
DIGITAL HERITAGE AND MULTIMEDIA
COURSE: DESIGN BRIEF
RED POPPIES
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1. CONTEXT

(A) THE MUSEUM AND ITS CONTENT/COLLECTIONS

The Polish Military Cemetery (*Cimitero Militare Polacco*) is a place of rest of 1421 military personnel of Polish 2nd Corps of Polish Armed Forces in the West, which took part in the Liberation of Italy in the latter years of World War II. It's one of four Polish military necropolises in Italy, the other three being on Monte Cassino, Casamassima (Bari) and Loreto (Ancona). Out of 1421, there is 1 Buddhist, 7 Jewish, 56 Orthodox and 1357 Catholic graves on site. In front of the entrance, there is a "candle of memory" and a roofed altar, at which Pope John Paul II performed mass twice. Under the altar there is a section closed off to the public, which contains text mosaics about the aforementioned cemeteries, the route of the unit during the campaign, a map of Italy with pictures of the cemeteries, and the battles fought by the unit, and plaques about the restoration of the cemetery and a former soldier of the unit popularising the ancient Amber Road and other historical connections between Poland and Italy. On the outside of this section, there are another two plaques, one relating the Papal visits in 1969 and 1982, and one commemorating Polish soldiers fighting in the West, who upon return to Poland, were subjected to persecution by the Stalinist government.

(B) THE LOCATION AND ITS MAP/PLAN

The Polish Military Cemetery is located on the SS9 Via Emilia, on the border of Bologna and San Lazzaro di Savenna.



Fig. 1 – The bird's eye view of the cemetery

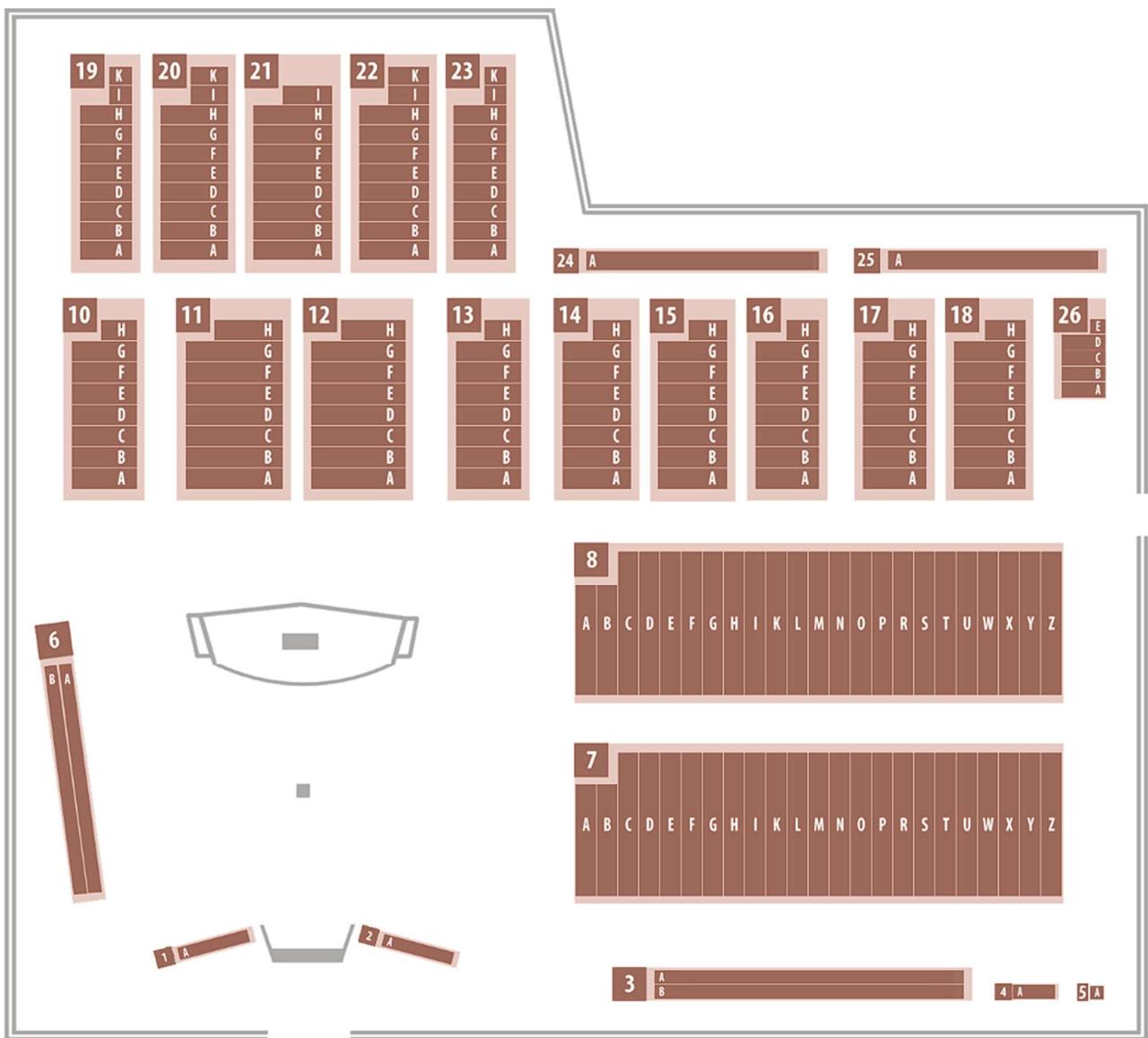


Fig. 2 – Schema of the cemetery [<https://www.polskicmentarzbolonia.pl/en/cemetery-plan.html>]

(c) INSTITUTIONAL GOAL

The cemetery serves almost solely as a resting place for military personnel. Aside from what is located in the locked off section mentioned in paragraph (a), there is a framed collage of the experiences of the unit during the campaign next to the entrance.

I would consider the potential institutional goals to be:

- Digitise more assets: photos of all tombstones are available on the cemetery website, however, the locked-off section is not available to see there, same can be said of the altar, there are no 3D models, even though there are only 4 tombstone designs, there are no panoramas from inside of the cemetery.
- Increase online visits: the website already has a surprising amount of information regarding people resting at the cemetery, however, I would describe it to be bare-bones.
- Change visitor attitudes and beliefs: This would apply mostly to local visitors, showing them that there was a large group of outsiders that gave their life for the liberation of their region, perhaps leading to a change of how they view foreigners.

(D) COGNITIVE GOALS

I would distinguish two main cognitive goals of the cemetery:

1. Develop Empathy – through historical empathy, contextualising the historical events that led to the creation of the cemetery, taking the perspective of soldiers who took action during those events and are buried there, and affective connection to them and/or the region.
2. Develop Identity – through personal connection to the soldiers, their actions, goals and the results of those.

