



DELIVERABLE

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This deliverable contains original unpublished work except where clearly indicated otherwise.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

CARARE ANNUAL REPORT 2011	3
SUMMARY OF ACTIVITIES	3
Content	3
CARARE Aggregation Service	4
3D and VR	5
SUSTAINABILITY	6
IMPACT	6
CONTACTS	6

CARARE brings together a network of heritage agencies and organisations, archaeological museums and research institutions and specialist digital archives from all over Europe to establish an aggregation service for Europeana. The project's main objectives are to:

- *make digital content for Europe's unique archaeological monuments and historic sites available to Europeana's users;*
- *establish tools and services to support and enable its network of partners to make their digital content interoperable with Europeana, and to share best practices;*
- *enable access to 3D and Virtual Reality content through Europeana; and*
- *establish the business model for sustainability.*

Summary of Activities

The focus of activities during the second year of the project has been on commencing the supply of contents to Europeana. For CARARE's content partners this has meant working to prepare their content and has involved a range of activities from setting up systems, enhancing metadata and taking part in training workshops to securing permissions. CARARE's technical partners have been working to complete the testing of the systems which make up the aggregation service and going live. CARARE is one of the first aggregation services to provide content to Europeana in its new EDM format and our content has been helping Europeana to test its ingestion services against the new format. The first CARARE contents, from the Swedish National Heritage Board, were published in Europeana in early February. The Heritage Board is one of eighteen CARARE content partners who have signed the new Europeana Data Exchange Agreement and its data forms part of Europeana's Linked Open Data Pilot. Work has also been underway to enable 3D collections in Europeana, with CARARE's content partners preparing their content as 3D PDFs with the necessary metadata and Europeana implementing changes a new search facet for 3D in its user interface.

During the course of the year the project partners have taken part in a range of activities and events, presenting the activities of the CARARE project widely to members of the archaeological and architectural heritage community. The network continues to expand to include new stakeholders with an interest in Europeana and in aggregation services.

Content

A major achievement of this year has been the publication of the first contents from a CARARE partner in Europeana. The dataset, from the Swedish National Heritage Board, consists of records for over 800,000 archaeological monuments and includes sites such as the Rökstenen Rune Stone which is illustrated here.

All CARARE's 23 content partners have been working hard to prepare their collections for Europeana. More than 2.75 million items had been uploaded from partners' repositories to the CARARE metadata mapping and ingestion tool by the end of the year.



**Rökstenen Rune Stone - Foto:
Bengt A Lundberg - 1986-08-01**

CARARE Aggregation Service

The CARARE aggregation service went live during 2011. The main components of the service, the MINT metadata mapping and ingestion tool and the MORE repository, were fully tested in the laboratory and against real data. The testing covered the full [workflow](#) from the repositories and systems established by CARARE content partners, via MINT and MORE to Europeana and all aspects of interoperability.

Version 1.1 of the [CARARE metadata schema](#) was prepared and an updated version of the schema XSD (1.0.6.1) installed in the CARARE [MINT](#) tool. This version is now being used by our content partners to map their metadata in MINT. This tool enables partners to import XML metadata records from their native systems using HTTP and FTP uploads or OAI-PMH harvesting. By the end of January 2012, 2,059,013 item records had been uploaded to MINT by 25 organisations for mapping and ingestion preparation.



