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## Project

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### Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise.  
Acknowledgement of previously published material and of the work of others has been made through  
appropriate citation, quotation or both.

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## Table of Contents

1	EXECUTIVE SUMMARY .....	3
2	INTRODUCTION.....	4
3	BACKGROUND .....	5
3.1	Initial release: documented in D5.3. ....	5
3.2	Interim report on progress .....	5
3.3	Feedback mechanisms.....	6
3.3.1	<i>The training and training materials .....</i>	6
3.3.2	<i>Some feedback from the users and/in the pilots (WP6) .....</i>	7
3.3.3	<i>The cooperation of WP1-WP5-WP6.....</i>	8
4	OVERVIEW OF THE DIFFERENT TOOLS CREATED .....	10
4.1	MOVIO .....	10
4.1.1	<i>Final toolkit set.....</i>	10
4.1.2	<i>The Ontology Builder.....</i>	12
4.1.3	<i>Training wiki.....</i>	14
4.1.4	<i>MOVIO Hub .....</i>	14
4.1.5	<i>MOVIO App .....</i>	17
4.1.6	<i>MINT and MOVIO: the AthenaPlus 'Museum' pilot .....</i>	21
4.1.7	<i>User centred approach .....</i>	24
4.2	CityQuest .....	28
4.2.1	<i>General information .....</i>	29
4.2.2	<i>Item creation .....</i>	29
4.2.3	<i>Map.....</i>	29
4.2.4	<i>Mobile application .....</i>	30
4.3	SchoolTrip.....	31
4.3.1	<i>Creation process.....</i>	32
4.3.2	<i>Interaction .....</i>	33
4.4	Urban Explore .....	34
4.4.1	<i>Creating a project .....</i>	34
4.4.2	<i>Content sources.....</i>	36
4.4.3	<i>The publication of the app .....</i>	37
4.5	eCultureMap .....	38
4.5.1	<i>Walking tour &amp; location of the content.....</i>	39
4.5.2	<i>Geoparsing your own data .....</i>	40
4.5.3	<i>Augmented reality (AR) mobile application .....</i>	40
4.6	Training materials wiki .....	42
5	BEYOND THE PROJECT .....	44
5.1	Looking forward .....	44
5.2	GitHub.....	46
5.2.1	<i>About GitHub .....</i>	46
5.2.2	<i>Why is GitHub important for the AthenaPlus tools distribution and the software community? ..</i>	46
5.3	License schemes .....	48
6	CONCLUSIONS.....	49
6.1	Results and impact .....	49

7	ANNEX: LIST OF NEW MOVIO HANDBOOKS .....	50
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## 1 EXECUTIVE SUMMARY

**This deliverable reports on the final version of the AthenaPlus tools: the pilots feedbacks and suggestions have been used to refine the tools, their functionalities and the availability of more semantic resources coming from partner's work in other work packages. As such we reviewed and improved the tools, and implemented them in an open source framework.**

At the end of the AthenaPlus project, we are able to present the maturity of five different tools for digital cultural heritage re-use.

MOVIO was the subject of most changes to its initial version, thanks to its very wide usage within the project's lifespan. Currently there are more than 70 active instances distributed among institutions and museums and ICCU recorded the download of the first release (1.0) done, the final release (2.0) is not yet available for download: in fact, as for the release 1.0 more than 1.000 downloads of the source code have been recorded by ICCU, we would be overcome by support requests in case we published the release 2.0 before it reached a stable and fully debugged state. MOVIO Hub and MOVIO APP have been produced additionally as two promising features.

Four other tools that have been subject to pilot testing and training sessions, were updated or further finalised based on user input. CityQuest is a tool for creating a mobile search quest in a locality, using QR codes to learn more about objects or points of interest. SchoolTrip is a programme in which teachers and students can collaborate on the full trajectory of preparing a city visit. eCulturemap is a tool for exploiting the added value of geographical information in your metadata, and also includes an easy to use geocoding tool. Urban Explore is the mobile application which gives you additional contents while experiencing a guided city visit.

These AthenaPlus tools<sup>1</sup> will be released under an open license model, even being fully accessible on the Git-Hub platform. By making available the programme's source codes, the creations from within the programme can not only be adapted to the specific additional needs that users may have, but may also serve as inspiration of further development by interested parties from outside the network.

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<sup>1</sup> Apart from UrbanExplore: Dedale's license model is commercial only, see section on Owner Model [http://wiki.athenaplus.eu/index.php?title=Urban\\_Explore\\_Publication\\_instructions](http://wiki.athenaplus.eu/index.php?title=Urban_Explore_Publication_instructions)

## 2 INTRODUCTION

**In a nutshell, this deliverable describes the tools that have been created and continually improved (thanks to user feedback), and made available in the framework of WP5 of the AthenaPlus project.**

The actual deliverable subjects are the tools that have been developed under the umbrella of WP5's title: 'Creative applications for the re-use of cultural resources'. The written report that forms this deliverable, is kept quite condensed as the majority of the information (i.e. the actual tools, their download & installation instructions and manual information) is already documented on the online wiki platform at <http://wiki.athenaplus.eu>. Therefore, the wiki is an intrinsic part of this deliverable and, as being an online interconnected knowledge source, could not be put as paged annex to this deliverable (we report only the list of the last additional handbooks created in October 2015).

In this report, we will thus briefly describe the final outcomes of the creative applications that have been developed and some scenarios of future evolutions. The iterative process that preceded the final release – the user testing and pilot trajectory carried out in WP6 – is closely linked to the final release of the tools. The two final WP deliverables are strictly connected due to the tight collaboration and joint activities performed to train users, collect feedback and support them in staging digital exhibitions, and finally refining the tools. The related documents are:

1. D5.5 Revision of the AthenaPlus tools
2. D6.3 Report with the assessment of the pilot actions
3. D6.5. Report describing the communities of users

They should thus ideally be consulted together, as the WP6 reports also described major changes that have been implemented in the AthenaPlus tools, between their earlier release (as documented in 'D5.3 First release of the AthenaPlus tools' and the 'Interim report on progress of development and release of the creative tools') and their final delivery at the end of the project.

### 3 Background

The title of this deliverable is 'Revision of the AthenaPlus tools'. The title phrase is a good summary of the workflow that took place between the initial tools' release and their current, final status, whereby 'revision' was a keyword. We will take a look again at the different states-of-the-art of the two preceding reports on the tools, to then talk about the feedback mechanisms that have fostered the revision, changes and improvements in the second project period.

#### 3.1 Initial release: documented in D5.3.

The first release of the developed tools was documented in 'D5.3 First release of the AthenaPlus tools' (March 2014). The deliverable mainly described the first release of MOVIO (supervised by META) as a tool environment for the creation of digital exhibitions. It highlighted some of the main features of the programme at that stage of development (such as the Ontology Builder, the Storyteller, the Image Hotspot, etc.). The report also contained a list of suggested improvements by the consortium members, after a first period of getting acquainted with the idea and possibilities of MOVIO (see 'MOVIO tools and functionalities, released by February 2014', in section 9. From the requirements to MOVIO realised tools').

Although MOVIO was the first tool to be released, the document already contained an outlook to the next steps of development to be expected. It already announced the creation of the educational tools, and the suggestion to insert another deliverable document between the D5.3 and the final D5.5.

#### 3.2 Interim report on progress

In July 2014, the 'Interim report on progress of development and release of the creative tools' was released. This report described for the first time the other tools that were under development in WP5. The report introduced:

4. **CityQuest** (supervised by PACKED): a tool that allows cultural organisations to easily create a quest online, and publish it to a mobile app to send visitors around the city to discover items from a collection and the locations they are connected to. Based on hints and media you track down an item, scan the QR code on its location and learn the (hi)story behind it.
5. **SchoolTrip** (supervised by PACKED): a programme that allows students to create their own school journey. Through an online interface the teacher can set a couple of parameters defining the skeleton of the trip. Students fill the template with information on practicalities, cultural heritage sites to visit, historical information, and so on. They learn to plan a travel from a to z, while incorporating our cultural heritage. At the end, a journal-like document is generated which can be used as itinerary guidebook.
6. **Urban Explore** (supervised by Dédale): an editor CMS that allows to generate a mobile app as touristic and cultural digital guides in the context of a collective or individual visit to a city area, museum, ... it is adapted to and used in specific places (city area, museum) and aims to link video, audio and pictures (as archives material) to a place users are going through.
7. The **eCultureMap** (supervised by IPCHS): a tool to demonstrate the use and re-use of Europeana, AthenaPlus and other cultural heritage content, when browsing the content geographically. Applications were limited to location of a heritage object on a map, creating a walking tour on a map incl. seeing object locations, and geoparsing of your own uploaded data.

8. **MOVIO updated version** (supervised by META): as time had passed between the initial release of MOVIO and this interim report, this was the first tool of which already interim progress could be documented. In the period between the two reports, some of the AthenaPlus pilot partners had benefited from national trainings on the use of the tool, and therefore their feedback could already feed into the release of new functionalities. An extensive spreadsheet detailing the changes to MOVIO was included in the report (see Section 6. MOVIO updated version). Some of the additional features were highlighted in the subsequent pages, as was for example the case with the possibility to now also include (and search for, by means of the API) Europeana related content in your own exhibition.

For every tool described, the report included:

9. general information describing the main functionalities;
10. contact information (to be informed about progress);
11. an impression of how the front- and back-end environment would work (including mock-ups if available);
12. an overview of suggested pilot actions based on the different tools made available.

### 3.3 Feedback mechanisms

In the months after the delivery of these two reports presenting a state-of-the-art, WP5 further improved the available tools. In order to be successful in this, we relied on a combination of several factors.

#### 3.3.1 *The training and training materials*

As part of WP5, we released the 'D5.4 Training materials for supporting the use of the AthenaPlus tools' in April 2014. The document mainly introduced the AthenaPlus wiki (available at <http://wiki.athenaplus.eu>) as the main source where all information could be found, for those who wanted to get hands-on with it.

For each available tool, the wiki contains

- a dedicated section with information to read 'before getting started';
- the actual manual pages instructing how to work with the tool;
- the installation (or code download) instructions;
- contact information via the helpdesk.

For every single tool, the developing or supporting partner provided the needed information to PACKED so that it could be mounted onto the platform.

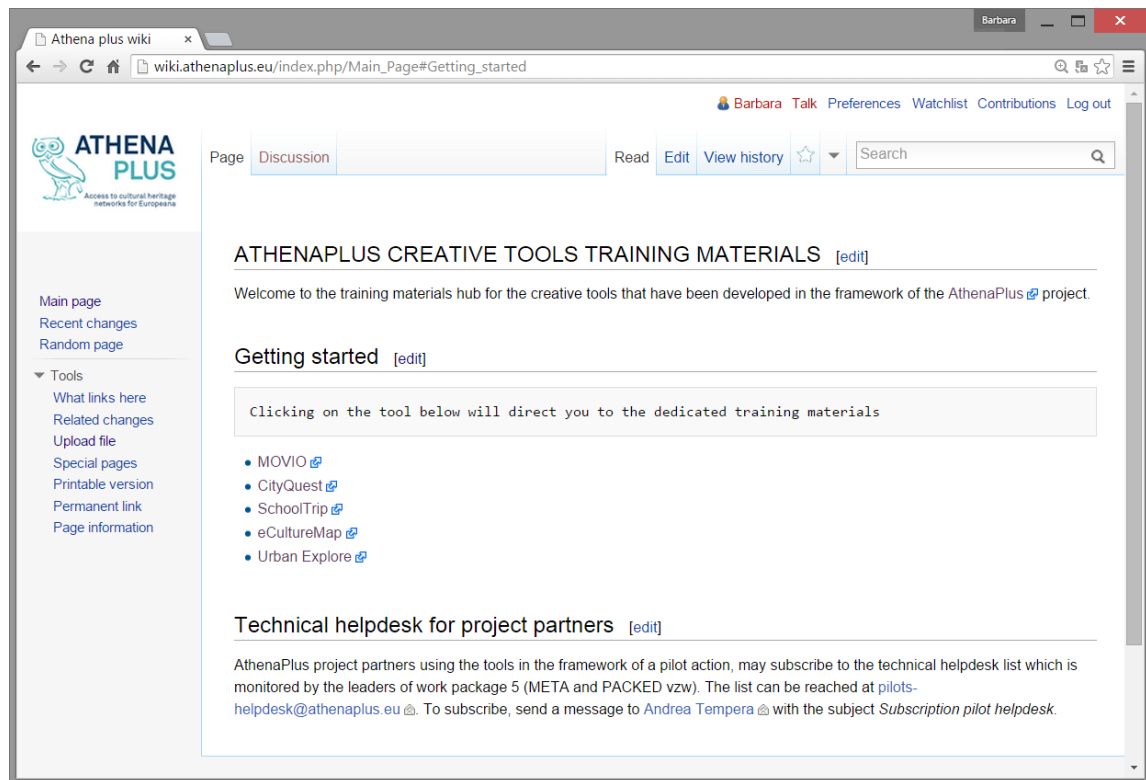


Figure 1: homescreen of the AthenaPlus training materials wiki

The wiki with the training materials was in most of the cases used in direct combination with a live face-to-face training. The set-up of the first range of national trainings was also described in the D5.4. The first candidates to organise a smaller-scale training were the project pilot partners (see next point). They were guided through the different tools' functionalities, in combination with highlighting where this information could be found on the wiki. The trainings were closed with a Q&A and hands on experimenting session with the tool they were going to work with in their pilot action. The training sessions were a good source for immediate feedback, as participants evaluated the day in terms of quality of the actual training, as well as their experience with the tools. They were able to point out bugs, suggestions for improvements, use case scenario's and so on. After the trainings, the findings were shared with the developing partners so that they could be integrated into the issue tracking system for the ongoing development of each tool.

### 3.3.2 Some feedback from the users and/in the pilots (WP6)

Considering the scope of D5.1-D5.3 to identify the user requirements and define the tools' new functionalities, we can say that the AthenaPlus project reached important results satisfying the needs that existed with the tools' users. Here we summarise some of the feedback collected from pilots (the full documentation is reported by WP6).

The digital exhibitions were in many cases the result of a team effort: different experts (in general at least two) contributed with their own specific knowledge to create a well-functioning exhibition in a small team. What is most effort consuming, is

13. the collection of content (information, images and other media);
14. organizing the collected content and adding additional tags when describing the content in e.g. MOVIO's Media Archive;
15. structuring the ontology and finally the exhibition.



The structuring of an exhibition often requires the support of additional people, for example curators, photographers, technicians who have a more natural feel of working with digital tools, or people managing the digitised contents.

The consequences of working with the AthenaPlus tools are different from institution to institution: while there are no measurable consequences in the daily way of working, great post-pilot improvements were detected in particular, 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. Pilots acquired new knowledge on the utilization, functions and opportunities of the digital communication tools with a content derived dissemination and promotion model. Some partners envisaged a new opportunity to use internal database from strictly managerial to produce interesting data for a broader public like CityQuest.

Advices to curators can be identified on how best take advantage of the AthenaPlus tools:

16. any digital narrations need to be founded on strong stories and clear messages;
17. the ideas must be supported by good content selection (a careful selection of the visual and textual resources) and appropriate tool selection and customisation.

In particular, if a digital exhibition is going to be integrated into a physical exhibition, the digital exhibition could present a different approach to the subject and offer features and experiences that cannot be achieved in the physical environment of the exhibition. In fact, digital exhibitions allow highlighting relations and telling stories in ways that cannot be achieved through physical exhibitions. 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: an ontology builder, 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. It is the variety of these functionalities that adds the greatest added 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.

In addition, the AthenaPlus Digital Exhibitions Working Group constantly monitored the evolution of digital exhibition scenarios at international level and provided feedback to WP5 in terms of improvements and functionalities.

### **3.3.3 The cooperation of WP1-WP5-WP6**

As the expected operational endpoint for the tools was really dependant on the feedback to be collected and the two-way dialogue between partners and developers on what was possible in relation to the desiderata, work packages 1, 5 and 6 have been working closely together. Preceding each plenary meeting, a dedicated WP5-WP6 meeting would take place. These meetings – usually lasting a full day, were organised as follows:

18. The partners involved in a pilot trajectory could discuss their progress, in direct dialogue with the tools' technical teams
19. Project partners not directly involved in a pilot action but with general interest in the tools, could come and hear about the updates in relation to the previous meetings
20. WP5 and WP6 could identify where the needs lay – i.e. which tool would need more pilot testing, which partner or institutions would like or require more real-life training, etc.



*Figure 2: pre-plenary meeting presentation of a digital exhibition, realised by one of the project partners, followed by a general discussion (WP1-5-6 and pilot members)*

The cooperation in this way between the different work packages and the internal information sharing proved to be very valuable for the final release of the tools. This also shows from the way this deliverable and the final WP6 deliverable 'D6.5 Report describing the communities of users' are interlinked. The recording of pilot experiences did not only prove to be fruitful for a good tailoring and finalisation of the tools, but also provided insights into the tools (and broader project) sustainability (see more in chapter 5).

## 4 Overview of the different tools created

As mentioned in the introduction, the main source of information on the final release of the AthenaPlus creative tools is the training wiki at <http://wiki.athenaplus.eu>.

Below follows an overview of the tools that have been released. For each tool, we include a short overview of functionalities, illustrated with screens of the actual tool in action.

### 4.1 MOVIO

MOVIO is a tool for the creation of digital exhibitions. Its first version was mainly focussed on functionalities for curated collection presentation, based on storytelling elements. By the end of the project, MOVIO also included features that were targeted to linking the presented elements to touristic and educational activity fields. The reason of the connection among culture – tourism – education is natural as one guides the user into the other.

