COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME

ICT Policy Support Programme (ICT PSP)

[Theme 2: Digital Libraries]

ICT PSP call identifier: CIP-ICT PSP-2009-3
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Best Practice Network

Annex I - "Description of Work"

ASSETS

Advanced Search Services and Enhanced Technological Solutions for the European Digital Library

GRANT Agreement no: 250527

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Part A

A.1 Project Summary

A1:
Our project

Project Number [1]	250527	Project Acronym [2]	ASSETS

One form per project

General information

Project title [3]	Advanced Search Services and Enhanced Technological Solutions for the European Digital Library		
Starting date [4]			
Duration in months [5]	24		
Call (part) identifier [6]	CIP-ICT-PSP-2009-3		
Objective most relevant to your topic [7]	CIP-ICT-PSP.2009.2.1: European Digital Library - services		
Free keywords [8]	Metadata search service, Multimedia Search Services, similarity search, semantic browsing, advanced intrface, Digital Preservation Services,Metadata Ingestion, Digital Library large-scale services		

Abstract [9] (max. 2000 char.)

ASSETS aims to improve the usability of Europeana by developing, implementing and deploying large-scale services focusing on search, browsing and interfaces. These services are applicable to all digital libraries and include: Searching multimedia objects based on metadata and on content similarity; executable Ranking algorithm for improve results display; Browsing multimedia objects for rapid navigation through semantic cross-links; Interfaces especially designed for interacting with multimedia objects; planning digital preservation services; Ingestion of metadata requiring normalization, cleaning, knowledge extraction and mapping to a common structure. The main expected outcomes from ASSETS are: a) A set of value-added search, browsing and long-term access services to enhance the content accessibility and improve the usability of Europeana operational services. b) Making new multimedia digital content available to and accessible by Europeana portal, as delivered by those ASSETS content providers which so far did not take part in the Europeana service. c) A large-scale validated services in the real Europeana context of use. d) A set of recommendations, guidelines and best practices concerning the technology adaptation, and service rolling up, which strongly contributes to the promotion of the standards and specifications addressed in Europeana, and pave the way for an increased interoperability. The European-wide coverage of the ASSETS consortium, which includes 24 partners coming from 10 European countries and Japan, and its multi-disciplinary dimension, including all the significant stakeholders in the DL value chain (cultural institutions, research organisations, ICT players, content providers), and the strong involvement of the EDL Foundation (which is responsible for the overall strategy and policy for Europeana) will enable an effective and broader networking activities, and further promoting the adoption of the recommendations envisaged within the ASSETS project.

A.2 LIST OF BENEFICIARIES

No.	Participant Organisation Name	Short Name	Country
1 (coord)	Engineering Ingegneria Informatica	ENG	IT
2	Athens Technology Centre	ATC	GR
3	Austrian Institute of Technology GmbH – AIT	AIT	AT
4	EXALEAD	Exalead	FR
5	Consiglio Nazionale delle Ricerche	CNR	IT
6	STICHTING EUROPEAN DIGITAL LIBRARY	EDLF	NL
7	BARCELONA MUSIC AND AUDIO TECHNOLOGIES	BMAT	ES
8	ROBOTIKER TECNALIA	Robotiker	ES
9	SWEDISH INSTITUTE OF COMPUTER SCIENCE	SICS	SE
10	Institut National de l'Audiovisuel	INA	FR
11	Universidad Autónoma de Madrid	UAM	ES
12	Centre of Research and Technology Hellas	EKETA CERT	GR
13	Universite PARIS-SUD XI	UPS	FR
14	Virtual Resource Centre for Knowledge about Europe	CVCE	LU
15	Deutsche Welle	DW	DE
16	Accademia Nazionale di Santa Cecilia	ANSC	IT
17	Liberis Publications	Liberis	GR
18	Hellenic Archive of Scientific Culture	HASC	GR
19	Dias Publishing Public	DIAS	CY
20	Fundaciòn Albeniz	Albeniz	ES
21	CIAOTECH S.r.l. (PNO Group B.V.)	CIAOTECH	IT
22	United Nation Educational, Scientific and Cultural Organization	UNESCO	INT
23	Fondazione Micheletti	FLM	IT
24	Media Lab of the Hokkaido University	MMLHU	JP

Part B

PROJECT PROFILE

Proposal acronym: **ASSETS**

Proposal full title: **A**dvanced **S**ervice **S**earch and **E**nhancing **T**echnological **S**olutions for the European Digital Library

Information on the Best Practice Network
Objectives ASSETS aims to **improve the usability of Europeana** (the European Digital Library platform) by developing, implementing and deploying large-scale services **focusing on search, browsing and interfaces**. These services are applicable to all digital libraries and include: ***Searching*** *multimedia objects based on metadata and on content similarity; and* ***Ranking*** *algorithm for improved result display;* ***Browsing*** *multimedia objects for rapid navigation through semantic cross-links;* ***Interfaces*** *especially designed for interacting with multimedia objects; planning* ***Long-term Access*** *to digital information;* ***Ingestion of*** *metadata requiring normalization, cleaning, knowledge extraction and mapping to a common structure.*
Activities and Outcomes ASSETS will undertake the deployment of digital libraries services by adopting a clear user-centred methodology, in which the targeted user groups will be directly involved in requirements analysis, design, large-scale implementation, testing and evaluation. ASSETS will work in **strict cooperation with Europeana**, and will synchronize its workplan with the Europeana v1.0 and Europeana*Connect* activities, by making available the first release of the ASSETS services to Europeana. The main expected outcomes from ASSETS project will be many-fold: • **A set of value-added search, browsing and long-term access services** to directly enhance the content accessibility and improve the usability of Europeana operational services • **A large-scale validated implementation of such services** in the real Europeana context of use • **A set of recommendations, guidelines and best practices** concerning the technology adaptation, and service roll out contributing strongly to the promotion of the standards and specifications addressed in Europeana, and paving the way for an increased interoperability. • **Making new multimedia digital content available to and accessible by Europeana portal**, as delivered by those ASSETS content providers which so far did not take part in the Europeana

service (ANSC, Liberis, HASC, DIAS, Albeniz, UNESCO, F-Micheletti).

Consortium

The European-wide coverage of the ASSETS consortium includes ***24 partners*** from ***10 European countries (Italy, Austria, Spain, Netherlands, Greece, France, Germany, Cyprus, Luxembourg, Sweden***) and ***one partner from Japan*** and has a multi-disciplinary dimension. Many significant stakeholders in the cultural heritage value chain (cultural institutions, research organisations, ICT players, content providers and users), and the strong involvement of the EDL Foundation partner, which is responsible for the overall strategy and policy for Europeana) will enable effective and broader networking activities, aimed at raising awareness and further promoting the adoption of the recommendations envisaged within the ASSETS project. Moreover the UNESCO participation in the project will guarantee a worldwide coverage related to both content provision and engagement of potential adopters of the ASSETS services and consequently to EUROPEANA.

Impact

1. ASSETS will have a strong and measurable impact on bringing to the forefront of the large scale **service implementation and real user context validation** innovative technologies from the following three main areas:

- ***Search and retrieval:*** ASSETS will enhance in quality and widen in scope the search and retrieval service of Europeana. The quality enhancement will be produced by improving ranking of simple search through employing techniques developed in web search, such as the analysis of the query log and the usage of sophisticate weighting and scoring schemes. This will solve a large usability problem for Europeana, giving the user sets of results that have meaningful ranking and assurance of the quality of the service. The widening in scope will be produced by adding to Europeana a similarity-based search service that will exploit the media dimensions for giving the users a different way of discovering the information within Europeana.
- ***Semantic Browsing*** annotating the Europeana resources with categories from the Europeana semantic layer as well as with user-defined categories representing user interests, ideas and social interactions. Navigating through these categories will allow users to explore the Europeana information space in an interactive way leading to the discovery not only of the Europeana content but also of the interests, ideas and vocabularies of other communities.
- ***Interface improvements***: deploying interfaces specially designed for browsing multimedia content.

2. The contribution of ASSETS to the Europeana - making Europe's cultural heritage more accessible - will play an important role and will lead to better results for the users of Europeana and similar portals, as well as for its improved inclusiveness and accessibility. ASSETS will foster new industrial and service opportunities across the continent. The components developed by the ASSETS Best Practice Network are planned to be included directly into Europeana. This will place the service ahead of the competition in terms of managing, discovering and visualising digital objects and their related knowledge. It will also support powerful semantic-based discovery, out of reach for e.g. audiovisual search engines. This will reinforce the European industrial leadership in these areas and develop

stronger synergies between relevant actors.

3. The ASSETS services will be **loosely coupled** with Europeana, which means that they can be used together or in isolation by the adopters. This approach will pave the way even for a **long-term viability of the ASSETS services** beyond the scope of the project, since will allow these services to be used even for integrating other cultural digital libraries, unlocking at the same time other exploitation channels beyond the Europeana one.

B1. PROJECT DESCRIPTION AND OBJECTIVES

B1.1. PROJECT OBJECTIVES

ASSETS aims at developing digital library services focusing on search, browsing and interfaces in order to improve the usability of Europeana (the European Digital Library platform).

ASSETS will implement and deploy large-scale services for: **Searching** multimedia objects based on metadata and on content similarity; **Browsing** multimedia objects for rapid navigation through semantic cross-links; **Interfaces** especially designed for interacting with multimedia objects; planning **Long-term Access** to digital information; **Ingestion of** metadata requiring normalization, cleaning, knowledge extraction and mapping to a common structure.

The main expected outcomes from ASSETS project will be many-fold:

- **A set of value-added search, browsing and long-term access services** to directly enhance the content accessibility and improve the usability of Europeana operational services
- **Making new multimedia digital content available to and accessible by Europeana portal**, as delivered by those ASSETS content providers which so far did not make accessible their content through Europeana.
- A **large-scale validated implementation** of such services in the real Europeana context of use
- **A set of recommendations, guidelines and best practices** concerning the technology adaptation, and service rolling up, which strongly contributes to the promotion of the standards and specifications addressed in Europeana, and pave the way for an increased interoperability.

The European-wide coverage of the ASSETS consortium, which includes ***24 partners*** coming from ***10 European countries*** and one from **Japan**, and its multi-disciplinary dimension, including all the significant stakeholders in the cultural heritage value chain (cultural institutions, research organisations, ICT players, content providers), and the strong involvement of the EDL Foundation partner, which is responsible for the overall strategy and policy for Europeana) will enable an effective and broader networking activities, aimed at raising awareness and further promoting the adoption of the recommendations envisaged within the ASSETS project.

B1.1.1 BACKGROUND AND MOTIVATION

Heritage, history and cultural diversity represent all together an enormous yet dispersed strength which unanimously contribute to create the “Europe uniqueness”. Europe’s libraries, museums, archives and

audiovisual archives possess huge and rich collections, which, once made accessible by the Internet, allow people to consult and reuse them for several different purposes, like work, leisure and study, and for a wide range of information product and services (e.g. tourism, education). European Commission has been acknowledging the importance to preserve, maintain, sustain and make European cultural heritage accessible for some years. In particular the Digital Libraries initiative, which is flagship project of the EU Commission i2010 strategy for the Information Society, is strongly supporting the setting up and the development of Europeana – the European Digital Library -, which aims at making accessible to a wide public books, films, newspapers, photographs, drawings and archival documents from European cultural institutions, through a unique web portal. By 2010 Europeana is expected to make accessible more than the 6 millions of multimedia digital objects originally envisaged.

There are several on-going or ready-to-start European projects (EuropeanaLocal, Athena, EFG, EUScreen, EuropeanaTravel, Europeana v1.0, *EuropeanaConnect*) within the Europeana Network Cluster, which are contributing (i) to increase the content which will be accessible through Europeana, (ii) to build the back-end infrastructure for operating the Europeana service (Europeana v1.0) and (iii) to deliver key infrastructure components for semantically enriching Europeana digital content and allowing multilingual access to it (Europeana*Connect*).

Although such huge effort is laying the foundation for the effective operation of the Europeana portal and services, unfortunately none of the above mentioned current initiatives so far is specifically tailoring some crucial front-end issues, which would dramatically contribute to improve the Europeana usability. In particular while the majority of the digital objects made available by Europeana is intrinsically multimedia in their nature (videos, film, photographs, music, drawings), the search as currently offered within the Europeana portal still rely on textual information to index digital images, audio-video and music. This is because up to now many technical hurdles have prevented content-based search and retrieval technologies to offer reasonable performance in operational environments when they have been applied to a large mass of content. Consequently a suitable mix of specific multimedia scalable tools, front-end services and adequate user interfaces will be required for effectively indexing, searching, ranking, browsing, retrieving and presenting digital objects in a real multimedia environment. Luckily enough a set of R&D European projects (PHAROS, MESH, VITALAS) have been delivering multimedia search and retrieval technologies with a great potential to take off and have significant impacts on the Europeana accessibility at a large, if deployed, validated and rolled-out as front-end value-added services within the Europeana operational service.

Despite the main target of Europeana has been so far to aggregate and make available at a large as many digital objects as it could, there is a rising awareness at European level about the concept of digital preservation and long-term access for digital native or digitised objects. Whilst computer systems become obsolete, encoding formats change, and storage media tend to degrade, cultural heritage institutions are paying attention more and more on which strategies and technologies might be effectively used for guaranteeing that European digital heritage could remain available and accessible for future generations. Within this emerging framework, the Europeana Digital Library usability would greatly benefit if the Europeana portal will offer digital preservation and long-term access services. In order to deal with these challenges, ASSETS will specifically adapt the technology and the services resulting from CASPAR and PLANETS European Research projects to the Europeana needs and requirements.

Although the main objective of the ASSETS Best Practice Network will be to complement the Europeana services with advanced value-added search, browsing and long-term access services, a considerable amount of digital content will be aggregated and made available to Europeana, as provided by those content providers which are not still taking part in Europeana.

The **ASSETS** Best Practices Network will deploy advanced multimedia index, search, browsing, interaction, ingestion and long-term access services to Europeana, the European Digital Library.

The ASSETS front-end services:

- will not build from scratch, but they will rely on the top of the technology outcomes of the PHAROS, MESH, BRICKS, CASPAR and PLANETS European R&D projects.
- will be adapted to the Europeana requirements by implementing them in a fully compliant way with the Europeana functional and technical specifications.
- will be deployed and validated in a real and typical Europeana context of use, consisting of a large-scale implementation of non previously, or partly, annotated multimedia digital content
- will be capable to capture the digital object IPRs even at territorial level, through a direct implementation of the Europeana Licensing Framework.

The main ASSETS objectives can be broken down into the following 11 objectives.

B1.1.2 Detailed objectives

The main ASSETS objectives can be broken down into the following 11 objectives:

Objective 1: ***implement a Search service*** **based on Metadata**. In the web era, users expect to discover information in digital libraries in the same way they do it on the web; i.e., by issuing very short, free-text queries that return relevant objects within the first 10-20 items displayed, less than half a second after the query was submitted. Web search engines have managed to fulfil, or rather create, these expectations by appropriately indexing and ranking hypertext documents. However, the content base of a digital library is very different from that of the web, and meeting these expectations is a very difficult challenge. For instance, in the near future Europeana will have several dozens of millions of surrogates on board. Very short queries stated against Europeana are likely to select thousands of these surrogates at least. Ranking the selected surrogates with respect to the query only is a replica of the first, pre-page rank generation of web search engines: it will not be effective, as the relevant objects will be lost amongst the other thousands of returned items. The challenge for digital libraries is to identify an effective ranking scheme that allows to score highest the really relevant objects amongst the thousands selected by the query.

The first objective of ASSETS is to develop a search service using such a ranking scheme, based on metadata. To this end, ASSETS will employ techniques developed in the web search area, such as query log analysis, to derive a set of features for representing each object in a digital library, and will use information retrieval techniques to combine these features into an effective ranking scheme. This service will be made accessible through an open API, whose main methods will offer indexing and scoring objects. The API will be specialized for Europeana surrogates, so that Europeana can integrate the service with a minimal effort. This style of integration will be applied also to the services described in the sequel.

Objective 2: ***implement a Search service*** **based on Content.** Content-based (also termed “similarity-based”) information retrieval is a well-established field, allowing users to search multimedia objects (text, images,

sound, video, audio-visual) by using objects of the same type as queries. This paradigm was introduced to overcome the medium mismatch problem, and has produced a wide range of techniques. The second objective of ASSETS is to employ these techniques in order to provide Digital Libraries with a search facility able to explore the media dimensions. Although Europeana does not store the contents of the providers, it will nevertheless index them for offering content-based search to its users. The search will take as input a whole Europeana surrogate and will rank the remaining surrogates with respect to the similarity they bear to the media objects and metadata that make up the given surrogate. The requirement for this type of search is clearly stated in the EDLnet deliverable D2.5 (Section 3.2.2 Queries).

Content-based search is complementary to metadata-based search, in that it considers only similarity, but covers the whole media spectrum.

Objective 3: Implement ASSETS Semantic Browsing:

Many archives identify digital content by tagging and hyper-linking; however, the conventional browser model offers few possibilities for exploring the patterns that are inherent when information is classified in this way. Designers must therefore seek to enrich the user's experience of complex data sets through patterns of metadata, graphical visualization, iconography, and social interaction, wherever possible allowing users the means to manipulate information according to their own interpretation.

Most existing Information Retrieval systems either annotate all the objects in the database (manual tagging) or annotate a subset of the database manually selected (partial annotation). In the case of large-scale digital repositories, full annotation is increasingly difficult because of the manual effort required. Partial annotation is relatively affordable and trims down the heavy manual labour. Leveraging this information to automatically tag items that have not been tagged, e.g. newly entered items can be done effectively using recent advances in active learning frameworks, where most salient features and items are automatically selected for human verification and generalisation.

A dynamic and adaptive knowledge representation scheme - e.g. a vector space model or a probabilistic model - used for representing the semantics of collection items can be designed to allow generalisation and fuzzy matching of items within the collection and across collections. Together with a learning approach, this will allow for the construction of meaningful representations, which evolve over time and automatically assign associative links between items that are related by virtue of their usage (recommendation systems) or their content representations. Technologies that make this feasible have been deployed for innovative text search systems but have not yet been put in place for multimedia, except in laboratory experiments - the technology is now mature for application.

The ASSETS project will adopt the Semantic Web paradigm in representing knowledge and content in order to achieve a semantically rich representation of content, user interests, ideas and social interactions. The project will augment the capabilities of multimedia information retrieval by providing the mechanisms for the establishment of semantic links between pieces of information presented in different media. This will be realised through the development of a service based on semantic cross-linking of multimedia content. The service will allow users who have little experience with the collection to gain access to it with a low learning threshold; it will allow exploration and even the creative curation of collections by interested outside users. This is expected to significantly improve searching, browsing and retrieving information, especially for large scale Digital Libraries such as Europeana.

Objective 4: Interface improvements: The ASSETS project will develop graphical user interfaces specially designed for searching and browsing in large scale multimedia archives. The objective is to develop an interface that provides intelligent access to a wide range of media inputs within one overall approach, that supports the formulation of different types of queries that enhances the user's experience as he interacts with the system and that allows a customization according to the user's preferences and characteristics.

Rich user interface components will be designed and implemented to support the ASSETS Platform and its value-added services. The ASSETS web portal will allow complex query formulation and results presentation, ensuring the integration and interoperability with EUROPEANA. It will also integrate GUI components specially designed for improving the usability of the searching and browsing user interfaces in the EUROPEANA platform.

***Objective 5*: *Preparing the ground for digital preservation*:** Digital preservation - securing the long term persistence and access of information in digital forms - remains one of the key objectives of the i2010 strategy and the European Digital Library. ASSETS aims to provide key digital preservation services to the content providers of Europeana by adopting the key reference for digital preservation archives: Open Archival Information System (OAIS – standard ISO:14721:2003). According to that standard, one of the most important functional components of a long term digital preservation archive is the preservation planning component, which monitors changes that could impact ability to preserve and maintain archival information. It maps out preservation strategy, and recommends appropriate revisions to this strategy in response to evolving conditions. In this perspective, the ASSETS project will implement key aspects of an OAIS Preservation Planning component in order to support the following preservation activities:

1. monitoring, identification and analysis of preservation risks (e.g. obsolescence);
2. notification for change event impacting long term preservation;
3. triggering of appropriate preservation activities.

Those will be provided by the following services: the Risk Management service, the Normalization service and the Notification service. The Risk Management service will make use of information available from international technical registries such as PRONOM and the upcoming GDFR (Global Data Format Registry) initiative in order to evaluate the digital object collections of content providers and identify those in danger of digital obsolescence. The Normalization service will provide tools for the transformation of endangered digital objects to open, preservation-friendly and compatible formats, such as PDF/A for documents or TIFF for images. In this perspective, the Normalization service will allow the system to react to any potential risk from the digital obsolescence. Any potential risk that could impact the digital data will be alerted by the Notification service to the proper entity (i.e. human actor and/or automatic tool) which will be able to enact the corrective action according to preservation plans. Any change and transformation that may have taken place on the digital information has to be documented and traced as evidence of the preservation activities and in order to guarantee the adequate level of authenticity.

Objective 6*: Implement an *Ingestion service: Digital Libraries have always been conceived as open systems, sharing their content with other digital libraries through the global infrastructure of the Internet. From an information system point of view, a digital library can be seen as an integration system, acquiring information from the external world and integrating it into its own content base for lending it to its services and ultimately to its users. Europeana is a very significant exemplification of this aspect. In this scenario,

ingestion becomes a very difficult task, since it requires crossing the semantic interoperability barrier. While the problem is typically reduced to the mapping of one data model into another, there are other fundamental aspects that must be addressed: the reduction of the input data values to a target vocabulary (normalization), the identification of variants of the same value, the correction of the inevitable errors and, above all, the extraction of knowledge which cannot be captured by mapping rules because it requires additional knowledge or uncertain inference (or both). The ingestion process of Europeana is a case in point: in order to offer a very rich set of functionality to its users, Europeana has a very rich data model. Populating this model invariably requires performing all the above-mentioned tasks, with special emphasis on the inference of semantic associations.

The sixth objective of ASSETS is to implement an ingestion service that allows us: (a) to perform metadata normalization, cleaning and mapping, and knowledge extraction; (b) to control the whole ingestion workflow from a single point, endowed with a powerful visual interface. For objective (a), ASSETS will apply machine learning techniques supporting tasks such as automatic classification and clustering of information, For objective (b) ASSETS will integrate workflow models with visualization tools to develop a dashboard for piloting ingestion.

Objective 7: Community services

Traditional libraries have always served communities of users who find in the library the sources of information they need for their work; and, in turn, they enrich the library with the results of their own work. Digital Libraries are no exception. The ASSETS project will develop services aimed at supporting this information exchange. In particular, the project will address the content creation by re-use, a sophisticate form of notification based on taxonomies, and the personalization of search based on user preferences.

Objective 8: Validation of consolidated services.

The ASSETS Best Practice Network has two focuses, the first is to implement large-scale digital library services, and the second is to foster the adoption of the implemented services. Nevertheless, on-line digital libraries nowadays exist in abundance and the only way that ASSETS and its services may be adopted is to invest in functionalities that really make a difference to the actual users. This will be ensured in ASSETS by several cycles of user validation both for the whole concept as well as for individual functionalities. The validation will be carried out by real users, in real life.

Objective 9: Integration of a large volume of content coming not only from Europeana but also from other relevant content providers. The ASSETS services will be delivered populated with content. Content Providers Partners (such us CVCE, DW, Accademia Santa Cecilia, Liberis Pubblication, The Hellenic Archive of Scientific Culture, DIAS Publishing Public, Fundación Albeniz, INA) will make content available to European citizens through the ASSETS services.

Objective 10: Liaison with Europeana

The process of creating the European Digital Library relies on a web of related European projects, including EuropeanaV1, EuropeanaConnect, EuropeanaTravel, and EDLocal, just to name a few. In order to maximize productivity and avoid duplicate effort we must coordinate efforts across these projects as well as across the ASSETS workpackages. We will meet this challenge within ASSETS by assigning specific tasks and effort within Workpackage 2.0 dedicated to cross-project communication of requirements and specifications, technical and otherwise. Joint initiatives with the various Europeana working groups will lead to strong

synergies. For example, ongoing participation in Europeana Cluster technical workshops is already planned in 2010 and 2011. In this manner, we will ensures that ASSETS development will be guided by and conform to Europeana requirements and specifications.

Success of this objective will also be guaranteed by the presence of relevant key-persons in the ASSETS consortium who are also involved in other Europeana initiatives (details provided in the "*Networking Capacity of the Consortium*").

In order to additionally support this objective, the Europeana Cluster Advisory Board (ECAB) will be established within the project life cycle. The mission of the ECAB is to:

(a) strengthen the cooperation with Europeana,

(b) participate in and approve the definition of the ASSETS services specifications,

(c) foster coordination with the Europeana projects,

(d) supervise the interoperability with the Europeana infrastructure.

The member of the ECAB are both internal partner than external experts.

Objective 11: Development and Engagement of the ASSETS Community where users will have the possibility to be the early adopters of the ASSETS services. The involvement of a critical mass is a crucial point for the future sustainability of the project and will put the basis for long-term viability of the ASSETS services. The ASSETS community will also be a fundamental tool to create awareness and build consensus around the Best Practice Network.

Hence, the Best Practice network will foster, by means of the ASSETS Community, the adoption of the ASSETS services.

Specific initiatives and clustering events organised in collaboration with the European Commission will be planned and implemented to foster networking activities and attract new members in the ASSETS Community.

B1.1.3 Synchronizing ASSETS and EUROPEANA activities

In order to ensure relevance and impact, the project will work in **strict cooperation with Europeana**. In particular, ASSETS will synchronize the activities to be carried out with Europeana v1.0 and Europeana*Connect* activities. This will enable Europeana to offer a very high quality service in ranking surrogates, discovering them via the similarity of the corresponding multimedia objects and browsing the whole information space in terms of semantic categories. In addition, the ingestion service will allow Europeana to adequately populate the very rich data model underlying its contents, thus making a decisive step towards semantic interoperability. Finally, the services for long-term access will set the basis for the preservation of the Europeana surrogates resulting from ingestion. In return, the EDL Foundation will contribute to the evaluation of the services created by ASSETS, both through its portal and through its innovation laboratory, the EuropeanaLabs. The services thus validated will then be deployed to the other stakeholders in the ASSETS consortium, for further evaluation and final take up.

In order to achieve these objectives, ASSETS will mobilize a large community, consisting of stakeholders bringing requirements, validation and sustainability; researchers applying basic knowledge in order to contribute the algorithms and models underlying the ASSETS services; industries providing the necessary

infrastructural and technological support, as well as the strength required by services meant for large-scale adoption.

The ASSETS services will be **loosely coupled**, which means that they can be used together or in isolation by the adopters. This approach will foster the sustainability and exploitation of the project outcomes and establish the basis for a **long-term viability of the ASSETS services**.

B1.1.4 Relevance of ASSETS to the ICT-PSP WorkProgramme 2009

The objective is to support the build up of the operational part of Europeana. In this context Best Practice Networks will be funded to further develop the Europeana front end services…	ASSETS will directly contribute to the ICT PSP 2009 WorkProgramme, since it aims at delivering in the real Europeana context of use, where large-scale multimedia digital objects are available, a set of specific services for complementing the Europeana operational service in a real multimedia environment.
…including search improvements (e.g. sound and picture, multilingual, ranking algorithms),	Some of the ASSETS deployed services will concern the multimedia search, which so far was not addressed by the Europeana service platform. In particular specific services for multimedia indexing, ranking, searching and retrieval will be adapted and validated against music, audio-video and image content, provided both by Europeana and other content providers participating to the ASSETS consortium. In particular the planned improvements in ASSETS will be related to improving ranking through employing techniques developed in web search and content-based (also known as "similarity-based") information retrieval allowing users to search multimedia objects (text, images, sound, video, audio-visual, 3d objects) by using queries objects of the same kind. This will solve a large usability problem for Europeana, giving the user sets of results that have meaningful ranking and assurance of the quality of the service.
…browsing improvements (e.g. combined spatial temporal browsing, personification functions, collaborative tools),	ASSETS will directly adopt the Semantic Web paradigm to represent knowledge and content to achieve a semantically rich representation of content, user interests, ideas and social interactions. This will result in an improved browsing services for Europeana, which will allow to strongly link the navigation paths, the user interfaces and the user profiles and preferences

interface improvements (e.g. for mobile platforms).	The advanced search services on multimedia digital objects will be complemented within ASSETS by designing and implementing graphical user interfaces specially designed for browsing Europeana multimedia content. The provision of such interfaces will clearly contribute to improve the Europeana usability to the multimedia content.
The ability to recognise the Intellectual property rights relating to digital objects, including territorial rights for material still in copyright, should be taken into account.	All the ASSETS services will be deployed taking care of the Intellectual Property Rights associated with the digital content. In particular the deployed services will be released ensuring that the Europeana Licensing Framework which the EuropeanaConnect project will make available, will be taken care. Besides the ASSETS large-scale implementation will take into account the IPRs of the digital objects still in copyrights, in order to trade-off the existing rights with the content accessibility**.**
The expected outcome is to improve the usability of Europeana.	The availability of the ASSETS services in a Europeana-compliant way will directly contribute to improve the usability of Europeana. Thanks to the ASSETS services new ways for creatively re-use and re-purposing of Europeana multimedia digital content.

Table 1 Relevance to: ICT PSP 2009 – Objective 2.1 European Digital Library - services

B1.1.5 RE-USING PREVIOUS RESULTS AND KNOW-HOW

ASSETS will not develop on scratch the services, but utilises existing results already available as background research & development or experience from the consortium.

The consortium partners will provide to the ASSETS their know-how and achievements resulting from previous EC and National funded projects. This means that the project will be based on a strong knowledge and fund of expertise.

The following table illustrates, per each of the ASSETS deployed services, which partner brings what pre-existing technology know-how, developed in what R&D or eContentplus project.

Project	*Re-using Pre-existing Know-how*	*Partners*
BRICKS - Building Resources for Integrated Cultural Knowledge Services	Open Source Sustainability Models, Service-based Digital Library Infrastructure	ENG, ARC, CNR
CASPAR - Cultural, Artistic and Scientific Knowledge for Preservation Access and Retrieval	Notification Service for **Digital** Preservation and Long-term Access	ENG, CNR
PLANETS - Preservation and long-term access through networked services	Risk Management Service, Normalization Service	ARC
Europeanav1.0	Back-end Infrastructure of Europeana	EDLF
EuropeanaConnect	Ingestion service, Semantic browsing	EDLF, AIT
PHAROS - Platform for searcH of Audiovisual Resources across Online Spaces	Audio content annotation and indexing	BMAT
MESH – Multimedia sEmantic Syndication for enhanced new services	Video summarisation and adaptation	UAM
MESH – Multimedia sEmantic Syndication for enhanced new services	Manual correction of multimedia object annotation	INA
MESH – Multimedia sEmantic Syndication for enhanced new services	Integration of multimedia analysis, search and retrieval services into a single platform	ATC
VITALAS - Video & Image Indexing and Retrieval in the large Scale	Cross-media specifically tailored user interfaces	ROBOTIKER
VITALAS - Video & Image Indexing and Retrieval in the large Scale	Semantic cross-linking	EKETA CERT
VICTORY – Audio-Visual Content Search and Retrieval in a Distributed P2P Repository	3D objects search	EKETA CERT

QUAERO – National French Programme on Audio-Visual search	High Scalable Complex Multimedia Object Search Engine	EXALEAD

B1.1.6 User involvement

In ASSETS users will have a very important role. The user involvement will be guaranteed by project user partners, by the ASSETS user Community members the that will be aggregated during the project lifetime (see objective 11 and chapter 2.3.3) and by Europeana.

In particular within ASSETS, we intend to fully leverage results and methodologies generated within the Europeana project cluster in order to support our user testing and user involvement. In particular, a number of useful results will become available from the EuropeanaConnect project workpackage 3. First, we will draw our test groups from an existing registry of test users, based on profiles (or personas) that have been tailored to represent the most significant Europeana user groups, which should be available during the first half of 2010. Second, we will choose our testing methods from the Europeana catalogue of usability methods, which will cover requirements for user tests and will define usability testing procedures (which include user observation, workshops and field studies) for Europeana cluster projects.

Testing will be carried out within the context of the cross-project "EuropeanaLabs" framework, which is hosted by CNR and funded by the EDL Foundation. EuropeanaLabs will provide a development infrastructure with test-suites of high quality data for creating, testing and evaluating innovative solutions for Europeana. It will include a development environment for rapid prototyping, a large high-quality collection of real data, and a sandbox environment for testing prototypes for effectiveness, efficiency, and usability, as well as benchmark test suites for measuring service scalability.

B1.2 Contribution to the European Digital Library initiative

The goals of the European Digital Library initiative were originally established in September of 2005 in a communiqué that outlined the three principle strands of digital library strategy: Online accessibility, digitisation of analogue collections, and preservation and storage. Following this strategy, ASSETS contributes to these goals and requirements of Europeana by providing new Europeana content, by enhancing access to that content, and by providing digital preservation support to content providers.

With regard to content, ASSETS partners will provide new digital multimedia content to Europeana in the form of video, audio and images, as well as digitized text, as detailed in Appendix I (ASSETS Objective 9). In addition, by offering digital preservation services, ASSETS will deliver an incentive to other content providers to offer more content.

With regard to accessibility, ASSETS will contribute by developing a search layer that will allow Europeana to plug different third-party search technologies and test them with minimal development effort (ASSETS Objective 1). Online accessibility to multimedia content will be strongly enhanced by ASSETS annotation, indexing, and retrieval services. While efforts in the *EuropeanaConnect* project focus on manual annotation by users, ASSETS will provide the complementary automatic or semi-automatic annotation services for audio and video. Furthermore, this analysis of media streams and the resulting feature indexes allow for advanced retrieval and personalization methods, for example, allowing users to query audio material by example or by providing recommendations (ASSETS Objective 2). As a further contribution to access,

ASSETS will offer to Europeana an ingestion service based on the advanced techniques for metadata cleaning, classification, and knowledge extraction (ASSETS Objective 4). ASSETS will also make use of the Europeana semantic layer in order to improve the search and browse experience by automatically building semantic links between digital objects based on user behaviour (ASSETS Objective 3). The project will further enhance online accessibility by providing services specifically tailored to displaying and browsing audio and video within the Europeana portal (ASSETS Objective 4). This will complement (but not duplicate) the interface improvements planned in the *EuropeanaConnect* project (spatio-temporal browsing, mobile device interfaces).

Finally, ASSETS will indirectly support the i2010 and EDL objectives of long-term digital preservation and storage by providing digital preservation services to Europeana content providers (ASSETS Objective 5). Direct support of Europeana is intrinsic to the project design, as a primary objective (ASSETS Objective 10, detailed previously) and through dedicated tasks in Workpackage 2.0 ("Technical Coordination and Interoperability"). Furthermore, this workpackage will ensure that all work within ASSETS maintains the necessary standards for technical interoperability that will be established in the Europeana project cluster. In addition, WP2.0 will ensure that all developed services will have intrinsic support for multilingual interfaces, thereby contributing to an additional European Digital Library requirement.

B2. IMPACT

B2.1. TARGET OUTCOMES AND EXPECTED IMPACT

B2.1.1. STRATEGIC IMPACT – DELIVERING THE VISION

The ASSETS project will contribute significantly to the intended impact expected for *Objective ICT- PSP Work Programme Objective 2.1: European Digital Library – services* under the current Call for Proposals.

Impact 1: Improving the usability of Europeana through improvements of the services it offers. This will contribute to allowing citizens to access the rich collective European heritage at the click of a mouse.

ASSETS will achieve the required impact by developing and deploying new technology in 3 areas to radically improve the user experience in Europeana. Namely:

Search and retrieval: ASSETS will enhance in quality and widen in scope the search and retrieval service of Europeana. The quality enhancement will be produced by improving ranking of simple search through employing techniques developed in web search, such as the analysis of the query log and the usage of sophisticate weighting and scoring schemes. This will solve a large usability problem for Europeana, giving the user sets of results that have meaningful ranking and assurance of the quality of the service The widening in scope will be produced by adding to Europeana a similarity-based search service that will exploit the media dimensions for giving the users a different way of discovering the information within Europeana: users will use as queries objects of the same kind of the sought ones, and will have in return a rank of the objects which bear similarity to the query. Similarity search will address both surrogates of simple objects (text, images, sound, video, audio-visual, 3d objects) and surrogates of composites,

analyzing the latter into their media components and using a scoring function that appropriately combines these components.

Semantic Browsing annotating the Europeana resources with categories from the Europeana semantic layer as well as with user-defined categories representing user interests, ideas and social interactions. Navigating through these categories will allow users to explore the Europeana information space in an interactive way leading to the discovery not only of the Europeana content but also of the interests, ideas and vocabularies of other communities.

***Interface improvements*:** deploying interfaces specially designed for browsing multimedia content.

Impact 2: -Contributing to Europe's strong presence in the cultural and creative industries of the 21st century and enabling the development of new value-added services for research, learning and leisure.

The *Communication from the Commission i2010: digital libraries {SEC(2005) 1194} {SEC(2005) 1195}* discusses the importance of online content that is easy to find, access and use for end-users. It also mentions the need for appropriate services allowing the user to discover and work with the content.

In this context, ASSETS complies with *Action area A of the Dynamic Action Plan (2005)* which replaces the Lund Action Plan:

Users need to benefit more from the networking of cultural knowledge, as the implementation of technologies enables the development of a European Cultural information space. They need to be facilitated to find easily and use cultural content and to contribute their own knowledge and experience, becoming active citizens in information societies.

Key issues:

- Recognizing cultural content as a driver for eLearning and the creative industries.
- Mobilizing cultural institutions to make best use of existing technologies

The contribution of ASSETS to the European Digital Library - making Europe's cultural heritage more accessible - will play an important role and will lead better results for the user of Europeana and similar sites.

As stated above ASSETS will focus on improving the services of the Europeana platform, implementing: 1) a search functionality based on Multimedia Indexing, searching and retrieving; 2) new browsing approaches such as semantic cross-linking of multimedia content allowing fast navigation through similar items; 3) Interfaces specially designed for browsing through multimedia content. Therefore ASSETS will foster new industrial and service opportunities across the continent. The components developed by our project are planned to be included directly into Europeana. This will place the service ahead of the competition in terms of managing, discovering and visualising digital objects and their related knowledge. It will also support powerful semantic-based discovery, out of reach for e.g. audiovisual search engines. This will reinforce the European industrial leadership in these areas and develop stronger synergies between relevant actors.

B2.1.2 Organisational impact

ASSETS results will allow institutions to enhance the discovery of their most significant collections without duplicating effort and thus money, contributing to a vastly improved user experience in the growing mass

of digital materials in Europe. For this purpose ***the ASSETS Community*** formed by users and content providers, will from the very beginning of the project aim to attract many new adopters of the ASSETS services for cultural heritage portals, e.g. national portals and help increase the use and popularity of Europeana.

The notion of creating tools and services that can be reused is important, as it is also likely to be more attractive to private partners. ASSETS will help digital library initiatives also in smaller memory institutions at sub-national level and facilitate a more collaborative approach to digitization and the accessibility & usability of the digitised objects. In particular, the results of the project will:

- Support the participation of smaller institutions through capacity-building and deliverance of tools, applications and demonstrators
- Make semantically enriched digital objects fully discoverable and therefore accessible to the world, supporting cultural heritage institutions on the one hand, and the vision of European Commission on the other.

In this respect our work in this area is complementary to the agenda set by the National Representatives Group (NRG) to develop mechanisms to promote good practice and skills development in accordance with the Dynamic Action Plan.

B2.1.3 Technical impact

ASSETS will improve the technical functionalities of the Europeana encouraging new institutions to make their digital collections accessible through Europeana. This will foster the interoperability between international collections and cultural & scientific institutions, thus supporting *Commission Recommendation (2006/585/EC)*:

"encouraging cultural institutions, as well as publishers and other right holders to make their digitised material searchable through the European digital library (Europeana)"

The resulting components of the project will

- help the acquisition, dissemination, management, discovery, accessibility and integration of large bodies of digital objects, endowed with rich multimedia indexing, searching and retrieving and advanced interface.
- provide heritage & scientific institutions willing to be part of the European Digital Library with knowledge and applications for semantic-based discovery, cross-fertilisation and access. i
- be loosely coupled so that they can be used by all interested institutions, as well as in any combination where institutions require only a specific subset of their overall functionality.
- enable more specialised forms of data search and retrieval (see Stream 2 WPs)
- support the development of more personalised and collaborative services through the implementation of Community services (see WP 3.2)

B2.1.4 Why a European approach, rather than a national or local one?

Developing Europeana, the European digital library, in particular is inherently a European undertaking. It could not be done at national level both because of its nature and because the European partnership involved allows the necessary financial and human resources to be brought together. Research institutes, Industries and Cultural Heritage Institution from 8 different European countries work together in this

project as the collective expertise to tackle the problems to be addressed cannot be found within a single Member State.

In its recommendation of 24 august 2006 On The Digitisation And Online Accessibility Of Cultural Material And Digital Preservation (2006/585/ec)[1], the European Commission effectively recommended that

The European digital library (Europeana) should be built on existing initiatives such as The European Library in which Europe's libraries already collaborate [….].

The success of The European Library as a building block for Europeana can be largely credited to a series of EU funded projects to initiate, expand and enhance The European Library. The initial TELproject [FP5] and its successors TEL-ME-MOR [FP6], EDL project [eContentplus] and TELplus [eContentplus] have also been inherently European and not national in that they are building a platform that involves every EU Member State. For efficiency reasons the consortium created for the delivery of this project is deliberately focused on a core of experienced and trusted organisations from just 9 Member States (Italy, Greece, Austria, Spain, France, Germany, Sweden, Luxembourg,, Cyprus) but aims to deliver benefits to all 27 Member States and all users, Europeana in particular.

B2.1.5 Why an ICT PSP Proposal?

As the fully operational Europeana portal is planned to be implemented according to EDLnet functional specifications and other projects connected to Europeana (EuropeanaV1, EuropeanaConnect, EuropeanaTravel, and EDLocal and others), in separate eContentPlus projects, the implicit assumption is that Europeana will be relatively easy to build. In this context ASSETS is crucial as an intermediate building block towards the European digital library.

There are vital services, such as search, browsing and interface, within Europeana and in its immediate surroundings that need to be improved. ASSETS is the perfect answer to the main focus of the *ICT PSP Workprogramme Objective 2.1: European Digital Library – services*, since the main goal of the ASSETS project is to improve the search, browsing and interface services that will be implemented starting from previous successful results of previews projects and initiatives. This will guarantee the deployment of consolidated services that will be tested by real user and in a real environment. The ASSETS services will be ready to be integrated into Europeana prototype that will be delivered in 2011.

B2.1.6 Related research

The Council Conclusions on the Digitisation and Online Accessibility of Cultural Material, and Digital Preservation (2006/C 297/01) underlines that:

- The instrumental work done at European level by CENL (the Conference of European National Librarians);
- in organising and creating The European Library (TEL) as a gateway to the collective resources of national libraries across Europe;
- in carrying this work forward towards the creation of the European digital library

[1] *http://ec.europa.eu/information_society/activities/digital_libraries/doc/recommendation/recommendation/en.pdf*

- the work ongoing in the Michael and Michael Plus projects in describing and linking digital collections of museums, libraries and archives from different Member States and providing access to these collections;
- that future work should be based on these and related initiatives, towards the goal of achieving a balanced cooperation between libraries, museums and archives;

The ASSETS consortium combines a core of leading scientists, experienced institutions, industries and projects with proven track records in the Digital Library domain. It offers advanced research concerning core functionalities, semantic interoperability among existing Digital Libraries, and a network of content providers and users who already actively contribute within their respective user communities.

Our project will be launched from established research results and employ the 'best of' practices and results from the renowned European projects TELPlus, EDLNET, BRICKS, PHAROS, VITALAS and MESH

In particular, ASSETS will:

a) base the functionality of its target components on the Europeana user requirements, which reflect the desiderata of a significant portion of the major European user communities and stakeholders, and on the Functional Specifications of Europeana.

b) evaluate its results by iteratively collecting feedback from the Europeana community, also in the context of experiments run against the series of Europeana prototypes, created from November 2008 onwards these prototypes consist of millions of multimedia complex objects, described by metadata records and associated ontologies, acquired by the content institutions which are members of Europeana.

