Grant Agreement 297292

EUROPEANA INSIDE

Functional Requirement

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Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Contents

1 Introduction

1.1 Background and role of the deliverable in the project

It is Europeana Inside's objective to simplify the sharing and exchange of data on cultural objects by lowering the existing technical barriers. For this a Europeana Connection Kit (ECK) is envisaged. The ECK will bridge the gap between source data, as managed by content providers (CPs), and the digital services built on aggregated target data. On one end the ECK will work together efficiently and effectively with the local collection management systems (CMSs) holding the source data. On the other end the ECK connects to global aggregators that expose, service and thereby enrich data through interaction with end users and re-using third parties.

Deliverable 2.4: Functional Requirement is the last step in the gathering and documenting of requirements in WP 2. This deliverable is the distillation of the outputs of *D2.1: Requirements Analysis* and *D2.2: Use Cases*. Both are based on input by the project partners who participated in the *Requirement Analysis Task Assignment*. Together with comments by partners on the first two deliverables, the survey still serves as a main reference regarding the partners' needs and wishes.

 The input is translated into three kinds of requirements:
- High level requirements: describe a set of requirements valid for the system to be delivered as a whole and not related to a single workflow step (section 3);
- Workflow requirements: describe the functional requirements necessary for a certain workflow step (section 4);
- Non-functional requirements (section 5).

The idea of Europeana Inside is that a lot of the requirements at both ends of the exchange chain will be supported by (extensions of) existing systems that as a result may carry the label "*Europeana Inside*". However, for the requirements analysis the whole value chain had to be looked at, because:

- The decision which requirement will be covered by which component will only be made during technical specifications;
- The division of requirements across components and modules will differ depending on the use scenario;
- The technical solution to be delivered should also cover the scenario where there is no source or target system, if only for benchmarking purposes;
- Where parts of the value chain are offered by different parties, public and private, content providers must be able to assess their quality, so there must be some common reference of what functionality is required throughout the value chain.

To avoid confusion between the ECK as the abstract concept for gathering requirements for the complete exchange chain and the ECK as the concrete implementation of the set of modules in between the CMSs of a specific content provider and Europeana, throughout this deliverable requirements are defined from 'the system'.

The functional requirements deliverable will be used to inform *D2.5: Technical Specification*. This will map the functional requirements defined here into an architecture of existing and to be developed modules and components, some of which will comprise the ECK. Section 2 offers a preview of this architecture and is provided here to help understanding of and context for the list of requirements presented here.

1.2 Approach

The requirements are listed in tables containing the following aspects:

Number:	Each requirement has a unique number with a code that refers to the nature of the requirement and the specific subject or workflow step where the requirement is listed.
Functionality:	This is the actual requirement.
Explanation:	This section provides insight in the context of use.
Priority level:	The priorities are listed according to the MoSCoW method[1] with Must-haves, Should-haves, Could-haves and Won't-haves.

The functional requirements of the system are set out in a simple table in the format:

No.		Requirement	Explanation	Priority
n.0				
n.1				
n.1.1				
n.1.2				

1.3 Relation between the priorities and the use case scenarios

For the system the priority is indicated by the use of:

Priority	Definition of this priority for the system
must	Must be satisfied in the system to be considered a success.
should	A high-priority that should be included in the system if it is possible. If not, some explanation is required.
could	Considered desirable but not necessary. This will be included if time and resources permit.
won't	It has been agreed that this will not be implemented during the EC-funded project, but may be considered in the future.

The requirements from the basic user scenario (use case 1, D2.2.) are prioritised as must-haves, the advanced user scenario (use case 3, D2.2.) as should-haves and both the enriched return data user scenarios (use cases 2 and 4, D2.2.) are mostly prioritised as could-haves and won't-haves. Requirements that were not part of the use cases are prioritised based on feasibility within the project. Requirements that are indicated as won't-haves are outside the scope of the project.

[1] Description of the MoSCoW Method taken from Wikipedia. <http://en.wikipedia.org/wiki/MoSCoW_Method>.

2 Functional approach to building the ECK

This section describes the functional approach to building the ECK as was implicitly described already in the project proposal and later refined and supported by all project partners during discussions at the first network conference of Europeana Inside. It has been designed to allow maximum flexibility in deploying the ECK in a range of different configurations to meet local need.

