LINKeD HeRITAGe

Coordination of standards
and technologies
for the enrichment
of EUROPEANA

SHARe
CULTURe,
LINK
CONTeNT!

ICTpSP
ICT POLICY SUPPORT PROGRAMME

europeana
project group
member
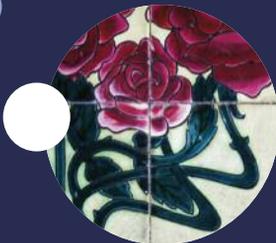
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Introduction

The aim of the Linked Heritage project has been to facilitate and deliver large-scale, long-term enhancement of Europeana and its services.

This has been achieved by:
- Contributing approximately 3 million additional digital content items.
- Giving advice about the use of persistent identifiers in digital cultural heritage and their use in the linked data scenario.
- Addressing the issue of non-standard descriptive terminologies; this has enhanced the quality of content of Europeana in terms of metadata richness, re-use potential, and uniqueness.
- Exploring the management of metadata in the private sector and outlining the benefits of private sector interoperability with Europeana.

The Linked Heritage project has been able to deliver upon its core objectives by bringing together ministries and responsible government agencies, content providers and aggregators, leading research centres, publishers and SMEs, from throughout Europe who have offered up their expertise and time. The establishment of a strong 'best practice network' in Work Packages 2, 3, 4, and 7 has provided the necessary guidelines and policy for the progression of the project. Work Packages 5 and 6 have played a complementary role, implementing the technologies set out by the best practice network, and coordinating the aggregation of over 3 million digital content items into Europeana.
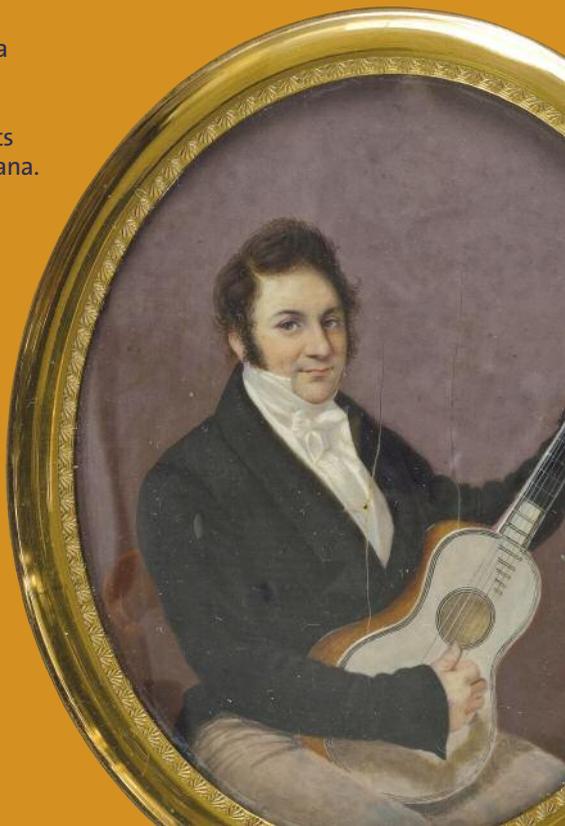
The Project in Numbers