Additional, four secondary cognitive goals would be:

1. Develop Diversity Acceptance – through the nationality of the soldiers, reflection on thousands of foreigners giving their life to liberate another country from fascism.
2. Strengthen Perception of Authenticity – the number of people remembering the horrors of the war decreases with time, seeing an actual cemetery filled with graves of people who died during it helps provide some perspective
3. Create Meaningfulness – multiple possibilities: what does a person visiting the cemetery have in common with the soldiers? E.g. young visitors drawing parallels to teenage/young adult soldiers.
4. Develop Sense of Belonging – on various levels, i.e. personal (through being related to the soldiers), local (that is Bolognese/Emilian-Romagnan), regional (coming from the same place as the soldiers), national (Polish/Italian), supranational (European, Western, democratic etc.)

(E) STAR ASSETS

I would consider three assets at the cemetery as must-see:

The first one is the roofed Modernist altar in front of the main entrance, at which Pope John Paul II performed two masses.



Fig. 3 - Altar

The second one is a grave of a Buddhist soldier, located in the south-eastern corner of the cemetery. Googling the name on the tombstone returns links to Polish language pop-history social media accounts, which would lead me to believe that it could generate more interest in general.



Fig. 4 - Grave of a Buddhist soldier

Finally, the Modernist mosaic depicting the map of Italy, the necropolises and the brief story of the unit in the locked section of the cemetery.



Fig. 5 – Modernist mosaics

(F) TARGET AUDIENCE

The target audience of the location would be locals, either just curious or perhaps on an organised school trip, Polish tourists (there is an annual motorcycle trip organised to visit this and the other three cemeteries mentioned in subsection (a)), perhaps those with family members resting at the site, people interested in the events of World War II, especially the Italian Campaign and the intersection of those groups.

2. THE AUDIENCE

(A) MOTIVATIONS

I identified four potential motivations for the selected target audience:

Cultural Identity – one of unofficial Polish mottos is “For our freedom and yours”, originally used by 19th century Polish insurrectionists supported by Italians, it was also used by the 2nd Polish Corps, soldiers of which are resting at the cemetery.

Contemplation – cemeteries are quiet, thus being the perfect place for contemplation.

To Be Moved – either by the fate of the people, or by related events in general.

Personal Relevance – applicable for people with relatives resting at the cemetery.

(B) BARRIERS

I identified three potential barriers for the selected target audience:

Accessibility – while the part just in front of the entrance, that is the part with the roofed altar and the memory light, all the other parts require going down on a set of stairs. This is problematic for people with mobility problems and a barrier for wheelchair users.

Restrictive Opening Hours – The cemetery is open from 9am to 7pm on all days of the week.

Hidden – The cemetery is not hidden in a direct manner, as it is unmissable from the road it is adjacent to. It is, however, far away from the main cultural attractions from the city, being located in the suburbs.

(C) CAPABILITIES

I identified three potential capabilities for the selected target audience:

Websites – the principal method of obtaining information on the Internet, especially on personal computers

Mobile Apps – used on modern mobile devices.

Social Media Networks – overlapping previous two capabilities, serve as a way to disseminate information

(D) DEVICES

I identified two potential devices for the selected target audience:

Computer – ubiquitous devices, today used even by senior citizens.

Smart phone – ubiquitous devices, today used even by senior citizens.

3. CONCEPT

(A) PROBLEMS YOU ARE FACING WITH YOUR PROJECT

In my opinion, the main problem with the cemetery would be a practical lack of information regarding what the people resting there actually did and what happened to them. It is quite obvious that they were in the military, yes, information regarding their military rank and the unit they were part of can be found on the tombstones (albeit only in Polish). If someone was, say, to take a stroll among the graves and see thirty or forty graves showing the same date of death, some sort of curiosity would arise – why did they all die, what happened on this day, where were the soldiers fighting? How many of them did die after the fights have ended, from illness, partisans, mines not yet unarmed?

The second problem is people treating the vast majority of the cemeteries solely as a resting place for the deceased. There are of course cases, where the funeral art, such as tombstones and vaults, are recognised to hold some degree of artistic value. However, this is not the case with military cemeteries such as this one, mainly due to the standardisation of the graves.

Other problems include: having to be physically present at a specific place in order to access the cemetery, being able to use stairs to access the majority of it and even then, being unable to access the entirety of it.

(B) HOW YOUR PROJECT WILL FACE THE PROBLEMS

The main problem will be faced by telling the story of the unit through a narrative in Twine. The cemetery theoretically houses the remains of the soldiers fallen during the fights in Emilia-Romagna, this does not coincide with dates of death on a substantial part of the tombstones. Regardless, sources for the story exist, whether it's about the whole journey of the 2nd Polish Corps, or just the Battle of Bologna. I like the idea of the user seeing the cemetery gradually fill up as the story progresses, perhaps giving some information when one hovers the mouse pointer over a specific grave.

Showcasing the art can be done in two ways, either by providing a simple model viewer for the tombstones and the roofed altar, or, coinciding with the aforementioned idea, provide a model of the entire cemetery at the end of the story or a side content selectable in the start menu.

The other problems can be grouped together as access problems – for these the 3D model of the cemetery could be one option, the other, a virtual tour made with panoramas in Pano2VR. Perhaps it would be possible to contact the officials responsible for the upkeep of the cemetery to gain access to the closed-off part under the altar to take photos and create panoramas there as well.

(C) MUSICOGICAL APPROACH

For the narrative in Twine, I plan to use the military songs known to be sung by the soldiers of the 2nd Polish Corps, as well as later songs written about the events that happened during the course of the unit's campaign. The actual playlist will depend on the final scope of the story, for example: "Czerwone maki na Monte Cassino" wouldn't make sense to appear if the story focuses solely on the Battle of Bologna, but would be an unequivocal choice for the first song for a story based on the whole Italian campaign, where Monte Cassino was the place of the first significant battle.

Preparation of an audioguide is in my opinion excessive, considering the low amount of information available at the cemetery. However, it might be worth considering, as the commemoration plaques are in Polish and Italian only, and the tombstones have information (military rank and unit) only in Polish.

Thus, I'd consider the main features to be the following:

On/off toggle - While the goal of adding the music is parallel to the want of amplifying the experience, a portion of the audience might be susceptible to exertion from auditory stimuli or overstimulation in general.

Playlist shuffling - The subject of most military songs is not a specific event that happened during the course of a campaign, rather, they mostly focus on the dole of a soldier and the future they were hoping for.

