# OPENUP! ANNUAL REPORT 3 & PROGRESS REPORT 6 PUBLISHABLE SUMMARY

## Project objectives

European natural history collections manage and give access to over 1.5 billion objects from the world's biodiversity heritage, covering most of the species described worldwide. These are reference objects, including all common and famous species in the world, those of high economic importance and even those that have already gone extinct. Many have great cultural value as they were collected during historical expeditions and scientific endeavours by well-known epochal explorers and scientists like Darwin, Linnaeus, or Stanley. In many cases, OpenUp! will make these treasures for the first time available to the general public, *via* the European virtual library, Europeana. As a result, Europeana will be providing the general public, but also scientists and policy makers with a substantial information source needed in the understanding and protection of global biodiversity. The content provided by OpenUp! is exactly complementary and linked to the resources mobilised by the *e*Content*Plus* project BHL-Europe (Biodiversity Heritage Library Europe).

Although being clearly within the scope of Europeana as part of the scientific and cultural heritage, at the outset of the project, multimedia objects from the natural history domain were still dramatically underrepresented. This project has closed this gap. It made available close to 2 million high quality images, movies, animal sound files, and natural history artwork. It brings together 23 institutions from 12 European countries. Access is based on the established technical infrastructure of the Global Biodiversity Information Facility (GBIF) including the BioCASE network (Biological Collection Access Service for Europe). These networks are open for new providers. With the created pathway and data flow from providers into the BioCASE network and GBIF, a steady stream of additional multimedia objects to Europeana will be achieved.

**The project addressed the following specific objectives*:***

- Mapping between the ABCD (Access to Biological Collection Data) standard and the Europeana metadata scheme ESE/EDM
- Enrichment of metadata towards compliance with Europeana standards
- Incorporation of multilingual metadata, in particular vernacular names of organisms
- Incorporation of metadata that will allow semantic linking of content with other domains, particularly scientific organism names
- A single access point to distributed GBIF/BioCASE multimedia content for Europeana
- Adding data providers for multimedia content, set up of data provider software
- A sustainability plan for the future network maintenance
- The development of a consistent IPR and copyright strategies for future data providers

## Description of work performed since the beginning of the project

The work progress has been completely according to plan. The technical requirements (Figure 1) for the provision of multimedia content to Europeana were met at the end of the first project year and

since then **more than 1.6 million records with multimedia objects were delivered to Europeana via the OpenUp! infrastructure**. All content providers in the project have installed the required BioCASe provider software and prepared at least one of their data sources for harvesting by OpenUp! and eventually by Europeana. New content providers have been won, and the BioCASE secretariat is actively promoting the accession of further network members to the Europeana data provision scheme. The Europeana Natural History Aggregator is managed by an SME partner, who is also constantly updating the Aggregator in accordance with new provisions introduced by Europeana in the course of the transition from ESE (Europeana Semantic Elements) to EDM (Europeana Data Model) as the target standard.