#### 4.1.1 *Final toolkit set*

The most important module components provided and refined in the final version of MOVIO are:

21. **Ontology Builder:** enables to create personalised paths defined by curators; connect resources in a simple and fast approach; implement a semantic infrastructure to the resources and exhibition logics. The curator may create a personalised ontology with entities and relations and associate content to the entities.
22. **Mobile APP generator:** enables museum staff to create digital exhibitions and generate apps with part or entire contents from the MOVIO exhibition website; it also includes QR code reader functionalities.
23. **Module Builder:** enables institutions to import in a simple and easy way external databases and publish them through personalised pages and search engines.
24. **Media Archive:** the media archive allows importing, annotating (Dublin Core metadata model), tagging (for internal retrieval and management), and profiling (allow download, watermark, etc.) of media resources. The media archive can be accessed from any area of work: while preparing a page, without having to leave the page workspace.
25. **Thesauri builder:** this module opens new opportunities to cultural institutions. They may create their own thesauri, manage them and publish pages using this aggregation instrument. The thesaurus generator enables three kind of thesauri:
26. *Geographical:* associating terms to map positions which will be visualized as POIs on a Google map;
27. *Chronological:* the thesaurus is based on dates and its presentation will be on an interactive timeline with cards and paging;
28. *Customized:* the thesaurus can be completely personalized in terms of its nature and the visualization can be with images or text (as an example we could create a thesaurus defining the photographic theme where the elements of the thesaurus are the photographic techniques – daguerreotype; albumin, etc.).
29. **News module:** enables to create news, to plan news items' publication and duration, and to add relevant information such as links and maps, etc. News can be categorised and associated to ontological entities as same as other kind of content items.
30. **Tourism operator module:** enables to create dedicated tourism cards (related to hotels, restaurants, information points, etc.) enriched with maps, images, descriptions, links, resources, etc.

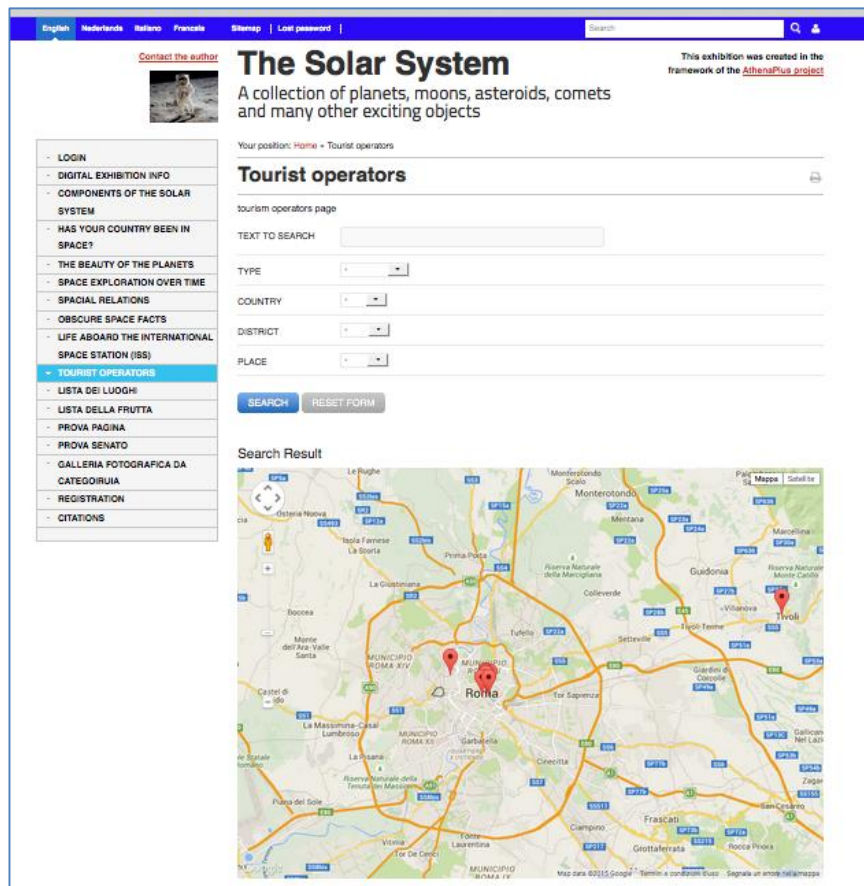


Figure 3: the page contains a map and a search tool for tourism operators. The page could also contain a list of images and tourism operator organisations.

**31. User profiling tool:** enables to create internal and external profiles. The external profiling is very innovative as enables to associate exhibition navigation to specific profiles. As example, if a 'kid' profile is created by the curator and specific resources are assigned to the 'kid' profile, then the end user can access personalized navigation if registering and selecting this profile.

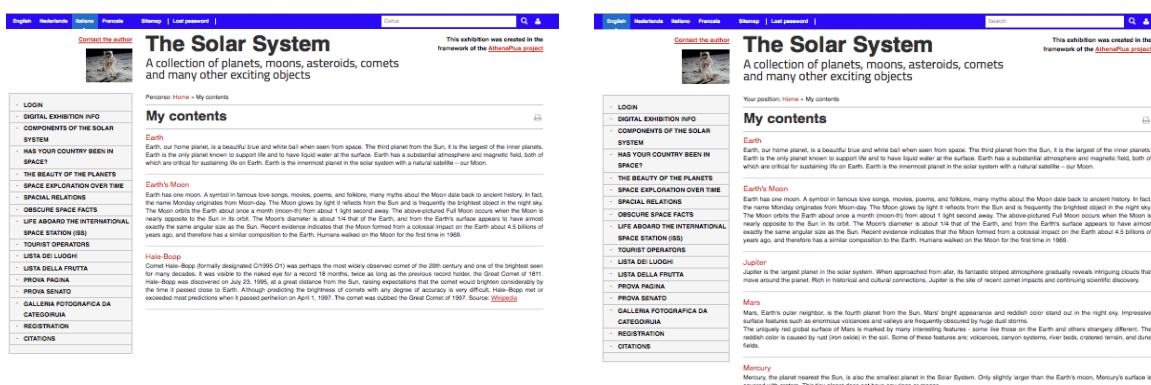


Figure 4: same page but different presentation for two different user profiles (shorter on the left side user; longer for the right side user).

We explore some of these features here in more detail, while the others are fully documented in the project wiki as already mentioned.

#### 4.1.2 The Ontology Builder

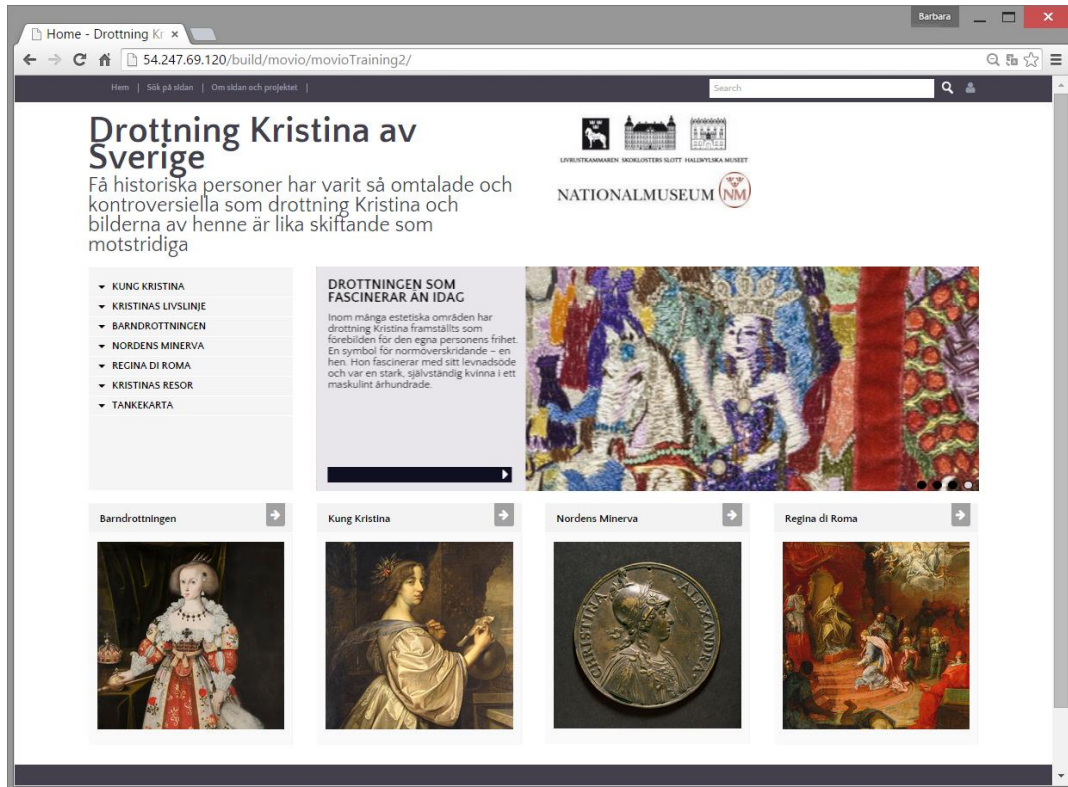


Figure 5: Screenshot of the homepage of an exhibition on Queen Christina from Sweden

What distinguished MOVIO already in its early stages from other tools for digital exhibition creation, was the multiplicity of navigation layers. When mounting an exhibition in MOVIO, it is possible to create an exhibition that is more or less 'flat'. You can browse different pages via the page menu to the left of the page. However, as a well though exhibition contains several layers of information, a deeper level of knowledge can also be presented. This is possible through the implementation of MOVIO's Ontology Builder feature.



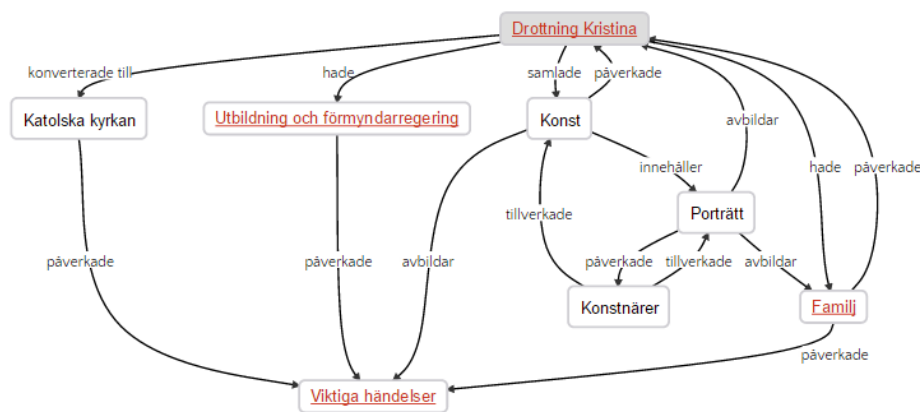


Figure 6: Screenshot of the Ontology Builder function, applied to the life of Queen Christina from Sweden

The Ontology Builder is a powerful tool: it allows relations to become scientifically and methodologically coherent, connecting elements that are described in the exhibition into a dynamic model. For instance, a visitor may open a page on a certain painter, then also see an overview of related works to other artists, or related places he may have lived/worked in, or events in which the artist has been involved. Moreover, the visitor may access external resources (such as from Europeana or Wikipedia pages) associated to that element. These works or places then each contain their own information on their own page, and have links to other elements in the story. Such non-linear navigational possibility offer to different visitors a choice to browse more superficial through the content, or really become involved in-depth in the exhibition's layers and material.

Offering additional information has become even more powerful with the introduction of the search for related content in Europeana. Performing a search on the built-in Europeana tool can enrich every content element, that is part of the exhibition's Ontology. The regular Europeana API search fields have been provided and the curator may select results and organize them on the presentation box. In the example below, we see the selection window on type of content, expanded. Upon performing the actual search, MOVIO offers the retrieved content, and then the curator may choose, order, or discard the found items. This way, he/she can select only the retrieved contents that fit best with the scope or subject of the exhibition, to become visible as related content.

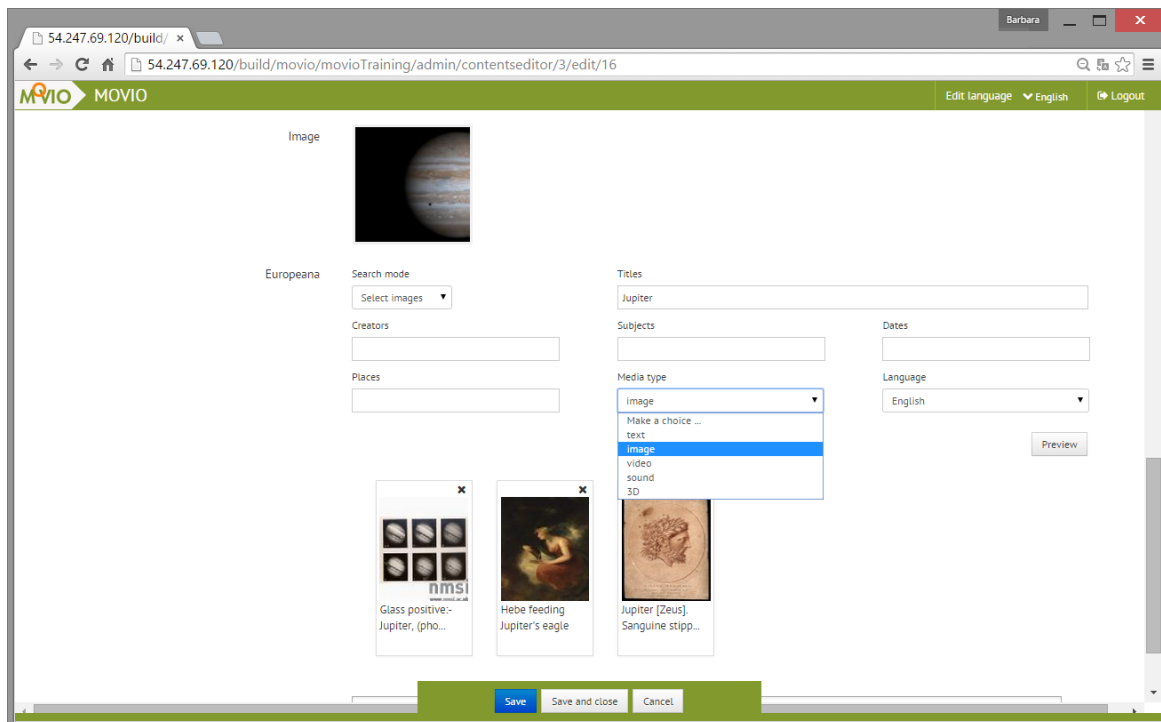


Figure 7: Screenshot of the Europeana related content search, presented with the subject of Jupiter in the example exhibition on the Solar System.

The MOVIO back-end has been translated up to ten languages over the course of the project. Currently MOVIO is available in Italian, English, German, French, Catalan (partial), Spanish, Latvian, Polish, Dutch, and Estonian. The methodology followed was simple: META shared with partners a Google-excel where all the English entries were visible and partners could directly complete their language column. Also the update was simple in this way.

#### 4.1.3 Training wiki

The part of the training wiki on MOVIO has also been updated with instruction material to train your peers on the use of MOVIO. This was done in order to maximise impact of a training, as often only one person of an institution attended the real-life training events. Via means of a Powerpoint-presentation<sup>2</sup>, this attendee can now – based on the presentation and the wiki – instruct team members on the use of MOVIO too.

#### 4.1.4 MOVIO Hub

MOVIO Hub is an indexing platform managed by ICCU and MICHAEL where only a reference to the links of adhering MOVIO instances are registered. MOVIO Hub harvests automatically and regularly from remote MOVIO instances, their digital and physical exhibition pages. Consequently, the editorial staff at ICCU is free to manage the service through a very simple interface. For institutions or museums, which do not use MOVIO, MOVIO Hub enabled the creation of virtual or physical pages too. As same as in MOVIO instances, the editorial staff can assign a title, opening and closing dates, a map, etc. to physical exhibition pages and similarly operate on digital exhibition pages.

