ARIADNE

D13.1: Service Design

Authors:

HellacHollander, KNAW--DANS
Maarten Hoogerwerf, KNAW--DANS

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Authors: **Hella Hollander**

Maarten Hoogerwerf

KNAW-DANS

Contributing partners: **Franco Niccolucci, PIN**

Julian Richards, ADS

Holly Wright, ADS

Roberto Scopigno, CNR

Massimiliano Corsini, CNR

Frederico Ponchio, CNR

Matteo Dellepiane, CNR

Carlo Meghini, CNR

Dimitris Gavrillis, ATHENA

Guntram Geser, SRFG

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2 Document history

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3 Introduction

This document aims to specify the service design of the ARIADNE Portal, and provide a common vision, a user perspective on the functionality, and a framework to identify, discuss and validate the requirements for the underlying technical services. As such, the audience of this document will be both technical and non-technical.

The context of task 13.1 Service Design can be visualised as follows:

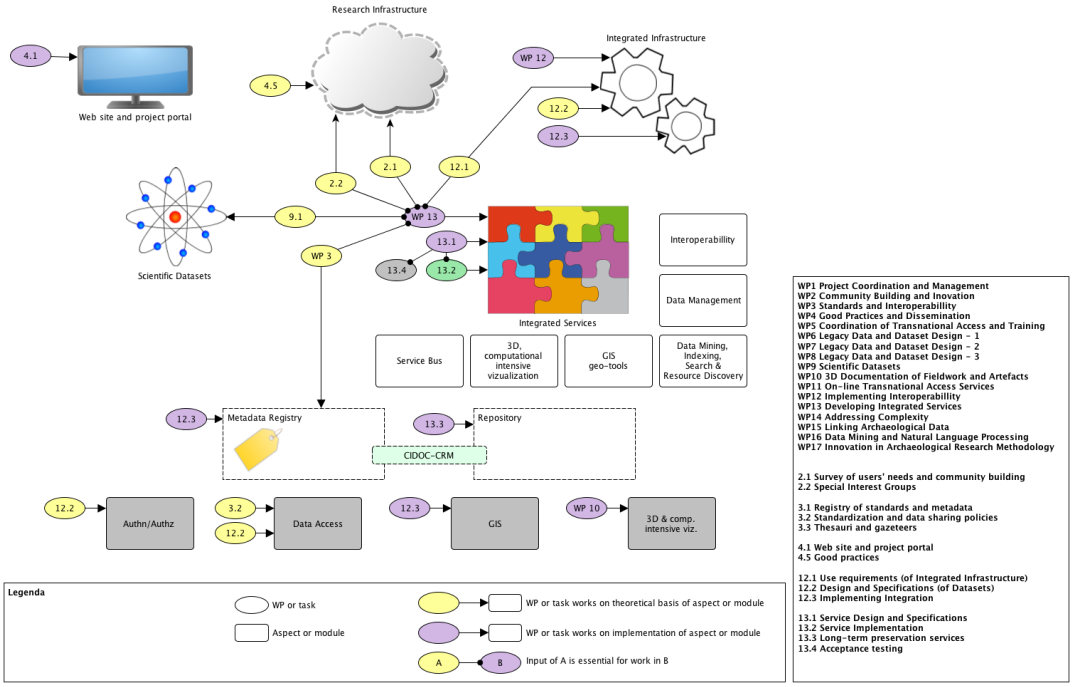


Figure 1: ARIADNE tasks and Service Design

This service design was created using the following input: Description of Work, Task 2.1 (Survey of users' needs and community building), Task 12.1 (Assessment of use requirements), an examination of existing portals and WP3-12-13 Workshop discussions. The service design will provide input for Task 13.2 (Build Services) and Task 13.4 (Acceptance testing).

The service design will provide a common vision formulated in terms of principles, derived from the mission statement in the Description of Work. This will be described in Chapter 4. The functionality will be derived from a user perspective. The users and their concerns will

be introduced and described in Chapter 5. Chapter 6 will detail the activities of these users in relation to the ARIADNE portal and describe their technical impact. A detailed description of the components the project necessary for the design and implementation of visual media is given in Chapter 7. Chapter 8 gives an overview of the technical architecture with some brief explanation. Chapter 9 discusses the data model of ARIADNE that should support the described use cases.

4 Related Work

4.1 First report on user's needs (D2.1)

The stakeholder survey described in D2.1 allows the detailing and prioritization of the functionality of the service design in D13.1. The wishes expressed can be clustered together in five main categories of user needs: data transparency, data accessibility, metadata quality, data quality, and the international dimension.

- **Data transparency needs: having a good overview of available data(sets)**

Inconsistent interfaces, insufficient provenance information and scattered and heterogeneous resources (D2.1, Page 49) are all challenges for archaeologists wishing to use data. To address these challenges, the expected benefits from the ARIADNE infrastructure and services to ease search and access are to: "facilitate a better knowledge of existing datasets, improved access conditions", "user-friendly queries and interfaces" and "cross-searching data repositories" (D2.1, Page 65).

Respondents suggested that ARIADNE should establish a new portal for data search. If such a portal (on top of existing data resources) is established, users will clearly expect added-value – i.e. it must have other or better features, or provide access to more resources. While an improved overview, cross-searching and filtering of data resources, would be a good progression from the current situation, the specific requirements are not fully clear (D2.1, Page 163). The most commonly stated needs are searching across distributed resources and

filtering hit returns more effectively. Mentioned is “Innovative methods to represent time and other values; semiautomatic extraction of data from texts” (D2.1, Page 141). Not appreciated: online collections pre-culled by others (D2.1, Page 157).

- **Data accessibility needs: the required data(sets) are available in an uncomplicated way**

Only few respondents felt the online availability of research data was satisfactory. Data appeared as difficult to find, not available online, and if online, difficult to access (D2.1, Page 63). Some respondents commented that they could not rate the availability of data they do not use, while others complained about lack of downloadable “raw data” for re-use (D2.1, Page 159). Informal contacts and networks play a major role in gaining access to the data that haven’t been published yet. Humanities scholars in general seem willing to share some data with other researchers but the “raw data”, such as a database used for the creation of a scholarly edition is not usually shared. Scholars wish to be acknowledged, cited and referenced by peers for their published work (D2.1, Page 47). Most researchers suggested implementation of open access principles, and technical improvements that would allow easier searching and access. For example: “Large open databases, easily accessed, well managed (…) Would also make it easier for me to enter my material or parts of my material there.” Among the technical suggestions were: “A coherent method of data publication, accessibility (intelligent interfaces) and transparency about the data creation process (D2.1, Page 64).” Concerning data that are accessible online, researchers mentioned that they are sometimes not as useful as they could be, because data is structured in different ways, not up to date, incomplete or lacks important details (e.g. how it was collected or processed). Moreover, a lot of data are not re-usable but “canned content” (such as data tables in pdf documents) or not available under an adequate license. Therefore, we believe that users of the ARIADNE portal would benefit from innovative mechanisms that allow a quick scan of data resources to quickly assess their usefulness (e.g. previews, snapshots, “look inside” functionality). Also some pre-filtering or ranking services might be provided (e.g. only openly licensed data) (D2.1, Page 162).

Researchers have a predominantly project-centred view, rather than an institutional perspective on data. As a result, the major formats for organizing data are “project archives” (one per excavation site) and “database projects” of small research groups, or even a single researcher. The “collection” format is much less common. Unfortunately, this does not represent favourable conditions for linking and integrating. To link these project archives with a common repository requires a system, workflows, and dedicated staff, which may not be available in many research institutions. ARIADNE will have to focus on data sets that are already available in existing institutional repositories and national data centres and, but on the other hand, promote the flow of currently “dark data” into the repositories or centres. However, in many countries national centres do not exist, or may not be optimal (e.g. lack of Open Archive Initiative compliant systems). Hence, ARIADNE can play a significant role in leveraging the “data tanks and pipelines” (D2.1, Page 157).

- **Metadata quality needs: the available data(sets) are well described.**

Most researchers seem not to worry much about metadata (like repository managers do) and, consequently, often do not produce metadata for the various data (data sets) they generate in projects. Researchers are aware and concerned that producing adequate metadata is a considerable additional effort, and that they might lack required expertise. To allow for effective data sharing, these additional efforts (costs) will have to be covered somehow (e.g. by research grants) (D2.1, Page 62).

