



Europeana Space – Spaces of possibility for the creative reuse of Europeana’s content
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1 EXECUTIVE SUMMARY

The Museums pilot has a structure that is unique to the E-Space project. It is divided into two distinct sub-pilots both focusing on museums, but with each one involving different partners, as stated in the DoW, and each targeting different stakeholders through different applications:

1. Museumsmedien and content providers, that are not partners of the project, focused on *Integration of the Toolbox* (henceforth called 'Toolbox'). The Toolbox is a web app is a unique tool designed for educational staff and curators in museums and memorials.
2. EUREVA and the following partners SPK, LAM and EVK as content providers focused on the *Integration of the mobile application for museums visitors*, called Blinkster. Blinkster is a mobile app for increasing the value of visitors' experience in museums via mobile phone. It also provides an admin app designed for museums and exhibition curators facilitating the upload of contents and information, which informs the visitors' app.

The main focus of this pilot is to provide innovation solutions towards the re-use of digital cultural heritage contents for education and 'edutainment' purposes. The Museums pilot elaborates on already existing solutions, developed by the Small and Medium sized Enterprise (SME) partners under real use cases (in other projects with customers).

The document describes the results achieved by the two sub-pilots and all the activities carried out, including the technical implementation, the selection of contents and the results of the evaluation activities.

A series of events and evaluation activities have been implemented as part of the pilot activities, to fine-tune the two products and evaluate their effectiveness and usability.

The results of the evaluation activities have been used not only to improve the technological solutions themselves, but also to design a strategy towards impact and sustainability, and future activities of the two sub-pilots.

2 INTRODUCTION

2.1 BACKGROUND

Museums and memorials staff in charge of audience development, design of educational contents, and enhancement of visitors' experience must nowadays also be experts in media, open systems and content management tools. Furthermore, within a few years the use of mobile applications became almost mandatory for cultural institutions wishing to boost and consolidate their 'image' to attract more visitors and provide new edutainment experiences. The result of this change has also led to museum visitors becoming ever more exigent in terms of the services that they expect to receive. Engaging with such a demanding audience is a challenge that requires a consistent mix of communication, technology and contents. Most of the museums and memorials in Europe are small to midsize and specialised in terms of contents. The smaller institutions are also those that experience more difficulties in remaining competitive, mainly due to lack of financial and staff resources. Therefore, the possibility of enriching the services offered to the public is even more important for them than for bigger and well-known cultural institutions. The Museums pilot, together with the WITH platform developed within the project's Technical Space, offers the possibility of enriching their collections and educational contents also owing to the re-use of the rich patrimony of Europeana.

With these elements in mind, the E-Space consortium designed the Museums pilot to provide easy and accessible solutions for museums and memorials to increase business potential, not only for the cultural institutions themselves but also for the hi-tech sector focusing on cultural heritage.

2.2 ROLE OF THIS DELIVERABLE IN THE PROJECT

This deliverable presents the activities carried out in the first 24 months of the project lifespan to date under the Task 4.6 dedicated to Museums. It reports on the execution of project activities and reflects on the main lessons learned in terms of future activities. For purposes of sustainability this, not only concerns E-Space but also, and mainly, focuses on possible application of the pilot results to digital solutions for cultural heritage in different fields: technology driven solutions for cultural heritage as used by content providers, exhibition and museums curators, and professional storytellers for the cultural sector.

2.3 APPROACH

The Museums pilot is divided into two sub-pilots, the first is the Toolbox and the second is Blinkster.

The Toolbox is designed to enhance the collections of museums and memorials. It is a web based app that is designed to be used by curators and/or educators. Using specifically designed templates, information and images can be added to create worksheets and storyboards, tailored to collections and exhibitions, for members of the public and/or school students.

Blinkster is an app that is aimed more directly at visitors to museums of other cultural institutions. Members of the public can use their mobile phones to take a picture and receive supplementary information about the item or image in front of them. To make this possible, institutions have to populate the back-end database with both images and text.

The Museums pilot has taken this dual approach, considering how cultural institutions can enhance their offer to the general public, both through increasing the information/stories that are available within collections, and by enhancing the visitor experience, with additional information being available within the palm of their hand.

2.4 STRUCTURE OF THE DOCUMENT

Since this pilot is divided in two distinct parts, it has been decided to report on the two sub-pilots separately. Therefore the first part of the document is devoted to the Toolbox (chapter 3), while the second half to the Blinkster app (chapter 4).

Finally, an overall conclusion is presented (chapter 5), including the lessons learned from the Museums pilot in general.

3 TOOLBOX

3.1 INTRODUCTION

Today, staff members in memorials, museums and cultural institutions are more and more accustomed to the use of media, open systems and content management tools. The museums and memorials wish to manage and provide the content for different purposes, with easy-to-use systems.

For organisations it is essential to have a presence in the digital media world. To distribute content, several digital channels exist: 'physically on site in the institutions, with digital collections on offer to the public, e.g. introduction videos, interactive multimedia applications, special educational media, searchable databases; and 'virtually' on websites, on mobile platforms, in social media.

The sub-pilot Toolbox is an answer to these challenges. An intelligent data and content management Toolbox will help to reduce both the staff and upkeep costs for memorials and museums by managing their digital resources and providing content for different purposes in a few easy steps. For smaller and medium sized institutions in particular, it is vital that they produce something that can be used more than once.

Furthermore the Toolbox will improve the collaboration between small and medium sized memorials and museums and the creative industry. Content will be presented more effectively and used and re-used by the creative partners in developing new creative products.

Moreover the Toolbox offers the possibility to search in and use data from Europeana (respecting copyright).

The Toolbox pilot is developed for educational use in memorials and museums. It enables educational staff as well as creative partners to update or create new worksheets, or edit storyboards for media production. By using the Toolbox, both sides can save money and time.

The Museums Toolbox sub-pilot has achieved all of its objectives towards the development of the Toolbox as scheduled, in the first 24 month of the project, with the final outcome of the Toolbox in January 2016. This includes final adjustments made after analysis of the evaluation event that took place in October, and also the production of the teaser video for the MOOC (Massive Open Online Course) session and promotional purposes.

A promotional video for the Toolbox pilot is available here: <https://youtu.be/b6pCe2UZio0>.

3.2 SUB-PILOT EXECUTION

The work on the pilot development started in February 2014 immediately after the kick off meeting, with planning and structuring of the technical - contextual - and work flow areas.

Aside from the technical development of the pilot, the most difficult part was the coordination with such a large institution as the German Resistance Memorial Center in Berlin (GDW) and Silent Heroes Memorial (as part of Foundation German Resistance Memorial). In the early stages of the pilot work, Museumsmedien set up a working group with educational and scientific staff. This working group met regularly, and was assisted by the GDW director Professor Dr. Johannes Tuchel, where needed. Members of the working group are Beatrix Lehmann and Peter Werder (Museumsmedien), Dr. Claudia Schoppmann (GDW/ Silent Heroes Memorial), Dr. Tanja von Fransecky (GDW/ Silent Heroes Memorial), Dr. Christine Müller-Botsch (GDW), Susanne Brömel (GDW).

Museumsmedien, with its long term experience in fields of educational and exhibition media (structuring process, development, screen design, production and integration in exhibitions), led this working group. The work was intense and effective despite it requiring much effort in terms of organisation and coordination. The group continued its work until the end of the pilot development in January 2016.

The development activities of the Toolbox pilot can be divided in the following phases, each marked by specific milestones/results:

First phase: Planning and structuring of the technical development

Several meetings with the content provider took place in the first project phase. These meetings clarified the requirements and possibilities of the Toolbox, on the part of the content provider and Museumsmedien (subsequent requirements including agreement for using content are published in the project deliverables D4.2 – *Pilots coordination: information on technical planning* - and D4.3 – *Pilot prototypes*).

Second phase: Development of the basic frame of the Toolbox application and prototypes realisation

The technical framework for and definitions of the Toolbox were finalised in this phase, which lasted from month 2 until month 18. The basic layout was created and the login and welcome page were made. Last, but not least, the project server for Toolbox was set up. Prototype 1 (month 12) and prototype 2 (month 18) were realised.

The following internal milestones marked the end of this phase:

- MS 1: Technical framework and definitions for the Toolbox (July 2014).
- MS 2: First release of prototype 1 (January 2015, corresponding to project milestone nr. 7).
- MS 3: Collection of feedback and implementations (before technical review in April 2015).
- MS 4: Second improved version – prototype 2 – including revision of labels, new HTML/worksheet integration, minor look and feel adjustments (September 2015).

Third phase: User test and evaluation

In several sessions during the second year of the project, the educational staff of memorials had the chance to test the Toolbox and discuss its future usability. This exchange of information, wishes and requirements accompanied the development until the end of the final outcome of the Toolbox in month 24, in January 2016.

The evaluation happened during the workshop “Presentation and evaluation of the Toolbox,” in October 2015 in Berlin at German Resistance Memorial Center. The workshop was the first public presentation of the Toolbox. The results and analysis of an evaluation questionnaire influenced the final adjustments. For a detailed description of the evaluation event see section 3.6 Evaluation of the sub-pilot below.

The end of this phase was marked by the internal pilot milestone number MS 5: Evaluation of the Toolbox (October 2015), and the last milestone number MS 6: Outcome of the Toolbox (January 2016).

Aside from the concrete development of the Toolbox, Museumsmedien accomplished several activities to disseminate the sub-pilot in general and also the E-Space project that included production of articles for the project blog and attendance to related events. Further dissemination activities will take place in the remaining months of the project.

3.3 OUTCOMES

The main concrete outcomes of the Toolbox are the web app itself as well as the worksheets and materials produced by the memorial through the use of the Toolbox.

The Toolbox web app

The web based Toolbox is an open source app ready to use for memorials, museums and cultural institutions. All software used within the Toolbox is open source: based on a Linux / Apache web server with a Typo3 CMS installation. It uses PHP, MySQL database, JQuery and JavaScript frameworks. All developments have been made according to project deliverable D4.2 - *Pilots coordination: information on technical planning*.

Worksheets and materials produced with the Toolbox

Since January 2015, the Toolbox has been used by GDW and Silent Heroes Memorial to produce educational material. The following different workspaces have been created to produce worksheets and storyboards, some of which are available in the annex:

- Nelly Sturm and others (material for worksheet).
- At the Side of Mass Murder – The story of Bertold Beitz (material for worksheet, screenshot).
- Fled a death transport – Story of Michael Rozenek and his brother Jurek (material for worksheet, screenshot).
- Mirjam Ohrringer – I am educated, according to Marx and Moses (material for worksheet).
- Samuel Bak – The Story of Major Karl Plagge (material for worksheet).
- Oskar Schindler – The man behind the ‘list’ (material for worksheet and storyboard, screenshot).
- Eugen Herman-Friede – Resistance group: Community for Peace and Reconstruction. Worksheet is used in German Resistance Memorial Center and Silent Heroes Memorial for educational work (materials for worksheet and storyboard, screenshot).
- Simon Gronowski – The Boy who jumped off a death transport (material for storyboard).
- Survival in disguise – from Poland to Berlin (material for worksheet and link to best practice video, screenshot).

3.4 CONTENT SOURCES

Museumsmedien invited the German Resistance Memorial Center in Berlin to be a content provider for the cooperation in this project. Also, a close cooperation for the Toolbox development was planned with “Silent Heroes Memorial,” one of the central memorials, of the Federal Republic of Germany (<http://www.gedenkstaette-stille-helden.de/english.html>) (please refer to D4.3 - *Pilot prototypes* - page 75, details of content provider, and webpage: (<http://www.gdw-berlin.de/en/home/>)).

On July 1, 2014, the Federal Chancellor of Germany Angela Merkel opened the new permanent exhibition “Resistance against National Socialism” in the German Resistance Memorial Center in Berlin. The entire social breadth and ideological diversity of the fight against the National Socialist dictatorship is documented in 18 topic areas.

The barrier-free permanent exhibition is accompanied by a wide range of media and materials, along with an audio guide in seven languages and a video guide in German Sign Language. Museumsmedien produced an extensive digital media offer for the exhibition (see E-Space blogpost: <http://www.digitalmeetsculture.net/article/german-resistance-memorial-center-in-berlin-new-permanent-exhibition/>).

The development of the new educational program in the memorial will be accompanied by the Toolbox after its outcome in January 2016.

The memorials are commemorating those courageous people who helped persecuted Jews during the Nazi dictatorship. Both institutions belong to the Foundation German Resistance Memorial Center.

Most of the used content is provided by German Resistance Memorial Center. Moreover Museumsmedien made contacts with private owners, to search and use new content.

Furthermore sources like Europeana, Wiki Commons and Wikimedia Commons will be used.

Names of repositories used (final number of images from them will be given after outcome):

- German Resistance Memorial Center;
- www.searchformajorplagge.com;
- History Workshop Darmstadt;
- Irmgard Voshaar;
- Europeana;
- Wikimedia Commons;
- RBB (public regional broadcaster for Berlin and Brandenburg):
 - Interview with Barbara Schieb, The Silent Heroes Memorial: <http://www.rbb-online.de/politik/beitrag/2013/11/75-jahre-pogromnacht-juden-scharff.html>;
 - Broadcast and project Inforadio (RBB) Berlin in time of National Socialism <http://wegmarken.inforadio.de/> (different videos for download);
 - Movie about Otto Weidt: "A blind Hero – The love of Otto Weidt" – Production NDR, RBB, 6.1.2014;
 - Destiny of a three-year old child, deported to concentration camp Buchenwald. The boy survived hidden. http://www.rbb-online.de/stilbruch/archiv/20150326_2215/neuverfilmung-nackt-unter-woelfen.html.

The following tables provide an overview of the type of files used and their content sources:

| Source | Type of content | Number of objects | License |
|----------------------------------|-----------------|----------------------|-------------|
| Silent Heroes Memorial, Berlin | Images | about 120 | CC BY-NC-ND |
| Irmgard Voshaar (private person) | Images | 2 | CC BY-NC-SA |
| Gallery of the Saved | Documents | About 5 ¹ | CC BY-NC-SA |

Types of image files used from Europeana and Wikimedia Commons:

About 10 images from Europeana have been used in different Toolbox workspace. All images are in CC-BY license. About 10 images in CC-BY-SA license have been used from Wikimedia Commons:

| Data Provider | Provider | Country | Link |
|---|---|---------|--|
| University Osnabrück (Europeana) | Athena Plus | Germany | http://www.europeana1914-1918.eu/de/europeana/record/2048043/ProvidedCHO_Universit_t_Osnabr_ck_Historische_Bildpostkarten_7655#sthash.QsiP0bzC.dpuf |
| Deutsches Filminstitut – DIF ² (Europeana) | EFG - The European Film Gateway | Germany | http://www.europeana.eu/portal/search.html?qf=DATA_PROVIDER%3A%22Deutsches_Filminstitut_-_DIF%22&rows=24 |
| National Library of Poland ³ (Europeana) | The European Library | Poland | http://www.europeana.eu/portal/search.html?qf=DATA_PROVIDER%3A%22National_Library_of_Poland%22&rows=24 |
| Das Bundesarchiv (Wikimedia Commons) | German Federal Archive (Deutsches Bundesarchiv) Digital Image Archive | Germany | https://commons.wikimedia.org/wiki/File%3ABundesarchiv_Bild_183-J14605%2C_Ukraine%2C_Besuch_Rosenberg_bei_Koch.jpg Used in the Toolbox workspace “Survival in disguise – from Poland to Berlin” |

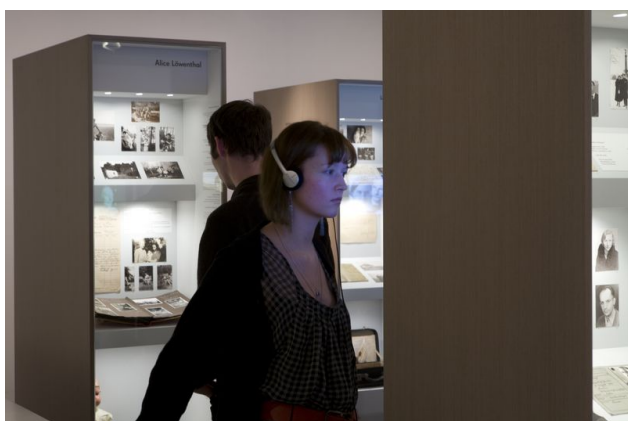
¹ On the Toolbox will be a link redirecting to http://www.searchformajorplagge.com/searchformajorplagge.com/Gallery_of_the_Saved.html that the Toolbox user can search for further documents and images.

² Movie poster: “All Jews out! Jewish persecution in a small German town 1933-1945,” could be used in different Toolbox workspaces.

³ Images from Lvov in the time of 1933-1945, used in the Toolbox workspace “Survival in disguise – from Poland to Berlin.”



Exhibition opening July 2014. Peter Steinbach, scientific director of the German Resistance Memorial Center; Monika Grütters, Minister of State for Culture and Media; Petra Pau, Vice-President of the Bundestag; Angela Merkel, Federal Chancellor; Johannes Tuchel, director of the German Resistance Memorial Center, (photo: GDW / Ernst Fessler)



Visitors in Silent Heroes Memorial (© GDW)



Educational work in German Resistance Memorial Center (© GDW)

3.5 INTEGRATION OF THE SUB-PILOT WITH THE PROJECT

Use of technical space APIs, content/private space

By using the Europeana-API, the Toolbox makes the richness of data available for Toolbox-users. Technical details were discussed in advance with WP2 Leader - NTUA.