(D) SPECIFIC THEMES AND TOPICS YOU HAVE SELECTED AS CASE STUDY FOR YOUR PW

Authenticity – Historical Monuments

4. REQUIREMENTS

(A) MUST

1. Interactive narrative in Twine – as it is one of the main deliverables of the project
2. 3D Model viewer – create and integrate a 3D model viewer of tombstones. This will be accessible from the title screen
3. Panorama viewer – create and integrate a Pano2VR tour of the cemetery. This will be accessible from the title screen
4. Title screen – with clear navigation options, to ensure that users can choose between the interactive story, the model viewer, and the panorama viewer
5. Background music – for the interactive narrative

(B) SHOULD

1. Background music – for the interactive narrative
2. Music shuffling – implement the ability to shuffle background music.
3. Audio controls – to allow users to adjust volume levels
4. Interactive cemetery model – as part of the narrative, or in the 3D model viewer, the gradual filling of which is the central
5. Language options – as certain information is available only in Polish, it should be made available to non-Polish speakers
6. Accessibility features – including, but not limited to, ARIA labels, screen reader support, text alternatives for multimedia, keyboard navigation, etc.

(C) COULD

1. Historical context pop-ups – for example, tooltips with additional historical context when users hover over elements in the story or model viewer
2. Further educational value – include quizzes as part of the narrative to help with understanding the significance of the presented events and experiences

(D) WON'T

1. Multiplayer features
2. Virtual reality support – too resource-intensive for a single person project
3. Mobile app version – the focus is on making the web version responsive
4. Extensive animation – too resource-intensive for a single person project
5. Gamification aspects

5. IDEATION

(A) EXPERIENCE (FROM THE USERS PERSPECTIVE)

The user will enter the main menu first. It will contain three options – story (the interactive narrative made in Twine), panorama viewer (to view the panoramic photos taken at the cemetery), model viewer (to view all 3D models, namely the tombstones, roofed altar, the entire cemetery and perhaps the entrance gate).

On clicking the "Model viewer" button, the user will be redirected to the model viewer, in which they will be able to change the viewed model with arrow buttons, or by using the keyboard arrow keys. The user can go back to the main menu by clicking the "back" button, or by pressing the Escape key on the keyboard.

On clicking the "Panorama viewer" button, the user will be redirected to the panorama viewer made in Pano2VR. The viewer will always initialize at the same panorama in front of the main gate of the cemetery. The user will be able to navigate through the panoramas of the cemetery by clicking the appropriate buttons, or by pressing keyboard arrow keys analogous to the direction in which they want to move. The user will be able to move back to the main menu by pressing the "Back" button, or by pressing the Escape keys on the keyboard.

On clicking the "Story" button, the user will begin the interactive narrative made in Twine. The narrative will have background music, of which the user will be able to shuffle the songs, as well as have the possibility to change the volume. At the end of the story (and at the end of each section), the user will be able to complete a quiz, during which they will be able to reflect about the content of the story and the experiences of the soldiers during the campaign.