<sup>2</sup> See [http://wiki.athenaplu.eu/index.php/MOVIO#MOVIO\\_getting\\_started](http://wiki.athenaplu.eu/index.php/MOVIO#MOVIO_getting_started)

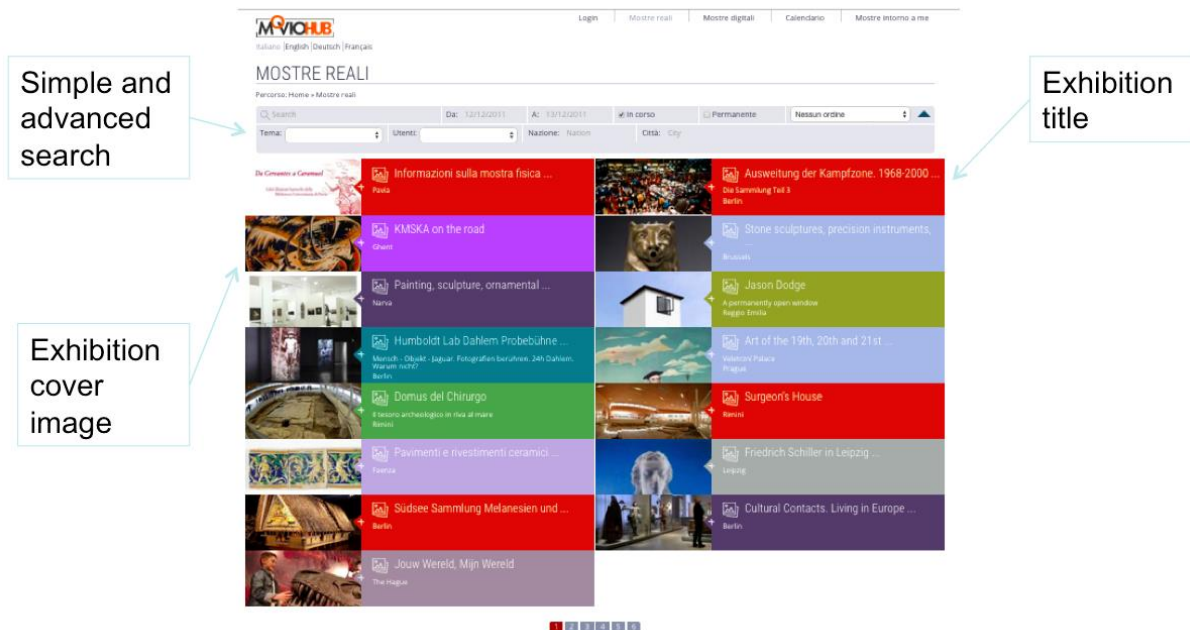


Figure 8: MOVIO Hub: real exhibition area with a general list of exhibitions

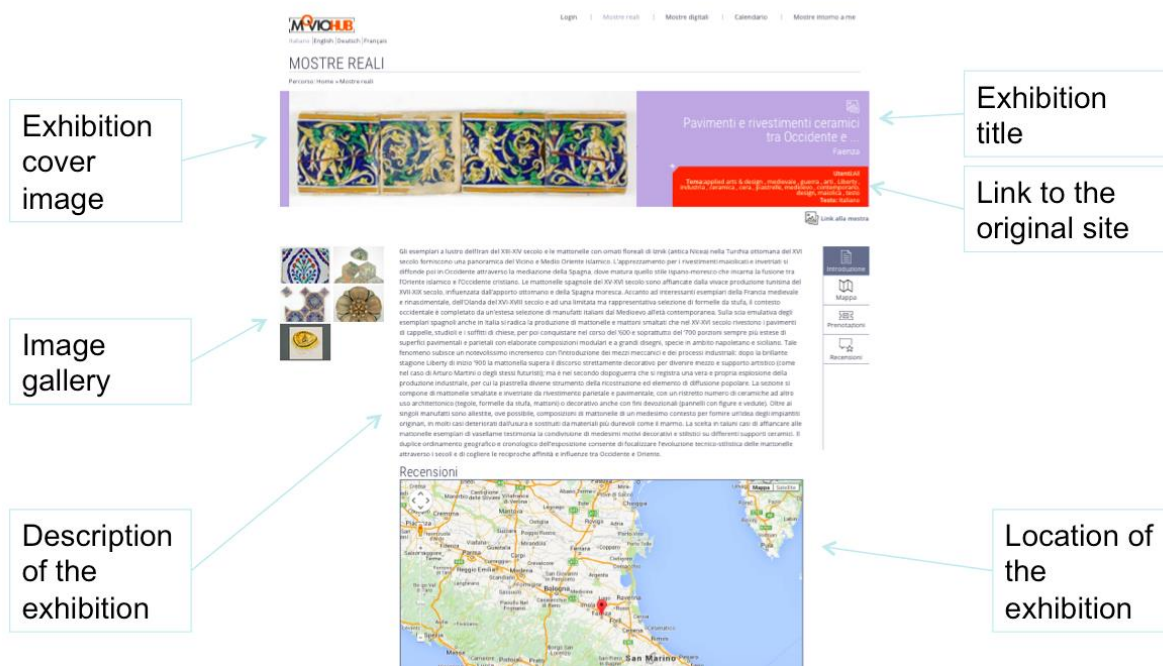


Figure 9: MOVIO Hub: real exhibitions: detail of the card of one exhibition. Notice there is a location map and useful information to visit the physical exhibition.



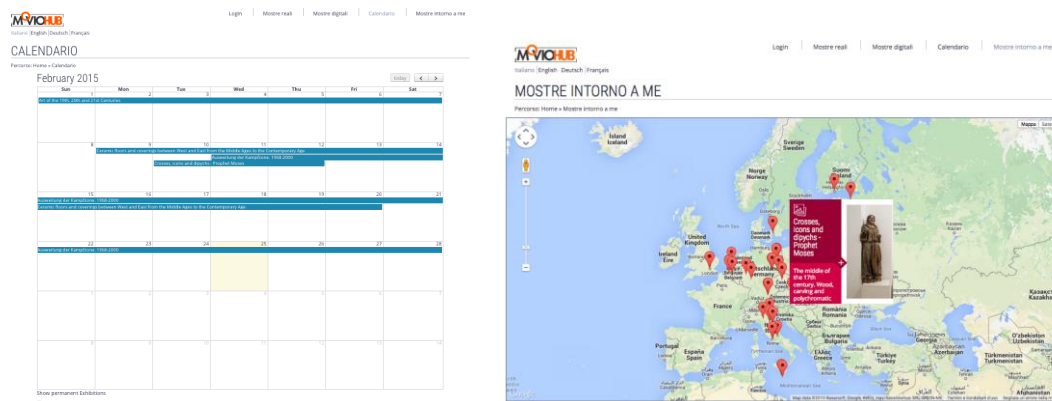


Figure 10: MOVIO Hub: interactive calendar and mapping for physical exhibitions

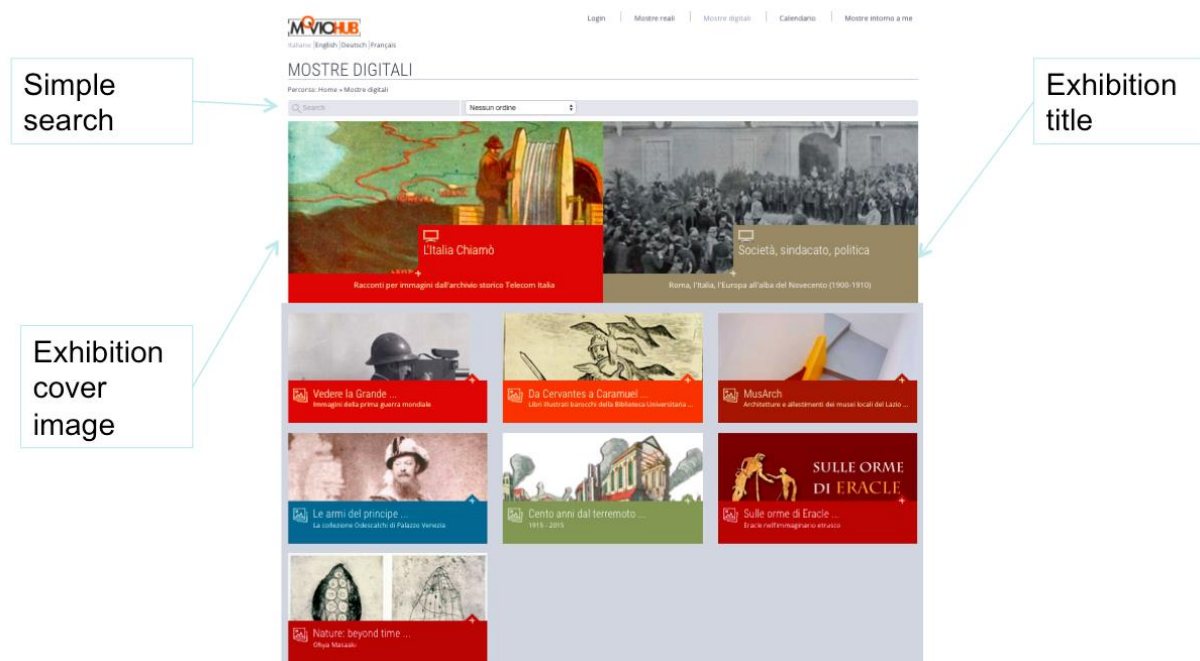


Figure 11: MOVIO Hub: general list of digital exhibitions

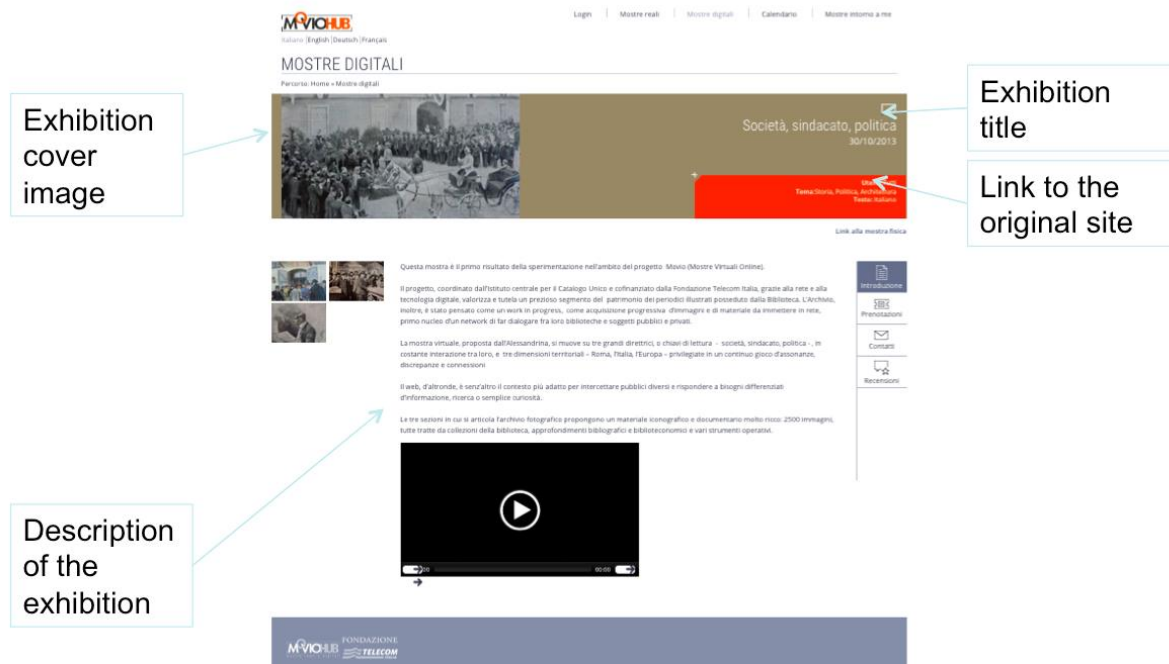


Figure 12: MOVIO Hub: a detail of the card of an exhibition. Notice there is no map as the exhibition is not physical. Instead, there is room for video and multimedia.

#### 4.1.5 MOVIO App

The MOVIO-APP generator requires shot to be executed but still the 'last mile' must be done inside the Android or IOS developer's applications. This is something that no-one can skip: Google and Apple offer a single door to their stores through their proprietary frameworks. MOVIO-APP generates a pre-elaborated APP which needs be acquired inside these framework and from them published finally to the stores.

Next is the sequence of the three steps needed to publish on external stores:

##### Step 1) Selection of the exhibition from the back end

The curator can select the content by deciding which (all or a part) of the MOVIO exhibition to be imported into the app by checking the pages to me generated.

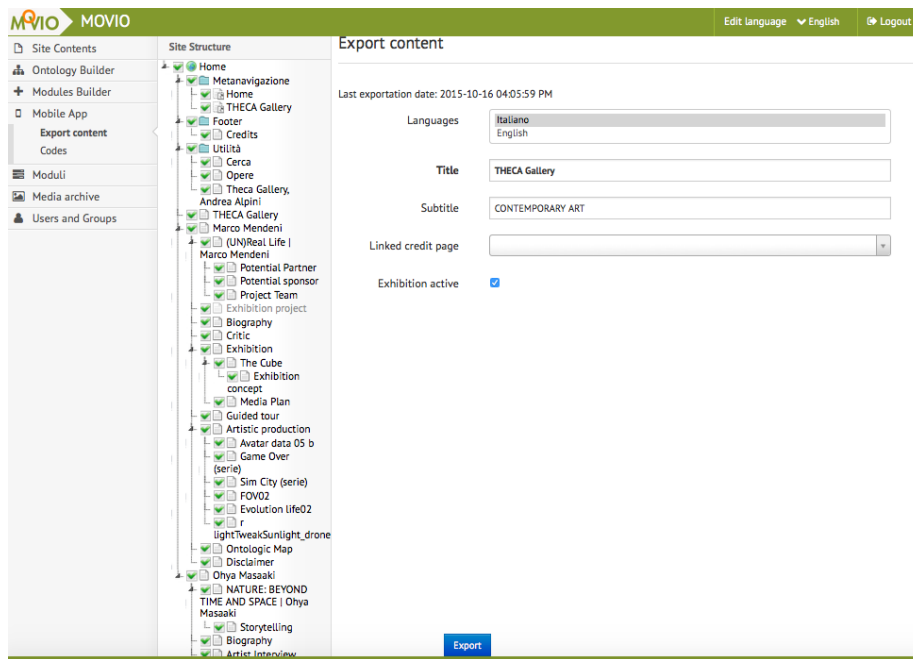


Figure 13: APP generator module and the back-end visualization.

## Step 2) Generation of the APP resource

The curator selects the button 'export' and thus starts the process which generates on the hosting server, the APP resources.

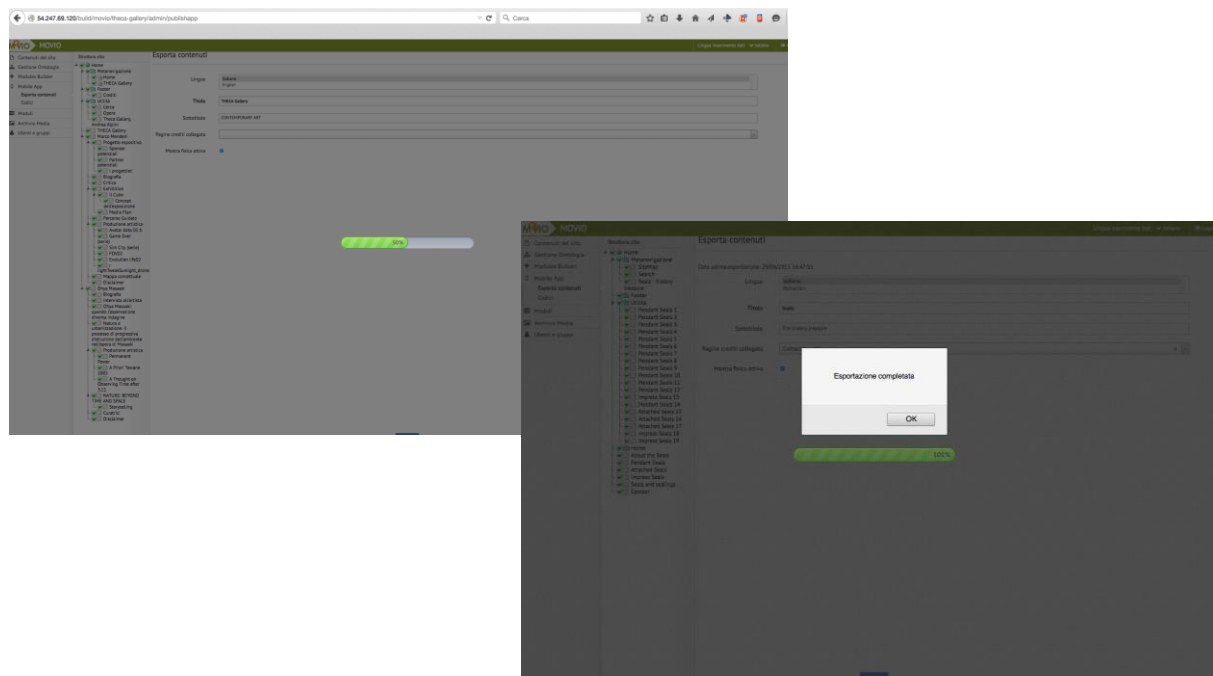


Figure 14: APP generator module during and at the end of the APP generation process (no downloads are necessary, the APP remains on the server side).

### Step 3) use the Android/iOS framework to import and publish on Google Play or on Apple store

This step should be executed not by the curator but by a technical staff as the framework is external to MOVIO (Android/iOS). The developer puts the MOVIO link in the resource location and proceeds with the external platform to publish it.