Number of Partners & Contributors
38 Partners
10 Contributors

Number of Countries
26

Numbers of Languages represented
21

Visits to project website
Over **30,000** Unique visitors since March 2011
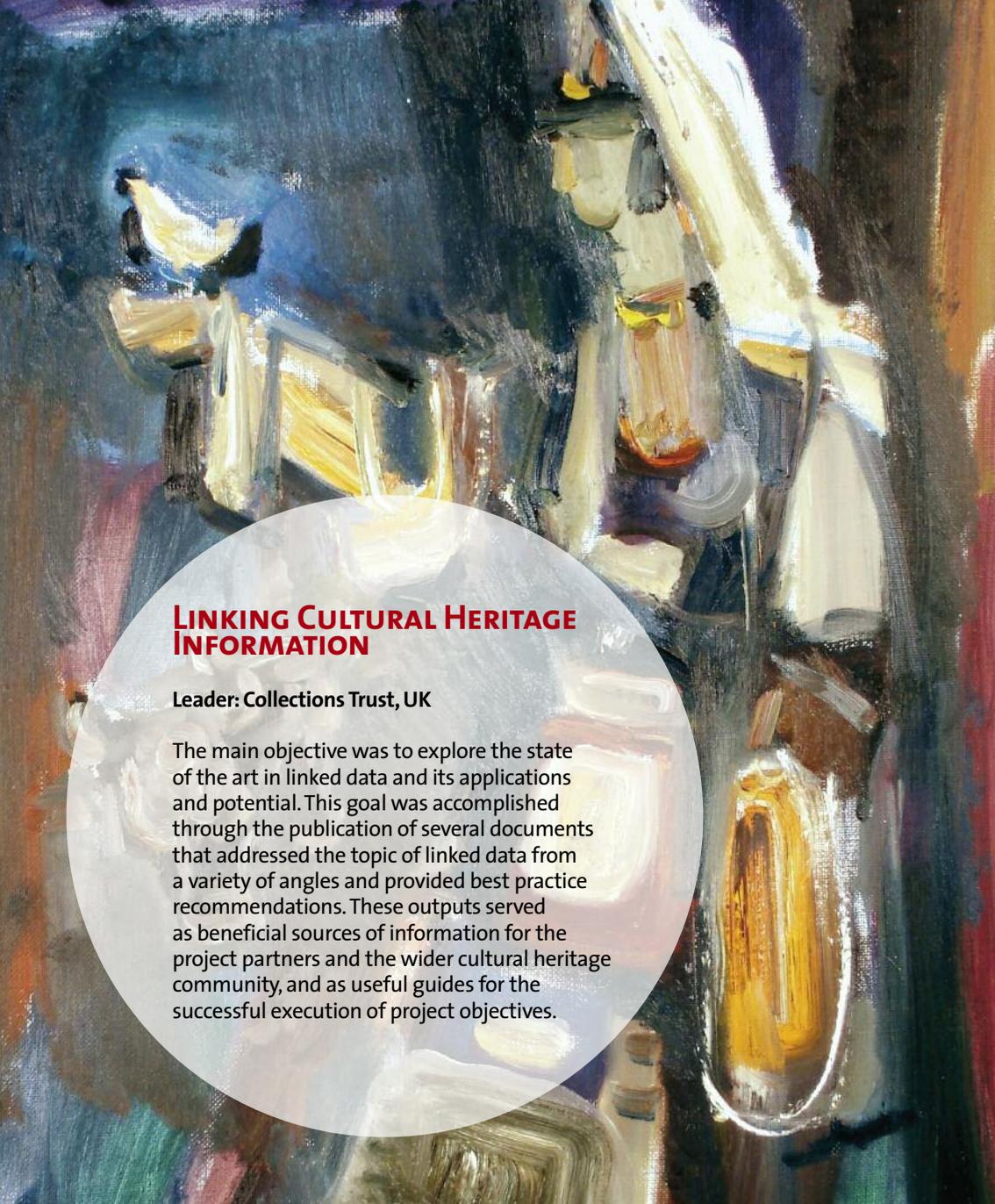
Linking Cultural Heritage Information

Leader: Collections Trust, UK

The main objective was to explore the state of the art in linked data and its applications and potential. This goal was accomplished through the publication of several documents that addressed the topic of linked data from a variety of angles and provided best practice recommendations. These outputs served as beneficial sources of information for the project partners and the wider cultural heritage community, and as useful guides for the successful execution of project objectives.

A best practice report on cultural heritage linked data and metadata standards

The report provided first, an overview of linked data; second, a discussion on the survey results of Linked Heritage partners on their awareness of linked data; third, an analysis of the 'Linking Open Data Cloud'; and fourth, gave best practice advice on publishing information as linked data.