These evaluations will make sure that the services developed by ASSETS not only meet their functional requirements, but are also robust and scalable enough to support Europeana. The proper interaction between ASSETS and Europeana is assured by the presence of partners in the project consortium that are involved in Europeana both at technical and content provision level (EDL Foundation, ARC, CNR, INA, and experts that will be member of the Europeana Cluster Advisory Board (ECAB) such as Stefan Gradmann, responsible of the liaison with Europeana, Vivien Petras responsible for Multilungual issue of the Europeana Connect, Stefanos Kollias specialist in semantic web technologies and OWL ontologies, and Max Kaiser coordinator of Europeana *Connect*. The ultimate goal of the project is to incorporate the target services directly into Europeana. ASSETS will thus ensure that its development and timings are planned to be perfectly aligned with that of releases. Aiming to deliver according to the release schedule of Europeana ASSETS will add enormously to the usability for the user.

ASSETS will also create solutions for the multimedia search. At the object level, mechanisms for assigning to each object a degree of "semantic knowledge and indexing", are required.

B2.1.7 RISK FACTORS

Risk factors assessment and monitoring can take place at any time during the project. It allows project managers to:

1. Explore the entire project plans and identify areas of uncertainty;
2. Analyse how those areas of uncertainty can impact the performance of the project, either in duration, cost or meeting the users' requirements;

3. Prioritise risks, so as to establish which risks should be eliminated completely (because of potential extreme impact), which should have regular management attention, and which are sufficiently minor to avoid detailed management attention.

The consortium foresees the following risks factors during the project implementation and contingency measures in case these risks take place.

Risk factors	Probability/Impact	Contingency measures
Lack of motivation for participation in making up part of the ASSETS Community	Low/High	The ASSETS consortium will target key decision makers and relevant stakeholders in the Cultural Heritage domain. Specific action will be put in place in order to aggregate a critical mass of potential users and content providers of the ASSETS services. The main target will be public and private Cultural Institution who manage digital collections. In addition, the consortium members have access to relevant target communities with a significant number of Cultural Organisation contacts (see BRICKS Community, PHAROS Federation, CASPAR Preservation User Community, MESH network …) which will be tapped into to maximise further awareness.
Attracting Digital collection holders to the ASSETS initiative	Medium/High	The growing significance of libraries, museums and archives in European economy is hard to ignore. Unfortunately many Cultural Organisations argue that they very rarely can afford to take on board in Digital Cultural Heritage market. It takes up too many resources and the time to market for technological deployment is too long for an average Cultural Organisation to appreciate the return of investment. The ASSETS consortium wishes to attract a high number of Digital Libraries in Europe to inform them of the opportunities available from the ASSETS services for searching and browsing through advanced interfaces for multimedia content their digital collections and make them available through Europeana.
Limited interaction via the virtual ASSETS community platform	Medium/High	Networking, via any portal, is time-consuming for people who normally spend most of their working day dealing with the internet, coupled with this, individuals are uncomfortable in disclosing personal details. The ASSETS portal will disseminate the added value of creating a unique, access point of a virtual community of Europeans stakeholders interested to a different extents to the European Digital Library.
Financial problems for participants attending the networking	Medium/Medium	Attendance to all the events which will be organised will be free of charge. Budget has been earmarked in the external, financial breakdown of costs to cater for materials, simultaneous translation costs, consumables

conferences		and catering costs.
Financial problems for the consortium members in hosting the networking conferences	Low/Medium	The consortium partners and their subsequent links to national organisations and international programmes have appropriate premises or have access to premises and would be willing to host the networking conferences, so savings will be made here. If a suitable premise were not available within the partners' countries a small budget has been set aside for hire charges in the event that a suitable premise is not found. In the event that the conferences are run at a loss, the consortium may consider finding appropriate industrial sponsorship support to avoid a budgetary shortfall.
Lack of participants to the focused initiatives	High/High	To entice an appropriate number of participants at focused initiatives, the consortium will introduce enticers on the ASSETS portal such as: enabling registered members to download the ASSETS main documentation.
Cultural Differences between different type of stakeholders (developers, end users,…)	High/Medium	Cultural and linguistic barriers are the biggest obstacles for effective and seamless co-operation between the different ASSETS stakeholders. Bearing this in mind, the consortium aims at ensuring an equal representation between all the stakeholders categories within the ASSETS initiatives. Multilingual aspects will be considered in the dissemination of the results.
Creation of production level solutions	High/Medium	If the quality control will ascertain that some fundamental property is missed by the software produced by ASSETS, some extra men-power will have to be used in order to achieved the designed quality. This could be done in the context of a specific action involving EDLF and the partner responsible of the software.
Creation of sustainable service for the API services	High/Medium	Europeana will take over the code implementing the ASSETS services in their farm, guaranteeing for their maintenance. These services MUST therefore use the development practices defined by Europeana.

Table 2 Risk Factors

B2.2. LONG TERM VIABILITY

An important goal of the ASSETS project is to provide results that will be exploited in the real environment during and after the end of the project. The project activities ASSETS will set-up, test and validate the proposed services in order to deliver at the end of the project mature and tested technical outcomes that guarantee the long term viability of the ASSETS services.

The exploitation activities of the project aim to ensure long-term viable outcomes and are dedicated to ensuring that sustainability objectives will be achieved in line with the project Work Plan.

The project members, also, will define how the exploitable aspects can be used and integrated inside their business'. To this end, the exploitation plan will cover a detailed market analysis of current tools and initiatives, the sector trends and the main industry players, as well as identifying partner-specific plans and intentions in order to plan a shared exploitation strategy.

The ASSETS consortium has a strong combination of academic partners with relatively balanced competences in the ASSETS technical areas in order to reach the ambitious goals and industry partners that will ensure the suitable commercial exploitation of the project results. The project sustainability is also linked to Europeana.

Digital libraries represent the main target market and consequently through them will be possible to better understand the needs and requirements on which to design services to offer to the customers. Moreover, over the time a significant challenge is emerged about how not to disperse the European digital heritage and especially how to make this digital information fully accessible to all the users' communities. In this heading, through the strong relationship among academic, industrial and libraries partners will contribute to the challenge that access to European Cultural heritage presents.

ASSETS gives a high level of technological innovation offering consolidated and innovative services to the Europeana but also to archives, audio-visual archives and museums in line with the European Commission Strategy and consequently increasing the use satisfaction of the final customers.

In particular, the exploitation approach will be driven from three main guidelines:

- To be user oriented
- To integrate the ASSETS results inside Europeana
- To have re-usable results
- To have modular components
- To offer free of charge services to Europeana for the ASSETS long term viability

To be user oriented

The users' perspective will be one of the key points in the ASSETS project implementation: this means that a particular attention will be given to user needs and requirements in designing and implementing the new functionalities. Special attention will be given to the recommendations and specification coming from Europeana Connect.

Moreover, the services will be user-centred, through the involvement of user partners in the specifications and design of functionalities. Only a continuing and effective participation of users throughout the entire production cycle will guarantee that the services meet all the requirements for which they are designed and that they comply with the needs of each and every type of user.

To guarantee the focus on usability of the services and end users, the project will:

Involve in a very close collaboration the Users partners with content providers, and those two categories with the ASSEST partners developing the services, to allow an improvement of the development process. Such strict collaboration and involvement will be realised through establishing specific communication channels and workshops

Profiling users with respect to the services requested, to allow a tailored deployment that could reach a wider acceptance. Such target will be reached during the project sustainability task.

To integrate the ASSETS results inside EUROPEANA

The integration of the services implemented into ASSETS inside Europeana is one of the main project goals. Europeana from November 2008 represents the European Digital Library that brings together millions of digitised resources from Europe's archives, museums, libraries and audio-visual collections through a single portal.

Europeana is an ambitious initiative. It enables the connections between the whole network of cultural heritage digitisation programmes in Europe. It has developed practical, user-defined tools for exploring and sharing content in a multilingual interface.

The integration of the ASSETS services is a strategically important as it will improve and empower the functionalities and consequently the services offered by Europeana itself and the access to Europe's cultural heritage.

To have re-usable results

The ASSETS results will be re-usable in other digital libraries and in other context In order to reach this goal each service will be functionally and technologically open:

Functionally open, since the project allows for the evaluation of the services in a neutral environment such as the Europeana Labs, where the services will be ported and deployed as stand-alone components that can be re-used by other parties. The project also allows for an evolution of the system, with the passing of time, related to the evolution of the regulations, standards and organisation of the Digital Libraries activities. It will be able to see to its connection with outside systems, if any, sharing information stored in both central and local structures;

Technologically open insofar as the development languages and environments are concerned. The latter will be identified in line with advantages and opportunities and they may also be specialised by areas in order to guarantee both the development and maintenance efficiency and the full consistency with the architectural reference models.

To have modular components

The modularity of the services will be a very important point for exploitation. That means that each service will be independent of each other and replicable in different field in easer way. They consequently could be used and applied in single way and this ensures a better and more effectiveness exploitation.

The services, which ASSETS intends to deploy in real life operational scenarios, will be loosely coupled with Europeana. This technological decision will affect to a large extent the ASSETS long term viability, since will allow these services to be used even for integrating other cultural portals. On one hand this will make easier to build up the critical mass of content required for drawing overall conclusions on standards and specifications, after the large-scale real-life implementation of services within the lifetime of the project. More than this the loosely coupled ASSETS services will unlock even further exploitation channels going beyond the Europeana. For example such services could be reused in other portals, such as Flickr, YouTube, and other relevant image and video web portals.

To offer free of charge services to Europeana for the ASSETS long term viability

All the ASSETS services will be deployed free of charge to Europeana. Concerning project pre-existing back-end software components will be licenced free of charge to Europeana.

B2.2.1 EXPLOITATION PLANNING

In order to reach the long term viability goal and produce the results planned a concrete exploitation plan will be developed during the timeframe of the project, which will include, in particular, the analysis of the following items:

Industry and User profile analysis: an analysis to identify and segment (profiling) the different type of possible users and their characteristics will be realised. The analysis will identify the potentialities of the ASSETS results in different sectors/usage scenarios beyond the traditional digital libraries ones (Audiovisual Archives, Museums, etc.), with the twofold objective to support a user centered deployment and to define exploitation channels. Moreover, a PEST (Political (and legal), Economic, Sociocultural and Technological forces) analysis will be elaborated in order to have a clear idea of the macro-environment and the technological and market trends.

Digital Libraries business models: both traditional Digital Libraries and more innovative approaches will be analysed in order to understand the new business model specifications for the exploitation strategy definition with particular attention to the contents kind, DRM specifications, IPRs specifications and the customer/users needs analysis.

Partners' individual exploitation plans: the intention and future objectives of each partner will be analysed in order to define the most suitable exploitation strategy for every members.

A Business Plan will be successively developed with the following main objectives:

- ***To analyse the technical and business framework***, where the ASSETS results will move; receiving feedback from the different partners;

- ***To define and describe products and services*** that will come from the project implementation;

- ***To identify and evaluate potential ASSETS business models***, comparing with the competitors in the Digital Libraries domain in order to determine a competitive advantage and to study the possible position of ASSETS services/products on the market;

- ***To determine the draft and final economic forecast analysis*** and the financial impact. The long term viability for ASSETS would be to eventually approach the market, beyond the Europeana main customer, with a free "basic" release including the ASSETS choreography of Open Source services, whilst the **revenues** will be generated around **support services (consultancy, training, customisation)** within a commercial offer.

PARTNER INDIVIDUAL EXPLOITATION

The following chapter will present the individual exploitation intentions of each partner of the ASSETS consortium.

Industries

Engineering

The coordinating partner of ASSETS, Engineering Ingegneria Informatica, is a major System Integrator. As such, Digital Libraries is one of the main production line in its offering, particularly a Digital Library Search facility is crucial to its offering. Engineering has invested about 50 Million Euros on research in the 2006-

2008 three-year period, and already demonstrated its deep interest in the DL Search field by coordinating the PHAROS project, a large Integrated Project for Multi Media Search.

Engineering is also a founding member and president of the steering committee of the European Technology platform NESSI – Networked and Electronic Software and Services Initiative - and member of the NEM – Networked and Electronic Media – European technology platform. Engineering is a strategic member and co founder of the OW2 consortium, and has a declared approach in offering solutions based Open Source technology. ASSETS is thus completely in line with these investments and Engineering expects to be able to further develop the integration of Digital Libraries and Search Services into its portfolio. Moreover gained expertise will constitute a boosting factor for its multimedia and network division solutions. In addition to this, Engineering will exploit the gained capability to integrate search driven applications, leveraging on ASSETS functionalities, in their SOA solutions and portals. It will bring a real added value also for the multimedia content management in business environments.

The Engineering Group enhances its competences and services in the area of managed operations at the Pont Saint Martin Service Centre (PSM), which is a concrete example of European-level technological excellence for outsourcing services, provided to more than 100 Italian and international customers. The PSM center manages 40.000 workplaces, 1000 remote connections, 10.000 electronic mail boxes and about 7000 SAP users. With 100 outsourcing contracts for over 3500 servers, the center provides the following services: Network & System Monitoring, Network & Security Management, Internet Data Center, Server & Storage Management, Application Server Management, Disaster Recovery & Business Continuity, Re-hosting. The Pont St. Martin centre is run by Engineering.it SpA, a subsidiary company of ENG. Engineering coordination of ASSETS is a perfect occasion to enhance the role and services of Pont Saint Martin in the Digital Archive and Libraries business market. This will complete the possibility to exploit and to use ASSETS results together with the Engineering operation lines and departments.

ATC

ATC is a company with clear commercial interests in the sector of media asset management. A number of commercially successful products, which have been developed fully in–house prove ATC's position in the relevant market. In particular, NEWS ASSET and DOC ASSET have been adopted by major organisations dealing with media asset management both within and outside Greece, with clear examples being the national news agencies of Greece, Portugal , Russia and Poland. The ASSETS project will provide to ATC one more business avenue with clear exploitation potential, as the ASSETS platform will provide access to content coming from major European providers with valuable visibility through Europeana. Furthermore, the collaboration with leading organisations in the areas of search and retrieval will provide the benefit of building commercial partnerships, which will give the opportunity for worldwide exploitation of the results of the project.

Exalead

As a major French and European search company, Exalead is interested in the exploitation of the ASSETS project. They have a strong involvement in many research projects like Quaero, WebContent dealing with building content management systems of multimedia data. The exploitation of this project will give Exalead the opportunity to learn how the archive and library market is structured and organized. Exalead would like to better understand the needs and requirements of the main actors of European archives and libraries

to develop their commercial portfolio. Therefore, they aim at gaining in experience to better address the non Europeana network with their solutions. For Exalead, there is a straightforward and strong dependency between the success of ASSETS project and their strategic development in targeting the archives market. The achievement of the objectives of ASSETS project are a good opportunity for Exalead to emphasize their expertise and prospecting new customers.

BMAT

BMAT desires to further explore the inclusion of its technologies in media search engines, especially for the audio and music domain. The collaboration with system integrators, service providers, content aggregators and providers, and also with other technology providers will be enlightening for BMAT, in terms of user needs and operational modes.

CIAOTECH

CIAOTECH involvement in ASSETS is driven by the interest of the company, as leading technology Transfer Corporation in Europe, to be one of the main players in the offering of a service for the managing of digital contents. The share of knowledge is at the basis of the technology transfer, which is the core business of the company, therefore the activities to be realised in the project, and its future exploitation, fall in the company core business, allowing CIAOTECH to reach visibility within its usual client basis, provide advanced services to such community, and create synergies with the current technology transfer services offered**.**

Academia and research centres

AIT

AIT is dedicated to supporting long-term access to digital data within our new strategic area of Future Networks and Services. In particular we are pursuing secure service notification and digital preservation services (such as those described in ASSETS). Digital Preservation deals with the issue of sustainable access to digital objects, which can in some cases (proprietary formats, unstable media) become problematic over a relatively short time span, even less than ten years. We aim to become a service provider and consultant for at least four national libraries and/or archives by 2013. We will leverage our experience and expertise in the domain of digital libraries and archives, who are the first adapters of digital preservation technology, from projects like ASSETS.

CNR

CNR aims at transferring to European Digital Libraries, and to Europeana in particular, its knowledge and competence in machine learning and search, in order to develop services on ingestion and discovery at the highest level of quality. The reason for doing so is to contribute to the making of the European information space in the cultural heritage sector and of Europeana in particular, what is fully compliant with the mission of CNR. From a scientific point of view, participating to ASSETS will give to the CNR researcher the opportunity to (a) have access to very high quality data, such as those made available to the project by the involved stakeholders; and (b) to have direct contact with the users and the stakeholders, thus gaining requirements for new challenges. The latter point is a way of exploiting the participation in ASSETS. Another form of exploitation is the possibility of creating new proposals, addressing important aspects that are beyond the reach of ASSETS. A third form of exploitation is the use of the ASSETS experience for creating education opportunities, such as the training on the job of young researchers and the creation of conference tutorials or advanced universities courses.

SICS

SICS will contribute a multilingual terminological service which learns from the data in the collection. Given that the data will be manifold and heterogeneous from various time periods, readymade ontologies will be of less utility than in many other more topically focussed, monolingual and temporally consistent collections. We will utilise the word space model together with active learning approaches, which will provide a dynamic but partially supervised tool for providing editorial consistency to a terminological tool.

SICS will also participate in a use case analysis to establish macro level requirements for usage for the library. However, this is likely to be of less urgency, since presumably the participating content providers will have such analyses.

UAM

UAM is interested in participating, as a public university, in the commercial exploitable outcome result of any project in which it is involved. The participation in such exploitation shall depend on the type of results and the contribution to the project. In the case of ASSETS, UAM is responsible for the design and implementation of personalized summary generation and multimedia content adaptation, based on existing background technology available in the VPULab research group.

The VPULab looks for enhancing our knowledge for video summarization and adaptation in order to both enhance our experience and technology, as well as being able to add additional functionalities to future exploitable products. Working with ASSETS will allow us to test that technologies on different and new content, and therefore generalizing the scope of our future products and algorithms to be exploited in future projects and licensed products. Also the knowledge acquired will be exploited in the educational dimension that any university research group has: courses, seminars, PhD and Master thesis, etc.

CERT (EKETA CERT)

CERT is a non-profit research organisation and as such focuses on research and its dissemination by publishing results in well-known and widely read international scientific journals, as well as by presentations in international scientific conferences, workshops and exhibitions, web based publishing, standards submissions and small seminars and talks organised for specialised audiences. However, contact with industry and the consequent opportunity to link the activities of Research Organisations with the ability of industry to observe and take advantage of opportunities for exploitation is also sought by CERT.

CERT-ITI has already significant dissemination activities in the field. The research team of CERT-ITI has already published more than 100 papers in journals the last 3 years.

Concerning exploitation, CERT-ITI is already participating in the VRSENSE S.A. spin-off company that aims at producing and distributing innovative high technology products and services. The research group of CERT-ITI will carefully study the ASSETS project results and investigate the technologies that will help to strengthen the VRSENSE's solutions and give added value to its products. Furthermore, part of the CERT-ITI business plan is to participate in a number of new spin-off commercial companies capable of exploiting its research when new market needs and solutions are identified. CERT-ITI was in fact founded so as to accomplish Technology Transfer, encouragement of entrepreneurship and innovation. CERT-ITI has all the necessary support including legal support, business management, marketing, distribution sales channels and accounting in order to create innovative enterprises.

UPS

The National Library of France is one of the main actors in Europeana, the new European digital library which is expected to have a significant impact in the European cultural space. The LRI aims at transferring to the European digital libraries in general, and to Europeana in particular, its knowledge and competences in information systems, in order to develop advanced services for user communities (e.g. document composition by reuse, information personalization etc.). The reason for doing so is to contribute to the making of the European information space in the cultural heritage sector and of Europeana in particular, what is fully compliant with the mission of LRI. From a scientific point of view, participating to ASSETS will give the LRI researchers the opportunity to expose themselves to an international environment of high quality research and have direct contact with users and stakeholders, thus gaining experience and confronted to new challenges. This is one way of exploiting the participation in ASSETS. Another form of exploitation is the possibility of involving in the project young researchers and doctoral students thus creating training on the job opportunities.

Robotiker Tecnalia

ROBOTIKER TECNALIA is a non-profit Research Technological centre that masters technologies through RTD projects included in programmes promoted by the local or national government, or by the European Community. These technologies are then transferred to companies by means of contract or co-operation projects, as a way of improving their level of competitiveness. These companies are mainly SMEs, whose R+D capacity is very limited.

In the ASSETS project ROBOTIKER TECNALIA expects to enhance our experience and technology in the implementation of advanced interfaces that deal with multimedia contents. Our exploitation plans for the project will include two aspects:

- Transfer of knowledge to national or international companies via the development of projects, founded by European programmes or national programmes.

- Further research to convert precompetitive knowledge into products/services

In addition, ROBOTIKER TECNALIA will achieve the dissemination of the project results in peer-reviewed journals and specialized web sites, as well as several workshops and conferences.

Users and content providers

EDL Foundation

Search and browse are integral to the success of Europeana, from a user viewpoint. Search must be accurate and relevant. Browse needs to add new dimensions and views upon the material. Some of this is dependent on the quality of the metadata, which is outside the scope of this project but the rest is based on ways of displaying the retrieved information. Missing in Europeana is a decent means of ranking results obtained from searching across millions of cultural items. It makes use of the default system of the search engine and this gives no real capability of ranking other than on keywords. This can lead to some curious results for the user such as all the items in one collection placed above something more relevant e.g. Picasso's houses, where Picasso occurs in every field being placed above Picasso's Guernica. Google bases part of its search ranking algorithm on linking. This is not possible for Europeana at this stage. New ways of ranking the material from cultural heritage institutions are therefore very important to enable the user to

find what is pertinent to them. The huge volume of content also requires inventive ways of viewing it. Additionally the impact of more streamlined ingestion processes will be great for efficiency and efficacy of both content providers and the central Europeana office. For Europeana this project is therefore of paramount importance and all functionally tested, robust and scalable solutions will be deployed within Europeana.

INA

As an archives institute, and member of the European Digital Library Foundation, INA, which has already provided access to 20.000 hours of its public corpus through Europeana, is obviously interested to improve access to this own content, coupled with a significant decrease of indexing time.

At the team level, this project is the opportunity to achieve a real scale experiment and obtain a reliable tool, which will extend our internal research platform on a semi-automatic workflow management of semantic indexing.

CVCE

The CVCE's activities are the result of a pooling of ideas that combines research and development from the EIS/DHSS (European Integration Studies, Digital Humanities and Social Sciences) department and from the KEDL (Knowledge Environments and Digital Libraries) department applied to a well-defined niche market on the European Integration Process. These research activities are all directly linked to the exploitation and development of the European NAvigator (ENA) digital library The ENA exploitation takes benefit ofthe CVCE's technological capabilities cover the whole digital object life cycle (digitisation, creation, processing and preservation) as well as the promotion, distribution, use and re-use of multimedia content on the World Wide Web. The CVCE also serves as a most propitious testing ground for innovation and for the validation of ideas and concepts derived from fundamental research in the field of European integration process. The CVCE's ENA digital library is also representative of a fundamental change in people's attitude towards information and media, the emergence of an intuitive and visual means of communication based on the possibilities offered by multimedia resources, the new roles played by virtual user and contributor communities**.**

ASSETS project results can be directly exploited in the pragmatic context of the ENA digital library life cycle. Part of CVCE building trade, the enhancement of ENA architecture and functionalities follow the end-users requirements and technology evolution.

Deutsche Welle

Deutsche Welle (DW)primarily expects significant improvements of internal work practices and, as a result, more effective use of resources, combined with improved ways of making its content available to its audience. Being a not-for-profit public service broadcaster, DW's exploitation is primarily going to be internal in nature. As such, DW's overriding aim is to provide high quality audio, video and text services to worldwide audiences. This should be done in the most cost-efficient and user-friendly way. The ASSETS project is regarded by DW Management and the department that is dealing with innovative ideas and projects as a very worthwhile undertaking that looks highly promising in achieving just that: provide better services and results, while, at the same time, relieving those in charge of content provision from time-consuming, laborious tasks that yield few tangible benefits.

Accademia Santa Cecilia

ANSC is a non-profit organization and its interest is to exploit possible outcomes of the ASSETS project to enhance its existing applications, create new ones related to its digital heritage and offer new and better opportunities to its users. ANSC is also interested in disseminating the ASSETS project results within the context of similar institutions (such as museums, libraries, other musical institutions, educational etc.) thorough participation to specific events (conferences, international events etc.). Moreover ANSC has an intense activity of in-house international and national events organization and hosting (more than 10 per year) with large and diverse audiences (both specialized and general public) which will serve as a visibility and dissemination driver for the ASSETS project.

Liberis

LIBERIS has a rising interest in the online exploitation of digital content and is undergoing an internal web development phase for making more of their content available. At this phase ASSETS is ideal for making the content of LIBERIS known and accessible from the wide community of Europeana while providing a platform for promoting the marketing ability of their offerings.

Hellenic Archive of Scientific Culture (HASC)

HASC Objectives are the management of collections and archives and the creation of digital forms, with the purpose of collecting, preserving and promoting industrial, technological and scientific heritage and culture. Our primary interest in participating and contributing to ASSETS lies in the fact that we will be able to define, deploy and test state of the art software tools and services, that assist in the management and processing of our digitized archives and that will allow to reach one of our major objectives which is the unrestricted (by age, language, etc.) access to scientific and cultural heritage. HASC will be testing the developed services by utilizing its available content and human resources, being able to provide the necessary feedback to technology providers in order to increase usability and acceptability of the end-system. HASC aims to work towards an Information Society that is inclusive, provides high quality services and promotes quality of life. Cooperation in the Best Practice Network will increase our knowhow and allow for proper knowledge sharing amongst all involved partners.

DIAS

As a content producer DIAS could exploit the ASSETS platform in a number of ways. Content storage and retrieval is at the heart of all operations performed by the group's different departments. Having a platform that is able to offer a consistent and unified way to tag and store digital content that is in alignment with agreed standards would make finding and making available content much easier. Dias could use the platform along side with the current content management systems used for printed and online publishing. The ASSETS platform could also be used in conjunction with current archive systems of both printed and broadcasted media.

The platform could also be used to help achieve greater synergies between DIAS and other media partners. Media on the platform could be combined easier and thus would be ideal in creating community portals or sites that draw on media of different languages and from different providers.

Fundación Albeniz

The Fundación Albéniz aims to explore real opportunities to integrate our content to other European projects with important developments in the domain of digital services and the information society.

Albéniz is also interested in establishing a consistent personal network between institutions and to undertake a specific professional and technical dialogue in order to find common solutions to create interoperability and to explore possible sustainable governance and business models for such relationships.

As a non-profit organisation we pursue the promotion of the cultural heritage combining multicultural and multilingual environments with technological advances and new and sustainable business models.

UNESCO

UNESCO is an intergovernmental UN organization and its interest is to exploit possible outcomes of the ASSETS project to enhance its existing applications, create new ones related to its digital heritage archives and offer new and better opportunities to the UNESCO Member States (193). UNESCO is also interested in disseminating the ASSETS project results within the UNESCO Member States, UN sister organizations and UNESCO partner institutions through participation to specific events (conferences, international events etc.).

ASSETS will provide to UNESCO a unique opportunity to start cataloguing digital multimedia objects. In particular multimedia objects are now starting to be used inside UNESCO in order to document the tangible heritage: monuments, archaeological sites, etc. as well as the intangible heritage: living expressions and the traditions that countless groups and communities worldwide have inherited from their ancestors and transmit to their descendants, in most cases orally.

Fondazione Micheletti

Improvement of the access through the web of the digitised material of the FLM collection, improvement of the usability of the same material especially as far as vintage clips (already digitised) are concerned establishing the necessary connections with the other areas of the digital collection, development and aggregation of materials as well as interoperability of individual database of museums belonging to the network of former winners of the Micheletti Award, improvement of the cooperation in the exploitation of digital resources of the network of former winners of the Micheletti Award. A specific experimental programme will be devoted to the treatment of a sample of cells used for cartoons movies, which are a speciality of the FLM collections being among the oldest of this kind in Europe (if not the oldest , FLM holds all material related to the production of the first animated cartoon movie produced in Europe which was made in Italy in the early ‘40s).

B.2.3. WIDER DEPLOYMENT AND USE

B2.3 1 ANALYSIS OF THE DEMAND AND TARGET USER

ASSETS outcomes will consist of deployed services and recommendations and best practices for promoting the wider adoption and usability of Europeana, the European Digital Library. ASSETS services will have a strong impact at societal level on an enormous number of real users.

Europe as a whole is well recognised to have the largest cultural heritage market in the world. In Italy alone, has it has been estimated by UNESCO, the average 60% of the world's cultural heritage treasures are located. Although such estimates of the European leadership in the field may in the future appear to have been somewhat generous, with for example the African, Arab and Asian 'market shares' being more important than currently seen, there can be little doubt that Europe is well endowed in this regard.

Certainly as regards museums with their 'organised cultural treasures' Europe is very well placed, as indicated in the diagram above, with some 40-50% of the world's museums and a high proportion of the major ones.

Europe's libraries, characterized by strong IT users for many years, archives and other cultural heritage repositories such as castles, gardens and palaces form with museums what is now becoming an increasingly convergent marketplace for technology suppliers.

The picture below is a view of the global market size of the European Cultural Market (Source James Hemsley National Museums of Scotland & VASARI).

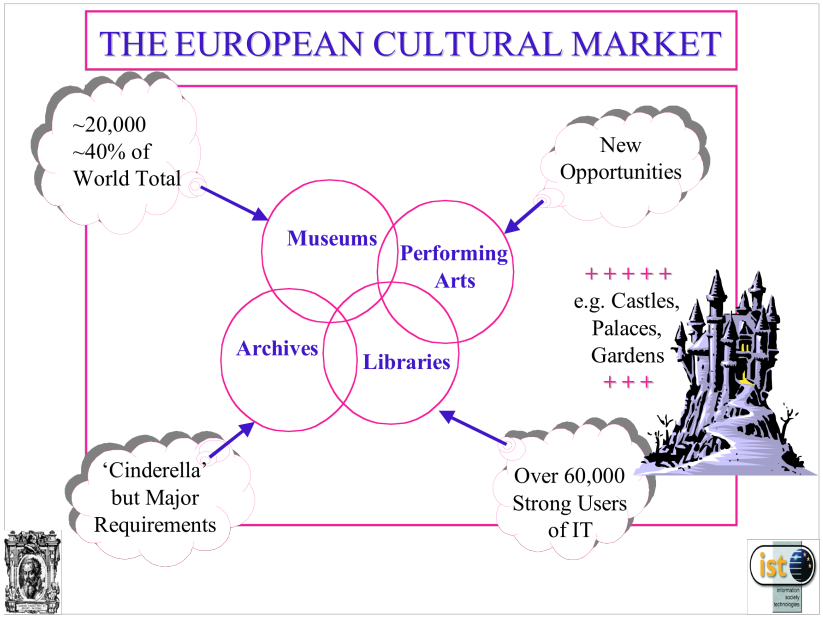

Figure 1 Market sixe of the European Cultural Market

"Economically, cultural industries and cultural heritage are major sectors of activity. For example, according to statistics collected by the LIBECON study (International library statistics: trends and Commentary based on the Libecon data, by D. Fuegi and M.Jennings, June 2004), European libraries employed nearly 337 thousand staff in 2001 and had 138 million registered users. This is almost one third of the entire EU population. This shows the social impact libraries have."

(Source: European Commission, Viviane Reding speech at CENL Conference, "The role of libraries in the information society, Luxembourg Sept.2005).

In order to better adapt the existing technologies to the real needs of large number of users of Europeana service, the ASSETS services will be designed with a user-centred methodology, which will build on a clear identification of the target user groups. ASSETS indeed will affect the very large and diverse range of stakeholders in different ways.

Such user target groups match with the target users defined by EDL.net/Europeana.Net projects and updated by EuropeanaConnect project.

The following table describes the unmet needs of the users, the way ASSETS intends to contribute to fulfilling these needs, and how this category of users will be involved in the

project, as well as the countries covered.

Target User description	Needs	Involvement and Role	Country coverage
Ministries, Universities and Government Institutions	Need of contents/material for studies/analysis to evaluate/plan/implement policies and actions	This tipology of users will be involved in the *aggregation of new content* and in the adoption of the ASSETS services	At first all countries covered by the project (10 EU member states). Country coverage will expand throughout the ASSETS User Community.
Scientific Institutions	Need to access material for researches, studies and education.	Scientific Istitution looks for specific topic Both expert (academic) researchers as well as professional users fit this profile. They will be involvement in the Assessment of the ASSETS services	See above
Professional Users: **Cultural Heritage Institutions** ○ **Museums (including even Small Museums)** ○ **Archives** ○ **Public and Private Libraries (University and Specific Libraries),**	Provide access to their own contents. Access contents for education/information, personal/professional interest. Usage of contents as lifelong learning tool (resource for further education).	These users will be involved in the *assessment and validation* of the ASSETS users and in the *aggregation of new content*	See above
Broadcasters and Audiovisual Institutions **Media (press, communication agencies, exhibitions)**	Access material for production of own contents (publication, media contents, exhibition, etc.)	These user are interest in accessing the content and will be involved in the testing and validation	See above
Private Companies	Reading material and	These Users will be	At first all countries

○ **Regulated Industries (Pharmaceutical, Finance,…)** ○ **Non-Regulated Industries (ICT, Automotive, Textile,…)** ○ **Technology / Service Providers**	research material/files to use for analysis and reports. Access scientific materials for technology benchmark and innovation processes	interested in specific topics such as technical results and documentation, specific services. They will be involved in the assessment of the services.	covered by the project (10 EU member states). Country coverage will expand throughout the ASSETS User Community.
Content Providers for Digital Media and New Media Companies	Need to upload/share contents, enhancing object metadata and interoperability features	These user represent the category of content providers and will be involved in the content provision, testing and validation.	Represented by consortium partner and Other providers that will be aggregate through the ASSETS User Community. All member states and other non European countries.
Curators, librarians **Professionals involved with Cultural, Scientific and Artistic activities (researchers, professors, experts,)**	Need of tools to enrich metadata, backend function. Need to share and integrate contents and services. Access material for studies, education, learning and training, analysis.	Interest in the ASSETS services and will be involved in the design, validation and testing	See above
Citizens and Tourists **Digital artists** **School student** **General Users**	Need to access reading material and elements to use for homework and reports.	These user can be considered general users. They are familiar with basic functionalities, has no specific domain knowledge. They will be involved in the *Assessment* of the services	At first all countries covered by the project (10 EU member states). Country coverage will expand throughout the ASSETS User Community.

B2.3.2 NETWORKING

Networking is a fundamental aspect for the ASSETS project. In order to guarantee a stronger impact to the ASSETS services is of paramount importance to involve in the ASSETS networks all the relevant stakeholders in the Digital Library domain.

This paragraph presents the networking capacity of the ASSETS consortium and the ASSETS Community as the main outcome of Networking activities.

NETWORKING CAPACITY OF THE CONSORTIUM

The ASSETS consortium is composed by 24 Partners covering 10 European Country and Japan that are dealing with the digital library domain, their contact base will be the first channel for ASSETS networking activities.

In this perspective the networking capacity provided by the partners is the following:

Engineering: BRICKS Community (hundreds of organisations from the DL domain), CASPAR User Community (hundreds of organisations dealing with digital content from cultural artistic and scientific domain), PHAROS Federation Members (20 organisation and content provider from the audiovisual domain). Engineering is also members of the NEM and NESSI technology platform.

ATC: ATC has a wide range of customers in the sector of media being ideal for networking the ASSETS initiative. Just mentioning the national News Agencies of Greece, Portugal (also covering parts of Latin America), Russia and Poland. ATC has a critical mass of key organisations for promoting the usage of ASSETS in the EU and beyond.

AIT: Planets network (200 organisations specifically interested in digital preservation practices, plus the vendor subgroup of ca. 15 firms interested in providing long-term archiving software solutions); numerous national libraries (48) and archives (5) through Planets and TELplus, and EuropeanaConnect.

CNR: CNR plays an active role in many national and international activities concerning the cultural heritage sector. At the national level, the responsible of the National Italian Project on Beni Culturali of the Information and Telecommunication Department of CNR, Roberto Scopigno, is a researcher at ISTI. This will facilitate the transfer at the Italian level of the results achieved by ASSETS. At the international level, both ISTI laboratories involved in ASSETS are part of a wide network of projects and initiatives, through which they will pursue the further deployment of the ASSETS results. Amongst these initiatives, the DL.org Coordination Action on Digital Library Interoperability, Best Practices, and Modelling Foundations, which the NMIS laboratory of ISTI coordinates, is perhaps the most important one. DL.org represents an ideal medium of dissemination of ASSETS, since it collects experts in the digital library fields, who are part of wide networks.

EDL Foundation: EDL Foundation is made up of the major pan European Associations for libraries, museums, archives and audio visual collections. Its reach through these associations is to majority of the stakeholders in cultural heritage across Europe, numbering thousands of institutions. In addition Europeana itself gives access to users world wide. It has a newsletter with a reach of nearly 100,000 users and this can be used to promote the activities of ASSETS to the various communities that could make use of the developed functionalities. The EDL Foundation is asked to participate at many conferences and seminars, this also represents opportunities for networking and disseminating information. The EDL

Foundation is involved in many projects and has therefore very strong internal networking capacities between the project partners[2]. Moreover Europeana v1.0. has a series of clustering activities, physical meetings and virtual collaborative spaces, to ensure that work is not duplicate where possible. These clusters will continue beyond the life of the project Europeana v1.0 as they have proved very useful to the delegates serving as both physical and virtual meeting points for exchange of knowledge and information.

BMAT: BMAT has very close relationships with Creative Commons. BMAT already powers two of the main Creative commons repositories, Freesound (www.freesound.org), world largest repository and community around Sound effects , as well as Jamendo (www.jamendo.com), the largest and most successful music site. BMAT has good relationship with a number of institutions: Biblioteca Nacional de Catalunya, Liceu de Barcelona, and CCTV (national Catalan broadcaster).

Robotiker: Member of NEM (Networked and Electronic Media) European Technology Platform and its corresponding Spanish mirror, the eNEM Technology Platform. Member of the Future Internet European initiative and its mirror, es.INTERNET, the Spanish Platform for the Future Internet. Technological partner of VOCENTO Mediatrader, leading company in digital contents distribution and member of VOCENTO group, one of the leading multimedia groups in Spain.

University of Paris-South (UPS): The USP-LRI plays an active role in many national and international activities many of which concern the cultural heritage sector. At the national level, the database group has collaborated in several national projects and in particular with the multimedia laboratory of the Louvre museum. At the European level, the database group has participated in two projects related to digital libraries: the Delos Network of Excellence on Digital Libraries, and the project "Self eLearning Networks", and has strong links with several European institutes, most notably with the ICS-FORTH Institute in Greece, well known for its involvement in cultural activities. At the international level, the database group has a long standing collaboration with Hokkaido University in Japan, in the context of several projects, including a project concerning the cultural heritage of Kyoto; it has also initiated (since 2003) the annual Franco-Japanese workshop ISIP (Information Search, Integration and Personalization).

SICS: CHORUS clusters (hundreds of organisations from the audiovisual search engine domain); participating organiser of the CLEF evaluation cycle for search engine evaluation, with over a hundred academic partners all over the world.

INA PRESTOPRIME (hundreds of user in the audiovisual domain dealing with audiovisual assets preservation and exploitation), CASPAR User Community (hundreds of organisations dealing with digital content from cultural artistic and scientific domain), EUROPEANA (tens of organisations dealing with distribution of assets on the Web).

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[2] *Europeanav1.0 – will launch Europeana as an operational service, EuropeanaConnect – technology components for Europeana, EuropeanaLocal – local + regional CH-institutions will make their content available in Europeana, Athena – aggregator (no portal) that helps museums bringing their content to Europeana. EFG – The European Film Gateway, APEnet – Archival Portal of Europe, PrestoPrime – will address long-term preservation of and access to digital audio-visual content, BHL-Europe – common standards and interfaces for biodiversity resources. EuropeanaTravel - digitise content on the theme of travel and tourism for use in Europeana, EUscreen – achieving an interoperable digitised collection of television materials for Europeana, Judeica – Jewish Urban Digital European Integrated Cultural Archive , ARROW – Accessible Registries of Rights Information and Orphan Works towards Europeana, MIMO – Musical Instrument Museums Online*

UAM: multimedia processing and semantic multimedia communities (via attendance to and presentations at the relevant conferences, e.g., IEEE ICIP, ACM Multimedia, IEEE ICME, WIAMIS, SAMT), MPEG standarization group (via the use of MPEG standards and reporting results and comments to the MPEG standardization -may be proposing amendments-), humanistic students and academia at UAM (UAM, being a multidisciplinary university, is a particularly interesting fora for dissemination of ASSETS results).

CERT: CERT/ITI has close relationships with numerous large digital libraries in Greece, such as the National Conservatory of Thessaloniki (http://www.odiokrat.gr/), which hosts a rich collection of books, video and sound recordings, the Foundation of the Hellenic World (http://www.fhw.gr/fhw/), the Thessaloniki Film Festival (http://www.filmfestival.gr/), the Teloglion Foundation of Art (http://www.tf.auth.gr/teloglion/default.aspx?page=448) and the Theoharakis painting collection. Also, CERT/ITI is a core member of CHORUS and has contacts with all the key European players in the audiovisual search domain. Finally, CERT/ITI is closely collaborating with the coordinators (EMPOLIS GmbH) of the THESEUS project (http://www.flagsol.com/theseus_project.htm) since they both participate in the Search engines FP6 project VICTORY (http://www.victory-eu.org).

CVCE: CVCE: DL.org member (Coordination Action following the DELOS Network of Excellence), Multimatch contents provider community member (13 organisations dealing with large, heterogeneous and multimedia contents), Europeana contributor, W3C member (major stakeholders of the Web).

DW: Deutsche Welle is a member of the European Broadcasting Union (EBU), the umbrella organisation of Europe's public service broadcasters. It is also an associated member of the ARD (network of public service broadcasters in Germany) as well as an active participant in and contributor to a number of other organisations and associations in the broadcasting and telecommunications sector. This includes, among others, the Asia-Pacific Broadcasting Union (ABU), the International Telecommunications Union (ITU), the Broadcasting Mobile Convergence Forum (BMCO Forum) and many more. DW also holds close contacts to other broadcasters and media companies, especially international broadcasters such as the BBC World Service, Radio France International and many more. DW will use these contacts and channels to disseminate ASSETS project results and achievements as suitable.

ANSC : The Accademia Nazionale di Santa Cecilia has many contacts with cultural heritage and musical/cultural actors such as libraries, museums, musical institutions, educational organizations etc. These spam from international circuits (e.g. IALM - International Association of Music Libraries, Archives and Documentation Centres - CIMCIM - International Committee of Musical Instrument Museums and Collections -) to national ones, e.g. AIB (Associazione italiana biblioteche). Additionally ANSC is networked with all music and ethnomusicological departments from major national universities in Italy as well as other departments and research centres. Frequent contacts are maintained with all such actors within ANSC's daily activities. Additionally ANSC organises, hosts and has visibility within- many international and national events (usually more than 10 per year organised) with diverse scopes (from full-featured international conferences to round tables, workshops, public lessons etc.) and all audience profiles (from experts to general public, schools, universities etc.): these activities will serve as dissemination and informational means for ASSETS. Additionally ANSC can use its expertise and public recall for specifically-organised events within the project activities.

Liberis: Multinational group of publishing companies, member of FIPP and MPA organisations, major provider of digital content of wide variety (Technology, Automobiles, Entertainment, Fashion) with hundreds of viewers.

The Hellenic Archive of Scientific Culture: HASC members are active in the IIC (International Institute for Conservation of Historic and Artistic Works) and in the TICCIH (International Committee for the Conservation of the Industrial Heritage), and serve as consultants for several institutions and museums in Greece. HASC is currently in the process of becoming official Europeana contributor. HASC IT members are also participants of the "User Centric Media Cluster", a cluster of projects of the Information Society and Media Directorate General of the European Commission. In addition they are also active in CHORUS, a European Coordination Action which aims at creating the conditions of mutual information and cross fertilization between the European projects dealing with Multimedia Content Search Engines. Members of the Graphics designers Association of Greece and of the Technical Chamber of Greece.

