Augmented Exploration
Travelling through unknown realities
Umeå Institute of Design, Umeå University

This thesis project of Maximilian Herr conducted from January to June 2019, in order to attain a Master of Fine Arts Degree in Interaction Design at Umeå Institute of Design, Umeå University, Sweden.
# Table of content

- **Abstract**
- **Introduction**
  - 6 Background
  - 9 Scope & goals
  - 9 Collaboration
- **Methodologies**
  - 11 Research
  - 12 Immersion
  - 15 Expert talks
  - 17 Secondary Research
  - 21 Survey
  - 22 Interviews
  - 23 Rapid Prototyping
- **Conceptualisation**
  - 26 Analysis
  - 29 Co-Creation
  - 33 Storyboard
  - 35 Framework
- **Definition**
  - 36 Design
  - 41 Concept proposal
- **Reflections**
- **Time Plan**
This is a project exploring a possible future of embedded mobile augmented reality services in people’s daily routine. The project was conducted at Umeå Institute of Design as a MFA Thesis in Interaction Design.

The constant development of technologies alongside with society’s increased usage of the mobile phone makes this medium more and more interesting amongst all age groups. The existing solutions focus on ways of communicating through short time interactions as well as on gameplays with a focus on storytelling. So far, these existing solutions are rarely implementing a service aspect for people’s daily routine. The mobile augmented reality technology has the power to serve a variety of purposes, which are for now, not discovered. This lack of exploration creates challenges for the market and the user which leads to discourage in that medium.

To understand the needs of the people and the language of the technology, I immersed myself into the augmentation of realities and conducted a thorough research with conversations with the target group and experts in the field, opportunity evaluations, and concepts testing. The insights gathered during the research brought the conclusion that the medium has the power to transfer knowledge by having the user experiencing rather than observing. This increases the chances of understanding and participating with information. This is why the project’s goal is to form a mobile AR service example, where the user feels motivated to engage with their surroundings in their daily routine.

The final outcome of the project consists of a platform which allows the user to explore the history of their current location. The platform is clustered in two areas. On the one hand a content library gathers information about explored locations. This information is displayed through a list and detail view of written information as well as through an immersive gallery. This gives the user the opportunity to easily explore and share their discoveries with their communities. On the other hand an interactive map as well as a lens filter enables the user during their exploration to discover the information. Based on a data preview visualisation the user is able to create their own contextual digital gallery. This experience motivates the user to easily start discovering their location as well as building up routines based on that kind of interaction. This new service showcases possibilities to design for mobile AR as well as strengthen the relation between the users and their environment.
Powering the future
Forming a relation
Exploring the medium
Understanding the system
Use of technologies
Creating experiences
Powering the future
Creating experiences
Introduction
The brief of the thesis will be introduced in the following manner:

- Introducing the topic’s relevance in the context of society from people and markets perspectives
- Framing the project by explaining the development of the technological use, introducing user groups and their characteristics, explaining challenges they are facing and introducing the scope of the project
- Staging the goals for the project
- Introducing collaborators and partners

**Background**

In my MFA Thesis Project, I would like to investigate how interaction and service design can help to envision an immersive mobile AR service experience. The project will try to answer on opportunities such as designing the interspace of digital and physical surroundings and discover new forms of interactions between the user and the mobile form to promote a natural way of engaging with technology in people’s daily routine. The goal of the project is to form a mobile AR service experience which lets the user discover the histories of their surrounding.

**The topic’s relevance in the context of society**

The relevance of the topic in the context of society can be divided into two perspectives from two stakeholders: People as potential user as well as the market as the source of product development and creation.

**Peoples perspective**

The use of mobile AR technology becomes more popular amongst the society. The technological development of mobile devices as well as communication and gaming applications encourage phone users to interact with the technology on a daily basis.

These areas of use define themselves through a clear target and showcase different beneficial aspects. In the context of

1. **communication**, it is a tool to create a highly entertaining content by merging the physical and digital.
2. **gaming**, it is a tool to focus on storytelling by including the physical environment into the gameplay.
3. **specific targets**, it is enabling services which are not possible to create without that technology.

This shows that the mobile AR technology has a broad variation of benefits for the user.

**Markets perspective**

Parallel to people’s interest in mobile AR technology, the industries sees opportunities to raise their attention by creating products on a mobile AR base.

On the one hand this can be seen by taking a closer look at the popularity of lens filter on platforms such as Facebook, Snapchat and Instagram. These communication platforms offer technologies to create mobile AR enabled user touchpoints. Embedding the product into one of these existing ecosystems have several benefits.

1. The product is placed into an existing community.
2. The product creation is fast because of the existing technology and design aspects, like interaction patterns.
3. A high marketing value as the communities shows a strong engagement.

Even though the market shows a high interest and usage in the technology, the development is driven by just a few stakeholders. This low engagement in experimenting with the technology shows me missing potential which is yet not discovered.
Development of technological use
Technology becomes more persuasive in everyday life and is often introduced into a social system with the stated intention of making life easier for people. The utilisation of technology to create and maintain relationships among people and/or objects has become commonplace. More notably, technologies impact on or interfere with how individuals engage in relationships between people (and with objects), behave within relationships, and project feelings and meanings. Essentially, the new technological landscape now links to what it means to be human.

Along this rapid development of technologies human behavioral patterns are changing as nearly every experience is in some way connected to a technological use since we are used to carry around mobile devices. But smartphone based technology shows a bottomless sink of time and attention (Harris 2017). People don’t realise that technology is not neutral. Each digital service and information is competing for attention. It aims to keep the user in a service for as long as possible, instead of serving the user’s actual interest. What information technology is doing to us and allowing us to do to our self is sourced in the industry key metrics “spent time per page”.

As a consequence the quality of how or where we spend our time changes. For example, we check our phones around 150 times per day without having a deeper intention of doing this. We are following patterns that try to keep us in a loop of using a service for as long as possible, like a slot machine.

As a result, a controversial relationship between technology and human interaction arises, which is deeply rooted in the system of today’s attention economy.

Technology is important, it’s going to make us better and better – but it’s not going to take away the importance of the human interactions. (Verghese 2018)

When it comes to the availability of services, products and information, technology enables people to do better in a variety of ways. However, when it comes to the way how we experience this, I think there is a huge area that remains untapped. For now, I’ve chosen to focus my thesis on mobile AR solutions. Using a rising technology to build up a new system within its interactions will allow me to discover new opportunities in the relationship between technology and human interaction.
User groups
Defining a user by observing a use case is a common way to identify and communicate needs in the scope of work. This design perspective starts typically with a given problem which has to get analysed by profiling user(s) and from their on co-operating with these. This is known as a human-centred design approach.

Starting a project by seeking for opportunities in the sphere of mobile AR is a converse approach. This technology centred project approach requires a different perspective on the potential user by taking today’s society to account. Today’s society pretty much gets divided when taking technology to account. First, there are generations which grew up with physical ways of interacting and getting introduced to the digital from time to time. Second, there is generation z which is growing up with the digital. This said, the design will miss the opportunity to serve potential users well. It is necessary to understand generation z and their use of technology. As a result, technology-centred design approaches has to design for a mindset rather than user(s).

