Data Donation

An Investigation into the Motives and Motivations
for Donating Personal Data.

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"The details are not the details. These make the Design."

– Charles Eames

Abstract

Significant challenges of our time, such as climate change, require new ideas and technologies to address them together as a society. Data donations can give research and development an insight into our everyday lives in order to use the knowledge for positive and meaningful innovations. Various scandals surrounding data collection have increased public scepticism about data collection. This bachelor thesis deals with the donation of data and how users can be motivated to donate their data for a good cause. Based on the project "Data Donation for Public Benefit", the thesis examines which requirements must be fulfilled in order to increase the motivation to donate data. In this context, the work deals with various psychological theories.

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Introduction and Overview

Acronyms:
City of Zurich: City of ZH
Stiftung Risiko-Dialog: SRD
University of Zurich: UZH
Zurich University of the Arts: ZHdK

The following bachelor thesis is based on the project "Data Donation for Public Benefit" (hereinafter project). The project is managed by the Stiftung Risiko-Dialog and supported by the University of Zurich, the City Development of Zurich, the POSMO Genossenschaft and the Zurich University of the Arts, and is financially supported by the Stiftung Mercator Schweiz. *(Stiftung Risiko-Dialog, 2021)*

The COVID-19 pandemic has shown how essential data can be in managing a crisis situation. Comprehensive data is an indispensable basis for mastering more complex challenges. This realisation was also addressed politically at the federal level by National Councillor Judith Belleiche's Postulate No. 20.3700 submitted to the National Council on 17 June 2020. *(2020)*

The project "Data Donation for Public Benefit" would like to motivate the population to donate their mobility data for public benefit solutions. These data donations are to be made ethically correct and anonymised for non-profit purposes and used by administrations, research institutions and other organisations. Ethically correct data donation in this sense is to be defined in such a way that the data can

be donated voluntarily, with conscious consent, context-specifically and anonymously. The project focuses on analysing how the population can be motivated to donate their personal data for good causes. *(Stiftung Risiko-Dialog, 2021)*

Cities around the world are facing major challenges. In particular, cities have to cope with climate change and increasingly scarce land per inhabitant. A central question facing cities is what mobility and urban spaces should look like in the future. *(Stadt Zürich, 2022)*

In the use case of the project "Data Donation for Public Benefit" with the Zurich Urban Development, the focus is on how mobility data (geotracking data of 500 citizens) can be used to support the mobility planning of the city of Zurich. The non-profit mission is to achieve a climate goal in a cost-effective and efficient way and to improve the quality of life for the population by reducing the volume and exhaust emissions of high-emission traffic. In concrete terms, this involves analysing the traffic flow (Civil Engineering Office) and how it can be optimised. Mobility is also about where traffic hubs can be created in order to optimise public transport and its connection with alternative forms of transport such as scooters, car sharing, city bikes, etc. *(Stiftung Risiko-Dialog, 2021)*

This requires data showing the route and means of transport a person takes to get from A to B. In order to obtain this data, it is almost impossible to avoid collecting precise movement data. In the present case, this is done via an application of the POSMO Genossenschaft for mobile phones. But how do you get people to voluntarily donate movement data that is sensitive under data protection law in times of regular data protection scandals? This is the question I am trying to examine more closely in my bachelor's thesis.

The project described has high relevance for the current complex social problems and the resulting findings could at best be applied to other challenges from our time. Significant challenges of our time, such as climate change, require new ideas and technologies to address them together as a society. Data donations can provide research and development with insights into our everyday lives in order to use the

knowledge for positive and meaningful innovations.

In autumn 2021, I was offered the opportunity to enter into a cooperation partnership with the Stiftung Risiko-Dialog with regard to the project "Data Donation for Public Benefit" and to write my Bachelor's thesis within the framework of this project. I was involved in the project and was able to contribute my knowledge and ideas to the project. However, it turned out that due to the rolling planning, the time schedule and the distribution of roles within the project, it was not possible to take out a sub-area or a sub-task of the project and work on it as a bachelor thesis. The development of the application was largely completed, which is why I could not contribute there.

