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D7.1: EFG1914 Virtual Exhibition: Concept and Technical Specifications

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1 Introduction

EFG1914 project will digitise and make available 647 hours of film and 5.600 film-related items on the theme of World War I held by 20 European archives in 15 countries. All of the digitised material will be made accessible to the public free-of-charge via www.europeanfilmgateway.eu and www.europeana.eu. While most of the project's activities are dedicated to the workflow of digitising film and related material, the aim of WP7 is to highlight selected films, images and texts in a virtual exhibition. So in addition to the presentation of all content through the European Film Gateway, a curated virtual exhibition will showcase objects that are outstanding or especially noteworthy.

The aim of this document is to show the work that went into the conceptualisation of the exhibition so far, presenting the concept of the Virtual Exhibition as well as the functional and technical specifications of the EFG1914 Virtual Exhibition System. Chapter 2 sets out to give a general overview of what a virtual exhibition (VE) is considered to be. It highlights some already existing VEs on the Internet that EFG1914 looked at for inspiration. Chapter 3 then focuses on the EFG1914 VE, starting out with highlighting the decision process that took place from the beginning of the project in February 2012 until September 2012. Furthermore, the target audience is described briefly and the themes of the VE are being presented. Chapter 4 then goes on to describe the basic functionalities of the VE and shows some design drafts. Chapter 5 then goes in to more technical detail about the VE Information Model, before Chapter 6 describes the system architecture and also takes a look at software used or built by related projects, possible video formats and options for the streaming of the films selected for the VE.

The EFG1914 VE is a joint effort with all project partners involved, most notably ATHENA as WP leader. While ATHENA is mostly in charge of the technical implementation, the curatorial effort lies with DIF as project coordinator with the strong support from the archives in the consortium.

According to the time schedules laid out in the EFG1914 Description of Work, an internal prototype of the VE will be available by the end of 2012. The official launch of the Virtual exhibition is scheduled for late 2013.

2 General Overview of Virtual Exhibition

2.1 Characteristics

“A virtual exhibition (VE) is a Web-based hypermedia collection of captured or rendered multidimensional information objects, possibly stored in distributed networks, designed around a specific theme, topic concept or idea, and harnessed with state-of-art technology and architecture to deliver a user-centred and engaging experience of discovery, learning, contributing and being entertained through its nature of its dynamic product and service offerings.”¹

Also, one of the essential characteristics of a VE, and possibly its greatest strength, is **accessibility**. It can reach audiences that the physical counterpart never could². VEs can showcase museum or archive collections without the **space, time and location constraints** of a physical exhibition and to anyone with access to the Internet. A VE is usually an environment constructed for **single users**, that allows them to understand, explore, discover, and learn, through a **vast variety of forms of media** (text, image, audio, sound, video, etc.) both in a linear way but also, by hyper-linking, in a **non-linear** one.

Even though accessibility is what sets a VE apart from a physical one, this is not what distinguishes it from other legitimate, online sources of information. What differentiates a VE from other online information sources is that the VE is a matter of **experience** rather than of one-way learning³. To that direction a VE has evolved from being a model for physical exhibitions or a simple way of presenting information for exhibits, into becoming an experience. In that context the VE design is taken even further, incorporating elements of edutainment and story telling, by improving the HCI and using entertainment and dramaturgy. End users became the centre of a VE and in some cases even personalization techniques are applied for displaying information and providing the most appropriate navigation⁴.

All these characteristics make the VE very appealing to users, to such an extent, that their current popularity indicates that they will be used even more frequently in the future.

2.2 Challenges

Given the technologies that are available for developing web applications and complex user interfaces, the implementation of Virtual Exhibitions with a high quality presentation and advanced user functionalities is nowadays possible. However there still remain a number of challenges:

A VE model should be designed in such way that it has all the expressiveness demanded to capture different scenarios for VEs and to facilitate advanced user functionalities. When it comes to presentation, the difficulty lies in keeping a balance between information and elaborate interfaces so that it still holds that essence of information authenticity. The implementation within the context of EFG1914 should be based on state-of-the-art technologies and integrate the latest technological trends. Nowadays users are very familiar with web technologies and have high expectations when it comes to user interfaces and their functionalities.

2.3 Existing Virtual Exhibitions

A great variety of virtual exhibitions are available on the Internet. This chapter lists a number of existing virtual exhibition sites built for history, art, nature or technology domains, with similar purposes than the EFG1914 VE. WP leader Athena looked more closely at these exhibitions in order to gather ideas for design, content presentation, functionalities, interactivity and usability aspects. Some key designs aspects that might be interesting in the context of the EFG1914 virtual exhibition are identified and briefly presented. The following categorisation is based on the main subject of the presentation.

¹ Schubert Foo, 2008, Online Virtual Exhibitions: Concepts and Design Considerations, DESIDOC Journal of Library and Information Technology, Vol. 28, No. 4, July 2008, pp. 22-3

² Elin Ivarsson, 2009, Definition and prospects of the Virtual museum, Master Thesis, Department of ALM Museum and Heritage Studies, Uppsala Universitet

³ Roussou, Maria, 2007, “The components of engagement in virtual heritage environments”

⁴ Personalized storytelling in the FP7 CHESS project H<http://www.chessexperience.eu/H>

Focus on objects

This type of VE is dedicated to presenting a loose collection of objects, with main focus on providing information about the objects. A user can browse the whole collection available. The displayed objects are clickable. Only after a user clicks on an object, metadata, description and links for more information about this object are displayed on screen. The object collection is narrowed down using filters, such as time, location, type, etc. For navigation, timelines and maps might be available. Some examples are:

- **BBC – A History of the World⁵**: This exhibition includes images of simple objects or tools, placed in a timeline, so as to present the complete history of the world and mankind.
- **The United States Holocaust Memorial Museum⁶**: This exhibition is dedicated to the Nazis sophisticated propaganda campaigns and their legacy. The gallery section of this exhibition consists of a list of items, photographs, posters, sound recordings, videos, and more, that showcase the exhibition's subject.
- **World Digital Library⁷**: This exhibition presents a collection of digitised objects, photographs, manuscripts, books, sound recordings, videos, etc., from various history institutions and libraries throughout the world.

Focus on themes

Another approach is to group the objects into a set of themes. These themes may represent broad thematic areas of interest associated to the general subject of the VE. Such VEs display a collection of themes and use the objects to better illustrate them. In many cases, the themes may be hierarchical (i.e., composed of sub-themes, or as they are more usually referred to, topics). The themes presented are usually selected taking into consideration the available objects and how to best categorise them.

In VEs of this type, users can choose one of the themes at a time, and then navigate through its sub-pages. Each page can contain one or more objects along with accompanying text that can describe the theme, the objects, and/or their correlation. By clicking on an object, more information about it (metadata, related links, related objects, etc.) is presented. These VEs manage to draw attention to the objects by presenting them from a certain viewpoint and setting them in a context rather than plainly displaying them and their metadata to the user in an un-contextualised way. In the case of EFG914, the thematic approach would manage to demonstrate the added value of collections brought from different countries and archives and move beyond the traditional information access portal. Some examples for VEs of the type just described are:

- **Europeana Exhibitions – Untold stories of the First World War⁸**: This exhibition presents personal accounts of ordinary people from across Europe that experienced the horrors of WWI. It is organized around six themes, and based on stories, photos, letters, and other memorabilia contributed by the public.
- **The United States Holocaust Memorial Museum⁹**: This exhibition is dedicated to the Nazis sophisticated propaganda campaigns and their legacy. The thematic section of this exhibition consists of seven themes and presents a vast selection of objects such as photographs, posters, sound recordings, videos and more.
- **Anne Frank Museum¹⁰**: This virtual exhibition is a timeline presentation of various themes regarding the life of Anne Franks' family, before, during and after the WWII. The exhibition presents, mainly photos but also other objects such as posters, and annotated maps that show the state of European countries during the war.

⁵ <http://www.bbc.co.uk/ahistoryoftheworld/explorerflash/?timeregion=7#/home>

⁶ <http://www.ushmm.org/propaganda/exhibit.html#/gallery/>

⁷ <http://www.wdl.org/en/>

⁸ <http://exhibitions.europeana.eu/exhibits/show/europeana-1914-1918-en>

⁹ <http://www.ushmm.org/propaganda/exhibit.html#/themes/>

¹⁰ <http://www.annefrank.org/en/Subsites/Timeline/>

- **In Black and White – Photographs from Buchenwald Concentration Camp**¹¹: This exhibition presents photographs from the Buchenwald Concentration Camp, categorised in topics. Apart from the photos, the exhibition also includes a few videos, interviews or documentaries about the camp.

Focus on events

VEs following this approach have a tendency to present objects related to historical events in a timeline. The objects are used to illustrate the events. The difference with regard to the VEs focusing on themes is that in this case, the presented events are given and not as much selected depending on the available objects. This means that the objects just accompany the events presented and this happens only in the cases where suitable objects exist. Some examples are:

- **Conflict History – Browse the timeline of war and conflict across the globe**¹²: This exhibition presents all conflict events that have taken place. The events are represented as pins on a global map, depending on the location where they took place. Every pin-event is linked to a line on an accompanying table where more information about the conflict is presented. The possibility to filter the time period for which events are presented is also given.
- **The United States Holocaust Memorial Museum**¹³: This exhibition is dedicated to the Nazis sophisticated propaganda campaigns and their legacy. The timeline section of this exhibition presents key events of the history of the Nazi party. In the timeline, a number of images complement the event entries.
- **South African History Archive (SAHA)**¹⁴: This SAHA exhibition is commemorating the role of the youth in the struggle for justice in South Africa. The timeline it features presents key events, some of which are supplemented with items such as photographs and posters.

¹¹ http://www.buchenwald.de/fotoausstellung/ausstellung_enH

¹² <http://www.conflicthistory.com/#/period/1481-1484>

¹³ <http://www.ushmm.org/propaganda/exhibit.html#/timeline>

¹⁴ <http://saha.org.za/youth/timeline.htmH>

3 EFG1914 Virtual Exhibition

Preparations for the conceptualisation of the EFG1914 Virtual Exhibition started out with the EFG1914 consortium identifying the main purpose of the VE, the themes that it should cover and the target audience it should reach. These decisions taken were supported by

- The **content** itself, i.e. the content that will be made available in the context of the project.
- The **presentation** of the content, in order to make it attractive to the audience and serve the main purpose.

This part of the deliverable will describe the decisions taken so far regarding the EFG1914 VE. It presents the chosen themes, the audience targeted and talks about design aspects.

3.1 Target audience and main purpose

In consideration of the forthcoming centenary in 2014, a growing demand for content – and especially moving image content – related to the time and events of the First World War is to be expected.

EFG1914 considers its future Virtual Exhibition to be relevant to the general public with an interest in either WWI or else film history, potentially both. Academics, curators or amateur historians interested in rare moving images on WWI related topics as well as regular visitors of the EFG portal that are interested in a more contextualised presentation of the highlights of the archives count among the potential user groups. Hence, the main purpose of the VE will be

- (i) To inform and educate users about film production history and illustrate how film was used to record, propagate and interpret war.
- (ii) To inform and educate the general public on aspects of WWI in the battlefield and beyond the trenches and illustrate why WWI is a significant event even 100 years later.
- (iii) To bring important and rare material to general public's attention.
- (iv) To promote highlights of each archive.

With a clear link from the start page of the EFG portal, the VE will have the potential to draw the visitors' attention to highlights from the collections of the partner archives and thus potentially raise their interest in further material that is available on WWI from the archives.

The EFG1914 VE will allow editors to include links to external sources via which also the Europeana 1914-1918 VE as well as the Europeana Collections 1914-1918 VE could be connected to the EFG1914 exhibition.

3.2 Steps towards the EFG1914 Virtual Exhibition

The EFG1914 Description of Work states that the theme of the First World War “can only be addressed and covered properly if it is realized that the meaning of the events before, during and after the Great War by far transcend the manifest acts of war in the trenches, on the battlefields and at sea. It has multiple facets which need to be taken into account in order to get a complete picture”. In addition to this the DOW introduced a possible, very broad, set of themes that could be covered in a Virtual Exhibition. See Annex 1 for the list of themes that were mentioned in the DOW.

To get a very first overview of the available material for these themes, the consortium archives indicated which of the films they plan to digitise falls under which of the themes mentioned in the DOW. It showed that the most popular themes seemed to be “The aftermath” as well as “Entertainment at home”. It also showed that some of the films on the digitisation schedule did not fit any of the suggested themes.

As the DoW themes were rather generic and more specific topics were not mentioned, WP7 leader ATHENA carried out a survey among the archives (see Annex 3) asking for suggestions of possible topics that the archives could cover with content coming from their collections. They were also asked to underline the added value that they see in their proposed topics and the audience they would like to attract with it. ATHENA presented the results of this first questionnaire to the consortium during the

WP7 workshop “EFG1914 VE Conceptualisation workshop” in July 2012. All results were also made available to the consortium in the member section of the EFG1914 project website.

Apart from the target audience and the new suggestions for topics, the questionnaires also provided the opportunity to get some design ideas directly from the partners and see how they envisioned the presentation of their content. After the compilation of the questionnaires and in order to have a more concrete starting point for the discussions in the EFG1914 virtual exhibition conceptualisation workshop, ATHENA produced a set of mock-ups. Two basic approaches for the design of the EFG1914 virtual exhibition were identified: a *map* based approach and a *thematic* based approach.

The map-based version is an example of a Virtual Exhibition with focus on the objects (compare chapter 2.3). For this version a European map was used as a canvas in order to pin on it all the items to be presented in the virtual exhibition. A timeline as well as several menus were provided in order to filter the pinned items according to various options (location, time, type, theme etc.).