(B) CONCEPTUAL MAP

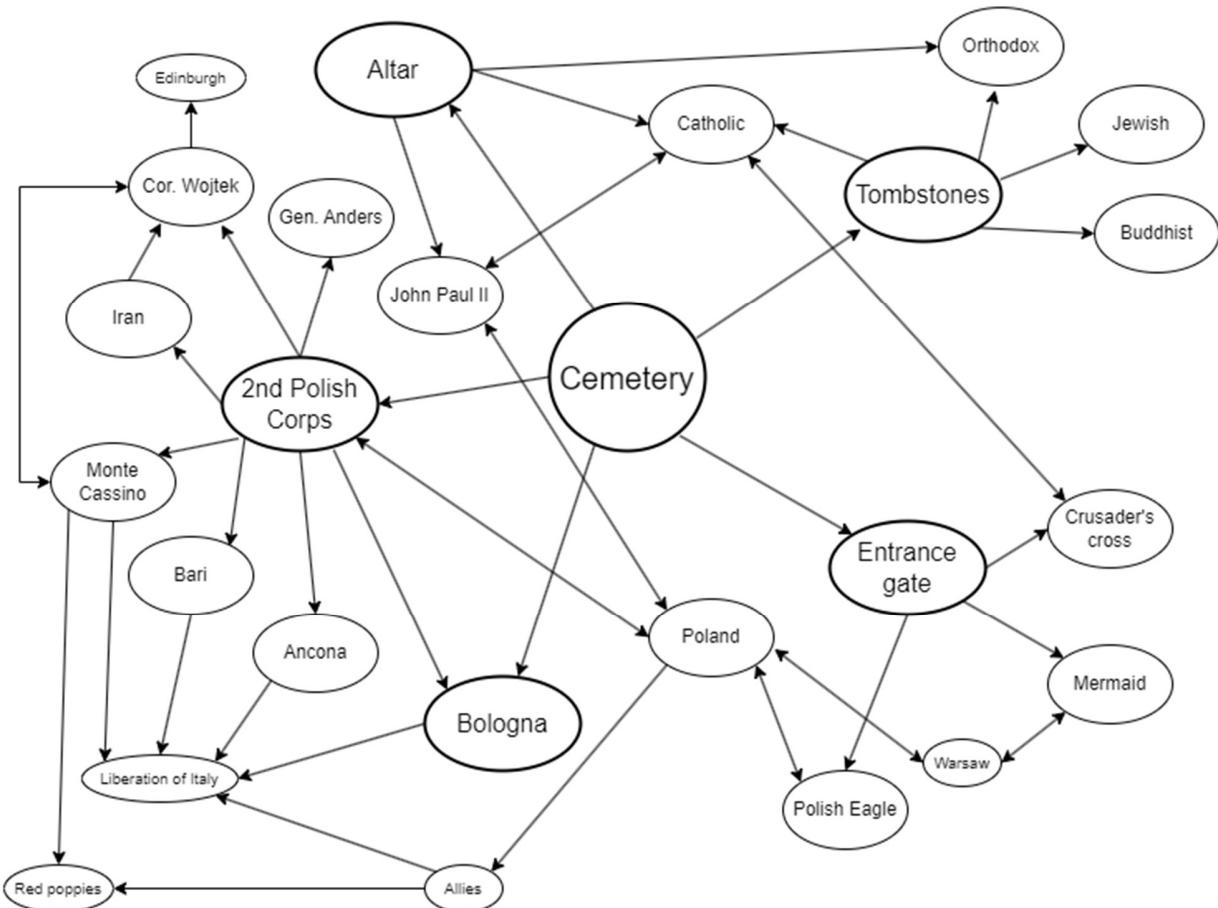


Fig. 6 – Conceptual map

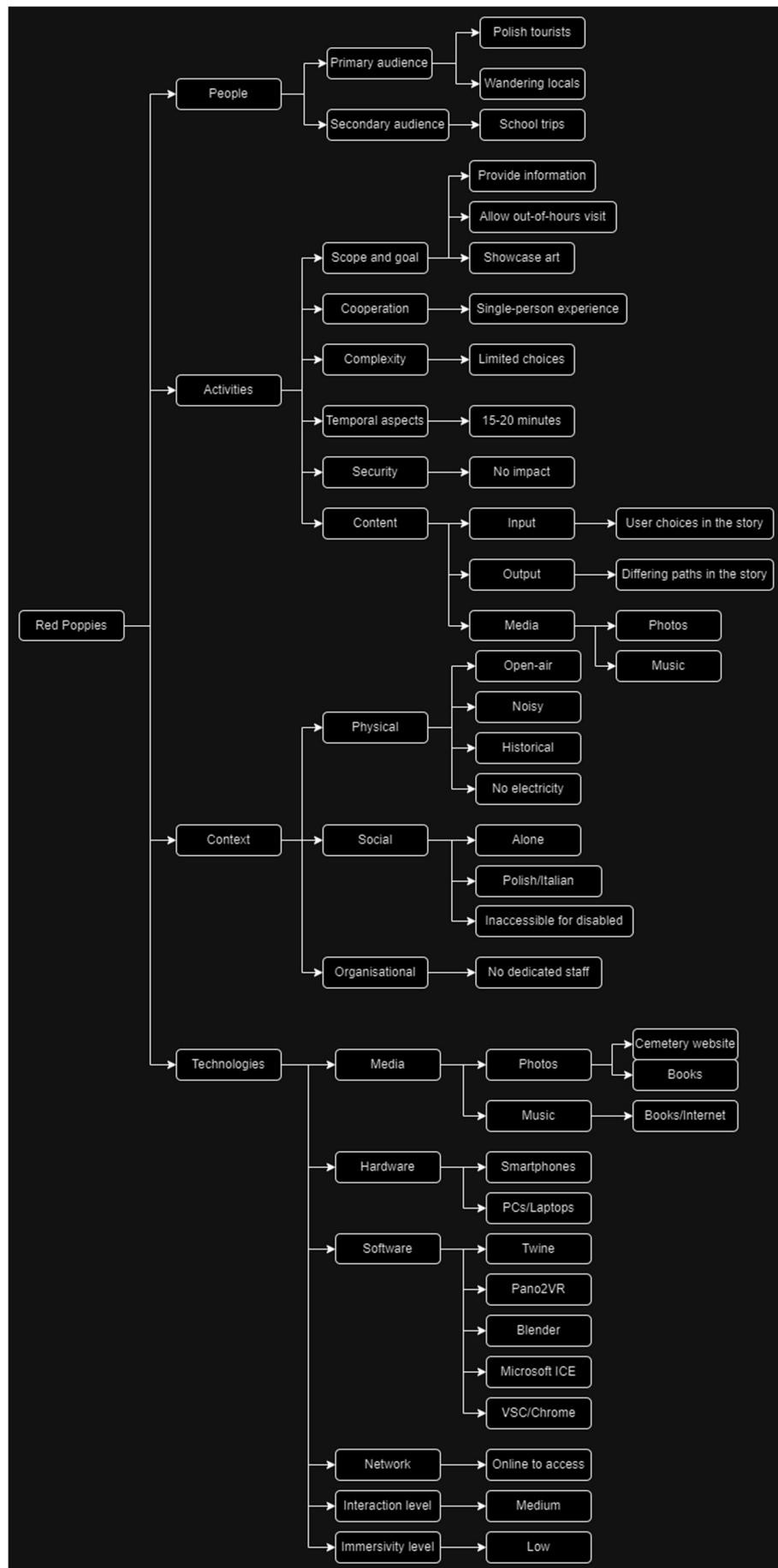


Fig. 7 – PACT Analysis

(c) THE STORY

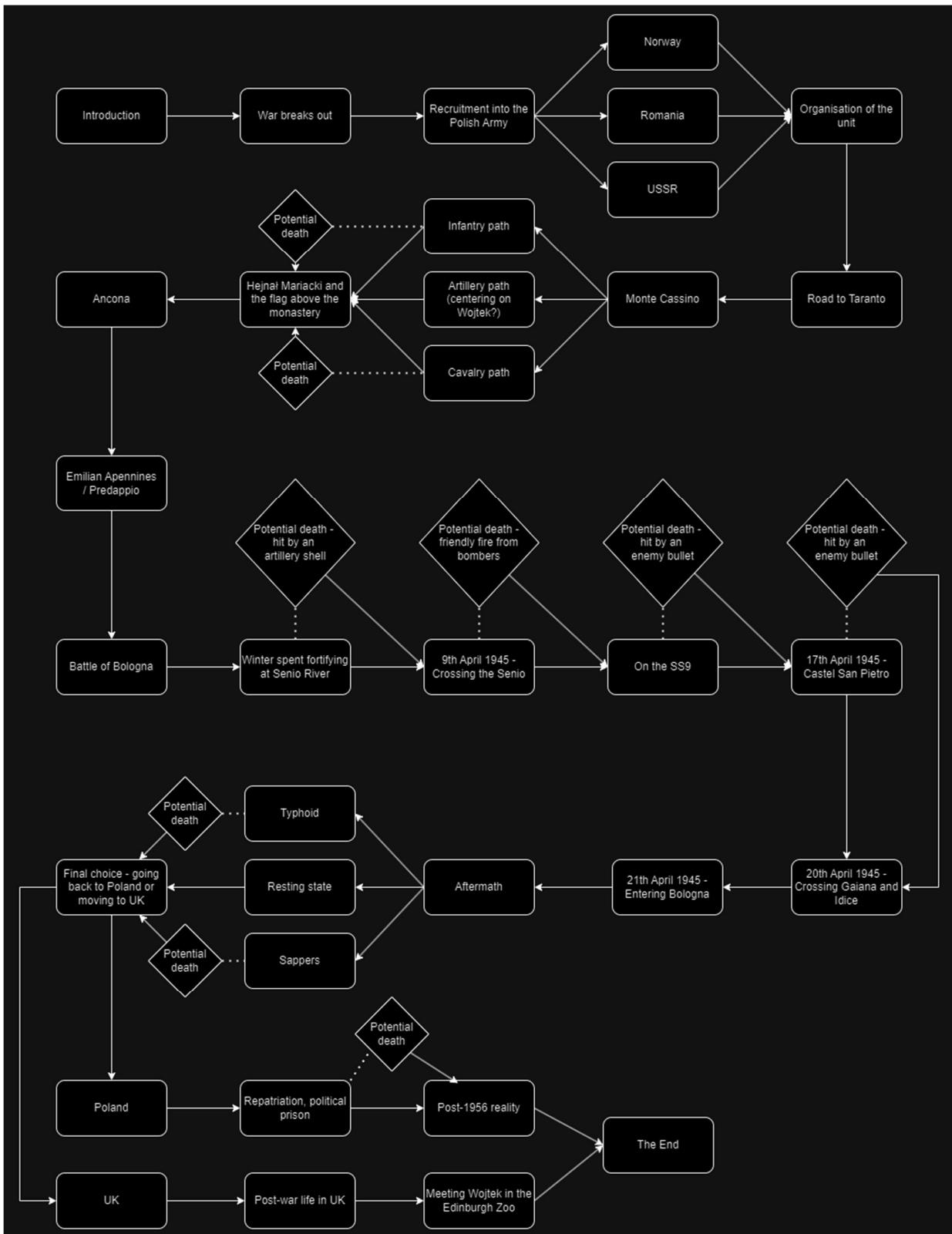


Fig. 8 – diagram of the initial plan of the story

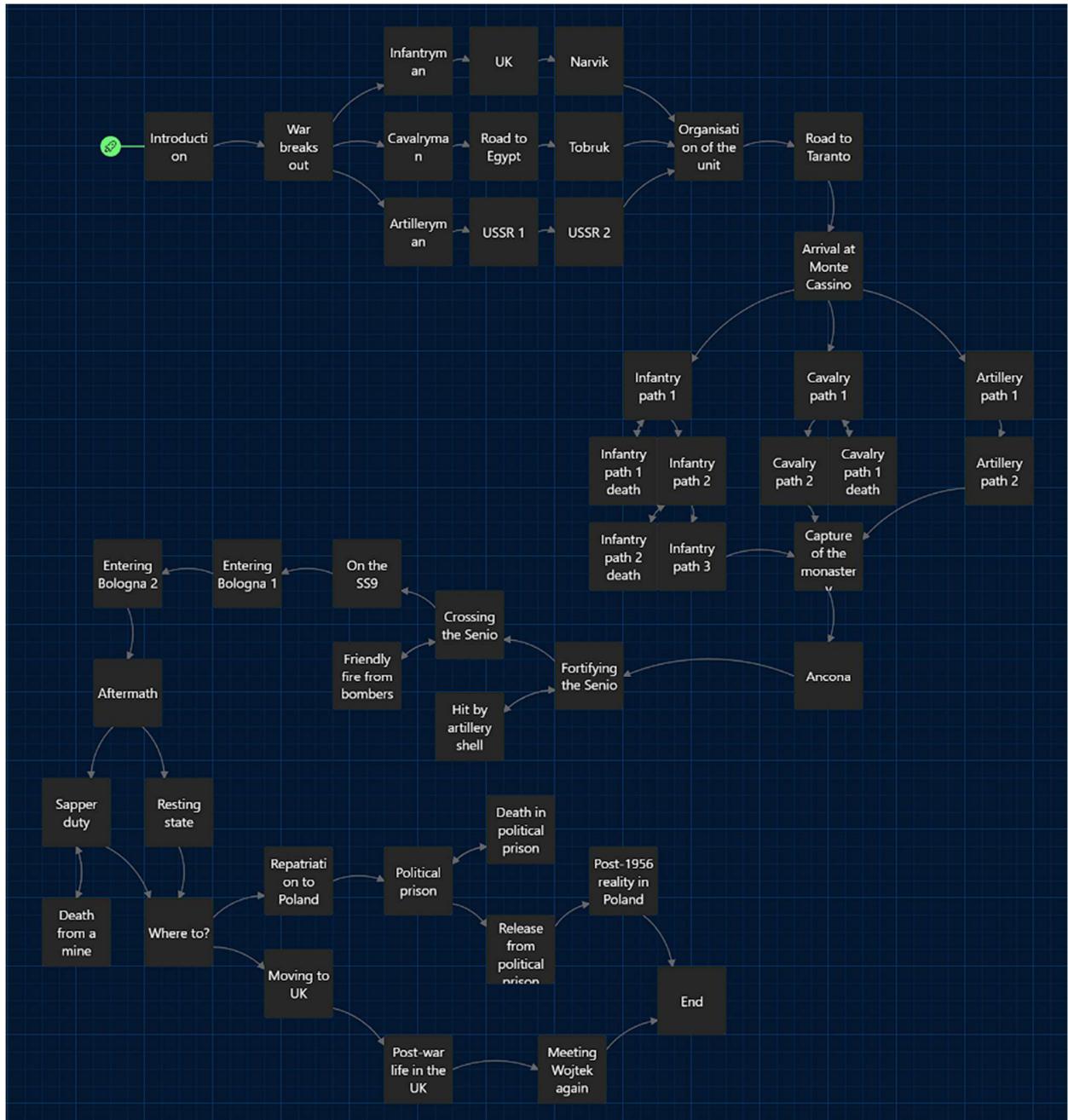


Fig. 9 – diagram of the final story in Twine

(D) DESCRIPTION OF THE INTERACTION BETWEEN THE APPLICATION AND THE USERS

The user will enter the main menu first. It will contain three options – story (the interactive