Therefore, I have decided to deal with data donation in general in my bachelor thesis and to use the example of the project to explore the question of how one could get a broad population to donate data for a (good) cause. Based on the project described, I will try to explain data donation and point out problems and possibilities for improvement in the project. The project as a whole should be an investigation of different levels and not be limited to a user interface. I do not consider a finished app as a goal in my path, but more as an element for communicating my research.

1.
Background and Context

Data Donation

Data donation is the transfer of personal data to a data receiver that uses the data in a specific way and context, with no expectation of receiving anything in return. *(Gomez Ortega et al., 2021)*

Examples of personal data made available through data transfers are activity data from mobile phones and wearable devices, a reflection of mobility patterns, isolation, physical activity, and sleep. As well as traffic data, which shows the location and daily context of these, and weblogs, which reflect personal interests and concerns. *(Gomez Ortega et all., 2021)*

Because there was no established framework for sharing personal data between industry and academic researchers, it was not easy to use industry data for academic research. People generated personal data that reflected their behaviour, but they had no choice about whom they wanted to share it with or what the data was used for. At best, they received benefits in exchange for their data, such as shop loyalty cards that offered discounts. The introduction of the General Data Protection Regulation (GDPR) has drastically changed the rights of

individuals in the EU concerning the personal data collected about them for data sharing and privacy. It allows people affected to obtain data and reuse it for their purposes. This means that it is now possible to share data collected from individuals by the industry for research purposes to benefit the general public. *(Skatova & Goulding, 2019)*

In Switzerland, a similar data protection law should have been implemented in a similar framework this year, but it has been postponed.

2.
Cooperation
Project

Context & Problem: Cooperation Project

For a long time, consumers were willing to share their personal data through various online platforms without being aware of the consequences of doing so. Data scandals and the resulting media attention have raised awareness of how data is collected, used and abused. Consumers are more aware of this and have also started to boycott certain services. *(Wenzel, 2021)*

Cooperation Partner

A central question of my cooperation partner, the Stiftung Risiko-Dialog, is how people can be motivated to make their personal data available for non-profit purposes. The use case concerns the city of Zurich and the focus is on urban planning in relation to mobility. With the mobility platform POSMO and the help of machine learning, we can understand how people move around the city. The collected data can be used as a decision-making basis for urban planning and thus the design of sustainable mobility. *(Stiftung Risiko-Dialog, 2021)*

Using the POSMO Project Application, geotracking data from 500 citizens of the city of Zurich will be collected within one year and experiments will be conducted to investigate what communication is necessary to motivate citizens to donate data. *(Stiftung Risiko-Dialog, 2021)*

Angle

The City of Zurich hopes to use this pilot project and the data collected to answer questions posed by the Zurich Transport Network (ZVV) and the Civil Engineering Office. In addition, the aim is to test what advantages such a tool has compared to others and to what extent it could be used by other city departments in the future. Public transport in the city of Zurich is provided by the ZVV and would like to learn from the data where commuters change transport in the city and whether they change their means of transport. In the city of Zurich, the Civil Engineering Office is responsible for the planning, design and maintenance of public space as well as for future-oriented mobility and traffic planning. It sees the potential above all in the question of traffic flow for cyclists in the city. How smoothly and quickly can they ride through the city and how often do they have to stop?

