

ECP 2008 DILI 538013 MIMO
MIMO

Final Report

1 September, 2009 – 31 August, 2011

www.mimo-project.eu

Deliverable number/name	<i>D4.6</i>
Dissemination level	<i>Public</i>
Delivery date	<i>7 October 2011</i>
Status	<i>Final</i>
Author(s)	<i>Norman Rodger (UEDIN)</i>



eContentplus

This project is funded under the *eContentplus* programme¹,
a multiannual Community programme to make digital content in Europe more accessible, usable and exploitable.

¹ OJ L 79, 24.3.2005, p. 1.
Norman Rodger

1 Table of content

1 TABLE OF CONTENT	2
2 PROJECT OBJECTIVES	4
3 CONSORTIUM	5
4 PROJECT RESULTS/ACHIEVEMENTS	6
5 TARGET USERS AND THEIR NEEDS	8
6 UNDERLYING CONTENT	10
6.1 Digitisation Figures and Targets	
6.2 Digitisation figures overview	
6.3 Digitisation figures and revision of holdings	
6.4 Success indicators and critical mass	
6.5 Dictionaries and Thesauri	
7 SUMMARY OF ACTIVITIES	13
7.1 Digitisation	
7.1.1 The MIMO Digitisation Standard	
7.2 OAI Harvesting, Database Development and EUROPEANA Interoperability	
7.2.1 Metadata Harvesting	
7.2.2 Web Tools	
7.2.3 Metadata enrichment	
7.2.4 Images, Sound and Video File Transfer	
7.2.5 Metadata and Vocabulary to EUROPEANA.	
7.3 Thesauri and Classification	
7.3.1 Outcomes	
7.3.2 EUROPEANA Themes and Social Contexts	
7.4 Project Management	
7.5 Evaluation and Assessment	
7.5.1 The Role of Associate Partners in Evaluation	
7.6 Dissemination and Awareness	
7.6.1 Web-based dissemination	
7.6.1.1 Project Website	
7.6.1.2 Internal communication	
7.6.1.3 New MIMO Website	
7.6.1.4 The Home Page	
7.6.1.5 Search Capability	
7.6.2 Web 2.0	
7.6.2.1 Facebook	
7.6.3 Newsletters	
7.6.4 "Explore the World of Musical Instruments"- Virtual Exhibition	
7.6.5 Online Dissemination of Outputs from WP3	
7.6.6 In-Person Dissemination	
7.6.6.1 Creation of Dissemination Materials	
7.6.6.2 Dissemination strategy	
7.6.7 MIMO in Museums	
7.6.8 Summary	
7.6.8.1 Post Project Activity	
8 IMPACT AND SUSTAINABILITY	35
8.1 Impact of MIMO – The Benefits of Aggregation	
8.1.1 Information about particular kinds of instrument	
8.1.2 Information about particular people	
8.1.3 Information about instrument making in particular places	
8.1.4 Information about instruments of a particular period	
8.1.5 Identification of instruments	
8.1.6 Impact on Other Museums	
8.2 Sustainability	
8.2.1 Sustainability Level 1	
8.2.2 Sustainability Level 2 & the MIMO Toolkit	

8.2.3	The Role of CIMCIM	
8.2.4	Thesauri and Classification - Ongoing Activity	
8.3	EUROPEANA	
9	FURTHER INFORMATION	43
9.1	Lessons Learned from involvement in the project	
9.1.1	Digitisation	
9.1.2	Interoperability of data/aggregation	
9.1.3	Other	
9.1.4	Added value for partner institutions	
	Appendix 1: D1.6 and D1.7: Final Digitisation Report. Revised Public Version	47
	Appendix 2: Digital Records by Institution	57
	Appendix 3: D2.3 Guidelines for harvesting MIMO's database repository	59
	Revised version 16th September 2011	
	Appendix 4: List of Meetings	72
	Appendix 5: MIMO Toolkit Checklist	74

2 Project Objectives

The aim of the MIMO project was, through EUROPEANA, to create a single access point to information and digital content on the collections of musical instruments held in European museums.

Europe has developed its culture of music over many centuries and integral to that development are its tools: musical instruments. Collectively, the European museum collections hold the largest number of these objects in the world and, as such, can claim to represent a key part of the world's musical instrument heritage.

Musical instruments play an important part not only in art, but also in many other European social contexts, such as military life, dances, feasts, ceremonies etc. European musical instruments were typically produced in urban centres or well-defined regions and traded worldwide. Museum collections inform and provide essential points of reference for musicians and instrument makers seeking to interpret the cultural heritage. Ethnographical collections also have inspired European composers and instrument makers.

Before the project began, however, there was no common access point for anyone wishing to explore the collections online, nor was there any consistency or common standard for the online presentation of musical instruments. Taken as a whole, this important heritage was only accessible (with some difficulty) to scholars and museum professionals: the MIMO project sought to address that problem. Moreover, the majority of museum websites present their content only in their own language, although a few offer English or perhaps one other as an alternative (though not always offering the full detail). A key aim of this project was therefore to improve access to multilingual content through the delivery of dictionaries for controlled vocabularies for musical instruments databases, ensuring consistency of nomenclature for the musical instruments within a multilingual framework comprising the following languages: French, German, Italian, Dutch, Swedish and English.

Musical instruments and music have a wide-ranging appeal, and in order to engage with the maximum number of online visitors, the dictionaries include names for instruments that are familiar to non-specialists, as well as a variety of synonyms and the terms used by professional curators. This work was based on the standard classification for musical instruments devised by Curt Sachs and Erich Moritz von Hornbostel in 1914 that, prior to the project, had no international body to review and agree the many proposals made for its modification. The dictionaries created by the project were applied across the board to the metadata for all the instruments in the partners' museums.

As indicated in the eContentPlus Work programme 2008, the overall aim of the programme was to make digital content in Europe more accessible, usable and exploitable and this was precisely the objective of the MIMO Project. By working collaboratively, the partners within the MIMO project established a mechanism which not only enables their own collections to be accessed via EUROPEANA but which will enable other European museums to do likewise after completion of the project. As there was no equivalent project on this scale anywhere else, MIMO has positioned European collections and EUROPEANA at the forefront of research in this field, whether for the serious academic or the general interest user.

The six Work Packages (WP) as outlined in the Description of Work (DoW) covered by the project are as follows:

WP1: Digitisation – Lead Partner GNM

WP2: OAI Harvesting, database development and EUROPEANA Interoperability – Lead Partner CM

WP3: Thesauri and Classification – Lead Partner HML

WP4: Project Management – Lead Partner UEDIN

WP5: Assessment and Evaluation – Lead Partner RMCA

WP6: Dissemination – Lead Partner SPK

3 Consortium

No	Participant full name	Short Name	Country	Role in the project
1	University of Edinburgh	UEDIN	UK	Coordinator (WP4 – lead) Content Provider
2	Germanisches Nationalmuseum, Nürnberg	GNM	DE	Digitisation (WP1 - lead) Content Provider
3	University of Leipzig, Museum für Musikinstrumente	ULEI	DE	Content Provider
4	Africamuseum, Tervuren	RMCA	BE	Assessment and Evaluation (WP5 – lead) Content Provider
5	Associazione "Amici del Museo degli Strumenti Musicali," Firenze	AF	IT	Content Provider
6	Cité de la Musique, Paris	CM	FR	Harvesting (WP2 – lead) Content Provider
7	Musical Instrument Museum, Brussels	MIM-BE	BE	Thesaurus and Classification Content Provider
8	Università degli Studi di Firenze , Florence	UF	IT	Thesaurus and Classification
9	Horniman Museum, London	HML	UK	Thesaurus and Classification (WP3 – lead)
10	Stiftung Preußischer Kulturbesitz, Ethnologisches Museum	SPK	DE	Dissemination and Awareness (WP6 – lead) Content Provider
11	The Stockholm Music Museum	SMS-MM	SE	Content Provider Dissemination and Awareness

Table 1: Project Partners

In addition to the eleven full partners, the project had four Associate Partners:

- Musikmuseet, Copenhagen (DK);
- Technisches Museum, Wien (AT);
- Pokrajinski Muzej, Ptuj (SI)
- Palais Lascaris-Musée de la musique de Nice, Nice (FR)

The role of the Associate Partners was to assist with project evaluation.

4 Project Results/Achievements

- Reached agreement on standards for photographing and scanning (WP1)
- Completed digitisation of the collections of nine partner museums. (WP1)
- Developed, tested and published the MIMO Digitisation Standard. (WP1)
- Established technical specifications and guidelines to enable harvesting of data (WP2)
- Set up and successfully tested the automatic harvesting mechanism for the museums' databases (WP2)
- Developed a professional and publicly available web search interface to MIMO's database. (MIMO-DB) (WP2)
- Defined the list of access keys for the database (WP3)
- Identified the GeoNames database <http://www.geonames.org> as a source of geographical names; it was tested and subsequently adopted by the MIMO project (WP3)
- WP3 resolved to develop and revise the full version of the Hornbostel Sachs classification, and to add the electrophones class rather than to create a simplified version (as was originally identified in the DoW) since the full version would both be of greater use to the project and to the international community of musical instrument professionals, and it would be easier to work with (WP3)
- Compiled a list of over 1,300 musical instrument names and synonyms in French and English, including names for general public access. Before being finalised, the list was reviewed by target users who were academic researchers, instrument specialists and music librarians (WP3)
- Developed a web tool for the management, editing and translation of the MIMO WP3 vocabularies (WP3)
- Compiled a dictionary of musical instrument makers' names, comprising three subsets of names: Persons, Corporations and Families. 4396 names were identified and 592 rejected (WP3)
- Translated the French/English dictionary into four other languages: German, Italian, Swedish and Dutch, and more keywords and synonyms were added, amounting to over 2,000 instrument names (WP3)
- Established and agreed mechanisms for sound Project Management (WP4)
- Coordinated all aspects of day to day running of the project to ensure that all targets and milestones were successfully achieved and deliverables submitted (WP4)
- Maintained financial control of the project with regular monitoring of all partners' expenditure (WP4)
- Conducted a range of external and internal evaluations of project activity and output (WP5), including:

- Assessment of digital content
 - Interview based evaluation of MIMO–DB with external focus groups
 - Online evaluation of MIMO–DB with external focus group
 - Evaluation of Sub Focused Information – Digitisation, Harvesting and Classification
 - Internal evaluation of project progress, including financial review
 - External evaluation of the MIMO Digitisation Standards
-
- Established a range of promotional tools, such as a project website, web 2.0, flyers, newsletters, press pack etc. to facilitate communication within the project consortium and external promotion (WP6)
 - Successfully developed a sustainability model to ensure ongoing delivery of content to EUROPEANA for a minimum period of 5 years after the end of the project (WP6)
 - Established mechanisms to expand the online content by incorporating additional museums' collections into the MIMO database (WP6)
 - Began the process of longer term sustainability, beyond the 5 year period covered by the initial agreement (WP6)

5 Target Users & their Needs

- Within education, the content provided by MIMO, both via EUROPEANA and via MIMO-DB, can be used by school teachers, university teachers, student teachers, school pupils, and university students in preparation of their work and as visual illustration in their classrooms
- This content is of interest to both musical communities - musicians, ensembles, composers, instrumentalists - and geographical or ethnic communities, e.g. people from the countries where instruments were originally collected, to learn more about ancient forms of instruments or forms from other countries
- Journalists (Broadcasting, Television etc.) and editors will find this to be a valuable resource as it will greatly reduce research time to find appropriate visual material for their work
- Academic researchers and scholars (musicologists, organologists, etc.) will have their searches for comparable instruments and information greatly improved
- Music fans, amateur musicians, general interest users get information about musical instrument development, get background information to their concert experience and enjoy looking at and hearing unique objects
- Instrument collectors, instrument professionals (museums, curators, dealers, insurance) have the means for comparison and information about competent dialogue partners
- Instrument makers and instrument conservators will be able to search comparable instruments for their work and get in contact with the institutions which own them
- An output from WP 1, The MIMO Digitisation Standard, will act as a valuable tool for any photographer (amateur or professional) seeking advice on the photography of musical instruments

Evidence of the above was demonstrated throughout the project in a variety of ways, primarily through dissemination and evaluation. Because of the difficulties outlined in the section on WP2, no content was visible via EUROPEANA until September 2011, i.e. just after the end of the project. Testing has therefore focussed largely on the professional users, primarily via the work of WP1, through the photographers using the MIMO Digitisation Standard document (D1.1), and WP3 testing the revised Hornbostel Sachs classification of musical instruments.

Some groups of target users, as stakeholders in the MIMO project, were invited to critique the work of MIMO WP3 directly, as follows:

A target user group of instrument professionals, represented by the membership of CIMCIM (Comité international pour les musées et collections d'instruments de musique), the international committee for museums and collections of musical instruments of the International Council of Museums (ICOM) was invited to critique the updated Hornbostel Sachs classification when it was published on the website of CIMCIM in March 2010;

Target users in education and instrument professionals represented by a working group of IAML (International Association of Music Libraries) members and specialist instrument curators in British musical instrument museums were invited to review the WP3 deliverable, 3.2: a list of over 1,000 instrument names and synonyms in French and English, including names for general public access. Members of IAML in Britain and Ireland were also invited to review the classification of musical instruments (deliverable 3.1). The work of MIMO and the fact that the dictionary of instrument names

now encompassed four more languages, was promulgated to the international membership of IAML at their conference in July 2011, keeping these stakeholders informed of developments;

Academic researchers provided a valuable critique of the French/English dictionary (deliverable 3.2). These were a consortium of scholars in Portugal, including Lisbon's Museu da Música and the Centro de Estudos da Sociologia e Estética Musical (CESEM) in the Faculdade de Ciências Sociais e Humanas at the Universidade Nova de Lisboa, who were applying to the Fundação para a Ciência e Tecnologia (FCT) to create a bilingual Portuguese/English dictionary of music and musical instruments.

6 Underlying Content

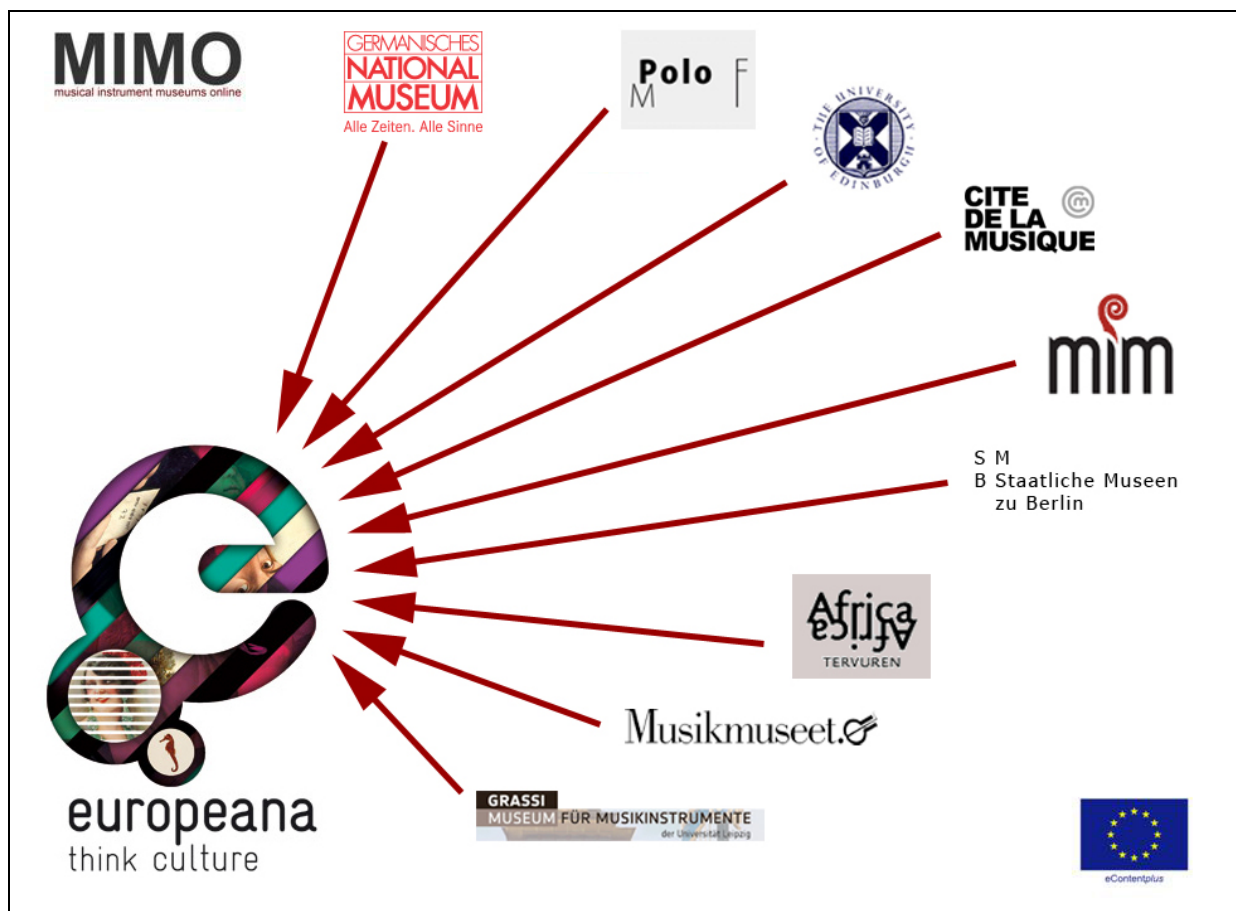


Figure 1: MIMO in EUROPEANA

6.1 Digitisation Figures and Targets

In the DoW, the following target figures are indicated:

- 45,000 images of musical instruments (DoW 6.1, success indicators, p. 69)
- 45,000 musical instruments digitised (DoW 6.1, success indicators, p. 69)
- 4,921 images of musical instruments (DoW 4.1, underlying content, pp. 9-13)
- 40,370 metadata records (DoW 4.1, underlying content, pp. 9-13)
- 1,768 audio files (DoW 4.1, underlying content, pp. 9-13)
- 307 video clips (DoW 4.1, underlying content, pp. 9-13)

While the figures for video clips and audio files are clear, there has been some confusion about the discrepancy between 40,370 metadata records and 45,921 images (i.e. the 45,000 figure from the DoW). The figures in the following overview have to be interpreted in the light of this fact.

6.2 Digitisation figures overview

By 2.8.2011, the draft outcome figures are:

1. No. of objects available through digital images	46,123
2. No. of digital images available	80,557
3. No. of sound files available	1,757
4. No. of video files available	308

The number of objects available through digital images corresponds to the number of musical instruments, where each instrument is represented by a metadata record. The initial MIMO consortium has provided 43,668 metadata records with images, which means a slight shortfall of approximately 3% compared to the figure of 45,000 instruments to be digitised, as indicated in the DoW. The reasons for this could not have been foreseen in the project development phase but are outlined below and in the individual digitisation reports contained in the combined *D1.6 and 1.7 – Final Digitisation Report*. (An updated public version of this report is attached as Appendix 1.) In order to meet the target, CM also harvested 2,455 records with 5,670 images from French museums, so that the final figure of 46,123 records with images now exceeds the initial goal of 45,000 instruments by approximately 2.5%.