DIAS Publishing Public: Members of Mesh Consortium (http://www.mesh-ip.eu/), Members of Gredia Consortium (http://www.mesh.eu/), Ambassador to Cyprus of the International Academy of Television Arts & Sciences, Members of the Cyprus Union of Journalists, Members of the International network of a number of large publication titles (OK, Timeout, Harpers Bazaar, Madame Figaro).

Fundación Albeniz: Since the very beginning the Albéniz Foundation has been linked with the most important cultural institutions like museums, libraries and concert-halls in Spain, sharing its knowledge and experience, and participating in different events to promote and preserve the music. Through HARMOS and VARIAZIONI (eContentplus Programme), CONCERTANDO (Culture Programme) and i-MAESTRO (IST Programme) projects, as well as through the Encounter of Music and Academy (annually held by FIA) we have been networked with many prestigious musical institutions like: Royal College and Royal Academy of London, Staatliche Musikhochschule Stuttgart, Sibelius Academy (Finland), Conservatoire National Supérieur de Musique et de Danse de Paris, Accademia Nazionale di Santa Cecilia (Italy), Liszt Ferenc Academy of Budapest, Academy of Performing Arts of Prague, Escola Superior de Musica e das Artes do Espectáculo-Instituto Politécnico do Porto, Lietuvos Muzikos Akademija (Lithuania), Escola Superior de Música de Catalunya, Koninklijk Conservatorium Brussel, Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen, exchanging and creating an intense and artistic life which comprises more than three hundred concerts per year as well as the organization of exhibitions on themes, personalities and relevant musical events in this matter.

Furthermore, and as a contribution to the knowledge of Spanish music, the Foundation initiated through the Albéniz Archive and Documentation Department a line of research with the purpose of reconstructing the recent music history within the intellectual context of the time. Our own library contains more than 10.000 hours of audiovisual content and around 100.000 entries comprising scores, pictures, letters, among others.

CIAOTECH: CIAOETCH has well established contacts (as client or collaborators) with more than 2.000 industries in the whole Europe. Through the private initiatives (EUGA action, the largest private drive innovation action in Europe) and the European funded support actions, CIAOTECH is able to reach (with specific communication channels) more than 20.000 organisations in the whole Europe, among which several organisations CIAOTECH in the industry community. Moreover, through its network of clients and

collaboration, CIAOTECH has established contacts with several research institutions in 13 European Countries (where the company is present) and beyond, that will be used for networking and dissemination actions.

UNESCO: UNESCO has unique networking capabilities: 193 countries are member of UNESCO. In addition UNESCO works in close partnership with the International Society for Photogrammetry and Remote Sensing (world leader in digital cultural heritage with more than 200 institutions/organizations being members); the International Council of Museum (ICOM (ICOM is the international organisation of museums and museum professionals which is committed to the conservation, continuation and communication to society of the world's natural and cultural heritage, present and future, tangible and intangible).

Fondazione Micheletti: FLM counts specifically on the networks deriving from the management (in the context of the European Museum of the Year Award Scheme –European Museum Forum) of the well established Micheletti Prize for industrial, scientific and technical innovative museums , come of which have later got also further prestigious recognitions like the Descartes Prize to La Città della Scienza)

This the list of the museums involved. This activity will be coordinated by Prof. Massimo Negri and dr. Wim van der Weiden

B2.3.3 Development and engagement of The ASSETS Communities

The networking activities will result in the creation and start-up of two Communities, one a large user community in order to build the consensus around the ASSETS initiative and the future ASSETS services, and one dedicated to the beta-tester, in order to improve functional testing during the development and the maintenance phases.

ASSETS USER Community

This community will consist of the main Europeana institutions and actors, public as well private.

The ASSETS Community represents a powerful tool with the goal of attracting specific users of the proposed services.

The motivation that leads the building up of the ASSETS community is twofold: from one hand the community members will be involved in the design of the ASSETS services and in their validation therefore the outcomes will be: (a) the analysis and collection of user requirements, exploring the potential and needs of users, and gaining an understanding of the basic requirements of the target community, and (b) the involvement of real users in the testing and validation of the services. From the other hand the community members will be the early adopters of the services and the first content providers; it is expected that the ASSETS Community will be launched starting from other projects in the domain and from the relevant already existing communities.

The ASSETS consortium will delegate an established network of hundreds of research institutions and individuals such as students and researchers who belongs to the DL domain.

The ASSETS community will be constantly utilised in terms of:

- Defining of user requirements
- Raising interest and dissemination project solutions
- Validating ASSETS results and services

- Representing the first content providers and early adopters of the ASSETS services
- Participation in ASSETS events
- Networking within other projects within the DL sector and increasing public awareness
- Supporting the future self sustainability of project results.
- Attracting relevant stakeholders
- Aggregate their content into Eiuropeana

This network of organisations and experts provides a critical mass of users that offers ASSETS with valuable feedback regarding test results and concurrences. The Community will present the consortium with an opportunity to explore the potential of the user base, and personalise services to fit specific user needs. Target groups will be systematically recruited and invited to join the Community free of charge with an easy to use online membership registration form. Members are encouraged to interactively contribute to the project by communicating with the consortium through the functionality offered by the ASSETS Community Web Site, attending and advertising current relevant events, and generally keeping up to date with project initiatives and developments. The progress of the Community not only generates interest in project results, but also provides insight regarding the future self-sustainability of the project. The advantages of the Community will be mutual and reciprocal, as Community members have a direct and clear impact on the development of ASSETS services.

The success of the Community and consequently the aggregation of a critical mass around the project will transform a simple project into a compelling solution ready to be used in the real environment.

SECTION B3. IMPLEMENTATION

B3.1. CONSORTIUM AND KEY PERSONNEL

The ASSETS consortium brings together key industrial companies, top research centres and academic institutes, Cultural organisations, representing different disciplines and having complementary skills. Together they cover the entire aspects of the project and many segments of its value chain.

The ASSETS consortium is a very well balanced one, offering complementary skills, and is composed of **24** partners, belonging to **10** different European countries and one partner from **Japan**.

The representation of end-users point of view, is also essential for such a project. This needs to be faced at a European level.

The ASSETS consortium has the following characteristics:

— A balanced consortium between research & academic excellence, large industrial software/hardware players, and cultural organisations representing the users' point of view.

— The ASSETS consortium includes the key actors of Europeana that will guarantee the full interoperability of the ASSETS services with the Europeana platform

— The consortium covers the required skills and expertise needed to deliver the work, with minimal gaps or overlaps (see detailed partner descriptions).

— The ASSETS consortium Represents ten European countries (Italy, Greece, Spain, Netherland, Austria, France, Germany, Luxembourg, Sweden, Cyprus) and one from Japan, creating a valuable mixture of cultural perspectives as well as critical mass to maximise project impact.

The consortium has been built following four guiding principles. First, gathering industrial and academic partners that already had excellent **ongoing and complementary activities** in Digital Library and audiovisual search engine, these range from national applied research projects to products and service development in industry. Second, to gather partners to cover all **competencies needed to develop and evaluate** impacts of DL services such as multimedia indexing, audiovisual search, semantic browsing, advanced interfaces for multimedia content and digital preservation services. Third, the industrial partners have been gathered to have as many as possible **actors in potential exploitation**. Fourth, Content Provider and User partners to guarantee **the user perspective and the usability of the services**. Those partners will be the first validators of the ASSETS services.

In more details the different partner typologies are:

Industries: large companies that bring into ASSETS their consolidated technological know-how and business experience. These companies will play a fundamental role both conveying industrial perspective and developing exploitation opportunity of the ASSETS services, and they are: **Engineering**: The largest Italian player in System Integration and an active player in the Digital Library and Audiovisual Search engine domain. **Ciaotech**: CIAOTECH S.r.l. (PNO Group B.V.) is the leading company in Europe specialised in technology transfer, grants and innovation activities.

SMEs: Niche companies having a technical and exploitation role for specific technologies and targeted market: Athens Technology Centre, an Information Technology Company offering business solutions targeting specific sectors such as the Media, Banking, Retail and Public sector; **BMAT**, a highly innovative SME in the field of digital music products and services, **Exalead** a global software provider in the enterprise and Web search markets**.**

Accademic Institutes and Research centres: The most prestigious European Technical Universities and Research centres that will offer their excellence in the ASSETS relevant technical areas**.**

These organisation are: ***Austria Research Centre (ARC)***, the Austria's leading research and technology establishment and a key player on the European research landscape, involved also in Europeana; ***CNR-ISTI*** The Institute of Information Science and Technologies (ISTI) of the Italian National Research Council; ***ROBOTIKER Tecnalia*** a Technology Centre specialising in Information and Communication Technologies (ICTs) and in Product Development with a wide experience in the design and implementation of graphical user interfaces; the ***Swedish Institute of Computer Science, SICS***, a non-profit research organisation focusing its research on distributed and networked interactive real-time systems and applications -- spanning from infrastructural issues to software methodologies to human-computer interaction; the ***Universidad Autómona de Madrid (UAM)*** is the third largest university in the central region of Spain, ranked as one of the top Spanish University in research, who participate in ASSETS through its *Video Processing and Understanding Lab* (VPULab), a research group on Digital Visual Analysis, Processing, Understanding and Communications; ***The Informatics and Telematics Institute*** (ITI) of the Greek Secretariat of Research and Technology ***(CERT/ITI***) one of the leading Institutions of Greece in the fields of Informatics, Telematics and Telecommunications with great experience in the creation of novel algorithms

for audio-visual content search and retrieval (image, video, 3D), the automatic extraction of metadata and semantics for enriching the content and enhancing the retrieval process and the creation of web services; ***University of Paris South*** IX, one of the top academic research laboratories in Computer Science in France, both in terms of size and scientific excellence.

Content Providers/Users: Cultural Organisations dealing with multimedia content active in the Digital Library Domain and organisation representing users. These Organisation are: **EDL Foundation** The Stichting European Digital Library is a cross domain foundation, under Dutch law, set up for the purpose of fostering collaboration between Museums, Archives, Libraries and Audiovisual Collections in Europe; **INA** (Institut National de l'Audiovisuel), in charge of French radio and television archives and a partner of broadcasters and producers. (The INA activities in ASSETS have two main focuses: a) provision of their "OGP" Corpus, that is already in Europeana, b) development of Multimedia Manual annotation tool); The **CVCE** (Virtual Resource Centre for Knowledge about Europe), the only institution of its kind whose main aim is the creation, diffusion and sharing of information on the European integration process using ICT (their content is already in Europeana); **Deutsche Welle** (DW), Germany's international public broadcaster whose core competence lies in the production of high quality content and its distribution; The **Accademia Nazionale** di **Santa Cecilia**, one of the most ancient musical institutions in the world; **Liberis Publications** a Greek company with the goal of operation in the sector of publications and presswork ; The **Hellenic Archive of Scientific Culture**, a non-profit organization with the purpose of collecting, preserving and promoting industrial, technological and scientific heritage and culture; DIAS Publishing, the Cyprus's largest and fastest growing print and electronic media company; **Fundación Albéniz**, a private foundation for cultural promotion of philanthropic nature acknowledged; UNESCO is a specialized UN agency that is well known mainly for its Cultural achievements and currently it has now 193 Member States and 6 Associate Members; **Fondazione Micheletti** dealing with an intensive work of digitisation and organization of digital material in the field of contemporary history and industrial history; the **MEME MEDIA LAB OF THE HOKKAIDO UNIVERSITY** focusing on research into fundamental technology for international distribution and reuse of multimedia knowledge'**.**

B3.1.1 ENGINEERING INGEGNERIA INFORMATICA

Founded in 1980, Engineering Ingegneria Informatica SpA (http://www.eng.it) is the leader of the Engineering Group consisting of 12 firms specialised in different IT services, but sharing the same cultural identity and mission. Financed by private capital, the Engineering Group operates in more than 20 locations in Italy, and in 2006 achieved consolidated revenues of about 450M€ with almost 4800 employees, thus further consolidating the Group's position as one of largest private enterprise in the system and business integration market sector in Italy. The main areas of interest of the R&D Department are concerned with Service-Based Software Engineering, Multi-Agents System, Software Architecture, Knowledge Management, and Human-Computer Interaction. This policy - based on strict synergies between the operational and the R&D divisions - has proven essential to generate a wide number of opportunities and contracts with large organisations like ENEL, Vodafone, Monte dei Paschi di Siena, Ministero dei Beni Culturali, and many others. In particular, the commercial successes achieved have progressively increased the company's trust and confidence in the importance of investing in research and innovation activities, allocating an annual budget of around 5% of the global turnover and a global foreseen investment in the period 2003-2005 of almost 30

Million Euros. Since 1987, current and past research initiatives have been accomplished at European level. The long tradition in participating in research projects, combined with its intimate industrial nature, allows the Engineering R&D Department to be the coordinator of several of the abovementioned research projects both at the national and European level. Engineering is one of the leading partner of the NESSI Technology Platform on the Service and Software and the NEM Technology Platform on Networked and Electronic Media.

Main Competences relevant to the project

The R&D Department is concerned with Service-Based Software Engineering, Multi-Agents System, Software Architectures, Multimodal Interfaces, Digital Preservation services.

ENG has leaded among many others the following projects relevant to ASSETS: BRICKS (Building resources for integrated cultural knowledge services), PHAROS project (Platform for searcH of Audiovisual Resources across Online Spaces), CHANCE (Cultural Heritage Access through Networked serviCes for Edutainment market), TNT (Trusted Network for online Trading). Moreover it is the Architecture responsible for the CASPAR project (Cultural, Artistic and Scientific Knowledge for Preservation Access and Retrieval).

Role in ASSETS

Engineering will play the role of Project coordinator. It will also leads WP1.0 Management and coordination, and Task 2.0.4 ASSETS Platform and service design. Moreover, ENG is involved in WP2.0 technical coordination and interoperability, WP2.4 ASSETS service integration and testing and WP1.1 Networking dissemination and exploitation. Engineering will provide the theoretical foundation for design and developing the ASSETS services.

Key personnel

Maria Silvia Boi. Her skills lie in managing European and National projects mainly in digital content and the digital media sector. Specialised expertise and consultancy support to: Project quality assurance monitoring and management, Project organisation, EU programme expertise, Web Publishing & market planning. She delivers high-level Communications strategies on various projects dealing with Digital libraries, digital content preservation, new media & multimodal interaction and audiovisual search.

Dr. Massimo Bertoncini got his University Degree in Management Engineering in April 1992 at University of Palermo. He obtained his Ph.D. in Production Engineering on January 1995 at the University of Palermo. From October 1994 until April 2002 he worked in the IT European Projects Department of the Italian Customs Agency. Since May 2001, he has been working in the R&D Laboratory of Engineering S.p.A, where he was involved in several project as coordinator of several European projects.

Luigi Briguglio - received an Electronic Engineering degree in 1996. He has long experience in industrial system automation, specially in distributed acquisition systems and supervision software, and analysis, specification and development of software architectures within a quality controlled process. In 2001 he joined Engineering covering several different operational roles including requirement and specification analysis, analysis and design of service-based and component-based architectures, analysis of development methodologies.

B3.1.2 Athens Technology Center S.A (ATC)

Athens Technology Center S.A. (http://www.atc.gr); ATC

Founded in 1987, ATC is an Information Technology Company offering business solutions targeting specific sectors such as the Media, Banking, Retail and Public sector. The company also provides state-of-the-art horizontal solutions focusing on Content Management and Web Applications, Human Capital Resource Management as well as Mobile Applications. The activities of the Company span among several countries in EU, Eastern Europe and CIS countries, as well as the Balkans. ATC is active in R&D activities since 1990 and continuously invests in new technologies through its participation in EU and National R&D and technology transfer projects. Research Activities co-ordinated by the Consulting Unit span across all Production Units of the Company, focusing on enriching existing technology assets in order to improve the product/services mix offered and the introduction of new technologies in the whole Company. ATC has undertaken project and technical co-ordination as well as technical development in numerous projects in the areas of software and services, grid technologies, Intelligent Content and Digital libraries. Technologies currently explored include: GRID technologies; Trust, Security and Dependability; Service Oriented Architectures; Co-operative Platforms, Mobile solutions; Digital libraries and Intelligent content related technologies including Search technologies and Mobile extensions for Networked Media.

Main Competences relevant to the project:

ATC has long experience in working with news management systems and has built the applications currently in use by the national News Agencies of Greece (ANA-MPA) and Portugal (LUSA). ATC is currently implementing the news management systems of the Russian RIA NOVOSTI news agency and the Polish News Agency PAP. Particularly the application for the Athens News Agency was especially designed and installed for managing all news information during the Athens 2004 Olympic Games, along with a complete video archive solution which was designed for the Athens Olympic Broadcasting (AOB) Corporation integrating Virage components, for who ATC was a key partner.

ATC was also the Technical Director and Integrator in the MESH Integrated Project delivering a platform with similar functionalities to the ones envisaged in ASSETS. This experience will be valuable in guiding the integration activities in ASSETS.

Role in the project:

ATC will be responsible for the design, integration and deployment of the ASSETS platform, which is clearly in line with the company commercial interests and in-house developed products.

Key personnel:

Dr Nikos Sarris is a Senior IT Consultant in the ATC Consulting Department. He has received his PhD from the Aristotle University of Thessaloniki and his Master of Engineering degree in Computer Systems Engineering from the University of Manchester Institute of Science and Technology (UMIST). He has worked as a Researcher for the Aristotle University of Thessaloniki. His research interests include 3D model-based image and video processing, multimedia coding and analysis, and semantic-based knowledge extraction.

Dr. Vasilios Tountopoulos is working as an IT consultant in the ATC Consulting Department. He received the diploma in Electrical and Computer Engineering from the University of Patras in 2000, and the PhD degree in Electrical and Computer Engineering from the National Technical University of Athens (NTUA) in 2005. Previously, he was a research associate, in the Telecommunications Systems and Computer Networks Laboratories of the ICCS/NTUA.

B3.1.3 Austrian Institute of Technology (AIT)

Austrian Institute of technoilogy (AIT) is Austria's leading research and technology establishment and a key player on the European research landscape where the exchange of knowledge with universities and companies is central to the successful development of industry. AITconducts research to underpin the competitiveness of Austria in an international context. A total of around 1.200 employees located at 14 sites across Austria, with the main facilities in Seibersdorf, Lower Austria, and in Vienna, act as technology providers and innovation partners to society, industry and commerce. The institutionalised technology transfer services provided by AITare critical to the successful transfer of know-how and do-how, and they also take account of the interests of SMEs. AITrealises future-shaping solutions through its role as an interface between research-based and commercial companies.

A further indication of AIT's international competitiveness can be seen in the Group's intensive involvement in the research and technology programmes of the European Commission, a context in which Austrian Research Centers cooperates with other European research institutes and companies to establish new partnerships. This is an important means of exchanging application-oriented scientific findings with other players. The AIT Department of Safety and Security is presently involved in numerous EU-funded projects (PLANETS, COOPERS, TELplus, EuropeanaConnect), including as the coordinator of the S@NY (Sensors Anywhere), SECOQC (Development of a Global Network for Secure Communication based on Quantum Cryptography) and SENSE (Smart Embedded Network of Sensing Entities) projects.

Relevant competences to the project

The AIT Digital Memory Engineering group brings several years of experience in the area of Digital Libraries, in particular through work with both the TEL and Europeana portals. In addition, the group provides professional Java software development competence in the areas of semantic web technologies, web applications (including JSP, JSF, and Adobe Flex), web services (in particular RESTful web services), and notification service.

Role in ASSETS

AIT will play the role of technical director and leader of Workpackage 2.0, and will be a key software development partner within the project and will also act as one of the technical liaisons between ASSETS and Europeana, particularly in the areas of service interfaces and the R&D Sandbox.

Key Personnel

Ross King received his Ph.D. in physics from Stanford University, where his work concentrated on real-time data acquisition and analysis of large data samples in experimental particle physics. After moving to Vienna in 1995, he migrated to the IT sector, and joined the AIT in 2002 to help found the Research Studio Digital Memory Engineering working group, which he presently leads. His research interests are primarily concerned with multimedia information management and digital preservation.

B3.1.4 Exalead

Founded in 2000 by search engine pioneers, Exalead is a global software provider in the enterprise and Web search markets. Exalead's worldwide client base includes leading companies such as Price Waterhouse Cooper, Michelin, American Greetings and Sanofi Pasteur, and more than 100 million unique users a month use Exalead's technology for search. Today, Exalead is reshaping the digital content landscape with a

platform that uses advanced semantic technologies to bring structure, meaning and accessibility to previously unused or under-utilized data in the disparate, heterogeneous enterprise information cloud. The system collects data from virtually any source, in any format, and transforms it into structured, pervasive, contextualized building blocks of business information that can be directly searched and queried, or used as the foundation for a new breed of lean, innovative information access applications. Exalead's technology provides users with a single access point to information, regardless of format or location. Its patented Search by Serendipity® navigation system adapts to user habits for a less frustrating and uniquely satisfying search experience. This revolutionary technology and others make Exalead one of the most important companies to watch in the fields of digital content search, discovery, management, security, and storage. Exalead devotes substantial efforts in supporting research and innovation for helping customers succeed and to be in the forefront of emerging technology developments. Therefore, Exalead is engaged in European and French research projects with academic partners and some of the industry's top research organizations to forge new ground in the analysis, classification and usage of digital multimedia content, ranging from text, speech, and music to images and video.

Relevant competence to the project

- Expertise in crawl, indexing, processing and search of multimedia content (text, images, video, sounds, pdf, doc, custom data, etc.).

- Expertise in third party business modules and components integration to our search platform for processing multimedia content (SOA architecture).

- Active collaboration with major European companies in EU and French funded projects in the multimedia management and retrieval systems (Quaero program, WebContent project, etc.).

Role in Assets

Exalead will play a role of a consultant partner where they can bring their expertise in search and multimedia to advise, test and validate the open source approach of the platform. Exalead could help for example in the resolution of scalability issues, ranking and relevance advising. These issues are currently addressed by Exalead teams with their customers**.**

Key personnel

Gregory GREFENSTETTE, PhD University of Pittsburgh (1993)* is Chief Science Officer at Exalead. He has been a fixture of the information retrieval and natural language processing fields since 1988. He was previously Principal Research Scientist at Clairvoyance Corp (Pittsburgh; 2001-2003) and Principal Scientist at the Xerox Research Centre Europe (Grenoble; 1993-2001). Key skills: Information extraction and retrieval, Natural Language Processing (including Arabic and Chinese), Computational Linguistics, Language modelling and identification (including Languages with highly complex inflection), Machine translation, Multimodality, Semantics. Audio processing (indexing, detecting speech and emotion in noise).

Amar-Djalil MEZAOUR, PhD of University of Paris Sud (Paris XI),* (2005), he is R&D project manager at Exalead. He was previously Researcher Assistant at LRI in IASI team (Artificial Intelligence team). He also worked as Teacher Assistant in computer science department of Paris Sud University and EPITA School. Within the research and innovation group of Exalead, he worked on integrating advanced semantic technologies for information extraction in Exalead software. *Key skills:*Information extraction and

retrieval, machine translation, multimedia content management, java technologies, web crawling, web language, page-rank, ontology and semantic frameworks (RDF, SKOS, OWL).

B3.1.5 Consiglio Nazionale delle Ricerche (CNR)

The Institute of Information Science and Technologies (ISTI) of the Italian National Research Council (CNR), is organized in 16 laboratories and is committed to produce scientific excellence and to play an active role in technology transfer. The team participating to the ASSETS proposal belongs to the digital library group of the Networked Multimedia Information System (NMIS) Laboratory. At present, NMIS consists of 48 researchers and technicians conducting research and development activities on algorithms, techniques and methods for information modelling, access and handling, as well as new architectures and system services (P2P and Grid-based) supporting large networked multimedia information systems.

The ISTI-CNR team has been involved in many European funded projects on digital libraries namely in the following FP5 projects: DELOS NoE (No. 507618, scientific co-ordinator), ECHO (No. 11994, co-ordinator), SCHOLNET (No. 20664), scientific co-ordinator, CYCLADES (No. 25456, scientific co-ordinator), CLEF (No. 31002, co-ordinator), D-Lib Competence Center (No. 32587, co-ordinator) and Open Archives Forum (IST-2001-320015); and FP6 projects: DELOS II NoE (No. 507618, scientific co-ordinator), DILIGENT (No. 004260, scientific co-ordinator), MultiMatch (No. 033104 , co-ordinator), BRICKS (No. 507457), BELIEF (No. 026500), CASPAR (No. 033572), DRIVER (No. 034047), and SAPIR (No. 45128).

Main Competences relevant to ASSETS

Two laboratories from CNR ISTI will be involved in the ASSETS project:

- The Networked Multimedia Information Systems (NMIS) laboratory will contribute to the main components of the Ingestion service, based on its competences in machine learning and conceptual modelling, and to the Similarity Search services, based on its competencies on content-based multimedia information retrieval;
- The High Performance Computing (HPC) laboratory will contribute to the scalable indexing and metadata-based search, based on its competences on web search engines, query log analysis and parallel computing.

Role in the project

CNR will play the role of User co-director (together will EDLF) and will be responsible for WP2.1 Ingestion, WP2.2 Scalable indexing and search and T2.0.3 Interoperability with Europeana infrastructure and Service deployment to R&D Sandbox, T2.0.5 ASSETS API specifications, T2.5.4 Service porting, deployment and experimentation to Europeana Labs.

Key personnel

Carlo Meghini In more than two decades of work as researcher at the NMIS lab of ISTI, he has published more than 50 papers in international conferences and journals in the area of information systems. Since the beginning of the 90's, he is doing research on multimedia information retrieval, contributing the Multimedia Information Retrieval Model entry to the Encyclopaedia of Database Systems. In the last 10 years, he focused on Digital Libraries, publishing in major conferences and journals both on practical and theoretical aspects of Digital Libraries. He is heavily involved in the making of Europeana.

Fabrizio Sebastiani is a senior researcher at the NMIS lab of ISTI. His research interests are at the crossroads of information retrieval, machine learning, and computational linguistics, with special emphasis on opinion mining; on these subjects he has published several articles on international journals and conference proceedings. He is the Editor-in-Chief of the newly launched journal Foundations and Trends in Information Retrieval (Now Publishers). He is also an Associate Editor of the ACM Transactions on Information Systems journal, and a member of the Editorial Boards of the Journal of the American Society for Information Science and Technology (Wiley), Information Retrieval (Springer), and Information Processing and Management (Elsevier) journals.

Giuseppe Amato is a researcher at the NMIS lab of CNR-ISTI, working in the area of Multimedia Information Systems, and Digital Libraries. He graduated in Computer Science at the University of Pisa, Italy, in 1992 and was awarded a PhD in Computer Science at the University of Dortmund, Germany, in 2002. He has participated in several EC funded research actions in the areas of content-based retrieval of multimedia data.

Raffaele Perego is senior researcher at HPC lab of ISTI, an Institute of CNR, the Italian National Research Council, where he leads the High Performance Computing Lab. He received his Laurea degree in Computer Science from the University of Pisa in 1985. His main research interests include efficiency issues in data mining and Web information retrieval, distributed information retrieval, high performance parallel and distributed computing. Raffaele Perego co-authored more than 70 papers on these topics.

B3.1.6 Stitching European Digital Library (EDL Foundation),

The EDL Foundation is a cross-domain foundation under Dutch law founded in 2007. The aim of the foundation is to foster collaboration between Museums, Archives, Libraries and Audiovisual collections in Europe. It aims to provide access to Europe's cultural heritage by facilitating formal agreement across museums, archives, libraries and audiovisual collections on how to cooperate in the delivery and sustainability of a joint portal, europeana.eu. It also provides a legal framework for use by EU funded projects to bring their research and or content into Europeana.

Its current Board of Participants is made up of pan-European Associations from the 4 domains able to represent and mobilise their members to contribute and form part of EU funded projects aimed at creating an operational service and sustainable business model for Europeana.eu. These associations are EURBICA, FIAT, ACE, EMF, ICOM Europe, CENL, CERL, LIBER, MICHAEL, the Koninklijke Bibliotheek from the Netherlands, INA, the Bundesarchiv and Bibliothèque National de France. The Board of Participants has elected an Executive Committee which is responsible for making decisions on behalf of the Board of Participants and for the legal and financial running of the Foundation.

The EDL Foundation is the coordinator of the Europeana v1.0 project and a partner in the European Film Gateway (EFG), EuropeanaLocal, APENet, Athena, BHL, Europeana Travel, Europeana Connect, EU Screen, Judaica and PrestoPrime. The EDL Foundation also works closely with other EU funded projects.

Key personnel

Jill Cousins – Executive Director EDL Foundation

Jill Cousins is the Executive Director of the EDL Foundation and the Director of The European Library. Successes to date include the creation of the operational service of The European Library

(www.theeuropeanlibrary.org) and the prototype of the European Digital Library (www.europeana.eu). Jill Cousins has a strong web publishing background, having worked for VNU as their European Business Development Director. Prior to her publishing career, she worked in the online environment for many years. Combining her skills of web publishing, marketing, research knowledge and business development she heads the growing European Library and Europeana.

Karin Heijink is the Business Development Director for Europeana and is responsible for developing a sustainable business model for the service. Karin directs the marketing, communications and PR strategies, focusing on delivering Europeana's key objectives. For nine years prior to joining the Europeana core team in November 2008, Karin worked for the Discovery Channel, becoming Channel Director for Emerging Markets in 2005. She directed all product aspects of the networks, including programming, on air, marketing and PR.

Bram van der Werf is Technical Director at Europeana responsible for the development and build of the Europeana prototype and the operational service under Europeana v1.0. Bram brings with him a wealth of experience in managing software development projects. Prior to his appointment at Europeana he was a management consultant expert/advisor on Software Development Best Practices for Open Source and Collaborative Technologies.

Julie Verleyen is the Scientific coordinator for Europeana v1.0 and related projects. She graduated in cell biology at the universities of Lille and Grenoble. and physiology in 2001. She focused her interest on bioinformatics and took a degree in computer science in 2002. After a work experience in software development and molecular modelling in the biotechnology industry (2003), she started at The European Library office as programmer and technical assistant.. She took part in all projects associated with The European Library and played a key role in the EDLNet, the project that delivered the prototype for Europeana.eu

B3.1.7 Barcelona Music and Audio Technologies (BMAT)

Barcelona Music and Audio Technologies (BMAT) is a technological company specialized in digital music products and services. BMAT is a spin-off company of the Music Technology Group (MTG) of the Universitat Pompeu Fabra (UPF) and an output of the IST Project SIMAC. BMAT is one of the few companies worldwide able to offer a number of solutions around audio and music, including audio analysis and description software, music recommendation, and singing score analysis, among others. These solutions have been integrated in products by Yamaha, Intel, AGB Nielsen, The Orchard and Jamendo, and are in production in several countries in Europe, Africa, Asia, Latin-America and US. BMAT is a global company with offices in Barcelona and Tokyo, and commercial representatives in San Francisco, London, Mexico D.F. and Porto. BMAT aims at being a key player in digital music technologies. Its mission is to enable computers and devices to understand music like humans do, to provide powerful search engines (like a musical Google that organizes all the music of the world), a "smart shuffle" to improve end-user's experience when interacting with music in portable players (e.g. by selecting music that suits their mood or activity), or even a virtual partner that can recommend new music, concerts of unknown bands you might like, or even people you might like to go to the concert with. Some products which incorporate BMAT's technology, are for instance Bodibeat (a new Yamaha music player that synchronizes music to joggers' workout, music beats matching their footsteps http://www.yamaha.com/bodibeat), or a search system for content distributor that allows

users to explore music collections by a different set of "filters", such as tempo, genre, production (e.g. live/studio), instrumental/voice, and so on. These filters are automatically extracted from the audio content, and allows users to define complex searches like "find me music similar to 'The Pixies' from bands around Singapore." This complete platform provides the back-end search functionality to on-line music and mobile shops, as well as social networks sites. Other applications include audio identification or virtual jury singing used by Endemol.

Main Competences relevant to ASSETS

BMAT provides world-class audio and music analysis, search and recommendation engines.

Role in ASSETS

Role in the project BMAT will be a technology provider of audio and music search service.

Key personnel

Dr. Pedro Cano holds a PhD in Computer Science and Communication by Pompeu Fabra University, Telecommunication Engineer by UPC and a post-degree of EOI Business School. He has been a Senior researcher at the MTG (Music Technology Group) since 1997. He has 5 patents in the audio and music computing area. He has been a Professor in the Department of Technology at UPF and project manager of industrial, National and European projects in the area of music search and recommendation. He is a founder of the BMAT company, and currently the Chief Technical Officer.

Dr. Alex Loscos received the B.S. and M.S. degrees in Signal Processing Engineering in 1997. In 1998 he joined the Music Technology Group (MTG), a world's top research lab in computer music science. After a few years as a researcher, lecturer, developer and manager he co-founded Barcelona Music & Audio Technologies in 2006. In 2007 he became Ph.D. magna cum laude in Computer Science and right after started as the Chief Strategy Officer at BMAT (www.bmat.com). Now he is the Chief Executive Officer.

Dr. Oscar Celma holds a PhD in Computer Science and Communication by Pompeu Fabra University, and Computer Engineering from the Polytechnic University of Catalonia (UPC). Oscar has been a Researcher and Project Manager in the Music Technology Group (MTG) from 2000 till 2008. Since 2009, Oscar is BMAT's Chief Innovation Officer. He is a Professor of the Department of Technology, Pompeu Fabra University (UPF).

B3.1.8 ROBOTIKER TECNALIA

ROBOTIKER Tecnalia is a Technology Centre specialising in Information and Communication Technologies (ICTs) and in Product Development, whose objective is to actively contribute to sustainable development in Society through Research and Technology Transfer. Member of the TECNALIA Technology Corporation, it is a private, non-profit making Foundation, at the forefront of Research, Technological Development and Innovation (R+D+I), which upholds a strong commitment to Quality, efficient Customer service and continual Staff development and training. Specialist technological fields include Ambient Intelligence, Wireless technology, Distributed generation & renewable energy sources, Manufacturing the Future (micro & nano-robotics, smart processes, virtual manufacturing) and Technology & Society.

The Centre is involved in various international programmes covering a wide range of areas in terms of orientation and closeness to the market and maintains cooperation agreements with a relevant number of

organisations and research centres, some of them top references world-wide. Over the years ROBOTIKER Tecnalia has taken part in more than 85 European projects, 24 of which remain ongoing.

Relevant competences to the project

The INFOTECH Unit of TECNALIA has a wide experience in the design and implementation of graphical user interfaces. The Intelligent Interfaces group has more than 20 years of experience in Machine Vision, and more recently, Biometry, Intelligent Interfaces and Digital Security strategic lines have been incorporated.

Recently, we have been the leaders of the GUI development in two FP6 European projects related to multimedia search engines: TRENDS project - development of interactive software for the elaboration of design trend boards integrating innovative technologies: Intelligent Web crawling, Automatic image analysis, Semantic multimedia search engine and Cutting-edge ergonomic Human Machine Interface (HMI)- and VITALAS project - provision of advanced solution for indexing, searching and accessing large scale digital audio-visual content technology, being its core strengths: Advanced Visual Interfaces, Automatic Annotation, Cross-Media Indexing and Retrieval, Flexible and Extensible Architecture and Personalised search for each and every user (context adaptation). In VITALAS, we lead the GUI design and development and the implementation of the Security, personalization and user profiling module.

The INFOTECH Unit has also a wide experience in semantics technologies applied to different fields: tourist, automotive, furniture, equipment goods, life sciences, and scientific content management. We have been working in several projects regarding ontology engineering, metadata schemas definition, knowledge management, context management and Semantic Web framework and Web 2.0 applications integration in order to formalise the Web 2.0 and to socialise the Semantic Web: WORKSAFE, EUROWORKSAFE, LIAISON, and AQUARING.

Role in ASSETS

The main role of ROBOTIKER Tecnalia in the project is the Design and Development of the ASSETS Interface improvements for the EUROPEANA digital library network. Advanced search and navigation interfaces will be implemented specially designed for browsing through multimedia content.

Key personnel

Cristina Martinez, Bachelor in Computer Science at the University of Deusto (1989), MSc in Foundations of Advanced Information Technology at Imperial College of London (1990). She has a working experience of 18 years in ROBOTIKER TECNALIA. Responsible of products development. Currently is senior engineer and project manager of several R&D national and international projects related to Ambience Intelligence, Intelligent interfaces and Digital Security.

Arantza Bereciartua, degree in Physics, branch Electronics and Automatic, by the University of the Basque Country, and Degree in Electronic Engineering, joined Information and Telecommunication Systems department of Robotiker in November 2000, she has worked in the Machine Vision and Intelligent Interfaces Area. Nowadays, she develops and manages research and development projects in this area. She counts on 9 years' experience in the design, development and installation of Machine Vision systems and Artificial Intelligence systems.

B3.1.9 Swedish Institute of Computer Science (SICS)

The Swedish Institute of Computer Science, SICS, is a non-profit research organization. SICS mission is to contribute to the competitive strength of Swedish industry by conducting advanced and focused research in strategic areas of computer science, and actively promoting industrial use of new research ideas and results in industry and society at large. SICS works in a close collaboration with industry and the national and international research community.

SICS research focus is on distributed and networked interactive real-time systems and applications -- spanning from infrastructural issues to software methodologies to human-computer interaction. SICS collaborates actively with industrial and academic partners. The core of SICS research is supported by major companies associated with Föreningen för Datateknisk Forskning (FDF), by the state-owned Ireco Holding AB supporting industrial research institutes in Sweden., and by the Swedish Agency for Innovation Systems, VINNOVA. Research contracts assigned by the FDF members and other organizations, Swedish and foreign, speed up dissemination and uptake of research results in industry and public sector. SICS participates also actively in collaborative national and international R&D programs, i.e., programs funded by the European Commission. SICS has a well developed collaboration pattern with small and mid-sized enterprises in Sweden, carrying our joint projects, and acting as an external R&D resource for the SMEs. SICS has also a proven record of disseminating and promoting industrial deployment of its research findings, including establishing of spin-off companies, as well as licensing of its software and patents.

The SICs main application areas are: Telecom and computer systems and services, electronic commerce, information retrieval and access systems and applications, industrial production and transportation systems, command and control systems, bioinformatics, trade and civil services, and supportive solutions for contemporary work and leisure activities.

Relevant Competence to the project

SICS participates in the CHORUS coordination action on multimedia retrieval. SICS is an established research centre in the area of language technology for information access and has participated in every CLEF evaluation action since its inception in 1999. SICS language technology approaches are relevant to this project primarily in three aspects: First, through a usage oriented approach to system and technology development. Second, a focus on how semantic knowledge is acquired and represented in human and machine using the distributional approach to semantic knowledge acquisition, in which semantic information is extracted from distributional statistics of words in language data. SICS is the principal originator of the Random Indexing representation, which is a methodology for producing high-dimensional vector spaces from distributional statistics, based on Pentti Kanerva's research on sparse distributed representations. The methodology is both computationally advantageous - it is scalable, efficient and adaptable - and cognitively justified. Third, SICS research projects are based on a learning and dynamic perspective to representation of information, which will be advantageous to the purposes of the heterogeneous collection under consideration for this proposed project.

Role in ASSETS

SICS will provide its expertise in semantic cross-linking browsing, in the ASSETS Service integration, testing and deployment and in the networking activities.

Key personnel

Jussi Karlgren, a computational linguist by training, has worked with aspects of usage of information sources in digital information access experiments for the last ten years. He received a Candidate of Philosophy degree in Computational Linguistics and Mathematics in 1988, a Licentiate of Philosophy degree in Computer and Systems Sciences 1992, and a Doctor of Philosophy degree in Computational Linguistics in 2000 - all at Stockholm University. Since 2006, he is an Adjoint Professor of Language Technology at the University of Helsinki. He has since 1990 been employed at SICS, the Swedish Institute of Computer Science, in various instantiations of the Language and Interaction laboratory.

Fredrik Olsson has been employed at SICS since 1998. He has worked in the areas of software architectures for language engineering, re-usage of language resources, information access and retrieval, and digital libraries. Olsson's current research interests concern the intersection of information access and machine learning, in particular the use of active and weakly supervised machine learning in user and usage centered approaches. Fredrik Olsson received his Master of Arts degree in Language Engineering in 1998 and his Licentiate of Philosophy in 2002 on the same subject from Uppsala University, and his Doctor of Philosophy degree in Natural Language Processing from Gothenburg university in 2008.

B3.1.10 INSTITUT NATIONAL DE L'AUDIOVISUEL (INA)

INA (Institut National de l'Audiovisuel) is in charge of French radio and television archives and a partner of broadcasters and producers. About 950 persons work in the institution, also in charge of professional training, research and experimental production. INA is gathering, safeguarding, digitising, restoring and communicating French radio and television archives, representing more than 60 years of radio and 50 years of television programmes, and large amount of collections: 2,5 millions hours of radio and television, more than one million of photos. INA is in charge of the Legal Deposit for national TV and radio channels since 1995, with more than 300 000 hours each year. INA has launched on line services for professionals, who have direct access to all digitised collections and may buy full programs or excerpts. A new service for the general public was launched in April 2006 with 100 000 programmes available on line, mainly for free viewing and possible purchase for personal use.

50 persons work in the Research and Experimentation Direction, which has been involved in several IST projects since 1995 and has successfully led some of them, such as AURORA, BRAVA, EURODELPHES, CAPMED, PrestoSpace and currently PrestoPRIME**.**

Relevant competences to the project

The research team involved in ASSETS focuses its interests on audiovisual semantic annotation of multimedia content, ontology management systems as well as semi-automated content publishing. The team has gained good experience in knowledge representation language such as OWL/RDF and Conceptual Graphs, which has been used and improved by several participations to European projects on these thematic, such as LOGOS and MESH as well as French funded projects like ECOUTE, OPALES, CHAPERON and SAPHIR (ending in October 09).

Role in ASSETS

In ASSETS project, INA will act essentially as a technology provider by delivering an improved adaptation of a semantic annotation tool, able to display and correct pre existing automatic RDF annotations driven by RDFS/OWL Ontology. As a content provider INA will give access to some selected parts of the corpus

already available on Europeana, in format compatible to automatic analysis components of other ASSETS technical partners. And, as evaluator, INA will also handle evaluation of the ASSET results on this corpus.

Key personnel

Patrick Courounet, Project manager in the Research Department of INA, holds a PhD in Computer Graphics sciences and joined INA in 1984 as a researcher in 2D animation computing. Since 1998, he is now involved in research focussing on archive new usages, and participated in different projects funded by the EC or the French Ministry of Industry and Research (ANR). The mains being: Eurodelphes (Technical director) and MESH (Project-Manager) for EC, and OPALES, SAPHIR (coordinator), Ecoute (project-manager) for ANR.

Steffen Lalande is a Researcher/engineer in the research Department of INA. He received a post-graduated research degree in Artificial Intelligence (DEA IARFA) from the Paris VI University in 1992. He worked on multi-agent systems and machine learning in the MIRIAD and OASIS research teams of the "laboratoire d'informatique de Paris 6" (LIP6). He led for three years a small RTD unit in a French multimedia editor, initiating and conducting French funded RNTL projects on adaptive hypermedia GIC & GICSWEB

Agnès Saulnier is a Researcher/engineer in the research Department of INA. She received her Engineer degree from the Ecole Nationale Supérieure des Télécommunications (TELECOM Paris) in 1992, and a master of mathematics in the University of Paris VI in 1990. She first joined the Televirtuality project at INA in 1992 to participate to research and development in image analysis, and then she joined the VIE team of INA to collaborate to a video database interface research.

B3.1.11 Universidad Autómona de Madrid (UAM)

Universidad Autómona de Madrid (UAM) is the third largest university in the central region of Spain, ranked as one of the top Spanish University in research by the Times Higher Education Supplement. UAM will participate through the *Escuela Politécnica Superior* (EPS), one of Spain's major High Technical School teaching Computer Science and Telecommunications degrees and involved in several research projects at national and European level.

The **Video Processing and Understanding Lab (VPULab)** is a research group on Digital Visual Analysis, Processing, Understanding and Communications, with a large expertise in European projects (including projects in the main programs related to IT and audiovisual research) and an average of 20 publications per year. VPULab members are active participants in conferences, committees, standardization bodies (mainly in MPEG-7 and MPEG-21), journal and conferences review boards, and evaluation of research projects.

Relevant competences to the project.