Cooperative principle of Data Collection, Data Model and Application

In this project, the Genossenschaft POSMO Switzerland (POSMO [**Po**sitive **Mo**bility]) provides the mobile phone application as well as the technical infrastructure for storing and evaluating the data. *(POSMO, 2022)*

The legal form of a cooperative is a person-related form of organisation with an unclosed number of members, which primarily pursues certain economic purposes in joint self-help and can operate a commercial enterprise for this purpose. It is regulated in Art. 828 of the Swiss Code of Obligations (OR). Its legal form offers stability, transparency at every level of the hierarchy and a direct democratic right of co-determination for the members, without taking into account their
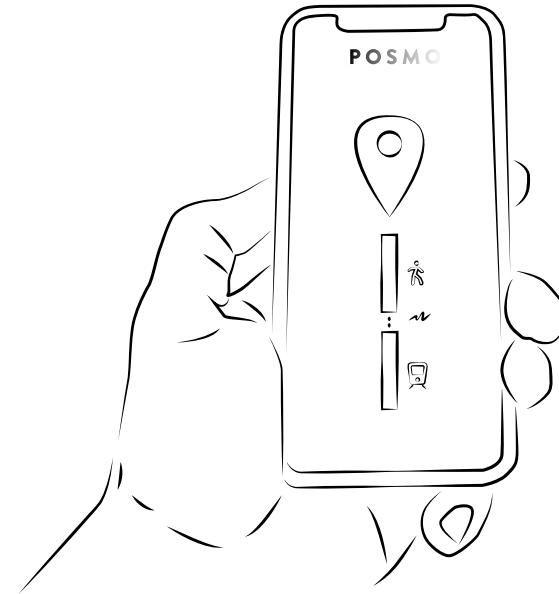
Fig 1. Drawing of the POSMO App

actual participation *(principle of one vote per member; Art. 828 ff. OR)*. Through its legal form, a cooperative offers the protection that it will not be financially exploited or taken over. In the specific case of POSMO, this would mean the takeover of the data. Furthermore, it gives a certain degree of self-determination over the data.

POSMO sees itself as a trustee of mobility data, which is stored anonymously in a pot. All data donors can become cooperative members themselves and thus have a say in which institution can use the collected data and the insights gained from it. Project partners of POSMO do not have access to the raw data at any time and only receive an anonymised data evaluation. *(POSMO, 2022)*

POSMO's apps collect accurate personal mobility data, either from the data donors themselves or through projects with partner organisations. Self-determined, POSMO collects and manages data on the mobility behaviour of the population in order to lay the foundations

for sustainable mobility. The aim of the data pool is to make the data collected in it available to third parties (e.g. research institutions, cities, municipalities, public transport operators) for a fee to solve problems of public interest. The advantage of the described data collection is that the data is available across studies and does not have to be deleted at the end of the project. Furthermore, the cooperative structure should increase trust in the data owner. *(Stiftung Risiko-Dialog, 2021)*

The POSMO One and POSMO Project applications are used for data collection. The applications collect GPS and other sensor data and automatically interpret the user's mobility form in real time, using machine learning among other things. *(Stiftung Risiko-Dialog, 2021)* On the user interface, a movement history of the mobility behaviour can be seen by means of a bar or a map.

The POSMO Project and POSMO one apps are basically the same apps, with the difference that POSMO Project will be used for targeted projects and POSMO one for individuals who do not wish to donate their data to any specific project. The POSMO Project app will be used for the project. For this, users need a code with which they are assigned to a corresponding project.

Existing studies

With the Corona pandemic, society was confronted with multi-layered and complex problems. In order to make appropriate decisions, authorities were dependent on extensive data. The question arose as to how such data could be obtained and, among other things, forms of data donation were investigated. These studies can also be used for the present project to answer the questions of what conditions must be met for people to donate data.

A Sotomo study of 25 May 2020 commissioned by the Federal Office of Public Health (BAG) showed that there is no general scepticism against any further use of the data collected with the COVID app, but that 73% of respondents would be prepared to pass on the personal data in anonymised form to the scientific community, provided it would serve to contain the coronavirus. *(Sotomo, 2020)*

In another preliminary study conducted by Stiftung Risiko-Dialog, the University of Zurich and the Swiss Data Alliance in October 2020, it was investigated whether and to what extent the Swiss population is willing to voluntarily donate their data to fight crises and in what form this data could be used. The representative survey showed that over 60% of respondents are willing to donate data. What data the survey participants are willing to donate for crisis management strongly depends on the topic of the social crisis. In the case of a pandemic, for example, most respondents were willing to donate health data. *(Datenkooperation CH, 2020)*