After the outcome of the Toolbox and final data search most of the listed content will be uploaded to the project's content space and therefore Europeana.

Collaboration with other E-Space work packages and pilots

- Rights management and copyright

Close collaboration with WP3 Leader - UNEXE to develop an agreement for the use of content with German Resistance Memorial Center. The agreement is the basis for the cooperation between Museumsmedien and the Memorial. In this agreement all used data (photos and documents) will be listed.

- Cross pilot cooperation

Museumsmedien will engage in a communication and potential collaboration with the partners involved in the second Museums sub-pilot: the Blinkster app. Both pilots address museums and memorials, so it is obvious to strengthen an exchange. This will be intensified in the coming months with regard to the Museums hackathon to be held in Venice.

- Cross pilot meeting

In March 2015, the German partners of the E-Space TV pilot (Doreen Ritter and Jennifer Mueller from RBB) and the E-Space Museums pilot (Monika Hagedorn-Saupe from SPK, Sarah Wassermann from MEK and Beatrix Lehmann from Museumsmedien) had a meeting at the Institute for Museums Research in Berlin, to strengthen collaboration. The partners pointed out how they could benefit each other, and how such cooperation could support the goals of the E-Space project.

It was agreed to use RBB contents for the two museums sub-pilots Toolbox and Blinkster app. The use and potential use of the Toolbox for the RBB were discussed.

Requests concerning topics and contents (television, radio and online broadcasts) were prepared and, after rights clearance was finalised by RBB, a selection has been provided for the use in the Toolbox. The links and content have been made available at the end of January 2016.

Furthermore the partners proposed to visit or to present the pilots and the project itself in different events as dissemination activity (WP6). The list of main events and dissemination activities will be described in the dissemination report due in January 2016.

- Participation in the task force to create a MOOC

Museumsmedien will support the task force producing a teaser video. The video will introduce the Toolbox and its use. It is foreseen to integrate the teaser video to the MOOC. Pilot Coordinator FST supported the MOOC activity by providing videos from the Creative Marketing Online workshop, especially dedicated to audience development and marketing for the cultural sector.

3.6 EVALUATION OF THE TOOLBOX

3.6.1 Evaluation procedure

The evaluation took place on 29 and 30 October 2015, in the German Resistance Memorial Center. This location was perfect for the evaluation event: in the centre of Berlin, a very interesting venue for guests from other memorials, a respectable institution with high quality work, and modern technical equipment. As the content provider of the Toolbox pilot, the memorial hosted the workshop together with E-Space partner and museums sub-pilot leader Museumsmedien.

The event was titled: *Workshop: Presentation and Evaluation of the Toolbox*.

The target audience for the evaluation workshop were educational staff from small and midsized memorials and museums, graphic artists, screen designers and developers. Invitations were sent via the mailing list of the content provider and other personal contacts. This reached a wide potential audience of affiliated partners and interested institutions who were asked to attend the event. Museumsmedien used the following contacts lists:

- http://www.orte-der-erinnerung.de/de/links/datenbanken_zur_ns_geschichte/
- <http://www.gedenkstaettenforum.de/nc/linksammlung/>
- <http://www.topographie.de/de/aggb/mitglieder/mitgliederliste/z/0/>

The feedback of interested participants was enormous. Not only people participated from Berlin, close to the venue, but also from Brandenburg.

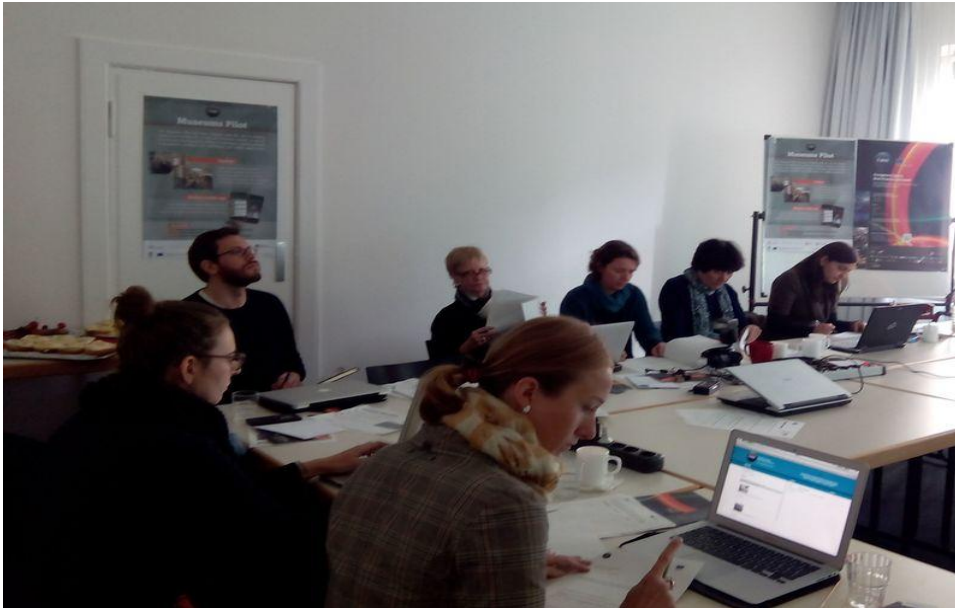
The workshop took place over two days. On the first day, staff members from different memorials had the opportunity to work with and test the Toolbox. Day two was reserved for selected creative partners. The participants came from different memorials, museums and small enterprises in Berlin and Brandenburg (see annex for list of participants).

The partners from RBB and SPK attended the workshop and had the opportunity to explain their activities in the project. Their participation enhanced the presentation of the E-Space project and supported the discussions concerning the use of data for different purposes.

20 people from memorials and museums registered for the evaluation workshop after receiving the invitation via email. The event was eventually joined by fifteen people, a smaller number due to illness. The participants mainly work in the field of education and curation. All of them are accustomed to work with computers, data search, copyright questions and databases.

Six creative partners were chosen for the second day of the evaluation event, to take part in the evaluation. All of them joined (see list of participants in Annex 1).

The workshop's atmosphere of testing, learning and discussing, was very inspiring and gave a lot of input for further development of the Toolbox, after the project. The groups from both days received the same questionnaire with fifteen questions (see questionnaire in Annex 2). Answers to them gave a detailed overview of issues concerning the usability and desirable improvements of the Toolbox.



Participants working with the Toolbox; photo: Museumsmedien



Prof. Dr. J. Tuchel (head of German Resistance Memorial Center) and Beatrix Lehmann Museumsmedien; photo: Museumsmedien

3.6.2 Evaluation results

The answers and comments from the evaluation questionnaire were collated in an Excel spreadsheet. The questions and answers are available in Annex 2.

The evaluation revealed very positive feedback of the Toolbox development. Most of the participants consider the Toolbox very helpful for the educational work in memorials and museums, and state that they would use the Toolbox in their enterprise/office/institution (questions 7 and 11).

The majority of the participants were computer experts, who think that the Toolbox can be used by computer experts as well as non-experts (questions 8 and 15).

Most participants think the Toolbox is very clear in the use of terms and uniformity (questions 5 and 6), and also agreed that the Toolbox is simple to use and easy to learn after a short introduction (questions 4 and 9). Nevertheless most of the participants would take advantage of user support and template development as a potential customer (question 10).

The majority liked the Toolbox on the whole (question 1) and liked the layout in general (question 2). However, the layouts of templates and storyboards should be improved (question 3).

Furthermore the following comments concerning the usability and improvements of the Toolbox were recorded in free text fields:

What has been liked most:

- easy way to use it;
- extremely uncomplicated;
- very clear and structured;
- a very easy way to create and edit storyboards;
- the uniform layout for worksheets;
- the quick result;
- upload for photos and documents;
- Europeana interface.

What people missed:

- possibility to edit the text on the template;
- possibility to cut a photo on the templates;
- possibility to edit the layout;
- print function;
- share button.

Recommendations for further developments that the Toolbox should include:

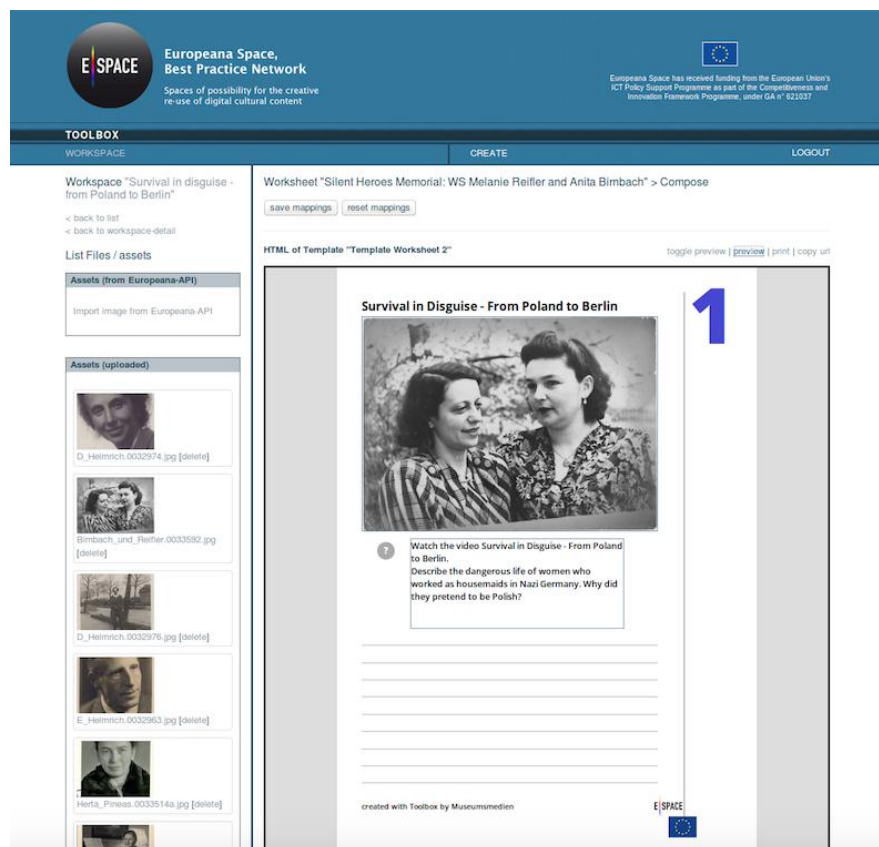
- new templates;
- connection with external databases;
- preview in separate window;
- possibility to embed the logo;
- share button;
- storyboard enlargement;
- separate field for notes and copyright;
- PDF format;
- different languages (for the use in schools).

3.6.3 Improvements after evaluation

The following improvements were made as the result of the evaluation event with input from the participants. These last technical and graphical adjustments have been realised by the end of January 2016 and are part of the final outcome of the Toolbox:

- revise labels;
- integrate new HTML template / worksheet;
- preview function;
- new database field 'Institution';
- import API: only if at least one image is selected;
- copyright information;
- project information and special hint to the content and technical space;
- last look and feel adjustments.

The image below shows a screenshot of the Toolbox, more specifically the worksheet of "Survival in Disguise - from Poland to Berlin." More screenshots and examples of application of Toolbox's worksheets are available in Annex 3.



Worksheet example of Survival in Disguise – From Poland to Berlin

The following link shows a video based on Toolbox storyboard "Survival in Disguise - from Poland to Berlin": <http://europeanaspacespace.museumsm Medien.de/index.php?id=32>.

3.7 LESSONS LEARNED

The possibility to create a simple tool for the educational work in memorials and museums was a significant big challenge. The sub-pilot reached its aims and brings a 'ready-to-use' web tool on the market. The extremely positive reactions of potential customers on the Toolbox pilot are proof of this useful development. Due to our experiences in working for museums and memorials, we were able to cope with the challenges in the project. Moreover, the German Resistance Memorial Center as the content provider for the Toolbox, supported our work in very helpful way. Without these two pillars, the development would not have been so successful. Experience in institutional work and topic expertise, or experience of leading heterogeneous working groups and achieving on-time delivery of results, are strongly recommended skills to reach the high aims of such a complex project.

What would be done differently now, based on the experience?

- The timeframe would be prepared more flexibly to interact better with the large number of different partners in such a big project.
- Greater emphasis would have been placed on the layout of different templates. That would make it easier to find new potential customers outside the field of memorials.
- The hackathon should perhaps have taken place earlier. The Museums hackathon is scheduled for March 2016 after the outcome of the Toolbox pilot. Otherwise, developments or adjustments after hackathon feedback will not possible.

This success of this sub-pilot is based on being embedded in the larger E-Space project, which offers diverse possibilities for an SME like Museumsmedien to develop an application in advance, with support from technical experts, IPR experts and market experts. Moreover, the feedback and exchange of experience with the other pilots and the experts from universities and institutes were more than enriching.

With the support of the project it was possible to handle the huge topic of IPR, copyright and licenses. An example of this added value is that the agreement with the content provider for the Toolbox pilot was supported by the experts in the project. The comprehensive information concerning these topics and the concrete support with questions regarding the use of digital content within the Toolbox. Without this support, the use of digital content from other sources than from the content provider would not have been possible.

Another big opportunity was the use of the integration of Europeana API into the Toolbox, which was most helpfully accomplished by NTUA. This increased the scope of the Toolbox enormously: users can search for photos and documents via the API in Europeana and integrate these into the Toolbox.

The provision of the E-Space Technical Space (WITH-tool) and the Content Space supported our development in a helpful way. The use of both will be continued.

3.8 EDUCATIONAL USE

The educational work in memorials and museums was the focus of the Toolbox development. With the Toolbox, educational staff in institutions can create worksheets and storyboards. The Toolbox can also be used in and by schools. Therefore, regarding the aims and outcomes of the Toolbox, it can be described as an *educational tool*.

During the development of the Toolbox, different educational materials were produced and in place by the end of January 2016 as part of the final outcome of the Toolbox (see above 3.2 Sub-pilot Execution).

Further collaborations with the German Resistance Memorial Center and the Museums Association of Saarland are planned for 2016.

Moreover, Museumsmedien is part of the educational MOOC working group led by KULEUVEN. An online course will be available after the project. An instructive teaser video will be created to learn more about the Toolbox and how to use it.

3.9 IMPACT AND SUSTAINABILITY

As main direct impact of the Toolbox delivery, current users could create worksheets based, not only on the contents and material owned within their collections, but also extending them through the re-use of contents available on Europeana and Wikimedia Commons.

The Toolbox combines existing OS solutions available for the museums and memorial staff in one online product that is accessible anywhere. Its accurate interface also makes the Toolbox very easy to use.

The activities, in relation to the evaluation, facilitated improvement, as well as dissemination of the Toolbox itself amongst other institutions that signed a collaboration agreement with the E-Space project to use the Toolbox.

The use of the Toolbox within the Museums hackathon will promote a wider usage among international cultural institutions.

Museumsmedien is the SME that has developed the Toolbox in the E-Space framework and will continue to use it as the basis for media productions and services for its customers (mainly museums and memorials). New templates for worksheets and presentations will be designed for new projects, and new features and improvements might be added for keeping the web app always updated with the latest software releases.

Furthermore, Museumsmedien plans to disseminate the Toolbox in other cultural and educational institutions, such as museum associations to increase adoption. Collaboration with regional schools is also possible for promoting the use of the Toolbox in educational activities. Moreover, the Toolbox can be used directly by students to create their own study material and 'annotations'.

To promote the educational potential of the Toolbox, Museumsmedien will present the Toolbox during lectures at Touro College Berlin and the Hochschule für Technik und Wirtschaft (HTW) Berlin.

In terms of business model, the Toolbox itself is available as OS app, but has the option to be commercially customised. The Toolbox function for creating worksheets could also be exploited by professionals and free-lancers working in the field of content curation, storytelling and audience development for the cultural sector.

3.10 FUTURE WORK

For the Toolbox sub-pilot, the following steps are anticipated towards the completion of WP4 pilot activities in Month 30:

- last development improvements and internal testing of the improved version;
- finalising data search in Europeana (for the use in Toolbox pilot), final list from content provider's data;
- preparation of hackathon in March 2016;
- dissemination activities (e.g. invitation to Rhenish Museums Office in Cologne, invitation to Saxon Palaces and Gardens GmbH, workshop in German Resistance Memorial Center);
- support the MOOC task force;
- creating the teaser video for the MOOC;
- supporting the WITH-tool.

4 BLINKSTER

4.1 INTRODUCTION

The Blinkster app has been conceived by technology partner Eureva to become a possible substitute for museum audio guides through the use of image recognition and possibility of adding descriptive content for each object of the exhibition. With Blinkster, a museum visitor can take a picture of the object that he/she is seeing and – once the object is recognised – receive extra information about it with a descriptive text, additional links, etc.

Within the E-Space project it is currently used by three main content providers – SPK from Germany, LAM from Lithuania and EVK from Estonia – to improve the user experience for museum visitors. It was also the app used within the Photography pilot.

Blinkster consists of two distinct apps: an administrative one for museums staff to upload the contents and create new collections, and a public one for visitors. It also has a web app to access the online database and refine the contents within the visitors' app.

The architecture of Blinkster was already in place at the beginning of the project. During these 24 months, the content providers of this sub-pilot played a significant role in the improvement of the overall app features – both from the admin side and from the end user side – not only by testing it and providing feedback, but also by suggesting features and implementations to meet the user requirements.

