

D6.3 – Pilot and Infrastructure Evaluation Report

Pilot and Infrastructure Evaluation Report: A document summarising the results from the evaluation and testing results from all the usability and acceptance testing activities.

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Authors: Enric Senabre, Platoniq
Ann Marie Utratel, Platoniq

Contributors: Olivier Schulbaum, Platoniq
Remy Gardien, EF
James Morley, EF
Vassilis Tzouvaras, NTUA
Vladimir Alexiev, ONTO
Sergiu Gordea, AIT

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1. Scope

This deliverable comprises the progress and conclusions of the evaluation activities of WP6 in the third year of Europeana Creative. It also incorporates results and observations from different evaluation tasks performed from the beginning of the project, including Pilot monitoring, interviews with Pilot Product Owners and experts, and UX testing.

The document addresses the following topics: observation and testing of the outputs of each Pilot theme; expert interviews on each product; a summary of results from the evaluation and testing of critical project infrastructure such as Europeana Labs and the Content Re-use Framework (CRF); and other related developments.

2. Introduction

After an incremental evaluation process where attention was focused on observation and question-answer formats, an interdisciplinary and heuristic set of tasks and tools was developed to gather relevant qualitative and quantitative information about the Europeana Creative Pilots and infrastructure. To accomplish these objectives, an overall methodology of a mixed-method design was used. The methodology consisted of focus groups, user experience tests, expert interviews, monitoring development and online surveys. These methods were used according to the requirements of the specific evaluation tasks.

First, as described in the sections below, one priority since the creation of the first prototypes, was to perform usability and user acceptance tests of products developed by each Pilot. Second, also key in terms of understanding the Workpackage 2 infrastructure represented mainly by Europeana Labs and the Content Re-use Framework, in-depth feedback from different stakeholders and experts comprised evaluation activities in the last period of Europeana Creative. Third, additional technical testings of performance and the scalability of tools was conducted where indicated.

Following objective number 7 of the Description of Work of the Europeana Creative project (Part B, p. 4), the Workpackage evaluated the “results of tasks performed at key points in the project and measure their success against the strategic objectives”. Results from the evaluation activities described in this report demonstrate that Europeana can effectively facilitate the creative re-use of cultural heritage metadata and content.

3. Pilot Evaluation

The Pilot evaluation were based on a multi-perspective approach which tries to present a holistic point of view by assessing a research objective from a variety of perspectives. For this, feedback was gathered from different levels (primary, secondary and partially tertiary stakeholders) with different methods. An important goal was to ensure permanent feedback from project partners and consortium members, as well as to keep an external perspective about the quality of the Pilots prototyped, depending on communities of potential end-users and experts in each theme.

That's why methods such as focus groups, user experience (UX) and user acceptance tests (UAT), expert interviews, monitoring by backlog from the agile development method and online surveys have been the primary sources of data, impressions and feedback about the Pilots. The main results from these activities and conclusions are presented in this section.

3.1 Design of the UX testing

Europeana Creative is structured in iterative cycles. According to this, different rounds of UX testing were performed to evaluate the user experience of interfaces and performance of the different Pilots generated in WP4. The approach was consolidated after improving progressively the outcome of the initial UX testing sessions. As described in [WP6 milestones](#), there is a clear distinction between UX and usability. UX is focussing on the holistic interaction of a user with regard to his feelings, thoughts and perceptions during interaction with an application, while usability takes into account the user's ability to solve a specific and defined task. For testing the Europeana Creative Pilot prototypes, an adapted method comprising both UX and usability was applied.

The testing of software increments or prototypes after the development cycles was an important part of the agile software development process. The international and interdisciplinary composition of the development teams made this part of remote cooperation and testing complex, but WP6 closed this gap by providing heuristic evaluation including user experience (UX) testing. The UX testing was compiled twice for each Pilot theme. The first testing round for each Pilot was compiled in specific venues related to the partners or target communities involved. The second testing, which was compiled online with the same participants, aimed at the development progress but also focused on content re-use or sustainability and business modeling questions.

3.1.1 Testing Spaces

Within Europeana Creative the developed prototypes were tested in the theme related laboratories from the Europeana Labs Network. The partner venues related to the Europeana Labs Network for each testing were:

- For testing the Natural History Education and History Education Pilots: Future Classroom Lab (FCL) in Brussels, a creative space to do research on future teaching and learning methods. The facility is a fully equipped, reconfigurable, teaching and learning space developed by European Schoolnet, its 30 supporting Ministries of Education and leading educational technology providers. The FCL is supporting changing styles of teaching and learning.
- For testing the Social Networks Pilot: British Library in London, the national library of the United Kingdom and one of the world's greatest libraries. It serves business and industry, researchers, academics and students in the UK and worldwide.
- For testing the Tourism Pilot: MFG Baden Württemberg, a regional public innovation agency for ICT and media based in Stuttgart, Germany. Its mission is to support the IT and media sector, as well as related fields like the re-use of digitised cultural heritage content.
- For testing the Natural History Education, History Education, Tourism and Design Pilots: YOUCOOP CoLaboratory in Barcelona, focusing on ICT applications for creative and social uses. It is specialized in methodologies for collaborative creation, testing and fostering innovation in cultural and social projects. YOUCOOP aims to spread alternatives basing on the application of working methods of the Internet and P2P to several areas such as education, economics and social innovation.
- For testing the Design Pilot: Aalto Media Factory in Helsinki, focusing on developing multidisciplinary media-related research and education, welcoming people from all around Aalto, and reaching out to commercial industry partners and non-profit organisations.

3.1.2 Participants

Based on the educational character of the three products for the testing of the Natural History Education and History Education Pilots, different stakeholders from the educational sector were invited as testers to the Future Classroom Lab and the YOUCOOP CoLaboratory. Overall 18 test persons tested the three products in a one day workshop at different working stations.

For the testing of the Social Networks Pilot in the British Library, several stakeholders that were engaged and working with sound files were invited. This comprised a group of 7 people from different backgrounds: composers, sound producers and representatives from sound communities.

The Tourism Pilot is addressing a very broad target audience that varies between consumers and businesses. As the application itself can be used by young audiences, families, tourist groups and niche audiences, there was no specific requirements for the selection of participants, which represented different interests or professional roles in the CC sector. Overall 10 test persons tested the prototype in a one day workshop.

The Design Pilot was addressing a quite broad target audience that varies between different types of designers. In both Helsinki and Barcelona, a variety of multidisciplinary visual artists and graphic designers participated, along with an illustrator, art director, editorial designer,

design professor, architect and handcraft designer, and a writer. Overall 10 test persons tested the prototype in a one day workshop. They were mainly illustrators but also professionals with experience in graphic design, visual design, multidisciplinary design, creative handcrafted design, art direction, editorial design, and also included illustrators, graphic and visual artists, an architect, a design professor and a writer.

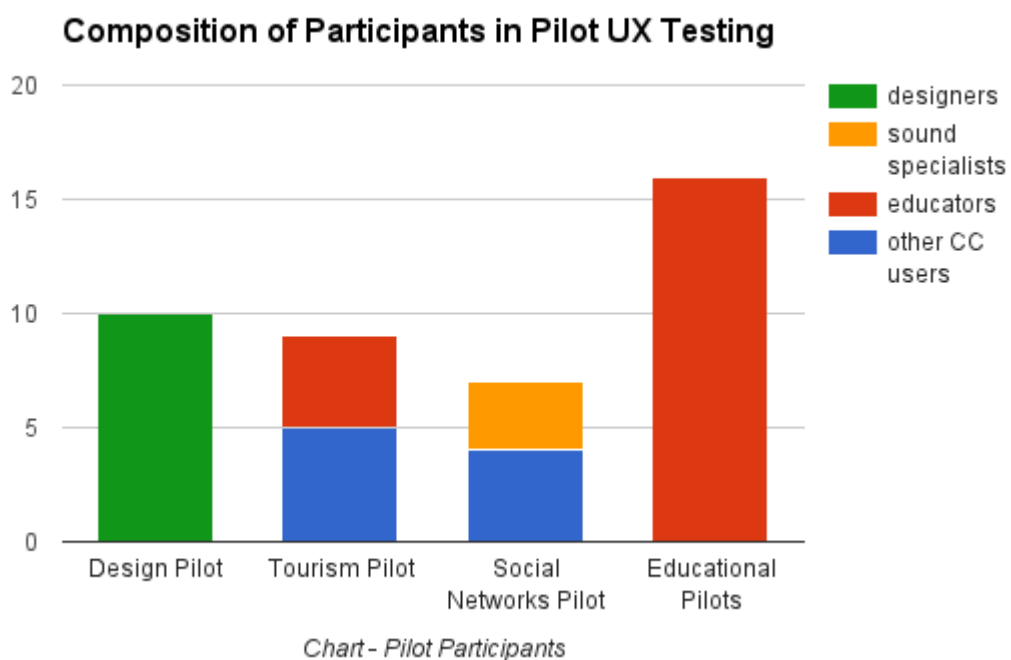


Fig. 1 Composition of participants in Pilot UX Testing

3.1.3 Evaluation and Testing Method

In the first year of Europeana Creative a specific set of usability indicators (table 2) was compiled within the deliverables “D6.1 – Evaluation Strategy and Framework” and “D1.1 – Service Design for the Co-Creation Labs”. They combine different approaches for accessing the field of usability testing. This set of indicators was used for the UX testing of the five Pilots developed in this project. The applied method was an adaptation mixed from the think-aloud protocol (TAP) and World Cafe. Both methods will be introduced in the following sections. Additionally the alignment for the Europeana Creative UX testing will be explained.

Table 1: Usability Indicator

Criteria	Explanation
<ul style="list-style-type: none"> • <i>Starting screen</i> 	The test person has a positive first impression and is willing to start using the product. It is clearly visible what kind of actions can be initiated. The screen displays the purpose of the application and raises awareness on the value proposition.
<ul style="list-style-type: none"> • <i>Accessibility</i> 	The applications pricing is transparent. The test person can easily access the content. The user control and navigation matches the requirements off the application and its hardware. Important fields to fill in are labelled with terms that match the real world.
<ul style="list-style-type: none"> • <i>Navigation</i> 	The status within the application is visible and test persons are aware of it. The navigation is consistent and standardized. Test persons can recognize easily how to navigate to a desired destination. Links and buttons are described in a manner that allows test persons to identify the purpose clearly.
<ul style="list-style-type: none"> • <i>Design & Layout</i> 	The design follows aesthetic criteria, addresses the target audience and is consistent through the whole application. Relevant content is identifiable and displayed accordingly.
<ul style="list-style-type: none"> • <i>Efficiency</i> 	The application can be used by a broader audience than the target group. Expected objectives can be reached by the application.
<ul style="list-style-type: none"> • <i>Help options</i> 	During the use of the application the test person is provided with hints (e.g. error prevention), search and help options.

Think Aloud Protocol (TAP)

The TAP is a method for testing the UX of web and mobile applications. It requires an observer, a testing person, ideally audio and video equipment and the application to be tested. During the test the interviewee shall speak out loud all his thoughts related to the testing task. This enables the observer to get an understanding of what users are thinking by using the web or mobile application. The testing person usually gets a specific task in order to work with the application while the observer is taking notes without commenting and/or recording the test with audio or

video tools. This kind of testing requires a closed testing environment to avoid interference from outside.

World Café Method

The World Café method is used to gather feedback on different themes from a broader audience. The Method is based on the following seven principles:

- *Context setting* – defining the stage for your purpose, objectives and themes.
- *Adequate space* – ensuring a comfortable environment for attendees, engages their creative thinking and proactive participation.
- *Preparation of relevant questions* – clear tasks and objectives which guide the participants and set the frame for the discussion.
- *Encouraging contribution* – gathering feedback and input from everybody involved
- *Connected perspectives* – enabling exchange on participants thoughts and ideas to get new insights.
- *Listen to insights and patterns* – allowing to connect the inputs into a bigger picture
- *Sharing the results* – bringing the results together and discussion with the whole auditorium.

The workshop starts with an introduction of the topic and describes the goals that shall be achieved. The setting allows different working stations. The participants write down, paint or pin their thoughts and results at the working stations. Each group has a specific time to work on a theme, and afterwards the participants move on to the next station. At the end the results of the different working stations are discussed together with all participants and the outcome is documented.

3.1.4 User Experience Testing Tasks

For each of the Pilot prototypes a specific testing task was prepared. The tasks were fairly simple because of the restricted functionalities of the prototypes. Within this section the tasks including the sample questions for the participants are described.

Each participant received a hand-out for the specific prototype including a table of the usability indicators (table 1) applied for this testing. A short introduction raised the awareness of the testers on the relevant product. The observer was permanently available to support in case of questions.

For each Pilot prototype, the following tasks were applied:

Task Memory Game

For the [Memory Card Game](#) prototyped as one of the Pilots of the Natural History Education theme, the testing groups were asked to:

- “Please start the game and finish one memory game.”
- “Please test as much functions as you can find.”

Solving both tasks included to finish the available memory game with the related quiz and to figure out that the 'Create your set' function can only be used when the dummy search word 'mineral' or 'butterfly' are entered. Additionally the testers had to report that a set creation was not possible.

Task Educational Adventure Game

For the prototype of the [Educational Adventure Game](#), developed also in the context of the Natural History Education theme, each participant had to solve the following tasks:

- "Please start the game and collect all items available in the three screens."
- "Solve the puzzles and exit through the door in the third screen."

For a successful walkthrough, the testers needed to collect the shovel, backpack, knife and photograph. In the first screen they needed to open the available folder and report on its content. To exit the door in the third screen both puzzles in this scenario needed to be solved whereby for the crab taxa puzzle in the hand-out a hint was given to figure out the right order of the objects. At the end each participant had to figure out the door code and exit the demo.

Task History Learning Activity

In order to test the learning activity of the [History Education Pilot](#), the students and educators were asked to test the app directly on the platform:

- "Please start the 'Sample Analyse App' in the upper left corner and fulfil the task as you were a student."
- "Please access the 'Working at the British Home Front App' in the upper right corner and review the student's answer."

The tester had to answer the questions from the first application and to review the sample answers from the second application requested in this task.

Task Social Networks Pilot

For the [Sound Connections](#) prototype the testing groups were asked to:

- "Please enrich 3 sound files from the map with additional information related to the sound you hear (e.g. Wikipedia, Wikimedia, Google Search etc.)."

Solving the task included to log into the application successfully and to identify as well as to enrich three sounds of choice. The task was the same for both themes (cityscapes and bird sounds) because both themes had the same user interface (UI).

Task Tourism Pilot

For the [VanGoYourself](#) application testing each participant had to solve the following tasks:

- “Please recreate two art pieces of your own choice.”

The testers could voluntarily choose if they wanted to submit their recreated art pieces or not. For the testing it was more important how the prototype was working on different types of mobile devices and computer.

Task Design Pilot

For [Culture Cam](#), the Design Pilot prototype, each testing participant was asked to:

- “Please use one of the predefined artifacts or images to realize a search”
- “Please do other experimental searches for few minutes”

3.2 Results from the UX Testing

The results from the testing session were documented in the way the feedback was gathered during each workshop. Each participant was asked to indicate the feedback in a six folded template (table 3 below) provided at the working station. The feedback given is sometimes focussing on problems which are already known by the development teams and would be solved in the upcoming development steps, or at least documented for further development stages. It is important to point out that some of the recommendations were contrary to others, which is quite normal for testing situations. It was not intended to find a consensus during the sessions but to get feedback from different perspectives and input for refinement of the further product development.

The recommendations for each product were gathered in specific and detailed tables (see Annex) where comments were not adjusted but full transliteration of the used Post-its from participants. In the following sections results from the different Pilots and focus group discussion are summarized.

Table 2: Structure UX Testing Documentation

Structure UX Testing Documentation	
Starting Screen	Accessibility
Navigation	Design & Layout
Efficiency	Help Options

3.2.1 Natural History Education

Educational Adventure Game

Testers gave positive feedback about the Pilot in different areas, from finding the scene and setting of the game exciting to a very attractive design and layout, with an engaging atmosphere inviting one to move around and touch potential objects. Participants considered, in that sense, that the laboratory room and furniture were well designed. Also some answers pointed to the positive fact that the concept of a treasure hunt could be applied for any subject.

The most important recommendation from participants was that when accessing the application the starting screen was lacking the relevant information in order to understand the purpose and operation mode of the game. Also, based on the dummy character of the content many users were not satisfied with the option for using the content. The navigation needed further improvement with special regards to the user awareness of where to go and how to move forward or backward between screens. The general game flow could be improved by accelerating the character dialogues and pointing out clearly if a puzzle was solved successfully. For an educational purpose the used content would need more contextualisation. The help options were not satisfying to enable the user to solve all the tasks successfully.

Memory Card Game

Positive feedback from these UX testing sessions confirmed that the designed layout engaged one to play; navigation was easy and clear; as a concept, seemed transferable to different testers; usable in any educational level; and the 'Create your set' option seemed important for the educational value. Some educators considered how the game could be integrated in different stages of a lesson (as a revision exercise or starter activity) with good accessibility and not needing many descriptions. In terms of layout, it was considered that the wood design gives a natural feeling, where the game prototype was clear, well placed, and with easy to read texts.



Fig. 2: UX testing session at Future Classroom Lab

The most important recommendations for the development team from the workshop addressed the following issues: At that stage the starting screen was raising wrong expectations regarding the target audience of the game. The navigation needed improvement in order to guide the users clearly without confusing them, where the educational purpose could be improved by providing more context information on the quiz questions, and having a chance to select the difficulty as well as creating a shared database for teachers. A clear definition of the rating system and the chance to compare the ranking with other users was mentioned, which could increase the UX. In general, more clear help options seemed necessary to support users getting started with the application.

3.2.2 [History Education](#)

The first UX testing sessions for the learning activities of this Pilot for the Historiana learning platform showed results in terms of positive feedback stating that the starting screen was simple and the interface easy to use, and also the rest of screens having a simple navigation without too much unnecessary information. For educational purposes this kind of application was perceived that could work for every subject, giving opportunities for the classroom use, for

example for producing a comprehensive storyline. Testers also said this type of application could make it possible to work on several documents, where in the end students have to produce a synthesis of the previous documents, because the type of application could facilitate a global comprehension of historical problems.

The summary of the most relevant recommendations was pointing out that for first time visitors without a prior briefing the starting screen would need additional instructions and a clear layout that allows differentiating between the shown learning applications. The navigation and functions within the applications were not self-explaining. Several users were confused by the icons and colours. The educational purpose could be enhanced by adding options for cooperation between students.

3.2.3 [Social Networks](#)

The testers of the Social Networks Pilot mentioned that the core functions of both maps of Sound Connections could be applied to a broad variety of themes (e.g. stories of people). Also that navigation was very easy to follow, with good descriptions and not complicated to understand based on the similarity with Google Maps. Comments from the first evaluation session also showed that it was positive to have pictures of the recorded space, and that the Audioboo widget seems more pleasing to use than the Soundcloud one. In terms of descriptions, the ones done for the birdlife theme seemed much better than those for the cityscapes. On efficiency, some testers indicated that it was good to have fade-outs in the audio files, and that they liked the dateline showing when recordings were made. Also how easy it was to add a comment was an important features of the prototype.



Fig. 3 UX testing session at British Library Lab

In relation to the starting screen, information at the bottom line irritated most users as it is normally used for secondary information. According to that the map position down on the right side confused most users, while the testers suggested mentioning the value of users input in the beginning. In terms of accessibility, the login requirements by using social media accounts for adding content and comments was considered could be disengaging for users. Except of this necessity the accessibility was related to Google maps and should be familiar to potential users. Some of the information boxes covered closely located pins, what required to go back to see the others. Another tester recommended that every external link should open in a new tab in order to avoid disturbance of the sound file. It was also recommended to decrease the size of the Audioboo widget which actually seemed to prominent. Some other recommendations were directly focussing on the usability of the product. It was suggested to ensure coherence on the audio player with regards to the consistency and to add a closing option for the widgets as well as a back button for opened widgets. Among other potential areas for improvement, some of which were later implemented were an option for volume control and the possibility that external links open in new tabs were requested by the testers.

3.2.4 [Tourism](#)

Some testers experienced the starting screen of VanGoYourself as engaging but also identified potential for improvement. In addition, some testers thought that too much content was shown on the starting screen and the version where the title was separated from the paintings was more attractive for testers. Especially on mobile devices, the starting screen was experienced as well designed. In terms of accessibility, the testers noted that different mobile device versions of iOS and Android showed different levels of responsiveness. Overall, the testers expressed that navigation was easy and only occasionally caused misunderstandings.

Regarding the efficiency, participants stated a high fun factor for users. They could also imagine other use cases like workshop openers or teaching arts. In contrast the addiction potential was perceived as rather low. For a long term usage more functions would be required (e.g. transparent picture that allows a precise adjustment of the photo). The improvement of the 'search' functions in a way that allows users searching for desired content could optimise the potential additionally (e.g. a selfie-option). The testers suggested having an option to download or send the twinned image for them without publishing it. The relation to the Tourism theme was missing for the participants and the focus on event-support needed to be pointed out clearer.



Fig. 4: UX testing session at Youcoop

The testers missed a working search & select function. The 'search' categories were sometimes dysfunctional and not in logical order, which made their use unclear for the participants. The integrated principle of tagging paintings as search help was not self-explaining and the function itself was only coincidentally explored. The testers also sometimes missed the help options or could not clearly identify them while the 'Learn More' function was prominent. The additional information was reducing with the progress in the app. Participants experienced the content of 'Tips & Tricks' as not precise enough and would have desired more tips.

3.2.5 [Design](#)

Participants offered positive general remarks during both UX testing sessions of Culture Cam, with a high interest and desire to keep using and being informed about the tool. They repeatedly agreed the prototype was easy to use, engaging or useful for them. Positive comments from participants were generalised about simplicity, version responsiveness, initial display design and attractiveness of the different elements on the starting screen. Participants' positive responses also indicated that navigation was intuitive.

For the design and layout, positive comments were generally about the simplicity and familiarity, specifically of the camera and menu icons, and also mentioned that the display results in the mobile version were pleasing. In terms of accessibility, there was good agreement about the ease of transition from image to image, and also pointed out that the app was best suited for use on a mobile, for ease of capturing images. Finally, in relation to efficiency many very positive comments were received in this category, and a favorable comparison was noted with Pinterest several times, noting the relative benefit of using this app for finding items of quality and cultural relevance, and that having GLAM institutions behind it gave a strong sense of credibility, and useful as a tool for benchmarking and inspiration in higher culture.



Fig. 5: UX testing session at Aalto Medialab

In relation to areas for improvement, the most notable ones had to do with the need for more visual hints and indicators of the function of the application, specifically noted was the perceived need for a “search function”. In terms of navigation, testers mentioned the potential improvement of getting back to their original searches and commented that it would be better to have an easier means to return without losing results. Several users commented that it was difficult to know their location, and the browsers’ back and forward buttons did not work for navigating through images.

Unsurprisingly, comments received about improvements in design and layout were quite diverse and specific in this category, given that the users work in design-related fields. Too-long URLs displaying in descriptive texts were mentioned more than once. Another repeated comment was that users sometimes found themselves attempting to use their laptops as a “touch-screen”, like they would with a tablet, noting that the desktop version looks quite like a “pad” version. Some users had specific suggestions for improvements in displaying search results, including a drag-and-drop search results reorganizer. Several users commented about the central camera position, saying that they’d prefer to see it to one side.

In terms of accessibility, improvement-related comments made reference to several points of confusion about things such as finding the number of displayed images, problems with refreshing, the need for a “zoom” feature, and the difficulty in learning how to download images for use. Other suggested improvements included several mentions of a need for more filtered and defined searching options, saving image searches, several more mentions of a zoom option, requests for an option for uploading an image (rather than using a cam), and multiple references again to Pinterest in requests for share button.

3.3 Results from the Online UX Testing

In order to monitor the development progress for the prototypes, WP6 executed a second UX testing online. The evaluation of user experiences in an online form is normally difficult as the participants would need a holistic explanation what is meant by the six categories (table 2) used for the UX evaluation in Europeana Creative.

