Manual of good practices for creative applications allowing reuse of cultural resources MOVIO



Authors: Sam Minelli, Maria Śliwińska, Sebastian Michałek, Piotr Kożurno, Marc Aguilar, Maria Teresa Natale

Edited by Maria Śliwińska

Project Coordinator: Istituto centrale per il catalogo unico delle biblioteche italiane

Address: Viale Castro Pretorio 105 – 00185 Roma

Phone number: +3906 06 49210 425

E-mail: info@athenaplus.eu

Project WEB site address: http://www.athenaplus.eu

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1. EXECUTIVE SUMMARY

This manual is a result of the AthenaPlus (Access to cultural heritage networks for Europeana) project funded under the European Commission ICT Policy Support Programme part of the Competitiveness and Innovation Framework Programme.

Five creative applications have been developed in the framework of the AthenaPlus project. Among them are:

- **MOVIO** the software for virtual exhibitions creation:
- City Quest the software that supports tourists in discovering city attractions but not only.
- **School Trip** has been created to support teachers and students in planning visits to a number of places.
- **GIS in eCultureMap** become the more and more used software which helps to locate quickly the places on a map.
- **Urban Explore** is a tool which gives opportunities to present stories related to a number of places users wish to discover.

All of the applications have been tested by the project partners, who also conducted a number of workshops involving vary communities in order to help the developers to find the bugs, improve functionality and to customize the applications according to the needs.

Each application has been translated to the partners languages to avoid problems with understanding English version of the software during the testing phase.

In this part we present **MOVIO** - the software for virtual exhibitions creation.

Communities involved into the testing are also presented in the manual, and communities to which the presented applications are particularly addressed are pointed out.

However the main goal of this manual is to present and promote creative applications and support the users with an instruction how to implement the software in the cultural domains.

To give the potential users better understanding of the applications, there have been pointed out some good examples to follow and to understand how the software works, and how it can be used in particular environments. In this paragraph also additional literature, and addresses of help-desks are listed.

Finally there is attached an instruction of fair use of the applications offered to the communities for free.

2. THE ATHENAPLUS CREATIVE APPLICATION - MOVIO



Movio has been initiated in 2010 by the Central Institute of the Union Catalogue of the Italian Libraries (ICCU), in cooperation with the Technological Observatory for the Cultural Heritage and Activities, interested in creation a software for online digital exhibitions. In the framework of AthenaPlus project MOVIO has been developed by its partner META srl, Italy by adding multilingual interfaces, and features for education and tourism.

MOVIO is a multifunctional software including: MOVIO virtual exhibitions (the most popular till now), MOVIO education, MOVIO touristic routes, MOVIO GIS, MOVIO mobile applications, and tool for digital storytelling.

MOVIO is an innovative tool to support cultural institutions in the realization of online digital exhibitions and thematic routes using multimedia content suitable to provide different levels of knowledge to different categories of users and to increase the visibility of cultural masterpieces.

Tools and services in MOVIO:

- an open source software CMS MOVIO used for online digital exhibitions;
- CMS MOVIO for mobile devices (microsite): iPhone and Android smartphones and tablets:
- MOVIO APP for the mobile platforms;
- MOVIO HUB, an online catalogue of digital and real exhibitions, available also on MOVIO APP;
- Online tutorials and interactive training on the use of the kit and on the implementation of the guidelines for the creation of online digital exhibitions.

Digital exhibitions & thematic routes

An **online digital exhibition** is a hypermedia collection made up of digital items which are:

- linked together by a common thread, an interdisciplinary topic, a concept, an idea, an anniversary, a special event, or a physical person;
- displayed in 2D and/or 3D;
- occasionally stored in distributed networks;
- made accessible through the potential provided by modern technologies, thanks to a system architecture designed to provide user-centered, absorbing experiences;
- dynamic products that can offer additional services and be updated periodically.

A **thematic route** is a particular aspect of an online virtual exhibition that can be:

- · an autonomous and independent product;
- a way to enhance and enrich the knowledge disseminated through the digital online exhibitions.

3. THE USE OF MOVIO CREATIVE APPLICATIONS: A STEP BY STEP MANUAL

In this part of the Manual the user can find a condense instruction of how to proceed with the application to get success. Those interested in using any of the creative applications should start with making decision about hardware and software selection. When this choice has been made one can follow with an implementation guidance. In this part each application is described in a special paragraph where detailed, step by step instructions are given

a. Software and hardware requirements

In order to be able to create your own digital exhibitions you need to set up a MOVIO server. It can be any Internet-connected computer capable of running:

- Apache 2.2 or newer
- MySQL 5.1 or newer
- PHP 5.3 with the following extensions:
 - o PDO
 - o PDO MYSQL
 - o DOM
 - o LIBXML
 - o JSON
 - o GD Lib

After successful server installation and configuration, exhibitions can be created (using MOVIO's back-end module) and viewed on any device with network access and capable of display HTTP webpages. It is also possible to create a mobile version of digital exhibitions to be used directly as an app for Android and/or Apple devices.

b. Creating your project step by step

In this paragraph we present instructions on implementation of MOVIO.

Instruction begins with information on how to start. Then the particular functions are presented, and finally an advice where to find further information and support are given.

MOVIO application has been described in details with examples and links to instructions on Youtube at the address: http://wiki.athenaplus.eu/index.php/MOVIO Getting started

It is recommended to start with selection of the exhibition subject and determining the audience the exhibition is addressed to. The author of the exhibition should think:

- What story s/he wants to present?
- What is the subject of the exhibition?
- Who is it made for?

This might affect ideas on navigation & storyline breakdown, tone in the texts, use of media.

Learning about MOVIO possibilities

It is recommended to attend one of the national trainings, if available. It should be possible to agree the convenient date with the AthenaPlus Contact Point (listed at part 5). If such a training is not offered, it's possible to learn about MOVIO by examining the following:

MOVIO folder: www.athenaplus.eu/getFile.php?id=371

MOVIO brief info on youtube: https://www.youtube.com/watch?v=JDFXEgmTvB8. MOVIO manual: https://wiki.athenaplus.eu/index.php/MOVIO#MOVIO manual pages

These publications will give a hint of

- what is possible with MOVIO
- what form an exhibition can take
- and what content can fit in there

Gathering the content

When the concept of an exhibition is more or less clear it's time for gathering the content that will be featured in it. Descriptive texts, images, videos and/or other materials need to be collected, edited or written, and checked in terms of possible copyrights, as some selected materials may be a subject to copyright restrictions. Where necessary the rights should be cleared and all digital objects should be described with the appropriate attribution or other credit information.