The Blinkster app went through several internal evaluations performed by the content providers that also organised specific evaluation events with museum staff in the period from June 2015 until December 2015. This resulted in new releases of the app provided by Eureva.

The first release of the app has been made available in the App and Play stores early December 2015, and has been publicly tested at the Tallinn conference during a site visit specifically organised in the afternoon of 11th December 2015 at the Estonian Museum of Applied Art and Design.



The Blinkster app

4.2 SUB-PILOT EXECUTION

Technical implementation

The first application delivered was the Administrator Blinkster app. It was only provided for Android devices and it will only be available for content managers in order to facilitate their work. This app allows for adding new elements to the database, as well as new images to each element (those images are used by the image recognition system). Additionally, the content managers can test the image recognition system and give feedback to the Eureva team about its efficiency.

This app was used to support the back-office platform, available for all the museum teams. Each content manager had a password that allowed them to consult and modify their own database. Some platform improvements have been made for the E-Space project, such as loading data content as archive files, or adding several images in one step for an element.

The client Blinkster app was first released on Android devices. It is similar to the Administrator Blinkster app, but with fewer options (no content management). The main goal was to develop an application which is simple and efficient for the everyday user. The user can consult the content using the image recognition system, as well as the search text system. Previous searches undertaken by the user are kept, so it is possible to retrieve these with the history feature.

Eureva then improved the interface of the client application for the everyday user. The graphical elements were modified, but the user interface was also improved in order to facilitate the experience of the user. This new design was validated by all the partners.

The two main features that were added to the Android app within the last few months were the possibility to change both language and museum.

The first version of the app used the device language as a reference, but requested by partners, the Eureva team added the option to change it within the app. This will modify the displayed text, but also the information that will be provided by the database in the server part, editable by content managers with the back-office platform. It is important to note that if the selected language is not supported, the app will use default language (English).

The Blinkster app was originally designed to work for only one museum at a time, but the testing phase required changing museums quite often. Therefore the possibility to change museum was added within the app itself. Currently, the available, integrated, app allows switching between museums, instead of having several apps, one each per museum. It is still to be discussed whether to keep it this way and publish it as one product, or remove this feature again and publish several apps for different museums.

The iOS version was released after the Android version, as Eureva was waiting for the graphical interface and the different features before starting the iOS development. Indeed, the validation process is a lot more complicated for this system, as any testing device must be registered before being able to use it.

This version was made as similar as possible to the Android version. The general aspect was the same, and the functionalities were all added to the system. However, some aspects of the graphical interface were a bit different, such as parameter selection (in a popup on Android, while on a different page on iOS).

During the development of this app, new features were added to both the iOS and Android version, such as displaying html formatted text, and the provision of hyperlinks to allow the user to get more information about the E-Space project.

During the whole testing phase, the efficiency of the image recognition system was improved to optimise the user experience. The delay of the server request was reduced, especially for a user's first request to improve the speed of information reaching them. The relevance of the result is still to be improved, as proper result is not always shown to the user, but the image database is still in completion.

Eureva continued the development of the Blinkster app, on both systems that were agreed for the Europeana Space project: iOS and Android.

Content provision

Below is a summary of the activities performed by the content provider partners, from the content providers' point of view.

SPK delivered the negotiated amount of objects for the implementation of the Blinkster app in their museum. SPK's goal was to deliver quality over quantity, choosing a selected number of objects that were enriched with qualified texts and contexts. These were partly created, or respectively adapted and translated, for the purpose of the app as some of them already existed as catalogue texts. To test the value of contextual content, research was done to find video and audio files on the internet that are displayed with the related object. As the insertion of object information had to be done in html coding in order to display the texts as required, SPK did a re-formatting of all texts in German and English. Links to other sources that cannot directly be displayed within the app were inserted in html as external links.

Furthermore, SPK actively supported Eureva in developing and improving the app through continuous feedback, improvement suggestions and bug reporting. This was done mostly via email and during regular Skype calls. Everything was documented in a shared document on Google drive.

Some delays in SPK activities have been caused by the fact that Eureva first started with the development of the Android version of the app, while the SPK staff have Apple devices, so they could only do their testing at a later stage. Eventually, they managed to start testing activities with the stable Android version in November 2015 (see 4.6 'Evaluation' for further information under).

EVK provided items for the Blinkster app from two very different museums – Estonian Applied Art and Design Museum (ETDM) and Kadriorg Art Museum (KAM). EVK delivered a higher amount of objects than those negotiated.

The involvement of two different museums enabled us to collect a wide range of requirements and to increase the user group for the evaluation.

Museum specialists were interested to apply new technological features to enlarge visitors' museum experience, and the Blinkster app was offering some new elements.

All available information about selected museums collections in item level were inserted via the Administrator Blinkster app and the web app. Item descriptions were modified and adapted for app usage and several descriptions were translated to enable possible multilinguality.

External links to other sources that cannot directly be displayed within the app were inserted in html. To improve the museum artefact recognition process, additional imaging was made.

EVK participated in developing and improving the app through feedback, suggestions and bug reporting. This was done mostly via email, and during Skype calls. Also a Eureva representative was visiting Tallinn, Estonia, so EVK could have direct information about the planned possibilities and was testing and inserting data with the Administrator Blinkster app.

EVK tested the app at ETDM and KAM in several rounds in order to improve the usability continuously. Test devices were personal smart-phones and tablets. Unfortunately, EVK and the museum staff could not be able to test iPhone features.

Still EVK tested the app on several Android devices like: Sony Ericsson MK16, Motorola Moto E 2nd Gen, Asus Nexus 7 tablet, etc.

LAM provided over 6000 online available items from Europeana and LIMIS systems (national museums aggregator system). All of these items have been made available under CC-BY licence. LAM staff made significant efforts in providing evaluation and technical feedback that resulted in an internal debugging document that was also adopted by the other partners involved in this sub-pilot.

XVI – XX c Vilnius Picture Gallery: representing Western, Eastern, Nordic, Southern, Central Europe spiritual and political life.

- Vilnius Picture Gallery: 500 items uploaded to Blinkster. 95% from Europeana. All the items recognised by Blinkster lead to landing pages with short descriptions in Lithuanian and references to www.europeana.eu, www.limis.lt, Athena Plus Movio solution and at local portable WiFi Access Point.
- Entire collection of 6000 items
https://docs.google.com/spreadsheets/d/1YijJKZEh1EBHrWPU_Qyq10iSFznglx4IbNvLLHrOzo/edit 50% is published at www.europeana.eu 50% at www.limis.lt

The collection has minimum viable descriptions for points of interest: Authors, Titles, Description, Production date, Material, Dimensions in Lithuanian.

The real value of collection is limited because of shortage of stories appealing to target audiences.

At the end of Year 1 the risk was evident that the content provision was progressing too slowly and this would potentially delay the finalisation of the necessary technical implementations and app release. As contingency measure, FST as pilot coordinator, produced a detailed work plan to bring the sub-pilot activities back on track. The plan included weekly Skype calls with all sub-pilot partners to strictly monitor the progress in terms of technical resolutions to problems and database improvement. All sub-pilot partners participated actively in this contingency plan and this joint effort allowed to finalise the activities on time.

4.3 OUTCOMES

The E-Space Blinkster app is currently available on the App and Play stores. It is also accessible from the project website in a dedicated page under the URL: <http://www.europeana-space.eu/blinkster/>.

It currently has 13 different locations available, corresponding to the museums of the content providers and to different exhibitions.

Despite the app still having to be fixed in some aspects, it is stable enough to be considered a semi-final product of this sub-pilot.

4.4 CONTENT SOURCES

Below is the summary of the content sources provided by each partner:

| Content provider | Source | Type of content | Number of objects | License |
|------------------|---|-----------------|-------------------|--|
| SPK | Ethnological Museum (EM): | Images Texts | 98 (each) | images: smb-digital.de – cc by nc sa , also available via Europeana texts: catalogue texts - cc by nc sa |
| SPK | Museum of European Cultures (MEK) | Images Texts | 38 (each) | images: smb-digital - cc by nc sa , also available via Europeana texts: partly catalogue texts, partly designed for the app - cc by nc sa |
| EVK | ETDM | Images Texts | 52 | CC-BY-NC (as the physical items have also some copyright restrictions) |
| EVK | ETDM 20 French Design Icons | Images Texts | 21 | free access - rights reserved |
| EVK | Kadriorg Art Museum | Images Texts | 120 | CC0 ver 1.0 |
| LAM | XVI – XX c Vilnius fine art school painting and graphic artwork | Images Texts | 300 | CC-BY |
| LAM | Vilnius Picture Gallery | Images Texts | 500 | CC-BY |

The objects inserted in the Blinkster app by **SPK** all have links to Europeana and are SPK's semi-digital entries, while the link to Wikipedia still has to be discussed/embedded.

About 95% of the objects inserted by SPK into the Blinkster database are already displayed on Europeana. Within the app, the content is presented in an enriched form. This means that detailed object texts and links to multimedia sources like articles, YouTube videos or Wikipedia have been added for the app. This content is not displayed on Europeana due to its CC0-metadata-policy, as SPK follows a CC BY-NC-SA (non commercial) policy. SPK pursues the goal of making knowledge accessible on the Internet as easily as possible. It draws a line at the commercial use of content. Public cultural institutions invest considerable financial resources to digitise their holdings. For that reason, the Foundation takes the view that appropriate fees should be charged for commercial use of digitised materials. A possible compromise for the use in Europeana could be to make these sources available on Europeana as copyrighted PDF files.

The Museum of European Cultures (MEK) in Berlin, for example, prepared a storyline around the chosen objects, corresponding to three different topics, which are:

- Personal viewpoints: museum staff present their favourite objects in the exhibition.
- Gender-queer: together with museology students from Würzburg, the museum brings objects in a new focus, concentrating on gender norms and how they can be questioned.
- Upcycling and other unique objects: special objects are in focus here, especially old materials that were evaluated via upcycling.

Furthermore, links to the object's Europeana page have been inserted into the database to connect to Europeana.

Concerning **EVK** contents: from Kadriorg Art Museum nearly 53% (64 items from 120) are from Europeana and from EDTM 20% (15 items from 73).

Of the entire LIMIS collection of **LAM** comprising 6000 items⁴ 50% is accessible through this link www.limis.lt, and 50% from Europeana.

Of the 500 items uploaded to Blinkster for the Vilnius Picture Gallery, 95% are from Europeana. All the items recognised by Blinkster lead to landing pages with short description in Lithuanian and references to www.europeana.eu, www.limis.lt, Athena Plus Movio solution and at local portable WiFi Access Point.

4.5 INTEGRATION OF THE SUB-PILOT WITH THE PROJECT

The major integration of the Blinkster sub-pilot is with the Photography pilot because they shared the same app. The Blinkster app was in fact tested by KULeuven during the Europeana Photography exhibition "All our yesterdays," taking place in Leuven from February 1, until March 15, 2015. The feedback provided by KULeuven was therefore fundamental also for the improvement of activities within Museums pilot.

SPK attended the Toolbox evaluation event by Museumsmedien on October 29, 2015 in Berlin.

They also participated in the testing of the project's Technical Space WITH platform, reporting possible bugs and improvements to NTUA via 'bugzilla'. The WITH platform enables the creation of collections for particular user groups. Such a collections, including content from the Museums pilot participants, could be created for participants to experiment with during the hackathon.

⁴ https://docs.google.com/spreadsheets/d/1YijjKZEh1EBHrWPU_Qyq10iSFznglx4IbNvLLHrOzo/edit

SPK initiated the translation of the Blinkster app handbook and website and was partly supported by the other German partners RBB and Museumsmedien. The translations are not yet finished.

Concerning integration activities carried out by LAM, the partner used the existing NTUA tool MINT to transform in bulk, LAM's collection to be incorporated into Blinkster.

The requirements for the exhibits data, as well as for the stories and the implementation of authorised access management, were explained during the planning event in Brussels (early 2014). The newly developed Technical Space platform, WITH, was successfully tested to import LAM collections from MINT. LAM produced video material illustrating how Blinkster is used for bulk upload collections and taking snapshots of POIs as well as recognising them.

Partners of the Blinkster sub-pilot will also contribute to the MOOC activity by developing a specific video about the use of Blinkster (SPK and FST).

External integration:

Exhibits recognised by Blinkster have landing pages with references to the Europeana portal (www.europeana.eu), national museum aggregator in Lithuania LIMIS portal (www.limis.lt) and storytelling tool Movio used in Europeana project Athena Plus (<http://www.athenaplus.eu/>)

4.6 EVALUATION OF BLINKSTER

4.6.1 Evaluation procedure

Evaluation of the Blinkster app started with the content providers' database. They continuously evaluated the administration web and mobile app to improve their functionality.

The same applies to the evaluation of the client Blinkster app from the administrator point of view.

EVK, SPK and LAM scheduled internal evaluation events with the museum staff to test the app and provide feedback on it between June to November 2015. This has been shared internally with Eureva through a GoogleDrive document.

A first draft of the evaluation questionnaire, both for Museums' staff and visitors, was initially developed by FST and shared with all partners for comments. The draft questionnaire was discussed in order to create the final questionnaire, but also provided the main guidelines for the internal evaluation. All content providers provided feedback on the evaluation questionnaires, especially SPK who provided additional and valuable inputs for the design and finalisation of the questionnaire for museums' visitors. The questionnaires are accessible online:

- Museum visitors: <http://goo.gl/forms/OqltcfKSo7>
- Museum staff: <http://goo.gl/forms/zFTg2Dtnfp>

Several iterations took place via email and Skype (on a weekly basis) between Eureva and the contents provider. This led to the optimisation of the Blinkster beta version under the coordination of FST. Eureva staff addressed the greater part of comments and customisation requests by the content providers in a timely manner and delivered the app on time for the testing events organised by the content providers.

LAM planned the evaluation in the following steps:

- 1) Initial evaluation of Blinkster back-end and front-end features done by technical museum staff and curators as well as the exposition of 500 items at Vilnius Picture Gallery (June-August 2015).
- 2) Evaluation of the storytelling use cases by using Blinkster opportunities; adding links to additional content repositories; adding sample video stories recorded by museum curators (September-December 2015).
- 3) User centric and wider audience (curators, visitors) oriented evaluation of the app and related storytelling solutions (January-February 2016, after the release of the app on Android and iOS at public app stores).

EVK organised an internal evaluation during the end of November with students and museum staff. Feedback has been collected and major issues have been promptly addressed by Eureva to fix bugs. EVK also organised a public evaluation workshop during the Tallinn conference at the Estonian Museum of Applied Arts and Design where nearly twenty participants could test the app and provide feedback via online questionnaire. EVK and LAM also gave a dedicated presentation during this evaluation workshop.

SPK made plans and preparations how to visualise the Blinkster objects in the exhibition. After consultations with the museum staff, it was agreed to create Blinkster displays on the museum floor or showcases to identify the integrated objects that are part of the app. An informational text was written by SPK and presented in front of the exhibitions to inform visitors about the app testing. Questionnaires were available at a standup-displays for any visitors willing to test the app.



Display at the exhibition, photo: Sarah Wassermann

In preparation for the evaluation in Tallinn, Eureva and EVK arranged a pre-testing onsite. In the pre-testing it was ascertained that the quality of some objects' pictures were not sufficient for the recognition, therefore EVK and Eureva staff re-created some objects and adjusted the database for the testing event providing an improved application in less than one day. This episode highlighted the flexibility of Blinkster and the possibility of creating a new exhibition in a few easy steps.

A first test with participants from the working group 'Multimedia' took place during the "Berliner Herbsttreffen zur Museumsdokumentation" (Annual Berlin Autumn meeting – museums documentation, October 12-14, 2015) organised by SPK. A second test with MEK and IFM staff (curators, museologists, conservators and researchers) took place on November 18, 2015. The tests could only be carried out on Android phones, as the iOS version was not yet ready for testing. The evaluations were completed via a printed questionnaire that was re-created online. A third testing with the EM staff took place on December 16, 2015.



App-testing in the exhibition & filling out the questionnaire, photo: Sarah Wassermann

During the development of the Blinkster version app several tests with Android devices were done by EVK. A more precise test was organised after the first stable demo version was announced by Eureva, on: July 16 and 22, 2015 (Blinkster version first demo), October 21, 2015 (Blinkster version 0.5), November 23, 2015 (Blinkster version 0.6).

The first two tests gave information about app functionalities and UI, some improvements were also discussed via Skype.

The third test demonstrated some limitations of the app during the search and browsing of the images and had some bugs during the image capture – image ratio was changing unexpectedly on the screen of the device. Further findings:

- first connection time was 13 seconds, the following recognition and loading times were between 4-7 seconds;
- image recognition level was quite poor, only 19 were recognised of 58 imaging recognition attempts;
- the app crashed twice during 58 recognition attempts despite the Internet connection of the device was stable (communication problem with the server).

The fourth test with Blinkster version 0.6 (Android) demonstrated better recognition level compared with previous app version (0.5). Improvements and (new) issues are:

- during the recognition the app was more accurate and faster than the previous version and if there was a response then it was faster than in previous version;
- app started to blink in random cases (4 times). To solve this it was necessary to kill the app process;
- several Android devices crashed after taking a shot;
- from the perspective of user experience the new version (0.6) was more unstable than the previous version.

LAM organised internal evaluation sessions with museum staff in the timeframe from July 2015 and December 2015.