The members of VPULab focus their research on: AV content analysis, AV content summarization, AV content metadata for indexing, searching, filtering, browsing and content adaptation, and AV standards. Their research lines are targeting on-line mode operation modes. Besides national public and industry projects, in the last years VPULab has been participating in successful EU projects, being of special relevance for the semantic analysis on multimedia content the aceMedia and Mesh projects.

With ASSTS, the VPULab will mainly contribute to personalized video summarization (for efficient browsing and enhanced multimedia user experience) and multimedia content adaptation to different terminals, networks and user preferences**.**

Role in ASSETES

The UAM main role in the project deals with *video summarization* and *content adaptation* to different terminals, networks and user preferences. With respect to *video summarization* UAM will provide their summarization algorithms in order to enhance the user experience when accessing videos. UAM will personalize the video summary to be produced based on the existing video annotations and associated user preferences to those annotations (a user may be more interested in the video parts where people appears, whilst other may prefer the landscape views). With respect to *content adaptation*, UAM will provide experience and tools that can be easily integrated in order to provide content adaptation during delivery to different terminals, networks and user preferences.

Key personnel:

Dr. José M. Martínez has been heavily involved in the development of MPEG-7 and has also followed MPEG-21 DIA. In the last years he has focused his research in content adaptation and has a large experience in the EU research area, both as participant in projects and as evaluator and reviewer for IST. He has over 60 publication related to metadata indexing, content adaptation and content analysis.

Dr. Jesús Bescós has a significant expertise in the analysis of multimedia content for description creation, object detection and tracking, with a special focus in real-time video analysis, with several relevant publications on the topic. He has been involved in different research projects and was the coordinator at UAM for the aceMedia IST project.

B3.1.12 Centre of Research and Technology Hellas - Informatics and Telematics Institute

The Informatics and Telematics Institute (ITI) was founded in 1998 as a non-profit organisation under the auspices of the General Secretarial of Research and Technology of Greece, with its head office located in Thessaloniki, Greece. Since 10.3.2000 it is a founding member of the Centre of Research and Technology Hellas (CERT) also supervised by the Greek Secretariat of Research and Technology.

CERT/ITI is one of the leading Institutions of Greece in the fields of Informatics, Telematics and Telecommunications, with long experience in numerous European and national R&D projects. CERT/ITI has participated in more than 60 research projects funded by the European Commission and more than 85 research projects funded by Greek National Research Programmes and Consulting Subcontracts with the Private Sector (I&T Industry). In 2008, the Informatics and Telematics Institute attracted an income of 14 M€ from National and European competitive R&D projects.

For the last 10 years, the publication record of ITI includes more than 150 scientific publications in international journals, more than 400 publications in conferences and 45 books and book chapters. The development of the infrastructure of CERT/ITI was financed by the National Research fund EPET II with € 2,3 million in the period 1998-2000. In 2002 and 2005, selected committees of experts in Information and Telecommunications Technology from European countries (other than Greece) evaluated the GSRT institutions. CERT/ITI was graded with 9,65/10 and 4,4/5 respectively and on this basis it was awarded grants of more than 800 k€.

Relevant competence to the project

CERT-ITI is or was participating in the following EU-funded relevant projects: VICTORY, ASK-IT, CHORUS, VITALAS, AEGIS, i3DPOST, OASIS, WeKnowIt, aim@shape, CATER, ACCESSIBLE. The abovementioned

projects mainly deal with the creation of novel algorithms for audio-visual content search and retrieval (image, video, 3D), the automatic extraction of metadata and semantics for enriching the content and enhancing the retrieval process and the creation of web services.

Role in the project;

Services for audio-visual content search; Relevance feedback services for user personalisation; automatic classification techniques of new media; Semantic cross-linking of multimedia content allowing fast navigation through similar items.

Key personnel

Dr. Petros Daras is a Senior Researcher in the Informatics and Telematics Institute. He received the Diploma in Electrical and Computer Engineering, the M.Sc degree in Medical Informatics and the Ph.D. degree in Electrical and Computer Engineering all from the Aristotle University of Thessaloniki, Greece in 1999, 2002 and 2005, respectively. His main research interests include 3D object indexing, classification and retrieval, annotation propagation and relevance feedback. He is a member of IEEE and the Technical Chamber of Greece.

Prof. Michael Gerassimos STRINTZIS is a professor of electrical and computer engineering at the University of Thessaloniki, Thessaloniki, Greece, and, since 1999, Director of the Informatics and Telematics Research Institute, Thessaloniki. His current research interests include 2-D and 3-D image coding, image processing, biomedical signal and image processing, content-based indexing and retrieval and DVD and Internet data authentication and copy protection. He is serving as Associate Editor for the IEEE Transactions on Circuits and Systems for Video Technology since 1999. In 1984, he was awarded one of the Centennial Medals of the IEEE.

B3.1.13 UNIVERSITY OF PARIS SOUTH XI (UPS)

Laboratoire de Recherche en Informatique(LRI), Université Paris Sud

The LRI is the Laboratory for Computer Science at the Université Paris-Sud, and one of the top academic research laboratories in Computer Science in France, both in terms of size and scientific excellence. As of January 1st, 2008, the laboratory had over 200 members. It comprises twelve research groups supported by systems and network staff and an administrative team. The primary infrastructure assets include a high-performance network with a shared cluster and an extensive library.

The research themes addressed by LRI cover a wide spectrum of computer science: algorithms and complexity, quantum computing, graph theory, fundamental aspects of communication, micro-architecture, clusters and grid computing, software engineering, programming, human-computer interaction, databases, inference systems, data mining, machine learning, and bioinformatics.

More details can be found at the following site: http://www.lri.fr/

Main Competences relevant to ASSETS

The database research group at LRI has contributed research in various aspects of information systems for over two decades, and has also participated actively in the design and early implementation phase of the O2 system, one of the first object-oriented database management systems to be released in the mid-1980s. The advent of the Internet and the Web in the early 1990s has profoundly changed the nature of research in databases. As a consequence, the group has re-oriented its activities in the late 1990s, guided by previous

experience in the field of databases, and in some cases by building upon its past achievements. While some effort is still devoted to the research areas mentioned above, the current activities are centred on the following themes:

⇒ Digital Libraries

⇒ Information Integration (mediators, data warehouses)

⇒ Languages and Systems for Semi-Structured Data

⇒ Temporal Databases

A main, recent achievement of the group was the design and implementation of an XML user-friendly programming language called CDuce. This language has now become part of all major Linux distributions (Debian/Ubuntu, Fedora, Mandriva).

Role in the project

UPS will be responsible of the WP3.2 Community services, moreover it will participate in Task 2.5.2 Ingestion Interface, Task 2.5.3 Query log visualisation.

Key personnel

Nicolas Spyratos is full professor of computer science at the University of Paris South, and head of the Database Group at the LRI. His current research interests include digital libraries, conceptual modelling, data mining and data warehousing, deductive databases. From 1999 to 2001 he was director of the applied graduate programs "Communication Systems for Man-Machine Interaction" and "Information Systems Design". He is the author of over 150 scientific articles in international conferences and journals, and has supervised 17 doctoral theses.

Michel de Rougemont is full professor of Computer Science and member of the LRI. His research concerns Logic and Complexity and its applications to Databases and Information Systems. He has been educated in France and in the U.S.A.: Dipl. Ing. from the Ecole Nationale Supérieure des Télécommunications in Paris, M.Sc. from the University of California (Berkeley), Ph.D. from the University of California (U.C.L.A.) and Habilitation from the University of Paris-11. He is currently Director of the applied graduate program "Models of the Digital Economy".

Veronique Benzaken is full professor of Computer Science at the University of Paris XI and member of the database group of the LRI. Her main research interests are in the area of database programming languages and systems. She has actively participated in the design and implementation of the O2 object-oriented database system. Her current research is focused on the definition of query languages for semi structured data, in particular, studying new primitives and execution mechanisms in this context.

B3.1.14 Virtual Resource Centre for Knowledge about Europe (CVCE)

The CVCE (Virtual Resource Centre for Knowledge about Europe) is the only institution of its kind whose main aim is the creation, diffusion and sharing of information on the European integration process using ICT. The Centre is a public undertaking under the aegis of the Luxembourg Ministry of Higher Education and Research.

The CVCE develops the European Navigator specialist digital library (www.ena.lu) a unique and ground-breaking digital library that meets today's multidisciplinary demands on a technological level (architecture

and language), a social level and a historical level. Today, ENA is the authoritative multimedia reference on to the historical and institutional development of a united Europe from 1945 to the present day. More than 16000 documents of all types (film recordings, sound clips, photos, cartoons, facsimiles, texts, etc.) are freely available for consultation and are regularly updated by the CVCE multidisciplinary team of researchers.

The Centre has also collaborated at different level with several European projects in the field of digital libraries (DELOS, BRICKS, Multimatch, Europeana…).

Main competences relevant to the project

The CVCE team is a very interdisciplinary research team in the fields of European Integration Studies, Digital Humanities and Social Sciences, and *intellectual property and rights,* working on the European integration process, experts in the field of Knowledge Environments and semantic digital library, development engineers, usability professionals, audio-visual engineers, graphic designers,, translators…

Role in the project

The CVCE will provide a heterogeneous set of relevant contents in the context of ASSETS (e.g. CVCE interviews collection) to improve multimedia search and browsing according to subjects of interest. ENA digital library will also serve as a real-life test-bed for the ASSETS developed services. The CVCE will provide user specifications and/or scientific feedbacks about the services usage by the end-users. CVCE target communities are scientists, teachers and interested public including journalists or students.

Key personnel

Frederic ANDRES, PhD, expert in digital libraries and semantic extraction, he served as project leader of the Geomedia and Myscoper projects. Research interests include distributed semantic information management systems for Geomedia and multimedia applications. He is member of IEEE, ACM, and of many more.

Laurent EILRICH is a User Experience Specialist at the CVCE. More specifically, he worked on the ECIM project to set up AMETIS, an initiative encouraging the development of European cooperation between universities, businesses and local authorities.

Ghislain SILLAUME, having won a prize in multimedia design, he graduated in computer engineering at the University of Nancy (FR). After over 5 years of experience developing IT solutions for institutional and industrial sectors, he joined the CVCE where he develops the European Navigator Digital library. He is interested in new technologies in the fields of Web 2.0, social networks, and collective intelligence.

Isabelle VAILLANT, legal expert specialising in IP/ICT law, worked for legal firms and computer services companies before focusing particularly on the legal issues surrounding the reproduction and publication of protected works over networks, especially with relation to digital libraries.

Alexandre GERMAIN**,** expert in pictures, sounds and videos production and methodology of audiovisual content, has been in charge in the CVCE of digitazing, archiving and post-producting of medias since 2001. He's responsible of the dematerialization's workflow for audiovisual content. From analog to digital formats, from indexation to restoration and webcasting, he vouches the durability and interoperability of the audiovisual files owned and published for ENA. He's audiovisual engineer for the exercices of interviews and conferences produced by the CVCE.

B3.1.15 Deutsche Welle (DW)

Deutsche Welle (DW), Germany's international public broadcaster, was founded in 1953. It provides a variety of audio, video and text services in a total of 30 different languages. The organisation's core competence hence lies in the production of high quality content and its distribution. As a modern organisation, DW is increasingly trying to reach its users via new IP-based platforms such as IPTV, mobile devices and social networks, to name but a few. It is DW's goal to continuously work on improving services for its audiences. This is to be done by fully embracing technological possibilities and resulting opportunities. That is also why Deutsche Welle is participating in a variety of international, collaborative initiatives and projects such as GREDIA (www.gredia.eu, finishing date 30 June 2009), MESH (www.mesh-ip.eu, finishing date 28 Feb 2009) and VIDEO ACTIVE (www.videoactive.eu, finishing date 31 Aug 2009). Especially the work carried out in MESH and VIDEO ACTIVE is to be of great benefit for the ASSETS project, as these were / are concerned with a great variety of issues in the field of multimedia search and retrieval as well as content provision, all aspects that are to play a role in ASSETS, too.

Role and competencies in the project

Consequently, and based on DW's expertise and overall aims and goals, the role of DW in ASSETS is manifold. The involvement of DW will ensure that the project work is user-centric and guided with a clear view to future exploitation. DW will also be involved in validation activities, and supply the consortium with content and metadata information. Another part of DW's involvement in ASSETS will be the dissemination and exploitation of project results.

DW plans to involve the following personnel in ASSETS:

The ASSETS overall project management for DW will become the responsibility of Tim Koch. Tim has been involved in large scale media projects since 2001. He joined Deutsche Welle in 2004 and, ever since, has been a highly valued member of the Innovation Projects team that handles and manages both EC co-funded research activities and other innovative projects at DW. Tim is currently responsible for DW's work in VIDEO ACTIVE (see above - to end in August 2009), which makes him an ideal candidate to lead the DW work in ASSETS.

Individual tasks in ASSETS will be taken over by Jochen Spangenberg. Jochen's involvement will be on both the strategic level, making sure the project work is in line with business requirements, and in dissemination. Jochen has been with Deutsche Welle since 2003. Ever since, he has been involved in DW's innovation activities and worked as a member of the team responsible for DW's overall strategy. Previously, Jochen worked as a journalist and researcher for BBC Radio & TV and, thereafter, spent five years in the commercial (new) media sector. There, he held positions as Head of Media Consulting, Chief Operating Officer and Editor-in-Chief. In addition to his work for DW, Jochen lectures at various universities and regularly speaks at conferences about digital media production and delivery issues.

The core DW team will be completed by Mirko Lorenz. Mirko joined Deutsche Welle in September 2007. In ASSETS, his focus will be on market analysis and market surveys (in order to make sure both the project and DW are fully aware of the surrounding market needs and conditions), and the area of user validation, in which Mirko is a highly skilled expert. Previous to joining DW, Mirko worked as a (technical) journalist. From 1995 onwards he has been working as an Internet consultant and online editor for international companies and web agencies. Mirko holds a Masters Degree in History and Economics.

In addition to the above, the following DW staff will be involved in ASSETS: Wilfried Runde (for administrative/financial tasks) Andreas Giefer (for technical/integration issues), and Peggy van-der-Kreeft (for project assistance). Also, DW is in the fortunate position to draw on its large personnel base consisting of IT experts, broadcast technicians, archiving staff and journalists. They will be involved in the execution of particular tasks, as required.

B3.1.16 Accademia Nazionale di Santa Cecilia(ANSC)

The Accademia Nazionale di Santa Cecilia is one of the most ancient musical institutions in the world (it was founded in 1585). Its activities embrace many diverse sectors of cultural life. Concerts are the core and take place in the new Auditorium 'Parco della Musica' in Rome. Additionally a very important cultural heritage sector with a digital library, a collection of musical instruments (hosted at the Museum of Musical Instruments at the Auditorium), a collection of ethnomusicology recordings (oral traditional music from Italy and the Mediterranean), an ancient documental archive, a photothèque. The Accademia is also involved in musical education at a very high level with post-degree courses and master classes, held by outstanding musicians, composers, etc.. The Accademia Nazionale di Santa Cecilia already participated in other EC funded project related to culture and music as well as heritage and new technologies.

Relevant Competences relevant to the project

The Accademia Nazionale di Santa Cecilia (Rome) beyond being one of Italy's most important musical institutions, operates in a wide range of cultural activities. It possesses a vast amount of content related to its heritage and current activities such as musical manuscripts, ancient books, audio/video recordings etc. It also possesses one of the most important ethnomusicological, oral tradition collections from Italy and the Mediterranean area. All such content is available to users in its multimedia library and digitised from its online web portals. The Musical Instruments Museum (MUSA) features the Accademia's instruments collection, also present on the web.

Through all these activities ANSC has gained a solid expertise in content digitisation, cataloguing, metadata and research in the field through the participation to International and National projects.

Relevant Projects funded by European Commission Programmes: 6th FP: AXMEDIS and i-Maestro .

Role in the project

The Accademia Nazionale di Santa Cecilia will be a Content provider and Demonstration partner.

Key personnel.

Dr. Annalisa Bini Musicologist and librarian. Since 1980 her activity is involved both into musicology and librarianship, leading also musical libraries. Since the very beginning of computer-assisted cataloguing in Italy she took part into several projects about cataloguing music, and nowadays she is continuing this activity. From 1996 she coordinates cultural and scientific activities. She is director of the Multimedia Library and the Museum of the Musical Instruments, of Accademia di Santa Cecilia, managing many cataloguing projects, and digitalisation projects.

Dr. Tiziana dell'Orto is responsible for the European funded activities of the ANSC. After her degree in Physics of Solid State Matter, she has been teaching assistant at the Ecole Polytechnique Federal of Lausanne where she studied for the PHD. In the last 10 years she was in charge of the management of several R&D projects: she has been consultant of the Chamber of Commerce of Rome, Sviluppo Italia,

Consorzio Roma Ricerche and of several IT companies for management, realisation of EC funded projects and relationship with the Commission.

Lorenzo Franco Sutton has a Magistral Degree in Musicology and Musical Heritage at the "Università degli Studi di Roma - La Sapienza". He is also a trained classical guitarist and musician. During his university training he has had the possibility to develop experience with 'traditional' and innovative musical applications as well as digitization and digital cataloguing. He has been working with the ANSC in the digital content management, cataloguing, digital archives and cross media fields. Currently he is a collaborator with the Accademia's Cultural Activities and Musical Instruments Museum as an expert in new technologies and media.

B3.1.17 Liberis Publications

LIBERIS PUBLICATIONS S.A. was founded in its current legal status in 1986 by Antonios Liberis, with the goal of operation in the sector of publications and presswork. In the course of all these years, the company has had a spectacular development, dynamically moving in the sector of publications, launching new and successful magazines that conquered the top ranks amongst their competitors. In addition, by concluding strategic alliances with large foreign companies of the sector and by founding or acquiring shares in new or well-established companies in this market, this company has fortified it position in the Greek publishing market and now expands its activities in new sectors. Today, it is one of the largest listing magazines publishing companies in Greece, chartered in the stock exchange and heading a group of 6 companies (Parent company, Libecom S.A., IT Publications Hellas, Liberis Publications Cyprus Ltd, Liberis Publications Bulgaria OOD, Liberis Publications Romania Srl). This group employs in total approximately 400 employees, with activities covering a broad spectrum in the media field - where it holds a leading position with 20 publications in the Greek market, plus some special annual editions.

In the publishing sector, the company itself issues 12 magazines (STATUS, 7 DAYS TV, TILECONTROL, VOGUE, FOCUS, LIFE & STYLE, GLAMOUR, LUCKY, DOMINO, MEN'S HEALTH, PREVENTION and HELLO!); VOGUE, GLAMOUR, LUCKY and DOMINO are owned by means of a license by the international publishing company Conde Nast Publications, and FOCUS is also owned by means of a license by the publishing company Gruner und Jahr/Mondadori. Men's Health and Prevention are published under license from Rodale and HELLO! is published under license from Hello! Ltd. The company owns 3 more titles via its subsidiary company IT Publications Hellas (PC World, Computer Active και Channel Partner), as well as another 3 through its subsidiary DESMI PUBLISHING S.A, that issues ATHINORAMA, EF ZIN and ALPHA GUIDE.

Main Competences relevant to ASSETS

LIBERIS brings a wide variety of magazine content to Europeana and ASSETS, which has a rising interest in the reader audiences.

Role in the project

LIBERIS will be a content provider for ASSETS bringing magazine digital content from the variety of the offered publications.

Key personnel

George Ropodis has a BSc degree in Computer Science from the University of Portsmouth. In 1991 he is teh technical editor in computer magazines. In 1996, he takes on the management of computer testing labs in Computer. The same period Liberis Publications launches PC Magazine in Greece and he takes on the position of editor in chief from 2000 until the end of 2004. In the beginning of 2005 he became Director of PC World magazine and Computer Active magazine. In September 2007, he becomes the New Media Director in Liberis Publications and focus on the websites and online services development of the company.

Natalia Lorentziadi holds a BA in English Literature and History from McGill University in Canada (1999) and a MA Degree in Electronic Publishing from University College London (2001). Her started in London as a staff writer for Property People. While studying at UCL she held the positions of online editor for The Independent newspaper, web producer for Channel 4 News (ITN) and web moderator for websites including the BBC.co.uk. In June 2003 she joined Liberis Publications to found the New Media department where she held the role of New Media Manager.

B3.1.18 Hellenic Archive of Scientific Culture (HASC)

The Hellenic Archive of Scientific Culture is a non-profit organization, established in early 2008 in Patras, Greece, with the purpose of collecting, preserving and promoting industrial, technological and scientific heritage and culture. Its Objectives are the management of private and public collections and archives and the creation of digital forms. The activities of the Hellenic Archive of Scientific Culture include:

- Collection and assessment of public or private archives, Study and scientific documentation (historical documentation and archival)
- High Quality Digitization, using a series of professional equipment
- Storage of digital content in state of the art content management systems, providing easy access to researchers and content editors, Management of digital content and protection of intellectual property rights
- The encouragement and promotion of the results of scientific research and their popularisation to the general public through seminars, conferences, scientific workshops, multimedia applications, documentaries, editions and translations.

These activities lead to the production of high quality cultural, educational and scientific products, always adhering to international standards in terms of digitization, creation, management and documentation enabling equal access and interoperability.

Relevant Competence to the project

HASC develops methods for disseminating the produced knowledge, by implementing a series of actions, including: Creation of Educational Material and Events, Organization of Collections, Exhibitions and Conferences, Creation of printed and electronic publications; Deployment and integration of software tools (Databases, content management systems, integrated library systems, etc.) to allow for unrestricted (by age, language, etc.) access to scientific and cultural heritage.

An expert team of scientific and research personnel is involved in all stages of handling and digitization of archives, while specific scientists or experts are employed per case to further elaborate on a specific collection and to assist in its management and documentation. The core personnel includes museologists,

experts in art conservation, lawyers, computer and imaging engineers, librarians, archivists and graphic artists

Role in the project

HASC will be a Content provider and validation partner. HASC is also able to provide contribution to user requirements and specification (WP2 Platform and service design) and scientific feedback about the services and its usage by the end-users (WP4 and WP6)

Key personnel

Nikos Achilleopoulos He received his Engineering Diploma from the Electrical and Computer Engineering Department of the University of Patras, and holds also a degree in Wire Communications Technologies form the Greek Military School of Telecommunications. He is involved since 1991, in the analysis, design, consulting and procurement of professional video and image processing systems, for several commercial companies. He is HASC's RTD Manager. His expertise is on Multimedia enhanced Internet applications, involving 3D and combined Video data and advanced visualization and collaboration techniques.

Dr. Dimitris Kouis was born in Patras, Greece, on June 1, 1976. He received his Diploma in Computer Engineering and Informatics from University of Patras and his Ph.D. from National Technical University of Athens (NTUA) in 1994 and 2004 respectively. His scientific interests include Software development, Analytical Methods and Simulation Models, Content Management, IT middleware platforms and meta-data modelling and search techniques.

B3.1.19 DIAS PUBLISHING PUBLIC

DIAS Publishing is Cyprus's largest and fastest growing print and electronic media company. It has forged a reputation as a dynamic and progressive organization seeking to diversify into strong alliances and new ventures in broadcasting and new media. Founded in 1975 with the launch of the Simerini daily newspaper, the Dias group now employs over 350 professionals and is the largest and most diverse media group in Cyprus. Along with Simerini the group now publishes 1 more weekly newspaper, 9 magazines, broadcasts Sigma TV and 5 radio stations. In the last few years the group has also moved into the rapidly emerging digital distribution networks on the Island with two sports channels, Sigma Sports1 and Sigma Sports 2. The latest addition to the group's media is the first internet portal on the island Sigmalive, which offers all content produced by the group to online audiences.

Role in the project

DIAS is an industry partner and content provider in EuroPressNet. In this capacity DIAS will be guiding the requirements from a commercial content provider's point of view and providing EuroPressNet with digital News content.

DIAS has been publishing news for over 30 years and has a large team of experienced journalists and supporting technical staff. DIAS publications cover a wide array of subjects and include newspaper, magazine and online publishing. For the last 15 years DIAS has been active in the broadcasting domain initially with Radio and then following up with Television broadcasting too. Over the years DIAS has acquired a large archive of both printed and broadcasted media from various domains.

DIAS will offer it's experience in the broadcasting and publishing domain to help EuroPressNet develop a platform that will add value to professional content producers and help formulate ways for content producers to find new value from archived material.

Key personnel

Antonis Karatzias serves as Human Resources Manager for DIAS Publishing Group and Sigma TV. He studied business administration and has served for 20 years in Cyprus and abroad in business executive's positions, in the fields of HR, IT and General Management. He is experienced in business process reengineering, business consultancy, and also in project and change management.

Greg Andreou serves as IT Manager for the Dias Publishing Group. He is a graduate of the University of Edinburgh in Software Engineering and Artificial Intelligence and has experience in both software development and project management.

B3.1.20 FUNDACIÒN ALBENIZ

The Fundación Albéniz was created by Paloma O'Shea in 1987, in order to offer a legal and financial framework to the growing musical activities coming out of the International Competition for Piano taking place in Santander from 1972. FIA has received support from well-known people from the fields of music, communication, public administration, university and company.

FIA's activity concentrates on four areas: research, teaching, dissemination and creation, joined up to specific programmes related among themselves. One of the main programmes is the Escuela Superior de Música Reina Sofía - an academic institution based on musical excellence teaching for young musical talents, and which counts among their students some big musicians of our time - is recognized internationally in terms of their quality music teaching (production) and the professional musicians/maestros visiting their institution.

For the European and world-wide promotion of the Virtual School of Music, the Fundación Albéniz has developed the HARMOS project, an ambitious project that aims to reuse information produced by public education institutions in the area of Cultural Heritage, by creating a digital collection in a multilingual format and making it available online.

Main Competences relevant to ASSETS

Since a decade ago, the Fundación Albéniz took advantage of the technological revolution and contributed to make knowledge universal and exportable through the elaboration of technological models. The next step was to utilize audiovisual means as a format, facing the problem of losing the teachings of exceptional maestros of our Reina Sofía School such as Alfredo Kraus or Yehudi Menuhin. This concerns to preserve our patrimony and having available digital video tools, scores, as an ideal means to do it, we created our own computer platform with the financial support of the Spanish Ministry of Science and Technology. The result of this tenacious investigation has been the development of the Virtual School of Music, an extraordinary pedagogical resource which places at the disposal of everybody throughout the world the teachings and explanations of the most outstanding music maestros.

Relevant Projects funded by European Commission Programmes Harmos Project No.:EDC 11189 HARMOS28777, i-Maestro Contract number: 26883, Variazioni Project No.: ECP 2005 CULT 038264.

Role in the project

The Fundación Albéniz will be a Content provider and validation partner.

Key personnel .

Mr. Vicente Ferrer y Pérez de León is Graduated in Philosophy at the Universidad de Barcelona, specializing in Contemporary History, and carrying out a thesis on the application of computing to the study of history. MBA at the Instituto de Empresa in Madrid. As President of the Board of Administration of Ifigenia Plus, he has carried out a number of European projects. Currently, he is Vice-president of the Fundación Albéniz and the Escuela Superior de Música Reina Sofía.

Alvaro Guibert (Madrid, 1959) is Contents Director of the Fundación Albéniz. He has a large reputation as a music pedagogue. He is the music critic of Madrid's papers La Razón and El Cultural and contributes regularly to other specialized musical media. For six years he was Coordinator for the Ministry of Culture's Centro para la Difusión de la Música Contemporánea and for six years was Manager of Almagro's Internacional Classical Theater Festival.

Catalina Nagy is a Administration and planning development specialist, with a large experience in project management, strategic planning, budgetary programming and project evaluation processes. Currently, she is responsible for the day by day management of cooperation and cultural projects implemented by FIA at the European and local level. She was the coordinator of the Variazioni Project, inside the eContentplus programme.

Laura Poggio is a flute performer and teacher, she is responsible of the Musical Analysis and Development Department of the foundation, analysing and cataloguing videos and master classes, and also involved in European projects department.

B3.1.21 CIAOTECH S.R.L. (PNO GROUP B.V.)

CIAOTECH S.r.l. (PNO Group B.V.) is the leading company in Europe specialised in technology transfer, grants and innovation activities, with more than 500 employees in 13 European Countries. CIAOTECH has a wide experience in supporting the realisation of technology transfer actions, studies and support activities for policy implementations within the framework of European RTD or innovation projects. In the realisation of such tasks, CIAOTECH is supported by the presence of the Company in Europe, and by the experience of its R&D department, and by its direct connections with Public Institutions from one side, and with more than 2.000 industries in the whole Europe. CIAOTECH is also specialised in leading private-driven initiatives targeted to support innovation projects: in Spain, CIAOTECH has been appointed by TELEFONICA to support SMEs in the supply chain of TELEFONICA (or partners) in realising their innovation project. CIAOTECH is also leading the largest private-driven initiative to support innovation (the EUGA project, led by Microsoft, Intel and HP), currently on going in the all 27 European Countries, and has been appointed by ENDESA (one of leading energy company in Europe) to support innovation in rural area of Spain through technology transfer actions.

CIAOTECH network is also guaranteed by several innovation and support actions that the company realises in the framework of European Programmes. CIAOTECH, in fact, has been (and is currently) involved in several research projects aimed at awareness creation, impact generation and technology transfer

activities. Among the experience of the company in European projects in such activities is worth mentioning:

- AEROPORTAL project: led by the ASD, it is the main action funded by the EC to support SMEs in realising research projects in the Transport (Aeronautic) programme
- SHARE: support action funded by the ICT programme of the FP7, aimed at creating a community of researchers to share knowledge on Open Source Middleware for Embedded Systems
- SMART: support action funded under the FP7 Surface Transport programme, aimed at creating a network of clusters of SMEs operating in the surface transport domain
- SECURE FORCE: support action funded under the FP6 Economic and Technology Intelligence Action, aimed at creating a network of SMEs operating in the security domain

Role in the project

CIAOTECH is a large service company, with main focus on innovation and technology transfer actions. Exploiting its main capabilities, CIAOTECH will support the ASSETS project in reaching the expected impact, realising actions to favour networking and engagement of stakeholders in the project activities. With such regard, CIAOTECH will also exploit its network of clients and collaboration, which include several prestigious EU organisations (such as CERN) in the framework of EU funded projects. Moreover, as leading organisation in technology transfer activities and public funds in Europe, CIAOTECH has contacts with several institution and EU, National and Regional Level. Such contacts will be exploited to set up a dialogue which will provide the A S consortium with awareness and consensus needed to reach the objectives. SSET

Key personnel

eng. Paolo Salvatore (Head of Innovation Projects): Electronic Engineer with more than 11 years of experiences in international RTD projects and technology transfer actions. Specific expertise in the embedded system domain, where he collaborated with several industries and research centers in the realisation of research projects within the framework of national and international projects.

Mrs Lucia Gregorio. Senior Consultant: She has worked for several private (Atos, Sema) and public companies (Consorcio de Vigo). She has a vast knowledge of IT projects having participated in the planning and realisation of IT projects in the field of eHealth, eGoverment and eBusiness. She has experience in leading multicultural teams and has the official title of programming. She hold a degree in Industrial Engineering, from the University of Valladolid.

B3.1.22 United Nations Educational, Scientific and Cultural Organization (UNESCO)

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialized UN agency that is well known mainly for its Cultural achievements. UNESCO was founded in 1945. With the entry of the Republic of Singapore to UNESCO in October 2007, the Organization has now 193 Member States and 6 Associate Members. Therefore UNESCO brings to ASSETS a large number of international members for the testing phase. In addition almost all Member States have established a National Commission for UNESCO. The UNESCO National Commissions are national cooperating bodies set up by the Member States for the purpose of associating their governmental and non-governmental bodies with the work of the Organization.

Therefore ASSETS can also benefit form almost 192 national offices working at national level. Obviously not all these countries will be used to assist the tests with ASSETS but a good representation will be used. Recently on 22nd April 2009 UNESCO and partners launched the World Digital Library which is a web site that features unique cultural materials from libraries and archives from around the world. The site includes manuscripts, paper maps, rare books, films, sound recordings, prints and photographs. It provides unrestricted public access, free of charge, to this material.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has 193 Member States (countries). In order to serve these countries, there is a UNESCO Secretariat with main headquarters located in Paris, France. The UNESCO Secretariat is divided by Sectors being the most outstanding ones the Educational Sector, The Cultural Sector, the Science Sector (Natural Sciences and Social Sciences) and the Communications and Information Sector.

Main competences relevant to ASSETS

UNESCO is considering the importance of supporting long-term access to digital data within its strategy. On one side being conscious of the digital gap that separates developing countries from essential access to digital knowledge data and information but on the other side seeing that such a digital gap is slowly decreasing and that new technologies might assist in decreasing it even more. For this reason UNESCO has participated into the CASPAR project and is continuously participating in the training and dissemination events of 'We Preserve'.

UNESCO having the cultural archives of 193 countries and having developed in partnership with other institutions the World Digital Library, is obviously interested to improve access to this own content, and mainly to assist Member States in starting to do the same with respect to their own national digital archives.

In particular in the areas of tangible cultural heritage (monuments, archaeological sites, etc.) as well as intangible cultural objects (living expressions and the traditions that countless groups and communities worldwide have inherited from their ancestors and transmit to their descendants, in most cases orally), UNESCO is now starting the elaboration of large multimedia digital archives. For these archives ASSETS can be the perfect contribution.

UNESCO has a large capability for networking: 193 countries, strong links with the International Society of Photogrammetry and Remote Sensing (world leaders in digital cultural heritage); strong links with the International Council of Museums (ICOM); etc.

The role of UNESCO

UNESCO is an intergovernmental UN organization and its interest is to exploit possible outcomes of the ASSETS project to enhance its existing applications, create new ones related to its digital heritage archives and offer new and better opportunities to the UNESCO Member States (193). UNESCO will also disseminate the ASSETS project results within the UNESCO Member States, UN sister organizations and UNESCO partner institutions through participation to specific events (conferences, international events etc.). UNESCO moreover will provide to ASSETS digital content consisting in 3D reconstruction of World Heritage sites.

Key personnel

One major advantage of UNESCO is that if necessary for ASSETS UNESCO can call for the assistance of a large variety of specialists working inside UNESCO as well as experts working on any of the 193 countries members of UNESCO.

However for ASSETS in particular UNESCO will dedicate the following staff:

— Senior Programme Officer heritage. An expert with more than 15 years of experience dealing with the documentation of heritage using for this purpose text, images, digital maps, satellite images, 3D digital models and digital virtual tours.

— Associate expert. An expert with more than 5 years of experience in similar domains.

— Secretarial and administrative support. Unfortunately the EC projects are extremely effort and time consuming with respect to administration and reporting. In addition the UN system is not an easy system. Therefore ASSETS will be supported by secretarial and administrative UNESCO personnel

B3.1.23 Fondazione Micheletti (FLM)

The Micheletti Foundation was recognised by the Italian Ministry of Cultural heritage as a non profit Foundation since 1998 and operates in the field of industrial and social history with a special accent on industrial archaeology and research in museology applied to industrial heritage. It has been publishing several books and magazines, counts on a large library and has largely contributing and is still contributing to the creation of the Musil, Museum of Industry and Labour in the Brescia province consisting of different venues each specialised into a topic. So far 4 venues have been open to the public. LFM counts on secretarial services, archivists, collections curator, digitisation unit, administration, international relation officer. A qualified ***set*** of scientific consultants is cooperating via the Scientific Committee. Agreement with research centres, universities, etc ensure a wide range of competences available for individual projects. It has started since years an intensive work of digitisation and organization of digital material in the field of contemporary history and industrial history as well as a collecting programme oriented towards written paper documents as well as objects, video etc, concerning the development of industry in Northern Italy. In the context of the project will play the role of aggregator thanks to its large network of specialised museums all over Europe (see networking), disseminator in cooperation with other organization to which is linked since many years (namely the European Museum Forum and), pilot for elaborating studying and developing devices for the use of digital collection related to industrial history and heritage.

Role in the project

The Micheletti Foundation will play the role of Content Provider and user validator of the ASSETS services

Key personnel

Massimo Negri European Museum Forum Director since 2000 and member of the Jury of the European Museum of the Year Award since 1983. Twice Fulbrighter at the Pennsylvania State University and at the Smithsonian Institution. Independent temporary exhibition specialist and an active lecturer on industrial archaeology, he has also written several publications in this field as well as on museological matters in general. In 1993, Massimo Negri was awarded the Order of Isabel la Catolica by the King of Spain for his activities in cultural exchanges between Italy and Spain. Also works as a consultant to the Province of Milan for museum innovation. He teaches Museology at the IULM University of Milan and Industrial Archaeology

at the University of Padua. Full CV and info at www.massimonegri.com. He is member of the Europeana executive board.

B3.1.24 MEME MEDIA LAB OF THE HOKKAIDO UNIVERSITY (JAPAN)

The history of Hokkaido University goes back to 1876 when Sapporo Agricultural College was founded as the first higher-education institution in Japan. The Meme Media Laboratory (MML) is an independent institute within Hokkaido University, reporting directly to the university president, although the MML director and most of its members are also attached to the Graduate School of Information Science and Technology (IST). The MML was inaugurated as one of the 'venture business laboratories' set up in eleven Japanese universities in 1995, as part of a program promoting research and development centered on graduate schools; the MML's theme was set as 'research into fundamental technology for international distribution and reuse of multimedia knowledge'. Spurred by the trend of diversification and segmentation of specialties within science and technology, recently this research has focused on the challenge of citing, accessing, compiling and re-distributing knowledge resources that have highly heterogeneous formats and access methods. The MML aims to be at the leading edge of addressing this challenge, by pursuing research into the creation, searching and processing of 'knowledge media', and thus enabling the advanced utilization, global distribution, reorganization and reuse of knowledge across diverse communities.

Role in the project

The MEME Media Lab will develop the service for the full-text search for image-scanned documents

Key personnel

Tanaka, Yuzuru. Professor, Laboratory director; PhD 1985. Knowledge media, Database and

Knowledge base, Database and Web visualization, Ad hoc federation of computational resources, Document image retrieval.

Lunzer, Aran. Visiting researcher; PhD 1995. Interfaces for exploration, End-user development, Human-computer interaction, Object-oriented environments

Imura, Hajime. Doctoral student: Document image retrieval for handwritten documents.

B3.1.24 SUBCONTRACTING

EDL Foundation will subcontract part of the activities of WP3.1. The subcontract would be to set up user groups according to the DoW and organise their participation in Usability Laboratories in 3 European countries. These laboratories record the movement of the user around the site, whether they click and use the specific functionality and then how they use it. In addition Focus groups will be held to obtain more qualitative evidence about the new functionality. The subcontract partners will be selected through tender according the EDLF rules and procedures.

Engineering will engage two experts for the coordination of the Europeana Clustering Advisory Board (ECAB) and the coordination of the Content Provider User Group. For the first activities has been identified Prof. Stefan Gradmann from the University of Humboldt, while for the second activities the expert has to be selected in the first month of the project.

B3.2A. CHOSEN APPROACH

B3.2A.1 STRATEGY AND METHODOLOGY

ASSETS will develop its services following the classical methodology, consisting of the cyclic execution of the following steps: requirements analysis, design, implementation, testing and evaluation.

Concerning requirements, ASSETS will assemble in deliverable D2.0.1 the functional and non-functional requirements produced by the EDLnet Network and the additional requirements that in the meantime have been produced by Europeana version 1.0. Some members of the ASSETS consortium (namely, EDL Foundations and CNR) have had an active role in this collection and specification, and they will use their knowledge to contribute to D2.0.1 which is an internal deliverable and will serve as a basis for the software production cycle in ASSETS.

Concerning the design of the artifacts that directly involve users (user interfaces, documents, results of operations, etc.), a user-centered approach will be followed, directly involving the user in all the design stages in order to understand their needs and test the underlying assumptions. These specific needs and assumptions are hard to state at the level of requirements, and for this reason they will be elicitated and tested during design, by capturing audience, purpose and context of the designed tasks and letting the user (audience) verify that the proposed artifact correctly serves its purpose in the given context.

Concerning the implementation and testing of the services, ASSETS will follow an open source approach. To this end, it has devoted a Workpackage (Service integration, testing and deployment) to the support of the software development activities. This Workpackage will follow the open source best practices and will use current state of the art tools for covering all phases of development: setting up of the development framework, documenting designs and code, defining and implement a run-time environment including all necessary packages and libraries, defining and automatically running tests. A standard, integrated tool from the open source community will also be used for communication within the development community of ASSETS.

In ASSETS Open Source means that Europeana can take over the ASSETS components without asking any permission to anybody. No special clause is needed. It is the busness concept behind ASSETS that Europeana will take over the services in their farm guaranteeing their maintenance using the development practices as Europeana itself.

Concerning evaluation, two types of evaluations will be carried out: a technical and a user-centered evaluation. The technical evaluation will be aimed at verifying that the services delivered by ASSETS fulfil the efficiency and scalability requirements of European Digital Libraries and Europeana in particular. This type of evaluation will be carried out in the sandboxes of EuropeanaLabs. EuropeanaLabs is a facility set up and run by CNR within the Europeanav1.0 Network, in order to make available the data sets of Europeana for experimentation of services. Every sandbox is a virtual machine endowed with all the necessary components for: deploying the component to be evaluated and for executing experiments against the Europeana data set. The presence of the coordinator of Europeanav1.0 and of the responsible of the EuropeanaLabs in the ASSETS consortium will make technical evaluation possible with the best efficiency.

The user-centered evaluation will be aimed at verifying that the services delivered by ASSETS fulfil the expectations of the users. The EDL Foundation and the other content providers in the ASSETS consortium will carry out this evaluation by deploying the ASSETS services and managing evaluation campaigns of these services with their users. The outcome of these campaigns will be fed back to the respective developers for revision/refinement.

From a strategic point of view, ASSETS aims at making the developed services available to Europeana first and to the other digital libraries in the ASSETS consortium in a second stage. This prioritization is due to the central role played by Europeana in the creation of the European Digital Library. This strategy dictates a very strict agenda and determines the scheduling of the activities of the ASSETS project, as it can be appreciated from the GANTT chart included in the Implementation section of this proposal.

In general terms, alignment with Europeana means inclusion of the basic services developed by ASSETS in Europeana.

In order to contribute to Europeana, the following schedule will be followed by ASSETS:

- That first draft of the specifications will be issued at M7;
- A first implementation of the services will be produced by month 11, evaluated until month 15, integrated into Europeana at month 16.
- In parallel, from month 12 to month 15, the results of evaluation will be taken into account in order to specify, enhanced services.
- The enhanced services will be implemented until month 19, evaluated until month 23 and finally integrated into Europeana and deployed by the other Digital libraries in the consortium until month 24, which is the end of the project.

This strategy combines a sound methodology with the effective contribution to Europeana.

The technical work to be performed by the project is described next.

B3.2A.2 ASSETS PLATFORM AND SERVICES

ASSETS will provide a “light” software layer (here referred as the “ASSETS Platform”) aimed at providing a minimal integration support to the loosely coupled ASSETS services at presentation level. Such thin level will provide access to a multiplicity of media content providers without aggregating the content in a central repository or changing the current practices of content provision each organisation has in operation.

This will be achieved by the implementation of ‘thin’ interfaces (APIs) on the side of the content providers which will make sure that the metadata of all content items are made available to ASSETS and synchronised during any changes that take place. In this way ASSETS will act as a ‘broker’ of content without having to maintain copies of the content and endanger breach of IPRs or changing pricing policies that are in place.

ATC will provide a common and homogeneous web interface to the running single services, in order to offer the user a transparent solution, mostly through the exchange of data structured in suitable communication languages.

The central idea is to deliver a “light” integrated prototype, based on a **common presentation layer**, which will allow the dynamic presentation of the information delivered by the remote calling of the existing

deployed services. Standard technologies and tools (CSS, XSL, XML, JSP) will be used within this integration activity.

In the heart of ASSETS **state of the art services** for searching, browsing and delivering rich media content will be provided for ensuring user satisfaction which will go far beyond the existing solutions on a worldwide level.

In parallel to providing this integrated solution which will ensure the sustainability of ASSETS beyond the framework of the EC funding, all services will also be **integrated on the existing Europeana platform ensuring improvements in searching, browsing and user interface functionalities**.

Content in the content repositories will be semantically analysed and indexed with existing methods which are the results of recent EC funded projects, while also using all existing metadata. Indexing will be based on a content model that will be the evolution of the IPTC taxonomy, extended to cover the associated special attributes of the media items of any classification.