narrative made in Twine), panorama viewer (to view the panoramic photos taken at the cemetery), model viewer (to view all 3D models, namely the tombstones, roofed altar, the entire cemetery and perhaps the entrance gate).

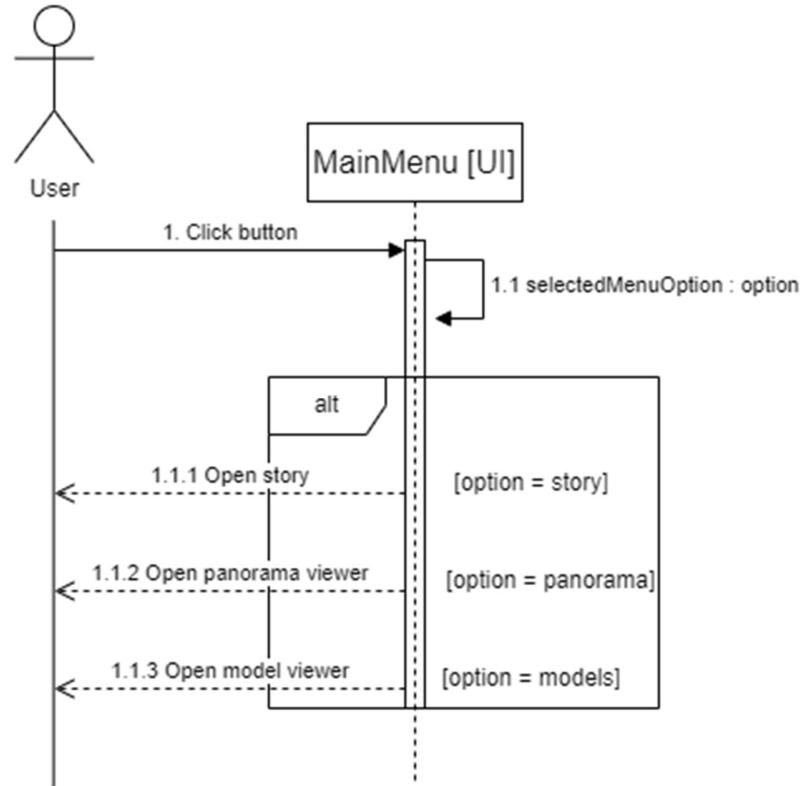


Fig. 10 – Interaction diagram for the main menu

On clicking the "Model viewer" button, the user will be redirected to the model viewer, in which they will be able to change the viewed model with arrow buttons, or by using the keyboard arrow keys.