In the thematic based approach, the exhibition is comprised of a set of themes, with each theme presented in a similar way: a number of items, placed in a certain order on the screen, accompanied by text.

Discussions during the workshop in July led to a clearer idea of what the themes to be presented could be. Another result also was the re-definition of the first design drafts that ATHENA had prepared. More information on the outcomes of the discussions on design are presented in Chapter 3.6.

After the workshop a further feedback round regarding the themes identified was carried out and archives committed to curating individual topics. Chapter 3.4 lists the themes and topics identified and describes the steps of the curation process.

3.3 Concepts and main principles

The consortium decided that the most important approach to be followed is the one where the VE focuses on selected themes and presents objects related to these themes in a contextualised way. As the focus of the project suggests, all themes will have to do with WWI and the film production during that time. The VE will look at the First World War from several angles, presenting films as historical documents, a medium to manipulate but also distract the masses from the war. Considering that the EFG1914 consortium does not consist of historians or WWI specialists, accompanying texts will be of a short, journalistic style rather than of a lengthy, scientific type. EFG1914 will follow the approach to link to external resources which provide further, more scientific in-depth information. Also, the VE will not only focus on WWI events but also the impact the war had on film production of that time. Furthermore it was decided that the main focus of the VE should be on moving images, as this is what sets EFG1914 apart from other projects related to the First World War that mostly focus on Non-AV material. However, images and text documents will be used to further contextualise the videos that will be presented.

The EFG1914 VE will mainly consist of three layers: the theme layer, the topic layer and the item layer. The theme is considered to be the broader subject under whom a number of topics will be joined together. For each topic it is foreseen to showcase around 3-5 videos or non-AV objects. The themes and topics identified during the workshop and afterwards will be presented in more detail in the following chapter.

3.4 Themes

To better serve the above-mentioned purposes and to satisfy EFG1914 users, a thematic approach will be followed. The consortium agreed that a theme is a broad setting, context or ambience given to the EFG1914 Virtual Exhibition. The consortium also realised that there is a need to divide themes further into sub-themes in order to contextualise the available videos better. In EFG1914, these sub-themes are called topics.

Below is a list of themes and topics that came out of the initial survey, the discussions during the workshop as well as a further feedback round a few weeks after the workshop. This list is still not completely final, as the consortium would like to maintain a certain amount of flexibility in the curation

of the exhibition. Therefore, it can well be that certain topics might be left out or other ideas pop up in the curation process. It might be the case that due to the sheer number of themes and topics not every topic listed below will be possible to implement.

In the following list, the overall theme is bolded, while the topics belonging to that theme are underlined.

1. Film and Propaganda

- a. Same images, different stories: This topic should focus on films that tell about the same events but from different perspectives. (i.e. the assassination of Franz Ferdinand as reported about in different countries)
- b. Advertising the war: This topic should focus on films advertising war bonds or the army or similar activities aimed at promoting individual nations' war efforts.
- c. Anti-war propaganda and resistance: This topic should focus on films and people that speak out against the war and/or reveal its cruelties/atrocities

2. At the front

- a. Cinema at the front: This topic should feature films presented to soldiers at the front and their reaction to it. Also, footage of cinemas at the front would be useful.
- b. Cameramen at the front: This topic should explore the life and working conditions of cameramen working at the front.
- c. Battlefields re-enacted: Most films of the time didn't show actual battle scenes but re-enacted battle scenes. Reasons for this were that either cameramen couldn't or weren't allowed to shoot at the front because of technical and/or war strategic reasons. This topic should point out this fact and highlight some interesting examples.
- d. Lines of Battle: This topic should present films from the different fronts.

3. Suffering in and after the war

- a. Poverty and famine: As the title suggests, this topic should feature films that show how the war brought about hunger and starvation.
- b. Diseases: This topic should focus on the diseases that many people were effected by during the war
- c. War Injuries: Films dealing with injuries cause by the war should be featured und this topic

4. Neutral countries

- a. Daily life: This topic should show how the (daily) life of people in neutral countries was looking like during and after the war.
- b. Propaganda films: This topic should show how neutral countries became a safe haven for refugees fleeing from countries involved in the war.

5. Science and technical innovation

- a. Research and development of new weapons / war technologies: This topic should show research and development activities in the laboratories/factories.
- b. New weapons/war technology in use: This topic should show how newly developed weapons were used in the fields.
- c. Women as the backbone of war: This topic should show how women supported the industry as factory workers.

6. Commemorating the war

- a. Monuments and celebrations: This topic should explore the differences of commemoration events.

- b. Depiction of war in films produced after the war: This topic should explore how the war is dealt with in films produced after the war.

7. Beyond the trenches

- a. Children / Childhood in the war
- b. Cinema at home: This topic should explore the programmes shown in cinemas to keep up the spirit, it should focus on women as the new cinema audience and the effects on film production
- c. Film production during the war: This topic should explore the effects of war on film production. It could explain how production companies were founded in the different countries.

The curation workflow foresees that there is one partner responsible for each topic. According to the DOW, all archives have one Person-Month dedicated to the Virtual Exhibition. The curating archive together with the contributing archives will form the “topic work group”. As the curator of a topic, the responsible archive has to:

- Be the main contact person for the archives that provide content under that topic and that form the “topic work group”
- Identify and define suitable content from the archives to be presented (depending on the topic usually up to 5 objects)
- Confer with the partners archives who provide the objects about the final selection of objects and wording of the topic title
- Write a short journalistic text about the topic
- Participate in telephone or skype calls with other archives curating a topic under the same theme.

All archives contributing content to a certain topic are asked to give active input to the curator of the topic. The project coordinator DIF will be writing the theme texts, supported by selected partners. DIF will also be responsible for the overall coordination of the curational work, while ATHENA is in charge of the technical development.

3.5 EFG1914 Virtual Exhibition Items

Videos will be the main focus of the EF1914 Virtual Exhibition. As mentioned before, selected non-AV material will accompany the videos. The documents that will be chosen for presentation in the VE will mostly belong to the group of videos, images and texts digitised in the EFG1914 project. However, already in the original EFG project that ran from September 2008-August 2009, some material with a relation to WWI was made available via the EFG portal. Where it seems suitable, also content coming from the earlier project can be included in the VE. Both types of objects will be available to the EFG1914 VE System through the existing EFG Infrastructure.

Considering the fact that some of the chosen videos will have a longer duration and not all of their content will be related to the topic or theme they are presented under, it was decided to create extracts of videos where it seems to make sense. In these cases not the full video will be presented in the VE, but only a shorter extract, called snippet in the following.

3.6 Design

During the Virtual Exhibition conceptualization workshop in July 2012, which was mostly used to reach consensus on the themes and topics to be chosen as well as to discuss technical implications, ATHENA presented some design drafts for both, the map based approach and the thematic one. Outcome of the discussions about the approach to follow were mainly two-fold. It was decided to discard the map approach, as the presentation of video material is rather complex. As locations in videos can change and on the other hand borders of countries kept changing during the war, it was considered too much of a curational effort to prepare the video items for a presentation like this. In

contrast to that, the participants considered a timeline more easily to prepare and therefore opted to keep a time-based presentation of the objects in addition to the thematic approach as an option. All workshop participants were in clear favour of a thematic approach when presenting highlights of their collections. A thematic approach was considered to give the user a feeling of a more personal interaction, and the approach of browsing through the content is more attractive than simply displaying the items on the screen and clicking on them. Depending on the work necessary to design a theme-based VE, ATHENA stated that they could also try and implement the timeline approach.

The original design drafts presented by ATHENA (see Annex 4), used a book as a background to showcase the material, as ATHENA thought this could fit nicely with the idea of telling a story. However, most of the participants agreed that in the EFG1914's case it is not the best solution. The book metaphor was considered to be too inflexible regarding the format and also not quite fitting for the presentation of film. Instead it was suggested to have a more fluid layout that fits with the movement that characterises film in contrast to static non-AV material¹⁵. Following up the workshop, ATHENA worked on new design drafts that will be presented in the following chapter about the functional specifications. These newer drafts are still subject to further reviews and usability assessments through the progress of the project, but they already now can give the reader an idea of the direction in which the design of the VE will be going.

¹⁵ The Nelson Mandela Digital Archive Project by Google (<http://archive.nelsonmandela.org/>) was mentioned as a good example for a VE with a fluid navigation.

4 Requirements and Functional Specifications

1. Display available themes

Function: Anytime be able to see all the available themes

The start page of the virtual exhibition must prominently display all the available themes, along with the title, representative thumbnail and short description. In all other sub-pages, a theme menu containing all the available themes must also be available, e.g. in the header navigation as a drop-down list. The title, a thumbnail and a short description of each theme should be displayed in this menu.

2. Display current theme

Function: Anytime be able to identify what the current theme is

To allow a better orientation for the user, the drop-down list of themes (themes menu) should always indicate the theme that the user currently views. Again, the current theme could be display in the top right corner of each sub-page.

3. Select and change the current theme

Function: Be able to select and jump to any theme

The themes displayed in the first page and the themes displayed in the theme menu are links to the pages of a theme, respectively the topics.

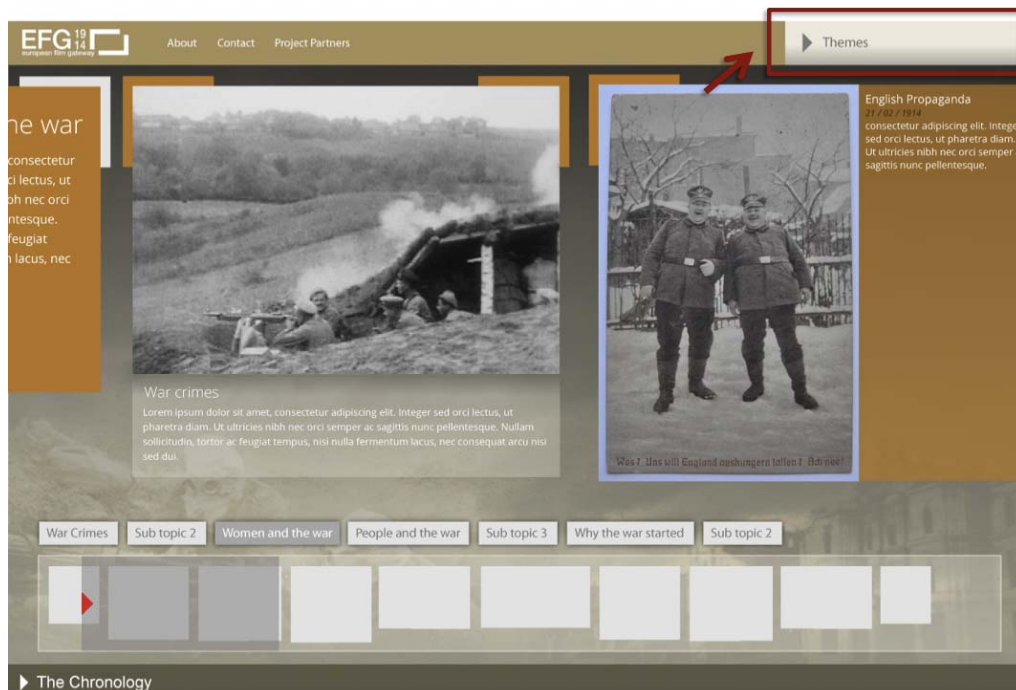


Figure 1 – The menu theme is always available in the right top corner of the screen.

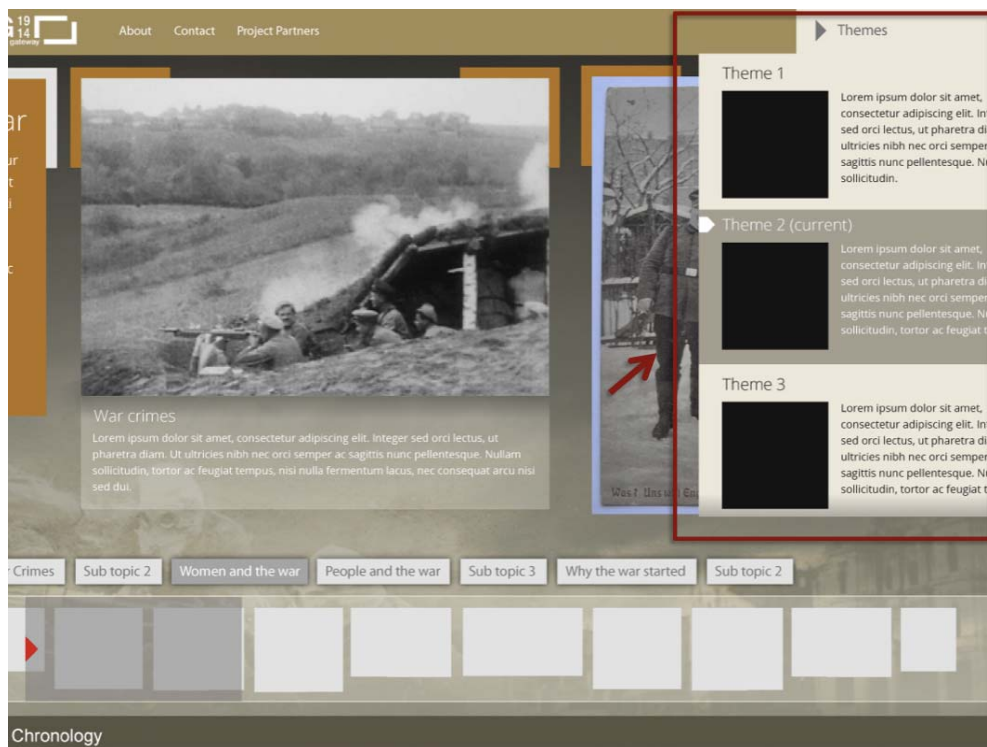


Figure 2 - After clicking the theme menu, all themes with thumbnails and descriptions will be displayed. Each theme from this list is clickable so that a film can be easily selected and changed.