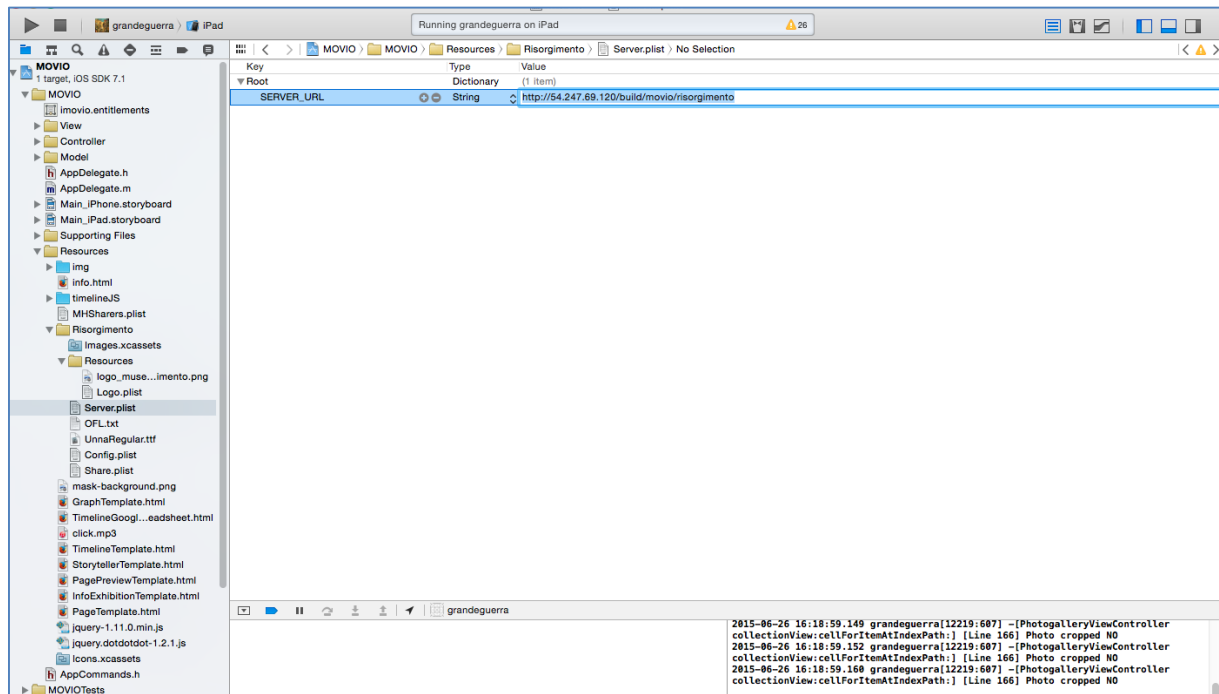
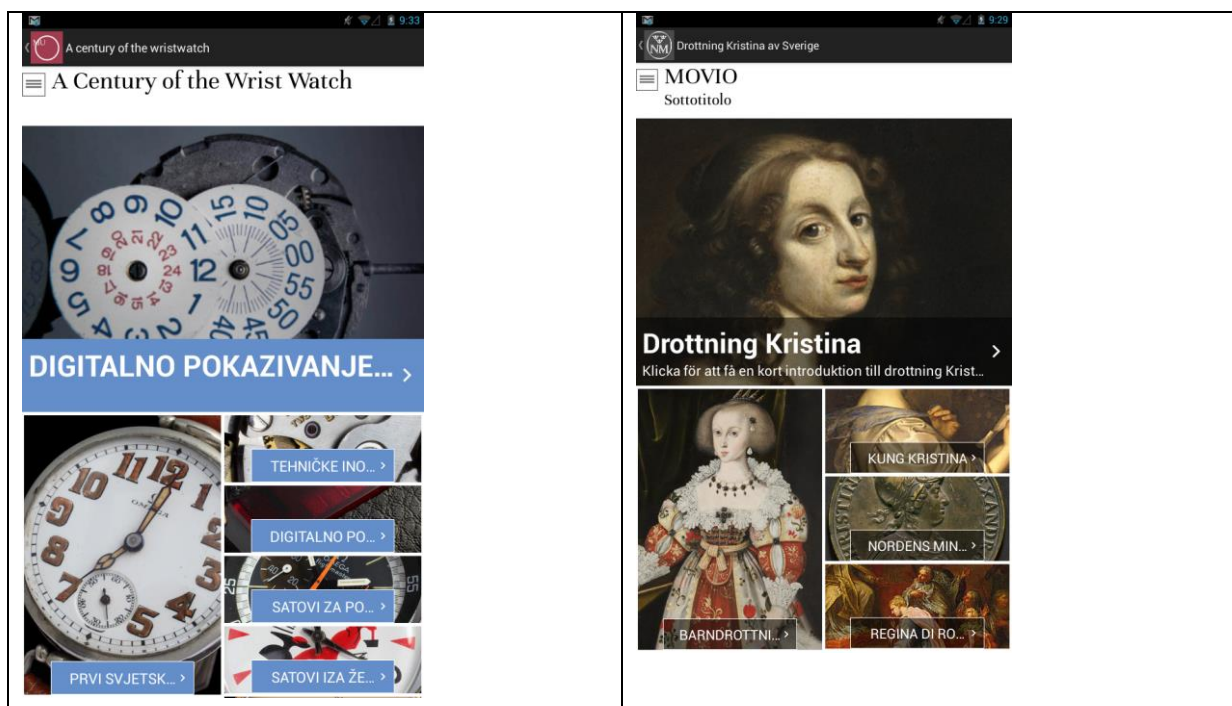


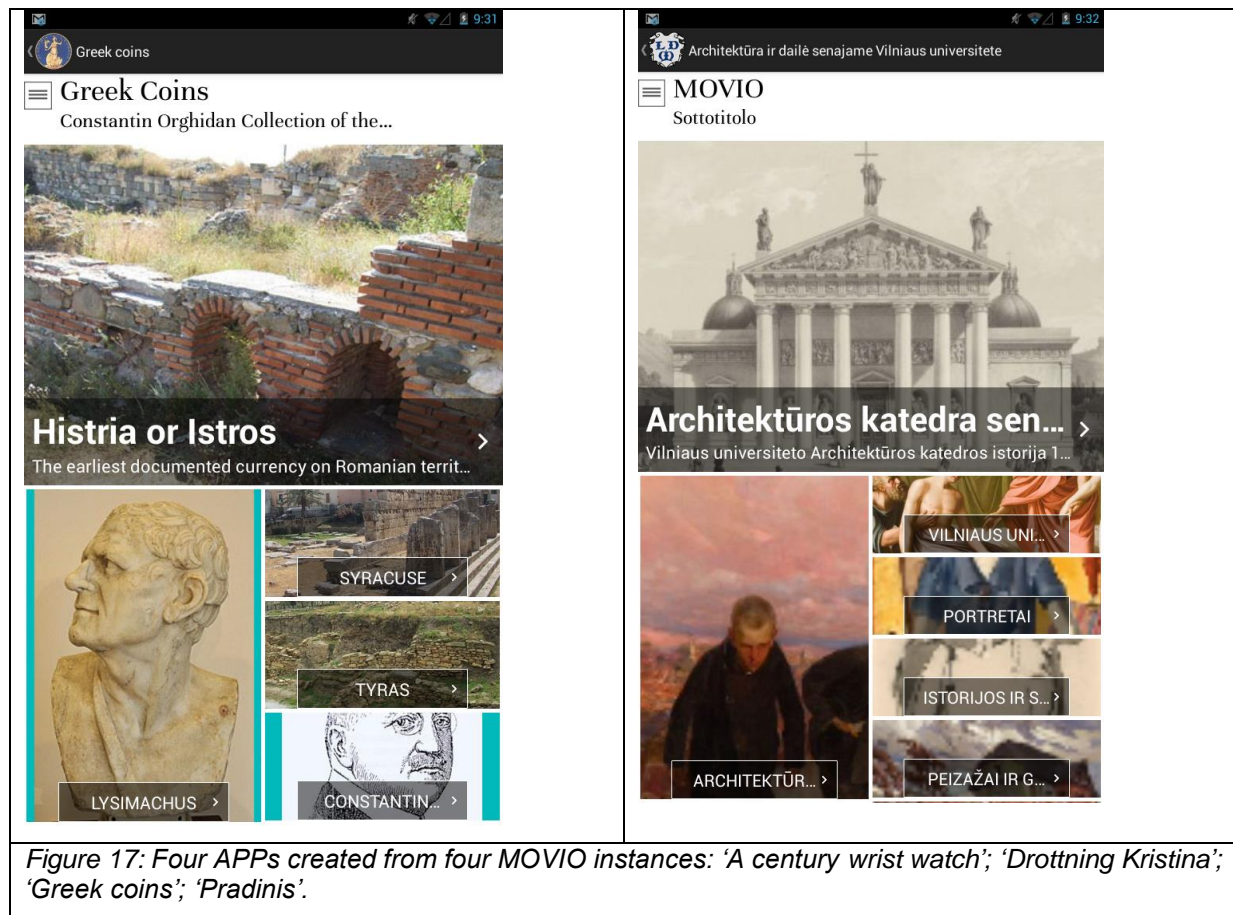
Figure 15: technical framework where the MOVIO APP is referenced towards the external stores (and eventually the cover of the app can be customized in terms of presentation and icon).



Figure 16: once the APP passes the iOS/Android approval process, it is accessible from the web for download and use.







#### 4.1.6 MINT and MOVIO: the AthenaPlus 'Museum' pilot

According to the requirements provided within WP7 an exhibition was set up using the MOVIO Technology to show museum objects with higher density and refined organization (following LIDO) of information. 'Museum' is a compound AthenaPlus exhibition, re-using partners' collections, enabling to further test MOVIO and its elastic capabilities. Thus, Museum Collections Pilot belongs to the MOVIO ecosystem and application cases: the pilot showcases museum collections with a new presentation model. This pilot showcases the interoperability and opportunities to customize MOVIO into many other specialised tools for creating and customising cultural exhibitions. The enhanced and quality metadata produced by museum curators in respect to the LIDO metadata model is generated by MINT and elaborated inside MOVIO. The resources are more than 1.000 content items from more than 20 museum institutions and organized in respect to a thesaurus navigation (similar to Getty's AAT).

Museum is not meant to be 'another museum portal' (as pointed out by the project reviewers): Museum is a MOVIO application with the target to re-use (thanks to internal collaboration among different WPs - NTUA, UNIMAR, META -) and enhance the experience of a relatively small number of partner's collections and respond to the demand of quality and specialise the navigation method for these resources.

### Accessing the content:

Each LIDO record provided for the exhibition has an element `lido:classification@lido:type="object classification"` which provides the reference to the Getty AAT top-level hierarchy<sup>3</sup>.

By clicking on one of these classes, for example "Visual Works" will take the user to the object classification page (see **Errore. L'origine riferimento non è stata trovata.**).

For access by providing institution use the mandatory element `lido:recordSource@lido:type="europeana:dataProvider"-> lido:legalBodyName -> lido:appellationValue`



Figure 18: Object classification

### Result page for an "object classification"

Show thumbnails with title for all records with such classification, for example for "Visual Works"

```
<lido:classification lido:type="object classification">
  <lido:conceptID
lido:type="URI">http://vocab.getty.edu/aat/300179869</lido:conceptID>
    <lido:term xml:lang="en">Visual Works</lido:term>
  </lido:classification>
```

By clicking on thumbnail or title will take the user to the search page (see next figure).

<sup>3</sup> See <https://docs.google.com/spreadsheets/d/17gLzpRzqGHg2dOCUYjnIVGSmAGb57EKC9ExsGYwrYI>

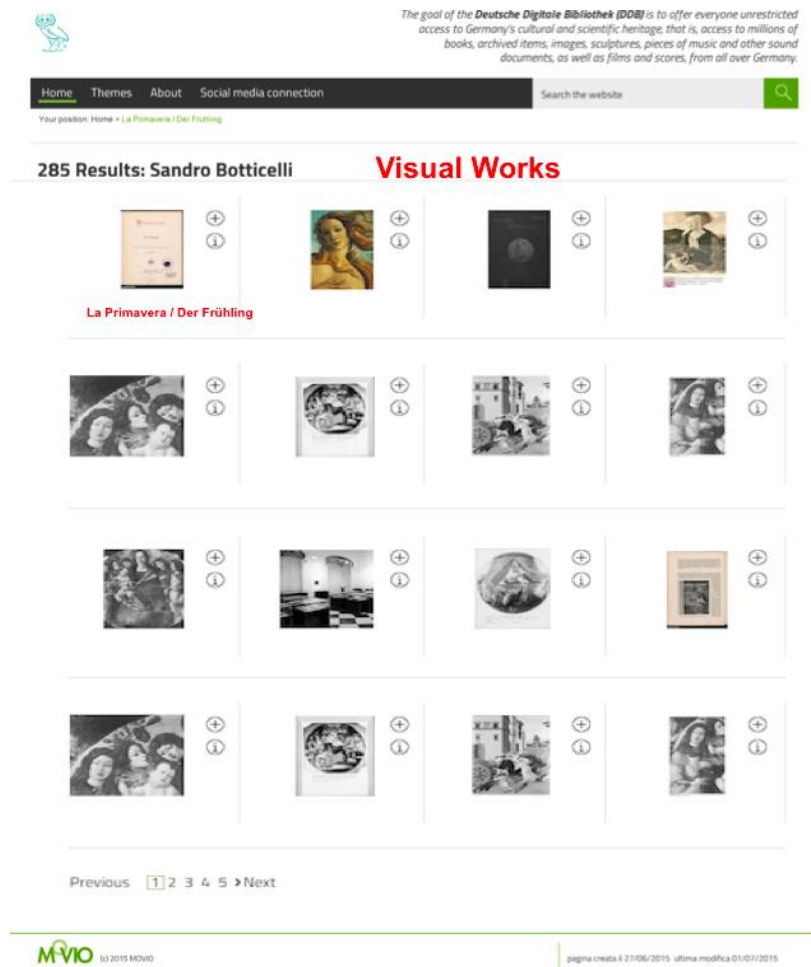


Figure 19: Search tool

### Card detail

The four red framed elements are mandatory and should be displayed for all records in the same position (see next figure):

- Title: lido:titleSet -> lido:appellationValue
- Object classification: lido:classification@lido:type="object classification" (AAT reference required)
- Object type: lido:objectWorkType
- Location (country): lido:repositoryLocation -> lido:partOfPlace -> lido:placeID (TGN reference required)

The list of LIDO elements in the attached requirements document (and MINT bookmarks) as circulated to everybody - so these appear in the card detail if provided in the record<sup>4</sup>. Specific focus has been put on the correct grouping and visualisation of the event information, e.g. multiple lido:eventSet elements.

The LIDO design principle of distinguishing display and index elements are always grouped together in a set element:

Basic structure:  
 xxxSet  
 displayXXX  
 XXX

<sup>4</sup> <https://docs.google.com/document/d/1u1XmBHILFChFftddKHTm0Uq3wJRRirwvdHNNvIGK14o> - p.7ff



For example:

```
objectMeasurementsSet
displayObjectMeasurements
objectMeasurements
```

If the display variant is given, we used this - if not, used the information from the index elements for the card details.

If multiple language variants are provided in one record we used them for the visualisation in the first place of the basic metadata language, as given in the mandatory language tag: lido:descriptiveMetadata+xml:lang, and in the second place the enriched English terms.

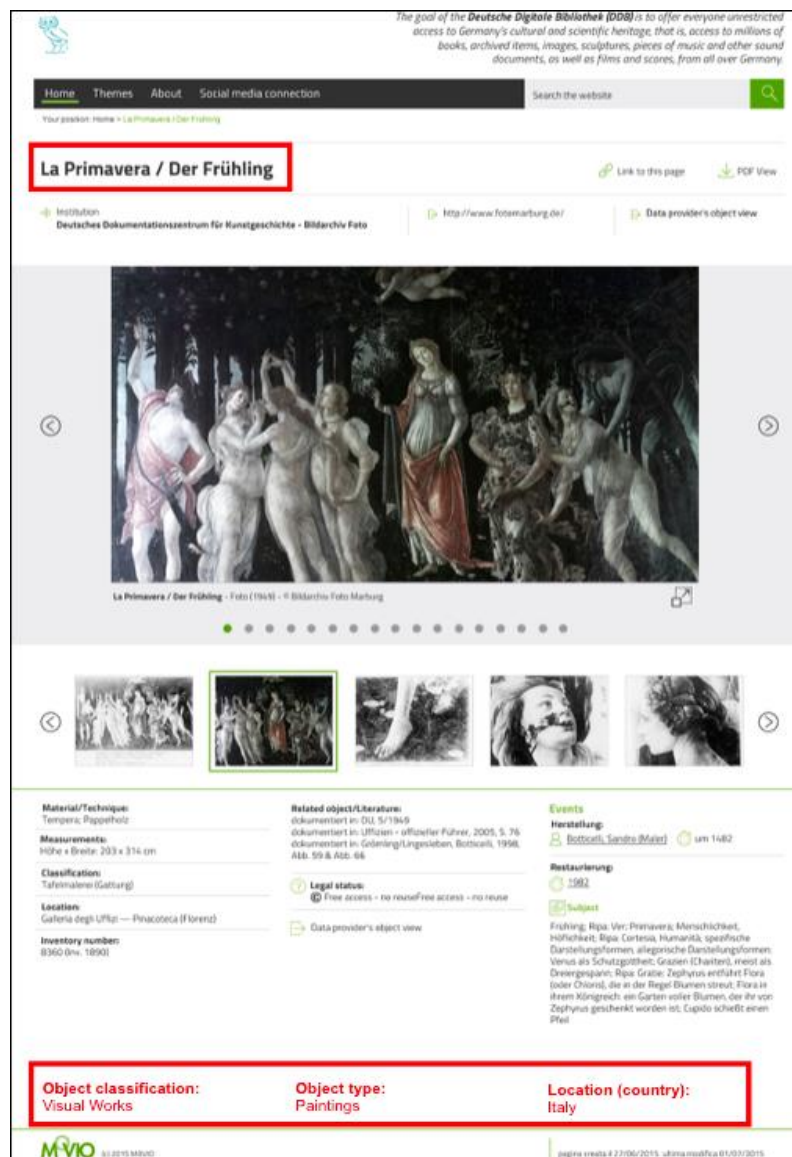


Figure 20: Card detail

#### 4.1.7 User centered approach

The AthenaPlus approach is to implement tools, which will be used and will be instruments for future generations of creative professionals. Keeping this in mind, the project team always

listened to requests and where sustainable with the available resources, implemented the requests.

In fact, the user suggestions, coming from the tests and pilots, and the availability of more semantic resources, coming from the partners' works in other WPs (such as for the demonstration which combines MINT resources to MOVIO presentation), allowed a revision of the previously implemented tools.