Therefore WP6 was contacting the same testers that participated in the first UX testing workshops and the focus group discussions. The form of the testing followed the same principles applied for the first testing. The testers were once more solving a specific task with each prototype and expressed their feedback on the potential for improvement in a survey template (created with LimeSurvey).

In contrast with the first UX testing this time participants were also asked for their agreement on certain general statements regarding the prototypes and its related financial sustainability or business models. At the end of each application test users were asked to indicate their agreement on a variety of statements related to the product using a Likert-scale (1 = strongly disagree; 2 = disagree; 3 = neither disagree nor agree; 4 = agree; 5 = strongly agree).

3.3.1 Response to Online User Experience Testing

For the Natural History and History Education Pilot, the general response rate on the online UX testing was one third of the initial testing persons. From 18 potential respondents six completed the online survey template. Reasons for that could be the complex requirements as participants had to download the demo versions and run them on their own devices at home plus solving the testing tasks and answering the online survey.

For the Tourism and Social Media Pilot, the general response rate on the online UX testing was more than a half of the initial testing persons. From 16 potential respondents 12 completed the online survey template. That means an improvement in the response rate from the previous Pilots, probably due to more accessibility to the prototypes online in this occasion, rather than with complex requirements as participants with the Natural History and History Education Pilots had to download the demo versions and run them on their own devices at home, plus solving the testing tasks and answering the online survey.

For the Design Pilot, the general response rate on the online UX testing was a half of the initial testing persons, following a similar percentage of previous testing for other Europeana Creative Pilots. From 10 potential respondents 5 completed the online survey template, keeping the improvement in the response rate from the previous Pilots.

3.3.2 Natural History Education

Educational Adventure Game

Overall the testers in this second round noticed the Educational Adventure Game as well designed and easy to understand. They experienced the game could be used by nearly everyone who is interested in point and click adventure games. Most of the testers requested however more context information about the storyline of the game in order to understand clearly what the purpose of the game was about. The navigation within the application seemed easy except of changing the screens.

For most testers it was difficult to evaluate the final efficiency of the game as the product was still in a prototype stage during the testing and the riddles and puzzles could not be finalized. In general the testers experienced the latest test version as more advanced than the previous version. Especially the design convinced the testers and was described as consistent and attracting. The help options within the game improved during the development stages but still needed improvement with regards to the clarity.

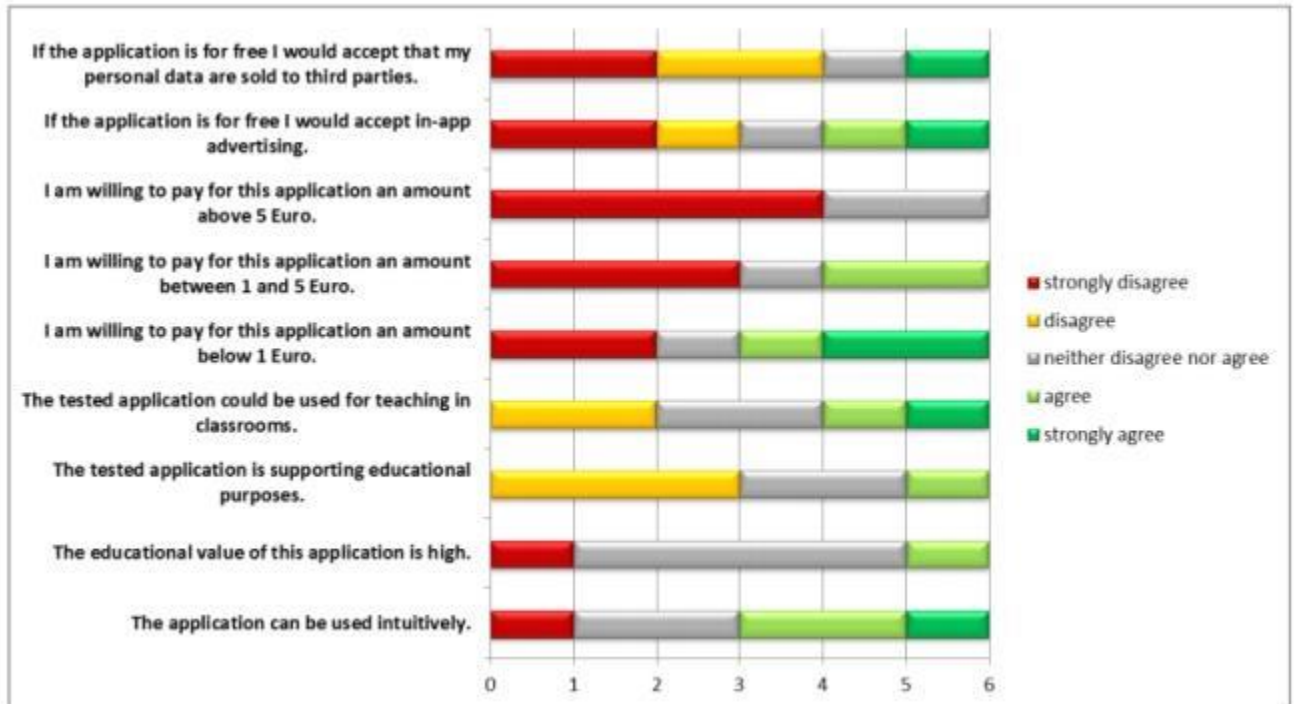


Fig. 6: Survey Results Educational Adventure Game (Agreement)

As the figure shows, results from questions addressing the potential business model as well as purpose and value in relation to this were given different appreciation rather than a clear positive result. This is especially clear in terms of willingness to pay for the app, or other similar formulas, where data traffic and advertisement seemed better options for testers.

Memory Card Game

The online testers of the Memory Card Game liked the user friendly, clear and funny design. The illustration according to the majority of them was matching with the purpose of the game but could give a wrong impression of the target group. However the navigation would need still more clarity order to avoid misunderstandings besides the users.

The Memory Card Game was again considered to be used by a very broad target audience if the difficulty of the integrated quiz questions could be adjusted to the user's age. The scoring system seemed to need more consistency with regards to the created sets. Especially the possibility to apply the prototype for different themes was attractive for the focus groups participants.

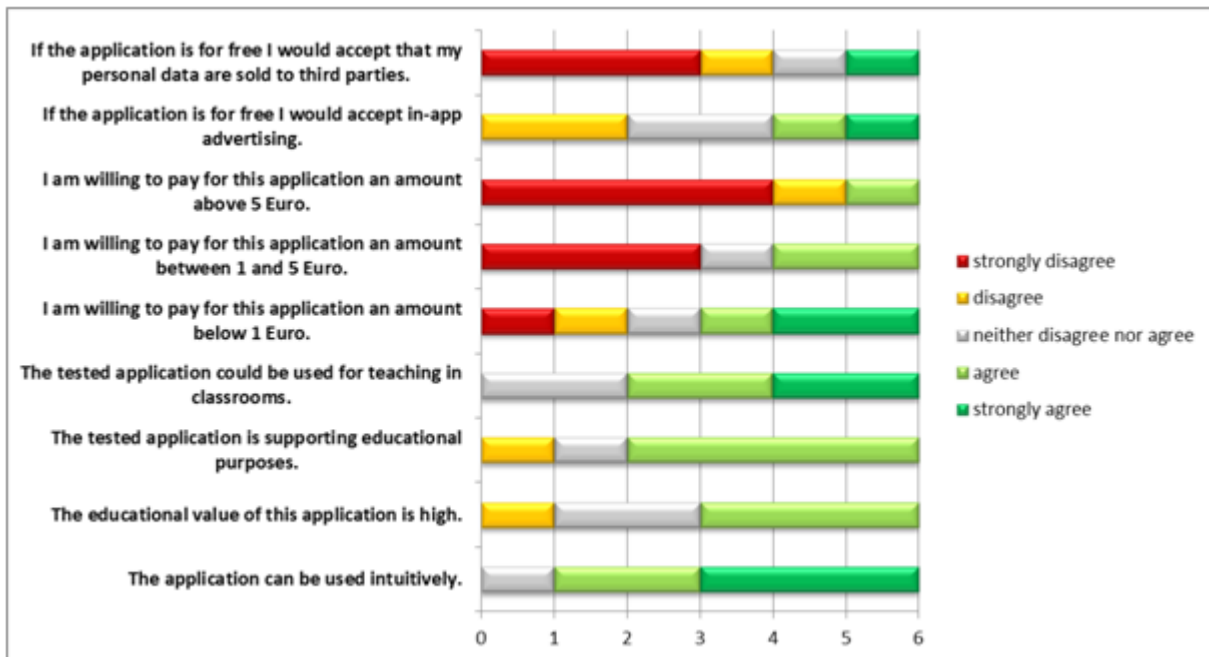


Fig. 7 Survey Results Memory Card Game (Agreement)

For the Memory Card Game, the same item battery was applied as for the Educational Adventure Game, whereby the educational potential was ranked higher, as well as options for the use within lessons and supporting educational purposes. However, once again the suggested questions about sustainability of the concept by micropayments or sharing personal data did not score high in responses from participants.

3.3.3 History Education

After Workpackage 6 decided to exclude the History Education Pilot from the online testing due to difficulties in the Front-End development, the Future Classroom Lab offered an opportunity to test the Pilot again in its facilities. In November 2014 the second testing was executed offline instead of online. The project partner from European Schoolnet invited 10 teachers from different subjects to Brussels for the UX testing.

The tasks for the History Education Pilot UX testing changed compared to the first testing. The changes were necessary given the new functionalities that were accessible for the second testing. The educators were asked to explore the platform without a specific task as the teaching platform was the main access point for other educators before they start using a specific application.

Nearly all participants of the UX testing liked the starting screen and the related drop-down menu. There was a common agreement that clear instructions are important for the success of the Pilot. Some educators suggested balancing the information and point out core aspects of

the explaining texts because they experience the starting screen as a bit text heavy. It was suggested to aim on a self-explaining description of each learning activity. During the UX testing a variation of the teaching platform layout on different devices was recognised.

The testers appreciated the easy accessibility of the teaching platform. While most educators experienced the website navigation as very intuitive, some objected a not clearly self-explaining functionality as when they refreshed the website they ended up on a different page.

Especially the design and layout was appreciated by the participants. The colours and visualisations were perceived as nice what is important for attracting potential target audiences. The testers suggested strengthening the layout through common images and specific colours for specific meanings. A common request was the improvement of the responsive design to ensure the same performance on different devices.

The most important recommendations regarding efficiency were addressing the need for improvement of the search function (e.g. option to search on every page of the platform) and a requirement of tagging options. Most testers agreed that it would be useful to link to other content sources not explicitly Europeana. For potential target audiences it can be of interest to show the 'cross-curriculum-correlation' that would allow a broader use of the platform also for other subjects. In order to increase the efficiency it was recommended to embed translation options that allow using the teaching platform in different countries. At least it was desired to have the chance to use the learning materials offline (e.g. zip-files of the lessons or activities).

Visual Analysis of Sources App

After discussing the most important requirements for the teaching platform testers also added their recommendations for the 'Visual Analysis of Sources App'.

A broad discussion was addressing the functionalities and possibilities within the app. The teachers identified several options that could enrich the usability e.g. the possibility to create a learning group and invite more students at one time. Additionally some participants asked for options to assign tasks to students with a code that enables the students to access the assignment. The functionality of the app ensures that the students are receiving their tasks exactly in the same design that the teachers had prepared but the testers recommended nevertheless a preview option to see how the task will look like for students.

Another important finding on navigation was that once the back button is used on the starting screen the user gets logged out again. In general the log-out process was described as not intuitively. The only recommendations on design and layout were related to the sometimes confusing in-app description (magnifying glass and description "analyse") and the desire to have the opportunity to view the images as full screen.

The participants of the UX testing stated a high *efficiency* of the 'Visual Analysis of Sources App'. The teachers could also imagine using the app for brainstorming activities with their students. Independent from that some adjustments have been suggested to improve the functionalities. From a teachers' perspective it would be helpful to have an option to manage the invited students or a class. The review function is important and highly recommended as

students need a feedback for their work and performance. Furthermore a timeline was suggested for the learning activities of each teacher to show the students what tasks belong to which specific event.

3.3.4 Social Networks

The UX testing tasks for the online testing were the same as for the offline sessions, where overall the testers experienced the Social Networks Pilot with less usability or accessibility issues than in the previous testing, after previous recommendations in relation to icons, navigation or design were addressed by the development team. However several areas of improvement were identified. This was the case on the icons used or background images and in the case of the home button or use of colours. The help options within the game improved during the development stages but still needed improvement with regards to the FAQ section. Also some navigation problems were found in relation to the tablet version because the responsive design of the website was still not fully implemented at the time of the UX online testing. In general, the testers found the latest test version to be more advanced than the previous version. The testers made a special note of the design which they described as captivating and nice.

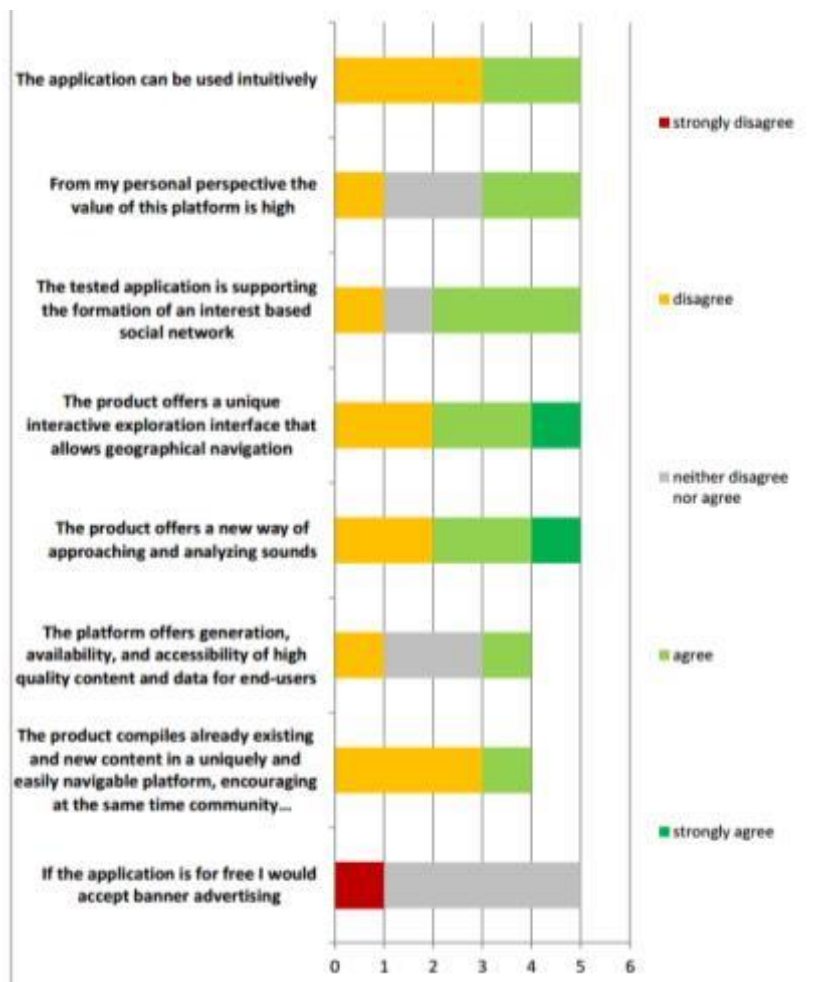


Fig. 8: Survey Results Social Networks Pilot (Agreement)

In this case, the agreement about additional criteria like originality and opportunity were also considered quite positively, but not in terms of agreeing with a potential sustainability formula based on keeping the application free from banner advertising. This was not considered a good idea in any of the cases.

3.3.5 Tourism

On average, relevance and scope of comments for the online testing of VanGoYourself showed improvement from the UX point of view, compared with the previous testing session, with more positive comments than negative. Words like "inspiring", "captivating" or "engaging", as well as easy interactions, demonstrated a wide acceptance at this stage of testing among participants. However, in areas related to the starting screen, design or accessibility in devices like iPad and smartphone, or colours of menu or toolbar, some comments showed there's still need for

improvement. Future versions of the application would need to clarify also the use of elements like the social media buttons, the keywords of search or other languages rather than English for the interface.

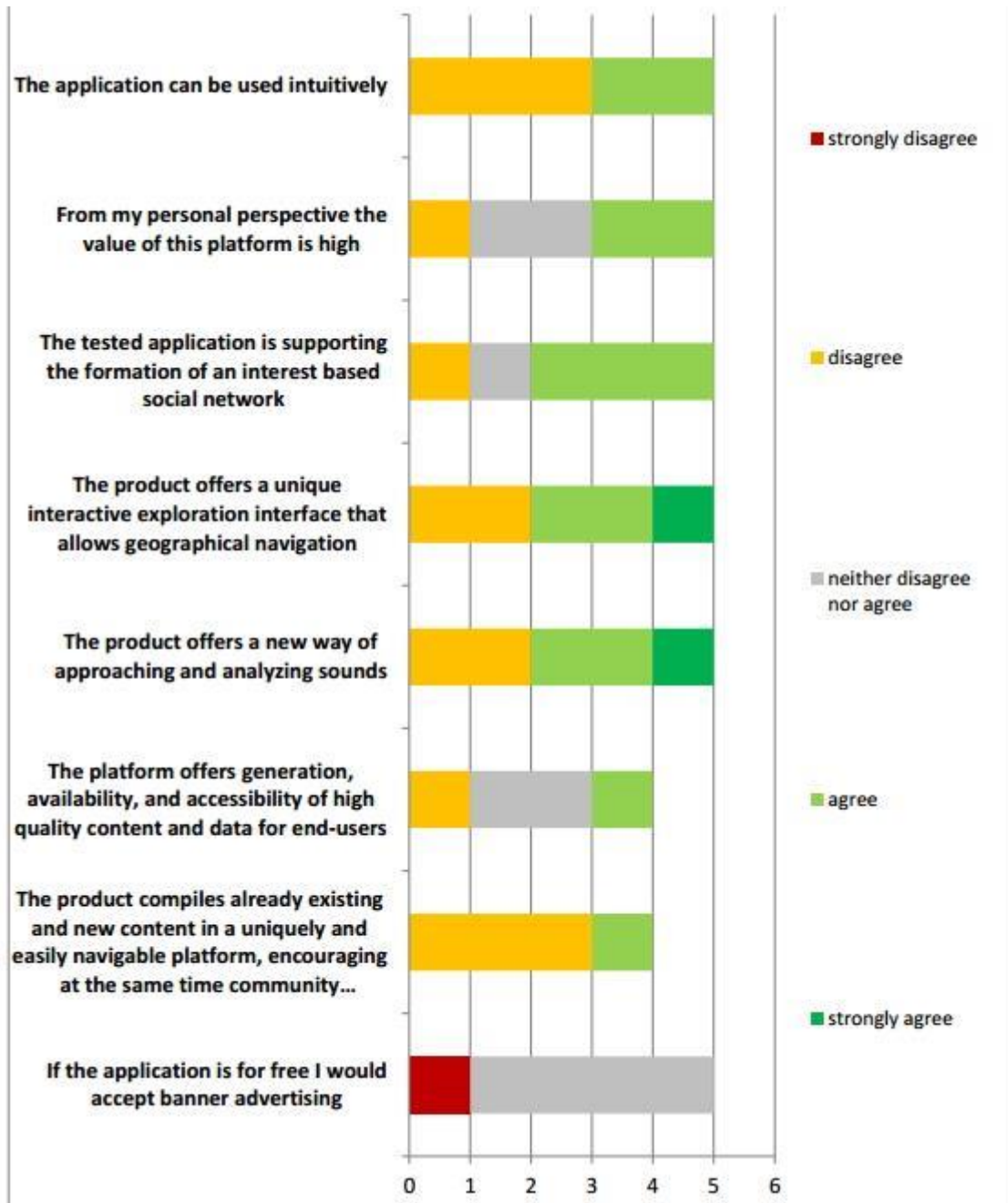


Fig. 9 Survey Results Social Networks Pilot (Agreement)

In response to the additional questions of the online testing, users on average agreed about how intuitive the application is, its "fun factor", its potential for heritage institutions, and how it can be integrated in events. Also, but with less relevance, testers agreed in its potential interest for different collections and for merchandising related to VanGoYourself. However, in relation to willingness to pay for extra services, results show an apparent area to improve or discard in relation to possible sustainability of the tool.

3.3.6 Design

Overall the testers experienced the Design Pilot with few usability or accessibility issues, and with positive feedback confirming the good acceptance and UX experience from the previous testing.

Answers to the questions of intuitive use of Culture Cam, its high value for designers and if it can support specific work tasks from a designer's point of view were answered positively in all cases, as well as agreeing with the sentence "The product offers a unique interactive exploration interface that allows for creative inspiration".



Fig. 10 Survey Design Pilot (Agreement)

Also clear affirmative answers were given to the question if the product offers a new way of approaching and re-using digital heritage, and to the statements such as "The platform offers availability and accessibility of high quality re-usable content for designers" and "The product compiles already existing content in a uniquely and easily navigable platform, encouraging

creative re-use”. These constructive and positive comments confirmed the feedback from the previous offline testing sessions.

Compared to other Pilots, there was significant balance in the acceptance of sustainability formulas for the concept through banner advertising or, in this case, “freemium” services with extra features, although answers were less positive compared to the rest of the questions.

3.4 Interviews with Product Owners

As described in deliverable D6.1, the evaluation actions planned by WP6 of the conceptual and technical development of the Europeana Creative Pilots included interviews with the “Product Owners” responsible for each Pilot theme. These interviews were an important element of the continuous production process alongside external evaluation via UX tests and focus groups. These interviews reveal interesting points of view and considerations in assessing the value of core infrastructures when developing different services and products. They also help in understanding the core value of Europeana Labs in particular once it was available for use and exploration.

In addition to internal evaluations via regular scrum calls, interviews were held with the partners responsible for each of the five Pilot themes developed within Europeana Creative. These interviews were conducted once the production process of the product or service was well under way rather than before or during the co-creation workshop, when eliciting feedback on expectations or expertise about the Pilot process would have been premature.

3.4.1 Natural History Education Pilot

For the Natural History Education Pilot and its two related developments, the Product Owner Jiří Frank (Národní Muzeum) was interviewed on July 2013. Regarding the core goals of Europeana Creative from both the educational and general point of view, Mr. Frank stated two key aspects: “One is the demonstration that the open source, or the content of Europeana is possible to use in the creative industries for some good reasons, for example, education in this field. The second thing is to demonstrate the cooperation between the memory institutions, which are the content providers for Europeana, and the creative industries”.

However, in relation to the key point of success and sustainability of this type of development (in this case, educational apps in the shape of games), he offered a relevant comment about how “In the sense of the products, well, this is always a tricky task, to keep them long term. Even a good game or a good book - you read it just once, you finish it, and it’s done”, because in the learning context “it’s hard to apply [tools like the ones developed for the Pilot] directly in your class, so you need to be really creative, you cannot use only one system. You need to change, and adapting them. So let’s say we have two games, there are two tools, but they are two tools of many”.

According to Mr. Frank, when developing the Pilot one of the core principles guiding the team was that tools re-using digitised Natural History content “need to be combined with the classical

teaching practice, and with other content on Europeana, for example interactive tables, which are the highest trend of the education tools. So I think the potential is there, the playing by games”. Again in terms of success, the complex goal seems to be a good balance between content quality, communities of practice and the involvement from heritage institutions: “So, there is also good commercial potential if the collections are attractive, the community will be good, and if the involvement of the memory institutions is there, it will be successful”. In Mr. Frank’s opinion such a combination, in terms of reaching a critical mass of users first, requires some investment in dedicated promotion: “So, there must be not just the funds spent to create but also the funds to spend advertising, promoting the game”.

When asked about the concepts being developed and the fact that in this case there was an agreement between different partners involved in developing two different games for the Pilot, it seemed clear that at the time that was a pertinent strategy, focusing on “two completely different things, one targeted for teachers and one directed mostly for children, which can create a good overview for the market as well, to see completely different aspects. We have now two games, but really we have to say two completely different models, which is good as well”.