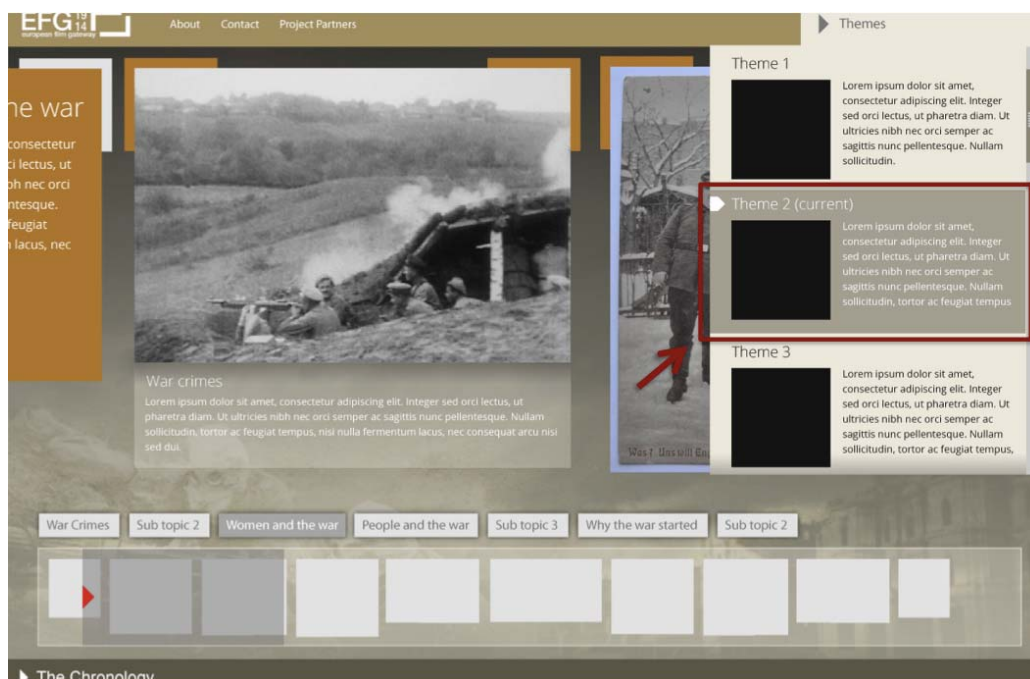


Figure 3 - The current theme is highlighted.

4. Identify of all the topics of a theme

Function: In the context of a theme be able to identify what the available topics are

After a theme is selected, the titles of topics that belong to that theme must be displayed.

5. Identify the current topic

Function: Anytime be able to identify what the current theme is

The title of the current topic must be highlighted.

6. Select and change the current topic

Function: After a theme and a topic are selected be able to select and jump to any other topic that belongs to this theme

After a theme is selected, the titles of topics that belong to that theme must be displayed. These titles are links to the topics.

7. Identify the size of each topic

Function: For each topic be able to identify its size in respect to the number of items it contains

When the mouse is over the title of a topic a number indication of items contained in the specific topic will be displayed, probably in the form of a tool tip. The analogy between the different topics of the theme can be kept and presented on a slider.

8. Identify what a topic is about

Function: After a theme is selected a user should be able to identify what each topic of the selected theme is about

When the mouse is over the title of a topic, a tool tip will appear that displays an introductory text relevant the specific topic.

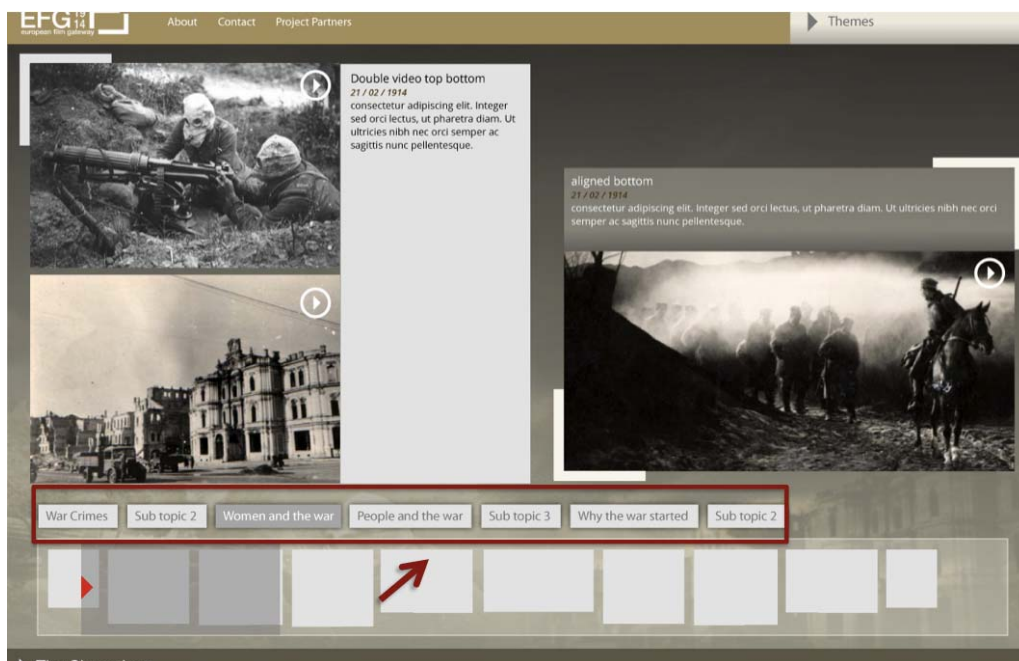


Figure 4 - All the topics of the current theme are displayed on screen. The topics are clickable so that a user can select and change the current topic.

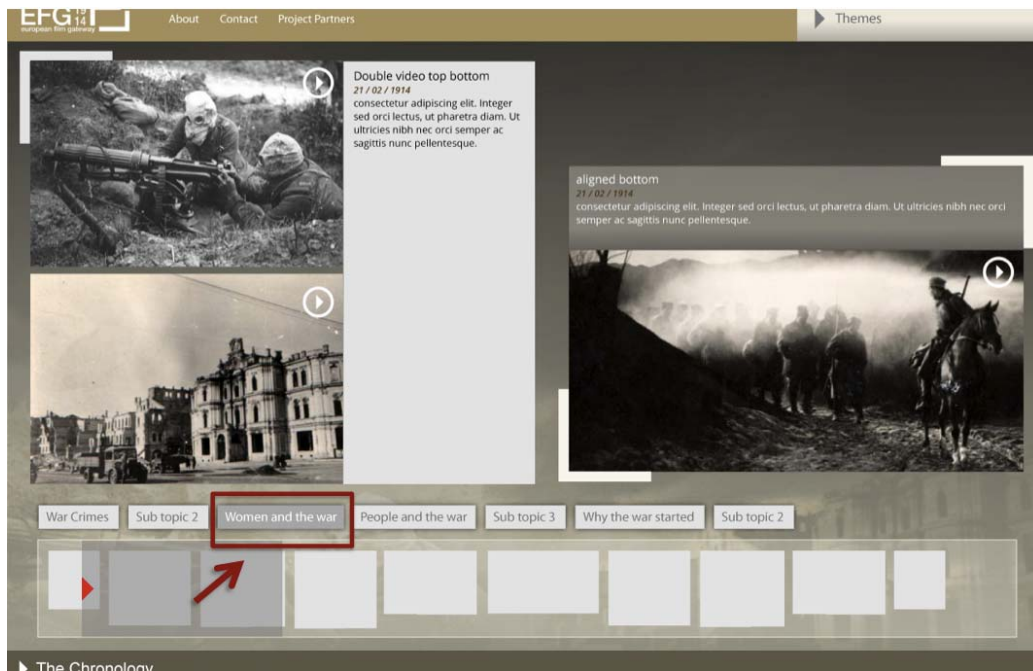


Figure 5 - The current topic is highlighted.

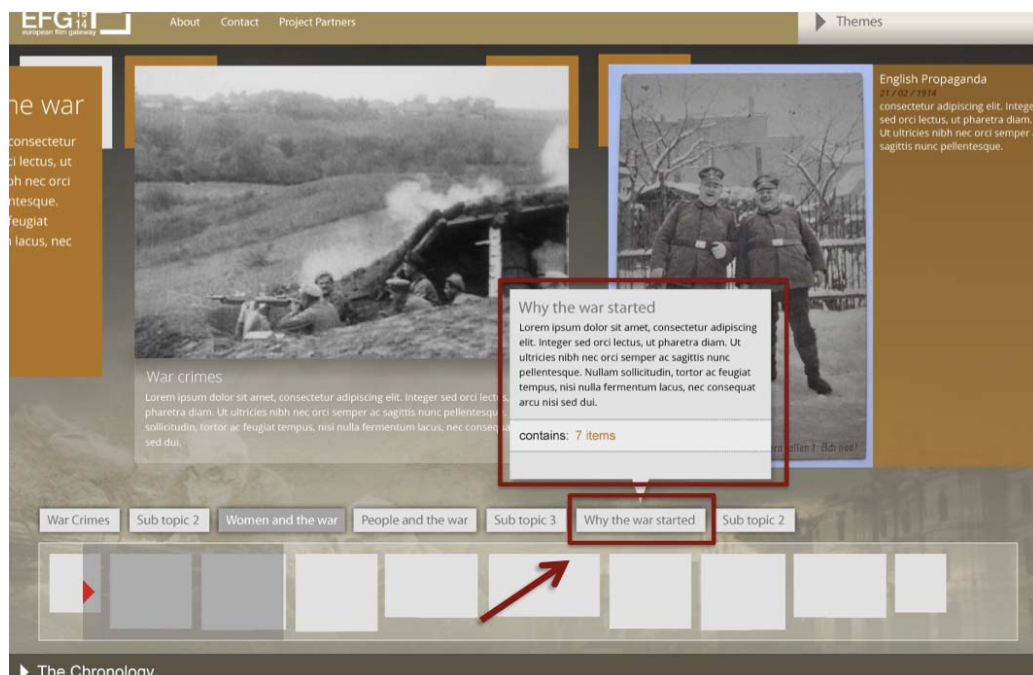


Figure 6 - Every time the mouse is over the title of a topic, a tool tip will be displayed. This tool tip can contain various information - the number of the items of a topic, short description, etc.

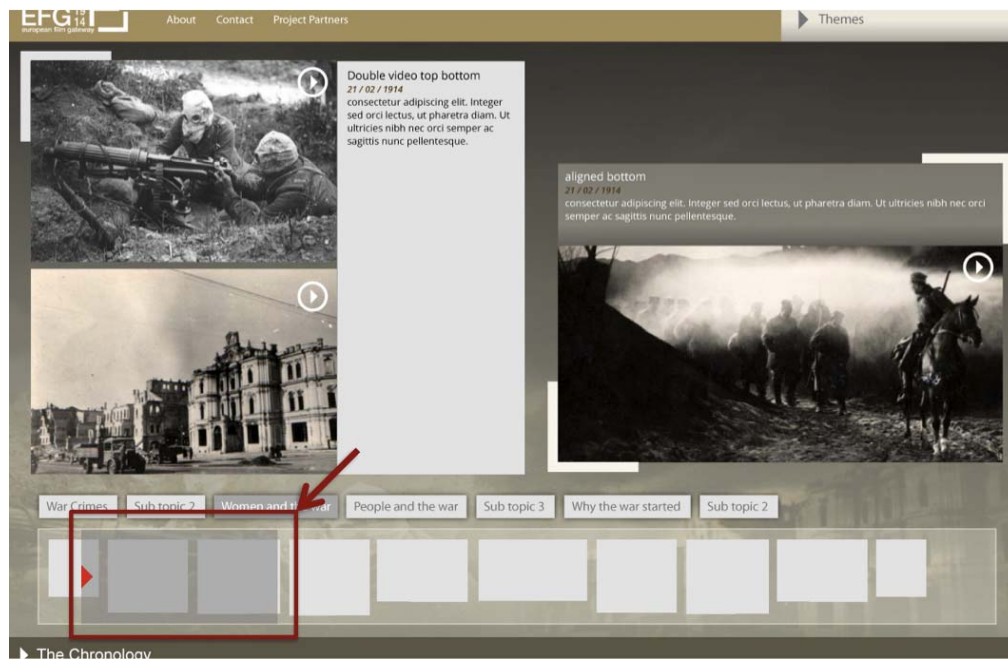


Figure 7 - The slider can be used to keep the analogy of the different topics of the theme. It can be also used to identify the navigation progress of a user through a theme or a topic of the virtual exhibition

9. Have knowledge of what is the user's progress in the contents of the current theme or topic

Function: After a theme is selected a user should have an idea of how much content is before and after the current screen

Have a slider with a progress indicator.

10. Jump to any part of the current topic

Function: While viewing a screen of a topic be able to jump to any other slide of the current topic

Use a slider and move the indicator.

11. Jump to any part of the current theme

Function: While viewing a screen of a topic be able to jump to any other slide of the current theme

Use a slider to move the indicator or use the topics menu.

