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List of participants:

Participant no.	Participant organisation name	Participant short name	Country
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2	Federal Institute for Materials Research and Testing	BAM	Germany
3	Graz University of Technology	TUG	Austria
4	Institut Valencià de Conservació i Restauració de Béns Culturals	IVCR	Spain
5	National Gallery of Denmark	SMK	Denmark
6	Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario	ICPAL	Italy
7	Wallraf-Richartz-Museum & Fondation Corboud Köln	WRM	Germany
8	Azienda U.S.L. Roma "E"- Biblioteca Lancisiana	BL	Italy
9	Bibliotheca Hertziana	HERTZ	Italy/Germany
10	Transilvania University of Brasov	UTBV	Romania
11	Bach-Archiv Leipzig	BAL	Germany
12	International Mozarteum Foundation	ISM	Austria
13	Fondazione Museo del Tesoro del Duomo e Archivio Capitolare di Vercelli	ACV	Italy

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PROJECT PROFILE (Short, precise, verifiable) – **maximum 2 pages**
Proposal acronym: IMPERIALLE
Proposal full title: Imperialle – European Masterpieces on Paper

Information on the proposed service/solution

Description of the issue and proposed service/solution

The *Imperialle* project will connect multiple research areas and deal with a number of time periods and countries. The main goal of the proposed project is the digitisation of material, in this case **masterpieces on paper,** for Europeana. Europeana will make this material available in digital form for the first time. A new feature of this project, when compared to earlier projects, is that two different methods will be used to digitise each object: one, the traditional means of reflected light from both the recto and verso sides, and the second, using transmitted light or radiography (comparable to X-ray imaging). Thus the user is given not only the possibility of viewing a high resolution image of each unique masterpiece, but also of looking *through* the masterpiece, seeing the paper's structure and, if present, the watermarks. Examining a paper's structure and watermarks allows its provenance to be identified, which provides a great deal of important added information about the work of art or text for which the paper has been used. The works of individual artists are often spread through many collections and catalogued under dissimilar names or attributions (a problem resulting from incorrect subject headings); it is clear that uncovering relationships between these works is useful as well as very desirable. Adding data about paper structure to the information already known about a masterpiece is valuable not only for scholars, but it also allows the layman to gain deeper insights into particular art objects. Information about the genesis of a work based on the material it is made of adds significantly to what is understood about the object and its creator. Additionally, *Imperialle* will offer the possibility of discovering relationships between objects being examined in different disciplines, such as art history, musicology and literature.

Despite the study of paper clearly being a valuable facet in historical research, its importance unfortunately is not yet widely appreciated. The *Imperialle* project will increase awareness about paper studies, as well as about the beauty and significance of watermarks, and stimulate an adequate standardization in the digitisation of artworks on paper in the future.

Target users and their needs

The main target users are the users of Europeana, i.e., the general public. *Imperialle* will enhance Europeana by allowing unique European cultural masterpieces of international significance to be examined in detail. Among these works are the delicate drawings by Rubens and Dürer, for example, as well as prints by other major European artists, original music scores and letters by Bach and Mozart, architectural drawings by Hittdorff, precious European book art and early prints (incunables), scientific works such as important illustrated medical books of the 17th and 18th centuries, and still other pieces.

A second important target group of non-specialists to *Imperialle* are art collectors who buy old master prints at antique markets, antiquarian bookshops or auctions. A common question that often then arises is whether the acquired piece is an original or a later print, copy, forgery, etc. Because prints are quite inexpensive, many lay people collect them as well. Knowledge about the paper they are printed on can greatly assist customers who would like to know more about a print they have purchased.

A third user group are scholars and specialists in the fields of art history, music, architecture, literature or the natural sciences, i.e., fields in which paper has been used as an information carrier. The aim of such users is to identify and date particular sheets of paper (used for prints, drawings, letters, documents, scores, etc.) as well as to determine their provenance.

Finally, restorers and conservators are a fourth target group. It is clear that proper digitisation provides good documentation of an object's state of preservation, as it shows mechanical damage, scratches, stains, ink corrosion, etc. But another significant benefit of digitising fragile masterpieces on paper is their dissemination on the internet, as often they cannot be displayed for longer periods due to their extreme sensitivity to light.

Usage

A user of the service will have three ways to access and use the digitized data in *Imperialle*.

a) The user will be able to search and retrieve information about the *Imperialle* masterpieces using all Europeana facilities. The individual works will be presented in the traditional manner, as digitized

photographic images, but *Imperialle* provides the additional possibility of seeing images of the paper structure.
b) Europeana already provides links to the paper portal Bernstein (www.memoryofpaper.eu), where the user can search for specific paper features, create images thereof and undertake more detailed investigations. In addition, it is possible for the user to determine the date and origin of paper sheets used by a specific artist and to search for others that are identical.
c) Finally, the user will be given the possibility to be linked from Europeana to the server of the relevant content provider in order to get further in-depth information about specific objects.

Technology

The individual works will be digitized in two ways: by using reflected light (both verso and recto, if necessary) and secondly, by transmitted light. The first method is the traditional means, already well established, of digitising art objects, books, and documents. The second method digitizes the paper structures, and in many fields is a rather new technique. The specific method used will depend on the characteristics of the individual objects themselves, as well as the technological capabilities of the various partners in the project.
The digitized works, together with their metadata, will be made available on the servers of the various content providers. The Bernstein portal will aggregate the *Imperialle* data. For this purpose, Bernstein will be given additional search features. The various databases are or will be connected with Bernstein using appropriate protocols (e.g. SRU). The connection between Europeana and Bernstein has already been implemented by OAI-PMH. The existing connections are established, tested, and are functioning well; the new ones will be implemented accordingly.

Content

The term masterpiece is usually associated with the visual arts. The *Imperialle* project aims to overcome this restriction by targeting masterpieces in other fields as well, including music, literature, architecture, religion and the natural sciences. The digital contents of the *Imperialle* project will come from institutions in six different countries. All of these institutions deal with the study and care of masterpieces that have paper as their carrier, and all are major cultural institutions. The materials they will provide can be classified into the following areas:
Art history: prints and drawings by famous artists such as Rubens, Dürer, Maarten Van Heemskerk, Goya, Piranesi, and others; Vedute d'Italia (20,000);
Music: scores by Renaissance and Baroque composers, Johann Seb. Bach, Wolfgang A. Mozart;
Architecture: drawings and sketches by Jakob Ignaz Hittorff, the most important Parisian architect of the 19th century;
Archaeology: drawings by Jean-Baptiste Lepère, who documented Egyptian monuments during Napoleon's Egypt campaign;
Natural sciences: the most important medical texts of the 16th to 18th century, with illustrations of anatomy, medical tools and medicinal plants, among them a unique collection of wonderfully illustrated medical books of the 17th -18th century by Giovanni Maria Lancisi;
Religion: masterfully illustrated bibles and religious books from the 15th to 19th century in Romanian and Spanish collections.

Sustainability

All of the content providers are major cultural institutions: museums, libraries, archives, research institutes, and universities. They all are funded with public money and are obliged to make their work and collections available to the general public. The proposed digitisation is in accordance with the objectives and guiding principles of these institutions. In addition, high-quality and well-planned digitisation is an important step towards the preservation of cultural heritage altogether. This is why all participants in the *Imperialle* project plan to maintain and keep the service running. They also plan to continue digitising their material after the project has ended, since it lies within their own interests and goals. The Bernstein portal, which will function as an aggregator for *Imperialle*, is currently maintained, serviced and updated by the Austrian Academy of Sciences. This will continue to be the case in the foreseeable future.

Ownership

The owner, provider, and maintainer of the digitised data are the content providers themselves who own the masterpieces. The digitised data will be made available on servers of the content providers with the possibility for Europeana to harvest the metadata via the Bernstein portal.

Other

SECTION B1. RELEVANCE

B1.1. Project objectives

The proposed project – the digitisation of important **European masterpieces on paper** - is a targeted digitisation project in synergy with and complementing the *Bernstein* portal of paper (www.memoryofpaper.eu), which is already accessible through Europeana. The project title *Imperialle* was chosen because this was the established name for the largest and most expensive mould-made paper format used in Europe over many centuries. It thus brings to mind the Europe-wide importance of paper. The aim of *Imperialle* is to digitise important European cultural masterpieces on paper and make these digitalized images available by means of Europeana. The project will use *Bernstein* as an aggregator for forwarding the metadata to Europeana. The masterpieces that have been chosen are works of art already in great public demand and of high interest for the wider European public. They have a multinational dimension and cover a broad range of cultural heritage objects on paper. Section B2.1b describes the quantity and quality of the objects to be digitised in detail. Among the masterpieces to be included are works by Peter Paul Rubens, Albrecht Dürer, Maerten Van Heemskerk, Johann Sebastian Bach, and Wolfgang Amadeus Mozart, all artists of great significance in Europe. The total number of individual objects to be digitised will be around 45,000, and all of them will be provided with detailed metadata. Each object will be further accessible and retrievable at the item level from the servers of the various content providers. The fact that all of the objects to be digitised were created on paper provides a thematic continuity.

Since the Renaissance, paper has been the most important data and image carrier in Europe and is therefore highly relevant for anyone interested in history and culture. Since paper has been used for such a long time, in Europe up to eight hundred years, there are an enormous number of existing sheets of paper that have been used for artistic or historical purposes, indeed amounting to billions of items. Together they constitute a sizeable piece of Europe's cultural past. The identification of a sheet of paper by examining its specific characteristics, allowing the determination of its date of production, origin and even the individual paper-mill that produced it, is of great historical value. Combining the provenance of a piece of paper, its trading and other movements, its use and possible accidents through time and space provides a series of captured events, events that then constitute the foundation of an often most revealing and intriguing series of historical events. These events are essential for identifying and understanding our common cultural background. Furthermore, paper has always been an international resource and, as such, was distributed all over Europe, thus making it an ideal candidate for identifying, demonstrating and consolidating Europe's common cultural roots.

The carefully selected masterpieces will be digitized in two distinct ways: by using reflected light (both the verso and recto sides, if possible) and secondly, using transmitted light. The first method is the traditional means, already well established, of digitising art objects, books, and documents. These images will be made available online via Europeana, providing high-definition images of elaborate and light-sensitive masterpieces that are rarely displayed for viewing or study. Secondly, the paper structures will be digitised by means of transmitted light or soft x-raying, a technique that has not yet been used in many fields. The specific method used for digitising the paper structure will depend on the characteristics of the individual objects themselves, as well as the technological capabilities of the various partners in the project. Thus the user will be given not only the possibility of viewing a high resolution image of each unique masterpiece that clearly presents its artistic or cultural importance, but they will also be able to look through the masterpiece. This will offer the unique opportunity of seeing the paper's structure and, if present, its watermarks. Thus, each object will be presented in at least two high-definition views.

Providing comprehensive **metadata** for the cultural objects is one of the most important concerns of *Imperialle*. Mapping between the paper and watermark metadata and the Europeana Semantic Elements (ESE) metadata has already been implemented using the standard OAI-PMH protocol and it works very well. The same standards and mappings will be used in *Imperialle* for the metadata on cultural objects and masterpieces. The metadata will be available in at least two languages, one of them English.

Imperialle can be used directly within Europeana or at the Bernstein portal. As mentioned above, the information carrier paper is particularly useful in historical research because in many cases, careful study of a sheet of paper allows much precise historical data to be collected. Watermarks and other unique paper characteristics, such as chain and laid line imprints, can be used to identify the paper's maker and thus, the date and location of its production. These unique paper characteristics make it possible to compare the paper used in a particular field, be it art, literature, music or architecture, in order to determine the chronology of an oeuvre and to trace it back to its origin. For example, knowledge of paper structure enabled the stock of 19th-century prints at the Swedish Heritage Museum to be linked with drawings in a private Spanish collection and a group of letters kept at the Russian Academy of Sciences, facilitating (in some cases, making even possible!) the identification and determination of the origin of many hitherto unidentifiable objects, or objects that had not been adequately described. Presently, such interdisciplinary research is rarely possible due to the lack of access to wide enough resources; it is for this reason that *Imperialle* plans to link very diverse collections at an entirely new level, jointly showing images and paper structure. This will serve as a foundation upon which to build further.

The materials to be digitized are being provided by various cultural institutions. Their common interest in digitising the masterpieces in their holdings is based on the need or desire to make them available to both scholars and the general public, as well as to preserve and protect these precious objects. In some cases, *Imperialle* has prompted the interest in digitising these holdings and making them available on the internet, and in other cases it will continue digitisation projects of the content providers already in place. This and the sustainability of Bernstein, as guaranteed by contract at the Austrian Academy of Sciences, will ensure the continued availability of new material, also after the *Imperialle* project has ended.

Jakob Ignaz Hittorff, WRM

Vedute d'Italia, HERTZ

B1.2 EU and national dimension

The relevance of *Imperialle* and its aim of digitising extraordinary European masterpieces and allowing their accessibility through Europeana will be explained below. The selected masterpieces are carriers of our multicultural heritage. Works by Peter Paul Rubens, Albrecht Dürer, Johann Sebastian Bach or Wolfgang Amadeus Mozart are without doubt a fundamental part of the European cultural heritage of which we are most proud.

Paper technology, as well as the structure and watermarks found in individual pieces of paper are important elements for the geographical placement and dating of the sheets of paper used for drawings, manuscripts, musical compositions or architectural sketches and plans. For centuries, paper technology has had a significant impact on the propagation of cultural and intellectual assets within Europe, from documents to books, drawings, prints and graphic works. In addition, however, to its cultural importance for communication or visual creations, the paper itself contains a multitude of information about manufacturing processes, the development of paper technology in different regions on the European continent, as well as trade routes and distribution channels.

Towards the end of the 13th century, Italian paper manufacturers introduced watermarks into their paper – directly part of the paper, they were thus impossible to duplicate and were possibly a mark of quality. The idea of quality marks soon spread all over Europe and is still in use today. Watermark motives have varied from paper mill to paper mill, and from one epoch to another. Their identification can therefore assist scholars in dating and locating where a particular piece of paper was manufactured, and thus help in placing the origin of a piece of graphic art, a book or a document into a specific geographical area and time period.
Unfortunately, we know very little about early paper manufacturing and we therefore often cannot relate early watermarks to specific paper mills. Although research on watermarks has still a great deal of room for further development, nevertheless, identical inherent watermarks aid in identifying a series of objects if some of these objects are dated documents or drawings – information that on occasion verifies or contradicts other indices of a stylistic, iconographical or technical nature.

If, for example, we possess a drawing by Rubens that cannot be connected to a finished painting, its dating within his oeuvre is uncertain. The existence of a watermark could prove crucial. It might be possible to date the drawing within a specific period if an identical watermark can be found in other drawings, as it thus would have been part of a larger batch of paper from the same manufacturer.

Confronted with the dating of a print – determining whether it was printed in the artist's own time or much later, even if at the original place – identifying a watermark is again the single most reliable method of solving the problem.

Thus, it is a paramount desideratum to identify and digitalize all of the watermarks found in master drawings and prints. A few projects have been initiated in Europe and the United States. Documenting a few watermarks in a particular collection does not lead to greater insights with regard to that collection alone, but accumulating documentation of the same type of watermarks in other collections generates important reference material for dating as well as other sorts of relationships between drawings, prints, sketches and illuminated books.

The study of paper can only be fruitful if performed on a super-national level, i.e. at the European level. Paper, together with the artistic creations it carries, is perhaps the most prominent multinational and multicultural product of Europe and has an immense importance for our common identity. The multinational character of this project can be clearly seen in the constitution of its consortium, formed by partners at cultural institutions in Austria, Denmark, Germany, Italy, Romania, and Spain.

Additionally, it is of paramount importance that we realise that most of the items to be digitised in Imperialle will not survive if they continue to be displayed in exhibitions or museums. The fragility of works on paper, be it drawings, prints, illuminations, etc., is well established. The only way to share these fragile collections with the general public is through digital images. Europeana is ideal for making such images available online. Thus,

the significance of Imperialle is its part in sharing vulnerable and fragile objects that are rarely seen with a large community of people, which in turn, is part of the goal of lifelong learning and pleasure for the peoples of the world.

Biblioteca Lancisiana

B1.3. Maturity of the technical solution

All partners within *Imperialle* are familiar with or even developers of new interfaces for public outreach through the internet via digitisation of parts of their collection. The perspectives and technical system on which the implementation of *Imperialle* will be based is the success of the "Bernstein portal". The following section will summarize the most important facts and results of this.

The Bernstein project was co-funded by the European Commission, eContentplus program, from September 2006 to February 2009 (ECP 2005 CULT 038097/Bernstein). The main goal of the Bernstein project was to produce a digital infrastructure for the expertise and history of paper based on images visualizing the paper's structure. The individual resources are databases of watermarks and other annotated features, image measurement software, contextual resources for cartography and bibliography, and an integrated workspace.