There are many digital libraries in the world, including Europeana digital library (www.europeana.eu) with its over 45 mln items or Wikipedia that offers free access to its resources. Also Media Archive allows for elaborate Copyright and Description info on any media asset possible to upload and use as exhibition asset. Exhibition curators can benefit from the decision of The Rijksmuseum that offers unlimited access to over 200.000 works of the renowned collection, including all the masterworks by Rembrandt, Vermeer, and Van Gogh, among others.

Website's navigation

Depending on the exhibition subject and idea, different layout and navigation can be used. In a case of **linear story without many internal relations**, creation of a number of flat web pages can be an option. Order of the pages can be altered through simple drag and drop procedure in the back-end of MOVIO.

It is important to think about the title of each page and its content. It is advised to draw up the structure and eventual subpages on a piece of paper before creating the exhibition.

It is recommended however to use **the Ontology Builder** to allow the user to discover the content not just through a list of pages, but also through the Graph navigation. Use of the Ontology Builder requires some thoughts and preparation. This tool allows to present different concepts, their relations to each other, and their underlying content. These three elements are best laid down first on a piece of paper before implementing in MOVIO.

Contact information

A visitor of the virtual exhibition may want to contact the curator for enquiries, disclaimer information, and so on. It is important to add the institution address and contact information (through the Page Type Exhibition or DigitalExhibition).

The MOVIO back-end

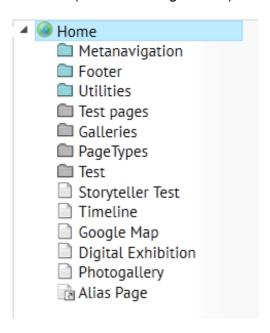
The back-end is the area dedicated to the Ontology and Content Management of MOVIO. It consists of three sections:

- (A) The section with the list of items on which it is possible to work in the back-end;
- (B) The section with the structured list of pages;
- (C) The section to create and edit the page contents and the ontology structure.

Access to the MOVIO back-end can be obtained by typing the dedicated URL (= normally adding /admin to the front-end URL), for example:

http://movio.beniculturali.it/bua/societasindacatopolitica/admin/

All the pages available in MOVIO are listed on the structured list (section B); the main page, from which the others all originate, is **Home**. The Homepage, together with the folders Metanavigation, Footer and Utilities, are predefined items in MOVIO and therefore cannot be removed (see detail image below).



MOVIO structure

Each element of the structure is represented by these icons:

- Prepresents a page;
- or represents a folder containing pages (the blue ones are system folders which are not possible to remove);
- Trepresents alias pages that point to other pages.

The position of the page, like the position in the structure and order, represents the position of the page in the MOVIO front-end (how users will see them). Therefore all work done in

that particular back-end page will directly affect the look of the pages in the front-end of MOVIO.

In the back-end it is possible to perform the following actions:

- Move the page into a different position in the navigation tree
- Edit the contents of the page
- Remove the page
- Hide the page
- Allow the page to be accessible only to authenticated and registered users in the front-end

Moving a page is done via drag & drop: simply take a page and drag it to the desired position. For all other operations described, click the right mouse button on the page on which you want to operate, and from the following window which opens, you can choose the item you wish to work on.

Four types of actions can be performed:

- Edit edit the contents of the page
- Delete delete the page
- Hide hide the page
- Make the page private render the page private so that only authenticated users in the front-end can access it



The addition of a new page in MOVIO, as a first step, requires the definition of three values:

- **Title** is the title that the new page will have within MOVIO
- Parent page, indicating the name of the page in the current structure of MOVIO, of which the new page will be a "child"
- Page Type, indicating type of the page that will be created (it's possible to choose between all currently available Page Types in the system)

Every page of MOVIO is based on a specific page type. This is a kind of a template, which affect the look and use of the page. The possible page types include the following:

- Alias it creates an Alias to the same page so that it is possible to publish in the structure of the contents of MOVIO, in multiple nodes of the navigation tree.
- Cover page that can be used as a cover for the exhibition hosted in MOVIO.
- <u>Digital Exhibition</u> page which allows to present, inside MOVIO.
- <u>Empty</u> kind of "folders" pages that have no content, but which organise the structure of MOVIO.
- <u>Exhibition</u> allows adding information on a physical exhibition totally or partially connected to the digital exhibition.
- <u>Photo Gallery</u> allows a group of images with different display options to be displayed in the front-end of MOVIO.

- Google Map allows the Point of Interests (POI) to be graphically displayed on a map.
- <u>Homepage</u> creation of a new page structured like the Homepage of MOVIO, i.e. the page composed by a title, one or more sliders and one or more Boxes.
- <u>Image Hotspot</u> allows to associate sections of an image with some additional information or some links to other pages.
- <u>Login</u> login page for registered users in the front-end.
- <u>Lost password</u> page to recover the password for the registered users in the frontend
- Page page for a website, a page that can be composed of a title, text, a sequence
 of images and a sequence of attachments. The Page Type Page is used every time
 and it is not necessary to create a page that falls within a particular type covered by
 the other Page Type.
- Registration registration page for users to access the front-end of MOVIO.
- <u>Search</u> page with field allowing to search on the site. The search is done on all text fields of all the pages of MOVIO.
- <u>Sitemap</u> automatically created page containing the content structure of MOVIO (the menu).
- <u>Storyteller</u> creates a composed page, which allows to create some narrative on the subject; it can consists of several types of records: Text, Text with media, Video, External video, Image, Photogallery, Audio. At the back-end, they can be displayed all at once, or the user can decide which type of record to show.
- <u>Timeline</u> single events, together with multimedia contents like: text, images, videos etc, graphically displayed over a time line.
- <u>User Details</u> allows the registered and authenticated user in the front end of MOVIO, to fill in/edit their own personal details.
- <u>Video</u> pages containing videos.