One field of practice, which might be enhanced, is the preparation of shareable data or datasets. Profiling researchers’ practices will allow greater understanding of how they prepare data (e.g. to underpin a publication) and what is understood to be shareable data, beyond just presenting summary tables, charts, etc. in a publication. This has been explored by the Data Curation Profiles project, in view of enhancing researchers’ data sharing through repositories (cf. 3.6.8). Profiles like the ones produced in this project might also be relevant for ARIADNE (D2.1, Page 48).

- **Data quality needs in general: the available data(sets) are complete and well organized**

Concerning data that are accessible online, several researchers mentioned a lack of usefulness because the data are structured in different ways, not up to date, incomplete or lack important details. For example: “the main problem is the variability and inhomogeneity of data content and structure”; “incomplete datasets; online databases that aren’t kept up to date (this is a big problem)”; “lack of details on how data was collected – it is difficult to assess the quality of data published online” (D2.1, Page 63). Online publications with supplemental data are seen as particularly important, equal to printed publications. However, the feedback indicates that it is not the source as such that matters – it is the quality of the data contained. There is no single most important source; researchers make use of all kinds of sources (D2.1, Page 158).

Archaeologists’ seem to seek improvements especially in the initial phase of the data lifecycle (field recording, data entry) and when publishing project results online (D2.1, Page 50). The usefulness of a suggested new tool or service is evaluated with regard to the individual or group of “scholarly primitives” it aims to support (searching, collecting, comparing, annotating, etc.) and what researchers are already using. To invest time and energy in learning how to use a tool effectively, researchers need to be convinced that it will not become rapidly obsolete. (D2.1, Page 48) They do not like significant changes in existing research designs, workflows or vocabularies. Achievement of data compatibility and interoperability are a concern, though the willingness to adopt unfamiliar standards is generally low (D2.1, Page 49). The need expressed as the ease of documentation and metadata production is formulated as: “simple-to-use tools for documenting and sharing”; “a metadata ingestion and management tool (…) that can be easily installed in our server to organize the workflow during the production phases” (D2.1, Page 65).

ARIADNE e-infrastructure and services might support first steps in advanced e-research practices, for example, aggregation, integration and mining of datasets. As suggested by an archaeological e-science scoping exercise, this would require going beyond resource discovery across distributed datasets (D2.1, Page 50). ARIADNE services might provide/support:

- identification of available datasets, which could be relevant;
- data aggregation, search and delivery (e.g. via web services);
- links to relevant tools/workbenches (e.g. data exposure and integration tools);
- deep and dependable linking between datasets and tools (beyond file level);
- ontologies for data mining, integration, and analysis.

Expected benefits from ARIADNE are: “a common approach for the presentation of archaeological research data (data structure, …)”, and “… standardization. If metadata…are produced in a similar way, language barriers can be overcome, too” which could then allow “a thematic or methodological approach, rather than just combining data in an arbitrary way”. These common approaches may enable comparative research to “make results, sites and evidence comparable”, and thus allow “more potential for quantitative comparisons” thus showing why “comparative data sets [should] be made available for furthering and developing advanced research in archaeology” (D2.1, Page 65).

- **The need for an international dimension: having easy access to international data(sets)**

Having access to international data(sets) was perceived as “very important”. According to the pilot interviews, one major reason for seeking data beyond national borders is comparative research for broad synthesis or meta-analysis. “The research between different institutes (with different specializations and their own databases) would benefit greatly”, and “access to a wider geographical datasets will in time help facilitate cross collaboration and enhance funding opportunities”.

Only a few researchers mentioned that other languages are an issue for accessing and using data and datasets. (D2.1, Page 64). There is mixed evidence concerning the question as to whether data and metadata need to be available in different languages (other than English) (D2.1, Page 161).

Thinking beyond individual users, ARIADNE should also be seen as a service for data repositories, other websites and for specific practitioner communities. ARIADNE may help enrich services of underlying repositories, by suggesting (and providing) links to similar or complementary collections or individual items held by other repositories (for example). For other websites, ARIADNE could provide RSS feeds on available new data relevant to particular subjects or geographic regions. An Application Programming Interface (API) would be useful for application developers seeking to combine (mashup) ARIADNE data/metadata with other information resources (D2.1, Page 163).

Archaeology has close scholarly neighbours, including classics, medieval studies, epigraphy, iconology and others. A multitude of directories, catalogues, bibliographies, reference collections, text and image corpora, and digital editions have been produced in those fields. These resources have not been fully considered yet by ARIADNE, but the neighbours are relevant both as providers and users of data and knowledge resources (e.g. vocabularies). Thirty per cent of the repository managers surveyed said their holdings include data/content relevant for corpus studies (D2.1, Page 157).

4.2 Use requirements (D12.1)

Task 12.1 of WP12 pulled together the considerable information already gathered within several other ARIADNE tasks and their resulting deliverables, with to understand the nature of the infrastructures provided for integration, including an inventory of what data and metadata will be available within the registry, making it possible to identify gaps that may be present, and how they may be adapted for integration. The deliverables analysed by 12.1 include:

- D3.1: *Initial Report on Standards and on the Registry*
- D3.2: *Report on Project Standards*
- D3.3. *Report on Data Sharing Policies*
- D2.1 *First report on users' needs*

D12.1 formulates user requirements on Data, requirements on Metadata standards, Schema's and Vocabularies and requirements on Access and Sharing Policies. The needs expressed by researchers regarding data are clear. The most important type of data is excavation data, (stratigraphy, description, images, finds, GIS data, geophysical data, environmental data, radiocarbon data). Seventy-five per cent of the respondents said that excavation data was "very important" for them to carry out their research projects. Also very important for a large group of researchers (about 50% each) was GIS data, data stemming from material or biological analysis, and data from field surveys (descriptions, images and finds data for individual sites, and GIS data, by period, material and site type for the survey as a whole). These types of data are also the ones most frequently produced by researchers. More specific research data mentioned as being searched for and produced are: "images, maps and texts", "bibliographical research, historical data, maps, etc.", "artefact studies"; "mostly 3D models from 3D survey and 3D reconstruction"; "geomorphology, geology and vegetation data"; "14C dating and carbon and nitrogen isotope analysis".

A majority of the researchers interviewed said that excavation and/or the management of archaeological sites and monuments were among their research priorities. For monuments, the data consists of physical description, location data, images, access data, and conservation data.

The users' needs survey revealed that researchers are first struggling to know what data exist. Researchers are also concerned that producing adequate metadata is a considerable additional effort. The willingness to adopt unfamiliar standards is generally low.

Data transparency and data accessibility are seen as the most important user needs, including the recommendation made within D3.3 *Report on data sharing policies,* that all ARIADNE data resources have DOIs or the equivalent. As only three partners (ADS, SNDS and DANS) have the ability to mint DOIs at present, how (and if) this can be implemented will need further exploration. The topic of access will be part for further strategic work within D2.2. *Second report on users' needs*. There will be further requirements once users have discovered "useful" data(sets). For example, if such data has been found users might wish to also find related publications from the researchers who have shared it. Therefore, as next

steps we suggest having some “lead users” evaluate a larger number of portals to identify where and how various needs and requirements are met (or not met), including examples of existing innovative approaches, and further ideas on specific services or features the ARIADNE user community might appreciate.

The interactions between the work packages and relevant tasks can be seen in Figure 2.