4.6.2 Evaluation results

During the first two tests of SPK, the content was evaluated as the most positive aspect of the app. Most users agreed that the information accessed via the app made their knowledge of the exhibition more complete. The most negative aspect according to the users was the app's usability, which still needs to be improved. A basic criticism was the image recognition, in particular that the user does not only get one result but a full list from which she/he has to choose – this was evaluated as too imprecise. Furthermore, preview images are quite small so users could not always recognise which object from the list was the correct one. A suggested improvement was the possibility to save and reread content at home as well as further developments concerning the use of audio-visual material.

At the end of January, SPK organised another evaluation session with museology students. SPK analysed these results and provided a detailed evaluation summary; this is presented as Annex 4.

An evaluation event took place in Tallinn on 11 December 2015, following the E-Space conference, at the Estonian Museum of Applied Arts and Design. The event was organised by EVK and gathered about 20 participants. Participants could test the app on site as end users. A dedicated presentation about the sub-pilot was given by EVK and LAM. After the event participants received an email with a link to the evaluation questionnaire to complete the evaluation of the app.

In general the main outcomes of the evaluation in Tallinn are in line with what emerged from the SPK evaluation. The app in general is quite usable, although it still needs further improvements in terms of usability.

The full results of the evaluation by SPK and by EVK are attached to this deliverable in Annex 5.

Concerning the evaluation carried out by LAM, the results can be summarised as follows:

The point of interest recognition accuracy was fine. The number of issues that limited the realisation were reported in an internal document: “Blinkster – feedback from content providers.” The main issues were the recognition speed, the unstable connection and the missing support of national language characters in search.

LAM carried out evaluation with museum specialists and students. Technical features of Blinkster were evaluated and reported in a feedback document. Building end user-oriented applications with target audiences and relevant storytelling is constantly improving. Current Blinkster features have to be complemented with extra storytelling tools.

Most of the exhibits have minimum viable descriptions: title, author, and short descriptions in Lithuanian. These attributes are taken from national museums aggregator system LIMIS. Attributes contain information on dimensions and materials as well. Minimum viable descriptions are too generic to be interesting for target audiences. Those are adequate to be delivered to creative industries and trigger new product development.

The descriptions are appealing to target audiences but stories around the objects should still be created. That is a task that could actively involve the creative industries. LAM produced short video stories linked to POIs as well as using some videos from Lithuanian national broadcaster LRT, in order to illustrate capabilities of the collection and tools used.

4.6.3 Improvements after evaluation

The Blinkster app has been tested by the content providers since June 2015. Content providers supported the improvements of the app by suggesting significant modifications in terms for bug fixing.

Some results of the evaluation from museum staff have already been collected by SPK via the online questionnaire through the evaluation events that have been organised in the period from November-December 2015. In parallel, EVK organised an evaluation event in early November 2015 with museum staff and the feedback was summarised. The main developments and improvements that were made by Eureva for the Android version in the months after the evaluation were:

- possibility to display headings in different colours;
- links to other sources like YouTube as external pages;
- implementation of the option to select museum and language within the app;
- improvement of the image recognition speed;
- results list limited to three objects, with the most likely object appearing first.

The comments collected via the evaluation questionnaire showed an improvement from the first testing to the Tallinn evaluation in terms of positive results.

4.7 LESSONS LEARNED

The sub-pilot execution offers valuable insights for future projects on what they should be aware of and how they could gain the best results from their project. The following paragraphs summarises important points and gives advice to those wishing to work on the re-use of cultural content through mobile applications.

One challenge within the project was that different pilot partners had varying needs concerning the app. Therefore, the service design needs a more customised approach individually addressing the different users’ needs.

The role of the technology partner is also important to guide the content providers in the construction of their databases and in the usage of the admin and web apps for creating their own application. On the other hand, the role of content providers is fundamental to support the service design of the technology solution.

In this case, the needs of all partners were better met and the exchange between the partners became livelier, thus enabling a timesaving development. However, not only technical but also educational aspects and requirements should be clarified first. Therefore, the participation of an additional partner from the educational sector is beneficial to get further knowledge on acceptable text lengths, language and media use, etc. Besides, the use of a common bug reporting platform that allows direct question and feedback avoids duplicate bug reporting and eases the work progress.

Another important element to take into consideration is the contents selection. Most of the content providers have chosen the strategy of inserting in the Blinkster database all items in their collection, while a real added value for the app could be to use it to create specific storytelling on a specific exhibition or for creating different visitors' paths within a same collection/exhibition.

One specific insight SPK had during the preparation phase while talking to a curator, was that the app's use in front of delicate objects which are not behind a showcase is problematic, as Blinkster users reach out to take a photo and that might cause an alarm to go off or even harm the objects. Thus, these objects are not part of the testing. Future projects and developments should keep such issues in mind.

Some technical remarks and ideas could not be tackled within the project yet, e.g. the display of links to Wikipedia or the insertion of audio-visual material within the app. However, the project partners gained interesting ideas and feedback for further developments and improvements.

4.8 EDUCATIONAL USE

The app offers the possibility to further contextualise museum objects. If the app is further developed so that audio, video and visual material can be inserted as well, it might work as a good multimedia-guide. Another possibility would be to encourage interactivity between app users or between users and friends, for example by 'liking' or sharing content, by adding media-links or comments etc.

The current reduction to only text (or links to other media) is less attractive from an educational point of view. But a possible educational use here would be to apply the app to target foreign language speakers, as the exhibition only offers a limited space for text labels. The app could be used as an external display for texts in English or other foreign languages.

In terms of educational use potential, the app could be used for training sessions with visitors but also with content/exhibition curators within a specific museum to work on and explore storytelling methods and re-use of cultural contents.

The app could be also used to engage young visitors through creating a contest (e.g. be the first one to find this object!) or quest (e.g. assigning to each the task of finding a specific object).

SPK is currently planning a workshop with young adults to test this scenario: teenagers will get to know the museum and its exhibition, learn something about curating, research on selected objects and in the end curate their own app tour. This is especially interesting as curating is part of the art curriculum in senior school classes in Germany.

4.9 IMPACT AND SUSTAINABILITY

Within E-Space the app has been customised for several museums such as EVK, LAM and SPK and is paving the way to be easily used by other museums. The app might be especially important for smaller museums that could use an existing technology and would simply have to select and insert their data into the database. This would mean that it must be possible to create folders/reserved areas within the admin database to which only the dedicated group has access. The idea of a singular app for a selection of museums under one umbrella organisation is also interesting.

The apps that are developed within the project are available to users and visitors of the named museums for free. Customisation of the app for additional museums after the end of the project will be a service that might be commercialised. Furthermore, the visitors' app could be downloadable upon payment of a fee that could be directly integrated in the app stores or integrated with the museums ticket itself.

Possible use in the educational sectors – such as for developing storytelling methods and strategies for cultural contents – might be also investigated.

The business model developed by the Blinkster partners is to sell the app on the App and Play stores or to incorporate its cost within the museum ticket. The revenues will be shared equally between Eureva as technology provider and the content providers. An in depth analysis concerning the price positioning has not yet been done, but the cost of the app will be low (less than 2 Euro) to make it affordable for as many users as possible.

4.10 FUTURE WORK

Open developments from the technical point of view are mainly related to further technical improvements like the display of additional fields, which are links to SPK's smb-digital and Europeana (which will be made available in the next version); display Wikipedia-Link according to keywords; improve image recognition).

Further improvements need to be done to address some of the imperfections highlighted in the evaluation, e.g. put the location selection at the beginning of the app (currently is in the settings), a possibility of including multimedia and audio material, etc.

From the contents point of view, some elements in the database still need to be fine-tuned especially regarding the quality of the pictures of some objects and the revision of texts related to them, in order to provide real added value to the users with concise and descriptive texts.

SPK is planning and preparing an educational workshop at the Museum of European Cultures in Berlin (one of the content providers), which is presumably taking place in May 2016. The workshop will offer important insights on possible educational uses of the app.

The future work foreseen in the remaining six months can be summarised as follow:

- further testing of the app & evaluation of the questionnaire;
- consulting Eureva concerning possible further improvements;
- internal testing of the improved version;
- deciding upon whether the app can access all museums or that instead, one is created for each museum
- preparation of hackathon/makeathon/editathon which will give further input;
- dissemination work;
- preparation of the MOOC session.

5 CONCLUSIONS

“Easy in use: that's the key!”

This quotation of one of the project partners after a presentation of the Toolbox described in a short and complete way what our aim was: to develop an educational tool easy in use for non-technicians in memorials and museum. Moreover, the possibility to search and collect data from different sources, and the use of open source technology were further aims.

In several meetings and training sessions with educational staff, including , but not exclusively from the German Resistance Memorial Center, Museumsmedien have always received the feedback: great, simple in use and nearly free. Those tools may become more and more important to institutions in times of decreasing funding.

Furthermore, the possibility of using different databases – in the case of the Toolbox, Europeana content via an API and data upload currently – seems to be the right approach to meet the needs of potential customers. An extension of interfaces on demand could enhance the Toolbox in the future.

The benefit for cultural institutions of using Europeana content should be promoted further. Conversely, Europeana would benefit from an even better data input on special topics (for example resistance and persecution between 1933 and 1945 in Europe).

The ‘easiness’ is also the *fil rouge* that characterises the Blinkster concept and accounts for the success of the app. The possibility for a museum to create a dedicated app simply by using a smartphone is an added value for content curators for sure.


The same is true from the visitor’s point of view: having the possibility of using a familiar object during a museum visit, such as a smartphone, creates a different engagement and a more active approach to the visit itself. By taking pictures, the visitor actively interacts with the objects rather than passively listening to an audio guide in which interaction with the user is, of course, limited.

A content curator must think about the experience of potential visitors and ask themselves questions before uploading the contents in the app, such as: “What is the story I want to tell with my objects?” and “What is the path I want the visitors to follow?” The storytelling element might also be the key for large and historic museums to ‘renew’ their collections by simply creating different ‘paths’ within the same collection.





Contents presentation is also essential. In order for the Blinkster app to provide real added value to the users, it is fundamental that the information received via the app gives additional and useful information and not simply replicates the labels of the object in the exhibition. The difficulty in this aspect is related to the length of the text: content curators must be able to build a story around the objects in a concise and effective way.

ANNEXES





Annex 1 - Toolbox evaluation workshop participants list

|  | |
|--|---|
| Workshop Präsentation und Evaluation der Toolbox | |
| 29. Oktober 2015, 10.00 bis 14.30 Uhr Gedenkstätte Deutscher Widerstand Stauffenbergstraße 13-14 10785 Berlin-Mitte 3. Stock, Raum G | |
| Teilnehmer/in (Name, Unterschrift) | Institution (Name, Adresse) |
| 1. → Dr. Tanja von Fransecky | Gedenkstätte Stille Helden |
| 2. → Verena Schneider | Gedenkstätte Deutscher Widerstand |
| 3. → Mirjam Röther | Staatliche Schlösser, Burgen und Gärten Sachsen |
| 4. → Katja Döhnel | Museum Blindenwerkstatt Otto Weidt |
| 5. → Marlene Scholz Wissenschaftliche Mitarbeiterin E-Space | Institut für Museumsforschung SPK |
| 6. → Sarah Wassermann wissenschaftliche Mitarbeiterin Europeana SPACE | Museum Europäischer Kulturen |
| 7. → Prof. Dr. J. Tüchel | Gedenkstätte Deutscher Widerstand |
| 8. → Ute Stiepani | Gedenkstätte Deutscher Widerstand |
| 9. → Sabine Sieg | Gedenkstätte Deutscher Widerstand |

Participants of Toolbox evaluation, page 1

|     | |
|--|--|
| ¶ | ¶ |
| 10. Dr. Christine Müller-Botsch ¶ | Gedenkstätte Deutscher Widerstand ¶ |
| ¶ | |
| 11. Barbara Schieb ¶ | Gedenkstätte Stille Helden ¶ |
| ¶ | |
| 12. Dr. Claudia Schoppmann ¶ | Gedenkstätte Stille Helden ¶ |
| ¶ | |
| 13. Oliver Pidancet ¶ | Rundfunk Berlin-Brandenburg (rbb) ¶ |
| ¶ | |
| ¶ | |
| 14. Philipp Sukstorf ¶ | Gedenkstätte Deutscher Widerstand ¶ |
| ¶ | |
| 15. Susanne Brömel ¶ | Gedenkstätte Deutscher Widerstand ¶ |
| ¶ | |
| 16. Dr. Barbara Köster ¶ | Stiftung Denkmal für die ermordeten Juden Europas ¶ |
| | ¶ |
| 17. Andreas Sander ¶ | Stiftung Topographie des Terrors, Berlin ¶ |
| ¶ | |
| 18. Michaela Illner ¶ | Gedenkstättenforum ¶ |
| ¶ | |
| 19. Dr. Thomas Lutz ¶ | Gedenkstättenforum ¶ |
| ¶ | |
| 20. Kasper Nürnberg ¶ | Aktives Museum ¶ Faschismus und Widerstand in Berlin e.V. ¶ |
| ¶ | |

Participants of Toolbox evaluation, page 2

|     | |
|--|--|
| Workshop Präsentation und Evaluation der Toolbox | |
| Am 30. Oktober 2015, 10.00 bis 14.30 Uhr In der Gedenkstätte Deutscher Widerstand, Stauffenbergstraße 13-14, 10785 Berlin-Mitte, 3. Stock, Raum G | |
| Teilnehmer/in (Name, Unterschrift) | Firma/Büro (Name, Adresse) |
| 1. → Karin Schroeder | Karin Schroeder Adalbertstraße 6 10999 Berlin www.iomorph.de |
| 2. → Katja Peters | Leuschnerdamm 15 10999 Berlin www.misspeters.de |
| 3. → Christian Baer | Christian Baer UG Oranienplatz 4 10999 Berlin www.christian-baer.com |
| 4. → Maike Adami, M.A. | Kulturwissenschaft und Amerikanistik denkraum-berlin informationsdesign Spittastr. 7 10317 Berlin http://www.denkraum-berlin.de |
| 5. → Taina Sivonnen | Freiberufliche Texterin |
| 6. → Karl-Heinz Lehmann | Lehmann - das Designbüro |

Participants of Toolbox evaluation, page 3

Annex 2 – Toolbox evaluation questionnaire



Toolbox Evaluation

1. Wie würden Sie die Toolbox als Ganzes benoten? (1= sehr gut, 6= sehr schlecht)

How would you grade the Toolbox on the whole

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

2. Wie gut hat Ihnen das Layout der Toolbox gefallen? (1= sehr gut, 6= sehr schlecht)

How did you like the layout

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

3. Wie gut haben Ihnen die Layouts der Vorlagen (Arbeitsblatt, Storyboard) gefallen (1= sehr gut, 6= sehr schlecht)

How did you like the layouts of the templates (worksheet, storyboard)

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

4. Wie einfach ist die Toolbox zu bedienen? (1= sehr einfach, 6= sehr kompliziert)

Is it complicated to use the Toolbox?

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

1



| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

5. Empfinden Sie die verwendeten Begriffe, Bezeichnungen, Abkürzungen oder Symbole in Masken und Menüs als verständlich? (1= sehr verständlich , 6= unverständlich).

Did you understand the used terms (menus, templates etc.)

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

6. Die Toolbox lässt sich durchgehend nach einem einheitlichen Prinzip bedienen (1= stimme ich voll zu, 6= stimme ich gar nicht zu)

The Toolbox is uniform in its use

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

7. Die Toolbox ist für die pädagogische Arbeit in Museen und Gedenkstätten sehr hilfreich (1= stimme ich voll zu, 6= stimme ich gar nicht zu)

The Toolbox is very helpful for the educational work in memorials and museums

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

8. Die Toolbox eignet sich für Anfänger und Experten gleichermaßen, weil sie einfach in der Bedienung ist (1= stimme ich voll zu, 6= stimme ich gar nicht zu)

The Toolbox could be used by experts and non-expert

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|



9. Die Toolbox ist so aufgebaut, dass ich sie nach einer kurzen Einführung nutzen konnte ?(1= stimme ich voll zu, 6= stimme ich gar nicht zu)

The Toolbox can be used after a short introduction

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

10. Anwender-Support und Erweiterungen in der Toolbox sind sinnvoll und würden von mir in Anspruch genommen werden. (1= stimme ich voll zu, 6= stimme ich gar nicht zu)

User support and new templates are useful, I would use this service

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

11. Werden Sie die Toolbox in Ihrer Institution/Agentur/Unternehmen? einsetzen (1= sehr wahrscheinlich, 6= sehr unwahrscheinlich)

Would you use the Toolbox in your agency/office/institution

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

12. Was hat Ihnen am meisten gefallen?

What did you like best

3



13. Was haben Sie vermisst?

What did you miss

14. Die Weiterentwicklung der Toolbox sollte beinhalten:

Further developments of the Toolbox should include:

...

...

...

Abschließend noch eine Frage zu Ihrer Person:

15. Bezeichnen Sie sich selbst als erfahrenen PC-Anwender (1= sehr erfahren, 6= sehr unerfahren)

Are you an expert in using computer programmes?

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

Vielen Dank für Ihre aktive Hilfe. Ihre Daten werden selbstverständlich anonym behandelt.