Detailed description of the page types including tutorial can be found on the AthenaPlus Wiki page devoted to AthenaPlus Creative Tools Training Materials, in the paragraph: MOVIO: The different MOVIO pagetypes:

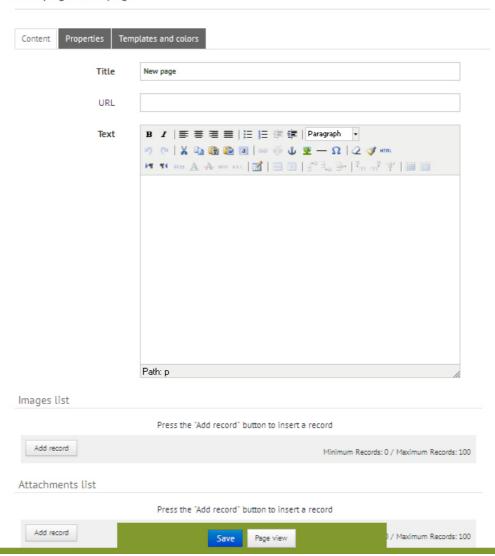
http://wiki.athenaplus.eu/index.php/The_different_MOVIO_pagetypes

Inserting/editing content



After clicking **Add page**, choosing the title, the Parent page and the Page Type, according to the Page Type chosen, MOVIO presents the **Contents** in the form of fields provided by that specific Page Type template.

Edit page: New page



The fields in **bold** (in this example: **Title** and **Text**) are mandatory. The repeatable fields have the **Add Record** button located underneath them. In that way it is possible to add up to a maximum of 100 records.



The fields that contain the box (no image) or (no media selected) are connected to the Media Archive with tutorial presented at the page:

http://wiki.athenaplus.eu/index.php/The media archive



They will be completed directly with the selected content (media asset) from the Media Archive.



Features

The second table represents the Features of the page.



In this section it is possible to edit the following attributes of the page.

- Title: the title of the page, which appears:
 - o in the bread crumbs.
 - o as the title of the page.
 - o as the title link in the content navigation tree.
 - as an alternative text link in the content navigation tree.



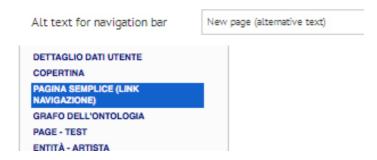
• Title attribute for links in navigation



This value defines the title of the link of the page in the navigation box.

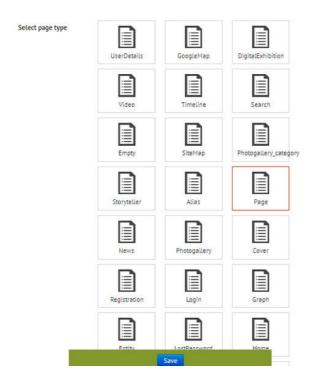


Alt link in navigation defines an alternative text for the specific navigation link



- **URL linked**: if you want to link this web page, you complete this with the URL of the page. When you click on the link of the navigation tree instead of accessing the page, you will access the linked web page.
- **Reserved Page**: flag it if you wish for the page to be accessible only to registered and authenticated users at the front end of MOVIO.
- **Type of page** refers to the template of the page you are editing. In practice it is possible to change the PageType even after the creation of a page.

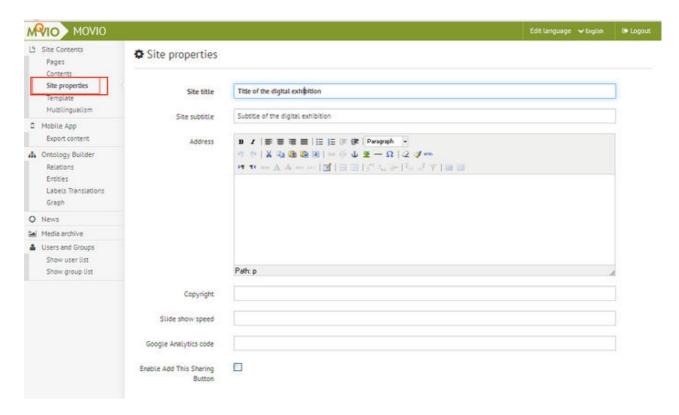
Warning: In a case of change the Page Type of a page, all content posted so far on that page will be lost.



- In compliance with the W3C Recommendations, MOVIO also allows to define <u>Dublin</u> <u>Core</u> consistent meta tags for each page. The following Dublin Core elements are implemented in MOVIO:
 - **Keywords**. Topic of the resource, or the keywords, phrases, or descriptors that describe the topic or content of the resource.
 - Description. A textual description that describes the content of the resource, including abstracts in case of documents or a description of the contents in case of visual resources.
 - **Subject**. Name given to the resource by the author or by the editor.
 - **Author**. The person(s) or / the organisation(s) responsible for the intellectual content of the resource.
 - **Editor**. The entity in charge of having made the resource available in its current form, for example a publisher, a university department, a company, etc.
 - Author of Subordinate Contributor. This element marks the person(s) or / the
 organisation(s) in addition to those specified as the Author, who made a significant
 intellectual contribution in the production of the resource but whose contribution is
 secondary compared to those who were indicated as Author.
 - **Type**. The category of the resource, for example a home page, a story, a poem, a working document, a technical report, a dictionary. Typically the resource type must be chosen from a closed list of types of resources.
 - **Identifier**. A string or numbers used to uniquely identify the resource. Examples of networked resources include URLs and URNs (when implemented).
 - **Source**. The work or project within which this resource was generated.
 - Report. Links to other resources.
 - Coverage. The spatial location and the temporal duration characterising the resource.

Website properties

In this section of the back-end it is possible to configure some parameters/properties which are useful for all the instance of MOVIO.

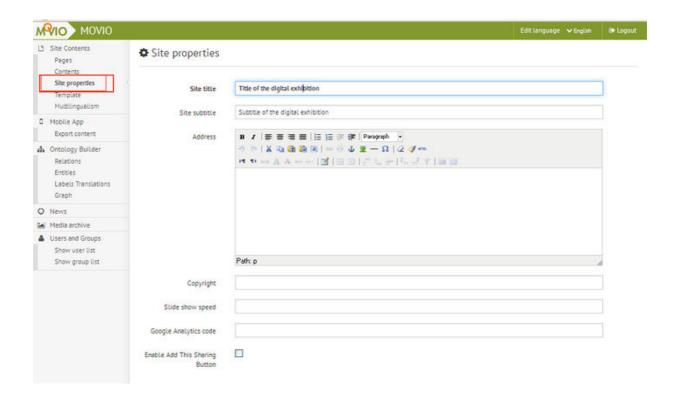


The following fields can be defined:

- The **Title of the digital exhibition**, that appears in the Home Page of the MOVIO instance, it will also be the title broadcasted to the applications connected to the MOVIO instance and to the MOVIO-HUB, the catalogue of the other digital exhibitions available (see dedicated tutorial).
- The **sub-Title** of the digital exhibition, similar to the previous.
- The Address that will be shown at the footer of the web site (typically the address of the exhibition creator).
- The **Copyright**, it is the copyright message about the content made available on the site and about the usage of the web site in general.
- The **Slide show speed**, it is possible to change the default speed of the slideshows you will create (see dedicated tutorial).
- **Google Analytics Key**, this is the key requested by Google to generate statistics about the navigation of the website by the end users.
- Add This, allows activating the possibility to share the page contents on the most important social networks.