The technologies that were used to implement the Bernstein portal are all of them *open source*, very well developed and widespread. Below is a list of technologies and protocols used in Bernstein:

- MySQL (Database Management System; MySQL Community Server: http://www.mysql.com/downloads/mysql/)
- Java (Programming language to implement the application itself; http://java.sun.com/javase/downloads/index.jsp)
- Spring Framework (Application Framework; http://www.springsource.org/)
- SRU (Search and retrieval via URL; http://www.loc.gov/standards/sru/)
- JFreeChart (Java free chart library; http://www.jfree.org/jfreechart/)
- DWR (Direct Web Remoting; http://directwebremoting.org)

At the end of the Bernstein project (Feb 2009) the official 'Bernstein portal' was presented online (http://www.memoryofpaper.eu) and since that time the portal services are used by "paper historians" and other interested people in Europe and from all over the world. It consists of over 120.000 records of papers from pre-modern Europe found in books, archive documents, and prints.

In Jan/Feb 2010 the Bernstein portal has been extended by a gateway to support the integration of Bernstein artefacts into Europeana. This gateway makes use of the OAI-PMH protocol (Open Archives Initiative Protocol for Metadata Harvesting; http://www.openarchives.org/pmh/). The acceptance tests for OAI-PMH harvesting were successful and the Europeana harvesting in production started with end of February 2010.

To fulfil the requirements for *Imperialle* the existing Bernstein portal will be extended in various aspects. For instance the database schemas will have to be expanded to support all the metadata available for the new digitized objects, portal services have to be adapted, usability extensions have to be provided and the protocol layer for data integration into Europeana has to be augmented. The new Bernstein portal will aggregate the metadata from the distributed databases and thereby the performance of the search within the portal and of the gateway for Europeana will be improved. The new architecture also will allow more advanced search features (e.g. for temporary or geographically relations) and will support the additional metadata of the new databases.

SECTION B2. IMPACT

B2.1a. Target outcomes and expected impact

The viability, sustainability and scalability of the target outcomes after the end of the project are implicitly guaranteed by the institutions of the project partners.
The content-providing institutions are major cultural institutions funded primarily by various national states and thus, they are explicitly obligated to make their treasures and inventories available for research as well as for the pleasure and education of the general public. Digitisation of their holdings is necessary in order to make it widely accessible and to preserve it physically. A digital copy in high resolution often shows more details to the viewer than would the original object if viewed in a museum or library display. Hence in nearly all cases, digital copies, in high resolution, are a complement to the often fragile and light-sensitive originals, which must be kept and preserved in climatologically secure places. It should be stressed that paper objects such as drawings, prints, letters, scores, etc. are highly fragile. The sensitivity of these objects is well known; the only way to share these frail collections with society will be through digital images. These can be made available online via Europeana. Public interest in and demand for access to these highly vulnerable tokens of our cultural heritage are signs pointing to the importance of delivering high-level digital and meta-data information to our communities. *Imperialle* is dedicated to sharing otherwise at-risk and fragile objects, which are rarely seen, with the wider community at large, as part of lifelong learning and pleasure wherever people are.

In some cases, *Imperialle* has initiated the interest of the content providers in digitising their holdings and making them available on the internet, and in other cases, it will continue digitisation projects already in the process of being undertaken. This is a sure sign that these digitisation efforts are timely and have long been needed.
All of the partner institutions have a serious interest in maintaining the availability of their digital contents and to continue digitising additional items on their own after the initial project is completed. This shows that not only current intentions will be actualized by the project, but it is expected that the project outcome will actually entail an increased *viability, sustainability and scalability.*

The far-reaching potential of *Imperialle* will be publicized through a series of exhibitions demonstrating the importance of paper and watermark research. Similar presentations were already held during the Bernstein project, and they turned out to be a very successful dissemination means, attracting thousands of people. Included in the plans for these further exhibitions is a catalogue in four languages: English, German, Italian, and Spanish. The National Gallery of Denmark has even considered establishing a focal exhibit for museum visitors to present *Imperialle*, some of the masterpieces it contains, and information about the paper used by artists of the 16th to 17th centuries.

The continued availability of the contents for Europeana through the Bernstein portal is also guaranteed. Although the first phase of the Bernstein project was concluded in February 2009, the Austrian Academy of Sciences is obligated by contract to keep the service running. Bernstein has continued to be updated and extended since the end of the project. The most important update has been the realisation of a connection with Europeana.

B2.1b. Underlying content

i) Content
The term masterpiece is usually associated with the visual arts. The *Imperialle* project aims to overcome this restriction by targeting masterpieces in other fields as well, including music, architecture, religion and the natural sciences. The fact that all of the objects to be digitised were created on paper provides a thematic continuity. The objects date from the15th century to the 19th century. The detailed descriptions of the objects follow Table 1, which provides an overview of the content.

Table 1: Template – Underlying content

Quantity and Quality of the Content						
Provider	**Quantity and type**	**Subject matter (topic or theme that content is about)**	**Language**	**Format**	**Existing Metadata**	**IPR**
WRM	300 drawings	German drawings from the 15th and 16th centuries	German	Paper with drawing	Partly digital/archives in German	WRM
WRM	300 prints	Drawings and prints of Jean-Baptiste Lepère	German	Paper with drawing/print	Partly digital/archives in German	WRM
WRM	400 drawings	Artistic estate of Jakob Ignaz Hittorff – a selection of popular sheets	German	Paper with drawings	Partly digital/archives in German	WRM
SMK	286 drawings	Rubens Cantoor – Willem Panneels, c. 1630	Danish English	Paper with drawing	Archives in Danish	SMK
SMK	242 drawings	Other Rubens Cantoor, c. 1630	Danish English	Paper with drawing	Partly digital in Danish/ English	SMK
SMK	140 drawings	Maarten van Heemskerck, c. 1520-1570	Danish English	Paper with drawing	Archives in Danish	SMK
BL-ICPAL	1,000 illustrations	Illustrations from unique medical books of the 18th century representing the period's state of the art in medicine	Italian English	Paper	none	BL
IVCR	79 engravings "*aguafuerte*"	*Los Caprichos* by Francisco Goya	Spanish	Paper	Records in the catalogue of the museum	IVCR and local partners
IVCR	800 engravings "*aguafuerte*"	Prints of Giovanni Battista Piranesi	Italian	Paper	Museum catalogue	IVCR and local partners
IVCR	200 music sheets	16th- and early 17th-century books of printed music and autograph manuscripts (Tomas Luis de Victoria, Palestrina, Francisco Guerrero)	Spanish	Paper	none	IVCR and local partners
IVCR	200 engravings "*entalladura*"	Illustrated and illuminated bibles from the 16th century from the library of San Juan de Ribera	Spanish Latin Greek Hebrew Aramaic	Paper	none	IVCR and local partners
IVCR	800	Medical and	Spanish	Paper	none	IVCR and

	engravings "*entalladura*"	botanical books of the Renaissance of high artistic and scientific value (Boerhaave, Swieten, Baglivi, Boissier de Sauvages, Chauliac, Galenus, Vesalio)	Latin Greek			local partners
BAL	3,500 sheets	original documents, manuscripts of Johann Sebastian Bach	German English	Paper	Mets/Mdos	BAL
BAL	16,800 sheets	collection Bachiana including the estate of C.P.E. Bach	German English	Paper	Mets/Mdos	BAL
ISM	1,600 letters	Mozart letters	English German	Paper	yes	ISM
ISM	100 music manuscripts	Relevant music manuscripts of Mozart; in total 13,000 pages	English German	Paper	yes	ISM
HERTZ	20,000 sheets	Vedute d'Italia (Views of Italy)	Italian French English German Dutch Latin	TIFF 600 dpi / books with graphics (most of them large scale)	Records in the catalogue of the library (cataloguing rules: RAK-WB)	HERTZ
ACV	30 books	Rare printed musical books of the 17th century (Centorio, Donati, Brusaschi, Perotti)	Italian English German French	Paper	none	ACV
ACV	100 books	European incunabula (in part illustrated and illuminated)	Italian English German French	Paper	none	ACV
ACV	50 manuscripts	16th century musical manuscripts written by Kapellmeisters of Vercelli's cathedral	Italian English German French	Paper	none	ACV
UTBV	950 sheets	Incunabula and unique editions of illustrated and illuminated religious books from the 15th to the 19th century	Romanian, Slavonic, Latin, German, Greek	Paper with handwriting/illustrations/ engravings/prints	none	UTBV and local partners
UTBV	350 sheets	Scientific books with history and geography of South-East Europe, the Balkans and especially the Ottoman Empire.	Romanian, Slavonic, Latin, German, Greek	Paper with handwriting/illustrations/ prints	none	UTBV and local partners
UTBV	100 sheets	Law books: early statutes, codices and constitutions from the 16th to the 19th century	Romanian Latin German	Paper with handwriting/illustrations/ prints	none	UTBV and local partners

Institut Valencià de Conservació i Restauració de Béns Culturals (IVCR)

The IVCR's department of graphic paper and archival material is in the process of documenting and conserving Valencia's graphic heritage in the museums, universities, archives, libraries and cathedrals of the Comunidad Valenciana (Spain). Since its opening it has become the one of the most important institutions devoted to the field of conservation and restoration in Spain. This institution will operate as an aggregator for three Valencian cultural institutions.

The Academy of Fine Arts of San Carlos at the Fine Arts Museum of Valencia will contribute 800 engravings by **Giovanni Battista Piranesi** (1720-1778), a set of 79 engravings of *Los Caprichos* created by **Francisco Goya** in 1797 and 1798 and also his drawing "Academia". The prints were an artistic experiment: a medium for Goya's condemnation of the universal follies and foolishness in the Spanish society in which he lived.

The second institution will be the Institute for the History of Medicine and Science, which has a library containing a unique and precious collection of scientific books, covering not only medicine but also botany, astronomy, and veterinary science. Among these treasures are Renaissance editions of the main authors of Classical Antiquity, including Hippocrates, the father of Western medicine, Dioscorides, whose volume of herbal medicine was extremely influential, and Galenus, whose medical theories guided medical practices in Europe for more than a thousand years. It also includes major works by Renaissance, Baroque and Enlightenment doctors and physiologists, such as Vesalius, Haller, Boerhaave, van Swieten, Baglivi, Boissier de Sauvages, Chauliac and many others. The engravings and plates in many of these volumes provide these works with an artistic value over and above that of their scientific one. The plates are not only relevant to the text, but are beautiful and interesting in and of themselves, and are often of astounding quality. More than 800 pages with illustrations from the above-mentioned books will be digitised in high resolution, commented on by descriptive metadata, and made available for Europeana.

The Royal College Seminar Corpus Christi, founded by St. John de Ribera (1532-1611), is one of the most important historical-artistic complexes of the Comunidad Valenciana. It is the third Valencian institution that will provide data for Europeana. An important part of the college collection is the private library of the saint, which includes his bibles. Among them are some of the most outstanding bibles ever printed, including the Castilian translation of Cipriano de Valera and Lorenzo Iacobi (Amsterdam,1602), the New Testament of Arias Montano edited by Christopher Plantin (Amsterdam, 1571), a bible published by Robert Estienne in Paris 1540, which was corrected and amended by officials of the Inquisition, two beautiful bibles published in Lyon by Guillaume Roville in 1566 and 1586, the Sistine Vulgate (Rome, 1590), the Complutense Polyglot Bible (Alcalá de Henares, 1514-1521), the Royal Polyglot Bible published by Plantin (Antwerp, between 1569 and 1572), and one of the most outstanding bibles, the Bible of the Klauber, with more than a hundred illustrations depicting major biblical passages. The great beauty, artistic quality and historical and religious importance of these bibles will be demonstrated to Europeana users through more than 200 digitised pages, which will also be amended with metadata.

Additionally, the Royal College has a large holding of 16th- and early 17th-century books of printed music and autograph manuscripts. These books are exceptional because very few copies have been preserved in other parts of the world. In addition, most are still in relatively good condition and are possibly the best copies to use for dissemination and research. They contain printed music of great Renaissance and Baroque composers, including Tomas Luis de Victoria, Palestrina and Francisco Guerrero, all of whom are of pan-European importance.

National Gallery of Denmark (SMK)

The Department of Prints and Drawings at the National Gallery of Denmark possesses 528 drawings from the workshop of the Flemish painter **Peter Paul Rubens** (1577-1640). These drawings are a very popular part of the museum's collection. When they became part of the collection is shrouded in oblivion, and very little is known about their nature or provenance.
Around 80 of them carry inscriptions in a mysterious notation. They have been deciphered as stating that the motifs are based on drawings in the archive where Rubens kept his studies. These drawings appear to be by the

painter **Wilhelm Paneels**, who administered Rubens' workshop during the latter's journeys to Spain. Based on these drawings, an attempt has been made to systematize the drawings by Paneels stylistically, but the results have not been convincing and no new information could be added for understanding this painter's work.
The collection can be seen as a coherent art historical document that reveals details about the organisation of the work in Rubens' workshop. A number of features help to reconstruct the original order of the drawings, trace their origin, as well as explain how they ended up in Copenhagen. Some of the drawings appear to be studies by Rubens himself, whereas others seem to be copies of his works or studies by his assistants, which were then used for the many paintings that poured out of Rubens' workshop.
If these 528 drawings were carefully analysed, it would most likely be possible to connect each drawing with a specific painting. Additionally, investigating the watermarks and the paper structure would allow us to reunite drawings that were cut from the same sheet of paper. Some of these would most likely be among those in the Copenhagen collection, but others may be connected to drawings by the master himself that are kept in other collections. This project will therefore enable these works to be linked to works in collections of Rubens drawings all over the world. This will undoubtedly allow a deeper understanding to be gained of how Rubens' paintings were created, and will set a standard for the management of similar collections in other institutions. Also facilitated will be a better understanding of the similarities and differences between comparable painters' workshops in 17th and 18th century Europe.
The digitisation of the images and the paper structure of the drawings in the **Rubens Cantoor** collection in Copenhagen is crucial for this understanding.

Maerten van Heemskerck (1498-1574) is one of the main protagonists of art in the Netherlands of the 16th century. This artist brought Michelangelo's imagery to northern Europe and played a major role in the diffusion of Classical Antiquity north of the Alps. In the Department of Prints and Drawings at the National Gallery of Denmark he is represented with 140 drawings, which is the largest number held by any museum with the exception of the Kupferstichkabinett in Berlin. Unlike the drawings in Berlin, which are mainly sketches made during van Heemskerck's sojourn in Rome, 1532-1536, the drawings in Copenhagen cover almost his entire career and thus give the best impression of his stylistic development to be seen in any collection.
Most of the drawings are polished and well-designed models for a series of engravings, of which some were then done by the artist himself, others by his friend, the learned humanist Dirck Volckertsz, or by Philip Galle, the leading printer and editor in the Netherlands in the second half of the 16th century. Many of the drawings still carry traces of the stylus with which they were traced onto the printer's plates. Samples of the prints are also kept in the Department. An analysis of the paper and comparisons with the paper used for the prints as well as the paper of van Heemskerck drawings in other collections would no doubt give new insights into aspects such as dating, connections between various printers, etc.
The drawings seem to have been part of the Copenhagen collection since the late 17th century. A volume of small black and white reproductions was published in 1971, already nearly forty years ago. Since they are one of the museum's greatest attractions and represent a major contribution in the dialogue between southern and northern Europe, digitization of these images and their paper is urgently needed.

Wallraf-Richartz-Museum & Fondation Corboud Köln (WRM)

The WRM will be taking part in the *Imperialle* project with three exceptional collections: early German drawings, prints by Jean-Baptiste Lepère, and drawings by Jakob-Ignaz Hittdorff.

The German drawings from the 15th and 16th century comprise works by **Albrecht Dürer**, **Hans Schaufelein**, **Erhard Schön**, **Bartholomäus Bruyn**, **Hans van Aachen** and others, all of whom can be considered among the greatest European artists of their time. Dürer's "Catherine", connected to Dürer's journey to Venice, is one example of the internationalization of fine arts in Europe from about 1500. Bruyns "Resurrection" shows the strong influence of Dutch art to that in Cologne around 1530. And Hans van Aachen's drawing style demonstrates the influence of the courts in Florence, Prague and Munich on German art around 1600. These drawings have been selected as they reflect the cultural shifts that occurred in Germany during the 16th century, a facet that is of high intercultural significance.

Jean-Baptiste Lepère (1761–1844) was an architect and draftsman in the service of Napoleon Bonaparte. In 1798, he and many other scientists, engineers, and architects joined Napoleon's expedition to Egypt. During his sojourn there, Lepère produced sketches and studies of high artistic and scientific value. Today they are considered a mandatory source for architects, antiquarians, archaeologists and Egyptologists, as well as for anyone interested in Egypt and French history. More than 50 of his drawings were used as prints in the famous *Description de l'Égypte*, the compendium written as a result of Napoleon's stay in Egypt. With this publication, the new discipline of Egyptology was established. In addition, Lepère also designed numerous contemporary buildings (e.g. a hospital in Alexandria, a grain warehouse in Cairo, as well as an innovative type of windmill). About 300 prints will be made available for Europeana.