Moreover, as the MIMO Digitisation Standard paper allows for recommended views, i.e. supplementary views which could be taken without disturbing efficient workflows, the total number of images of 80,557 now in MIMO-DB shows an increase of 79% compared to the target figure of 45,000. The goal for video files has been reached. There is a small shortfall for audio files of 11 which, in the opinion of the consortium, can be neglected.

6.3 Digitisation figures and revision of holdings

As indicated in several of the WP1 reports, digitising a collection of musical instruments requires a detailed review of all instruments held in that museum. In developing workflows for the digitisation aspect of the project, MIMO forced some partner museums to conduct a full audit of their collections for the first time in decades, in order to gain an accurate knowledge of all the instruments which constituted their holdings.

During this revision process, two contrary tendencies – increase and reduction of predicted figures – were observed.

The most common reasons for reduced figures were:

- Lost instruments, especially during the Second World War, but not clearly reported as such in the written inventories or of not yet known number
- Non accessible objects, e.g. because of harmful contamination not previously known
- Items counted as instruments in the overviews, but which turned out to be parts rather instruments

Reasons of increased figures were:

- Instruments thought being lost, but which surfaced during the digitisation process
- Instruments not yet inventoried, but were subsequently included in the digitisation process
- Instruments acquired during the project's lifetime and digitised on the fly

These tendencies did not occur equally across the partnership but were spread, to varying degrees, over the different institutions. At the start of the project, some partners did not possess an adequate database containing all of their objects. The project enabled these museums to overcome this deficiency, so that the different records of instruments are not only easily accessible, but also represent (for some institutions for the first time in a century) an accurate record of the musical instruments in their possession.

6.4 Success indicators and critical mass

One challenge in the forerun of the project was to define a critical mass. In the project proposal and the DoW, this was done by comparing the MIMO target figures with figures for European museums against the rest of the world through the International Directory of Musical Instrument Collections on the website of [CIMCIM](#).

At the end of the project, criteria for a critical mass can be much more precisely defined on the basis of fruitful results for sustainability. The sheer number of digitised objects as a quantitative criterion has to be completed by qualitative criteria which turned out to be of great importance. These are:

- Quality of the collections digitised
- Quality of the digital images, sound and video files as well as the metadata records
- The added value of aggregation
- The reputation of the project partners

The efforts of the partners to maintain the MIMO-DB services for another five years and the enormous interest of ICOM-CIMCIM as the main access partner to musical instruments collections worldwide to negotiate a sustainable future partnership, as well as new partners delivering their data (e.g. the French museums) or preparing for joining the consortium (e.g. Musikinstrumenten-Museum der Stiftung Preußischer Kulturbesitz Berlin)² as soon as possible prove that a critical mass in terms of quantity and of quality already has been reached, even though there was a slight shortfall in the total number of objects, as mentioned above.

6.5 Dictionaries and Thesauri

In addition to the digital content, over 2,000 names for musical instruments were identified for the multilingual dictionary compiled by MIMO WP3, in French, English, German, Italian, Swedish and Dutch.

Each musical instrument record in the database had to include a musical instrument keyword from the common web tool, to promote consistency in nomenclature.

MIMO WP3 compiled a dictionary of musical instrument makers' names, comprising three subsets of names: Persons, Corporations and Families. 4396 individual names were identified. MIMO WP3's revised version of the Hornbostel Sachs classification of musical instruments includes over 500 classes of musical instruments, with over 50 new classes of Electrophones.

² Stiftung Preußischer Kulturbesitz is the parent organisation of the Ethnological Museum in Berlin, MIMO partner short name SPK.

7 Summary of Activities

7.1 Digitisation

Digitisation was the work of WP1, led by GNM. The two main outcomes were:

- The digitised objects with their images, video files, audio files and metadata, delivered to the aggregator MIMO-DB at CM.
- The MIMO Digitisation Standard.

The results of the digitisation element of WP1's activity are given above in **Section 6 - Underlying Content**.

7.1.1 The MIMO Digitisation Standard

Unlike artwork such as paintings or sculpture, musical instruments in their capacity as ergonomically designed tools rarely have an established way of visualisation. In everyday life, they are seen in different positions from different angles, depending on if they are viewed by a musician, by the public or in a museum showcase. To make all forms of musical instruments clearly distinguishable and comparable, there was a need to provide recommendations on how to photograph them and how to digitise analogue audio and video sources, as well as pre-existing analogue images such as slides and prints, in order to ensure sufficient quality for future preservation and presentation.

One of the key objectives of the project was therefore to establish a set of standards for digitising musical instruments and to create a document containing recommendations for the photography of musical instruments and defining scanning properties. This work was undertaken through WP 1.

Following research into worldwide common de facto standards for the photography of musical instruments, based on several thousand individual images in printed and online sources, staff at the Germanisches Nationalmuseum, Nürnberg (GNM) prepared a draft for The *Definition of Scanning Properties and Recommendations for Photographing Musical Instruments - Version 1* – (Deliverable D1.1 in the DoW), hereafter referred to as the **MIMO Digitisation Standard** paper. This was circulated to the members of WP1 digitisation for consultation and was then discussed, corrected, refined and unanimously agreed upon by the WP1 members at its meeting on 28 October, 2009 at GNM. The document was then submitted as D1.1

The WP1 members also agreed to continue to enhance version 1 by adding further refinements concerning more specific types of instruments, sharing technical solutions developed for photographing certain types of instruments in an efficient manner and contributing these to a pool of technical tips in order to collate examples of best practice. This continuous process led to two further versions of this document, with Version 3 (D1.8) made publicly available at the end of the MIMO project. The final version 3 (*Deliverable D1.8, submitted in M23*), includes results from an external online survey led by WP5 among members of ICOM-CIMCIM and was entirely redesigned to increase its usability. This final version is also available as a PDF-Download as a part of the MIMO-Toolkit in order to assist new content providers in the digitisation of their collections.



Figure 2: The MIMO Digitisation Standard

The MIMO Digitisation Standard was used by all partners during their digitisation sessions throughout the project and proved to be an extremely valuable tool, especially in photographing musical instruments.

7.2 OAI Harvesting, Database Development and EUROPEANA Interoperability

This work was led by CM, lead partner for WP2 and as indicated in the DoW, the work of this group was to:

“Create a technical platform that will aggregate metadata related to musical instruments in public collections to provide EUROPEANA with normalised data, using OAI-PMH Harvesting, and digitised documents such as images, audio and video files.”

WP 2 was led by the Cité de la Musique, in Paris. Over the two year period all objectives of this work package were achieved successfully. The technical platform indicated in the DoW, was referred to by the project as MIMO-DB and this is now publicly accessible through the URL - <http://www.mimo-db.eu>. No username or password is necessary to access MIMO-DB.

MIMO-DB contains the harvested metadata from the nine partner museums that contributed digital content, a search interface through this metadata, links between harvested records (enriched records) and WP3 vocabulary, as well as links to instrument images, sound and video files.

A resumé of the work done in this area since the beginning of the project follows.

7.2.1 Metadata Harvesting

MIMO's harvester is up and running, hosted on a specific server at the Cité de la musique, in Paris. The harvesting mechanism uses OAI protocol to gather metadata from data providers' repositories.

The complete OAI-PMH specifications have been implemented. A specific graphic interface was designed to allow an administrator to quickly set up new data sources, data sets to be harvested, type of harvesting (complete or incremental) and frequency of harvesting.

The harvesting mechanism is now fully automated and each partner's repository will be periodically harvested in order to retrieve any modification of its content.

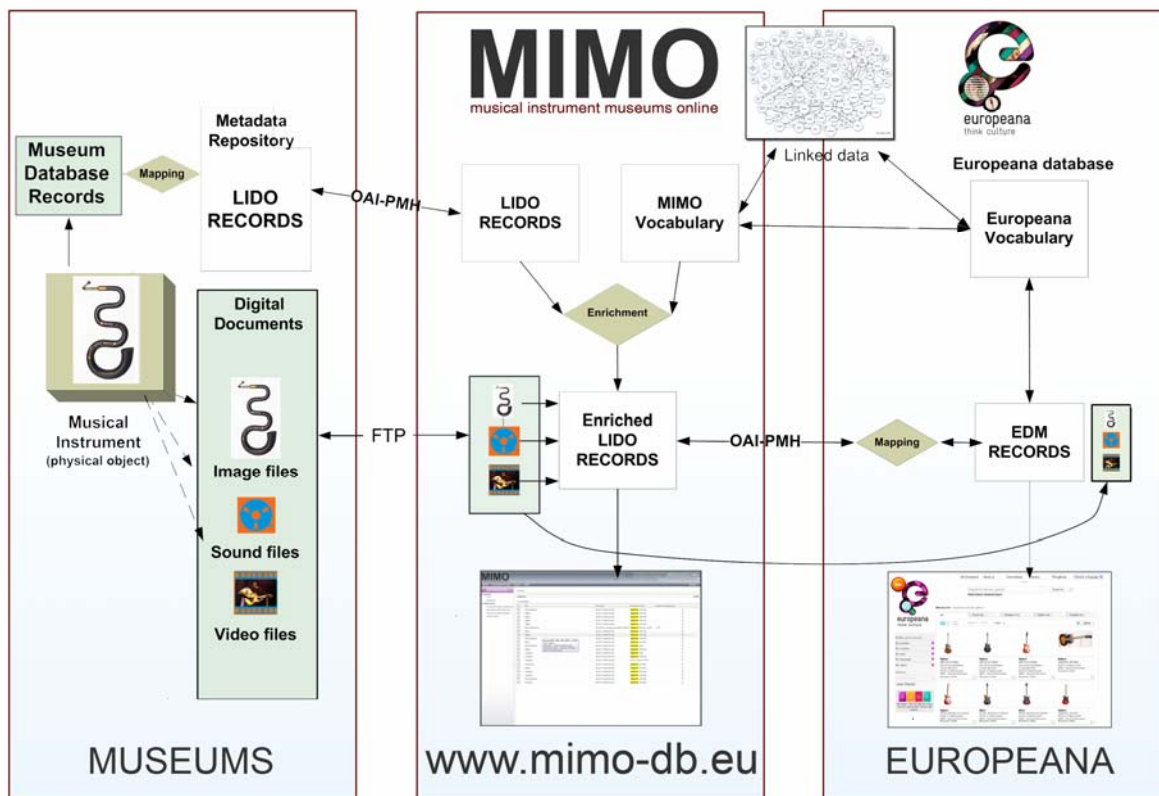


Figure 3: The MIMO harvesting process

The repositories of the nine museum data providers have been implemented and are fully operational.

These partners are:

- Cité de la musique (Paris, France)
- Galleria dell'Accademia (Florence, Italy)
- Germanisches National Museum (Nuremberg, Germany)
- Musical Instruments Museum (Brussels, Belgium)
- Musik & Teatermuseum (Stockholm, Sweden)
- Royal Museum for Central Africa (Tervuren, Belgium)
- Stiftung Preussischer Kulturbesitz (Berlin, Germany)
- University of Edinburgh (Edinburgh, United Kingdom)
- University of Leipzig (Leipzig, Germany)

In addition, smaller collections which were not originally part of the project have been added to MIMO-DB, either as subsets of existing repositories or as independent repositories. These new collections come from the following institutions:

- Musée Arlaten (Arles, France)
- Musée Auguste Grasset (Varzy, France)
- Musée de la Castre (Cannes, France)
- Musée de la lutherie (Mirecourt, France)

- Musée de la musique mécanique (Les Gets, France)
- Musée de l'Hospice Comtesse (Lille, France)
- Musée des instruments à vent (La Couture-Boussey, France)
- Musée des instruments de musique (L'Aigle, France)
- Musée des musiques populaires (Montluçon, France)
- Musée du palais Lascaris (Nice, France)
- Pôle Accordéons (Tulle, France)
- Norwegian Museum of Cultural History (Oslo, Norway)
- Nydahl Collection (Stockholm, Sweden)

MIMO-DB now contains more than 50,815 records (i.e. 50,815 musical instruments descriptions). Detailed figures are given in the table in Appendix 2, along with the total number of digital documents.

7.2.2 Web Tools

Web interfaces were developed in order to help the online and collaborative management of WP3 multilingual vocabulary (Instrument makers, Instruments keywords, Professional Classification). All of these tools are fully operational and available through MIMO-DB.

The management of geographical information is based on an external geographical thesaurus: "[GeoNames](#)".

Interfaces have been implemented to improve the management of instruments makers, so it is now possible to create, add, modify or delete any information about an instrument maker through MIMO-DB.

7.2.3 Metadata enrichment

When an instrument record is harvested, a "record enrichment" process takes place before importing that record into MIMO-DB. During this process, the system tries to establish links between MIMO's vocabulary and the specific fields of the LIDO record. In this way, records coming from each of the museums use the same vocabulary (authorities) in MIMO-DB. This enables powerful multilingual search implementation in both MIMO-DB and EUROPEANA.

A specific linking algorithm has been developed for each vocabulary:

- Instruments makers (people/corporate/family)
- Keywords and Hornbostel Sachs classification
- Geographical locations (using Geonames)

The vocabulary can be located in MIMO-DB or anywhere in the Internet through linked data (this is the case with Geonames).

If the system fails to establish a link between a record and the specific vocabulary, an error or warning message (depending if the link was mandatory) shows up on the corresponding harvesting/enrichment report. All partners have access to the reports generated for the harvesting and enrichment of their own metadata.

7.2.4 Images, Sound and Video File Transfer

An FTP repository was set up for each of the partners. During this phase of the project, it was simplest for each partner to "manually" upload huge amounts of image, audio and video files to MIMO-DB. All partners have uploaded their digital documents. At the time of writing, MIMO-DB contains 81,172 images, 1,510 audio files and 149 video clips.

7.2.5 Metadata and Vocabulary to EUROPEANA.

A huge amount of work was done in order to develop the mapping between LIDO and EDM (EUROPEANA Data Model). (See [D2.3](#) for more information a revised version is attached as Appendix 3).

At the start of the project EUROPEANA worked with an XML schema known as ESE – European Semantic Elements. Midway through the project EUROPEANA changed this to EDM, the EUROPEANA Data Model, causing technical difficulties for all projects working at that time. Between March and June 2011 we worked on mapping without having any EDM schema. An XML schema (XSD) was released in the end of June. We then had to adapt our previous work to this schema. By the middle of July we were ready to be harvested by EUROPEANA, using EDM, in RDF/XML format. At that time, EUROPEANA told us they were not ready to get EDM data. So we used an EDM to ESE mapping, and were finally ingested by EUROPEANA on the 15th September 2011.

At the time of writing, EUROPEANA contained 43,478 MIMO records in ESE format.

We are fully prepared for future development by EUROPEANA in the next few years, as our metadata is already available.

Each of the records has a URI in MIMO-DB, here are some examples :

- <http://www.mimo-db.eu/UEDIN/5710>
- <http://www.mimo-db.eu/ULEI/M0001638>
- <http://www.mimo-db.eu/GNM/692612>
- <http://www.mimo-db.eu/CM/0157419>
- <http://www.mimo-db.eu/AF/IT-DSMFI-STR0001-0000061>
- <http://www.mimo-db.eu/SMS-MM/M2592>
- <http://www.mimo-db.eu/RMAH/118445>
- <http://www.mimo-db.eu/SPK/obj-16198>
- <http://www.mimo-db.eu/RMCA/BE-TEN00-MO.1953.74.4070>

To isolate these records from the others in EUROPEANA, “enter europeana_collectionName: 09102*” in the search field of www.europeana.eu

In addition to the metadata, the Vocabulary (Keywords and H&S classification) and Instrument Makers is available in the web of data, to EUROPEANA but also to the rest of the world, using Linked Open Data technology.

Technically, it means that each term has URI, and this URI provides HTML descriptions of the term, as well as RDF/XML versions depending on the request.

Here are some examples:

- <http://www.mimo-db.eu/InstrumentsKeywords/2232>
- <http://www.mimo-db.eu/InstrumentMaker/Person/2889>
- <http://www.mimo-db.eu/HornbostelAndSachs/2168/423.232.2>

7.3 Thesauri and Classification

As outlined in the DoW, the aim of the work in this area (WP3, led by HML) was to exploit the unique opportunities offered by the project partnership of museums to define and deliver dictionaries for controlled vocabularies for musical instruments databases, ensuring consistency of nomenclature for musical instruments within a multilingual framework comprising the following languages: French, German, Italian, Dutch, Swedish and English. It was intended that three vocabularies would be developed, each one for a different sort of access. The dictionaries created by the WP would then be applied across the board to the metadata for all the instruments in the project by the museums.

It was also intended that this group would also undertake the task of reviewing EUROPEANA Music themes, and those that provided social contexts and events which could be linked to object records in order to enrich them. Conversely, EUROPEANA themes would be animated by the MIMO project outputs: that would include sound and video recordings, images and object records.

7.3.1 Outcomes

A web tool for the management, editing and translation of the MIMO WP3 vocabularies was developed by the Cité de la musique in Paris. This web tool was designed by adapting a commercial product (Idesia: a thesaurus management product) to the specific needs of MIMO. This tool simultaneously manages the Hornbostel Sachs classification (*Deliverable 3.1*) and the dictionary of musical instrument keywords (*Deliverables 3.2 and 3.3*), which now exists in six languages: French, English, German, Italian, Dutch and Swedish.

As a thesaurus management tool, it allowed the MIMO consortium partners to create, modify or delete terms. The MIMO web tool already describes nearly 500 classes from the Hornbostel Sachs classification and over 2,000 instrument names in the dictionary of musical instrument keywords. The tool manages the links between a keyword and the corresponding Hornbostel Sachs classes, and over the life of the project a considerable amount of work was undertaken to link new keywords with the classification. The web management tool is collaborative: it allows to each museum to make online the translation of the instruments' keywords in its own language.