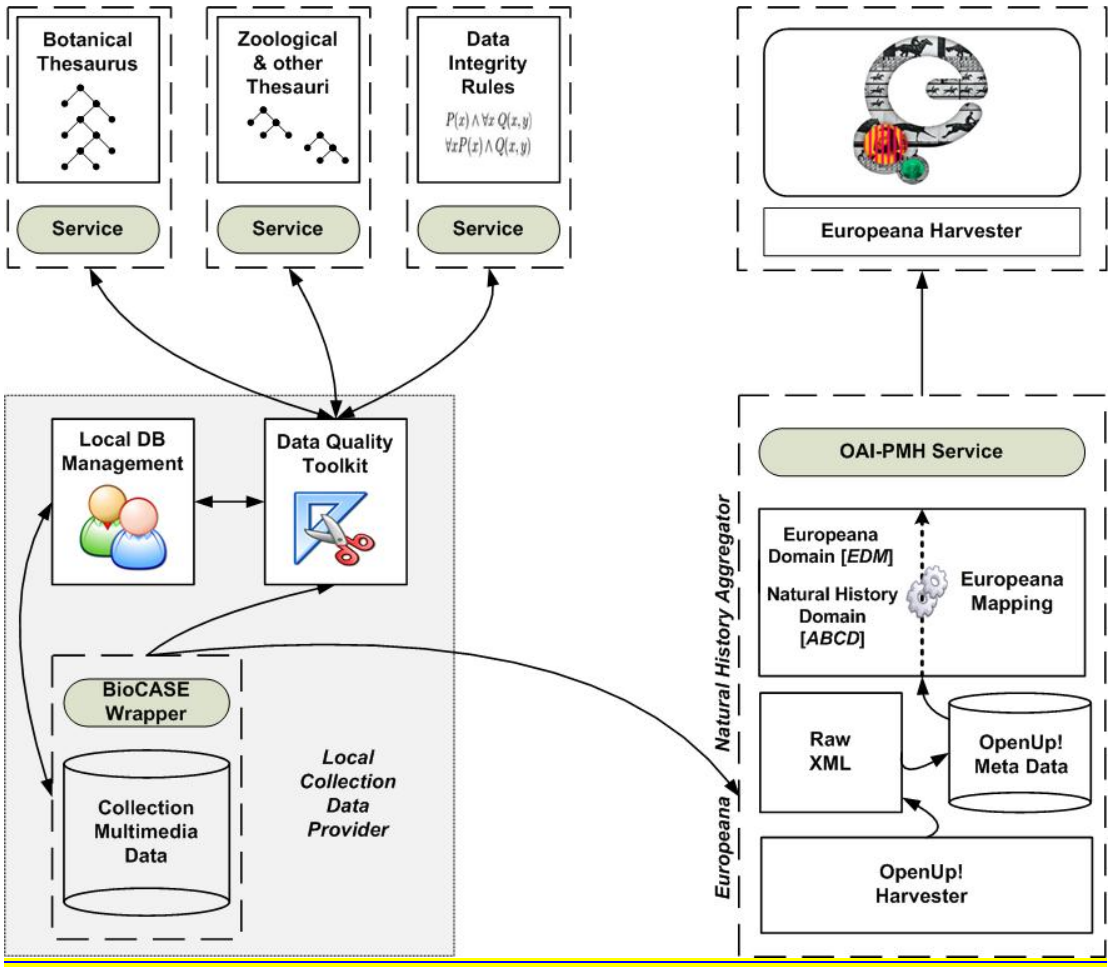


*Figure 1: Data processing steps in the mobilisation of multimedia content from natural history institutions to Europeana*

Sustainability of the project's results is achieved by a series of institutional commitments to maintain infrastructures beyond the project period, among them constant and reliable provision of technical support through helpdesk facilities, data hosting, web services and software for data quality checking,

web services for metadata enhancement, promotion of content, and the commitment of data providers to contribute to a fee-based system to ensure proper harvesting and data transformation.

## Main results achieved

**More then 1.6 million records with multimedia objects (1.658.827, as of March 26, 2014) are delivered to Europeana** via the OpenUp! infrastructure at the end of year 3. With almost 800,000 objects more than originally aimed at, the **performance indicator no. 1, was met.**

The Technology Management Group coordinated the **implementation of the technical infrastructure** by means of weekly Skype meetings. All technical developments proceeded according to plan:

- **Harvesting and Transformation Component** and the **OAI-PMH Interface**.
- Set up of the **OpenUp! Metadatabase**.
- **Availability Checker** to reduce the likelihood of broken links for OpenUp! records in Europeana.
- **Mirroring System** to secure long-term availability of the metadata of the OpenUp! Aggregator.
- **Mappings** of the ABCD data elements to the Europeana Semantic Elements (ESE) and Europeana Data Model (EDM) were specified and implemented in the Harvesting and Transformation Component. A model for the integration of content from the areas of **palaeontology and mineralogy** was put in place, which uses the ABCD extension for geosciences, EFG, which was also mapped into ESE and EDM.
- Based on the analysis of EDM and various domain specific vocabularies, a concept for inclusion of **metadata vocabularies and metadata enrichment** was published after existing tools for building and deploying semantic knowledge representations had been evaluated. A technical routine was then developed that is used to implement the **OpenUp! metadata enrichment services.**
- The **Collection Data Quality Toolkit** was specified and implemented. It is an open web-based application for OpenUp! data providers and BioCASe (Biological Collection Access Service) providers in general performing data quality checks on their data. The **Data Quality Service for Zoological and Botanical Names** and the **Data Integrity Service** were connected to the quality toolkit.
- A system for **harvesting, parsing and caching federated reference data** (common names, person names, and geographical place names) was developed and deployed.
- A report on multilingual data for natural history objects was published.
- A web servide provides **common names for metadata enhancements in several different languages** including Hebrew, Norwegian, Swedish, Finnish, Danish, Icelandic, Czech, Slovak, Maori, English, and German.

The **OpenUp! Helpdesk** was set up at http://open-up.cybertaxonomy.africamuseum.be/. It links to the OpenUp! project website and provides an extensive list of open, free, and easily accessible online documents for further reference, such as the **OpenUp! Guidelines v.1** and other **documents from related projects and networks** like GBIF, BioCASe, Europeana, BHL-Europe and STERNA, as well as information on upcoming events in the digital library, collections management and standardization domain. The extension of the OpenUp! network is fostered with the publication of a **preliminary list of potential associated partners** along with a **standard procedure for associated partners** and a **new providers information package.**

The Outreach and Dissemination Group coordinated the collaborative efforts in these areas; achievements include the setup of the **OpenUp! Website** (http://www.open-up.eu), the **dissemination and publication plan**, the **newsletter**, and further **promotional materials** such as, e.g., a **self-running OpenUp! demonstration** that can be downloaded from the web page. They also focussed on **outreach to the educational sector** and distributed an online questionnaire to assess and promote the usage of OpenUp!/Europeana content in schools.

An overview of **IPR** issues in OpenUp! and the Consortium's view on Europeana's new Data Exchange Agreement was prepared. An intense discussion process about the controversial application of the **Europeana Data Exchange Agreement (DEA)** in the natural history research domain was initiated, with the result that now all OpenUp! partners provide data to Europeana under the new DEA.

**Cooperation** with other projects/programmes is growing steadily: BHL-Europe, CETAF, EU BON, Europeana Creative, GBIF, Natural Europe, pro-iBiosphere, STERNA, and ViBRANT.

The **OpenUp! Consortium Agreement** came into effect on 6 December 2011. **Amendments No. 1** and No. 2 were approved by the EC. **The revised Annex I – Description of Work dated 19/07/2013 has replaced any former version of the DoW.**

## Expected final results and their potential impact and use

The inclusion of culturally-significant multimedia content from European natural history collections and the cooperation of 23 well-known institutions from 12 different European countries will enhance the scientific dimension of Europeana by adding substantial information about the natural world complementing the digital biodiversity literature and adding to the previously existing material that stemmed primarily from the arts and humanities. The users of Europeana will have direct online access to famous examples of natural and cultural heritage information that are kept in far-flung institutions that are often inaccessible to the public or would be arduous to visit in person. Also, and due to the history of Europe and its colonial past, much of this information is of high interest to countries outside Europe and it will play an important role in the provision of information on items kept in European repositories to their countries of origin. Accordingly, this project addresses end-users worldwide and will make them familiar with Europeana and its objectives.

Different user communities, including those in research for example from the fields of biology in general and specifically biodiversity conservation and land use management as well as potential users in education, citizen science, eco-tourism, or from industry now have access to information *via* Europeana. The presented information also has an overall educational role and can be used in materials that make the general public aware of important challenges like climate change or loss of biodiversity. Last but not least it will foster the general public's understanding of the role and the work carried out in natural history institutions beyond what is exposed in exhibition rooms.

From a technical point of view, the result of this project and the procedures set in place to make natural history data accessible can serve as proof of concept of the networking and distributed access mechanisms used for Europeana content provision. This experience can be extended to other content provider communities with a similar high degree of distribution.

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