Jakob-Ignaz Hittorff (1792 Cologne –1867 Paris) was an architect who defined the cityscape and skyline in Paris of the 19th century. The collection at the WRM includes the plans and designs that Hittorff developed for the city of Paris from 1810 until his death in 1867. His work is an excellent example of cultural links between Germany and France and Europe in general. Hittorff's plans for the Place de la Concorde, the Champs Elysées, and the Place de l'Etoile played a crucial role in the expansion of Paris. Hittorf's oeuvre provides a deep insight into urban development of the 19th century. His work also had a deep impact on the development of other cities, including London, Vienna, Barcelona, and Turin. Surprisingly, Hittroff's importance is little known and a comprehensive scholarly review of his graphic work is still lacking. The digitisation and publication of his drawings will bring Hittdorff back to the awareness of people today. As a first step, a selection of 300 sheets from the collection at the WRM, which totals 8,000 sheets, will be digitised during the project.

Many of the works by Lepère and Hittdorff need intensive and expensive restoration because of heavy fungal decay.

Azienda U.S.L. Roma "E"- Biblioteca Lancisiana (BL) and Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario (ICPAL)

The Library in the Palazzo del Commendatore Lancisiana is considered one of the most important collections of historical medical writings in the world. The library was established in 1714 by the personal physician of the Pope, Giovanni Maria Lancisi, and one year later the Accademia di Medicina e Chirurgia was founded at the same site. Hereafter the library quickly became a famous research centre, studying in particular malaria therapies – one of the most common maladies in Italy at that time. Important donations were made to the library by Louis XIV, Cosimo III de' Medici and Furstenberg, and today the library collection includes a huge number of manuscripts and medical books. Lancisi was the personal physician of three popes. He collected books, manuscripts and texts from all over Europe. The library represents the state of the art in medicine of the 18th century. Beautifully illustrated herbaria and books with artistic and scientific medical and anatomical drawings are of interest not only for scholars, but also the wider public. Approximately 1,000 sheets of high aesthetic appeal will be selected from the huge collection, and will be digitised and augmented with metadata.

Bibliotheca Hertziana (HERTZ)

The Library of the Bibliotheca Hertziana (Max Planck Institute for the History of Art) holds the most complete collection of books and visual materials on the art and culture of Italy in the world, with over 300,000 volumes, both rare and modern, in many languages. One of the greatest strengths of the library is the **Vedute d'Italia** (views of Italy), which is a collection of 16th- to 19th -century prints displaying urban, architectural, and landscape images of all regions in Italy. These graphic representations were produced by European artists – chiefly Italian – for the aesthetic pleasure and education of the European elite. In the days before the invention of photography, the graphic medium was the principle means for transmitting images of famous monuments, works of art, and landscapes. A market quickly grew to fulfil the demand for such views of the Italian peninsula, both for Europeans who had visited Italy, but also those who had not, these graphic images becoming the basis for the European impression of Italy. For over four centuries they had an enormous impact on the development of taste, style, and knowledge in all of Europe. Although these images are of artistic masterpieces and ideal landscapes, at the same time most are in themselves masterpieces of graphic art, some reflecting remarkable creativity and the highest levels of graphic technology of the period. While during their

day these images were appreciated principally because they represented a canon of ideal beauty, over time they have acquired an even greater value as historical documents of undeniable aesthetic quality. Today all of the prints in the Vedute d'Italia collection are bound in the form of books – generally large format – but at the time of their production, they were sold both as bound collections and as single sheets. The collector could thus either frame and mount the images, or acquire a series to create an "art book" that would be treasured for generations. In the course of the 20th century, a market has grown up for reproductions of these images, of which some have been widely disseminated among all levels of society and on all continents, not only for their aesthetic quality, but also as tourist souvenirs and for education purposes. While some are widely known because they have been frequently published, most of this material must be considered an unexplored galaxy of hidden treasures. Digitalising this collection of 20,000 images and providing it with a special search and browse interface will provide a much-needed access to these rare and little-known materials.

Transilvania University of Brasov (UTBV)

Transylvania, especially Brasov (Corona, Kronstadt, Brasso), is a multicultural region – ethnically, linguistically and religiously – that has collected manifold influences, both Western and Oriental. A unique local colour has emerged due to the proximity of Romanian, German, Magyar and Greek communities, and, respectively, of the Orthodox, Catholic and Reformed churches, communities that have lived here together over centuries. The culture of this area was reflected in texts in many languages, including Romanian, Slavonic, Latin, German, Magyar and Greek, and works were often bi- or even multilingual.
For these reasons, the written culture of this region has generated texts on religion, law and science that are especially valuable. Because of their content, artistic achievement, impact and uniqueness, these books are true treasures of European culture, worth exposing and disseminating to the widest public possible.

Of the manuscripts and publications from this region, the religious volumes in Brasov collections are masterpieces. They include a unique collection of Romanian bibles printed in Cyrillic characters from the 17th to 19th century, as well as bilingual bibles in Latin and Greek. All are endowed with rich bindings as well as superb decorations and illustrations. The Brasov collections contain some of the oldest Slavic publications (and some incunabula), in Polish, Russian, Serbian and printed in Krakow, Venice, Vilnius, and Ostrog. They also hold some of the oldest Romanian publications (16th century), printed in Brasov itself. These texts were of paramount importance for the establishment of written Romanian. Reflected in these volumes is the religious and artistic syncretism of south-eastern Europe.
The law books in Brasov, based both on Roman law and customs specific to each local community, show the authorities' efforts to set rules that would be widely accepted and followed by a cosmopolitan population. These early statutes and constitutions in Brasov were the foundation for four centuries of legislation for the Saxons in Transylvania, and even influenced the first 19th century codices in Moldavia and Walachia. These masterpieces have remarkable bindings (leather and silver), rich calligraphy and valuable illustrations.
The volumes on science in the local collections are very diverse and cover such fields as history, philology, medicine, natural sciences, geography, etc. For Western Europe, some of these works were unique information sources about the history and geography of south-eastern Europe, the Balkans and especially the Ottoman Empire. Extraordinary works, these science books are of interest to the science historian as well as the layman curious to compare past and present achievements and mentalities.

More than 1,400 sheets from the above-mentioned books will be selected with regard to their outstanding artistic and/or historical and multicultural importance. All of the selected pages bear watermarks. Recording and investigating these will add valuable information about the provenance, dating and circulation of each individual object, and most likely will lead to unexpected findings regarding both diversity and unity in European culture.

Bach-Archiv Leipzig (BAL)

The Bach-Archiv in Leipzig is the most important centre for research on **Johann Sebastian Bach** in the world. It possesses the second largest collection of original documents by J. S. Bach, as well as valuable manuscripts by other members of the Bach family and works related to Bach. Of these, 3,500 pages, with images of their watermarks and metadata, will be made available for Europeana. The second contribution of BAL will be the

documents of the so-called Bachiana (Sing-Akademie zu Berlin). This is a complete collection of volumes related to Bach collected around 1800 in Berlin. It contains most of the estate of C. P. E. Bach, and includes a number of unique vocal scores. In total this will encompass16,800 pages for digitisation. The results of *Imperialle* will be incorporated into the "Bach Digital" project, which intends to digitise every existing Bach autograph in the world.

International Mozarteum Foundation (ISM)

The ISM (Internationale Stiftung Mozarteum) houses the largest collection of primary documents (letters, documents) related to the Mozart family and covers the period from 1750 to 1858. It includes more than fifty per cent of all extant autograph letters by **Wolfgang Amadeus Mozart** (1756-1791) and an even greater proportion of the letters of other members of the family. Furthermore, the ISM possesses a large number of autograph manuscripts (about 80 works) as well as early authorised copies from throughout Mozart's creative career. It is clear that Mozart's compositions have rightly been regarded as masterpieces of European culture, but his letters are also invaluable documents since they shed vivid light on the cultural life in Europe of the18th century. Their contribution to the cultural heritage of Europe and the interest they have received, even outside specialist circles, is testified by the numerous editions that have been published since the 19th century as well as by ongoing projects such as "European Mozart Ways" (http://www.mozartways.com/).
The items for digitisation will include 1,600 letters and documents, together with about 100 relevant music manuscripts, with a grand total of 13,000 pages.

Fondazione Museo del Tesoro del Duomo e Archivio Capitolare of Vercelli (ACV)

The ACV contains a collection of musical manuscripts, dating to the 16th century, written by the music directors of the cathedral in Vercelli as well as unique printed books of music of the 17th century (including compositions by Centorio, Donati, Brusaschi, and Perotti). It also holds a collection of rare books from the 16th century printed in Vercelli, which includes volumes on several topics ranging from devotional and worship practices to administrative duties, etc. In some cases, these books survive in only a single copy and thus are considered by scholars of key significance with regard to their contents, illustrations and typographical features. A group of very rare European incunabula (in part illustrated and illuminated) kept in the Diocesana and Agnesiana Library represent an important collection for the history of books in the Piedmont in general as well as the closer Vercelli region, and also testify to the importance of the Vercelli diocese in the past.

ii) IPR issues

All of the objects that will be digitised and made available through Europeana are more than 70 years old and are not protected by copyright. The owners of these objects (see column IPR in Table 1) and the databases with the digitised information are the content providers. They grant the right for the information to be freely consulted on the internet and used for private, scholarly, or educational purposes. Restrictions apply to the commercial use of the images and metadata, as well as to publications. The publication of images is only allowed with the explicit approval of the owners.

iii) Multilingual and/or multicultural aspects

1. *Multilingualism* – Multilinguality is considered an important feature of *Imperialle*. In all cases, the metadata of the masterpieces will be at least bilingual, and metadata in English will be provided by all the collaborating institutions in addition to their national languages. The *Bernstein* portal provides six languages (English, French, German, Italian, Russian and Spanish) at the user-interface level as well as at the search level. All search terms are translated into the six languages of *Bernstein*. This means a search for e.g. "flag" also invokes a search for "Fahne", "drapeau", "bandiera", "флаг", and "bandera". The cross-lingual search applies to all metadata related to paper as well as to geographical terms.

2. *Multiculturalism* – The multicultural aspect of *Imperialle* is inherent in the content that will be digitised for Europeana. Works by artists like Dürer, Rubens, Goya, Bach or Mozart are part of a common European

heritage and do not belong to a single nation. The medical, scientific, and religious books of the partners in Spain, Italy, and Romania originate from all over Europe and many of them are multilingual. Hittdorff's and Lepère's influence and importance go far beyond the borders of France. The exhibition "With Napoleon in Egypt – The Drawings of Jean-Baptiste Lepère" at the -Richartz Museum in Cologne from October 2009 until January 2010 proved an enormous success with the public and was therefore extended. An excellent example for multiculturalism is the *Imperialle*-partner UTBV in the city of Brasov, where Romanian, German, Magyar, and Greek communities lived together for centuries, all of them contributing to the culture of the region, regardless of whether their texts were in Romanian, Slavonic, Latin, German, Magyar, or Greek.

Maarten Van Heemskerk, SMK

Hans von Aachen, WRM

B2.2. Long term viability

The viability, sustainability and scalability of the target outcomes after the end of the project are guaranteed implicitly by the nature of the project partners' institutions.
The institutions providing the content are major cultural institutions funded primarily by the state and thus, they are obliged to make their inventories available to the general public. Digitisation of these materials is required in order to make the contents accessible as well as to preserve them. A good digital copy in high resolution often can reveal more details to the viewer than the original object seen at a greater distance. Hence, in nearly all cases, in exhibitions digital copies will replace the originals, which can then be kept and preserved in a secure place. *Imperialle* is in some cases the initiation and in others the continuation of initiatives of the content providers to digitise their material on paper and make it available through the Internet, which is a sure sign that the digitisation efforts are timely and have long been needed.

It is well established that paper objects such as drawings, prints, letters, scores, etc. are highly fragile. The only way to share these fragile collections with the general public is through digital images. Europeana is ideal for making such images available online. Thus, the significance of *Imperialle* is its part in sharing vulnerable and fragile objects that are rarely seen with a large community of people, which in turn, is part of the goal of lifelong learning and pleasure for the peoples of the world.

All of the partner institutions are seriously interested in maintaining the availability of their digital contents and to continue digitising additional items on their own after the initial project is completed. Thus, it is expected that the project outcome will entail an increase of *viability, sustainability and scalability.*

The far-reaching potential of *Imperialle* will be publicized through a series of exhibitions demonstrating the importance of paper and watermark research. A series of like exhibitions were already held during the Bernstein project, and the turned out to be a very successful dissemination means, attracting thousands of people. Included in the plans for these further exhibitions is a catalogue in four languages: English, German, Italian, and Spanish.

The continued availability of the contents for Europeana through the Bernstein portal is also guaranteed. Although the first phase of the Bernstein project was concluded in February 2009, the Austrian Academy of Sciences is obliged by contract to keep the service running. Bernstein has continued to be updated and extended since the end of the project. The most important update has been the realisation of a connection with Europeana.

B2.3. Wider deployment and use

The importance of *Imperialle* is based on its plan to digitise unique masterpieces that have been executed on fragile paper. Since the Renaissance and still today, paper has been the most important information carrier in Europe. Paper, by nature of its production materials and techniques, not only stores information about the date and location of its making, but also, in a broader sense, about the technological, economical, social, and cultural environment of its origin. Tracing the movement and use of a sheet of paper through space and time provides a thread of captured events that can form the basis for historical research and, at a still wider scale, the exploration of cultural heritage. For the general public, tracing the movement of paper from country to country, from artist to artist, adds significantly to the understanding of artistic creativity as a pan-European activity rather than a local or particularly national pursuit.

The importance of paper studies is well established among medievalists and codicologists, but it is less known and accepted in other fields of the humanities. The *Imperialle* project will increase awareness about the value of paper studies, as well as the beauty and significance of watermarks. Further, it will stimulate the standardization of adequate digitising of artwork on paper in the future. The experience and results gained in the pilot project will be passed on to other European cultural institutions through personal contacts, articles in scientific journals and presentations at conferences. The institutions within the *Imperialle* project – and beyond – hold tremendous numbers of objects on paper that are part of the European cultural heritage, and all are obvious candidates for future digitisations, also for preservation reasons.

Imperialle is closely related to the eContentPlus project *Bernstein* (http://www.bernstein.oeaw.ac.at). *Bernstein* has created an integrated digital environment for European paper history and expertise by linking several individual watermark databases into one. The project is a comprehensive and unrivalled information source on paper. The various databases are augmented by specialized image processing tools for measuring, authenticating and dating papers, as well as by a large amount of contextual data that includes bibliographical, historical and geographical (GIS) information. *Imperialle* will contribute to *Bernstein* and enlarge its watermark data pool significantly by providing images and paper samples from the 15th to 19th centuries.

Bernstein has coordinated the watermark terminology of six languages and also developed the basis for standardizing a hierarchical watermark classification. *Imperialle*, together with the *Bernstein* portal, will set standards regarding how information inherent in paper from the Renaissance through the 19th century is to be digitised, described and used.

Digitising paper objects is vital because paper is a fragile material and every direct physical contact with this vulnerable material presents risks and potential damage. By digitising these objects, *Imperialle* offers an crucial contribution to the conservation and preservation of art works on paper, while simultaneously publicising them, which is something that will surely be replicated throughout Europe.

The project *Bernstein* has been very successful in its dissemination activities. The most effective activity has been a still-continuing series of exhibitions about paper history and watermarks, with catalogues in Italian, German and English (http://www.bernstein.oeaw.ac.at/twiki/bin/view/Main/ProjectExhibitions). To promote *Imperialle*, this series will be continued and extended throughout the project member states and beyond.

SECTION B3. IMPLEMENTATION

B3.1. Consortium and key personnel

The consortium consists of three technical partners and ten content providers. Six members of the consortium (OEAW, TUG, IVCR, SMK, ICPAL, ACV) were already collaborators during the *Bernstein* project.

Technical partners			
1	Austrian Academy of Sciences	OEAW	Austria
2	Federal Institute for Materials Research and Testing	BAM	Germany
3	Graz University of Technology	TUG	Austria

The OEAW will take on coordinating tasks, including decisions about who manages and directs the project, implements software tools for image post-processing tasks, disseminates the project, and participates in all work packages. The BAM is a specialist for digitisation. It will instruct and teach the other involved institutions and offer a digitisation service. The TUG will do the web programming, coordinate the databases, implement the interfaces and protocols necessary for making the contents available for Europeana and *Bernstein*.

Content provider			
4	Institut Valencià de Conservació i Restauració de Béns Culturals	IVCR	Spain
5	National Gallery of Denmark	SMK	Denmark
6	Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario	ICPAL	Italy
7	Wallraf-Richartz-Museum & Fondation Corboud Köln	WRM	Germany
8	Azienda U.S.L. Roma "E"- Biblioteca Lancisiana	BL	Italy
9	Bibliotheca Hertziana	HERTZ	Italy/Germany
10	Transilvania University of Brasov	UTBV	Romania
11	Bach-Archiv Leipzig	BAL	Germany
12	International Mozarteum Foundation	ISM	Austria
13	Fondazione Museo del Tesoro del Duomo e Archivio Capitolare di Vercelli	ACV	Italy

The content providers are major cultural institutions such as national and regional museums, archives, libraries and research institutes. They will digitise the masterpieces executed on paper in their holdings, document the paper structures and watermarks, which will also entail a documentation of the European industrial evolution, annotate the images with metadata, build up online databases, and make this wealth of images and information available to the multicultural viewers and readers of Europeana.