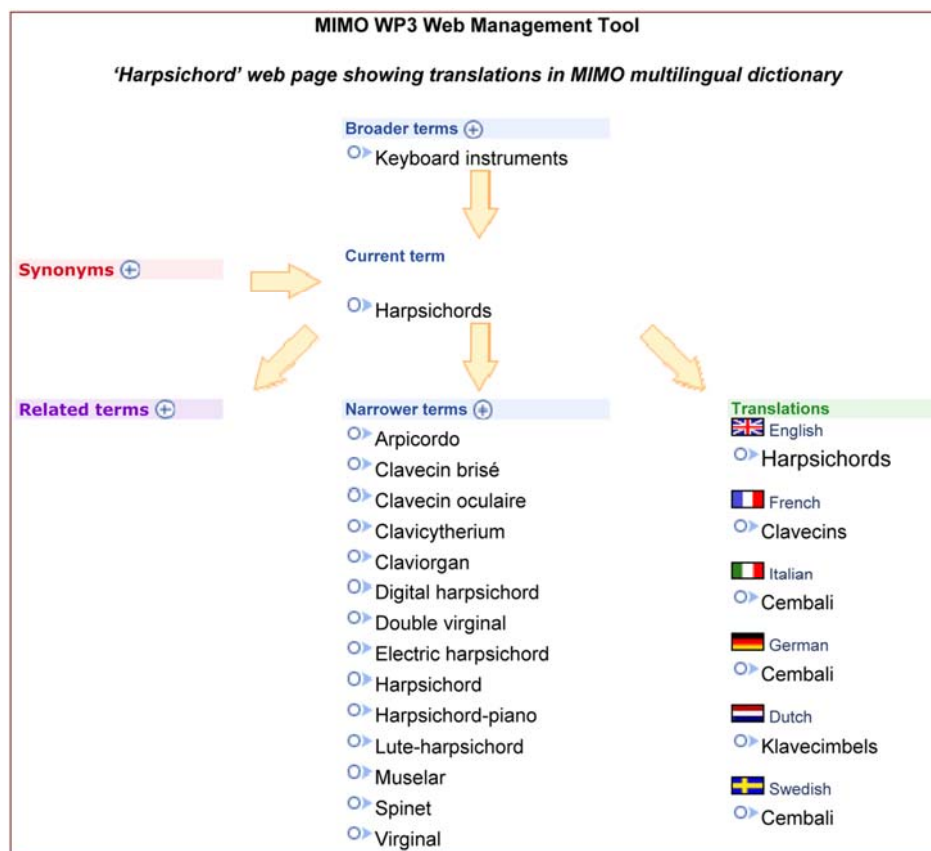


Figure 4: MIMO WP3 Web Management Tool

In the DoW, Task 3.3 specified that MIMO would define a simplified model of the Hornbostel Sachs classification for professionals (deliverable 3.1). The Hornbostel Sachs classification is the standard classification scheme for musical instruments and it identifies instruments through a numbering system, i.e. equivalent of a library classification for books.

In December 2009 MIMO WP3 agreed to utilise the full version of the Hornbostel Sachs classification³, rather than to develop a simplified version. The working party arrived at this decision because:

- The full version was already a de facto international standard
- It was easier to work with, provided deeper knowledge of musical instruments
- Had wider applicability to the global community of organologists and the public at large than a reduced version

The deciding factor in arriving at this resolution was that the Hornbostel Sachs classification had moreover been fully revised by the scholar Jeremy Montagu in 2009⁴, with amendments to most of the anomalies of the original version that was published in 1914, and it is Montagu's version that MIMO WP3 has used as the basis for their own revisions. A significant change to this, however, was that MIMO has added a new class of instruments to the Hornbostel Sachs classification, that of electrophones, instruments producing sound through an amplifier and loud speaker. This group of musical instruments did not exist at the time the original classification was devised. Most of the work in creating this new section was carried out by MIM-BE.

Experts outside the consortium gave assistance and advice on the electrophones section, namely Dr Tim Boon, Head Curator of the Science Museum in London and Professor Clive Greated of the University of Edinburgh.

MMO WP3 has also developed dictionaries of musical instrument makers' names (*Deliverable 3:4*), comprising three subsets of names: Persons, Corporations and Families. The two screenshots below show the MIMO database link between the list of instruments by Antonio Stradivari in consortium members' museums (*Fig. 5*) and a typical catalogue description, that of the guitar by Antonio Stradivari in the collections of the Cité de la musique. (*Fig. 6*)

The screenshot shows the MIMO database search results for the query 'stradivari'. The interface includes a search bar, navigation links, and a table of results. The table has columns for Title, Repository, Instrument maker, and Date of manufacturing. The results list various instruments such as Violon, Demi violoncelle, Guitare, Pochette, Contalto, Tête de viole, Alto, Violon 'le Tux', Violon 'le Provigny', Violon 'le Sarasate', and others, all attributed to Antonio Stradivari or related makers.

Title	Repository	Instrument maker	Date of manufacturing
Violon	Musée de la Lutherie et de l'Archeterie (Lotte, Georges	1934
Demi violoncelle	Musée des instruments de musique (L'A	Stradivari, Antonio	
Guitare	Musée de la musique	Stradivari, Antonio	1711 ?
Pochette	Musée de la musique	Stradivari, Antonio	1717
Contalto	Musée de la musique	Vuillaume, Jean-Baptiste	ca. 1850
Tête de viole	Musée de la musique	Stradivari, Antonio	début 18e
Alto	Musée de la musique	Gand et Bernardel frères, (fn	1967
Violon "le Tux"	Musée de la musique	Stradivari, Antonio	1708
Violon "le Provigny"	Musée de la musique	Stradivari, Antonio	1716
Violon "le Sarasate"	Musée de la musique	Stradivari, Antonio	1724
Alto	Musée de la musique	Falaise, Georges	vers 1800
Alto	Musée de la musique	Silvestre, Hippolyte Chrétien	1888
Alto	Musée de la musique	Vuillaume, Jean-Baptiste	1829
Violon dit le longuet	Musée de la musique	Stradivari, Antonio	vers 1692
Luth "ud"	Musée de la musique	Nahat, Georges	1931
Violon	Musée de la musique	Lupot, Nicolas	1803
Alto	Musée de la musique	Bernardel, Auguste Sébastier	1834
Alto	Musée de la musique	Derazey, (atelier)	1850-1860
Violon "le Davidoff"	Musée de la musique	Stradivari, Antonio	1708
Violino piccolo	Museum für Musikinstrumente der Unive		nach 1722, vor 1743
Gitarre, Model "Strad"	Museum für Musikinstrumente der Unive	Jacob, Richard	1950
Violine	Museum für Musikinstrumente der Unive	J. H. Zimmermann	1900-1910
Violine	Museum für Musikinstrumente der Unive	Müller, Walter	1989
Drei-Viertel-Violine	Museum für Musikinstrumente der Unive		1880-1920

Figure 5: List of instruments by Antonia Stradivari in MIMO museums

³ Erich M. von Hornbostel and Curt Sachs. 'Systematik der Musikinstrumente. Ein Versuch'. Zeitschrift für Ethnologie Jahrgang 1914, Heft 4 u 5., pp.554-590, translated as 'Classification of Musical Instruments', by Anthony Baines and Klaus Wachsmann Galpin Society Journal XIV, 1961, pp.3-29

⁴ Jeremy Montagu, 'It's time to look at Hornbostel-Sachs again', Muzyka 2009, 1, pp.7-27

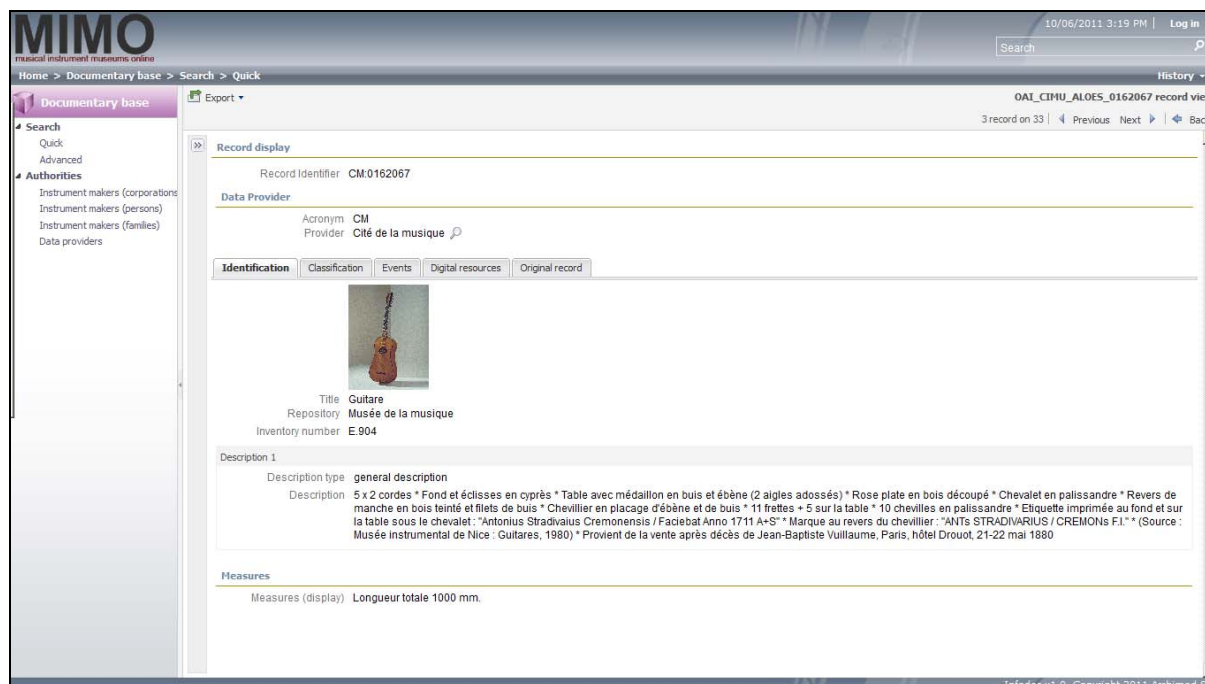


Figure 6: Catalogue description of the guitar by Antonio Stradivari in the collections of the Cité de la musique

Following EUROPEANA's recommendation that a thesaurus for geographical names should be made available through linked data, and that MIMO should not maintain its own thesaurus, MIMO has adopted the GeoNames database as its source: <http://www.geonames.org>. As a registered user, MIMO has had the remit to manually edit, correct and add new geographical names.

The resources assembled by the project are available here: <http://cimcim.icom.museum/uymhs03.pdf>

The dictionaries of instruments and makers are integrated into the MIMO database: <http://www.mimo-db.eu>. This interface will remain live and will be further developed, post project.

The MIMO content is now available through www.europeana.eu.

7.3.2 EUROPEANA Themes and Social Contexts

Although this was originally indicated as a task for WP3, the work of reviewing EUROPEANA Music themes, and those that provided social contexts and events which could be linked to object records in order to enrich them became a focus for a subgroup led by UEDIN and CM, which combined elements of WP6, with input from all partners in the development of the virtual exhibition “**Explore the World of Musical Instruments.**” This activity is described in detail in the section on WP6 below.

7.4 Project Management

Work in this area was led by UEDIN and, as indicated in the DoW, the main focus its task was:

“To ensure efficient overall management of the project. A robust and well defined management structure, with a clear breakdown of responsibilities is central to the success of the MIMO project. This is especially important given the geographic spread of both staff and project partners, the limited timescale of the project and the scale of the tasks therein.

Led by the University of Edinburgh, this WP will ensure the technical and legal compliance of the consortium in its contract with the Commission; manage overall the finances of the project; ensure that the consortium is effectively managed and coordinated internally in order to optimise its performance, meet its objectives and produce its agreed deliverables; assure the overall quality of the work of the

consortium and the fitness for purpose of its deliverables.”

Management of the project, led by UEDIN (WP4) was undertaken according to the structure agreed in the DoW and formally adopted at the Kick-Off Meeting in Florence, in September 2009. The purpose of that meeting was to formally launch the MIMO project and to discuss the internal working practices that would be adopted by the consortium to fulfil its aims and objectives. The main focus was to agree to the guidelines drawn up in the MIMO Manual (a process and management tool for the project) prepared by the UEDIN team in advance of the meeting, including:

- Project finances: reporting, guidelines etc.
- Reporting procedures
- Grant agreement and Description of Work
- Meetings and communication

The manual, with some amendments agreed in Florence, was adopted by the group and adhered to throughout the project. Printed copies were issued to each partner and an amended version was posted to the project website. This document was also attached as an Appendix to the Year 1 Annual Report

There were seven scheduled Project Steering Group (PSG) meetings over the two years of the project, along with a programme of WP meetings structured around these sessions. A number of extra WP meetings were set up as required. (*See Appendix 4 for full list*). For example, due to staff illness at HML and SMS-MM, two further meetings were arranged between the Project Manager and those museums in order to cover aspects of work missed by those staff unable to attend full PSG sessions.

Attendance at PSG meetings was mandatory and each one worked to very strict timetables and pre-agreed agendas in order to maximise the value of the sessions. Project activity for the next quarter was discussed at each PSG, then set out and circulated in an Action Log.

A Consortium Agreement was developed by the legal team at UEDIN and a draft presented to the PSG in Brussels in April 2010. Thus then underwent several modifications before the final version could be agreed but and signed by all partners in Year 1 of the project.

In addition to the financial monitoring requested by the European Commission the management team asked all partners to complete interim internal financial reports in M6 and again in M17 in order to monitor expenditure and identify potential areas of over or underspend.

The Project Management Team also conducted a major internal evaluation of the project at the mid project meetings in Stockholm in October 2010, including 1:1 sessions with each partner, in order to discuss individual partners' progress and any issues of concern. A key focus of these sessions was also to discuss the issues raised at the European Commission's mid project review held in Luxembourg in September 2010 and ensure that measures were put in place to address these concerns. The outcome of this activity was described in detail in *D5.6 – Final Evaluation Report*.

WP4 liaised well with the European Commission throughout the project, keeping the Project Officer informed of any changes to the structure of the programme or submission of deliverables. There was some loss of continuity towards the end of the project, with a change of Project Officer in M20 of the project.



Figure 7: Members of the MIMO Partnership at the final PSG meeting in Edinburgh, July 2011

7.5 Evaluation and Assessment

As anticipated in the DoW, performance measurement and evaluation was central to the success of the MIMO project. Without this the project would not have achieved its objectives. Many of the tasks within the project were based around meeting interdependent targets, so within the structure of the work packages, ongoing performance measurement was necessary to move through the agreed schedule. In some areas measuring performance was based on achieving quantity, for example in harvesting the agreed numbers of digital images on time, while in others it was either about achieving functionality or technical standards.

Evaluation was the focus of WP5, led by RMCA, and the aim was to ensure that the project developed in accordance with the needs of the target users, the consortium members and EUROPEANA. Through systematic monitoring, carried out at regular intervals over the life of the project, assessment and evaluation shaped the direction of the work to ensure that all those needs were met.

Within WP5 there were seven deliverables. As reported to the European Commission's Project Officer, there was some deviation from the schedule and content of deliverables as stated in the DoW, reflecting changes to the way in which the project had evolved over its lifespan. The first four deliverables were very task focussed on work, as outlined in the DoW, but in the process these reports did not really take into account the fact that a significant amount of evaluation work was undertaken, not by WP5, but by each of the other work packages as they undertook ongoing internal assessment. The latter activity was reviewed within the WP and Project Steering Group Meetings throughout the life of the project and focussed the direction of activity within each area.

With hindsight it was perhaps a failing of WP5 not to integrate this information into its written reports and rather to resolutely adhere to the wording of the DoW for the direction and content of its deliverables. Within the partnership, a criticism levelled at WP5 was that it did not interact sufficiently with the whole group in carrying out its work outside of the scheduled formal meetings, resulting in a lack of clarity about how to approach evaluation, particularly in the early stages of the project. This is perhaps reflected in the quality of the output from that WP.

Nevertheless, the fact that so much evaluation work was carried out was one of the project's strong points and without it we most certainly would not have progressed in the manner we did. All meetings worked to very tight agendas, with critical discussions setting clear targets for the next working period and progress on this activity closely monitored at the following meeting. The consensus among the partners was that the Management Team maintained very strict control of the project but that this proved beneficial to the day to day running of the operation.

It should be noted that due to the retirement of Ignace de Keyser of RMCA, there was some break in the continuity for WP5, as no one else in that organisation picked up the role of WP5 leader. The final two deliverables were completed by Norman Rodger, Project Manager.

7.5.1 The Role of Associate Partners in Evaluation

One of the tasks of WP 5 was to establish external focus groups, including the four associate partners – [Musikmuseet, Copenhagen](#) (DK); [Technisches Museum, Wien](#) (AT); [Pokrajinski Muzej, Ptuj](#) (SI) and the [Palais Lascaris-Musée de la musique de Nice](#), Nice (FR) in order to undertake sample tests at four month intervals (M17-M21).

Although attempts were made to establish these groups, these were not entirely successful, as two of the partners - Technisches Museum, Wien and Pokrajinski Muzej, Ptuj offered very little feedback throughout the project, despite being kept abreast of all developments through mailing lists. Input from the other two partners was of more value however, with regular feedback and attendance at the final two PSG Meetings. In addition, the Palais Lascaris-Musée de la musique de Nice took on a more active role through the inclusion of its digital content as one of the smaller collections which were not originally part of the project but were added to MIMO-DB. Of greater significance, was the input from Copenhagen, both through the named contact Ture Bergstrom, who attended the penultimate PSG meeting in Florence, in May 2011 and contributed to the development of the MIMO Toolkit, and latterly Lisbet Torbet, not least as she became President of CIMCIM during the life of the project.

7.6 Dissemination and Awareness

The objectives for this area of work were:

- To effectively disseminate information about the project to interested target groups (specialists, higher education, industry) as well as the general public
- To define, identify and aggregate new participants
- To create a business plan and exploitation plan
- To address project maintenance and sustainability after EU-funded phase

Dissemination activities, the focus of WP6, led by SPK in Berlin, can be split into two key areas:

- Online activity – via the project website and the use of Web 2.0 resources
- Traditional methodology, consisting of dissemination via presentations, leaflets, and promotion via the media

7.6.1 Web-based dissemination

Web-based dissemination was based around the project website, newsletters and several Web 2.0 tools, the most popular one being Facebook. MIMO generated a large user group, principally due to the website and the Facebook page.

7.6.1.1 Project Website

The MIMO website - www.mimo-project.eu - was constructed by the WP6 team using the Drupal CMS system. Led by SPK in Berlin, working closely with the Project Coordinator Norman Rodger (UEDIN) it was based on a concept that had been agreed at a development meeting in Berlin in September 2009. A basic version of the site was posted immediately after the launch of the project, with additional content added over the next seven weeks.

The public site offered information about the project and its consortium in the six languages of the partnership – English, French, German, Dutch, Italian and Swedish. It was used to distribute news and announcements, informing about upcoming and past events, share media coverage and display public results. All project partners contributed content to the site.

The site was regularly reviewed throughout the project, in response to user feedback (both internal and external) and new features were added, while others were removed. For example, a forum was set up in the early months of the project as a means of creating interactive communication between partners and the public audience but as this did not prove especially popular it was quickly removed. In general, feedback tended to be given via email.

In order to maintain interest in MIMO during the development phase, especially as no content was scheduled to be visible on EUROPEANA for most of the project's lifespan, an online gallery was created to give the public a taste of the partners' collections and to make the project website more visually appealing. This included more than 400 photos of musical instruments from all partner's collections, along with supporting metadata. A randomly changing thumbnail image of an instrument from the Gallery appeared on the right of the home page of the MIMO site: this could be viewed in detail by clicking on the thumbnail. This was further enhanced by the addition of images on the Facebook page and via the virtual exhibition.