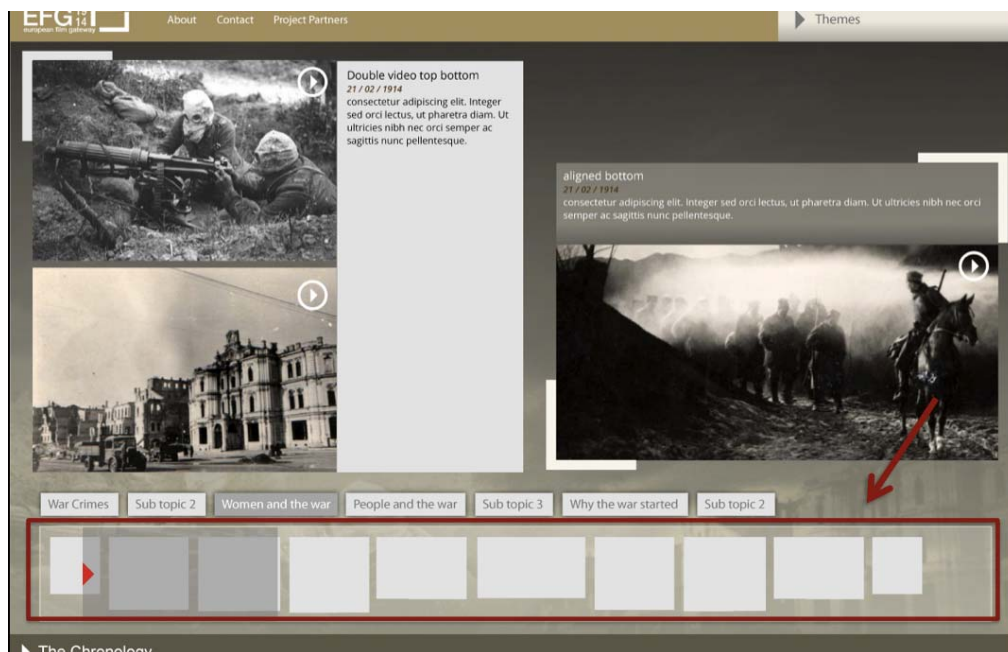


Figure 8 - The slider can help to jump to any slide of a topic or theme.

12. Present information that is related to more than one item

Function: Be able to provide information related to more than one item

Have group of items organised in a box like area that we call frame, where the items and an accompanying text are displayed.

13. Present additional information for a group of items

Function: Be able to provide additional information for a group of items (frames)

Have a detailed page for a frame that will fit the whole screen and give more space for additional text, relative information and links to related resources, such as . links to the Europeana 1914-1918 VE as well as the Europeana Collections 1914-1918 VE. This page will be a layer and won't open a new window.

14. Present additional information for an item

Function: Be able to provide additional information for an item

Be able to display the metadata of an item

15. Search in Europeana for related content

Function: Give the possibility to users to search in Europeana for items related to the content displayed

In some cases, when it is considered necessary, a link to the search page of Europeana will be available. This link will contain the relevant predefined (by the curator) query. A new page will be opened in the browser. This page will be the relevant Europeana's search result page.

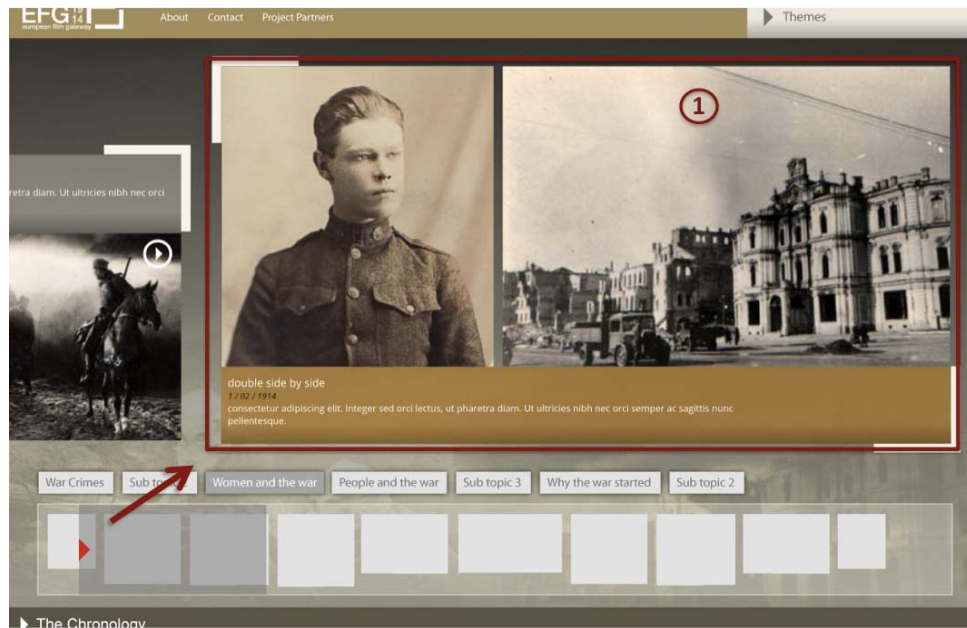


Figure 9 - Items and text grouped together in a frame. The frame is clickable.

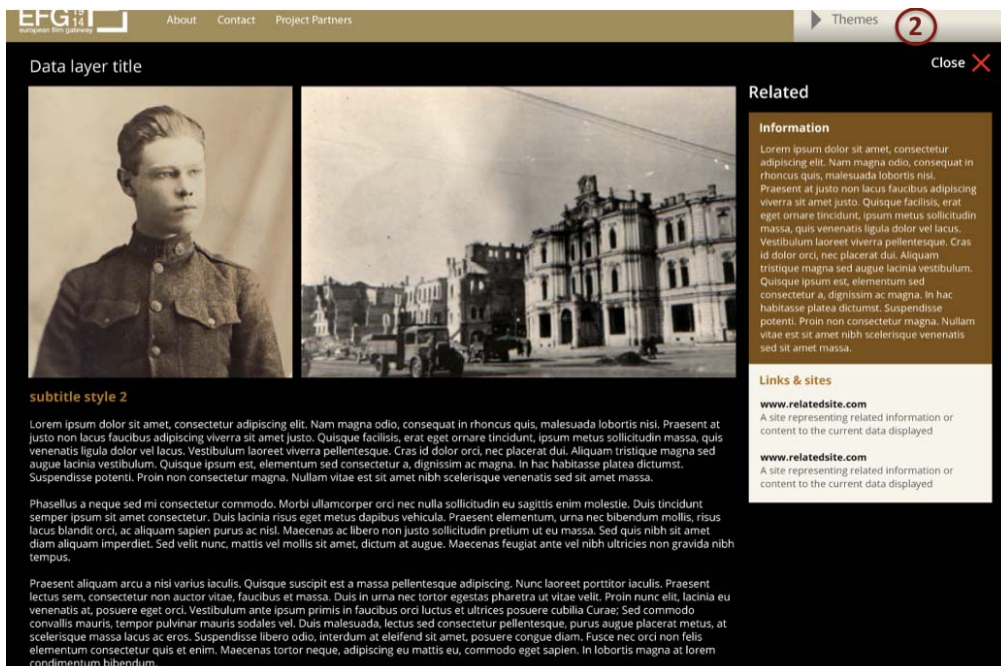


Figure 10 - After a frame is clicked an overlay will appear containing more detailed information for the items of the frame

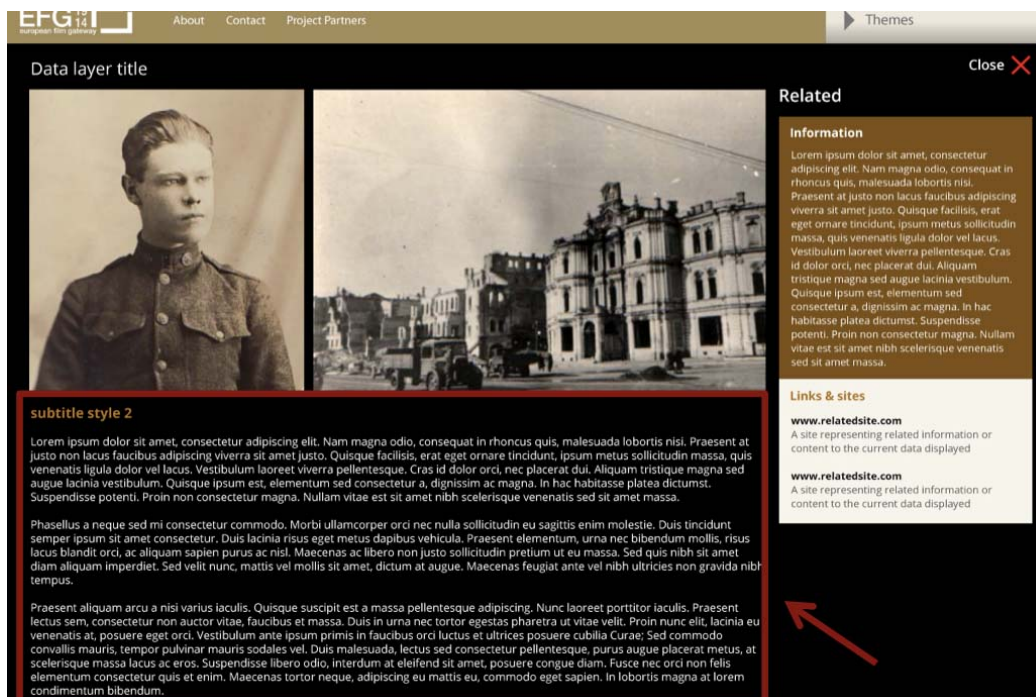


Figure 11 - The detailed text area

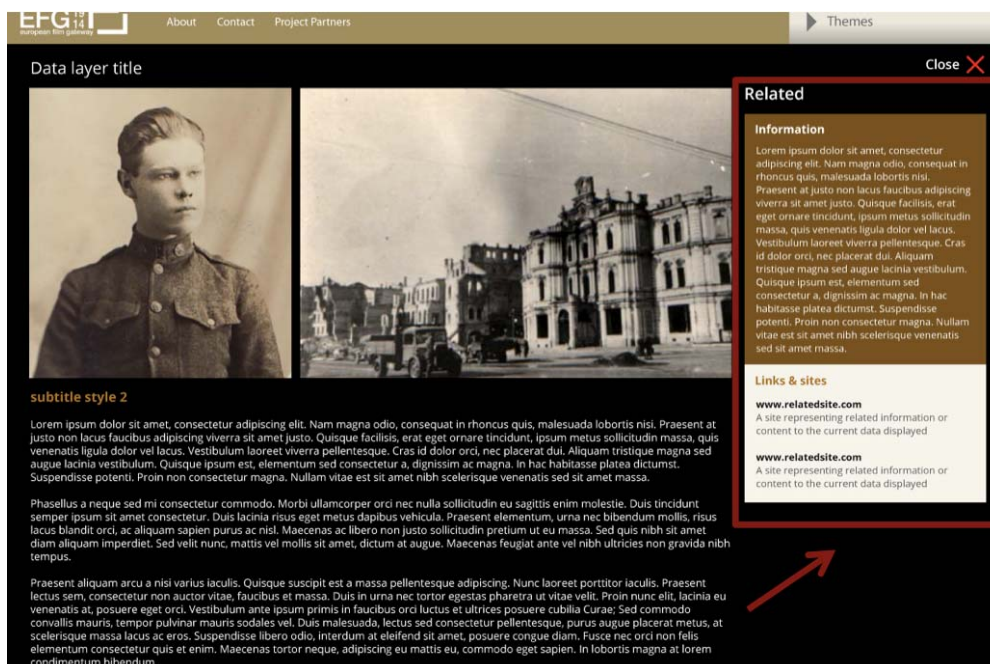


Figure 12 - The box on the right can be used to display metadata of an object and related links - like Europeana search link

16. Play the video

Function: Video playback

Anytime a video thumbnail is displayed, the video could be played without changing screen

17. Distinguish snippets

Function: Be able to tell when a video is a part of a bigger file

Have always accompanying text for snippets containing this information

18. Have chronological view of items

Function: Be able to view the items per year

Provide a special page where all the items of the EFG1914 Virtual Exhibition will be categorized and browsed by chronology.

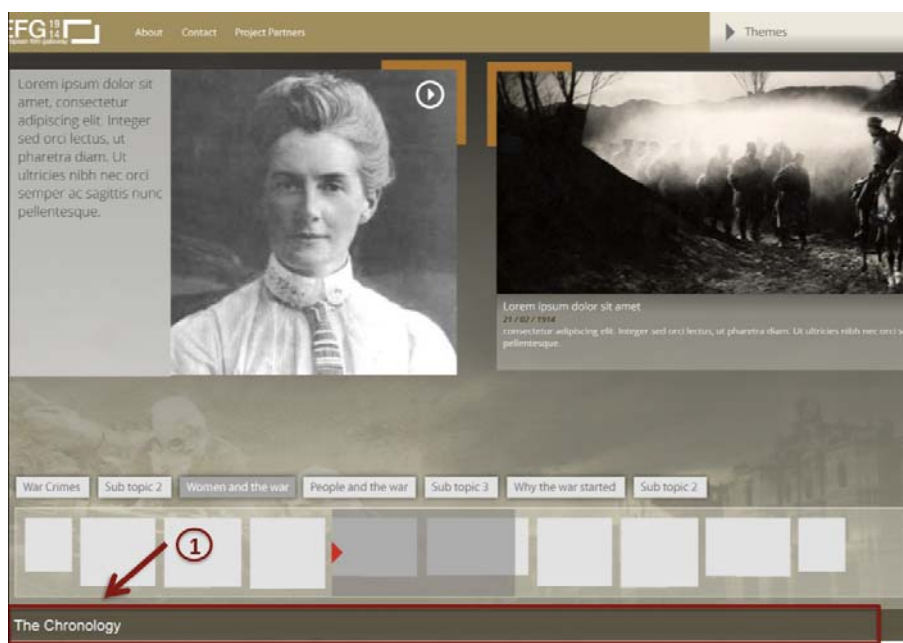


Figure 13 - The chronology menu can be available at the bottom of each screen

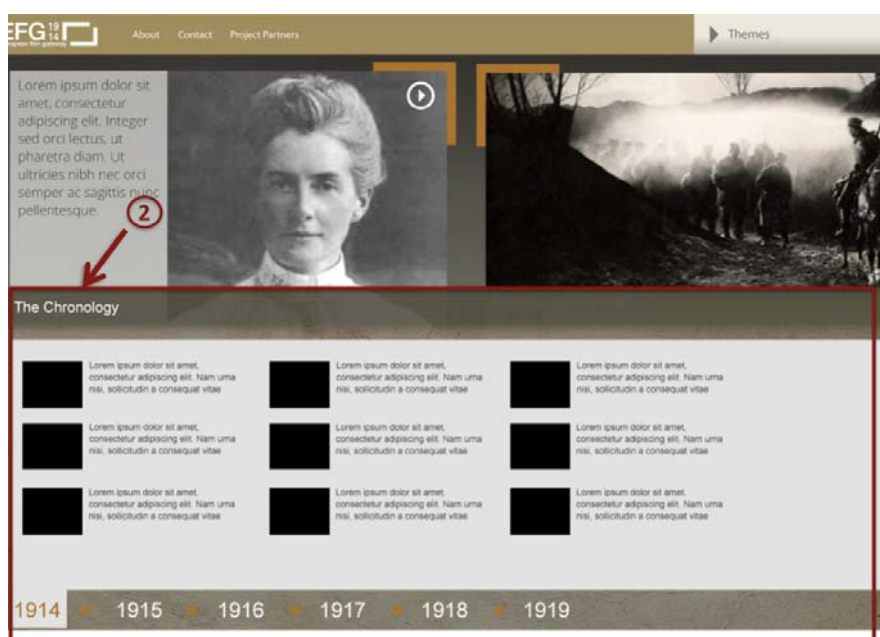


Figure 14 - View of items per year

19. Share virtual exhibition parts in social networks

Function: *Be able to share a virtual exhibition part – most probably a frame other users in social networks (twitter, facebook, google+, etc.)*