The content can be classified in the following way:

Old Master drawings and prints: IVCR (F. Goya, G.B. Piranesi), SMK (P.P. Rubens and school, W. Panneels, M. van Heemskerck), WRM (A. Dürer, A.-L. Lepere, J.I. Hittorff).

Vedute d'Italia (Views of Italy): HERTZ.

Printed music and autograph music manuscripts: IVCR (T.L. de Victoria, G.P. da Palestrina, F. Guerrero), BAL (J. S. Bach, P. E. Bach), ISM (W.A. Mozart), ACV (M.A. Centorio, I. Donati, G. Brusaschi, G.D. Perotti).

Medical and botanical books of the Renaissance of high artistic and scientific value: ICPAL, BL (Avicenna), IVCR (H. Boerhaave, G. van Swieten, G. Baglivi, B. de Sauvages, G. de Chauliac, C. Galenus).

Illustrated and illuminated bibles from the 16th to 19th centuries: IVCR, UTBV, ACV.

B3.1.1 Austrian Academy of Sciences, Vienna, Austria (OEAW, Coordinator)

Main expertise: project management, digital image processing, database systems, manuscript studies, watermark standards.

Role: project management, paper and watermarks database, digital libraries, standards, dissemination, image processing tools.

The Austrian Academy of Sciences is the main organisation conducting non-university academic research institutions in Austria. More than 1100 employees are involved in carrying out extensive research projects. Highly qualified researchers from Austria and abroad are included among the members of the OEAW and guarantee the "community's" excellence in the sciences and the humanities. On average, the OEAW participates per year in about 50 EU projects as coordinator or participant.
Two institutions of the OEAW are involved in the *Bernstein* project: the Commission for Paleography and Codicology of Medieval Manuscripts in Austria (KSBM, historians) and the Commission for Scientific Visualization (VISKOM, computer scientists). The two institutes have collaborated on digital libraries and paper research for more than 20 years. Results of this collaboration have been a database of medieval watermarks and a powerful watermark processing toolkit: the Watermark Processing and Database Management Toolkit (WMT for WZMA) and the paper portal *Bernstein* (www.memoryofpaper.eu). The same team was the coordinator of the INTAS project INTAS00-0081 (A Distributed Database and Processing System for Watermarks, 2001-2004) and of the eContentPlus project ECP-2005-CULT-038097 (Bernstein – The Memory of Paper, 2006-2009).
The main job of KSBM is the publication of catalogues of medieval manuscripts in Austrian libraries, in which all aspects of the medieval book are dealt with. Since the 1970s, two dozen catalogues have been published. In addition to these main tasks, an online database of more than 10,000 watermarks has been created over the years. It is now the third largest database of medieval watermarks worldwide. Its primary use is to aid in the dating of undated manuscripts.

Homepage: http://www.oeaw.ac.at

Key personnel

Alois Haidinger

- Studies in History and of Historical Basic Sciences in Vienna (PhD)
- researcher at the KSBM since 1974
- project leader of several scientific research projects in the field of manuscripts
- formal member of the work group "Information systems for the research of the Middle Ages and early modern time" funded by the German Research Foundation (DFG)
- member of Comité International de Paléographie Latine since 2004

Key expertise: manuscripts, watermarks, paper history

Maria Stieglecker

- Studies in History and of Historical Basic Sciences in Vienna (PhD)
- researcher at the KSBM since 1996 (main field of research: WZMA –Wasserzeichen des Mittelalters/ Watermarks of the Middle Ages in Austria)
- participant in several research projects on paper and watermarks (INTAS00-0081, ECP-2005-CULT-038097 and DFG)

Key expertise: watermarks, paper, manuscripts

Emanuel Wenger

- Studies of Mathematics and Computer Science in Vienna
- formal positions at the Institute of Information Processing of the OEAW
- senior researcher at VISKOM of the OEAW since 1999
- coordinator of an INTAS (INTAS00-0081) and eContentPlus (ECP-2005-CULT-038097) project

Key expertise: image processing, visualization, project management, digital libraries

Georg Dietz

- Studies Art History at the Universities of Vienna and Amsterdam
- formal positions at the Dutch Institute of the History of Art in Florence as project manager (watermark database) and the Kupferstich-Kabinett Dresden
- junior scientist at BAM and OEAW since 2010
- took part of several scientific research projects in the paper field (i.a. University of Leiden, Bern, Staatlichen Kunstsammlungen Dresden)

Key expertise in watermark imaging and paper history

B3.1.2 Federal Institute for Materials Research and Testing, Berlin, Germany (BAM)

Main expertise: digital image processing (image subtraction and x-ray), post processing, scientific research, expertise in watermark and paper history.
Role: Digitisation

The BAM Federal Institute for Materials and Testing is a major technical and scientific institution under the authority of the German Federal Ministry of Economics and Technology (BMWi). BAM is one of the leading institutions doing research in analytical chemistry, safe handling of dangerous materials and dangerous goods, safe and environmentally compatible use of materials, safe operation of technical systems and processes, as well as the analysis and mechanisms of damage of materials and structures.
BAM develops the basis for legal provisions and obligatory regulations, in particular, for dangerous materials, their containment, safe transportation and storage. The responsibilities of BAM encompass the interacting fields of materials – chemistry – environment – safety. BAM is involved in collaborating in developing statutory regulations, in advising the Federal Government and industry on safety aspects of materials and chemical technology, in the development of standards and technical regulations for the evaluation of substances, materials, and structures. The tasks of BAM also include non-destructive damage assessment and environmental measurement methods as well as participation in training and dissemination programs.

Homepage: http://www.bam.de

Key personnel
Oliver Hahn

- Studies Chemistry at the university in Cologne (PhD)
- formal research associate in the Department for Restoration and Conservation of Books, Graphic Arts and Archival Materials at the University of Applied Sciences in Cologne, Germany
- researcher at the Federal Institute for Materials Research and Testing BAM since 2000
- since May 2007 head of the work group “Analysis of cultural assets”
- partner and inventor of several scientific research projects on ‘masterpieces’

Bernhard Redmer

- Studies in Instrument Engineering (PhD)
- since 1994 at BAM
- head of the work group “Radiation methods and radiation protection”

Key expertise: radiation methods, R&D in instrument engineering, experience in radiation imaging of historical buildings and art works

B3.1.3 Graz University of Technology, Graz, Austria (TUG)

Main expertise: expert in databases and internet services integration.

Role: implementation of the integration software, database and web programming.

The Graz University of Technology (TUG) is a state university with its chief tasks and main goals entailing research and education, as well as knowledge transfer to industry. When compared worldwide to similar

institutions, the top teaching and research being done at the Graz University of Technology concentrates in the fields of engineering sciences and the technical-natural sciences.
The Institute for Information Systems and Computer Media (IICM), which is part of the Faculty of Computer Science at the Graz University of Technology, is a research unit that has worked for about fifteen years exclusively on multi- and hypermedia and their applications to education and electronic publishing. It has some 30 staff members, both part and full-time. Among other major undertakings, it has developed the large networked multimedia system Hyper-G, which is now marketed as Hyperwave. The IICM has also laid the ground work necessary for the electronic publishing of books, journals, general multimedia material and multimedia courseware. In particular, it produces the electronic journal J.UCS published by the University of Technology Graz and the Universiti Malaysia Sarawak in co-operation with Know-Center Graz. Researchers at the IICM have published some 400 papers in the area of networked multimedia and hypermedia and educational applications thereof.
The main body of IICM is currently concerned with eLearning and knowledge management systems, networked computer-supported new media, digital libraries, design and implementation of information systems and enterprise application infrastructures, as well as the visualization of information structures. The institute is carrying out research in areas related to different hypermedia-based educational, communicational and co-operational issues. The IICM has been partner in a number of EU-funded projects, including LIBERATION (coordinator), HYPDOC (also coordinator), EUROPE-MMM, EONT, SCARD, CORONET, APOSDLE and BERNSTEIN.

Homepage TUG: http://www.tugraz.at/
IICM: http://www.iicm.edu/

Key Personnel
Frank Kappe,

- Studies in Technical Mathematics at the Graz University of Technology (PhD)
- since 1988 employed at the IICM
- since 2009 head of IICM
- one of the Austrian Web pioneers
- published numerous scientific articles

Helmut Leitner

- key researcher
- manager of the “Web Application Group” at the IICM
- his team of software developers has carried out numerous innovative IT projects for large corporations and public institutions in Austria and abroad
- participant in a number of EU projects (such as LIBERATION, HYPDOC PPP, APOSDLE, BERNSTEIN)
- active as lecturer at the TU Graz and supervisor of a number of master’s and PhD theses

B3.1.4 Instituto Valenciano de Conservación y Restauración de Bienes Culturales, Valencia, Spain (IVCR)

Main expertise: paper in art history, preservation of cultural objects.
Role: content provider
The IVCR is funded by the “Generalitat Valenciana” (autonomic government). It was established to protect, disseminate, preserve and restore Valencia's cultural heritage. It brings together public and private agencies that help plan and support its activities in the heritage field. As a research centre, the IVCR is continually exploring new restoration theories, methods, and criteria at the international level. It has developed an intensive training program aiming to develop professionals in the field.
The impressive assets making up Valencian cultural heritage, which range from the origins of man to the world today, represent many different areas of human cultural activity, including cave painting, pedestal painting, murals, paintings, gold and polychrome sculptures, graphic paper and archival material, metals, textiles, ceramics, archaeology and palaeontology, ethnology and furniture.

The IVCR's department of graphic paper and archival material is working on the documentation and conservation of Valencia's graphic heritage in the museums, archives, libraries and churches of the Valencian Community. Since its opening, it has become the most important institution devoted to the field of conservation and restoration in Spain.

Homepage: http://www.ivcr.es/

Key personnel

Carmen Pérez García.

- Catedrática de Restauración de la Universidad Politécnica de Valencia
- General Director of cultural heritage of Valencian Community until 2005
- managing director of IVCR since 2005

Key expertise in cultural heritage preservation, restoration

Marisa Ferrando

- Studies of fine arts at the Universidad Politécnica de Valencia.
- member of staff of Instituto Valenciano de Conservación y Restauración de Bienes Culturales" (IVCR) at the restoration laboratory and member of the research department of watermarks

Key expertise in paper restoration, expertise in manuscripts and printed book restoration

Pascual Mercé

- Studies of Geography and History at Universidad of Valencia
- professional photographer since 1986
- twenty books published about Art, History and Photography

Key expertise in digitization of artwork, photography

B3.1.5 National Gallery of Denmark, Copenhagen, Denmark (SMK)

Main expertise: The National Gallery of Denmark is Denmark's main museum of the visual arts and has the vision of becoming a leading national gallery.
Role: - data provider and WP6 leader: Monitoring and testing.

The objective of the museum is to build and maintain collections of Danish and foreign art, primarily art from Western cultures from the 14th century to the present. This task is accomplished through the collection, registration, and preservation of relevant objects, and through research and communication pertaining thereto. The strong incitement to communicate via the internet has resulted in a very proactive outreach to the museum's main audience: the public, scholars and colleagues.
Relevant for the *Imperialle* project is a unique collection at the SMK of prints and drawings, which comprises more than 245,000 objects. The SMK has expertise in paper technology, art historical research, photo-digitisation, and the management of large amounts of data. SMK has been applying advanced IT technology for almost two decades, the most important recent projects being a contemporary open-source system developed by CollectionSpace (implementation, testing and project management), digitalisation activities (glass plates to high-resolution TIFF, library paper archives to online databases), and upgrading projects, advanced web design as well as technical skills to support the on-site state-of-the-art digital equipment. The National Gallery of Denmark is investing in a five-year developmental programme (SMK-Digital) to bring the museum to the very forefront of digital arts communication. This communications enterprise is based on the museum's collections and the artistic knowledge and expertise that the museum represents by virtue of its position as a leading research institution. Digital representation of the museum's collections requires these works to be digitised. SMK-Digital consists of a series of projects, including a new website for the museum (launched April 2010; www.smk.dk). The online collections give the user online access to the museum's collections and shows how museum professionals work with the collections. Another project, "Stories of Art", plans to add still another dimension to this dissemination process, in which the art is brought to life (to be launched at the end of 2010 – with time it will be possible to incorporate *Imperialle*). A planned art database will make information about the museum's collections, research and exhibition activities available online (to be launched in 2011). The

museum's digital productions integrate digital communication, videos and games into the galleries of the museum, and are a central part of the museum's art education and promotion.

Role in the project: Digitisation of 528 unique masterpieces from the Rubens Cantoor (ca. 1630) and 140 equally exceptional works by Maerten van Heemskerck (c. 1520-1570), all drawn on paper. Additional digital radiography of the paper structure, watermarks, and paper identification including metadata will be applied. SMK will be the leader of WP6: Monitoring and testing.

Homepage: http://www.smk.dk

Key personnel:

Jørgen Wadum

- trained as a flower painter and as a painting conservator, studies in Art history (PhD)
- Keeper of Conservation at the National Gallery of Denmark, Copenhagen
- since the 1980s he has specialised in the painting techniques of 16th- and 17th-century Dutch and Flemish artists.
- has published and lectured extensively internationally on a multitude of subjects related to this and other issues of importance to the understanding and keeping of our cultural heritage
- holds positions in several international organisations and committees

Chris Fischer

- Studies in Art history (PhD)
- worked many years as Keeper of Prints and Drawings at the National Gallery of Denmark
- senior researcher
- Head of Centre for Advanced Studies in Master Drawings at the National Gallery of Denmark and lecturer at the University of Copenhagen
- arranged and participated in a number of exhibitions here as well as in some of the world's leading museums, including the Uffizi, the Pitti Gallery and the Louvre, and publishes extensively in international periodicals and exhibition catalogues

Key expertise in Italian drawings

Hanne Kolind Poulsen

- senior researcher (PhD)
- since 2006 curator in the Department of Graphic Art at the National Gallery of Denmark
- specialist on 16th-century art
- associate research professor at Copenhagen University
- arranged a number of exhibitions at the National Gallery of Denmark and at other Danish museums

Anja Scocozza

- graduated from the Royal Academy of Fine Arts, School of Conservation in 1992
- since 2002, employed at the National Gallery of Denmark.
- an expert in restoration and conservation of old master drawings, graphic art and manuscripts; collection examination and consultancy at local museums in Denmark

Experience in digitalization of prints and drawings and in project management

Jakob Skou-Hansen

- studies in Art History at the University of Århus and the Sorbonne
- educated as a photographer
- since 2001, head photographer at the National Gallery of Denmark

- responsible for photographic digitization of the collections, implementation of high-end colour-management with ICC-profiles, as well as infrared-analytical photography and advanced digital X-radiography

Ingelise Nielsen

- trained as a paper conservator at the University of Manchester (PhD)
- since 1985, has taught paper conservation, paper history and paper technology at the School of Conservation in Copenhagen
- presently head of the Graphic Department at the Royal Danish Academy of Fine Arts, School of Conservation
- research in all of these fields

B3.1.6 Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario, Rome, Italy (ICPAL)

Main expertise: research on paper production, paper history and conservation
Role: content provider
The Istituto centrale per il restauro e la conservazione del patrimonio archivistico e librario (Central Institute for the Restoration and Conservation of Library and Archival Heritage) was established at the beginning of 2008 with the goal of merging into a single organisation the skills and instrumentation necessary for library heritage and archival materials conservation, both of which were formally provided by the Istituto centrale per la patologia del libro and the Centro di Fotoriproduzione legatoria e Restauro degli Archivi di Stato, respectively. The newly-formed institute is a branch of the Italian Ministry of Cultural Heritage and Activities; its chief function is to undertake cutting-edge research in the fields of conservation and restoration.
The institute is one of Europe's centres of excellence for the formulation and establishment of methodologies and norms, and plays an intensive role as a consulting body to assist in finding solutions to conservation and restoration problems arising in Italy's state libraries.
The institute is currently carrying out the digitization of 4,500 watermarked sheets of the *Corpus Chartarum Italicarum.* The collection illustrates the history of paper production in Italy from the 13th to the 20th century. The project will carry out strictly non-destructive measurements of sheets' physical characteristics.