The results of the two studies strongly suggest that data donation should be individually earmarked and that participants want to be informed about the respective purpose before they disclose certain data (informed consensus). It was also relevant to the participants to whom the data would be forwarded or with whom the data would be stored. The latter study showed that private companies (3%) and NGOs (7.1%) enjoy little trust, whereas public authorities (53.8%) and research institutions (32.6%) are trusted significantly more.

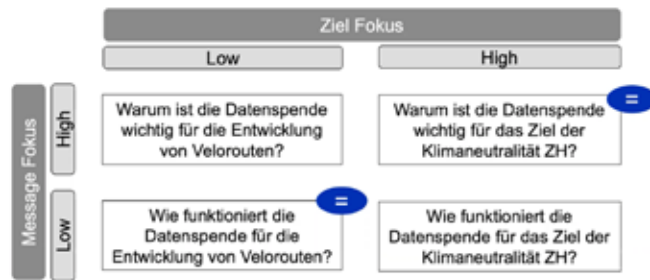**Kommunikationsbeispiele: Posmo & Stadt Zürich (Skizze)**

Fig 2. Printscreens of Claudia's presentation (Wenzel, 2021)

Doctoral Thesis by Claudia Wenzel

As part of the project and the preliminary studies, Claudia Wenzel is writing her doctoral thesis *(How does abstract (why) versus concrete (how) framing of communication influence the mental representation about data collection services and the consequent adoption of those services for a personal versus social benefit?)*. She dealt with the Construal Level Theory, which comes from social psychology and describes the connection between psychological distance and mental abstraction. According to this theory, psychological distance describes the distance of an object on a temporal, spatial, social or hypothetical dimension. Mental abstraction, on the other hand, describes the extent to which a person thinks abstractly or concretely. Psychological distance and mental abstraction influence each other. People think more abstractly about more distant objects. *(Trope & Liberman, 2010)*

As an example, one can mention a burglary at a neighbour's house. The burglary affects one's sense of security significantly more and one can imagine the event much more concretely than if a burglary abroad is reported. *(Hoffmann, 2021)*

Claudia Wenzel now wants to use construal level theory to find out how abstract (why) or concrete (how) communication influences data donation.

