Immersive Tour at Umeå’s Prison Hotel

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MFA in Interaction Design
Summer 2018
ABSTRACT

The overall purpose of this project is to develop an immersive storytelling experience that connects with both physical and social environment. To be specific, it focuses on the old prison in Umeå which was closed in 1981 and nowadays serves as a hotel. There are abundant historical materials related to the old prison preserved, and how might we transform such textual, historical information into relatively interactive experience. By collaborating with Hotell Gamla Fängelset (Umeå’s Prison Hotel), the result turns out to be an application in combination with augmented reality (AR), to build a guided tour that brings history to life at Umeå’s Prison Hotel. The tour not only demonstrates the plight of the prisoners, but also showcases the reform to humanized treatment over time, at the end linking back to the cozy hotel where the guests are staying. After users experience the tour application, it stimulates people’s imagination of the prisoners’ story and raises their awareness towards the cultural heritage that has always been forgotten.
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INTRODUCTION

1.1 Background
Nowadays, cutting-edge technologies can be used to transform static physical spaces into interactive environments for a higher level of immersive storytelling. For instance, in the field of Tangible User Interface, many researches utilize a touchscreen or a surface for projection to display contents affected by physically placing different objects and manipulating them with hands.

The practices that unit physical forms and dynamic digital information can tell stories in a unique way and brings a more significant emotional impact on audiences. Such mediums work as a compelling format to demonstrate knowledge related to history and culture that might not be so interesting for some people. We can see from museums and public spaces that they have started to create such site-specific experiences to allow a higher level of engagement and interaction.

1.2 Opportunity
The project involves designing interactions oriented in public spaces where visitors can learn about Umeå’s history with immersive experiences. By integrating new media with public spaces, it drives interactions through possibly screen, light, projection, sound and tangible objects embodied in a location. Thus, the story is not static and unresponsive with merely historical artifacts and descriptions. Instead, it could be presented with playful contexts and ambient stimulations influenced by the actions of the audiences, meanwhile triggering people’s interest to explore the city where they live. In the end, the framework established by the project is expected to contribute to the knowledge about designing interaction embedded in spaces for conveying informative historical materials.

1.3 Approach
It intends to engage target audiences, stakeholders and experts in the earlier stage of the design process. The research of interactive storytelling contains many disparate fields like interior architecture and advanced computer interfaces in addition to interaction design. Insights from different professionals would be gathered and further converged to discover opportunity areas. Besides conducting research to understand people’s needs and stakeholders’ points of view, a few prototypes would be built and experienced by participants for ideation and iteration. The outcomes, including a proof-of-concept prototype, concept video and thesis report, would be examined by programme director, tutors, cooperation partners and participants at UID ’18 Graduation Show.
1.4 Learning Goals
Based on the course syllabus of the degree project, it is crucial to demonstrate the ability of planning and carrying out a project individually. Many master students from previous years have mentioned that it might be the last chance to go through a complete design process, at the same time owning the freedom to make vital decisions all by yourself, which would be rare in actual design works.

Besides this, it is impractical to deal with the complexity of a thesis project by simply one designer. Therefore, the designer has to learn how to seek assistance from other people, such as peers, designers in industries and stakeholders. The development and concepts should be communicated clearly not only by design language but also other mediums which could be understandable by laymen.
The process went through from exploration based on a general topic to a narrowed scope, Umeå Old Prison, and further developed the design concept according to target users’ and stakeholders’ feedbacks.

At the phase of exploration, it aimed to discover the opportunity of designing for conveying the history of Umeå. Desk research and interviews with eighteen people were conducted to enhance the understanding of related knowledge. With the help of locals and experts regarding Umeå’s history, the scope has defined from the city as a whole to one specific place in Umeå. Then, the designer had in-depth discussions with the stakeholders to discover possibilities, and at the same time investigating the needs of potential users by shallowing visitors, holding interviews and reviewing online comments towards the place.

After the research of its past stories and the current context, four design directions were generated by ideation workshops with peers and the designer’s self-brainstorming exercise. The next step was to build design probes and evoke discussions for refining the initial project goals. When it comes to concept development, two rounds of user testing validated the main idea and helped to tweak design details. The testings with four potential users involved functional prototypes and occurred at the place where the design was meant to happen. These activities established the final thought.

Eventually, the designer produced materials including images, videos, and interactive prototypes to communicate the results.
2.1 Overview
The opportunity identified by the initial thought is to develop an understanding of how interaction design can support learning and comprehension of historical information. So far the scope is still too broad and supposed to be explicitly defined. The following research was managed to make the project more concrete. It concludes two rounds: exploration and focus. The explorative series concentrated on semi-structured interviews with people whoever relevant to the topic. The focused round was conducted after the content has been decided to target at one of the oldest buildings in Umeå, the old prison.

2.2 Process
To start with, both experts and laymen were interviewed at this phase. Firstly, eight interviews involved staff who work at culture- and history-related museums, including researcher, curators, teachers, receptionist and developer. The interview questions consisted of investigations about audience needs, stakeholders, existing solutions and technology considerations at their organizations.