User statistics for the website are included in *D6.14 – Final Dissemination Report and Exploitation Plan*.

7.6.1.2 Internal communication

In addition to the public interface, a secure internal section of the website was set up for the project partners containing administrative documentation on the project, e.g. minutes, reports, deliverables etc. as well as discussion boards on particular issues.

Partly because partners preferred to use established channels like email or mailing-lists for internal communication and also because of recurring technical problems, the internal site was withdrawn at the end of the first year of the project. As an alternative, a separate file repository for storing and exchanging documents was set up at http://ff.mimo-project.eu/file_browser with a back up repository stored on the CM server in Paris, accessible via FTP.

At the beginning of 2011 SPK requested that each partner should identify a single dissemination contact person in order to simplify communication concerning WP6 between the WP leader and the partners. The idea was presented and accepted by the partners at the MIMO meeting in London March 2011. The idea proved successful, with communication becoming much easier and time efficient after that, as SPK was then able to directly address the correct person.

7.6.1.3 New MIMO Website

As outlined below in the section on Sustainability (*see section 8 below*), MIMO will continue to maintain an online presence after the end of the project.

At the end of the project, responsibility for the MIMO website passed from SPK to UEDIN and it will be their role to develop and maintain a new website for the post project period. The new site will not only inform visitors of the work of the MIMO project but, more importantly, will become the focus of post project dissemination. As the site will be linked to MIMO-DB, with full search capability, it will also be seen as the first step towards the creation of a MIMO portal, one of the longer term objectives of our Level 2 Sustainability plan. This will be critical if we are to encourage any non European museums to add their collections to MIMO-DB, since this material will not be visible via EUROPEANA.

The need for a new site grew out of presentations to CIMCIM in August 2011 and discussions with a number of delegates. At a meeting of the Sustainability Sub Group in Paris, it was agreed that in addition to content being visible through EUROPEANA, we urgently need a website that allows access to the MIMO content only. Not much can be done with the look and interactivity of the MIMO-DB site, so it was decided that a new site with full search capability should be created. As this site will be used for ongoing dissemination and growth of MIMO post project, we need to develop something quickly.

The consensus was that while we will still explore longer term development of a MIMO portal, MIMO-DB is currently the site that will be used most in the immediate post project period (particularly by the professional user) and, as such, it is not suitable as the key online legacy of the project. There is a high risk that, in its present form, it will only be used by a very small number of people, as its appearance and usability will not engage a wide audience.

For post project dissemination and particularly in terms of attracting new museums to add content we need a new site that is visually appealing and easy to use.

It was agreed that CM will approach an external graphic designer that they have used before to explore the design element and the team that worked on MIMO-DB to discuss the back-end work.

For the design it was agreed that the overall look needs to be clean, uncluttered and visually appealing as the key aim is to make an attractive and easy to use site.

7.6.1.4 The Home Page

The home page should contain links to MIMO-DB, the MIMO Toolkit, EUROPEANA, Facebook, Twitter, CIMCIM and ICOM. The current MIMO site should automatically redirect to the new one, as sub pages will include background on the project. We may also have to consider whether we incorporate the content of the MIMO Toolkit into the new site and also redirect visitors from that one.

The home page should also include a list (or link to one) showing all contributing museums, with links back to their home sites. It should be a condition of participation that all museums reciprocate with a “contributor to MIMO” icon.

A counter displaying the number of records in the system should be prominent on the home page.



Figure 8: Draft layout for new home page

7.6.1.5 Search Capability

There should be only one search box on each page. Searching should still be by one of two options - simple or advanced – but the terminology on advanced search process (e.g. Event) needs to be reviewed. The current version uses too much LIDO terminology and this wording is not clear to a wide user group.

Search results should display:

- A thumbnail image of each instrument - this should be in the first column on the left of the screen
- Place of manufacture
- The English keyword – this will be of growing importance as new languages are added to the system

We also need to review how records are displayed as the variable metadata and number of images per instrument currently mean that there is no consistency in the display of information. It was suggested that we use the mandatory image as the one first displayed, with thumbnails to alternatives at the bottom of the record.

At the time of writing, development on the new website is at an early stage but a prototype home page has been designed, see figure 1 above.

7.6.2 Web 2.0

In recent years, social media has become increasingly important, both as a means of person-to-person communication and for promotional purposes. A sub group of WP6 attended the EUROPEANA Communications Group presentation on Web 2.0 at their meeting in Edinburgh in April 2010 and agreed to experiment with a range of tools, this included: Facebook, Twitter, YouTube, Flickr and Voicethread. The main focus of this work was to try and reach a broader public.

Twitter and Voicethread did not prove especially successful and after review were both discarded. The consensus was that Twitter required a regular and frequent input, which not only made the tool labour intensive but, given the (scheduled) lack of visible online progress on the project, not especially appropriate for our needs. [Voicethread](#) was used as a means of creating interactive online displays such as a mock-up of how our content would appear in EUROPEANA but, possibly because it requires users to register before comments can be made, proved to be of very limited value.

An early attempt at creating an online gallery via [Flickr](#) was used to showcase instruments and generate feedback. However, there was some resistance within the partnership because of internal copyright regulations within museums, so this was dropped in favour of the Gallery on the project website.

Evaluation showed that usage of these tools fluctuated according to the level of content being posted by the MIMO team. For example a link to the [YouTube video](#) created about the photography sessions at the University of Edinburgh, with a link posted on **Facebook** proved to be very popular, with over 150 views of the film in the space of a few days. The lesson appears to be that in order for Web 2.0 tools to work they require new and interesting content to be added on a regular basis.

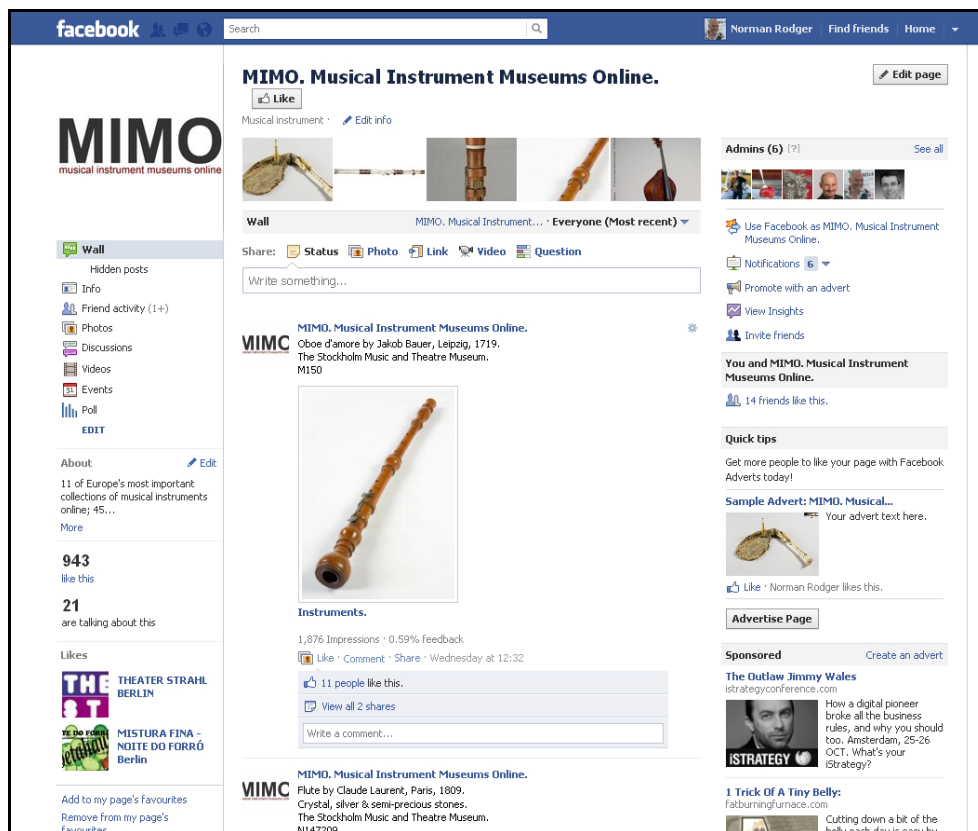


Figure 9: MIMO Facebook page

7.6.2.1 Facebook

By far the most successful web 2.0 resource used in the project was the [MIMO Facebook page](#). This was set up immediately after the WP6 sub group meeting in Edinburgh, in April 2010 and quickly became popular with a very satisfying world-wide user base.

The items posted were of three main categories; photos and brief descriptions of instruments, news items about the progress of the project, sometimes with photos of a "behind the scenes" nature, and user generated content. 232 items were published from the launch of the page until the end of the project.

As indicated above one of the key difficulties faced in the dissemination of MIMO was that our content was never scheduled to appear in EUROPEANA until the latter stages of the project. This made it very difficult to maintain an interesting online profile and given the need to continuously add new content, in order to maintain user interest, we had to come up with a number of ideas to keep interest in the Facebook page alive. This included:

- The addition of regular photos, with descriptions, from the gallery
- The inclusion of key dates in music history, such as composers' birthdays
- Links to online surveys (using Survey Monkey)
- Links to YouTube video clips
- Links to online news articles about the project
- The addition of photographs of users' own instruments

The Facebook page was principally maintained by SMS-MM, with additional input from UEDIN and SPK.

Brief summary of facts and figures relating to the MIMO Facebook page:

- 940 subscribers
- 233 entries which have been viewed 210,000 times
- 1,650 user comments
- 73 items of UGC (user generated content)

A full breakdown of users is given in *D6.14 – Final Dissemination Report and Exploitation Plan*.

7.6.3 Newsletters

A key aim of the online dissemination was to regularly inform web users about the progress of the project via regular newsletters. Over the period of two years 6 newsletters were issued, distributed via email lists, and made available as a download from the MIMO website. These were also delivered to the European Commission as Project Deliverables D6.4, D6.6, D6.8, D6.10, D6.11 and D6.12 (M1-23).

In order to create a user group of 600 members (the Performance Indicator figure indicated in the DoW), a subscriber form was added to the website, enabling website visitors to subscribe directly to the MIMO newsletter. By the end of the project 609 subscriptions had been registered, i.e. just over the original target. However, taking into account the 903 followers of our site on Facebook and via resources such as the Virtual Exhibition and corresponding promotion via EUROPEANA, the user group being informed by the MIMO consortium was in fact considerably bigger than anticipated in the DoW.

The newsletters covered general information about MIMO, i.e. the consortium partners, the core concept and the project's mission. It also reported on dissemination events and promotional activities like presentations of MIMO at conferences, concerts and exhibitions, as well as media reports and press releases about MIMO. Extraordinary activities like the [Virtual Exhibition](#), launched in partnership with EUROPEANA, and the opening of the MIMO-DB to the public were also featured.

Subscribers were also notified about updates and changes to the website. Limited website statistics were published, giving newsletter readers and website users an insight into key figures describing visitors' characteristics.

Another main purpose of the newsletter was to inform about intermediate results achieved by the partners, e.g. latest figures for digitised content, developments in revised classification system for musical instruments, and curiosities such as the discovery of a new type of musical instrument. In order to improve the usability (i.e. finding the desired content) and to channel the user traffic, links to websites relevant to the MIMO project were embedded within the newsletter (e.g. the EUROPEANA portal, Virtual Exhibition, MIMO-DB, etc.).

The first four newsletters were issued in all partners' languages. But with almost 90% of the website users indicating English as their language, the partners decided to stop the effort of translating the newsletter, and published the final two in English only. A mid project evaluation of the newsletters concluded that the first few were somewhat inconsistent in terms of style and content and this resulted in the later editions being more thematically focussed.

7.6.4 “Explore the World of Musical Instruments”- Virtual Exhibition



Figure 10: MIMO Virtual Exhibition

Produced in conjunction with EUROPEANA, MIMO's virtual exhibition [“Explore the World of Musical Instruments”](#) was launched on 27th June 2011. The exhibition focuses on six themes, each offering a selection of instruments, with high quality, zoom-able images, description and some sound clips. It has been produced in the six languages of the MIMO partners. The content is drawn from the collections of nine of the MIMO partners' museums and the selection of instruments illustrates a range of styles and cultural uses.

A considerable amount of effort and time was invested into the creation of the Virtual Exhibition and it was a particular challenge to fit this work into the workload of the last third of the project. Over 550 hours were spent within the partnership on the development of the Virtual Exhibition. Despite this, the production of the virtual exhibition has been a hugely worthwhile piece of work for the project in terms of dissemination. The work was led by UEDIN and CM, with input from all partners both through the submission of digital content (images and sound files) and supporting written material to give context. The timing of the launch was especially important, as it provided us with an online resource during the life of the project that clearly demonstrated the strengths of the collections, especially as no material was yet visible via EUROPEANA.

In the two month period between the launch of the exhibition and the end of the project, over 3,800 people visited the site. In addition, the launch was featured in the [June 2011 edition of the EUROPEANA Newsletter](#), which has a readership of around 45,000 people from a wide range of countries. So this in itself was a significant element of our dissemination output, particularly as it reached a wide audience, both in terms of numbers and geographic spread.

7.6.5 Online Dissemination of Outputs from WP3

A key output from WP3 work on classification was “*The Revision of the Hornbostel Sachs Classification of Musical Instruments by the MIMO Consortium, 2011.*” For museum staff and other people working in this area the production of this document represents a significant development, as it brings this important resource up to date. Given that it is mainly used by museum staff and those with a professional or educational interest in musical instruments, the logical place to disseminate this resource was through the website of [CIMCIM](#), the International Committee of Musical Instrument Museums and Collections. Two versions were posted: one [with editorial markings](#), for those who wished to compare it with earlier versions, and another [without editorial markings](#).

7.6.6 In Person Dissemination

The in-person dissemination was based on press conferences, public presentation, lectures on MIMO, meetings and interviews. In addition, nearly all partners already implemented MIMO into their permanent exhibitions to raise awareness interest among physical visitors.

This was supported by the distribution of leaflets, postcards and various articles in printed and broadcast media.

7.6.6.1 Creation of Dissemination Materials

A number of dissemination materials were produced for distribution and in-person dissemination activities like conferences, workshops, concerts, exhibitions, etc.

An eye catching project **logo** was created right in the beginning of the project using an acronym to ensure an easy recognition for the project's visual presentation. The idea behind the logo was that it should stand out even at small scale.

A PowerPoint presentation about the project was created for use at the presentation on MIMO given by the UEDIN Management Team at the CIMCIM Annual Conference in Florence in September 2009. This was then adapted by WP6 leader SPK and later on by other partners. In addition, using the free online presentation tool Prezi.com, <http://prezi.com/pign5yvhaijz/mimo/> another promotional resource was created. This was a visual tool with little written content, so it could be adapted for use in any of the six partner languages. This presentation was subsequently modified and re-used as a PowerPoint which was regularly updated throughout the life of the project as the basis for a number of presentations, including the mid-project review to the European Commission, the EU Information in Luxembourg in February 2011 and the CIMCIM Annual Conference in Paris in August 2011.

A project leaflet in all six partner languages was produced by UEDIN in time for the project's Kick-Off Meeting and inaugural presentation at the CIMCIM Annual Conference in Florence in September 2009. Each partner received 1,000 copies for local distribution.

A second, revised version of the leaflet was printed in June 2010 in an edition of 10,000 copies, in response to the need for more copies from the partners. Almost all of them have been disseminated so far.

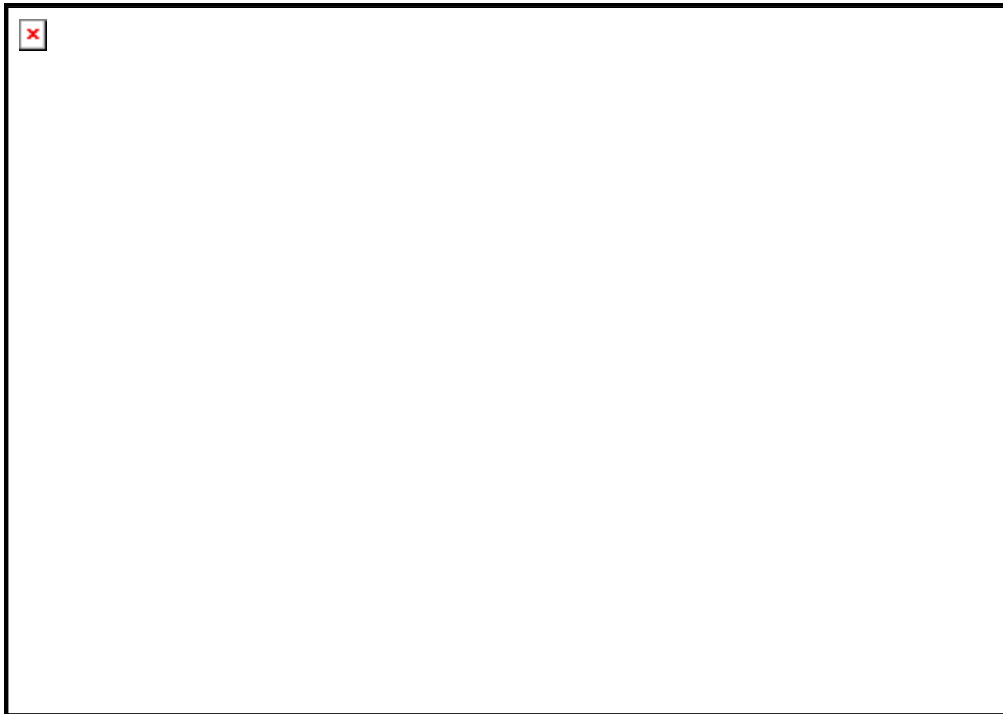


Figure 11: MIMO Poster

A poster was designed and prepared by UEDIN in July 2010, initially as part of the in-house exhibition in the University of Edinburgh, and this subsequently adapted and regularly re-used for most subsequent presentations and conferences and exhibitions. The poster design followed the visual, non language specific approach.

5,000 copies of a promotional postcard based on the poster were printed in time for the CIMCIM conference and to promote the first MIMO content going live in EUROPEANA.

Most of the dissemination material is available in the project's file depot (http://ff.mimo-project.eu/file_browser).

A Wikipedia entry has been created in German and awaits translation into the other MIMO languages. (http://de.wikipedia.org/wiki/Musical_Instrument_Museums_Online)

7.6.6.2 Dissemination strategy

In the first year of the project, the **in-person dissemination** was rather unbalanced between the MIMO partner institutions. This was largely due to the fact that a number of partners were reluctant to do too much promotional work on the project in the developmental stages of the project, as there was very little to actually show in terms of output. As reported at the mid-term review and in the first annual report, it was always envisaged that a greater effort in terms of dissemination would be required in Year 2. SPK developed a dissemination strategy with targeted activities to encourage partners to step up their work in this area of the project in order to reach all the target groups indicated in the DoW.

The dissemination strategy targeted the following groups:

General public: As outlined above, the MIMO website's gallery was enhanced in order to make the site more visually appealing to a wider audience. All partners sent 50 pictures with supporting metadata to SPK, who then uploaded them to the gallery. Website users were informed via the latest newsletter.