Following the Museum Adventure Game developed for this first Pilot, which downloads from the Natural History Museum of Berlin are planned, the progress of this combination between a developer’s company and a memory institution seemed like a good approach for new potential commercial or “win-win” relationships, given the fact that “there isn’t money... Memory institutions aren’t creating the game according to the content of the exhibitions, because it costs quite a lot of money. They would like to hire the game company and say, have a look, we have this very nice dinosaur exhibition and we would like to make a game about it with you, but they simply can’t afford it because it’s very expensive. So now, you show them the model that the game company can come to the museum and say, we have a good idea for your collections”.

Feedback about searching for content for the Pilot through Europeana focused on the critical aspect of cost efficiency in terms of the time needed for such tasks. Also relevant is the opinion expressed that “It’s much better now, of course, when the new Europeana interface was released. It’s better than before because you see more results on the screen - it’s like a tiny thing, it affects a lot. In the filtering you can combine different aspects. So, I can filter content provider rights, and content type in one moment, so it’s a huge improvement according to previous facets, because you’re able to turn one filter at once. This is a high improvement. The function of Europeana now is working fine if I was to find the content”. However, another question arose during the interview regarding the critical issue of the quality of content for re-use, and to what extent this was an area to improve: “The second thing is the quality of the content itself, which is very very variable, from very low resolution images to absolutely perfect images, so it takes time”. In section 4.3 about the Content Re-Use Framework, we will see evidence of an improvement in access to content based on resolution, or, in terms of dedicated collections online on Europeana: “You can see some innovation in the exhibitions. So that’s the thing, in Europeana as a portal versus the Europeana products. Let’s say the Europeana products, which are using the Europeana API and these things, they have the innovation

potential, because you can always create the innovative app, even in Europeana Creative of the other projects”.

However, Mr. Frank also mentioned something positive about the user experience of using the portal for discovering content and exploring different formats related to a specific topic or period: “What I really like, what is really feasible about Europeana, is mixing completely different content types, you know, the topics, together, because they have for example, a similar name, or author. Or time period, or something. So if I’m searching for “nutmeg”, for example - it’s a really nice example - it’s very self-explanatory how feasible Europeana is in this field. It’s what I love in Europeana, I must be honest.” The challenge is to keep enabling tools and resources for new applications while also increasing the perception of quality: “It’s quite a challenge to find good content, and if you find it you need to have a good copyright. So I think that the highest challenges are first is the selection of the good content, suitable content, attractive content, content that has a really good impact, because the game must be attractive, and the second challenge is the technical solution of the Pilots”.

3.4.2 History Education Pilot

The second interview related to the development of the Pilots also took place in July 2013, with Steven Stegers (Euroclio), the Product Owner of the e-learning features for Historiana based on Europeana content. On this occasion, the focus was similarly on critical aspects of creative re-use for educational projects. Other aspects of the Europeana portal and needs from the practical and professional points of view were also addressed. These aspects were related to the core concepts of Europeana Labs and other infrastructure which were developed later.

In terms of the learning activities under development at that time, Mr. Stegers’ perspective on the current opportunity for this type of tool was also relevant: “What we try to make is an application which is so useful for history educators that they are really sort of telling their colleagues, ‘you should try this’. At the moment, there aren’t too many online educational applications for history education that are really good”. This was validated in their later workshops with the History educators community, based on the principles “to promote creativity, critical thinking, decision making, learning to learn, et cetera, but at the same time there are also competencies that are specific for history education, such as the critical analysis of sources, it can also be changing continuity, which is recognising change in continuity. We are all working on multiperspectivity and educators sometimes have difficulties to work on these concepts, especially multiperspectivity, because they lack access to the sources”.

Another relevant point for an institution that depends heavily on volunteer work is how the current potential business models (focused on pay-per-use, donations or selling of services) did not seem like an option in the publishing industry context, also taking into account issues of copyright: “I think for us, we would be reluctant to ask money for our tools because first of all, we rely so much on the volunteers, so that will be a problem if we are suddenly asking money for that. And then also for the content owners. It is easier to get copyright clearance if you just give away the material for free rather than selling it, so the copyright issues are less if you have

no commercial reuse. Having said that, I think it is very interesting to partner with educational publishers, because they are all facing the same problems”.

The extent to which the qualitative aspects of sources and relevant content related to Europeana were critical in the development of the History Education Pilot are also important to highlight. According to Mr. Stegers: “We are not so interested in quantity, we are more interested in the quality of the source and the relevance of the source, and so far we've gotten positive reactions from individual museums and archives who are quite happy to cooperate and give some sources”. This also applies in relation to content from heritage institutions involved through the online resource, where “the business side from that is that it's good for the museum to show that they have an international outreach. It's good to work with civil society and with educators. They also have to legitimise the investments they made in digitisation but also in staffing, and so I guess cooperation with us would generate new traffic that we can report back”.

Considering that key Europeana developments also covered in this report were not yet available during the first year of the project, such as Europeana Labs and the Content Re-Use Framework, feedback from the initial Pilots initially was slightly negative about the availability of “the metadata from Europeana, which should be the unique selling point, but is often not good”. Some of the early feedback given here by Mr. Stegers points to the eventual importance of Europeana Labs: “What is slightly better are the collections and the exhibitions where you have preselected material which has been contextualised, which has been selected. So there, for example, we could find the postcards or the posters, which is much better. Also I can imagine that for the newsletters, for example, if you're looking just for newspapers at Europeana, for that the subset of sources could be the best portal to look for”.

Here is another point made which presages one of the core values of Europeana Labs: “I think what Europeana could offer could be access to collections of sources. With Google you only find one thing, but it could be that with Europeana, we would be interested to have a poster collection about the Second World War, and then you would have a whole gallery. I think that would make much more sense and much more added value, but that would involve some coordination, some contextualisation, some curation, some selection. Then, I think Europeana could really be a big asset for a lot of different audiences”.

Speaking of a much-needed online hub as connecting point between developers, institutions and exhibitions, making connections and potential collaborations more agile, the interviewee identified an “added value of Europeana as a sort of a broker of these relationships, because it's just a matter of facilitating and then they save time”.

However, from the perspective of developing new, creative uses via Europeana, the interviewee commented to what extent (at that time, still during the first year of the project) “the critical issue is that we can really show how we can reuse digital heritage, the cultural assets, by history educators. The problem is that as long as it's not also easy to find these materials on Europeana, and as long as they are not licensed in a way that we can actually reuse it, then it's very hard to demonstrate the potential of reuse of Europeana sources, or those made available via Europeana”, or when “sometimes there are broken links and the material is not there. The

search functionality is fine but what you find is just not good enough”. Mr. Stegers also touched on one of the main theses of Europeana Creative, later on addressed by tools like the Content Re-use Framework (CRF) and evaluated in this report (section 4.3), like the objective of creating new services in the educational sector in order to “help Europeana to make a stronger argument that more material should be licensed for reuse by showing what’s possible”.

3.4.3 Social Networks Pilot

Once the development of the Sound Connections prototype started in September 2014, its Product Owner Lizzy Komen (Sound & Vision) started by commenting on how the idea of the tool is “trying to facilitate relationship between culture and communities. We are trying to do this by integrating collections from existing sound archives”, and the relevance of API for this type of concept “because the Pilot has an integration with Europeana API, it’s possible to integrate any other content source from Europeana, so, that goes beyond sounds. You could even think about integrating images and audiovisuals in the future. We we are working now on facilitating this function in the Pilot, so that other contents from, for instance, other providers can also be integrated”.

As in previous cases, the product owner considered quality of metadata a key question in terms of an added value, because “it’s important to know for the rights, and being able to mention the author, the name of the person who recorded the sound for the user generated content”, which required that the development team “first looked at our sound collection from both content providers. Both collections were not yet provided to Europeana, so we had to look at the integration of that, so there’s specific workflow available for providing content to Europeana”, in a way that “the integration is done via Europeana API so from the technical side, the Historypin people were able to make a call to integrate [the British Library and Sound & Vision] collections”.

In terms of providing some improvements to Europeana, Ms. Komen noted that “we discovered there wasn’t an embed player yet available in Europeana, which would allow a much better user experience for browsing in Europeana by being able to listen directly to the sounds, rather than moving away from the portal, so we collaborated with Europeana in order to have a Soundcloud embed player integrated in the portal”. All this with the expectation of also creating an interactive process for enriching content valuable for the Creative Industries, where Ms. Komen states that in any case “it’s always difficult to predict exactly what kind of collection they might be looking for, so maybe suggestions for new datasets, which is already there, is a good thing to have”.

Since Europeana Labs was already operative as an Alpha version by then (July 2013), some considerations were already significant in terms of its potential: “It is quite informative the way the Labs is now set up. For developers, it’s already clear how to use an API, and there is support there”, although still missing some important aspects: “on the technical side, I think it would be good to also have a forum or community area where people can share their experience with using the Europeana tools and services, and share their codes and their experiences with other developers”.

3.4.4 Tourism Pilot

In September 2014, the interview with Frank Thinnés (plurio.net), the Tourism Pilot Product Owner began with recalling the important role of the co-creation workshop, which was the kickoff for the conceptualisation and development of Vangoyourself.com: “Participants came up with the scenario that focuses on an emotional connection between users and the cultural heritage. That scenario was quite attractive to us, because the other scenarios mostly were more traditional ones where cultural heritage was re-used on a more intellectual level, meaning, giving information and pointing out heritage objects and sites. That is something we can find already in many applications, but we don’t have many applications which offer an emotional connection to heritage”.

One key aspect in relation to the success of the Tourism Pilot has been its vast representation of meaningful and engaging cultural heritage content for a wide diversity of audiences. Mr. Thinnés said that from the very beginning: “We have a lot of recreations of unknown paintings, from relatively unknown painters in relatively unknown collections, which are super popular just because it’s just an interesting theme and topic, and people recreate it all the time”. The focus in this case, with such critical requirements, was not on metadata but on a more traditionally curated approach to “search for specific content and that’s why we prefer to cooperate with people from a collection who know their collection. We tell them we need something for families, or something that it would be fun to recreate for young men, and they know their collection very well, because is something that is very difficult to find good results, even if you search on Europeana or other search engines. This is one half of the point about metadata”.

According to the development team, another valuable output after they began producing results was the implementation of the Image-Twinning plugin for WordPress, which they later shared with its open source community. They observed that, “the good thing is that we made the good case, because we were using Wordpress for the programming of our responsive design website, and then do something that is a content management system that is widely used by the entire developers community, so we somehow are defining the needs on the re-users side with our service”.

Among recommendations for future developments given by Mr. Thinnés was “to see the metadata regarded IPRs more from the re-users perspective and less from a technical perspective”, and in relation to Europeana as a result of this learning embed in the development process for creative re-use: “If Europeana wants to position itself as a source for content, it should position itself as a source for trusted content. That’s my recommendation. The second is to really provide high resolution images: that’s it, that’s all”.

This qualitative feedback points in a different direction, that products like Europeana Labs should not focus solely on developer communities. Mr. Thinnés instead offers “the recommendation to shift the focus a little bit, and although it’s hard to say to take the lead away from the technicians and the developers, and give it more to customer relations team, which would then pull thoughts from tech developers on what to do. Just shift the focus a little bit, so

these people, customer relationship managers, are defining what is needed and not the technicians”.

3.4.5 Design Pilot

The last to be interviewed was with Sanna Marttila (Aalto University), the Product Owner for the Design Pilot in June 2015. This interview took place at a time when Europeana Labs and the Europeana Creative project in general had gone through its core development processes. By this point there was a wealth of experience and lessons learned for the collective coordination and production of the Pilot. Ms. Marttila began by clarifying the scope of the Pilot in terms of developing the Culture Cam prototype but also other strategies for engaging designers with digitised heritage. She observed that, “We’ve had quite a broad agenda to attract the design community and the craftspeople, and people who are interested in using digital cultural heritage that is made available by Europeana. The idea was not only to create a demonstration or a prototype, but also to work closely with the design communities and media designers to learn about their practices in using digital cultural heritage, and also to try to advocate this openness of the content”. For this, the Pilot team had “another strand that was to organize a series of workshops, seminars and experiments for the design community, so we could learn from their practices and also test and enhance the prototype that we had been developing; and also, we’ve had the final aim of the Pilot to share the knowledge and practices of creative re-use of digital culture heritage”. This is because “one thing we’ve also been trying to do in the Design Pilot is to create building blocks that could be used by the creative industry that can be used by other actors related to Europeana and cultural heritage. I’ll give you an example. I’ve been hoping that Culture Cam would not only be a demonstration or a prototype, but that we would package the software and the lessons learned in a way that others could benefit from it”.

The continuous feedback loop of developing the Culture Cam tool in parallel with gathering feedback via workshops with designers, generated an additional evaluation process which influenced the prototype. According to Ms. Marttila: “At the beginning, we had content that had more restrictive items in the index of Culture Cam, but then because of the feedback we got from designers, artists and practitioners, it was too difficult to communicate which ones of the items could be used and which ones not. That has been, actually, the biggest challenge in Europeana in my opinion, because it has been too difficult to know for creative people, which part of the content could be used as part of their creative works, and which ones cannot be used”. To an extent they “had many parameters we needed to meet, for example the licensing but we also wanted to have content that would be useful for the artists and creators, so it had to be in high resolution”.

Regarding the future of the tool and the purpose of the strategy, based on practical demonstrations of the potential for re-use of Europeana content and inspiring new designs and projects, one critical learning from the development process was the importance of automation related to the API: “as we did for the demo, we handpicked 1,000 images, but that was only for demonstration purposes, and it would not be feasible for the future of the tool or any other similarity search tool, to use handpicked items. It has to be a machine doing the harvesting

through the metadata or the API”. Another point Ms. Marttila made on the importance of sustainable hosting and continued support for the tool, after getting different types of positive feedback: “we would of course hope that Europeana would host Culture Cam in the future because our experience and feedback from artists and designers was that they really appreciate the way of browsing the open collection of Europeana through Culture Cam. So, for them it would be a shame if now that we have introduced this tool, that it would not be supported anymore”

After developing Culture Cam and following other similar processes in all other Pilots since the project began, another key reflection offered by Ms. Marttila is that: “we need to put a bit more effort in selecting and curating the content that we have in different themes, or inviting other people to do that for us. About the development - well as I mentioned already, the strategy for the Content Re-Use Framework, that’s a very important element of the new Europeana platform, and I think that the ways it describes the different facets of Europeana for example being a channel, or being a platform, or a search portal. I think that all these different aspects of Europeana should be developed further and I think it’s a good idea to provide different kinds of services to different kinds of organizations”, which validates the approach of the infrastructure even when in cases including this one, (as described above), it was not yet ready for the first Pilots of the project.

3.4.6 Conclusions around Product Owners interviews

Interviews with the “Product Owners” responsible for each Europeana Creative Pilot theme were conducted by WP6 as an element of the evaluation and continual production process beyond external evaluations, UX tests and focus groups. The interviews took place after the development phase, while the production processes for the products and services were in progress, allowing time for integration of any insights gained. Key aspects noted by Product Owners included the need to demonstrate the creative industries’ ability to use open source content (especially that of Europeana) for specific beneficial end purposes such as education, with the cooperation of the content providers (memory institutions), and to use these positive examples used to help Europeana petition successfully for more material licensed for reuse. Another key factor cited is the formula for good commercial potential, composed of attractive collections, resulting communities, and memory institution support and involvement, including funding for promotion (not only development). Partnerships between developer companies and memory institutions were also posited as good approach for new potential commercial relationships. The quality (high resolution) and relevance of source materials were stressed as highly important over the quantity of material available, as well as clear information about licensing. Improvements made in the Europeana interface, including better visibility of search results and filtering capabilities, were noted as helpful.

3.5 Pilot Impact and Uptake Evaluation

The measurement of the Pilot impact and uptake has been addressed in Europeana Creative following a framework inspired by the Theory of Change, an approach that helps to evaluate the programme's resources, outputs, outcomes and intended impact. That's why the project has developed the following criteria and indicators.

Table 3: Pilot Impact Evaluation Criteria

Impact Evaluation Criteria	Description
Number of contributors	Target group, take-up and depth of involvement. For some of the Pilot themes, the contribution by volunteers is mandatory based on the indicated business model (e.g. History Education and Social Networks).
Number of uptakes for the Challenges	The uptake of the Pilot concepts for the Challenges addresses those applications that are building on the initial Pilot concepts / products.
User statistics	<p>The user statistics can provide important information about the impact of a Pilot. Such statistics can be:</p> <ul style="list-style-type: none"> • Number of page views • Number of frequent users • Numbers of subscriptions • In-app purchases
Sustainability of the Pilot beyond the project duration	This category addresses the successful acquisition of funding or further investments besides the SMEs who are developing the products. It should also include an assessment of progress against the business planning targets each Challenge winner is developing as part of their incubation support package.
Requests besides CCIs	The number of direct request from CCIs to project partners for cooperation or the development of related products.

3.5.1 Number of Contributors

The number of contributors is focused on those people who helped improve the product concept and prototype with the aim of developing the planned product successfully (Table 4), as well as other volunteer contributions adding content in different ways to the prototypes.

For the Natural History Education and History Education Pilots, the contributors that participated in the co-creation workshops came mainly from the educational sector. In the concept development and testing of the Pilots, educators and students in particular volunteered.

For the Tourism Pilot, the contributors came mainly from the tourism sector, related to WW1 memorial in Verdun and the European Cultural Capital of Mons in 2015. Once the VanGoYourself application was developed, it contained online content from 12 collections at its launch in May 2014. Content from 4 more collections was added immediately after launch. During its launching offline event at Museums at Night¹ (UK), approximately 200 visitors approached its stand.

For the Social Networks Pilot, volunteer contributors for its co-creation workshop came mainly from communities of practice and experts in the field of sound files, digital heritage and tourism as well. Once the Sound Connections platform went online as a prototype version, in month 22 of the project there were 33 comments added to the birdlife sub-theme, 9 to aviation, 19 to London cityscapes and none added to Amsterdam cityscapes, while in month 24 there were already 976 visits by 563 users, increasing contributions in 60 comments on birdlife, 1 to aviation (plus 3 pins), 19 to London cityscapes and 2 to Amsterdam cityscapes.

Table 4: Number of Contributors in Project Events

Project Event	Number of Contributors
Natural History Education Pilot Co-Creation Workshop, Prague	25 participants in total
History Education Pilot Co-Creation Workshop, The Hague	40 participants in total
Offline UX Testing Educational Pilots, Brussels and Palma	18 participants in total
Tourism Co-Creation Workshop, Verdun and Mons	52 participants in total
Social Networks Co-Creation Workshop, Palma	38 participants in total
Offline UX Testing Tourism and Social Networks Pilots in Palma, London and Frankfurt	15 participants in total
Design Co-Creation Workshop, Palma	16 participants in total
Offline UX Testing Design Pilot in Barcelona and Helsinki	10 participants in total
Total participants in co-creation and evaluation Pilot related activities	214 participants in total

In addition to these contributors, more volunteers contributed with their knowledge and expertise in conferences and workshops executed by the involved development team partners, for example, in the case of different VanGoYourself reenactments after conferences and events in the CI sector, or the SMK event described in section 3.6.5 in relation to the Design Pilot.

In the case of the History Education Pilot, in the initial months of the development of the e-learning activities 36 people from 25 countries joined the core team of a follow up project as professional volunteers (committing to active participation and preparation of 5 team meetings), 5 voluntary peer reviewers during a session in Madrid and one Pilot school in Tbilisi (European School) providing quality feedback, followed by 3 voluntary academic reviewers, committed for several meetings.

3.5.2 Number of Uptakes for the Challenges

This indicator addresses the number of Challenge applications that built upon the Pilot prototypes developed within Europeana Creative. The idea behind it was to figure out how attractive the Pilot concept was for representatives from the creative industries. The intention was to make available an open source code of each prototype and to allow interested participants to use these source codes and develop them further. This approach could not be realised for the different rounds of Challenges due to impediments in the evolving infrastructure and postponed development kick-offs. As it turned out, despite the availability of the Pilot source codes, none of the submitted proposals expressed an intention to use the initial Pilot concepts for their applications. Each Challenge entry application was an independent and new concept not related to the Pilots themselves.

3.5.3 User Statistics

User statistics can give helpful insights regarding the success of the Pilot prototypes. This type of evaluation also implies that the prototypes are accessible through the Internet or equivalent distribution channels (like the App Store or Google Play Store), and that their usage can be tracked. The evaluation of statistics like downloads, subscriptions and frequent users can usually be measured at a later stage of the project, when the product prototypes are live. For this reason, not all the Europeana Creative Pilots could generate such statistics because of their formats as was the case with some of the first Educational projects.

However, in the case of the Historiana website's online learning activities section, which included the History Education Pilot, by month 29 there were 140 registered users (115 were active users) out of 2.317 active users of the Historiana site more generally.

The application VanGoYourself experienced a relevant uptake in terms of user statistics after launching in May 2014, with 96,400 total pageviews accumulated by August 2014 (23,500 unique visitors), and a stable volume of visits of between more than 7,000 page views in M20 and nearly 5,000 page views in M23, with more than 1,000 unique visitors each month. Nearly 800 twinning images is the estimate of total recreations of paintings submitted by users up until

M23. The number of subscriptions for the VanGoYourself newsletter then was of 575 subscribers.

Another positive user statistic is related to events hosted in parallel with the online activity of the Pilot. There were more than 100 active participants at 6 VanGoYourself recreation events in Croatia, UK, Luxembourg, Greece, and the USA until M19, and also around 100 active participants at 4 VanGoYourself events in Luxembourg, Germany, in Spain in M20, and 10 active participants at another VanGoYourself reenactment event in Italy in M21.

In relation to the Social Networks Pilot, even before the official public launch of Sound Connections there were significant user stats which demonstrated an interest in the prototype accessible online, with 29 accounts created and a regular number of frequent users: 290 until M19, 58 in M20, 190 in M21, 78 in M22, 27 in M23, 29 in M24 and finally 205 during M29.

The Design Pilot, even with the Culture Cam website only being disseminated as a prototype among participants of workshops, exhibitions and testing sessions, registered 1,744 unique visitors with a total of 2,873 of visits, counting more than 18,000 page views for such short period between February 2015 and June 2015 (at the time of writing) with Finland as the country with the most visits.

3.5.4 Sustainability of the Pilots beyond the Project Duration

The evaluation of products developed within each Pilot focused on analyzing the sustainability of established business model and/or the successful acceptance of the product among members of target user communities.

The Natural History Education Pilot consists of a Memory Card Game and an Educational Adventure Game. The Memory Card Game was intended to be uploaded on the Google Play Store, but ultimately a decision was made to make the source code available via GitHub which would provide a wider visibility among the development community. In this way also the code can be accessed and maintained at no cost. For the Educational Adventure Game developed by Exozet (ultimately named 'The Secret Legacy'), an info and download webpage will be established by Museum für Naturkunde, where standalone offline versions of the game can be downloaded for Mac and PC once some final German language translations will be ready (at the time of writing).

The History Education Pilot product is a learning platform integrated in the environment of the Historiana portal, which "is an online educational multimedia tool that offers students multi-perspective, cross-border and comparative historical sources to supplement their national history textbooks". This integration by project partner Euroclio ensures the Pilot's sustainability beyond the lifespan of the project. Sustainability is also insured via Historiana's regular sister projects like "Decisions and Dilemmas" (Jean Monnet Project), "Multi-Faceted Memory" (Europe for Citizens Project), strategic partnership with Center for Historical Culture (Erasmus University) offering research traineeships to contribute content to Historiana, and a donation by Evens Foundation to develop content on WW1. There has also been new fundable projects related to the Pilot development with "Strategies for Inclusion" (Erasmus+ KA2 project) and

"Silencing Citizens through Censorship" (Europe for Citizens) using Historiana as dissemination platform.