Project’s scope
In my Thesis Project, I would like to tackle opportunities mentioned before and create a mobile AR experience which creates a natural relation between technology and the human and challenge the way we design with and for technologies at the moment. To make that happen, I distinguish four main areas of interest:

1 Mindset
How might we design for a mindset which is hunting for digital solutions by including the benefits of the physical?

2 Engagement
How might we create an engaging experience which is not falling back on persuasive tools?

3 Intersection
How might we design for the intersection of digital device and physical surrounding?

4 Presence
How might we create a service which can be routed in people’s daily routine?

Project goals
This project aims to strengthen the relation between virtual and analogue. To create meaningful scenarios and cases which explain the opportunities with augmented reality has thereby strongly to connect with the user’s intention. To do so I want to create scenarios the user strives for.

The goals for me as a designer is to create a concept by dealing with the unknown rather than concentrating on a problem.

To do so I want to gain knowledge around the philosophical and sociological aspects in design by seeing augmented reality not as a technology only, as well as by designing through making (and thereby to overcome my fear of prototyping).

Collaboration partner
This Thesis project is done in collaboration with the design agency North Kingdom and their stockholm office. The collaboration included a mentorship as well as support through the use of digital devices. In the process I benefit by creating workshops, co-creation and testing sessions with colleagues. This as well as their experience in creating mobile ar and vr experiences helped me to broaden my perspective and gain expert knowledge as well as feedback.

During the thesis, I will be looking for feedback from:

Niklas Andersson. Teacher at Umeå Institute of Design.

Jakob Nylund. Art Director at North Kingdom.

Dominique Dautheribes. Programmer at North Kingdom.

Kallirroi Pouliadou. UX Designer at Natural Cycles. (UID Alumni)

Philipp Schenk-Mischke. Designer and Artist. (RCA Alumni)

Collaboration Platforms
Project Techniques

This project is being conducted in three primary stages. Each individual section has specific techniques to guide the progress, as well as supporting the quality of the resulting concept.

**RESEARCH**
- Immersion
- Expert talks
- Secondary Research
- Survey
- Interviews
- Rapid Prototyping
- Sketches

**CONCEPTUALISATION**
- Analysis
- User Journey
- Co creation
- Framework

**DEFINITION**
- Usability & Testing
- Story
- Design
- Proposal

Project time schedule

---

Understand    Interpret    Ideate    Construct    Test    Iterate

---

RESEARCH    CONCEPTUALISATION    DEFINITION
Methodologies

The project is rooted in a technology-centred project approach by seeking for opportunities in the sphere of mobile AR technology. To do so, it is utilizing methods of user-centred design approaches with the aim to understand the users, their perspectives and challenges. With the support of interviews with the target audience and experts in the fields as well as workshops for ideation, testing, prototyping and storytelling it was possible to discover possible ways which supports their needs and desires. This way of cooperating with 3rd parties provides feedback throughout the whole process with the goals to decide on direction and improve the projects depth.

Research and Exploration
The goal of the design research phase was to identify and gain a broad understanding of the areas mobile AR technology experiences are dealing with. The research started with visiting installations, exhibitions and museums to experience traditional ways of displaying information in a space. I visited a broad spectrum of talks from experts and listened to aspects of storytelling, spatial design and interior architecture. Both helped me to get familiar with the topic and gather in depth knowledge. As a result I was able to profile my brief intention and get in contact with potential users to figure out their problems and interests. I was gathering personal stories and user insights through an online survey. Further, semi structured interviews helped to define the target audience, their interests as well as problems. Gathering information from books, papers, articles and films helps me to understand aspects I was not able to get in contact in person. The initial research helped to set conducted interviews with experts out of the technological and storytelling field to understand and discuss around areas from different perspectives including their requirements and potentials.

Synthesis
Collected data from the interviews, field and desktop research were translated into actionable insights, guidelines and opportunity areas. This transfer set the directions for the ongoing design process by highlighting potentials and problems. I used these to represent and communicate topics as a whole rather than individual experiences and thoughts.

Ideation
The areas of interest resulting from the research and synthesis phase were used to communicate further on with the target audience and experts. Forming analog prototypes helped to ideate use cases. This creation of common scenarios got transferred into digital prototypes to immerse users into the scenarios which lead to a first proof of concept.

Feedback & Iteration
The co-creation sessions helped to form and decide on a common service approach. This approach got transferred into a first creation of mock up’s. Through conversations with experts and potential users the service got analyzed which helped to improve on the ideas as well as understanding and refining the concept in detail. This phase was not linear and had multiple iterations including a refinement of both, the service as well as the mock up for communication.

Design
Through the definition of the service design user touchpoints got framed. The design phase focused following on creation a variation of explorations for each of the interaction points. These got formed through research, prototyping and user testing. Testing and iteration on this stage on the digital touchpoints helped to create an experience following the intention of the service by understanding the users behaviour. Besides the storytelling got refined by approaching the service in detail and taking the feedback and conversations to account.

Documentation
The project process was presented through visualized scenarios, high-fidelity prototypes and a concept video. A detailed documentation report got handed in as a preparation for the project presentation and Q & A session. During the project a project diary in digital and analog form helped to communicate the concept.
The start of the project the research phase was dealing with analog and digital techniques to gather aspects and create an understanding for challenges and opportunities. In the following I will explain different approach which were used throughout this phase. The research was not aiming to give answer, the intention was to create potential as well as getting aware in designing for the interspace. Towards the end of the research I started to transfer the impressions through prototypes into visual representatives.
The start of the project was set to understand the context of “Augmented Realities” by observing and experiencing analog set ups for a full week. Visiting installations, exhibitions and museums helped me to discover different ways of interacting with a medium. Similar to digital services, these curated events highlighted core aspects of designing within the space and a user which are the following:

1. Getting aware of an object for the first time by seeing, hearing or/and feeling it. This moment of introduction is deciding users interest in following the journey or already skipping it.

2. Gathering the first impression through observation. The gathered information building up expectations and a basic understanding of the target.

3. Interaction with the object through visuals, sounds and/or tactile feedback. The quality of interaction is depending on the target of the object and its environment.

4. Wrapping up. Ending the interaction through a designed scenario or simply by losing the interest and/or not reaching the expectations.

Together with journeys of experiencing common situations out of a fresh perspective* this made me understand the importance of taking the user, the medium as well as the environment into account in this design (reference on page 14).

*On the example of locomotion with a stroller, riding a horse and a dog walk.
1. Taking a ride on a horse to change the perspective of experiencing the forest in a new way.
2. Audio and film sequence reacting on visitors position. This creates a surprising moment.
3. A immersive experience created through a tunnel within analog and digital ways of informing. The focus is increasing.
4. A mixed reality screens the visitor in a pre design scenario. A moment of discovery.
5. An interactive Installation which is creating understanding through making.
6. The quality of interaction is always depending on medium and context.
7. An interactive Installation which invites to discover possible interaction points.
Expert talks

A 3 day visit at Konstfack Research Week was set to get inspired in the fields of spatial design and storytelling. A diverse set of talks let me listen to group discussions, video call presentations as well as reports from artists, designer and researcher (reference on page 16).