Include sharing buttons for social networks in each overlay of frame screen details

20. Show authoring credits

Function: *The authors/ creators of every theme should be available*

Credits menu will be available in the main menu bar. A page that will contain all creators' names and their affiliations will be available.

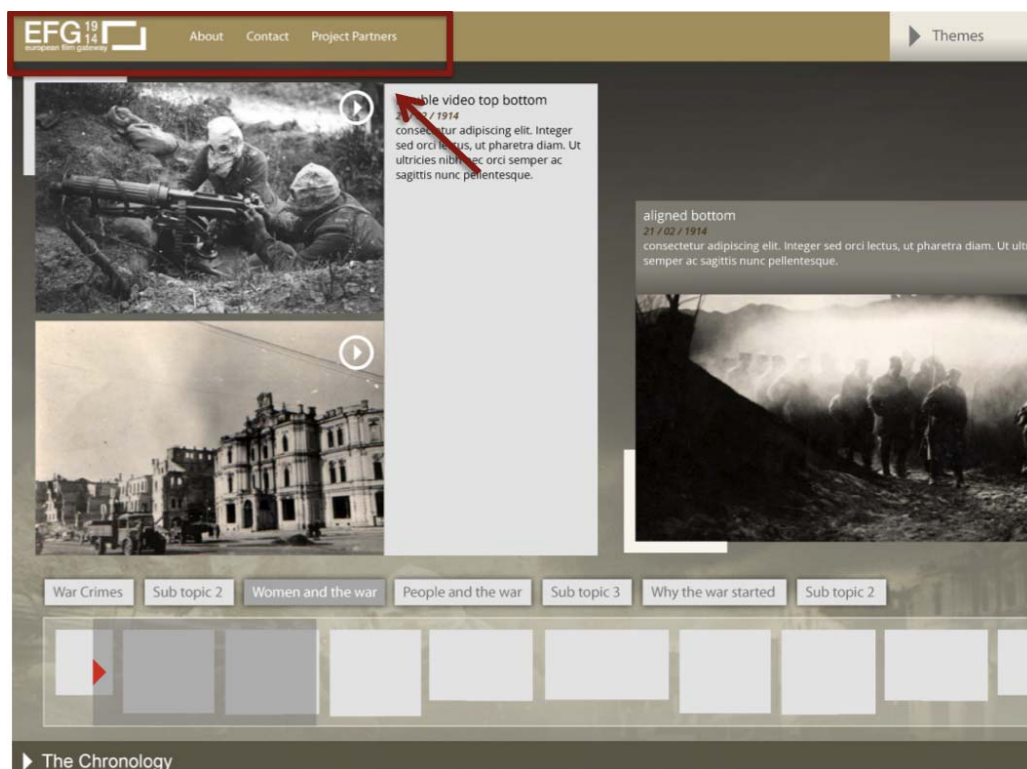


Figure 15 - The top left menu can contain links to credits page and other useful information

The mocks used to showcase the functional specifications are the result of the rendition of the workshop's mocks, but are not to be considered final. They are subject to new reviews and usability assessments through the progress of the project.

5 EFG1914 Virtual Exhibition Information Model

As was stated before, the EFG1914 Virtual Exhibition will consist of a collection of themes. Several archives will be involved in the curation of themes and topics. They will also be editors of the VE that work directly with the system to enter information and select suitable objects. The whole exhibition will be structured hierarchically: A theme will be composed of several topics. A topic will be composed of several items that are representations of EFG items. The items included in a topic, are presented within a frame, one by one or in groups. In that way the curator can enhance an item with topic related information or compare and connect items. Part of the frame hierarchically belongs between the topic and the item.

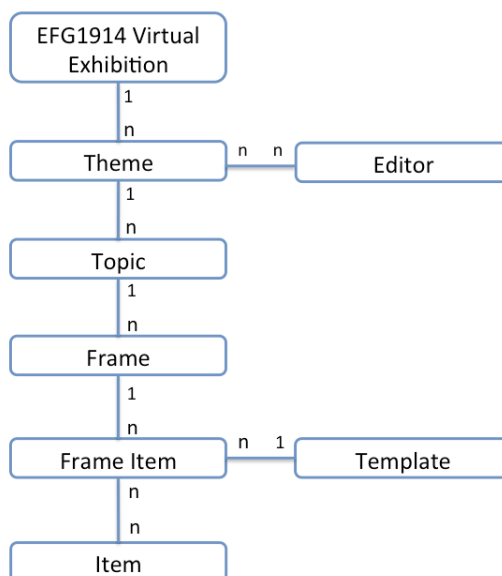


Figure 16 - EFG1914 Virtual Exhibition model

5.1 Components and Metadata

This section describes gives an overview of the necessary components and the related metadata. All metadata will be presented in English.

5.1.1 EFG1914 Virtual Exhibition

This component represents the main body of the EFG1914 Virtual Exhibition. It consists of one or more themes, therefore the only metadata it contains are:

- **Identifier**

The identifier of the EFG1914 virtual exhibition that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Theme**

The link to the theme component of the virtual exhibition.

Status: Mandatory; Occurrences:1..n

5.1.2 Theme

The theme component corresponds to a theme of the Virtual Exhibition. The theme is one level under the whole exhibition level and consists of a series of topics. The necessary metadata of a theme are:

- **Identifier**

The identifier of the theme that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Title**

The title of the theme. [to be displayed]

Status: Mandatory; Occurrences:1

- **Creation date:**

The date when a theme was created.

Status: Mandatory; Occurrences:1

- **Last modification date:**

The date when the theme was last modified.

Status: Mandatory; Occurrences:1

- **Introduction text**

A short text about the theme. [to be displayed]

Status: Mandatory; Occurrences:1

- **Description**

A short description of the theme that will explain in few words what the theme is about. If no value available, it can be replaced by the value of introduction text.

Status: Optional; Occurrences:1

- **Creator**

The link of the editor that created the theme or part of the theme.

Status: Mandatory; Occurrences:0..n

- **Thumbnail**

The link to a reduced-size image that is used as a cover for the theme.

Status: Mandatory; Occurrences:1

- **Background image**

The link to the image used as the background image throughout the theme.

Status: Mandatory; Occurrences:1

- **Topic**

The link to the topic component that the theme contains.

Status: Mandatory; Occurrences:0..n

- **Keyword**

The keyword related to the theme.

Status: Optional; Occurrences:0..n

5.1.3 Editor

An editor is a person from the EFG1914 consortium who is involved in the creation and authoring of the VE theme or a part of it. The following metadata will be stored in the system:

- **Identifier**

The identifier of the editor that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Name**

The name of the registered editor.

Status: Optional; Occurrences:0..1

- **Surname**

The surname of the registered editor.

Status: Optional; Occurrences:0..1

- **E-mail**

The e-mail address of the registered editor.

Status: Mandatory; Occurrences:1

- **Affiliation**

The name of the institution that the registered editor works for.

Status: Mandatory; Occurrences:1

5.1.4 Topic

The topic component corresponds to a topic of a Virtual Exhibition theme. A topic is a list of frames. The metadata that a topic component carries are:

- **Identifier**

The identifier of the topic that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Title**

The title of the topic

Status: Mandatory; Occurrences:1

- **Introduction text**

A short text that introduces a user to the topic.

Status: Mandatory; Occurrences:1

- **Description**

A short description of the topic that will explain in few words what the topic is about.

Status: Optional; Occurrences:1

- **Frame**

The link to the frame component that the topic contains

Status: Mandatory; Occurrences:0..n

- **Order**

The order of the topic in the theme

Status: Mandatory; Occurrences:1

- **Keyword**

The keyword related to the theme.

Status: Optional; Occurrences:0..n

5.1.5 Frame

A frame is a setting for an item or a group of items that gives the curators the possibility to introduce information for the item or the group of items in the context of a topic. The frame component contains the following information:

- **Identifier**

The identifier of the frame that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Title**

A title for the frame

Status: Mandatory; Occurrences:1

- **Subtitle**

A subtitle for a frame

Status: Optional; Occurrences:1

- **Frame Item**

The link to the frame item that belongs to the frame

Status: Mandatory; Occurrences:0..n

- **Template**

The link to the template that describes the layout of the frame.

Status: Mandatory; Occurrences:1

- **Long Curation Text**

The text that explains why the frame items are grouped together in a frame.

Status: Mandatory; Occurrences:1

- **Short Curation Text**

A short text that explains why the frame items are grouped together in a frame. If not present it can be replaced by a part of the Long Curation Text.

Status: Optional; Occurrences:1

- **Information text**

Additional text regarding the frame-items on the frame.

Status: Optional; Occurrences:1

- **Related link url**

The external url to related sources.

Status: Optional; Occurrences:0..n

- **Related link text**

Displayed text for the related link url.

Status: Optional; Occurrences:0..n

- **Related link description**

A short caption for the related link.

Status: Optional; Occurrences:0..n

5.1.6 Template

A template is a pre-specified layout for the items in a frame that contains information regarding the their positioning and size :

- **Identifier**

The identifier of the template that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Css file**

The link to the css file that contains all the css information of the frame.

Status: Mandatory; Occurrences:1

- **Name**

The name of the css class that defines the placement and the sizing of the items of a frame.

Status: Mandatory; Occurrences:1

5.1.7 Frame Item

The frame item represents the item that is exhibited in the Virtual Exhibition, along with all information regarding it that depend on the topic/theme that it is included in.

- **Identifier**

The identifier of the frame item that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **Caption**

A small caption for the frame item.

Status: Mandatory; Occurrences:1

- **Thumbnail image**

Link to a reduced-size image that is used as a cover for the theme.

Status: Mandatory; Occurrences:1

- **Order**

The order of the frame item in the frame

Status: Mandatory; Occurrences:1

- **Item link**

The link to the item that is exhibited in the Virtual Exhibition.

Status: Mandatory; Occurrences:1

5.1.8 Item

This component is the representation of the EFG item in the Virtual Exhibition.

- **Identifier**

The identifier of the item that will be automatically generated by the EFG1914 VE database.

Status: Mandatory; Occurrences:1

- **EFG Item Identifier**

The identifier of the EFG item represented in the VE.

Status: Mandatory; Occurrences:1

- **Item Source**

The link to the file.

Status: Mandatory; Occurrences:1

- **Item title**

The title of the item translated in English (if needed).

Status: Mandatory; Occurrences:1

- **Original title**

The original title of the item.

Status: Optional; Occurrences:0..1

- **Description**

A short description of the item

Status: Optional; Occurrences:0..1

- **Production year**

The year associated with the production of the item

Status: Optional; Occurrences: 0..n

- **Production country**

The geographic origin of a audiovisual creation. This should be the country or countries where the production facilities are located. If production information is missing, this element can refer to countries where the audiovisual creation was filmed or distributed, or where copies are known to exist in archives.

Status: Optional; Occurrences: 0..n

- **Provider**

The name of the organisation that provides the item to EFG or Europeana

Status: Mandatory; Occurrences:1

- **Provider link**

The url link to the web page of the providers' institution

Status: Optional; Occurrences:0..1

- **Creator**

The creator of an item. This can be the photographer, the poster designer etc..

Status: Optional; Occurrences: 0..n

- **Digital format**

The file format of the viewing item

Value: controlled vocabulary (MIME Types)

Status: Optional; Occurrences: 0..1

- **Duration**

The running time measured in minutes and seconds in case of video file.

Status: Optional; Occurrences: 0..1

- **Link to the EFG portal**

The link to the page of the item on EFG portal, where more metadata can be accessed.

Status: Optional; Occurrences: 1

- **Link to provider's portal**

The link to the page of the item on the provider's portal, where more metadata can be accessed.

Status: Optional; Occurrences: 0..1

- **Snippet indicator**

An indicator for whether the EFG item's file will be fully displayed in the VE, or only a part of it. In case where only a part is displayed the value is set to "true". The default value is false.