The proposed technical approach is summarised on the following figure:

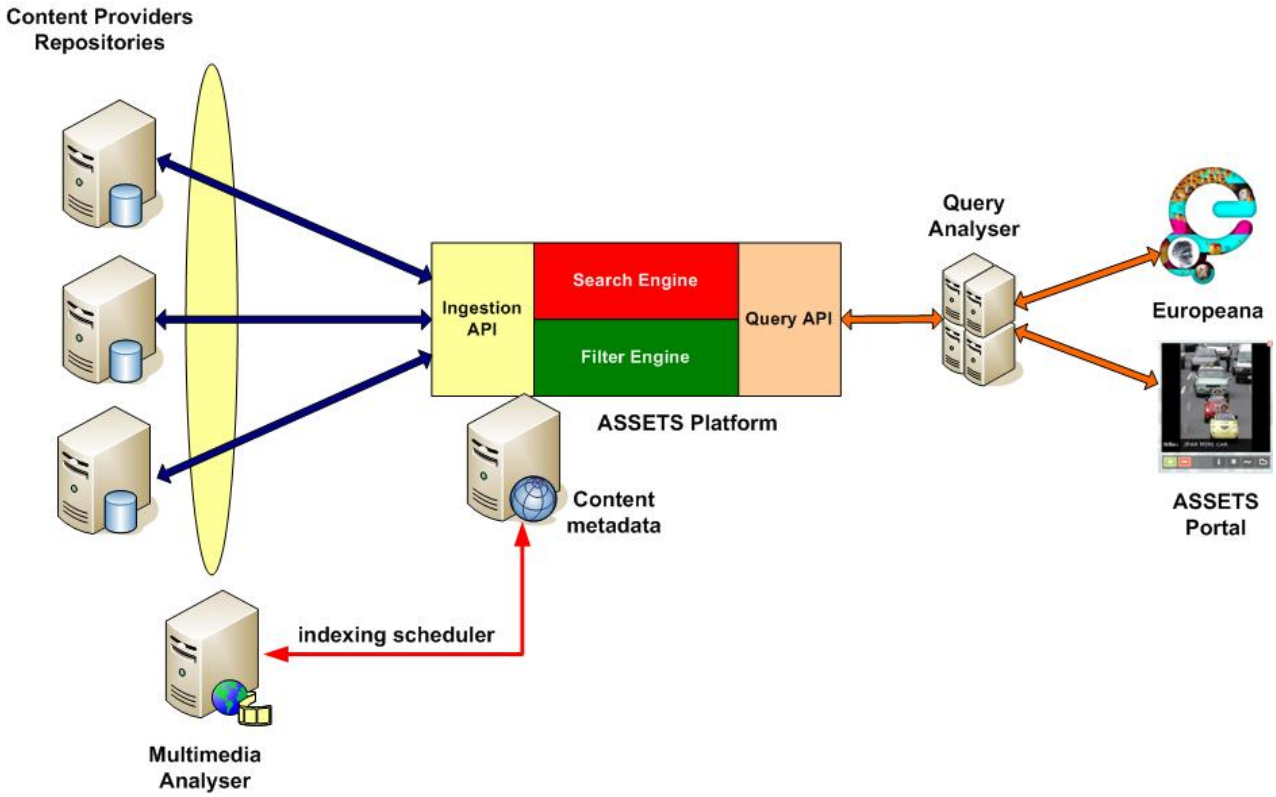


Figure 2 The ASSETS Platform

This figure envisages a "light" integrated software application, which will combine advanced searching and retrieval procedures with sophisticated media items management services. The targeted solution will comprise a system that will enable information retrieval of any type, combining real-time searching, advanced linguistics and semantic analyser mechanisms, along with a variety of content access options into a modular and scalable product suite.

A web Portal will be used to enable searching for any kind of multimedia content. The retrieved content will be fed from a pool of content providers (from the ASSETS consortium), which offer a set of digitized media items, annotated with the appropriate metadata information. Multimedia analysis modules will be

introduced to enhance the functionality by providing the necessary APIs to generate the appropriate annotation fields and produce rapid, relevant and reliable results.

The digital objects stored in the Content Repository of the providers will be annotated using existing, state-of-the-art techniques in order to produce the news items metadata information (document map, content and attributes), according to a standardised taxonomy for the metadata structure of multimedia content. Based on this, an Indexing Profile will be created for the ASSETS repository and will be treated as the gateway to enable searching within the available multi-scope media content on the specific provider.

B3.2A.3 ASSETS SERVICES

Ingestion of metadata

Metadata cleaning

The service will be based on supervised machine learning technology, according to which a generic learning device will learn from provided clean metadata a model of "metadata correctness", and will apply the resulting model to the metadata records to be cleaned; those that are most at odds with the learned models will be the most likely ill-formed ones. If the semi-automated cleaning method is chosen, these will be ranked high in the list. If the completely automatic method is chosen, a threshold will be learned so that the records that exceed this threshold will be cleaned automatically, without user intervention.

Knowledge extraction from metadata records

This service will be based on supervised and semi-supervised technology for information extraction, a field which has reached a good level of maturity in recent years. This technology will allow to build an automatic annotator of concept occurrences, learning from a set of metadata records in which the concept occurrences have been manually identified; the system will build the annotator by looking at the examples provided, and extrapolating from them the features that characterize an instance of a given concept. In other words, the system will build and then apply a model of what it takes for an expression of natural language to denote the instance of one of the targeted concepts.

We will investigate (and leverage on existing) approaches for recognizing various types of named entities in text (including names of persons, organizations, locations and geo-political entities, etc.), as well for recognizing expressions of time.

Metadata classification

The service will be based on supervised (and possibly semi-supervised) machine learning technology, whereby a general-purpose learning device learns, from a set of manually classified metadata records, the characteristics that a yet-to-be-classified metadata record should have in order to be attributed to a given category. The technologies we are going to use are fundamentally agnostic about the specific classification scheme (i.e. the set of categories, typically organized into a taxonomy) under which the metadata records need to be classified; therefore, it will be possible to develop this tool even before final recommendations as to the classification scheme that should be used are issued. These technologies are, however, robust and scalable, and have already been tested by these proponents in contexts characterized by very large (i.e., tens of thousands of categories) classification schemes, such as e.g., IPC (International Patent Classification). Large multidisciplinary classification schemes such as Dewey Decimal Classification (DCC) or Library of Congress Classification (LCC), can easily be handled by the tool we will build.

This service will be based on technology for structured document classification. In fact, since metadata records are structured into fields, and since they are more difficult to classify than standard textual documents (since surrogates are poorer in information than the documents they represent), it makes sense to use classification techniques that exploit the available structure in order to "squeeze" as much classification accuracy as possible from the available information.

Data Repository

Regarding the scalable insertion of data in the index, we will design and develop the API and infrastructure allowing the ingestion phase to populate the repository with the data from providers.

The access method to support efficient and scalable search operations is more research-wise and will study and develop techniques for representing data and supporting data encoding. In particular, we will focus on data encoding techniques that will reduce the space occupancy of the data stored. Data encoding (i.e. compression) has been shown to be very important to exploit the memory hierarchy of modern computing architectures. The more shrank the data to be processed the more data will fit in lower, and thus faster, memory levels.

The repository will be designed to allow the storing of many different data, in particular: the different records, the various indexes, the log of the queries submitted (query logs).

Indexing

In indexing, we will be inspired by the BM25F document scoring technique, for instance we will exploit the structure of Europeana records to appropriately weight each field of the record.

Efficient indexing techniques will also include the adoption of parallel/distributed techniques like the recently made popular MapReduce programming model that has been shown to be suitable to support scalable indexing. In particular, open source implementations of MapReduce exist, like the popular Hadoop project developed under the Apache Licence and heavily supported by major search engines like Yahoo!.

Another aspect of efficiency in indexing is how to compactly represent the index data structures. Encoding techniques for reduce the space occupied by the index will be studied. In particular, we will design and develop the most suitable index encoding method for the peculiar data managed by Europeana.

Metadata based ranking

This task will implement a ranking function for object surrogates. On the one hand we will apply advanced ranking techniques that exploit the current model, and, on the other hand, we will pursue the goal of identifying additional information that can extend or refine the model and improve the effectiveness of ranking perceived by users. Given a set of properties of an object and of the whole corpus, such as number of unique terms in the corpus, largest term frequency, largest object frequency, etc., we aim at discovering an effective (object ranking) function that maximizes the precision of the retrieval system. In case the surrogate of an object provides a pointer to the object itself or a container such as a web page, we plan to collect additional information also from a crawling process. Another promising direction is the personalization of results, that is the adaptation of results to the user's general tastes and interest. For a given query, there may be multiple relevant results, but only a few of them may match the user's tastes. One approach would be to discover a customized ranking function for a given user, and to use this function during the search process. A completely different direction would be to exploit social information in such a way so as to boost the ranking of surrogates highly rated by the user's neighbourhood. The building block of those activities is constituted by query log analysis, from which we aim at exploit feedback information to improve the quality of search results.

Large-scale and high-throughput are another aspect of search. A distributed IR system is usually deployed on large clouds running multiple search core modules, each of which is responsible for searching a partition

of the whole index. Furthermore the whole search system may be replicated to spread the workload on more than a single search system. We will study how to support advanced query processing by using architectures able to cope with the impressive amount of data we aim at managing. We will use a careful combination of both document-partitioning (splitting the collection into sub-collection and independently index and concurrently search through them) and collection-prioritization (selecting the most promising sub-collection to reduce the average workload of the system).

Audio content annotation and indexing

The service has two main objectives:

— Provide a service for the automatic description and content enrichment of music audio data

— Provide a service for fast indexing and retrieval of music audio content.

Music search core engine will listen to, understand and interpret music like humans do. It will describe audio in musical and perceptual terms like rhythm (beats-per-minute, percussiveness), harmony (key, mode, chords), timbre (instrumentation, production qualities), genre of the song, and even moods ('blue', 'party', 'furious', 'happy', among others). The audio description can be enriched with editorial information (artist, release date, country) as well as information distilled from blogs, reviews, or other external data.

The search engine will then base the search criteria on metadata extracted from the song and editorial content to allow to search inside the collections for “music that sounds like Pixies” or allows your users to query music like “what are the tracks from this repository which sound like Chet Baker” or “I want relaxed jazzy music”. Once one finds more less the user need, it is possible to use the function "more like this" that will give you more results like the one you chose. The search must scale to millions of audio segments and have a simple yet powerful API.

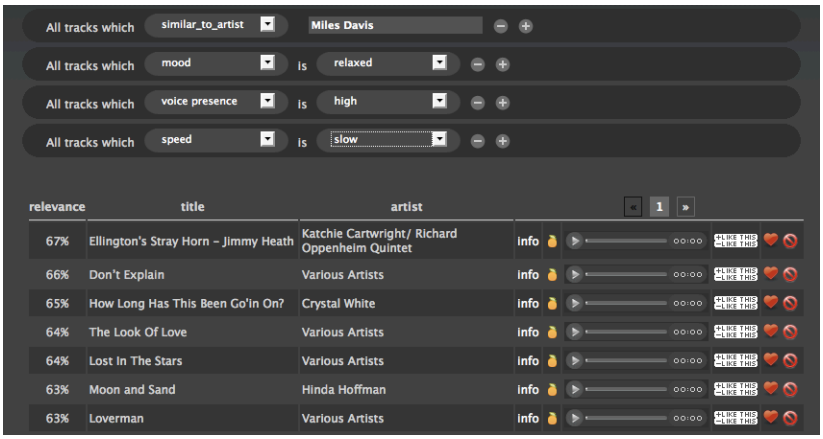


Figure 3 Audio content annotation interface

Search abstraction Layer

Search in the Europeana context is a central feature that requires efficient indexing structures, advanced ranking algorithms based on metadata and multimedia annotations. In other words, our aim is to implement a dedicated search engine targeted on the specificities of the cultural items managed by Europeana. We expect then to output advanced features and functionalities that suits the search of cultural multimedia content.

To do so, this activity will consist on the definition of an abstraction layer dedicated to search. This layer will be an open API that any search component has to implement to be Europeana compliant. We will therefore explore different strategies based on metadata, semantics, context and user experience and requirements to provide a common set of basic functionalities for searching cultural items. In addition to these basic features, advanced search functions will be proposed, defined and implemented to exploit the innovations in the domain of content management (like audio/video processing and indexing, 3D modelling, images annotations, etc.). Based on these innovations, we will define advanced search features that will bring an added-value in the Europeana platform like similarity search based on the content of multimedia files, ontology reasoning for query expansions and similarity searches, etc.

Based on the search abstraction layer API specification, open source and licensed search providers of the consortium will implement and adapt their search technologies to propose search functionality to Europeana platform. Based on these implementations, a benchmark of the two implementations will be realized to validate the use of the two approaches (open source and licensed search). The validation will be based on defined criteria like scalability, load balancing, relevance metrics, time responses etc.

Semantic cross linking browsing

The objectives of the Semantic Cross-linking Service are the following:

- Provide a set of tools that will allow fast navigation through media-rich content
- Provide the mechanisms for the establishment of semantic links between pieces of information presented in different media
- Transform the current flat form of media search to an experiential one by taking into account - user's experience and way of thinking**.**

The proposed service will allow for the construction of meaningful representations which evolve over time and automatically assign associative links between items that are related by virtue of their usage (recommendation systems) or their content representations. The service will allow users who have little experience with the media collection to gain access to it with a low learning threshold; it will allow exploration and even the creative curation of collections by interested outside users. This is expected to significantly improve searching, browsing and retrieving information, especially for large scale Digital Libraries such as EUROPEANA.

The main functionalities of the Semantic Cross-linking Service are the following:

- Annotation Propagation: by exploiting the recent advances in active learning, this component will leverage information from already annotated objects in order to automatically tag items that have not been tagged, e.g. newly entered items. The method should be able to investigate which (and how many) objects should be annotated in order to minimize the uncertainty of the system. This functionality will be enhanced with an appropriate mechanism for manual tagging based on a tree-level structure, where the user can select among the several predefined annotations or create new ones.
- Relevance Feedback: this component will work in combination with the previous one. In this way, semantic cross-linking will incorporate the expression of conceptualizations by individuals. User interaction will be translated to a "similarity score", and will be inserted to the system in order to

refine the already retrieved result set. In this way, the proposed system will be more "human-centric" since it will be based on the user's individual actions and choices.

Manual correction of annotations

Automatic analysis of content will provide mid/high level semantic descriptors which are often noisy. It's usually the case for the recognition of named entities (people, location, events, event dates etc.). A semi-automatic workflow must improve the quality of the obtained results by integrating into the loop a manual correction or completion of information.

The proposed service is a tool capable to insert/correct temporal annotations within video content. A first version of this tool already exists as a stable prototype developed during the European MESH project.

The main functionalities of the tool are:

- A generic connection to RDFS / OWL ontologies
- The display and editing of automatic RDF annotations (possibly multilingual) including temporally anchored ones.
- The possibility to create a user decomposition of the video in more meaningful sequences than a basic shot decomposition.
- The potentiality to manage several independent layers of annotations as well as hierarchically organized ones.

Beyond possible adaptations and customization, we aim, in this project to improve this tool in the following way:

- Make use of a audio transcription (if available through automatic analysis) to allow both: navigation through the video by the text and provide assistance to creation of named entities.
- Extension to photo and pure audio indexing.
- Eventually, add some specific enhancement in the GUI according to a given Ontology, to allow optional simpler annotation work according to a profile chosen by the user.

The following screenshot gives a view of the current tool.

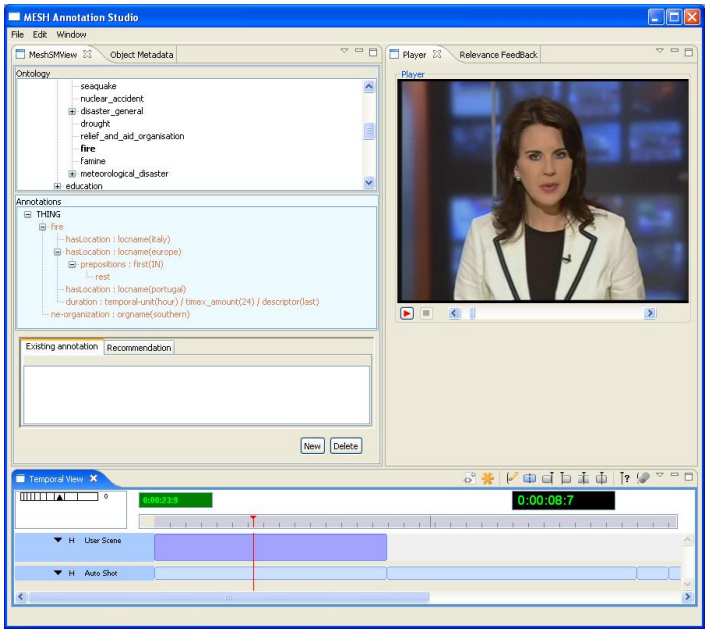


Figure 4 MESH tool screenshot

The tool is implemented in java as an ECLIPSE Rich Client Platform application and make use of SWI prolog for ontology and RDF management.

Digital Preservation Services

The OAIS (standard ISO:14721:2003) represents the key reference for digital preservation archives. The OAIS Reference Models establishes a common framework of terms and concepts and the OAIS Functional Model defines the basic functional components of a system dedicated to the long-term preservation of digital information. Within these functional components the preservation planning component plays a strategic role, by monitoring changes that could impact ability to preserve and maintain archival information. It maps out preservation strategy, and recommends appropriate revisions to this strategy in response to evolving conditions.

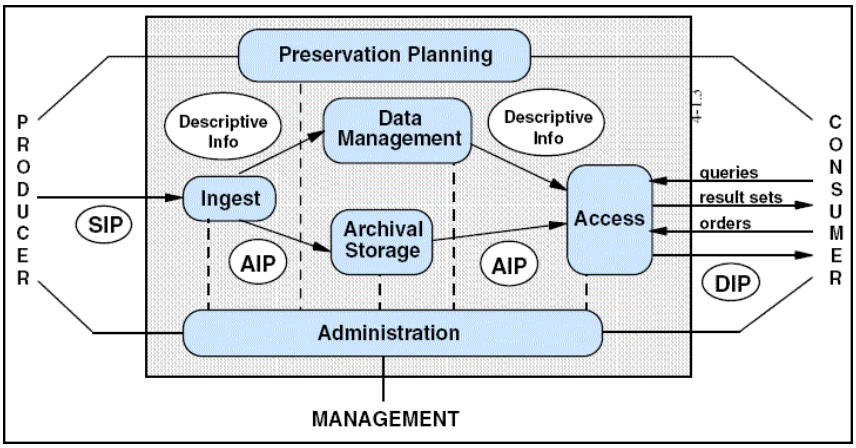


Figure 5 – OAIS (ISO:14721:2003) Functional Model

In this perspective, the ASSETS project will implement key aspects of an OAIS Preservation Planning component in order to support the following preservation activities:

⇒ monitoring, identification and analysis of preservation risks (e.g. format obsolescence);

⇒ notification for change event impacting long term preservation;

⇒ triggering of appropriate preservation activities.

The necessary fctionality will be provided by the following digital preservation services:

⇒ Risk Management Service;

⇒ Normalization Service;

⇒ Notification Service.

Risk Management Serviceun

This service will be available to all content providers and will provide risk management reports to content providers by analyzing the metadata profiles of the contributed content. The service will perform a statistical analysis of the content formats and categorize them based on their preservation risk; for example, proprietary formats with limited support would fall under the highest risk category. This service would work extensively with preservation community resources such as PRONOM and the proposed UDFR (Universal Data Format Registry).

Normalization Service

Normalization is the conversion of the source object from its original data format into an open, preservation-friendly archival format. This service will be available to those content providers that provide digital objects (as opposed to only providing metadata records). Based on the results of the risk management analysis, the service will recommend a normalization strategy for those objects in the provider's collection. If the provider agrees to the recommendation, the normalizations will be carried out on a computing cloud infrastructure (in order to avoid loading Europeana computing resources) and be made available for secure download by that institution.

Notification Service

Notification is the service which guarantees the adequate distribution of notifications for change events that could impact long term preservation, within the digital archive. Those notifications are dispatched according to event types, well defined rules (notification rules), and roles of the entities involved in the digital environment (i.e. curator, preserver, holder). The alerted entity (i.e. human actor and/or automatic tool) is able to enact corrective action according to established preservation plans.

Video summarisation and adaptation

Video summarization and content adaptation are aimed to provide an enhanced quality of experience for the different users consuming video content from different terminals and networks. On one side video will be summarized in order to provide a preview of the video content, allowing the user to quickly browse large video repositories effectively. Additionally if the video is semantically annotated and the user has a preferences profile, the summaries can be personalized to each user. On the other side, both summaries and complete videos can be adapted to the different terminals and networks used for accessing the repositories, allowing a more effective retrieval of video content.

Video summarization will be based on on-line summarization, that is, each time a summary is requested it will be generated on-line, with a unnoticeable delay and avoiding to store large number of summaries. Additionally, the summaries can be personalized (if annotations are available) as the algorithms work on-line and real-time, there is no need for storing summaries, as they can be efficiently created on demand. Annotations for personalization can cover different aspects (e.g., what each shot is about, what objects appear, what events happen, genre, places) and associated user preferences rank for each user the importance of those annotations (a user may be more interested in the video parts where people appears, whilst other may prefer the landscape views). Besides the enhanced efficiency at the server side as summaries don't need to be stored, at the client side there can be additional advantages: as the summarization is performed on-line it would be possible to access to a summary at the same time the video is being downloaded (not seeing all the video, just the summary). This allows the user to stop the downloading if she/he doesn't like the actual content, saving resources and, what is more important, time. On the other hand, if she/he likes the video, as it will be stored during summarization, after viewing the summary (or deciding it is what she/he looked for) she/he will be able to see the complete video without requiring to download it again. So the main contributions are personalization of video summaries, efficient summarization for browsing purposes, and enhanced user experience when accessing videos.

With respect to content adaptation, we will make use of tools that can be easily adapted and integrated in order to provide content adaptation during delivery to different terminals, networks and user preferences.

Adaptation may range from adapting among formats, resolutions, ... for different modalities (image, video, audio), to transmoding (e.g., image2video, video2image).

B3.2A.4 ASSETS PORTAL USER INTERFACE

Advanced search and navigation interfaces will be designed and developed with a twofold purpose:

⇒ First, to create Rich user interface components for the ASSETS Platform and its value-added services, supporting complex query formulation and results presentation and ensuring the integration and interoperability of the ASSETS Platform with EUROPEANA.

⇒ Second, to provide GUI components that allow improving the usability of the searching and browsing processes in EUROPEANA.

The ASSETS Portal will benefit from GUI facilities developed by Robotiker Tecnalia in previous research projects. These facilities are part of innovative interfaces, specially designed for searching in large scale multimedia professional archives, which provide:

⇒ Intelligent access to a wide range of media inputs within one overall approach

⇒ Interactive retrieval, through feedback and log analysis mechanisms

⇒ Customization of the search system according the profile of a particular user

⇒ Searching facilities.

The objective is to provide interactive search interfaces. Textual queries is a well-established way in which users make queries, but it is also desirable to enable other types of query formulation such as visual queries or audio queries.

Being aware that users have different needs when formulating a query, the Search Portal provides an adaptive interface for searching in multimedia content:

⇒ Basic search: just a query text box to input some keywords.

⇒ Basic expanded search: basic search plus some extended options.

⇒ Advanced search: further advanced functionalities for complex queries

The Search Portal also provides support to execute different types of simple queries and any combination of them:

⇒ Full text search

⇒ Search text on audio transcription

⇒ Concept search

⇒ Metadata search

⇒ Similar Search: visual similar search taking as input an image or a video

⇒ Local Search: visual similar search taking as input an area selected by the user

⇒ Search by Upload: visual similar search taking as input an external image provided by the user

⇒ Relevance Feedback search: search for documents that are similar to one or more relevant ones selected by the user (positive samples) and/or have nothing in common with one or more non-relevant ones also selected by the user (negative samples).

⇒ Search by colour similarity

Presentation of results:

The objectives are to present the results of a query in a user-friendly way, to support an easy navigation in the result set, to provide several tools for interacting with a result and to display detailed information about it.

Several presentation modes are available:

⇒ Mosaic View: each query result is represented by a thumbnail. By default, the results are displayed by relevance order and the number of items to be displayed in each page is automatically computed, adapting the presentation to the screen resolution. A detailed info and further functionalities for each result can be obtained by holding the mouse on a thumbnail for a few seconds (Mini toolbar). By making click on a thumbnail, quick info and further functionalities can be accessed in the Zoom window.

⇒ List View: each result is also represented by a thumbnail, and close to it some metadata fields are displayed. At the bottom of the thumbnail a mini toolbar is shown with some buttons that provide support for the main operations to do on a result.

⇒ Clustered View: in composed queries, the results are grouped according to the query type they are matching. The user can explore deeper into each individual group or close those groups that are not informative.

The improvements to implement in EUROPEANA will be carefully analyzed taking into account the developments achieved in other related projects. Some of the improvements proposed at this stage are described below:

⇒ **Advanced search**: currently only a limited set of fields are provided ('Title', 'Creator', 'Date', 'Subject'). Greater flexibility in metadata search could be implemented, for example allowing the user to specify values for each metadata field. Formulation of complex queries could also be supported, for example allowing to select the type of resource (text and/or images and/or videos and/or sounds).

⇒ **Query refinements**: Currently the system only allows browsing in the results of the previous query. The usability of the 'Refine your search' functionality could be improved by allowing the user to add new search conditions in the formulation of the query and by displaying Query Suggestions, either based on previous searches and logs or based on semantic annotations (p.e. Paris" is part of "France"). Quick filtering of results according to progressive user queries will be achieved.

⇒ **Results presentation**: different approaches for presenting the search results could be implemented (lists of images, categories of results, timelines, maps …). The presentation of results could be optimized, minimizing navigation through multiple pages and adapting the presentation to the screen resolution. The results could be ranked by relevance in an intuitive way for the user, supporting also various criteria for results ranking.

⇒ **Easy interaction on a result**: the image thumbnail could be enlarged when the mouse is on a thumbnail, showing some visual clues on the result. A Toolbar could be implemented to support main actions on each thumbnail, i.e. invoke to the ASSETS services (p.e. mark the result as being positive or negative regarding Relevance Feedback, add the result to a Lightbox (save to 'My Europeana'), perform

a similar search, open the Details window, etc.). This toolbar will increase the usability by allowing the user to get access to advanced functions without needing to open the "Details" window.

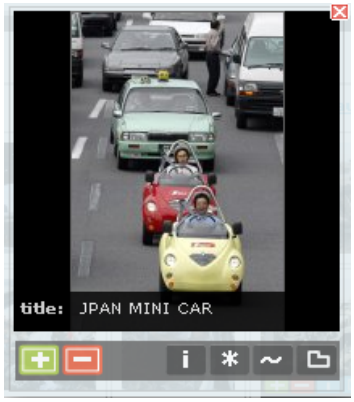


Figure 6 Example of advanced interface

- ⇒ **Details window**: an option of selecting a tag and performing a new search could be introduced. The navigation through 'related content' and in general, all the navigation, could be improved to gain in usability and avoid confusing the user.
- ⇒ **Personalization improvements**: user profiles can be implemented to support personal preferences (i.e. details to be displayed, accessibility issues…). The private workspace can also be improved with new facilities, for example, adding tools to manage multiple light boxes or a facility to download contents from the site.
- ⇒ **Administrative facilities**: a dedicated interface can be implemented to support administrative task (usage monitoring, statistics…).
- ⇒ **Collaborative working spaces**: support for user's group activities could be implemented.

B3.2A.5 Content Provision

Even if the objective of the call (2.1), where ASSETS is applying, does not require the definition of content provided by the project, the ASSETS consortium content providers will give details on the content that there are going to make accessible through the ASSETS services.

At the end of the project ASSETS will provide to Europeana not only the services, in order to improve the functionalities of the European Digital Library platform, but also to provide more content to it.

Moreover the ASSETS services will be validated with the Europeana content but also with other digital library content not yet accessible through Europeana.

B3.2B. Work plan

Through the proposed project we aim to provide to Europeana the necessary ASSETS for becoming the reference point of Digital Libraries. We aim to make Europeana the most attractive, usable and effective gateway to free digital content worldwide. At the same time we aim to provide a self-sustainable platform which, utilising the same functionalities will be a central access point to professional content in a paid basis.

To realise this vision we have structured the foreseen work in three Streams:

Stream 1: Management and Networking

Stream 2: Foundation

Stream 3: Content and Users.

In the following diagram we group the planned workpackages under these three streams:

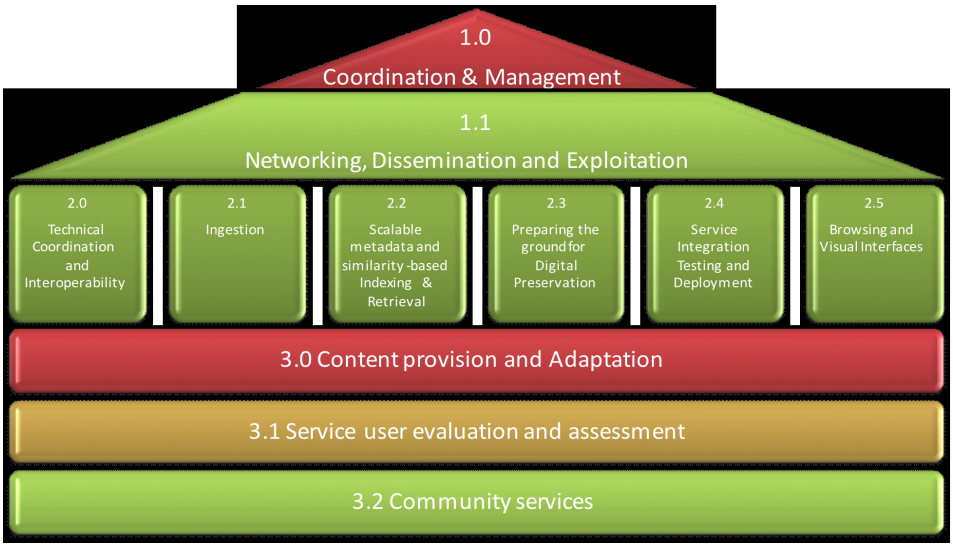


Figure 7 Work plan structure

In detail, two workpackages have been grouped under **Stream 1 (Management and Networking)** to ensure the necessary activities for:

1.0. coordinating all administrative and financial tasks

1.1. disseminating information on the project and its progress, building a community for networking activities and drawing the business plan that will ensure the future sustainability of the ASSETS outcomes

Six workpackages have been foreseen in **Stream 2 (Foundation)** for the design and implementation of the ASSETS platform and services:

2.0. to make sure all the technical activities are coordinated and streamlined towards providing services interoperable with Europeana

2.1. to implement services that will allow metadata normalization, cleaning and mapping

2.2. to deal with the necessary improvements on multimedia content retrieval

2.3. to prepare the ground for digital preservation

2.4. to integrate and deploy all services both on the ASSETS platform as well as in the framework of Europeana

2.5. to provide an improved user experience through browsing and visual interfaces

Three workpackages have been planned under **Stream 3 (Content and Users)** to ensure:

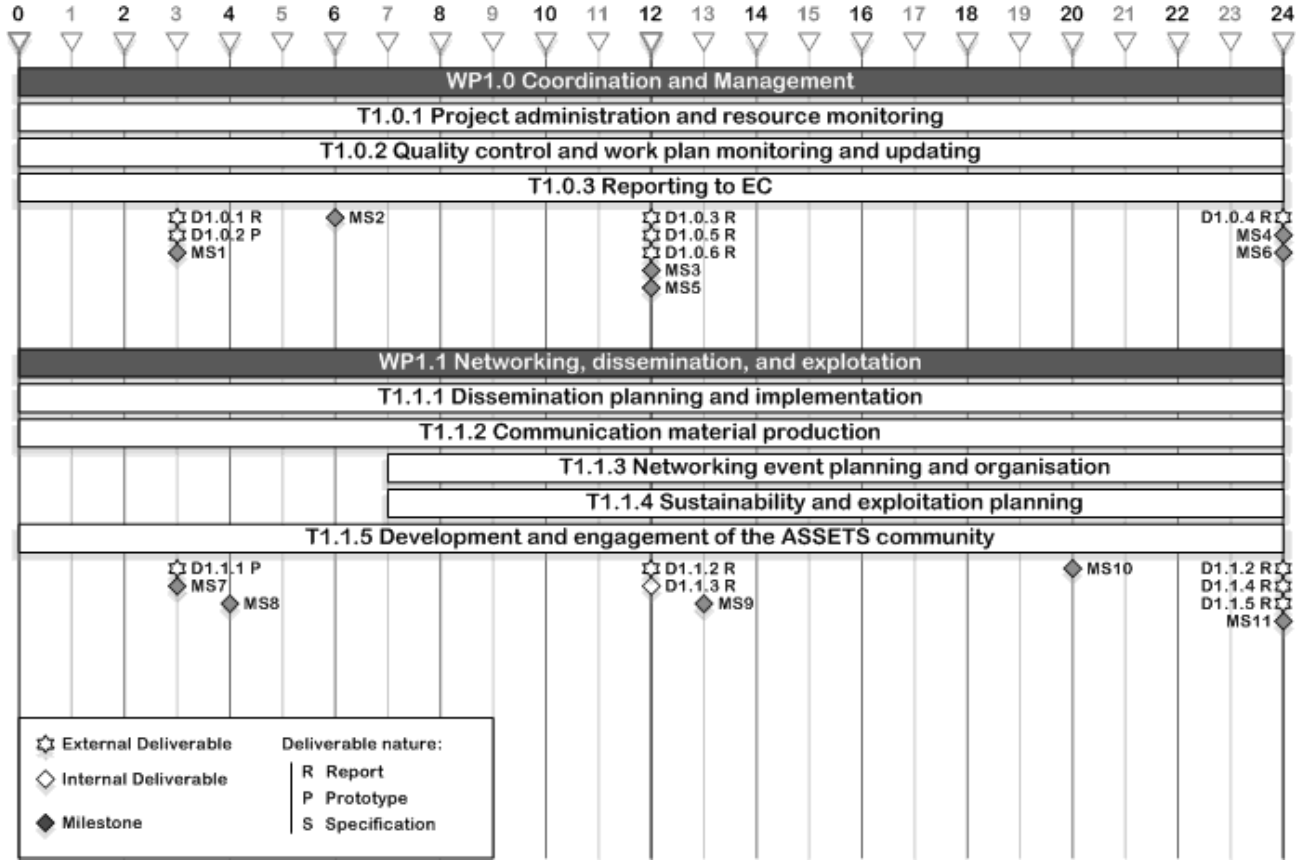
3.0. adequate content is made available for testing the new services and environment (apart from the existing Europeana content)

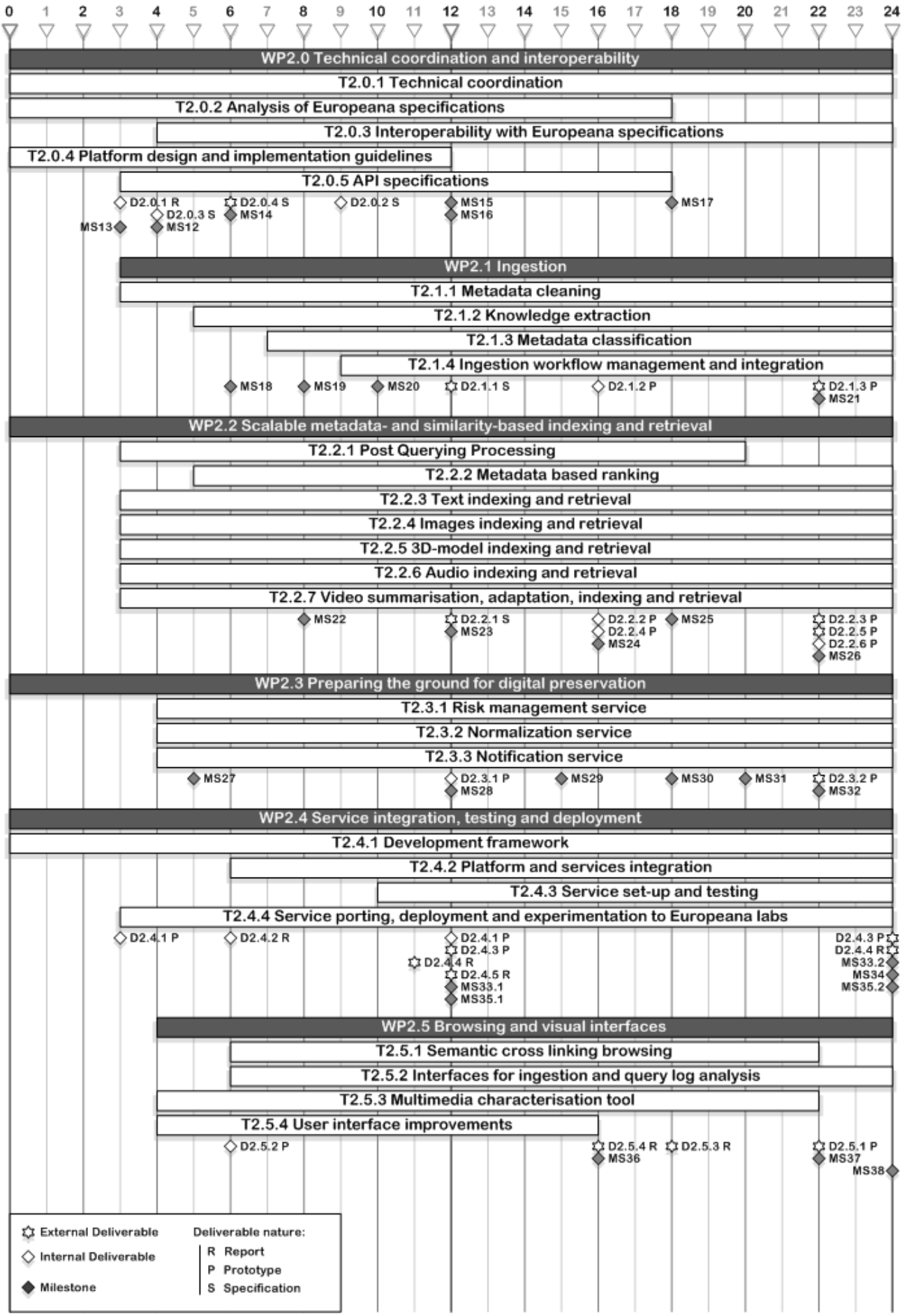
3.1. the continuous evaluation of the services and platform by real users

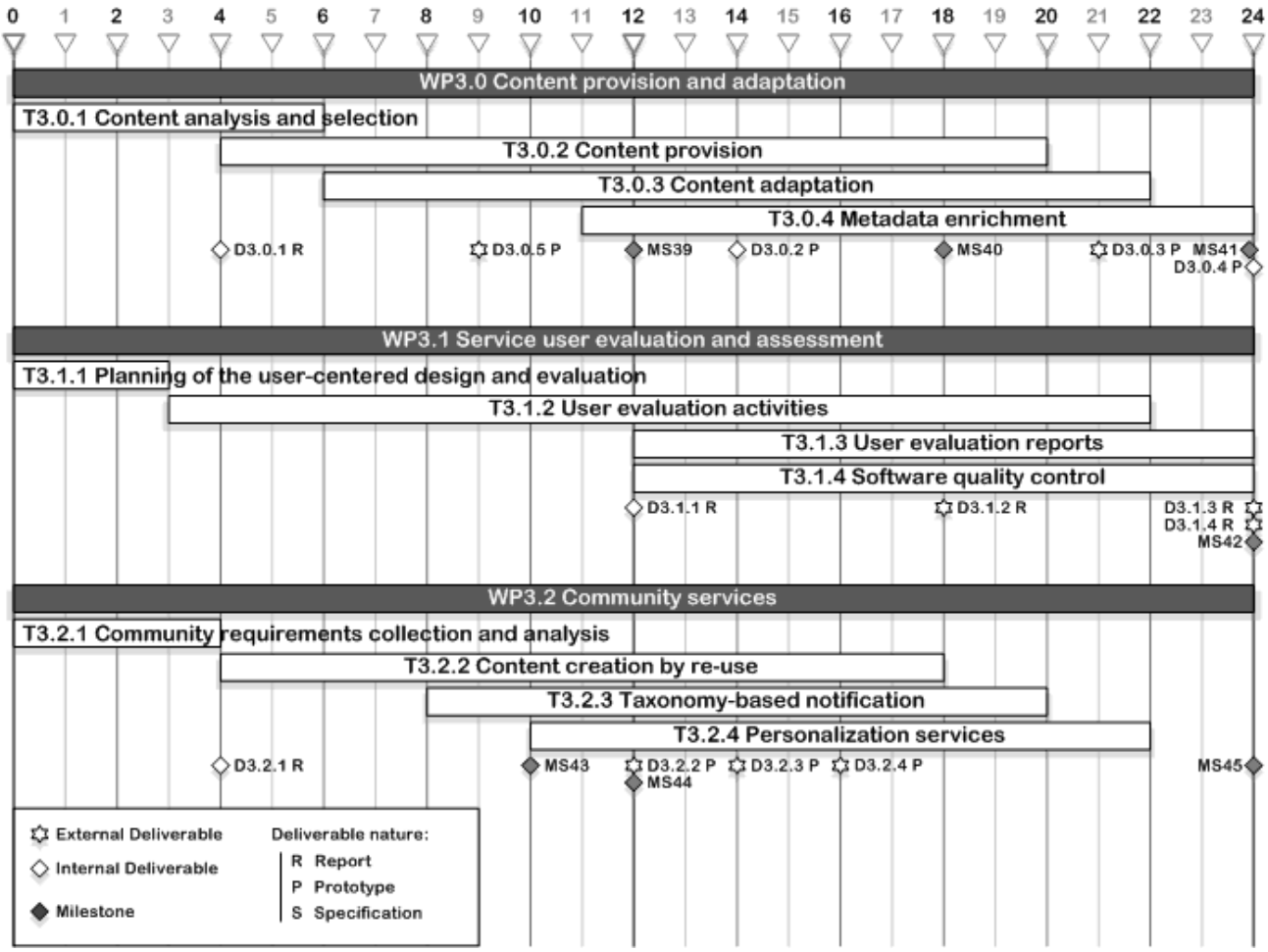
3.2. community building services are adequately integrated to involve real users in the content lifecycle

B3.2B.1 Timing of Work Packages and their components:

GANTT CHART




0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
WP2.0 Technical coordination and interoperability
T2.0.1 Technical coordination
T2.0.2 Analysis of Europeana specifications
T2.0.3 Interoperability with Europeana specifications
T2.0.4 Platform design and implementation guidelines
T2.0.5 API specifications
D2.0.1 R
D2.0.3 S
MS13
MS12
D2.0.4 S
MS14
D2.0.2 S
MS15
MS16
MS17
WP2.1 Ingestion
T2.1.1 Metadata cleaning
T2.1.2 Knowledge extraction
T2.1.3 Metadata classification
T2.1.4 Ingestion workflow management and integration
MS18
MS19
MS20
D2.1.1 S
D2.1.2 P
D2.1.3 P
MS21
WP2.2 Scalable metadata- and similarity-based indexing and retrieval
T2.2.1 Post Querying Processing
T2.2.2 Metadata based ranking
T2.2.3 Text indexing and retrieval
T2.2.4 Images indexing and retrieval
T2.2.5 3D-model indexing and retrieval
T2.2.6 Audio indexing and retrieval
T2.2.7 Video summarisation, adaptation, indexing and retrieval
MS22
D2.2.1 S
MS23
D2.2.2 P
D2.2.4 P
MS24
MS25
D2.2.3 P
D2.2.5 P
D2.2.6 P
MS26
WP2.3 Preparing the ground for digital preservation
T2.3.1 Risk management service
T2.3.2 Normalization service
T2.3.3 Notification service
MS27
D2.3.1 P
MS28
MS29
MS30
MS31
D2.3.2 P
MS32
WP2.4 Service integration, testing and deployment
T2.4.1 Development framework
T2.4.2 Platform and services integration
T2.4.3 Service set-up and testing
T2.4.4 Service porting, deployment and experimentation to Europeana labs
D2.4.1 P
D2.4.2 R
D2.4.1 P
D2.4.3 P
D2.4.4 R
D2.4.5 R
MS33.1
MS35.1
D2.4.3 P
D2.4.4 R
MS33.2
MS34
MS35.2
WP2.5 Browsing and visual interfaces
T2.5.1 Semantic cross linking browsing
T2.5.2 Interfaces for ingestion and query log analysis
T2.5.3 Multimedia characterisation tool
T2.5.4 User interface improvements
D2.5.2 P
D2.5.4 R
MS36
D2.5.3 R
D2.5.1 P
MS37
MS38
External Deliverable
Internal Deliverable
Milestone
Deliverable nature:
R Report
P Prototype
S Specification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WP3.0 Content provision and adaptation
T3.0.1 Content analysis and selection
T3.0.2 Content provision
T3.0.3 Content adaptation
T3.0.4 Metadata enrichment
D3.0.1 R
D3.0.5 P
MS39
D3.0.2 P
MS40
D3.0.3 P
MS41
D3.0.4 P
WP3.1 Service user evaluation and assessment
T3.1.1 Planning of the user-centered design and evaluation
T3.1.2 User evaluation activities
T3.1.3 User evaluation reports
T3.1.4 Software quality control
D3.1.1 R
D3.1.2 R
D3.1.3 R
D3.1.4 R
MS42
WP3.2 Community services
T3.2.1 Community requirements collection and analysis
T3.2.2 Content creation by re-use
T3.2.3 Taxonomy-based notification
T3.2.4 Personalization services
D3.2.1 R
MS43
D3.2.2 P
MS44
D3.2.3 P
D3.2.4 P
MS45
External Deliverable
Internal Deliverable
Milestone
Deliverable nature:
R Report
P Prototype
S Specification

B3.2B.2 PERFORMANCE MONITORING

Indicator No.	Objective/expected result	Indicator name	Expected Progress		
			Year 1	**Year 2**	**Year 3**
1	make Europeana content accessible through metadata-based searches	**Deployment of Metadata search service**	10% of content will be accessible	100% of content will be accessible	Any new added content will be accessible
2	make multimedia content accessible through content-based similarity searches	**Deployment of Content-based similarity search service**	30% of the ASSETS multimedia content	100% of the ASSETS multimedia content 20% of the Europeana Providers multimedia content	100% of the Europeana Providers multimedia content
3	create semantic links between Europeana surrogates	**Deployment of Semantic Browsing Component**	5.000	10.000	20.000
4	provide digital preservation planning services to Europeana Content Providers	**Deployment of Digital Preservation services**	analyse the content of Europeana and ASSETS	Normalise on 10% of Europeana content and 100% of ASSETS content Europeana	Normalise on 50% of Europeana content
5	Enrich new and existing content using the ingestion services	**Deployment of Ingestion Services**	10% of the Europeana content 50% of the ASSETS content	50% of the Europeana content 100% of the ASSETS content	100% of the Europeana content
6	Add ASSETS new	**Content**	30%	100%	

	multimedia (audio, video, image) content to Europeana	**aggregation**			
7	Aggregate critical mass	**ASSETS Community**	< 50 members	< 100 members	< 150 members

Table 3 Performance Monitoring Table

*Measurable actions relating to Networking and Impact are indicated in chapter B2 Impact – Performance Monitoring.