Component/s	Requested by	Description of additional requirements for future improvements
Frontend, Maps	Curators and pilots	POI improvement - possibility to connect only chosen points would be great, for example only existing factories. Now it connects random points with no further info. Clicking on the route might give information (similar to Google maps, how to get from one point to another, time...)
Ontology Builder	Cultural pilots	Connect the ontology builder with Wikipedia
Ontology Builder	Curators and pilots, AthenaPlus partners	Connect the ontology builder with Europeana
Backend, Modules Builder, thesaurus	Curators and pilots, AthenaPlus partners	In the Module Builder add link to thesauri and entities
Back-end and Front-end	Curators	Personalise the content to be viewed by users who subscribe to a specific profile created by the curator (such as: student, researcher, etc.)
Back-end and Front-end	Pilots, AthenaPlus partners	Possibility to set the page date changes (previously it was set by the system and could not be changed by the curator)
Tourism operators	Curators and pilots	List view Map view Search and selection of records
User comments, back-end	Curators and pilots	Possibility to remove and hide user's comments when spam
User comments, back-end	Curators and pilots	Automatic system to prevent non-human comments
Storyteller	Curators and pilots	View additional info in a card / insights
MOVIO-Hub	Curators and pilots	A catalogue with all MOVIO virtual exhibitions
MOVIO and MINT	Curators and pilots	Verify the possibility to connect MINT to MOVIO in order to enable the creation of improved exhibitions with more quality resources than the one presented in Europeana.
Entity navigation	Curators and pilots	In few steps you can connect with built modules (i.e. tourism operators nearby your institution)
Google Map	Curators and pilots	Improve path building and path fruition
Graphical templates	Curators and pilots	Additional templates
Graphical templates	Curators and pilots	Bootstrap based templates (conceptually similar to Wordpress): you can customise the templates more easily

Thesaurus	Curators and pilots	Possibility to create personalized thesauri and have a different presentation for each (geographical, chronological, custom)
MOVIO-HUB	Curators and pilots	Search tool
MOVIO-HUB	Curators and pilots	Calendar
MOVIO-HUB	Curators and pilots	Harvest from existing and connected MOVIO instances the exhibition pages
MOVIO-HUB	Curators and pilots	Map and presentation using POIs
Modules builder	Curators and pilots	Tools to connect local DBs or import DBs to be presented and searched from the front-end
Share and social tools	Curators and pilots	Sharing buttons to be managed from the back-end and published on the FE (Social connectors)
Share and social tools	Curators and pilots	Sharing the link on storytelling
Zooming tools	Curators and pilots	Zoom tool on images (with watermarking facilities and disabling option for downloads)
Google Map	Curators and pilots	Map resize with new POIs
Google Map	Curators and pilots	Additional fields on mapping (title, URL, etc.)
Google Map	Curators and pilots	Connection POI with curved path
Media archive	Curators and pilots	Multiple item deletion
Super-exhibition	AthenaPlus partners and external museums (such as the National Museum of Israel)	As a demonstration, we collected some hundred ad hoc MINT generated cards from AthenaPlus partners together with their thesaurus
Interface terms translation	Curators and pilots	languages: IT, CA, DE, ES, FR, LT, NL

### Comments control

Where end user is enabled to leave a comment, we experienced that huge automated spam was pushed into the comment area. As such, we activated a barrier to non-human comment generation with a Captcha code check (see figure below).

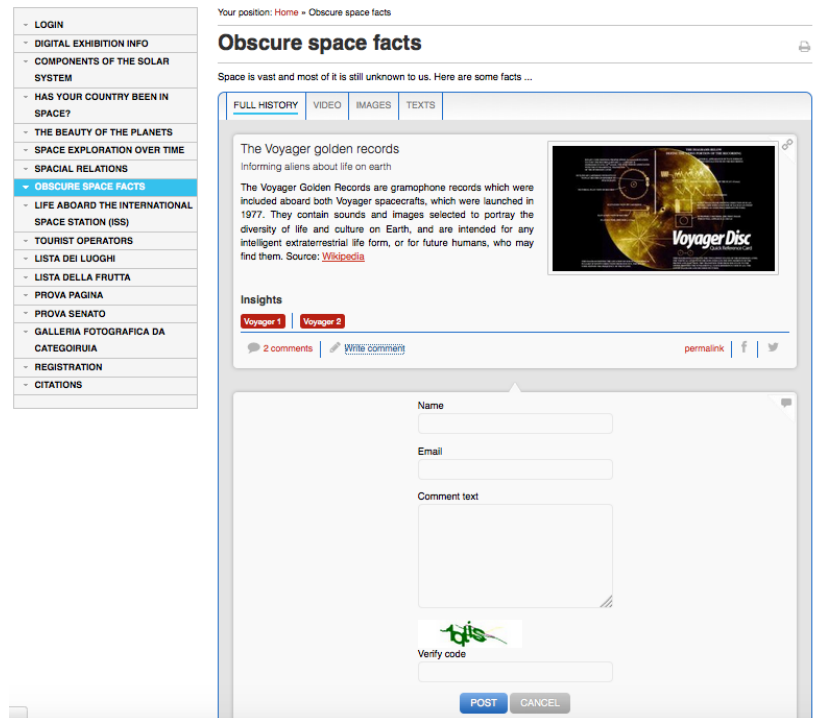


Figure 21: Comments control functionality

## Storyteller additional info

Some pilots requested the possibility to expand a card providing additional info. This was enabled with a dedicated functionality inside the storyteller tool.

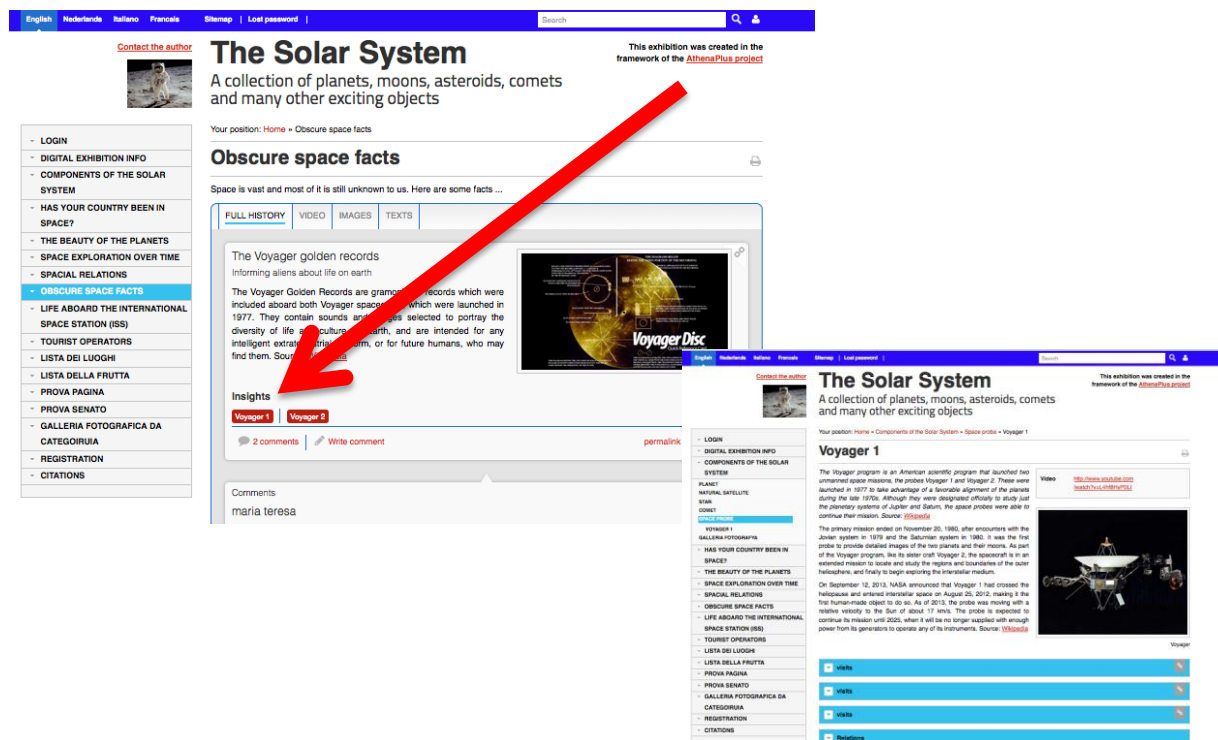


Figure 22: Storyteller : presentation of additional information in a card.

## 4.2 CityQuest

CityQuest<sup>5</sup> is an easy-to-use tool for the creation of a mobile experience similar to a treasure hunt. Based on clues, the player of CityQuest needs to search for objects on certain locations. Once found, there is a posted QR code that, after scanning, provides detailed information about the very item that was discovered.

The tool is made up of two components: an online Quest editor (the place where you create the Quest) and the mobile application (used to play the Quest you've created). The source code of both components has been released via GitHub. The online editor requires you to create a free account, and the mobile app can be downloaded for free from the Google Play and Apple Store (see wiki for full access details)<sup>6</sup>.

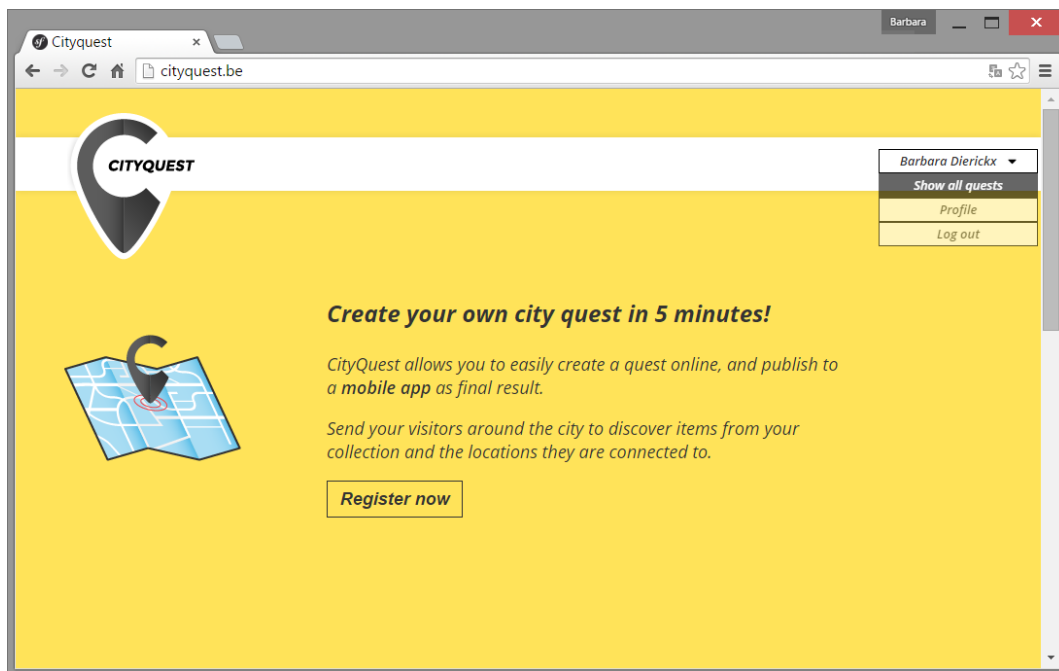


Figure 23: Screenshot of the CityQuest online interface homepage

City museums or municipal archives often sit on a very diverse collection of heritage items that have a strong link to the actual place they are located in. However, they're often not that known as institutions to the people living, working, studying in the very town. A programme like CityQuest helps to gain visibility for both this heritage and the actual institution. When creating the Quest, the idea is that you tell a story or have people look for the most interesting heritage items that link to your collection. The ones with the best, or most surprising story. That one house of which hardly anyone knew who lived there, etcetera. By posting a sign with a QR code, you do not only allow players to gain more information but you can also inform the wider community of why it's there, and what's going on. An example of how this can be done is also included in the wiki (see below). The generation of the QR codes that are linked to the objects created, is also done automatically. You can thus print your codes after the Quest has been created in the online editor.

<sup>5</sup> The name 'CityQuest' has not been registered in the European trademark database (neither in Canada; there is one listing in the US).

<sup>6</sup> See part on [http://wiki.athenaplus.eu/index.php/CityQuest#Get\\_source\\_code](http://wiki.athenaplus.eu/index.php/CityQuest#Get_source_code) and [http://wiki.athenaplus.eu/index.php?title=CityQuest\\_Installation\\_instructions](http://wiki.athenaplus.eu/index.php?title=CityQuest_Installation_instructions)

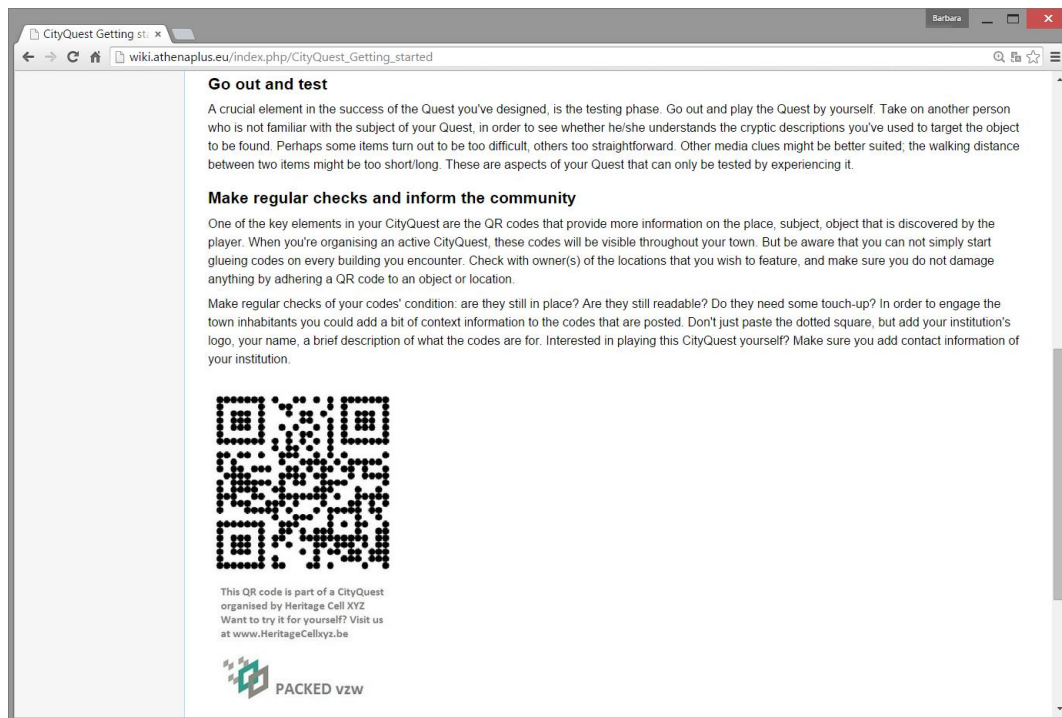


Figure 24: Screenshot of the CityQuest 'Getting Started' section on the training wiki

The creation of the actual Quest happens in one single webpage through the online editor. The page contains a section on general information, a section for the item creation and lastly the possibility to generate a map.

#### 4.2.1 General information

The general information is used both internally and as data to feed into the Quest. Examples of information to fill are a title and an abstract of the Quest, or a disclaimer. Also the average duration of your Quest is asked for (this is more for internal purposes, so that interested players with only x amount of time to go around may be suggested the most appropriate Quest). There is also a field to enter contact information and a direct telephone number. Should players encounter a problem while on the road, this would be the number of a responsible person in the museum that they can call for assistance (e.g. disappeared QR-code, lost in town, ...).

#### 4.2.2 Item creation

The creation of the actual items requires text and media. You need to re-think the item to be found (a house, a statue, a location, ...) in a cryptic way. The player will get to see a cryptic description of what he/she needs to find. They can ask for additional hints, slowly giving away more information about the item. Based on these text snippets and parts of pictures, the item can be found.

#### 4.2.3 Map

The final component is a map that guides the player from the last point/item in the Quest, back to the starting location. The map is included in order to save time in getting back to the institution.

In case tablets or other mobile devices were lent, players will return to the initial location. If not, it is of course not obligatory to return there.

#### 4.2.4 Mobile application

Once the Quest is created and you are ready to either fully advertise it or just try to play it for yourself as a test, you will get a 'key'. This key is a random string of characters that you enter into the mobile application on your device. Without the key, the app will not do anything as it contains no content yet. It is only upon entering the key that the Quest's content is downloaded into your app, and you can play that particular Quest. Entering the key and downloading the Quest is the only time in the cycle where you will need an internet connection. As the key is normally handed out at e.g. the ticket desk of the museum, that should pose little problems. From the moment the Quest is loaded, it can be played offline. This is particularly useful in case your Quest is in rural areas or in a parkside, with no guarantee of good (or affordable) wifi. In case you want to play another Quest, you can reset the app and load a new key into it.