Mobile Application

MOVIO can be connected to a mobile APP (available for Android and iOS), which allows also off-line navigation of the content published on the MOVIO instance. A dedicated tutorial will illustrate how to configure, publish and use this tool. It is possible to update the mobile applications also after their release to the users by publishing and delivering new content items and pages to the applications.



The back-end is composed of two frames:

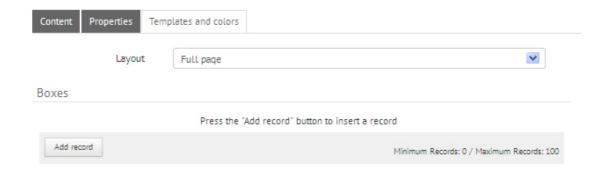
1. Entire structure of the contents of the MOVIO instance of the digital exhibition. Next to each node of the tree you can find a flag: if you check this flag all the node and its sub-nodes will be exported into the app.

NOTE: this is useful when you decide that some pages need not to be delivered to the APP.

- 2. Export parameters:
 - Date of the last export.
 - The languages you need to be exported among those available in the MOVIO instance
 - The Title of the digital exhibition, witch will appear in the mobile APP. The field will be automatically filled with the title written in the site properties but now it is still possible to change it.
 - The subtitle of the digital exhibition, which will be shown and you can modify as same as the title.
 - App Credits page: the related credits page can be selected and chosen among the pages of the web site.

Templates and colours

The third tab represents the template used to display the page



Layout

In this section it is possible to select the layout of the page; the choice is between default, full page, and two or three columns



Read more about the <u>management of the MOVIO template and colour options</u> on the tutorial site: <u>http://wiki.athenaplus.eu/index.php?title=Customisation_of_MOVIO_template</u>

More information on digital exhibitions

Some publications about virtual exhibition that can be helpful include among others: MOVIO training materials: http://wiki.athenaplus.eu/index.php/MOVIO and Indicate Handbook on Virtual Exhibitions and Virtual Performances (August 2012) - www.indicate-project.eu/getFile.php?id=412

There is also an international <u>Working Group on Digital Exhibitions</u> with its homepage <u>http://museumsdokumentation.de/joomla/</u> where are published results of discussion of proper metadata that should be used for digital exhibitions description, and the catalogue of the virtual exhibitions to which it would be worth to add the new created exhibitions to reach wider audience. It is possible to contact the group via <u>info@digitalexhibitions.org</u>.

4. BEST PRACTICE EXAMPLES

All the creative application have been developed and tested in the framework of AthenaPlus project. The most visible result, available for external users from any place at any time are virtual exhibitions. Some of them are located on the Italian Ministry of Culture server, some have been downloaded on the partners servers at the project end. The list of available online virtual exhibitions is listed at the end of this paragraph.

However the first glimpse on the work done, and features implemented by the partners can be made on the AthenaPlus blog at the address:

https://athenaplus.wordpress.com/2014/10/09/exhibitions-without-walls-movio-pilots/

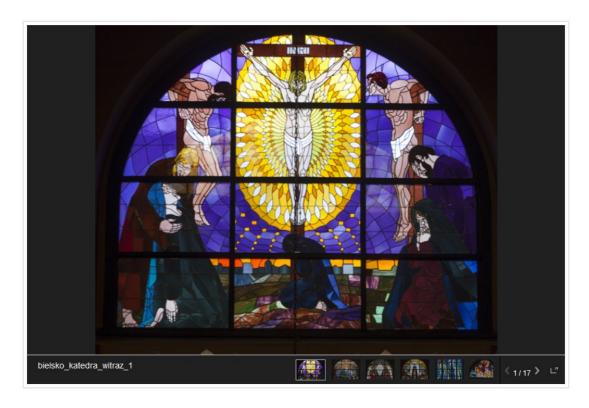
Exhibitions without walls. MOVIO pilots

The advantages of digital exhibitions are obvious: Online digital exhibition can be visited by people from all over the world. Well curated exhibitions are excellent learning tools that can make accessible to the public even the most valuable and fragile works and documents, without putting the national and international cultural heritage at risk.

In the frame of the <u>AthenaPlus</u> project <u>MOVIO</u> an innovative tool to support cultural institutions in the realization of online digital exhibitions is refined and developed further by adding multilingual interfaces, and features for education and tourism. Several partners from the AthenaPlus consortium volunteered in creating pilot exhibitions with the MOVIO tool.

The examples with some selected illustrations presenting chosen features of the application can be seen on the blog. In the Manual are picked up just single illustrations for each exhibition.

Art Nouveau in the architecture of Poland



Timeline of Art Nouveau



January 15, 1869

Narodziny Stanisława Wyspiańskiego



Stanisław Wyspiański, polski dramaturg, poeta, malarz, grafik, architekt, projektant mebli. Jako pisarz związał się z dramatem symbolicznym. Wyspiański był najważniejszą postacią dla krakowskiej secesji, jednak nie chciał by jego dzieła wpisywano w ten nurt, pomimo tego, iż posiadają wiele jej pierwiastków. Chętnie posługiwał się falistą linią i płaskimi plamami oraz wykorzystywał motywy roślinne. Rośliny rysował w "Zielniku" i wykorzystywał w wielu dziełach, np. malowidłach w krakowskim kościele franciszkanów. Tak jak i inni artyści secesyjni, był twórcą wszechstronnym, zajmującym się grafiką, malarstwem, projektowaniem mebli, wnętrz, krojów pisma. Zmarł 28 listopada 1907 roku.





The exhibition presents Art Nouveau architecture in Poland, its diversity, motifs, details and different techniques used to ornate buildings.