* The ASSETS project will last 2 years, the following table reports also the expected results for the year successive the end of the project (3rd column Year three).

B3.2B.3 WORK PLAN TABLES

WT1: WORK PACKAGE LIST

Work package no.	Work package title	Lead partic no.[3]	Lead partic. short name	Total Person months[4]	Start month[5]	End month[6]
WP1.0	**Management and coordination**	1	ENG	36	1	24
WP1.2	**Networking, Dissemination, and Exploitation**	21	CIAOTECH	113	1	24
WP2.0	**Technical Coordination and Interoperability**	3	ARC	109	1	24
WP2.1	**Ingestion**	4	CNR	38	3	24
WP2.2	**Scalable metadata- and similarity-based indexing and retrieval**	4	CNR	83	1	24
WP2.3	**Preparing the ground for digital preservation**	1	ENG	42	1	24
WP2.4	**Service integration, testing, and deployment**	2	ATC	95	1	24
WP2.5	**Browsing and visual Interfaces**	12	CERT	56	4	24
WP3.0	**Content provision and adaptation**	14	CVCE	89	6	24

[3] Number of the participant leading the work in this workpackage.

[4] The total number of person-months allocated to each workpackage.

[5] Measured in months from the project start date (month1)

[6] Measured in months from the project start date (month1)

WP3.1	**Service user evaluation and assessment**	18	HASC	101	1	24
WP3.2	**Community services**	13	UPS	121	1	24
	TOTAL			**883**		

WT2: DELIVERABLES LIST

Number	Work package	Title	Lead beneficiary	Person months	Nature	Dissemination	Delivery date	Scientific
D10.1	WP10	Quality Plan	ENG	9.00	R	CO	3	No
D10.2	WP10	Management Website	ENG	12.00	R	CO	3	No
D10.3	WP10	First Monitoring report	ENG	4.00	R	CO	12	No
D10.4	WP10	Final monitoring report	ENG	4.00	R	CO	24	No
D10.5	WP10	Financial report year 1	ENG	3.00	R	CO	12	No
D10.6	WP10	Financial report year 2	ENG	4.00	R	CO	24	No
D11.1	WP11	ASSETS Communication Web site and dissemination material	CIAOTECH	26.00	P	PU	3	No
D11.2	WP11	Dissemination plan	CIAOTECH	28.00	R	PU	12	No
D11.4	WP11	Final Exploitation and sustainability plan	CIAOTECH	29.00	R	CO	24	No
D11.5	WP11	Final plan for the dissemination and use of Project result	CIAOTECH	30.00	R	PU	24	No
D20.4	WP20	The ASSETS APIs	CNR	109.00	P	PU	11	Yes
D21.1	WP21	Specification of ingestion services	CNR	15.00	O	PU	12	Yes
D21.3	WP21	Ingestion service - 2nd Release	CNR	23.00	P	PU	22	Yes
D22.1	WP22	Specification of post querying processing functionalities	CNR	18.00	R	PU	12	Yes
D22.3	WP22	Metadata-based indexing and ranking - 2nd Release	CNR	32.00	P	PU	22	Yes
D22.5	WP22	Scalable image indexing and ranking - 2nd Release	CNR	33.00	P	PU	22	Yes
D23.2	WP23	Deployed Preservation Services	ENG	42.00	P	PU	22	Yes
D24.3	WP24	ASSETS Platform	ATC	30.00	P	PU	24	Yes
D24.4	WP24	Service testing	ATC	32.00	R	PU	24	Yes
D24.5	WP24	Service deployment and experimentation in EuropeanaLabs	CNR	33.00	R	PU	12	Yes
D25.1	WP25	Semantic cross-linking service	EKETA CERT	20.00	P	PU	22	Yes
D25.3	WP25	Multimedia Characterisation tool	INA	16.00	P	PU	18	Yes
D25.4	WP25	Improved User Interface	ROBOTIKER-TECNALIA	20.00	P	PU	16	Yes
D30.3	WP30	Enhanced packaged and well-described sets of content	CVCE	45.00	P	PU	14	No
D30.5	WP30	Best practices for providing content	CVCE	44.00	R	PU	16	No
D31.2	WP31	Report on user evaluation of functionalities	HASC	50.00	R	CO	18	No

D31.3	WP31	Final report comparing laboratory evaluation against field use	HASC	51.00	R	PU	24	No
D32.2	WP32	Content creation service	CNR	51.00	P	PU	12	No
D32.3	WP32	Taxonomy-based notification service	UPS	25.00	P	PU	14	No
D32.4	WP32	Personalization service	UPS	45.00	P	PU	16	No
			Total	883.00				

WT3: WORK PACKAGE DESCRIPTION

"ASSETS Workpackages define both INTERNAL and EXTERNAL Deliverables. INTERNAL Deliverables are reports or prototype releases that are must be delivered within the project so that dependent work can go forward. EXTERNAL Deliverables are those that are contractually delivered to the European Commission. This distinction was made in order to reduce the total number of Deliverables that must be examined by a Review Panel.

From a project management point of view, both types of Deliverables are handled equally. From a quality control point of view, INTERNAL Deliverables are reviewed by WP leads, whereas EXTERNAL Deliverables must be reviewed by a person outside of the Workpackage.

Stream 1: Management and Networking

Work package number	WP1.0			Start date	1		End date	24				
Work package title:	Coordination and Management											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	r	SICS	INA	UAM	CERT
Person-month per partic.	28	1	1	0	1	0	0	0	0	0	0	1
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	1	1	0	0	0	1	0	0	1	0	0	0

Objectives

This work package will ensure the overall management of the ASSETS Best Practice Network. This requires a control of the technical quality of contributions, and appropriate timing of activities. Rules for the quality control of all project activities will be defined and adopted. Progress of the work will be monitored against the milestones and the objectives defined in the project programme.

All the activities carried out in this work-package will be conducted according to the management structure of the Consortium, as described in Section B3.2c Engineering is responsible for this work package as overall coordinator of the Project

WP1.0 will be the instrument that will guarantee a correct and efficient development of the project activities. Management activities will monitor and assure that project outcomes will be in line with the expected results as defined in the Description of Work.

Description of work

Task T1.0.1 [month 1-24] Project Administration and Resource Monitoring *(Responsible: ENG)*

This task will provide support for Financial and Project Administration as well as the monitoring of appropriate and adequate resource allocation of all partners. Details of the project management structure are given in Section B2.1

Task T1.0.2 [month 1-24] Quality Control and Work Plan Monitoring and Updating *(Responsible: ENG; Participants: ATC, ARC, CNR, CERT, UPS, CVCE, HASC)*

This task is dedicated to the following activities:

⇒ The monitoring of all project activities to ensure that they are carried out according to planned scheduling;

⇒ The definition of a quality plan with a set of rules for the organisation of the day-to-day cooperative work, including the procedures to be used, and the reporting mechanisms;

⇒ Continuous checking that the work to be done is in accordance with the original work plan. In case of delays, new activities that are considered necessary due to scientific and technology evolution, a new Management Plan will be produced.

Task T1.0.3 [month 1-24] Reporting to EC *(Responsible: ENG)*

This task will be the responsibility of the Project Coordinator. A Progress Monitoring Report will be produced every six months. It will contain a management-level overview of the activities carried out, a description of progress toward the scientific and technological objectives, a description of progress toward the milestones and deliverables foreseen, and identification of problems encountered during the project and actions taken to correct them.

A Financial Report will be produced every twelve months containing a summary cost statement prepared by each participant and a cost certificate per participant, a management-level justification prepared by each participant of its overall costs incurred, linking these costs to the resources deployed and activities carried out by the participant. The financial report will also contain a summary financial report prepared by the coordinator and the administrative co-ordinator, bringing together the incurred costs of the consortium and the requested Community contribution.

Description of Deliverables

D1.0.1 (M3) Quality Plan [EXTERNAL]

This deliverable will report all the project quality procedures and rules that partner as to follow for a correct development of the activity.

D1.0.2 (M3) Management Web Site [EXTERNAL]

This Web site will be created at month 3 and successively updated in a continuous manner, to be release in its final version at the end of the project

D1.0.3 (**M12**) ***First Progress Monitoring Report*** [EXTERNAL]

This deliverable will be the first monitoring report

D1.0.4(**M24**) ***Final Report*** [EXTERNAL]

This deliverable will be the second monitoring report

D1.0.5 (**M12**) ***Financial Report year 1*** [EXTERNAL]

This deliverable will be the financial report for year 1

D1.0.6 (**M12**) ***Financial Report year 2*** [EXTERNAL]

This deliverable will be the financial report for year 2

Person months per participant

Participant number	Participant short name	Person month per participant
1	ENG	28
2	ATC	1
3	AIT	1
5	CNR	1
12	EKETA CERT	1
13	UPS	1
14	CVCE	1
18	HASC	1
21	CIAOTECH	1
	Total	**36**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS1	Definition of the quality procedures	1	3	This milestone consists in the definition of specific procedure in order to guarantee the quality of the project activities, that each partner has to follow
MS2	Management Web site running	1	6	Project internal website where partner can retrieve and upload relevant information on the project activity
MS3	First Progress Monitoring report available	1	12	Report on Internal activities and resource results from all partners for year 1
MS4	Final report available	1	24	Report on Internal activities and resource results from all partners for year 2
MS5	Financial check-point year 1	1	12	Financial and administrative check points for year 1
MS6	Annual Financial check-point year 2	1	24	Financial and administrative check points for year 1

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D1.0.1	Quality Plan	1	9	R	CO	3
D1.0.2	Management Web site	1	12	P	CO	3
D1.0.3	First Progress Monitoring report	1	4	R	CO	12
D1.0.4	Final report	1	4	R	CO	24
D1.0.5	Annual Financial check-point year 1	1	3	R	CO	12
D1.0.6	Annual Financial check-point year 2	1	4	R	CO	24

Work package number	WP1.1			Start date	1		End date	24				
Work package title:	Networking, Dissemination, and Exploitation											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	10	6	3	0	3	5	3	4	4	2	4	4
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	CIAOTECH	UNESCO	FLM	MEME
Person-month per partic.	2	4	4	5	3	5	5	3	25	5	2	2

Objectives

The central objective of this WP is to guarantee a wide impact of the project. At this purpose this WP will plan and develop all networking, dissemination and exploitation activities in order to promote the future adoption of the ASSETS results. Therefore the main goal of this work package is manifold:

- To foster the future evolution and valorisation of the ASSTES services;
- To aggregate a critical mass around the project in order to build consensus and interest of relevant stakeholders;
- To focus on the realisation of a business model in order to assess the exploitation perspectives of the ASSETS services:
- To educate potential adopters of the ASSETS solution in order to facilitate and foster the adoption of the ASSETS services.

This workpackage is fundamental for guaranteeing the success of ASSETS and its future sustainability after the project deadline. Relevant stakeholders will be attracted into the project in order to foster the adoption of the ASSETS solution. The involvement of a critical mass around ASSETS will help to shape a sustainability model. Moreover individual exploitation purposes will be identified by all the partners and will guarantee the continuation of the project outcomes.

Description of work and role of partners

The dissemination and communication activities will focus on:

- Disseminating and publicising the activities of the project to national and international organisations dealing with Digital Libraries.
- Implementing the strategic user profiling and the innovation activities
- Networking with other projects, acting in the Digital Libraries, that produce or possess complementary know-how
- Participating in clustering and coordination workshops.
- Organising networking events
- The exploitation activities aim at:
- Developing a business analysis
- Drafting a sustainability plan in order to define the sector of the market in which ASSETS can move in the future.

Task 1.1.1 [month 1-24]– Dissemination planning and implementation *(Responsible: CIAOTECH; Participants: All except Exalead)*

This task foresees the planning and the implementation of the dissemination activities to be undertaken during the project life cycle, defining different types of actions:

- To show the project results to the relevant stakeholders (Europeana and other DL initiatives);
- To target specific audiences that can benefit from the ASSETS results
- To promote synergies with other projects or initiatives both at National and European level.

- To define a variety of techniques and media as appropriate for the content to be delivered to the target audience

Participation to relevant initiatives in order to guarantee a wide visibility of the project objectives and outcomes.

Organisation of strategic meetings and workshops with potential early adopters of the ASSETS solution.

The results of the Project will be disseminated via the publication of articles and technical papers in the specialised press, the organisation of focused workshops. More general articles will be produced by many of the covering the many different aspects of ASSETS.

Task 1.1.2 [month 1-24]- Communication material production (*Responsible: CIAOTECH; Participants: ENG, Robotiker, ANSC, DIAS****)***

This task deals with the realisation of different typology of dissemination material according to the phase of the project and the targeted audiences, including: a web site (web2.0-like) that will be continuously populated and upgraded during the life of the project, paper based material such as brochures, leaflets, posters, bookmarks and other striking and impressive equipment to be produced according to the promoting needs that will be come out during the achievement of on-going and intermediate results.

Task 1.1.3 [month 7-24] Networking event planning and organisation *(Responsible: CIAOTECH; Participants: ENG, ATC, ARC, BMAT, Robotiker, SICS, UAM, CERT, UPS, CVCE, ANSC, Liberis, HASC, DIAS, Albeniz, CIAOTECH, UNESCO)*

This task is devoted in the design plan organisation, and execution of the ASSETS networking events that may take place in strategic cities in Europe. In the context of this task, the time, location, specific goals and expected outcomes for these events will be planned. In addition, the process of selecting attendees will be determined. Consortium links will be leveraged for dissemination purposes as well as to attract, support and recruit participants.

Task 1.1.4 [month 7-24] Sustainability and exploitation planning *(Responsible: CIAOTECH; Participants: All except FLM and Exalead)*

This task deals with business planning and strategy of the potential commercial exploitation for the ASSETS services. After having performed a user profile analysis, a preliminary business plan will be developed, addressing market entry and technical deployment strategies, choice of criteria for best cooperation partnerships, and exploitation strategies. At the same time, the ASSETS component responsible will define which are the exploitable aspects of the different scenarios of the project. They will contribute to the business model definition, explaining in detail how the output from scenarios would be introduced into a common and individual strategy. The ASSETS business plan will cover in detail the following points:

- Definition of the Business Concept by presenting the current situation
- Description of the usage scenarios for sustainability
- Preliminary overview of potential competitors and existing services
- Description of the ASSETS services
- Possible exploitation strategies.

Task 1.1.5 [month 1-24] Development and Engagement of the ASSETS Community *(Responsible:* CIAOTECH*; Participants: All except EDLF)*

This task will be devoted to the building up of the ASSETS Community whose members will represent the ASSETS relevant actors in Digital Libraries especially cultural organisation dealing with digital content and more specifically with multimedia content. Community members will be identified and involved also in European Countries not represented by the project Partners. The ASSETS Community motivation is to promote the adoption of the ASSETS services. This task includes the following activities:

- To identify and select relevant communities including stakeholders. This will include a user profiling and the establishment of communication channels between users and content

providers. The creation of the Community start at M1 of the project and a major goal is to ensure that the type of members is consistent with the target audience for ASSETS. The focus of this activity is to individualise relevant stakeholders that could be potential ASSETS community members.

- To attract and aggregate relevant actors in the ASSETS Community. The success of the Community is what makes possible to attract a critical mass around the project results and objectives, transforming a simple project in a compelling solution ready to be validate by the relevant target users. The ASSETS community will be aggregated with the relevant stakeholders and its pivotal role is to foster the adoption of the ASSETS services. Members of the Community can ideally act also as multipliers, promoting other participants to join by using their own contact networks

Deliverables description

D1.1.1 (M3) ASSETS Communication Web site and dissemiantion material (Responsible CIAOTECH with support of ENG for development) [EXTERNAL]

This Web site will be created at month 3 and successively updated in a continuous manner, to be release in its final version at the end of the project. The ASSETS Website will feature a web 2.0-like approach. Dissemination material will be also provided through the communication website.

D1.1.2 (M12-24) Dissemination plan (Responsible CIAOTECH) [EXTERNAL]

This deliverable will present the Communication strategy and the methodology that will be adopted (dissemination plan); in subsequent releases, it will report the results of the dissemination activities, including: events attendance, projects contacted, material realised.

D1.1.3 (M12) Draft Exploitation and sustainability plan (Responsible CIAOTECH) [INTERNAL]

This report will draft the description of the market, the ASSETS services, analysis of the potential competitor and existing services and the ASSETS exploitation model.

D1.1.4 (M24) Final Exploitation and sustainability plan (Responsible CIAOTECH) [EXTERNAL]

A final Exploitation and sustainability plan will be delivered at the end of the project presenting also individual exploitation plan from each partner.

D1.1.5 (M24) Final plan for the dissemination and use of Project result (*Responsible CIAOTECH)* [EXTERNAL]

This deliverable will report all the dissemination action including networking and clustering event report.

Person months per participant

Participant number	Participant short name	Person month per participant
1	ENG	10
2	ATC	6
3	AIT	3
5	CNR	3
6	EDLF	5
7	BMAT	3
8	ROBOTIKER TECNALIA	4
9	SICS	4
10	INA	2
11	UAM	4

12	EKETA CERT	4
13	UPS	2
14	CVCE	4
15	DW	4
16	ANSC	5
17	LIBERIS	3
18	HASC	5
19	DIAS	5
20	ALBENIZ	3
21	CIAOTECH	25
22	UNESCO	5
23	FLM	2
24	MMLHU	2
	Total	**113**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
M7	User Community website site running	21	3	This milestone will guarantee the communication between the Community member and the project. The Community web site will be continuously updated.
M8	First dissemination material	21	4	A first brochure will be issued in order to have dissemination material to be distributed
M9	Rolling Dissemination Plan	21	13	A first set of dissemination activities will be carried out by the relevant partners.
M10	User profiling and engagement of ASSETS community	21	18	This milestone is of paramount importance for the success of the project. The User Community will guarantee the future sustainability of the ASSETS BPN
M11	Definition of a final exploitation plan	1	24	At the end of the project a final exploitation plan will be defined in order to foster the continuation of the project results.

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D1.1.1	ASSETS Dissemination Web site	21	26	P	PU	3
D1.1.2	Dissemination plan	21	28	R	PU	12
D1.1.4	Final Exploitation and sustainability plan	1	28	R	CO	24
D1.1.5	Final plan for the dissemination and use of Project result	1	30	R	PU	24

Stream 2 Foundation

Work package number	WP2.0			Start date	1		End date	24				
Work package title:	Technical Coordination and Interoperability											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	17	12	32	8	10	8	5	6	0	3	4	4
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	0	0	0	0	0	0	0	0	0	0	0	0

Objectives

The goal of this workpackage is to develop the overall architecture and specifications of the ASSETS services, ensuring the seamless integration of ASSETS components within the Europeana R&D Sandbox and portal during the lifetime of the project.

The central objectives of this WP are

- Analysis and continues monitoring of state-of-the-art in Europeana and related projects.
- Definition of the overall design of the ASSETS system.
- Specification of service interfaces and interaction.
- Continuous coordination and monitoring of the integration process.
- Service Deployment to the Europeana R&D Sandbox and portal

This workpackage will oversee the project-wide development process. Within ASSETS, we will apply the "Iterative and Incremental development" methodology. Iterative and Incremental development is a cyclic software development process developed in response to the weaknesses of the waterfall model. It starts with an initial planning and ends with deployment with the cyclic interaction in between (refer to Figure 1).

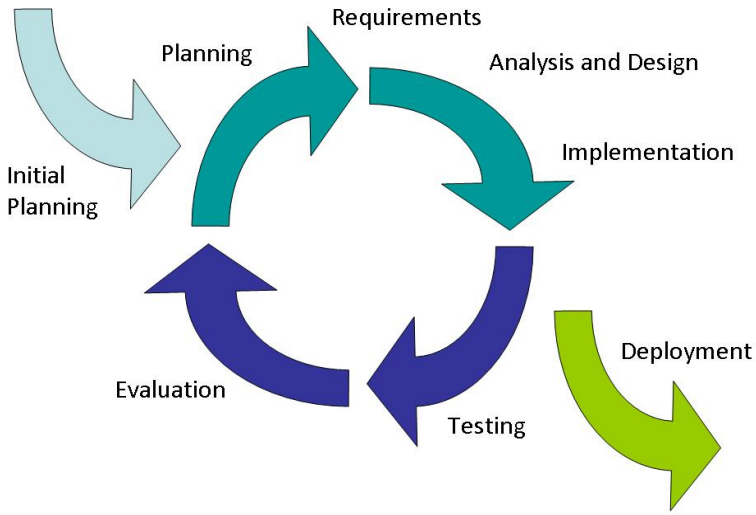


Figure 8: Iterative and Incremental Development Cycle

Description of work

Activities within this workpackage are distributed over the following primary tasks:

Task 2.0.1 [month 1-24]– Technical Coordination *(Responsible: AIT; Participants: ENG, ATC, CNR)*

This task is dedicated to cross-project communication of requirements and specifications, technical and otherwise, and involves monitoring the technical development across the ASSETS workpackages, and

identifying and proposing solutions for interoperability problems. A Technical Coordination Committee will be formed, including designated technical leads from the Foundation Stream workpackages, that will have regular conference calls to discuss and monitor interoperability issues.

Task 2.0.2 [month 1-18]- Analysis of Europeana Specifications *(Responsible: AIT; Participants: ENG, ATC, Exalead, CNR, BMAT, Robotiker, INA, UAM, CERT)*

Within this activity the general requirements and specifications coming from Europeana and related projects from the Europeana cluster will be analyzed. A regular technology watch over related Europeana cluster activities as well as other digital library projects will be conducted. Ongoing participation in Europeana Cluster technical workshops is already planned for the following dates:

⇒ June 2010, CNR, Pisa

⇒ September 2010, KB, The Hague

⇒ March 2011, ÖNB, Vienna

In this manner, we will ensures that ASSETS development will be guided by and conform to Europeana requirements and specifications.

Task 2.0.3 [month 4-24]- Interoperability with Europeana infrastructure *(Responsible: CNR; Participants: ENG, ATC, AIT, EDLF, BMAT, Robotiker, SICS, INA, UAM, CERT)*

This task allocates effort to monitor and guarantee the compliance of the ASSETS services to the Europeana R&D Sandbox and Portal.

Task 2.0.4 [month 1-12]- Platform design and implementation guidelines *(Responsible: ENG; Participants: ATC, AIT, Exalead, CNR, BMAT, Robotiker, INA, UAM, CERT)*

Based on the requirements from Task 2.0.1, the overall system design will be developed. The overall system design describes the architecture, communication, generic data flows, etc.. The overall system design serves as the basis for the detailed specifications of services within the Foundation Stream workpackages. Exalead will participate in the archtitecture design process and will help the partners in the technical choices to address scalability issues, high data volumes management, persistency, etc.

Task 2.0.5 [month 3-18]- API specifications *(Responsible: ENG; Participants: ATC, AIT, Exalead, CNR, BMAT, Robotiker, INA, UAM, CERT)*

This task will ensure the seamless integration of all services, the public programming interfaces and protocols as well as service descriptions will be standardized within this workpackage, based on internal specification reports from each workpackage. The resulting deliverable will be used as a reference and guideline to help developers to implement and integrate their services into the Europeana environment.

Deliverables

D2.0.1 (M3) Requirements Specification (Responsible: AIT) [INTERNAL]

This document will collect the requirements of Europeana and content providers for the service developers.

D2.0.2 (M9) Interface specifications and system design (Responsible: ENG) [INTERNAL]

This document will provide the definition of high level interfaces for ASSETS services, and integrates results from both T2.0.5 and T2.0.6.

D2.0.3 (M4) Implementation guidelines (Responsible: ENG, WP Leads) [INTERNAL]

This is a document establishing the implementation guidelines to be followed by the ASSETS developers.

D2.0.4 (M12) The ASSETS APIs (Responsible: ENG, WP Leads) [EXTERNAL]

This is a technical document detailing the ASSETS architecture and API for each component

Person months per participant

Participant number	Participant short name	Person month per participant

1	ENG	17
2	ATC	12
3	AIT	32
4	EXALEAD	8
5	CNR	10
6	EDLF	8
7	BMAT	5
8	ROBOTIKER TECNALIA	6
10	INA	3
11	UAM	4
12	EKETA CERT	4
	Total	**109**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS12	System architecture completed	1	M4	This milestone is associated to T2.0.4
MS13	Europeana Cluster Technical Meeting, Pisa	5	M3	This milestone is associated to T2.0.2
MS14	Europeana Cluster Technical Meeting, the Hauge	6	M6	This milestone is associated to T2.0.4
MS15	First revision of Service API published	5	M12	This milestone is associated to T2.0.5
MS16	Europeana Cluster Technical Meeting, Vienna	3	M12	This milestone is associated to T2.0.2
MS17	Final revision of Service API published	5	M18	This milestone is associated to T2.0.5

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D2.0.4	The ASSETS API	1	112	P	PU	12

Work package number	WP2.1			Start date	3		End date	24				
Work package title:	Ingestion											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	0	0	8	0	23	3	0	0	4	0	0	0
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	0	0	0	0	0	0	0	0	0	0	0	0

Objectives

Metadata ingestion is a very critical process for a digital library, aimed at acquiring knowledge from external sources and at transforming it into the format that is understood by the internal digital library services. Knowledge comes packaged in metadata records that typically suffer from several problems, including noise, heterogeneity, lack of explicit connections to the data model of the acquiring digital library, and lack of explicit semantics. This is due to several factors, such as the cultural heterogeneity of the knowledge sources, the variable (and often poor) quality of the work carried out by people in charge of the metadata entry phase, and the fact that the metadata were not originally conceived for supporting the services of the acquiring digital library. Europeana experiences all these problems in the most extreme form, since it is expected to provide sophisticated search and browsing services on top of very heterogeneous metadata acquired from a large number of providers.

The objective of this workpackage is to implement a service for metadata ingestion that covers all phases of the process and keeps track of the work done in each phase, thus allowing to obtain a full account of the ingested metadata. The service will be accessible from a sophisticate GUI including a powerful information visualization tool that will support the interoperability manager in quickly analyzing and visualizing the metadata being worked on. The GUI will be developed by Task T3.0.3 (WP 3.0).

The ASSETS Ingestion service consists of the following services:

- Metadata cleaning. This service will allow to transform unnormalized, noisy metadata records into normalized, cleaner metadata records that can more effectively support search, browsing, and other information access tasks.
- Knowledge extraction. This service will allow to use the knowledge embodied into the (cleaned) metadata record to populate the data model of the acquiring digital library. Two different types of extraction will be offered: mapping-based and inference-based extraction. Mapping-based extraction will allow to specify and apply mappings that relate elements of the target data model to combinations of fields from the input metadata. Inference-based extraction will allow to populate elements of the target data model that are outside of the mapping scope, with knowledge inferred from the input metadata.
- Metadata Classification. This service will add further knowledge to the ingested metadata by relating them to a taxonomy of semantic categories.

These services will build on the ingestion service already existing in Europeana at the time of design. They will be validated against the metadata records provided by the content providers to the ultimate end of ingesting these records into Europeana. Europeana will clearly participate in the validation process, by lending some of its most difficult data to ASSETS. In the evaluation, we will look at both effectiveness and efficiency issues. While effectiveness (i.e., the quality of the work carried out by these services, such as the accuracy of the knowledge extracted and of the classification decisions made) is their primary goal, efficiency issues cannot be ignored: in fact, while it is true that ingestion is mostly a “back office” operation, it is also true that the sheer size of the metadata involved requires scalability to be hard-wired in the proposed solutions. In particular, this also means that all the services developed in this workpackage will use the data repository (Task T2.2.0 in WP2.2) and indexing facilities (Task T2.2.1 in WP2.2) as low-level functions.

Each one of the above listed services will be made accessible through an API so that the service can be individually deployed for digital libraries not needing the whole ingestion service but only a part of it.

This clearly applies to Europeana, although the ultimate goal of this WP is to offer the ingestion service as a whole to Europeana.

Description of work

Task T2.1.1 [month 3-24] Metadata cleaning *(Responsible: CNR; Participants: EDLF, SICS)*

Metadata records suffer from noise, heterogeneity, and inconsistency. Noise may be due to the less-than-optimal quality of the work sometimes carried out during the (meta)data entry phase, to lack of experience on the part of junior annotators in charge of this phase, to lack of agreement among annotators on the intended semantics of the metadata records, to inconsistent procedures adopted while importing the metadata from some other format, and cultural diversity among those that have originally generated the metadata. This task is devoted to the design and implementation of a service by means of which it will be possible to clean the metadata from these various sources of noise. It will be possible to carry out the cleaning activity in a completely automatic way, having the service decide in all autonomy the cleaning activities to perform. Alternatively, it will be possible to carry out this activity in a semi-automatic, computer-assisted way, according to which the service will only provide to the user (typically, an interoperability manager) a ranked list of metadata records with their recommended corrections, in which the top-ranked items are the ones the service deems more likely to be noisy; the user will thus scan the list from the top, applying the recommended corrections when (s)he deems fit.

Task T2.1.2 [month 5-24] Knowledge extraction *(Responsible: CNR; Participants: SICS)*

Metadata records, even once cleaned, are not rich in knowledge, since the text they contain is not interpreted. As a result, an end user who engages in browsing and searching the collection of metadata records would experience problems due to ambiguity, synonymy, homonymy, and other problems having to do with the fact that natural language is far from being a “normalized”, formal language of concept expression. It would thus be desirable to enrich the metadata by linking individual natural language expressions encountered in the record to the appropriate classes in the data model of the acquiring digital library (notably, the Europeana Data Model). For instance, it would be interesting to recognize, within the records, all expressions that denote instances of the top-level semantic entities, such as people, time, event, place. The component underlying this service will scan the metadata records, searching for occurrences of a set of concepts that are indicated as input, and linking the detected occurrences to the appropriate concepts.

Task T2.1.3 [month 7-24] Metadata classification *(Responsible: CNR)*

The set of metadata records to be ingested, even after undergoing a cleaning and information extraction phase, still remains a largely disorganized set, and the searching and browsing services offered on top of these metadata need to tackle it as such. In order to further improve the quality of these metadata, and with the ultimate aim of making the search and browsing experience on the part of the end user more effective and more rewarding, this task will develop a service for the automatic classification of metadata records under a taxonomy of semantic categories. The field of automated text classification has reached a good level of maturity, and these proponents have been at the forefront of this research field for the last ten years. However, the Europeana context provides new challenges for automatic classification, since in this context the object content are typically not available, and the classification activity must be typically performed solely on the basis of the information found in the object surrogate; as such, cutting-edge technology needs to be deployed in order to bring about good classification accuracy.

Task T2.1.4 [month 9-24] Ingestion workflow management and Integration *(Responsible: ARC; Participants: CNR, EDLF)*

In order to automate the ingestion process this task will customize a standard-based, open source workflow management system and use it to integrate into a unique service, the services developed in the remaining Tasks of this WP. This task will also make available these services as individual systems, deployable by digital libraries. The services will also be deployed on the Web as Web services for use on the global infrastructure.

Deliverables
D2.1.1 (M12) Specification of ingestion services *(Responsible CNR)* [EXTERNAL] This deliverable will report the design and functional specification of the metadata cleaning, knowledge extraction and metadata classification services. Date: **M12**. ***D2.1.2 (M16) Ingestion service – 1st Release*** *(Responsible CNR)* [INTERNAL] This deliverable is the Ingestion service. Two releases of the service will be delivered: the first one, at **M16**, will include the services developed for metadata cleaning, knowledge extraction and metadata classification, individually. ***D2.1.3 (M22) Ingestion service – 2nd Release*** *(Responsible CNR)* [EXTERNAL] The second release of the ingestion service, at **M22**, will have refined services based on the results of evaluation and incorporating enhancements, and will include the results of task T2.1.4.

Person months per participant		
Participant number	Participant short name	Person month per participant
3	AIT	8
5	CNR	23
6	EDLF	3
9	SICS	4
	Total	45

Schedule of Relevant Milestones				
Milestone n.	**Milestone name**	**Lead beneficiary n.**	**Delivery date from Annex 1**	**Comment**
MS18	Selection of reference data-set for metadata cleaning	6	M6	
MS19	Selection of reference data-set for knowledge extraction from metadata records	5	M8	
MS20	Selection of reference data-set for metadata classification	5	M10	
MS21	Generation of final metadata set resulting from metadata cleaning, knowledge extraction from metadat	5	M22	

List of WP deliverables						
Deliverable n.	**Deliverable name**	**Lead beneficiary n.**	**Estimated indicative person-months**	**Nature**	**Dissemination level**	**Delivery date**
D2.1.1	Specification of ingestion services	5	15	S	PU	12
D2.1.3	Ingestion service – 2nd Release	5	30	P	PU	22

Work package number	WP2.2			Start date	1		End date	24				
Work package title:	Scalable metadata- and similarity-based indexing and retrieval											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	0	0	0	0	34	0	12	0	4	0	12	9
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	0	0	0	0	0	0	0	0	0	0	0	12

Objectives

Users interact with the Europeana portal, mainly, through the search service. It is of utmost importance, then, to make the service as fast as possible. Even more important is to make the search service scalable to support digital libraries of up to hundreds of millions of objects. Obviously, users are not willing to trade quality for speed thus retrieving high quality search results is extremely important as well.

The objective of this WP is to implement a qualitatively new type of search service for European Digital Libraries that will provide to the end user an efficient and effective search service. Efficiency, in this context, is related to both the data management part, to the query processing itself, and to the post query processing steps, when results retrieved by the Europeana back-end are cleaned, clustered, enriched, to be shown to the user who submitted the query, by taking possibly into account the information that can be derived from the context, and from user preferences learned from historical data.

The WP will develop two different type of search: (1) metadata-based search for digital libraries that do not store the content of objects, but only their descriptions, thus acting as mediators between the institutions holding the contents and the users—Europeana is a notable case in point; (2) similarity-based search for digital libraries endowed with multimedia content or with at least the possibility of indexing multimedia content. These kinds of search are complementary with respect to the relevance captured by their matching functions: metadata-based search approximates uncertain inference by looking at formal descriptions and bringing in as much context as possible to achieve a good approximation; on the contrary, similarity-based search captures sameness of appearance (or form) on single media types, and tries to combine the sameness on different media (including formal descriptions) into a unique similarity value for a whole complex object. The users of Europeana have manifested interest also for this kind of search, albeit Europeana will be able to index only a portion of the multimedia content held by the content providers.

The WP is structured in the following activities:

- **Post querying processing**, addressing the study of all functionalities acting on the plain items retrieved by the Europeana back-end, and aimed at preparing these results for presentation to the user who submitted the query. A level of personalisation might be introduced here where, for example, a user can filter the results according to her personal preferences. Moreover, results presentation can take into consideration information mined from the content, the context, and historical data. Result clustering/diversification goes under this label, but also query suggestions, aimed at helping the user to formulate a better query in case the current query has given disappointing results, or to try to give her hooks for submitting new queries related to her interests.
- Designing and deploying effective **metadata-based ranking** functions aimed at improving precision while enhancing user experience. Modern ranking functions are commonly weighted combinations of different features (e.g., BM25f), and we expect to learn the best combination of weights from usage data containing implicit feedback from past users.
- **Text indexing and retrieval**, addressing the efficient techniques for indexing and retrieving content by means of full-text queries; specific partitioning and replication techniques will be possibly used to achieve scalability In presence of large volumes of data;

- proving a **similarity-based indexing and ranking** on multimedia complex objects; this activity will be further structured in a number of sub-activities, each addressing a specific media type; finally, there will be an activity for combining into a unique similarity ranking function the various medium-dependent ranking functions. Scalability will be addresses also in this service by adopting partitioning and replication techniques for indexes and query optimization.
- providing scalable indexing, ranking and search techniques to efficiently retrieve multimedia objects.

Special attention will be paid to robustness of the system.

The search service will be made available through an API offering indexing and scoring methods for the two types of search developed by the WP.

Description of work

Task T2.2.1 [month 3-20] Post Querying Processing *(Responsible: CNR)*

This task addresses the design and the implementation of functionalities acting on the plain items retrieved by the Europeana back-end for answering a submitted query, and aimed at preparing these results for the presentation to the user. Among these functionalities the support for some level of personalisation where, for example, the user can filter the results according to her personal preferences (e.g., give me only result in French, or regarding oil paintings). More interestingly, the task will study the support of results' presentation scenarios exploiting information mined from the content, the context, and historical data stored in the query logs. Also algorithms for result clustering and diversification goes under this label, but also query suggestion techniques, aimed at helping the user to formulate a better query in case the current query has given disappointing results, or to try to give her hooks for submitting new queries related to her interests.

Task T2.2.2 [month 5-24] Metadata based ranking *(Responsible: CNR)*

In information retrieval, the term “object metadata” is used to label information that serves as the representation for the full object, such as a title, abstract, table of contents, set of keywords, or combinations of these descriptors. For a multimedia object with audio and/or video and a temporal dimension, a multimedia metadata labels the set of text, image, audio, and/or video that can serve as a condensed representation for the full multimedia object.

A general approach for granting effectiveness of the retrieval process is – when possible – defining the features constituting a surrogate also on the basis on the ranking function adopted, e.g. a weighted set of keywords for a vector space approach. A digital library such as Europeana, typically gathers data from external sources such as other digital libraries, archives and museums. Therefore the constrained surrogate object mainly contains bibliographic information. Such a model stores useful and reliable information about authors, date, etc., but it may poorly describe the content of the corresponding object.

This task will implement a ranking function for object metadata. On the one hand we will apply advanced ranking techniques that exploit the current model, and, on the other hand, we will pursue the goal of identifying additional information that can extend or refine the model and improve the effectiveness of ranking perceived by users.

Task T2.2.3 [month 3-24] Text Indexing and Retrieval *(Responsible: CNR; Participants: UAM, CERT)*

Indexing is basically a sort operation and this justifies the hardness of the problem itself. Indexing in traditional information retrieval consists in converting a document collection into a set of word occurrences, i.e. index elements. For each term in the collection the index element records: frequency, position in document, and some other information. In digital libraries, and in particular within Europeana, the collections we are considering contain records that are more structured than textual documents, yet each record field might contain unstructured textual data. Therefore, building an index on this kind of data is comparable to traditional indexing in IR. Within this task, we will study efficient indexing techniques and, as a cross activity between this task and the previous and following ones, we

will define what information we need to store in the index to support the ranking function devised and the post querying functionalities. Another aspect of efficiency in indexing is how to compactly represent the index data structures. Encoding techniques for reduce the space occupied by the index will be studied. In particular, we will design and develop the most suitable index encoding method for the specific data managed by Europeana.

Task T2.2.4 [month 3-24] Images indexing and retrieval *(Responsible: CNR, Participants: SICS, MMLHU)*

The objective of this task is to investigate and develop techniques to perform effective and efficient similarity search on image documents, including images of scanned manuscripts. The proposed techniques are the building blocks to offer functionality that use the real content of image, rather than their metadata only, to search for other documents. Various search paradigms can be supported by means of this functionality. For instance, results of a metadata based search can be used as queries to refine the search, external documents can be used to access the Europeana content, the Europeana content can be used to get information concerning documents possessed by the users (for instance, who is the author of the painting contained in this picture?).

- In order to offer image similarity search functionality it is necessary to extract from the original documents the relevant information (visual features) that allows documents to be compared. In order to obtain that, without necessarily asking content providers to give their content away, we will build some client side indexing tools that will analyze documents on-site and send to the similarity search service just the result of the analysis (the extracted features).
- In order to offer efficient and scalable similarity search, we will investigate techniques to build data structures (indexes) that organize the extracted features in such a way that several simultaneous queries can be executed in less than a second on hundred millions documents.
- We will implement techniques that perform effective and efficient ranking of the retrieved documents.

Task T2.2.5 [month 3-24] 3D-model indexing and retrieval *(Responsible: CERT)*

This task involves research and development of the components for feature extraction and indexing of 3D content, as well as the mechanisms for efficient querying, similarity matching and retrieval. The methods will be optimised for use on 3D reconstructed World Heritage sites, which will be provided by UNESCO.

A set of already existing algorithms will be initially investigated and evaluated and the best among them will be adopted. Special attention will be given to the following issues:

- The descriptor extraction methods will support all available formats of 3D content (.wrl, .off, .3ds, .x3d etc.), be robust to objects degeneracies (holes, missing polygons) and robust to affine transformations and levels of detail.
- All categories of 3D content descriptor extraction methods will be supported, i.e. histogram-based, transform-based, view-based and graph-based methods. This is essential since there is no method appropriate for all types of queries and retrieval tasks.
- Input of the 3D search and retrieval system may consist of different modalities such as text (annotation), 2D images (taken by the user's mobile device), sketches made by the user or 3D objects. In the case of 2D input, hybrid 2D/3D matching algorithms will be introduced to compare 2D input with 3D content.

If required, new methods will be developed, either by extending the existing approaches or by creating new ones.

The next step is to define the specification of the 3D content low-level descriptors in order to support their potential integration to the ASSETS environment as services. This is not a trivial task taking into account the diverse nature of the low-level descriptors that occur from different categories of descriptor extraction methods. Therefore, the development of the appropriate mechanisms for mapping the resulting descriptors into a uniform 3D low-level feature representation will be realized.

Task T2.2.6 [month 3-24] Audio indexing and retrieval *(Responsible: BMAT)*

The service has two main objectives:

- Provide a service for the automatic description and content enrichment of music audio data
- Provide a service for fast indexing and retrieval of music audio content.

