account and to request membership to the EUCAIM group. This process is performed only once and can be initiated through the EUCAIM Platform Dashboard (<u>https://dashboard.eucaim.cancerimage.eu</u>). The steps are described in the following subsections.

7.2.1. Creation of a LS-AAI account

LS-AAI accounts can be associated with the user institutional IdP. This is the preferred approach, as the user will not need to create a new user and password and it relates a user to an institution. However, some institutions are not included in the LS-AAI set of trusted Identity Providers, which will require creating a user and a password or to use a personal account, which will require additional verifications when the data access request is performed. The steps are the following:

- Access the "My Profile" area of the Dashboard (figure 1).
- Search for the institutional IdP and log in using the institutional credentials (figure 2). Alternatively, a user account can be created or other personal accounts can be used.
- Proceed to the registration of the user in the LS Login (figure 3). Provide with your name, email, and a username, read the Privacy Policy⁵ and the Acceptable User Policy⁶ of the LS-AAI service and click on the boxes confirming so.

⁵ <u>https://lifescience-ri.eu/ls-login/policy-on-the-processing-of-personal-data-of-the-ls-aai-service.html</u>

⁶ <u>https://lifescience-ri.eu/ls-login/ls-aai-aup.html</u>

- The account's email needs to be verified (figure 4). Once the email has been verified, the user holds a valid LS-AAI account.
- The details of the account can be modified in <u>https://profile.aai.lifescience-ri.eu/profile</u>.



Figure 54: Dashboard (https://dashboard.eucaim.cancerimage.eu), anonymous access.

	ADMISION ESTUDIOS	INVESTIGACIÓN ORGANIZACIÓN	
SCIENCE IN I	Identificación UPV. Accediendo a a	plicación integrada en el SSO de la U	JPV
Choose how to log in	Alumnado	Percent	Dersonas avternas
	DNI*	DNI	ID*
e in ar least 3 characters to start the search	PIN / Clave *	Clave UPVnet*	Clave*
6 0PV	Entrar	Entrar	Ente
UPV - Universitat Politècnica de València			
or	Acceso con certificado 🖾	Acceso con certificado 🖸	Acceso con certificado
LinkedIn		Ahora va puedes acceder a la	
Apple	¿Has olvidado tu PIN o clave? Si procedes de otro país, debes incluir tu nomero de pasaporte o NIE, en lugar del DNI.	Intranet identificándote mediante el DNI-Electrónico o el certificado digital de la GVA. <u>Más información</u> Para poder acceder con certificado	 ¿Has olvidado tu clave? Si tienes la nacionalidad española, introd tu DNL Si procedes de otro país, incluye número de pasaporte o NIE.
Google	 En la casilla de PIN / Clave, añade el número PIN de tu automatricula en el caso que seas alumno nuevo o en proceso de registro, en otro caso utiliza la contaseña del dominio el Lamon 	pulsa	En la casilla de clave, escribe tu contrase de extraNET. Tu identidad, así como los privilegios que lleva asociados, será recordada durante t
ORCID	Tu identidad, así como los privilegios que	· ¿Has olvidado tu clave?	la sesión de trabajo. No olvides, pues, cer tu sesión antes de abandonar el ordenado
GitHub	la sesión de trabajo. No obvides, pues, certar tu sesión antes de abandonar el ordenador.	 En la casilla de clave de UPVnet, debes introducir tu contraseña de UPVnet. 	
or		 Tu identidad, asi como los privilegios que lleva asociados, será recordada durante toda la sesión de trabajo. No olvides, pues, cerrar tu sesión antes de abandonar el ordenador. 	
LifeScience Hostel			

Figure 55: Find your Identity Provider (left) and Authenticate through it (right).

	LIFE **** RI Registrar B Submitted registrations 22 (* Sign	sut
	Life Science Login Registration to the Life Science community As this is your first time login via the Life Science Login, please add some information to complete your registration with L Science Community.	ife
	Name Type in your bit name how it should be displayed i.e. in the graphical components. E-mail* Image: Second se	
You tried to accese (a service via) Life Science Logit, but we couldn't find a registration. Let's fix that	Usename as solver a solver by you with a username. You can change this later if you want. You do not need a password for your username because	you log
Proceed to register on the Life Science Login	In to service will your linked abcounts (e.g. institutional account, ORCID, Google). Please read and mark approval of the Processing of Personal Data of the LS AuX Service Please Yelds in version from the 27m of James Y 2022.	
	Processing of Personal 2 I have read, and accept the contents of the document Data of the LS AAI Agreeing with the Privacy Policy document is required. Please check the box to indicate the agreement.	
	Brease Head mark agreement of the Acceptable Live Policy defined by the Life Science Login AUP document in version from the 4th of Angust 2020.	
	Acceptable usage policy* 😨 I have read, and accept the contents of the document.	
	regressing meric to mover declarations, meaded DROA the DOA of INDCase the agreement.	

Figure 56: Proceed to the registration of the user in the LS Login. Provide Name, email and username.