Thank you for your cooperation

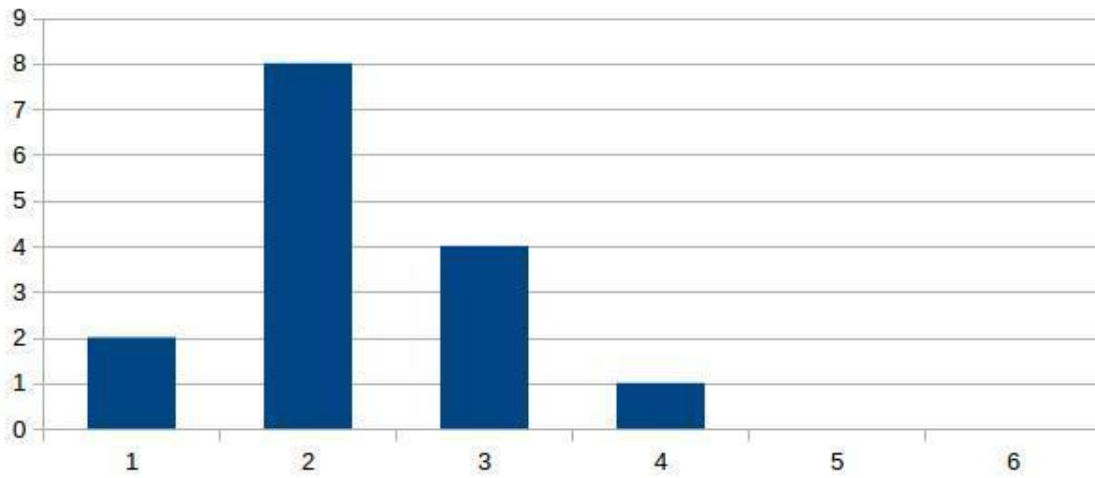
Das letzte Wort haben Sie:

What would you like to say in the end

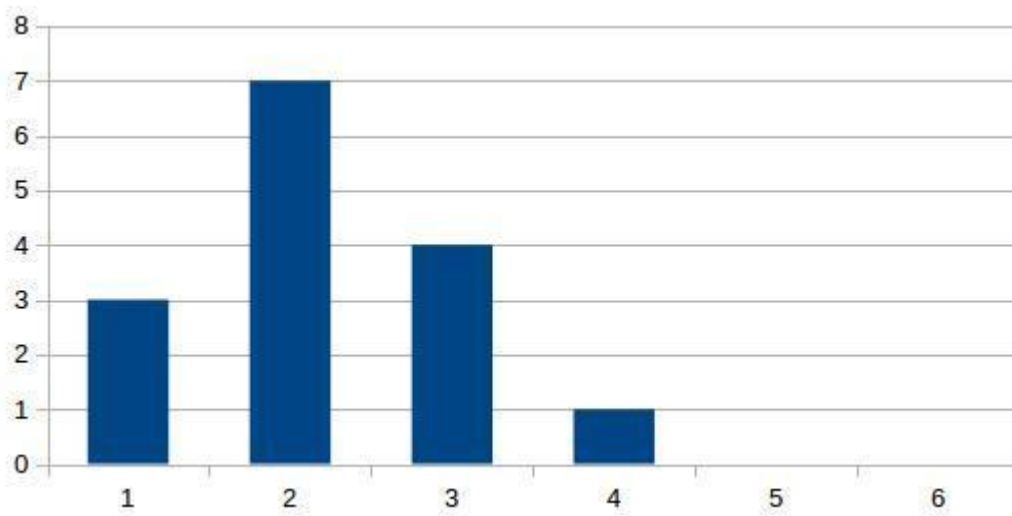
4

Evaluation results of the Toolbox:

1) How would you grade the Toolbox on the whole (1= very good, 6= very bad)

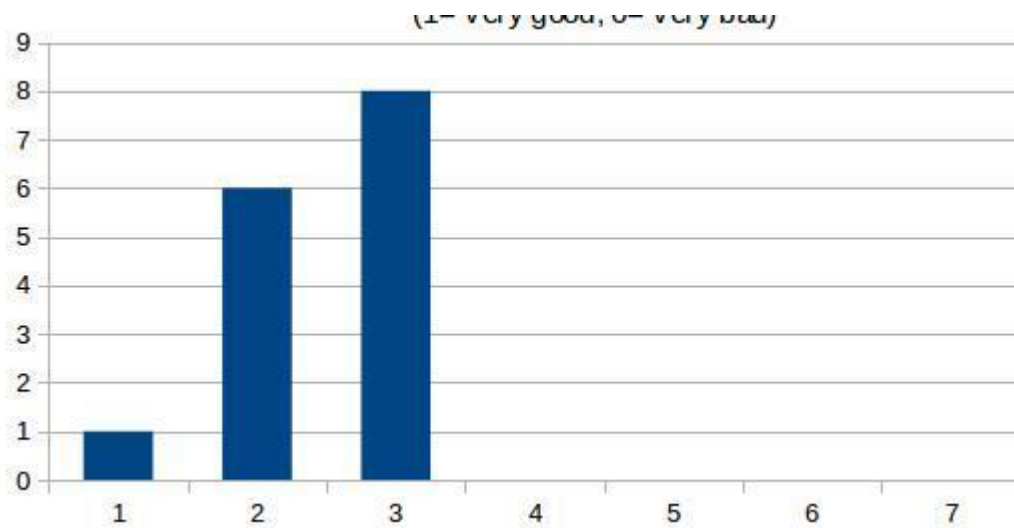


2) How did you like the layout (1= very good, 6= very bad)

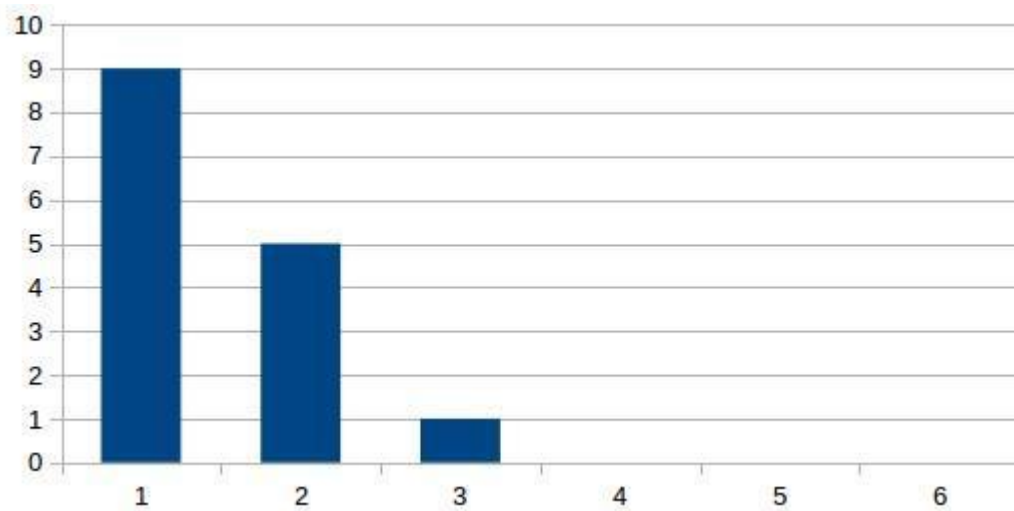


Questions 1 and 2: The majority of participants values the Toolbox very positive and like to work with it

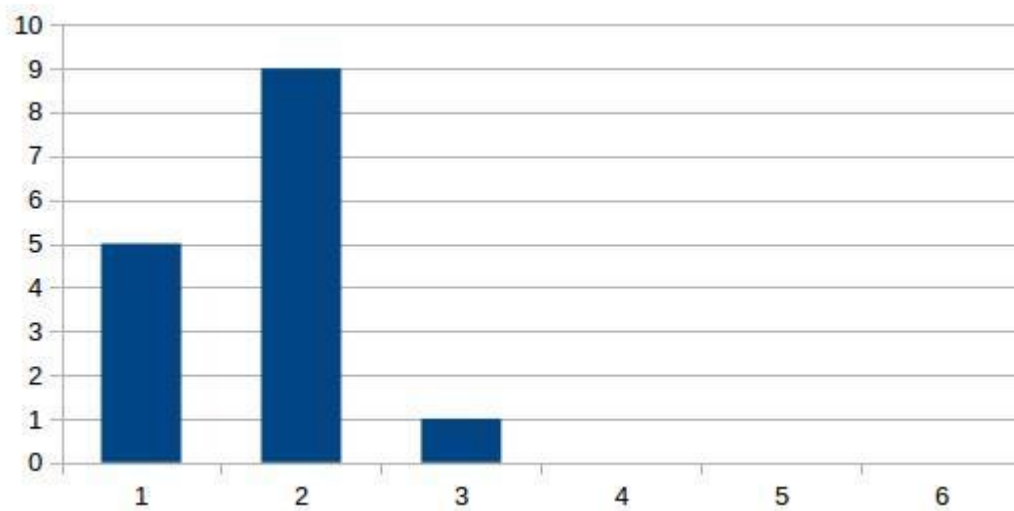
3) How did you like the layouts of the templates (worksheet, storyboard) (1= very good, 6= very bad)



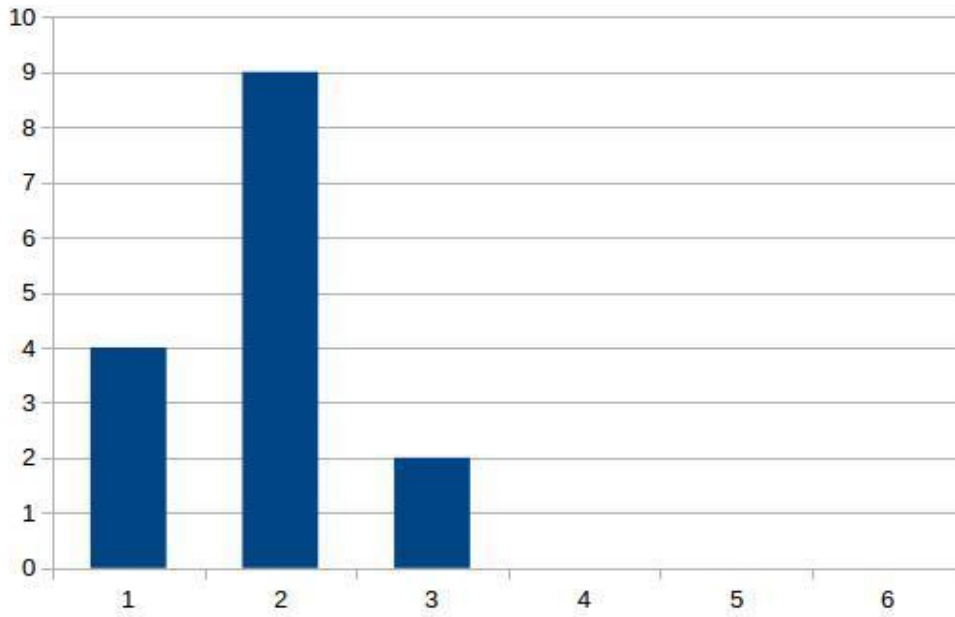
4) Is it complicated to use the Toolbox? (1= very easy, 6= very complicated)



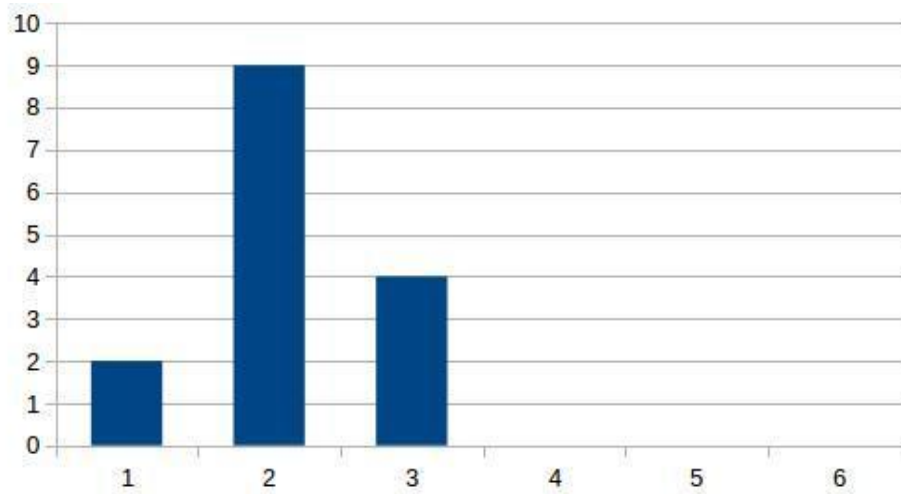
5) Did you understand the used terms (menus, templates etc.) (1= very perspicuous 6= very unintelligible)



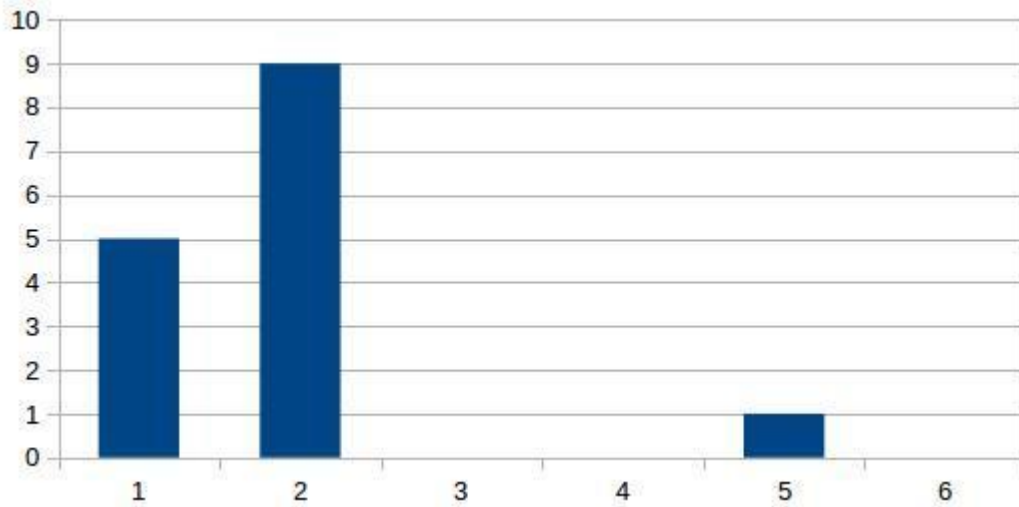
6) The Toolbox is uniform in its use (1=fully agree – 6= I completely disagree)



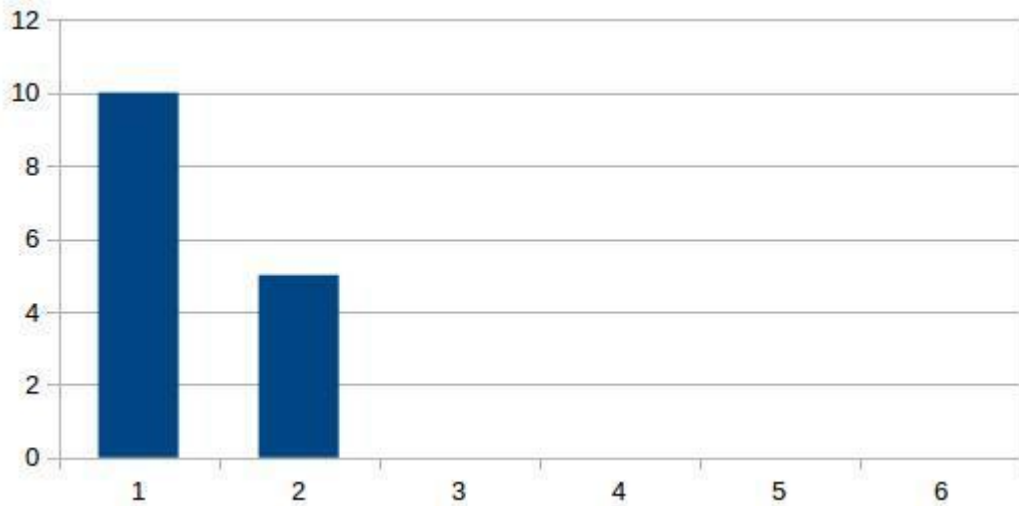
7) The Toolbox is very helpful for the educational work in memorials and museums (1=fully agree – 6= I completely disagree)



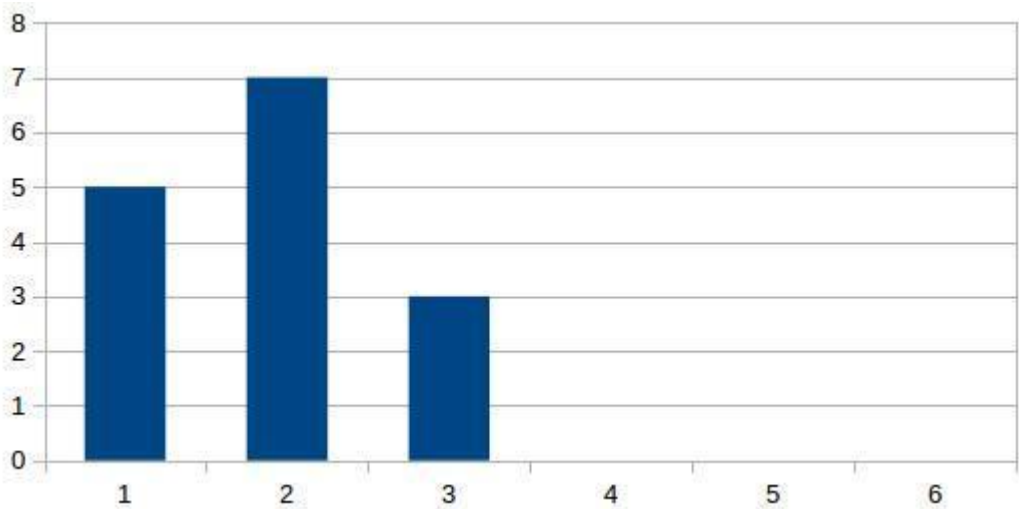
8) The Toolbox could be used by experts and non-expert (1=fully agree – 6= I completely disagree)