Homepage: http://www.patologialibro.beniculturali.it

Key personnel
Paola F. Munafò

- librarian
- Head of Education Department at ICPAL
- head of conservation, digitisation and research project focused on the *Corpus Chartarum Italicarum* (5,000 watermarked sheets of paper dating from the 13th to 20th century);
- acted as scientific coordinator for the European ConBeLib project
- author of various publications
- organizer of various courses, seminars and meetings addressing the theme of library materials conservation

Viviana Elisa Nicoletti

- studies in conservation science of cultural heritage at the Università della Tuscia (Viterbo, Italy)
- staff of the project "Digitisation: Safeguarding and Knowledge" carried out at the ICPAL

B3.1.7 Wallraf-Richartz-Museum & Fondation Corboud Köln, Germany (WRM)

Role: content provider

The Wallraf-Richartz Museum is one of the three major museums in Cologne, Germany. It houses an art gallery with a collection of fine art from the medieval period to the early 20th century. Part of its collection was used for the establishment of the Museum Ludwig in 1976.
The print collection at the Wallraf-Richartz Museum encompasses German drawings of the 15th and 16th centuries and is internationally a collection of high importance. It includes: 1) early German drawings until 1500; 2) the drawings of Albrecht Dürer, his contemporaries and successors, including Hans Schaufelein, Erhard Schön and Bartholomew Bruyn the Elder; 3) German drawings until 1600. The stylistic originality seen in the works of Hans von Aachen, Johann Caspar and Freisinger Rottenhammer show the European point of reference in German art around 1600.

Homepage: www.wallraf.museum

Key personnel

Thomas Ketelsen

- studies in Art History at the Universities of Hamburg and Wien (PhD)
- held several positions at the University of Hamburg, the Old Masters Department in Kassel, the Kunsthalle Hamburg
- formal curator at Kupferstich-Kabinett Dresden,
- since 2010, head of the print collection at the Wallraf-Richartz Museum & Fondation Corboud.

Tobias Nagel

- studies in Art History and Theology (MA, Dipl.-Theologe)
- worked since 1987 for the Wallraf-Richartz Museum & Fondation Corboud
- since 1990, responsible for scientific documentation of museums of Cologne (Wallraf-Richartz-Museum, Museum Ludwig and Rheinisches Bildarchiv Köln)

Key experience in presentation of collectors albums, digital informationssystems

Thomas Klinke

- accomplished as bookbinder, Studies in Restauration and Conservation Sience of art in Cologne
- worked for several institutions in Germany
- since 1997 restaurator on Wallraf-Richartz-Museum & Fondation Corboud
- since 2005 Public appointed, sworn and qualified expert

B3.1.8 Azienda U.S.L. Roma "E"- Biblioteca Lancisiana, Rome Italy (BL)

Role: content provider

The Lancisiana Library was founded in the years 1711-1714 by Giovanni Maria Lancisi. Housed in the Hospital Santo Spirito in Saxia in Rome, its very structure and organization mirrors the scientific and medical culture of its founder. Lancisi meant to offer to the young apprentice, either physician or surgeon, the means for a rational medical education, based on "plenty of patients" and a good choice of books. The comparison between the Library and some of Lancisi's works show his ideas about the relationship between the sciences - chemistry, natural history, mathematics and mechanics - and medicine, as well as the close relationship between medicine and surgery.

The Library in the Palazzo del Commendatore Lancisiana is considered one of the most important collections of historical medical writings in general. This library is established on 21 May 1714, when, after three years of preparation by the personal physician of the Pope, Giovanni Maria Lancisi. On 25 April the following year was founded on the same site the Accademia di Medicina e Chirurgia. Here after the library changed quickly in an famous research center, particularly in therapy of malaria -one of the most treatment of this time in Italy. Today the library includes prominent donations from Louis XIV, Cosimo III de 'Medici and Furstenberg. Special treasures are two of the Avicenna manuscripts.

Homepage: http://www.lancisiana.it

Key personnell
Saverio Marco Fiorilla

- Studies in Philosophy and Humanities, University "La Sapienza", Rome (PhD)
- Postdoctoral Research Fellow in Paleopathology, Catholic University “Sacro Cuore”, Rome
- worked as Assistant Librarian at the library of Institute for the History of Medicine, Faculty of Medicine, University "La Sapienza", Rome.
- Director of the Monumental Complex Santo Spirito in Saxia and Bibliotheca Lancisiana in Rome.
- responsible for the development of the historical collections (rare books, manuscripts and special collections).

Key experience: Preservation and conservation, economics and management of cultural heritage, exhibitions, digitization and research projects focused on the history of medicine.

B3.1.9 Bibliotheca Hertziana, Rome, Italy (HERTZ)

Role: content provider

The Bibliotheca Hertziana in Rome is a Max Planck Institute for the History of Art (part of the Max Planck Society, Munich) and holds in its library the most complete collection of books and visual materials on the art and culture of Italy: www.biblhertz.it. The library is a partner in the “Kubikat” Union Catalogue (www.kubikat.org), together with the “Kunsthistorisches Institut” in Florence and the “Zentralinstitut für Kunstgeschichte” in Munich. Begun in 1997 Kubikat is today the most complete and important art history catalogue in the field: The collection of the Bibliotheca Hertziana comprises over 300.000 volumes, including approximately 10,000 rare books. Some of the rare books in this collection are large scale folio formats containing exceptional graphic materials bound together to form books. The research and IT departments of the Hertziana Institute have developed a research database “ZUCCARI, which now comprises several thousand scientific records together with large-scale scans of prints, drawings and photographs of Italian architectural monuments and works of art. For a part of ZUCCARO, the database LINEAMENTA see: http://lineamenta.biblhertz.it:8080/Lineamenta. The digitalised rare books of the library (http://www.biblhertz.it/deutsch/opac/dignel/digi-bhr-200.html)are still only in part integrated into this database and the total integration of these texts and images is planned. The Imperialle Project will furnish one further step in this process.

Homepage: www.biblhertz.it

Key personnell
Andreas Thielemann

- Studies in Art History, Philosophy and Archaeology on the University of Cologne and Library Science on Humboldt University in Berlin (PhD)
- Head of the Library
- Several positions for Institute for Art History of the University of Cologne and Bibliotheca Hertziana in Rome
- Since 2006 Head of the library of the Bibliotheca Hertziana in Rome (Max Planck Institute for the History of Art)

B3.1.10 Transilvania University of Brasov, Romania (UTBV)

Main expertise(of UTBV and its local partners): digitization and databases, history of book and paper, early manuscripts and printings, paleography, preservation of library objects.

Role: content provider and WP2 leader in: Database design and metadata specification.

UTBV is one of Romania`s most prestigious higher-education institutions with a tradition of more than 60 years originating in the old cultural traditions and intense cultural climate of the city. UTBV aims at training highly qualified specialists in the fields of fundamental sciences, technology, economics, law, sociology, arts and

medical science as well as at providing knowledge and services for society. Thus, it has set a partnership with local libraries, museums and archives aiming at preserving, researching and promoting our mutual heritage of manuscripts, old books, maps, art objects. UTBV Library organizes the International Conference on Library and Information Science, whose special section of History of Book gathers valuable national and international expertise in the field. Our specialists from the Faculty of Library and Information Science work to investigate and to make widely available (for instance through *Manuscriptorium* and *Europeana*) the valuable objects spread in the rich local collections of old books and manuscripts.

Homepage: http://www.unitbv.ro/

Key personnel

Emilian Corneanu

- Study of Bibliology and Museology (Licensed as librarian and museologist) at the Transilvania University of Brasov;
- Master in European Aspects of Management;
- Associate Professor at the Faculty of Library and Information Science, teaching *History of Writing, Books and Libraries* and *Bibliography*;
- Expertise in paper, watermarks and 16th c. printed book;
- Responsible in COLLIMUS research project funded by the World Bank (CNCSIS code 258, 2000-2002);
- Secretary of the National Commission for Digitising and Old Book of ABR (Romanian Librarians Association).

Elena Helerea

- Study of electrical engineering at Polytechnic Institute of Brasov and study on the quality of electro insulating materials – paper and plastics ageing - at Polytechnic Institute of Bucharest (PhD)
- Research in Engineering and History of Science;
- Full professor, since 1999, at Faculty of Electrical Engineering and Computer Science;
- Library manager since 2008, Transilvania University Library of Brasov;
    - Scientific coordinator of EU-Projects (EuRoCEP, CONEET, *Electro-Virtual-Lab,* COMPLETE, etc.).

Expertise: material ageing, e-learning, project management.

Vasile Oltean

- PhD in Philology and PhD in Theology;
- Head of First Romanian School Museum, managing one of the most valuable collection of old manuscripts and books from Romania;
- Associate Professor at the Faculty of Library and Information Science, teaching *Greek, Latin and Cyrillic Paleography*;

Expertise in history of printing, manuscripts` research, Cyrillic Paleography, Slavonic and Romanian religious old books.

Gabriela Mailat

- Study of mathematics and computer science at Transilvania University of Brasov;
- coordination of IT in the following projects:
    - CNCSIS – A / cod 991/2003/2004: *Research regarding modern methods for conserving the collections with managerial applications – digital library*,
    - CNCSIS A / cod 406/2006/2007: *Instructive, educational and research model; generating on line bibliographies* ;
- coordination of Library IT service.

Expertise: database administration, image processing, design of software products and services.

B3.1.11 Bach-Archiv Leipzig, Germany (BAL)

Role: content provider

Bach-Archiv in Leipzig, Germany, remained after the closure of Bach-Institute, Göttingen in 2008 the most important centre of international research about Bach. It consists of a research institute which is mainly occupied with basic research and a scientific library of extended various collections concerning Bach. The general public is served by a museum dedicated primarily to the life and work of Bach in Leipzig and an art management office producing among others a Bach-festival and the Bach-competition Leipzig.
BAL is a member of the Konferenz Nationaler Kultureinrichtungen and belongs to the German »Kulturelle Leuchttürme«. An evaluation study (»Blaubuch«) performed in 2001 by the Assignee for culture and media of the federal government declared it to belong to the ``most important federally significant cultural institutions´´ in the new federal states.
Starting in 2008 the Bach-Archive Leipzig became an associated institute of the University of Leipzig.
The BAL is a cooperation partner with numerous institutions The long-term project Bach-Repertorium targeting specifically the study of the remaining musicians next to Johann Sebastian Bach in the large musicians' family is located at the Saxon Academy of Sciences and is furthered by The Packard Humanities Institute (Los Altos/California). The research whose focus lies currently with the sons of Johann Sebastian Bach is presented to the broad public by notes and documents editions, work lists, and scientific inventory catalogues.
All world-wide existing Bach autographs should become digitised and the culture-historically valuable inventory of Bach resources should be made available to a broader public in Internet in the framework of DFG-Project Bach-Digital in cooperation with the Staatsbibliothek in Berlin, the computing centre Leipzig, and the Saxon Landes-, Staats- und Universitätsbibliothek in Dresden. The data about works and manuscripts for Bach-Digital is going to be taken over from the well-established "Göttinger Bach-Katalog" maintained by Bach-Archive Leipzig since August 2008.

Homepage: www.bach-leipzig.de

Key personnel:
Uwe Wolf

- Studies in Musicology and History on the Universities of Tübingen and Göttingen (PhD)
- held several positions on Johann-Sebastian-Bach-Institute Göttingen and for Saxon Academy of Sciences Leipzig,
- Since 2005 head of ‘section II’ on Bach-Archive Leipzig
- Publisher and Co-publisher of several publications
- Project coordinator of ‘Bach-Digital’

Peter Wollny

- Studies in Musicology and German language and literature studies on the Universities of Cologne and Harvard (PhD)
- State doctorate in 2009 on the University of Leipzig.
- worked since 1993 on Bach-Archive Leipzig,
- since 2001 head of ‘section I’ on Bach-Archive Leipzig
- Publisher and Co-publisher of several publications and periodicals

Wolfram Enßlin

- Studies in Musicology and History on the Universities of Tübingen, Bologna and Heidelberg (PhD)
- worked for Beethoven-Hauses Bonn
- worked since 2003 for Bach-Archive Leipzig
- Publisher and Co-publisher of several publications

All three are members of the Bach-Archive / Bach-Repertoriums and have a profound knowledge of the musical source research (manuscripts, paper, watermark).

B3.1.12 International Mozarteum Foundation, Salzburg, Austria (ISM)

Role: content provider
The International Mozarteum Foundation was founded in 1880 by citizens of the city of Salzburg and is rooted in the Cathedral Music Association and Mozarteum of 1841. Since then the prime concern of the non-profit organisation has been the person and œuvre of Wolfgang Amadé Mozart. The organisation of concerts, the Mozart museums and academic research are three core areas whereby a link is created between preserving and fostering tradition and a contemporary view. The aim is to open up changing perspectives and new approaches to the analysis of the composer.
ISM houses the largest collection of primary documents (letters, documents) related to the Mozart family from the period ca. 1750 to 1858. These include more than 50% of all extant autograph letters by Wolfgang Amadeus Mozart (1756-1791) and even greater portions of the letters by other members of the family. Furthermore the ISM possesses a large number of autograph manuscripts (ca. 80 items) and early authorised copies from the earliest until the latest periods of Mozart's creative career. Not only the compositions by Mozart have rightly been regarded as masterpieces of European culture, but also the letters since they shed vivid light on 18th-century cultural life in Europe. Their contribution to the European cultural heritage and the interest they have received beyond circles of special lists is documented by numerous editions since the 19th century and by ongoing projects such as European Mozart Ways (http://www.mozartways.com/).

Homepage: www.mozarteum.at

Key Personnel
Ulrich Leisinger

- Studies in Musicology, Philosophy and Sciences at Freiburg University (PhD)
- head of the research department of the ISM since 2005
- program director for the 'Neue Mozart Ausgabe' and its digital follow-up project Digitale Mozart Edition.

Franz Kelnreiter

- Studies in Musicology and French at Salzburg University as well as church music at the Mozarteum Salzburg,
- worked since 1994 as archivist of the Mozart Sound and Film Collection on ISM
- since 2002 member of staff for the Digital Mozart Edition
- head of the IT department
- Key experience in Development of interfaces and coordination.

Patricia Breitbarth,

- studies in Ethnomusicology at Salzburg University and training as photographer
- since 2008 photographer for digital projects on ISM

B3.1.13 Fondazione Museo del Tesoro del Duomo e Archivio Capitolare, Vercelli, Italy (ACV)

Main expertise: digital image processing, manuscript studies, watermark studies and standards.

Role: content provider

The Fondazione Museo del Tesoro del Duomo e Archivio Capitolare of Vercelli, founded 2005, is committed to the task of protecting, managing and disseminating the artistic, bibliographical, historical and religious cultural heritage preserved in the Museo del Tesoro del Duomo (opened in May 2000) as well as the Chapter Library and Archives. Vercelli is the oldest diocese in the Piedmont (before the mid-4th century, a bishopric) and over the centuries has witnessed important historical moments. It has thus become the guardian of art treasures of international importance, which in part have been made available to the public thanks to the Fondazione Museo del Tesoro del Duomo e Archivio Capitolare.
Safeguarding this important heritage is the primary task of the Foundation, which in recent years has pursued that aim by promoting exhibitions as well as scholarly and cultural initiatives, often together with other

agencies involved in protecting and managing cultural heritage (Soprintendenze, the University, the Vercelli Town Administration, as well as those of the Province and Region), as well as in collaboration with other Piedmont museums and libraries (Palazzo Madama of Turin, Borgogna Museum and the Leone Museum of Vercelli).
For example, the Fondazione has participated in the following projects:
1. "Medieval enamels, metal works and ivories in Piedmont: art-historical and scientific methods for their evaluation", together with the University of Turin, Department of Chemistry; University of Vercelli, Department of Science and of Humanities; the Palazzo Madama of Turin; the Soprintendenza per i beni storici, artistici ed etnoantropologici of Piedmont
2. The "Digital Vercelli Book" project, together with the Universities of Turin and Pisa
3. "Censimento del patrimonio librario delle biblioteche delle parrocchie dell'Arcidiocesi di Vercelli" promoted by the Soprintendenza ai beni librari of the Piedmont Region.