After talking with people at museums, some of them mentioned that young people are always the target group that cultural institutions are trying to attract and recruit. As a result, ten young people have been interviewed. Those talks intended to figure out how history came across in their lives, no matter if it happened at museums or not. Such ‘encounter with history’ was considered as an event. The context of the event (where, when, what, who, why and how) was investigated as well as the best/worst moment for the mentioned experience.

Ingela Wall and Maine Wallentinsson, educators from Västerbotten Museum
2.3 Key Findings
Based on the note-taking and recordings of the interviews, the key learnings were clustered into themes. Those themes turn out to center with one insight: It’s the context of the event where you meet history that makes it meaningful.

Two characteristics of a meaningful encounter with history have been outlined as below:

**Connection with the present**
It links to what people understand, further providing them a chance to make a comparison or find similarity between the place and their own experiences.

“After skiing in the forest, I dropped by the museum and saw the display of the oldest ski. I was impressed by the wooden materials and compared it with the one I am using.”

“While visiting the Elk farm, I also learned about the development of hunting regulations to protect those elks. The size of elk is much smaller now than many years ago because of over-hunting.”

**Authentic voice**
It brings a vivid scenario to audiences. People are captivated by the power of a story that happened in the same place.

“When I stood in the front of the king’s study room, I could imagine that the king used to work there. I was in the same place as the king.”

“I entered the house and there was a very steep stairs. When I stepped on the floor, I heard a sound of fragility and I could feel the materials were fragile, so I needed to be careful.”

2.4 Refined Goals
The learnings show how people would react to a successful interaction with curtain history pieces. However, one question remains unknown. What does history mean for this project? To make the experience meaningful, the content needs to determine before moving forward. Thus, designer attempted to find opportunity areas that still take place in Umeå but with a focused location. The target would allow more time and efforts on concept development to discover how to create an experience with historical information in reality.
3.1 Target
As mentioned in the introduction section, this project targets showcasing Umeå's history. To discover the interested segments of the city, two resources have been inquired for detailed information: researchers at Västerbotten Museum and a tour guide from Umeå's Official Guide Association. Along the process, one impressive place stood out, which is Umeå Old Prison.

Umeå Old Prison (Swedish: Umeå gamla fängelse) was built in 1861, serving as the county jail for Västerbotten County. It is one of Umeå's oldest remaining buildings nowadays. The prison ended the service in 1981 and was converted into a hotel in 2007.

To decide to focus on this place, there are a few reasons supported behind. Firstly, its cultural and historical value is significant. As one of the few buildings that did not burn down at the city fire of 1888, it remains as evidence of Umeå in the 19th century, reflecting the concept of human rights by seeing how the society treated criminal back that time. Secondly, there is a small museum inside the building to display preserved historical materials related to the old prison, which means specific information is already accessible and therefore this project can concentrate on exploring how to communicate and support the learning of that information. Thirdly, the hotel, who is the primary operator as its nowadays use, expresses interest and is willing to assist in further development.

The small museum displays artifacts and information regarding the old prison.
3.2 Stakeholders
There are three primary stakeholders involved in this old building. All of them work on adapting the building to the needs and usefulness of today to benefit the society. The National Property Board of Sweden (Swedish: Statens fastighetsverk, SFV) is the owner of the building. It is a Swedish state administrative authority that takes charge of managing the property in Sweden that holds particular historical value. Since 1993, after the Umeå Old Prison became a national monument, it has been managed by SFV.

Another stakeholder is the operator of the hotel. They utilize the space to provide hotel service with 23 single rooms, 2 family rooms, a double room and a conference room for meetings. Besides hotel business, one cell room has been kept as space for a small museum to display historical artifacts and information about the history of Umeå old prison.

Concerning the founding of the small museum, the collection and exhibition were taken care by Swedish Prison Museum in Gävle. The Prison Museum preserves criminal heritages from the 1850s when public bodily and shame punishment still existed in Sweden.

All three stakeholders have their standpoints but share one shared vision, which is to preserve and communicate the old prison’s cultural and historical values to people. And this project tries to contribute to such aspect with the assistance of interaction design.

3.3 Users
At this case, the target users would be people who stay at the hotel. The demographics of hotel guests is rather diverse, and therefore they are categorized by the reason why they stay at the hotel instead of ages or gender. They are two main types of guests. One is to stay for business. Those people come to Umeå to participate meetings, conferences or activities mainly in Umeå University or University Hospital of Umeå. Usually, they check in in the evening and check out in the early morning during weekdays. Another type of guests stays at the hotel for traveling. They either take a trip to Umeå or in the middle of going to the North. As tourists, they are more actively getting to know something new about a place. It is the group who tends to be interested in the story behind the old prison and expects unusual experiences. Thus, this project plans to target the hotel guests who are travelers and willing to know more.
3.4 Investigation
In order to identify what the opportunities and challenges of communicating the history of the old prison, and understand what people have interested in, several approaches have been conducted to investigate the current situation.

Shadowing first-time visitor
The first one is to shadow a first-time visitor to the place. She was invited to visit the hotel without giving any prior knowledge. The goal is to understand what the first impression of this place would be and how she feels after walking around the building in and out. In general, the place showcases a mixed feeling between the old prison and a modern hotel. She still saw clearly it’s a prison but with recent renovation. And perhaps because of Scandinavian style, she felt it’s a calmer, cozy and dorm-like place than her general impression of other prisons. In addition, there are few things that she would like to see, but she cannot find them, such as some small details of the place beside the general information and how an old cell room looked.