In the case of VanGoYourself, the team responsible for the prototype developed a widget allowing the integration of VanGo'd Images on any website, based on tags, as well as merchandising articles and implementing a Cafe-Press shop with twinned images from the application, followed by a successful crowdfunding campaign at the end of the Europeana Creative project for improving and creating new developments around the tool.

For the Sound Connections Pilot, its development team has had up to 9 funders or collection holders interested in actively investing in the platform which has emerged through the Europeana Creative project, as it is or with extensions adapted for their specific needs.

Finally, for the Design Pilot, the potential sustainability is still under discussion when writing this, following interest from different partners in hosting the implementation of the tool online, although again in this case the commitment in order to enable further re-use and appropriation of the Pilot its source code would be made available on Github or a similar service.

3.5.5 Requests from CCIs

The number of requests from CCIs provides an indication of Pilot products potentials. Such requests can result in cooperation between the Europeana Creative development team and CCIs or in new products that use and built upon or integrate the Pilot's source code. This evaluation indicator provides an impression of the attractiveness of new products that re-use digitised cultural heritage content and the uptake potential besides CCIs.

In the case of the History Education Pilot, after month 13 of the project there were requests from the Foundation of the History of Technology to use the templates and coding from the History Education Pilot, as well as demonstrations of interest for strategic partnerships with EUScreen project and with Europa Newspapers project. At the end of the project, by month 29 there were requests for partnerships of 11 consortia applying for Horizon 2020 funding and 6 consortia applying for HERA - Uses of the Past funding.

After launching, VanGoYourself received five requests to cooperate and use or adapt the product, from the Freer & Sackler Galleries of the Smithsonian Institution (USA); the Munch Museum in Oslo; the Israel Museum in Jerusalem; the Waikato Museum in New Zealand; and from those responsible for the program of Mons 2015.

As for the Sound Connections prototype, so far there have been requests from Historiana and Fujitsu Labs in Japan, showing interest in pulling data from projects like these. There was also the Challenge winner Mobile Location Buitenplaatsen Game, who showed interest in continuing to build on the platform developed.

The Design Pilot team members collaborated with Statens Museum for Kunst (SMK) in Denmark in organising an SMK Friday event on May 29, where a Culture Cam interactive installation allowed around 6,000 visitors to engage with digitised artworks from Europeana and SMK and play with various colours, shapes and patterns through the visual similarity search.

During that event, participants could also join an animated GIF workshop based on the concepts developed by the Design Pilot, in this case working with SMK's public domain image collection in order to create animated GIFs. Outcomes of the session were presented in the museum during the SMK Friday event.

3.6 Conclusions about the Pilot Evaluation

The different quantitative and qualitative evaluations by WP6 activities, involving a wide range of creative industries representatives and potential end-users, confirm broad interest in Pilot products. Evaluation of Pilot products also demonstrated that target communities were able to see the added value in the re-use of digitised heritage. This also serves to validate the initial hypotheses about Europeana being a source of value for innovative and interesting products and services. Although not all the prototypes reached the same level of development or uptake, with further improvements their potential was clear for the users. UX testing and other feedback gathered by communities of practise related to each theme reflected positive results, potential and valuable perceptions about performance, features and goals.

On the other hand, in analysing potential sustainability and business models for the products developed by each Pilot, there was less data showing explicit agreement with the potential of the business models and sustainability, apart from the interest shown and the value perceived in the re-use cited above. Perception from initial surveys and interviews conducted regarding models of funding, selling and finding resources for this type of digital products basically showed less agreement. This is probably due to a highly competitive and complex ecosystem of online applications, videogames and Internet platforms..However, in some cases the work done, high standards of perceived quality in some prototypes or products like VanGoYourself, Historiana learning activities, Sound Connections or Culture Cam has also resulted in new potential ways of sustaining more developments through additional public funding in new projects, or initial approaches to crowdfunding.

Another key question for this evaluation approach has been the perception and use of the core infrastructure of Europeana for developing the Pilots when, due to the delay in major developments like the Content Re-Use Framework and the first prototype version of Europeana Labs, there was no opportunity to connect both processes. As reflected in the interviews, there were previous indications that the Pilots could have benefited from such tools, particularly during inception. However, in the case of the latest Pilots (related to the last Challenges or dissemination activities), coinciding in time with Europeana Labs was noted as a positive effect.

Although the Pilot applications could not be used to extensively evaluate the effectiveness of the WP1 and WP2 results with real use cases, feedback from interviewed Pilot Product Owners, Consortium developers and other external developers and representatives (also as described in the following sections) points to the *clear utility and cost-effectiveness of tools like Europeana Labs and the Content Re-Use Framework, in terms of making it easier and more agile to identify content suitable for re-use, embed content in their services or products, and get help from quality documentation and expert knowledge when needed.*

4. Infrastructure Evaluation

4.1 Approach to the Evaluation

A multi-perspective approach to the evaluation of the infrastructure was taken in an effort to ensure a holistic point of view. This was done by assessing a research objective about key questions, such as perceived added value and cost effectiveness, when using the preliminary versions of each service. Feedback was gathered from different levels (primary, secondary and partially tertiary stakeholders) and with different methods in order to ensure ongoing feedback from both an internal and an external perspective, in order to guarantee a high quality standard.

4.2 Europeana Labs

The Europeana Labs website was launched in Beta on 1 April 2014. Since that time, content has been regularly added and improved across all areas, for example, enhanced API documentation, open datasets, featured apps, and blog posts & events. This has culminated in July 2015 with further work on a redesigned home page which better showcases all aspects of the site, features new content additions, whilst also focussing on targeted messaging and direct links to highlight specific tasks, for example access to open data. Work is now underway on evaluation and expansion of the site to better understand and address the needs of target audiences.

New communication channels have also been implemented, notably a Europeana Labs e-newsletter was launched in April 2014 to actively deliver latest news to the user community and to help promote recent developments and events.

Finally, a follow-up process for new API key sign-ups has been implemented, where developers are contacted shortly after registration to reinforce the offer available on Europeana Labs and to offer direct support, whilst also seeking details of new projects that can be added to the Apps showcase. This in itself has resulted in some useful feedback.

4.2.1 Website Content and Statistics

As of July 2015, the Labs website includes:

- 3 methods for accessing Europeana: API (dedicated access), OAI (bulk object download), SPARQL (semantic querying)
- 52 pages of API documentation: During this period these have been enhanced and extended to include new features.
- 81 featured datasets: A diverse range of openly licensed content with direct links to media; together these contain well over 1 million items.
- 168 applications: Includes over 100 API implementations and prototypes at various stages of development, and also 53 open source tools and 8 client libraries.
- 18 blog posts: Covering topics such as sourcing open content, technical hist & tips, new features, and Europeana Creative Challenges.

- Since launch, 26 events listed: Whilst primarily featuring Europeana Creative Challenges and events, these now include other events where Europeana content and the API is, or at least potentially could be, used.

For the period April 2014 - July 2015 the website achieved an average of ca 750 user sessions per week, with each session on average lasting about 3 minutes and in excess of 3.4 page views (see fig.2). The most viewed sections were:

- API documentation - 35.8%
- Apps showcase - 19.0%
- Home page - 14.0%
- Datasets gallery - 15.3%
- Blog - 8.4%
- Events - 2.3%

In addition, the detailed statistics show that the site appeals to a wide range of users from different countries and with different languages.

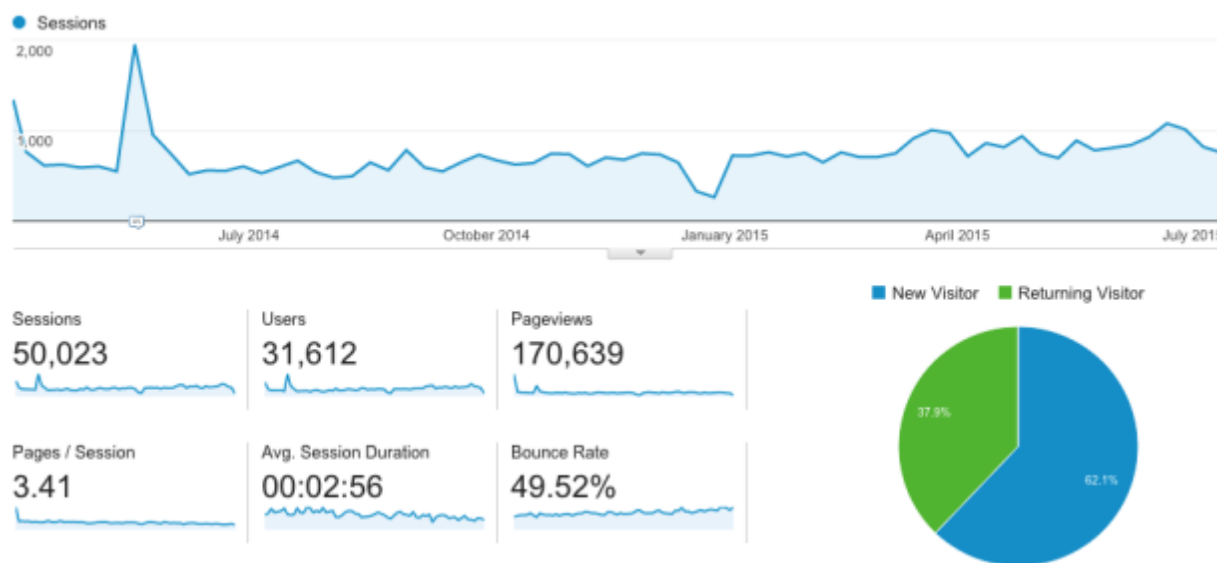


Fig. 11: User views and visit stats of Europeana Labs website

4.2.2 API Stats

As of July 2015, there were over 2,750 API keys registered to more than 2,600 unique email addresses. There were in excess of 350 new sign-ups during the period May 2015 - July 2015.

Over 155 API keys are regularly active (defined as having made calls in two or more of the previous three months), with an average of over 250,000 API calls made per day.

4.2.3 Communications

Five Europeana Labs e-newsletters have been sent to the developer mailing list (currently 2,336 recipients) since the Beta launch in April 2014. Topics have included promotion of Challenge events, highlighting new open datasets, and technical features. The typical open rate is 30% with a click rate 4% (both above industry averages).

The follow-up process implemented for new API-key sign-ups has resulted in several new projects which are being developed and supported.

4.2.4 Surveys to Europeana Labs Users

First survey and relevant results

An initial survey took place during year two of the project while developing the first version of Europeana Labs. It had a very limited number of participants (self-defined as developers, librarian, student and researcher) with 6 replies which were added to more extensive qualitative research for the development of Europeana Labs personas (as documented in WP1), mainly via detailed interviews from external partners (see also section 4.2.5). That initial survey produced quite a relevant number of interesting answers to questions such as, “What brought you to Europeana Labs today?”, with answers including, “To study the API”; “To find open source information access with the API”; “Researching how to use the API and how to build useful queries for use in an application”; “Trying to find out how to search for cultural resources on Europeana.”

Participants in that initial survey said that they were able to do what they had hoped, and quickly found the information they needed. However, when asked about anything that could have made their visit better, some examples of feedback provided included: “This site is a bit rigid, and the documentation seems to be a bit unclear, but I’m just starting, so maybe I’m getting the wrong idea”. Positive opinions were also offered, such as “It was very easy to get started using the API, the idea of an open database of European history etc for all to access is a great idea and it would be great to see the service continue to grow and mature”.

One person said that they read and understood the API documentation, was inspired by the Apps, found the Data useful, and enjoyed the blog. Another person felt the Data was good, but the Apps and API areas were poor, and yet another person felt the documentation was good, but the Data and Apps were poor. The student said that the Data area was useful, but the API documentation and Apps areas were poor.

To the question of what sort of support they would expect from Europeana to help them to make their app a success, some significant answers were: “I want to have deep integration with Europeana data, so I’m sure a lot of issues will arise, I would love to know there is someone I can go to, with availability I can work with, and not someone that will answer me in a week or two”; “More information on the types/sizes of images available and information on whether records contain actual text rather than only images, e.g. letters, books etc” or “I need more basic and concrete information about how to use API or other tools”.

By tracking visitor flow at the beginning of Europeana Labs development (as a Beta), it was possible to see which areas of the site people would visit. Results from 456 navigations recorded showed the main pages visited with the original interface, the primary one being the home page (113 / 456), followed by the APIs section (214 / 456), the Data section (80 / 456), the Apps page (90 / 456) and the blog (37 / 456), where stats showed that 74 people spent longer than 5 minutes on the site. Also, the stats results showed that visitors spent the longest time on the site and in the API Documentation area.

These interviews, survey results and site behaviours suggested the following, also in relation to needs now being covered by the new Content Re-Use Framework (see section 4.3 of this report):

- Europeana Labs is an area whose primary audience are developers.
- ‘Entrepreneurs’ and developers are not necessarily two different audience types.
- The API queries were difficult for some, and the documentation needed improvement.
- Putting the API behind SSL would benefit app developers.
- The metadata in Europeana needs improvement - location, date, resolution, and, specifically to maps, bounding-box coordinates all came up.
- Categories (or themes) would be hugely beneficial not only for those using the site, but those using the API and those submitting thematic apps to the app stores.
- Finding high resolution images easily is a big problem.
- If Europeana could provide thumbnail, medium, and hi-res options in the filters, this would be a good step forward.
- The “Data” section in Europeana Labs is not widely used.
- Direct links to high resolution images should be high up in the metadata (when available).
- Clearly show in the filters what sort of re-use is allowed, e.g., commercial re-use.
- The “Apps” section is generally well received, but could be more visual, and split the summary from the item description.
- The “Apps” section is used primarily for inspiration, to see what others have done, and to make sure you aren’t taking somebody else’s idea.
- Crowdsourcing metadata enrichment is considered good, as long as improvements by others are clearly shown.
- A great deal of support is required in Europeana Labs, from licensing to API. The content should be examined and addressed, as it is not providing enough for the visitors of the site.
- Partnerships are formed via their own networks, and by other means.
- The Support area is also rarely used - an opportunity may arise to provide contextual help and support in some other way.

Second survey and relevant results

During the last quarter of the Europeana Creative project, a large and detailed online survey about Europeana Labs was answered by 150 people, in response to an invitation sent to

registered users of the site and also disseminated through several online channels related to Europeana Creative. Participants included 57 developers, 36 researchers and students, 25 self-defined as creatives and other relevant profiles like librarians, product managers or data analysts. With an excellent response level, the results of that survey reflected the richness and diversity of the respondents, as well as different, positive satisfaction with the API and Europeana Labs in many aspects.

The majority of participants were employees of institutions like galleries, libraries, archives, audio visual collections, museums and universities, and were usually searching for large (thousands) or medium (hundreds) quantities of records, rather than either small (tens) or very large (millions) quantities. They also reported that these were mainly to be used for creating digital products (e.g. apps or websites) rather than offline ones (e.g. manufactured products or artworks).

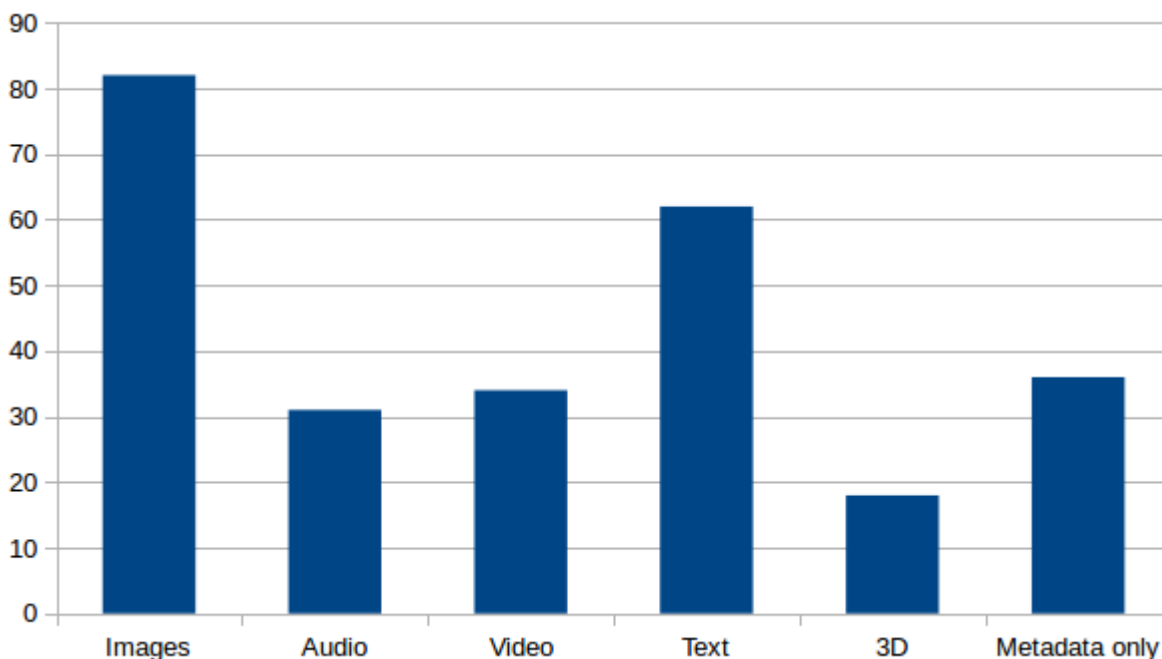


Fig. 12: Which type(s) of content does your project use?

Another relevant answer is that the majority of participants (more than 70%) stated that the intention of their project included making live API calls instead of relying on downloading content, which consists mainly in image and text format, followed by metadata only, audio and video (see figure 8 above). Rather than a “one-off” use, the majority of participants said their interaction with the tool was understood as something that would lead to regular ongoing re-use of Europeana content.

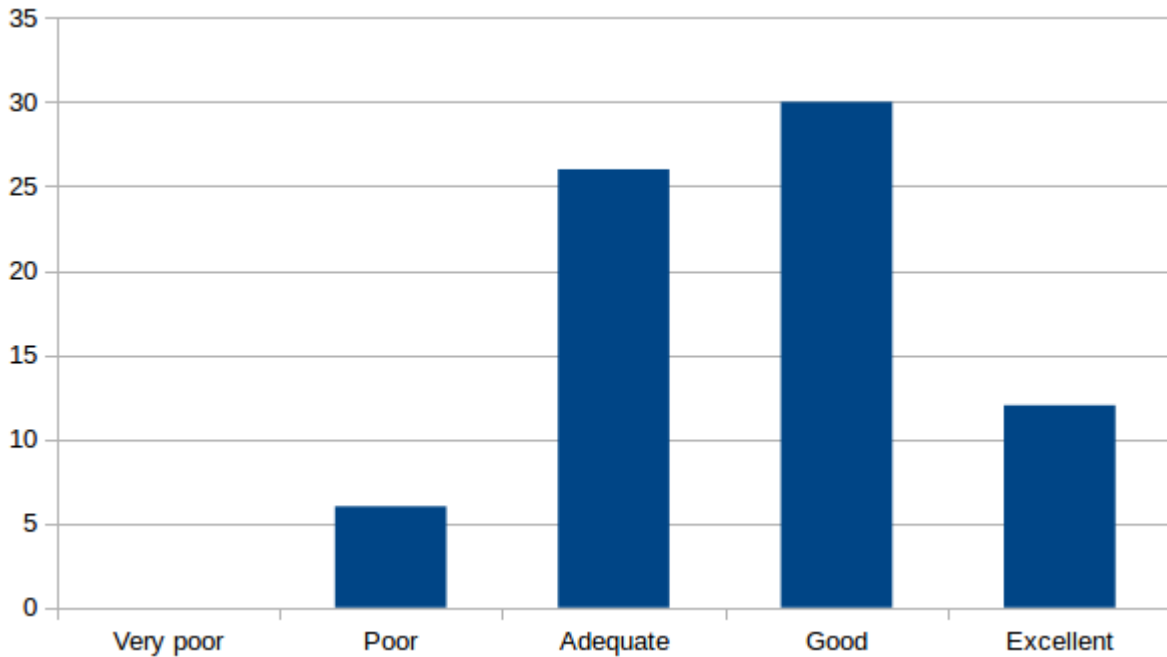


Fig. 13: How would you rate the Europeana API overall?

One of the central questions of the survey had to do with the participants' general perception of the Europeana API, accessible through Europeana Labs as one of its key components. As figure 8 shows, results from the survey indicate a positive opinion, rated by 30 participants as "Good" (40,5%) and "Adequate" by 26 (35,1%), but also as 'Excellent' by 12 (15,6%).

How easily participants could access the exact content they required was another important aspect of the site's design and aptitude for use by developers or creative and digital heritage professionals. The results shown below (figure 10) indicate a positive perception overall, but with room for improvement in defining better approaches to usability and definition on the site. A question that would be interesting to re-evaluate, for example, once the Content Re-use Framework is implemented.

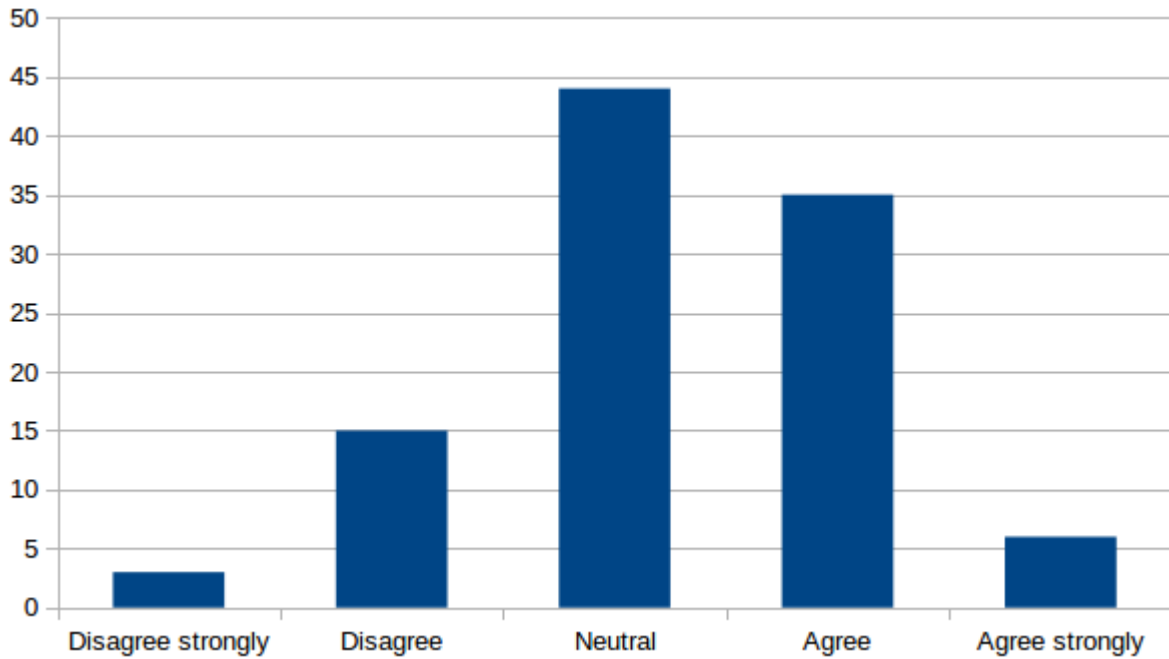


Fig. 14: I find it easy to access the exact content I require

When asked for perceptions about the most useful sections of Europeana Labs, survey results show positive feedback (figure 11) mainly with strong agreement about the usefulness of the API documentation and the Europeana open datasets, followed by the showcase of apps (where Pilots are some of the most relevant content in that section).