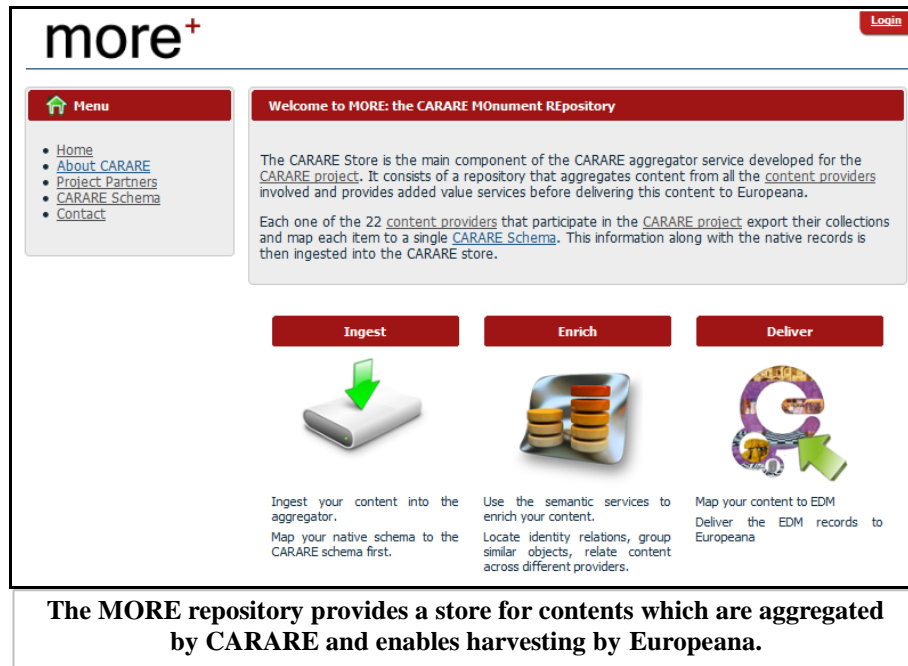
The screenshot shows a web application window titled "XML Transformed". It has a navigation bar with tabs: "Input", "XSL", "Output", "Validation", "EDM", "ESE", and "Europeana". The "Europeana" tab is selected. The main content area displays a preview of a cultural heritage record. On the left is a photograph of a canal scene with buildings. To the right of the photo is the title "Exterieur, overzicht voorgevel pand Vrouwenverband". Below the title are several metadata fields, each with a value and a right-pointing arrow: "Creator: Dukker, G.J. | > Fotograaf | >", "Publisher: Rijksdienst voor het Cultureel Erfgoed | >", "Date: Post Medieval | >", "Geographical coverage: 1001490 | > 1001490 | > Netherlands | >", "Type: image | >", "Subject: architecturemonuments | >", "Description: Exterieur, overzicht voorgevel pand Vrouwenverband", and "Provider: CARARE | >". Below the photo, there is a link "View item at Rijksdienst voor het Cultureel Erfgoed" and a "Rights:" section with "Identifier: collect:20000001" and "Format: JPEG photograph".

Preview of an item record from the Netherlands Cultural Heritage Agency in the CARARE MINT tool.

A fundamental part of the CARARE aggregation service has been the implementation of a mapping and transformation service to support the conversion of records into Europeana format. Working with MDR and Europeana, the Digital Curation Unit established a mapping between the CARARE metadata schema and the [first implementation of the EDM](#), and then developed an XSLT to support the transformation of CARARE records to EDM. Records are then made available to Europeana for harvesting via the OAI-PMH repository which is part of the CARARE [MORE](#) repository.

Until June 2012, Europeana will continue publishing records in ESE format. This means that CARARE's EDM records are converted from EDM to ESE format by Europeana for the time being. The Europeana preview service implemented by the National Technical University of Athens in the MINT tool makes use of the CARARE-EDM and the EDM-ESE XSLTs which have been developed, and allows content providers to check and quality assure the results of the mappings between their native records and the CARARE schema.

For CARARE content partners a major activity during 2011 has been the setting up of services to support interoperability between their systems and CARARE. Partners have been implementing OAI-PMH repositories and XML exports for their content to enable harvesting by CARARE. During the year the project organised a series of [training workshops](#) which covered installing and configuring repositories, extracting local data to XML, metadata and using the CARARE MINT and MORE systems.



more⁺ Login




Menu

- Home
- [About CARARE](#)
- [Project Partners](#)
- [CARARE Schema](#)
- [Contact](#)

Welcome to MORE: the CARARE MOument REpository

The CARARE Store is the main component of the CARARE aggregator service developed for the [CARARE project](#). It consists of a repository that aggregates content from all the [content providers](#) involved and provides added value services before delivering this content to Europeana.