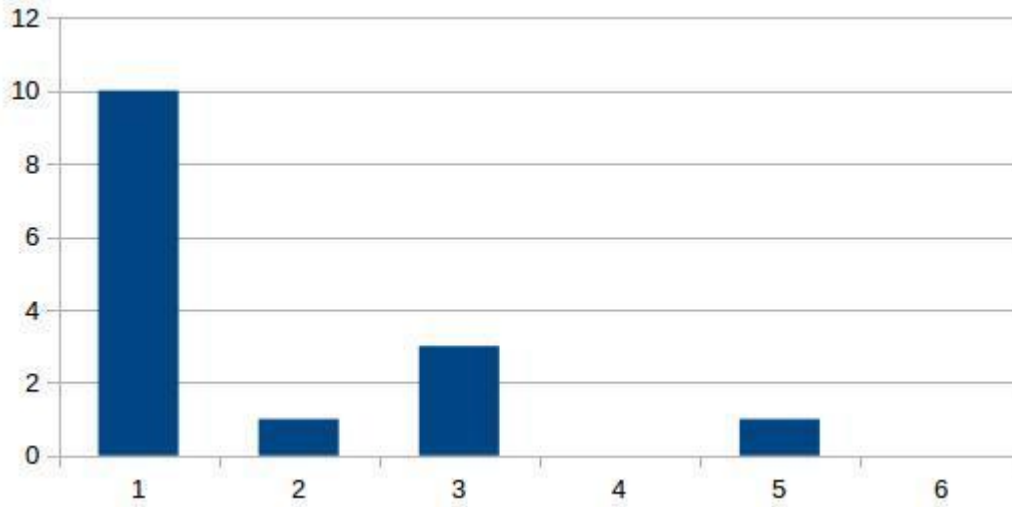
9) The Toolbox can be used after a short introduction (1=fully agree – 6= I completely disagree)



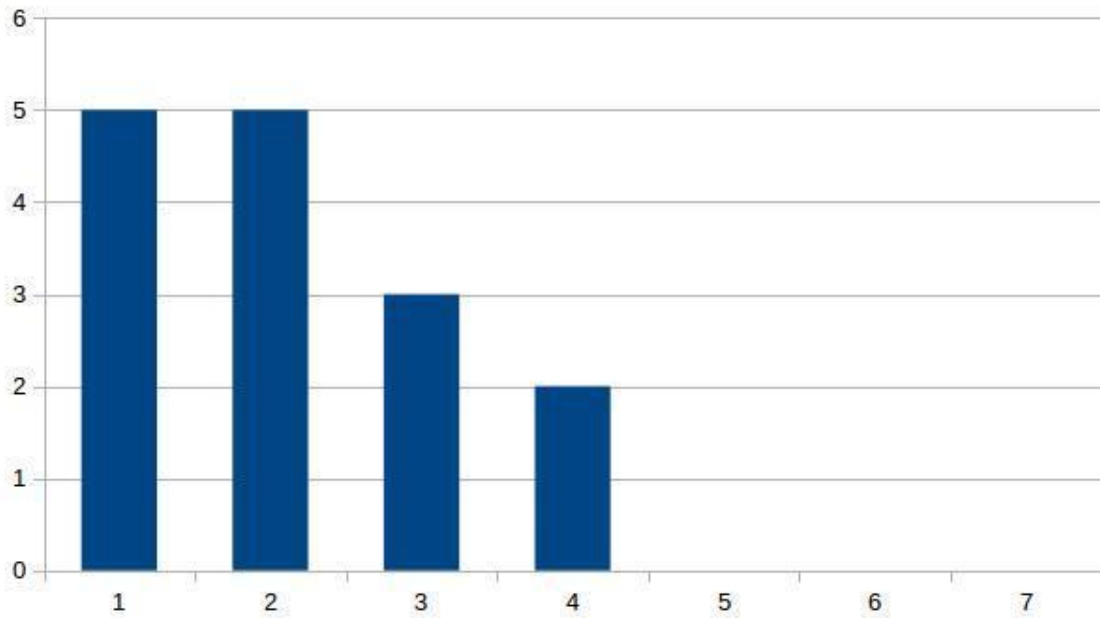
10) User support and new templates are useful, I would use this service (1=fully agree – 6= I completely disagree)



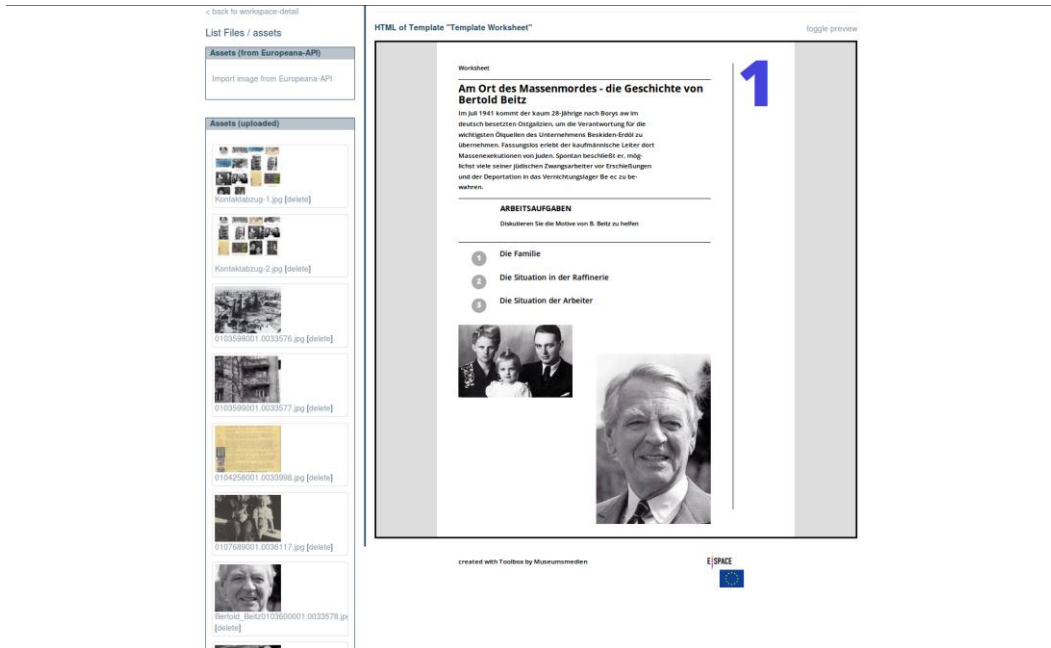
11) Would you use the Toolbox in your enterprise/office/institution (1= quite likely 6= quite unlikely)



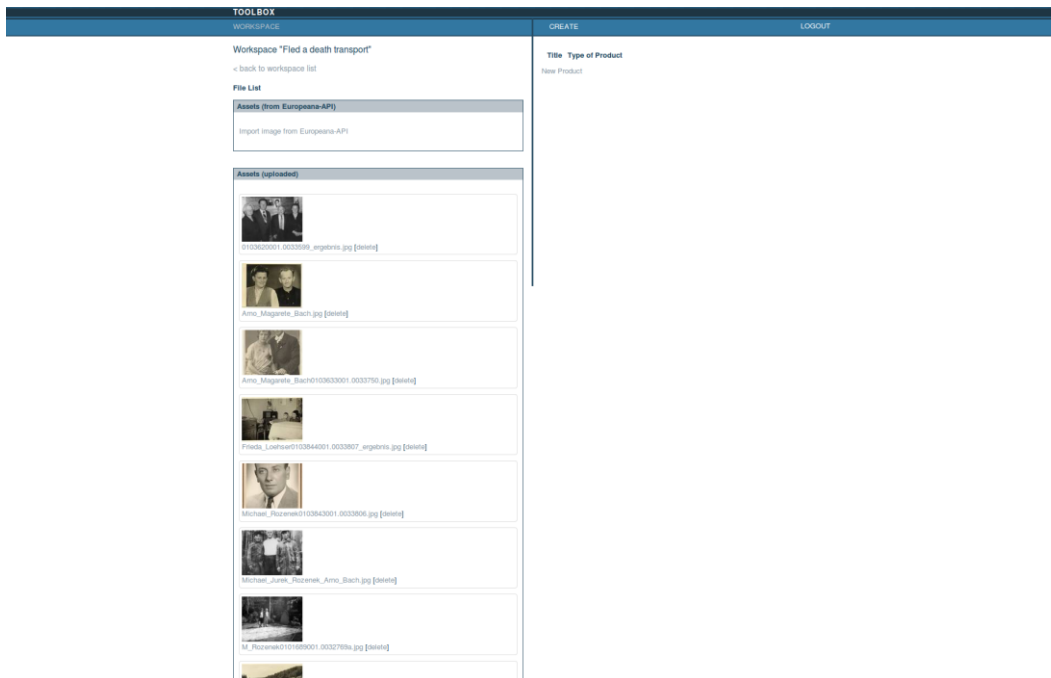
15) Are you an expert in using computer programs? (1= expert – 6= non expert)



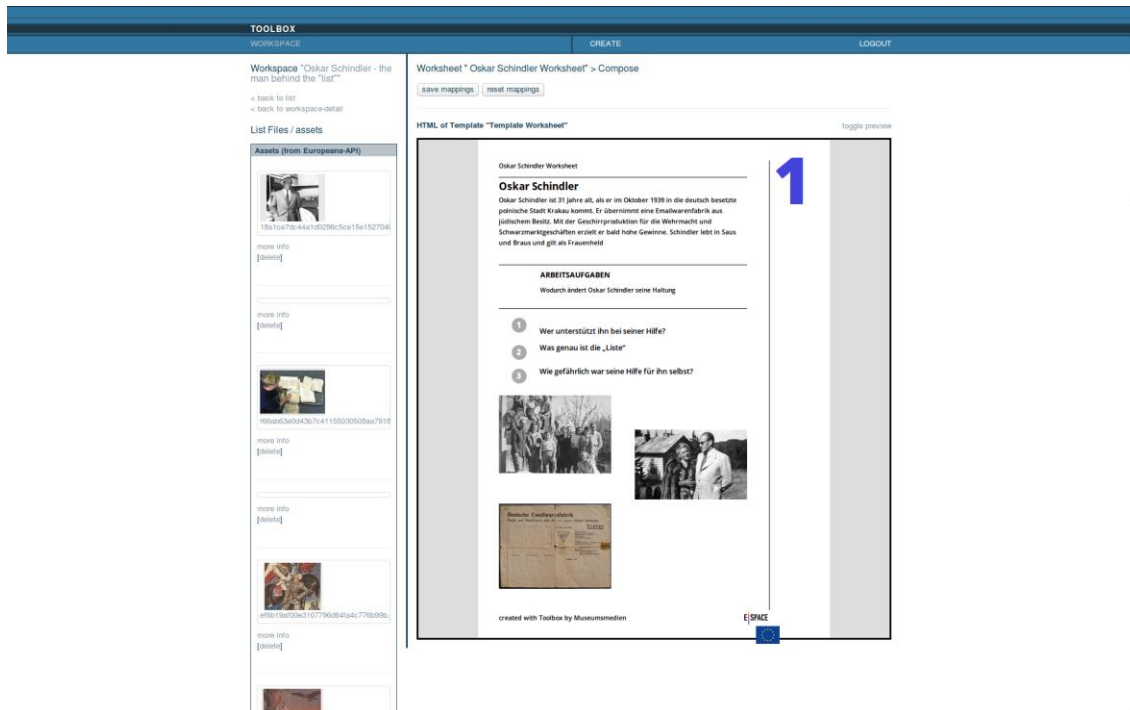
Annex 3 – Screenshots of the Toolbox and examples of applied use of the worksheets



Screenshot Toolbox: worksheet At the Side of Mass Murder - The story of Bertold Beitz



Screenshot Toolbox: material for worksheet Fled a death transport - Story of Michael Rozenek and his brother Jurek



Screenshot Toolbox: worksheet: Oskar Schindler - the man behind the 'list'



Exhibition Silent Heroes Memorial: left, screen for video "Oskar and Emilie Schindler" (©:GDW)



Exhibition Silent Heroes Memorial: show case with photos from Oskar and Emilie Schindler (©:GDW)



Screenshot Toolbox: worksheet: Eugen Herman-Friede - Resistance group: Community for Peace and Reconstruction



Exhibition German Resistance Memorial Center: worksheet "Eugen Herman Friede - Resistance group: Community for Peace and Reconstruction" is used in this part of the exhibition (©:GDW)



Exhibition German Resistance Memorial Center: educational work with Toolbox worksheets (photo: MMedien)



Exhibition German Resistance Memorial Center: educational work with Toolbox worksheets (photo: MMedien)

Annex 4 – Full evaluation report provided by SPK

SPK carried out a qualitative survey with 40 test subjects from the cultural heritage and media sector. By doing the testing with professionals, we could guarantee qualitative and targeted answers concerning content and/or technology. The basis for the survey was a common questionnaire that was designed by all E-Space Museum pilot participants. Most questions in the evaluation were scaled from 1 (very good/most positive answer) to 6 (very) poor/most negative answer). The ratings in between can, according to the German school grade system, be interpreted as 2=good, 3=satisfying, 4=sufficient, 5=deficient. These ratings correspond to the English grades (1=A, 2=B, 3=C, 4=D, 5=E, 6=Incomplete).

There have been a larger number of women (25 women compared to 13 men and 2 not disclosed) completing the survey. These numbers are likely to be connected with the higher percentage of women working or studying in the cultural heritage sector. Slightly more than half of the respondents (21 out of 40=52,5%) were between 31 and 50 years old. 12 respondents (30%) were between 19 and 30 and 6 respondents (15%) were aged between 51 and 60 years. One person was 61 or older.

Almost three quarters of the respondents (70%) were familiar with using apps, stating that they “use them all the time” (12 out of 40), “often use them” (9 out of 40) or at least “sometimes use them” (7 out of 40). One quarter (10 out of 40) of the respondents weren’t very familiar with using apps, using them “barely” (6 out of 40) or not having their own apps but used a friend’s app (4 out of 40). One person did not answer this question. Strikingly, only one person stated that he never uses apps.

As the app was only available for android phones & tablets, to begin with, more tests were undertaken using android (32 out of 40) rather than with iPhone (8 out of 40). Thus, these numbers do not necessarily mean that the average of users owns an android phone. Some test subjects who usually have an iPhone or Windows phone (or no smartphone) borrowed a device to complete the testing. An intensive and repeated testing for iPhone by SPK itself compensated for the smaller number of user tests for iPhone. These results were reported separately to Eureva.

25 respondents (62,5%) rated the overall impression of the app as “good”(grade 2/B, 10 out of 40) or “satisfying” (grade 3/C, 15 out of 40), but at the same time 12 people rated it only “sufficient”(grade 4/D, 8 out of 40) or even “deficient”(grade 5/E, 4 out of 40). While 2 respondents said the app was “very good”, 1 also rated it as “poor” (grade 6/Incomplete). It is therefore not possible to generalize the testers’ overall impression of the app. There is no clear connection detectable between the positive or negative evaluation of the app to the respondent’s age or experience with using apps. The differing answers may refer to a) the different scientific backgrounds and technical experience of the respondents and b) the respondent’s impression that the app still needs development. This might have resulted in some people evaluating it more critically and some more favourably; considering it to be not yet finished.

This opinion is also reflected in the answers to question number 16 “Why would/n’t you recommend the app” (answered by 35 out of 40 persons), where 5 respondents explained their impression that the app is not yet developed enough. In general, 11 people would or would even “absolutely” recommend the app to a friend or other museum visitors (question 15). Positive remarks concerned the further contextualization via the app (“positive are the links to films and further information”, “new information about the queer topic”, “good option to get additional information about exhibited objects”, “additional information, especially about the topics very interesting”) and the interactivity/fun aspect of it (“readable, understandable and entertaining texts”, “interactivity for visitor”, “it’s fun”). However, three respondents thought that there was no or only a limited added value of the app. Two testers who were visiting the museum for the first time said that the app might distract visitors: “during first visit the app rather distracts (me) from the exhibition and other objects, but as an addition it is nice”/ “recommendable only as additional immersion, exhibition is already a lot of input”. The app therefore seems to be especially beneficial for frequent museum goers and offers the possibility to revive an existing exhibition by new object information and contextualisation.

The testing revealed that the content and usability were evaluated as one of the most positive aspects of the app (question 17, said by 18/17 out of 40 respondents), though it was at the same time felt that these aspects should still be improved – the content could be extended by adding further objects and having the possibility for further contextualization and the usability eased. The data are sometimes ambiguous, as the usability, e.g., was also rated as one the most negative aspects (question 18) by 11 testers, followed by multi-functionality (10 out of 40 respondents). The reason for this is probably the differing overall app impression of the testers.