LIFE Science RI Registrar (B. Form # Submitted registrations (22 (* Sign out	LIFE NER Registrar @Form Science R	strations 📴 🕞 Sign out
A Email verification needed	Email verification	
Please check your mailbox prove your application.	Your email address was verified.	
Continue >	Continue 3	

Figure 57: Request for email verification (left) and Account verified (right).

7.2.2. Membership to the EUCAIM Group

The creation of a LS-AAI account is a prerequisite to access EUCAIM restricted resources, but it does not grant access to them. In order to access the EUCAIM restricted resources, the user has to request membership to the EUCAIM Group. This process is manually verified by the security team of the platform, checking that the account requests are not fake and requesting any additional information if needed. Requests will be registered in the LS-AAI platform.

It is important to outline that users in the EUCAIM Group will only have access to the aggregated data. They will not be able to access actual data. This process will be granted through the negotiator service.

The request of membership goes through the following steps:

- Access the "My profile" area of the Dashboard. It will require the authentication through the LS-AAI, and it will present the enrollment form (figure 5). The enrollment form⁷ is prefilled with the user's email and requests the user to provide the institution. Additionally, the user has to read and accept the privacy policy⁸ and the user's acceptable policy⁹ for the platform.
- A membership to the EUCAIM group will have been created (figure 6). This should be manually verified and accepted or rejected (figure 7) by the administrator of the EUCAIM group (NOTE: these screenshots are not available for the user, just for the group administrator).
- Once this request has been approved, the user will be able to access the restricted area through the "My profile" button of the Dashboard. When the user accesses, the system requests to confirm the acceptance of the privacy policy (figure 8). This can be done for a single access or for six months.
- Then, access to the restricted services will be granted (figure 9).

	RI Registrar	Form	S S				
EUCAIM Applicatio	n Form						
I want to be a member of EUC	AIM and get access to dataset catalogues						
E-mail used in LS AAI:*	S upv.es •				Form	Submitted registrations	🛐 (# S
Institution:*				You have successfully applied for membership			
				Please wait until your application has been approved. You will be notified by email.			
Privacy Policy: https://dashboa Usage Policy: https://dashboa	ard.eucaim.cancerimage.eu/privacy-policy rd.eucaim.cancerimage.eu/eucaim_usage_policy.pdf						
Consent:*	 I accept privacy and usage policy 						
The person in charge will revie	w the application and reply to you shortly.						

Figure 58: Return to the Dashboard "My profile" area, where the Dashboard will show the enrollment page to the EUCAIM Group, pre-filled in with the email.

⁷ <u>https://signup.aai.lifescience-ri.eu/fed/registrar/?vo=lifescience&group=communities_and_projects:EUCAIM</u>

⁸ <u>https://dashboard.eucaim.cancerimage.eu/privacy-policy</u>

⁹ https://dashboard.eucaim.cancerimage.eu/eucaim_usage_policy.pdf

🔸 🗧 🔹 💿 🗖 🔮 LifeSci	ence × +	
← C ① https://perun.aai.lifese	cience-ri.eu/organizations/3345/groups/23560/applications	a 🖉 🖓 🤄 🗇 👎 🖓 🦓 🔇
		Ignacio Blanquer Espert 🌲 🏭 🕞
Home Home Access management If Escience Community Arg communities_and_projects_EUC And Overview Members Subgroups Resources Applications Attributes	EUCAIM #23560 > 5 ULD: 699304-145-496-990-490248/1542 Out, Organization: Life Science Community, Description: EUCAIM This group is a subgroup of communities and projects Application	tome ≠ date mage 2610.2022 - 2610.2022
Statistics Advanced settings ~ Membership Managers Application form Notifications Relations Extransl sources	Id Dreated Date ↓ Type State Dreated by 61155 20.10 2023 →	teens per page 10 1−1 of 1 2 2 Mooffed by case4boat699277ed2985574a1b38000416s@judv.es
A My profile	ABOUT US LifeScience Login Homepage Privacy policy	SUPPORT Report problem support[Basilifescience-ri au
	Acceptable Usage Policy	
	② 2023 Copyright: CESNET, CERIT-SC, Operated by: MU, EGI;, web a	pplication: 13.4.0, server: 29.0.0

Figure 59: Administrative Dashboard. Request received.