Homepage: www.tesorodelduomovc.it

Key personnel
Timoty Leonardi

- studies in Bibliology Science, Cultural Heritage and Library Science at the University Vercelli, Master's of Rare Books and Library Science at the University of Siena;
- formal researcher at the Fondazione Museo del Tesoro del Duomo e Archivio Capitolare
- since 2009, curator of manuscripts and rare books at the Fondazione Museo del Tesoro del Duomo e Archivio Capitolare
- project leader of "Censimento del patrimonio librario delle biblioteche delle parrocchie dell'Arcidiocesi di Vercelli" as well as participant in other research projects
- member of the International Paper Historians and the Bibliographical Society of London

Key experience in librarianship history in Piedmont, watermarks, paper trade and bindings in Piedmont and North Italy

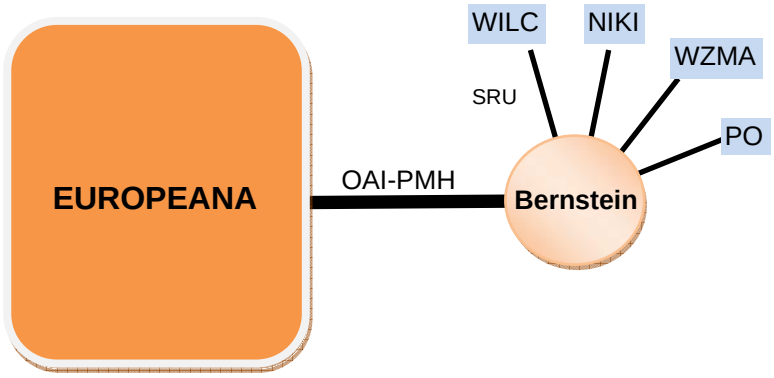
Albrecht Dürer, WRM

Jean-Baptiste Lepère, WRM

B3.2a. Chosen approach

The *Imperialle* project has a clear and rather simple structure, and carries a logical sequence of the work packages. The project's work plan is divided into five production work-packages (WPs) and three logistic work-packages. WP1 to WP5 follow the natural steps needed for digitisation, beginning with defining the digitisation rules, evaluating the technical resources, and the selection, restoration and preparation of the objects to be digitised. These are the tasks of WP1. WP2 includes the preparation work concerning the software, database system, and metadata. WP3 follows with the digitisation itself. In WP4 the digital images are post-processed, and put into the databases together with the metadata. WP5 is the integration work package responsible for the inter-operability between the databases.
The logistic WPs put a strong emphasis on the exploitation aspect in addition to producing output. In WP6 "Assessment and Evaluation", we want to verify, in collaboration with external users, the quality and impact of our output. WP7 "Dissemination and Sustainability" takes care of accessibility (ergonomics and graphic appeal of user interfaces and other output; quality of documentation), manages awareness activities and prepares the dissemination kit. WP8 "Project management" is responsible for the day-to-day management of the project.
The majority of the technical work is in WP2, which includes the database design and web presentation of the masterpieces, and in WP5 which entails the functional extension of the Bernstein portal and the implementation of the communication protocols.

Partners' roles – Most of the partners will contribute to all tasks or activity areas of the project. However, each has a focal interest, which is outlined below.



WILC, NIKI, WZMA, and PO are the Bernstein watermark databases:

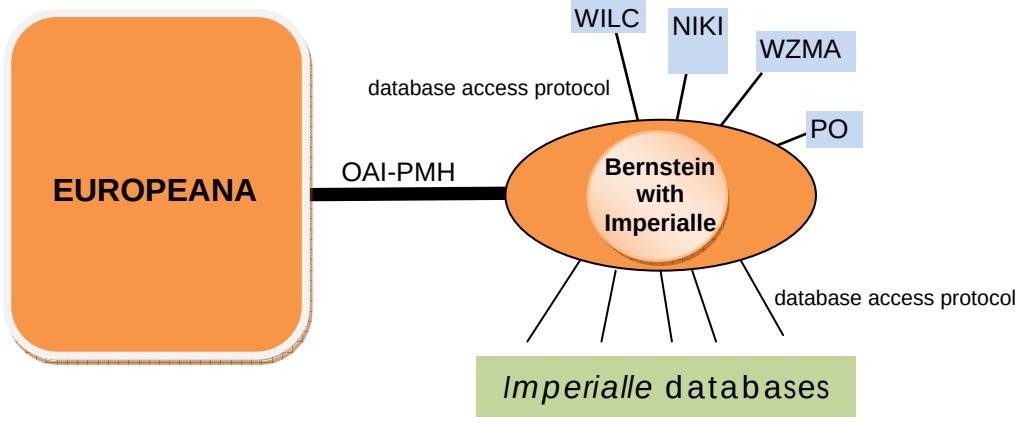
PO: Piccard Online

NIKI: Watermark database of the Dutch University Institute for Art History Florence

WILC: Watermarks in Incunabula Printed in the Low Countries

WZMA: Watermarks of the Middle-Ages

Bernstein



Bernstein with *Imperialle* extension

B3.2b. Work plan

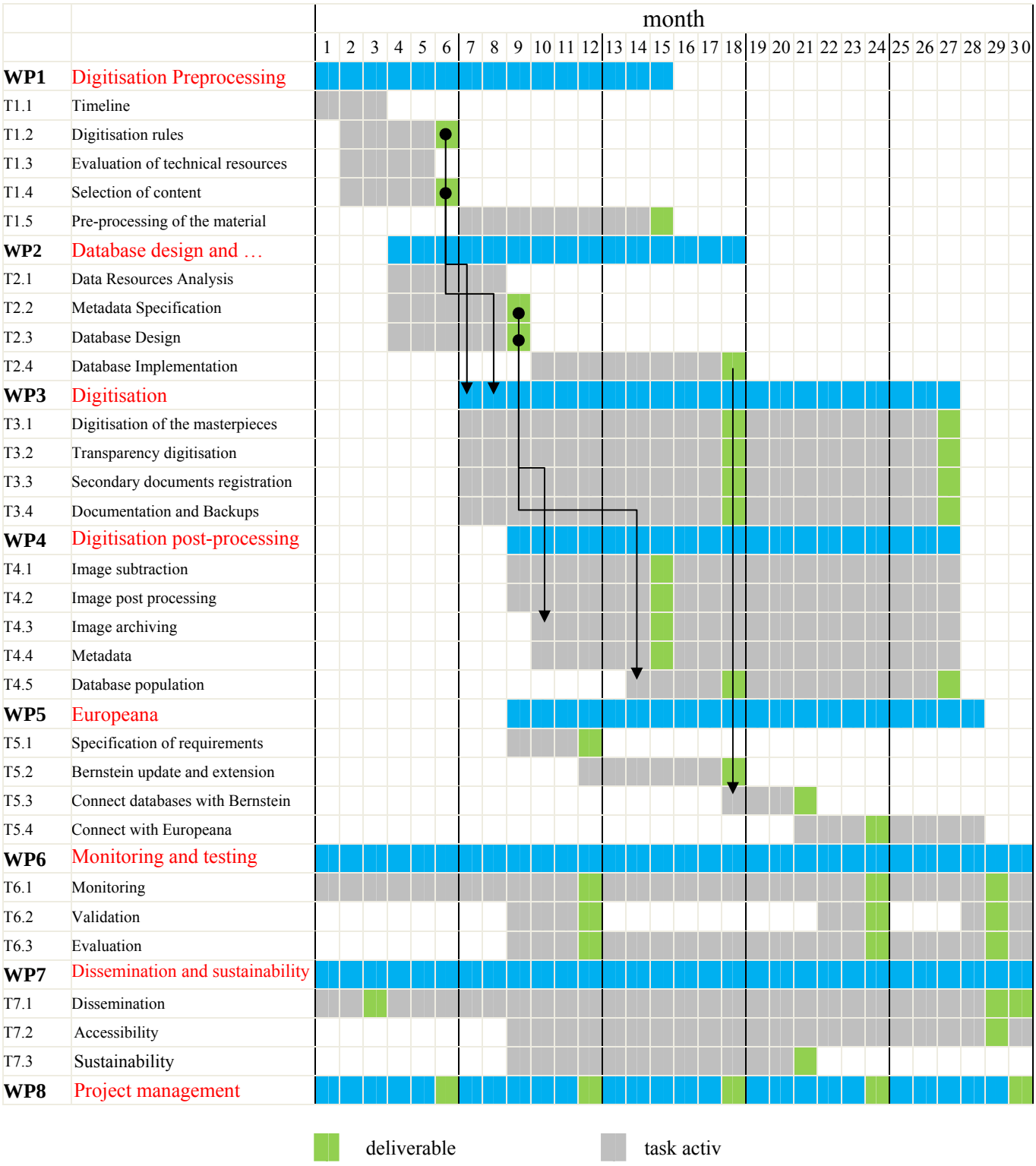


Table 2: Template - Work package list

Work package No.	Work Package Title	Lead Part. No.	Lead Participant Short name	Total person months per WP	Start Month	End Month
WP 1	Digitisation pre-processing	4	ICVR	78.5	1	15
WP 2	Database design and metadata specification	10	UTBV	113.5	4	18
WP 3	Digitisation	2	BAM	120.0	7	27
WP 4	Digitisation post-processing and database population	6	ICPAL	217.5	9	27
WP 5	Europeana	3	TUG	120.0	9	28
WP 6	Monitoring and testing	5	SMK	53.0	1	30
WP 7	Dissemination and sustainability	7	WRM	66.0	1	30
WP 8	Project management	1	OEAW	45.0	1	30
				812.5		

Table 2 shows the distribution of the work load between the work packages. There is one work package which clearly jumps out, this is WP4 which is the most laborious. WP4 includes the tasks post-processing, metadata, and database population which are all time-consuming. A special focus of Imperialle is put on the quality of the metadata. An image in the web without appropriate annotations makes no sense and annoys the user. We have more than 45,000 objects which need to be combined with precise and comprehensive metadata in at least two languages. For many objects the metadata needs to be investigated. All participants claimed to have some effort also with the “project management” (WP8). This effort is honoured with a maximum of 2 person/months.

Table 3: Template - Deliverables list

	Deliv. No.	Deliverable title	WP No.	Nature	Diss. level	Delivery date
1	D7.1	Project website	7	P	PU	m3
2	D7.2	Project presentation (first version)	7	P	PU	m3
3	D1.1	Digitisation rules specification	1	SP	PU	m6
4	D1.2	Content selection report	1	R	PU	m6
5	D8.1	Half-year progress report	8	R	PU	m6
6	D2.1	Metadata specification (includes D.5.1)	2	SP	PU	m9
7	D2.2	Database design specification (includes D.5.1)	2	SP	PU	m9
8	D5.2	Architectural software design	5	R	PU	m12
9	D8.2	Second half-year progress report. (includes D6.1)	8	R	PU	m12
10	D8.3	First annual report.	8	R	PU	m12
11	D1.3	Pre-processing report	1	R	PU	m15
12	D4.1	Image processing and archival report	4	R	PU	m15
13	D4.2	Metadata status report	4	R	PU	m15
14	D2.3	Database implementation report	2	R	PU	m18
15	D3.1	Digitisation report (first version)	3	R	PU	m18
16	D5.3	Bernstein extension (first prototype)	5	P	PU	m18
17	D8.4	Third half-year progress report (includes D4.3)	8	R	PU	m18
18	D5.4	Integration report	5	R	PU	m21
19	D7.3	Dissemination kit	7	P	PU	m21
20	D5.5	OAI-PMH Implementation	5	P	PU	m24
21	D8.5	Fourth half-year progress report (includes 6.2)	8	R	PU	m24
22	D8.6	Second annual report	8	R	PU	m24
23	D3.2	Digitisation report (final version)	3	R	PU	m27
24	D4.4	Database population report (final version)	4	R	PU	m27
25	D7.4	Project presentation (final version)	7	P	PU	m29
26	D7.5	Exhibition report	7	R	PU	m29
27	D7.6	Project website (final version).	7	P	PU	m30
28	D8.7	Fifth half-year progress report. (incl. D6.3)	8	R	PU	m30
29	D8.8	Final project report.	8	R	PU	m30

Table 4: Template – Work package description

Work package number :	**1**					**Start date or starting event:**							**m1**
Work package title:	Digitisation Pre-processing												
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	10.0	2.0	2.0	**14.0**	9.0	5.0	9.0	5.0	2.0	10.0	4.0	4.0	2.5

Objectives (ii)
O1.1 – Timeline for all tasks and digitisation rules O1.2 – Selection and pre-processing of the content to be digitised O1.3 – Selection and Preparation of the scanning equipment

Description of work (iii)

T1.1: Timeline (OEAW, TUG)

- detailed timeline and resource plan for all task (timing for the preparation of the objects, digitization operations and post processing)

T1.2: Digitisation rules (participants 4-13)

- Evaluation of digitization standards for each several research disciplines (music, art history, archaeology, architecture, literature), harmonization on an common Imperialle standards
- Evaluation of digitization methods (flatbed scanner, line scanner, Photo, Video or alternative procedures e.g. X-ray, thermography, etc.)
- Evaluation of the data formats (.tiff, .png, .jpg, etc.) and compression methods in terms of their long-term effects, storage requirements and possible costs in the future
- Test set for each method, check for distortion, alignment, colour fastness, (possibly collaboration with digitization centres in Munich, Göttingen, Marburg)
- Elaboration of digitisation rules for the Imperialle-Project (like: how to digitize, minimum resolution, ruler specification, colour format like: 24bit colour depth, 300dpi, tiff uncompressed)
- Developing of an internal project standards for naming of the images and scans (European Museum Code)

T1.3: Evaluation of technical resources (WRM**,** all teams**)**

- Evaluation of existing and needed equipment (digitizing equipment, computers, hard drives, other hardware, scanners, recording rooms)
- Evaluation of internal and/or external performances (Subcontractors) in case of: Creating the duties and specifications, contract tendering, contracting, contract monitoring, budget planning
- Evaluation for the handling of the generated data (long-term archiving, presentation forms, copy protection regulations, etc.)

T1.4: Selection of content (OEAW, participants 4-13)

- Selection of objects to be digitized (masterpieces)
- Collecting all previously rendered /created services, document, etc. of the objects to be digitised (e.g., tracings of watermarks, etc.)
- Task planning of all necessary works in relation of digitisations for Imperialle
- to do list with all tasks and jobs

T1.5: Pre-processing of the material (ICPAL, participants 4-13)

- Preparation of objects for the digitization (separation from passé-partout, restoration, cleaning, etc.)
- Providing of the facilities and necessary equipment for digitization
- Providing of commodities (gloves, Japan paper, cardboard, colour cards, etc.)

Deliverables (iv)
D1.1 Digitisation rules specification and timeline /m6 D1.2 Content selection report /m6 D1.3 Pre-processing report /m15

Work package number :	**2**			**Start date or starting event:**					m4			
Work package title:	Database design and metadata specification											
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	10.0	0.0	25.0	6.0	5.5	9.0	12.0	9.0	6.5	**12.0**	6.0	8.0	4.5

Objectives (ii)

O2.1 – Analyze all the available data resources (digitized masterpieces) of partner institutions and provide a metadata specification for these objects to make it possible to integrate them into the Bernstein portal and to allow their import into Europeana.
O2.2 – Provide a Database Specification that allows flexible storage and efficient retrieval of the (referenced) digitized masterpieces along with their metadata.
O2.3 – Implementation of a Database to store the (references to) digitized masterpieces and their metadata and to provide search and retrieval mechanisms to support Bernstein portal services and to allow the import into Europeana.

Description of work (iii)

T2.1: Data resources analysis (OEAW, ICPAL)

- Analyze all the data resources the Imperialle partner can provide (European masterpieces of art, music, literature, architecture, and science that were made or planned on paper)
  - What kind of "masterpieces" are to be integrated?
  - If information on these masterpieces is already electronically (in digitized form) available, how is it stored and how can it be accessed and retrieved?
  - What kind of metadata on these masterpieces is available and what kind of metadata should be added
- Analyze all the data resources the Imperialle partner can provide (including possible metadata) with respect to:
  - Usage in a shared and joined portal (issues: usability, accessibility …)
  - Applicability regarding additional services provided by the Imperialle portal
  - Qualification regarding import of metadata into Europeana

T2.2: Metadata specification (HERTZ, SMK)

- Harmonization of all the metadata upon all the different and diverse kind of masterpieces that are to be integrated
- Specification of a unified common metadata schema for Imperialle

T2.3: Database design (TUG, SMK)

- Design of the Imperialle database which contains the aggregated data of all databases of the partners

T2.4: Database implementation (TUG, OEAW)

- Implementation of the Imperialle database:
  - Implementation of the database schema (create tables, views, indices …)
  - Specification of a persistence layer API that can be used by portal services and gateways to store, access, retrieve metadata of digitized masterpieces
  - Implementation of the persistence layer API

Deliverables (iv)
D2.1 Metadata specification (aligned with D5.1 ... requirement specification) /m9
D2.2 Database design specification (aligned with D5.1 ... requirement specification) /m9
D2.3 Database implementation report /m18

The first Russian printed *Bible* by Ivan Fiodorov, Ostrog, 1581

Slavonic Ohtoih printed by Coresi, Brasov, 1574

Work package number :	**3**			**Start date or starting event:**					**m7**			
Work package title:	Digitisation											
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	5.0	**10.0**	2.0	9.0	8.5	15.0	12.0	15.0	6.5	10.0	9.0	10.0	8.0

Objectives (ii)

O3.1 Digitisation of the objects by reflected light and backlight.