The visitor was looking at the introduction board next to the entrance of the prison hotel.

Reviewing online comments
Some people left their comments about their experience at the hotel on the Internet, like a website called booking.com. Through their posts, it provides another resource to learn people’s feelings and takeaways after their stays. Besides complaints and compliments regarding hotel service, many people were impressed by its prison background and atmosphere. The keywords like “intriguing,” “quirky” and “unique” were repeatedly mentioned by different guests. Some people said “fun to be arrested” and “... feel like sleeping in a cell room...”, which shows their imaginations of acting like a prisoner. Some people also mentioned “... the room doors - which are not the cliché steel bar style - were very private and sturdy timber doors ...” and “The wooden cell door is authentic ...”. Those comments point out some traces from the past attract attention, like the wooden cell door.

Interviewing hotel guests
By talking with two hotel guests, the questions centered on what they want to know more and what they have interest. They are both excited to stay at a prison-like hotel. One interviewee was wondering if there is ghost story at this place. In general, they want to know more personal stories from prisoners, and how they lived in the space. So questions remain in their minds, like “Who had stayed here?”,

...
“What’s the reason that sent them to the prison?”, “Were they killers?” and “Did anyone escape from the prison?”. They think it’s good to keep one room as a small museum, but they don’t have any idea about how the current setting could be improved. One key finding from those hotel guests is that people usually don’t know what they want to see regarding historical materials. To trigger more thoughts and discover possibilities from potential users, prototypes should be prepared to stimulate imaginations.

**Staying for one night**
To get a complete experience as a hotel guest, the designer decided to stay at the hotel for one night, going through the whole journey from online booking, check-in, finding the room, taking a shower at a shared bathroom, staying, having breakfast to check-out. Two interesting points were discovered during the stay. Firstly, sound insulation at hotel doesn’t work well. While being inside the room, the sounds of a footstep, opening/closing door and people’s talking in the corridor could be heard to some extent. Such issue makes some guests complaint. But at the same time, the sounds connect to the story of a prison. Regarding storytelling of its past, the sound effect could be involved to link the past and present.

Secondly, since it is a relatively small hotel, the relationship between people tends to be closer than regular hotels. Hotel guests would chat with each other in common space or corridor. During breakfast time, the food was directly prepared by the hosts. She and her husband would talk with most of the guests. Despite that the place is supposed to a hotel by definition, its social aspect works more like a hostel or B&B (Bed and breakfast).
3.5 Refined Goals
Currently, to communicate its historical story of prison, people learn about the information from the small museum, handbooks, introduction board next to the main entrance and talking to hotel hosts. However, concerning those static historical artifacts and texts, they simply represent the traditional, factual information that doesn’t efficiently evoke people’s interest, and answer their curiosity about prisoners’ lives in the past. The information that most people have interest in is missing and inaccessible. How might we bring it up to people?

Besides this, one opportunity is that people happen to be at the same place as where the stories happened. The prison hotel owns both material (prison-like interior structure) and immaterial (atmosphere, sound) aspects of prisoners’ lives. How might we convey prisoners’ stories together with interaction design that considers the context of the hotel and the space in which the interactions occur?

How might we activate the narrative through interaction that involves embodied and tangible qualities of the place?

In summary, how might we represent prisoners’ stories by connecting design practices and embodied qualities of the place together to engage people in the context of a hotel?
4.1 Initial Ideas

To generate a certain number of ideas, two ideation workshops participated by six people were run, and the designer did a few brainstorming sections on her own. For the first phase, it focused on ideating the way to activate the narrative through interaction between the place and the audiences, regardless of the context of prison hotel. Four “How might we” questions, listed as below, were shown to participants at the workshop to evoke their imaginations and thoughts.

- How might we overlay the past and the present to show historical stories behind the old buildings?
- How might we put people directly into the story?
- How might we create a sense of “being there” and offer the opportunity for people to engage with the story personally?
- How might we place a starting point of the design into certain moment or context with the old building for people to initiate the experience?

The produced ideas were later categorized into a few directions.

Tangible historical token
Tokens based on the theme of old buildings could always get people's attention. The information told by the token is still more efficient than just merely texts. For example, newspaper, letter and diary could be replicated according to existing collections or produced based on historical records to communicate the
stories or the significant moments. On the other hand, people always like to receive information by touching or feeling objects. If those tokens could be accessible for visitors rather than hiding behind glass box like a regular museum setting, it would suck people into the stories even more. Another idea is that people can get those tokens at curtain touchpoint before starting the designed experience. For example, hotel guests can get something while check-in, and the token guides them to begin exploring the story behind the place where they are.

*Role-play setup*

To build connection between the audiences and the content of history, role-play as a person or character related to the old building could be a good setup. Through being assigned to specific roles, it seems to put people directly into the stories, making them become parts of the place. Like RPGs (Role-Playing Games) popular in computer gaming, players experience missions and join conversations in a fictional setting.