Created by: <u>ICIMSS</u>, International Centre for Information Management Systems and Services, Torun, Poland

Architecture and Visual Arts at the Old University of Vilnius

Kūrinių istorijos ir siužetai

Meno kūriniuose pasakojamos istorijos ir istorijos apie meno kūrinius



An exhibition about the University of Vilnius is done in three ways:

- Presenting history (using timelines and storyteller);
- Presenting artists (professors and students in total 52 artists at the moment) who worked/studied at the University of Vilnius (using ontology builder);
- Presenting their artworks (using galleries, hot-spot, storyteller in total, 212 artworks at the moment).

Created by: <u>LAM</u> – Lithuanian Art Museum

A NYOLCAK (1909-1918) / THE EIGHT (1909-1918)



Three elements of MOVIO will be emphasized: use of the Ontology builder (in context of a traditional collection browser), the Timeline function and the CMS. Testing the Storyteller function is planned at a later stage of the pilot project. We have tested the MOVIO through creating a virtual exhibition for a Hungarian group of artists called The Eight, based on different publications of previous real exhibitions.

Created by: MNG, Museum of Fine Arts – Hungarian National Gallery, Budapest

From Data to Creative Content. A Century of the Wristwatch



The exhibition shapes the story of the invention and the development of the wristwatch with items from the Museum of Arts and Crafts collection. The exhibition commemorates the centenary outbreak of the WW1 which started the production. The material is based on a corresponding temporary exhibition held this year at MUO. It contains an interactive application which tends to preserve and develop an interest in our non-material heritage.

Created by: MUO, Museum of Arts and Crafts, Zagreb, Croatia

Who am I? I will not say...

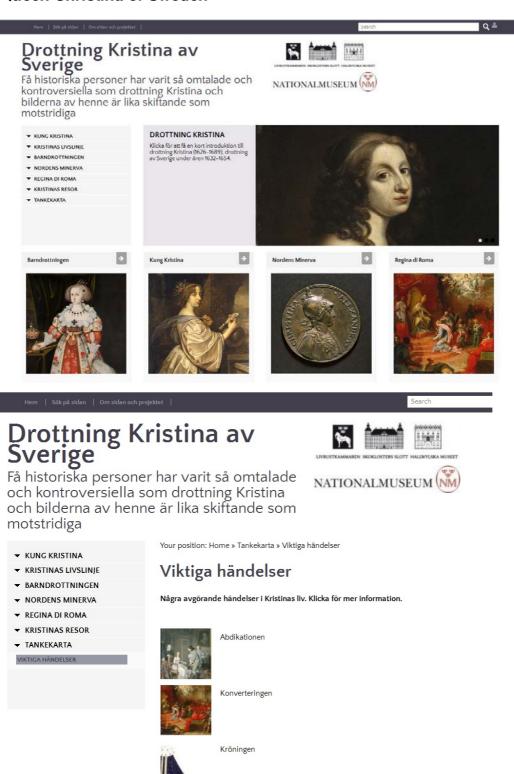
Kőborlások



For Hungarians, Sándor Petőfi means much more than just a poet who lived many years ago: he embodies poetry itself. This exhibition was created from the materials of the permanent exhibition of PIM, which deals with Petőfi's short but intense career, and the dilemmas it involved. The virtual exhibition sketches the main periods of Petőfi's carrier and the map of his connections, but there are some new topics such as a digital footprint, a role-play, and the comments of the ,Z' generation.

Created by: PIM, Petőfi Literary Museum, Budapest, Hungary

Queen Christina of Sweden



Queen Christina of Sweden (1626-1689) was one of the most famous women of her time. Few historical figures have been discussed so much and so controversial, and the impressions of Christina are as diverse as they are contradictory.

Created by: RA, The Royal Armoury and Skokloster Castle with the Hallwyl Museum Foundation, Nationalmuseum, Sweden

The Modernism Architecture of Šiauliai in 1930's

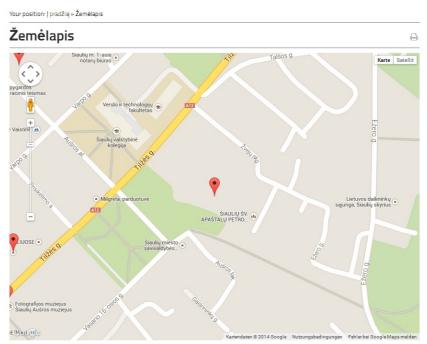


Tarpukario modernizmo architektūra Siauliuose

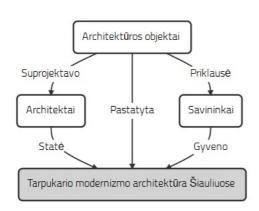


Paroda sukurta dalyvaujant tarptautiniame projekte "AthenaPlus"





Ontologijos schema



The digital exhibition introduces the 1930's architectural heritage of Šiauliai, reveals its meaning and contributes to the strengthening of the city's historical and cultural identity. Historical images, personalities, who owned the buildings and the architects, who created the face of the city are the key to learn about unknown Šiauliai Old Town.

Created by: <u>ŠAM</u>, Šiauliai "Aušros" Museum, Lithuania

Detailed information of these and many more examples of creative projects developed with MOVIO and the other AthenaPlus creative tools can be found in D6.5 of the AthenaPlus project, which can be accessed here.

5. HELP-DESK

If you would like to make a suggestion, report any problem or obtain additional information, you can address your questions to the developers with the following forms:

MOVIO https://docs.google.com/a/i2cat.net/forms/d/1KuacQX6XXFiDUoY0VxW/LXn4XE5peCU0pe1bi6qhoc/viewform	MOVIO
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Don't forget to add a contact email to your comment so that we can reach you!

6. FAIR USE AND BENEFICIARY OBLIGATIONS

Several of the creative applications prepared in the framework of the AthenaPlus project are available for free use as based on the open source. Therefore the interested institutions are welcome to use the created software just for a simply use for their needs or also for further development. In the case of development and improvement of the software they are obliged to offer access to this new release on the same conditions i.e. for free.

Each institution interested in the software use is expected to sign a short form of cooperation to let the developers know how good and popular their product has been. In a case of any bugs or disfunction such partnership agreement can also be used for communication and possible improvement.

7. ACKNOWLEDGMENTS

This manual is based on the creative applications developers instructions, and include materials from printed articles, leaflets, and the project blog. Apart Sam Minnelli, the main author of instruction to the creative application MOVIO, we thank to the project coordinators Maria Teresa Natale, Rosella Caffo and Simonetta Buttò who inspired and managed the entire process.