In recommending best practices for publishing information as linked data, the report took into consideration a wide range of issues that complicate the process. Issues addressed include what kind of linked data to publish; which license to publish linked data under; how, in terms of technical standards, to publish cultural heritage linked data and the process of contributing to Europeana thereby providing a practical introduction to the process of contributing information as linked data.

State of the art report on persistent identifier standards and management tools

This report educated the partners and the wider cultural heritage community, about persistent identifiers. It also gave best practice advice based on the use of persistent identifiers in the cultural heritage community and in particular their use in the context of linked data. The study represented both an introduction to the topic of persistent identifiers and a guiding document for the rest of the project.

Specification of the technologies for large-scale implementation of cultural heritage linked data

This report outlined the specifications of the technologies for large-scale implementation of cultural heritage linked data. Utilising the findings of the previous documents, this report first, set out the requirements that were needed for the project's linked data 'demonstrator;' and second, gave an overview of how the demonstrator would be created and developed during the rest of the project.

Linked Data Demonstrator

Starting from a selected subset of data, the experimentation consisted in: mapping from MINT (LIDO) to RDF, setting up and populating a repository, enriching the data by linking (e.g. to DbPedia).

Terminology

Leader: KMKG, Belgium
Coleader: MCC, France

This working group addressed the large gap between the actual state of terminology management in cultural institutions, and the skills and means necessary to deliver these vocabularies in a standardised format. This required addressing the topic of terminology through an array of tasks, from identifying the needs of terminology management in the cultural and publishing sector, to implementing and testing a terminology platform as a software integrated format. The latter was accomplished by the successful development of a prototype of Terminology Management Platform (TMP) that allowed for the creation and updating of a network of multilingual cross-domain thesauri and controlled vocabularies in a collaborative way.[1]

1 Beta version available on www.culture-terminology.org
2 http://terminology.lido-schema.org/eventType
3 English: http://www.linkedheritage.eu/getFile.php?id=244;
   French: http://www.linkedheritage.eu/getFile.php?id=355

The working group also created a multilingual LIDO event type terminology that has been reviewed by the LIDO Working Group and will become an official recommendation for the LIDO standard.[2] In order to capitalise on the successful completion of the work package goals, dissemination and training activities were carried out:

• The working group provided guidelines, recommendations and training on terminology management, and also published the booklet "Your terminology as part of the semantic web. Recommendations for design and management".[3]

• Additionally, dissemination and training events were organised: a training workshop in Paris (20/09/2012) was organised on the principles of the semantic web where the beta release of the Terminology Management Platform was presented and tested by the participants.

Public-Private Partnership

Leader: EDITEUR, UK

The main objective in this field was to explore the state of the art in the management of metadata in the private sector, and to outline the benefit to Europeana of interoperability with the private sector. The primary outputs of Work Package 4 are its three planned deliverables:

Best Practice Report – Public Private Partnership
This report comprehensively described standard identifiers and metadata used to describe the outputs of the commercial media industries – books, film & TV, recorded music and photography – with a view to integration with heritage sector data, so that in-copyright, in-commerce materials can be discovered and accessed reliably through Europeana.

Specification of the technologies chosen
Partner EDITEUR is also the standards body maintaining and developing ONIX for Books, the product information format for the global book trade supply chain. They produced a detailed semantic mapping of ONIX for Books 3.0.1 to the LIDO heritage data schema used in Linked Heritage, facilitating a substantial contribution to semantic interoperability between public and private sectors.