Remarks on “missing information or functions” could be listed in question number 10. More than half of the people (24 out of 40, 60%) answered this question. A repeated suggestion was connected to the content (I), which is to extend the content and context information, link objects among each other, add different text layers for one object (e.g. for children and adults or different topics) and add the possibility to include other materials like further images or sound. Other suggestions were connected to the improvement of display and storage of results (II) or concerned the app’s usability and other technical suggestions (III). The remarks are listed here accordingly:

- multimedia and audio files, further linked information; images, links; audio records; some links did not work, further infos; it would have been nice to get more context information (images and sound), e.g. photos of a worn costume when the object is a traditional costume, not enough content yet; possibility to include audio material; other levels/formats for information than only text (a bit limited); links between objects: similar objects, very different ones...; I would prefer different texts e.g. for adults and children; audio/video directly inside the app (links work with internet connection but there's no WLAN in the museum)
- too many results; intermediate storage and history function; display of results; star/hearty function to reread content at home; object text should be displayed immediately and not always the whole result list; hits are not highlighted
- zoom function instead of focus function; feedback function; usability for one hand, gesture for zoom function is unusual; language selection; search not specifiable, colours of the topics not explained within the app; app did not load the images, might be connected to internet connection; WLAN for video; quicker option to get back to the camera (after text has been read); enlargement

Similar remarks were repeated in question 19 “What kind of improvements would you suggest?” Some of the suggestions had already been considered in the improvements. For example, the hit list was reduced to displaying three results and the image recognition was improved generally. The problem with displaying links was detected and solved. The colours in the App (for the different themes at the Museum Europäischer Kulturen) are now explained in brackets inside the app. Even if the hit list was reduced to three results, some users still found it confusing, as they sometimes weren’t sure which object was intended – especially when it was not listed first but appeared on second or third position. The best solution would be to have only one correct hit. To ensure accuracy, more sample images would probably be needed.

A major insight of the testing was that the help documentation, which explains how to use the app, seems to be rarely read by users. Only 4 out of 40 respondents (10%) said to have read it. This might be the reason for some misuses and misunderstandings during the testing, e.g. the comment “it is only in German” (related to question no. 14 “Why would/n’t you recommend the app?”) though texts were also available in English if the language was selected. One suggestion by a tester was to have a short video, audio or written instruction that opens automatically with the initial screen. This would also ensure that users clearly know that they first have to select a museum and language before using the app. Not knowing this, users easily get frustrated or confused by wrong or no results.

Some users were also confused about the usability, as they were not always sure which object in the showcase is meant and part of the app. As not all objects are included in the app, we marked them with stickers on the floor. It would therefore be good to have all objects in the app. This would also avoid the necessity to label each object that is part of the app. To do so, there must be enough server capacity to ensure a quick database request. A major and recurring issue was the occurring “connection error”, which might be connected to a bad internet connection in the museum. But this is just an assumption and cannot be validated.

As the app needs an internet connection and the museum does not offer WLAN, SPK added this aspect in the questionnaire, independent from the other pilot partners. 28 out of 40 persons had an Internet flat rate on their smartphone, 10 had no flat rate and 2 did not answer to this question. Some respondents clarified that they only have a flat rate in their home country. This might be a problem for tourists from foreign countries who would like to use the app, as many people do not have internet abroad and therefore would not be able to use the app. Interestingly, on some smartphones the internet connection worked “very good” (10 out of 40) or “good” (6 out of 40), on some it was “satisfying”(7 out of 40) or “sufficient” (6 out of 40) but on some phones the connection hardly worked (four times stated “deficient”=grade 5/E and one “very poor”=grade 6/D). There is no connection to the type of mobile phone detectable and we cannot say if this might be related to the internet provider, as we did not ask for it. All in all, for using such an app it would be advisable to install WLAN in the museum, as almost all testers wished for (35 out of 40, 2 did not answer, 2 said they do not care and one said no). This way, a good internet connection as well as internet access also for foreigners would be ensured.

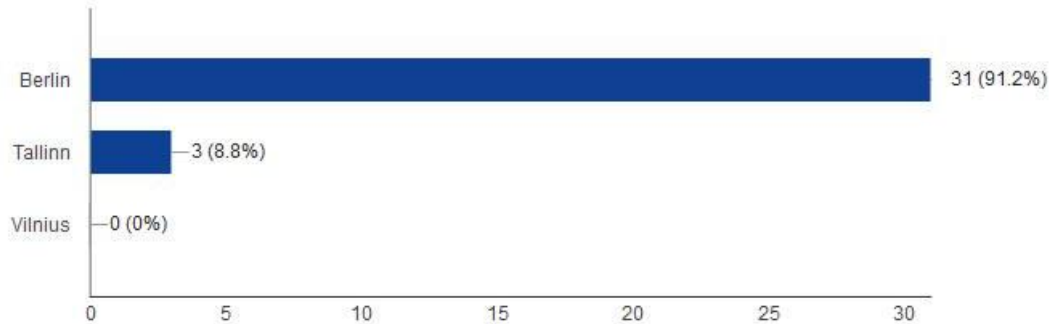
Further additional questions of SPK concerned the text length and the overall benefit of the app. More than half of the testers (23 out of 40) rated the text lengths as ideal, 4 people said they were too long and 11 weren’t sure about the length or did not answer to this question. Only one person thought the texts are too short and one commented that they were too small (something which should also be considered for accessibility reasons).

Almost half of the respondents (19 out of 40), said that the app (absolutely) enriched their museum visit (3 testers said “absolutely” and 16 rated it 2=B), 13 respondents (32,5%) said it partly enriched their visit (10 rated it 3=C and 3 rated it 4=D) while 4 testers (10%) said it did not (at all) enrich their visit (3 rated it 5=E and 1 rated it 6=Incomplete) and the same amount of testers (4 out of 40) did not reply to this question.

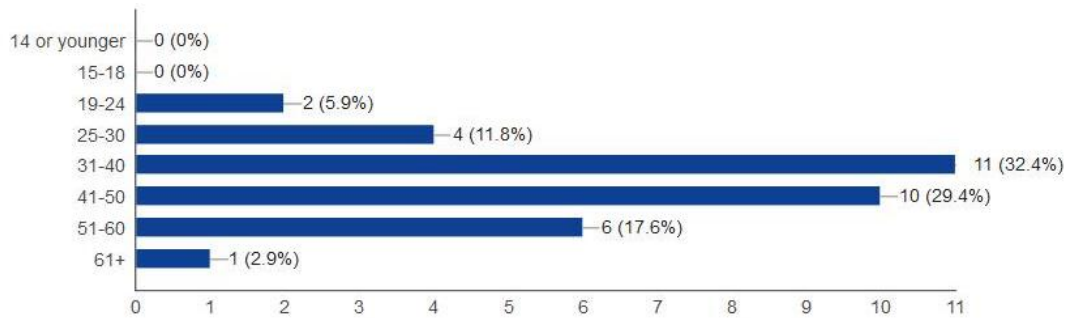
All in all the testing points out that the app has potential but still needs improvements for a full acceptance by the users, as it is currently only rated average with few very positive and very negative impressions. A benefit of the app is that it allows a further contextualization and/or multilinguality in the exhibition without having to add further disturbing text labels. To tap the full potential, these aspects should be further developed.

Annex 5 – Evaluation results of the Blinkster app (screenshots as of mid January 2016)

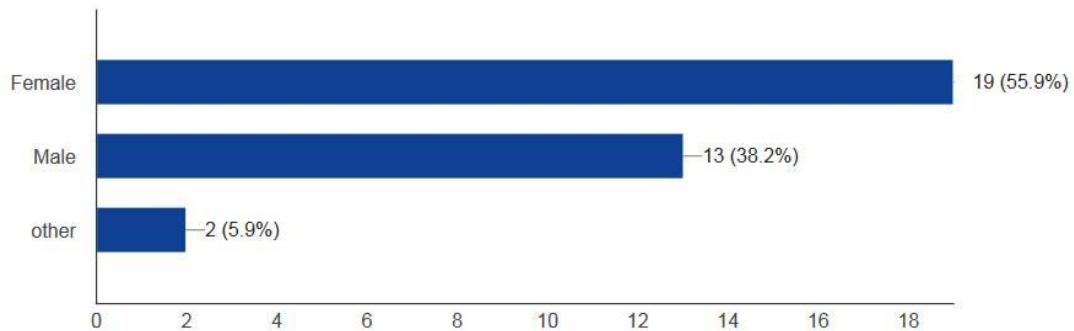
In which museum have you done the testing?



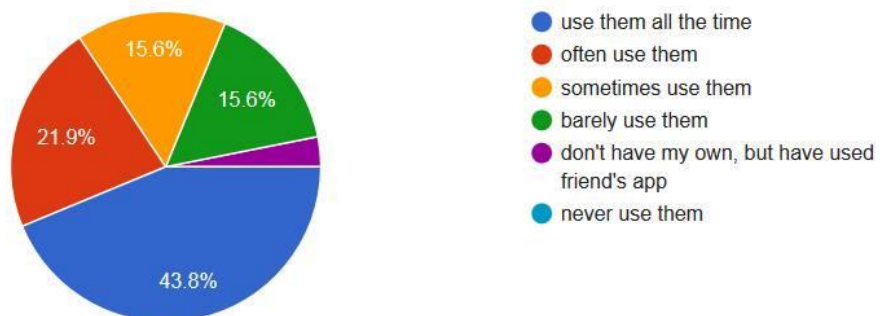
Your age:



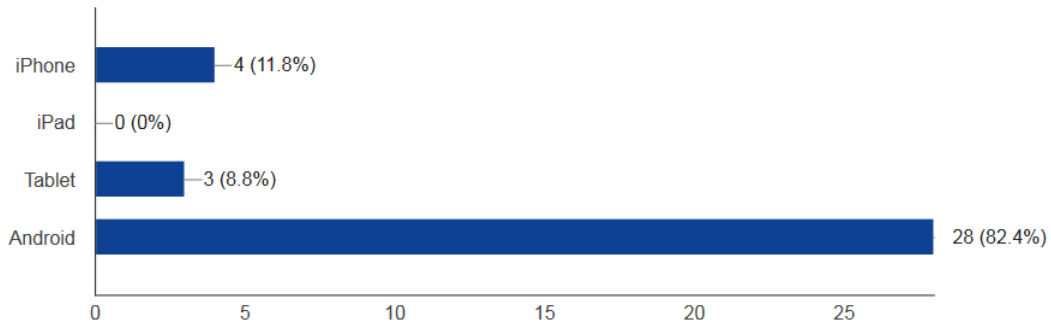
Gender:



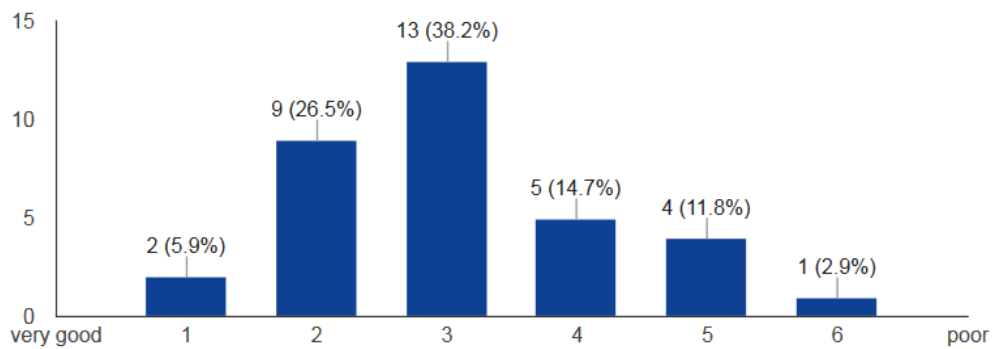
Your familiarity with using apps:



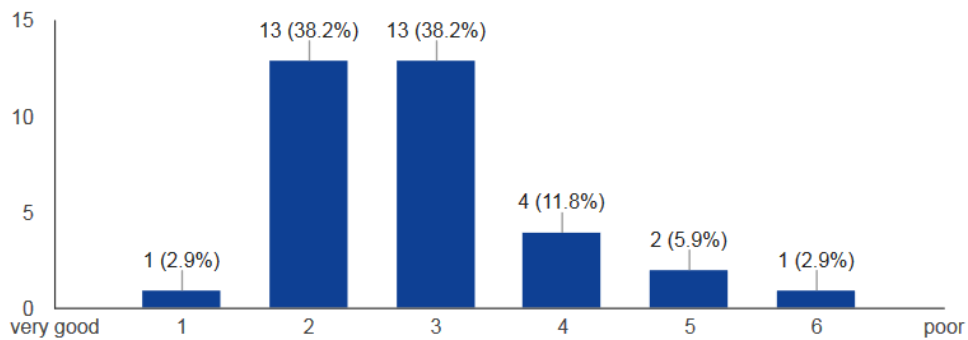
Device on which you used the app:



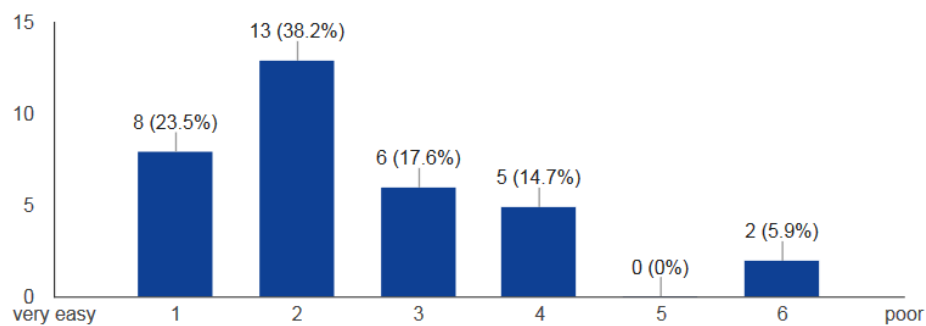
1. How would you evaluate the app in general?



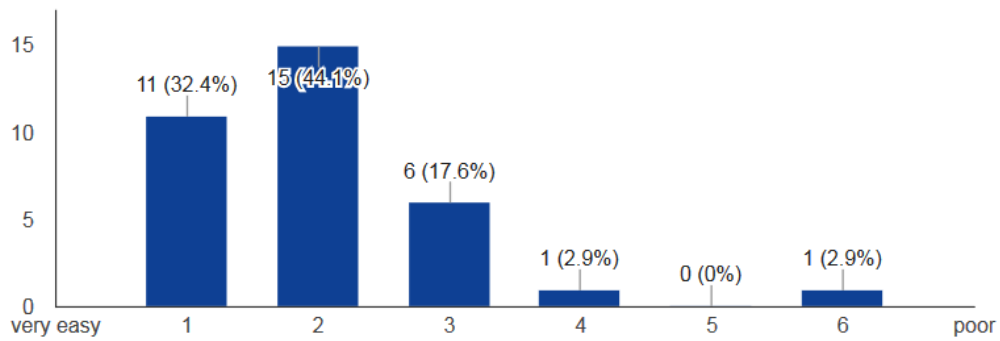
2. How do you judge the graphic design?



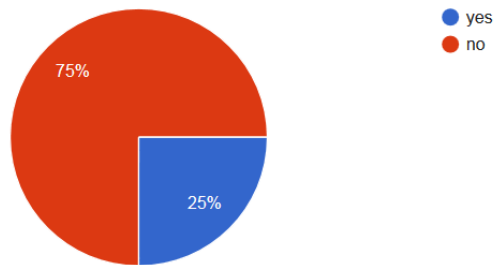
3. How easy was the navigation of the app?



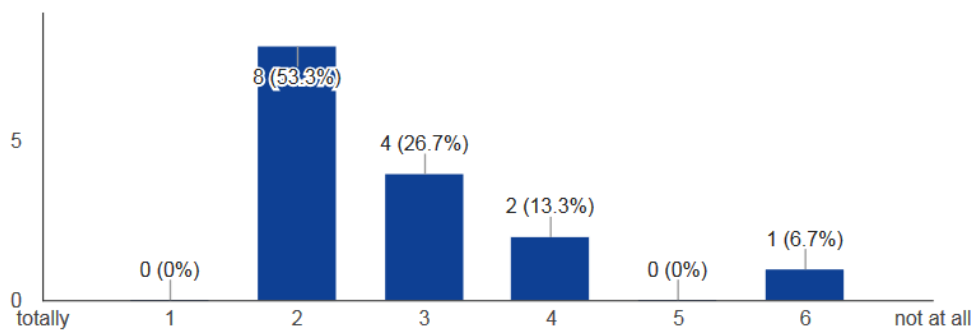
4. Could you use the app without written instructions?



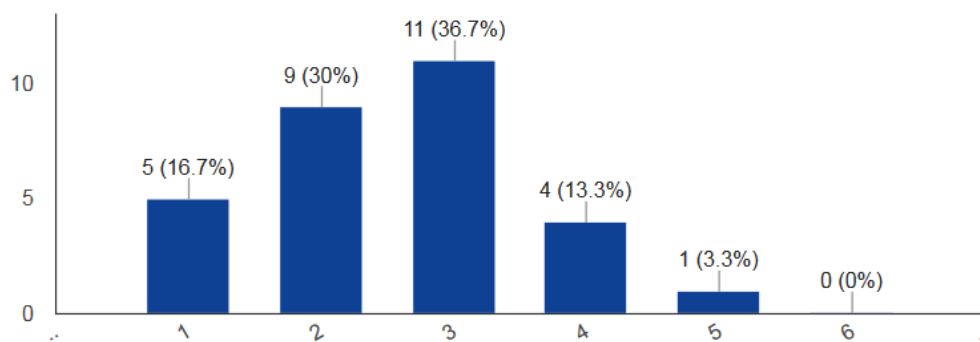
5.1. Did you use the help documentation?