*Showing change over time*

For people, it is impactful to see the difference of one place changing along time. There are several ways to show such transformation, such as time-lapse photography, a kind of time travel machine through augmented reality glasses or using a lens to zoom in/out to switch between different period. Besides, it could also achieve by micro-interaction took place at the digital display. For example, a simple tapping on screen could shift between the past and present, or moving device closer to curtain objects could show more details based on the movement.

*Encouraging exploration*

There must be abundant stories behind old buildings owning a value of being seen. Taking Pokemon-Go as an example, it helps users to go from one place to another for discovery, which provides a relevant reference for designing encouragement for exploring. Thorough examination during exploration, if it successfully triggers people’s curiosity at first, more options are available to access. Regarding that, one idea proposes a map could be a suitable format to display those options for users because a map could provide viewers a bigger picture and context. Furthermore, a kind of compass could work with the map to guide people to find out unknown regions.
4.2 Prototypes
Relying on the concepts at ideation phase, as well as the previous investigation conducted at the hotel with potential users, there are two main directions emerged at this point and further being built into prototypes to collect people’s feedbacks.

*Using tangible tokens as part of an interactive storytelling*
Tangible elements always convey stronger messages once people can touch and feel them. At the context of the prison hotel, the original cell door attracts people’s attention and greatly remind people of the presence of prison. Thus, could we apply storytelling with the cell doors? There is a peephole on a door for guards to oversee prisoner’s activity inside the room. The idea is to showcase a video of prisoner’s life behind the peephole. Visitors have to lean towards the door and put eyes on the peephole to see the video. A prototype was made based on this idea and showed to several people.

![The original cell room door nowadays](image1)

![A faked door was made by cardboard embedded a smart phone inside.](image2)

![The person was looking through the peephole.](image3)

![People would see a video of the prisoner wearing a mask.](image4)
Another tangible token is a telescope. It refers to a guard's duty to use a telescope to monitor the surrounding of the prison. This medium could be a point to display the story of the great fire of Umeå in 1888, which is a significant historical event for this town and connected to the building as well. Since the prison was one of the few buildings that survived the incident. By seeing through the telescope, it is a 360 degrees image overlaying with fire effect. The view would align with people's control of the telescope.

People can hold the telescope around to see the view out of building.

The 360 degrees image mimics the great fire happened in Umeå in 1888.
Overlaying hotel service journey as the role of a prisoner

People feel interested and curious about the experience of being a prisoner. One online comment posted by a hotel guest said, “fun to be arrested.” So one direction was proposed to link the hotel service journey with the journey of being a prisoner. For example, while hotel guests check in, they would get a fake arrest document. And later they would have a release statement while check-out.

![Image of arrest documents in a check-in envelope]

The arrest document was placed in the check-in envelope.
4.3 Key Findings

By showing the prototypes to people, it further evokes discussions and more ideas. Concerning the concept of a peephole, it brought up an idea to add “knocking” action for creating interaction with the character on the video. Once audiences knock the door, the prisoner would know someone is calling and look at the peephole.

Together with the prototype of a telescope, both of them allow people’s use as part of an interactive experience. Many testers mentioned such first-person experience caused impact towards them. It builds a deeper level of engagement rather than just being told by textual or verbal information. Especially for the peephole prototype, it even created a feeling for users to intrude into someone’s privacy.

However, after talking with hotel, such interventions for the physical environment has specific constraints. Because of the preservation regulations for old buildings, certain things cannot be changed or modified. Those cell doors are original, so it’s not possible to install digital device inside to play the video. Moreover, the idea of tangible token containing historical meanings and stories doesn’t fulfill hotel’s wish. They want to maintain the surrounding as a clean and cozy place, without placing unusual objects around which need to be taken care and maintained.

Apparently, the initial thoughts of doing tangible interaction cannot completely achieve in this context. As a result, applying a digital layer upon the physical environment seems to be a way to go. How might we create the experiences accomplished by digital format to activate the stories of the old prison, and at the same time it still takes the current environment, objects and people into consideration?

Aside from discussions regarding physical and digital format, the key findings based on playing a role as a prisoner also brought up some interesting insights. Firstly, to dive into this direction, it seems to become a service design project rather than interaction design, which didn’t align with the initial intention of this project. Secondly, some people felt such way doesn’t show respect to the prisoners. It leads to a design to fulfill entertainment by role-play rather than triggering reflections on prisoner’s stories afterward.

The atrium of the hotel
4.4 Design Direction
As the direction turned to be digital in order not to affect the current hotel context and physical building, the concept of building a guided tour application emerged. It’s not only because it could be achieved through a personal device from users, saving the efforts and investment for the hotel, but also the application could include all of the stories behind the place that is worth to be told. In addition, the hotel mentioned that sometimes people who know something about the prison approached them to share the stories or donate related artifacts like a painting drawn by a prisoner and a guard’s uniform from someone’s grandfather. There is a need to build a platform to collect, archive and further display these memories. Therefore, it is reasonable to create an application that can be updated with those accumulated stories and keep them in record.

Besides discussing the way to communicate the history, one thing hasn’t mentioned is what the stories should tell. Along the research and ideation process, it showed that people like to know the story of the prisoners. From the perspectives of stakeholders, the value of such history reflects on the improvement of human rights, since it demonstrates how an inmate was treated and how the attitude towards them changed from the past to the present. One of the stakeholders, Swedish Prison Museum in Gävle, believes that it is important to reflect about the contemporary and common values base in a historical perspective.