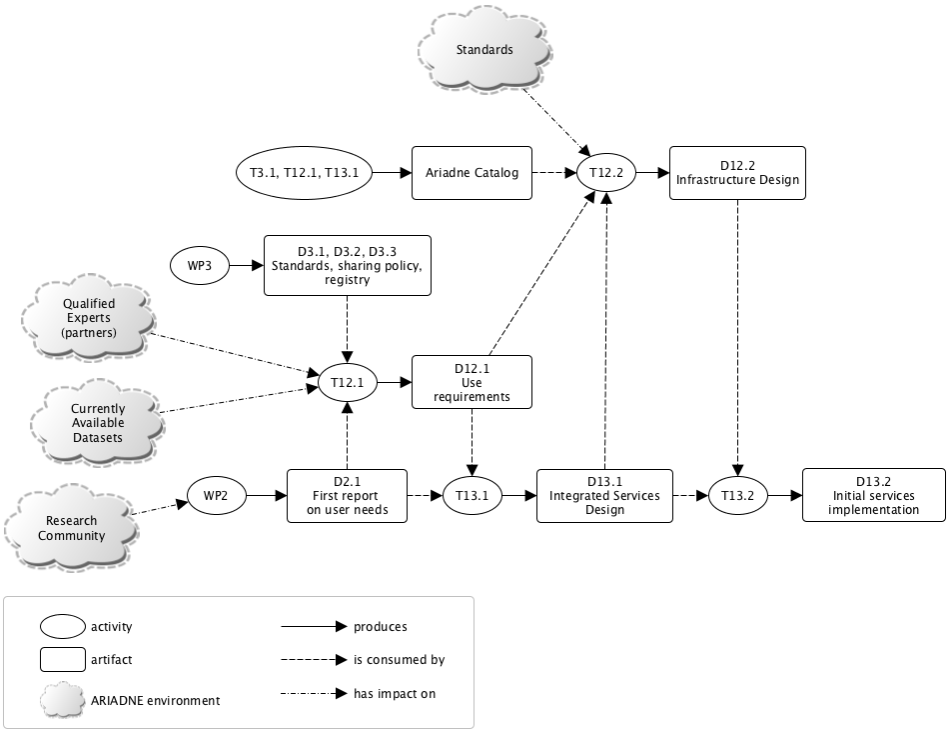


Figure 2: Relationship of Task 13.1 with its related WPs and Tasks

5 Common Vision

The Description of Work (DOW) of ARIADNE has been taken as a starting point. It formulates the following mission statement:

> "ARIADNE brings together and **integrates** existing archaeological research data infrastructures so that researchers can **use** the various **distributed datasets** and **new** and powerful **technologies** as an integral component of the **archaeological research methodology**".

In order to fulfil this mission, we now describe (1) the general objectives, and (2) the steps that will be taken within the context of WP13 to achieve these objectives.

Archaeological research infrastructures form a very heterogeneous and fragmented landscape, in which well-developed and advanced infrastructures, catering to the needs of broad research communities, coexist with much simpler infrastructures offering basic data access services to a restricted group of scholars. Along an orthogonal dimension, we must consider the heterogeneity of the research methodologies that the ARIADNE communities follow and that inform the supporting infrastructures. Last but not least, we must acknowledge the heterogeneity of the information technologies that are currently in use in the ARIADNE landscape, in terms of the models and technologies for supporting data resources, and in terms of the algorithms, domains and architectures of the service resources. These three levels of heterogeneity are the starting point for ARIADNE.

Under these circumstances, ARIADNE has decided to pursue its mission by following a pragmatic approach, based on the recognition of the existing data and service resources, and on the development of an infrastructure where data and services resources can be registered, discovered and accessed in a uniform and integrated way, in support of the existing research methodologies, and regardless of the different architectures that support these resources in their original format. The resources that will be discoverable and accessible through the ARIADNE infrastructure may be the ones originally provided, or may be the result of integrations, either at the data or at the service level. In particular, the integration of the data resources is planned and executed in WP12, while the integration of

the services will be outlined in the rest of this document. Here, we aim to outline the overarching vision.

The general objective is therefore the creation of a single, global access point, which will act as a *broker* between the resource providers and the resource consumers, in accordance with the nature of an infrastructure. Resource providers will be able to register their resources and supply rich descriptions about them, following the ontology established by the ARIADNE Catalogue Data Model, defined elsewhere. On the other hand, resource consumers will be able to explore the ARIADNE data and service space, either in browsing or querying mode, via simple or structured queries. Furthermore, the consumers will be able to access the discovered resources, obtaining data or services.

We would like to stress that the creation of such an infrastructure is already a considerable step forward within the archaeological domain, as it implies the creation of a unique space where the currently dispersed resources can be uniformly described, discovered and accessed, overcoming the idiosyncrasies that currently prevent their full exploitation by scholarly communities. At the same time, it represents a necessary step towards the more ambitious goal of creating a unique knowledge and service base for archaeology, a long-term goal that still stands as extremely challenging and desirable.

ARIADNE will reach the above-described objective in two major steps, as established by its Description of Work.

In the first step, it will set-up the infrastructure, which will be accessible via a portal, offering basic services for registering, discovering and accessing resources. The data and the service resources will be made available in a raw form, with little or no attempt at creating a uniform look-and-feel, and with little or no attempt to integrate the similar data. In this step, the emphasis will be on obtaining a complete population of the resource space, regardless of how different one dataset or one service will look from the others. This step will be completed by month 24, resulting in deliverable D13.2.

In the second step, a more advanced version of the register-discover-access services will be offered, and access to the available resources will be harmonized, so that the user will obtain a uniform experience across the whole ARIADNE space. At the end of this step, the

data provided and service resources that are planned to be tightly integrated, will also be available.

The next sections are aimed at providing an overview of the infrastructure by proposing three actors, which have been created following the needs and input documented by Tasks 2.1 and 12.1. The actors represent different possible users of the infrastructure. Each actor needs to complete different tasks: some of which are described and analysed in the Use Cases section.

6 The Actors and their stories

This chapter describes the different users and how their work relates to the different phases of the research data lifecycle.

6.1 Introducing Laura

Laura Simons studied Prehistory at Leiden University with a specialisation in the Bronze and Iron Age of the Netherlands, graduating in 2007, and continued her career at a commercial archaeological organisation for two years. This was followed by a PhD, which was financed by the Dutch Scientific Organisation (NWO) from 2009-2013. After her PhD, Laura continued with a new subsidised project and combines this with a job as a teacher in the Department of Archaeology at the University of Leuven in Belgium. The project will finish around 2018. The project is about the habitation development along the river Rhine valley, with a focus on eight sites, covering the timespan from the Stone Age to the Medieval Period. The digs took place between 1960 and 1990 and were not studied and published before, thus the aim of the project is to work through several of unpublished archaeological excavations.

6.1.1 Searching collections

Working on her recent project, Laura found interesting information about a Dutch burial site from the Iron Age, and wants to compare this to burial practices elsewhere in Europe. Laura will publish on this topic.

Laura searches online to collect detailed information. She is looking for general and specific data. Laura can do her research on her own computer using services available through the work of ARIADNE.

Through ARIADNE, Laura can easily obtain a list of all the collections related to her project. Laura was happy to see that another archaeologist put older research with detailed data online that was useful for her work.

By providing search input to the portal, Laura is able to obtain a detailed list of the collections that include items that fit the query. Advanced visualization services (visualization on maps, timelines) enable Laura to refine her search.

See use cases Discover data, Preview data, and Access data

6.1.2 Accessing collections

Laura can obtain a preview of the collections retrieved after the query. The preview contains a set of general information about the collection, and possibly a representative set of thumbnails.

She can access the collections with a single click, being redirected to their website.

6.2 Introducing Valentino

Valentino De Angelo works as an archive manager for a national archaeological research institute executing studies, surveys and excavations. The archaeologists are depositing their data at this institute.

He is currently interested in finding new ways to store and visualize several types of data, including high-resolution images, 3D models and GIS data.

He is mainly interested in providing ways to remotely access data, but at the same time, he would like to protect the data by preventing items within the collections from being downloaded.

6.2.1 Search services

Valentino is trying to find available services for his collections. He would like to know what the different possibilities are to handle the data.

6.2.2 Use services

Valentino is available to use new services to better store or present the items within the collections, and is willing to use new technologies in order to preserve and visualize data.

6.2.3 Support collections

Valentino would like to use the services to enrich the collections, but he would also like to take advantage of the server space, so that the Ariadne portal could maintain some of the pages produced by services.

6.2.4 Enrich collections

Valentino wants to be able to directly enrich the collections, so he would like to take advantage of the services, but he would also like to download the produced data and store it directly within the original collections

6.2.5 Preserve data

Valentino is worried that the data formats of his collections won't be supported in the future or that the collections won't have the resources to keep the items online. He may be interested in: accessing guidelines about data preservation, making use of services for automatic data conversion, and storing data on an available server that could ensure long-term preservation.

6.2.6 Add collections to the registry

Valentino is managing an archive that is continuously adding new collections. He would like to easily add them to the Ariadne Registry, in order to make them available for the community.

6.3 Introducing Christopher

The infrastructure employs Christopher Moore as security manager. He is responsible for the good operation of the ARIADNE portal.

His main role is to take charge of the security issues, focusing on authentication and access. He's also interested in being able to track the resource usage, and check the availability of services.