Some key points are:

- The ECK will be designed and delivered as a set of modular components which interact with each other in a loosely coupled, service oriented architecture. The interfaces between components will be specified in terms of a series of API calls and responses (ref.: *NFR.11*);
- It is envisaged that, in any given implementation scenario, a subset of ECK components only may be required;
- Where existing software components exist which meet the functional and technical requirements of the ECK and are available under an appropriate open source license, these will be incorporated into the ECK rather than "re-inventing wheels" (ref.: *NFR.10*);
- It may be decided to develop or incorporate several software components which fulfill the same function, thus allowing implementers an element of choice. Examples include different technical implementations (e.g. Java, PHP and C#), different user interface styles (e.g. drag and drop vs. wizard) and components designed to interface with a particular CMS (Ref.: *NFR. 08*);

The overall modular approach is illustrated in *figure 1* below:
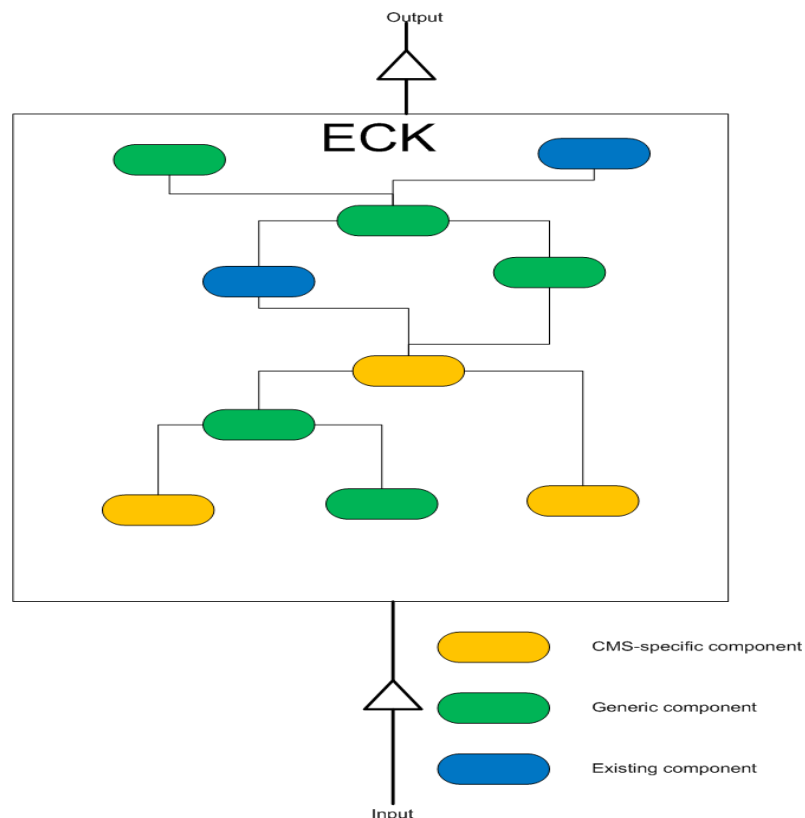
Figure 1: Overall modular approach to development of and integration with the ECK

The ECK will include components which may be used by CMS vendors, aggregators, and by (small) content providers without a CMS. Examples of where the ECK might fit into the workflow are shown in *figure 2* below:
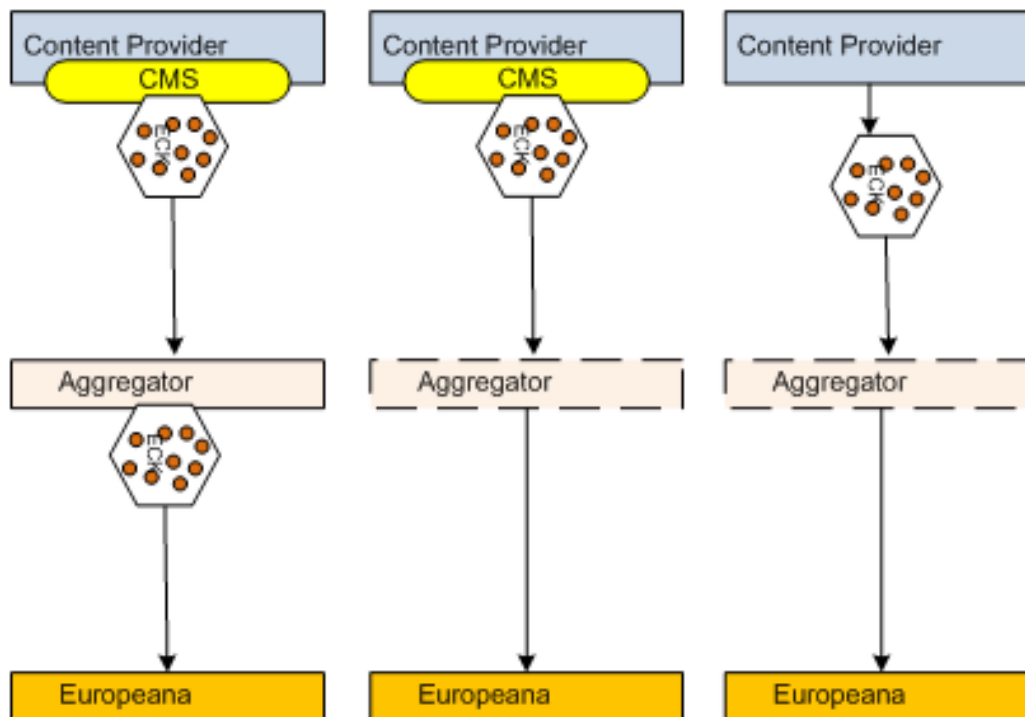
Figure 2: A small selection of the possible methods in which the ECK can be incorporated into the Europeana Inside workflow. Other possibilities exist but are too numerous to represent here.