What is the stories of the old prison that can evoke reflections? The primary story here is to show how the “Separate System” worked in the dark time. Such principle dominated most of the prisons around the world in the 19th century, including all of the jails in Sweden back in time. Before that, inmates used to stay in common cells but later replaced by individual cells to keep isolated from each other. It was believed to help prisoners contemplating their fate. However, the long-term isolation turned out to be torture towards prisoners. Afterward, it proved that many people had the mental breakdown because of the system and therefore it caused the reform in the mid of the 20th century to postpone such operation. The failures of good intentions would be the central theme which the designed tour application tries to indicate to people.
5.1 Prototyping - Round One
Based on the daily schedule at the old prison and the story of the separate system, as well as considering the traffic flow for users at the hotel, a working prototype built by Origami Studio includes nine stops for the guided tour. Each stop tells one story and is conveyed either by merely audio or combining with video playback through augmented reality.

For the sake of quickly building a testable prototype, the part of augmented reality relies on scanning an image target to show a video clip with defined size and position. In reality, it is feasible by object recognition of a door and a peephole, working together with a kind of indoor navigation technology called iBeacon, a class of Bluetooth low energy devices that detects movements in a given region. It can track people’s location near a specific door or peephole.

The wireframes of the prototype and how the interface was shows on the smartphone
Audio Narrative: The old prison was built in 1861 and is now the oldest stone architecture in Umeå. The main building has two floors plus a basement and attic. Each prisoner lived in their individual cells.

Upon targeting camera at the door of room 12, the video clip appears and the user can press a button to play. The video shows a prisoner sitting in the room and after a while looking towards the direction of where the audience stands.

Audio Narrative: Looking out the windows, you can still see the outer shape of the prison’s round-edged yard. There used to be a wall to divide the space into five sections. Prisoners would be working over there.

It is an instruction to tell people to move to the first floor to discover more stories upstairs.

The background music of pump organ is playing at this moment, together with a picture of the hallway of the first floor. The section tells how religion played a key role to assist inmates’ self-reflections back that time.
Stop 6: Find room 24

06
FIND ROOM 24 AND SCAN THE DOOR

Stop 7: Listen to the wall

07
LISTEN TO THE WALL BETWEEN ROOM 14 AND 15

Stop 8: Reform in 1945

08
REFORM IN 1945

Stop 9: Closure of the prison

09
ENDING

This part applies a similar method as room 12. But instead of revealing the whole door, it asks users to come closer to the door and target at the peephole. Such interaction tries to give a feeling of peeping at something secret. The content of the video demonstrates the story of prisoner wearing a mask to stay anonymous.

Users have to find the wall between room 14 an 15. While they approach the destination, it triggers a soundtrack playing automatically. The sound effects include knocking and screaming sounds made by prisoners to indicate their suffering due to the isolation system.

Audio Narrative: More and more people became insane because of the long-time isolation. The separate system didn't work out as planned. In 1945, prisoners were finally allowed to interact with each other occasionally.

Audio Narrative: The old prison was eventually closed in 1981 and later was converted into a hotel, just like what you are seeing now. If you want to explore more, there is a small museum on the ground floor. Thank you for your time today.
5.2 User Testing - Round One
The prototype tested with two potential users at the hotel. There were a few questions needed to investigate through user test. In terms of information display, does user have any problem to find the right position? Does any information shown on screen cause misunderstanding or is unclear to a user? Do users understand the story that the application tries to tell? Regarding its functionality and interaction, are the instructions precise for people to reach the intended experience? How do people feel by switching between purely audio narrative and visual display through augmented reality? Lastly, for emotional impact, how does an impression of the place change before/after the experience? What is the most interesting part for them among the whole journey?