1 Emma Rendel talked about ‘Narrative Processes in the Interspace: Investigating the Practice of Graphic Storytelling’. The talk was explaining different building blocks to create a story. She was highlighting that the rhythm of a story is getting set in the early beginning of a story. Peoples norms and perspectives building up the narrative of a story through interpretation of the individual. As an result not only the content provided by a medium creates the journey.

2 Cara Tolmie presented her work of ‘Listening to the Displaced Vocal Body’, where she is questioning the role of an audience in a participatory culture. Due to her history in performance art she reflected scenarios from personal expectations and emotional stages.

3 Jenny Richards, Sarah Browne and Gunilla Lundahl where talking about their publication ‘Building as Body: A handbook for Investigating Your Workplace’. This Conversation was dealing with the power of our bodies and how our physical and emotional behaviour is related to our surroundings by giving architectural examples.
1. Jag är arg.

2. Jag är arg.


Har visats mitt inre liv, först som en självmedveten, reflekterande kommentar, sen genom en direkt inblick i mina tankar, sedan i dialogen och till sist i bilden. (Bilden kan jag visa en av många möjliga nyanser av arghet...)

4. Text about the exhibited art.
Secondary Research

While moving forward in the process by gathering inspiration in this early stage of the process I found myself in the need of more context, history and data. Being not able to find this through face to face conversations lead me to including secondary research into my process.

Mobile AR Technology
One aim was to get to know the broader context of mobile ar technology by exploring the most recent news in the field and finding the latest innovations in my particular area. I took a look into solution areas and saw which approach worked and which one didn’t. This lead to an overview explaining certain purposes by designing with augmented reality (visual reference at page 18). And guidelines of communicating the variety of opportunities in the use of the technology.

Existing application showing often a similar intention. The primary focus of these products can be often sorted by one of the following areas.

1 Real-Time First
In a real-time first experience the user is interacting with 2D or 3D content in real-time. This type of experience is common in commerce app (e.g. Ikea Place App) to preview products for a better understanding and observation. The user may place, manipulate or browse content.

2 Narrative First
In a narrative first experience the user is following a sequence of actions to achieve a goal or destination. This story first experience is common for games by including the device orientation, location and map (e.g. Pokemon Go).

3 Capture First
In a capture first experience the user is capturing a video or image. It is the basis for most of the popular communication platforms (e.g. Instagram). The medium is merging real world media and digital content by tracking and pinning selected objects.

To communicate frameworks in the sphere of mobile AR technology popular content types used within AR should be defined. This landscape helps as well while designing to get an overview of explorations and to indanticate missing areas.

Static
Content that is still and lacks movement and interaction.

Animated
Content that moves on a timeline or follows a sequence.

3D
Content with width, height and depth or data with XYZ coordinates.

Dynamic
Adaptive content that changes with interaction or over time.

Procedural
Content generated automatically or algorithmically.

By defining interactions we have to start by pointing out the different mediums which are included in the example. As earlier mentioned the role of the environment, medium and its content as well as the user are most important. To do so following aspects have to be defined

Location
The design is defined through the location it takes place. This can create a relation to the glass (screen of the phone), an specific object in the space and/or the space it self.

Content Type
As mentioned earlier, a definition of the type of content at each step in a process of an interaction is needed. This can be often a combination of several types.

State of Content
The state of the content is defining rules for the location of the content. This can vary through interactions and changing conditions. A fixed state is describing a relation with a location and defines the position. Locked states points out that the content is only defined through the platform and cannot be changed through a direct interaction. A flexible state on the other hand is free in its position and appearance and can thereby get manipulated through a direct interaction.

This explanation has the aim to give a broad overview of the design landscape of AR technologies. Other aspects are including the implimentation of the user, finding a purpose in the use of the technology as well as implimenting this into scenarios which are following a needs and/or solving a problem for the user. These areas are explored and applied along the process to the design proposal.

This overview is based on Bushra Mahmoods experiences by designing with augmented reality technologies. She is a content creator at Unity and shared her knowledge on Medium.
Content Types
- Static
- Animated
- 3D
- Dynamic
- Procedural

Experience Focus
- Real Time
- Narrative
- Capture

Defining Interactions
- Static
- Fixed
- Glass

State of the content
- Fixed
- Locked
- Flexible

Adding Content
- Auto
- Manual
- Target
- Indicator
- Alert

Other
- Relation
Target Audience

Another main aspect in the secondary research was to grasp micro and macro trends in the society. Due to my social network and participants in this process I was aware of a certain age group called Generation Z. They get defined as people born from the mid 1990s to the early 2000s and show a great interest and use of technologies. By taking a rising technology into the centre of the process meant to me to understand this part of the society better. Generation Z is the first cohort to have Internet technology readily available at a young age. From earliest youth, they have been exposed to the internet, to social networks, and to mobile systems. That context has produced a hypercognitive generation very comfortable with collecting and cross-referencing many sources of information and with integrating virtual and offline experiences.

Extremes and Mainstreams

Designing a solution that will work for everyone means understanding both, extreme users and those squarely in the middle of your target audience.

Talking in person with the common users lead me to understand the extreme by taking a look at the generation forefront and defining their mindset.

Following key aspects of the target audience:

1. Global, liberal and visual-first tribe. Generation Visual is the forefront of emerging trends among Generation Z. They are the ultimate early adaptors powering the visual-first culture of tomorrow.

2. Generation Z have always known life with the internet and understand themselves in the context of this fourth dimension.

3. In the society they are often seen as digital natives with a reputation of being addicted to technology as around half of the 13 to 23 years old are logged around 10 hours online per day. But as they don’t exist apart from the technology we have to talk about digital beings.

4. Interpreting the phone as a digital extension makes this generation hunt for digital solutions. As a result their actions getting triggered by visual input first.

5. This change in the perspectives shows opportunities on the one side and existing problems on the other side as many services are technological not updated.

Industries perspective

To command the digital economy, the industry has to implement this culture with the result of seeing visual as the ultimate currency for the user. With this preference of visual modes of communication and interactions the culture is keen to use social media platforms which offer great touchpoints for services. Being always available through the digital leads to a behaviour which is primarily triggered by visuals or through a visual support. Designing for this mindset means to design product behaviours that complement user’s own behaviours, implicit assumptions, and mental models.
Zeitgeist

‘It’s not an addiction, it’s an extension of themselves. Are you addicted to your right hand?’
Survey

The initial research taught me a basic understanding and broaden up my perspective to the topic. This helped me to form and communicate my interests.