Greater effort was applied to the Facebook page, with positive results as shown above.

Additionally, the virtual exhibition was developed in cooperation with EUROPEANA. (See above)

National and international organisations: SPK spoke to the [GALPIN Society](#) and [CIMCIM](#) and were granted permission to contact their members via the organisations' mailing list. They were informed about MIMO and invited to join the website and/or subscribe to the newsletter.

Media: Each partner wrote a short article on a highlight of their collection. These were posted on Facebook. A wide range of articles on MIMO appeared in print, TV and radio over the two years of the project.

Specific target groups: Each partner contacted schools, universities, teacher associations and instrument makers association in their own country, informing them about MIMO. Within the partnership over 4,000 schools and 100 universities were reached.

In addition, MIMO was presented at many major specialist events over the project's lifespan – See *D6.14 – Final Dissemination Report and Exploitation Plan for full list.*

7.6.7 MIMO in Museums

As outlined in the DoW, each MIMO partner museum integrated the project in one way or another in its exhibition space, so that visitors can learn about the project as a whole or get an insight into a particular aspect of the work of the individual MIMO museums. This is described in detail in *D6.14 – Final Dissemination Report and Exploitation Plan.*

7.6.8 Summary

In the second year the consortium focussed on dissemination activities among the general public as well as experts, universities, museums, music lovers and students. These activities lead to more visits to the website and wider press coverage, with articles in important newspapers in all partner countries and TV and radio broadcasts. In addition to regional media coverage, MIMO was presented in two important international Music Magazines (*Das Rohrblatt, Das Orchester*) and was featured in an article for the Galpin Society.

The consortium implemented dissemination campaigns in each partner country, contacting schools, universities and teachers' associations and other target groups.

Although a wide audience was reached through our dissemination activities, it has been difficult to evaluate the impact of these, especially on the general public, given the late visibility of content in EUROPEANA. The feedback that we received via the project website and the Facebook page tended to come mainly from specialists and experts.

Dissemination activities can be divided into this having only a regional impact and those that have an international impact.

On an international level MIMO was presented at a number of important conferences including:

- CIMCIM Annual Conferences (September 2009 in Italy and September 2011 in Paris/Brussels)
- The 15th International CHIME Conference (November 2010 in Switzerland)

- The 54th Annual Meeting of SEM (September 2009 in Mexico)
- Several EUROPEANA conferences (e.g. Open Culture 2010 in the Netherlands), ATHENA meetings (e.g. January 2011 in Belgium)
- The American Musical Instrument Society at the Library of Congress in Washington (May 2010 in USA)
- The European Commission's CIP ICT PSP "Digital Content" Information Day in Luxembourg in March 2011

These activities were complemented by presentations at regional IAML meetings (e.g. May 2011 in Italy and April 2010 in France), regional EUROPEANA meetings (e.g. September 2010 in Belgium, June 2010 in UK, October 2010 in Germany), the Annual Meeting of the GfM (September 2009 in Germany) and many local presentations in every partner country.

Some of the consortium partners who were lacking behind in dissemination events in the first year did intensify their efforts in disseminating MIMO during the second year of the project according to the guidelines given in the dissemination strategy, although over the two year period there still was an imbalance between partners. As indicated earlier, the main reason behind this has been the reluctance of several partners to devote time to presenting the project at a point when there was very little physical evidence to actually demonstrate. One press office commented that while it was useful to gain press coverage to raise awareness of the project, articles on what the project would achieve (i.e. those printed early in the project's lifespan) would be produced at the expense of what the project did finally achieve, as it was unlikely that journalists (especially those working for national newspapers) would cover two stories about MIMO in a relatively short space of time.

It should also be noted that some of the partners who were less well represented in terms of numbers of press articles, presentations etc, were more heavily involved in other significant dissemination activities such as the development of the Virtual Exhibition, produced in association with EUROPEANA. As reported above, all partners put in a considerable amount of work into this work, particularly UEDIN and CM, and this activity reached a large worldwide audience.

In discussing dissemination with EUROPEANA, as part of the Communications Group meeting in Den Haag in May 2011, a number of projects commented on the fact that at their mid project reviews they had been criticised for not disseminating widely enough. EUROPEANA staff indicated that they would discuss this with the European Commission as they considered it their role to disseminate on behalf of contributing projects, particularly to the general public. Coverage in the EUROPEANA newsletter meant that information on MIMO went out to at 45,000 subscribers.

Over the course of the project MIMO was promoted via:

- Over 60 presentations
- 14 Radio Broadcasts
- TV Broadcasts
- 5 Public Photo Sessions
- Around 30 museum tours
- 20,000 leaflets
- 5,000 postcards

7.6.8.1 Post Project Activity

At the close of the project a number of key presentations have already been put in place to ensure continued dissemination of MIMO. These include:

- An interview with Norman Rodger, Project Manager, to be published in the October edition of The Strad magazine – a monthly classical music magazine for all strings enthusiasts including violinists, violists and cellists.
- A presentation at the EUROPEANA Tech conference in the Austrian National Library, Vienna on the 4-5th October 2011 to approximately 250 delegates.
- A presentation at the DISH Conference in Rotterdam on 9th December 2011
- A presentation at the CIMCIM Annual Conference in New York, in May 2012
- A presentation to the American Musical Instrument Society in New York in May 2012

We are also hopeful that we will have proposals accepted to present at other key international conferences such as Open Culture (London) and Museums Next (Barcelona) in 2012.

8. Impact & Sustainability

8.1 Impact of MIMO – The Benefits of Aggregation

As the project developed, the benefits of aggregating digital content and the impact that would have become increasingly more obvious to the partners.

This section of the report gives some examples of how MIMO has opened up access to information through aggregation and through other features including controlled vocabularies and classification. The examples include searches such as those made by the general public, information gathering in learning and teaching, and by researchers.

Many kinds of information search are available to all through MIMO which could previously be attempted only by specialists by use of printed catalogues (generally out of date) and by visits to, or correspondence with, museums (expensive and time-consuming).

8.1.1 Information about particular kinds of instrument

MIMO can, through its information architecture, make possible searches for similar instruments which go under different names. For example:

- 'Violin' has 77 synonyms recorded in MIMO and 678 examples in the partner museums
- There are 43 kinds of bagpipe with 149 examples scattered in all but one of the partner museums
- There are 37 kinds of instrument akin to the kora with examples in 8 of the partner museums
- There are 27 names for kinds of sansa with 925 examples in the partner museums
- There are 19 kinds of accordion with 528 examples in 11 of the partner museums
- There are more than 322 names for different kinds of drum, with 2104 examples which can be studied via MIMO.

Instruments used in groups (such as Gamelan instruments) can be virtually assembled where examples of individual instruments are scattered in different museums. Searching for '*gamelan*' gives 486 examples of individual instruments.

Theobald Boehm (1794-18871) not only developed the modern flute but his ideas were applied to produce the modern clarinet and with less success to the oboe and bassoon. Searching in MIMO for 'Boehm' gives 181 instruments of different kinds in MIMO museums, providing material for a study of his influence on woodwinds of all kinds. This is a typical topic for student projects.

There is often uncertainty about the appropriate kind of mouthpiece to use with the less usual kinds of brass instrument. Searching the mouthpieces in MIMO can lead to useful identification of mouthpieces. Similarly with bows for stringed instruments - there are 1098 bows in 13 museums searchable through MIMO.

Searching for the historical use of different materials is greatly facilitated through MIMO. For some materials, there may be different words in the six partner languages which can be searched for. Other materials may require only a simple search, for example 'nylon' is mentioned in 45 instruments in MIMO partner museums.

8.1.2 Information about particular people

The most important harpsichord makers such as the Ruckers family are very well represented in MIMO and examples of a maker's output in different museums can readily be compared.

The Denner family, active in Nuremburg at the end of the 17th and the first half of the 18th century, were renowned for the quality of their instruments and for their development of a range of woodwind instruments. They invented the clarinet. Through MIMO the 54 Denner instruments in 6 museums can be compared with instruments by other contemporary makers, and an approach can be made to the difficult question of which Denner family member made which instruments.

The Brussels Musical Instrument Museum is planning a major exhibition on Adolphe Sax (1814-1894) to be held in 2014; the greatest part of Sax's surviving instruments (254 instruments in 6 museums) can be viewed through MIMO and compared, thus greatly facilitating exhibition planning.

8.1.3 Information about instrument making in particular places

Following the invention of the pianoforte circa 1700 it slowly gained popularity through the following century. Because there is a critical mass of early pianos in MIMO partner museums it is possible to trace the early development and discover that the three main centres of piano manufacture in Europe in the 18th century were Vienna, Paris and London. It is now easy to compare typical instruments from these three places; this was not possible before MIMO.

It is now possible to get a more complete picture of the kinds of musical instrument used in specific places. Some examples: in MIMO museums there are 20 instruments from Istanbul, 101 instruments in 5 museums from Tibet, and 184 from Japan.

8.1.4 Information about instruments of a particular period

When searching for information on the history of musical instruments, for example, MIMO gives access to data and images of 394 instruments earlier than 1650.

When searching for a specific period, for example Second World War, a search in MIMO for the years 1939 to 1945 gives 200 hits. These include instruments manufactured in war time those in museum collections destroyed or damaged in this period (either could be of interest) plus instruments with periods that started or ended in WWII but stretched outside.

The history of a given instrument can be explored and illustrated through searching by date. For example, there are records for 10 clavichords earlier than 1700 in partner museums and 103 clavichords earlier than 1800.

The modern piston valve, almost universally used in trumpets and brass band instruments, was patented by François Périnet in 1839. Using MIMO it is possible to study how slowly this valve design was to be adopted. Of several hundred examples in partner museums, the earliest example dates from 1855.

8.1.5 Identification of instruments

Unidentified instruments can be identified by finding similar examples in museums using the classification built into MIMO

Not only can one identify instruments by a particular maker, but also instruments attributed to a maker and forged instruments with a maker's name, thus reconstructing dynamics of interpretation and commerce of musical instruments. The activity of dealers and forgers such as Leopoldo Franciolini (1844-1920) can now be studied through MIMO - there are 29 instruments associated in some way with Franciolini in partner museums.

When MIMO content becomes accessible through EUROPEANA, many further kinds of search will become possible, including searches which go beyond musical instruments such as those for designers who work in different genres including instrument decoration such as architects and for themes in decorative arts such as 'chinoiserie' where musical instruments have provided one medium amongst others.

8.1.6 Impact on Other Museums

MIMO was first presented to an audience of museum staff at the Annual Conference of CIMCIM, in Florence in September 2009, just days after the project was launched. At that point the presentation was very much about what we, as a project, intended to do and, while there was enthusiasm and interest in the ideas there was also a degree of scepticism about how much we could achieve in a two year period. The project was next presented to CIMCIM in August 2011, just as it came to end and the response from the audience was markedly different, with an overwhelming majority not just impressed by what had been done but also actively looking at how both their own museums and CIMCIM as an organisation could become involved in MIMO, moving from a group of eleven museums to something which could conceivably become of world importance for the musical instrument museum community and, by association, its users. All of the examples illustrated above demonstrated that having one access point to this level of information is of immediate benefit to the researcher, at whatever level they are working.

Expanding MIMO

In looking towards post project development the main goal of the MIMO partners is now to attract other museums to add their collections to MIMO-DB. In so doing, we will further enhance the range of information available to our users. We aim to reach a point where MIMO can become the single access point for information on musical instrument collections for the entire world and, within that, a key objective will be to digitally rebuild collections which, in the physical world, have become dispersed. For example, trying to do research into the instruments produced by Stradivari, even digitally, would currently involve visits to multiple museum sites, but what MIMO has already done and will continue to do is to pull some of that information together into one place, thereby greatly assisting the research process. If we can continue to build our contributing group of museums, that resource will grow in scale and become increasingly valuable. In the virtual world, all the instruments produced and sold by Stradivari and which had never previously existed together, would thus come back into a single collection.

It is proposed that the benefits of aggregation theme will form the focus of much of our post project dissemination activity.

8.2 Sustainability

Developing a sustainability model for MIMO was a key part of the project's development and its longer term viability. During the project's lifetime the MIMO consortium created a cutting-edge technological infrastructure supported by a vast amount of digital content of great value. Right from the beginning of the project the development of a business plan, which would ensure the continued exploitation of all the resources the MIMO consortium had generated, was seen as crucial and had been repeatedly addressed during the last two years by the partners. The development of a sustainability and exploitation plan was the responsibility of SPK. In the course of the project a dedicated sub-group consisting of SPK, UEDIN, GNM and CM was formed, which met both during scheduled WP meetings and at additional sessions arranged as required to accomplish this task.

The final sustainability plan can be divided on two different levels:

Sustainability Level 1 deals with original consortium of museums for the time period immediately following the completion of the project and was drawn up to ensure the maintenance of the technical infrastructure and ongoing visibility of MIMO content for the next five years. It was agreed early in the project that we needed to put an agreement in place that would establish a minimum level of service, i.e. ongoing access to content, while still exploring longer term solutions.

Sustainability Level 2 runs in parallel with Level 1 and has two main points of focus:

- i) Expanding the number of content providers.

- ii) Ensuring continued visibility of MIMO's content in the longer term (i.e. after the 5 year period covered by Level 1)

8.2.1 Sustainability Level 1

A key part of WP6's work 1 was to arrive at a position where the project partners could guarantee continued access to our digital content after the end of the project.

A sub-group consisting of SPK, UEDIN, GNM and CM worked on the development of a subscription based sustainability agreement. This agreement commits the nine content contributing partners of the MIMO project (i.e. not UF and HML) to maintain the databases and harvesting systems established during the life of the MIMO project in order to provide ongoing provision of digital content to EUROPEANA for a minimum five year period, from 1st September 2011 until 31st August 2016. Each partner will pay a single payment of 2,000 euros to cover hosting and ongoing operating costs for the maintenance of the MIMO-DB. In addition, as outlined above, a fully revised website will be launched at the conclusion of the project to inform the public about MIMO and its future progress,

This initiative will be coordinated by The University of Edinburgh (UEDIN), while Cité de la Musique (CM) will maintain the MIMO harvesting platform and database, MIMO-DB, for ongoing harvesting by EUROPEANA. UEDIN will take over the responsibility for the creation and management of a new MIMO website.

The Level 1 Sustainability Agreement was formally adopted after the PSG meeting in Stockholm in October 2010 and was ratified and signed in February 2011. A copy of the document is included in *D6.14 – Final Dissemination Report and Exploitation Plan*.

8.2.2 Sustainability Level 2 & the MIMO Toolkit

In parallel with the development of the Level 1 agreement, the sub-group began work on the development of a **Level 2 Sustainability Agreement**, to explore other possibilities for longer term sustainability and the involvement of new partners.

As the project developed it became increasingly apparent that the resource created via MIMO-DB was of much more value than originally envisaged. As content was added, the benefits of aggregation started to become clear to all partners to the extent that a decision was taken to not only make this resource public but to create a user friendly interface to a tool which, for the purposes of the project, had originally been created as purely technical resource. Moreover, as we reached the end of the project a number of other museums began to enquire whether they too could add content and while the existing structure would continue to be adequate for European museums - in that their content would be automatically be surfaced via EUROPEANA - another access point was necessary for non-European museums.

As outlined above, MIMO will continue to maintain an online presence after the end of the project and UEDIN will take over responsibility for the development and maintenance of a new website from 1st September 2011. The new site will not only inform visitors of the work of the MIMO project but, as importantly, will become the focus of post project dissemination. As the site will be linked to MIMO-DB, with full search capability, it will also be seen as the first step towards the creation of a MIMO portal, one of the longer term objectives of our Level 2 Sustainability plan. This will be critical if we are to encourage any non-European museums to add their collections to MIMO-DB, since their material will not be visible via EUROPEANA.

At the penultimate meeting of the MIMO partners, held in Florence in May 2011, it was agreed that some form of collaboration with the International Committee of Musical Instrument Museums and Collections, better known by its acronym CIMCIM, provided the most likely way forward for MIMO, post project. Accordingly, Lisbet Torp, the President of CIMCIM, was invited to attend the final meeting of the partnership, in Edinburgh in July 2011, to open discussions about how we might proceed. This process was discussed in greater detail at the annual conference of CIMCIM in Paris and Brussels in August 2011 – see *section 8.2.3*.

At the same time and as a first step in attracting new partners an interim website was set up to explain what is required from any new museums wishing to add their collections to MIMO. This site, which we refer to as the [MIMO toolkit](#), provides information and guidelines that outline the issues that any future partners should consider when they wish to expose their digital content through MIMO-DB. It operates on a variety of levels, ranging from introductory level explanations for museum curators wishing to explore the possibilities of contributing, to more in-depth descriptions aimed specifically at technical staff.

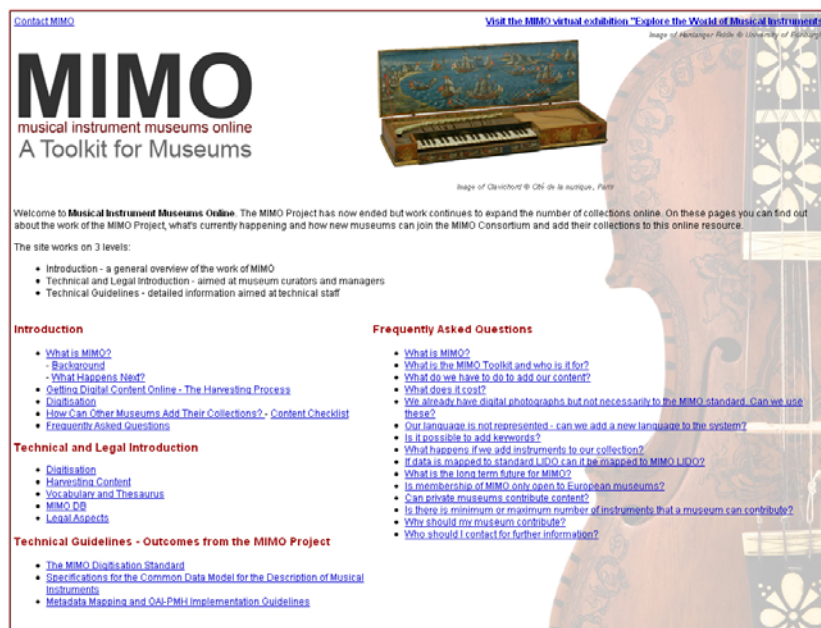


Figure 12: MIMO Toolkit

A presentation on the MIMO Toolkit at the CIMCIM Conference in Paris has already resulted in one enquiry from a museum wishing to add its collection. This is currently under consideration.