Music search core engine will listen to, understand and interpret music like humans do. It will describe audio in musical and perceptual terms like rhythm (bpm, percussiveness), harmony (key, mode, chords), timbre (instrumentation, production qualities), genre of the song, and even moods ('blue', 'party', 'furious', 'happy', among others). The audio description can be enriched with editorial information (artist, release date, country) as well as information distilled from blogs, reviews, or other external data.

The search engine will then base the search criteria on metadata extracted from the song and editorial content to allow to search inside the collections for "music that sounds like Pixies" or allows your users to query music like "what are the tracks from this repository which sound like Chet Baker" or "I want relaxed jazzy music". Once

one finds more less the user need, it is possible to use the function "more like this" that will give you more results like the one you

chose. The search must scale to millions of audio segments and have a simple yet powerful API.

Task T2.2.7 [month 3-24] Video summarisation, adaptation, indexing and retrieval *(Responsible: UAM)*

This tasks has two main objectives:

- To provide on-line summarization of videos in order to effectively and efficiently browse large video repositories, even allowing to provide summaries personalized to user preferences. The on-line summarization will allow to preview videos showing the most relevant parts of it.
- To provide adaptation of videos (either complete videos or summaries) to the different possible usage environments (e.g., different terminals, access networks, users' preferences or handicaps). The video adaptation service will allow to view video content in different usage environments (e.g., terminals, access networks) in an efficient way, as the video will be send adapted to the presentation condition not requiring the client to perform any transcoding, buffering, etc., and therefore consuming only the required resources. Different adaptation techniques could be used based on the usage environment and video annotation available (e.g., blind transcoding, content-based transcoding, transmoding).

Additionally there are two objectives that provide internal services to the summarization and adaptation, but that can be used by other modules/services:

- Video indexing: In order to summarize and adapt the content, at least some minimum annotations (indexing metadata are required). The summarization module will perform some on-line video analysis in order to provide content-based metadata that will allow to summarize the video based on some content features even in the case of minimum annotation of the video. These metadata may include, among others, activity of the video, presence of people, media format, … On the other side, for adaptation, at least metadata related to the media (e.g., format, resolution) are required and they will be obtained (if not available) from the video headers.
- Video retrieval: thanks to the above mentioned metadata that are to be obtained for the case that there are no annotations available, it would be possible to provide simple retrieval of video based on that metadata.

Deliverables

D2.2.1 (M12) Specification of post querying processing functionalities [EXTERNAL]

This deliverable will report the design and functional specifications of the post querying processing functionalities to be implemented by this WP.

D2.2.2 (M16) Metadata-based indexing and ranking – 1st Release [INTERNAL]

This deliverable is the service for metadata-based search. Two releases of the service will be delivered:

the first one, at **M16**, will consist of the data repository and a centralized index.

D2.2.3 (M22) Metadata-based indexing and ranking – 2nd Release [EXTERNAL]

The second release of the metadata-based indexing and ranking service, at M22, will take into account the results of evaluation and will feature scalability via replication and partition. This release will be integrated into Europeana and also made available to the content providers of the ASSETS consortium.

D2.2.4 (M16) Scalable image indexing and ranking – 1st Release [INTERNAL]

This deliverable is the service for content-based similarity search. Two releases of the service will be delivered: the first one, at M16, will consist of the search on objects spanning a single medium.

D2.2.5 (M22) Scalable image indexing and ranking – 2nd Release [EXTERNAL]

The second release of the content-based indexing and ranking service, at M22, will take into account the results of evaluation and will address complex objects and scalability via replication and partition. This release will be integrated into Europeana and also made available to the content providers of the ASSETS consortium.

D2.2.6 (M22) Post querying processing functionalities [INTERNAL]

This deliverable is the implementation of the devised functionalities for post querying processing designed by this WP.

Person months per participant

Participant number	Participant short name	Person month per participant
5	CNR	34
6	BMAT	12
9	SICS	4
11	UAM	12
12	EKETA CERT	9
24	MMLHU	12
	Total	83

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS22	Multimedia content feature extraction software	5	M8	
MS23	Index structure management software	5	M12	
MS24	Ranking and searching algorithms	5	M16	
MS25	First service release	5	M18	
MS26	Final service release	5	M22	

List of WP deliverables

Deliverable	Deliverable name	Lead	Estimated	Nature	Dissemination	Delivery

n.		beneficiary n.	indicative person-months		level	date
D2.2.1	Specification of metadata- and content-based indexing and ranking	5	15	S	PU	12
D2.2.3	Scalable metadata-based indexing and ranking – 2nd Release	5	35	P	PU	22
D2.2.5	Scalable content-based indexing and ranking – 2nd Release	5	35	P	PU	22

Work package number	WP2.3			Start date	1		End date	24				
Work package title:	Preparing the ground for digital preservation											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	r	SICS	INA	UAM	CERT
Person-month per partic.	21	0	21	0	0	0	0	0	0	0	0	0
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	0	0	0	0	0	0	0	0	0	0	0	0

Objectives

This workpackage will develop digital preservation services for the content providers of Europeana. Three specific services will be developed: the Risk Management service, the Normalization service and the Notification service.

Description of work

Task 2.3.1 [month 4-24]– Risk Management Service (Responsible: AIT; Participants: ENG)

This service will be available to all content providers and will provide risk management reports to content providers by analyzing the metadata profiles of the contributed content. The service will perform a statistical analysis of the content formats and categorize them based on their preservation risk; for example, proprietary formats with limited support would fall under the highest risk category. This service would work extensively with preservation community resources such as PRONOM and the proposed UDFR (Universal Data Format Registry).

Task 2.3.2 [month 4-24] – Normalization Service (Responsible: AIT; Participants: ENG**)**

Normalization is the conversion of the source object from its original data format into an open, preservation-friendly archival format. This service will be available to those content providers that provide digital objects (as opposed to only providing metadata records). Based on the results of the risk management analysis, the service will recommend a normalization strategy for those objects in the provider's collection. If the provider agrees to the recommendation, the normalizations will be carried out on a computing cloud infrastructure (in order to avoid loading Europeana computing resources) and be made available for secure download by that institution**.**

Task 2.3.3 [month 4-24]– Notification Service (Responsible: ENG; Participants: AIT)

Notification is the service, which guarantees the adequate communication and management procedures in reaction to events that could impact long term preservation, within the digital archive. As actions, appropriate messages are dispatched according to event types, well defined rules, roles of the entities involved in the digital environment (i.e. curator, preserver, holder). The alerted entity (i.e. human actor and/or automatic tool) is able to enact corrective action according to established preservation plans**.**

Deliverables

D2.3.1 (M12) Prototype Preservation Services (Responsible: ENG, ARC) [INTERNAL**]**

Software of the 1st prototypes for the preservation services. An accompanying report is released for each service, for documenting implementation details, refined specifications and tests**.**

D2.3.2 (M22) Deployed Preservation Services (Responsible: ENG, ARC) [EXTERNAL**]**

This is a software prototype Deliverable that corresponds to the deployment of the ASSETS digital preservation services to the Europeana Portal**.**

Person months per participant

Participant number	Participant short name	Person month per participant
4	ENG	21
5	AIT	21
	Total	**42**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS27	Digital Preservation Service Design	1	M5	
MS28	Digital Preservation Service Prototypes	3	M12	
MS29	Digital Preservation Service Deployment to Europeana R&D Sandbox	1	M15	
MS30	Digital Preservation User Test Results Analysis and Refactoring	3	M18	
MS31	Digital Preservation Updated Service Deployment to Europeana R&D Sandbox	1	M20	
MS32	Digital Preservation Production Deployment of Preservation Services	3	M22	

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D2.3.2	Deployed Preservation Services	1	43	P	PU	22

Work package number	WP2.4			Start date	1		End date	24				
Work package title:	Service integration, testing and deployment											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	r	SICS	INA	UAM	CERT
Person-month per partic.	21	23	9	0	10	10	6	5	1	1	5	2
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	2	0	0	0	0	0	0	0	0	0	0	0

Objectives

This workpackage will bring together all ASSETS services under a common platform which will serve as a basis for their interoperability.

The interfaces between the platform and the services, as well as between the platform and the content providers will be defined and implemented within this WP.

Within this workpackage the same services will also be ported under the sand boxes of the Europeana Labs for technical testing against the Europeana data sets.

Description of work

Task 2.4.1 [month 1-24] – Development Framework (Responsible: ENG) (Participants: ATC)

The development process will not follow a pure waterfall model: it will be an iterative process where lessons learned during each implementation cycle affects next implementation cycle. This kind of process is part of well-known modern agile approaches.

Such kind of iteration needs to be monitored in a controllable environment, and this is the aim of this workpackage. For this reason, a development support Web site will be set up and maintained for the ASSETS life-time. This Web site will be for internal usage by the ASSETS consortium members, offering a single, organised and maintained access point to the development support. The Web site will be open to the project reviewers and EU officer who will be able to use it to monitor the progress of development activities. The development framework will allow to monitor and control development activities in a common standardised way by adopting a suitable development process and platform (identified in T2.0.4), by reducing risks following the Continuous Integration discipline and by measuring quality of produced software. During this task, a centralised and fully automated build process verified by automatic unit tests will be set up. Mainly it puts the bases for an effective collaboration environment for developers, who will be continuously updated about the status of the whole development of ASSETS.

ASSETS will adopt the OSS (Open Source Software) approach and in this perspective will host the API and its implementation on Source Forge. ASSETS will create a solid and scalable API that Europeana will take over and maintain over time. That will allow to create an open source community of developers since the beginning of the project. In addition, the Continuous Integration practise will bring deployment and integration risk down by removing error prone tasks (such as deployment) and will take advantages from project automation tools. The development framework will be mainly characterised by: a change management system for the source code (e.g. SVN), a continuous build engine (e.g. Hudson) and a tracking system (e.g. Trac).

Task 2.4.2 [month 6-24] - Platform and Services Integration (Responsible: ATC)

As soon as the ASSETS services are fully implemented and tested they will be integrated into a common platform which will act as the common basis for addressing technical interoperability issues. The platform will also make the services deployable singularly, by creating the necessary software configuration and adaptation mechanisms.

Task 2.4.3 [month 10-24] - Service set-up and testing (Responsible: ATC)

This task will deal with their instantiation according to the APIs and unit testing procedures which will also be defined in this task. Before integration of the services to either the Europeana or the ASSETS platform they will be tested with all the content provided by the ASSETS consortium so that the stability

of the services can be ascertained.

Task 2.4.4 [month 3-24] - Service porting, deployment and experimentation to Europeana Labs (Responsible: CNR)

This task will perform the necessary activities to experimentally evaluate the ASSETS services in the sandboxes of EuropeanaLabs (technical evaluation). These activities will include: (a) the porting of the component implementing the service to be evaluated in a sandbox. This may require the development of some software, for instance for accessing the data set made available by Europeana for experimentation; (b) the deployment of the resulting component; (c) the set-up and running of the experiments required by evaluation. All these activities will be carried out in collaboration with the partner responsible of the service being evaluated; this partner will be in charge of the software development and the definition of the experiments, while CNR will give assistance, by providing guidelines and system administration support. CNR is in the best position to play this role, since it is responsible, within Europeana, of the EuropeanaLabs.

Deliverables

D2.4.1 – Development Framework (M3-M12) (Responsible: ENG) [INTERNAL]

The ASSETS development framework provides basic support for development activities: change management system and continuous build engine. It will be released in two stages: in the first stage (M3) the basic software development services will be set-up, without the machinery for testing, night build and integration. The full service will be released at month 12.

D2.4.2 – EuropeanaLabs integration guidelines (M6) (Responsible: CNR)[INTERNAL]

A report with guidelines for the technical evaluation of services in EuropeanaLabs

D2.4.3 – ASSETS Platform (M12-M24) (Responsible: ENG) [EXTERNAL]

The ASSETS platform will be released at month 12. From that moment, the services will start to be integrated into the platform in a continuous way. The final platform, including all ASSETS services, will be released at month 24

D2.4.4 – Service testing (M11-24) (Responsible: ATC) *[EXTERNAL]*

The testing environment will be set up and released at Mont 12. The service will continuously be used for testing ASSETS services as soon as they are developed.

D2.4.5 – Service deployment and experimentation in EuropeanaLabs (M12) (Responsible: CNR) *[EXTERNAL]*

The first services will be ported under the Europeana Labs sandboxes at month 12 and the task will continue to do so until the end of the project.

Person months per participant

Participant number	Participant short name	Person month per participant
1	ENG	21
2	ACT	23
3	AIT	9
5	CNR	10
6	EDLF	10
7	BMAT	6
8	Robotiker	5
9	SICS	1

10	INA	1
11	UAM	5
12	EKETA CERT	2
13	UPS	2
	Total	**95**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS33	ASSETS Platform	2	M12-24	
MS34	Assets final platform	2	M24	
MS35	First Assets services in the Europeana sandboxes	2	M12-24	

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D2.4.3	ASSETS Platform	2	30	P	PU	24
D2.4.4	Service testing	2	30	R	CO	24
D2.4.5	Service deployment and experimentation in Europeana Labs	5	33	R	PU	12-24

Work package number	WP2.5			Start date	4		End date	24				
Work package title:	Browsing and visual interfaces											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	r	SICS	INA	UAM	CERT
Person-month per partic.	0	0	0	0	0	7	0	12	6	10	0	13
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	H	O	FLM	MEME
Person-month per partic.	8	0	0	0	0	0	0	0	0	0	0	0

Objectives

The main objective of this WP is to provide a set of services for efficient search, browsing, navigation and visualisation of media content. More specifically, the services will incorporate the following features:

- Provide the mechanisms for the establishment of semantic links between pieces of information presented in different media
- Transform the current flat form of media search to an experiential one by taking into account user's experience and way of thinking.
- Provide a tool allowing manual indexing and /or correction of metadata delivered by automatic analysis modules.
- Provide GUI components that allow improving the usability of the searching and browsing processes in EUROPEANA.
- Provide visual interaction capabilities with tabular data coming from metadata sources and query logs.
- Provide Rich user interface components for the ASSETS Platform and its value-added services, supporting complex query formulation and results presentation, and ensuring the integration and interoperability of the ASSETS Platform with EUROPEANA.

Description of work

Task 2.5.1 [Month 6–22] Semantic cross linking browsing *(Responsible: CERT; Participants: SICS)*

This task will focus on the development of the semantic cross-linking service. The objective is to provide a set of tools that will allow fast navigation through media-rich content, transforming the current flat form of media search to an experiential one by taking into account user's experience and way of thinking. Towards this direction, the Semantic Web paradigm in representing knowledge and content, in order to achieve a semantically rich representation of content, user interests, ideas and social interactions, will be taken into account.

More specifically, the task will provide the mechanisms for the establishment of semantic links between pieces of information presented in different media, by seamlessly blending content semantics, social interactions and the expression of conceptualizations by individuals. Recent advances in active learning frameworks will be utilised for the annotation propagation of the non-annotated pieces of information. These will take into account the information hidden into the manually tagged objects minimizing at the same time the uncertainty of the system. This annotation propagation mechanism will be extended in order to incorporate user interaction. This will be achieved through combining active learning with relevance feedback. While browsing the repository, the user can interact with the system by marking the degree of relevance of the retrieved results. This type of interaction will be translated to a "similarity score", and will be inserted to the system in order to refine the already retrieved result set.

Task 2.5.2 [Month 6-24] Interfaces for Ingestion and Query Log analysis *(Responsible: UPS; Participants: ATC, EDLF, INA)*

The services for ingestion developed in WP2.1 will be offered through an advanced GUI developed by this task. Apart from allowing the user-friendly interaction with the ingestion services, this GUI will offer a powerful information visualization tool that will support the interoperability manager in quickly analyzing and visualizing the metadata being worked on. To this end, this task will implement a tool for: (a) transforming the source metadata into tabular form; (b) expressing queries on the tabular data based

on visual interaction; (c) visualizing query results in various forms (bar charts, pie representations and so on).

This visualization tool will be extended to also apply to the analysis of query logs. However, in contrast to tables derived from metadata collections that are input for ingestion, Query logs are represented as tables of huge size. As a consequence, appropriate approximation methods will be developed for scaling the visualization techniques up to the required size.

Task 2.5.3 [Month 4-22] Multimedia Characterisation tool *(Responsible: INA)*

This task is devoted to offer a provider-side service for indexing the content. The existing tool is able to work in a generic way with RDFS / OWL domain ontology, or to adapt to other kind of MPEG7-like multimedia description languages.

The biggest part of the work will be to deal with the interoperability bridge between the chosen metadata formats for the project and the proprietary description language of the tool as well as adapting the tool to server-side services and protocols.

Then it will be necessary to identify the basic set of metadata which have to be provided and eligible for manual correction or completion. This work has to be discussed with partners in charge with advanced semantic-based content retrieval functionalities (complex queries).

Beside this work some extensions are foreseen :

- the tool, currently dedicated to video indexing, will be extended to pure audio and some previous works on images annotation will be also integrated. image metadata extraction will also be investigated.
- If time-coded speech transcription is available, this feature will be used to implement navigation inside the video and enhance the productivity of the indexing process.
- Enhancement of RDFS / OWL ontology access provided by the project, if any.
- General Improvement of the current user interface.

Task 2.5.4 [Month 4-16] User Interface improvements *(Responsible: Robotiker; Participants: EDLF, CERT)*

This task will focus on the design and development of the ASSETS Portal. A user-friendly graphical user interface will be specially designed for searching and browsing in large scale multimedia archives. The Usability of the system in terms of effectiveness, efficiency and user satisfaction, will be considered in all steps of user interface development.

The objective is to develop an interface that provides intelligent access to a wide range of media inputs within one overall approach, that supports the formulation of different types of queries, that enhances the user's experience in the interaction with the system and that allows a customization according to the user's preferences and characteristics.

Rich user interface components will be designed and implemented to support the ASSETS Platform and its value-added services. The ASSETS web portal will allow complex query formulation and results presentation, ensuring the integration and interoperability with EUROPEANA.

The ASSETS Portal will also integrate some GUI components to improve the usability of the EUROPEANA platform user interface. These improvements will be carefully analyzed taking into account the developments achieved in other related projects. A description of the proposed improvements has been gathered in section *B1.1. Project Objectives*. These enhancements are related to :

- Advanced search, increasing flexibility and supporting more complex queries.
- Query formulation, adding new facilities to the 'Refine your search' functionality and introducing query suggestions.
- Results presentation, new presentation modes that optimize navigation and present results in an intuitive way.
- Interaction on results' thumbnails, showings visual clues and displaying a toolbar to launch main operations.

- Details window, enhancing navigation through 'related content' and in general, all the navigation.
- Personalization, introducing user profiles that support personal preferences and improving the private workspace facilities..
- Administration, introducing a dedicated interface to support administrative
- Collaborative working spaces, introducing support for group activities.

Deliverables

D2.5.1 (M22) Semantic cross-linking service [EXTERNAL]

This deliverable will include the software components of the semantic cross-linking service that will be developed within Task 2.5.1, along with a detailed documentation of their functionality.

D2.5.2 (M6) Interfaces for Ingestion and Query Log analysis [INTERNAL]

This deliverable will be a software component for interfacing tabular data through visual interaction; the tool will be integrated into the ingestion service and will be also offered as a stand-alone service for query log analysis.

D2.5.3 (M18) Multimedia Characterisation tool [EXTERNAL]

A semi-automatic multimedia characterisation service fully integrated with the server-side components as well as its complete documentation.

D2.5.4 (M16) Improved User Interface [EXTERNAL]

This deliverable includes the GUI components that will be developed within Task 2.5.5, along with a detailed documentation of functionality. These components will be integrated into the Europeana portal.

Person months per participant

Participant number	Participant short name	Person month per participant
6	EDLF	7
8	ROBOTIKER TECNALIA	12
9	SICS	6
10	INA	10
12	EKETA CERT	13
13	UPS	8
	Total	**56**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS36	First version of ASSETS User Interfaces	8	M16	
MS37	Complete set of services for search, browsing, and navigation	12	M22	
MS38	Final version of ASSETS User Interfaces	8	M24	

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D2.5.1	Semantic cross-linking service	12	20	P	PU	22
D2.5.3	Multimedia Characterisation tool	10	16	R	CO	18
D2.5.4	Improved User Interface	8	20	R	PU	16

Stream 3 Content and Users

Work package number	WP3.0			Start date	6		End date	24				
Work package title:	Content Provision and adaptation											
Participant n.	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	0	0	3	0	5	5	3	0	3	5	5	0
Participant n.	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*
Partic. short name	UPS	**CVCE**	DW	ANSC	Liberis	HASC	DIAS	Albeniz	CIAOTECH	UNESCO	FLM	MEME
Person-month per partic.	0	13	7	6	5	7	7	8	0	0	7	0

Objectives

The purpose of this work package is to provide a relevant and heterogeneous set of contents that will demonstrate the ability of ASSETS services to effectively clean, extract knowledge from and classify the provided metadata, thereby improving the usability of Europeana in searching and browsing**.**

Additional objectives of this WP is to increase the number of high quality contents available through European digital libraries.

Description of work

T3.0.1 [M1-6] Content analysis and selection *(Responsible: CVCE; Participants: EDLF, BMAT, INA, DW, ANSC, Liberis, HASC, DIAS, Albeniz, UNESCO, FLM)*

The aim of this task is to set up a detailed inventory of the contents provided by the consortium members and match them within the requirements of the different services that ASSETS will develop. Considering the main characteristics of the available contents (type, quantity, format, quality, existing metadata, language...) and the specific needs that will arise from stream 2 of the project, it will define a combination of several packages that will be made available to Ingestion and customized during the whole project. So, It will involve both content providers and technical experts.

This task will also look for external content if a specific need is not covered.

Task 3.0.2 [M4-M20] Content provision *(Responsible: CVCE; Participants: EDLF, BMAT, INA, DW, ANSC, Liberis, HASC, DIAS, Albeniz, UNESCO, FLM)*

This task corresponds to the initial aggregation and packaging of the contents provided by the different partners for tests and assessments of the following services:

- Metadata Cleaning, knowledge extraction and classification including both training and test data
- Audio content annotation and indexing
- Semantic cross linking browsing
- Manual correction of annotations
- Digital preservation
- Video summarisation and adaptation

This task concerns all content providers. CVCE will play the role of coordinator.

Task 3.0.3 [M6-M22] Content adaptation (*Responsible:* CNR*; Participants: ARC, BMAT, INA, UAM, CVCE, DW, ANSC, HASC, DIAS, Albeniz, UNESCO, FLM*)

The quality of provided content will obviously play an important role in the performance of the developed services. This task is a collaborative work between technical experts and content providers that will lead to the iterative adaptation of the inputs. Moreover, use of the services may also conduct to the transformation of the content themselves (quality improvement, preservation issues, mobility...).

Task 3.0.4 [M11-M24] Metadata enrichment *(Responsible: CVCE; Participants: AIT, CNR, BMAT, SICS, INA, UAM, DW, ANSC, Liberis, HASC, DIAS, Albeniz, UNESCO, FLM)*

ASSETS services will also generate a bunch of new metadata required for running new ways of searching

or browsing. This task will cooperate with the rest of the project, and in particular with the Ingestion WP, in order to support the knowledge extraction and the metadata classification services by providing training and test data, and assess these services by evaluating their results. This will lead to the enrichment of the metadata available within the project (above the testing packages that were used during the previous tasks). The objective is to increase the critical mass of operational contents ready to demonstrate the power of ASSETS services in Europeana and other digital libraries.
Deliverables
D3.0.1 (M3) Content Selection Matrix [INTERNAL**]** Detailed matrix of the contents selected for each type of service and needed benchmark (quality, scalability, efficiency...) **D3.0.2 (M14) Packaged and well-described sets of content [**INTERNAL**]** **D3.0.3 (M21) Enhanced packaged and well-described sets of content [**EXTERNAL**]** **D3.0.4 (M24) Enriched content, made available through Europeana [**INTERNAL**]** ***D3.0.5 (M9) Best practices for providing content*** [EXTERNAL]

Person months per participant

Participant number	Participant short name	Person month per participant
3	AIT	3
5	CNR	5
6	EDLF	5
7	BMAT	3
9	SICS	3
10	INA	5
11	UAM	5
14	CVCE	13
15	DW	7
16	ANSC	6
17	LIBERIS	5
18	HASH	7
19	DIAS	7
20	ALBENIZ	8
23	FLM	7
	Total	**89**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS39	Provision of a first set of content	14	M12	
MS40	Enrichment of metadata	14	M18	

MS41	Final Content provision	14	M24	

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D3.0.3	Enhanced packaged and well-described sets of content	14	44	P	PU	21
D3.0.5	Best practices for providing content	14	45	R	PU	9

Work package number	WP3.1			Start date	1		End date	24				
Work package title:	Service user evaluation and assessment											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	4	6	0	8	0	8	2	5	2	5	6	2
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	CIAOTECH	UNESCO	FLM	MEME
Person-month per partic.	2	3	6	5	6	16	6	4	0	3	2	0

Objectives

The objective of this Work Package is to validate the consolidated services by testing them on real users and to ensure that the services comply with the requirements Europeana in order to ensure deployment. The ASSETS Best Practice Network has two focuses, the first is to implement large-scale digital library services, and the second is to foster the adoption of the implemented services. Nevertheless, on-line digital libraries nowadays exist in abundance and the only way that ASSETS and its services may be adopted is to invest in functionalities that really make a difference to the actual users. This will be ensured in ASSETS by several cycles of user validation both for the whole concept as well as for individual functionalities..

This Work Package needs to cover 2 types of users: machine and end users. Machine is to ensure that the services can be well integrated into portals such as Europeana. As well as evaluating the results of WP3.0, and 3.2 this WP must relates to the mechanisms created and prototyped under WP's 2 2.1, 2.2 and 2.3.

Description of work

Four tasks are planned:

Task 3.1.1[Month 1-3] Planning of the user-centered design and evaluation (Responsible: HASC; Participants: All apart from CNR and CIAOTECH)

This task will create a plan to involve the end users both in the designs of the user-interfaces (user-centered design), and in the evaluation of the individual functionalities; the task will also determine the best ways of deploying such services for users of Europeana. It will create a work plan that is in line with the deliverables of the workpackages and integrate with the timings of Europeana releases and the user acceptance testing of those releases. Efforts will be made to group participation in the design of user interfaces and in the testing of functionalities together to optimise user evaluation time and costs. The plan will outline the user evaluation activities and the time required for them. In addition a set of requirements will be written as guidelines for inclusion of functionalities into Europeana.

Task 3.1.2 [Month 3-22] User evaluation activities (Responsible: STICHTING; Participants: All apart from Exalead, CNR and CIAOTECH)

The methodology for user-centered design and user evaluation is based on both laboratory involvement and experimentation, and field results i.e. post integration of the functionalities in Europeana. They will therefore include lab based interactive sessions with users from different age groups and backgrounds. These labs will allow the user to drive the user interface design; once the user interface is designed, the sessions will allow us to follow the user as they use the services, recording their click movements on screen. These will be held in at least 3 different Europeana countries. Additionally the normal user acceptance process against the requirements issued under task 3.2.1 to accept functionalities into a Europeana release will be activated. Other activities will include the incorporation of the functionalities into the thought lab of Europeana to encourage ad hoc use by normal users of Europeana. This usage will be logged and analysed by the Europeana logging analysis tool developed under EuropeanaConnect and deployed in the Rhine release of Europeana in July 2010. This will indicate exactly what users are using and how rather that what they say they will do under a test environment. This will be a strong

validation for and against the various services.

Task 3.1.3 User evaluation reports [Month 12-24] (Responsible: HASC; Participants: All apart from CNR Exalead and CIAOTECH)

The results of the various tests will be given in a series of public report, timed to coincide with the design and the delivery of functionalities. There will be 1 final report on the usage of the functionalities as deployed in Europeana compared to expected usage from the laboratory sessions.

Task 3.1.4 Software quality control [Month 12-24] (Responsible: ENG; Participants: ATC, Exalead, BMAT, Robotiker)

This task will monitor and test the quality of the services developed by ASSETS with respect to reliability, robustness and scalability. To this end, continuous tests will be executed after release of the components implementing the services. The Sonar Code Quality Management Platform will be employed to this end. In this task, Exalead will define an experimental protocol to test and validate the ASSETS search platform. This protocol will consider the critical issues of Europeana like scalability, relevance, system perfomances and efficiency. On the basis of this protocol, Exalead will conduct the trials and tests to validate the development and advise the partners to improve the system in case of not satisfactory results.

Deliverables

D3.1.1 (M12) Preliminary Report on user evaluation of functionalities [INTERNAL] This internal report will be the first draft of the evaluation methodology and planning.

D3.1.2 (M18) Report on user evaluation of functionalities [EXTERNAL] This deliverable will present a first report on the evaluation plan and activities.

D3.1.3 (M24) Final report comparing laboratory evaluation against field use [EXTERNAL] This final deliverable will report the final evaluation results.

D3.1.4 (M24) Final report on software quality [EXTERNAL] This final deliverable will report the results of the activity on achieving software quality.

Person months per participant

Participant number	Participant short name	Person month per participant
1	ENG	4
2	ATC	6
4	EXALEAD	8
6	EDLF	8
7	BMAT	2
8	ROBOTIKER - TECNALIA	5
9	SICS	2
10	INA	5
11	UAM	6
12	EKETA CERT	2
13	UPS	2
14	CVCE	3
15	DW	6
16	ANSC	5
17	LIBERIS	6

18	HASC	16
19	DIAS	6
20	ALBENIZ	4
22	UNESCO	3
23	FLM	2
	Total	**101**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS42	Final System Evaluation (M24)	18	M24	

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Diss. level	Delivery date
D3.1.2	Report on user evaluation of functionalities	18	45	R	CO	18
D3.1.3	Final report comparing laboratory evaluation against field use	18	56	R	PU	24

Work package number	WP3.2			Start date	1		End date	24				
Work package title:	Community services											
Participant n.	1	2	3	4	5	6	7	8	9	10	11	12
Partic. short name	ENG	ATC	AIT	Exalead	CNR	EDLF	BMAT	Robotiker	SICS	INA	UAM	CERT
Person-month per partic.	4	10	0	0	24	7	4	2	1	0	0	2
Participant n.	13	14	15	16	17	18	19	20	21	22	23	24
Partic. short name	UPS	CVCE	DW	ANSC	Liberis	HASC	DIAS	Albeniz	CIAOTECH	UNESCO	FLM	MEME
Person-month per partic.	31	2	1	2	2	1	1	3	0	2	4	18

Objectives

The objective of this WP is to develop services addressing the needs of digital libraries communities. A community is a collection of users who share some interest, such as the carrying out of a common activity or the membership to some social network. This WP also addresses single users, as communities with only one member.

The WP will focus on the following services:

- Content creation by re-use; the availability of content in digital form makes it possible to create new content by extracting and recombining in various forms existing digital objects or parts thereof. This service aims at supporting the composition of new digital objects from other simpler digital objects.
- Taxonomy-based notification; notification is a service that enables the selective dissemination of events, in an asynchronous manner, to communities that have expressed interest in those events. This service aims at developing a sophisticated form of notification, based on a taxonomy between the events.
- Personalization services; this service aims at customizing the functionalities of a digital library to

specific communities by reacting in different ways to one and the same request, depending on the community issuing the request.

These services will be evaluated by WP3.1. The resulting feedback will be used for implementing enhanced services.

Description of work

Task 3.2.1 [Month 1-4] Community requirements collection and analysis (*Responsible: EDLF; Participants: ENG ,ATC, Robotiker, SICS, UPS, CVCE, DW, ANSC, Liberis, HASC, DIAS, Albeniz, UNESCO, FLM*)

This task aims at creating use cases capturing user requirements for community services. The use cases will be obtained by the collaboration of the involved content providers, also based on previous experiences with their own communities. The focus will be on the services that are part of this WP, and the emphasis will be on the specific needs and modalities in which these communities require such services.

Task 3.2.2 [Month 4-18] Content creation by re-use (*Responsible: CNR; Participants: ENG, ATC, BMAT, UPS, MEME*)

This service aims at supporting the composition of new digital objects from other simpler digital objects. To do so, a data model of objects as composite entities will be required, describing how complex objects relate to their simpler constituents, including other objects as well as descriptions and versions. This data model will be built as an extension of the Europeana Data Model (EDM), which is the conceptual basis of Europeana Danube. EDM will thus be extended for the purposes of implementing advanced services. The extension will add to EDM primitive operations for creating objects from other objects, and the same for versions and descriptions; in addition, the extension will bring new querying capabilities to the digital library, taking into account the composite nature of objects, and the involved query evaluation algorithms. An initial prototype of EDM will be built. The above mentioned extension will subsequently be designed and implemented. Advanced composition techniques will be employed, especially those devloped at the MEME Media Lab, in order to allowing the seamless incorporation of dynamic objects into newly created objects.

The main activities of this task will be:

— providing an appropriate data model as an abstraction layer over digital libraries;
— providing the operations for creating objects from existing ones;
— providing a query language and algorithms for query evaluation;
— providing an advanced user interface for object composition.

Task 3.2.3 [Month 8-20] Taxonomy-based notification (*Responsible: UPS*)

This service aims at developing a sophisticated form of notification, whereby an owner registering an object is seen as a publisher, a user declaring preferences is seen as a subscriber, and when an inserted or modified object matches a subscription, the subscriber(s) having that subscription are notified. This form of communication does not require a synchronous connection between publishers and subscribers; this decoupling can allow for greater scalability and a more dynamic interaction.

We consider a publish/subscribe system for digital libraries which continuously evaluates queries over a large repository containing object descriptions. The subscriptions, the query expressions and the object descriptions, all rely on a vocabulary of terms (or keywords) that is usually structured hierarchically. The main activities of this task will be:

- based on the term hierarchy, define a hierarchy of descriptions, and
- use the description hierarchy to derive an algorithm that takes as input an event occurring in the library and returns the set of subscribers to be notified. The notification itself can be done in many different ways (e.g. RSS, email and so on) but this is not relevant to the present activity.

Task 3.2.4 [Month 10-22] Personalization services (*Responsible: UPS*)

Personalization can involve either adapting the user interface or adapting the content of a digital library to the needs or preferences to the users. In this task, the focus will be on adapting the discovery functionality of the digital library to the preferences of the involved user or community. In general, preferences span two orthiginal dimensions: the time and the expression dimension. According to time, there can be long- and short-term preferences. The former are captured in profiles, while the latter are state contextually to query formulation. According to expression, there can be qualitative or quantitative preferences. The former are expressed as binary relationships between items, while the latter associate a numerical value to each item. The main activities of this task will be:

define a model of the user/community profile capturing long-term preferences expressed both in quantitative and qualitative terms, and implement algorithms for profile management;

design and implement an algorithm for re-ranking the result of a query, taking into account quantitative and qualitative short-term preferences stated along with the query and long-term preferences stated in the user profile.

Deliverables

D3.2.1 (M4) Community service use cases (Report)[INTERNAL]

This deliverable will report the use cases for community services.

D3.2.2 (M12) Content creation service (Prototype)[EXTERNAL]

This deliverable will include the software components of the content creation by re-use service that will be developed within Task 3.2.2. After collecting feedback from evaluation, and enhanced release of the service will take place at month 18.

D3.2.3 (M14) Taxonomy-based notification service (Prototype) [EXTERNAL]

This deliverable will include the software components of the taxonomy-based notification service that will be developed within Task 3.2.3. . After collecting feedback from evaluation, and enhanced release of the service will take place at month 20.

D3.2.4 (M16) Personalization service (Prototype) [EXTERNAL]

This deliverable will include the software components of the personalization service that will be developed within Task 3.2.4. After collecting feedback from evaluation, and enhanced release of the service will take place at month 22 [month 16].

Person months per participant

Participant number	Participant short name	Person month per participant
1	ENG	4
2	AIT	10
5	CNR	24
6	EDLF	7
7	BMAT	4
8	ROBOTIKER - TECNALIA	2
9	SICS	1
12	EKETA CERT	2
13	UPS	31
14	CVCE	2
15	DW	1

16	ANSC	2
17	LIBERIS	2
18	HASC	1
19	DIAS	1
20	ALBENIZ	3
22	UNESCO	2
23	FLM	4
24	MMLHU	18
	Total	**121**

Schedule of Relevant Milestones

Milestone n.	Milestone name	Lead beneficiary n.	Delivery date from Annex 1	Comment
MS43	Content creation by re-use	5	M10	This milestone will be a report describing the approach to content creation by reuse as well as the algorithms supporting this service
MS44	Taxonomy based notification	13	M12	This milestone will be a report describing the approach to the particular personalization services considered as well as the algorithms supporting this service.
MS45	Community services for Digital Libraries	5	M24	This final milestone will be a report giving a succinct description of the services developed as well as their implementation and use.

List of WP deliverables

Deliverable n.	Deliverable name	Lead beneficiary n.	Estimated indicative person-months	Nature	Dissemination level	Delivery date
D3.2.2	Content creation service	5	51	P	PU	12
D3.2.3	Taxonomy-based notification service	13	25	P	PU	14
D3.2.4	Personalization service	13	45	P	PU	16

WT4: LIST OF MILESTONES

Number	Work package	Name	Lead beneficiary	Delivery date	Comments
MS1	WP10	Definition of the quality procedures	ENG	3	This milestone consists in the definition of specific procedure in order to guarantee the quality of the project activities, that each partner has to follow
MS2	WP10	Management website running	ENG	3	Project internal website where partner can retrieve and upload relevant information on the project activity
MS3	WP10	First Progress Monitoring report available	ENG	12	Report on Internal activities and resource results from all partners for year 1
MS4	WP10	Final report available	ENG	24	Report onInternal activities and resource results from all partners for year 2
MS5	WP10	Annual Financial check-point year 1	ENG	12	Financial and administrative check points for year 1
MS6	WP10	Annual Financial check-point year 2	ENG	24	Financial and administrative check points for year 2
MS7	WP11	User Community website site running	CIAOTECH	3	This milestone will guarantee the communication between the Community member and the project. The Community web site will be continuously updated.
MS8	WP11	First dissemination material	CIAOTECH	4	A first brochure will be issued in order to have dissemination material to be distributed
MS9	WP11	Rolling Dissemination Plan	CIAOTECH	13	A first set of dissemination activities will be carried out by the relevant partners.
MS10	WP11	User profiling and engagement of ASSETS community	CIAOTECH	18	This milestone is of paramount importance for the success of the project. The User Community will guarantee the future sustainability of the ASSETS BPN
MS11	WP11	Definition of a final exploitation plan	CIAOTECH	24	At the end of the project a final exploitation plan will be defined in order to foster the continuation of the project results
MS12	WP20	System architecture completed	ENG	4	This milestone is associated to T2.0.2
MS13	WP20	Europeana Cluster Technical Meeting, Pisa	CNR	6	This milestone is associated to T2.0.2
MS14	WP20	Europeana Cluster Technical Meeting, the Hauge	AIT	9	This milestone is associated to T2.0.4
MS15	WP20	First revision of Service API published	CNR	12	This milestone is associated to T2.0.2
MS16	WP20	Europeana Cluster Technical Meeting, Vienna	AIT	15	This milestone is associated to T2.0.6
MS17	WP20	Final revision of Service API published	CNR	18	This milestone is associated to T2.0.5
MS18	WP21	Selection of reference data-set for metadata cleaning	CNR	6	
MS19	WP21	Selection of reference data-set for knowledge extraction from metadata records	CNR	8	
MS20	WP21	Selection of reference data-set for metadata classification	CNR	10	
MS21	WP21	Generation of final metadata set resulting from metadata cleaning, knowledge extraction from metadat	CNR	22	
MS22	WP22	Multimedia content feature extraction software	CNR	8	
MS23	WP22	Index structure management software	CNR	12	
MS24	WP22	Ranking and searching algorithms	CNR	16	
MS25	WP22	First service release	CNR	18	
MS26	WP22	Final service release	CNR	22	
MS27	WP23	Digital Preservation Service Design	ENG	5	

MS28	WP23	Digital Preservation Service Prototypes	AIT	12	
MS29	WP23	Digital Preservation Service Deployment to Europeana R&D Sandbox	ENG	15	
MS30	WP23	Digital Preservation User Test Results Analysis and Refactoring	AIT	18	
MS31	WP23	Digital Preservation Updated Service Deployment to Europeana R&D Sandbox	ENG	20	
MS32	WP23	Digital Preservation Production Deployment of Preservation Services	AIT	22	
MS33	WP24	Assets platform 1st prototype	ATC	12	
MS34	WP24	Assets final platform	ATC	24	
MS35	WP24	First Assets services in the Europeana sandboxes	ATC	12	
MS36	WP25	First version of ASSETS User Interfaces	ROBOTIKER-TECNALIA	16	
MS37	WP25	Complete set of services for search, browsing, navigation and	EKETA CERT	22	
MS38	WP25	Final version of ASSETS User Interfaces	ROBOTIKER-TECNALIA	24	
MS39	WP30	Provision of a first set of content	CVCE	12	
MS40	WP30	Enrichment of metadata	CVCE	18	
MS41	WP30	Final Content provision	CVCE	24	
MS42	WP31	Final System Evaluation	HASC	24	
MS43	WP32	Content creation by re-use	CNR	10	This milestone will be a report describing the approach to content creation by reuse as well as the algorithms supporting this service
MS44	WP32	Taxonomy based notification	UPS	12	This milestone will be a report describing the approach to the particular personalization services considered as well as the algorithms supporting this service.
MS45	WP32	Community services for Digital Libraries	CNR	24	This final milestone will be a report giving a succinct description of the services developed as well as their implementation and use.

WT5: LIST OF TENTATIVE REVIEWS

Tentative schedule of project reviews			
Review number	**Tentative time**	**Planned venue of review**	**Comment if any**
1	M12	On site review	It is preferable to have on site review in order to guarantee good Internet connection for live demonstrations. The venue could be Pisa, the Hague, Vienna.
2	M24	On site review	It is preferable to have on site review in order to guarantee good Internet connection for live demonstrations. The venue could be Pisa, the Hague, Vienna.