To create a quick understanding of people and their profiles I created an online survey with the goal to understand their current view and behaviour in their daily routines by focussing on the environment as well as the usage of technology. This let me grasp peoples life, dynamics and needs by conducting questions which had to get analyzed. Even if this may not offer the depth and quality as an individual interview it gave me a compelling look into the society and formed a diverse set of opinions. The questionnaire was published through social channels and answered by 67 participants living in 14 countries (mostly europe) with an age range from 12 to 69 years. The ten questions were clustered into three main areas. In the following the results are getting presented:

**Results**

*First, people’s relation to their environment*

**Places people spend their time most often**

Work and home, Forest and Parc, Gym, Car, Plane, Metro, Bar, restaurant, Private areas (friends and family)

**Places people love to spend their time**

Nature (River, Mountain, Sea, Forest), Coffee, Bar, Home

**Peoples function behind their favorite places**

Space out, Reflect, Calm down, Realign, Peaceful,

Cozy, Focus, Harmony, Conversations, Meet friends, Exploring, Play

*Second, people’s behaviour with their mobile phone*

**Favorite apps in use**

Communication & Capturing, Music & Entertainment, Navigation, Organisation, Information

**Screentime**

60% 1,0 hr - 2,5 hr
30% 2,5 hr - 4,0 hr

*Third, people’s experience with their phone use*

**Situations where people most likely use and built up a routine with their phone**

On the go, while commuting, Before bed, relaxing, Bored, alone, need of information

**No phone use**

Social (face to face meet ups), Working

**Moments people have to rely on their phone**

New and unknown area, navigate and commute, capturing moments

**Outcomes**

First, I wanted to get to know patterns and common ways of dealing with our environments. I learned that people spend most of their time in areas due to routines including the home and work environment. In peoples free time they like to use their environment to charge their batteries again. This varies from relaxing with friends in a coffee to space out and discovering the nearby forest. However, seeing particular needs in the use of certain locations helped me to understand the range of opportunities by including and building up on the environment.

Second, I was interested to understand peoples behaviour und relation with their phone. The survey showed me that around 90% of the participants are using their phone one to fours hours per day. The usage varies thereby from communication and capturing features, to entertainment reasons. As well as from getting support in the daily challenges through navigating and organizing.

Last, I gathered participants experiences with their phone to gather scenarios they like and/or dislike. I realised that routines can get created through moments where we easily rely on the device, like in unknown areas or to capture moments. These moments are seen positive, as the device is solving a real need. On the other hand, routines get created by getting easily distracted and brought into a loop of using digital services. This came up in moments where we don’t have to follow a specific purpose like while commuting or before going to bed. The participants refer to a negative relation which leads to self created no phone policies.

The survey sparked my interest in understanding the purpose and opportunities of environments as well as patterns in the use of the phone.
Interviews

Facilitating individual talks were formed to understand the target audience I am designing for. With the support of two different methods I was able to understand the hopes, desires, and aspirations of those I am designing for. The selection of participants were at this stage broad as I took my technological centred project approach to account. Mobile AR technology is not excluding certain groups of the society and as nearly everyone in my environment is using an AR ready mobile phone my aim not to specify the target group at this stage.

Semi structured Interview 1

A Day in A Life
This method allows to identify and document key moments for the user as they’re explaining their current relation to the target. The focus was to gather products, experiences and services the participant is getting in contact with. In a first round the participant was asked to explain the activities from the last day. These got documented by sketching at the same time. In a second round the participant was asked to point out the emotional state for each of these moments which leads to an in depth understanding on my side.

Direct Outcome through mapping

Pain
- Action & Intention
  “I don’t like the Ads and the filtered content, I mean the algorithm”
- No Focus
  “I get easily distracted and end up in my routines”
- Disconnecting
  “Friends started to have a no phone policy at home,...”

Gain
- On the go
  “It is great to use the phone while waiting and commuting”
- Entertainment
  “I like to hang out and read or watch videos”
- Unknown Areas
  “I totally rely on my phone in unknown area”

Indirect Outcome
The function of the mobile phone is depending on the context and always depending on the perspective and interpretation. The feature of connecting people can for example be seen as an act of disconnecting from each other as it is less personal than a face to face conversation. Locations are highlighting this approach as well. The usage and people routines are often depending on their environment. These environmental areas can be clustered in Home, known areas, unknown areas.

Semi structured Interview 2

Activity Mapping
This method is using a city map to support a semi structured interview. The goal was to get to know peoples stories behind their favorite locations by using a city map to point them out. Startin by profiling the participants interest lead the interview to a certain target which got manifested by mapping out locations which stay in a relation to this.

Direct Outcome (Stories behind locations)
Grasp the culture -
“I just recently moved to this city, so it’s difficult to understand the local backgrounds”

Routines -
“I’m not aware of the surrounding i’m in all the time”

Instrument -
“I always take my camera to stay curious”

Profile -
“Each areas tell you special stories”

Hidden Stories -
“A few years ago this was such a unique place”

Discovery -
“I head out to unknown places in the nature to space out”

Indirect Outcome
Places are representing more than they can show us. Using location and their personal stories helped to ideate around location based service solutions.
Rapid Prototyping

**Expert Interviews**
Talking to experts at this early stage helped me to speed up quickly on my understanding of the technological perspective. Taking my key interest and early impressions to account it was helpful to get to know an overview of platforms to design mobile AR experiences. This introduction lead to first exploration rounds by using Unity and xCode.

**Prototyping**
Using prototyping at an early stage in the process was intended to explore the opportunities within the technology (page 24). By recreating open source example i was able to sketch out early concept ideas. Further this showed me the level of usability of the software to quickly build up prototypes.

Unity, a platform used for commercial productions within mobile AR, is offering a 3D space to design with objects, the medium and a variation of conditions. I was choosing this software to start with as it is one of the leading platforms for mobile AR content creation. With the implementation of both, Apple and Google’s AR softwares, it is device independent. Beside the combination of designing with pre designed features plus individual code lines showed me the broad spectrum of opportunities. On the example of Jane Friedhoff’s ‘Portal Painter’ project my aim was to create a first example to test with. Doing this, taught me a lot. I saw my limitations in designing with this platform due to a lack of knowledge. Further, using Unity as a tool to create quick sketches to iterate on is time consuming and requires a certain skill level. At least i realized that the test device has to be taken to consideration. Interacting through the phone camera with the surrounding is depending on the build in technology. As a result the outcome is due to many factors not as expected. A second try out brought me into designing with Xcode. This platform is pointing towards apple devices and used for commercial production as well. Comparing to Unity it is a code-line only platform which is pushing especially 2D content. With the support of a great community i was able to build up first prototypes and iterate on them. As a result of spending several days with developing i had a small set of prototypes. Even if the concept approach was not clear at this point, these frameworks where ready to get filled with content. Early prototyping helped me to get prepared to co-create and communicate with the target audience.

**Sketch**
Not being able to prototype my interests fully through rapid prototyping took me to the decision of creating mockups in Sketch and Photoshop. With the aim to start a conversation i took first impressions from peoples feedback in consideration to create scenarios embedded in images. Using a phone frame as well as printing these in original scale helped me thereby to imitate the vision (page25).
Googles Portal Painter
The first prototype was showcasing 'Portal Painter', an open source mobile AR experience by Jana Friedhoff. The user is creating Portal by swiping on the screen after detecting a plane surface.

How it works:
Users touch gets invisibly painted on a texture. This texture is releasing a camera into another predesigned world. As a result both layers reveal a second world (portal) by interacting with the screen.
Sketches
After experiencing the first prototype as explained I was interested to use the interaction pattern in different scenarios. Creating mockups helped me at this state to communicate opportunities and see potential fields of interest while making. Using visual styles to represent digital products is a great way of showcasing and iterating on ideas.
The conceptualisation started by analysing the research and transferring the most important and interesting aspects (out of my perspective as well as based on insights) into opportunity areas. By ideate through co creation with these information I was able to quickly iterate due to the feedback in form of scenarios and narratives. As a result I used storytelling to communicate my proposal to experts as well as creating a framework to define the intended experience.
Analysis

The Research was using different methods as well as setting me as a designer into different perspectives to the topic of interest. This went from being a facilitator in semi structured interviews to a participant by riding a horse and coding a prototype for the first time. This diversity of activities helped me to understand which areas mobile AR technologies are touching and gave me in depth knowledge about them through experiencing and gathering personal reflections.