6.3.1 Authentication and authorization

Users of the portal may access the portal with differing roles. Christopher wants to be able to control an authentication and authorization service.

6.3.2 Attribute-based access control

Since those who access the portal may have different roles and needs (like Laura and Valentino), an attribute-based access control is needed to be able handle the permissions.

Hence, a set of user related attributes (e.g. roles, collections) and eventually environment related attributes (e.g. country, date) are needed.

6.3.3 Support for standards

Christopher would prefer to have a set of services that could follow recognized standards.

6.3.4 Support for data providers

Christopher should also work with data providers, to help them prepare new collections for the registry, and use the tools provided by the ARIADNE portal. He should at least be able to re-direct the users to the maintainers of external services.

6.3.5 Resource usage tracking

Christopher is interested in being able to track the use of resources in the portal. This can be useful to quickly produce reports, map the main usage of the services and eventually find improper behaviours.

7 Use cases

The above actors presented above are a starting point to provide an overview of the desired functionalities of the portal, which will be specified from a user perspective. The Description Of Work will be the starting point for defining the user functionality. This will be the basis for an examination of existing portals as examples for the generic portal approach of ARIADNE. Finally, a stakeholder survey will allow the detailing and prioritization of this functionality, and the functionality will be the basis of the *Framework for Requirements.*

In between, the functionality will be discussed within the project and work-packages. One of the discussions led to the decision (November 2013, Pisa) to exclude annotation-support (the demand for annotation-support was considered low, while the implementation and maintenance of robust annotation tools is a cumbersome task). It can be considered in an experimental way for 3D models, to make comments by researchers on non-researcher metadata.

The requirements of the ARIADNE portal are based on use cases, to ensure that requirements are defined to support the users. This has been done by first defining the users (or actors) and their interaction with the services (their scenarios), broken down into clear steps. This will allow structured analysis of the requirements for the services to the end users, as well as to the technical components that should enable these services (like the ARIADNE Catalogue Data Model).

The activities, their steps and derived requirements will be prioritized in order to ensure a realistic and pragmatic end-result for the project.

7.1 Search and explore the registry

Characteristics	Description
Description	Laura wants to search and/or browse the portal to look for archaeological datasets she can preview and/or download.
"Trigger"	*Laura navigated to the ARIADNE portal, either directly by entering the URI, or indirectly by using a search engine like Google.*
Preconditions	*Laura has general ICT skills* *Laura is an archaeologist*
Primary Actor	*Laura, in the role of data consumer.*
Basic flow scenario	*Step 1: Navigate to search page.* *e.g. Laura clicks on the menu-item search* *Step 2: Enter search parameters.* (sub-steps can be repeated 0 or more times): *Step 2a:* Enter keywords. Keywords and operators can be entered. *e.g. Laura enters: burial mounds AND Iron Age AND France* *Step 2b: Specify multi-linguality.* The linguality of the keywords and the results can be specified. *e.g. Laura ticks the multi-lingual option and selects "Dutch", "English" and "French".* *Step 2c: Geo-integrated search.* Zooming and panning the map can specify the location/area. This step is integrated with the results (see Step 3b). *e.g. Laura zooms/pans(moves) to the region of Northern France.* *Step 2d: Specify collection.* The collections can be specified. *e.g. Laura selects the collection "Burials".* *Step 2e: Timeline search.* The time or period can be specified. *e.g. Laura selects the Iron Age from a timeline.*

	Step 3: Show results. The specified parameters are displayed and the matching results are presented to the user. The results can be presented using different views. *Step 3a: The results are displayed as a list.* The list has multiple pages and can be ordered. Each entry shows the most significant metadata elements for the entry. *e.g. the system shows the creator and the title of the first 10 results, ranked alphabetically.* *Step 3b: The results are displayed on a map,* according to the coordinates in the indexed metadata. Once one of these results is clicked, a popup is shown indicating a (clickable) title and creator of the dataset. *e.g. Laura sees 3 datasets/collections about burials in the region of Northern France.* *Step 3c: The results are displayed on a timeline.* Once one of these results is clicked, a popup is shown indicating a (clickable) title and creator of the dataset. *e.g. Laura sees that three datasets all belong to the Iron Age, starting X and ending Y.* *Step 4: Laura clicks one of the results* (go to 5) or decides to adjust her search parameters (go to 2). *Step 5: The system displays a preview of the selected dataset* to Laura and/or provides an overview of the metadata of the object, including a link to download it. Laura has the possibility to return to the original search results. *e.g. This overview includes (e.g.) title, creator, date issued, coordinates, time coverage, language, access rights, persistent identifiers, repository, etc. There is also a link that allows downloading of the data.*

Discussion: Discover = search and browse (define collections and categorise in sub disciplines: Indexing)

Source: User interface component at ARIADNE portal. (DOW)

This will include indexing and retrieval, whenever required by the amount and heterogeneity of data. They will take into account issues like scalability, indexing optimization (query caching), ranking and searching methodologies, etc. as well as an

interface enabling other services to search and retrieve content from within the infrastructure. (DOW)

The resource discovery is obtained by searching on the registry catalogue, which contains a metadata description of all the collections.

We foresee faceted search functionality allowing users to explore their searches with filters.

7.1.1 Navigate to search page

#	Description	Priority
1	**Indirect access -** The search-functionality can be reached from any page within the ARIADNE portal, by clicking its menu-item.	High
2	**Direct access -** The basic search-functionality is present at any page within the ARIADNE portal, e.g. by allow direct entry of keywords in small search-interface. The results are presented in the default result-view.	Medium

Technical impact:

- No significant impact.

7.1.2 Enter Search Parameters

#	Description	Priority
1	**No parameters –** A search query without parameters returns all datasets, ordered by date, showing the latest first.	High
2	**Multiple parameters –** Multiple parameters, e.g. keyword parameters and geographic parameters, are combined conjunctive (“AND”, showing datasets that fulfil both parameters).	High

Technical impact:

- No significant impact.

7.1.3 Free text search

#	Description	Priority
1	**Multiple keywords** – one or more keywords can be entered	High
2	**Boolean operators –** the keywords can be combined with operators such as (like, and, or, proximity search)	High

Technical impact:

- An index is required. It needs to support multiple keywords and operators.
- The metadata fields to be indexed need to be determined.

7.1.4 Multilingual search

Source: Integration of new **multilingual thesauri,** to allow linking previous dataset across languages and to enable new search services (DOW).

Note: Should discuss with an expert on multi-lingual search.

#	Description	Priority
1	**Default multi-linguality –** The system searches in all indexed descriptions, independent of their language.	High
2	**Specified languages –** The user specifies the language for the keywords. The system looks for descriptions in those languages, as well as descriptions in undefined languages.	Medium
3	**Translated keywords –** The user specifies to which languages the keywords should be expanded. The system translates the given keywords and searches the descriptions using the translated keywords.	Medium

Technical impact:

- A multi-lingual thesaurus is required.
- Either the descriptions are translated upon indexing, or the keywords are translated upon querying.
- The language of the metadata descriptions is specified

7.1.5 Geo-integrated search

Source: Sophisticated analyses of spatial features, combining the information available in distinct datasets; creation of derivative, GIS-based archaeological digital maps, embracing vast regions and collecting together specific features from different, and so far separated, datasets, e.g. “digital map of the distribution of Roman amphorae in the 1st century AD in the Mediterranean basin”. (DOW)

Discussion: Geo-integrated search is usually a way of presenting all datasets on a map, and browsing them by either zooming or panning. Geo-integrated search could also allow entering geographic names, as with Google Maps, or even to specify explicit distances (radius from specific point).

#	Description	Priority
1	**Geographic area –** A geographic area can be specified. Only datasets with a specified location within that area will be returned.	High
2	**Map specification –** the geographic area can be specified by zooming/panning on a map. Zooming specifies the height/width of the area. Panning specifies the location.	High
3	**Semantic location –** the geographic area can be specified by entering a geographic name and optionally a range.	Medium

Technical impact:

- Coordinates for a dataset are required. Default coordinate-system(s) needs to be agreed.
- Search engine needs support for geographic search (based on coordinates).
- A thesaurus for location-names is required.

7.1.6 Collection search

Identified collections are: “Sites and monuments”, “Events/Interventions”, “Fieldwork databases”, “Scientific”, “Artefacts” and “Burials”. (Pisa)

#	Description	Priority
1	**Specify collection –** The user can specify the collections that need to be searched. This can be one, multiple or all collections.	High

Technical impact:

- There is a need for a common/centrally defined collection policy, incl. a list of supported collections.