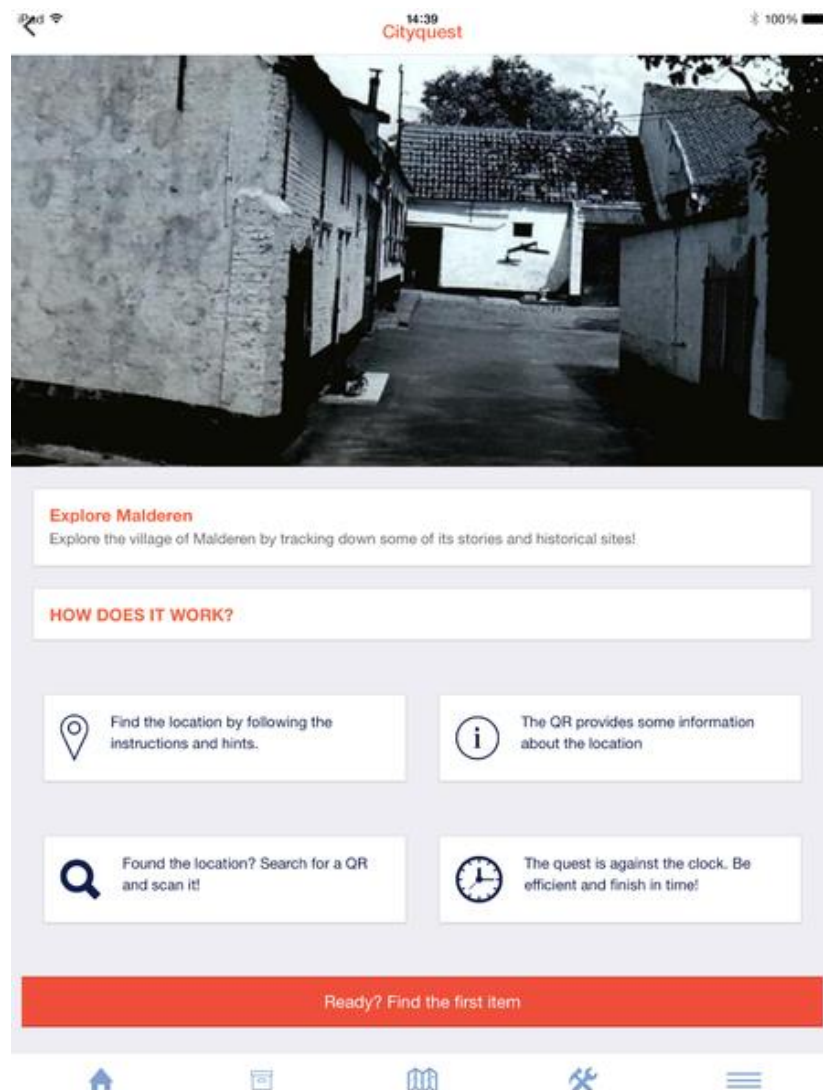


Figure 25: Screenshot of the CityQuest mobile app start page



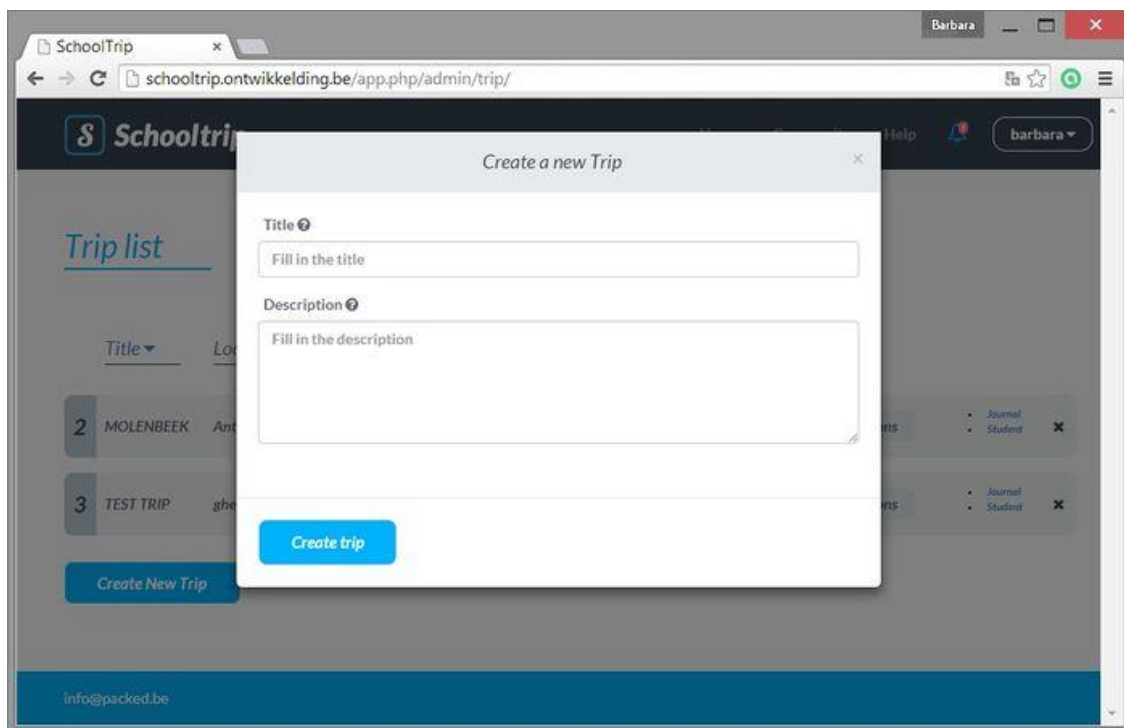
As the cryptic clues (see Quest creation) do not reveal the actual location or address of the item, it is encouraged that players also interact with the local community to ask them on directions for where this particular item can be found. The app is therefore also available in other languages such as Catalan, Spanish, Italian, Lithuanian, German and Dutch (besides the default English).

The app also contains a statistics page that shows how many items you've found, how many hints you have used, and what your total time has been. For individual users this is a just an added feature, but the main use of the statistics page is when groups of (school) children compete against each other. This way you can determine who did 'best', perhaps even with a little quiz on what they've seen and found afterwards.

While CityQuest was designed with an outdoors experience in mind, people suggested during training events that also indoor use might also deliver good usage scenario's. This could for example be the case when an institution exists out of multiple smaller premises, all belonging to the same museum and each holding a part of the collection. CityQuest could then be used as a guide-like application indoors.

### 4.3 SchoolTrip

SchoolTrip<sup>7</sup> is a downloadable programme (cf. MOVIO) and its source code has been released via GitHub (see wiki for full access details)<sup>8</sup>. It allows students to create their own school journey. Through an online interface the teacher can set a couple of parameters defining the skeleton of the trip. Students fill the template with information on practicalities, cultural heritage sites to visit, historical information, and so on. They learn to plan a travel from a to z, while incorporating our cultural heritage. At the end, a journal-like document is generated which can be used as itinerary guidebook.



<sup>7</sup> The name 'SchoolTrip' has not been registered in the European trademark database (neither in Canada nor in the US).

<sup>8</sup> See [http://wiki.athenaplus.eu/index.php/SchoolTrip#Installation\\_instructions](http://wiki.athenaplus.eu/index.php/SchoolTrip#Installation_instructions)



*Figure 26: Screenshot of the dialogue box for the creation of a new Trip*

The travel journal, which is the end product of the Schooltrip trajectory, requires thus preparatory work by the teacher/administrator, and searching content (texts, images, links, ...) by the students. SchoolTrip also features a function to search for additional media on Europeana, so that students are not only using the sources they know (such as e.g. Flickr), but also dive into the Europeana repository to find related contents often from the past. The API is programmed in such a way that only content with a license allowing for re-use is retrieved in the Europeana search results. When looking for the Trip preparational information, the Students of course also go looking for information on relevant heritage sites and/or museums to visit, and this is where the use of the Europeana API is particularly relevant for.

The teacher does not only create the general framework for the trip - where to go, when to leave, what the must-sees are - but also explains to the students how to work with the application. By working with an application like Schooltrip, the students also become more media and tech aware. There is no one-way process of knowledge transfer, but they're looking up their own information and work with a tool that is new to their experience. SchoolTrip can be used in a one-to-one relation (1 Teacher, 1 Student completing the full Trip), or one-to-many (1 Teacher, multiple Students working in small groups to complete the full Trip).

#### **4.3.1 Creation process**

The actual end product - a travel journal, requires the following steps. First, the **Teacher** gets to work. He/she obtained login credentials to the SchoolTrip programme upon installation (on e.g. the school's server infrastructure). He creates a new Trip, and thereby defines some basic information about the Trip (e.g. destination, travel dates, short description). He assigns a group of students (e.g. class group) as participants to the Trip. Next the teacher defines the topics to be researched by the students. These are called 'Sections' in the SchoolTrip programme. Now he can set Challenges for these Sections: these are small tasks or requisites that relate to the topic of the Section. You can add more than one challenge per Section. Lastly, the teacher communicates about the Student's tasks to the group assigned to this Trip.

Examples of Sections:

- 'The Musical Instruments Museum', in genre 'Cultural heritage'
- 'Getting around in the city', in genre 'Transport'
- 'Film screening at Cinematek' in genre 'Entertainment'

Examples of Challenges:

- Enquire what possibilities (tours, interaction) are offered for (school) groups (Musical Instruments Museum)
- Can we rent bikes for one day? What are prices? (Getting around in the city)
- Find appropriate screenings of silent movies after 6PM on weekdays (Cinematek)

Next, the **Student's** part starts. He/she logs in to SchoolTrip, based on the account data the teacher has previously created for him. He processes the skeleton of the trip and browses the different Sections that need to be filled with information ('Records') based on the Challenges that the teacher has set out. Then the actual work starts: adding snippets of information ('Records') to the various Sections, until they feel all needed information is present. A Record may contain text, URL and media<sup>9</sup>. Then it is time to order the Records chronologically and assign hours/times to them. The student is now constructing the itinerary of the travel.

---

<sup>9</sup> 'Media' in this context may refer to either self-found and uploaded content, and/or selected content via the Europeana API as mentioned higher up in the text.

He/she will then present the ordered information to the Teacher for approval (check for completeness) before editing the Journal. When finally then editing the Journal, he may alter and add texts in the chronologically ordered information. Upon 'finalising', the edited Journal is created. Print the Journal and take it with you on the actual SchoolTrip.

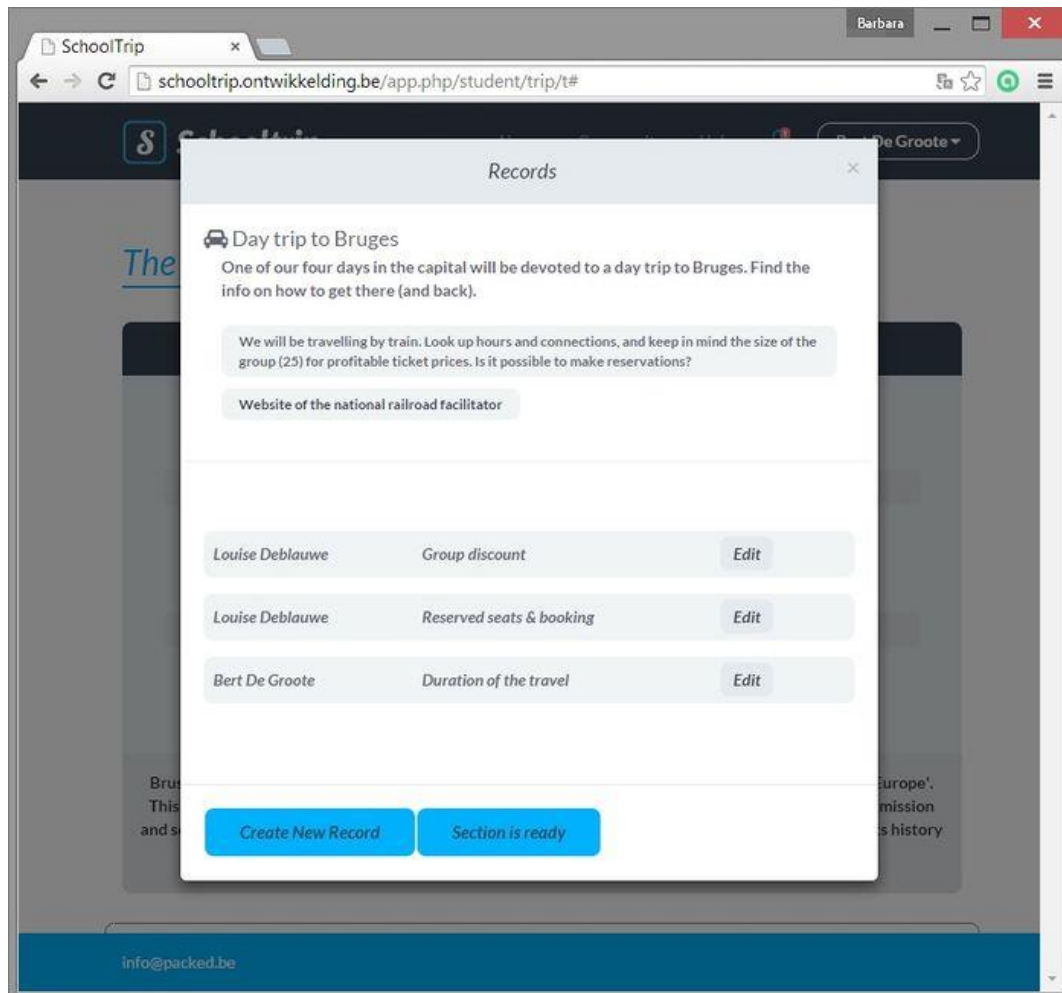


Figure 27: Screenshot of a detail page of one Section which students are filling with information.

#### 4.3.2 Interaction

SchoolTrip allows for cooperation and interaction. Students can use the message board to discuss their progress or obstacles in finding information (adding the Records). The message board is also accessible to the Teacher, who can keep an eye on what's going on or may even be asked for advice through the board. When the students have finished the chronological ordering of the found information, the teacher is notified that a structure has been created. He/she should approve the contents of the ordered Journal before the students start the final editing. This way, Students can return to add more Records to their Journal if certain parts are felt to be incomplete, before spending effort on editing.

## 4.4 Urban Explore

Urban Explore is a tool to create and manage mobile apps as touristic and cultural digital guide in the context of collective or solo visits. As a complement to a speaker story (heritage expert, historian, city planner, art professional), the mobile app offers an access to the audio-visual history / memory of a place, in an original and emotional way. It consists of an online CMS creation system and the possibility to publish your own app (currently for iPad only) as a result of this. Unlike CityQuest, Urban Explore thus creates the entire application for each unique individual case/scenario.

The idea of the app is that it is not a standalone thing, but is used in combination with a real life guided tour. It thereby complements what the guide is informing participants about. Convening in situ testimonies, text documents or audiovisual archives, from Europeana and other sources, the app enables to give a singular vision of the territory: it provides access to a set of selected and editorialised digital cultural content according to the theme of the walk. The user actually embarks on an exploration: he is guided by the story of a speaker and navigates through the contents over the path, tablet in hands.

The CMS allows the aggregation of different set of data within a mobile app: Europeana data, open data, user generated contents, cultural institution contents, resources from digital exhibitions ... You can adapt your Urban Explore app to specific places (city areas, museums) and link video, audio and pictures (as archives material) to a place participants are going through.

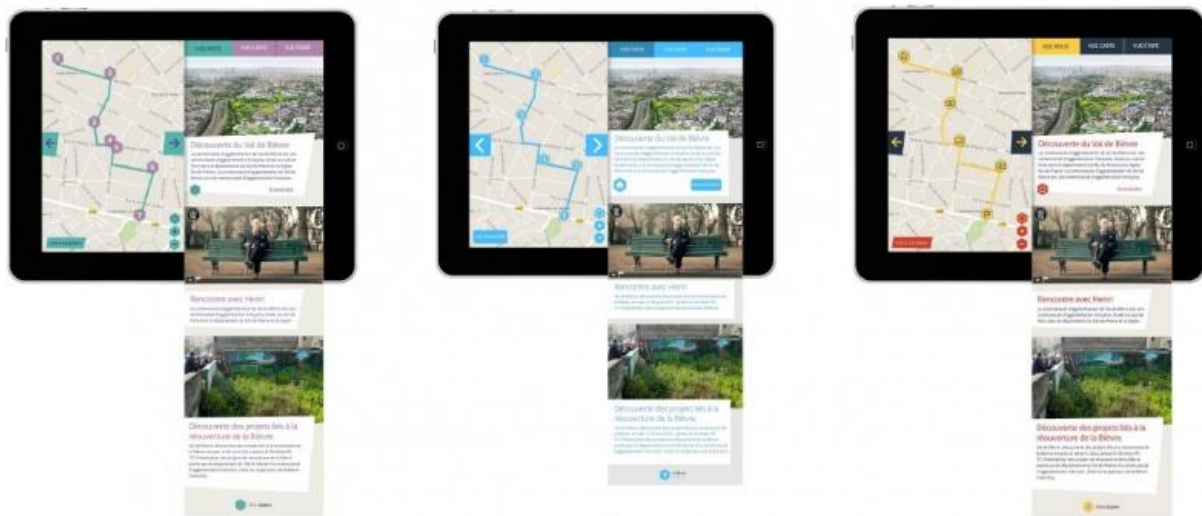


Figure 28: Screenshot of the different iPad layout modes

### 4.4.1 Creating a project

You can obtain a login by sending a request to Dedale to get your own Urban Explore profile and be able to manage a project. You will receive a connection ID for the User Login page at <http://www.urbanexplore.fr/#/login>. Once you have logged in, you will be able to create and manage your own project. Through a 'Project Dashboard' you can start a new project (i.e. Urban Explore tour), and further manipulate the path to be followed, the different steps (point of interest) and the homepage/app layout.


The main functionalities are:

- Generation of a path on a map
- Set up of the path: colour, thickness
- Positioning of map markers for content pop up opening
- Upload of content (video, sound, image)
- Local hosting of content on the iPad for a use without connection
- Easy update
- Customising of the graphic interface: colours, logo, header
- Specific dashboard to explore, select and reuse external data (from sources like Europeana)

## Urban Explore

HomeMediasSearchUsersLogin

Home / Les coulisses de l'art public / ETAPE 1 // L'AXE ROYAL MODERNISÉ



Step zoom

iPadwebSmartMap

### Step information

Visual

Parcourir...Aucun fichier sélectionné.  
upload me

Position

1

Title

ETAPE 1 // L'AXE ROYAL MODERNISÉ

Visible

☒ Visible ☐ Non Visible

Description

Learn more


Formats - B I

Valider

## Medias

Add Media / searchAdd Media / médiathèque

### Diaporama > ESQUISSES



Title

Diaporama > ESQUISSES

35

*Figure 29: Screenshot of the editing screen to create one Step in the programme*

#### **4.4.2 Content sources**

A search module for content and a media module. The search module enables research, selection and allocation of content from existing database and web platforms: Europeana, Wikipedia and YouTube. It displays the selection of media types, the selection of sources and fields for advanced search criteria.