The adoption of a service oriented architecture means that ECK components can be installed locally (i.e. in the same physical environment as the CMS) or remotely (accessible via web service/REST calls over a wide area network). All components will be available for local installation and implementers will be able to choose a network topology to suit their individual needs. In practice though, some components (e.g. a data selection service) will be more suited to a local implementation whereas others (e.g. a 'preview' service) will be more suited to a remote, shared, implementation.

Figure 3, below, shows some possible implementation scenarios using 'local' and 'global' services.

Note: The components in the figure below are included for illustration purposes only. The actual definition of service components will be performed as part of D2.5: Technical Specification.
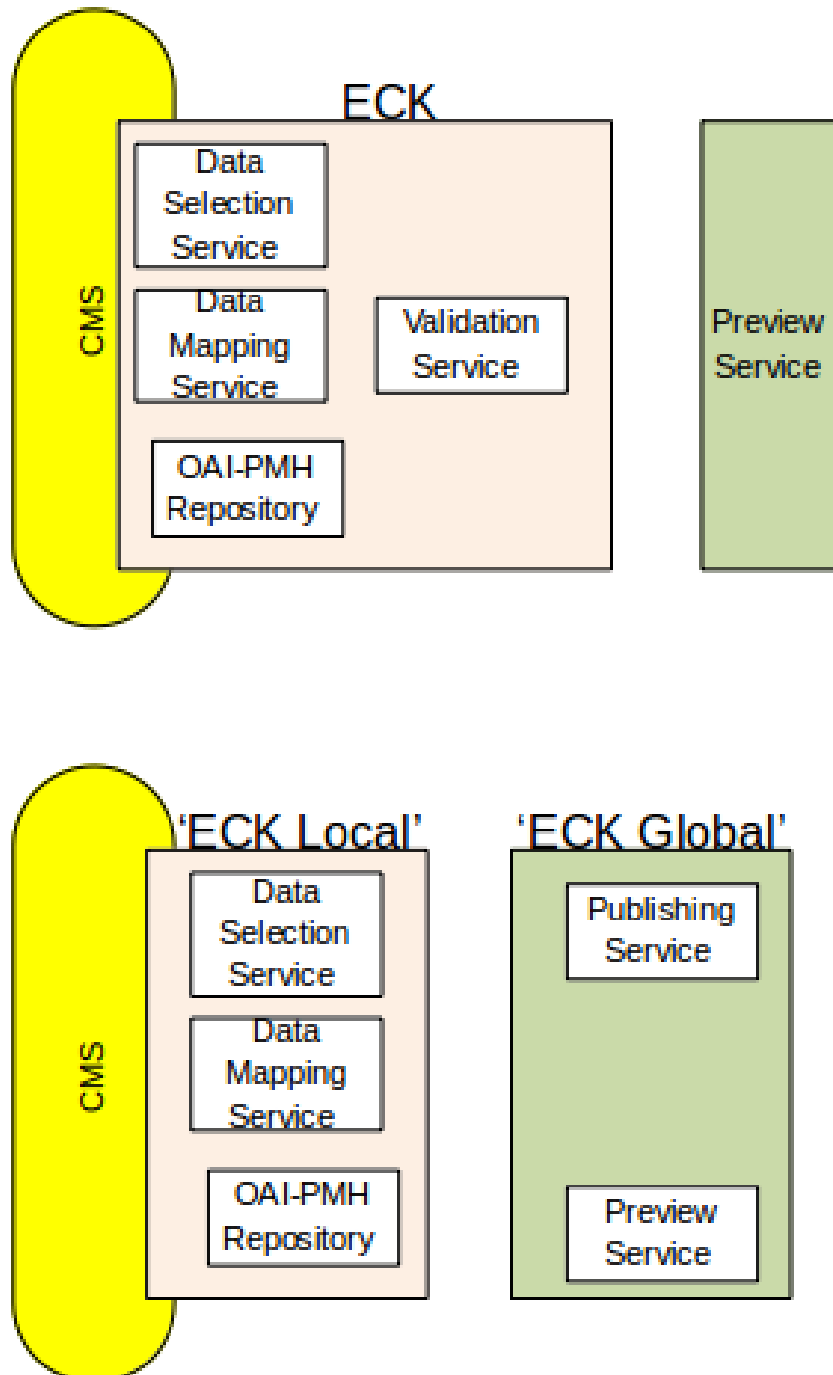

Figure 3: Possible implementation scenarios for the ECK showing how different parts of the ECK may be implemented and used in different places depending on the particular implementation requirements.