Description of work (iii)

T3.1: Digitisation of the masterpieces (BAM, IVCR, partially by sub contracting)

- Preparation of the equipment/devices in accordance with D1.1
- Digitisation of the objects with one or two images (recto and verso site) (the verso side can show remarks of the artist or the collector, documentation of mountings, etc.)
- Naming and storage of the images in accordance with D1.1

T3.2:Transparency digitisation (BAM, IVCR, partially by subcontracting)

- Transparency digitisation of the objects in order to record the paper structure including the watermark (backlight photography, x-ray imaging, thermography, etc.)
- Naming and storage of the images in accordance with D1

T3.3: Registration of secondary documents (ISM, ICPAL)

- Registration and digitisation of secondary documents (e.g. rubbings or tracings from watermarks)

T3.4: Documentation and backups (BAM)

- Documentation of the digitisation work (e.g. status report as Excel list)
- Generation of periodic backups

Deliverables (iv)

D3.1 Digitisation report (first version) /m18
D3.2 Digitisation report (final version) /m27

Work package number :	**4**				**Start date or starting event:**				**m9**				
Work package title:	Digitisation post-processing and database population												
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	10.0	3.0	10.0	14.0	13.5	**32.0**	30.0	25.0	19.0	17.0	16.0	18.0	10.0

Objectives (ii)

O4.1 – Post-processing of the images and archival
O4.2 - Metadata
O4.3 – Database population

Description of work (iii)

T4.1: Image subtraction (OEAW, IVCR)

- Evaluation of currently available image editing software (Photoshop, Photoshop Elements, GIMP, etc.) versus own developments
- Creating test sets for image subtraction and pre-press
- Training in image subtraction and image enhancement on test sets
- Development of a toolkit for image subtraction (back light techniques)

T4.2 Image post processing (OEAW, IVCR)

- Cropping of images
- Resize of images in various resolutions (work copies, generation of icons, web presentation, etc.)
- Image post processing (brightness, colour, contrast, etc.)
- Image subtraction to generate watermark (paper structure) images

T4.3 Image archiving (UTBV, ACV)

- Evaluation of archiving software for images and documents which is already in use
- Hierarchical structuring of data
- Data export/links in already existing and used data management systems (e.g. MUSIS, OPAC etc.)

T4.4 Metadata (SMK, all participants 4-13)

- Identification respectively completion of metadata
- Translation of the metadata in other languages

T4.5 Database population (HERTZ**,** all participants 4-13)

- Insert the metadata into the database
- Selection of images and documents for the web-presentation
- set up an web presentation system / adaptation of already existing web presentations systems for *Imperialle*-data
- Migration of the digital data, as defined by WP1 Guidelines (max resolution, format and Copyrights)
- Metadata import for web-presentation
- online presentation of *Imperialle* data sets

Deliverables (iv)

D4.1 Image processing and archival report /m15
D4.2 Metadata status report /m15
D4.3 Database population report (first, included in D8.4) /m18
D4.4 Database population report final /m27

Work package number :	**5**				**Start date or starting event:**					**m9**			
Work package title:	Europeana												
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	15.0	0.0	**37.0**	10.0	11.0	5.0	8.0	12.0	2.5	10.0	5.5	3.0	1.0

Objectives (ii)

O5.1 *Imperialle requirements*: Specify the additional requirements which are requested.
O5.2 *Bernstein extensions*: Update and prepare the Bernstein portal for the inclusion of new databases.
O5.3 *Bernstein-database connection*: Connect the new databases with Bernstein via appropriate protocols.
O5.4 *Europeana connection*: Specify extended mapping to ESE and update OAI-PMH implementation.

Description of work (iii)

T5.1 Specification of requirements (TUG, OEAW)
The additional requirements for the update and extension of the Bernstein portal as well as the extended set of metadata will be investigated and specified.

T5.2 Bernstein update and extension (TUG, OEAW)
The existing Bernstein portal will be improved by advanced search features and the implementation of the harvest model. By aggregating all the metadata of the distributed databases, the performance will be strongly enhanced and new search functionalities (e.g. for temporary or geographically relations) can be realized. Furthermore, the search possibilities will be extended to the additional metadata within the new databases and additional languages will be incorporated into the portal user interface and in the multilingual keyword list, which is used for the automatic translation of search terms.

T5.3 Connect databases with Bernstein (TUG, OEAW, IVCR, BL, UTBV)
The new databases will be connected with Bernstein by use of the SRU (Search/Retrieval via URL) or another appropriate protocol. First of all it must be investigated which database systems are used by the content providers and accordingly, the new database systems must be supported by the protocol being used. Additionally, the extended common set of metadata must be implemented in the protocol that connects the new databases with Bernstein.

T5.4 Connect with Europeana (TUG, OEAW, IVCR, BL, UTBV)
The connection between Europeana and Bernstein has already been implemented by OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting). The new databases will contain not only watermarks, but also high resolution images and the paper structure of the digitised masterpieces as well as many additional metadata. To connect these new databases to Europeana, an extended specification of the mapping to ESE (Europeana Semantic Elements) and accordingly, an update of the OAI-PMH implementation are necessary. For Europeana, this will provide access to all metadata of the masterpieces and also to the servers of the specific content providers.

Deliverables (iv)

D5.1 Requirements specification / m9 (aligned with D2.1 and D2.2)
D5.2 Architectural software design / m12
D5.3 Bernstein extension (first prototype) / m18
D5.4 Integration report / m21
D5.5 OAI-PMH Implementation / m24

Work package number :	**6**				**Start date or starting event:**					**m1**			
Work package title:	Monitoring and testing												
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	5.0	0.0	8.0	7.0	**10.0**	3.0	4.0	2.0	1.0	8.0	2.0	2.0	1.0

Objectives (ii)

The primary role of the work-package is to periodically monitor the work's progress according to the schedule. Periodic monitoring checks the quality of outputs and ensures through feed-back the best results. A mechanism will be put in place to evaluate the impact of the project on the targeted application areas during and after its lifetime.

Description of work (iii)

T6.1 Monitoring (SMK,OEAW)
Monitor the progression of the work, notice partners in time on delays, provide monitoring notes to the partners, coordinator and the Commission. The monitoring will be conducted by the coordinator's office, which has the best overview of the state of the project. A general assessment is formed by day-to-day contact with the partners, while formal assessments, consisting in short notices about the work progress of each partner, will have a frequency of 6 months.
T6.2 Validation (SMK, IVCR, TUG, UTBV)
Implement a project-wide validation mechanism, generate quality assessment reports on the developed outputs and provide feed-back to the developers. The validation mechanism is based on the cycles of evaluation and feed-back at work-package and project level, involving both project members and external users.
T6.3 Evaluation (SMK, OEAW)
Continual feed-back from external users on their assessment of the developed outputs is to be maintained by using the network put in place in the "WP7 Dissemination" workpackage. A final analysis and report on the observed impact will be presented at the end of the project. A list of evaluation criteria conceived in this work-package will ensure that other assessments of the project's impact can be conducted after the project's lifetime.

Deliverables (iv)

D6.1 (included in D8.2) / m12 – Assessment & evaluation report #1: Note on the progress of the work in relation to the schedule and report on reliability measures and improvements to consider.
D6.2 (included in D8.5) / m24 – Assessment & evaluation report #2
D6.3 (included in D8.7) / m30 – Assessment & evaluation report #3

Work package number :	**7**			**Start date or starting event:**					**m1**			
Work package title:	**Dissemination and Sustainability**											
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	15.0	0.0	4.0	4.0	4.0	4.0	**17.0**	3.0	2.0	6.0	2.0	2.0	2.0

Objectives (ii)

The role of this workpackage is to ensure that the consortium's outputs are being known and used at their full potential and to reach viability, sustainability and scalability after the end of the project
O7.1 – *Accessibility*: the outputs should be usable: easy to handle and attractive.
O7.2 – *Dissemination*: the outputs should have a deep penetration of the market: they should be known and used.
O7.3 – *Sustainability*: the work generated by the project should be usable over the long term.

Description of work (iii)

T7.1–Dissemination & exploitation (WRM, OEAW)
Public awareness on the availability and characteristics of the outputs will be developed through the media (web-sites, mailing lists, specialized journals, newspapers and presentations at conferences and public events) and through the professional networks of our partners. A series of exhibitions on the history of paper and watermarks will disseminate the project, its intentions and results to a wider public as well as to specialists.
T7.2 Accessibility (TUG, UTBV, OEAW)
This task is responsible for the efficiency of interaction between the users and the consortium's outputs in terms of software ergonomics, documentation and graphical attractiveness.
T7.3 – Sustainability (OEAW, TUG)
A ready-to-use kit containing the necessary guidelines, standards and software for the digitization of art works on paper and for processing and archiving the images will be developed and can be downloaded and installed for free. The kit contains: [1] guidelines on how to generate paper reproductions and to set up databases, what the interoperability standards are, and what and where resources for paper expertise are; [2] a "paper studies dissemination kit" for the creation of a paper database and expertise environment (database software, tools, benchmark images, documentation).

Deliverables (iv)

D7.1 Project website /m3
D7.2 Project presentation (start version) /m3
D7.3 *Dissemination kit*: containing ready-to-use guidelines and software /m21
D7.4 *Project presentation*: final version /m29
D7.5 *Exhibition*: report on the exhibitions on paper studies and *Imperialle* during the project /m29
D7.6 Project website (final version) /m30

Work package number :	**8**				**Start date or starting event:**					**m1**			
Work package title:	Project management												
Participant number:	1	2	3	4	5	6	7	8	9	10	11	12	13
Participant short name	OEAW	BAM	TUG	IVCR	SMK	ICPAL	WRM	BL	HERTZ	UTBV	BAL	ISM	ACV
Person-months per participant:	**30.0**	0.0	2.0	2.0	2.0	1.0	2.0	1.0	0.5	2.0	0.8	1.0	1.0

Objectives (ii)

O8.1 – *Keep the project on track*: This work-package is the administrative glue of the project, implementing the terms of the consortium's contract and the decisions taken by the consortium's councils, and ensuring that it runs according to plan. It has six competence areas as outlined below, and which are discussed in greater detail in section B3.2c "Project management".

Description of work (iii)

T8.1 EU coordination (OEAW)
The coordinator communicates to the consortium partners information originating from the EU that specifically addresses our project or is of general interest regarding the eContentPlus and other scientific programs and activities, and also reports developments about the activity of the consortium to the EU.
T8.2 Administrative affairs (OEAW)
Maintain the day-to-day administration of the project (requests and replies to and from the partners). Collects periodic reports from the partners on the progress of the work and generates synthesis reports at the project level.
T8.3 Financial matters (OEAW)
Receives the EU grant for the project, plans its deployment over time, distributes the funds among partners and manages budget increases, shifts and cuts. Monitors, by means of periodic reports from the partners, the state of financial expenditures.
T8.4 Intellectual propriety rights (IPR) (OEAW)
Negotiates IPR with the partners and external entities and ensures the balance between the claims of the owners and the access needs of the public.
T8.5 Information flow (OEAW)
Keeps the partners updated on the progress of the project and circulates technical and administrative information among them.
T8.6 Public relations (OEAW)
Acts as the official inquiry and statement point for the consortium, seeking a lively contact with the specialized-user communities as well as the non-scientific public.

Deliverables (iv)

D8.1 First half-year progress report /m6
D8.2 Second half-year progress report /m12
D8.3 First annual report /m12
D8.4 Third half-year progress report /m18
D8.5 Fourth half-year progress report /m24
D8.6 Second annual report /m24
D8.7 Fifth half-year progress report /m30
D8.8 Final project report /m30

Table 5: Template – Summary of staff effort

Participant No.	Part Short name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total person months
1	OEAW	10.0	10.0	5.0	10.0	15.0	5.0	15.0	**30.0**	100.0
2	BAM	2.0	0.0	**10.0**	3.0	0.0	0.0	0.0	0.0	15.0
3	TUG	2.0	25.0	2.0	10.0	**37.0**	8.0	4.0	2.0	90.0
4	IVCR	**14.0**	6.0	9.0	14.0	10.0	7.0	4.0	2.0	66.0
5	SMK	9.0	5.5	8.5	13.5	11.0	**10.0**	4.0	2.0	63.5
6	ICPAL	5.0	9.0	15.0	**32.0**	5.0	3.0	4.0	1.0	74.0
7	WRM	9.0	12.0	12.0	30.0	8.0	4.0	**17.0**	2.0	94.0
8	BL	5.0	9.0	15.0	25.0	12.0	2.0	3.0	1.0	72.0
9	HERTZ	2.0	6.5	6.5	19.0	2.5	1.0	2.0	0.5	40.0
10	UTBV	10.0	**12.0**	10.0	17.0	10.0	8.0	6.0	2.0	75.0
11	BAL	4.0	6.0	9.0	16.0	5.5	2.0	2.0	0.5	45.0
12	ISM	4.0	8.0	10.0	18.0	3.0	2.0	2.0	1.0	48.0
13	ACV	2.5	4.5	8.0	10.0	1.0	1.0	2.0	1.0	30.0
Total		78.5	113.5	120.0	217.5	120.0	53.0	65.0	45.0	812.5

Rubens Cantoor, SMK

Table 6: Template – Risk assessment

Description of possible risk	Impact	Probability of occurrence	Remedial Actions
Quality of scans/metadata is insufficient according to the set standards	insufficient quality	low	1) Rework 2) Escalation mechanism
Partner does not deliver	data or service not delivered	low	Escalation mechanism according to the consortium contract
Partner cannot deliver	data or service not delivered	low	Replacement of the partner
Key personnel loss	delay and quality	low	The assigned substitute takes over the duties

Imperialle is a project with a low risk probability because it is based on well-known and approved technologies and the consortium comprises specialists for conservation, paper research, digital scanning, web design, and digital libraries. Nevertheless, decision-making, conflict-solving, and contingency mechanisms have been chosen in a manner to minimize the risks and optimize the proper functioning of the project. These mechanisms are part of the management structures described in more detail in B3.2c (Project Management). Responsibility for the project has been distributed to all partners through the allocation of work packages and task leaderships. Several partners are usually implicated in the realization of individual tasks, so that the progressive shifting of responsibilities is possible. The work packages and tasks have been designed to operate relatively autonomously in order to reduce their interdependencies in case a particular product is delayed or fails to deliver.
A monitoring cycle of 6 month (WP6) guarantees on-time detection of eventual delays, quality of products (scans, metadata) and other problems. All partners will sign a consortium agreement at the beginning of the project. This consortium agreement will regulate the responsibilities and the actions to be taken if and when a contractor fails to meet a goal, and defines escalation mechanisms.

Bible of San Juan de Ribera, IVCR

B3.2c. Project management

Managing a project with 13 partners from 6 countries needs clear decision mechanisms, involvement of all partners and a wide distribution of the responsibilities. The coordinator, the Austrian Academy of Sciences, has extensive experience in managing projects of such scale. On the average, the OEAW is involved in 50 EU projects per year.

A substantial investment in the project is allocated to its management, reflected in the creation of three specific work-packages out of a total of eight (the ratio is not proportional to the cost and time investment, only indicative of the importance accorded to management). They are: project management (WP8), assessment & evaluation (WP6) and dissemination & sustainability (WP7). A strategic objective of *Imperialle* is to bring to the potential users the outputs generated during its lifetime and create a climate of interest towards our cultural heritage, paper expertise, and the history necessary for the sustainable development of these fields. This objective is reflected in WP7.

All partners are involved in the management of the project as much as possible. This translates into a distribution of managerial tasks between the partners, the bestowing of responsibility positions (8 out of 13 partners are work-package leaders) and the representation of all partners in the scientific and managerial councils. The benefits of these choices are expected to facilitate management, create a sense of shared responsibility, intensify collaboration between the partners, ensure higher quality standards and ground the project in a democratic participation while retaining individual innovation possibilities.

A facilitating aspect in the management of the project is the experience of the partners to work with each other, an experience gained during many national and international projects, which for some of the participant researchers has stretched over their entire careers. We therefore think that our choices optimally fit our needs and conditions. Furthermore, all of the partners without exception have an extensive knowledge of large international projects, some funded by the EU. The collaboration is regulated by a Consortium Agreement, agreed upon by all partners.

Management structures

The main management structures of the project are the consortium council and the coordinator's office. The consortium council is responsible for strategic planning and decision taking for scientific and managerial matters, while the coordinator's office has an executive role and will ensure that the project runs properly in all its different aspects: administrative, financial, information flow, external relations, intellectual rights.

The council is a body convening at general and exceptional meetings, while the coordinator's office corresponds to a work-package (WP8 "Project management"). Also work-packages are the task of quality monitoring which reports to the council (WP6 "Assessment & evaluation") and the liaison-to-users task, attached to the coordinator's office (WP7 "Dissemination & sustainability"). A detailed description follows.

1. The *consortium council* consists of a steering, a scientific and an exploitation body, gathering during the general meetings (4 during the 30-month length of the project) or in the case of exceptional needs, on demand. Usually all project members will participate in the council discussions, the coordinator's office being responsible for collecting discussion topics, setting up the agenda and moderating the debates. Steering and scientific meetings for non-strategic issues will take place much more frequently, at the work-package level. While the steering council discusses the operational performance of the project and proposes solutions, the scientific council's duty is to make scientific choices, prepare R&D plans and assess the outputs' quality, and the exploitation council debates how well our outputs are being received by the targeted users. In the event of quality problems or roll-out delays, the issues will be reported to the steering council and/or to the coordinator's office for implementation of recommendations.