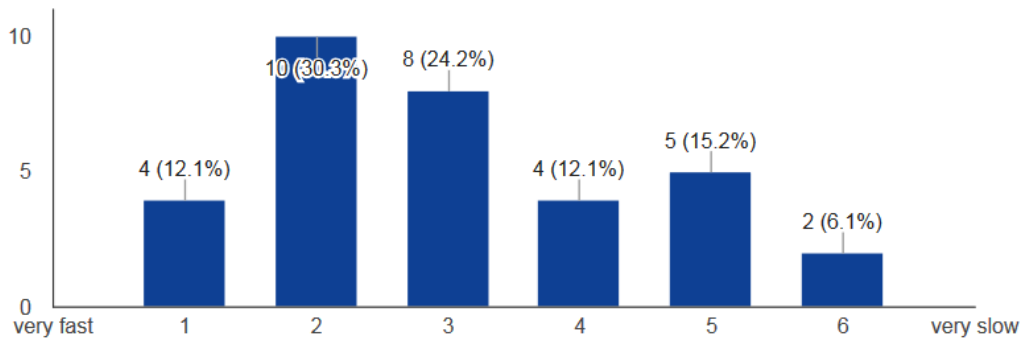
5.2. The help documentation was helpful and understandable?



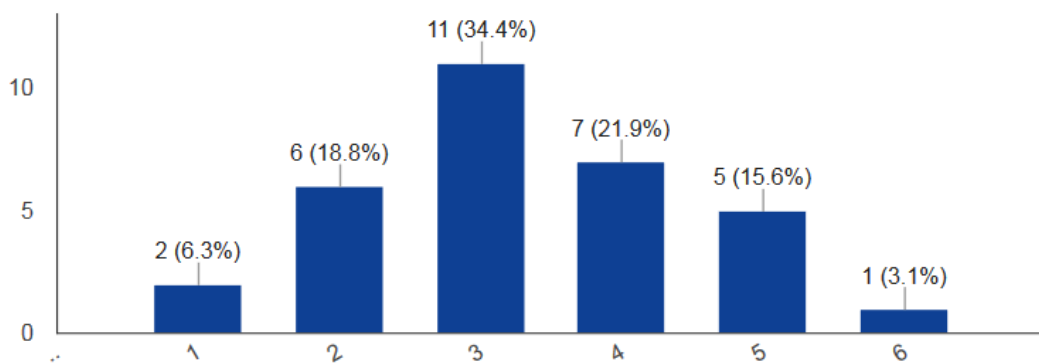
6. How did you like the content?



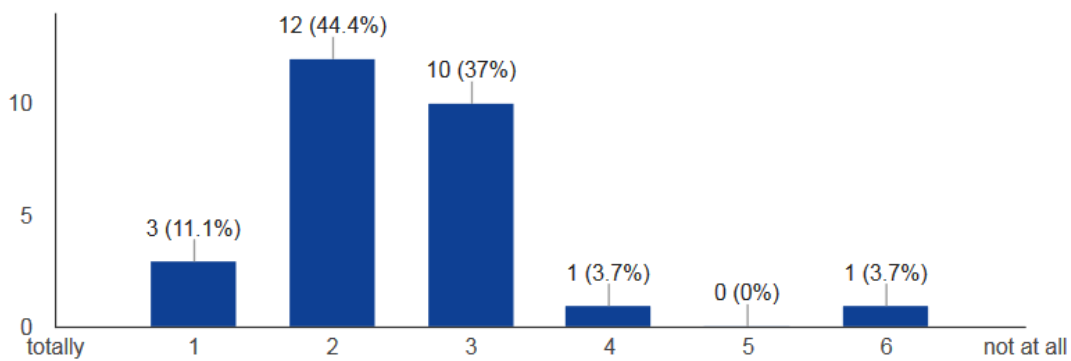
7. How fast was the image recognition?



8. Was the image recognition correct? Did the information provided fit to the chosen object?



9. Did the information accessed via the app make your knowledge of the exhibition more complete?

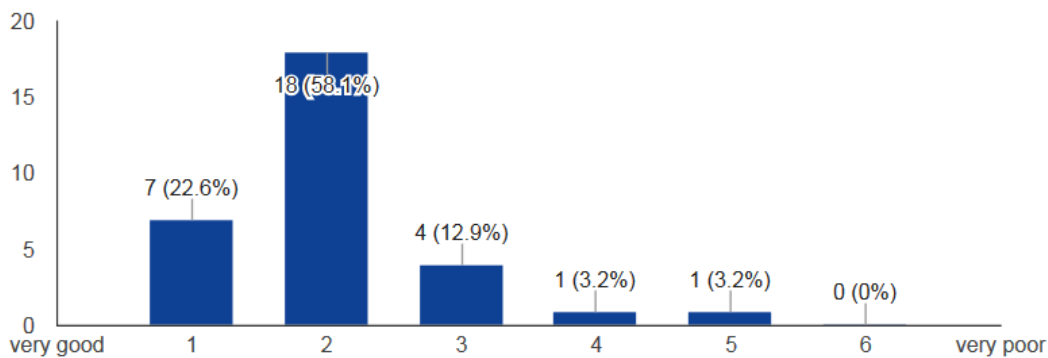


10. Did you miss information or functions? If yes, which one?

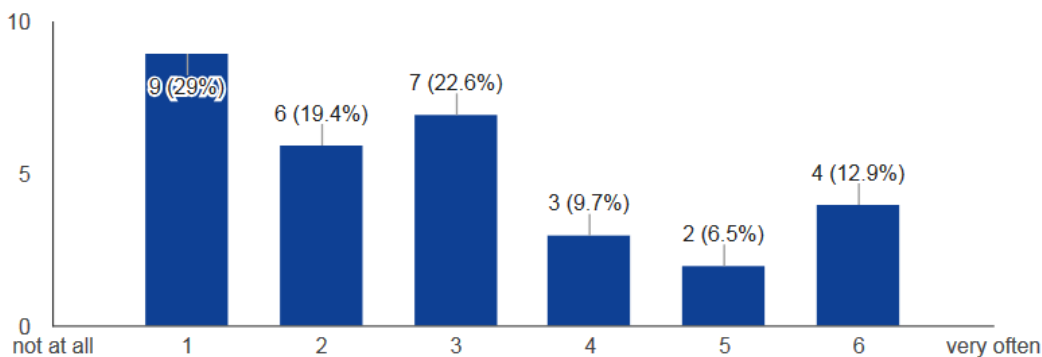
- app did not load the images, might be connected to internet connection
- usability for one hand. gesture for zoom function is unusual.
- too many results
- selection of location should be the first
- possibility to include audio material
- some links did not work
- images, links
- instructions how to use the app while using it, automatic intro how to use it when starting the app/what the app is about

- audio records
- it would have been nice to get more context information (images and sound), e.g. photos of a worn costume when the object is a traditional costume, not enough content yet
- language selection; positive: there are already a lot of objects from the permanent exhibition included
- feedback function, display of results
- zoom function instead of focus function, object text should be displayed immediately and not always the whole result list.
- Easily browse and search the available information.
- further linked information
- search not specifiable, hits are not highlighted, colours of the topics not explained within the app
- intermediate storage and history function
- star/heart function to reread content at home
- multimedia and audio files

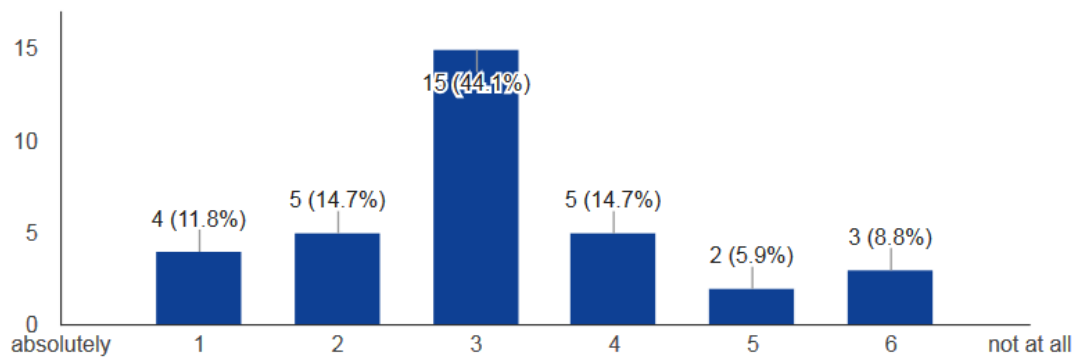
11. Was the language used in the app easy and understandable?



12. How often did the app crash?



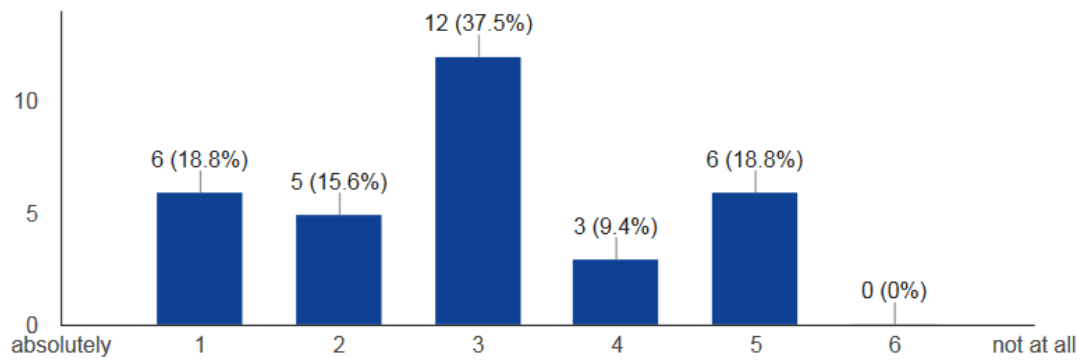
13. Do you think the app can be used by everyone?



14. If yes or no, why?

- not understandable
- no, as it is only in German
- as soon as the installation is clear it works
- many app crashes, long waiting times, very often no matches found
- not everybody has a smartphone.
- non everybody is using smartphones
- text style defines target group
- intuitive, easy and clearly structured
- Combined with additional service could be better experience
- complicate download procedure
- the language settings did not work, I got only the German version.
- easily and quickly understandable also for old-fashioned people
- people without smartphones cannot use it
- Yes, if the usability option were improved for example saving especially interesting objects.
- what is it needed for
- hit rate low, visitor gets frustrated; hit list does not rotate; preview images very small
- target group seniors
- image recognition as input mode is intuitive and easy

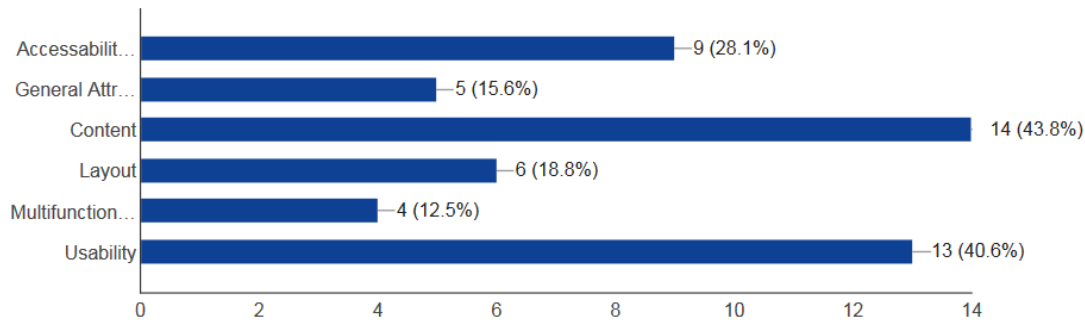
15. Would you recommend the app to a friend or other museum visitors?



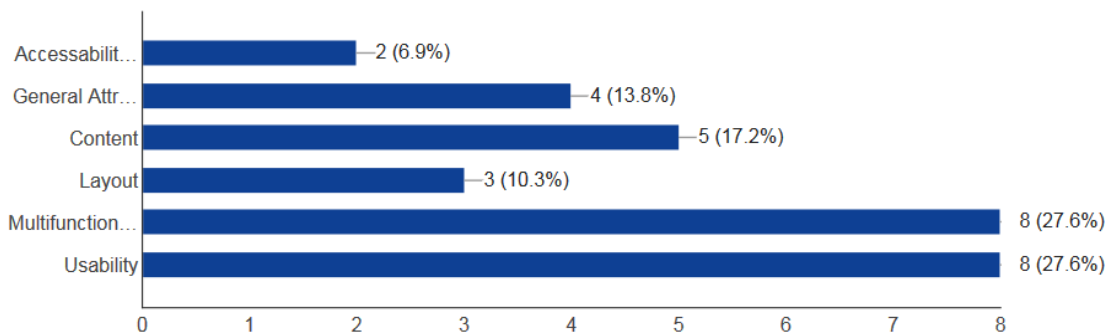
16. If yes or no, why?

- good option to get additional information about exhibited objects
- no added value
- Generally yes, BUT the hit rate has to be improved.
- current state of development insufficient
- with reservations and the remark that the app is still being tested
- for ethnological objects it is often important to know the information source
- not yet developed enough
- added value
- interactivity for visitor
- new information about the queer topic
- QR code more precise
- texts in exhibition are sufficient
- readable, understandable and entertaining texts
- it depends on the visitors
- Technique is not that developed yet, too many wrong results
- development still insufficient
- it's fun
- everyone has a right to collect experiences
- positive are the links to films and further information

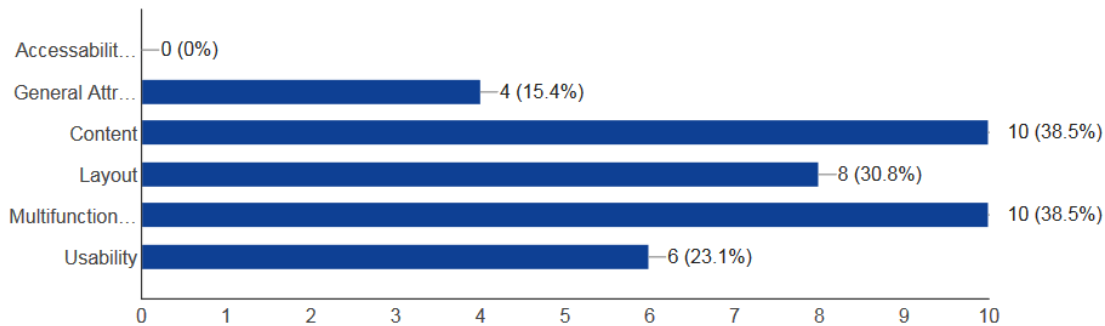
17. Which are the most positive aspects of the app? Please mark corresponding aspects



18. Which are the most negative aspects of the app? Please mark corresponding aspects



19. What kind of improvements would you suggest? Please mark the corresponding aspect

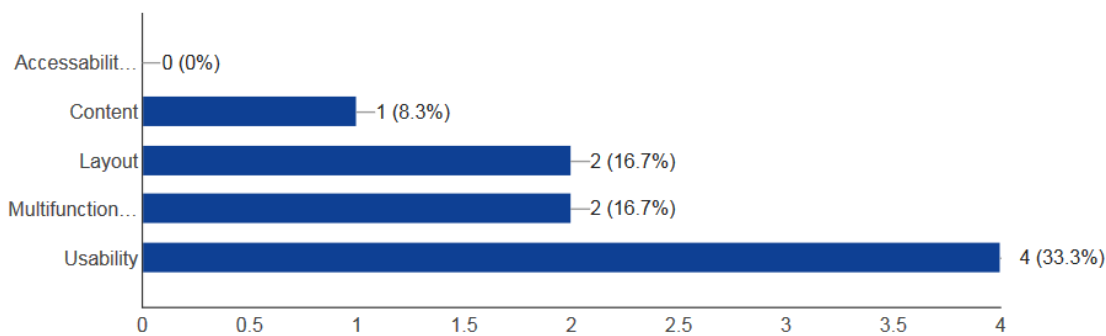


Details:

- more precise and correct results like you get immediately the wanted object, so there is no need in choosing it. report function for bugs
- added value ?
- WLAN in the museum
- image recognition
- image recognition should be more precise in giving the wanted result
- links did not work
- functionality
- content should be correctable and easy accessible by curators; there should be transparency of data sources

- much more content about particular objects
- rectangular focus function could be also be used as release at the same time
- image recognition, avoid incorrect hits
- possibility of saving and sharing images taken; internal storage, Instagram
- videos should work better, not only texts
- embedding of multimedia contents
- Some more verbal intro and explanation
- videos are a good idea, but might bother visitors. search results could be improved.

20. Did anything about the app confuse you? Please mark the corresponding aspects



Details

- image detail selection
- App download
- if record does not fit to object
- app did rarely work
- unclear which object in the showcase
- I have an iPhone
- symbols not clear
- Settings page
- preview images in the result lists are too small. I could not recognise the fitted object.
- similar content to exhibition texts
- there are several apps with similar name available in the app store!
- too many mistakes in recognising the wanted object.

21. How could we improve the educational aspects of the app?

- more video less text
- more interactive multimedia content, e.g. for particular user groups like younger people
- ask a teacher

- animated images
- improve additional functions
- good and straight context, ask questions
- more multimedia, less text
- further links
- object history can be used outside the museum

22. If you know comparable apps, did you like them more or less than the app you just tested? Why?

Which apps are you referring to?

- don't know competing other apps
- Google gadgets which has an easy handling but is only used for painting