3 High level requirements

A list describing a set of requirements of WHAT the system to be developed by Europeana Inside will DO as a whole and how important that functionality is. These high-level requirements are the general starting point for the more detailed functional requirements per workflow step which are described in section 4.

3.1 Added value

No.	Requirement	Explanation	Priority
HLR.01	Exchange of cultural data.	The system should support the exchange of data from a context of collection administration of a single institution (local environment) to a context of an international, multi-purpose cross collections context of use (global environment).	Should
HLR.02	Contributing to Europeana.	The system must improve exposure and discovery of data from CPs by supplying data to Europeana.	Must
HLR.03	Adding value to local collections.	The system enriches CPs' data by supplementing from and connecting to other knowledge at different levels (institution, collection, and object).	Should

3.2 Simplicity

No.	Requirement	Explanation	Priority
HLR.04	Data management	The system allows CPs to control their data even though the flow takes various routes across multiple modules.	Must
HLR.05	Transparency	The system allows CPs to keep overview of the workflow of sending data to Europeana through clear steps with good insight in the current status of their data.	Must

3.3 Flexibility

No.	Requirement	Explanation	Priority
HLR.06	Choice of data pull or push to Europeana	The system must provide the possibility to pull or push data to Europeana.	Must
HLR.07	Multiple targets	The system should provide the possibility to exchange data to and from dissemination platforms other than Europeana.	Should
HLR.08	Various routes	The system supports different routes to exchange data with Europeana, both direct and via one or more aggregators and/or service providers.	Must
HLR.09	Contextualisation	The system ECK provides functionalities that allow content providers to add information to their source data for better usage in different context in a simple, flexible and semi-automated way.	Should

3.4 Implementation

No.	Requirement	Explanation	Priority
HLR.10	Re-use available knowledge	The system includes and improves proven functionality that is available in best practices in order to build on knowledge from previous digital heritage projects.	Must
HLR.11	Modular	The system must do as much of the required Europeana workflow as possible in a generic way. On the other end support of content provider specific functionality and local workflow by the system should be limited. CMS vendors are encouraged to develop additional advanced functionality that is not readily available in the system.	Should
HLR.12	Export-import	The system exchanges data between components through export and import of standards-based machine-readable, structured formats.	Must
HLR.13	API	The system interacts between different modules by Application Programming Interfaces (APIs).	Should

3.5 Functionality

No.	Requirement	Explanation	Priority
HLR.14	Communication of changes	The system provides easy means of communication of changes to all users. E.g. changes to the EDM conversion module of the ECK by Europeana.	Should
HLR.15	Version tracking	The system provides the capability to store, maintain, exchange and reuse intermediate results. This allows version tracking of the uploaded data by the system.	Must
HLR.16	Changing and saving of settings	System settings (e.g. configuration, user, workflow, mapping, licenses, etc.) can be adjusted manually by CPs and saved accordingly.	Should

3.6 Quality

No.	Requirement	Explanation	Priority
HLR.17	Control of workflow by CP	The system provides the possibility for testing, feedback, trace back and preview of metadata mapping. Previews for other steps in the workflow could be implemented in the ECK.	Must
HLR.18	Update content	The system replicates updates on records and fields at the source throughout the workflow either automatically or on request of the CPs.	Should
HLR.19	Conformity to legal restrictions	The system provides the capability to check, process and maintain a legal valid agreement with target platforms like the Europeana DEA.	Must
HLR.20	Use of Persistent Identifiers (PIDs)	Use of PID within the system must be implemented because of two reasons: 1. To ensure that various statuses of object and data remain connected across steps and systems; 2. To ensure data of the same object remains interlinked and de-duplicated despite exchange route.	Must
HLR.21	Source references	When collections knowledge from different sources is merged, the source has to remain clear (e.g. user generated content, automatic linking, curators).	Should
HLR.22	Reporting	The system reports on strategic (key performance identifiers) and operational performance to various users in different roles.	Should
HLR.23	Identification and authentication	The system identifies different users through existing authentication systems across different modules.	Could
HLR.24	Authorisations	The system uses different user roles that come with responsibilities and permissions.	Must
HLR.25	Character encoding	The system can cope with special characters in the source and created metadata.	Must

4 Workflow requirements

From the start of WP 2 a tentative workflow for the exchange of cultural data within the Europeana cultural eco-system served as a framework for gathering and documenting requirements. Also for *D2.4*, the list of detailed functional requirements is grouped according to the seven steps. However, as with all models the actual practice is more diverse and complex. The steps are hardly ever followed by CPs sequentially. Besides, individual requirements are encountered and dealt with at different stages within the workflow depending on local conditions. Still it is considered a useful way to analyse requirements needed.