	scence x +	••• ± © 🖬 🐠 LING	liece x +		
← Ø (Ó https:/perunaai.li	lascience-riseybrganizations/5345/groups/23950/applications/61195 R A 🗘 C 🛛 D 🟚 🐁 📽 \cdots 🔕	← C () https://perun.aai.i/le	science-flag/organizations/3346/groups/23360/applications/61156	ର ନ ନ ପା ସ ବ କ କ କ କ ବ	
	liprecio llenquer Expert 🌲 🏢 🕞	= SEENCE RI		lgradio Dianquer Espert 🏛 🕞	
Items Items Itesserve Community Approximation Itesserve Community Approximation Itesserve Community Approximation Itesserve Community Approximation Itempoint Itempoint Itempoint Itempoint Itempoint	EVENIM #23550 / 8 E EVENIM #23550 / 8 E Evenim Control of the destination One Operating Left Amount in the Control Provide in store of according and unless Application detail #61155 Provide in the operating Provide in the operating Provide in the operating Provide integrate Event Integ	Anno Anno Anno Anno Anno Anno Anno Anno Annonn Annonn Annonno Annon Annon Annon Annon	EUCAM #23550 / 8 EUCAM #23550 / 8 EUCAM #23550 / 8 EUCAM #23550 / 8 EUCAM #25550 Prove is subject of generative data and and and and and and and and and an	✓ Application min typened	
Membership Managers Application form Notifications Relations	Type — Hinki A faloritetti ya amerika akaka a Baka akaka	Membership Managaris Application form Notification form Relations	Type - Huld J Approx Hull Solid Mid2/Mid2/Mid2/Mid2/Mid2/Mid2/Mid2/Mid2/		
A My profile	a terminativitati internativitati internativit		End of Americano 0 End of Stococh 20 00-99 E-marked 12-20 00-99 E-marked 12-20 Institute. () Country ()	-de M Lury gets	
	ABOIT 15 EUROPET Unition to up in the state to the state of the state		ADDUT US Linkdolanca Login Hompaga Privacy policy Acceptable Using Photy @ 1010 /conscient 2010/17 20101.00- /coverset Jou Mil	SUPPORT Report problem aupport Bask Moscience–I.eu 20. web protocols 13.4.0. work: 19.1.0	

Figure 60 7: Administrative Dashboard. Approval of the request.

Consent about releasing personal information to service EUCAIM Dashboard					
Document with the privacy policy for this	service can be found here.				
LS ID	@lifescience-ri.eu				
Entitlements	um:geant:lifescience- ri.eu:group:lifescience:communities_and_projects:EUCAII.#4aal.lifescience-ri.eu				
Email	Email upves Verified: true				
Profile	Username: Given name: Name of user: Family name:				
Remember					

Figure 61 Return to the Dashboard "My profile" area. First time requires confirming the acceptance of the Privacy Policy.

* EUCAIM	The Dashboard of the	PUBLIC CATALOGUE 1780 EUCANCER IMAGE EUROPE & European Federation of Canc	eranted query necontator helpersa 1	(1900/T)		
Collection Summary 47 datasets with a total of 35527 subjects						
D	latasets and Subjects	Image Modalities	Body Parts Examined			
	Expl	ore our PUBLIC CATALOG	UE			
B	Become a Become User Software Pro	a Become a ovider Data Holder	Become a Member			

Figure 62 9: Dashboard Fully authenticated

8. Annex II. Documentation Required by the Negotiator for existing datasets

This annex shows the details of the documents required by the negotiator when requesting access to existing datasets, which are already exposed in the catalogue. The annex has been extracted from the document Negotiator documentation v2 - existing datasets, available in Negotiator documentation_v2-existing-datasets.pdf

REQUEST FOR DATA/SOFTWARE

APPLICATION DOCUMENTS (Data User-Researcher, Innovators, Members):

- 1. Cover letter (no more than 500 words).
- 2. Work team: list of centres, researchers per centres and short CV per researcher (no more than 50 words per CV).
- 3. Hypothesis to be developed with its clinical impact (no more than 300 words).
- 4. Objectives of the application, study design and work plan (no more than 500 words)
- Necessary material and methods, such as target population, type of data (image modalities, case report forms), datasets (filtering criteria, recruitment period), number of cases, annotations, tools, computational resources and temporary storage (no more than 600 words).
- 6. Expected results and applicability (no more than 100 words).
- 7. Sources of funding (no more than 200 words).
- 8. Supporting documentation:
 - Favourable Ethics Committee report (pdf)
 - Approved project (pdf)

9. Annex III. Documentation Required by the Negotiator for building datasets

This annex shows the details of the documents required by the negotiator when requesting new datasets to be created, which will come from the RWD through EUCAIM's network of stakeholders. The annex has been extracted from the document Negotiator documentation v2 - build datasets, available in Negotiator_documentation_v2-build-datasets.pdf.

BUILD YOUR PROJECT

APPLICATION DOCUMENTS (Data User-Researcher, Innovators, Members):

- 1. Cover letter (no more than 500 words).
- 2. Proponents: centres, researchers' team and short CV with previous experience (no more than 50 words per CV).
- Consortium: check for EUCAIM partners experience based on your specific needs (such as hospital data holders, research centres, partners with local computational resources, partners with expertise in data preparation, data curation, AI and software development, legal and ethical aspects or project management, among others)
- 4. Hypothesis with its clinical impact (no more than 300 words).
- 5. Objectives, study design and work plan (no more than 500 words).
- Necessary material and methods, such as target population, type of data (image modalities, case report forms), datasets (filtering criteria, recruitment period), number of cases, annotations, tools, computational resources and temporary storage (no more than 600 words).
- 7. Expected results and applicability (no more than 100 words).
- 8. Research Call applying to.