7.1.7 Timeline search

In the timeline search, the user should be able to define a search for time period within the collections. Alternatively, they could visualize the collection on the timeline, and refine the search by indicating periods or exploring it.

#	Description	Priority
1	**Specify period –** the period can be specified using a “from” and/or “until”. To define open or closed periods.	High
2	**Timeline –** the period can de specified on a timeline.	High
3	**Timeline zoom/shift –** The timeline can be shifted and zoom to allow the specification of both wide and specific time periods.	High
3	**Predefined periods –** The timeline identifies predefined archaeological periods from which one can be selected.	Medium

Technical impact:

- Ontologies for predefined periods are required.

7.1.8 Show results

#	Description	Priority
1	**Display search-parameters –** The search-parameters are visible along with the search-results (e.g. above search-results, or next to them (faceted)).	High
2	**Alter search-parameters –** Allow users to adjust parameters at the search result page.	High
3	**Change views –** The user can switch between the list, map and timeline view.	High
4	**Multiple views –** The user can see multiple views at the same time, e.g. map and timeline view.	Medium

Technical impact:

- No significant impact.

7.1.9 Show results as list

#	Description	Priority
1	**Ordering –** The results can be ordered on different properties (t.b.d.). The default order by relevance.	High
2	**Paging –** The results can be paged with a configurable page-size.	High
3	**Metadata preview -** The list shows a summary of the metadata for each entry. At least: title, creator and date… (t.b.d.). A link is provided that allows the user to navigate to the preview-page for the entry.	High

Technical impact:

- There is an algorithm that determines the relevance of the search-results.
- The metadata elements to be displayed or ordered are in the index.

7.1.10 Show results on map

#	Description	Priority
1	**All results –** The map indicates all results on the map. This implies that there is no paging-mechanism.	High
2	**Point and clusters –** Each of the results has an indicator on the map. If there are too many results in a small area of the display, a special indicator replaces these and shows the amount of results for that area.	High
3	**Dynamic update –** If the map-view changes (by panning/zooming), then a new search is executed and the results are updated directly (within the existing location).	High
4	**Point-details –** If the user clicks on one of the indicators then a popup displays a summary of the metadata (equal to list-view) and a link to the preview-page of the entry.	High
5	**Cluster-details -** If the user clicks on a cluster then a popup displays a list of clickable titles for each of the entries. Note that there is a risk that there are 1000's of entries with similar coordinates. Zooming will not decrease the number of entries, and paging within a popup will also be difficult.	High
6	**Map-layers –** The user can change the map-layers (map, satellite, …). This may include historical maps.	Medium

Technical impact:

- A map-server is available. Custom maps might require a self-managed map-server (rather than the ones from Google or OpenMaps).
- There are multiple geo-referenced maps available.
- Quick zooming/panning of the map requires the metadata that to be displayed is indexed.
- Maps or layers are geo-referenced.

7.1.11 Show results on timeline

#	Description	Priority
1	**All results –** The map indicates all results on the timeline. This implies there is no paging-mechanism.	High
2	**Point and clusters –** Each of the results has an indicator on the timeline. If there are too many results in a small period of the display, a special indicator replaces these and shows the amount of results for that period.	High
3	**Dynamic update –** If the map-view changes (by shifting/zooming), then a new search is executed and the results are updated directly (within the existing period).	High
4	**Point-details –** If the user clicks on one of the indicators then a popup displays a summary of the metadata (equal to list-view) and a link to the preview-page of the entry.	High
5	**Cluster-details -** If the user clicks on a cluster then a popup displays a list of clickable titles for each of the entries. Note there is a risk of having 1000's of entries with a similar time. Zooming will not decrease the number of entries, and paging within a popup will also be difficult.	High
6	**Time-period –** The user can change the ontology for predefined time-periods.	High

Technical impact:

- Similar to "show results on map".

7.1.12 Preview metadata

#	Description	Priority
1	**All metadata –** The page shows all metadata on the selected entry.	High
2	**No distraction –** The page shows no other information. Only essential branding- and navigational information is shown.	Medium
3	**Back to search-results –** The user can directly navigate to the search-results, with the same view (page/area/period), highlighting the popup of the entry that the user previewed.	High

4	**Source information –** The user is informed about the original repository and the conditions for access of the information at that repository (open access or not). A link to the entry within its source repository is provided.	High

Technical impact:

- The information about the source is registered in a normalized format.
- There is a common core of metadata that the portal can display.

7.2 Preview data

This use case describes how a researcher like Laura can view a preview of a dataset.

Characteristics	Description
Description	Laura wants to see a preview of the data that allows her to determine the relevance of the data for her research.
"Trigger"	*Laura has discovered the dataset in the ARIADNE portal (by search/browse within the portal, or via Google), sees the metadata and sees the option to preview the data.*
Preconditions	*Laura has general ICT skills* *Laura is an archaeologist*
Primary Actor	*Laura, in the role of data consumer.*
Basic flow scenario	*Step 1: Click on the preview-option* *e.g. Laura clicks on the preview-tab of a dataset that contains images and a 3D-model.* *Step 2: The preview is displayed* *e.g. Laura sees an overview of the media elements in the dataset, visually presented by means of low-resolution thumbnails (produced from the images or as a pre-rendered image of the 3D model).* *Step 3: The preview is adjusted*

	e.g. Laura navigates through the collection of thumbnails. *Step 5: The preview is closed* *e.g. Laura clicks the upper-right cross and is referred back to the splash-page of the dataset.*

7.2.1 Click on preview option

Discussion: When is the preview made? Who creates the preview? Who serves the preview?

#	Description	Priority
1	**Availability –** The preview option is only displayed when the preview is available	High
2	The preview is generated in an automated way for all collections	Medium

Technical impact:

- The portal knows which previews exist (or can be generated on the fly) and to what dataset and file they belong.

7.2.2 Display the preview

#	Description	Priority
1	**Preview in browser -** The preview is displayed within the browser	High
2	**Preview in portal** - The preview is displayed within the portal	High

Technical impact:

- The portal knows which previews exist (or can be generated on the fly) and to what dataset and file they belong.

7.2.3 Adjust the preview

Discussion: Behaviour is specific to each preview. Since the preview may be different among the collections, it may also be possible to adjust the visualization of the preview.

Technical impact:

- The preview runs client-side using static data that is stored by the ARIADNE portal.

7.2.4 Close the preview

#	Description	Priority
1	**Close –** The preview can be closed by the user	High
2	**Return to list preview** - After the preview is closed, the user return to the list preview page.	High

Technical impact:

- No significant impact

7.3 Access data

This use case describes how a researcher like Laura can access a database and eventually download data.

Characteristics	Description
Description	Laura found a database that is of interest for her research. She would like to be able to download some of the data
"Trigger"	*Laura has discovered the dataset in the ARIADNE portal (by search/browse within the portal, or via Google), sees the metadata, and the option to download the data.*
Preconditions	*Laura has general ICT skills* *Laura is an archaeologist*
Primary Actor	*Laura, in the role of data consumer*
Basic flow scenario	*Step 1: Check if the data are available for download* *e.g. Laura checks the preview of the dataset, and she finds there's the possibility to access and download the data*

	Step 2: Check for a link to the dataset *e.g. Laura sees that a direct link to the dataset is provided* *Step 3: Access the dataset* *e.g. Laura clicks on the link, and she is redirected to the dataset*

7.3.1 Link to downloadable content

#	Description	Priority
1	The description of the datasets shows there is content to be directly downloaded	High
2	A direct link to the download page is provided	Medium
3	The portal brings the user directly to the indicated page	High

Technical impact:

- In the description of the collections, the availability of downloadable material must be indicated, together with a link.

7.4 Deposit data

This use case describes how a researcher like Laura can deposit her data in an appropriate archive

Characteristics	Description
Description	Laura wants to deposit some of the data she has produced in an ARIADNE compatible archive
"Trigger"	*Laura has data, but she does not have an archive for it*
Preconditions	*Laura has general ICT skills* *Laura is an archaeologist*
Primary Actor	*Laura, in the role of data provider*
Basic flow scenario	*Step 1: Check if there are archives available for depositing data*

	e.g. Laura searches for Ariadne compatible archives that provide services for depositing data *Step 2: Accessing guidelines* *e.g. Laura can access to the general guidelines for depositing the data* *Step 3: Access the archive* *e.g. Laura is redirected to the archive, where she will be able to deposit data.*

7.4.1 Link to archives which provide services for depositing data

#	Description	Priority
1	A list of Ariadne compatible archives is available	High
2	A set of general guidelines for depositing data is available	High
3	The portal brings the user directly to the desired archive	High

Technical impact:

- While guidelines for depositing data may differ between archives, a generic set of rules is needed. When redirected, the user should follow the specific guidelines of the archive.