Each one of the 22 [content providers](#) that participate in the [CARARE project](#) export their collections and map each item to a single [CARARE Schema](#). This information along with the native records is then ingested into the CARARE store.

Ingest	Enrich	Deliver
		
<p>Ingest your content into the aggregator.</p> <p>Map your native schema to the CARARE schema first.</p>	<p>Use the semantic services to enrich your content.</p> <p>Locate identity relations, group similar objects, relate content across different providers.</p>	<p>Map your content to EDM</p> <p>Deliver the EDM records to Europeana</p>

The MORE repository provides a store for contents which are aggregated by CARARE and enables harvesting by Europeana.

A step-by-step guide to the [content provider's workflow](#) was produced to support CARARE's partners to plan and timetable the activities involved in preparing their content for harvesting and aggregation to Europeana. The [aggregator's workflow](#) has also been documented and published on the project website. The full workflow from the content providers' repositories via the MINT service and MORE repository to Europeana was fully tested as part of the process of the CARARE aggregation service going live.

The content from the Swedish National Heritage Board was the first dataset to progress through the entire workflow and be published in Europeana. By the end of January 2011, several other CARARE content partners were at an advanced stage in the workflow, finalising the mappings of their datasets, completing the transformation of their content on MINT and having datasets ingested to the MORE repository ready for harvesting by Europeana. By early 2012 we anticipate that a substantial body of content from the CARARE aggregator will join the Swedish data and will also form part of Europeana's first [Linked Open Data Pilot](#).

3D and VR

Work has continued throughout the year to implement the recommendations of the [functional specification for preparing 3D content for Europeana](#). CARARE content partners have been testing the methodology for converting 3D and VR content from their native formats to 3D-PDF and preparing the metadata needed to support resource discovery. A case study of the materials for the theatre at Paphos was prepared by the Cyprus Research Institute. This case study formed part of the [3D training materials](#) prepared by Visual Dimension to form the basis of a training workshop delivered during the project plenary meeting. Other partners are working on case studies which address different issues. The Scuole Normale Superiore di Pisa is exploring the integration of 3D models of Pompeii with a rich archive of drawings, images and texts. Heritage Malta is exploring

techniques for publishing highly detailed and complex 3D representations of prehistoric temple sites. The Centre for Educational Technology has been experimenting with web GL as an alternative to 3D-PDF, as well as preparing 3D-PDFs for immediate publication to Europeana.

Europeana has also been acting on the recommendations of the CARARE report. In February 2012 a new version of the Europeana interface will include a search facet for 3D to enable users to find this exciting content more easily. The modifications included an update to the EDM and ESE, and to their ingestion toolkit in order to add 3D as a type in Europeana.



3D model of Xanti,
Centre for Educational Technology

Sustainability

During the first half of 2011, CARARE carried out an opinion survey of its stakeholders. The results of the survey clearly show that participation in CARARE is considered a real benefit to partners. Not only do they gain a positive experience through broader international contacts, the sharing of information, the development of technical knowledge and the fact they are operating in the front line of European digital experience, but also they see the possibilities for their own organisations to profit from CARARE and Europeana in terms of visibility, standardisation and content sharing. The survey findings suggest that the responding partners agree on the possibility of CARARE as a sustainable service and various options for sustainability were proposed.

Work has begun on establishing the framework of agreements and the business model for network sustainability. MDR carried out an investigation into the advantages and disadvantages of setting up a legal entity, and a comparative analysis of the different forms of legal entity. The Archaeology Data Service has been carrying out an investigation into the costs and possible business models for aggregation services. This research will inform decisions about the sustainability of the CARARE aggregation service during 2012.

Impact

CARARE's content partners have endorsed the new Europeana Data Exchange Agreement and the publication of their metadata as Linked Open Data. CARARE's first content has been published in Europeana and forms part of its first Linked Open Data pilot. Several CARARE content partners cooperated with their national [Wiki Loves Monuments](#) campaign which spanned 15 countries and resulted in members of the public capturing 160,000 photos linked to CARARE monument inventories.

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CARARE has 29 partners in 21 countries: <http://www.carare.eu/eng/About/Partners>