APPENDIX 1. GUIDELINES FOR INVOLVING USERS IN THE DESIGN OF YOUR PILOT

Innovation is a very important asset for organisations. However, innovation driven only by technological push has a market risk. Companies may find themselves in a situation where they have a promising engineered innovation in their hands while users will ignore it, because it was designed and marketed out of the user experience. Hence, it is essential to reach out to external stakeholders, and organise actions in which we can hear their opinions and suggestions.

One proven and tested way to solve the gap between technology and society is to involve the prospective users into the process of developing these innovations. The involvement of users on innovation research ensures that the products and services have not only a "user touch" but also a user point of view and the user experiences included. Including users as participants, co-creators, co-designers, first usability evaluators and other roles on the innovation projects diminishes the risk of project failure and increases the probabilities of a successful technology.

To this end, the purpose of this document is to provide pilot partners with a set of recommendations to assist them in organizing sessions in which the external users' feedback, both professionals and prospective visitors, can be generated and collected.

Before the session...

Strategies to launch sessions with users

The main point for you to consider is to seek synergies with your own activities, so that you can add a "Get to know our project" session at some convenient point. Here's a set of things you can do:

End users

- Schools and high schools visiting your institution are a great opportunity. Before the
 visit, discuss with the teacher the possibility of using some time to present your
 project to the students and the teachers, and have them fill a feedback questionnaire
 afterwards.
- Organise a session to present your project at a local library or community center.
- If you have an open museum day (i.e. in Barcelona many museums have free entrance every Sunday after 3pm), you can consider setting up a small stand in a corner. This stand would have some promotional posters, a few computers in which the interested visitors can check out your creative project, and a staff member answering questions and making sure that each visitor who has accessed the creative project fills in a questionnaire.

Professionals

- For large institutions, you can organise a training session with the creative tools with participants from other departments.
- Organisations which have a budget to organise training workshops are strongly encouraged to administer the questionnaires and/or the interview guide to the workshop's participants, either as a paper form at the end of the session or via an online form a few days after.
- You can also organise a dedicated creative tools training session for the local professional associations (this is especially indicated for those organisations interested in the education and tourism sectors).

Tips for recruiting users

Here are a few tips to recruit users:

- Communicate with the prospective participants through your usual channels. If you
 have a monthly newsletter, announce that you will be holding a session to present
 your project. If you have a website or presence in social media, run a short
 newspiece on it.
- If you'll be offering some refreshments, do not fail to mention this fact in the recruitment communication: believe it or not, it does make a difference;)
- To manage the registration of participants, you can use a free event planning tool such as www.eventbrite.com
- In cases in which you recruit the participants individually (that is, not as part as an organisation such as a school or a professional association), you may expect as many as half of the registered participants to not show up.

During the session...

The realisation of a user involvement action integrates, generally, a six-step process:

- 1. Welcoming
- 2. Presenting the activity
- 3. Preparation for the activity
- 4. Core activity
- 5. Feedback collection
- 6. Thanking, rewarding and closing

The core activity of the session may be different depending on whether the participants are end users or professional users:

- In the case of sessions with professionals, the core activity will be a short training session, in which the workshop leader shows the promotional material available on the creative tool, goes over some examples of projects created with the tool (so that attendees learn about the possibilities of the tool), and gives some basic ideas on how to work with the backend.
- In sessions with end users, the core activity will be promotion and dissemination, in which the staff member running the event tries to get visitors to access the creative project and provide their feedback afterwards.

General principles for user involvement

During the preparation and coordination of user involvement actions, the project partners will keep in mind general principles such as:

- Users are helping you. They have no obligation to you or your research in spite of their potential interest in your technologies.
- Ask them if they would like to be involved in this research and commit them to give insights.
- Remember them that the research takes some time and effort both for them and you as a researcher.
- Remember that they are very generous to assist to your activities and to give you their time.
- Treat them very respectfully.
- Be patient with their ignorance of the technology that they are exploring.
- Facilitate their participation.
- Make the event a good experience to them.
- Thank them for everything.
- Share some photos with them as a souvenir of the activity to share with others (and the odds to come back next time will increase)

Tips for running sessions with users

- The main gold rules to be considered when preparing user involvement activities are:
- Activities have to be prepared in a positive and non-stressful mood for everybody, including the researchers.
- First at all, be sure that technology is really working and ready to be used for the users. Don't make users wait for technical preparations. When they arrive, everything should be ready to be tested or displayed. Respect their time.
- Don't forget items for registering data on the event (photo camera, notebooks, etc).
- Don't forget any printed questionnaire you consider necessary to use and enough copies and pen/pencils for each user.
- Foresee any additional material you'll need such as promotional material, markers, etc.
- It is much recommended to have an assistant researcher to help you making pictures; observing and interviewing the users as you'll do run the workshop.

After the session...

After the session, it's time to collect the feedback and report the event. Generating feedback on the participants' experience is what gives you the ability to adapt to their recommendations and make use of their suggestions.

Collecting the feedback

Several feedback collection tools, ready to use, were included in D6.1 of the AthenaPlus project, which you can access here. These comprise end user questionnaires, professional questionnaires, interview guides, etc.

Pilots are encouraged to adapt these to their contexts, for example by:

- Translating the questionnaires to their local language
- Adding, removing or rewording questions if needed
- Changing graphical elements (i.e. adding the pilot institution's logo)

An online version of the questionnaires can also be easily created with Google Forms, which sometimes helps in administering the questionnaire after the event and analysing the results.

APPENDIX 2. THE EXPERIENCE OF USING MOVIO. INSIGHTS FROM PILOT MAKERS

During the month of April 2015, interviews with six of the piloting institutions were conducted in order to gather a final feedback on the usage of MOVIO in the context of cultural heritage institutions, focusing particularly on organisational changes, concrete insights on MOVIO and insights on the topic of digital exhibitions.

The interviewees were:

- Donatas Snarskis "Architecture and visual arts in the Old University of Vilnius" Lithuanian Art Museum (LAM), Lithuania.
- Iva Mestrovic and Petra Milovac "A century of wrist watches" Museum of Arts and Crafts (MUO), Croatia.
- Marina Battaglini and Paola Puglisi "Gaspar van Wittel's drawings for Vedute" Central National Library of Rome (BNCR), Italy.
- Piotr Kozurno "Art Noveau in the architecture of Poland" The International Center for Information Management Systems and Services (ICIMSS), Poland.
- Karin Glasemann "Exhibiton on Queen Cristina of Sweden" Nationalmuseum Sweden; Royal Armory; LSH, Sweden.
- Jovita Vilimaitiene "The Modernism Architecture of Šiauliai in 1930's" Šiauliai Aus ros Museum (SAM), Lithuania.