Specification of legal/licensing environment
This report detailed the key legal and commercial concepts for private public partnerships with the commercial media sectors. These concepts were as follows:
• Copyright status of items of metadata; database right; the commercial value of product data and services built around it
• Difficulties inherent in "open" licences for sharing databases
• Potential approaches to a compromise licence using the existing Europeana framework
• Case studies drawn from conversation with a range of smaller and larger companies across the EU
• Recommended business models in future commercial sector partnership with Europeana

Expertise and networking
• Research and development in Linked Data for bibliographic descriptions, which discussed the opportunities of Linked Data in Libraries.
• Network of potential commercial sector data providers, which prepared the ground for future projects by opening dialogue concerning commercial contributions to the Europeana project.

Technical Integration

Leader: NTUA, Greece

The central objectives were to integrate the technical components necessary for the Linked Heritage aggregation, to make this platform available online for training, validation and for the large-scale contribution of content to Europeana, to document programming interfaces for the integration of technical results and interoperability with external systems, and to operate the aggregation and publication, supporting ongoing requirement analysis.

These goals were accomplished by the completion of the following tasks:
- Creation of an online platform for the Linked Heritage aggregation (MINT system customized for Linked Heritage).
- The establishment of metadata interoperability between content providers data sources and the LIDO-based Linked Heritage repository.
- Creation of a Metadata gateway for transformation to established standards and remediation.
- Delivery of Metadata to Europeana and the Linked Data demonstrator.
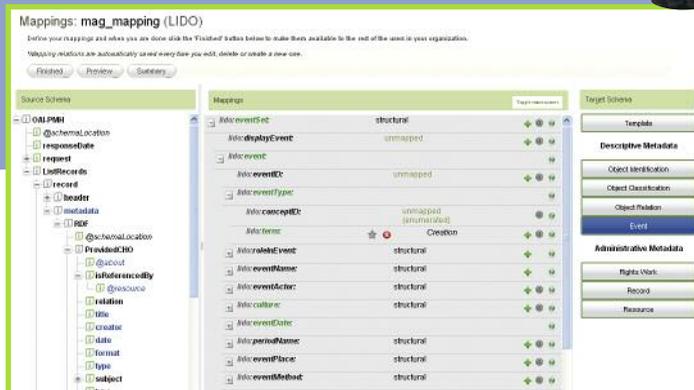
Screenshot of the MINT platform: mapping tool

THE AGGREGATION WORKFLOW THROUGH MINT

Harvesting, Delivery	Import, Parsing, Indexing	Versioning	Semantic Mapping	Value Mapping, Normalizazion	Enrich	Export Publish
Delivered Data	Structured Indexed Data	Data with reapplied enrichment	Interoperable Semantics	Interoperable Structure	Europeana Enabled Data	

Presentation & Search

Analysis & Statistics

Quality Control

Re-Iterating Process

Coordination of Content

Leader: CREF CYI, Cyprus
Coleader: ICCU, Italy

The objective was to facilitate the aggregation of over 3 million digital content items into Europeana belonging o GLAMs and other memory institutions. This goal was accomplished through the completion of the following tasks:

- Implementing smooth workflow for the mapping and aggregation activities. This included interaction between the Europeana Operations Team, the work package leaders, and all content providers.
- Assisting and training of content providers in the aggregation process.
- Maintaining the quality of the content for Europeana. This involved frequent feedback from the Europeana team, who provided valuable comments on how to improve the ingestion process.

Training and Dissemination

Leader: UNIPD, Italy (training)
Coleader: ICCU, Italy (dissemination)

Training activities were designed, developed, and implemented for comprehensive training programmes dealing with the most relevant topics of the project. Significant results includes:

The Virtual Learning Environment
Realization of a Virtual Learning Environment based on Moodle, a free open source PHP web application for producing modular internet-based courses.

Training Programme
Definition of a tailored Training Programme available as an e-learning facility and focusing on key aspects of the project (Europeana, aggregation, metadata standards, linked data, permanent identifiers, multilingual terminologies, public-private partnerships).
The training Programme comprises by four modules specifically targeted to the following user groups: cultural institutions, decision makers, teachers and researchers, library and information science professionals, market players.
Each module provides a set of topics suitable for each target group of users.
Each topic is linked to a learning package which includes: case studies and training materials, bibliography and, for some topics, also a Learning Object with assessment and evaluation questionnaires.