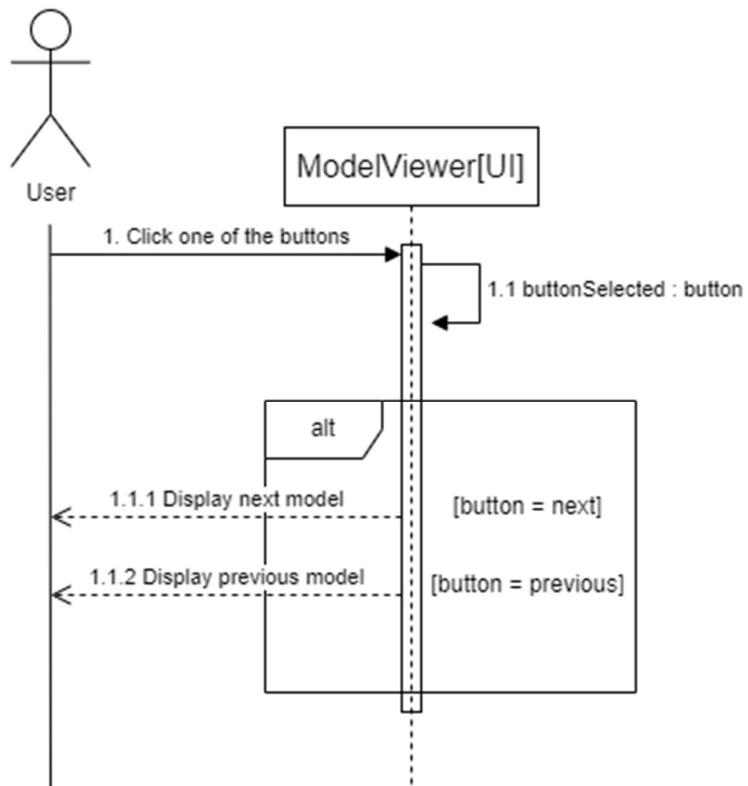


Fig. 11 - Interaction diagram for changing models in the model viewer

The user can go back to the main menu by clicking the "back" button, or by pressing the Escape key on the keyboard.

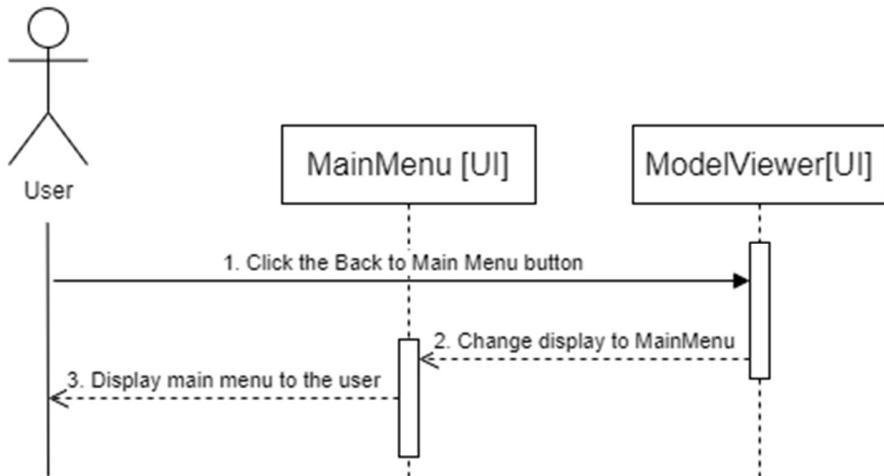


Fig. 12 – Interaction diagram for returning back to the main menu from the model viewer

On clicking the "Panorama viewer" button, the user will be redirected to the panorama viewer made in Pano2VR. The viewer will always initialize at the same panorama in front of the main gate of the cemetery. The user will be able to navigate through the panoramas of the cemetery by clicking the appropriate buttons, or by pressing keyboard arrow keys analogous to the direction in which they want to move.

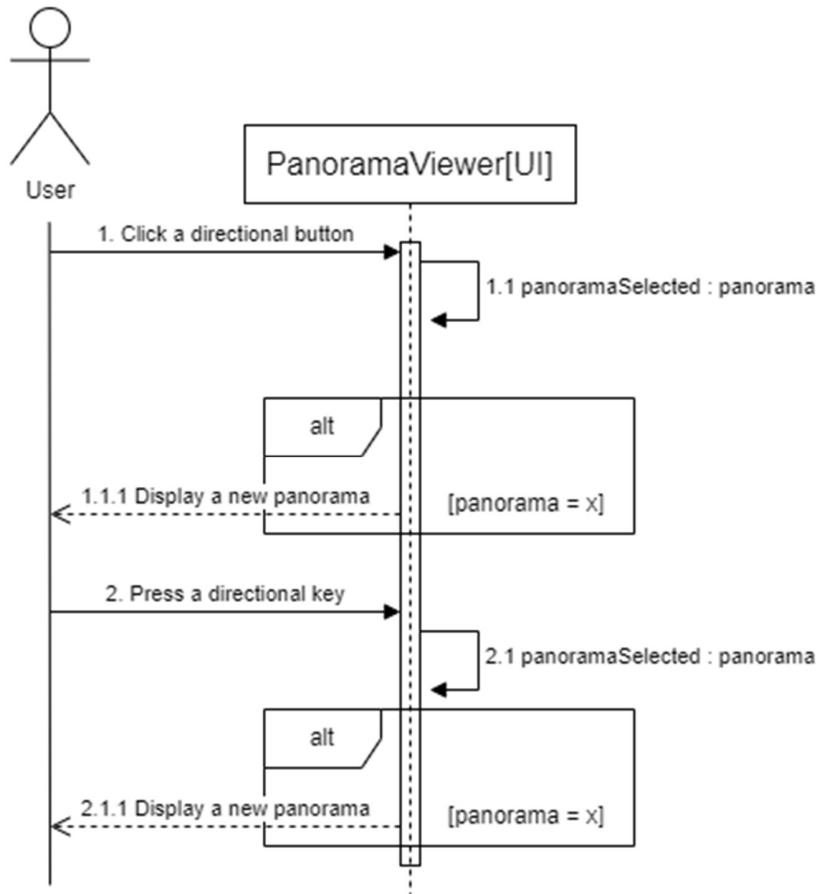


Fig. 13 – Interaction diagram for changing panoramas in the panorama viewer

The user will be able to move back to the main menu by pressing the "Back" button, or by pressing the Escape keys on the keyboard.