Images, videos and sounds from Europeana are displayed into the CMS. You can add five elements to describe the content (Content (image...), Title, URL, Data provider, Licence). The interface also allows to search and select text from Wikipedia and extract them from a form. By default the system provides two elements which can be associated to a visit project: the Article title and an Article abstract (first text paragraph on the top of the form). YouTube content can be described on the basis of Video and video thumbnail, Video title, Video description, Video tags, Author and URL.

The creation interface also has a Media module, for content that you want to upload yourself (not coming from any of the external sources).

Urban Explore

Home Medias **Search** Users Login

Home / Search & Selection

## Search

Search Selection - UCG

Types Sources Advanced search

☒ Image  
☐ Video  
☐ Text  
☐ Sound  
☐ 3D

☒ Europeana  
☐ Wikipedia  
☐ Youtube  
☐ Flickr  
☐ Twitter  
☐ Instagram

Place  
 Date  
 Creator

Search

## Results

Cart - Add to cart -  
 View all carts

Add to medias  
 View all medias

Nothing selected -  
 View step :

Show 10 entries Search:

IMAGE link Title

No data available in table

Showing 0 to 0 of 0 entries First Previous Next Last

from Ooffee team

Figure 30: Screenshot of the module where to include different media assets

#### 4.4.3 The publication of the app

The publication process requires you to first, create and manage a project (see above), then move on to publication in the App Store (only for Apple). This means that any publisher needs to have a personal account on the Apple Store.

The owner model foreseen is the following:

- Free use of the CMS to create EU-type proposed visit, hosting at the cost of the user, in the framework of Athenaplus (valid for projects for the account of the partner)

- Partner and associated partners who signed the Athena Plus consortium agreement: free use of the tool, as one of the Athena Plus Dashboard. Hosting costs and costs related to the production of a project (coordination, monitoring project) assumed by the user (valid for projects for the account of the partner). Maintenance ensured for 2 years after the project ends
- Commercial license for users outside AthenaPlus for the right to use the CMS
- Sales of visits key in hand

#### **4.4.4 General technical approach and licensing**

**Production of a POC in the frame of AthenaPlus:** Urban Explor is composed by two parts (CMS and the application generator), both of them are an aggregation of many open source tools and specific developments had been added on top of all such components. Urban Explore proposes a kind of technical mash up approach to guarantee the low cost of the prototype. By nature and by philosophy Dédale would like to offer an open source in a longer timeframe.

The reasons why Dédale decided not to publish now the source code are:

1. The investment done so far needs to be recovered: Dédale intends to recover at least part of its investment before opening the source code.
2. Moreover, the time to prepare the source code for being published was not enough: the source code and the infrastructure architecture is not enough documented to be valuable and clean open source software: there would be the risk of some 'rejection' from the community of developers and brand compromise.
3. Finally, to success an open source operation, after the end of the project, some "human investment" would be required in addition to the development resources (communication, dissemination, users support and software maintenance).

## **4.5 eCultureMap**

The eCultureMap has been developed to demonstrate the use and re-use of Europeana, AthenaPlus and other digital cultural heritage content, when browsing the content geographically. Applications were limited to location of a heritage object on a map, creating a walking tour on a map incl. seeing object locations, and geoparsing of your own uploaded data. A GIS Pilot action resulting in use cases and the creation of an augmented reality application.

The functionalities of the map have also been enhanced with the GoogleStreetview modus. This allows the map browser to directly look at the current way the location can be experienced in real life. You can explore cultural heritage around the world through 3D, panoramic, and street-level imagery with links to the description of an object on the Europeana portal (or another, e.g. national heritage portal).



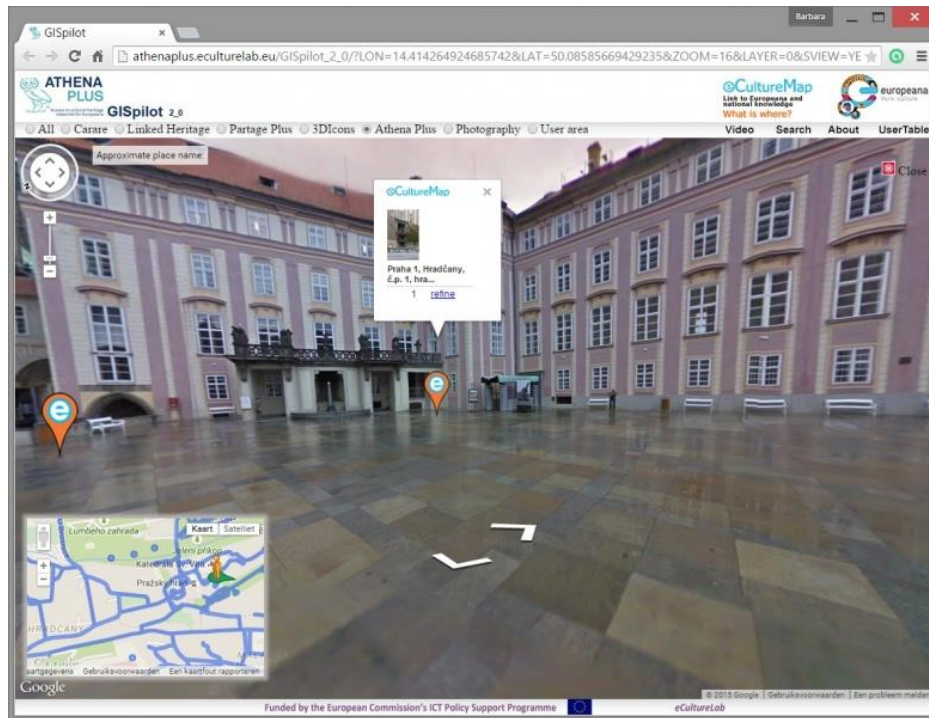


Figure 31: Screenshot of an item discovered on the eCultureMap, as seen through GoogleStreetView.

#### 4.5.1 Walking tour & location of the content

Via looking for a specific location (e.g. particular town) the map will point out which points of interest can be traced in the neighbourhood. You can plan out the (walking) path drawing a line on the map, which then renders a list of all cultural heritage items you may find along the route.

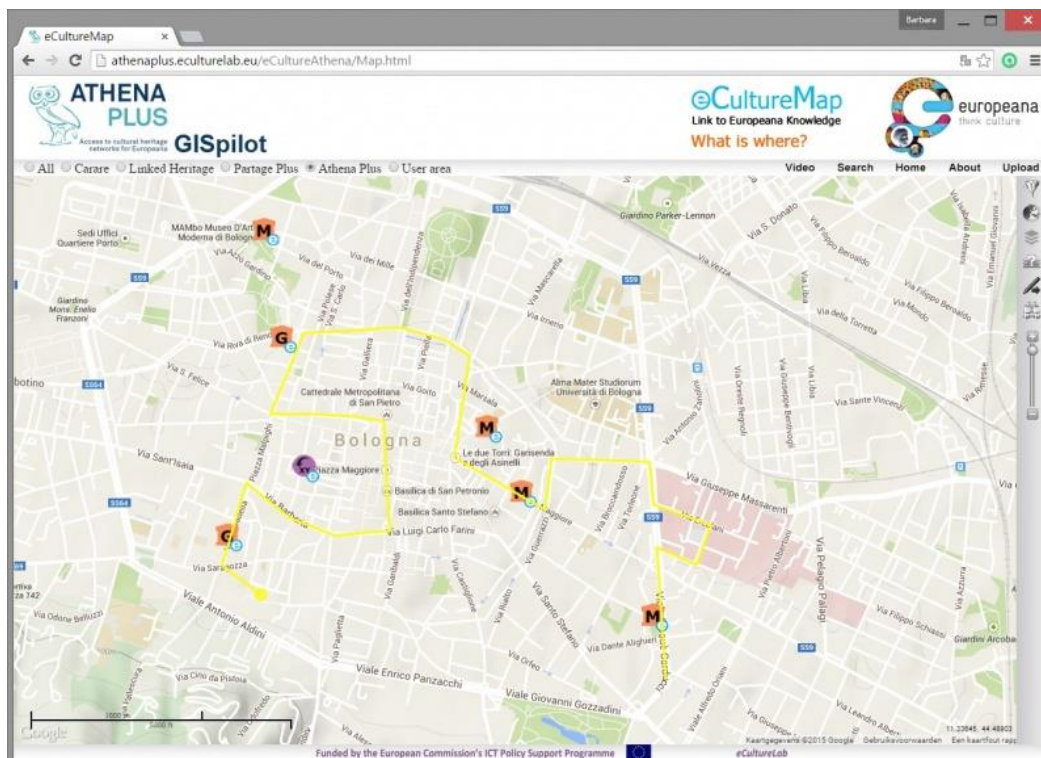




Figure 32: Screenshot of the eCultureMap showing a walking path

#### 4.5.2 Geoparsing your own data

The degree of usability of the eCultureMap of course depends on the accuracy of the geographical coordinate information that is delivered with the object links. But not every institution is able to provide geocoordinated data for its heritage collection. In the user interface of the eCultureMap it is possible to upload your own data, and geoparse it. If geographical coordinates are not available in the source data, the geoparser web service will automatically determine them from the geographical place name (e.g. the general description of the city 'Leipzig' is then changed to a string of coordinates).

ID	TITLE	THUMBNAI	CONTEXT	CONTEXTG	PlaceName	Country	ACCURAC
1	Panjska končnica	http://europea	http://www.et	http://www.Kranj	Gorenjska, Slovenia	Slovenia	1010
2	Panjska končnica	http://europea	http://www.et	http://www.Britof	Gorenjska, Slovenia	Slovenia	1010
3	Panjska končnica	http://europea	http://www.et	http://www.Podbrezje	Gorenjska, Slovenia	Slovenia	1010
4	Panjska končnica	http://europea	http://www.et	http://www.Praprotna polica	Gorenjska, Slovenia	Slovenia	1010
5	Panjska končnica	http://europea	http://www.et	http://www.Voklo	Gorenjska, Slovenia	Slovenia	1010
6	Panjska končnica	http://europea	http://www.et	http://www.Voklo	Gorenjska, Slovenia	Slovenia	1010
7	Panjska končnica	http://europea	http://www.et	http://www.Trboje	Gorenjska, Slovenia	Slovenia	1010
8	Panjska končnica	http://europea	http://www.et	http://www.Trboje	Gorenjska, Slovenia	Slovenia	1010
9	Panjska končnica	http://europea	http://www.et	http://www.Trboje	Gorenjska, Slovenia	Slovenia	1010
10	Panjska končnica	http://europea	http://www.et	http://www.Poljanska dolina	Gorenjska, Slovenia	Slovenia	1010

Figure 33: Screenshot of the geocoding import from an Excel list of records

#### 4.5.3 Augmented reality (AR) mobile application

The mobile application based on the eCultureMap lets you discover digital heritage content near real-life locations within your proximity. In the free app (available for Android) you can install a discovery radius (e.g. a couple of meters, some kilometres, ...) that will show a radar, displaying the purple and orange dots that are familiar from the eCultureMap. When you're approaching the location, you can not only see it in real life but digital heritage content related or about the location will pop up, giving a current and historic perspective at the same time.



Figure 34: Screenshot of the augmented reality mobile application

The API that is made available, enables the reuse of eCultureMap data and can be embedded into any full webpage and/or mobile application. An example of the embedding of the map in a website is seen below:

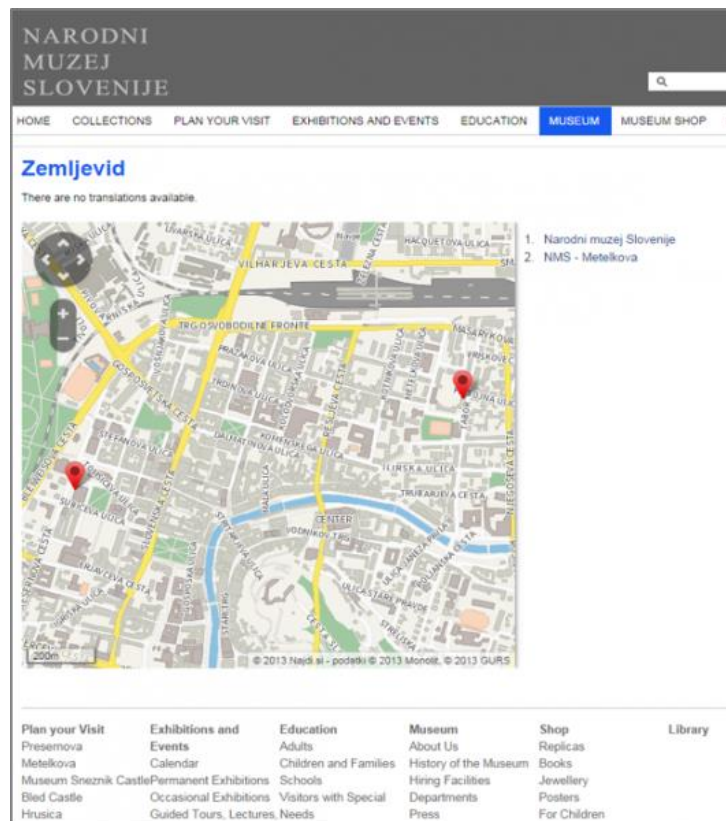


Figure 35: Screenshot of a webpage in which the eCultureMap has been embedded

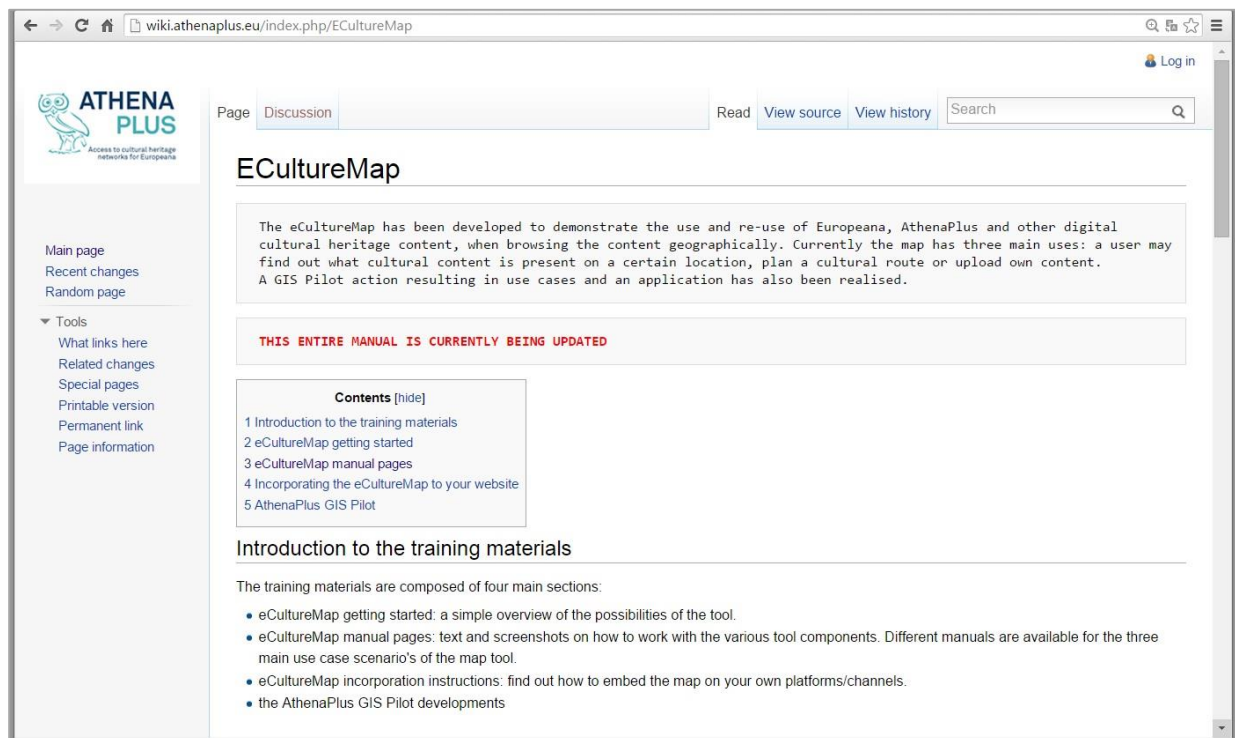
Lastly, the pilot action created three use cases that demonstrate the potential of what you could also do with the eCultureMap.

- Van Wittel vedutes: vedutes were geocoded on a location from which the painter Van Wittel (17th century) had drawn them. The user can browse the vedutes in central Rome through the map interface and retrieve an image of a veduta. Then you can open Google Street View mode on a position in the city of Rome, at the exact location from which the painting was drawn. This experiment was possible thanks to resources and information provided by BNCRM.
- Geocoding historical photographs: the objective of this use case was to evaluate how the AthenaPlus GIS pilot is efficient for geocoding of historical photos. Firstly, we geoparsed the collection of the Adjutament of Girona, and then they improved the spatial accuracy of the data by using AthenaPlus GIS pilot tool.
- Architectural heritage: over 25.000 photographs were added to the eCultureMap. The exact location of the camera when taking the picture of an architectural heritage item, was geocoded and is now visible on the map by way of a camera icon.

## 4.6 Training materials wiki

Although no tool in itself, the wiki containing the training materials was also subject to updating and now getting to a 'final' release. With every release of a tool, shortly afterwards a manual followed. That document (mostly text and illustrative pictures) was then transferred to the tool's respective page in the wiki. After some months of being available, showcased and tested in training events and pilots, features of the tool(s) were being improved or added. This meant that

also the information on the wiki underwent regular updates. Wiki users were always notified whenever there would be a risk that the current information was not complete, because e.g. the page or pages were subject of a new edit. This can be seen in the screenshot below.