4.1 Manage[2]

This workflow step describes all aspects of data management and user management.

No.	Requirement	Explanation	Priority
WFR.01.01	Export management	The system is able to tell which records have been exported when to Europeana.	Must
WFR.01.02	Revision history	The system is able to show which records are altered when and by whom, so it can provide a base for updating exported records.	Must
*			
WFR.01.04	PID management	The system manages PIDs for objects that can be used for identification when data is sent to Europeana.	Must
WFR.01.05	Enriched data management	The system is able to merge and manage returned enriched data once ingested in the system of the CP.	Could

4.2 Select

This workflow step describes the selection process.

No.	Requirement	Explanation	Priority
WFR.02.01	Selecting multiple records	The system can make a selection of multiple records.	Must
WFR.02.02	Selecting a single record	The system supports making a manual selection of multiple records or a single record.	Must
WFR.02.03	Selecting records based on values	The system is able to select records based on specific values in a variety of fields: e.g. by location, by object category, by theme, by section, or by (part of) inventory number.	Must

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[2] WFR.01.03 was changed into a high level requirement.

WFR.02.04	Boolean operators	The system is able to combine filters with clear Boolean operators.	Must
WFR.02.05	Indication of selected fields	The system shows whether certain records or fields are or will be included in a selection.	Must
WFR.02.06	Selecting within records	The system is able to exclude or include each individual digital asset attached to a record in a selection.	Won't
WFR.02.07	Reuse saved queries	The system is able to repeat a certain selection, e.g. for updates, so filters or queries must be storable and re-usable.	Must
WFR.02.08	Managing multiple selections	The system is able to manage multiple selections, for Europeana and for various aggregators. Selections can be based on different criteria and can overlap.	Won't
WFR.02.09	Standardised selection filters	The system is able to exchange selection settings (filters, criteria, etc.) through the use of a uniform XML schema.	Won't

4.3 Prepare

This step contains all activities regarding data preparation. Data quality control is a major issue for CPs and they will perform most actions regarding quality control during this step.

No.	Requirement	Explanation	Priority
WFR.03.01	Automatic EDM mapping	The system converts metadata automatically from a predefined input format to EDM by (a set of) default mappings that is selected during configuration of the system.	Must
WFR.03.02	Preview mapping	The ECK shows a preview of the converted metadata and associated thumbnails that are the result of applying a specific mapping. It also indicates the quality of the converted metadata including the thumbnail.	Must
WFR.03.03	Editable mapping	The mapping can be edited to correct/improve the metadata conversion from source to target data model.	Must
WFR.03.04	Mapping feedback	The system reports on problems with applying the mapping.	Must
WFR.03.05	Saving mapping	The system saves the mapping for repeated use.	Must
WFR.03.06	Field explanations	The system informs on the expected input required for the concerned fields in the mapping.	Must

WFR.03.07	Automatic value insertion	The system is able to insert constant values automatically for metadata not included in the collection database as defined by the user, e.g. language of record, content provider name.	Must
WFR.03.08	Check digital asset availability	The system ensures that an image is available for access by Europeana or other targets to generate a thumbnail.	Must
WFR.03.09	Thumbnail selection	If more than one digital asset is linked to a metadata record the system can choose which image will be used to produce a thumbnail based on input of the user manually or in batch.	Must
WFR.03.10	Multiple assets	The system supports the use of more than one digital asset with one single metadata record.	Must
WFR.03.11	Defining media types	The metadata and media types prescribed by the target are defined automatically on record level or per batch.	Must
WFR.03.12	Metadata field on IPR digital object	The system adds missing or corrected information on the IPR of the digital object based on input of the user manually or in batch.	Must
WFR.03.13	Metadata field on IPR metadata	The system adds missing/corrected information on the IPR of the metadata based on input of the user manually or in batch.	Must
WFR.03.14	Metadata field on IPR preview	The system adds missing or corrected information on the IPR of the preview (thumbnail) based on input of the user manually or in batch.	Must
WFR.03.15	Mark mandatory fields	The system indicates which fields are mandatory for a chosen mapping or output data.	Must
WFR.03.16	Choosing a default mapping	The system supports choosing a default mapping based on user input or system configuration.	Must
WFR.03.17	Automatic data suggestion	The system suggests necessary data enhancements on data set (like apply license, apply source institution) and gives the possibility to approve or decline them.	Should
WFR.03.18	Target format selection	The content provider points out what source format the data is in and chooses a target format.	Should
WFR.03.19	Semantic data enrichment	The system can be used to make data more explicitly semantic by linking or converting data to controlled vocabularies and thesaurus concepts.	Should
WFR.03.20	Conditional mapping	The system supports conditional mappings. The decision about which target field for some content may depend on the value in certain fields.	Must