The tester was trying to find the next stop based on the instruction on the interface.
The tester looked out of windows to see the backyard where prisoners could have fresh air. People could experience augmented reality by targeting camera at the pattern.
<table>
<thead>
<tr>
<th>TESTER</th>
<th>FIRST IMPRESSION</th>
<th>NAVIGATION</th>
<th>STORY</th>
</tr>
</thead>
</table>
| USER 1  | • From the entrance, it looks just like a normal hotel.  
• While entering the room section, I feel wow and suddenly realize it’s a jail due to the stairs and cell door.  
• It’s contradict: hotel, privacy versus corridor, open.  
• (Stop 3: yard) The map is not clear. I don’t know the place is outside. | • I would like to know more personal stories of those prisoners, like going to see his cell, seeing what he sees. Maybe someone who experienced the closure of prison can tell the story.  
• I want to see something connected to hotel, such as the details of a room, seeing through augmented reality to show book, candles, or bible on the table.  
• It would be cool to record the voice from the prior guard.  
• Good to mention the asymmetric arrangement of the cell doors  
• For the ending section, it can show a newspaper to tell the closure of the old prison, and opening of the hotel. | |
| USER 2  | • It gives me a mixed feeling. Something looks old while something looks new like the television.  
• In the beginning, it could show a map to let me know the context of the architecture.  
• I was confused by “Wall between room 14 and 15”. It’s not a destination for me.  
• (Stop 6: peephole) I thought it’s a horror movie. I don’t get the story. Maybe you can add knock or bell ringing to inform the prisoner that he needs to wear a mask and go out.  
• (Stop 3: yard) I was distracted by the surrounding snow. I need more information. It could be visual or something else. I thought that I need to open the cell door. | • I need more content to understand the story, not just hearing screaming.  
• (Stop 6: peephole) I thought it’s a horror movie. I don’t get the story. Maybe you can add knock or bell ringing to inform the prisoner that he needs to wear a mask and go out.  
• (Stop 3: yard) I was distracted by the surrounding snow. I need more information. It could be visual or something else. I thought that I need to open the cell door. | |
<table>
<thead>
<tr>
<th>TESTER</th>
<th>INFORMATION</th>
<th>SWITCH BETWEEN AUDIO &amp; VISUAL</th>
<th>THE MOST INTERESTING PART</th>
<th>TAKEAWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER 1</td>
<td>I would like to see more going on from the screen, something is not static. Taking a random example, while telling the story of ocean, I see some bubbles from water on screen.</td>
<td>I mentally prepared to use the phone all the time. I feel soon I need to press 'next' button.</td>
<td>I like the 1st AR (stop 2: door). Maybe it can show more stories about the prisoner, like how he goes crazy, laying on the ground...</td>
<td>I consider this tour as an intro, on-boarding section. The tour could be longer.</td>
</tr>
<tr>
<td>USER 1</td>
<td>I want to know how long the whole journey is in the beginning.</td>
<td>I am a user who always pay attention to the screen.</td>
<td>(Stop 3: yard) I thought it’s a parking lot, and then surprised by the five-cake shape. I recognize the place by its shape.</td>
<td>It’s fun and I like the story in general, since I am at the same place as the story happened. It provides a game-feeling experience because I was walking around.</td>
</tr>
<tr>
<td>USER 1</td>
<td>I need to know how long each audio section is.</td>
<td></td>
<td>(Stop 2: door) While she looks at me, I feel I intrude into their lives. It triggers the second-level of emotion. It is immersive and creates social interaction. I feel I am not just a passive observer, because there is an active interaction between me and the prisoner.</td>
<td>I somehow feel the guests are prisoners. I saw a guy and thought he is going to jail.</td>
</tr>
<tr>
<td>USER 2</td>
<td>It gives me a mixed feeling. Something looks old while something looks new like the television.</td>
<td>My habit is to check phone all the time. I want to make sure that I don’t miss anything. But if the audio tells me to put down phone, I would do that.</td>
<td>(Stop 5) I heard the church music while standing there. I feel nice and it’s a good timing to pause.</td>
<td>At first, it’s just like another building, but after the tour this place becomes alive for me with those little stories. One example comes to my mind is that a theatre itself is a dead place. It becomes alive while musicians are playing.</td>
</tr>
<tr>
<td>USER 2</td>
<td></td>
<td></td>
<td></td>
<td>I still feel like a visitor at museum. Some parts are immersive and some parts are museum-like.</td>
</tr>
</tbody>
</table>
5.3 Prototyping - Round Two
Based on the feedback gathered from the previous prototype, the second one was built with improvement and additional content.

• Adding starting page: People need to have a general idea about the time span of the guided tour and what it is.

• Adjusting the button of "Play" and "Next": People were wondering which button to press while they display with the same size. Thus, the size of play button becomes bigger and place in the center, while the next button located on the right-hand side with a smaller size.

• Showing the photo of the position on each page: For the sake of navigation, the pictures are expected to guide users towards the right spot.

• Visualizing the backyard: Testers felt the audio descriptions are not enough. Thus, by applying the same technique of the telescope prototype, a 360-degree image demonstrates the presence of prisoners at the backyard with division wall.

• Action-triggered video: Regarding the story of prisoner's mask, users have to knock the door to trigger the following story scene.

• Stereo sound effects: While facing the wall between room 14 and 15, two sounds are coming from either side to mimic the voices from the prisoners at those two rooms.

• Providing the second level of engagement: For each stop, there is a book icon on the left-down corner for people who want to learn more information about particular stories. Moreover, after finishing the basic tour, there are more other stories available for users to explore.

• Adding ending page: Upon finishing the tour, three options including explore, reward and share, are accessible for users.
All interfaces of the prototype

Adding audio and interactions on each page
5.4 User Testing - Round Two
With the updated prototype, it was tested with two users at the same time, to not only examine its improvement but also stimulate the scenario that user has the companion while participating the tour together with someone else. The key points to evaluate remain the same as round one.