7.5 Search and access the services registry

This use case describes how a researcher can use the ARIADNE portal to discover tools and knowledge to support their research / data management.

Source: Services and tools for the construction of digital clones by digitization and modelling technologies; services and tools for processing sampled data (2D, 3D). **MeshLab** (http://meshlab.sourceforge.net/) might be considered as the primary platform for processing sampled 3D data. The service provided will include: production and dissemination of training material (text, slides, didactical videos) and planning of training sessions; management of the evolution and consolidation of the selected services

(consolidation, bug fixing, extension of the set of supported features, deployment of new releases). (DOW)

Characteristics	Description
Description	This use case describes how a user can discover tools or best practices to achieve a certain goal.
"Trigger"	*Valentino navigated to the ARIADNE portal looking for tools and best practices. Directly or via a search-engine.*
Preconditions	*Valentino has ICT skills* *Valentino is an archive manager*
Primary Actor	*Valentino, in the role of an archive manager*
Basic flow scenario	*Step 1: Navigate to services section* *e.g. Valentino clicks a menu item on services* *Step 2: Search and Identify appropriate services* *e.g. Valentino searches in the services catalogue by providing the information that he is searching for services that give the possibility to handle 3D models.* *Step 3: Select, evaluate and access tool* *e.g. Valentino selects the service for remote 3D visualization, reads that it supports the creation of webpages that support visualizing 3D models and clicks on the link of the service.*

7.5.1 Navigate and search services

#	Description	Priority
1	**Navigation -** The section for tools & best practices can be easily identified on the ARIADNE portal.	High
2	**Search –** The service registry permits searching for the service that best fits the available data.	High

Technical impact:

- A metadata schema for the services is defined.

7.5.2 Identify appropriate tool or best practice

Discussion: the minimum implementation of this use case can be an authored webpage that provides an overview to common tools and best practices.

#	Description	Priority
1	**Description –** The services are displayed with basic metadata that helps to detect their functionality/purpose.	High
2	**Filtering –** The services can be sorted/filtered. The user can refine the search by indicating some of the metadata values. The user can limit the set to only items relevant for a specific phase in the research lifecycle (e.g. data creation, data processing, data curation, data storage, data publication).	High
3	**Multi-linguality -** the services are at least described in a shared language, e.g. English	Medium

Technical impact:

- There is a basic metadata-scheme for services.
- The metadata is indexed to allow searching/browsing/filtering.
- There might be procedures/policy for creating, updating and deleting entries for these tools or best practices.

7.5.3 Select, evaluate and access

Discussion: tools get frequent updates. It could be difficult to maintain entries for different versions of a tool, or to determine which tools are actually the same (is windows 7 the same tool as windows 8? Is “ABC’ the same tool as “ABC light”?).

#	Description	Priority
1	**Description –** the ARIADNE portal provides a page where the service is described.	High

2	**Link –** The page provides a link to an external location where the service can be accessed.	High
3	**Remote services –** wherever possible, the services are organized in a remote way, in order to overcome platform and browsers limitations.	High
4	**Multi-linguality -** the tools are at least described in a shared language, e.g. English	Medium

Technical impact:

- The Ariadne portal has to provide mechanisms to ensure the access to the services, and check their availability

7.5.4 Discovery services via examples

Discussion: Interlinking can be implemented among many objects, also between services and services. This comes with many issues, e.g. the way services become linked. For example, if a dataset contains data produced using the available services, this can be highlighted to guide the visitor to these services.

#	Description	Priority
1	**Link from item –** Users can navigate from an item that was produced with a particular service, to the service itself	Medium

Technical impact:

- There is an identification mechanism for services.
- There is a policy/procedure for linking datasets with tools or best practices.

7.5.5 Preservation of data

Discussion: Data formats and data hosting are important issues in the maintenance and long-time preservation of collections. The standard format for different types of data is not always defined in an official way, and it's important that a collection be available in the long term, regardless of financial and data storage issues.

#	Description	Priority
1	**Guidelines for data formats –** The user can access documentation regarding current standard formats, and possibly guidelines to convert them. The ARIANDE portal also takes into account the work on G2GP (Guides to Good Practice) for the description of guidelines on data formats and preservation metadata.	Medium
2	**Services for data conversion –** The portal may provide or give access to services for data conversion, in order to homogenize data formats and ensure long term preservation	Medium
3	**Data Seal of Approval** – ARIADNE supports and incorporates information about the Data Seal of Approval, an international standard for data repositories with requirements pertaining to sustainability, trustworthiness and accessibility. This certificate is granted after inspection and indicates that, according to third parties, the archive is a Trusted Digital Repository (TDR) and the research data deposited there will continue to be available and sharable in the future. http://datasealofapproval.org/en/	High
4	**Data storage –** Some of the services may also provide storage for data within the ARIADNE service, so that those with collections may take advantage of it	High
5	**Link to long-term preservation services –** Long-term preservation is much more than storage. Even if ARIADNE itself does not undertake preservation (other than the preservation of metadata in the repository, as described by ATHENA in Task 12.2), the ARIADNE portal should point users to partners who could undertake preservation on behalf of others, i.e. currently both DANS and ADS, and possibly SNDS and DAI in the future.	High

Technical impact:

- The standards of data formats will need to be discussed and provided.
- The Ariadne portal should ensure storing space and long-term availability of data.

7.6 Prepare and register a new collection

This use case describes how an archive manager can add a new collection to the Registry.

Characteristics	Description
Description	This use case describes how an archive manager can prepare a collection to be added to the collections registry
"Trigger"	*Valentino searches for the registry tool, in order to understand if one of his new collection can be added to the Ariadne infrastructure*
Preconditions	*Valentino has ICT skills* *Valentino is an archive manager*
Primary Actor	*Valentino, in the role of an archive manager*
Basic flow scenario	*Step 1: Navigate to registry tool section* *e.g. Valentino clicks a menu item on services* *Step 2: Access the documentation to prepare the collection* *e.g. Valentino can access a set of documents where he can find information about the preliminary preparation of a collection, He finds information about the organization and preservation of data, in order to understand if modifications are needed before using the registry tool* *Step 3: Import the collection using the Registry tool* *e.g. Valentino uses the Registry tool to add the new collection to the Registry.*

7.6.1 Prepare and register a collection

#	Description	Priority
1	**Documentation –** documentation about how to prepare a collection and use the Registry tool has to be provided (http://ariadne-registry.dcu.gr/manual/The%20ARIADNE%20Registry%20tool_manual.pdf)	High
2	**Feedback from portal manager –** The data providers have the possibility to get feedback from the portal manager about the good practice and the possible issues in collection registration	High
3	**Registry tool –** The registry tool is maintained and made available	High

Technical impact:

- Finalization of registry tool

7.7 Enriching Visual Media Documents

This use case describes how a researcher like Valentino can provide an enriched visualization of visual media.

Characteristics	Description
Description	Valentino wants to inspect one of the visual documents (an image, a 3D model, a video, …) stored in one of catalogues associated to ARIADNE portal. He has already selected (by means of the search and retrieval interface) the specific visual media document of interest for his research.
"Trigger"	*Valentino has discovered a specific visual document and he would like to know if one or more of the services within the ARIADNE portal can be used to enrich visualization.*
Preconditions	*Valentino has general ICT skills, but does not hold specific skills on visual media management (e.g. has not mastered the more common data types, does not have PC software tools for working with images of 3D models installed on his machine). Valentino is an archive manager and would like to be able to work on his research*

	using mostly web-based resources.
Primary Actor	*Valentino, in the role of archive manager.*
Basic flow scenario	*Step 1: Valentino searches in the services catalogue by asking which are the services that could be applied on his visual media (i.e. a 3D Model)* *Step 2: A visualization web window is displayed, showing the services that could be applied on the visual media.* *e.g. a list is presented, with a short description of the services, and possibly a couple of example of the effects of the services on the item.* *Step 3: Valentino can choose one of the services; he will be redirected to its page.*

ARIADNE's contribution aims to provide tools and technologies for improving the management of visual data (images, 3D models, geospecific data) stored in the archives of ARIADNE partners.