Even though this project is serving a technological development i implemented people from the early beginning. After understanding the dimensions of the technology participants were included to add personal stories and reflections as well as forming first opportunity areas.

As a result i am able to pointing out the target audience i am designing for, form opportunity areas and be aware of behavioural patterns in the usage of the phone people like and dis like.

Dimensions by designing in the sphere of mobile AR technology

User - Designing for a Mindset

In a user centered design approach the design is typically serving a persona. The persona or group of personas is representing key characteristics of the target group. This includes often an age group, a journey through the day as well as needs and problems. This attributes are rooted in they relation and behaviour to the service the product is contributing to. Starting with a technology-centred project approach by seeking for opportunities in the sphere of mobile AR is missing key aspects of forming such a persona. The process is not taking a specific use case in consideration and is not excluding certain groups from participating in it. This as well as the fact that this mobile based technology is available for most of the people i got in contact to changed my design approach by pointing towards a specific mindset. Designing for a mindset aligns in many aspects with the methodology of building a persona but is taking into consideration the diversity of our society in relation to mobile devices. As a result designing with a rising technology means for my proposal to design for the early adopters in the society. Key characteristics of this mindset can be seen in analysis of ‘Generation Z’. Even if this audience is showcasing key aspects and ways of interpretation of the behaviour and relation to technology i do not intend to exclude others. Designing for a mindset means to take the individual to account.

Medium - The phone as an Instrument

Seeking for opportunities in the sphere of mobile AR technology is including to gather and analyse peoples current use with technology. In this research it was a key for me to get to understand peoples relation with their digital devices and in particular with their mobile phone. By conducting interviews and a survey i learned that the use of the phone is a contextual state. Users environmental situation is one area to look at to start understanding the relevance of a context. I clustered the surrounding into 3 areas: home, known- and unknown areas.

Home is the most private area where the phone use is following a purely individual interest. Users interest varies from putting the phone off to getting entertainment over hours through videos on social networks. This observation is showcasing the variety of features and moment the device can be used. It is offering opportunities for every moment, if it is for a short notification or a long time interaction by playing a game.

In known areas like the workspace, universities and schools the phone is often serving a different interest. However, in these open environment i got to understand the quality of communication which the phone. Even though the technology is enabling is in easily getting in contact with others, it is seperating us from face to face conversations.

Unknown areas

Another perspective on our relation to the phone is by pointing towards unkown areas, environments we are not used to be and thereby relating to a third medium. My research though me that this is a great example for the phone use as a clear benefit can be seen. Communication and navigation features enable the user to feel safe and in control of the situation.

These examples defined through the context lead me to my design guidelines and my interest to form a product which shows a clear usage and function.
Environment - Location based opportunities

I gathered insights about people’s use of their environment through a survey, semi structured interviews as well as by immersing myself into specific scenarios. From the start of this project it was important for me to include traditional design methods into this technology-centred project approach. Even though Augmented Reality is a common way of describing a technology, its profile can be found in analog setups as well. This approach helped me to gather insights about that medium.

First, focusing on locations as a source of information. Hidden location based background informations. One opportunity are has been found by taking the profile of a location to account. A location is a constant medium which is changing its characteristics and purpose by time and use. Due to that each individual has a different perspective of a certain location. This collection of individual perspectives gather a broad spectrum of information which is yet not discovered.

Second, having the aim to create a relation between technology and user takes to account to look at people’s use of the environment. Most of the use is created through necessary aspects around living and working. More interesting aspects are pointing towards individual needs. The research showed me patterns in the needs of that use. Other than with their daily responsibilities they like to re align and space out by discovering and exploring the unknown. Seen by discovering nature areas like the forest, lakes or similar.

- The project want to deal change peoples perspective to their environment by offering unknown information in their private use. These kind of hidden information can be used in new and known areas.

This map clusters functions to certain locations. Pointing out the interest of the project helped understand the sphere by taking insights and collected scenarios to account.
Co creation number 1

After starting the conceptualisation phase with analysing my research and forming insights into opportunity areas my aim was to involve the target audience into the process. A first session was taking mock ups from the early sketching activity further by adding different environments to the frame. The goal was to get to know peoples aims and expectations in certain situations. The selection of the content goes back to places people frequently visiting. Taking these aspect further had the intention to get to know if the participants are curious about the usage in these situation.

This co-creation session was including 24 participants. In a quick 15 minutes session they sketched their personal perspective on the paper. This was an individual ideation session.

Result

After gathering the probs (page 30) I created a list with the individual interest in context to the print. The list of interest showcased features as well as plain information. Through clustering the insights afterwards following opportunity areas got created (page 31):
- Surface Information
  Information which support the user through analysied in deepth knowledge.
- Audio
  The implimentation of audio support to guide an experience and/or play relevant content
- Modes
  Features targetting the service itself
- Background information
  Historical, Environmnetal and general Information from the past related to the surrounding and object
- Art and gaming
  The content appearance and ways of interacting with it in a small and large scope
- Map and navigation
  Information which are supporting the navigation including public transport and guidance
- Weather
  Current climate information and forecast