The testers experienced the prototype together to examine the scenario while people have companions while using the tour application.
<table>
<thead>
<tr>
<th>TESTER</th>
<th>FIRST IMPRESSION</th>
<th>NAVIGATION</th>
<th>STORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER 3</td>
<td>• It looks very differently from the prisons in China. I didn't realize it's a prison until visiting the museum. &lt;br&gt;• By seeing the lock of windows, I realize that it's an authentic prison, not just built for commercial purpose like a prison-themed barbecue restaurant.</td>
<td>• I notice the number on the door immediately. People need to see the door number from a distance. The door number is not obvious if you stand too close to the door. &lt;br&gt;• Cake-shaped is a confused term for me. I was also confused by the instruction of stop 3. Should I find the window or the cake-shaped yard? &lt;br&gt;• It's easy to find the windows on the ground floor. The views from two windows are similar, so it doesn't matter which one I choose to see.</td>
<td>• Sometimes, the current surrounding influences the message about the past. Perhaps the visual information would be more obvious by adding color tone of vintage style, or removing today's element like car and the buildings behind.</td>
</tr>
<tr>
<td>USER 4</td>
<td>• I recognize it's a prison because of the cell door. I have seen similar door from western movies. Such kinds of door has two locks up and down. &lt;br&gt;• It's clean and warm. I feel warm because seeing the pulpit on the first floor.</td>
<td>• The door number is too small so I cannot find the right room. &lt;br&gt;• I thought the cake-shaped place is indoor.</td>
<td>• The whole journey is pretty serious. It would be good to show users the bright side in the end, since they are going to stay there. &lt;br&gt;• I want to learn about details of certain things. People can look at those details by following the audio description.</td>
</tr>
<tr>
<td>TESTER</td>
<td>INTERACTION</td>
<td>THE MOST INTERESTING PART</td>
<td>TAKEAWAY</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
</tbody>
</table>
| USER 3   | - For the 360 degrees image, it’s better with horizontal view, so it would be good to inform user to turn phone from vertical to horizontal mode.  
- It's confused to show ‘play’ and ‘go next’ at the same time. I didn’t know which one to press. And I also felt confused for the first play button.  
- Regarding the ending interface, there are three circle buttons displaying together. It seems like I can only choose one of them, a little bit like yes or not question for me. | - I like to pass each stop with hints step by step. I know it’s not hard to pass so I don’t need to think too much. It’s like a puzzle-solving game for me.                                                                                     | - I feel I stand at the present to look at the past from a perspective of an outsider. I remain objective.  
- It lets me believe it’s authentic and I further feel more respectful towards this place. People always like to see time-lasting things.                                                                 |
| USER 4   | - I am familiar about how to see 360 images already, based on the experience on facebook and Weibo.  
- For the peephole video, it should inform users to get closer, otherwise the video doesn’t show up.  
- I always wear only one side of the earphone, so I didn’t know the stereo sound effects.                                                                                                                                                             | - I like the part of listening to the sound of hitting wall, because it’s like the narrative from prisoner's perspective. It is an unexpected occurrence among the whole journey.  
- I like the story of mask. While I see something uncommon, it makes me want to know why they are doing this.                                                                                                                   | - Grasping the feeling of time pass  
- As a foreigner, it reminds me of the style of simplicity belonging to Sweden.  
- The place is not as horror as my general impression of a prison.                                                                                                           |
5.5 Concept Validation
In general, four testers all have positive feedback on the tour application. They would like to use it while they stay at the hotel. On the discussions after the test sections, they provided many suggestions for the improvement of the design and shared how the design changed their feelings towards the place. Regarding the second round of user test, it was supposed to find out how the situation might be different while two people join the tour simultaneously. However, the testers’ comment focused more on how to improve the storyline and primary functionality except for the behavior of using it with a companion. Thus, such issue would be dealt with when time permits.

The prototype was shown to the stakeholders from the hotel. With the product to communicate the history, they think such application could also be used by visitors besides hotel guests, like participants of a city guided tour or school visits. The hotel believes it can be helpful to promote the place for more people to know. Concerning the content, they suggested adding the story of the most famous prisoner, Gustav Rosén, who later became the Governor of Västerbotten County, as well as many other stories. Because of the time limit and the choice of focus, those stories are planned to place after the primary tour as the second level of engagement.
6.1 Final Concept
The outcome is an application in combination with augmented reality (AR), to build a guided tour that brings history to life at Umeå’s Prison Hotel. By following the narrative of a former guard, hotel guests take a walk through the space and learn about stories of the inmates who once lived there. Featured stories are represented through AR by scanning specific objects embedded in the physical environment. The tour not only demonstrates the plight of the prisoners, but also showcases the reform to humanized treatment over time, at the end linking back to the cozy hotel where the guests are staying.

Hotel guest is listening to the tour application.
6.2 Journey Overview
6.3 Highlights

Narrative
The story is told from a former guard's perspective. Users follow his narrative to walk through different spots to discover prisoners' lives. Such setting also presents the fact that only guards had the privilege to walk freely in the place.
Navigation

Based on the existing hotel environment, the instructions involve room number and other spatial guides like windows, toilet and stairs. Without an indoor positioning system, the guidance including text and photos assist users to reach specific spots. With the map available from the application, it is consistent with the map on a check-in leaflet.

Check-in leaflet provided to hotel guests

The interface of navigation map
Interaction
The interaction model integrates augmented reality with the audio guided tour. Users firstly follow the audio instruction to reach a destination and then target their devices at a specific object. A video clip appears upon the scanned object to offer a first-person view of a prisoner’s story for people. By shaking the device to stimulate knocking on the door, it further triggers second part of the video to show the prisoner’s following action while he hears the call from a guard. After the video playback, users would learn about the background information behind the story on the next audio section.