*Figure 36: While waiting for new information to be incorporated in the instruction pages of the eCultureMap, a message in red is displayed saying “This entire manual is currently being updated”.*

Currently, the wiki contains the full information on the tools in the way they're described earlier in this chapter. Should new information become available, then WP5 will make sure it gets uploaded and adapted in the wiki too.

## 5 BEYOND THE PROJECT

### 5.1 Looking forward

The tools that have been created in the framework of the AthenaPlus project were from the very beginning planned to be released as open source materials. The underlying motivation for this is twofold: the commitment that the consortium made versus its European financier<sup>10</sup>, but more widely the tools' sustainability beyond the project.

The open license models<sup>11</sup> have been chosen with the objective to allow any subject to take it, modify it and redistribute it respecting its open source nature (which does not limit the exploitation opportunities nor use). This also means that any additional components to be integrated, should be created in such a way that they are also open source components and their usage rights do not conflict with the license conditions applied to the original tools/programmes. This way, the entire layer of available AthenaPlus tools will be and remain available in an accessible way.

Releasing the tools openly gives opportunities to interested developers from the open source community. We have already seen a successful case of Italian higher education students who created new MOVIO templates based on the current code. As a matter of fact the ISIA school of design has explored new presentation models and the results have been presented during the final conference of AthenaPlus in Rome.<sup>12</sup> The open nature does not prevent the creation of a service layer, or specific add-ons from a business perspective. In light of the tools' sustainability beyond the project, this may be a valuable trajectory to investigate.

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<sup>10</sup> See Description of Work, part B3.5 Security, privacy, inclusiveness, interoperability; standards and open-source: *"The project will primarily seek to exploit open source modalities [...]"*. Furthermore: *"The consortium agreement to be signed between the Partners will set appropriate licensing or clearing arrangements for any Intellectual Property Rights arising from the project output so as to ensure the wide use and dissemination of the project results."*

<sup>11</sup> A chapter on the full license info of MOVIO has already been included in the D5.3.

<sup>12</sup> see presentation by Mario Fois (ISIA)

[The experience of two universities using the AthenaPlus creative tools. How students can benefit from the results of European projects](#)





Figure 37: new formats for MOVIO, 2<sup>nd</sup> year master, ISIA Roma Design, by teacher Mario Fois 8October 2015).

Here we see some screens of how the license terms are displayed in eCultureMap and CityQuest:

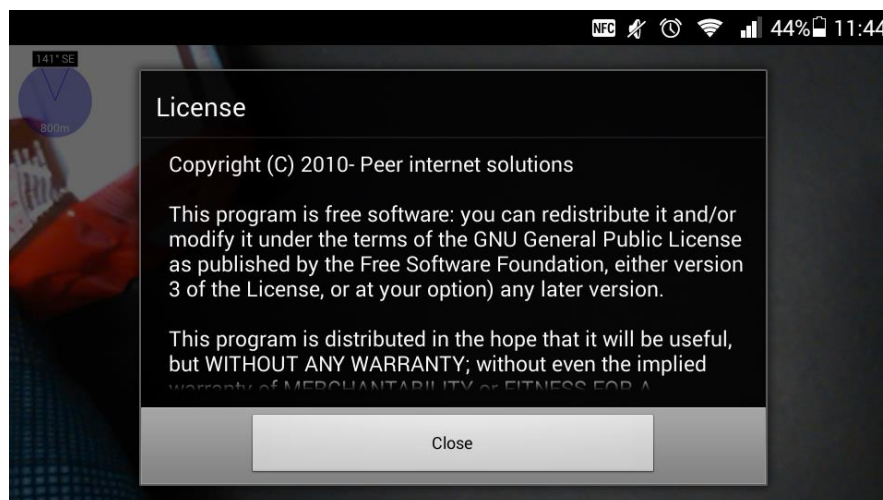


Figure 38: license terms in eCultureMap application



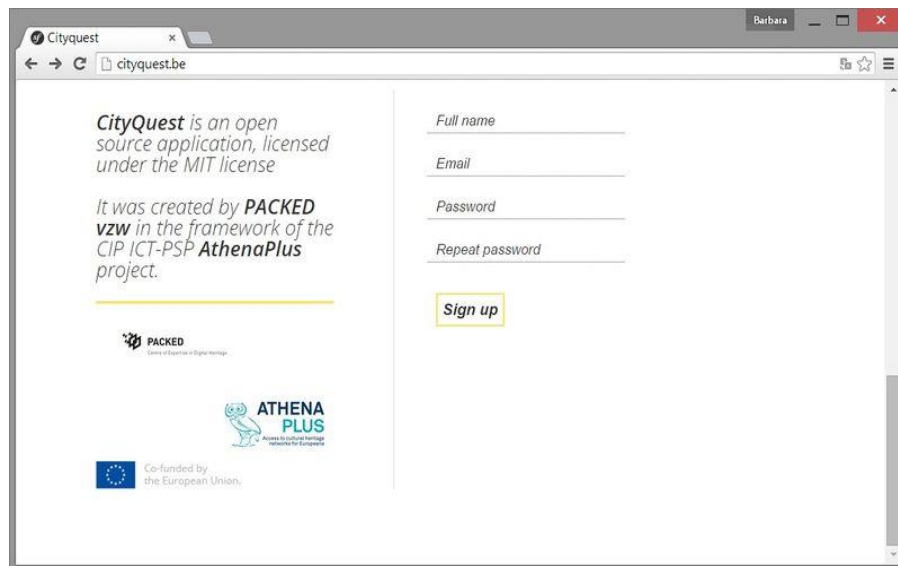


Figure 39: license information on the CityQuest website

## 5.2 GitHub

By 30 November 2015 META publishes<sup>13</sup> MOVIO source code through GitHub, to enable a broad community of developers to take advantage of the source code and implement new components and modules. The source code plus the handbooks will be maintained public and will help even more a community of contributors and consequently of users. The codes for the CityQuest back-end and app, as well as for the full SchoolTrip programme, are already published on GitHub since end of August 2015. The reason for late publication is due to the willingness of a bug-free and refined source code publication.

### 5.2.1 About GitHub

GitHub is the largest online storage space of collaborative works that exists in the world. Before GitHub existed, all companies created their knowledge only internally and mainly with proprietary software framework or proprietary releases. Through GitHub anyone is free to study, download and republish software resources.

Git is released under the an open source license GNU General Public License version 2.0 and GitHub claims no intellectual property rights over the material provided by users (see its Terms and conditions, section F<sup>14</sup>).

### 5.2.2 Why is GitHub important for the AthenaPlus tools distribution and the software community?

GitHub is a VCS (Version Control Software) as same as the Linux's Git: it enables changes to a project without overwriting any part of that project and as such, different users may write their codes without interfere one another. Later, different and customized software codes might be merged with the possibility to move back to an earlier version through a user-friendly interface. The major difference between Git and any other VCSs is the way Git handles data. Conceptually,

<sup>13</sup> MOVIO on GIT-HUB: <https://github.com/GruppoMeta/Movio>

<sup>14</sup> GIT-Hub: F. Copyright and Content Ownership <https://help.github.com/articles/github-terms-of-service/#f-copyright-and-content-ownership>

most other systems (CVS, Perforce, Bazaar) store information as a list of file-based changes and they manage the information as a set of files and the changes made to each file over time.

Git has three fundamental states:

- Modify:** the programmer can change the file (but have not committed it to his/her database). This is executed in the programmer's working area.
- Stage:** the programmer marks a modified file in its current version to go into his/her next commit snapshot. This is executed in the staging area.
- Commit:** the data is safely stored in programmer's local database. This is executed into the Git repository.

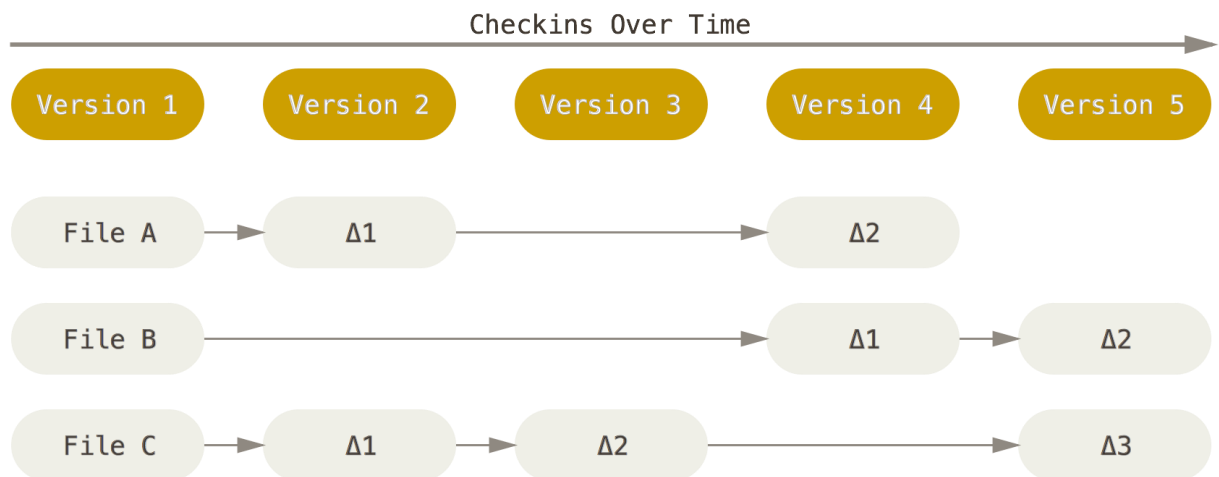


Figure 40: Storing data as changes to a base version of each file (Source: GIT-SCM.com).

Git manages data more like snapshot of the coding when some used pushes his/her code to the system and stores a reference to that snapshot and in case the files have not changed, Git doesn't store the file again: it links to the previous identical file it has already stored. This avoids collisions and inconsistencies: the programmer can freely develop new features locally and still the stored code be maintained with full integrity (Git is check-summed before any new storing).

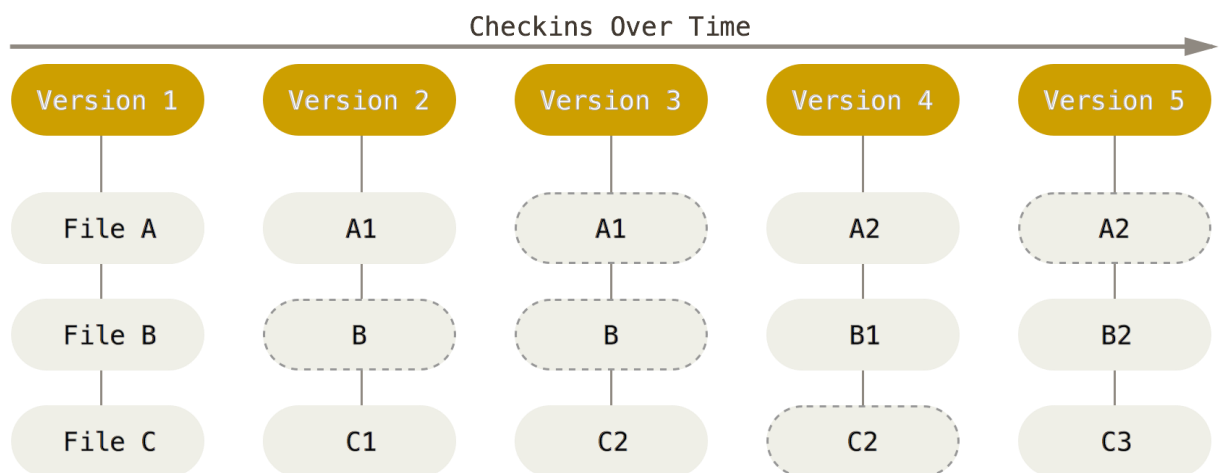


Figure 41: Storing data as snapshots of the project over time. (Source: GIT-SCM.com).

Thus one of the most important aspects for the AthenaPlus user community is the fact that local development can be optimized and the sharing process is reversible and consistent at any time. This CVS approach enables broader programmers contributions and software growth.

### 5.3 License schemes

Tool	Reference	Licence model	Contact reference
MOVIO: wiki	<a href="http://wiki.athenaplus.eu/index.php/MOVIO">http://wiki.athenaplus.eu/index.php/MOVIO</a>	CC-BY-SA	ICCU/PACKED
MOVIO: reference: ICCU	<a href="http://movio.beniculturali.it">http://movio.beniculturali.it</a>	ND	ICCU
MOVIO source code: GitHub	<a href="https://github.com/GruppoMeta/Movio">https://github.com/GruppoMeta/Movio</a>	MIT	META
CityQuest: wiki	<a href="http://wiki.athenaplus.eu/index.php/CityQuest">http://wiki.athenaplus.eu/index.php/CityQuest</a>	CC-BY-SA	ICCU/PACKED
CityQuest: source code	<a href="https://github.com/PACKE D-vzw/cityquest-back-end">https://github.com/PACKE D-vzw/cityquest-back-end</a> and <a href="https://github.com/PACKE D-vzw/cityquest-mobile">https://github.com/PACKE D-vzw/cityquest-mobile</a>	MIT	PACKED
SchoolTrip: wiki	<a href="http://wiki.athenaplus.eu/index.php/SchoolTrip">http://wiki.athenaplus.eu/index.php/SchoolTrip</a>	CC-BY-SA	ICCU/PACKED
SchoolTrip: source code	<a href="https://github.com/PACKE D-vzw/schooltrip">https://github.com/PACKE D-vzw/schooltrip</a>	MIT	PACKED
eCultureMap: wiki	<a href="http://wiki.athenaplus.eu/index.php/eCultureMap">http://wiki.athenaplus.eu/index.php/eCultureMap</a>	CC-BY-SA	ICCU/PACKED
eCultureMap: source code	<a href="mailto:franc.zakrajsek@guest.arnes.si">franc.zakrajsek@guest.arnes.si</a>	proprietary	Franz Zakrajsek
Urban Explore: wiki	<a href="http://wiki.athenaplus.eu/index.php/Urban_Explore">http://wiki.athenaplus.eu/index.php/Urban_Explore</a>	CC-BY-SA	ICCU/PACKED
Urban Explore: source code	Not publicly available: commercial license only	<a href="http://wiki.athenaplus.eu/index.php?title=Urban_Explore_Publication_instructions">http://wiki.athenaplus.eu/index.php?title=Urban_Explore_Publication_instructions</a>	Dédale

## 6 CONCLUSIONS

At the end of the AthenaPlus project, we are proud for the wide number and different tools developed and much more, for the positive feedbacks collected during the training and piloting activities. Each distinct in their own target audience and roles to play, the tools have been iteratively developed over the project months to reach their full objectives. Some tools even far exceeded their initial conception as mentioned in the project's Description of Work.

### 6.1 Results and impact

More important even than the tools themselves are the experiences gained by all those who tested the tools, experimented with them, attended hands-on trainings, and created publishable results.

The digital pilot exhibitions that started as a way of collecting valuable user feedback have matured into full-fledged standalone museum publications. Some of them have become very rich and act as a digital knowledge base for the particular exhibition topic. Museums that were not directly involved in the project consortium have taken up MOVIO and mounted their own digital exhibition after attending training. These exhibitions continue to live in the future<sup>15</sup>, thereby providing continuous exposure to MOVIO as the underlying technical infrastructure. We witnessed pilots express to us potential applications for their professional activities and on spot adoption of the tools; non EU museum staff (the National Museum of Israel in Tel Aviv), and users (as example from Korea) asking to try the tools and creating their exhibitions.

The GIS pilot actions making use of the eCultureMap features, have demonstrated the added value accurate GIS data may have in relation to your whole spectrum of object metadata. The geoparsing module allows every institution to optimise their geographic data with hardly any IT-investment. Adding the AthenaPlus content to the wider eCultureMap database also increased the consortium's represented European heritage.

The tours by Dédale that were organised as part of plenary project meetings gave the partners an insight in the added value that digital tools and content could generate, in relation to a real-life guided visit. This kind of experience is not an either/or story, but clearly indicated that the digital and the analog realm can co-exist and even enrich each other.

The SchoolTrip initiations brought to life interesting conclusions, such as the mix between language and technology. Where the first focus of the tool was on creating an environment for a multi-domain student task, the feedback showed that it would also be used by English teachers as the interface is available in that particular language. As such we can express our real satisfaction to see how the final result is much better than initially designed.

The different CityQuest explorations have shown the versatility of this tool. Quests in parks with children, inside museum premises with regular visitors and several combinations have been set up in real life. The easiness of the tool make it useful for anyone who never heard of a QR-code before, without too much ado.

As we have reached the end of the project, there is no real impact any more on other deliverables within the project. The work of this work package was closely linked to WP6 and WP1, so the results and impact of this work package are also described as part of the other WPs outcomes. Information on the amount and nature of trainings will be found in the Final

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<sup>15</sup> META and ICCU are currently mapping the existing exhibitions in order to arrange for the best possible hosting choice when the project has ended, as indicated by the museums.

Report (WP1), the results of the different pilot actions are covered in the deliverables of Work Package 6.

Although the tools are now released in a version that can be considered 'final', there may still be ground to be covered and new functionalities to add (we recorded many improvements and suggestions for the future). In the project's Sustainability Plan (WP1) we take a look at possible future development, for which the current WP5 outcomes may act as a starting ground.

## **7 Annex: list of new MOVIO handbooks**

During the meeting in Riga (2015) it was agreed to write additional handbooks in relation to some functionalities which matured in the meantime, but following a simplified approach (using powerpoint sequences). The list of the handbook is as follows:

1. Module builder
2. Mobile APP
3. News
4. Tourism operators
5. Thesauri
6. Sharing buttons
7. Dictionary List
8. User profiling
9. PageType Unity 3d
10. Movio Hub back-end