Take away

My interest was pointing to location based background information as this aligns with the research outcome. Due to that I saw this exercise as a proof of using mobile AR technology to follow an interest on the users site. Beside that, implemtenting features to control the behaviour of the service (e.g. do not disturb) and taking the design and approach of the product to account helped me to get sensitized to the different aspect a mobile AR experience has to deal with.
<table>
<thead>
<tr>
<th>Surface information</th>
<th>Background information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open hours</td>
<td>Info and year of the buildings</td>
</tr>
<tr>
<td>Current exhibition</td>
<td>What is this location?</td>
</tr>
<tr>
<td>Scoring and time</td>
<td>Why is this special?</td>
</tr>
<tr>
<td>Player information (name, age, position)</td>
<td>Is it special?</td>
</tr>
<tr>
<td>What does this sign mean?</td>
<td>Architecture info</td>
</tr>
<tr>
<td>Bikes</td>
<td>What happened here?</td>
</tr>
<tr>
<td>Available apartments</td>
<td>Did something happened there?</td>
</tr>
<tr>
<td>Bus 7, 9, 24</td>
<td>Info about the species</td>
</tr>
<tr>
<td>What busses goes from here?</td>
<td>Follow player on their view</td>
</tr>
<tr>
<td>Activity spots (Running, fishing, walking, mtb)</td>
<td>History</td>
</tr>
<tr>
<td>Water depth</td>
<td>Who did this?</td>
</tr>
<tr>
<td>Filter function “vintage stores”</td>
<td>Are there any events that regular occur here?</td>
</tr>
<tr>
<td>Translated information</td>
<td>Fun facts</td>
</tr>
<tr>
<td>Extra links for ticket info</td>
<td></td>
</tr>
<tr>
<td>Details about the event</td>
<td></td>
</tr>
<tr>
<td>Translation in vocal and text</td>
<td></td>
</tr>
<tr>
<td>Restaurant reservations</td>
<td></td>
</tr>
<tr>
<td>Bookmarks with notification</td>
<td></td>
</tr>
<tr>
<td>Info above the stadium</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio</th>
<th>Art and gaming</th>
</tr>
</thead>
<tbody>
<tr>
<td>What could you hear when you are at that spot?</td>
<td>Street art on the walls</td>
</tr>
<tr>
<td>Audio tour guide</td>
<td>Animals climbing on the walls</td>
</tr>
<tr>
<td></td>
<td>The street becomes clouds</td>
</tr>
<tr>
<td></td>
<td>People with animal heads</td>
</tr>
<tr>
<td></td>
<td>People with wings</td>
</tr>
<tr>
<td></td>
<td>Flowers growing out of the pavement</td>
</tr>
<tr>
<td></td>
<td>The walls get alive</td>
</tr>
<tr>
<td></td>
<td>Street art magic</td>
</tr>
<tr>
<td></td>
<td>Unknown creatures in the sky</td>
</tr>
<tr>
<td></td>
<td>Fun content for sharing</td>
</tr>
<tr>
<td></td>
<td>Virtual players</td>
</tr>
<tr>
<td></td>
<td>Price runner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modes</th>
<th>Map and navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information</td>
<td>Exit A</td>
</tr>
<tr>
<td>Control my own view (zoom levels)</td>
<td>Exit B</td>
</tr>
<tr>
<td>Do not disturb mode</td>
<td>Time until next stop</td>
</tr>
<tr>
<td>Personalised results</td>
<td>Is it possible to go inside?</td>
</tr>
<tr>
<td></td>
<td>Could you walk through here?</td>
</tr>
<tr>
<td></td>
<td>Direction to cafe, shop, parking</td>
</tr>
<tr>
<td></td>
<td>Where to by good food?</td>
</tr>
<tr>
<td></td>
<td>Where am I?</td>
</tr>
<tr>
<td></td>
<td>Left or right?</td>
</tr>
<tr>
<td></td>
<td>Types of stores</td>
</tr>
<tr>
<td></td>
<td>Street name</td>
</tr>
<tr>
<td></td>
<td>Is this the exit?</td>
</tr>
<tr>
<td></td>
<td>Where do I end up if I got here?</td>
</tr>
<tr>
<td></td>
<td>Can I take a bus from here?</td>
</tr>
<tr>
<td></td>
<td>Where is exit ‘Vasagatan’?</td>
</tr>
<tr>
<td></td>
<td>Directions and signs where you should enter</td>
</tr>
<tr>
<td></td>
<td>Pre planed routes and guides Compass</td>
</tr>
<tr>
<td></td>
<td>Map</td>
</tr>
<tr>
<td></td>
<td>Coordinates</td>
</tr>
<tr>
<td></td>
<td>Closest points</td>
</tr>
<tr>
<td></td>
<td>My friends location</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weather</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate info</td>
<td></td>
</tr>
<tr>
<td>Weather Info</td>
<td></td>
</tr>
<tr>
<td>Weather forecast</td>
<td></td>
</tr>
</tbody>
</table>
Co creation number 2
The second co creation session was following on the outcome of the first session. The intention in this session was to test the potential of interaction with location based background information.

To do so I built a prototype in XCode with the function of sensoring plain areas and through a tab interaction placing preselected content on that space.

Using a Wizard of Oz by introducing this product as a auto generated experience lead the participants directly into the potential of that function.

Result
As a reaction of using this experience to travel in time and explore hidden information the participants provided me with scenarios they're imagined to find a use for the service.

Listed, some examples

“I don’t have to go to school any longer!”
“He loves to explore buildings.”
“I would use it just while waiting.”
“We could plan expeditions on the weekends!”
“It’s like a Pop-Up Museum.”
“Beam me up!”
“Time travel, that’s cool!”
“Experience the city different.”

Take away
Looking back, this exercise was serving two purposes. On the one hand it was feeding the experience with use cases and on the other hand it was proofing the usability in terms of interaction and user behaviour.
Storyboard
The co creation sessions brought up a rough framework of a mobile AR experience. By involving participants into testing sessions personal motivations to us this tool got collected. Forming a first story based on the provided thoughts and feedback was intended to communicate my design proposal further in presentations as well as with experts. Beside it formed a first user journey which helped to understand potential user touchpoints of the service.

Story
1 Let’s see what Charlie and Philipp are doing. What they don’t know yet, soon they will discover this concept!
2 Hello, this is Charlie (15) and Philipp (12). The siblings are enjoying their afternoon at home. While playing and browsing on their phone they’re getting bored of doing the same thing over and over. Charlies Instagram feed is filled with time travel posts which makes her curious what that is about.
3 They discover a new application to travel back time. Charlie suggests to head towards Gamla Stan to explore the features.
4 At Gamla Stan. This is Nina (17) waiting for her friend who is, as always, too late. By studying history in town, her teacher informed her about that new service which allows to travel through time. While waiting, she is taking the opportunity to try it out.
5 Immediately particles start appearing in front of certain buildings. As she is starting to interact with the particles portals are released. Beside photos from the past she reads through information about happenings.
6 Look who is there, the siblings have arrived at the destination. They see a girl standing around using the phone to focus at certain parts of the buildings. ‘Look Charlie, people capture these days everything, haha’, Philipp is saying.
7 Quickly Charlie realises that this girl is using the same service. By opening the App she sees the floating portals Nina created. Getting closer to the spot let them explore the gallery full of history. They quickly start to chat.
8 The siblings are blown away by the fact that there are such interesting stories behind a place they have past by so many times. This moment of excitement is getting shared directly.
9 While sharing the experience the conversation with Nina came to an end. Her friend arrived and they went further to a coffee place. Charlie and Philipp on the other hand decided to go on to explore new unknown aspects about their town.

Outcome
Storyboards are a great method to communicate the design proposal. In addition it was for me the instrument to form a possible user journey.

Expert Feedback
The story was used to communicate the design proposal to experts in the field. My interest at his point was to gain feedback before narrowing down the product by defining and designing the touchpoints to the user. This said the selection of feedback provider is showcasing a broad spectrum of perspective touching the concept. In the following i will introduce and name the key aspects after communicating to the people:

Hannah Petruschat, UX Designer at Wikimedia
I got in contact with Hannah a designer who is working for Wikimedia, owner of Wikipedia. My intention was to share the vision to explore history through the use of mobile AR technology as well as understanding Wikipedias API and community. The feedback confirmed my insights and findings through out the process and introduced me to implement wikipedia as the source for location based information into the system.

Magnus Östergren, Game Designer at North Kingdom
I approached Magnus with the interest to get to know aspects by designing digital games. With his 15+ years in building outstanding game experiences he introduced me to common ways of creating gameloops as well as discussing possible ways of using gamefied interaction in my proposal. Taking the the gamelooop in consideration set my focus on creating easy entry points into the experience as well as motivating the user to collect items through a history feature.