Status: Optional; Occurrences:1

- **Start point**

In case of a snippet, the time point of the EFG item's file that is the start point of the snippet. It is measured in minutes and seconds.

Status: Mandatory; Occurrences:1

- **End point**

In case of a snippet, the time point of the of the EFG item's file that is the end point of the snippet. It is measured in minutes and seconds.

Status: Mandatory; Occurrences:1

The metadata of the item that are in italics are imported via EFG API directly to the Virtual exhibition. This metadata should all be in English, except for the original title and can be further edited by the curators. For more details please see Chapter 6.2.2.

6 Technical approach

The EFG1914 VE will be stored in XML files. These XML files will contain information for the content, the structure and the presentation of an EFG1914 VE theme. For that reason an XML schema for a VE theme will be defined. Information about the content means the metadata about the items. When talking of the structural and presentation information we refer to details like the order of the items, the frame they belong, their size and their position in the frame and on the screen. One possible instance of this xml file could be:

```
<theme>
  <name>Theme Title</name>
  <creator>Katerina Iatropoulou</creator>
  <description>The description of the theme</description>
  <introduction_text>The introduction text...</introduction_text>
  <topic template="ttl">
    <name>Women and the War</name>
    <frame template="ft1">
      <title>Frame layer title</title>
      <description>Frame description</description>
      <frameItems>
        <frameItem>
          <image src="http://www.image1.jpg" type="application/jpeg">
            <caption>Image caption</caption>
          </image>
        </frameItem>
        <frameItem>
          <video src="http://www.myvideo.com" encoding="">
            <caption />
          </video>
        </frameItem>
        <frameItem>
          <text>
            <![CDATA[
              <h2> Subtitle style 2</h2>
              <p>Lorem ipsum ...</p>
              <p>Lorem ipsum ...</p>
            ]]>
          </text>
        </frameItem>
      </frameItems>
      <related>
        <information>
          <text>More information available</text>
        </information>
        <links>
          <link url="http://www.url1.com" text="www.url1.com">
            <caption>Lorem ipsum1</caption>
          </link>
          <link url="http://www.url2.com" text="www.url2.com">
            <caption>Lorem ipsum2</caption>
          </link>
        </links>
      </related>
    </frame>
    <frame template="ft2">
      <title>Data layer title</title>
      <description>Consectetur adipidslkjdsdkghsfkg</description>
      <frameItems>
        <frameItem></frameItem>
        <frameItem></frameItem>
        <frameItem></frameItem>
      </frameItems>
      <related>
        <information>
          <text/>
        </information>
        <links>
          <link url="http://www.url1.com" text="www.url1.com">
            <caption>Lorem ipsum1</caption>
          </link>
          <link url="http://www.url2.com" text="www.url2.com">
            <caption>Lorem ipsum2</caption>
          </link>
        </links>
      </related>
    </frame>
  </topic>
</theme>
```

6.1 System Architecture

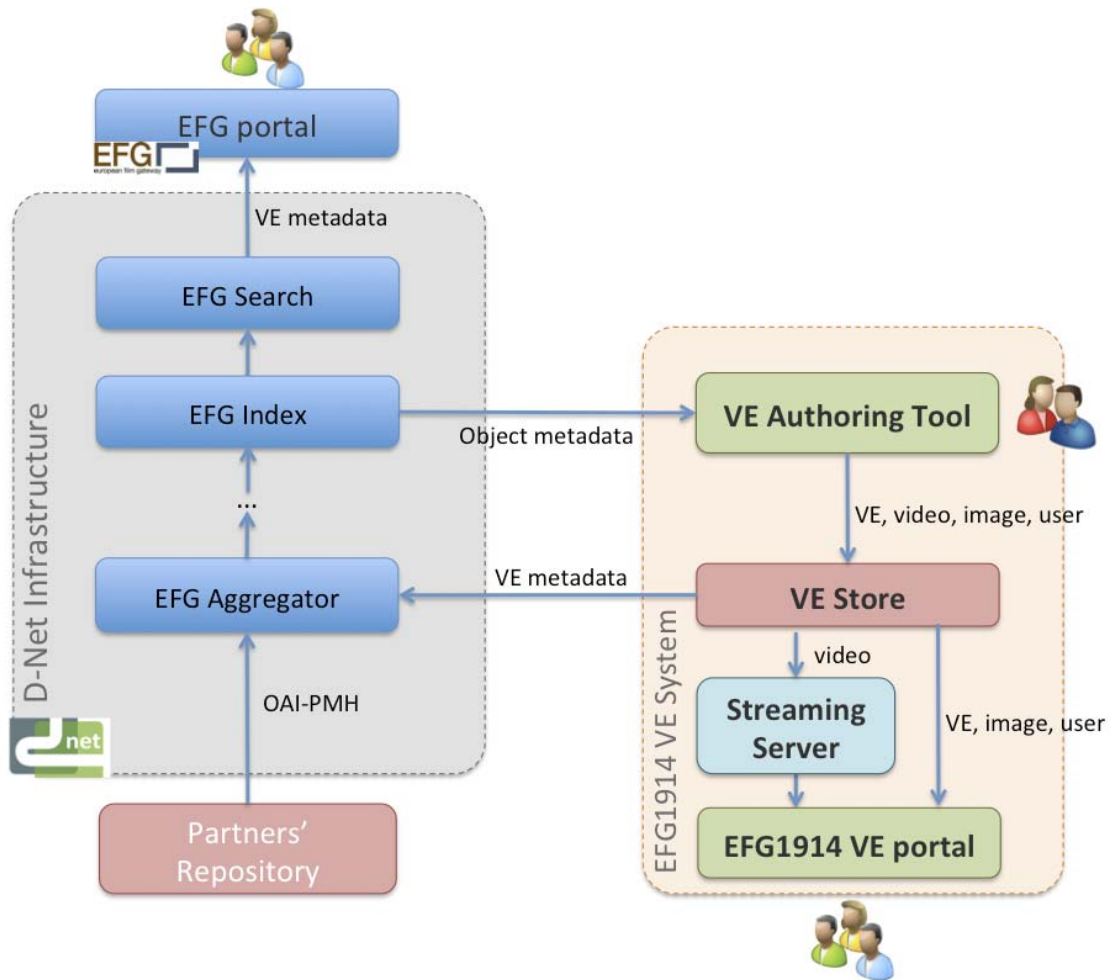


Figure 17 - EFG1914 Virtual Exhibition System Architecture

The main components of the EFG1914 Virtual Exhibition System (EFG1914 VES) are the VE Authoring Tool, the VE Store, the Streaming Server and the EFG1914 Portal.

6.1.1 Virtual Exhibition Authoring Tool

The Virtual Exhibition Authoring tool will be a web application that allows the partners of the project to create and edit a VE theme. To achieve this, a user interface will be available to the partners of the project. The two basic functionalities will be:

a) Upload snippets, EFG and EFG1914 files:

Users will be able to upload snippets, EFG and EFG1914 files. The uploaded snippets and files are those items that will be later included in the VEs. Snippets are not new objects in the context of EFG and EFG1914. They are parts of already existing EFG and EFG1914 objects and are only created for the needs of the VE. As a result the snippets will not be stored in the archives that contain the full version of the film, but instead they will be stored in the VE Store (see Chapter 6.1.2). Even though the EFG and EFG1914 object files are hosted by the partners on their websites, for the presentation in the VE they will be copied to the VE Store to ensure that possible performance issues at the partners' side do not influence the presentation of the VE negatively. All uploaded videos are stored in mp4 format.

b) VE theme editing:

Users will be able to edit a VE theme, i.e. create and edit topics and frames, write the accompanying text, choose presentation templates, choose among the uploaded items and match them with the

correct topic and frame. Also included will be user management functionalities to apply different roles to editors.

During their research, ATHENA have looked into already existing authoring tools, most importantly Omeka¹⁶ and the EUScreen VE tool¹⁷ and whether they can be re-used or customised for EFG1914 purposes. Although the already existing tools are very powerful, ATHENA are planning to develop a new authoring tool for EFG1914 for a number of reasons. Some of the most important reasons for that decision are:

- The model of EFG1914 has a different structure from the models of Omeka and Euscreen. This means that using one of these tools would require a mapping from the existing models to that of EFG. The EFG1914 VE model is richer and more complicated than those of Omeka and Euscreen. Such a mapping would not be able to express all the informational and functional elements that the EFG1914 VE wants to offer. One option would be to change the code of the already existing tools to support a different model. However, this means that the storage and retrieval functionalities of a pre-existing tool need to be rewritten. As storage and retrieval are some of the core functionalities of an authoring tool, the effort required to make such an adjustment is almost equivalent to building a new tool.
- Omeka and Euscreen offer possibilities for customization, but these are limited in respect to the presentation and design requirements of the EFG1914 VE. The general look and feel (meaning the logo, the colours, the background images, etc) can be customized in a relatively easy way, but this is not the case for the navigation. The navigation is strongly related to the underlying data models and therefore the slider approach that EFG1914 decided to follow cannot be expressed with the paging navigation that Euscreen and Omeka support.
- One of the strong advantages of Euscreen is that it has powerful video management functionalities, but the current available player is a Flash player. As it will be explained in Chapter 6.3 the EFG1914 VE should use the technology that allows the video to be accessed by the widest audience possible and in respect the greater number of browsers and devices available. As a result it was decided to use an HTML5 player.

6.1.2 Virtual Exhibition Store

The VE Store will be the storage for the VE XML files, for the snippets and their metadata, for EFG and EFG1914 objects and their metadata, for the thumbnail images and the user profiles. The VE Store will be an XML database, and it will expose the metadata of a VE to the existing EFG infrastructure.

6.1.3 Streaming server

Unlike in the EFG portal, where all content is simply linked to and not hosted centrally, for the EFG1914 VE the approach of central hosting will be chosen. In order to be independent from the individual performance of the archives' websites and/or streaming servers, all videos will be uploaded to a central streaming server. A simple Apache Server can be used that can deliver video and audio through HTTP, but the possibility of using a special server that uses specific set of protocols to deliver streams will be examined. For more details please see Chapter 6.3.4.

¹⁶ H<http://omeka.org/H> : Omeka is an open source web-publishing platform for the display of library, museum, archives, and scholarly collections and exhibitions. It gives editors of an exhibition the possibility to combine text with all kinds of media and to work on an exhibition simultaneously with other editors. It is Java based and extensible in functionality. It also contains some features that might be of interest to EFG1914 VE such as social sharing, comments box and zoom it.

¹⁷ H<https://sites.google.com/site/virtualexhibitiontesting/H> : The tool used by Euscreen is an exhibition builder tool that gives the users the opportunity to create online exhibitions using media items. In its core it uses the Springfield webTV platform that consists of different independent services. It consists of a flash video player that is enhanced with various video management advanced features, such as video editing, enhancement of video with text, forms, etc. New features can be implemented and embedded depending on the users needs.

6.1.4 EFG1914 Virtual Exhibition Portal

The web portal will host the EFG1914 VE. This means that it will offer all the functionalities described in the functionality specification section. The VE will be loaded from the VE Store. Since the VEs are stored in XML format the portal will be able to perform transformation functions that will transform the XML described entities into HTML pages. This will be done using XSLT and javascript.

An additional feature of portal will be to gather statistics for the number of unique visitors and the number of hits for the VE items. To achieve that an already existing free statistic tool can be used, most probably Google Analytics¹⁸.

6.2 Interaction with EFG Infrastructure

The partners of the project have the responsibility to make the content produced in EFG1914 available to the EFG Infrastructure. EFG Infrastructure is based on D-Net Software toolkit¹⁹. The D-Net software toolkit is an open source service-oriented solution for the construction of customized Data Infrastructures, such as EFG Infrastructure. The EFG Infrastructure comes with a set of services, which appropriately set in a workflow enable the autonomic construction of a uniform Information Space of metadata records harvested from EFG repositories, that are OAI-PMH compatible. According to this D-Net configuration, the original metadata records are harvested from the repositories by Aggregator Services and moved into so-called MDStore Services. Secondly, such records are transformed into an EFG Common metadata schema and stored again into further MDStore Services. Finally, the resulting records are fed to the Index Services, which can be queried through standard APIs.

The EFG1914 VES will interact with EFG Infrastructure in two cases:

- (i) To import metadata for the EFG and EFG1914 objects that will be included in the VE.
- (ii) To export the metadata of the VEs to the EFG Infrastructure in order to be able to see VEs in search results.

6.2.1 Import metadata from EFG Infrastructure

As we already discussed, partners will upload files they want to include in the VE in the VE Store. These files are not new in the context of EFG since the partners are also responsible to make them available to EFG Infrastructure. For that reason the metadata of those items are already available in EFG Infrastructure and therefore it will be unreasonable and inconvenient to ask partners to manually import them again by filling in the fields of a form.

Provided with the ID of the item, the Authoring Tool will be able to fetch its metadata and automatically fill in the relevant form fields. More precisely the Authoring Tool will make a CQL query to EFG Index. The response of EFG Index, i.e. the entity that describes in XML format the object with the given id, will be parsed and the values of the item fields will be retrieved. Those are the values that will appear in the respected fields of the form. In order to give the editors of the VE full flexibility and to be independent from the more complex ingestion process related to the EFG portal, all field will be editable in case changes in the metadata fetched from the EFG database are necessary. The new values will overwrite the old ones and will be kept locally, in the VE Store.