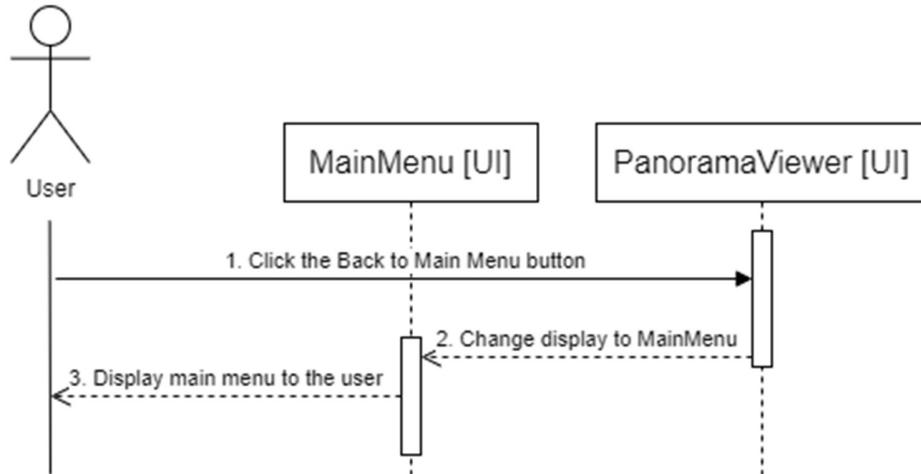


Fig. 14 – Interaction diagram for returning to the main menu from the panorama viewer

On clicking the "Story" button, the user will begin the interactive narrative made in Twine. The narrative will have background music, of which the user will be able to shuffle the songs, as well as have the possibility to change the volume.

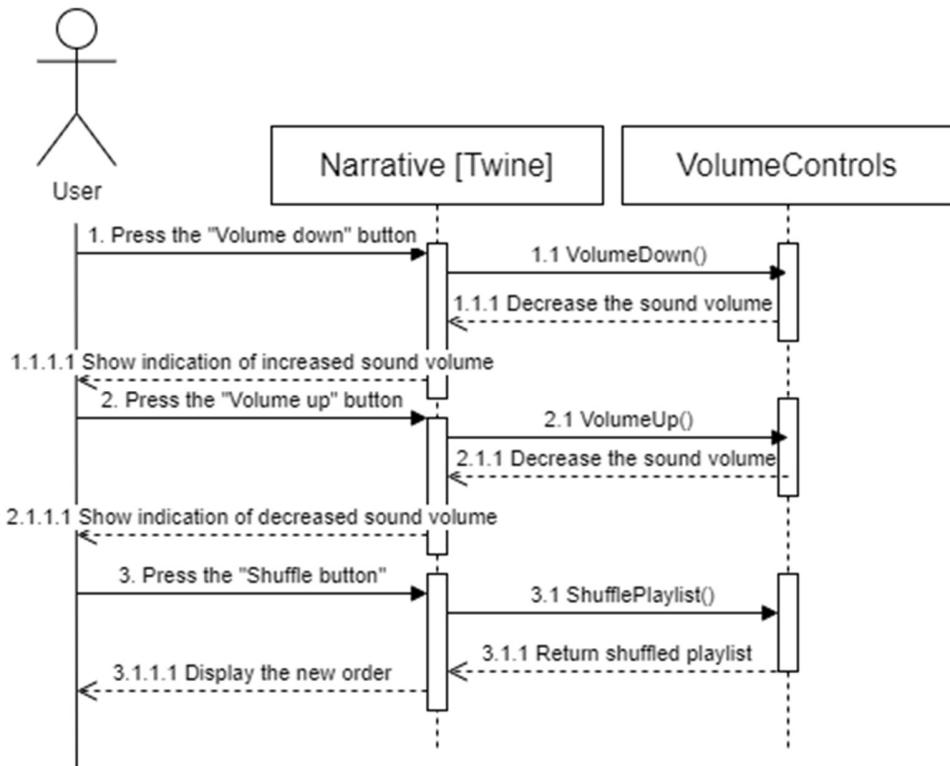


Fig. 15 – Interaction diagram for the audio controls in the narrative

At the end of the story (and at the end of each section), the user will be able to complete a quiz, during which they will be able to reflect about the content of the story and the experiences of the soldiers during the campaign.