Integrating audio guided tour with augmented reality for featured story
The first featured story reveals how the isolation system worked in the 19th century, while users scan the peephole of the assigned door. The second featured story shows the improved prison environment after the reform in 1945.
**Updatable tour**
As a digital platform, the tour can update with new stories that the hotel continually receives from local people who have stories or artifacts related to the old prison. The accumulated information could be archived and displayed no matter how the use of the old building would change.

The printing was created by a prisoner and later was donated to the hotel by his family.

The interface showing the updated part of the tour
Two engagement levels
For each stop, users can expand the card to learn more details. Upon finishing the basic tour, there are other sections available for people to explore if they are interested, such as the details of your room, the famous prisoner or architecture. Those additional information is accessible for people to encourage second level of engagement.
6.4 Future work
The updated version of the design is supposed to test with more people. In summer, much more potential users who stay at the hotel for traveling would come to Umeå. Among those travelers, some of them are family with children and some are elderly. The usage of the product could be very different compared to the four testers who are all young adults and familiar with digital devices. Besides this, the idea of revealing this design to the visitors in addition to hotel guests proposed by the hotel. It would also be interesting to discover how such types of users think about the experience.

When it comes to the content, the audio and video included in the application are just placeholders. Towards historical information, it should be as close to the fact as possible. Such materials are expected to be remade by experts from the field of culture and history based on records and documents.
The project was carried out by one design student individually, so this reflection section mainly mirrors how she thinks and feels. There were a few struggles and learnings during the process that could be relevant to other designers who work on the similar topics or also execute long-term projects on their own in an educational environment.

First of all, the project started from a relatively broad direction, which is to do something about conveying historical information by the practice of interaction design. It wasn’t clear that where the project was able to go because there were too many possibilities. So that’s why the following research section was necessary and essential to scale the direction down. However, while recalling the process of the research phase, it didn’t center with a clear research question, and therefore the collected insights were hard to synthesize and figure out a red thread. For example, the first attempt was to discover the opportunity at the museum setting. Then it shifted to talk with young people because they are not interested in visiting museums, but the discussions with young people didn’t dive into why they don’t like to go to the museums, and instead was aimed at how they think about ‘history’ and what they are interested. At one point, it raised another argument, “What does history mean in this project?”. Is it parts of culture? Is it a story? Could only historical records be considered as history? Those questions went too far away from the scope of a design project, and lead to chaos in the beginning.

Furthermore, the designer kept thinking of “how to say” and ignored about “what to say.” The content that the project strived to convey had been missing at the early stage. Two main reasons caused the issue. One is language boundary. Even though Umeå is a very international-friendly town, most of the information regarding its history is in Swedish. The workload of translation took much more efforts and time than expected. The second reason is the different mindsets between residents and travelers. Such fact uncovered after interviews with young people in Umeå. Usually, travelers are more actively getting to know one place they visit, so it’s common that people learn about history while traveling to somewhere. On the other hand, as locals, they care more about how happen at the present and in the near future, rather than things from the past. Thus, there are no active wish or internal needs for the resident in Umeå to elaborate what they would like to see regarding history. It’s relatively hard to select what history is worthy to tell based on their thoughts. In the end, the designer decided to focus on the old prison because of accessibility and personal interest, instead of people’s wish or problem areas.

After narrowing down to focus on the prison hotel, things started to get easier and move forward. The strength of working on something local became noticeable. It’s rather straightforward to
talk with potential users and stakeholders right at the place where the design would place. At the same time, by working closely with people from non-design backgrounds, specific design-related terms had to replace with understandable words. Also, designer had to communicate the methodology of conducting a design project with laymen and admitted that, with such limited time and resources, the outcomes would be merely a concept. It is vital to prevent giving too high expectations to the stakeholders but later found out it isn’t feasible.

When it comes to the final execution, an unexpected issue was that, regarding storytelling, the level of visualization matters a lot. The expressive content of the media, like video, 3D modeling, animation plays a critical role, while the production of those materials is closer to the skills as a filmmaker or a visual effect artist. For an interaction designer, the needed skills go beyond her ability, but she still needed to make the content upon the particular level to accomplish the storytelling. Besides, by seeing the final concept, it covers different perspectives including interaction, service and story. It is comprehensive, but if time allows, specific points should be selected and dive into details.

In summary, there are many valuable learnings for a developing designer by conducting the whole project individually. It is one of the rare chances to have the complete freedom to make each crucial decision on her own. Meanwhile, it is difficult to remain objective towards the development and have a precise inspection of the big picture because of the long-term process. Therefore, the project relies on the assistance and feedback from many people to be able to finish.
ACKNOWLEDGEMENT

Throughout the process, I received generous help from Nicholas Baroncelli Torretta, Carol Tang, Christoffel Kuenen, Niklas Andersson and Rickard Åström. I would also like to show gratitude to my collaborator, Svante Klinga and Ingela Klinga from Hotell gamla fängelset. In terms of financial support, this work would not have been possible without the scholarship from Brita-Stina Nordenstedts donation. Besides this, I have to thank my peers, other UID fellows, friends abroad and my dear family. None of this could have happened without their encouragement.
REFERENCES