WT6: SUMMARY OF STAFF EFFORT

Part. N.	Part. Short name	WP1.0	WP1.1	WP2.0	WP2.1	WP2.2	WP2.3	WP2.4	WP2.5	WP3.0	WP3.1	WP3.2	TOT
1	ENG	28,0	10	17,0	0,0	0,0	21,0	21,0	0,0	0,0	4,0	4,0	**105,0**
2	ATC	1,0	6,0	12,0	0,0	0,0	0,0	23,0	0,0	0,0	6,0	10,0	**58,0**
3	AIT	1,0	3,0	32,0	8,0	0,0	21,0	9,0	0,0	3,0	0,0	0,0	**77,0**
4	Exalead	0,0	0,0	8,0	0,0	0,0	0,0	0,0	0,0	0,0	8,0	0,0	**16,0**
5	CNR	1,0	3,0	10,0	23,0	34,0	0,0	10,0	0,0	5,0	0,0	24,0	**110,0**
6	EDLF	0,0	5,0	8,0	3,0	0,0	0,0	10,0	7,0	5,0	8,0	7,0	**53,0**
7	BMAT	0,0	3,0	5,0	0,0	12,0	0,0	6,0	0,0	3,0	2,0	4,0	**35,0**
8	Robotiker	0,0	4,0	6,0	0,0	0,0	0,0	5,0	12,0	0,0	5,0	2,0	**34,0**
9	SICS	0,0	4,0	0,0	4,0	4,0	0,0	1,0	6,0	3,0	2,0	1,0	**25,0**
10	INA	0,0	2,0	3,0	0,0	0,0	0,0	1,0	10,0	5,0	5,0	0,0	**26,0**
11	UAM	0,0	4,0	4,0	0,0	12,0	0,0	5,0	0,0	5,0	6,0	0,0	**36,0**
12	CERT	1,0	4,0	4,0	0,0	9,0	0,0	2,0	13,0	0,0	2,0	2,0	**37,0**
13	UPS	1,0	2,0	0,0	0,0	0,0	0,0	2,0	8,0	0,0	2,0	31,0	**46,0**
14	CVCE	1,0	4,0	0,0	0,0	0,0	0,0	0,0	0,0	13,0	3,0	2,0	**23,0**
15	DW	0,0	4,0	0,0	0,0	0,0	0,0	0,0	0,0	7,0	6,0	1,0	**18,0**
16	ANSC	0,0	5,0	0,0	0,0	0,0	0,0	0,0	0,0	6,0	5,0	2,0	**18,0**
17	Liberis	0,0	3,0	0,0	0,0	0,0	0,0	0,0	0,0	5,0	6,0	2,0	**16,0**
18	HASC	1,0	5,0	0,0	0,0	0,0	0,0	0,0	0,0	7,0	16,0	1,0	**30,0**
19	DIAS	0,0	5,0	0,0	0,0	0,0	0,0	0,0	0,0	7,0	6,0	1,0	**19,0**
20	Albeniz	0,0	3,0	0,0	0,0	0,0	0,0	0,0	0,0	8,0	4,0	3,0	**18,0**
21	CIAOTECH	1,0	25,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	**26,0**
22	UNESCO	0,0	5,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,0	2,0	**10,0**
23	FLM	0,0	2,0	0,0	0,0	0,0	0,0	0,0	0,0	7,0	2,0	4,0	**15,0**
24	MMLHU	0,0	2,0	0,0	0,0	12	0,0	0,0	0,0	0,0	0,0	18	**32,0**
	TOTAL	**36,0**	**113,0**	**109,0**	**38,0**	**83,0**	**42,0**	**95,0**	**56,0**	**89,0**	**101,0**	**121,0**	**883,0**

DRAFT IMPLEMENTATION PLAN

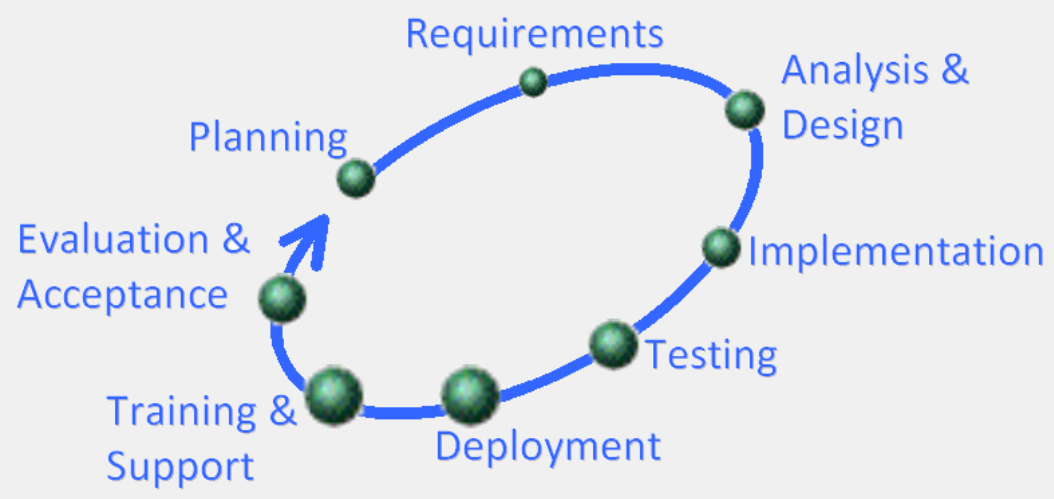
ASSETS can provide the reasonable effort in order to allow Europeana developers in integrating our services. But, it makes no sense, and it's dangerous, that ASSETS developers "handle confidentially" Europeana code.

In practice how this activities could be applied in the current DoW?

Specific Training task could be part of WP1.1 "Networking, Dissemination and Exploitation".

There we could explicitly identify when and how ASSETS experts will train and support Europeana developers for the integration.

This task could be also a part of an iterative and incremental process with the following phases:



- **Europeana Requirements –** Europeana requirements are gathered and prioritised from ASSETS Foundation team, and specifically AIT, through tasks 2.0.1 and 2.02;
- **Analysis and Design –** according to the requirement and their priorities, the ASSETS Foundation team, and in particular AIT – ATC – CNR - ENG – Exalead, defines specifications and a list of functionality to be released within the iteration;
- **Implementation –** according to the specifications, the ASSETS Foundation team involves its developers in implementing prototype;
- **Testing –** according to the list of functionality expected, the integration team (through Continuous Integration Engine) carries out the functional tests;
- **Deployment –** if tests are passed, software artefacts are deployed in the trial and validation environment (server for deployment of stable release, different from the server for development where everyday release is deployed for dev purposes);
- **Training and Support to Europeana developers –** new release of prototype could require training and support to Europeana developers for integrating released functionality. Experts within the ASSETS development team have the role for carrying out that activity;

- **Evaluation and Acceptance –** after the suitable training and support, Europeana developers can implement the functionality and (EDLF?) evaluates their behaviours and provide acceptance (if behaviour is compliant to the requirements, otherwise request for changes are submitted). (EDLF?) will be supported by the Continuous Integration tools provided by the WP2.4 "Service Integration, testing and deployment". In this case we can highlight the cooperation of different WPs within the project**.**
- **Master Plan Revision –** after the evaluation and acceptance phase, the Master Plan (plan for implementation of prototype) needs to be revised. This key activity represents a useful tool (a kind of contract) for monitoring and controlling the development process. It allows to identify a trade-off between expectations from Europeana developers and the functionality delivery from ASSETS developers**.**

A part of this process has been already presented in WP2.0 "Technical Coordination and Interoperability".

More, for the evaluation and acceptance, a new task will be added in WP3.1 "Software quality control", which will cooperate with WP2.0 (Technical Coordination) and WP2.4 (Integration and Automatic Testing) in order to guarantee the quality control and assurance of the released prototypes.

-

Phase 1 of Iterative and Incremental Process				
	Europeana Requirements			
	Objectives	Europeana requirements are gathered and prioritised from ASSETS Foundation team, and specifically AIT, through tasks 2.0.1 and 2.02		
	Important Dates	**[M2]**: Europeana Cluster Technical Meeting in Berlin;		
	Outcomes	**[M3] D2.0.1 Requirements Specification**		
	Evaluation methodology and functional testing description	Release of Requirements		
	Start Date	M1	***End Date***	M3
	Analysis and Design			
	Objectives	According to the requirement and their priorities, the ASSETS Foundation team, and in particular AIT – ATC – CNR - ENG – Exalead, will support the definition of the design and specifications		
	Important Dates	**[M3]**: Europeana Cluster Technical Meeting in Pisa; **[M6]** Europeana Cluster Technical Meeting in The Hague;		
	Outcomes	**[M9] D2.0.2 Interface Specification and System Design** **[M9] D2.0.3 Implementation Guidelines**		

		[M12] D2.1.1 Specification of ingestion services **[M12] D2.2.1 Specification of metadata and content based indexing and ranking**		
	Evaluation methodology and functional testing description	Release of Specifications		
	Start Date	M1	***End Date***	M12
	Implementation			
	Objectives	according to the specifications, the ASSETS Foundation team involves its developers in implementing prototype		
	Important Dates	**[M12]**: Europeana Cluster Technical Meeting in Vienna;		
	Outcomes	**[M12] D2.3.1 Prototype of Preservation Services** **[M15] D2.0.4 Search Abstraction Layer** **[M16] D2.1.2 First release of Ingestion Service** **[M16] D2.2.2 Scalable metadata-based indexing and ranking** **[M16] D2.2.4 Scalable content-based indexing and ranking**		
	Evaluation methodology and functional testing description	Release of software artefacts on code repository		
	Start Date	M9	***End Date***	M16
	Testing & Deployment			
	Objectives	according to the list of functionality expected, the integration team (through Continuous Integration Engine) carries out the functional tests; if tests are passed, software artefacts are deployed in the trial and validation environment (server for deployment of stable release, different from the server for development where everyday release is deployed for dev purposes);		
	Important Dates	**[M16]**: First Release of the ASSETS services		
	Outcomes	Release of tested software artefacts and deployment for Europeana		
	Evaluation methodology and functional testing description	Release of stable software artefacts on server. Detailed description for each service is available on line.		
	Start Date	M9	***End Date***	M16
	Training and Support to Europeana developers			
	Objectives	new release of prototype could require training and support to Europeana developers for integrating released functionality. Experts within the ASSETS development team have the role for carrying out that activity;		
	Important Dates	**[M16]**: First Release of the ASSETS services		

		[M24]: Final release		
	Outcomes	Release of training material for Europeana developers and Support on Development Issues		
	Evaluation methodology and functional testing description	Release of training material and check of addressed issues on issue tracking system		
	Start Date	M15	***End Date***	M18
	Evaluation and Acceptance			
	Objectives	after the suitable training and support, Europeana developers can implement the functionality and EDLF evaluates their behaviours and provide acceptance (if behaviour is compliant to the requirements, otherwise request for changes are submitted). EDLF will be supported by the Continuous Integration tools provided by the WP2.4 "Service Integration, testing and deployment". In this case we can highlight the cooperation of different WPs within the project		
	Important Dates	Meeting to be fixed on M16		
	Outcomes	**Evaluation Report and Acceptance of released prototype of ASSETS services**		
	Evaluation methodology and functional testing description	Release of evaluation report and acceptance from EDLF		
	Start Date	M15	***End Date***	M18
	Master Plan Revision			
	Objectives	After the evaluation and acceptance phase, the Master Plan (plan for implementation of prototype) needs to be revised. This key activity represents a useful tool (a kind of contract) for monitoring and controlling the development process. It allows to identify a trade-off between expectations from Europeana developers and the functionality delivery from ASSETS developers		
	Important Dates	Meeting to be fixed on M16		
	Outcomes	**Update of Master Plan for 2nd iteration (M16 – M24)**		
	Evaluation methodology and functional testing description	Release of updated Master Plan and agreement		
	Start Date	M15	***End Date***	M19

B3.3. PROJECT MANAGEMENT

B3.3.1 OVERVIEW

The activities of the project are structured in **Streams** (ST)composed by **Work Packages** (WPs) reflecting the specific structure of the ASSETS project. Each type of activity is leaded by the **directors** that compose the **Executive Committee of the project**, which is chaired by the **Project Director**, who is overall in charge of the project co-ordination. The partners' interests are represented by a **Governing Board**, to which the Executive Committee reports. The project organisational structure and decision-making mechanisms are formalised in a **Consortium Agreement**, which all partners will sign before the start of the project.

B3.3.2 THE GOVERNING BOARD

The Governing Board is composed of one institutional representative appointed by each of the partners. It is this Board, which ultimately validates the major decisions concerning the project. The Governing Board is the arbitration body for all decisions proposed by the Executive Committee. Any contractor may submit for arbitration by the Governing Board any decision by the Executive Committee it deems to be contrary to its interests. The Governing Board is also the decision-making body for any issue concerning the proper operation of the Consortium. In principle, approval by the Board shall be given by mail vote, upon proposition by the Executive Committee. It is anticipated that formal meetings of the Board will only be necessary under exceptional circumstances. The matters to be acted upon by the Board may include:

- The political and strategic orientation of the project;
- The Consortium's "Work Plan" and "Plan for using and disseminating Knowledge" and their regular updates;
- The Consortium's budget and the financial allocation of the EU's contribution between the various activities on the one hand, and between the various partners on the other;
- The annual validation of the realised expenditure in accordance to the budget;
- Any changes in the Consortium membership.

B3.3.3 EXECUTIVE COMMITTEE DIRECTORS

The Executive Committee is composed of the following directors.

Director	WP Involved	Responsibility	Responsible partner
Project Director	WP1.0	Overall responsibility, see below.	**ENG (Maria Silvia Boi)**
Communication and Innovation	WP1.1	Dissemination, Brand, , Long-term viability, Documentation.	**CIAOTECH (Paolo Salvatore)**
Technical	WP2.0 WP2.1 WP2.2 WP2.3	Overall technical coordination.	**AIT (King Ross)**

Director	WP Involved	Responsibility	Responsible partner
	WP2.4 WP2.5		
Content	WP3.0	Content provision	**CVCE (Ghislain Suillame)**
User	WP3.1	User involvement, service validation	**EDLF (Jill Cousins),**
	WP3.2		**CNR (Carlo Meghini)**

The main role of the Executive Committee is to make propositions to the Governing Board on the project work plan, budgets, and other matters necessary for the project advancement and success; and to implement the project orientations approved by the Governing Board. It is chaired by the Project Director. Its responsibilities include:

⇒ Define and update the Work Plan;

⇒ Make progress reports on the state of advancement of the Project;

⇒ Establish the Project Deliverables for the Commission;

⇒ Propose the Project budget to the Governing Board as well as the allocation of funding between the Contractors;

⇒ Propose and implement the competitive selection procedure for any new Contractors;

⇒ Make proposals to the Governing Board for changes in the consortium membership.

The Executive Committee shall more generally propose any and all decisions required for the proper conduct of the Project. The composition of the Executive Committee at the start of the project will be defined in the Consortium Agreement.

B3.3.4 Project Director

The Project Co-ordination is entrusted to Engineering, who has nominated Maria Silvia Boi as the Project Director. She has the responsibility of overall co-ordination and management of the project, including to:

⇒ Communicate all information in connection with the Project to the Commission;

⇒ Receive the entire financial contribution from the Commission. The Project Director will manage this contribution by allocating it to the Contractors pursuant to the “Work Plan” and the decisions taken by the appropriate bodies;

⇒ Prepare annual accounts, if requested by the Commission or by the Contractors, to inform them of the distribution of funds among the Contractors;

⇒ Approve all the Project Deliverables and address them to the Commission, after validation by the Executive Committee;

⇒ Provide day to day co-ordination of the project, monitoring project planning and progress, deadlines, deliverables;

⇒ Communicate within the project, to users, and to the general public;

- ⇒ Organise meetings and internal reviews;
- ⇒ Oversee the quality control and documentation plan;
- ⇒ Co-ordinate with other EU-funded or other international projects;
- ⇒ Provide overall administrative and financial management of the co-ordination,
- ⇒ Keep track of budgets;
- ⇒ Manage consortium-level legal and ethical issues;
- ⇒ Manage gender issues.

Implementation of the plans to manage knowledge and innovation-related activities, intellectual property issues is under the responsibility of the Communication and Innovation Director.

B3.3.5 Europeana Cluster Advisory Board (ECAB)

The ECAB will advise the project on the direction on the project activities and in particular it will:

(a) strengthen the cooperation with Europeana,

(b) participate in and approve the definition of the ASSETS services specifications,

(c) foster coordination with the Europeana projects,

(d) supervise the interoperability with the Europeana infrastructure.

The ECAB will be form by the project director (Maria Silvia Boi), the ASSETS technical director (Ross King), the ASSETS User director (Jill Cousin), the ASSETS user co-director (Carlo Meghini) and the ASSETS content director (Chislain Suillame). Moreover members of the ECAB will be external expert dappling involved in Europeana, and they are:

Dr Stefan Gradmann: Professor of Library and Information Science at Humboldt-Universität zu Berlin / Berlin School of Library and Information Sciences, with a focus on knowledge management and semantics based operations. Besides this scientific focus, he has good knowledge and experience in digital library, library automation and information technologies, with a special emphasis on the digital humanities. His third area of expertise is digital identity management as well as authentication and authorisation technologies. His fourth area of interest is document management and document lifecycle management. He is currently heavily involved in building Europeana, the European Digital Library, and more specifically was leading WP2 on technical and semantic interoperability as part of the EDLnet project and currently leads WP 1 (Creating the Europeana Semantic Layer) as part of the EuropeanaConnect project as well as together with Makx Dekkers and Carlo Meghini leading work in WP3 of EuropeanaV1.0 where his main tasks are the moderation of the core expert group, liaising with external projects related to Europeana and producing the long term recommendations for future work.

Max Kaiser: Head of Research and Development at the Austrian National Library. He holds a Master's degree in Philosophy and German Literature from the University of Vienna and has been working for the Austrian National Library since 2000. Max Kaiser has many years of experience in national and international research and development projects in the field of digital libraries, digital preservation and digitisation. He has been involved in several EU projects in the Commission's FP4, FP5, FP6, FP7, eContent and eContentplus programmes including MALVINE, LEAF, BRICKS, reUSE, DELOS, PLANETS, EDL, EDLnet, TELplus, IMPACT, Europeana v1.0 and EuropeanaTravel. He currently is leading the Digital Preservation Testbed

Subproject within PLANETS (FP6) ,the Enhancement and Enrichment Subproject within IMPACT (FP7), and is the coordinator of the eContentplus project EuropeanaConnect. Within EDL he led the work package "Developing the European Digital Library". He is member ONB's Digital Library Steering Board and is responsible for coordinating the library's participation in The European Library (TEL). He teaches Digital Libraries and Digital Preservation at the University of Vienna, the University Krems and the Center for Information and Communication Technology and Management in Eisenstadt."

Dr Vivien Petras. Vivien Petras holds a MA in Library and Information Science & Business Administration from Humboldt-University, Berlin, Germany, and a Ph.D. in Information Management & Systems from UC Berkeley, USA. She worked as the Deputy Head of the Information Science R&D department at the Social Science Information Centre in Bonn, now GESIS -Leibniz-Institute for the Social Sciences, where she coordinated several projects concerned with semantic interoperability, information retrieval and open access. She now works at the Berlin School of Library and Information Science and leads work package 2 (Multilingual Access to Content) in the eContentplus EuropeanaConnect project and is a member of the core expert group for the eContentplus project Europeana v1.0.

Stefanos Kollias: Professor of NTUA and Director of the Intelligent Multimedia Systems Lab. He obtained : Diploma in Electrical Engineering from National Technical University of Athens, 1979, M.Sc. in Communication Engineering from UMIST, 1980, Ph.D in Signal Processing from NTUA, 1984. In 1982 he was given a COMSOC Scholarship by the IEEE. He was elected Lecturer of the ECE Department of NTUA in 1986. From 1987 to 1988 he was a Visiting Research Scientist in Columbia University, NY. After serving as Assistant and Associate Professor, since 1997 he has been Professor of NTUA and Director of the Intelligent Multimedia Systems Lab. His research interests include multimedia analysis and retrieval, knowledge technologies, digital libraries, machine learning and neural networks, human computer interaction, multimodal emotion recognition and HCI. He has published more than 200 papers, 100 of which in international journals. He is editor of the book 'Multimedia Content & the Semantic Web', Wiley, 2005. He has been leading 90 projects, both European and National. He has been National Representative of the Hellenic Ministry of Culture to the EC NRG, Member of the EC Interoperability Group, Member of the EC MSEG expert group, Associate Editor of IEEE Trans. Multimedia, IEEE Trans. NNs & of Neural Networks Journal, member of the Executive Committee of the European Neural Network Society. He organised conferences VLBV in 2001, ICANN in 2006, CBMI in 2009.

The ECAB will meet every 4 months. The results of the ECAB meeting will be reported to the ASSETS partners during the All Hands meetings.

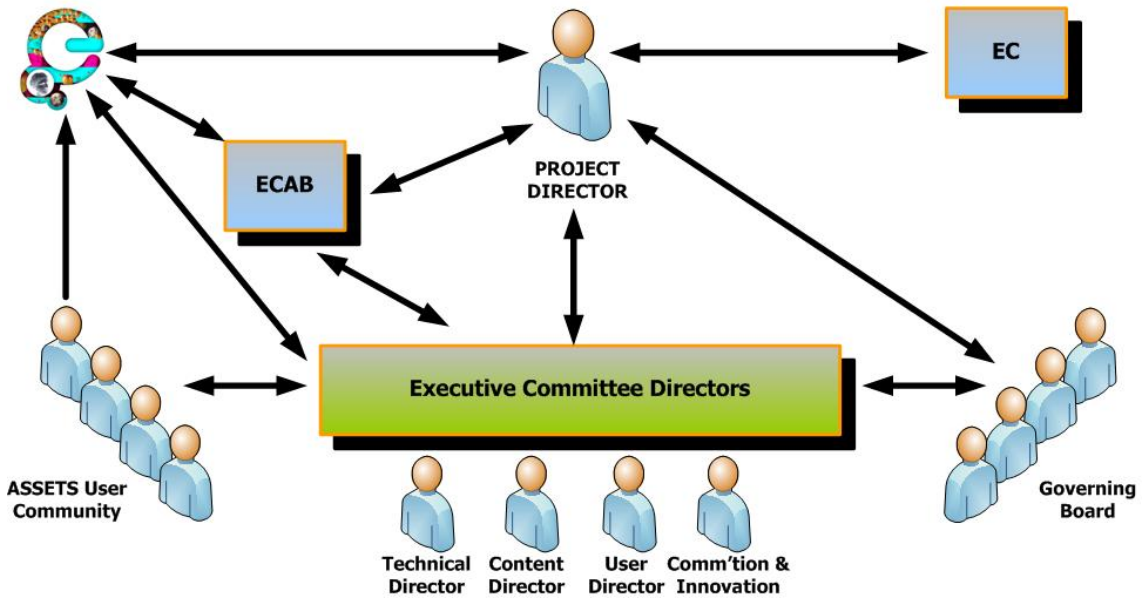


Figure 9 ASSETS Management Organisational Structure

B3.3.6 Project Meetings

The project kick-off meeting marks the effective launch of the project. It reinforces the sense of common purpose of all partners, and identifies the responsibility of each in the endeavour. Unresolved technical issues are identified and debated; co-operation between work packages is initiated. The management exposes what is expected of each in terms of results, performance and reporting. The detailed course for the all duration of the project is confirmed and fine-tuned. Other project meetings are timed with the preparation of the annual reports and rolling updates of the implementation plan. They will involve all the participants, and take place at Month every four months. They will be complemented and prepared by Executive Committee meetings to be held in the same time frame. Additional Executive Committee meetings will be convened as required. Topical working meetings will be organised by the work package leaders as needed for the progress of their tasks.

B3.3.7 Reporting

The consortium will ensure that in addition to the annual technical and financial reports, contractual deliverables required by the Commission and identified in the work package description, a short report will be delivered to the PO every three months. The report will outline the operational methods used including a statement of the resources allocated and spent by all partners and highlights of any serious deviations of the work plan will be indicated in this report, risks and contingencies will be included here.

B3.3.8 Risk Management

Risk assessment is an integral part of the ASSETS Management process. The management will identify those factors that are critical to the success of the project and control them. The main features are Risk Assessment and Risk Control.

B3.3.9 Risk Assessment

Risk Assessment can take place at any time during the project. It allows project managers to:

⇒ Explore the entire project plans and identify areas of uncertainty;

Analyse how those areas of uncertainty can impact the performance of the project, either in duration, cost or meeting the users' requirements;

Prioritise risks, so as to establish which risks should be eliminated completely (because of potential extreme impact), which should have regular management attention, and which are sufficiently minor to avoid detailed management attention.

Some of the risk that are foreseen by the consortium are listed in Table 2 Risk Factors chapter 2.1.a.

Contingency plans will be put in place in case these risks take place.

B3.3.10 Risk Control

Risk Control also has three tasks, as follows:

1. Take whatever actions are possible in advance to reduce the effect of Risk. It is better to spend money on mitigation than to include contingency in the plan;
2. For all those risks which are deemed to be significant, have a contingency plan in place before it happens;
3. Measure, monitor and track the effects of the risks identified and manage them to a successful conclusion.

As tools in the process, two report tables will be used:

A Risk Assessment Report, in order to manage correct risk evaluation and identification;

a. A Risk Action Report, in order to manage a proper risk mitigation action plan.

B3.3.11 Pre-financing

The pre-financing is to be forwarded by the coordinator to beneficiary Exalead in instalments only. Every instalment has to reflect the labour effort contributed by Exalead since the previous instalment. It should cover 50% of the actual costs incurred by this beneficiary. It is the duty of the coordinator to monitor the costs of beneficiary Exalead and adjust the instalments accordingly.

B3.3.12 Consortium Agreement

The ASSETS Consortium Agreement will be signed before the project starts. It will include:

⇒ Specific arrangements concerning intellectual property rights to be applied among the participants and their affiliates, in compliance with the general arrangements stipulated in the contract;

⇒ Management of knowledge generated by the project, and rules for knowledge transfer;

⇒ The internal organisation of the consortium, its governance structure, decision-making processes, reporting mechanisms, controls, penalties and management arrangements;

⇒ Arrangements for the distribution of the Community contribution among participants and among activities;

⇒ Rules for partners joining and leaving the consortium;

⇒ Provisions for the settlement of disputes within the partnership;

⇒ Other provisions deemed necessary to ensure a sound management of the project.

B3.3.13 Quality Plan & Management

A specific Quality Plan will be established by the Project Management, describing the procedures to be used in the project and the quality assurance policy The Quality Plan will include the definition of the internal review process to be applied to the different types of achievements and deliverable results (i.e. reports, specifications, evaluation of results, the industrial case studies), version and configuration management procedures, standard structure and formats for the various classes of documents that will be produced in the context of the project (i.e. progress reports, meeting reports, external presentations etc.). The Quality Plan will take into account the different workshop phases (planning, definition, implementation, execution and follow-up) and any other pertinent activities.

Documents, reports will be uploaded onto the consortium section of the ASSETS portal.

B3.4. Security, privacy, inclusiveness, interoperability; standards and open-source

B3.4.1 Interoperability between Products and Services

One of the most relevant objectives of the ASSETS Best Practice Network is to build up a large-scale implementation of the deployed search, browsing, ingest, interaction and long-term access services in the real-life context of use as envisaged by Europeana, the Europeana Digital Library, and their final users' needs. The large-scale implementation will be further extended to aggregating the content provided by those content providers participating to the ASSETS consortium and still not taking part to Europeana, in order to achieve the objective of making accessible through Europeana more 6 milions of objects by 2010.

This large-scale implementation will foster a wider use and adoption of the standards and specifications promoted within Europeana, directly contributing to enhance the interoperability among the heterogeneous products, services and networks, used by the different content providers and digital libraries willing to participate to Europeana. **It clearly emerges that interoperability and standards will be used within ASSETS as the strategic keys to unlock the still fragmented and isolated world of the cultural digital libraries, and attract an ever increasing number of them to integrate their content within the European Digital Libraries**.

In particular ASSETS will make use of the networking capacity of its European-wide consortium to aggregate the necessary critical mass on which raising awareness and building consensus on the Europeana standards and specifications. Besides that, thanks to the strong ASSETS consortium orientation to the Open Source Software, the increasing of awareness will be furtherly strengthened within the most relevant Open Source Communities. For example Engineering coordinating partner will prepare the ground for a stronger adoption of the Europeana standards and specifications within the OW2 Community (http://www.ow2.org). OW2 is a non-profit open source organization gathering renowned industry leaders, academics and individuals, focusing entirely on promoting open source middleware software, whose Engineering is a strategic partner. OW2 is tailored to the development of open-source distributed middleware, in the form of flexible and adaptable components. These components can range from specific

software frameworks and protocols to integrated platforms. OW2 developments follow a component-based approach.

ASSETS is strategically focused on a number of current and emerging standards both at content/metadata and service level, and aims at influencing these standards to best support its main expected outcome of the affirming the Europeana standards and specification.

The interoperability amongst the services that ASSETS will deliver is assured by the fact that all these services will be integrated through a "thin" software layer into a common "light" platform. The specification and development of this platform are performed in WP 2.0 (Task 2.0.4), while the integration of the ASSETS services into this platform is performed by in WP 2.4 (Task 2.4.2).

The interoperability between the ASSETS services and the digital libraries they will be contributed to, and in particular Europeana, will be ensured by: (a) making each service accessible via a generic API that will be implemented by a "front-end" component of the service (technical interoperability); (b) defining and implementing a specialization of the generic API for each digital library that will interact with the service, in order to map the data structures taken in input or given in output by the service to the data model of the interacting digital library (semantic interoperability). The APIs will be specified in WP 2.0 (Task T2.0.5) and implemented by the single services.

B3.4.2 Security and Privacy Issues

The project will not develop any other specific technology for ensuring the security of the services beyond those technologies which are currently used by Europeana on which the ASSETS services will be deployed. In other words, the deployment of the services (Task T2.0.3) will include the activity required for complying with the specific security system adopted by the target digital library.

In the activities of the project that may raise a privacy issue, such as query log analysis, personalization and user-centered evaluation, the privacy of the users will be guaranteed by collecting aggregate information, or using identification information that is not referable to single persons. Whenever this will not be possible, explicit authorization will be asked to the users concerning the treatment of private information.

B3.4.3 Standards

The project will make use of standards as much as possible. The following standards (or *de facto* standards) will be used:

- ⇒ XML for the representation of data
- ⇒ Semantic Web languages (RDF, RDFS in particular) for data semantics, OWL for ontologies (see http://www.w3.org/)

For multimedia content:

- ⇒ Images: MPEG-7 multimedia content descriptions
- ⇒ Video: Flash Video container format (FLV) and the associated codecs (H.263, H.264 [MPEG-4 AVC], or VP6 video and HE-AAC audio)
- ⇒ Audio: MPEG-1 Audio Layer 3 (commonly referred to as MP3), Ogg Vorbis, WAV, AAC, ID3 (both v1 and v2) as well as links to de factor standards such as MusicBrainz.
- ⇒ 3D models: WRL, 3DS, OBJ.

⇒ BPEL for process description and service orchestration (in the Ingestion WP)

⇒ OAIS (Open Archival Information System) Reference Model for the Long-Term Access Services

For software development, an Open Source approach will be followed.

The programming language will be Java. The following Java-related standards will also be utilized**:**

⇒ JAX-WS (Java API for XML Web Services) for web service interfaces

⇒ Java Persistence API (JPA) for object-relational mapping

⇒ JDBC (Java Database Connectivity) for relational database management; this ensures that our systems remain independent from the underlying RDBMS layer, allowing both open source (MySQL, PostGRES) and commercial database deployment if desired.

The software development environment will be an open source product such as GForge.

⇒ The run-time environment will be an open sources web application server such as Apache Tomcat or GlassFish.

⇒ Communication within the project will be organized via a web-based, open source collaboration platform such as Life Ray**.**

B3.4.4 Open Source versus Proprietary Releases: Assets Strategies

All the services and technologies deployed by both Open Source and Licensed software providers will be released as Open Source Software within the timeframe of the ASSETS project, which contribute to a most extent to the Europeana wider use and adoption.

Despite the technology landscape is going to offer promising economic paybacks to cultural heritage institutions, significant barriers prevented so far the most of cultural heritage institutions to bring forward effective sustainability strategies:

- Proprietary yet highly expensive ICT solutions for digital library solutions;
- Monolithic all-in-one solutions, hardly customisable;
- Low level of interoperability with other competing digital library systems, making it extremely difficult to expose local digital content to other more aggregated systems or search engines;
- Lack of open standards for identifying, annotating, describing and searching cultural digital objects

The Free and Open source Software (FOSS) is software that meets two criteria:

- its source code is freely available;
- under the licence regulating the intellectual property rights and the use and re-use of the software and the accompanying source code, the license may access, use, improve, supplement and (in some licence models) distribute the source code.

Nowadays it is more and more acknowledged that Open Source Software adoption in public sector, and in the cultural heritage domain in particular, can significantly contribute to promote ICT usage as strategic leverage for affirming the socio-economic role of the cultural institutions. Benefits relate to lower license cost and procurement cost and to the lessening of dependence on one software supplier. Users of closed source software are highly dependent on their suppliers. This dependence is reflected in the obligatory implementation of new versions, the obligatory purchase of new hardware, the unilateral alteration of

license conditions and the termination of maintenance agreements. These monopolies are eliminated when applying open source software since all suppliers have the same chance in the maintenance market.

B3.4.5 Inclusiveness and Accessibility

Inclusiveness and accessibility matters refer to the concept of guaranteeing an open and universal access for all to Digital Libraries and, to the European Digital Library in particular, as effective action to narrow the Digital Divide. This term has been originally coined about two decades ago and several definitions were subsequently given from them onward. The American Library Association's Office for Information Technology Policies (ALA) defines the Digital Divide as "differences due to geography, race, economy status, gender and physical ability :

in access to information through the Internet and other technologies and services

in the skills, knowledge and abilities to use information, the Internet and other technologies.

Europeana, as European Digital Library is playing a fundamental role in contributing to narrow and scale down the digital divide, and lay the foundation for making available inclusive and fully accessible services for all. A wider use and awareness of the Europeana standards and specifications will pave the way for a narrower digital divide and, consequently, for more accessible and inclusive services.

ASSETS is strategically positioned within this path towards a better accessibility and inclusiveness of the Digital Libraries Services. The strong networking capacity of the consortium, and the large-scale implementation of the deployed services, will contribute at a large firstly to an increased awareness, adoption and acceptance of the Europeana standards and specifications by a huge critical mass of content provider and target users. Besides that, ASSETS services will be designed in strict cooperation with the real user groups, as they have been identified in the B2.2 section Long Term Viability, and the subsequent large scale implementation will be validated by these users. Within all the interlinked phases of design, implementation and validation, the requirement of the universal access for all to the human knowledge will be clearly paid attention to, and will be interpreted in the following three dimensions: people(access by everybody), location (access by everywhere), and devices (access by everything).

Finally the **large-scale deployment of content-based search services for multimedia digital objects** will open up the possibility to any users, even those less skilled with the current ICTs, to search for something, by expressing her own question in a more natural way and language (for example "I would like to search all the images, videos, and speech about Mona Lisa "), contributing largely to narrow the digital divide by attracting even people traditionally less confident with ICT technologies and Internet.

B3.6. Dissemination / Use of Results

B3.6.1 Dissemination & awareness activities

Raising awareness, build consensus and disseminating the knowledge are crucial aspects for the success of the ASSETS project. The diffusion of information from the project to the potential users will not only raise interest in results, but also yield useful indications about the future continuation of the project results. During the project lifetime, a focused dissemination strategy will be undertaken. Several focused dissemination events will be organised and hundreds of potentially interested organisations and individuals will be specifically targeted and contacted with the aim of successfully exploiting project results. A

systematic approach and invitation process will be designed and implemented in order to maximize public awareness in the domain of Cultural Heritage and in particular in the Digital Library sector. At this purpose the ASSETS Community will be engaged.

The Dissemination strategy will reflect the specifications produced by the consortium, aiming at integrating personalised methodological processes, services, and tools. The dissemination approach will, thus, assist the impact of the project in terms of:

Creating awareness among the Cultural Heritage organisation, Academic and industrial researchers, other DL communities, SMEs working in the cultural heritage domain, in order to attract and engage all the relevant stakeholders that can be interested in the adoption of the ASSETS services;

Raising interest and build consensus in the digital library communities around the research areas brought forward in the ASSETS Community;

Create a communication channel between ASSETS and Users (Cultural Organisation focusing Digital Library).

In order to reach these objectives, ASETS communication and dissemination strategy will be articulated in 4 main groups of activities, and they are:

- Communication strategy
- ASSETS initiatives
- Training dissemination

COMMUNICATION STRATEGY

ASSETS will pursue a proactive and multidimensional communication and dissemination strategy from the beginning, with the goal of ever increasing its attractiveness and aggregation power, and maximise market opportunities for its technologies. It will become part of the Europeana Communication Cluster Group aiming to complement activities of the wider Europeana family and ensure that users do not suffer from mixed messages.

The dissemination approach anticipates the use of a multi-channel communication strategy to carry out diverse and progressive actions in order to maximise the dissemination of the ASSETS project and activities:

Methodology- which includes the establishment and dissemination of project objectives and anticipated results, and will be defined at the beginning of the project;

Presentation of updated results- includes the presentation and communication of intermediate ASSETS activities and results as well as the formally released assets. (Documentation, reporting, software). The information must be always updated and in continuous evolution;

Aggregation of the critical mass both in terms of developers, DL content providers and. The aggregation of the critical mass is vital for the success of the project and for its future sustainability. At this purpose the ASSETS Community will be engaged in order to attract all the relevant stakeholders. The main actors to be aggregated are: Cultural Organisation decision makers, technician, developers, researchers, SMEs, individuals willing to provide their personal experience in the digital library services.

ASSETS has defined clear objectives and coordinated tasks for the dissemination of the project methodology and services, which are detailed in WP 7 “Networking and dissemination”. All the project

participants will be involved in order to expand the ASSETS community and disseminate project results to the widest possible audience.

Several communication and dissemination approaches will be adopted in order to effectively disseminate project results. An assortment of communication materials will be designed and produced specifically for the different requirements and target users. Dissemination materials will be produced to meet different communication needs, to address various event typologies, and continually evolve to meet project needs.

The ASSETS Consortium includes partners with a consolidate experience in the creation and execution of dissemination and promotional activities.

Dissemination Materials

A diverse collection of dissemination materials will be designed and professionally produced in order to boost public awareness. The ASSETS brand will be immediately established in order to create an official project identity and personality. The official project brand (logo, color scheme, stylesheets, etc..) will be created to establish consensus around the project, and be able to present the project in a consistent and attractive manner. In addition to the brand, new communication materials will constantly be drafted and produced in order to adapt to changing needs, address diverse event typologies, and follow the evolution and lifecycle of the project. This assortment of materials will include: posters, a seasonal electronic Newsletter, brochures, booklets, flyers, bookmarks, etc.. . Different dissemination material will be shaped and produced according to the phase of the project and to the target sectors. The ASSETS material will evolve with the evolving of the activities and results. The term “updated” will be the catchword of the ASSETS communication.

COMMUNICATION INFRASTRUCTURE: A WEB 2.0-LIKE WEBSITE

The Communication infrastructure is the instrument that gives the opportunity to the users to meet and where they can have specific facilities and functionalities to be involved in the project activities and to be updated on the outcomes in all their stage. This area is accessible through the ASSETS website that have pivotal role in the overall project because it functions as a principle communication tool to disseminate and validate project results. It provides a wide array of functionalities including: document uploading/downloading, ASSETS events registration, news, and more importantly serves as the communication hub of the ASSETS Community. The website will be the main source of information on the project, on its initiatives such events and training sessions. It provides several services to Consortium partners and the potential member of the community. The website will be designed also to collect user statistics and detailed information about the users in order to support its management.

The Project Web Site will feature a ***web 2.0-like approach*** to promote its mission and solutions. With this solution, online discussion, knowledge sharing activities, forum-like debates will be enabled, allowing continued and effective dialogue among the different typology of users of the ASSETS Community members. The ASSETS website will feature an advanced content managed system that ensures individual customisation of the user experience for the ASSETS community (digital library experts and users as well as scientific communities).

The ASSETS website is where the Community members come together to interact in areas of mutual interest. This website will play a pivotal role in enlivening the ASSETS Community facilitating

communication with tools and methodologies dedicated to promote sharing, interaction and collection of user needs and requirements. This direct interaction with users will direct the ASSETS service design and implementation.

The ASSETS website is an integrated, versatile system which basically transforms a website into a platform to animate the ASSETS community depending on their topic of interest.

MEDIA PLAN

The first year will be dedicated to the definition of strategy and tactics of the media campaign. The criteria that will inspire the media plan are the definition of the following items:

Objective: definition of what the ASSETS media plan wishes to accomplish in terms of general and overall goals. The aim is to disseminate and valorise the project results and steps, increasing the awareness of the potential targets and end users;

Strategy: An appropriate strategy will thereby be elaborated, in order to reach different target audiences. The Cultural Heritage domain and the scientific community are the general targets, but more specific and niche targets will be identified as well. These specific audiences will be identified through surveys, market analysis and researchers. The most appropriate media vehicles will be identified, in order to reach these targets;

Tools : Realisation of tools supporting the Media plan: an info-package explaining the ASSETS project objectives and expected results and other tools targeted to wide audience and experts.

The results of the Project will be disseminated also via the publication of articles and technical papers written among partners in the specialised press (magazines and/or newspapers also on-line, audio or video media, at international, European, national, regional or local level in order to reach the widest audience).

The media campaign will be carried out respecting the continuity and quality criteria, in order to inform on a regular basis ASSETS audience over the project life cycle. Special attention will be devoted to milestones and relevant ASSETS events.

ASSETS INITIATIVES

In particular, ASSETS workshops and events will be organised with qualified participants from the Cultural Heritage sector and the scientific and technical domain. Specific workshops will be dedicated to

Consortium members will organize workshops and training session for the promotion of the adoption of OS solution in the CH domain. This initiative mainly aims at demonstrating the advantage of the adoption of ASSETS solutions to the all the potential users as well to the EUROPEANA.

During the project phase the events described in the following paragraphs will be organised.

<u>ASSETS specific workshops and clustering events</u>

Within the ASSETS project 3 Specific workshops will be organised in order to disseminate knowledge and exploit the project results. These workshops will be dedicated to the relevant stakeholder such as CH DL actors and the EUROPEANA Community. Workshops will include (as parallel session and/or plenary session) also clustering events, dedicated to the discussion on the relevant ASSETS topics. Relevant stakeholder and expert will be invited to participate to the discussion groups. Final results of the discussion of each working

group will be presented in the plenary session and an Event Report will be drafted in order to collect the results and disseminated them to the target audience

The workshops have been envisaged to take place one full day. A Press agent from local or international press will be expected to be present. A rapporteur from the consortium will be assigned to give a workshop results overview at the end of the day of the workshops.

ECAB Workshops

During the project lifetime Specific workshops with the Europeana Cluster Advisory Board (ECAB) will be organised. These workshops will have the aim to develop the ASSETS services in strict collaboration with EUROPEANA. Such workshops could be realised together with the ASSEXT specific workshops to optimise resources and increase audience and impact

The mail goals are: a) to define the ASSETS specification and architecture in accordance to the ones of EUROPEANA; b) to demonstrate how the ASSETS services will improve the European Digital Library platform; c) to prepare the ground for the integration of the ASSETS services in the new prototype of EUROPEANA.

These initiatives will be restricted to ASSETS and EUROPEANA. The results of these workshops will be presented to the ASSETS community and to all the relevant audiences.

Final Event

A final event (that could be realised in conjunction with the third year workshop) at the end of the project will be organised. This event aims at disseminating the ASSETS final results and the lunch of the ASSETS services. This event should present the sustainability and the continuation of the ASSETS initiative after the EC funding phase of the project.

TRAINING DISSEMINATION

Training is a fundamental channel for disseminating the project. Events dedicated for educating user and technical people will be organised. 'The establishment of an effective training agenda is crucial to the overall dissemination of the project because it helps to catalyze the widespread impact and adoption of project solutions and also boosts the overall visibility of the project. To ensure an extensive adoption of the technological progress completed, a vibrant, replicable, and extendable educational framework will be installed. ASSETS training session will have two objectives: the first is to educate potential users on the usage of the services the second is to foster the adoption of the ASSETS services.

The training dissemination activities will be delivered through tutorials and demonstrations organised at relevant events in the Digital Library sector.

MEASURABLE ACTIONS

In the table below the actions that will be undertaken in order to guarantee awareness and engage relevant stakeholder are described together with the target sectors, the material used for each particular action and Success Indicators in order to measure and assess the results of each of this action.

Action	Target	Material	Measurable Indicators
ASSETS initiatives			

Specific Workshops (SW)	DL domain DL users DL developers CH DL users All the DL stakeholders (for final event)	Booklet, Brochure, Posters, Manual	3 SW 40 people per SW / clustering event
ECAB Workshops	EUROPEANA and ASSETS key representatives	Technical documentations Project deliverable Project website	> 6
Training dissemination	CH DL developers and users	Training material The ASSETS web site	> 5 tutorials > 10 people per tutorials
ASSETS publications			
Publication @ Conference dealing with DL services **Events Reports /whitepapers** **Media Plan**	Scientific and DL Community	Paper, Poster, brochure, Press releases	> 8
Specialised Magazine **National/regional Newspaper** **Online Magazine**	CH DL organisation Research community	-articles	>10
Involvement of other user communities			
Engagement of stakeholder external to the project **Synergies with other DL community**	CH DL organisation DL community	-Press releases	>5
	DL communities and developers	-Website developer space, documentation	> 4
The ASSETS Community engagement	Developers Users	-The ASSETS documentation, - The ASSETS communication platform -Publication, public deliverables, booklet and documentation	> 150

Table 4 Action to be measured

List of Events & Meetings			
Meeting	**Date (Project month)**	**Participants**	**Location**
Kick Off meeting	(1)	(All partners	Rome

Specific Assets Workshops	8, 14, 24	All partners and external audience	Rome, Madrid, Luxemburg
ECAB Workshops	8, 14, 24	EUROPEANA and ASSETS key representatives	Rome, Luxemburg
ICDL	8	Key Representative	New Delhi
6th International Conference on Digital Libraries 2010	10	Key Representative	Prague
2010 IEEE/ACM 9th Joint Conference on Digital Libraries (JCDL)	10	Key Representative	Austin (USA)
Digital Challenges and Digital Opportunities in Audiovisual Archiving	9	Key Representative	Oslo
JCDL 2010 - Digital Libraries - 10 years past, 10 years forward, a 2020 Vision	6	CVCE	GOLD COAST, AUSTRALIA
International conferences after month 12 of project	To be defined	Key Representative	To be defined

Table 5 Event list