6.2.2 Export metadata to EFG Infrastructure

In addition to linking prominently to the Virtual Exhibition from the start page of the EFG portal, the themes and topics of the VE should also be made searchable through the regular EFG search and be presented in the EFG search results. Users searching for a certain keyword that matches with a theme or a topic of the VE will get a link that leads them back to that VE theme. ATHENA, ISTI and DIF decided to treat themes of a VE as individual text objects. That means that the VE is a NonAVCreation entity as described in the EFG Metadata Schema²⁰. The VE will also be described in an XML format as a *nonavcreation* record²¹. These records will contain the metadata of the theme or topic without any layout details. They will be published on an FTP server, or made harvestable to the EFG Database

¹⁸ <http://www.google.com/analytics/H>

¹⁹ <http://www.d-net.research-infrastructures.eu/H>

²⁰ http://www.efgproject.eu/downloads/D22_Common_Interoperability_Schema_V3_2_4.pdf#H

²¹ The format of the entities can be found here: http://www.efgproject.eu/downloads/efg_3.2.07.xsd#H

through an OAI-PMH protocol. After being harvested, the records will be fed to the EFG Metadata Store, which provides the data to the EFG portal.

The advantage of this approach is that the only mandatory change needed for EFG schema would be to enrich the description of item types for non-AV objects with a “Virtual Exhibition” entry. Also minor adjustments must be made to the current EFG portal.

6.3 Technologies involved

6.3.1 Video Format

The main goal is to create a VE that can be accessible both from desktop and mobile devices alike and is supported by the widest number of browsers possible. Even though in most cases this requirement might be considered obvious and needless to mention, in the case of the EFG1914 VE this is a great challenge as the main content of the VE is video. There is such a great variety of existing video file formats and in connection with the fact that there is no standard technology to support the display of video on the web without plug-ins, it is almost impossible to support every single format in every possible situation.

When it comes to video display on the web there are two strong candidates: HTML5 video and Adobe Flash Player.

6.3.2 HTML5 video

HTML5 video is intended by its creators to become the new standard to show video on the web without plugins, but has been hampered by lack of agreement as to which video formats should be supported in web browsers. In other words, the current HTML5 draft specification does not recommend any one video format browsers should support, and for that reason the teams behind each browser are left to determine which video format will be supported. This has resulted in the fact that **that no format is supported by all browsers**. The following table gives an overview of the compatibility between video formats (containers, video codecs, and audio codecs) and the major desktop browsers and mobile operating systems.

Container/Codec	IE	Firefox	Safari	Chrome	Opera	iOS	Android
Ogg: Theora/Vorbis	*	3.5+	*	3.0+	10.5+		
MP4: H.264/AAC	9.0+		3.1+	3.0 - 11.0 †		3.0+	2.0+
WebM: VP8/Vorbis	*	4.0+	*	6.0+	10.6+		2.3.3+ local, 4.0+ streaming

Table 1 - Compatibility table between video formats and the major desktop browsers and mobile operating systems. The source of this table is [netmagazine.com](http://www.netmagazine.com/features/deliver-video-seamlessly-desktop-and-mobile-devices) [<http://www.netmagazine.com/features/deliver-video-seamlessly-desktop-and-mobile-devices>]

Empty cells indicate no support. Populated cells show the version at which support for a video format was added. Asterisks are used to indicate that support is available through third-party software such as plug-ins. † Google announced that Chrome would drop support for the H.264 video codec with the release of version 11.0 — a great example of the aforementioned changing HTML5 landscape — although it appears that decision was postponed. It is worth to notice that the moment you read these lines there is a strong possibility that there have been changes to the support status of each browser.

In addition to the complicated situation of the format support, each browser, and even every version of each browser, implements HTML5 features to a varying degree.

IE	Firefox	Safari	Chrome	Opera	iOS	Android
9.0+	3.5+	3.1+	3.0+	10.5+	1.0+	2.0+

Table 2 - HTML5 basic video feature compatibility. The source of this table is netmagazine.com [<http://www.netmagazine.com/features/deliver-video-seamlessly-desktop-and-mobile-devices>]

6.3.3 Adobe Flash Player

On the other hand there is the Adobe Flash Player, which is software for viewing multimedia, Rich Internet Applications, and streaming video and audio, on a computer web browser or on supported mobile devices. Although Flash player is very popular it has received great criticism, over openness, security, access and performance issues, especially from Apple Inc. that decided not to support it on its mobile services. To go further into this dispute is out of the scope of this deliverable, but what is that this automatically means that since we want our VE to be displayed in every mobile device, we cannot choose the Adobe Flash Player. But even though HTML5 is gaining ground, we cannot ignore Flash Player. It is still is an impressive force and still widely used.

To overcome this complex situation and support the widest audience possible, we will use HTML5 in conjunction with Adobe Flash Player to reach the widest possible audience. To support the widest HTML5 audience possible we require from partners to upload objects and snippets in mp4 format. Every time a snippet is uploaded it will be transformed to WebM using a free available encoder, most probably the Libavcodec²².

In that way we can cover all the major desktop browsers and mobile operating systems by using an improved version of the HTML5 mark-up, which allows us to identify multiple video sources. This is achieved by using the <source> tag. When the <source> tag is present the browser will start with the first source and, if unsupported, move on to the next source, and so on.

```

video controls ...>
  <source src="sample_video.webm" type='video/webm; codecs="vp8, vorbis"'>
  <source src="sample_video.mp4" type='video/mp4; codecs="avc1.42E01E, mp4a.40.2"'>
</video>

```

What is left is to support browsers that do not support HTML5. This can be achieved by coding our pages to deliver Flash content when desired as a fallback from HTML5. A way to fall back to Flash is to place a Flash video player object at the end of a comprehensive HTML5 source list. This technique²³ is attractive because it doesn't require JavaScript or complex coding. The following example²⁴ uses the Open Source Media Framework Strobe player developed by Adobe to serve as the Flash video player.

²² <http://www.libav.org>

²³ This approach was popularised by Kroc Camen's Video for Everybody

http://camendesign.com/code/video_for_everybody

²⁴ <http://www.netmagazine.com/features/deliver-video-seamlessly-desktop-and-mobile-devices>

```
<video [0]... controls>

  <source src="vid.mp4">

  <source src=" sample_video.webm" type='video/webm; codecs="vp8, vorbis"'>

  <source src=" sample_video.ogv" type='video/ogg; codecs="theora, vorbis"'>

  <object ...>

    <param name="movie" value="StrobeMediaPlayback.swf">

    <param name="flashvars" value="src=http://yourdomain.com/ sample_video.mp4">

    <param name="allowFullScreen" value="true">

  </object>

</video>
```

By using this technique HTML5-compatible browsers will eventually find the needed assets to play the video, and all other browsers will play the video using Flash Player. This assumes, of course, that Flash Player is installed. A possible player that we can use is the Flowplayer²⁵.

Another solution could be to use a free cross platform video player with the strongest candidate to be MediaElement²⁶. MediaElement.js instead of offering an HTML5 player to modern browsers and a totally separate Flash player to older browsers, MediaElement.js upgrades them with custom Flash and Silverlight plug-ins that mimic the HTML5 MediaElement API. It also supports desired features such as standard play controls, skinning, and full screen video, but also has a plug-in architecture that enables more unique features.

6.3.4 Streaming vs. progressive download

Streaming and progressive download are two different methods of transferring digital files from server to clients. Although most of the times the final result look the same to the end users, these two methods have substantial differences.²⁷

Progressive download

Progressive download is a delivery of file over HTTP. Although the end user experience is similar to streaming it is actually a download of the media file to the end user's computer. HTTP operates over TCP that controls the actual transport of the packets over the network. Although TCP guarantees the delivery of the media file, if a packet is lost it will request a resend of that packet, causing load on the server and dad use of bandwidth. Additionally, if the media file exceeds the rate at which the file is downloaded, the playback will stutter or stop and it will begin to play again after further download.

Advantages

- Guarantee of delivery.
- The delivered media file will be of same quality with the original one.

Disadvantages

- Not possible to skip through the media file.
- Not efficiently use of bandwidth.
- The video file is stored on the user's computer

²⁵ [Hhttp://flowplayer.org/](http://flowplayer.org/)

²⁶ [Hhttp://mediaelementjs.com/H](http://mediaelementjs.com/H)

²⁷ Resources for more details: [Hhttp://en.wikipedia.org/wiki/Progressive_download](http://en.wikipedia.org/wiki/Progressive_download)H and [Hhttp://blog.mydeo.com/2009/01/12/streaming-vs-progressive-download-understanding-the-difference/H](http://blog.mydeo.com/2009/01/12/streaming-vs-progressive-download-understanding-the-difference/H)

Streaming Server

A streaming server is software that serves media files requests and uses a specific set of protocols to deliver streams. These protocols are more suited to delivering media file streams as they are more focused on continuous delivery rather than guaranteeing perfect accuracy. Unlike TCP they do not send requests for missing packets but instead continue with the rest of the media file, so there might be some momentary glitches.

A streaming server basically opens a conversation with the client. This conversation has two sides: transferring the video and control messages between the media player and the server. These control messages include commands such as 'play', 'pause', 'stop' and 'seek'.

Advantages

- It is possible to skip through the media file.
- Efficient use of bandwidth; only for the part of the media file that is actually played.
- The media file is not stored on the user's computer

Disadvantages

- To deliver to low connections, media files will possibly have lower quality with the original one.
- Not accurate and reliable delivery of every bit.

As the high quality of the videos and the guarantee of delivery are priorities for the Virtual Exhibition, ATHENA and DIF currently prefer the progressive download solution. Unless unforeseen obstacles occur, it is expected to be used for the EFG1914 VE.

6.3.5 HTML, JavaScript and css

As our main goal is to create a VE that can be accessible both from desktop and mobile devices, effort will be made to create a VE interface accessible from both desktop and mobile, with main focus given to the iPad. That requires careful design and constant checks in order to reassure compatibility for the html pages created, in respect to the structure, css styling and JavaScript functionality.

7 Next Steps

The next steps that are undertaken by ATHENA supported by the project partners towards the technical realisation of the EFG1914 Virtual Exhibition are the following:

- Implementing the internal prototype until December 2012
- Collecting feedback from partners on the prototype until February 2013
- Write the specifications for the authoring tool until March 2013
- Implementation of the authoring tool until summer 2013
- Testing and bug-fixing the authoring tool (ongoing task until the public launch in November 2013)

For the implementation of the prototype, ATHENA seeks cooperation with one or two archives that can provide content for test purposes.

The next steps with regard to the curation of Virtual Exhibitions involve DIF and the EFG1914 archives:

- Archives committing to the curation of a topic until December 2012
- Archives working in their "Topic task forces" to select suitable content from February 2013 on
- After the selection process, archives prepare the descriptions for the items to be presented (ongoing task from March 2013 until about September 2013)
- Archives responsible for topic write descriptive text about the topic's focus (ongoing task from March 2013 until about September 2013)
- Revision of texts at DIF with input from partners (ongoing task from March 2013 until about September 2013)
- Upload of items and texts to the VE system. (ongoing task from July/August 2013 until November 2013)

Both, the technical implementation as well as the curation process will be ongoing. While the technical implementation already started now, the actual curatorial work will proceed from February/March 2013 on. According to the EFG1914 DOW the VE is expected to go publicly online in time for the WWI centenary by November 2013.

Annex 1: Themes presented in the DoW

- A. The war in Europe: Life in the trenches and in the back area
- B. 1914-1918 overseas: War and life in the colonies
- C. Beyond the trenches: The war at home. Industrialisation, labour, poverty and hunger
- D. Entertainment at home: Film production during World War I
- E. Censorship, control and propaganda: Film as an instrument of influencing the masses
- F. Film transformed: World War I as the facilitator of the development of the European film industries
- G. Unrest and revolution: Dusk and dawn of empires and governments in Europe in moving image documents
- H. The aftermath: Effects on politics, society and culture as documented on film and film-related publications
- I. The Great War revisited, historicized and exploited: World War I in films produced after 1918

Annex 2: Number of films per DoW theme

Sub-themes of the DoW	Number of films
A. The war in Europe	199
H. The aftermath	163
D. Entertainment at home	141
G. Dusk and dawn	77
E. Censorship, control and propaganda	56
I. World War I in films produced after 1918	36
J. None of the above mentioned topics	31
C. The war at home	24
F. Film transformed	5
B. 1914-1918 overseas	4

Table 3 – DoW sub-themes and number of relevant

Please note that neither the list of titles was very concrete at the time the archives gave this information nor did they allocate all films to the themes.

Annex 3: Virtual Exhibition Questionnaire

The following questionnaire was distributed to each partner in spring 2012 with the main goal to help prepare ATHENA for the Virtual Exhibition Conceptualization Workshop. Each partner was asked to give their ideas on the EFG1914 Virtual Exhibition regarding the main goal, the target audience, the possible content and the functionalities that they would like to be included. The results of the

questionnaire were presented during the workshop and were the main source for designing the first mocks.

START OF QUESTIONNAIRE

In preparation for the Virtual Exhibition Conceptualisation Workshop in Crete, 9 and 10 July, we would like to collect some first ideas from the partners. We kindly ask you to suggest at least two possible topics for the Virtual Exhibition (VE) and to answer the following questions in a brainstorming manner. Not only we are interested in suggesting topics that are related to your content, but we also encourage you to think broader. Any WWI related idea is welcome. Please feel free to use the remarks field to let us know about anything you would like to share with us related to the Virtual Exhibition. Thank you very much in advance!

Suggestion No. 1

Name of the topic

Please indicate below the name of the topic you would like to suggest. It could either be a broader topic or you may focus on a more specified sub-theme.

Short description of topic and added value

Please briefly describe what the topic could cover and indicate why the topic seems relevant to you.

Who are the users?

Indicate what kind of user groups you think could potentially be interested in this topic. For each group indicate if possible for what purpose you believe the VE could be valued (e.g. educational, entertainment, ...)

What kind of content / which objects are available from your archive related to the topic?

Please indicate relevant film or object titles, or name a relevant collection from your archive.

What kind of content / which objects are available from other EFG1914 archives related to that topic?

Please indicate relevant film or object titles, or name a relevant collection from other EFG1914 archives, if possible.