2. The *coordinator's office* ensures the day-to-day proper workings of the project. At the administrative level, it will make managerial proposals, receive and forwards requests, pursue follow-ups and prepare meetings and reports. The financial and intellectual propriety aspects will be discussed by the management council and implemented by the coordinator's office, which is also responsible of the information flow inside the consortium and with exterior entities. The first of these is the European Commission, from which it will take requests and to which it will report the status of the work in progress. Public relations will also be handled by the coordinator's office. WP7 "dissemination and sustainability" is responsible for informing potential users about the consortium's outputs and activities by targeting contacts and creating passive showcases (websites,

publications, exhibitions, TV/radio), seeking dissemination and use of the outputs, gathering user experiences and providing adequate design packaging of the outputs (graphics and ergonomics).

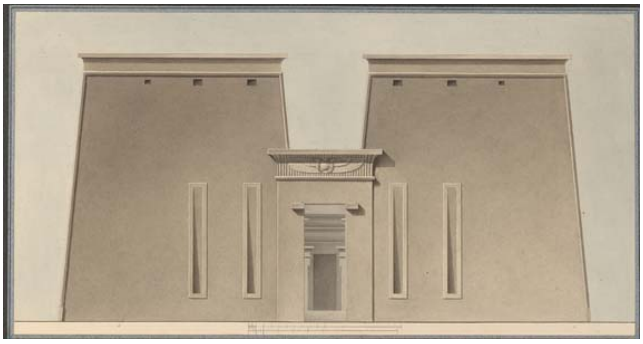
The coordinator's office will be composed of the coordinating person of the project and a secretary-general specifically employed for the management of the project. Depending on the nature of events, they will collaborate with the work-package leaders, who will then contact the individual partners, or they will deal directly with the individual partners. Each partner has one of its members designated as an administrative contact person.

Management mechanisms

1. The *decision-making, conflict-solving and contingency mechanisms* are in accordance with the impact of the foreseen action. If an action is localized, informal discussions between the affected partners is the preferred means. Strategic decisions are usually taken during general meetings, when necessary by majority voting (1 vote per partner) and an external referee when an agreement is not reached. The use of a voting webpage will ensure voting speed and independence from the physical location of the voters. From its beginning, the project's workflow has been designed to minimize risk situations through two strategic contingency measures: [1] *task autonomy*: the relative autonomy of tasks reduces their interdependencies in case a product is delayed or fails to deliver; and [2] *partner integration*: several partners are usually implicated in the realization of a single task so that progressive shifting of responsibilities is possible (maintaining an extensive network of collaborators, the consortium can, in extreme cases, quickly respond to a situation by integrating a new partner).

2. *Communication and collaboration* between partners takes place through a mix of physical meetings and telecommunication/collaboration. All partners and, if possible, all individual members will gather at four general meetings during the lifetime of the project: kick-off meeting, end of first year, end of second year, and end of project.

A *collaboration website* will serve as the virtual workplace for the consortium. Its functions are those of a listserver, a videoconferencing device, voting site, calendar management, meeting discussion agenda, documents repository and public showcase of the project (check http://www.bernstein.oeaw.ac.at/twiki).



Jean-Baptiste Lepère, WRM

Vedute d'Italia, HERTZ

B3.3. Resources to be committed

The total costs indicated on form A3 are € 4,894,600 (EU contribution € 2,447,300) composed of

- personnel costs € 3,024,000 (62.5%) representing 812.5 person/months,
- subcontracting € 256,000 (5%),
- other costs € 667,400 (13.5%),
- overhead € 907,200 (19%).

Other Costs consist of € 165,900 travel costs and € 501,500 equipment costs.
a) The travel costs are approximately € 15,000 per participant. We have planned four general meetings, at which all partners will be present and at which delegates from the European Commission will also be invited to participate – these include one kick-off meeting, two general meetings at the end of the first two project years respectively, and a final meeting at the end of the project. The locations for these meetings are foreseen to be Vienna (coordination), Valencia, Copenhagen, and Rome. General meetings serve to present the progress of our work to the Commission, to discuss management issues (financial, administrative, communicational, monitoring), to work out technical and scientific issues, and to plan future steps. Additionally, they represent opportunities to disseminate the work being done, either locally or internationally (which will be accomplished by inviting speakers as well as having potential users of our output participate the public portions of the meetings).
There are 4 to 9 scheduled work-package meetings. Their number will depend on the specific requirements of the tasks in each work package.

b) Equipment and others:

No.	participant	equipment, material, others	costs
1	OEAW	server, storage/backup system, software	5,000
2	BAM	1,500 X-ray films (30 x 40cm) + developing	50,000
3	TUG	server, storage/backup system, software	5,000
4	IVCR	server, storage/backup system, software, restoration material, films	14,000
5	SMK	digital X-ray (€ 60,000), photo equipment (€ 22,000), digital storage (€ 6,000), materials (€ 8,500)	96,500
6	ICPAL	server, storage/backup system, restoration material (frames, passe-partouts)	9,000
7	WRM	Cruse scanner (€ 100,000), exhibition "German Master Drawings" (€ 65,000), server, software, storage (€ 10,000)	175,000
8	BL	server, storage/backup system, restoration material (frames, passe-partouts)	9,000
9	HERTZ	Wolfenbütteler Buchspiegel + digital camera + computer: (€ 15,000), Zeutschel-Scanner OS 12000V (€ 28,000)	43,000
10	UTBV	A2 book scanner SMA 21 eDocument (€ 43,000), server + accessories, photo technique to extract the watermarks, storage-archiving solution (€ 17,000)	60,000
12	ISM	server, storage/backup system, 3 beta radiography plates	20,000
13	ACV	server, storage/backup system, slim light, beta radiography plate	15,000
		Total	501,500

Most of the masterpieces to be digitised in the project are unique works of great value that are extremely fragile as well as light sensitive. For this reason they must be handled with great care and require special equipment that has been expressly designed for recording this type of object.
Many of the objects involved are so valuable and fragile that moving them out of house for scanning would be expensive if not even risky for reasons of potential damage to the pieces. Sharing of scanning equipment is therefore in most cases non-feasible.

Equipment needs are very different for the various participants. Some institutions, like IVCR and ICPAL, are equipped with adequate scanning equipment, but others are not. For this reason, two participants, the WRM and the SMK, need appreciably higher budgets.

Most of the participants will need to purchase and install a server, purchase a secure storage and backup system, as well as software (€ 5,000). A beta-radiography plate, which costs € 4,000, records a paper structure in two hours. A number of such plates are needed for the larger collections (e.g. ISM).

WRM
A major part of the budget of the WRM, € 100,000, is for the purchase and modification of a large-scale high-resolution scanner, which will be purchased from CRUSE GmbH in Rheinbach near Bonn. It is the only device on the market that functions with no contact (even with no glass plate). It has a resolution of 14,000 pixels per line and operates in three modes: incident light, streak light (for surface texture) and back light. This scanner is recommendable for reasons of conservation because it emits light only at the site actually being scanned. Furthermore, this scanner allows the digitisation of objects that are mounted in passe-partouts. This reduces costs for preparing the objects. Purchase of this scanner will continuation of digitisation after project completion. Only 300 sheets from the Hittdorff collection have been selected for the project, of a total of 8,000 sheets. The poor condition of the objects due to heavy damage during World War II and the difficult, tedious, and expensive restoration work they thus need does not allow for more scans to be done during this project's duration. Nevertheless, a major goal of the museum is to restore the entire collection and digitise it.
The WRM is one of the major museums in Germany. Exhibitions in the museum are very popular and often draw thousands of visitors. A major dissemination activity for *Imperialle* will be the exhibition "German Master Drawings" at the museum. This will give a unique chance for *Imperialle* and Europeana to be presented to a large audience, both through the exhibition and the catalogue. Costs for catalogue, posters, flyers and exhibition are estimated at € 65,000. The remaining €10,000 is for software (Photoshop, HIDA MIDAS), a slim light foil, and a server.
SMK
The SMK will purchase digital X-ray equipment (e.g. DURR HD-CR 35 NDT) and phosphorous plates for high resolution radiographic imaging (transparency images) at a cost of approx. € 60,000, and photographic equipment (e.g. Phase One 645, Mamiya 645 AFD II) including software for the digitisation of images (€ 22,000). Other costs will be € 8,500 for the storage of the physical images after demounting and remounting in solander boxes; and € 6,000 for digital storage facilities including servers for the Digital Asset Management of new data as well as backup of the same images.
UTBV
The major portion (€ 43,000) of the requested budget will be used for an A2 book scanner: (e.g. SMA 21 eDocument), which can operate in daylight conditions and satisfies demanding preservation needs. This will be the first scanner of this type in the Brasov area. A key advantage of this scanner is that the operator is not disturbed by illumination elements, which is usually unavoidable when working with other types of scanners for books and large formats. The remaining costs (€17,000) are for a server, communication devices and a digital archiving system, a high quality digital camera system with software and a beta-radiography plate for the digitisation of watermarks and paper structures.
HERTZ
The Bibliotheca Hertziana will digitise 10,000 smaller sheets of the Vedute d'Italia in-house. The *veduta*s require a resolution of 600dpi because of their fine details and problems with moirè patterns. For this purpose, a high-quality, high-resolution scanner (e.g. Zeutschel-Scanner OS 12,000V) has been budgeted (€ 28,000). Additional costs (€ 15,000) include a so-called Wolfenbütteler Buchspiegel, a device for the digitisation of sensitive books, a digital camera and a server and storage system.

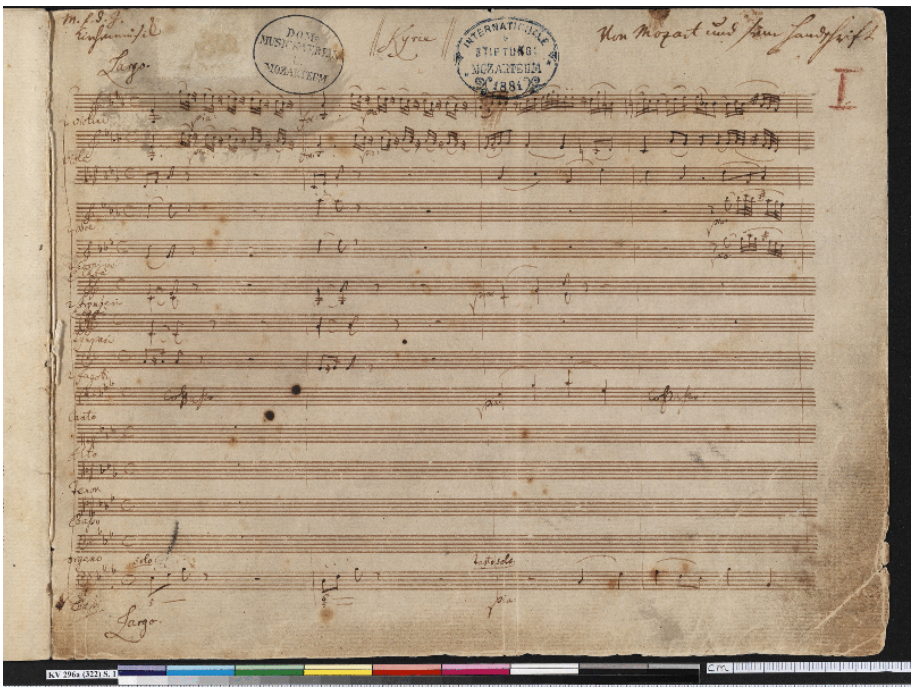
All investments of scanning hardware are investments for the sustainability and scalability of the project, as they guarantee that scanning work will continue beyond the project completion. The scanning devices will also be available for use by other Imperialle partners within the framework of the project.

Subcontracting:

No.	participant	services	costs
1	OEAW	printing (catalogue, folder, poster, etc.), translations	20,000
7	WRM	restoration of Lepère and Hittdorff works (serious fungus damage)	50,000

9	HERTZ	scanning of large-format items (10,000 sheets, € 15 per sheet)	150,000
11	BAL	X-ray scans of thick paper documents (250 pieces, € 200 per sheet)	50,000
12	ISM	translations	6,000
13	ACV	scanning, translations	20,000
		total	296,000

All participants will try to accomplish the necessary work within their respective institutions and will strive to avoid subcontracting whenever possible. Only six participants have allotted for subcontracting in their budgets, two with substantial amounts. Of the total budget, subcontracting represents 5%. The Bibliotheca Herztiana (HERTZ) is contributing scans of 20,000 sheets of the Vedute d'Italia, which is one of the most attractive and interesting collections planned to be included in the project. It also represents the largest amount of data (approximately 45% of the total) foreseen for inclusion in *Imperialle*. Of the total, 10,000 smaller sheets (measuring up to 34 x 24 cm) can be scanned in-house, but the others must be scanned by subcontractors. All of the *veduta*s are engravings with very minute details and need therefore a scanning resolution of 600 dpi in order to avoid moirè patterns and to capture all of the finest details. The costs for reflective and transparent scanning of each sheet have been moderately estimated at a maximum of €15 per sheet.
A majority of the sheets in the Hittdorff and Lepère collections (WRM) are in very poor condition because of serious fungus damage. Prior to digitisation, these sheets will need a special restoration treatment, which can only be done outside the WRM. This will cost € 50,000. As it would be impossible to include these precious masterpieces, which have never before been available, in *Imperialle* without their being restored, it is planned to contribute to this as well.
The project consortium does not include any participants from Great Britain, and therefore there are no native speakers of English working within the project. Some part of the subcontracting will therefore be used for translations of the metadata and dissemination material (catalogues, posters, folders, web pages).



Mozart KV296, ISM

B3.4. Indicators

The project provides the means to monitor the progress of the work at various degrees of detail and intervals:
1. *Core indicators* – See Table 7.
2. *Quarterly indicators* – Deliverables are good indicators, most of them being reports or internet-based services. The deliverables are distributed on a three month basis over the full project length.
3. *Yearly indicators* – The most detailed performance assessment is the yearly report to the EU. For facilitating monitoring we have introduced a "documented self-assessment" scheme, by which the partners themselves assess their progress and document their claims. [1] *Quantitative metrics* – The report details what was done during the specific period (work quantity), what is left to be done (percentage of work) and provides information about the rhythm of progress, the encountered and foreseeable difficulties, etc. (difficulty level of work). The claims are documented with screenshots of outputs, links to online software and online documents. [2] *Qualitative metrics:* the report explains what the functionalities of the outputs are and provides links for testing with representative samples.

Table 7: Template – Indicators

Indicator No.	Relating to which project objective / expected result?	Indicator	Method of measurement	Expected Progress		
				Year 1	Year 2	Year 3
1	O1.2 pre-processing	Objects ready for scanning	Counting (all/SMK)	20,000	45,000	45,000
2	O2.3 database implementation	Databases working	Counting (OEAW)	4	10	10
3	O3.1 scanning	Objects Scanned	Counting (all/SMK)	5,000	45,000	45,000
4	O4.1 post-processing	Images post-processed	Counting (all/SMK)	100	40,000	45,000
5	O4.2 metadata	Metadata available	Counting (all/SMK)	1,000	40,000	45,000
6	O4.3 database population	Data in databases	Database statistics (OEAW)	100	20,000	45,000
7	Databases online	Databases online	Web (TUG)	2	6	10
8	O5.3 Bernstein connection	Data available in Bernstein	Bernstein portal (OEAW)	0	20,000	45,000
9	O5.4 Europeana connection	Data available in Europeana	Europeana portal (OEAW)	0	20,000	45,000

The results of performance measurement and evaluation (indicators and their values) will be part of the progress reporting to the Commission.

B3.5. Security, privacy, inclusiveness, interoperability; standards and open-source

To guarantee interoperability of all the components and services of *Imperialle*, all the partners have consented to bear in mind a set of underlying conditions.

On the content side, international standards and guidelines for cataloguing cultural objects will be followed. This specification will be extended to support any new type of cultural object or masterpiece that is to be integrated into *Imperialle*. The use of standard metadata specifications and descriptions will simplify the integration process into Europeana. Furthermore, it will guarantee the possibility of exchanging information on digitized cultural objects with other institutions at a later date.

The interoperability layer for the process of collecting all the metadata on cultural objects and masterpieces provided by our partner institutions will use standard retrieval and database access protocols (e.g. SRU, Search and retrieval via URL; http://www.loc.gov/standards/sru/).

For the integration process of all the metadata on cultural objects and masterpieces into Europeana, the standard OAI-PMH protocol (Open Archives Initiative Protocol for Metadata Harvesting: http://www.openarchives.org/pmh/) will be used. An appropriate OAI-PMH gateway will be provided by *Imperialle*.

The new Bernstein portal will be accessible by means of standard WWW protocols (http) and will deliver its content using standard W3C (World Wide Web Consortium, http://www.w3.org/) formats: html, xml. We will also keep in mind the recommendations of the Web Accessibility Initiative (WAI).

The services and components of the new Bernstein portal itself will be implemented by using standard Web application technologies. The Bernstein services will be designed as "Web Services" in an open architecture (Service Oriented Architecture, SOA). This will guarantee interoperability and stability, as well as the scalability and extensibility of the Bernstein portal. Further, the technical partners will ensure that the new Bernstein portal (as described in the WP descriptions above) will be built on third-party libraries, development tools and technologies that are licensed under various forms of the Open Source Software License.

IVCR