What follows is an overview of the questions and the gathered answers.

1. Was the exhibition the result of a team effort – requiring the expertise and support of different departments of the museum? Or was it mainly developed by an individual person?

The digital exhibition was, in all the cases, the result of a team effort. Different people contributed with their own specific knowledge to create a well-functioning exhibition: in every instance at least two persons worked on the pilot.

If the institution taking part to the pilot activity was a museum, then various departments were contacted during the creation of the digital exhibition. If the institution didn't have departments – as for example ICIMSS – the exhibition still resulted from the joined efforts of various people.

Collecting materials, information and images, organising the content, and structuring the exhibition often required the support of additional people, for example curators, photographers, technicians able to work with digital tools, or people managing the digitized contents.

2. Did you hire additional staff to create the pilot, or did you perform this with in-house manpower?

The pilot was mainly performed with in-house manpower.

The only exception was MUO, where the exhibition was created by Iva Mestrovic and Petra Milovac: they work exclusively on European projects thus could be considered to be additional staff.

3. How aware/unaware was management level of the pilot trajectory and eventual outcomes? Do you think there's an interest at top level in incorporating digital tools such as the ones offered in AthenaPlus?

The management level of both smaller and bigger institutions was mostly well aware of the pilot trajectory. It was also interested in incorporating digital tools in order to promote and present the institution's digitized collection and to involve a larger number of visitors.

The only exception was the Nationalmuseum Sweden, where management level was not well aware of Athena Plus tools and benefits. The piloting activity was performed without the aim of publishing the exhibition as MOVIO was considered to be an interesting tool but for smaller museums.

4. Has taking part in the pilots changed in any way the way you work with digital tools in the museum? Did the pilot trajectory – getting acquainted with the tool, learning how to work with it, thinking about how to make it work in relation to the collection in the institution, adding the content, seeing mistakes or bugs, trying again, – have any resonance/consequences in what would be considered as the 'normal', everyday way of working in the museum? Could you say that there has been any measurable change on how some issues in the museum were and are handled pre- and post-pilot?

The consequences of working with MOVIO are different for every institution and concern mainly three aspects: the everyday way of working in the institution, the production of digital exhibitions and the understanding of digital tools.

Regarding the daily way of working in the institution, no major post-pilot changes can be measured for the institutions, such as BCNR, that have been working and dealing with digitised materials for years. Slightly different is the situation for those institutions like ICIMSS or MUO that never had to create a digital exhibition before: the way they work in the institution changed only during the pilot activity, as some of their daily issues were shifted from the physical to the digital realm; there are however no measurable consequences once the pilot experience was over.

Great post-pilot improvements can be seen in the production of digital exhibitions for those institutions that didn't have much experience in this field before starting the pilot activity: thanks to the various features of MOVIO they learnt new ways to make their digital exhibitions more attractive and efficient.

Lastly, there are two consequences on the understanding of digital tools:

On one hand, participating in the pilot has led to new knowledge on the utilisation and functions of the digital tools. For example, an important insight for LAM was that digital tools must be chosen wisely and used strategically in order to fully benefit from their potential and achieve all the targets; the key element to do so is the content.

On the other hand taking part in the pilot activity has contributed towards a new awareness on the benefits that digital tools can bring about in cultural heritage institutions. For example, the Nationalmuseum Sweden realised that its internal database is not only a management tool, but can also produce interesting data for a broader public: with digital tools, this new information can be presented and promoted. Furthermore, digital tools enable the institutions

to promote the cultural heritage, to reach a broader public, to prolong the life of temporary exhibitions by moving them to the digital world, to display fragile materials, to create exhibitions that are easily accessible and portable on smartphones and tablets. These and other aspects are discussed in the following questions.

5. Can you tell us why you used MOVIO to create a digital exhibition on this specific subject?

This being a pilot activity to test the tool, the primary reason that determined the choice of the subject was the availability of materials: almost all institutions reused materials and information of previous physical exhibitions or projects.

There were also some secondary reasons. LAM for example focused its digital exhibition on the same topic as that of a permanent exhibition in order to be able to incorporate the digital exhibition into the physical one. The decision was also dictated by the possibility of interaction between MOVIO and other digital tools they were testing at the same time, and of cooperation with other institutions.

ICIMSS and SAM both chose an architectural subject. The former wanted to test the possibilities of MOVIO as applied to an exhibition on architecture, the latter found MOVIO's attractive features and functions particularly suitable for the architectural theme.

6. Now that you've spent almost a year working with MOVIO, what do you think is the key to create a great digital exhibition?

Different key aspects were highlighted. First of all, the digital exhibition needs to be founded on a strong idea with a clear message. This idea has to be supported by a careful choice of the materials to display which requires a thorough knowledge of one's digitised collection. A good tip is to choose materials that are visually attractive. Once the content has been chosen, it is essential to create a story able to express the core message of the exhibition. To do so, the various technical functions and features must be chosen and used wisely to best enhance the subject and add extra value.

If the digital exhibition is going to be integrated into a physical one, it is important that it doesn't replicate the physical exhibition digitally: on the contrary, it should present a different approach to the subject and offer features and experiences that cannot be achieved in the physical environment of the exhibition.

Lastly, enthusiasm, time and patience contribute as well to the creation of a great digital exhibition.

7. Which functionalities do you think add the greatest value to a digital exhibition? Geolocalised data, interactive applications, multimedia storytelling tools, etc.?

Digital exhibitions allow for enriching the content, highlighting relations and telling stories in ways that cannot be achieved through physical exhibitions. They can also integrate other digital tools and resources. Therefore, all the functionalities of MOVIO were considered by the pilot institutions to be very important and the choice of which functionalities to use strongly depends on the subject of the digital exhibition.

The ontology builder, the multimedia storytelling, the timeline, the possibility to integrate Europeana APIs and geolocalised data are the functionalities that most of the institutions mentioned because they offered the possibility to enhance the content differently than in physical exhibitions.