In your opinion, are there any functionalities and/or design elements necessary or nice to have to represent this topic?

Please feel free to suggest any functionality you would find useful to have in a VE. If possible give a link to the page that provides the suggested functionality.

General comments, remarks and/or ideas:

Suggestion No. 2

Name of the topic

Please indicate below the name of the topic you would like to suggest. It could either be a broader topic or you may focus on a more specified sub-theme.

Short description of topic and added value

Please briefly describe what the topic could cover and indicate why the topic seems relevant to you.

Who are the users?

Indicate what kind of user groups you think could potentially be interested in this topic. For each user group indicate if possible for what purpose you believe the VE could be valued (e.g. education, entertainment, ...)

What kind of content / which objects are available from your archive related to the topic?

Please indicate relevant film or object titles, or name a relevant collection from your archive.

What kind of content / which objects are available from other EFG1914 archives related to that topic?

Please indicate relevant film or object titles, or name a relevant collection from other EFG1914 archives, if possible.

In your opinion, are there any functionalities and/or design elements necessary or nice to have to represent this topic?

Please feel free to suggest any functionality you would find useful to have in a VE. If possible give a link to the page that provides the suggested functionality.

General comments, remarks and/or ideas:

Suggestion No. 3

Name here any other potential WWI topic for the VE. (A topic title is sufficient)

Suggestion No. 4

Name here any other potential WWI topic for the VE. (A topic title is sufficient)

Suggestion No. 5

Name here any other potential WWI topic for the VE. (A topic title is sufficient)

Annex 4: Original VE Interface design drafts

Map approach

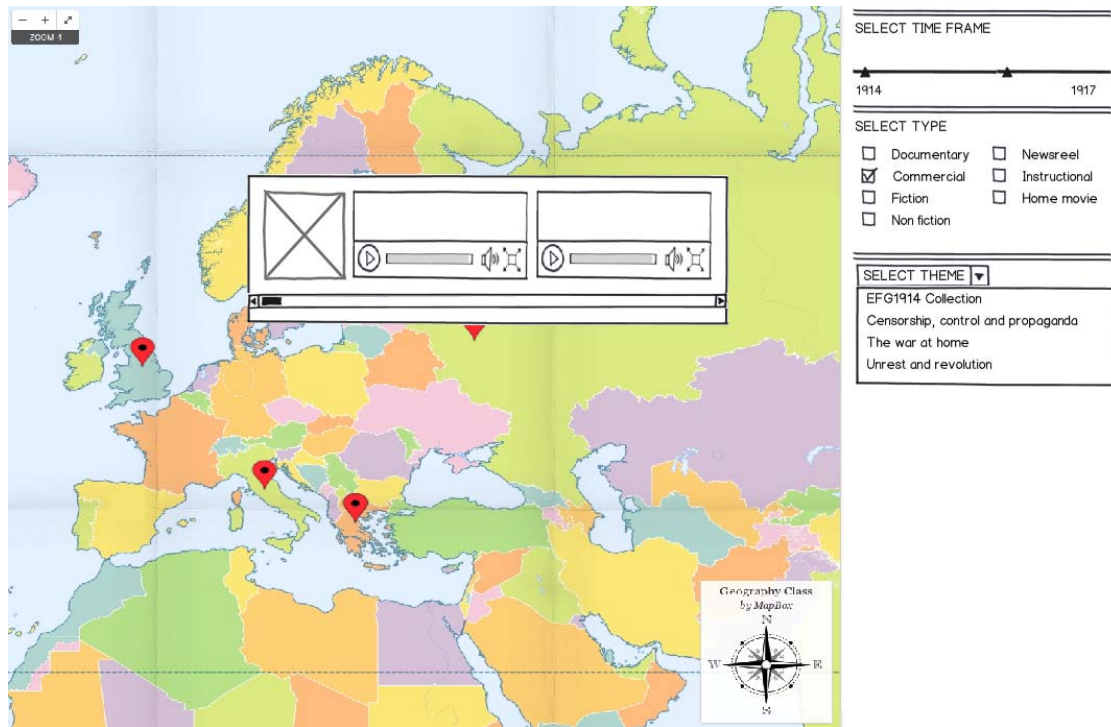


Figure 18 - Map based mock interface. Themes, timeline and additional categorization are used as filters of the objects displayed on the map.

Thematic approach



Figure 19 - Diary thematic approach

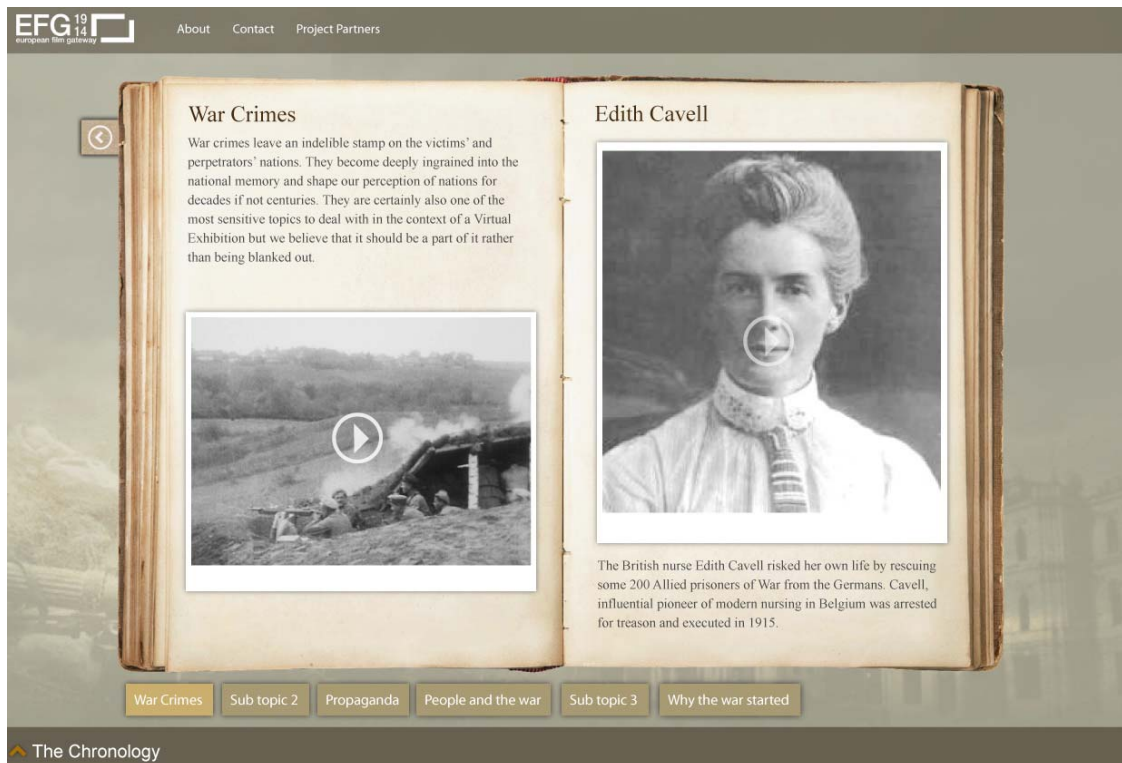


Figure 20 - Open view of the diary

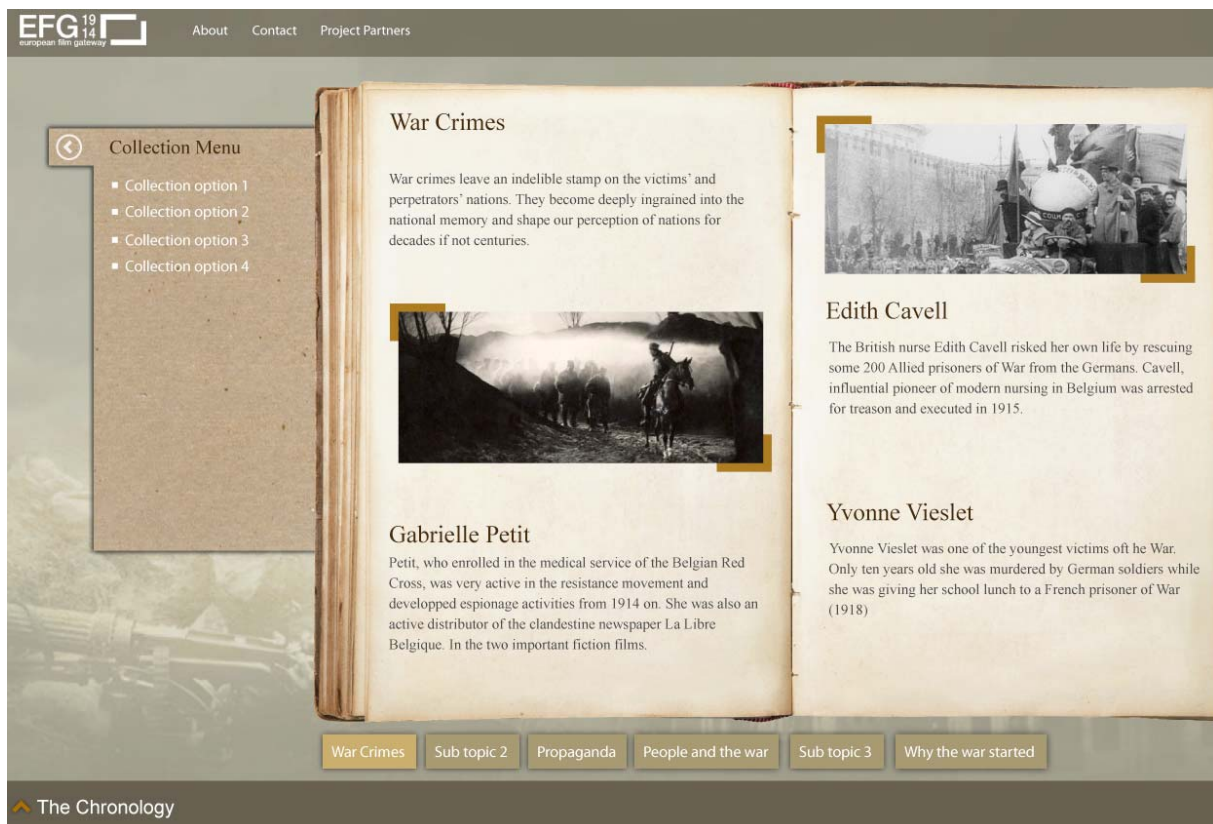


Figure 21 - View of different categories (sub-themes)

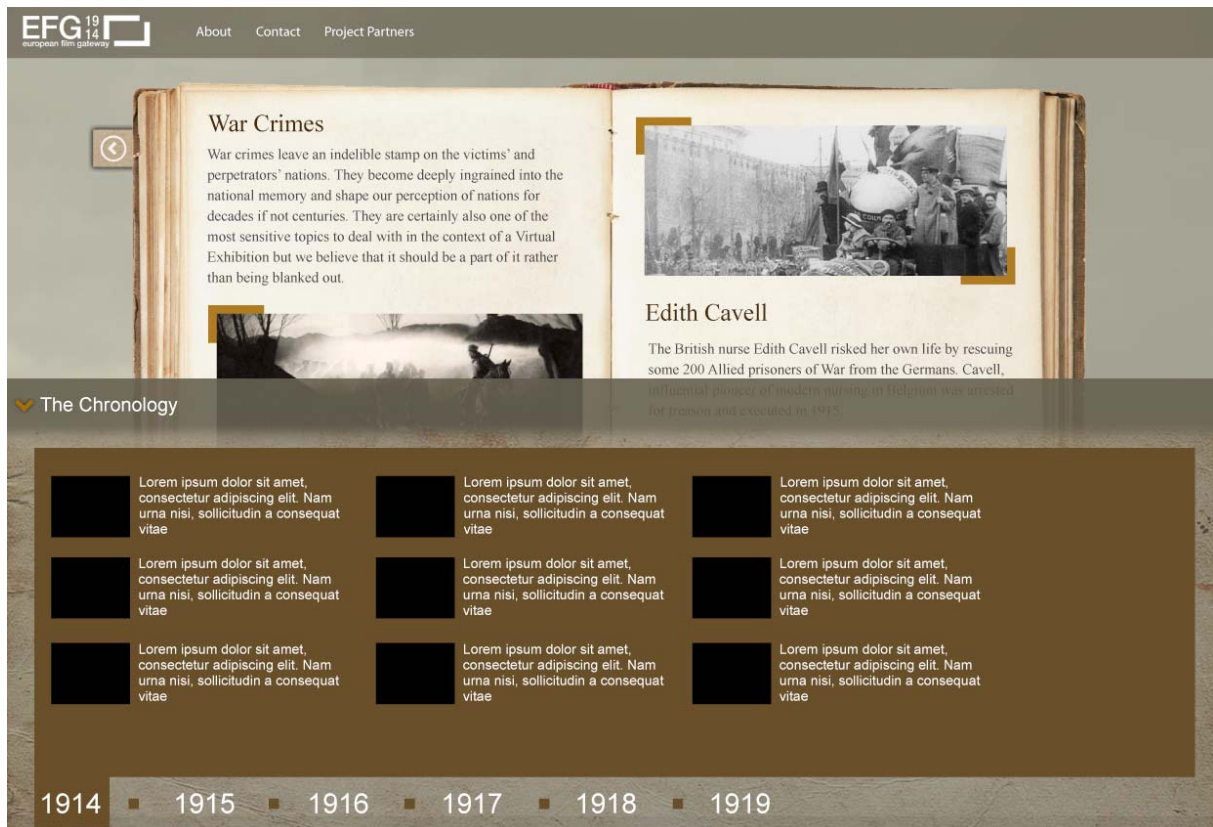


Figure 22 - Timeline approach