These functionalities would be implemented as resources available on the ARIADNE portal and will need collaboration with the reference archive manager (ARIADNE will provide tools for the management of visual media, but the integration of the results in each current archive will be implemented by the specific archive manager). The main goal is moving from the old approach (i.e. where single visual media is transferred to the remote user as a plain file, they have to store it on their PC and then select/install a proper application to open the file) to a more modern, web-based approach (i.e. the presentation of the result set of a query to the archive will be enriched by adding to each result an URL that will allow the user to immediately inspect the visual media in a standard web page).

7.7.1 Conversion and publishing of 3D models

Description: the service is accessible as a web application that produces a multi-resolution version of a set of 3D models, together with a basic HTML visualization page of the given models.

Input: one (or more) 3D models in one of the standard formats (.ply, .obj, .stl, .dae…).

Processing: The input models are manually uploaded by the user (either one at a time or zipped in a single file, in order to reduce upload time). The service will perform simple cleaning operations (e.g. removal of geometric artefacts), will convert the models in a multi-resolution format (.nxs), and will create and publish a simple webpage that will allow the user to interactively visualize the models in a WebGL frame (no add-ons needed, working on all the main browsers, except on smartphones and tablets for now). The processing will be based on 3DHOP components (http://vcg.isti.cnr.it/3dhop/).
All the operations will be performed by local scripted executables (meshlabserver.exe for model preparation, nxsbuilder.exe for nxs creation, a final script to prepare the webpage).

Output: the URL of a webpage on the ARIADNE portal or a zip file containing the multi-resolution .nxs model and the HTML/.js files of the basic webpage, or both. The zip file is available for download by the reference archive manager.

Notes: models with textures are currently not supported by the Nexus multi-resolution format. A possible solution for this could be to add other automatic functionalities to transform them to colour-per-vertex. Since the available 3D formats are too many, one idea could be to select 4-5 of them for support, as MeshLab is able to convert all the main 3D formats.

Notes for implementation *(common to all services described in (a), (b) and (c)):* these services require a quite simple input stream (that will be managed by simple web forms and file transfer). An important consideration will be how to estimate the required load for the platform(s) it runs upon (including defining specifications for processing power, disk size, transmission throughput expected for the server). In order to define the level of resources it may consume and prevent bottlenecks in future use (i.e. whether it may kill the platform if its requested by too many users simultaneously) more data should be gathered from potential ARIADNE contributors. This activity will be done as soon as the status of the specification is consolidated.

7.7.2 Conversion and publishing of RTI Images

Description: the service converts re-lightable images into webRTI, and produces a basic html visualization page for the given images (i.e. a version of the image that can be transmitted on the web and visualized efficiently on a standard web page).

Input: one (or more) RTI images in the standard formats (.ptm or .hsh).

Processing: input images will be uploaded to the service available on the ARIADNE portal, or automatically collected in a batch (it will also be possible to automatically compress them, in order to reduce upload time).
The service will transform each image in a web compliant format (similarly to Google Maps, the image will be divided into chunks of different resolution), and create a simple webpage where it will be possible to navigate the model in a WebGL frame (no add-ons needed, working on all the main browsers, except smartphones and tablets for now). The processing will be based on the components of WebRTI viewer (http://vcg.isti.cnr.it/~palma/dokuwiki/doku.php?id=research).
All the operations will be performed by local scripted executables (WebRTIBuilder.exe for the processing of the image, a final script to prepare the webpage).

Output: a webpage already published on the ARIADNE server (in this case only the URL will be returned to the reference archive manager) and/or a .zip file to download, containing the processed image and the HTML/.js files of the basic webpage.

7.7.3 Conversion and publishing of high resolution images

Description: the service converts high-resolution images (uploaded using standard image formats) into multi-chunk versions, enabling progressive transmission, and produces a basic HTML visualization page of the converted images.

Input: one (or more) high-res image(s) in standard formats (.jpg, .png, .tiff…)

Processing: Input images will be uploaded to the service available on the ARIADNE portal, or automatically collected in a batch (it will also be possible to automatically zip them, in order to reduce upload time).
The service will transform the image into a web compliant format (similarly to Google Maps, the image will be divided into chunks of different resolution), and create a simple webpage where it will be possible to navigate the image in a WebGL frame (no add-ons needed, working on all the main browsers, except on smartphones and tablets for now).
All the operations will be performed by local scripted executables (an executable for the processing of the image, a final script to prepare the webpage).

Output: a webpage already published on the ARIADNE server and/or a .zip file to download, containing the processed image and the HTML/.js files of the basic webpage.

Notes: as there are a lot of image formats, it is advised to only choose the main ones, but this also depends on the types found in the collections.

7.7.4 2D Maps Visualization component

This component will be developed through a responsive HTML5 (similar to Google Maps) component that can be integrated with search query results. The online portal will also suggest accessing and using the ARIADNE web-based terrain generator, and to perform further searches on geoimages and DTM (within the ARIADNE portal or a suggested global geo-database - i.e. Global Land Cover Facility).

Description: The front-end component should be based on responsive HTML5 and PHP to visualize specific areas with list of hotspots (i.e. obtained from search queries).

Requirements: geographical extents and hotspot coordinates.

Status: PHP service and HTML5 Front-End to be developed.

7.8 Manage accounts

This use case describes how a security manager can execute operations to handle and control authentication and access. A security manager like Christopher wants to have an overview of the users, and eventually change their attributes.

Characteristics	Description
Description	Christopher was asked (via a message through the portal) to modify the access attributes of a user.
"Trigger"	*Christopher accesses the area of the portal that is dedicated to security managers.*
Preconditions	*Christopher has ICT skills* *Christopher is a security manager*
Primary Actor	*Christopher, in the role of a security manager*
Basic flow scenario	*Step 1: Navigate to the user accounts list* *e.g. Christopher navigates to the user accounts* résumé *Step 2: Check the attributes of an account* *e.g. Christopher selects the account. The portal provides a short description, with the current attributes that have been enabled.* *Step 3: Modify and add attributes* *e.g. Christopher accesses the account information. He enables the requested attribute, saves the changes and sends a message to the user, confirming the update of the account.*

7.8.1 Navigate and search accounts

#	Description	Priority
1	**Navigation –** The security manager can navigate and access the accounts list	High
2	**Search –** The portal enables the search for the accounts, following different types of queries (e.g. name, attribute, date)	High

Technical impact:

- A data infrastructure and a set of Security Facilities are needed

7.8.2 Visualize and change attributes

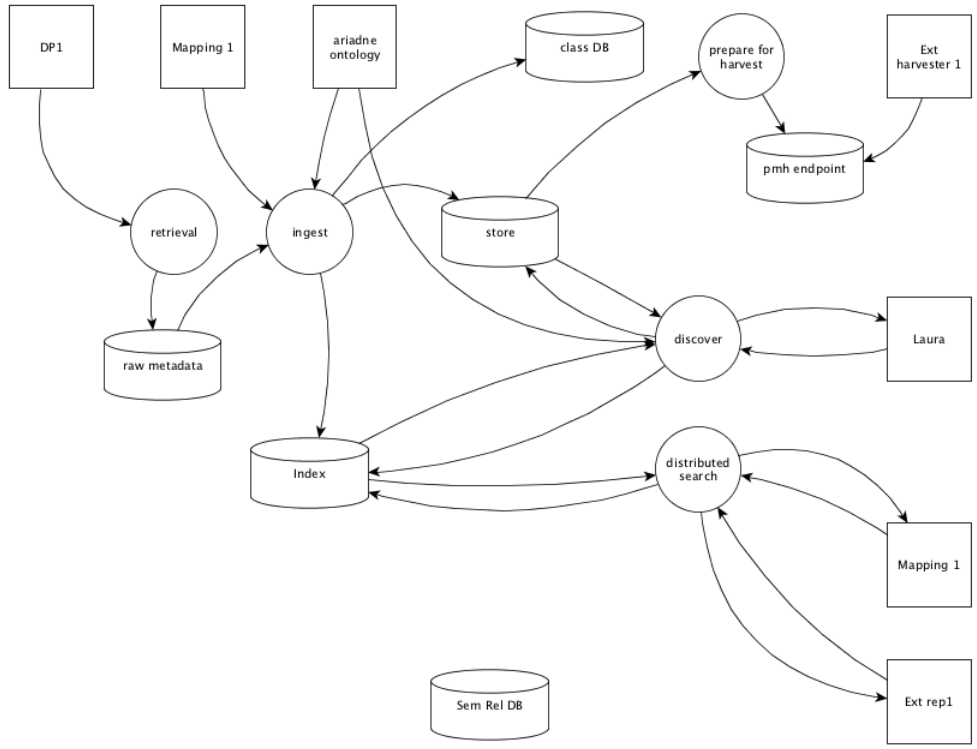
#	Description	Priority
1	**Visualization of an account –** The portal enables the visualization of the account information for each user, and the list of enabled attributes	High
2	**Attribute enabling and disabling –** The portal allows the security manager to enable and disable attributes for each account	High
3	**Automatic messaging, interaction with users –** The security manager will automatically contact the users each time their account is updated. The users can take advantage of a contact form to request changes and clarifications.	Medium