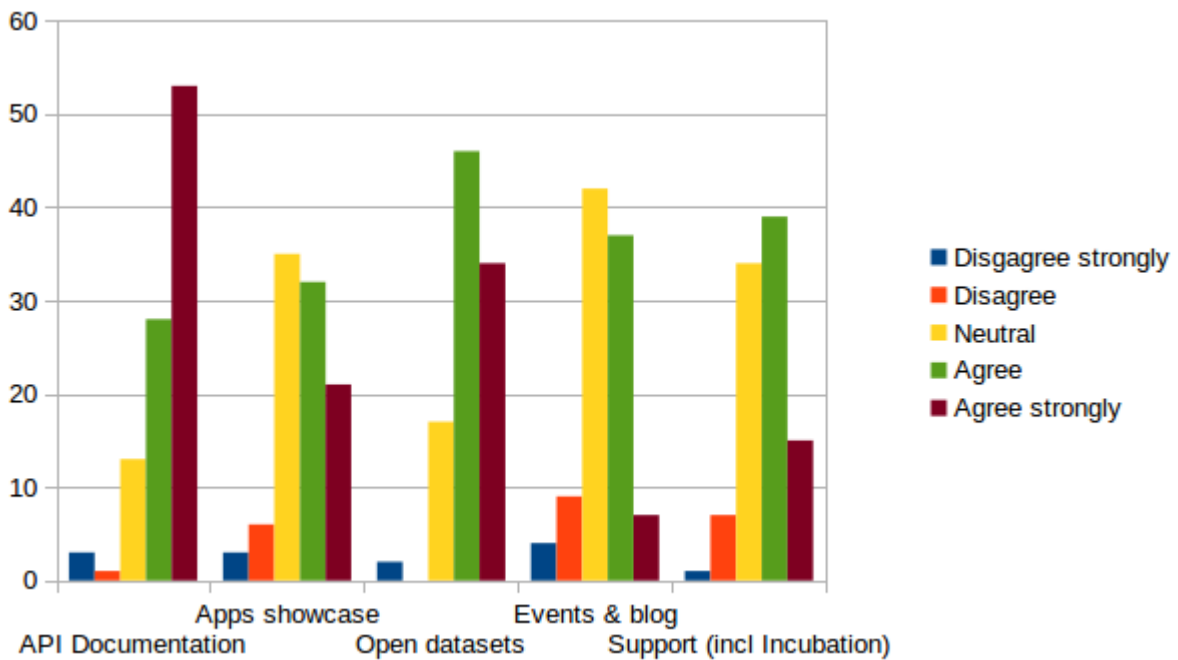


Fig. 15 The following sections of Europeana Labs are (or would be) useful to me

Another relevant survey result deals with which services could be most helpful to participants, also reflecting the importance of tools, code, and content sourcing, followed by technical support and inspiration (see figure 12). When asked, some participants mentioned valuable services which, as it happens, are presently in consideration or under development for Europeana Labs. Also mentioned were the strategic growth of related services and the Europeana Labs Network as described in D6.4: “clear base of use cases for technology and experience with Europeana”, “uses cases, standards”, “partner introductions for future work”, “funding”, “examples that work” and about “hackathons”.

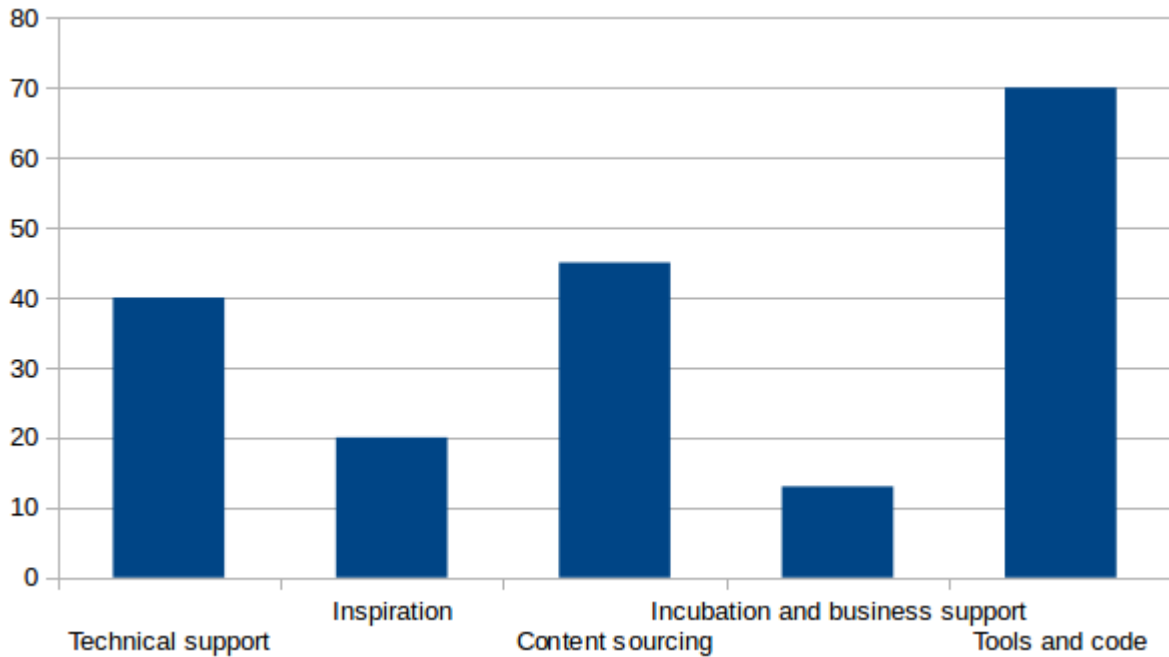


Fig. 16 Which service(s) would help your project most?

Finally, when asked about the general rating of Europeana Labs, most participants consider it good, and the rest range between adequate and excellent, indicating that the beta version of the service still has room for improvement but has already demonstrated value for its initial end users and context.

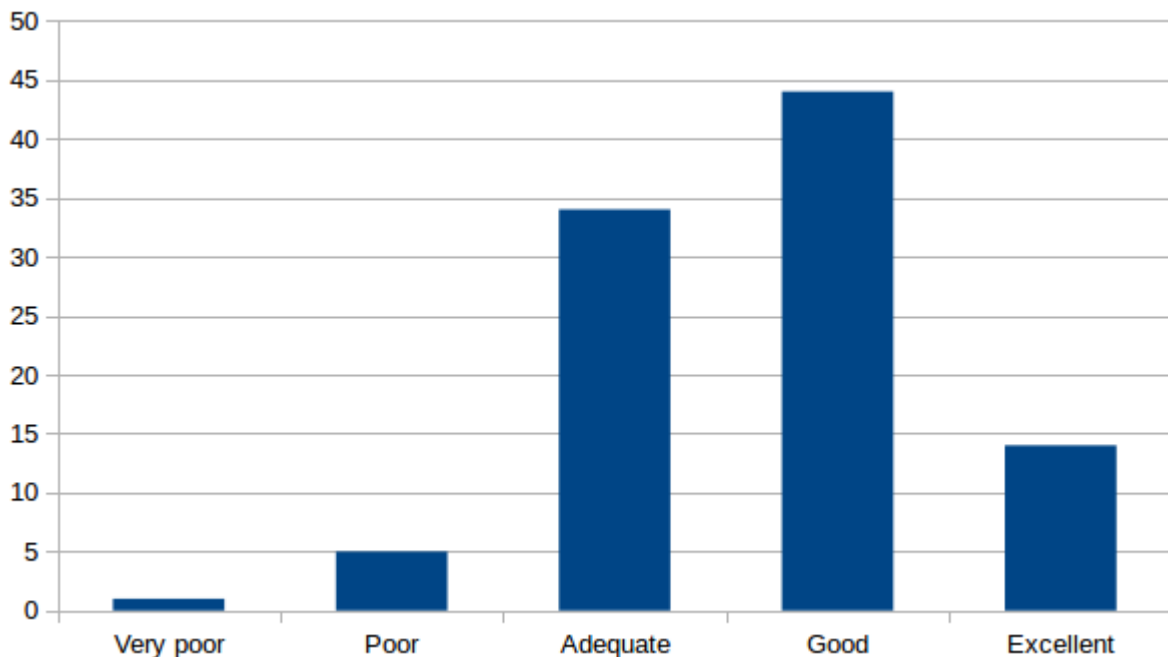


Fig. 17: How would you rate Europeana Labs overall?

As a final reflection on the results from this complete survey (see more answers and details in the corresponding Annex section), when asked what might be missing from Europeana Labs that would be helpful to participants, several answers validate the approach to future developments already mentioned in other Europeana Creative reports: a “playground for testing, evaluating applications”; “more uses cases”; “collaborative content production”; “ability to download big data sets - or better filtering”; “simple to understand, simple to get started api examples” among other observations.

4.2.5 Interviews

Specifically focused questions prepared for interviews held with different Europeana Creative participants (internal and external) provided the main source of feedback and impressions for a qualitative evaluation of Europeana Labs. The interviews were held both while the product was conceptualized (prior to development) and also up until the final period of the project (in month 29), when more features and content were available on Europeana Labs.

Chronologically, one source of feedback for the development of Europeana Labs in the second year of Europeana Creative was a complete series of interviews with different professionals from the Creative Industries familiar with Europeana, representing the main persona for whom the tool was developed. Parts of these interviews refer to key areas already present in Europeana Labs. For example, one developer from Oimpei (co-founder & mobile developer working on Europeana Beacon) expressed happiness with how their project was presented in

the Apps section in Europeana Labs, and that it was good to see other apps being built using the content. This independent professional also said he “would like to see apps that are in a similar category - competition is good, and makes us better”.

From the designer point of view, the Apps section of Europeana Labs also received quite positive opinions from that group of interviews. One of the founders of partner SAT - Waste of Time offered: “This section is very nice”. Other relevant roles like the CEO of Klokkan Technologies GmbH, a Swiss company specializing in online map publishing and open-source software applications for the cultural heritage sector, showed relevant opinions about its potential use: “It’s good to know what others are doing, but it is not critical section, I’d not go every month”. More enthusiastic from the perspective of a creative web developer in the cultural sector, another good feedback input about the Apps section was related to its potential use: “It’s nice to see what other people are doing. I’ve tried out a few of the things. [...] I’m not really in competition, but it is interesting to see what others are doing. [...] Sometimes it gives me ideas of things that I could do, or it gives me clues of things that are missing that I could do, or if I’m copying someone else, or if someone is already doing it”.

Additional relevant findings from a further round of interviews on Europeana Labs were received from people with a videogame industry background, including the Historical Content Coordinator, Junior Producer and Community Manager of the Ubisoft company, with experience in adapting graphics from digitised sources for a videogame about World War I. In his opinion, on the one hand the content from Europeana Labs compared to the portal was more attractive as based on collections: “while browsing through different sub sites I stumbled over a lot of really nice content”. However from his point of view, the general presentation of the site could still be improved: “Still, it seemed like a museum again”. As an important part of an ecosystem for re-usable content in the gaming sector, there could still be room for “content research as a service”, and specially with “better accessibility”.

WP6 also received this feedback about Europeana Labs from another Digital Gaming and Gamification Pioneer with more than 10 years of experience in the sector, co-founder of Digital Fun, who in some development processes explained needs digitised external content in terms of hi-res images and verified data. Without any previous experience about Europeana, like in other cases, this interviewed professional has a first impression of the Europeana portal as a “digital heritage web magazine”, where he recommended improvements in order to make it more attractive for him like “improving the first 60 seconds experience making all the picture clear. I also suggest to translate the content”. What seemed relevant is that once compared to Europeana Labs he found instead such platform a better resource, for example in relation to the Apps section: “I love this area, full of useful resources and a projects directory”.

From the GLAM perspective, WP6 also interviewed a Cultural Programme Manager and co-founder of one of the most active Wikimedia Chapters in Europe, also co-organiser of programs in GLAM and educational institutions into the open knowledge and WIKI movement. From his point of view, as a first relevant input before considering different aspects of Europeana Labs, the interviewed considered how “there is still a lack of education in the professional sector about the meaning of copyright, public domain, open content”, where “on the tech side there always will be a lack, and users always will want more and better quality and quantity”. From

that perspective, when referring to the Europeana portal he remarked how “citizens want their content to be hi-resolution, not thumbnails. As a project in 2015, thumbnails don’t make a good impression”, stating some previous feedback from relevant representatives of the Creative Industries about the need to develop another type of tool and perspective about the potential for re-use of digitised heritage.

When considering instead Europeana Labs, this professional remarkably stated in comparison how for such needs “the look and feel are much better, you get your API key, get some examples, very easy to source the website. As a web analyst I’m not sure how it would work, if it’s with thousands of examples. Good to source examples. Also stating however a relevant aspect from his point of view to be improved: “an important mid-term goal to remember is that not everyone speaks English, should be translated”. More specifically, when asked about the APIs available on the platform, making a comparison with another online industry he considered “that’s the basic thing. Regular users don’t care but.... Take the hotel industry for example, is very diverse. Booking can let you book a specific hotel in any area, and somehow it’s based on a clear API. I can go to any portal for travel for hotels and get to that content. I don’t care about the tool or API, I go to the website and get my room. An old innkeeper who has a small place doesn’t care about the tech, only that the rooms get booked. That’s the key for the Europeana - it needs a website to get to the content. Almost everything is prepared, but it’s still not very direct”.

More relevant feedback about Europeana Labs has been gathered from Europeana Creative partners, like in the case of Historypin developers according to one of the organisation managers: “They love the new Labs site! Once I pointed them there for EDM and API docs, they were extremely happy, and the development of our service got much faster at that point”.

Or for example from the Social Networks Pilot, valuable feedback was offered referring to a critical aspect which was later taken into account and implemented, also in relation to the Pilots as examples of creative re-use on Europeana Labs: “I think it would be nice to have more examples of the reuse of Europeana content featured on Europeana Labs in the first instance, and possibly also other channels, just to demonstrate to creative industries what the possibilities are. I think examples trigger the mind of creatives the best, so in that sense, the Pilots are good examples of this”. Also from the perspective of the Product Owner of the Design Pilot, when referring to the potential of the tool once published, tested and starting to have activity: “Europeana Labs could be a hub for these different kinds of pieces of code or experiments, and people could then - or the libraries, that software designers or designers could use, so it would become a repository of different things that could be taken into use by other museums, libraries and so forth. For example, my vision is that anyone could now do a Culture Cam, or a Culture Cam installation in their own organization, without involving us, because it would be so well documented that anyone could do it. And I think that would be good for Europeana Labs, to be that kind of a hub”.

4.2.6 Conclusions about Europeana Labs Evaluation

Among the many diverse projects within Europeana Creative, Europeana Labs has progressively demonstrated its value. Its initial development was based on qualitative ad-hoc research coinciding with the validated needs and interests of developers and other active agents in the creative industries sectors (as summarised in the initial interviews section of this report), and its utility and opportunities were confirmed through interviews and surveys addressing the hands-on experience of users of content and IT tools.

On the one hand, the data and statistics on site visits, communication and the community of users shows interesting, consolidated trends in its adoption and use by targeted audiences. In-depth interviews in the corresponding section of this report also show to what extent the reuse of content and creativity are stimulated by this online lab dedicated to the re-use of digitised heritage content, Europeana API and examples of products and services (for example, including the Pilot applications).

On the other hand, the extensive survey aimed at understanding the needs of Europeana Labs end users, their satisfaction with the different sections, and the value provided by the tool, indicates an overall positive perception and agreement with its core features (as in the case of the API), the open datasets, and the showcase of projects. However, according to that quantitative and qualitative feedback, improvement is still needed in offering incubation services, as well as updated information and dissemination activities about the sector.

Most of the additional information and observations gathered in parallel with the survey and interviews suggested improvements and new uses of the tool. These also validate future plans and development in Europeana Labs as extensively described in its sustainability plan report D3.4, noted here as a parallel validation process.

4.3 Content Re-use Framework

The goal of the Content Re-use Framework (now: Europeana Publishing Framework) is to promote re-use by making it easier for developers/re-users to find, filter and retrieve Europeana content (images, videos, sounds and text) for re-use based on technical metadata (such as width, height, mime-types, durations or colors). For this, Europeana has developed a set of tools to:

- Harvest all of the media URLs which providers provide to Europeana and use to:
 - Generate (new) thumbnails
 - Extract technical metadata (such as width, height) and dominant colours
 - Check if the links are still active
- Serve the new thumbnails and EDM metadata via the Europeana API to the portal and other applications
- Connect everything with UIM (Europeana's Unified Ingestion Manager, to Ingest content) to allow for reporting and integration with Europeana Ingestion workflows

The tools to make this happen are as follows:

- Harvester: Which downloads media files from providers, stores and processes them (extract technical metadata, generate thumbnails etc.)
- Publisher: It publishes the processed data into the Europeana production database, thus making it available to the public (and end-user products) via the API.
- API: A part of the Europeana API which allows to search for and retrieve technical metadata and thumbnails by developers (and Europeana Channels etc.).

The current status is that the Harvester is working on downloading all these media files from the providers, which will then be published by the Publisher in August 2015 and made available via the Europeana API.

The complexity of the Content Re-use Framework tools lies with its scale. With almost 45 million objects and more than 100 million URLs to download, verify and extract information from, which are hosted in hundreds of locations around the world, a scalable infrastructure and rigorous testing process are of essence.

4.3.1 Technical Testing

In order to deliver tools and set-up an infrastructure which can scale and meets all quality standards set in the project, almost 40% of development time was put into creating tests, creating tools to test or setting up and extending monitoring and logging systems. Before we describe the various tests done and set-up per tool we list the general supporting systems set-up to control testing:

- Monitoring: a monitoring system was set-up based on Grafana/Graphite to monitor all systems and servers (operating system, hardware information and monitoring) and to monitor the real-time status of the Harvester and Publisher (records processed in a certain timeframe, per X seconds etc.).
- Logging: a logging system was set-up based on Logstash/Elasticsearch to log all actions from the Harvester and Publisher. All logs are indexed by pre-defined parameters (such as record ID, or URL), in order to be able to reconstruct every process within the tools.

Infrastructure

To give some background on the scale of testing an overview of the infrastructure of the Content Re-use Framework tools, which is fully replicated to an acceptance and production environment:

- Harvester:
 - A distributed processing system distributed over various servers, one Master server and a dynamic number of slaves (for initial acceptance: 4 slaves, for production: 10-20 slaves).

- Two Mongo services with a replication factor of 3 for job and technical metadata processing.
- A SolrCloud instance for indexing with a replication factor of 3.
- A Swift container for object storage, up to 10 TB in production, for storing thumbnails.
- Other:
 - A Platform-as-a-Service application for the API (Java).
 - Two dedicated servers for logging and monitoring.

Harvester Technical Testing

The Harvester has full unit test coverage for every aspect of its process flow:

- Job loading: take a Europeana record and create jobs from it to execute (such as linkchecking, thumbnail creation).
- Job distribution: prioritise and distribute the jobs across the different servers.
- Job execution: execute a series of jobs and tasks on a URL.
- Job extraction: take a downloaded file and extract information from it.

For every read, insert and update from a data source there is a unit test to ensure all output and input matches the expected. The Harvester has also been pre-loaded with a variety of Public Domain records who are pre-processed and are used for verification of the different processes.

Furthermore, to make sure every scenario can be tested a (command line) tool named the UIM Tester has been developed. This tool allows customised records/URLs to be sent to the Harvester, in order for them to be processed and published in a test environment. This way, every possible use-case can be tested and verified.

Take-aways and Learnings

Two take-aways and learnings from the development of the Harvester:

- External dependencies: the Harvester fully depends on hundreds of different servers around the world which host media files. These servers can be very slow, return a wide range of errors or redirects. Extensive adjustments have been made to the Harvester to be able to cope with all these different (edge-)cases.
- Scale: to do what the Harvester is supposed to do requires a scalable infrastructure that can be set-up and configured in an automated way. It also poses limits to flexibility as more business logic is expensive when it comes to this scale.

Publisher Technical Testing

The Publisher has unit tests for every aspect of its workflow, being:

- Picking up the completed jobs from the Harvester which are ready for publishing.
- Verifying whether a record exists in the target source (eg Production).

- Publishing the index information in Solr and the technical metadata in Mongo.

Take-aways and Learnings

Two take-aways and learnings from the development of the Publisher:

- Data modelling: Europeana uses a very rich data model, EDM. One of the downsides of this model is that it is very open as to what providers can do with it. This also meant that some records did not have a WebResource class in their metadata (for technical metadata), and made the Publisher initially unable to publish technical metadata for those records.
- Solr: The indexing software that Europeana uses for search (Solr) was set-up and configured for the Europeana publishing workflows which exchanges full Solr documents (all the information that should be retrieved per record for search) for every record. However, for the CRF Publishing scenario, it was required to only do partial updates to a Solr document. This resulted in some information getting lost in the update, as Solr was not configured to cope with this.

API Technical Testing

The Europeana REST API has unit tests present for all of its method. Since there were no separate methods developed for the CRF tools, the existing unit tests are still used to conduct testing.

4.3.2 Interviews with External Users

Interviews on the Content Re-Use Framework were conducted during the final phase of the project cycle with an external selection of technical professionals including developers, programmers, designers, and software engineers working mainly in the culture and technology sectors. Specific areas of focus for these professionals include multimedia app development, website design, and research & development.

Feedback to questions about the API features was generally good. Beginning with the documentation, one reviewer found it to be “excellent - clear, well documented, RESTful (so: easy to use!)” Another said “Short introduction would be ok, these have new features - a list would be great...it’s fine, much better than some commercial documentation, there is some public interface where you can test the public API, don’t change it”; another reviewer offered that the documentation “looked nice”, but also that it “could use a paragraph explaining new changes”. “I really liked the documentation very much. The one thing that would improve it would be...real URLs pre-populated with the user’s key so that you can click on any URL example and see the result...Other than that, really good” was another comment. Finally, this reviewer had some specific feedback: “what I miss in the documentation, is a direct comparison (like in a table) between the fields returned in the Search API and within both the JSON and JSON-LD outputs of the Record API. Because now it seems that not everything can be

retrieved at search time and also it seems to me that not everything expressed in JSON is expressed in JSON-LD (A separate mapping between JSON and JSON-LD would also be nice)".

Turning to the API features, one interviewee remarked that "the main good change is the search on technical parameters". Another stated that "the new features seem very useful, as they give you much more control in loading content that scales/fits your particular UI or use-case", and added that "the API is pretty mature, especially given in the cult heritage world where the API isn't usually so great.". However, another expressed confusion regarding the "different results I get running the same query on each version", and wondered if "there been some sort of fundamental change to the query algorithm".

When enquired about the manner of searching for content for re-use scenarios, reviewers noted improvements. "Much easier to find content." offered one reviewer. "Lots of content in Europeana is just thumbnails and you have to drill down, maybe they are not available. Lots of it is 'noise', not worth the trouble. Good to have a direct route, will be using those filters as defaults to get rid of less useful things", another commented. Furthermore, one reviewer said, "I can imagine that especially the HD/HQ facets (in combination with the rights facet of course) will be useful for interested parties to conveniently locate good quality material for possible reuse. The color, size and duration facets in a similar sense should make it much easier to locate content that suits a particular use case (e.g. only short clips or just black & white images, etc)". Elaborating on the idea that the content seemed more available with these changes, one reviewer said "I believe now it will be easier to implement certain search features that we couldn't do before. Like finding images that are similar, even if only based on the color. And give me high-quality images from a certain museum that are reusable." On the other hand, another reviewer said that "queries are very slow, some kind of caching is needed, maybe use something like mongo to fetch whole documents and do less relation queries. Refreshing the same query is also slow."

Requests for feedback regarding the type of data available via the CRF and its access through the API, including color, aspect ratio, etc., yielded mixed though mainly positive answers. "Within Historiana context...the landscape/portrait mode might be useful but color is less useful but good to have...this makes it easier to get good stuff." However, one reviewer said that "colour query doesn't really give me any value", while another stated, "basically the new properties now available (image color/size/aspect ratio) make it easier to display results you get back from the API, but this info isn't directly in the search results, you only get it if you retrieve a record. Especially if this were part of the search results it would be easier to correctly display and offer features to group by size and color, for a better user experience." Finally, another reviewer offered a similarly positive comment: "I can imagine that especially the HD/HQ facets (in combination with the rights facet of course) will be useful for interested parties to conveniently locate good quality material for possible reuse. The color, size and duration facets in a similar sense should make it much easier to locate content that suits a particular use case (e.g. only short clips or just black & white images, etc)."