However, as MUO and ICIMSS pointed out, it is often the variety of these functionalities in itself that adds the greatest value: used together, these functionalities create a diverse and complex structure that not only can present its content to visitors in new and different ways, but also allows visitors to freely explore the exhibition through the functionalities they like best.

8. Do you think cultural heritage institutions can use digital tools such as digital exhibitions to connect to a broader public? How?

All the institutions agreed that digital exhibitions can definitely be used by cultural heritage institutions to connect to a broader public because of various aspects: their location online, that allows visitors from all over the world to explore the exhibitions; the ease of access, not bound to the institutions' opening hours; the feature of multilingualism; and the possibility to prolong the life of temporary exhibitions in the digital environment.

Moreover, digital technologies are widely used for work and pleasure in our daily life so the presentation of digital collections using creative digital tools helps to connect the institutions to contemporary society.

Different ways to reach a larger audience were proposed: linking the digital exhibition on the website of the institution; linking it to other relevant websites; connecting the content that appears in the exhibition to other resources; promoting the digital exhibition as it would be done for a physical one, keeping in mind that the fact that it is online doesn't entail that the public is going to find it; raising consciousness among relevant groups of people who might have specific interests in the digital exhibition.

9. Was the virtual exhibition integrated with a physical one? If so, how was it integrated and what kind of results would you say it produced?

In each case, the digital exhibition was based on a physical exhibition (or on a previous project as for ICIMSS) as it reused the same materials, but was not integrated. This was mainly due to the fact that the activity the institutions were conducting was a pilot. In the future, some of the institutions will integrate physical and digital exhibitions.

10. Could you say that there are subjects that are better fit for a virtual exhibition than a physical one?

All institutions answered affirmatively. Some of the examples of subjects that are considered to be better fit for a digital exhibition include: fragile objects; objects sensitive to light and/or temperature; drawings, documents and papers; jewelry; small-sized objects; objects located far away from each other and/or impossible to move or transport; objects that can't be displayed due to a lack of room in the exhibition spaces.

The advantages of showing these kinds of objects in a digital exhibition are not only the possibility to enjoy them in high resolution and to zoom in to see the details, but also to present them to a broader public in spite of their fragile and sensitive nature. Moreover, it could also prove to be less expensive than moving and transporting all the objects to the site of the physical exhibition.

However, LAM affirmed that all digital exhibitions should be connected to physical ones, as the physical content is considered to be more important than the digital, unstable one. This point of view is not shared or raised by the other institutions.

11. What is your perception of a digital exhibition in comparison with a physical one? Do you think it has some kind of added value or would you say that it represents a loss of what could be considered the core of an exhibition (for example the materiality of the objects)?

The opinion on digital exhibitions is quite unanimous: they cannot replace physical exhibitions, but represent something different and are surely highly valuable.

As both physical and digital exhibitions have their own losses and limits, in almost all cases it was agreed that the best practice would be to use them together in order to achieve an integral system. There should always be some digital counterpart to what is displayed in physical exhibitions. The level of independence that the digital part should have depends mainly on the decision of each institution: digital exhibitions can work as additions to physical exhibitions, or be completely independent systems that interact with the physical exhibitions.

A digital exhibition certainly has distinct advantages:

Firstly, it can promote the digitised objects and allows for curating the digitised collection that is normally plainly displayed on the institutions' websites without telling any kind of story.

Secondly, it is a good learning resource: digitised objects can be studied more easily and can be reached by a broader public.

Another important element is that a digital exhibition can extend the life of a temporary exhibition by transferring it from the physical into the digital world.

It also allows visitors to access additional information and relations between objects, and to explore the exhibition according to their own preferences; in addition to this, it offers the possibility to zoom in and see a higher number of details.

Lastly, a digital exhibition offers accessibility and portability on both tablets and smartphones – a very useful aspect if, as in the case of SAM, the digital exhibition is about the architecture or the history of a specific city: by accessing it on their portable devices, visitors can walk around the city following the exhibition and see the changes that have occurred in time.

12. What kind of experience do you think visitors can have in a digital environment, as opposed to a physical one?

Digital exhibitions offer different features than physical exhibitions so the experience for the visitors is definitely different as well.

One of the most evident and significant differences is the level of visitors' involvement. First of all, in a digital environment there are no opening and closing hours thus visitors are free to access the exhibition at any moment and visit it for an unlimited timespan. If they wish to see again some parts of the exhibition, they can easily go back to the relevant content. Visitors can leave the exhibition at any given moment and use different digital resources to find other information.

There is also a different level of freedom than in a physical exhibition: visitors can participate in various ways, follow a wide range of learning paths or create their own by choosing what they wish to learn and see. The content can offer more diverse materials, be displayed in different contexts and present more entries. The experience can also be more interactive as it can present video, sounds, effects, games, etc.

In conclusion, digital environments certainly make it easier for visitors to connect individually to certain stories, offer a wider freedom for the public to engage the exhibition and encourage a deeper involvement of their users.

Conclusion

The interviews outlined a set of good practices that cultural heritage institutions can follow in order to use the digital tools such as MOVIO to create great digital exhibitions.

A digital exhibition results from the joined efforts of various people working in the institution. To start, it is important to think about the concept that will lay the foundations of the digital exhibition. This means not only to come up with a strong idea and a clear message, but also to decide whether the digital exhibition will work as an addition to the physical exhibition, or be a completely independent system that interacts with the physical exhibition.

The concept needs to be supported by a careful choice of the materials to display. This requires a thorough knowledge of one's digitised collection. Even when the digital exhibition works as an addition to the physical one, it should never simply mirror its physical counterpart. In fact, the digital exhibition offers the possibility to display objects that would be problematic to show in a physical exhibition, such as fragile and sensitive objects, small-sized objects, materials located far away from each other, and so on.

Once the content has been chosen, it is essential to create a story able to express the core message of the exhibition. To do so, the various technical functions and features must be chosen and used wisely. It is essential in this phase to enhance the subject and offer features and experiences that cannot be achieved in the physical environment of the exhibition. This choice shapes the experience that visitors will have when visiting the digital exhibition — an experience that offers a wider freedom for the public to engage the exhibition and encourages deeper involvement of the users.

The perception of digital exhibitions outlined in the interviews is of something different than physical exhibitions and highly valuable. Not only do digital exhibitions enable the institutions to promote the cultural heritage and reach a broader public, they also help in the connection of cultural institutions to contemporary society and offer numerous advantages in the process of creating the exhibition and in the resulting visitors' experience.

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