WFR.03.21	Nested or grouped mapping	The system can perform mappings that consider the structure of nested or grouped fields.	Must
WFR.03.22	Intermediate format mapping	The system can support sequential application of various mappings, e.g. native data model into LIDO into EDM.	Should
WFR.03.23	Support for conditional truncation	The system can truncate the content of certain fields based on predefined conditions (cases).	Could
WFR.03.24	Apply PID	The system must check local identifiers in source data and enhance them automatically for global use based on configurations of the relevant CP.	Must
WFR.03.25	Conditional field conversion	The system can automatically convert certain data values based on predefined conditions. E.g. when [type] = "production place" THEN [eventType] = "Production").	Could

4.4 Validate transformation and receive feedback

No.	Requirement	Explanation	Priority
WFR.04.01	Validation	The system validates mapping results against chosen target schema, e.g. EDM.	Must
WFR.04.02	Feedback on validation	The system reports on the irregularities of the mapping results (e.g. missing fields, missing thumbnails).	Must
WFR.04.03	Edit invalidated fields	I think this actually means that if corrections are made then it should be possible to only reprocess these items rather than the whole set	Must
WFR.04.04	Automatic license validation	License information is validated automatically.	Must
WFR.04.05	Test ingestion	The system is able to do a test ingestion for metadata prepared for ingestion by Europeana.	Should
WFR.04.06	Align validation	The system ensures that successful validation warrants validation by Europeana at ingestion as well.	Must

4.5 Supply (push / pull)

No.	Requirement	Explanation	Priority
WFR.05.01	Automatic supply	The system supplies prepared and validated data to Europeana by push or pull.	Must
WFR.05.02	Re-supply functionality for failed records	In case of an error the system is able to start the supply process again only for the failed records.	Must
WFR.05.03	Schedule data supply	The system can be scheduled to supply data at a predefined date/time.	Should
WFR.05.04	Tools for third-party collaboration	The system facilitates the supply of data to platforms other than Europeana as well and provides the necessary tools (e.g. licensing filters and query APIs).	Could

4.6 Data acceptance

No.	Requirement	Explanation	Priority
WFR.06.01	Preview presentation Europeana	The system is able to preview the data representation in Europeana before it's being published.	Must
WFR.06.02	Withdraw records	The system can withdraw earlier delivered records instantly from Europeana by instructions of the involved CP.	Should
WFR.06.03	Update published records	The system can keep the data that are already in Europeana up-to-date.	Must
WFR.06.04	Publication indication	The system gives an indication about the processing steps and scheduling in Europeana.	Should
WFR.06.05	Automatic publication alert	The CP is informed on publication of the data on the target website (Europeana or aggregator).	Must

4.7 Enrich and Return (including Return and Re-use)

No.	Requirement	Explanation	Priority
WFR.07.01	Available enriched content alert	The system reports on available enriched content.	Could
WFR.07.02	Acceptance or declining of enrichments on record level	The system allows CP to accept or decline the enriched data (entire records).	Should
WFR.07.03	Automatic ingest of enriched data	Enriched data is ingested automatically in the CP's system after approval by the CP.	Could
WFR.07.04	Separate enriched data	The system allows separation based on the origin of the metadata (e.g. original, enrichment, human, machine, user, expert).	Could
WFR.07.05	Enriched IPR identification	The system provides insight in the additional IPR and, for user-generated content, privacy issues regarding the data from external origin.	Could
WFR.07.06	Choose target ingest	The system allows return data to be ingested in the system of choice by the CP.	Could
WFR.07.07	Acceptance or declining of enrichments on field level	The CP can either accept or decline the enriched data (on field level).	Could
WFR.07.08	Persistent ID's enrichment	The URIs or PIDs enhanced by the system are sent back to the content provider (ref.: *WFR.03.26. Apply PIDs*).	Should
WFR.07.09	Pull option	The ECK contains a pull option, at the request of the data provider: • Immediate, delayed or according to a preset schedule; • Full or filtered: e.g. related to a specific object or group of objects.	Could
WFR.07.10	Enriched data management	The system provides management information on which returned enriched data sets are ingested in the CP's system.	Could

5 Non-functional requirements

Apart from describing WHAT the system should DO, statements should also be about WHAT the system should BE. Non-functional requirements are used to judge the operation of a system. These requirements have an impact on decisions regarding architecture, technology and organisation that have to support the required functionality.