Interviewees were asked how they would describe the potential for this tool to become frequently used by developers. One replied that there might be room for improvement in that although “once you find it, the documentation is nice and open” it’s also their experience that it’s “not easy to get an API key? When I started at Historiana, I requested an API key but someone at Europeana had to apply”, in the sense that “the whole Europeana data set is useful in a European context but an American programmer looking for this context could be good, but people would have a hard time finding it.” On the positive side, “If you need content and you read the API info (as a programmer) you get results fast, no trouble”. Another commented, “This is much needed evolution of the already existing Europeana API. It is however unclear to me if now this will be a completely new API in itself or it will be rolled out into a new version of the Europeana API. If this will be a new API in itself, it could be confusing for developers, as they might not find it initially.” Finally, one reviewer added that “the potential is/remains relevantly big as Europeana is probably still one of the most extensive cultural heritage aggregator/collection (in Europe) with a good API and even more special: good documentation. As long as Europeana keeps being highly visible in the field and keeps producing awesome demonstrators of what can be done with its data, there should be no problem in finding developers (in projects) that would build specific applications for e.g. historical research”.

Feedback on the comparison with other image search tools (such as Google, Wikimedia Commons, Getty Images, Flickr and Shutterstock as examples) and whether some of the features they incorporate (such as image categorisation, tagging of persons or building appearing on the image, similar images) was also mainly positive, with suggestions for improvement. One reviewer stated that it was “quite on par with the other search tools”; another reviewer said that it would be “great to have features for filtering based on these tags (possibly even using a taxonomy or thesaurus)”. “I think you have a hugely capable offering - and together with the documentation it seems very coherent.”

The final point of feedback requested was for any other recommendations for improving this CRF API, prototype and documentation from the point of view of a developer’s needs and experience. One reviewer stated, “Basically the new properties now available (image color/size/aspect ratio) make it easier to display results you get back from the API, but this info isn’t directly in the search results, you only get it if you retrieve a record. Especially if this were part of the search results it would be easier to correctly display and offer features to group by size and color, for a better user experience.” Another offered, “Improvements could be made by adding some examples (maybe by exploring some common scenarios) and providing some SDKs for the most popular platforms/languages (e.g. IOS, Android, Javascript, PHP). It would also be an immense help if either version of the API were to be available with SSL in the future”.

4.3.3 Conclusions about CRF Evaluation

Although significant delays in the development of the Content Re-Use Framework (CRF) made testing by external users difficult, by the final quarter of the Europeana Creative project WP2 and WP6 were able to coordinate and gather early feedback (summarised above), inviting developers and representatives of the creative industries to check a CRF prototype and

demonstration tool. The technical testing of the tool and the positive feedback on its technical documentation were key aspects in guaranteeing the scalability and further use of the work developed under WP2. Results from the evaluation indicate that the CRF could enable more cost effective development of services and applications for creative industries based on the re-use of Europeana content.

Comparatively, feedback was also positive and indicated potential and coherence, for example, when asked about other image search tools. Answers about areas of improvement showed a notable interest in Europeana evolving and expanding the CRF service to help generate more tools and developments from third parties around open data, content and software accessible via its API.

However, results also showed room for improvement and the need to consolidate certain features like filtering by colours or licenses; testers and experts with access to the prototype suggested several areas related to the needs of creative industries and the technical development tasks they represent. Validating some key questions about efficiency, the CRF was reviewed as fast in some cases, while initial feedback has referred to slowness in the queries on other occasions; monitoring improvements here will be important while the CRF scales and reaches a critical mass of users.

4.4 Other Tools

During the Europeana Creative project there were also other related tools developed by Workpackage 2 which have been tested and observed in relation to its impact, in some cases related to the technical infrastructure itself and in other cases to the Pilots, like for example Culture Cam, although less than initially planned due to different coordination issues described in previous deliverables. In the following sections results, testing and feedback around these tools is described.

4.4.1 OAI-PMH

The OAI-PMH server developed by ONTO allows bulk download of EDM objects from Europeana. It uses the following software:

- Solr index to discover objects added within a certain time interval, optionally restricted by dataset
- MongoDB database to fetch the EDM records (using code from the Europeana Record API)
- OAICAT implementation of OAI by OCLC Research to handle the OAI-PMH protocol

The OAI server was tested extensively during development, because it is used by the SPARQL repository to download all Europeana objects and to keep it up to date. Initial deployments uncovered some scalability problems relating to Solr's ability to page through a EDM Repository and SPARQL Endpoint.

4.4.2 Image Similarity Tool

Europeana provides a single point of access more than 40+ million cultural heritage objects provided by European Galleries, Libraries, Archives and Museums. This is valuable for the education, research, tourism or creative industries domains, but the heterogeneity of the content objects and poor textual descriptions raise difficulties when navigating and exploring this large repository. This arises mainly because of multi-lingual object descriptions (i.e. using one of 27 European languages), different types of content (i.e. text, image, sound, 3D) and lack of standardized classifications among the 2000+ content providers. Additionally, some of the collections provide poor descriptions of their objects, especially in the case of image content (see objects in photography collections).

Within this context, content based retrieval services are providing complementary solutions to overcome the limits of text based search. By using an image similarity search service, the user has the possibility to select or provide a picture and find objects with similar visual content (available within the image index). However, different types of users have different needs and expectations when using a similarity search tool. The first technical evaluations of the image similarity search was performed within the scope of T2.2 and published in SUEDL@TPDL2013 workshop, the presentation is available online on slideshare. The service was further developed within the scope of task T4.6 to better address the requirements of professional designers and to serve the development of the CultureCam tool, work that was published in PATCH@IUI2015 and MMC@ICME2015 workshops.

Usage statistics

In terms of quantitative data about the tool, an initial consideration can be related to its academic and dissemination impact, where a paper and presentation has reached significant audience: “An Image Similarity Search Service for European Digital Library and Beyond”: 195 views on SlideShare, 86 view, 19 downloads on ResearchGate.

Demo/API calls

The online demo for image search service and the image search APIs reside on the same server using the base URL image-similarity.ait.ac.at. The access statistics are computed using the AWStats log analyzer, the necessary configurations were completed in December 2014. In the following images the usage statistics for year 2015 are displayed, however these does not take in account the API access using the ip address of the server. Still, there are more than 2000 hits (sum of accessed pages) accessed by 169 individual users. The API calls are not separated from the robot searches in the computed statistics and count 106+ thousands hits.

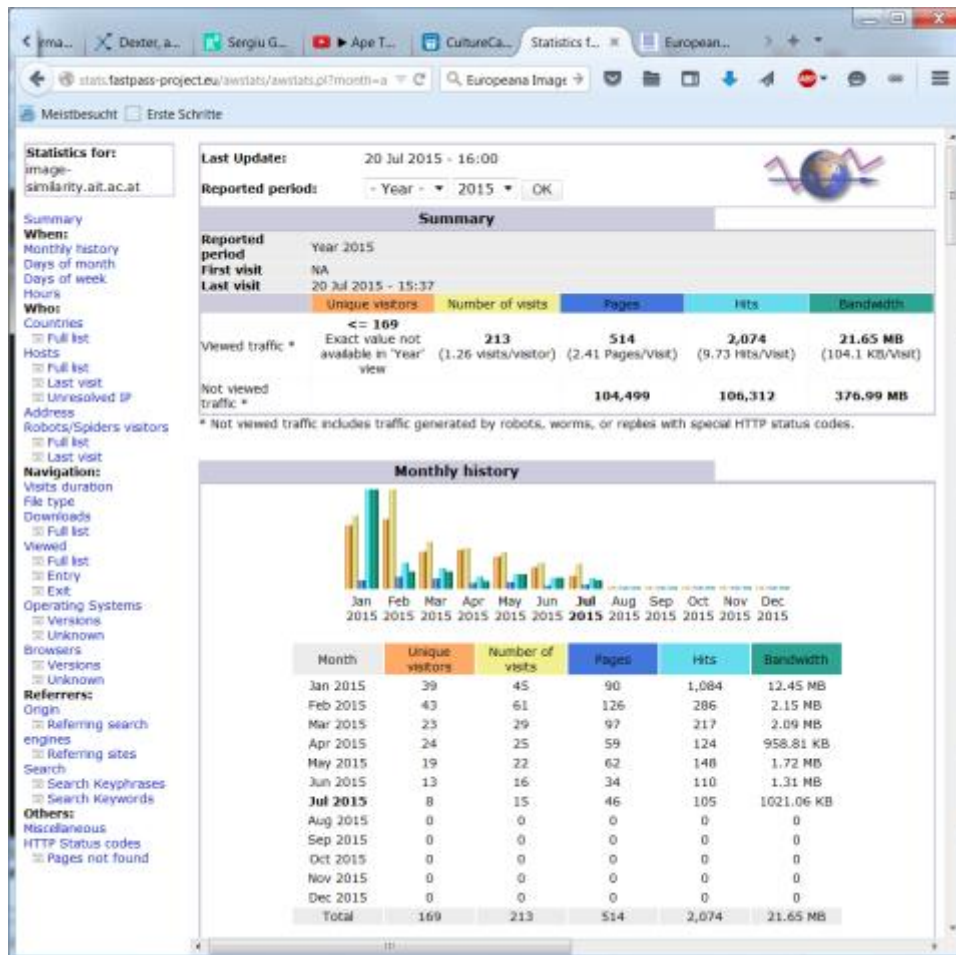


Fig. 18: Stats for the online demo for image search service and the image search API

4.4.3 Image-Twinning Service

The image twinning service was developed as being the core of the Tourism Pilot (i.e. vangoyourself.com). However this was further developed into an standalone wordpress plugin.

The source code of the Image-Twinning service was enhanced with additional functionality for selecting cropping input images, generating customizable picture frames, configuring output resolution and was contributed to the open source community as an official open source plugin.

The source core was reviewed by the WordPress core developers and after addressing the design and source quality improvement suggestions it was submitted in the WordPress SVN repository in December 2014. The plugin webpage and documentation was contributed at the beginning of January, since than 60 downloads are registered within the official statistics. The demo installation of the image twinning plugin on the test and development server and registered 29 visits in 2015 (see image bellow).

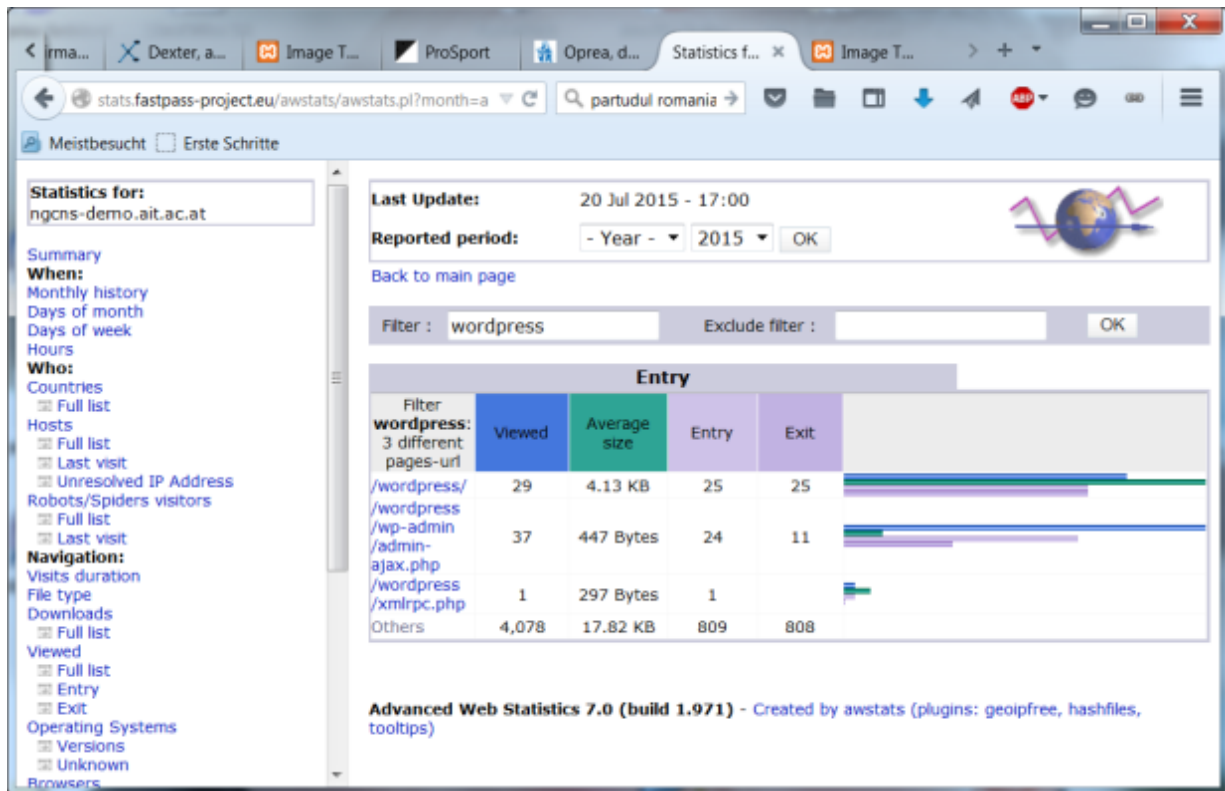


Fig. 19: Stats from demo installation of the image twinning plugin

4.4.4 Geographic Mapping Tool

The geographic mapping tool was designed as a service supporting efficient and effective access to local cultural heritage resources for tourists and tour guides. It has the goal of allowing users to self organized guided tours and collect information about the points of interest connected by the map route.

A demonstration of the geo-mapping tool with the thematic “Mozart’s footsteps in Vienna” was presented at the PATCH@IUI2014 workshop, the online presentation being accessed by 182 users on slideshare. The online demonstration available within the development test environment is rarely accessed by end users. As the test URL provided within the paper and the presentation was using direct IP, there are no official statistics for its usage.

4.4.5 Mint Platform

MINT platform offers users an organization management system that allows the deployment and operation of different aggregation schemes (thematic or cross-domain, international, national or regional) and corresponding access rights.

The main role of the MINT ingestion platform is to enable users to:

- Provide metadata records in a range of “source” formats.
- Convert metadata to selected target schema
- Monitor the progresses of content provision.
- Publish Metadata to Europeana

MINT is designed as a web-based platform so as to be easily accessed, user-friendly and enable users to easily perform mapping and transformation procedures, making the user experience as pleasant as possible. The most appropriate way to perform the evaluation is by directly assessing users’ feedback on their experience using MINT aggregation services.

The evaluation approach was based on mini tasks that users had to complete and then provide their feedback. These tasks were related to MINT functionalities that constitute basic steps of the ingestion process. Uses had to complete these tasks and then provide feedback about their experience with respect to ease of use/ access, documentation, problems that occurred etc. The evaluation survey focuses on MINT as a whole platform, and users are asked to rate overall the level of usability, satisfaction of the experience, navigation and search functionality of MINT platform, using the range 1 to 5, with 1 being the best and 5 being the worst.

The obtained results showed that users consider MINT as a useful tool with rating above average, that provides good navigation and search functionality.

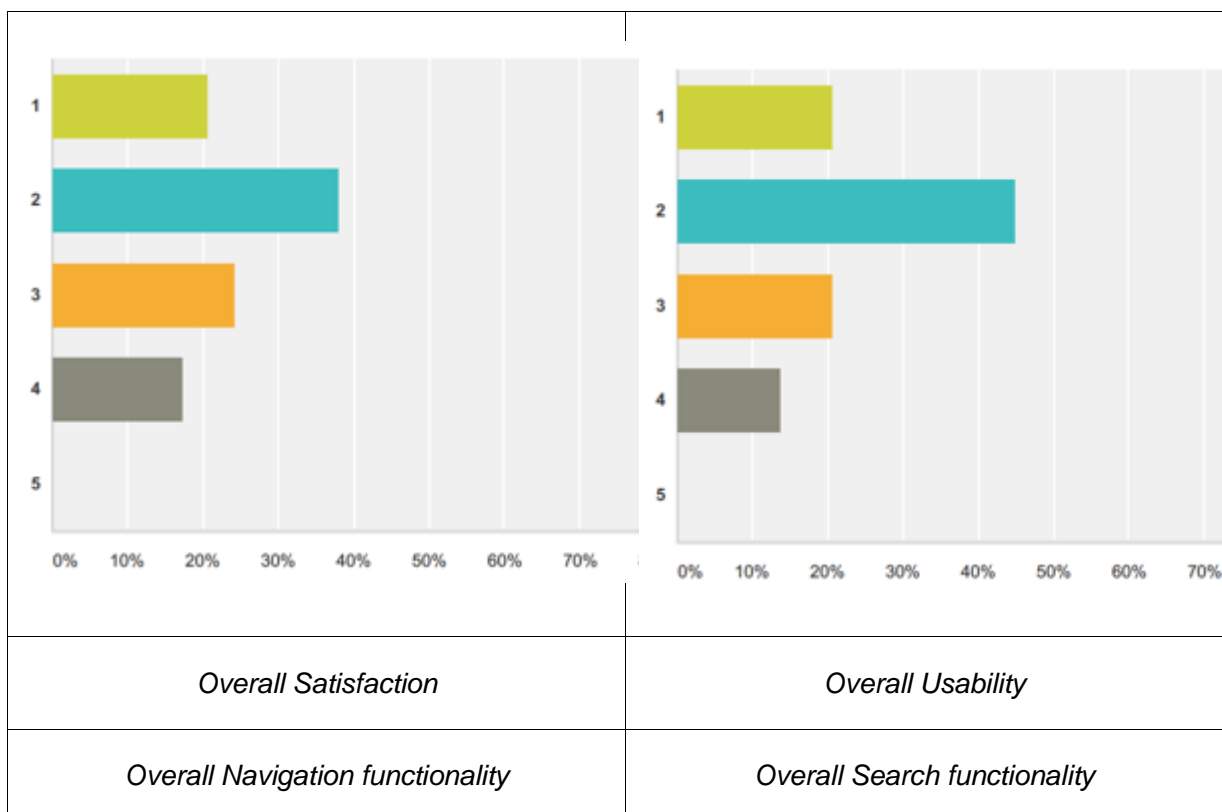


Fig. 20: Overall MINT rating

Having reported all participants' responses and comments, the conclusion of the survey evaluation process can be summarized as follows:

The users that participated in this evaluation procedure come from 18 different European organizations related to cultural heritage domain and span a wide spectrum of expertise, ranging from project managers, research assistants, metadata specialists and managers, archivists, librarians, IT architects. The vast majority of the respondents had a weak to average knowledge of XSLT and very little experience with other transformation tools. Most widely used metadata format proved to be XML, which is really convenient, and it is impressive that the majority of participants have a good knowledge of the metadata source schema, as this can ease the data preparation stage before applying any mapping using MINT.

Even though the majority of users have little or no previous experience working with MINT or other mapping tools, most of them managed to upload successfully their metadata files, define items and prepare their metadata for mapping. A few problems occurred with users having their metadata in cvs format. In describing their experience in performing these steps the users respond positively, finding the tool intuitive, user friendly and fairly straightforward to use. The drag and drop features make the process even more convenient. The documentation was generally found to be sufficient and helpful although there were users that would appreciate a more detailed documentation.

Regarding mapping, most users managed to map their metadata successfully either with no problems or with iterations and error fixes. In the mapping area, the drag & drop functionality proved to be very effective and much appreciated among users. In particular they found the mapping functionality easy to use, user friendly illustrating an intuitive interface with clear and logical structure. The provided navigational aids such as bookmarks, source/target element search and input value statistics received positive comments and acceptance and were extensively used by users, with bookmarks being the most convenient and helpful feature. Advanced mapping functionalities such as functions, conditional mappings, value mappings, vocabularies and group edit functionality, proved to be quite useful and were extensively used during evaluation session, with the vocabularies being the most used advanced feature. The vast majority of users found the documentation for completing the mapping task complete and clear. However there were users that required more detailed guidance, especially with advanced mapping features. In the occurrence of validation error messages during the mapping process, most users were able to understand them and then fix them iteratively by checking the XML file, using the available preview functionality.

At validation and transformation stage, most users could successfully resolve any occurring errors by using the available validation MINT functionality, which proved to be a valuable tool for mapping and transformation. Any validation errors that were identified prior to transformation were corrected in most cases as users used the preview to inspect both XSLT and transformed data and then iteratively correct the highlighted errors. The validation functionality of MINT proved to be a valuable tool that provides visual feedback about mapping errors with respect to the target schema, having an easy to use and intuitive interface, accompanied with helpful documentation. However, there were users that encountered problems, which could not be resolved, and required a more detailed documentation or even an extra training session.

Regarding the evaluation of the overall MINT experience, users consider MINT as a useful tool with rating above average, that provides good navigation and search functionality.

In conclusion, the feedback received during the evaluation process using the online survey was mainly positive. Although users were not using MINT for a long time, they were mostly able to successfully perform all tasks. The layout and interface of MINT platform were generally found to be intuitive easy to use and user friendly. Documentation was mainly sufficient and helpful, although attention should be drawn at more complicated MINT functionalities such as advance mappings where more detailed documentation is required. It should also be noted, that many of the issues that aroused during mapping and transformation were either due to users' unfamiliarity to target schema or due to the redundant information in the source data, that could not be mapped in EDM.

Users made many recommendations and comments while completing the online survey. All these are gathered and taken into consideration for the improvement of MINT at next deployment of aggregation mechanism.

5. General Conclusions

The Europeana Creative project outputs described in this deliverable - in many ways, the primary outputs of Europeana Creative - are a collection of reliable feedback and evaluation results. These qualitative as well as quantitative perspectives, gathered by different methods, have been widely validated and appreciated by internal and external stakeholders, end-users and experts. But there is more beyond the lessons learned and indications given for how to improve, scale, and impact these developments in the near future. As indicated in the corresponding sections, representatives of the creative industries have recognized the added value in the Pilots, Europeana Labs, the tools and content offered there, the Content Re-use Framework and other WP2 like the MINT ingestion platform. This was demonstrated in the interest by creative professionals in different sectors. Another added value perceived was cost efficiency, mainly by developers in their usual daily tasks.

The content discovery process for Europeana and creative businesses articulated via Europeana Labs has been also validated through interviews and surveys, where testers have provided extensive feedback and expressed interest in assisting with improvements and suggestions for the platform as a valuable resource competitive with similar offerings and services in quality, efficiency and interest. Such feedback and evaluation processes have not only been addressed to Pilot application development teams and Challenge participants who have worked extensively with the project results, but also to a rich diversity of external experts and stakeholders representing the creative industries.

When it comes to the Pilots as proofs of concept, examples of the potential of Europeana content for creative industries and as innovative or quality digital products for different sectors (education, tourism, design, etc.), the evaluation process led by WP6 has progressively observed, checked and demonstrated that the open development and usability of the work done under WP4 has reached relevant quotas of quality and interest from audiences. However, uptake by and impact on creative businesses as described is a complex task. There is still room to advance in further considerations based on evidence, which did not take place due to time limitations during the project.

Development, with or without the Europeana Labs and Content Re-use Framework (CRF) tools, was retroactively observed by analysing interviews conducted with the Product Owners. Their impressions and comments, along with some additional interviews about the CRF with several Pilot developers, helped draw the conclusion that the infrastructure work evaluated represents a significant advance and improvement toward helping new product and service development. Furthermore, the initial evaluation data available while the CRF is still in preliminary prototype version shows how, most probably, such development is well directed toward its target audiences and domains of application in terms of creative reuse of Europeana content.

Perceptions of the project's results in terms of cost efficiency confirm that they could make it easier and more cost effective for creative industries to develop digital products and services. This is something potentially applicable for all stakeholders, including Europeana, in terms of the combination of Europeana Labs and the CRF being of valuable assistance for accessing content, examples and how-tos. These could help save time and resources as information and

help points for interested parties (instead of a more human-powered process) as an opportunity to scale this aspect, optimizing human resources.