Technical impact:

- Mechanisms for handling the user access have to be developed and maintained

8 Service design model

The service design model below supports the use case descriptions. It is the starting point for the implementation phase. The use cases in this document describe the process, and the usability experts have given suggestions on how best to realise this.



Descriptions of terms used in the service design model diagram:

Discover = search and browse

Distributed search = when an external search portal automatically searches within the ARIADNE portal

Ingest = input of (meta)data

Retrieval = downloading

Prepare for harvest = make set/collection ready for harvesting

Laura = archaeologist, user of ARIADNE portal

Ext harvester = external harvester, e.g. Europeana

DP1= One of the ARIADNE Data Providers

Mapping 1 = translation between data model of data provider and Ariadne data model

Ariadne ontology = Ariadne data model

Ext rep 1 = external repository

Class DB= classification database

PMH endpoint = pmh endpoint

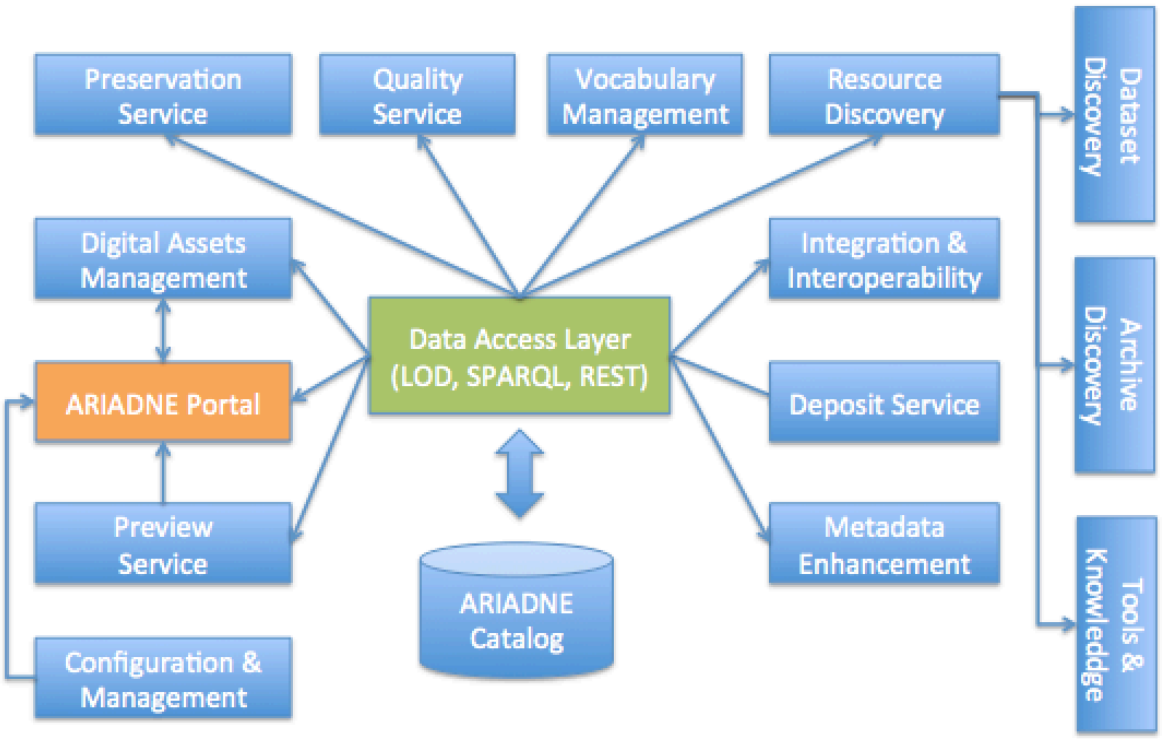
Sem Rel DB= Semantic Relation Database

Index = searchable metadata

Raw metadata = metadata of the data providers

Store = everything in store and not searchable in index (e.g. data files)

The use cases presented within this deliverable will be supported by an services/infrastructure arhitecture like the one presented in the following diagram. In this diagram, the ARIADNE Catalog is depicted as the heart of the system, along with its data access layer. The catalog will act as a glue, serving ACDM formated records across all users/providers. All data will be available through the ARIADNE portal, which will provide users with digital asset management tools. The various resource discovery elements (for use with datasets, archives, tools) along with the integration and interoperability services all have important roles to play. Finally, preservation, quality and integration services will provide the added value that users require.



The main technologies that will be used within the architecture are REST based services (in order to glue all components together), with RDF and SPARQL to encode the metadata and provide a standard mechanism for querying the graph-based data.

9 Synthesis

D13.1 aims to specify the service design of the ARIADNE Portal. It aims to provide a common vision, a user perspective on the functionality, and a framework to identify, discuss and validate the requirements for the underlying technical services.

The service design Task 13.1 is created using the following input: Description of Work, Task 2.1 (Survey of users' needs and community building), Task 12.1 (Assessment of use requirements), and WP3-12-13 Workshop discussions.

The stakeholder survey D2.1 allows the detailing and prioritization of the functionality of the service design D13.1. The expressed wishes can be clustered together within five main categories of user needs: data transparency, data accessibility, metadata quality, data quality, and the international dimension.

D12.1 formulates user requirements on *Data*, requirements on *Metadata Standards, Schema's and Vocabularies* and requirements on *Access and Sharing Policies*.

The topic of access will be part of the further strategic work within D2.2. *Second report on users' needs*. "Lead users" will be asked to evaluate a number of portals to identify where and how various needs and requirements are met (or not met), including examples of existing innovative approaches, and further ideas on specific services or features the ARIADNE user community may appreciate.

D13.1 provides a common vision formulated in terms of principles, derived from the mission statement in the Description of Work. Different users (data consumer, data producer, portal manager, archive manager) and how their work relates to the different phases of the research data lifecycle are described. The functionality will be specified from a user perspective. The requirements of the ARIADNE portal will be based on use cases, to ensure requirements are defined to support the users. This was done by first defining the users (or actors) and their interaction with the services (their scenarios), broken down into clear

steps. This allowed structured analysis, discussion and prioritization of the requirements for the services to the end users, as well as the technical components that should enable these services (like the ARIADNE Catalogue Data Model). The activities, their steps and derived requirements were prioritized (High, Medium, Low) in order to ensure a realistic and pragmatic end-result for the project.

A separate section of the document presents possible components for visual media. The section on the service design model offers a view of the overall services architecture of ARIADNE. It is the starting point for the implementation phase. The use cases in this document describe the process, , but advising the usability expert to give suggestions how best to realise this. The service design will provide input for Task 12.2 (Infrastructure Design), Task 13.2 (Build Services) and later on Task 13.4 (Acceptance testing).

The ARIADNE registry service is developed within WP3-12-13 and uses the ARIADNE Conceptual Data Model (ACDM). Ingesting the metadata into the registry will make it possible to evaluate this service, and to see if adaptations of the model are necessary to support the described use cases described in Deliverable 13.1.

10 References

Ariadne Description of Work"- DoW

Ariadne deliverable D2.1 "First report on Users' Needs" http://ariadne-infrastructure.eu/Resources/D2.1-First-report-on-users-needs

Ariadne deliverable D12.1 "Use Requirements" http://ariadne-infrastructure.eu/Resources/D12.1-Use-Requirements

ARIADNE website: www.ariadne-infrastructure.eu