In creating this resource we have also had to establish mechanisms for the admission and evaluation of new partners, so an essential part of this application process will be a [check list](#) (see *Appendix 5*) providing detailed information about content, technical infrastructure, and personal resources of the applicants. A similar form was circulated to the existing consortium partners in the development stages of the project. Based on the information given, an application will be considered by the MIMO selection panel. This group, a sub group of the current partnership, will meet annually but, given the need for ongoing work to support the addition new museums, dissemination etc. it was proposed we should also form a Core Management Group (CMG). This will include UEDIN (Management and Administration), CM (Technical Support), GNM (Digitisation), MIM-BE (for work on Vocabulary and Thesaurus and additional technical backup) and a representative from CIMCIM. The CMG will meet at least twice per year.

As the cost of hosting MIMO content will be covered by the existing MIMO partners from 1st September 2011 for a five year period, until 31st August 2016, there will be no hosting charge for new members during that period. Hosting costs after that will be split between the museums contributing at that point. Charges will be reviewed in Year 4 of the period covered by the initial agreement. The only external cost to new members to the consortium will be for technical support (i.e. advising, consultancy and testing) from the existing consortium, principally via the Cité de la musique in Paris. This will also include the cost of travel and subsistence should a member of the MIMO team be required to visit a potential new partner. The precise amount of work involved will depend on the technical expertise of the new contributing museum but is likely to be in the region of 13 days work for technical staff at Cité de la musique. Museums will have to cover their own internal costs, e.g. digitisation, database setup etc.

As this might be prohibitively expensive for smaller museums we will encourage them to work with other museums to form a cluster and thus spread the cost. This might be done on a geographical or thematic basis.

In order to test the process of bringing in new content post project we are piloting the procedure with the Musikinstrumenten-Museum of the Stiftung Preußischer Kulturbesitz (Berlin, Germany). The director of this museum met with the Sustainability Sub Group in Berlin at the end of April 2011 and began discussions about how their collection could be added. The direction of those discussions not only assisted with the development of the MIMO Toolkit but also enabled the museum to plan ahead to ensure its content would be ready for harvesting. At the time of writing, this process is almost ready to start. The collection consists of about 3,200 musical instruments, 95% of which have already been photographed. This content will automatically appear in EUROPEANA as soon as it is in MIMO-DB.

8.2.3 The Role of CIMCIM

Most of the MIMO partner museums are members of the **International Committee of Musical Instrument Museums and Collections (CIMCIM)** and as this organisation represents the worldwide community of musical instrument museums, a logical progression will be to integrate the work of MIMO with this group. As outlined earlier, we made a presentation to their Annual Meeting in Florence, immediately after the launch of the project in September 2009 which generated initial interest in the project. Since then a number of key individuals within CIMCIM have kept a close eye on the progress of MIMO. Internally, we see CIMCIM as a key player in future developments, not only in terms of dissemination of results but also for the adoption of MIMO standards and possibly the long term management of MIMO-DB.

As indicated above, discussions with CIMCIM began at the final meeting of the MIMO partnership in July 2011. Lisbet Torp, the current President of CIMCIM then invited MIMO to make presentations to the Annual Meeting which took place in Paris and Brussels in from 29th August – 1st September 2011. The MIMO project was presented in detail at this conference and the possibility of a future collaboration between MIMO and CIMCIM was discussed both in a separate meeting between the MIMO CMG and the CIMCIM Board and with the wider conference audience. The response to the presentations was extremely positive and, although no formal decision on any merger between CIMCIM and MIMO could take place at this year's CIMCIM General Assembly meeting, the CIMCIM Board was able to use the meeting to reach an in-principle decision from the delegates present that this is something that should be explored further. The full membership will now be informed in writing before any final decision can be reached. This decision will be taken at the CIMCIM meeting in New York in May 2012.

The proposal is that, rather than MIMO simply handing over responsibility for MIMO-DB to CIMCIM, there should be a merger of the two organisations and that this should take place over a five year period. To achieve this, a memorandum has been drawn up to formalise the process and set targets for both organisations. The proposal was submitted to CIMCIM at the beginning of October 2011 and discussions will continue over the coming months.

In relation to the MIMO digitisation standards, it was agreed that CIMCIM should agree to undertake a formal review process of the document and establish a timescale for its adoption by the CIMCIM membership.

It has been suggested that a member of the MIMO CMG could be co-opted onto the CIMCIM Board.

The response to the MIMO presentations at the CIMCIM conference and the possible link with CIMCIM itself represent a major success and will significantly boost our efforts to disseminate information on the project worldwide.

8.2.4 Thesauri and Classification - Ongoing Activity

Keywords will continue to be added to the MIMO database as new partners join the MIMO consortium, and records of types of instruments not so far represented by the aggregated resources are provided for the database. The work of adding new keywords to the online resources will be managed and supervised by the Cité de la musique.

The MIMO version of the Hornbostel Sachs classification of musical instruments is sustained as a separate resource from the MIMO database, online on the website of CIMCIM at:

<http://cimcim.icom.museum/uymhs03.pdf>

The MIMO version of the Hornbostel Sachs classification will also be published in printed form by Oxford University Press in the forthcoming Grove Dictionary of Musical Instruments (edited by L. Libin, publication date 2013).

The work of gathering new bibliographical references implicating the further revision of the Hornbostel Sachs classification of musical instruments and making critical analyses with a view to publishing another update of the classification at a future date will be continued by the newly-created working group on classification of CIMCIM, co-ordinated by HML.



8.3 EUROPEANA

MIMO has maintained close ties with EUROPEANA since the start of the project.

As a member of **EUROPEANA version 1 Working Group 3.3**, Rodolphe Bailly (CM) was present at all of this Working Group's meetings (January 2010 in Berlin, April 2010 in Berlin and June 2010 in Pisa). During these meetings, metadata experts helped EUROPEANA version 1 WP3 to design the current version of EUROPEANA Data Model (EDM 5.2). The 2nd meeting in Berlin was specifically dedicated to Museums, and Rodolphe Bailly provided samples of MIMO's metadata in order to help testing the model. A specific attention to EUROPEANA new recommendations was followed regarding the use of specific technologies in various domains, such as linked data as a way to use and expose vocabularies (as seen on WP3 with *Geonames*).

WP6 is represented on the **EUROPEANA Communications Group** by Norman Rodger, the Project Coordinator, and some of the MIMO Web 2.0 tools were presented to that group's meeting in Edinburgh in April 2010.

Rodolphe, Norman and Roxanne Wynns (MIM-BE) are also members of the **EUROPEANA Council for Content Providers and Aggregators**: Norman is part of the Sustainability sub group, while the others are in the Technical Group.

MIMO was also represented on the EUROPEANA project Share Development group by Norman Rodger. He also acted as liaison with Europeana on the development of the **"Explore the World of Musical Instruments"** virtual exhibition.

9. Further Information

9.1 Lessons Learned from involvement in the project

As part of the internal evaluation of the project (*as reported in D5.5 – Internal Evaluation of Work Package Output*), all partners were asked to review their involvement in MIMO and consider what lessons had been learned from their participation, both for their own institution and also working within the partnership. Although this information has already been presented in *D5.6 – Final Evaluation Report*, it is worth repeating here as an indication of how beneficial involvement in the MIMO Project has been for its constituent members.

As most partner museums arrived at similar conclusions, the simplest way to summarise the results of this part of our internal evaluation is to present a list of common bullet points, under broad categories. Where a response is unique to a particular museum, that partner's short name is shown.

A collation of the results follows:

9.1.1 Digitisation

Working on the project helped all partners understand the following areas more effectively:

Photography of musical instruments

- The need for and how to set up a proper workflow for a large scale photography project of musical instrument collections - from selecting the instruments, cleaning, moving, through to post-production
- The advantages of the use of a photography standard
- The advantages of using standard source formats (Tiff, JPEG,...)
- Data management: importance of giving the correct filenames, central data storage,...

Input and harmonisation of metadata

- The importance of the use of a metadata standard to increase the reliability and readability of the collection metadata
- Importance of streamlined and standardised data input processes into central collection management database: standard use of the metadata fields, standard use of terminology (e.g. by use of thesauri)

9.1.2 Interoperability of data/aggregation

Standard exchange formats

- The importance of having an xml export of the institution's data, using a rich and standard metadata exchange format (like LIDO XML) to allow proper data exchange through the internet
- GNM's IT-department has chosen LIDO as the storing format for the upcoming internal document management system (object database) GNM-DMS 2.
- Practicality of OAI-PMH as an automatic process for transferring metadata

- MIMO's adoption of LIDO XML has helped raise awareness of the schema.

Data enrichment technologies and procedures

- Enrichment procedure for linking geographical references with Geonames
- Multilingual vocabulary construction

Aggregation

- Content feedback within the consortium; identification of musical instruments and correction of metadata through comparison

9.1.3 Other

- An increased number of international contacts and the creation of a network of experts in the domain of musicology and musical instruments
- International contacts with technical specialists in data interoperability
- Research on the classification of musical instruments, ethnonyms and authority files
- The set up of a classification of group 5: electric and electronic instruments in the Hornbostel Sachs classification
- A better understanding of what is going on in European institutions with regard to digitisation, providing accessibility to digital cultural heritage
- A better understanding of other European projects, both Best Practice Network and digitisation projects (Pilot B), working to improve access to digital cultural heritage
- Better knowledge of EUROPEANA and its strategy to become a central access point for all European digital cultural heritage.
- The MIMO project has been closely monitored by external musical instrument museums and has forced them to consider how they operate in the digital domain

9.1.4 Added value for partner institutions

- The international visibility of the institution has been enhanced
- Better awareness of the importance of digitised cultural heritage through a strong commitment to the development of EUROPEANA
- Better awareness of the importance of online resources for education, culture and marketing
- Improvement in the quality of the institutional Thesaurus and Authorities through the collective work of the MIMO consortium
- Increase in knowledge of Digital Library technologies
- Amelioration of the conservation of the collection itself: general verification of the whole collection ("récolement"); cleaning up the collection, adaptations to the organisation of the depots, detection of urgent restorations

- Enlarging the institution's knowledge and expertise, chairing of information, international contacts
- Building an international reputation concerning digitisation and data exchange
- Knowledge and experiences of the project regarding a range of different issues can be used internally
- Increased cohesion within the staff (curators, conservators); tight collaboration through working towards the same middle-term goal
- Before MIMO no database was accessible to the public – people now have the possibility to research all the collections online, which is a big advantage for international researchers and interested people from all over the world
- The database now has high quality, consistent pictures thanks to the digitisation standard
- The database includes some instruments that had previously been thought lost, which were found as a result of the project
- New data has been added to the database and old metadata has been double-checked. This means the database is more reliable and has additional information to offer
- The updated database makes the preparation of future exhibitions and publications much easier
- The institution's staff are now much more familiar with the collection
- The conservational condition of the collection is now known, since each item, even those held in storage, had to be examined and cleaned before being photographed. This means that many objects have been studied in detail for the first time by curators and conservators and this has provided new insights in the collection's potential
- Storage facilities have been rearranged and thoroughly cleaned while the instruments were at the photographer's studio
- Involvement in MIMO has raised the profile of the musical instrument museum within the University and this has assisted in the development of new capital projects for the museum (*UEDIN*)
- Being a partner in a EU-project and leading a work package raised the profile of the museum in general and of the musical instrument department in several controlling and supporting institutions, as:
 - GNM's administrative council
 - GNM's scientific council
 - The friends and supporters of the museum (*GNM*)
- Being a partner in MIMO will underline the scientific efficiency during the museum's external evaluation in 2014 (*GNM*)
- Participating in overall museum issues as guides, audio-guides, and internal multimedia applications is now more efficient for the musical instrument collection than for others
- MIMO served as a showcase and training area for future harvesting of other collections by EUROPEANA

- The musical instrument department has become a counsellor in the area of digitising three-dimensional objects for other museum departments as well as for other museums (*GNM*)
- Through the attribution of keywords and the data enrichment process employed by MIMO-DB, *GNM*'s musical instrument collection is the only one in the museum disposing of controlled vocabularies for object names, places and makers (*GNM*)
- *GNM*'s understanding of the need for external collaboration in order to provide controlled vocabularies increased(*GNM*)

In summary, involvement in the MIMO project has proved to be valuable for all partners. While work has undoubtedly proved challenging at times, the benefits both in the short and long term clearly outweigh the difficulties.

Appendix 2 - Digital Records by Institution

<i>Institution</i>	<i>Records</i>	<i>Digital documents</i>
Cité de la musique (Paris)	4448	images : 19160 audio files : 266 video files : 2
Galleria dell'Academia (Florence)	323	images : 827 audio files : 147 video files : 0
Germanisches National Museum (Nuremberg)	3258	images : 7295 audio files : 32 video files : 6
Musical Instruments Museum (Brussels)	7952	images : 19026 audio files : 54 video files : 0
Musik & Teatermuseet (Stockholm)	5104	images : 6125 audio files : 729 video files : 0
Royal Museum for Central Africa (Tervuren)	8435	images : 9812 audio files : 0 video files : 0
Stiftung Preussischer Kulturbesitz (Berlin)	10269	images : 5789 audio files : 174 video files : 41
University of Edinburgh	4050	images : 4050 audio files : 93 video files : 100
University of Leipzig	4434	images : 4904 audio files : 15 video files : 0
Musée Arlaten (Arles, France)	147	images : 153
Musée Auguste Grasset (Varzy, France)	31	images : 34
Musée de la Castre (Cannes, France)	470	images : 869
Musée de la lutherie (Mirecourt, France)	334	images : 899
Musée de la musique mécanique (Les Gets, France)	464	images : 468
Musée de l'Hospice Comtesse (Lille, France)	81	images : 81
Musée des instruments à vent (Couture-Boussey, France)	242	images : 952
Musée des instruments de musique (L'Aigle, France)	90	images : 92

Musée des musiques populaires (Montluçon, France)	79	images : 90
Musée Lascaris (Nice, France)	413	images : 415
Norwegian Museum of Cultural History (Oslo)	49	images : 49
Nydahl Collection (Stockholm)	38	images : 82
TOTAL	50815	images : 81172 audio files : 1510 video files : 149
	<i>Records</i>	<i>Digital documents</i>

Appendix 4 - List of Meetings

Meeting	Project month	Date	Participants	Location
Kick-off Meeting + WP2 (<i>presentation of EUROPEANA ESE</i>)	0	5 & 6 September 2009	All	UEDIN (hosting in Florence)
Website Development	0	28-29 September 2009	SPK, UEDIN	Berlin
Project Steering Group 1 and WP1 + WP2	1	28-29 October 2009	PSG - All WP1 & 2 - all, except HML & UF	Nürnberg
WP2 (Main subject: Data Model Choice)	3	16-17 December 2009	All	Paris
WP6 Sustainability Sub Group	4	19 January 2010	SPK, CM, GNM	Berlin
Project Steering Group 2 + WP2 (<i>OAI repository development in each Museum</i>)	6	30 March – 1 April 2010 WP2 – 30,03 PSG – 31,03	PSG - All WP2 - all, except HML & UF	Brussels
WP3 meeting to finalise work on French, English multilingual dictionaries for testing and promulgation, and to prepare for work on German, Italian, Dutch and Swedish multilingual dictionaries.	7	28 April 2010	WP3	Edinburgh
WP6 – Web 2.0 Sub Group	7	29 April 2010	UEDIN, SMS-MM, SPK	Edinburgh
Project Steering Group 3 + WP1 + WP2 + WP3 + WP5 + WP6	9	June 2010	All	Berlin
1:1 Review	11	11 August 2010	HML, UEDIN	London
Sustainability Sub Group (WP6)	12	8-10 September 2010	SPK, GNM, CM, UEDIN	Berlin
E.C. Mid Project Review	12	22-23 September 2010	UEDIN, GNM, CM	Luxembourg
Internal Mid Project Review + WP1 + WP2 +	13	25-29 October 2010	All	Stockholm

Meeting	Project month	Date	Participants	Location
WP3 + WP5 + WP6				
WP6 + WP5 Strategy	14	1-3 December 2010	SPK, RMCA, GNM, CM	Berlin
Project Steering Group 4 WP1 + WP2 + WP3 + WP5 + WP6	16	11-13 January 2011	All	Tervuren, Belgium
WP1 + WP2 + WP3 + WP5 + WP6	17	2-3 March 2011	All	London
1:1 Review	18	31 March 2011	SPK, UEDIN	Stockholm
Sustainability Sub Group (WP6)	19	27-29 April 2011	SPK, UEDIN, CM, GNM	Berlin
Virtual Exhibition Sub Group			CM/UEDIN	
Project Steering Group 5 WP1 + WP2 + WP3 + WP5 + WP6	20	11-12 May 2011	All	Florence
Final Review	22	26-27 July 2011	All	Edinburgh
Sustainability Sub Group (WP6)	23	29-30 August 2011	UEDIN, CM, GNM	Paris

Appendix 5 – MIMO Toolkit Checklist



Content Checklist

Preliminary review for museums wishing to contribute content to MIMO

Introduction

- Please fill in this form as accurately as possible
- Save it as an MS Word document [.doc]
- Email it as an attachment to enquiries@mimo-toolkit.com

Summary of the questionnaire

The review consists of four sections:

1. Contact information
2. Overview of your collections
3. Digital Content
4. General Information
5. Supporting material

1 - Contact Information	
1-1	Organisation name
1-2	Address
1-3	Website address
1-4	Primary contact person
1-5	Alternative/Technical contact persons

2 - Overview of your collections	
2-1	Number of instruments in your collection
2-2	Can you break these down into numbers per category Please use MIMO-keyword categories: <ul style="list-style-type: none"> • <i>Electronic instruments</i> • <i>Elements of musical instruments</i> • <i>Keyboard instruments</i> • <i>Mechanical instruments</i> • <i>Mirlitons</i>

	<ul style="list-style-type: none"> • <i>Other instruments</i> • <i>Percussion instruments</i> • <i>Stringed instruments</i> • <i>Wind instruments</i> 	
2-3	<p>Do you have a database? What software does it use? Do you have web access to your database?</p>	
2-4	<p>To what extent is your collection fully recorded in your database?</p>	
2-5	<p>Can you please supply information on:-</p> <ul style="list-style-type: none"> • the levels of detail in the records e.g. the categories/fields used – name/maker/date/place etc. 	
2-6	<p>Do you have an OAI repository?</p>	

3 - Digital Content		
3-1	<p>Images</p> <p>How many instruments in your collection have been digitally photographed to a quality which could be used for printed publication?</p> <p>In what format are your digital images? (e.g. jpeg, tiff, size)</p> <p>Do you have multiple images (e.g. to highlight detail) of instruments?</p>	
3-2	<p>Audio</p> <p>How many instruments in your collection have digital audio recordings?</p> <p>In what file formats are the sound files? - e.g. wav, aiff, mp3 etc.</p>	
3-3	<p>Video</p> <p>How many instruments in your collection have digital video recordings?</p> <p>In what format are these? e.g. MPEG2, Quick Time, Flash Movie etc.</p>	
3-4	<p>Do you hold copyright on all digital content?</p>	

4 - General Information		
4-1	<p>Please supply further reasons why your institution wishes to have its content surfaced via the MIMO partnership.</p>	
4-2	<p>Do you (or your institution) have any areas of expertise that can be brought to the partnership?</p>	

5 - Supporting Material		
--------------------------------	--	--

In addition to the above information, please supply the following examples with this questionnaire:	
4-1	A screen shot of a sample record from your database
4-2	A typical high quality image of an instrument from your collection (if possible please match this image with the above sample record)

ECP 2008 DILI 538013 MIMO

MIMO

**Final WP1 report -
including Final Digitisation Reports
- All Partners -**

Deliverable number	<i>D1.6 and D1.7</i>
Dissemination level	<i>Public</i>
Delivery date	<i>4th October 2011</i>
Status	<i>Final</i>
Author(s)	<i>Frank P. Bär</i>



eContentplus

This project is funded under the *eContentplus* programme¹,
a multiannual Community programme to make digital content in Europe more accessible,
usable and exploitable.