Annex I

List of participants for each UX testing session

Participants Composition

Pilot and Location	Participants
Educational Pilots Participants: FCL, Brussels*	Mr José Luis Cebollada Gracia, Educator Mr Eric Vrignon, Educator Ms Maria do Céu Baptista, Educator Ms Véronique Sarrere, Educator Ms Andree Jordan, Educator Mr Jacky Philips, Educator Ms Laura Maffei, Educator Ms Maria da Luz Sampaio, Educator Ms Arjana Blazic, Educator Ms Tuija Lindström, Educator (*) Teachers with different subjects and responsibilities within the Education system
Educational Pilots Participants: YOUCOOP CoLaboratory, Palma de Mallorca*	Andres Bestard, Student Javier Padial, Student Cristina Guillem Cladera, Student Enrique Romero, Student Irene Bonín, Student Jose Bote, Student Mikel Martínez Senso, Student David Gelpi Fleta, Student (*) Students from the IES School Borja Moll and cycles of Web Applications Development and Development of Multiplatform Applications

<p>Social Networks Pilot Participants: British Library</p>	<p>Mr Paolo Viscardi, History Curator Ms Rachel Huddart, Policy Intern Mr Tim Webb, Communications Manager Mr Yiorgis Sakellariou, Composer Mr Panos Amelides, Composer & Sound Designer Mr Darius Rafter, Library and Information Ms Cheryl Tipp, Wildlife Sounds Curator</p>
<p>Tourism Pilot Participants: Stuttgart</p>	<p>Ms Ines Kreitlein, Innovative Education Ms Petra Newrly, Enhanced Learning / Digital Culture Mr Georg Sedlbauer, Digital Culture / Education Ms Corina Suceveanu, Innovation Fostering / Creative Industries Mr Enric Senabre, Project Coordinator Platoniq Mr Olivier Schulbaum, R&D Platoniq / Cultural Producer Ms Susana Noguero, Goteo.org Strategy Ms Maria G. Perulero, Goteo.org Campaigns Mr Pablo Castellano, Platoniq Developer</p>
<p>Design Pilot Participants: Aalto (Helsinki)</p>	<p>Elli, illustrator, graphic designer, visual artist Rinna, illustrator, writer Heini, visual designer Maarit, illustrator, graphic designer, visual artist Helena, graphic designer Johanna, illustrator, graphic designer</p>
<p>Design Pilot Participants: Platoniq (Barcelona)</p>	<p>Kimberly, multidisciplinary designer and creative handcrafted designer Mauricio, art director, editorial designer, design professor Cristina, architect Nacho, graphic designer</p>

Tables with results of offline UX testing of Pilots

Results UX Testing Educational Adventure Game

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> Exciting scene/setting 	<ul style="list-style-type: none"> Missing an introductory screen Background information on the mission is required in order to start the game Not clear what should be expected Letter content cannot be read Mission or information can be given with the letter Purpose of the objectives need explanation
Navigation		<ul style="list-style-type: none"> Not easy to navigate The 'Exit' button needs rewording, intends to leave the application better use a door click or 'Next' No chance to go back to a previous screen Moving between screens is not easy or logical Suggestion to close the puzzles automatically once they are solved (better recognition for users) Arrows for moving between screens would be helpful
Efficiency	<ul style="list-style-type: none"> Treasure hunt could be applied for any subject 	<ul style="list-style-type: none"> The mission needs to be clearer regarding the expected objectives Reason for collecting the items needs explanation Educational character needs

		<p>improvement</p> <ul style="list-style-type: none"> • For the use in classrooms the content needs to be changed • The content needs to focus more on the curriculum • The game-flow needs improvement • User don't knows if he is doing right or wrong • Request to create own content for the game • Dialogue from character take too much time • Contextual info about the elements in the microscope are missing • Dragging the crabs in the frame is not very precise • Request for music or audio hints
Accessibility	<ul style="list-style-type: none"> • Easy to access and start with 	<ul style="list-style-type: none"> • In the actual stage it is more for Kids • Provide information on how many items need to collected per screen
Design & Layout	<ul style="list-style-type: none"> • Entertaining • Very attractive design and layout • The atmosphere engages to move around and touch potential objects • Laboratory room and furniture are well designed 	<ul style="list-style-type: none"> • Character in the third screen doesn't look like a teacher/museums curators • Speaking characters would increase the experience for users • Desire to see big pictures of the fossils through the microscope • Design and layout between the screens varies too strong • Request to amplify the letter from the trunk • The trunk seems to float, not very realistic • Suggestion to put more secondary items with explanation into the screens

<p>Help Options</p>	<p>-</p>	<ul style="list-style-type: none"> • Clear 'Help' icon or section required • The objective screen could be used for hints and help • Suggestion to provide more information (e.g. like hints given by the character) • Suggestion to highlight clickable items in the screen
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Results UX Testing Memory Card Game

<p>Usability Indicator</p>	<p>Positive</p>	<p>Potential for Improvement</p>
<p>Starting Screen</p>	<ul style="list-style-type: none"> • The game purpose is obviously (two characters playing cards) • The funny layout engages to play 	<ul style="list-style-type: none"> • Starting screen evokes wrong expectations (only for children) • Starting screen could ask for the age first • To begin using the game is difficult (push play? or create your set?)
<p>Navigation</p>	<ul style="list-style-type: none"> • Navigation is easy and clear • Easy to go back 	<ul style="list-style-type: none"> • The second screen after pushing the 'Play' button on the starting screen is confusing (where to click for playing the game) • Users clicked repeatedly on the top menu where it says PLAY and were frustrated because nothing happens • There are no textual or visual warnings to know where to click • At the same screen it would be desired to have everything on one screen without scrolling • Suggestion to have guiding arrows instead of a scroll function • Some users don't notice the scroll function

		<ul style="list-style-type: none"> • Proposal to have audio hints for right or wrong quiz questions • Where will be new question sets integrated • Missing button to exit the application
<p>Efficiency</p>	<ul style="list-style-type: none"> • Very transferable • Usable in any level (e.g., English matching adjectives, etc.) • ‘Create your set’ option is important for the educational value • Could be integrated in different stages of a lesson (revision exercise or starter activity) 	<ul style="list-style-type: none"> • Suggestion to code a framework where different contents can be used • Educational objectives are not evident • Learning effect could be improved through a feedback form (e.g., add a final PDF report with the right questions or wrong questions with extra information) • Risk of only memorising the answers • Chance for self-evaluation • Suggestion to connect different sorts of images regarding a theme • The quiz answers could be explained more (choice followed by explanation) • Quiz questions have a too high complexity • Request to configure the level of questions • Scoring system is not clear, explanation of the rating system desired • Request for a timer for memorizing the images • By going to the menu by exiting the game the actual score is lost • No ranking option included, desire to compare with other users • Request to have a summary what students learn during their play • Sometimes an error in the search option in the create your screen set occurred, the cursor is in the search

		<p>field and continues to write</p> <ul style="list-style-type: none"> Idea of a shared database of sets for re-use by several teachers
Accessibility	<ul style="list-style-type: none"> Good accessibility Not many descriptions 	<ul style="list-style-type: none"> More explanation on the 'Level' desired (is it referring to the number of pairs or the questions) User struggles to find the interactive zone in the picture of sets available in the second screen (Play) or in the questions that come when couples are matched Missing a title set that indicates how or what the goal or theme to learn from in each one Suggestion to have a demo to learn how to play without using additional texts
Design & Layout	<ul style="list-style-type: none"> Wood design gives a natural feeling Clear, well placed Easy to read 	<ul style="list-style-type: none"> Design should vary with different topics The chosen answer should be highlighted The design is only addressing children Recommendation to offer personalisation for students (colour, shape, volume) Unclear why a dinosaur is used for the starting screen Annotation on the political correctness of the starting screen (no girl, character is a nerd) Request to have a mute option (avoid noise in classrooms) The child and dragon should be available in the other screens Missing music on the starting screen

Help Options	-	<ul style="list-style-type: none"> • Generally missing help option in the screens • Request for help/contextual information in the screen "create your set", users do not understand what to do, it does not seem intuitive to them
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Results UX Testing Learning Activity

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Starting screen is simple • Not too much information • Showing the date and teacher makes it personal so students know they're in the right place 	<ul style="list-style-type: none"> • Starting screen needs instructions of where to go first • Starting screen shows too many boxes • Clear but simple explanation desired • Confirm that all three application windows leads to the same place • General instructions regarding the different exercise modes (compare and contrast / sample analysis) and use of the icons desired • Suggestion to differentiate the three exercise modes with colours (e.g. grey or using the icon of a locker for reviewed exercises) • Sample exercises of students can replace long instructions
Navigation	<ul style="list-style-type: none"> • All in all a plain and simple navigation without too much unnecessary information 	<ul style="list-style-type: none"> • The cross up-right closes the app. It looks like it's to hide the menu • More precise options to enlarge and exit the app desired • Instruction for the students within the learning activity is not clear enough (how about "choose areas of the picture that show the different roles at the factory and make boxes to explain each role")

		<ul style="list-style-type: none"> • The instruction “Drag on the image” does not make sense, you need to “click and hold on a part of the image then drag to make a frame for your explanation” • The triangle which is showing/pointing out the difference between ‘Analyse’ and ‘Assignment’ should be bigger in order to know exactly where you are • Rename the button ‘Add’ into ‘Submit your work’ • Some functions are not intuitively clear and need some reformulation and detailed explanation • Maybe add the possibility to move the selected details • Users are confused when they want to save a comment and the use of the submit button • ‘Back to menu’ is not clear enough • In the "review" state: Menu should be separated from the picture and without opacity • In the "review" state: pink colour used for others students comments is confusing because it’s already used for teacher • The right menu should say objective or mission: analyse or "analyse mode"
<p>Efficiency</p>	<ul style="list-style-type: none"> • This kind of application could work for every subject • A lot of opportunities for the classroom use • Chance to produce a comprehensive storyline • This type of application could allow to work on several documents so at 	<ul style="list-style-type: none"> • For assessment purposes it would be good to have the chance to export students explanation into a work format for storage • Can be improved by adding a function that enables teamwork and allows to acknowledge the contributors within the team • In that version comments are not saved and the submitting option is not

	<p>the end students have to produce a synthesis of the previous documents because the type of application could facilitate the global comprehension of students about historical problems</p> <ul style="list-style-type: none"> • Could be used for other purposes (journalism, photography, biology) to share annotations or opinions on pictures 	<p>working</p> <ul style="list-style-type: none"> • Terminology used (apps) is confusing. • Before submitting the exercise to the teacher, possibility of auto-evaluation between students, more like the forum features of Moodle • The use of the site should encourage collective work • Suggestion for a "my profile" listing teachers evaluations or a score (not necessarily numerical) • Suggestion of a possibility for group work (various students analysing the picture having the possibility of mutual help) • Perception that the annotations of the teacher are more important than student's
Accessibility	<ul style="list-style-type: none"> • Easy to use 	<ul style="list-style-type: none"> • It is not clear how users receive a new exercise. Do users receive a mail alert and a reminder on deadlines? • Question on how to see others students annotations • On tablets need to double click to open the exercise
Design & Layout	<ul style="list-style-type: none"> • Simple in a positive way 	<ul style="list-style-type: none"> • Not sure if the submit button is submitting the exercise • [Compare and contrast section] lateral arrows are not easy to find • [Compare and contrast section]: missing possibility to see map entirely without the comment column to appear or possibility to hide comment • [Compare and contrast section] the 3 columns design is perceived as not easy to read.

Help Options	<ul style="list-style-type: none"> • Not mandatory necessary rather intuitive 	
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Results UX Testing Social Networks Pilot

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Cityscapes: Map image is nice on top bar 	<ul style="list-style-type: none"> • Bottom placement of the map is not intuitive • Navigation option should be on the front page • Login prompt • Login with a non-Google/Facebook/Twitter account was apparently not possible (couldn't see icon) • Login can put potential users off completely • Needs a 'Please login' reminder in central location of landing page • No link between birdlife and cityscapes • Went back to explore run into huge photo • Cityscapes: very few sounds • Need something more contemporary
Navigation	<ul style="list-style-type: none"> • Cityscapes: Navigation very easy to follow • Stay focused on page / sound • Good descriptions • Easy, similar to Maps Google • Good to have pictures of the recorded space 	<ul style="list-style-type: none"> • One instance when link to Soundcloud didn't open widget, just linked to Soundcloud • Finding files using the map isn't all that useful – lists, taxonomies and searches are more useful (want species) • Tags should link to sets of data • Back button, escape to close widget etc. would be good for navigation • Links should open in new tab • Back to menu button (rather than using the browser) after playing a recording

	<p>(need more though)</p>	<ul style="list-style-type: none"> • Expect map on the right bar to open the full map if clicked • It would be nice to be able to minimize widget while listening to the sound file in order to search more easily on the map for further files / pins • Also be nice to have links to further context opening in a new window when clicked. This would allow sound to be experiences with usual and text content, rather than separately from it • When click on pin, I need to immediately see more info without scroll down • Cityscapes: some confusion when switching pins (Audioboo)
<p>Efficiency</p>	<ul style="list-style-type: none"> • - 	<ul style="list-style-type: none"> • The timeline at the top spans from 1960-2010. Selecting recordings from 1960-1970 would be good to know equipment and technology used for the recording • When clicking on a pin would be good to know at least the year of the recording • Birdlife: some of the pins link to sounds which are not bird related • The pop-up for 'Frensham Grent Pond' covers some of the pins – preventing access to info. It only clears when you return to the full screen map • Birdlife: pins don't offer descriptions. It would be nice to see a text box opening when the cursor is over to say what the pin is, without having to open the link • It would be useful to have the sound file open and play on the click from the map (Soundcloud). Fewer clicks are always better • The tags with the sound files aren't linked. They only serve a metadata function rather than also acting as a navigation aid. It would help the user if these tags were active links to more content

		<ul style="list-style-type: none"> • People with an ornithology background will be more interested in knowing what birds are recorded and available than where they are recorded. I suggest that the map be considered a secondary mechanism for delivering the information about recording after a taxonomic selection or search option • Initially Greyherons frame linked out to soundcloud to play clip. Is it possible to embed a widget in the history pin page? Likely users will go off to explore Soundcloud • Greyheron description useful but think it needs a source (it's from BL blurb on sound cloud) – relationship to Wikipedia article. Is it editable if someone disagrees? • 'Comment' option suggests a narrow range of responses (akin to usual website comments). Does not encourage uploading of varied content / media as per Wikipedia • Would be nice if links in comments were active also if pictures could be embedded in the comment • Clicking the 'Close Window' box doesn't stop the audio, leading to an error message • Quitting the sound window without pausing the sound first removed all the pins from the map • Options for sharing a sound are hidden by embedded Audioboo object (IE) • What's a sound map? • Ask people to contribute with recordings • Instead of suggested lines such as Wiki, send them to sites related to field recording, acoustic ecology, sound archaeology etc. • Instead of having just comments, could you have separate tabs for links,
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		<p>pictures, description etc.? Might help prevent the same resource being added multiple times</p> <ul style="list-style-type: none"> • Creative use: technical info (Hz / bits) • When click at the recordist would be good to see info about them • At 'information' I need technical info as well • No obvious way to search by tags • Would be good to encourage recordists to provide info about the time (e.g. morning) • Give option to select / loop a portion or whole file • Be useful to have an edit button in the comments to fix mistakes / formatting issues • Locations aren't right for some files (e.g. St. Pancras announcements on map pin located on Tottenham Court Road)
<p>Accessibility</p>	<ul style="list-style-type: none"> • Audioboo widget seems more pleasing to use than Soundcloud 	<ul style="list-style-type: none"> • A pop-up player would mean you could explore the page whilst keeping an eye on the audio file • Interesting comments on recording's Audioboo page / any way they could be imported? • Server error when attempting to log in to history pin using Twitter • Lack of method for searching for content except using map. This is a major drawback • Needs a tag cloud and search box that allows recovery of links to sound files in a tabulated and sortable format • Want to search by species and not by format • No obvious way to add metadata beyond comments • Would help if Dutch descriptions were translated

		<ul style="list-style-type: none"> • Login issues / logging in puts people off, plus logging in led to error messages (in some cases) • Share options not obvious • Birdlife: it would be useful to have the 'Esc' button to clear the audio window • Not clear how to contribute tags (via Soundcloud) • Feel this is a user expectation on seeing tags displayed • Login necessary for comment (according to Mia Ridge this is a big turn-off for crowdsourcing contributions) • Making an account without using 'Big 3' social media sites is not immediately obvious • External links should open in new tabs • Maybe use categories (group of sounds / lists)
Design & Layout	<ul style="list-style-type: none"> • Birdlife descriptions much better than cityscapes one • Good to have fade-outs in the audio files • Like the dateline showing when recordings were made • Map nice • Dateline interesting • Cityscapes: nice map interface • Easy to add a comment 	<ul style="list-style-type: none"> • Dateline with more data may increase value of the feature • Intrusive logo for BL on Soundcloud means more scrolling • 'Explore the map' prompt is not obvious at bottom of screen although scrolling opening is eye-catching • Text box for adding comment not very clear • See the wave form and / or spectrogram ('see' the sound)
Help Options	<ul style="list-style-type: none"> • - 	<ul style="list-style-type: none"> • Clicking on pink question marks brings up message for historypin – not usual expectation for help button

		<ul style="list-style-type: none"> • FAQ would be more useful as first point of help process • No obvious way to flag up problems with receiving the activation e-mail or to have a new e-mail sent to a different address
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Results UX Testing Tourism Pilot

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Practice examples pique my interest in trying it myself 	<ul style="list-style-type: none"> • Loading takes long • Too many pics at once à hard to focus • Loading process too long • Mobile android: image size too large, introduction text not readable, scrolling function doesn't work • Not really self-explanatory • Purpose not so clear • Confusing if you don't know the applications purpose • Grammar / logic mistake in second sentence ("??") à had to read it twice
Navigation	<ul style="list-style-type: none"> • Easy to find basic action of recreating painting, by just clicking on the "Go" button • Easy to navigate • Links & buttons = clear • Easy on starting page 	<ul style="list-style-type: none"> • Search by Types of space o light (just like camera option) missing • The moving/zooming picture feature in step 1 and 2 is confusing, maybe a text tip would let me know I am able to zoom to check picture details • The button asking to choose between uploading an existing pic and take one at the moment doesn't appear at all at step 2. • Just realized at the end that the "Tips & Tricks" links are specific for each picture rather than general. Maybe a longer menu caption saying "for this picture"

		<p>would make more people pay attention to it and follow those detailed recommendations</p> <ul style="list-style-type: none"> • Search by numbers of people in the picture needed • Step 3 is divided in few sub steps, and it seems we're stuck if number doesn't change, maybe a 4th step for editing comment and sharing is needed • sharing buttons should be above the final picture • Geolocalization of the picture and of the Museum where it comes from would be interesting • What are buttons • Back to homepage??? • Unclear what buttons do – Go??? • Move out of the pic / pic not locked • Not clear where to upload the picture • 'Go' – button not self-explanatory • No search function • The description tells me I can choose a painting according to certain criteria. But then the search function is not clear • Categories seem to appear randomly next to pictures • No overview of categories
<p>Efficiency</p>	<ul style="list-style-type: none"> • Cool idea, easy to participate in • Language / wording • Fun factor = high • Selfie potential • Interesting to read explanations about painting (nice to have a link to the gallery) • A one-time experience? • Annoying title 	<ul style="list-style-type: none"> • Resize in Step 3 not working smoothly • A share in WhatsApp and telegram would be useful • With my second re-enactment the process stuck for ages with the progress circle moving in step 2 when loading the masterpiece • With Samsung Note II (O.S Android 4.4.2) in general takes more than 1 minute to change screens, specially the first ones which are important to engage and to know what can you do with the app. That has decreased my motivation

	<ul style="list-style-type: none"> • Purpose / function just twinning • Link to tourism? 	<p>as user. I think is great to show results from what you can do directly on the main screen, so it shows the goal, but being images it takes too long. Maybe I would reduce the number of pics or improve speed in another way there, in order not to lose users.</p> <ul style="list-style-type: none"> • The pic you take to recreate the portraits should be stored in the device by default. I am not able to have it out of the web. • Serious problems when moving the picture taken in order to slip the image and adjust it. Not the zoom nor the turnaround function, but the right/left slipping option (I had to crop the image with another app and then repeat the process, selection gallery rather than camera as source for the picture) • Even is cool to have some examples when selecting the painting you want to recreate, a search option considering people and context characteristics is key. First I selected one image and then I didn't like it but I had to go through all the example images again to find one, waiting for them to load and so on • original picture should be next to my camera picture • Version 2 should include image similarity comparison and see how far I am from a perfect re-enactment. • Should get a score and compare my pictures to others re-enactment • The choice of the creative commons license applied to final picture is automatic. Shouldn't I be able to choose the CC license according to the license applied to the original picture? In some case the license applied to the re-enactment is more restrictive than the original picture license
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		<ul style="list-style-type: none"> • Although this Pilot is not about education, I would develop a special educational kit to provide to teachers with more details and tips to use re-enactment in the classroom to learn about a certain painting movement and "give argument to kids to bring their parents to museums. This kit would also be useful for tourist Guides of Museums • Note that on IMac my Camera is not detected and I get only the upload option • With Linux Mint and Firefox in laptop, when clicking on the camera icon camera is not recognized and activates by default uploading archive.
<p>Accessibility</p>	<ul style="list-style-type: none"> • User control + navigation = okay • Content = easy to access 	<ul style="list-style-type: none"> • I don't really understand what the register process is for. I find it unnecessary to ask for data to the user in this kind of application. What for? They can accept the terms and conditions without provide any data. • although I used the same device I had to accept conditions twice • The option of saving image locally would be nice • time and process of curation on the Tumblr blog is not clear, maybe a copy of the picture or a link should be sent automatically by mail • loading time • IE didn't work • Login • Lengthy login (page didn't load) • Registration problematic • Registration àname & email (what's my benefit) • No explanation on the pricing system • Too many pictures available, no structure behind • No search function

		<ul style="list-style-type: none"> • How to use pictures, upload pictures
Design & Layout	<ul style="list-style-type: none"> • I love the tips about images, especially the ones with some humoristic touch • Very engaging initial page, clean and easy to navigate, you scroll looking for more by curiosity • Clear + nice • Simple design • 'About' + other written parts very clear style 	<ul style="list-style-type: none"> • Complicated to select pictures scrolling for recreating one, too big: missing thumbnail option at the beginning • I found general problems with the design: it seems to be made for iOS but buttons and frames don't get adapted properly to the Firefox browser in Android. • When clicking on "Go" it would be nice to have a random image (rather than always the same order) so you are surprised each time taking that step. • A grid or a filter with black silhouettes would be absolutely useful. Like a negative stencil • When sending a self-portrait, on the area for editing the picture it would also be good to have a "flip" option for the image, rather than only rotate. • Black background • A little bit overloaded • Explanations and descriptions are very small
Help Options	<ul style="list-style-type: none"> • Learn more 	<ul style="list-style-type: none"> • About à text is disturbing • Tips & tricks during the process (timing, content-wise) • Help after 'home' page • No visible 'Help' button

Results UX Testing Design Pilot

Usability Indicator	Positive Feedback	Suggestions for Improvement
Starting screen	<ul style="list-style-type: none"> • Simple menu. Designed more like 	<ul style="list-style-type: none"> • If I didn't know what happens after I take a photo, wouldn't necessarily try.