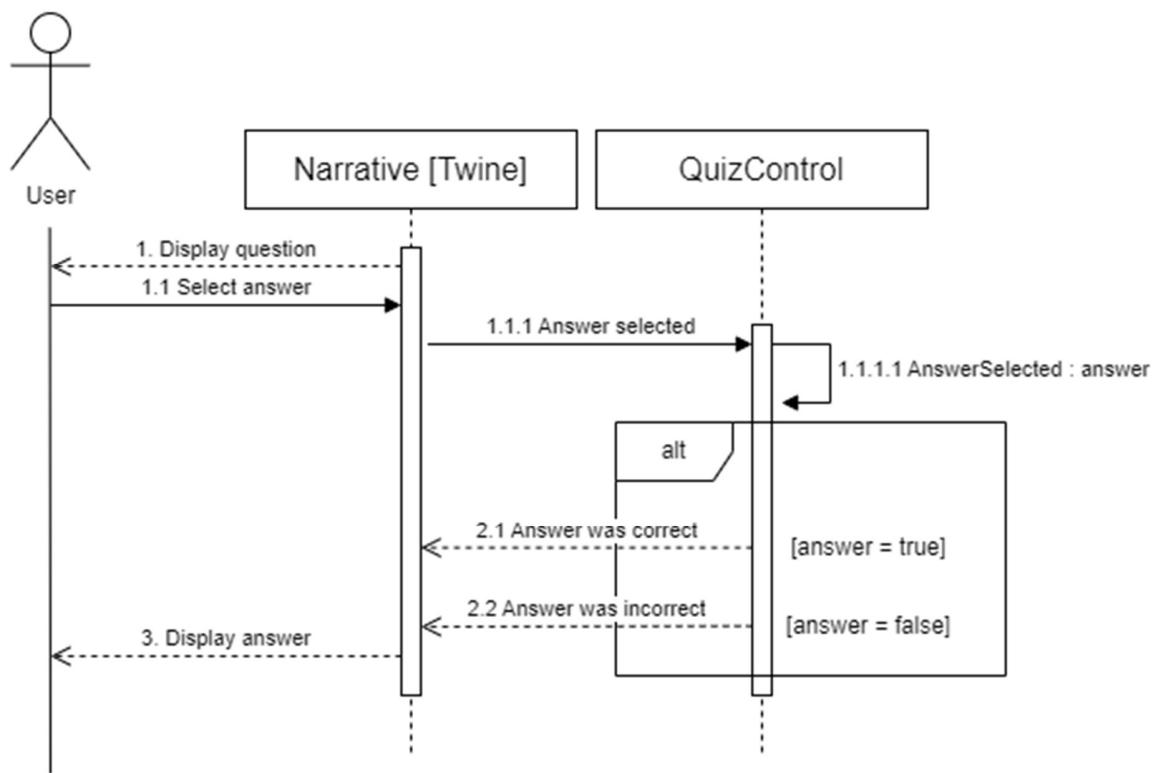


Fig. 16 – Interaction diagram for the quizzes

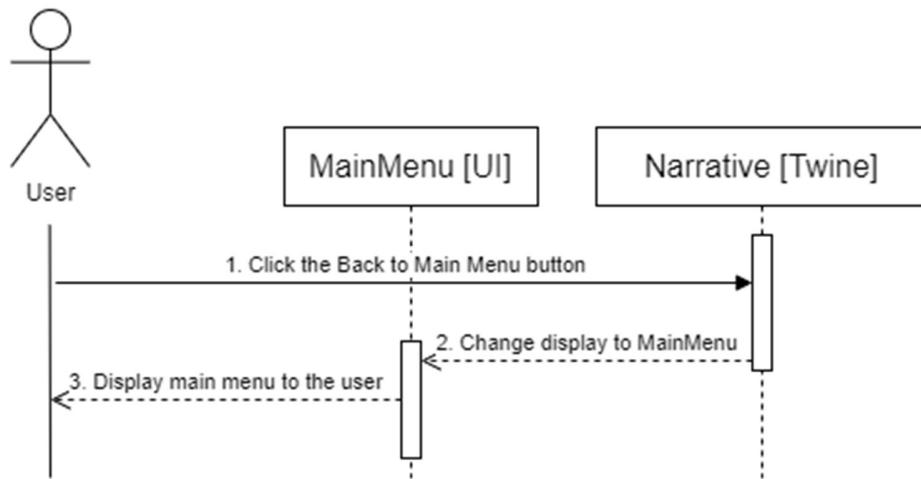


Fig. 17 – Interaction diagram for returning to the main menu from the narrative

(E) FORESEEN WORKFLOW

Following is the list of the tasks with the upper limit of the predicted hours necessary to complete them:

- Visit to the cemetery, taking the reference photos for modelling purposes, taking photos for panoramas - 4h
- Preparation of tombstone data (types according to religion, names, ranks, dates of death) - 12h
- Creating 3D models of the tombstones - 4h
- Creating 3D model of the roofed altar - 2h
- Creating 3D model of the entrance gate - 4h
- Creating 3D model of the entire cemetery - 4h
- Preparation of the Pano2VR tour - 4h
- Preparation of the model viewer - 4h
- Research and story design - 8h
- Preparation of the quiz(zes) - 3h
- Preparation of the multimedia content of the story - 3h
- Implementation of the story in Twine - 12h
- Implementation of the main menu - 3h
- Testing - 4h

Total: 85h

(F) SET-UP: FORESEEN HARDWARE, SOFTWARE AND MEDIA

Hardware – Personal computer/laptop, smart phone

Software – Web browser (user), Twine (interactive narrative), Pano2VR (panoramic tour), Blender (3D model creation), Visual Studio Code (necessary code writing)

Media – 3D models of the four different kinds of tombstones, 3D model of the roofed altar, 3D model of the entrance gate, 3D model of the cemetery, panoramic photos of the cemetery, historical photographs from the campaign trail of 2nd Polish Corps, military songs known to be sung by the soldiers of the unit

(G) FURTHER DEVELOPMENT AND MAINTENANCE ISSUES

Modelling - I had no previous experience with modelling before starting this project, and it definitely had an impact on the final artwork available to display in the model viewer. The entrance gate was too complex for me to create, and while I have created the model of the altar, I've decided against adding it to the project files. The actual reason for that can be seen in the included models: the UV mesh of the models was not updated on changing the models and adding new polygons, resulting in weird, stretched textures. This is not a huge problem for the single-material tombstones, but the altar is made of multiple materials.

Displaying models in a web browser - Currently, there are no native methods of displaying 3d models in a web browser. The possibilities include: parsing an .obj file as a JSON and displaying it using a JS library, or using Google's modelviewer extension. I've decided to use the latter, as it works with .glb/.gltf files, which can be exported in Blender.

Model viewer - Developed by Google and actively supported on all modern browsers. My issues here were with creating the buttons for rotating and zooming the model - the current iteration functions as an emulation of keyboard presses (the viewer has references to the degrees of the shot, but they are unaccessible from outside of the modelviewer itself), and it sometimes works as intended, but most times not.

Creating panoramas - I wanted to automate this as much as possible, especially since I did this before realising Pano2VR's limitation specified in the next paragraph. I settled on using Microsoft ICE, as it was free and didn't mind my mediocre photography skills (which are the reason for two splicing artifacts in the available panoramas).

Pano2VR - the "trial" unpaid version does not allow for linking more than 4 panoramas, so while I prepared more of them, the panoramic tour is serving more of a "proof-of-concept" role. Finding an open-source alternative was unfruitful, though perhaps the tour could be implemented in Google Street View?

Twine - it turned out to be an albatross around my neck. My main gripe would be with customisation features, which I would describe as harder to do than writing the interactive story viewer myself. These are the main reasons for the lack of additional features that I planned to do, but did not mention yet, like the music player.

(H) DISRUPTION

Following is a list of identified potential threats and their planned mitigation policies:

Technical difficulties – Allocate time for testing and debugging. Consult online documentation for tools and applications used to create the project. Use a version control system (Git) to manage backups and changes.

Resource limitations – Use free/open-source tools. Simplifying multimedia considered, but not possible.

Time constraints – Focus on the parts of the project according to the MoSCoW analysis provided in section 4. Break down the creation process into smallest parts possible to be more manageable. Create a progress timetable and review against it.

User accessibility – Research into and follow accessibility guidelines. Conduct testing with tools like screen readers and keyboard navigation.

Compatibility issues – Utilise multiple devices and browsers for testing.

Content accuracy – Conduct research before starting to work on the story. If possible, utilise multiple sources.

(I) TEAMS ROLES AND WORK

Hubert Krzywonos - everything

(J) UX SCENARIO

<https://polishmilitarycemeterybologna.github.io/twine.html>

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