The Learning Objects

Planning and implementation of a set of learning objects aiming to provide users with an entry-level knowledge of the subjects. The LO model, HTML based, was designed both to provide users with an interactive approach and to be easily translated into the Partners' native languages. It could also include text, video, audio and subtitles.

All the software programs used for the production of the LOs were Free Software/Open Source (GNU Project and/or OSI definition).

Phaidra for the Preservation of Linked Heritage Learning objects and Training materials

All the Learning Objects and training materials have been preserved in PHAIDRA (Permanent Hosting, Archiving and Indexing of Digital Resources and Assets), the platform for long-term management and archiving of digital objects designed by the University of Vienna and adopted by the Padua Library System in 2010 as part of a collaboration agreement and joint venture for software development.
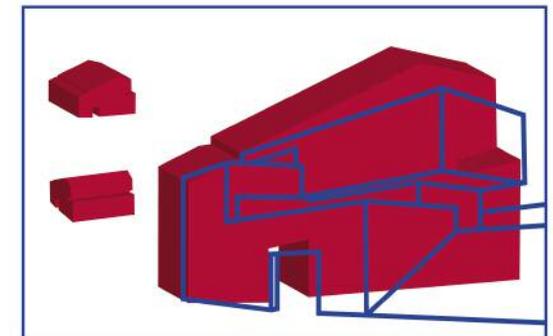
Printed Publications

Linked Heritage and its partners have featured widely in printed publications, appearing in educational booklets, academic journals and scientific articles.

Terminology Education Booklet

The booklet, *Your Terminology As A Part Of The Semantic Web Recommendations For Design And Management,* was published in the initial phase of the project. With over 1,500 copies distributed at dissemination events, and over 4,500 copies downloaded from the project website in total, the booklet has served as a useful tool for those addressing the complicated issue of terminology in cultural heritage and linked data. Following the successful French translation, Hungarian and Italian versions will soon be available.
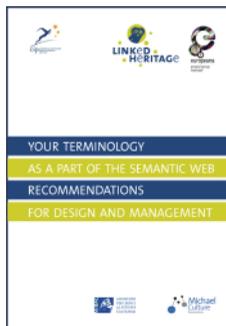
www.linkedheritage.eu /index.php?en/181/publications

Geocoded Digital Cultural Content

Following the fruitful memorandum of understanding between the Indicate project and Linked Heritage, another publication has been printed: *Geocoded Digital Cultural Content*, by Franc J. Zakrasjek and Vlasta Vodeb. This publication addresses the central issue of digital geographic coordinates, which can serve as incredibly valuable geographic descriptions. They allow for a far greater user experience, where cultural portals can provide information about overlapping cultural content at the same location but originating from different sources at different times.
This study investigates the possibilities and approaches regarding the use of e-infrastructure in geo-coded digital culture.
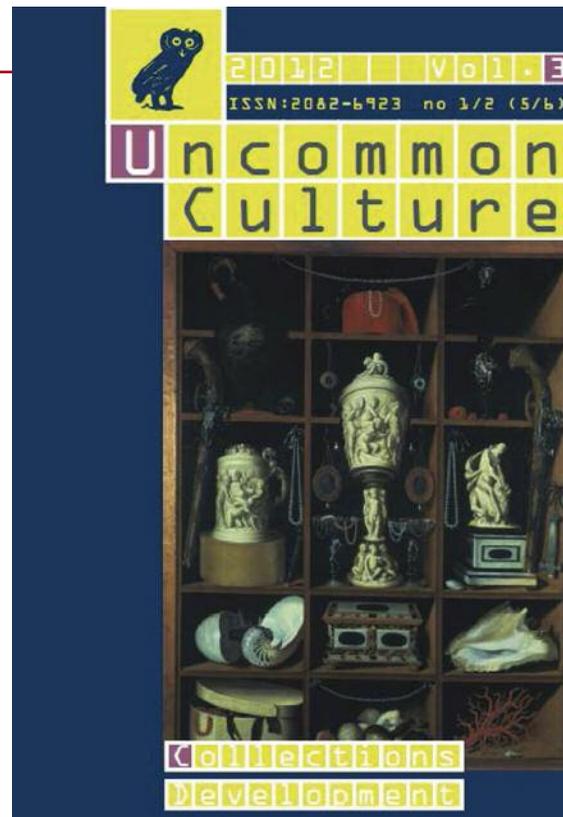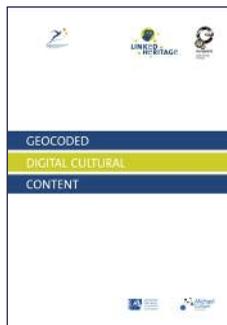
Uncommon Culture