¹ OJ L 79, 24.3.2005, p. 1.

Content

1	SCOPE OF THIS REPORT	3
2	WORK PACKAGE 1 AND LABOUR EFFORT OVERVIEW.....	3
3	WORK PACKAGE 1 OUTCOME.....	3
3.1	DIGITISATION FIGURES AND TARGETS.....	3
3.1.1	<i>Digitisation figures overview</i>	<i>3</i>
3.1.2	<i>Digitisation figures and revision of holdings.....</i>	<i>4</i>
3.1.3	<i>Success indicators and critical mass.....</i>	<i>4</i>
3.2	THE MIMO DIGITISATION STANDARD	5
4	WORKFLOWS AND PROCEDURES	6
5	INTERDEPENDENCIES WITH OTHER WORK PACKAGES	6
6	CONCLUSION.....	7
7	INDIVIDUAL QUANTITATIVE OVERVIEW BY DIGITISING PARTNERS.....	8
7.1	UNIVERSITY OF EDINBURGH, EDINBURGH (UK) - UEDIN	8
7.2	GERMANISCHES NATIONALMUSEUM, NÜRNBERG (DE) - GNM.....	8
7.3	UNIVERSITY OF LEIPZIG, MUSEUM FÜR MUSIKINSTRUMENTE, LEIPZIG (DE) - ULEI	8
7.4	AFRICAMUSEUM, TERVUREN (BE) - RMCA.....	9
7.5	ASSOCIAZIONE "AMICI DEL MUSEO DEGLI STRUMENTI MUSICALI," FIRENZE (IT) - AF	9
7.6	CITE DE LA MUSIQUE, PARIS (FR) - CM.....	9
7.7	MUSICAL INSTRUMENT MUSEUM, BRUSSEL (BE) - MIM-BE.....	10
7.8	STIFTUNG PREUBISCHER KULTURBESITZ, BERLIN (DE) - SPK.....	10
7.9	THE STOCKHOLM MUSIC MUSEUM, STOCKHOLM (SE) - SMS-MM	10

1 Scope of this report

This report combines all individual reports by digitising MIMO-partners in their last up-to-date version. As the informational architecture of the project is dynamic, new object records are continuously added. For current quantities, please refer to indications on MIMO-DB: www.mimo-db.eu.

2 Work package 1 and labour effort overview

Never before, it was undertaken to digitise entire collections of musical instruments and to make them available online through a common aggregator. Whereas every responsible for a collection had experience regarding the digitisation, esp. photography, of single objects within common museum workflows, the project of serial digitisation was an entirely new field for each partner. The labour effort overview as forwarded in the Description of Work was nevertheless quite well matched with a total of 336 person-months in comparison to the projected 345.5 person-months to digitise more than 45,000 musical instruments in public collections, manage the work package and create the MIMO digitisation standard (see below).

3 Work package 1 outcome

The two main outcomes of WP1 are:

- The digitised objects with their images, video files, audio files and metadata, delivered to the aggregator MIMO-DB at CM.
- The MIMO Digitisation Standard.

3.1 Digitisation figures and targets

In the Description of Work, different target figures were indicated, due to the different counting of musical instruments, metadata sets, or images. The most common published figures were:

- 45,000 musical instruments digitised
- 45,921 images of musical instruments
- 1,768 audio files
- 307 video clips

3.1.1 Digitisation figures overview

By 26th of September 2011, the outcome figures were:

1. No. of objects available through digital images	46,123
2. No. of digital images available	80,557
3. No. of sound files available	1,757
4. No. of video files available	308

Besides a very small shortfall for sound files, the project goals in terms of digitisation have been reached. The number of images exceeds these goals by far, for institutions used the

possibility of taking supplementary views as defined in The MIMO Digitisation Standard (see below) in order to enhance the representation of objects.

3.1.2 Digitisation figures and revision of holdings

Digitising a collection of musical instruments requires a detailed audit of all objects held in that collection. The project enabled some collections to check for the first time since decades to know all instruments which constitute their holdings.

During this revision process, two contrary tendencies - increase and reduction of predicted figures - were to be observed.

The most common reasons for reduction were:

- lost instruments, especially during the Second World War, but not clearly reported as such in the written inventories or of not yet known number
- non accessible objects, e.g. because of potentially harmful contamination not known before
- items counted as instruments in the overviews, but turning out as actually being parts of instruments

Reasons of increase were:

- instruments thought being lost, but surfacing during the digitization process
- instruments not yet inventoried. These were included in the digitisation process
- instruments acquired during the project's lifetime and digitized on the fly

These tendencies occurred not equally with all partners, but were spread to several degrees over the different institutions. At the start of the project, many collections did not possess an adequate database documenting all of the objects. The project permitted to overcome this lack, so that by now all records of instruments are not only easily accessible, but also represent - for some institutions for the first time since a century - the reality of musical instruments in their possession.

3.1.3 Success indicators and critical mass

One issue in the forerun of the project was to define a critical mass. In the Description of Work, this has been done by comparing the MIMO target figures with figures for Europe resp. the world available through the International Directory of Musical Instrument Collections on the website of ICOM-CIMCIM.

Now, after the end of the project, criteria for a critical mass can be much more precisely defined on the base of fruitful results for sustainability. The sheer number of digitised objects as a quantitative criterion has to be completed by qualitative criteria which turned out to be of great importance. These are:

- Quality of the collections digitised
- Quality of the digital images, sound and video files as well as of the metadata records
- The added value of aggregation
- The reputation of the project partners

The efforts of the partners to maintain the MIMO-DB services for another five years and the enormous interest of ICOM-CIMCIM as the main access partner to musical instruments collections worldwide to negotiate a sustainable future partnership, as well as new partners delivering their data or preparing for joining the consortium as soon as possible, prove that a critical mass in terms of quantity and of quality has been reached.

3.2 The MIMO Digitisation Standard

Unlike most artwork as paintings or sculpture, musical instruments in their property of ergonomically designed tools rarely have an established way of visualization. In everyday life, they are seen in different positions from different angles, depending on if they are viewed by a musician, by his public or in a museum showcase. To make musical instruments in all their variety clearly distinguishable and comparable, there was a need to give recommendations how to photograph them - along with recommendations how to digitise analogical audio and video sources as well as pre-existing analogical images as slides and prints in order to ensure a sufficient quality for future preservation and presentation. To ensure a maximum documentary use of efficient photographing workflows, for most instruments second and third possible views are given to accompany the first, mandatory view:



mandatory



recommended

Hurdy gurdy (© Germanisches Nationalmuseum)

In order to satisfy this need, GNM provided a first draft of the *Definition of scanning properties and recommendations for photographing musical instruments* which was discussed and adopted by the consortium in October 2009. As the paper proved very useful and was discussed and augmented further by all partners, it was finally renamed into “The MIMO digitization standard” for shorter reference.

The final version 3 includes results from an external online-survey among members of ICOM-CIMCIM and is entirely redesigned to increase its usability. This final version is publicly available as a PDF-Download as a part of the MIMO-toolkit (www.mimo-toolkit.com) destined to new content providers as a pragmatic and helpful document, carrying an appendix with practical hints to instrument photography furnished by all partners.

4 Workflows and procedures

Digitising musical instruments is a challenging procedure. Many of the objects are quite fragile, by virtue of their construction and mix of materials on one hand and often by their condition as museum objects having suffered from use and damage in their ante-museum history. Presenting them in an adequate manner in order to photograph them is a great challenge, as, in only a few cases, an instrument can just be laid down on a table in just the right position. Suspensions and supports are often necessary, and the multitude of shapes and object surfaces poses difficult demands to the photographers.

Combining adequate conservational and curatorial care with high-quality photography is thus a time-consuming undertaking in everyday's museum work, where usually one object or few very different objects are photographed, e.g. for an image leaflet or a report about new acquisitions. Digitising entire collections required thus to develop methods which increased speed and efficiency without neglecting the care for the precious objects.

All partners invested much energy in creating the organizational infrastructure to assure a safe and fast proceeding during the photographing process. Lists of comparable objects were created, the objects were controlled and prepared by conservators, and minutes were kept for instruments done. Quality controls of the photographs were immediately executed in order to avoid double transports and supplementary stress for the objects.

Alongside with photographing and digitizing, records for not yet recorded objects were created in - sometimes newly programmed - databases, and already existing records were formally checked and completed by the keywords furnished by WP3.

A major outcome for the collections was the in-depth revision of their holdings mentioned before. For the museum staff, it often was an amazing and fascinating experience to see objects from the reserves they had never seen before clearly - an experience which will be shared with the broad public through the publication in Europeana.

5 Interdependencies with other Work packages

As stated in the Description of Work, the interdependencies with other work packages proved to be manifold and essential:

- Existing metadata formats were the base for the mapping instructions developed and furnished by work package 2 (OAI Harvesting, database development and EUROPEANA Interoperability). On the reverse, the display and searchability on MIMO-DB along with the harvesting reports furnished an excellent means to help with metadata control on each institution's repository.
- Existing names of instruments, makers and places in the partners' inventories were the fundament for the word-lists collated by work package 3 (Thesauri and Classification). During the processes of digitisation and metadata control in the partners' institutions, new elements of controlled vocabulary were added. The thesaurus displayed on MIMO DB was in turn the key element to the institutions' metadata-control in order to regularize their records.

- The external evaluation of the MIMO digitisation standard paper by work package 5 (Assessment and Evaluation) revealed wishes of potential users which lead to important precisions and additions in the final version.
- The messages and newsletters issued by work package 6 (Dissemination) were constantly fed with news, figures and images from the digitisation tasks. In turn, the good reputation of the project greatly improved the visibility of the collections.

6 Conclusion

In an overall view, all partners managed the difficult task to digitise large quantities of precious and delicate musical instruments of all kinds, shapes, types of materials, be they European or extra-European. High quality standards were applied and fulfilled within a very tight schedule. This never before seen amount of valuable digital material is ready to come to life through the collecting work of work package 2 and the retrieval enabling work of work package 3. Thus, the infrastructure and knowledge are laid down to continue feeding new information and new images of musical instruments into Europeana via MIMO-DB.

The practical experience gained and shared throughout the project's lifetime especially in the area of the photography of musical instruments is documented in the MIMO digitisation standard paper available to the interested public and new partners.

The ardent interest of the globally acting interest group of Musical Instrument Museums and Collections, ICOM-CIMCIM, and the fact that an increasing interest of other collections to join MIMO in the near future is to be stated, shows that a critical mass of digitisation was reached in terms of quantity as well as in terms of quality.

The outcome of work package 1 can thus be considered as successful.

7 Individual quantitative overview by digitising partners

7.1 University of Edinburgh, Edinburgh (UK) - UEDIN

1. No. of objects photographed	1,268
2. No. of photos taken	1,268
3. No. of scans made	333
4. No. of sound sources digitised	0
5. No. of video sources digitised	0
6. No. of objects available through digital images	4,050
7. No. of digital images available	4,050
8. No. of sound files available	100
9. No. of video files available	100

7.2 Germanisches Nationalmuseum, Nürnberg (DE) - GNM

1. No. of objects photographed	2,792
2. No. of photos taken	6,489
3. No. of scans made	91
4. No. of sound sources digitised	32
5. No. of video sources digitised	6
6. No. of objects available through digital images	2,893
7. No. of digital images available	7,374
8. No. of sound files available	32
9. No. of video files available	6

7.3 University of Leipzig, Museum für Musikinstrumente, Leipzig (DE) - ULEI

1. No. of objects photographed	865
2. No. of photos taken	2,405
3. No. of scans made	1,424
4. No. of sound sources digitised	15
5. No. of video sources digitised	0
6. No. of objects available through digital images	3,634
7. No. of digital images available	4,872
8. No. of sound files available	15
9. No. of video files available	0

7.4 *Africamuseum, Tervuren (BE) - RMCA*

1. No. of objects photographed	7,497
2. No. of photos taken	7,870
3. No. of scans made	1,117
3bis. No. of objects on scans	1,029
4. No. of sound sources digitised	0
5. No. of video sources digitised	0
6. No. of objects available through digital images	8,603
7. No. of digital images available	9,925
8. No. of sound files available	0
9. No. of video files available	0

7.5 *Associazione "Amici del Museo degli Strumenti Musicali," Firenze (IT) - AF*

1. No. of objects photographed	301
2. No. of photos taken	25
3. No. of scans made	376
4. No. of sound sources digitised	32
5. No. of video sources digitised	0
6. No. of objects available through digital images	323
7. No. of digital images available	933
8. No. of sound files available	53
9. No. of video files available	0

7.6 *Cité de la musique, Paris (FR) - CM*

1. No. of objects photographed	1,050
2. No. of photos taken	3,845
3. No. of scans made	0
4. No. of sound sources digitised	0
5. No. of video sources digitised	0
6. No. of objects available through digital images	4,480
7. No. of digital images available	16,941
8. No. of sound files available	274
9. No. of video files available	2

7.7 Musical Instrument Museum, Brussels (BE) - MIM-BE

1. No. of objects photographed	7,600
2. No. of photos taken	17,669
3. No. of scans made	0
4. No. of sound sources digitised	54
5. No. of video sources digitised	0
6. No. of objects available through digital images	8,080
7. No. of digital images available	17,669
8. No. of sound files available	54
9. No. of video files available	0

7.8 Stiftung Preußischer Kulturbesitz, Berlin (DE) - SPK

1. No. of objects photographed	3,304
2. No. of photos taken	4,493
3. No. of scans made	523
4. No. of sound sources digitised	-
5. No. of video sources digitised	40
6. No. of objects available through digital images	6,500
7. No. of digital images available	6,923
8. No. of sound files available	500
9. No. of video files available	200

7.9 The Stockholm Music Museum, Stockholm (SE) - SMS-MM

1. No. of objects photographed	2,033
2. No. of photos taken	2,773
3. No. of scans made	1,424
4. No. of sound sources digitised	555
5. No. of video sources digitised	0
6. No. of objects available through digital images	5,105
7. No. of digital images available	6,110
8. No. of sound files available	729
9. No. of video files available	0

ECP-2008-DILI-538013

MIMO

Guidelines for harvesting MIMO's database repository

Deliverable number	<i>D2.3</i>
Dissemination level	<i>Restricted</i>
Delivery date	<i>28 January 2010</i>
Status	<i>Revised version : 16/09/2011 (see 5.3)</i>
Author(s)	<i>Rodolphe Bailly, Cité de la musique</i>



eContentplus

This project is funded under the *eContentplus* programme¹,
a multiannual Community programme to make digital content in Europe more accessible, usable and exploitable.

¹ OJ L 79, 24.3.2005, p. 1.

Table of Contents

1	INTRODUCTION AND WARNING	3
2	MIMO TECHNICAL ARCHITECTURE	4
2.1	MIMO-DB	4
2.2	ENRICHMENT.....	4
3	MIMO'S METADATA MODEL	5
3.1	MUSICAL INSTRUMENTS RECORDS.....	5
3.1.1	<i>LIDO</i>	5
3.2	AUTHORITIES.....	6
3.2.1	<i>Instrument Makers</i>	6
3.2.2	<i>Geographical locations</i>	7
3.3	VOCABULARY.....	7
3.3.1	<i>Hornbostel and Sax Classification (H&S)</i>	7
3.3.2	<i>Instruments keywords</i>	7
4	IMAGES, SOUND AND VIDEO FILES	8
5	MIMO'S METADATA IN EUROPEANA	8
5.1	HARVESTING AND DATA EXPOSITION	8
5.2	MIMO'S METADATA AND EDM	8

1 Introduction and Warning

The purpose of this document is to help the Europeana ingestion team understanding how to harvest MIMO's database.

At the time of writing (end of Jan. 2011), Europeana harvests metadata conform to ESE 3.3. The new Europeana data model: EDM v5.2 is planned to be fully implemented for the Danube release, end of April 2011.

This means that Europeana is not fully ready to retrieve and handle EDM records, nor is MIMO to deliver its data using this model.

MIMO and Europeana will collaborate in the next months in order to begin the harvesting using EDM around the end of April 2011.

As a result, this document will left open the following issues:

- The design of a complete mapping between MIMO's metadata model and EDM
- The choice of exposition technique for Vocabulary and Authorities

These issues need to be solved in the next 3 months, and this document will be keep up to date, reflecting the work done in collaboration with the Europeana ingestion team.