	<p>"mobile first"</p> <ul style="list-style-type: none"> • Easy to start the use • Great and nice display on the starting screen • Simple starting screen. Does attract to try out the camera. • Everything else was clear right away, except for the ≈ icon, but the hover text explained it. 	<ul style="list-style-type: none"> • Simplicity is a good thing, but there could be more visual hints what the application is all about. For example the word "search" would already help [mobile version] • A bit colourless. Camera icon is good, but the site doesn't really tell what the site is about [mobile version] • Simple and easy to use. But is the starting screen almost too empty? • Great to know that is all public domain so I can do what I want with results, but not clear in the initial info or message. • Given that it gets an image from your camera and there's this temptation of selfies at the beginning, it would be nice to have a disclaimer about privacy and data gathered.
<p>Navigation</p>	<ul style="list-style-type: none"> • Very intuitive navigation, easy to know where I am all the time. • At first I didn't understand the question. I know how to navigate back to start. 	<ul style="list-style-type: none"> • How to go back to the original search? Pinterest for example always opens up new tabs, so it makes possible to follow many search paths simultaneously. • Is complicated to go back if you do a new search, to recover the previous initial image when you want. • Can't find the option for going back. • Would be important to see the original image pixel size already in Culture Cam, now it is too many clicks away. • Going back to the original search results is not possible, have to start again if accidentally click some image. • Bigger image is now too many steps away, would like to be able to zoom in the Culture Cam window already. Thumbnail images are too small to see details. • Location is lost quite easily. Would like to mark images somehow, lightbox or

		<p>folder.</p> <ul style="list-style-type: none"> • Navigation goes quite deep and it is not easy to take steps back, but with mobile you can go back and forth by using browser tabs. • Can't navigate through images with browser's back/forward buttons, so if you click on the wrong image, you might have to start all over. • I don't know my location. The site is quite flat though, which is a good thing.
<p>Design & Layout</p>	<ul style="list-style-type: none"> • Great design and simplicity of elements since the beginning. • I like the title "Culture Cam! in the background very much. • I like how the results are displayed in the mobile version. Could browse them through forever. • The camera icon is a familiar one, so it's easy to imagine what happens with that. • Menu icon is familiar too. 	<ul style="list-style-type: none"> • It would be great to have also an "eye" with results for the mobile version, although I understand is complicated. • On mobile version, it would be great to have the original image on top somehow, for not losing it when scrolling down. • Maybe there could be a little number displaying how many items displayed when clicking on "<" and ">" symbols. • It would be great to have an option to drop images and slide them to reorganise the mosaic of results. • Could be better visually. Camera in the middle not good. Typography could be more interesting • Potential of the analogy between the app background and display and a museum white wall. • Camera icon guides to use it right away, but use is not that easy with a laptop, as the camera screen is in the middle and taking a photo blocks the view -> camera screen could be on left or right. • Tried to use laptop like a touch screen because of the camera icon • Share buttons more clear with the mobile version, didn't notice them in

		<p>desktop version.</p> <ul style="list-style-type: none"> • Mobile version is a bit plain, desktop version is more visual as it shows results in a more visual way. • In the mobile version there could be two columns of images (Pinterest works like that), so could see more results at once. Thumbnails are smaller but big enough to see what needed at a glance. When doing image searches is good to have a good "general overview" • The desktop version looks like a "pad" version, I wanted to click on the camera all the time and forgot is not a touch screen • Can the camera viewer be to the side? now It is hard to position the search item correctly and then bring the mouse to the right position because I can not see well. • The initial button to allow using the camera, from the browser system, does not give much confidence although unavoidable. • Hyperlinks on descriptive texts once you select a result are too long. • Not easy to identify the function of symbols/icons like "semi-similar" and "jump to europeana content" ones. • Too long URLs in the description. • The text about more information in the black circle seem not aligned at the centre, but too much to the right, touching the icon there. • The "Load more" option at the bottom of results page on mobile is not very clear. • Picture with tablet (Samsung with Android) takes too much area, so is complicated to zoom in.
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<p>Accessibility</p>	<ul style="list-style-type: none"> • Very nice transition between images when the mouse is over, and nice "touch" there. • Seems like the best gadget for the app is a mobile, which you can easily use to capture images compared to desktop or tablet. 	<ul style="list-style-type: none"> • Menu clear enough. I would want to be able to zoom images bigger while browsing through search results. • How to download images is unclear. If the purpose is to encourage use, it would be good to be able to "Use" them right away • The "take photo" button could be bigger so it would be easier to click it - for example the whole camera window could be the button. • Text when doing on mouse-over is too small and difficult to read. • Not easy to understand if there's more results than 30, now realise after a while that with the signs "<" and ">" help you to browse. • Not sure why when refreshing by clicking on that option the images shown from results are the same ones. • Not intuitive and hard to deal with exiting the main menu after clicking on it on top, need to click there again but any place outside the circle seems the logical one.
<p>Efficiency</p>	<ul style="list-style-type: none"> • Shazam but for images! very nice. • The value here for me as a designer is that I could trust more the quality and cultural importance of results than in Pinterest for inspiration. • To know there's an institution like Europeana and that ecosystem of GLAM institutions behind 	<ul style="list-style-type: none"> • Great to have, apart from this "serendipity" version a more filtered one, without losing the surprise/inspiration effect. • Once you get contextual info about selected images with (i) I expect Author and Title of work rather than URL and license. • The chain symbol for sharing URL does not seem to copy the link automatically. • However it would be great to be able to do a new search with the same initial image (and not capturing a new one each time)

	<p>gives it more credibility as a tool.</p> <ul style="list-style-type: none"> • Fantastic app for starting a project, when you want to be inspired, but also for latter stages if you could filter a little bit. • Easy to share an image result with the tablet, by just clicking on the default sharing option there with Android. • I like that seems to take in consideration shapes but also colours. • Great tool for benchmarking and getting inspired by high cultural content and serious stuff. • Nice intermediate service between Google and Pinterest, with differentiate and specific/curated value. • Nice to find in results images of things "not contaminated" by mass media or other contemporary influences. • Lots of interesting images are found. Old images mostly, because of copyright issues obviously. • Easy to use if the objective is only to 	<ul style="list-style-type: none"> • Great if rather than taking a picture I could upload one, from desktop or mobile. • I would like to zoom once the picture is taken, so I can choose an specific area before sending to find matches. • Wish there could be a filter for getting inspired by filtering a little bit: colour, shape, type or format too. • Complicated to use the tablet with a book picture, compared to the mobile. • In one result I got too many dark portraits. • Not easy to share image in results with Iphone. • When sharing via Facebook I expected the "eye" shuttle screen image to be shared there rather than the original picture I took. • _dev version seems not to work with mobile (iPhone) nor tablet, until you click on the camera icon. • It would help to understand the search algorithm better to be able to search in a more efficient way. Or possibility to decide what is used (shape, pattern etc) to do the search. So some sort of "advance" search were there could be more control of the parameters used to make the search like more weight to the pattern, or the color, or etc. • I work mostly by computer, so it would be good to be able to upload the work file to Culture cam and to search with that (or for example search with a pic found in Pinterest). With mobile that is possible, so why not with desktop version too? • I would like to define the search with additional words or even with another image. • How to save several images at once?
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	<p>make a search</p> <ul style="list-style-type: none"> • Simple and easy to use • Mobile version works better, the interface is simpler and more intuitive. • Yes, as long as I can try out more. Mobile version is a bit slow [old phone used for testing] but works. 	<p>Tool could be used for making moodboards.</p> <ul style="list-style-type: none"> • Pinterest and maybe also Instagram share button! They are image based services, so it would be more suited for sharing these images. Share possibility also for single image, not only for the whole search result. • The same images keep showing up in the mobile version, no matter what is used to do the search. • Could there be a possibility to select images I don't want to see in the search results? (As a way of refining the search) • Pinterest share button needed! • Would be handy to be able to save found images to a session lightbox, perhaps that would also solve the issue of not being able to go back within the search results • It would be useful to be able to zoom into the picture in the starting screen already and to make a search with just a part of the image • Important if it could have a zoom option before showing the search results. • It would be great that you could have the option to download or copy the images once selected. • When clicking on Twitter option, the pre-selected message could include a shortened version of the link. • Ideally when browsing on mobile version image could get bigger when clicking on it. • I would like to do the same as with Pinterest: to save results or give them a keyword so I can come back to a "inspiration board" • I think a heart symbol or "Pin-it" or
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		similar to save results on my Pinterest page will be a must, since that's the tool we use to collect visual inspiration.
Help Options	<ul style="list-style-type: none"> • Easy to learn and use. 	<ul style="list-style-type: none"> • How to download images? That could be more clear and simple function.

Tables with results of online UX testing of Pilots

Results Online UX Testing Educational Adventure Game

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • clear design, easy to understand • easy to come back to the screen page • dark but adapted 	<ul style="list-style-type: none"> • Title screen should appear before the start screen • only start game works • The starting menu is clear but lacks context since once started the game does not tell you about the mission or character • The initial screen could be more engaging • The Help, About, and Exit buttons don't work. • Therefore, you do not know what the purpose of the game is.
Navigation	<ul style="list-style-type: none"> • the glowing stars are very useful • Text are engaging in the way express the thinking of the player • Good 	<ul style="list-style-type: none"> • it's difficult to see the accept button to continue reading • It lacks in different moments enough information or intuitive options to know how or where to use the items • Lacks of coherence between the spaces and where you are, the only way to jump from one scene to the other is the map menu • It is not intuitive how to move from

		one room to another.
Efficiency	<ul style="list-style-type: none"> • can be used by anyone • OK. 	<ul style="list-style-type: none"> • Expected objectives cannot be reached by the application, you get lost around the screens and what to do at each one or its interrelation • difficulties to open at the end • difficulties to get the good numbers • there are some items not clickable
Accessibility	<ul style="list-style-type: none"> • easy to use and clear in usage • The game at the beginning is quite intuitive • better than the previous version 	<ul style="list-style-type: none"> • explanation how the objects in the inventory can be used is lacking or I could not find it • I expected to click on the door to move, not the map
Design & Layout	<ul style="list-style-type: none"> • nice and smooth design • easy to read in some scenarios • Scenes are interesting to click around • Design is consistent through the whole application • OK • Pleasant 	<ul style="list-style-type: none"> • some animations would be nice to give "life" to the screens
Help Options	<ul style="list-style-type: none"> • clear and instructive 	<ul style="list-style-type: none"> • Explanation of inventory lacking • I can't access to the help option • Needed more clear tips about how to move and what to do with the objects and screen • During the game, it is unclear how to access help.

Results Online UX Testing Memory Card Game

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Nice design of the characters • easy to use • friendly characters • very clear typography • Clear menu • Attractive • Clear message from illustration • Simple • user friendly • nice, funny and clear 	<ul style="list-style-type: none"> • very long loading time without any notice after selecting the number of players • PC version missing in the display when the mouse is over the button • Maybe some music would improve first impression • childish interface • Topics of gender and class are kept from the previous version. • No direct access to instructions on how to play. This should be included in the "about" menu but this section only provides information about the game credits.
Navigation	<ul style="list-style-type: none"> • very easy to use • easy for kids and adults • While playing or creating sets is clear where you are • easy to navigate • easy 	<ul style="list-style-type: none"> • when I press back in the game, it return to the starting screen and I expected the selection page • No clear where to go to find best scores (nor way to save your name) • Not so easy to navigate when selecting a set created by yourself • The "back" button placed back in the start of the game, not the previous configuration screen. • I'm not used to see the button "next" top right • Only one text indicates who is the player or who's turn it is.

<p>Efficiency</p>	<ul style="list-style-type: none"> • draws attention to natural history • as you don't have time to answer the question, it's good to give them the time they may need to read and understand the question • The application can be used by a broader audience than the target group • Expected objectives can be reached by the application • The difficulty of the questions is appropriate. • Good 	<ul style="list-style-type: none"> • the questions are even for natural history scientists really hard • The "Create your set" section can only search for the example (Butterflies) but not for other species or content • No score when playing your own sets • player must have for each question the right answers
<p>Accessibility</p>	<ul style="list-style-type: none"> • very easy to use • clear and linear design • green tick • Intuitive and easy to access content • Vocabulary clear for indicating actions • Fluent 	<ul style="list-style-type: none"> • Animation in the menu to draw attention • How to ask questions about a new game?
<p>Design & Layout</p>	<ul style="list-style-type: none"> • character design is nice and kid friendly • nice colors associated with the study • easy to read • Invites to play, especially for kids • Simple • adapted to the public 	<ul style="list-style-type: none"> • some animation would be nice • Some images on the cards are of not very good quality • Questions are for students 15 and over but the interface is for 10 years or so
<p>Help Options</p>	<ul style="list-style-type: none"> • where help is needed I can find it • very clear, instructive 	<ul style="list-style-type: none"> • useful and easy to understand • Clear access to visual help options

Results UX Testing History Teaching Platform

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Positive first impression • Easy to navigate • Kind of actions clearly visible • Clearly visible and accessible • Displays the purpose 	<ul style="list-style-type: none"> • Starting screen changes in some browsers
Navigation	<ul style="list-style-type: none"> • Good layout • Tabs explain well what they will access • Intuitive • OK: no troubles • Search engine: very good and allows search with historical keywords • No need to click, you just need to hover over the item to explore it 	<ul style="list-style-type: none"> • Drop-down menu only works with a mouse on desktops / laptops • Maybe the search terms should be connected with the category
Efficiency	<ul style="list-style-type: none"> • Can also be used by political sciences and human rights teachers • Learning outcomes: good list, useful for teachers, liked the bullet points • E.g. 'The role of postcards in WW1': option to click on the pictures and get a description of the learning activity is appreciated • Very good efficiency • Room for differentiated 	<ul style="list-style-type: none"> • Sometimes problems with understanding the English • Bullet points could be shorter • Learning activity 'Using political cartoons as evidence': some of the documents don't open • A private access for teachers with some kind of 'teacher book' could be useful • Option for translation would be helpful • Text for students 'Why we learn

	<p>learning</p> <ul style="list-style-type: none"> • Learning outcomes are well explained 	<p>about WW1' was experienced as unclear</p> <ul style="list-style-type: none"> • Example 'Debate & Discussion': teachers know this information and it could be experienced as annoying to get to much unnecessary information – suggestion of short bullet points
Accessibility	-	<ul style="list-style-type: none"> • The drop down menu on the green bar didn't work on some tablets • Sometimes not easy to go back to the main page 'learning' • Access is not the same on laptop and iPad • We should have the possibility to search at any time • The search engine difficult to find • Icons 'Follow us' and 'Create' should work by clicking on the rectangle not only the text
Design & Layout	<ul style="list-style-type: none"> • Very good • Fresh colours • Worksheets and teacher guidelines are good and easy to read but add images • Teacher material and activity plan consist of good ideas, a good layout and the links are useful 	<ul style="list-style-type: none"> • Perhaps you could have three different icons next to 'Historical thinking', 'Teaching methods' and 'Teaching challenges' which could re-appear on the sub-pages • Drop-down menu to teaching methods opens by touch on iPad not on other equipment but will not close after so the document is partly covered • The iPad layout is different from the Windows layout • The iPad layout is not very attractive, lots of coloured bars and no info visible on the first page • Very text heavy, maybe use more bullet points

		<ul style="list-style-type: none"> • Too much text
Help Options	-	<ul style="list-style-type: none"> • Where? • Need of more explanation of the item, for example when you go over it with your mouse • Help not to be found in 'Learning' section • No help button on the home screen

Results UX Testing Visual Analysis of Sources App (History Education Pilot)

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Inviting 	-
Navigation	<ul style="list-style-type: none"> • Creating your own App is engaging 	<ul style="list-style-type: none"> • For students invitations it is also necessary to have a chance to indicate an expiry date • To leave the app one has to click the 'X' that's unclear for users • 'Back' button unclear ('X') • Unclear how does the menu in the app creation works (events / people / locations etc.)
Efficiency	-	<ul style="list-style-type: none"> • Not clear if it is possible to invite several persons at the same time • Sounds and videos should be included • Request to publish student's answers to make them visible to other students • Creating an app took very long and was a little frustrating • 'Analyse' file is misleading It sounds like the first instruction for students but it just gives background information

Accessibility	-	-
Design & Layout	<ul style="list-style-type: none"> • Colours • Typography 	<ul style="list-style-type: none"> • Request for an option to zoom into the selected parts of the pictures • Request for high resolution images • Suggestion to keep the instructions somehow separate from the 'Analyse' section (e.g. bottom bar)
Help Options	-	-

Results Online UX Testing Social Networks Pilot

Usability Indicator	Positive	Potential for Improvement
Starting Screen	<ul style="list-style-type: none"> • Nice pics • Captivating • Start screen looks nice • Use of archival image is welcome • Centrality of 'About the project' section to page layout seems helpful for new users 	<ul style="list-style-type: none"> • Although interesting, the way the 'Le Gramophone' archival image dominates landing page is perhaps too startling and a little confusing; it's relationship to the project is unclear - could it be made more of a background with greater prominence given to the Sound Collections title? • First page after scrolling down is a little too busy? Feel users might prefer simpler choices • Many of sounds have black spaces where image should be - perhaps only those with images should be included on the first page? Or perhaps with a default sound icon? • Highlight or give greater prominence to icon for Enlarge map - it's not immediately obvious
Navigation	<ul style="list-style-type: none"> • Being able to bring up and quickly close user profiles is good 	<ul style="list-style-type: none"> • Home button not clearly visible • Slow to load and respond with IE11 (may have been due to local network slow)

	<ul style="list-style-type: none"> Navigation is intuitive and fast 	<p>running). Worked better on Chrome.</p> <ul style="list-style-type: none"> Some problems with blank screen when using search; perhaps a 'Sorry no results were found' Map should pop out when clicked, following style of the About section. Expect standard responses to an action during navigation.
Efficiency	<ul style="list-style-type: none"> Easy to add content 	
Accessibility		<ul style="list-style-type: none"> Lack of clarity in the distinction between the four main themes and the specific contents of each Light grey text on a white background is not sufficiently high contrast for someone with visual impairment Tested on tablet it needs extra plug-in so it was impossible to use it Inclusion of alternative text markup tags on images and hyperlinks to improve accessibility for visually impaired users
Design & Layout	<ul style="list-style-type: none"> The basic structure of the site is good and the look is generally nice 	<ul style="list-style-type: none"> In Amsterdam cityscape lack of images in the pins Simplify some of the link images, so they are less cluttered and distracting. Ideally make them more obviously indicative of the subject (bird image on link to birdlife) Greater prominence to search box on home page
Help Options	<ul style="list-style-type: none"> The personal response help option is a nice feature and should work well for developing a community of users 	<ul style="list-style-type: none"> Some basic faqs might be worth adding Some kind of reward for filling new content could be added

Results Online UX Testing Tourism Pilot

Usability Indicator	Positive	Potential for Improvement
<p>Starting Screen</p>	<ul style="list-style-type: none"> • Very inspiring sample pictures • Very captivating • One can directly see how the results may look like • The same capturing on tablet as computer desktop • The starting screen loaded all pictures very quickly • Interesting, funny & engaging, makes one curious to find out more • A lot of nice new recreations that invite the user to take part • Simple and intuitive starting screen • The 'learn more' section is well explained and helpful 	<ul style="list-style-type: none"> • When opening the mobile website on a iPad a black bar is between the top of the site and the sample recreations (this issue gets solved by sliding over the samples afterwards the sample start on the top) • Visibility of the menu • The go button should be bigger on the iPad • The background is too "dark" • The toolbar is to small and not so easy to spot due to the great number of pictures
<p>Navigation</p>	<ul style="list-style-type: none"> • Very easy and simple • Very easy to upload new photos • Same fluid navigation on tablet as on desktop computer • Links and buttons are well described - easy to understand 	<ul style="list-style-type: none"> • The menu bar on the upper right is not common • For someone who is not so familiar with apps it might be not so easy/intuitive to navigate through the website • The different steps are only explained at the beginning under "learn more" - if I don't memorize them and want to check again, I have to go back to "home"

	<ul style="list-style-type: none"> • Easy to navigate once the toolbar is found and the idea behind this app is understood • Good usability • Self explaining with the right amount of information 	<ul style="list-style-type: none"> • It's too bad that there is nowhere an overview of the different key words for the search. Only by accident I stumbled across new options of search topics. • The purpose of the social media buttons on each painting is not clear right away. If I sign up, are these pictures immediately posted on my Facebook page? - Why do I have to indicate my email address then?
Efficiency	<ul style="list-style-type: none"> • The fun effect is clearly visible (already on the starting screen) • Very fast to share the recreation with social network • Same fast-processing on tablet as on desktop computer • Uploading pictures and the sending options work very well • A nice tool for everyone, no matter what age or interest 	<ul style="list-style-type: none"> • The positive ux gets challenged when the application crashes on IOS devices • It's too bad that there is nowhere an overview of the different key words for the search. Only by accident I stumbled across new options of search topics. • Step 2 caused on the ipad a website reload and a black camera screen on the iphone
Accessibility	<ul style="list-style-type: none"> • Easy accessible and simple user instructions • No problems encountered • The technical accessibility is good • Easy to handle after several tryings & especially after understanding the idea behind • The tagging improved significantly and helps the user to choose an 	<ul style="list-style-type: none"> • After pushing the 'go' button the instructions are clear but it is not obvious how to proceed, the go button sometimes disappears • The second page of paintings is not found • On tablet some problem with full screen visualization • English knowledge is mandatory for users, different languages could significantly enlarge the target audience • Suggestion to inform the user how his personal data (name and email) will be used (without the necessity to read the

	<p>appropriate artwork</p> <ul style="list-style-type: none"> • The content is easy to access • The link to creative commons is very helpful • By searching via browser the website is the first hit, good SEO 	<p>whole terms and conditions</p> <ul style="list-style-type: none"> • By hitting the 'tips and tricks' button a dark transparent banner appears without any information / the applications crashed after hitting the 'go' button to start the camera! the website always gets restarted / unable to solve the bug / same issue occurred on the iphone
Design & Layout	<ul style="list-style-type: none"> • The simple layout and design is perfectly matching the purpose of a mobile website • The tags below every painting help people to find inspiration to recreate the artwork • The whole application looks very modern • Nice idea of having all the time examples • The available artworks increase the design and layout experience • The design is very consistent • It is fun to see right away what other people have done. 	<ul style="list-style-type: none"> • On the iPad the meta data category 'By' is covering the artwork partly • The background is too dark for this fun application • The responsiveness has still potential for improvement
Help Options	<ul style="list-style-type: none"> • Satisfying help options that answer all questions • Apart from the full screen visualization same efficiency on table as in desktop computer 	<ul style="list-style-type: none"> • Sometimes the hints cause a dark transparent banner without information • Few paintings. To implemented with more contemporary art works also. • Couldn't find the help options • There are no help options before you start uploading a picture

	<ul style="list-style-type: none"> • CC licensing link to creative commons help to increase the awareness on CC licenses and offers trust for the user 	<ul style="list-style-type: none"> • It might be considered problematic that one has to fill in the email address
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Results Online UX Testing Social Networks Pilot

Usability Indicator	Positive Feedback	Suggestions for Improvement
Starting screen	<ul style="list-style-type: none"> • Simple • Clear • The starting screen is easy to understand • Floating infoboxes are useful in understanding the actions • Simple recognizable icons • Easy to use 	<ul style="list-style-type: none"> • Could be more appealing • I have Mac OS X version 10.5.8. and the culture cam does not open correctly in my Internet browsers: neither on Chrome or Safari. In Chrome all the texts and images are on top of each other. In Safari it doesn't open at all. • Add visual info on side buttons • Spreadability
Navigation	<ul style="list-style-type: none"> • Easy • Understandable • It is very enjoyable to see what comes up when seeking for similar items. Even addictive! • The navigation is pretty clear and neat 	<ul style="list-style-type: none"> • Add some functions to navigate in old search • Saving the search would be great
Design & Layout	<ul style="list-style-type: none"> • Clear • Simple • The layout is clear • The basic design is very clean and usable • In my phone (iPhone 3) everything looks good and simple • But my computer cannot show them correctly - the lay out is not working • Nice minimal design • Intuitive 	<ul style="list-style-type: none"> • More 'inviting' layout

Accessibility	<ul style="list-style-type: none"> • Even if i have an old laptop, I experienced no problems • I can reach the menu and written info • The camera won't take a picture in my Chrome. Cannot test further 	<ul style="list-style-type: none"> • It took me a while to understand how to get rid of about-content-feedback screen • The contrast on certain screens can be difficult
Efficiency	<ul style="list-style-type: none"> • Everything works on my phone • Its great that I can save the link to the image and send it by email to myself so I can reach it from my computer later 	<ul style="list-style-type: none"> • I wish there was a way to retain / save some images • Also I wish the system would limit the appearance of same images • Amplify variety of results • Add more tools for social networks
Help Options		<ul style="list-style-type: none"> • Increase the size of texts with info