Therese Kristensson, Teacher at Montessori school
Finally I talked to Therese, a teacher for young kids at a Montessori school. I discussed with her methods and approaches of transferring and gaining knowledge in school systems with the intend to see parallels in my approach. Indeed the conversation pointed out body movement as well as exploring information by including the environment is beneficial if it comes to collecting, analysing and synthesising information. Even though I am aware that this proposal is not an educational tool, the provided feedback helped me in proofing the intention of creating a experience which shows a diverse set of benefits for the user.
Framework
The framework is used to give a conclusion of the conceptualization as well as displaying the building block for the definition phase.

Target
The product is designed for a mindset. The goal is to serving the visual first culture by creating a digital experience. The result is a proposal to create in the interspace of physical surrounding and digital devices.

Societal Function
This digital tool enables the user to discover hidden information due to their location. Offering local background information is transferring knowledge and thereby intending to strengthen the relation between the user and their environment by creating awareness.

Digital Function
The mobile phone is enabling the user to build up digital content by interacting with the glass. The location as well as the behaviour of the user are controlling the amount of data which can get released in form of text and video.

Journey
The experience will be explained by showcasing and describing the single phases of a user journey.

1. Onboarding
The product has to provide the user with an overview of features and ways of interacting. Further a first experience will be guided with the support of graphics to create understanding for the user.

2. Discovery
Aim of the product is to enable the user to discover the environment. This can be done immediately through the lense feature and/or with getting prepared and hunting for destination with the support of the map feature. Both solutions indicate the localized content through a visualisation which highlights interaction points to release the content.

3. Collect
To gather and collect the content the user interacts with the glass. Through this behaviour informations are getting released in form of pictures and text.

4. Sharing
After the exploration the user is able to share the moment of excitement by capturing the experience in form of a picture and/or video.

5. Revisiting
Each explored content will be saved through the history feature. The user can revisit the discovery by opening the media in space as well as the text.

A first list including feature areas and assets

Introduction Area
- Information graphics
- On boarding guide

Lense feature (Mode)
- Camera filter
- Data visualisation (3D)
- Interaction feedback

Map feature (Mode)
- Map Integration
- Data visualisation (2D)

Menu
- Alerts and Information
- Capture feature
- Mode change
- History feature

Capture feature
- Button
- Feedback graphic
- Notification

History Feature
- List view
- Detail view
In this final phase I formed a product by defining and designing the touchpoints of the user. Using prototyping to validate and concretize helped to argue in the decision making. The visual heavy representation of the result is still in the making.
Design
Designing for mobile AR experiences focused at this stage to start exploring possible visualisations. The design is taking the framework to account. This structured the design phase into three areas to discover.

Prototyping
With the aim to test the single stages through workshops with participants i started to explore possibilities by taking a look back into my secondary research. Revisiting that helped to create a broad selection of visualisation with different qualities. The prototypes got created in lense studio and released on the phone though the Snapchat platform.

Test 1 - visualising data
Before the user is gathering background information, an abstract visualisation is indicating the amount of data in a map as well as through the lense perspective. The aim is to raise users interest in exploring certain areas through a playful approach.

The visualisation of data was explicit taking care of the content types and their location. Due to that 6 prototypes were formed and representing different types of content as well as different relations to their location.

1 Animated 3D and fixed to the space
2 Static and fixed to the space
3 Procedural and fixed to the glass
4 Procedural and fixed to the space
5 Text and fixed to the space
6 Text and fixed to the screen

The set is representing content type variation with different relations to the medium of space and screen. Much more it is exploring the interest to test and define a visualisation of location based background information. Therefore the prototypes where created, formed and placed fitting to the project interest and introduced to the participants with an introduction of the experience.

My intent was to rate the experience after testing based on two indications.
- visualisation of data
Is the visualisation in the prototype representing data
- Interest to interact
Is the visualisation on the prototype motivating the participant to interact with it.

Outcome
Designing through co creation by testing prototypes worked very well. Participants got to experience each prototype in an individual session with the aim to rate the test after that. First, the rating was due to individual rating interpretations (Rating are an individual expression of a feeling and thereby difficult to compare, at least in my test) not taking into consideration. Second, it was a great setup to get into conversation and grasp the users impressions. They helped to form a clear design which represents and informs about data.

Take Away
The provided feedback got translated into guidelines. These helped to define the design proposal.
- Text information are fixed to the glass.

An area fixed to the glass is informing the user about the current environment. These information are short and describing opportunities to discover if the user is not interacting with the screen. If the user is participating the information will expand due to the released data.

- Particle galaxies
Particles formed to galaxies representing the located data. Each galaxy is showcasing on content area on the location and can thereby vary. Having galaxies gives the user the impression to be able to interact with the visualisation rather than observing it. These galaxies are located fixed to the space as they act as a representative.

Test 2 - Interacting and releasing the data
The goal of the second test was to create a interaction pattern as well as forming a behaviour to release the media information.

To collect the information the user has to participate with the mobile phone. By interacting with the glass information will be released and can get gathered. The interaction should promote the feasibility of the visualisation and its connection to the real world. After interacting with the glass photos and text can get released in the space. The creation of such a type of gallery could get into several relations with the space, objects and/or the medium. The aim is to keep the user interested and in charge of the tool.

Following up on this as well as on the take away of the first test lead me to the creation of prototypes with the primarily function of displaying images. Due to participants feedback i decided to use the space for placing and exploring images only. Fol-
lowing prototypes got tested.

1.1 A photo gallery placing the images on a plain surface after detecting it. The intention was to follow on traditional ways of placing and getting in contact with photos. As this approach can be seen in museum, galleries and at home, the user gets a good understanding of the scenario. The prototype released photos by taping on the phone and placed them in a choreographed order.

1.2 In a second version of this prototype, the user was able to manipulate the position of the content.

2 The second prototype were focusing on the user as the centre of the experience. By placing the photos around the user, a kind of tunnel got created which had the intention to immerse the experience of exploring photos. Having the pictures facing the user increases the visibility and quality of gathering content.

**Outcome**
User provided me not only with feedback regarding the positioning of the content. They shared their opinion about how to interact and release the photo. Building up narrative through immersing the participant in an experience helped at this stage to include aspects which are not shown in detail.

This exercise is a good example to showcase the power of rapid prototyping and testing. Creating an experience the participant can quickly dive into makes it possible to built up narratives by peoples expectations and interest.

**Take away**
- Releasing photos by expanding the particles through a long press interaction with the glass.
- Testing and talking the user saw a variety of interaction models. They included tap, long press, swipe, scale and auto generated interaction to release a photo.
- Placing the pictures in the space where the interaction happened raised the participants interest. By manipulating pre formed examples, I was able to grasp peoples interest as they started to create their preferred solution. Placing the picture where they are released is easy to understand and building up a mental model which follow the intend of the user by interacting with the glass.
Test 1
Visualisation of data
Test 2
Interacting and releasing information

Test 2
Interaction patterns
Test 2
Interaction patterns

Short Tab  | Long Tab  | Double Tab  | Scale  | Swipe  | Auto
Concept proposal
Introducing timeport, a mobile AR experience enabling the user to travel through unknown realities.

Character
The design proposal turns the mobile phone into a tool to travel in time. The design, including interaction pattern, creates an user behaviour which reminds of interacting with a tool rather than a mobile phone. The aspect of discovery is profiling the behaviour and mood through out the experience. This can be seen through the playful approach of visualising data through islands of particles. And through the long tab interaction to release photos and create digital galleries. The movement is playful and the control takes attention.