Please download the last version of this document at:

<http://194.250.19.151/mimo/doc/D2.3.pdf>

For any comments, please contact the author of this document at: rbailly@cite-musique.fr

2 MIMO technical architecture

2.1 MIMO-DB

MIMO aggregates the content of 9 musical instruments museum databases on a technical platform called "MIMO-DB". (See: Figure 1 MIMO Technical Architecture)

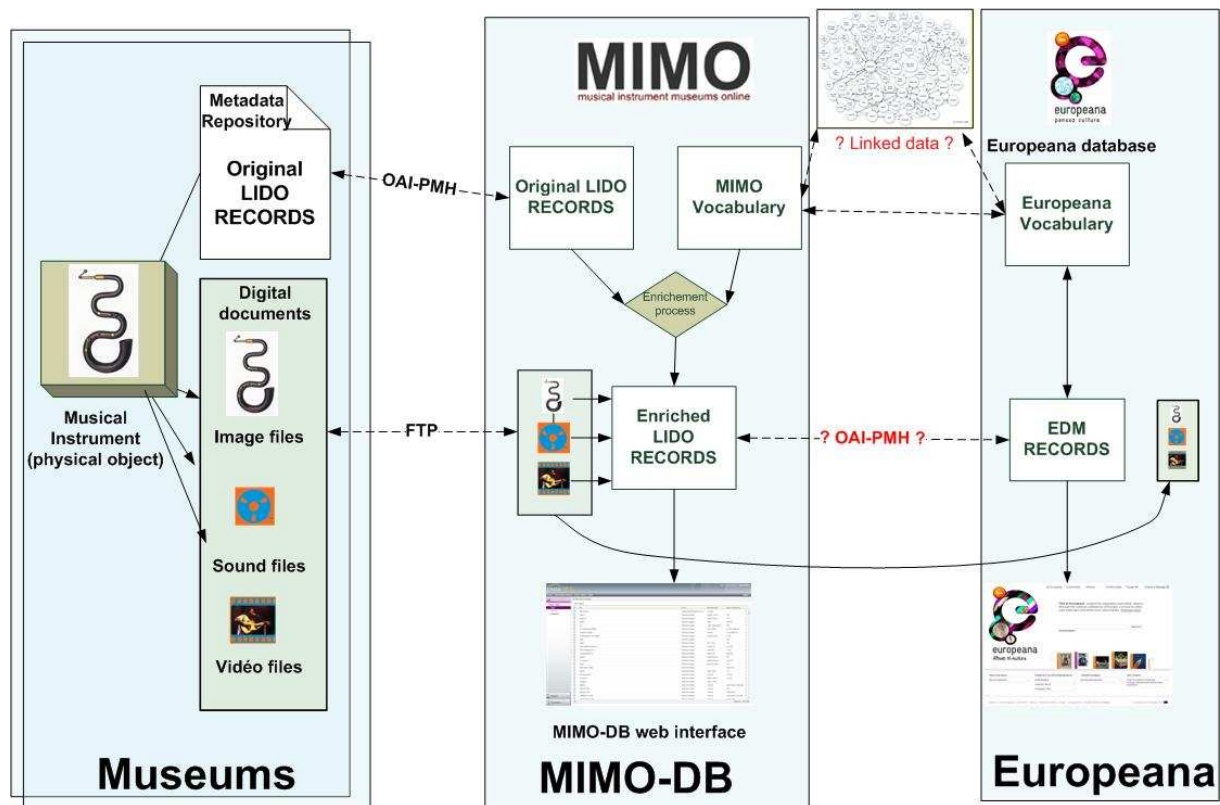


Figure 1 MIMO Technical Architecture

Using OAI-Protocol of Metadata Harvesting, MIMO-DB harvests musical instruments descriptive metadata which is conform to LIDO V1.0 model (<http://www.lido-schema.org/>). Sounds, Videos and images are sent to MIMO-DB using FTP.

MIMO-DB stores the records into an XML database and provides a web interface to search and retrieve musical instruments. In addition, MIMO-DB provides authorities management functionalities.

Search functionalities are available during the project for anyone using UserMIMO / UserMIMO login and password at the following URL: <http://194.250.19.151/mimo/infodoc>. After the end of the project, the search interface will be open to the general public (without login / password) at the following URL: <http://www.mimo-db.eu>

05/08/2011 Update : MIMO-DB is now fully open to the public.

2.2 Enrichment

When a record is ingested into MIMO-DB, an automatic "record enrichment" process is applied to the record just before its ingestion.

This enrichment consists of a matching (try) between specific record fields and terms of MIMO vocabulary and authorities (See Authorities). These authorities are hosted both by MIMO-DB and external sources (See Geographical locations)

As a result of this technical architecture, MIMO-DB will deliver the following 3 sets to Europeana:

- Musical Instrument Records
- Authorities and Vocabulary
- Images, Sound and Video files

3 MIMO's metadata model

3.1 Musical Instruments records

A detailed description of each field used in MIMO musical instrument records can be found on MIMO D2.1 (Specifications of the common data model for musical instruments description). In addition, a detailed description on mapping rules used by all partners can be found on MIMO D2.2 (Metadata mapping and OAI-PMH implementation guidelines)

MIMO-DB contains records in 6 languages: English, French, Dutch, German, Italian and Swedish.

3.1.1 LIDO

MIMO Musical Instruments records are using LIDO V1.0. MIMO records are fully using the “event-centric” potential of LIDO V1.0. Some records contain many events representing the life of a musical instrument.

3.1.1.1 Multiple digital representations for a single musical instrument

Each of the records possesses a digital resource (image). Many records will possess more than one image.

If there is more than one image, a “preferred” representation (typically the one used to generate the thumbnail) is indicated.

3.1.1.2 Multiple types of digital representations for a single musical instrument

In addition to images, some of the instruments will possess audio and video recordings. As a result, a single object can be linked to many images, audio and video recordings.

3.1.1.3 Multilinguism (multiple languages in one single record)

The Museum of Musical Instruments (Brussels) provides records in two languages (fr and nl). All the information is duplicated into both languages. The language is specified each time necessary. A special careful is to be taken at any steps of the ingestion process, in order to avoid duplication of similar elements, for instance events (each event is described in both languages, but it has to remain one unique event)

3.2 Authorities

3.2.1 Instrument Makers

Instrument Makers authorities are one of the WP3 deliverables. It is now hosted and managed by MIMO-DB, and used for data enrichment. Instrument makers are split into 3 types: individuals, corporate and families. Each of the categories has its own structure.

3.2.1.1 Instrument Makers (persons)

The following fields are available to describe Instrument Makers (persons)

Field	Mandatory	Repeatable	Example
Preferred Name	Yes	No	Stradivari
Preferred Forename	No	No	Antonio
Birth Date	No	No	1644-1649
Death Date	No	No	18.12.1737
Sources	No	No	Dictionnaire universel des luthiers / René Vannes, 1951
Alternate names	No	Yes	Stradivari Antonius ; Stradivarius Antonius ; Stradivarius Antonio

3.2.1.2 Instrument Makers (corporations)

The following fields are available to describe Instrument Makers (corporations)

Field	Mandatory	Repeatable	Example
Preferred Name	Yes	No	Erard et Cie
Beginning of activity	No	No	1777
End of activity	No	No	1960
Sources	No	No	Makers of the piano / Martha Novak Clinkscale, 1993
Alternate names	No	Yes	Erard & Cie

3.2.1.3 Instrument Makers (families)

Field	Mandatory	Repeatable	Example
-------	-----------	------------	---------

Preferred Name	Yes	No	Hotteterre
Beginning of activity	No	No	1601-1700
End of activity	No	No	1701-1800
Sources	No	No	The new Langwill index / William Waterhouse, 1993

3.2.2 Geographical locations

MIMO is using geonames (www.geonames.org) as an external source for geographical location reference. As explained in (*Enrichment*), we try to automatically match the value of each location field record contained into an instrument record, to a geoname term. If the match is done, then the record is “enriched” with the geoname URI corresponding to the term

3.3 Vocabulary

Delivered by MIMO WP3, the musical instruments vocabulary provides two different sub-thesauri: *Hornbostel and Sax Classification* (a professional classification of musical instruments mainly used by musicologists and curators), and *Instrument keywords*, a three level hierarchy of keywords used by the general public. These keywords are translated into the 6 MIMO languages. Each of the MIMO instrument records will be linked to one of these keywords. With a proper use into Europeana, these keywords will dramatically help to solve the multilingual search issue.

The vocabulary is managed into a tool. A fully functional demo of the tool (with a sample of the vocabulary) is available at the following URL:

http://incipioinfodoc.archimed.fr/Idesia/home.aspx?INSTANCE=MIMO&THE S=IFD_MIMO_CLASSIF&VIEW=DEFAULT&FORM=0&ACTIVE=TRUE

3.3.1 Hornbostel and Sax Classification (H&S)

The H&S classification is available in English only. Each term contains a label and a definition. For instance:

Label: 232 Friction drums with cord

Definition: The sound is excited by a tightly stretched membrane made to vibrate by friction. A cord attached to the membrane is rubbed.

Some of the terms are linked to one or many instrument keywords, using skos:related property.

3.3.2 Instruments keywords

Each of the keywords is available in 6 languages plus one language called the pivot language. The latter is the most commonly used term in Europe to describe a class of instruments. This 7th form was needed because its language is not necessarily one of the MIMO's 6 languages. Each of the 7 languages is a then a three level hierarchies (Families / Groups / Keywords) of terms, and each of the term may have one or many alternate labels

4 Images, Sound and Video files

All files are hosted on the MIMO-DB platform, ensuring a reliable access from Europeana. As a result, all direct URIs to files (ese:isShownBy) will point to MIMO-DB. Images will have a maximum resolution of 800x600. In addition, some data providers will provide landing pages (ese:isShownAt) on their own websites.

5 MIMO's metadata in Europeana

5.1 Harvesting and data exposition

The original plan in the DoW was to expose MIMO records using OAI-PMH. This is still possible, but it is not sure at this point that this technique would be the best one with EDM records, especially using RDF.

At the time of writing, MIMO WP2 will begin cooperation with Europeana Ingestion Team in order to find the best way to deliver the data for both parties.

The following two basic questions need to be solved before any further work begins:

- Do MIMO expose its metadata "as it is" (i.e. using LIDO format), along with a mapping OR directly in EDM / RDF ?
- How MIMO do expose Authorities and Vocabulary and how to represent the relations between Instrument records and Authorities / Vocabulary?

Given the fact that Europeana is now in the prototyping phase regarding the implementation of EDM, our guess is that these questions will find answers soon enough to be ready by the end of April 2011 to test data ingestion in EDM.

5.2 MIMO's Metadata and EDM

The figure "EDM RDF graph of CM:0162260" presents a possible RDF graph of a MIMO record in EDM. This graph was not produced automatically from RDF data; it is just a theoretical "drawing".

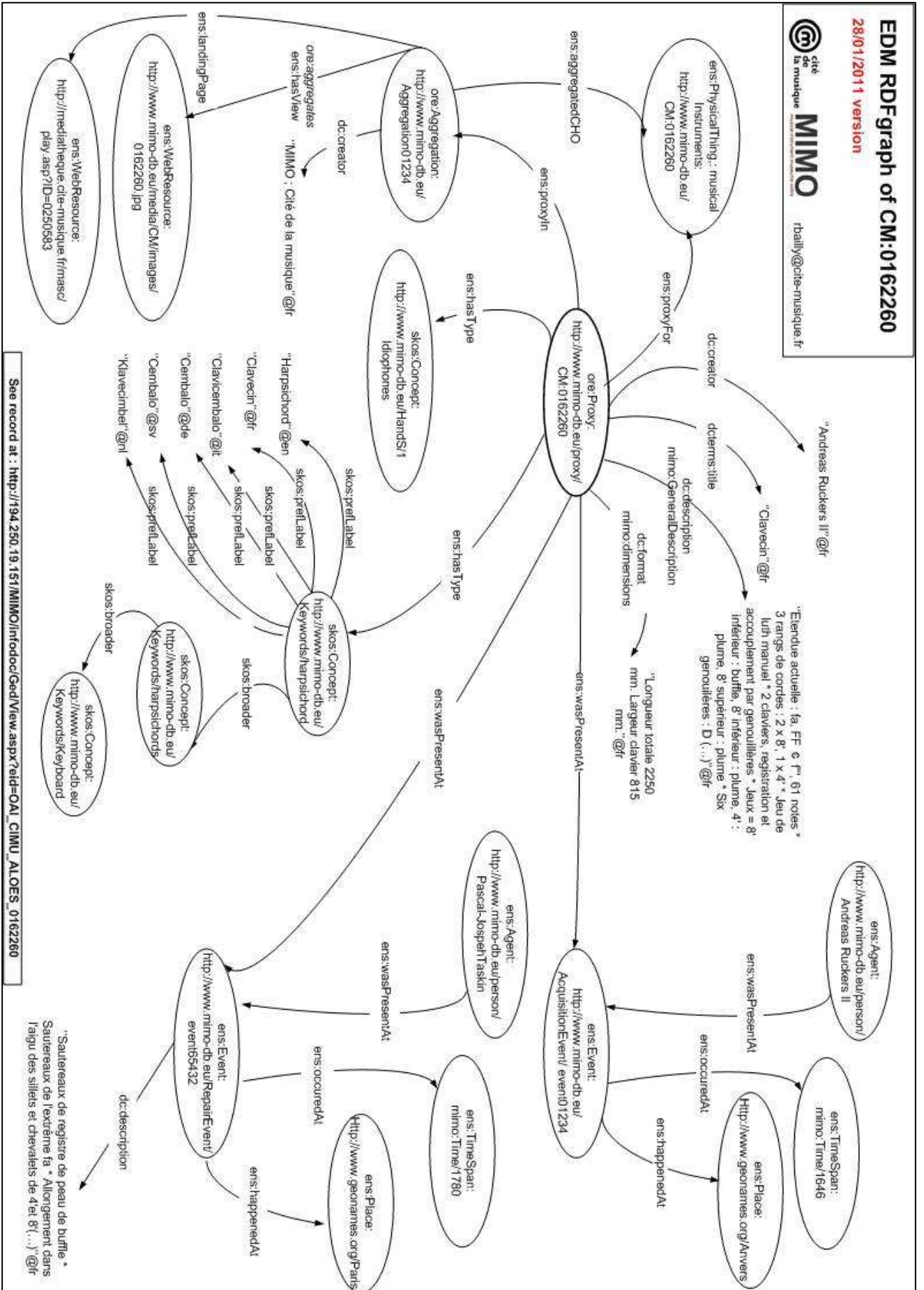
This graph is a good starting point for the design a more generic mapping from MIMO metadata to EDM.

In addition, a **preliminary** version of MIMO's vocabulary in SKOS format can be downloaded at:

<http://194.250.19.151/mimo/doc/mimo-voc.xml>

EDM RDF graph of CM:0162260
28/01/2011 version

© Cité de la musique **MIMO** rbailly@cite-musique.fr



See record at : http://194.250.19.151/MIMO/in/foadoc/Ged/View.aspx?aid=OAI_CIMU_ALOES_0162260

5.3 Update (16 / 09 / 2011)

As planned, a very close work with Europeana has been performed during the last 6 months. All open questions asked in January 2011 have been answered. MIMO's metadata records are delivered to Europeana "as they are", ie in LIDO format. We provide to Europeana an XSLT, implementing mapping from LIDO to EDM. The vocabulary is available in Linked Open Data.

5.3.1 Delivery of MIMO's metadata instrument records

Following the MIMO technical architecture represented in Figure 1, MIMO metadata records are now available to Europeana using OAI-PMH protocol at the following address:

<http://www.mimo-db.eu:8080/oaicat/OAIHandler?verb=ListRecords&metadataPrefix=lido&set=MU>

This repository contains all of the MIMO-DB records, except for the records without any image attached to it. The records are "enriched" records, containing all the links (URIs) to the online version of the vocabulary built by MIMO WP3.

5.3.2 Mapping from MIMO-LIDO to EDM

From April to June, we worked on a mapping from LIDO to EDM closely with Europeana Office, especially with Antoine Isaac. At this point, Europeana had not yet published a schema for its new model. In the en of June, Europeana did released an XSD schema. Since we were the first to use this schema, there has been a short period of debugging. We then had to re-adapt our previous mapping work to this new schema. At the end of july we were ready to be harvested. The Mapping is very easy to use in the sence that it is an XSLT. Since the Europeana Portal is still not ready to accept EDM, we then had to convert our data EDM data to ESE.

The result is the following process :

- 1 - Harvest the metadata from our OAI repository (see 5.3.1)
- 2 – Convert the metadata to EDM using MIMO-LIDO2EDM_v0.67.xsl
- 3 – Convert the result in ESE, using edm2ese.xsl

You can find here the latest versions of the corresponding files:

[edm2ese.xsl](#)

[MIMO_Sample_ESE.xml](#)

[MIMO-LIDO_EDM.xml](#)

[MIMO-LIDO_input_V065.xml](#)

[MIMO-LIDO2EDM_v0.67.xsl](#)

As of today, Europeana contains 43.478 MIMO records in ESE format.

In addition we created a URI for each of the instrument records in MIMO-DB. The URIs have the following format : [http://www.mimo-db.eu/Instruments/\[DataProviderAcronym\]/\[DataProviderLocalId\]](http://www.mimo-db.eu/Instruments/[DataProviderAcronym]/[DataProviderLocalId])

Here is an example for each data provider:

- <http://www.mimo-db.eu/UEDIN/5710>
- <http://www.mimo-db.eu/ULEI/M0001638>
- <http://www.mimo-db.eu/GNM/692612>
- <http://www.mimo-db.eu/CM/0157419>
- <http://www.mimo-db.eu/AF/IT-DSMFI-STR0001-0000061>
- <http://www.mimo-db.eu/SMS-MM/M2592>
- <http://www.mimo-db.eu/RMAH/118445>
- <http://www.mimo-db.eu/SPK/obj-16198>
- <http://www.mimo-db.eu/RMCA/BE-TEN00-MO.1953.74.4070>

5.3.3 Acces to the vocabulary

The vocabulary described in 3.3 is available for Europeana and the rest of the world using Linked Open Data technology.

Each term has a URI, and this URI provides HTML descriptions of the term, as well as RDF/XML versions depending on the request.

These RDF / XML versions are using various standard description models such as SKOS for the vocabulary, FOAF and RDA for the Instrument makers.

The Html view provides a display for humans, with all translations and synonymys for each term. As each term (as well as each translation and synonym) possess a URI, these URIs are transposed to hyperlinks, adn therefore they can be used to “browse” through the vocabulary.

Here are some examples:

- <http://www.mimo-db.eu/InstrumentsKeywords/2232>
- <http://www.mimo-db.eu/InstrumentMaker/Person/2889>
- <http://www.mimo-db.eu/HornbostelAndSachs/2168/423.232.2>

5.4 Figures

Here is a table describing the actual content (as of today) of MIMO-DB.

<i>Institution</i>	<i>Records</i>	<i>Digital documents</i>
Cité de la musique (Paris)	4448	images : 19160 audio files : 266 video files : 2
Galleria dell'Academia (Florence)	323	images : 827 audio files : 147 video files : 0
Germanisches National Museum (Nuremberg)	3258	images : 7295 audio files : 32 video files : 6
Musical Instruments Museum (Brussels)	7952	images : 19026 audio files : 54 video files : 0
Musik & Teatermuseet (Stockholm)	5104	images : 6125 audio files : 729 video files : 0
Royal Museum for Central Africa (Tervuren)	8435	images : 9812 audio files : 0 video files : 0
Stiftung Preussischer Kulturbesitz (Berlin)	10269	images : 5789 audio files : 174 video files : 41
University of Edinburgh	4050	images : 4050 audio files : 93 video files : 100
University of Leipzig	4434	images : 4904 audio files : 15 video files : 0
Musée Arlaten (Arles, France)	147	images : 153
Musée Auguste Grasset (Varzy, France)	31	images : 34
Musée de la Castre (Cannes, France)	470	images : 869
Musée de la lutherie (Mirecourt, France)	334	images : 899
Musée de la musique mécanique (Les Gets, France)	464	images : 468
Musée de l'Hospice Comtesse (Lille, France)	81	images : 81
Musée des instruments à vent (Couture-Boussey, France)	242	images : 952
Musée des instruments de musique (L'Aigle, France)	90	images : 92
Musée des musiques populaires (Montluçon, France)	79	images : 90

Musée Lascaris (Nice, France)	413	images : 415
Norwegian Museum of Cultural History (Oslo)	49	images : 49
Nydahl Collection (Stockholm)	38	images : 82
TOTAL	50815	images : 81172 audio files : 1510 video files : 149
	<i>Records</i>	<i>Digital documents</i>