No.	Requirement	Explanation	Priority
NFR.01	Sustainable and persistent workflow	The project being a BPN, the system is sustainable after the end of the project. This relates to, amongst others: • Maintenance: debugging, servicing, usage problems, guidelines; • Hardware and internet connection (for parts that resides centrally); • Additional development / improvement; • Evaluation / monitoring; • Roles and responsibilities.	Must
NFR.02	Label for CMS software	Availability of a label like "Europeana ready" or "ECK validated" for CMS vendors.	Should
NFR.03	User friendly	The ECK should be user friendly, intuitive to use and non-intrusive on the institution's day to day workflow.	Should
NFR.04	Auto-update	ECK is auto-updateable. Minimal user interaction is required for it to remain interoperable with connected systems like CMSs and aggregators.	Won't
NFR.05	Making cultural heritage available for digital services.	The system is an intermediary between the source data, which are generally data about physical heritage objects and target data, which are supposed to be metadata about digital objects that represent those physical objects.	Must
NFR.06	User manual and training materials	The system must be well documented and supported by user manuals and training materials, both on technical implementation of the tool and on use of the tool must be provided for.	Must
NFR.07	Multilingual support and documentation	The system must be translatable, within the scope of the project at least supporting the languages present in the consortium. Also the documentation should be multilingual.	Must
NFR.08	Flexibility and adaptability	The system is flexible to be deployed in a wide range of different configurations to meet local needs. The system will be used inside and outside existing systems for collection management.	Must

NFR.09	Open Standards	The ECK is based on open standards, with open source reference implementations, for every step of the workflow. The ECK needs to be as platform independent/ independent of local technical implementations as possible and must use open standards for the whole workflow to ensure interoperability.	Must
NFR.10	Re-use existing tools	The system is composed as much as possible of existing tools and services from earlier development projects to avoid duplicate efforts.	Should
NFR.11	Modular	The system is composed of common modules keeping the exchange process as generic as possible, while providing CMS access and local workflow compatibility at minimal costs.	Should
NFR.12	Easy adaptability	The system is easily adaptable to the constant evolution of Europeana as its main target platform.	Must
NFR.13	Simplicity	The system is balanced so CPs with average technical expertise can reach advanced goals with a reasonable investment in training, and with the necessary understanding and confidence.	Must
NFR.14	Public-Private Partnership	The system is based on PPP. This requires: • Added value in the partnership for all stakeholders; • All partners share the objectives; • Transparency in objectives and management; • Collaboration between CP and TP that goes beyond present vendor-client relationship.	Should
NFR.15	Master-slave	The system is slave to the source data management. E.g. fields for licensing information, persistent identifier and file format are administrated within the CP's local context and will only be altered if necessary when it is required by the intended target.	Should
NFR.16	Organization embedding	Some non-functional requirements refer to after the project was finished. In order to fulfill them organization(s) have to take responsibility for them	Should

6 Conclusions

This deliverable is built on previous ones:

- *D2.1: Requirements Analysis*, which grouped together all ECK requirements based on a survey among the project partners. For this deliverable a generic workflow for the exchange of data between providers and aggregators (e.g. Europeana) was conceived, to help assess the stakeholders' specific expectations and arguments. These stakeholders were positioned in relation to Europeana value network.
- *D2.2: Use Cases,* which created two main user profiles and developed three use case scenarios. These provide a basis for differentiating between generic and more specific requirements and the priorities for fulfilling them.
- *D2.3: Recommendations for Technical Standards*, which researched the best practice and quality instruments already in place within the Europeana project family. These act as framework for the translation of functional requirements into technical specifications within the Europeana Inside project.

This deliverable combines all these intermediate results and describes the functional requirements and their priorities. Combined, this is as a roadmap for the ECK's first iteration. Requirements are split into high level, workflow steps and non-functional requirements.

The requirements per workflow step are detailed enough to fit into an architectural design that will be the technical specifications' first result. The high level functional requirements address the expectations what the ECK will do, agreed upon by the various stakeholders. They will provide the high level overview necessary to assess the role and priority of specific requirements in the ECK's context. High level requirements also serve as a fall back when differences of opinion exist on how and when workflow requirements are met.

Non-functional requirements usually assess general constraints and quality expectations. In this case they also provide a framework for the acknowledgement that a technical solution is in itself insufficient to make the Europeana value network into a success. Any technical solution, no matter how well specified and developed, will only be effective in the long term if the context of use is optimal as well. This includes a wide range of non-technical factors from a satisfactory division of tasks and responsibilities for good knowledge sharing.