A Visual reference can be seen at page 48 as well as following the link on page 49 to the concept trailer.

Feature architecture
To create an understanding of the product for the user the features should follow a clear structure. To do so the content is clustered in two layers. The first layer is fixed to the glass and hosting general buttons (representation of feature areas) as well as text. If necessary (regarding the amount of text) the text box gets expanded and able to scroll. The second layer hosts content fixed to the space and creates thereby a playful approach. This layer uses the camera to place visuals onto locations due to the source.

A visual reference can be seen at page 44.

Service journey
The journey is showcasing the different phases by interacting with the service. This includes planing a discovery and getting to know the tool (Before) as well as discovering and collecting the data (While) and sharing and revisiting the experience (After).

A visual reference can be seen at page 43.

System Overview
The tool is connected to a variety of platforms due to their function.

Wikipedia - The location based content is based on Wikipedias API. Including content from an existing platform is benefitial as hosting and creating own content is showcasing a huge risk of safety. Further it is not guaranteed that the community creates an amount of qualitative content which invites to start a exploration. As an result Wikipedia is offering a great setup due to its community which provides timeport with the right amount of content to easily start a discovery.

A visual reference can be seen at page 45.

Experience
The experience can be discovered through lo fi prototypes which served as test tools through out the process. Further, a concept trailer will set the mood and spark an interest in using the tool.

A link to the trailer can be seen at page 49.

Visualisation
Particle islands serve as visual representations and theme hub for the content. The magical and playful movement of the particles is a great way of showcasing hidden data. Design in form of islands indicate the user the ability to interact with the objects. Beside each island is representing one article (location topic) at the location. This solves the issue of having an overload of information on well known places. It is serving the fact if a place has a rich and known history or if the user has to create history.

A visual reference can be seen at both the concept trailer on page 49 and a snapchat lens on page 50.

Conclusion
The overall aim of the project was to great a design proposal which highlights the potential by designing with mobile AR technology. The result is showcasing the power of that platform by building up a experience rooted in the potential of location based data. This serves the interest of strengthen the relation between user and surrounding through the use of a digital device.
User Journey

BEFORE
- User Interest
  - Planning a trip

SREEN
- 2D map with spots to discover

INTERACTION
- 2 finger swipe to change location

EXPECTED CONTENT
- Expected content to discover

WHILE
- Discover content by interaction with the phone
- Data visualisation
- Phone movement
- Reading detail information about the content
- Text visualisation
- Swipe to scroll

AFTER
- Contralring alerts and profile links
- Menu
- Revisiting the discovery and reading in detail
- History list view
- Tab and swipe to scroll and release content
Interaction Architecture

- Interaction with glass
- Interaction with space
- Phone movement

Reference

- History - Legend
- "Saint George and the Dragon"

Target

- Interact with features and text information
- Interact with enabled AR technology
- Control of the direction and proximity

Assets

- Features, Text
- Particles and photos
- Space
Exhibition pieces

To communicate the process and project characteristics a prototype, poster and video got created and presented during UID design talks.
Exhibition stand
I DON'T THINK YOU KNOW WHEN YOU ARE

Explore not only location present, explore location past. Just by creating digital galleries.

Geolocated content in form of magical islands of particles show us to let the user discover the space.

This immersive experience creates unique moments and aims to build a bond with the surroundings.

Exploring the future of embedded media. All services in people’s daily routine.

How might technology reconnect and strengthen people’s relation to their environment?

A tool to travel in time. This lens enables people to explore hidden stories in their surrounding by using their phone.

Timeport
Travel through unknown realities

In collaboration with
Concept Trailer

Click here to see the video
SCAN IT!
Personal Reflection

A degree project in Interaction Design served as platform to proof my learning in intellectual engagement, technical skills and my professionalism as a designer.

In the beginning I aimed to utilise the degree project as a platform to frame a project brief that would allow me to demonstrate my interests as a designer as well as highlighting topics relevant to the design community, industry and our society. This made me focus on mobile AR technology, which I think has huge potential for further development in the not too distant future. With this choice I had the goal to a) become an expert in a certain field which is relevant to the market as well as b) challenging my profile as a designer by entering unknown fields in the design sphere.

Exploring the landscape of interaction design through this master programme studies made me understand a human-centred design approach, facing a broad spectrum of (design-) challenges throughout the course. This showed a big impact on my practice as a designer, who believes in finding solutions by caring for and implementing the needs of the users throughout the whole process, eventually creating proposals that serve all stakeholders.

Thus, through this project and mainly focussing on a technology-centred approach, I was challenged in my behaviour and decision taking as a designer. Even though this project began with the aim to find solutions on a technological level, I was interested to apply human-centred methodologies throughout the journey. This transfer of using common technical skills (including approaches, methods and techniques) through a new perspectives brought up following challenges:

- Focusing on a technology set the focus on exploring the analog and digital example and representations like seen in the research earlier on. This lead to excluding the target audience in the early stages of the project and brought up an uncertain process state when compared to my earlier works. Throughout the whole project process I had to compare and adjust my own understanding of design with this new kind of approach.
- As a result, it was challenging to clearly communicate my design and ideas as intended, which may have led to miscommunications and then confusion on all sides (feedback provider and me as the designer, etc.)
- Finally the human-centred approach in form of ideation and storytelling methods solved this problem and transferred the technological focused findings to a human centred perspective.

Reflecting on these early phases of the project, it had a profound impact on my academic and personal development and the ways in which I work as a designer. The aforementioned points also demonstrate an issue that, in my opinion, will soon be a common struggle in the profession of interaction design, as it is impossible to approach a project with such a binary mindset that divides technology-centred and human centred into two different entities. To solve this and to improve on my personal process, all these aspects need to run alongside throughout the whole project, cross-pol

linating and informing each other to result in a proposal that encompasses and satisfies a broader range of interests.

On the other hand, the design approach from this project can be taken to account by exploring unknown technologies. Rather than focusing and following existing approaches and patterns the proposal is showing the benefit of investing time into the unique set up of a challenge and the unknowns that come with it. Furthermore, it offers solutions to interpret human-centred methods into other fields.

On this occasion, I would like to highlight the power of using analog and digital prototypes to be able to invite the user to participate from the early stages of the process. Gathering insights enables us designers to communicate and participate with an audience. And even if I started with a limited knowledge of coding and developing digital prototypes i found solutions to include others into the process. Having this in mind it is great to see that there is an open-source mentality in the design community.

Being able to share and receive feedback by talking and communicating online opens up endless possibilities and makes every challenge doable. With the experience I gained during the last months I want to share my insights throughout the different mediums depending on the focus:

1 This should include my workspace by sharing new aspects to bring the user back in the centre of the project.
2 This points towards online communities by preparing material for prototyping serving the used platforms.
3 This wants to invite other designer into my thought process and how to deal with the unknown by believing in a mindset and human-centred methodology.

I hope my project highlights some of the potentials of our discipline and highlights the importance of the user. This design wants to serve the interest of the user in a technology dominated field. I hope to bring back the importance by showcasing possibilities throughout the process that create a benefit for both the user and the creator.