Professional journal (ISSN 2083-0599 (online); 2082-6923 (print)) directed by ICIMISS, was born during the Athena Project. It provides unique perspectives on a rich variety of cultural activities in Europe. Examining cultural institutions and their collections, this magazine gives new insight into diverse cultural activities. During the Linked Heritage Project, two issues were edited:
• From closed doors to open gates
• Collections development.

www.uncommonculture.org
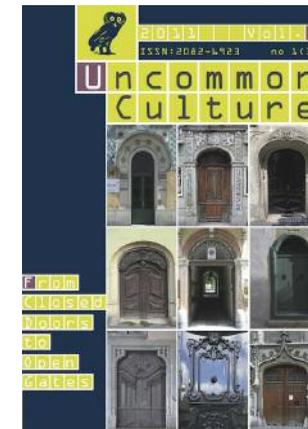
Linked Heritage on the Web

Linked Heritage has gained a strong presence on the web, utilising its own website as well as featuring on a variety of important sites in the cultural heritage community. Below is a selection of the project's online activities:

Project Website
The project website serves as the centrepiece of the Linked Heritage online effort. Featuring partner profiles, project information, and dissemination publications, it provides a useful portal to understanding both Linked Heritage and the wider cultural heritage community. Since its creation in May 2011, the site has received over 30,000 unique visitors and been populated with dozens of project deliverables, text and media presentations and informative guides about data aggregation and cultural content.

www.linkedheritage.eu

Michael Culture Website
The Michael Culture Website serves as a Europe-wide network for the valorisation of cultural content. The Linked Heritage project features heavily on the site's homepage, with a permanent link and button directing visitors towards the Linked Heritage Wiki.
The Michael Culture website showcases Linked Heritage Partners, where they discuss their main challenges.

www.michael-culture.eu

DigitalMeetsCulture Showcase
The project currently features on the digitalmeetsculture site, an important online magazine in the digital cultural heritage area featured by partner Promoter and dedicated to the themes of the digital technologies applied to cultural heritage and the arts. The online magazine is becoming increasingly popular, with over 50,000 visitors and 100,000 pages visited in the last year. Linked Heritage has a button permanently featured on the homepage, providing easy access to information about the project, including the latest news, documents and over half a dozen highlighted articles. Linked Heritage also features in the DigitalMeetsCulture Newsletters, which are distributed to over 4,000 readers.

www.digitalmeetsculture.net

Web 2.0

A Linked Heritage Wiki was also set up to support the activities on terminologies. This site offers generic information about the objectives of the working group, as well as technical information about the project.

Several videos have been created featuring partner members, showcasing their activities. These videos have been hosted on the Vimeo online video platform, and have been embedded on the project website and the Michael Culture website.

The project utilised a social media aggregator – Scoop.it – which allows for users to be directed quickly to the content that relates to their favourite topic.

Linked Heritage is also present on Linkedin.

KALEVALA.

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