The next step is for the technical partners to use the functional requirements as input for the technical specification. Assuming that delivering software that covers the required functionality will go through several iterations during the project, choices must be made about what will be included in the first prototype. This decision is influenced by several factors, like:

- Ambiguity and level of detail of the requirements. Some areas of functionality are still vague, controversial or both. Often this is the result of lack of expertise and experience with the process of exchange and re-use of collection data by all stakeholders. It is expected that the specifications can become more detailed and focused in the course of the project. Priority for the first iterations should be given to fulfilling requirements that are clear and unambiguous. For the project as a whole the priorities as stated in the tables must be leading;
- Testing scenarios. *D2.2. Use Cases* proposed different user profiles and related use cases. Early iteration will have to support testing of these use cases to assess their value. The test will correct some assumptions and will bring the use cases closer to the actual practice of CPs;
- Necessity to produce WP 4 content deliverables and draw conclusions on the process. Even early versions of the ECK will have to be able to supply data to Europeana;

- Knowledge and technology available for reuse. Some parts of the workflow are already partly covered by existing products, services and organisations (Europeana, aggregators, CMSs). Reusing and improving these, and if necessary improving, can help achieve quick results, independent of the question of how and by whom the ECK will be made sustainable in the future;
- Available development resources. Europeana Inside brings together software vendors, service providers and creative industries. Based on the different areas of expertise the development will be spread over groups that work within their own area.

Already it seems clear that the functionality required, produced through various modules, will consist of the following high level functional components:

- Add-ons to CMSs for selecting data to be exchanged. Also preparing these selections for use out of their local context will as much as possible be supported as part of the existing workflow within memory organisations. Both the quality improvements to the source data that are the result of the exchange process as well as various settings used to process the source data along the process are valuable for re-use. This requires some kind of administration that can be accommodated in existing CMSs;
- An aggregators module, taking care of the data ingest from various sources, linking them to each other and to external knowledge and making it available for discovery by end users or third parties (commercial and non-commercial) for re-use. For this part Europeana can be considered as best practice;
- An intermediary part, where the structure and semantics of data from a source (mostly a tailor made CMS) will be transformed in one or multiple steps so it complies with targets' ingestion requirements (Europeana or more specialist aggregator). It will probably consist of a set of dedicated modules for mapping, data enhancement, connecting and de-duplication, validation, communication and possible storage.

The challenge for the intermediary part lies in making the constituent modules into a comprehensive, coherent and to its users transparent framework that is sustainable in the long term. The challenge for the aggregators and CMS part is to prevent individual content providers to be locked into a commercial software solution and/or a unilateral strategic direction. Both challenges are crucial success criteria for the Europeana value network to which Europeana Inside aims to make an important contribution.

An additional layer of complexity is caused by the ambition of Europeana Inside to also pilot the return workflow where the aggregator is the source of (enriched) data that should be supplied back through the ECK to be of value to CPs in their local context. For the moment we assume that also functionality required for this return scenario can be supported by the same high level components.

Although the challenges mentioned above will be addressed later in the project, notably in the technical deliverables and the forward plan, they should be taken into account while drawing up specifications. The iterative approach the project will follow provides more opportunities to do so. Possible directions with a positive impact on keeping this balance:

- Open standards supported by open source when feasible;
- Knowledge sharing on strategy, tactics and operations;
- Independent quality monitoring;
- Public / Private Partnerships;
- Extending the expertise of heritage professionals with new skills;
- Alignment of supporting policy at different government levels;
- Strengthening the Europeana Network;
- Research into the validation of digital heritage.

From this list, it should be stated, only the first three are within the scope of the Europeana Inside Best Practice Network. For the later ones Europeana Inside will be a source of knowledge. It is the responsibility of the Best Practice Network to disseminate that knowledge whenever possible and to collaborate on finding solutions that will benefit the European cultural eco-system.

Glossary of terms

This glossary will be updated throughout the project duration.

Term	Definition
CP	Content provider. A CP is a content provider, or content providing institution. In this project, the CPs are usually museums, libraries, or archives which provide content to Europeana in the context of the project.
PID	Persistent Identifier. A PID is a unique code which is assigned to something, for example an ISBN number or a ISO code. In the case of this project, the term PID usually refers to a unique web address or URL which gives access to the online representation of the museum object.
BPN	Best Practice Network. A BPN is a network of people and organisations who together develop ideas about what is the most efficient and best course of action for something. In the case of this project, the term BPN usually refers to the entire consortium consisting of 26 organisations.
Non-functional requirements	Non-functional requirements are used to judge the operation of a system. These requirements have an impact on decisions regarding architecture, technology and organisation that have to support the required functionality.