Claudia Wenzel has set up two hypotheses and wants to test them with the project. She divides the message focus and the target focus into low and high. This resulted in four different messages, which she focused on the goal of expanding the bicycle routes on the one hand and climate neutrality in the city of Zurich on the other. These two messages were divided with the focus on why this should be implemented and the other on how exactly this works to be able to implement it. She assumes that when there is a high psychological distance, such as climate neutrality, the message describing why it is important to tackle the goal works better. With a message that points to a low psychological distance, i.e. the development of bike routes, it should work better if the focus of the message is on how the data donation works.
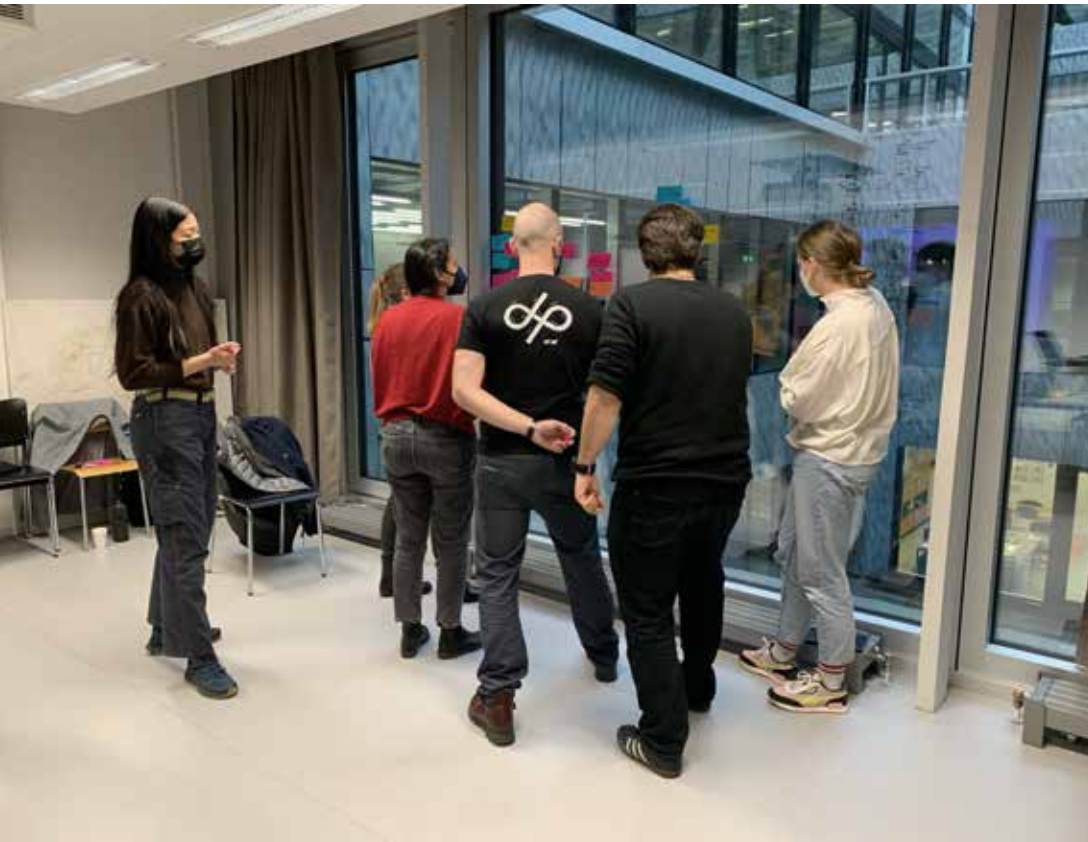
Cooperation with cooperation partner

I entered the project with the hope of working on a specific sub-area as part of my bachelor's thesis. The development of the applications was already far advanced, and the ambitious timetable of the project did not allow me to strive for or work on even minor changes at this stage. If this had been the case, a new development would have been on the agenda, but this would have exceeded the time frame of this work. Unfortunately, the start of the cooperation and the status of the project were so delayed that many things had already been defined in the project, so that my possibilities of influence were very limited. In the project, I therefore saw no scope for the contribution I wanted to make.

In the beginning, a common language had to be found and communication improved. In my opinion, my role in the project was initially misunderstood. The idea of my contribution to the project of the project participants was more in the sense of implementing design solutions for the external appearance of the project (also App-Store) and writing texts.

Over time, I was able to find my role in the interdisciplinary team and realised that I gained more trust through my contributions and proactive communication. The project members were more open and

the willingness for changes I wanted to make to the project increased. In January 2022, the active stakeholders involved (City of ZH, SRD, UZH, ZHdK) came together for a workshop. It was the first time that we all met physically in one place, before that there were some Zoom meetings online. The aim of the workshop was to inform everyone about the status quo of the individual departments and to create the basis for the storyboards for the communication videos together.

Based on the hypothesis developed by Claudia Wenzel, within the framework of the Construal Level Theory, we divided the four areas/messages into fields and noted down the terms and messages that we considered meaningful in each case. We then discussed these and allocated them to the respective field and determined how we wanted to communicate in each case. I was therefore involved in the further development of external communication.

Based on the messages developed, I created four story boards and then the four videos that follow:

Velo How Message: https://vimeo.com/701975965
Velo Why Message: https://vimeo.com/701976179
Climate How Message: https://vimeo.com/701975684
Climate Why Message: https://vimeo.com/701975872
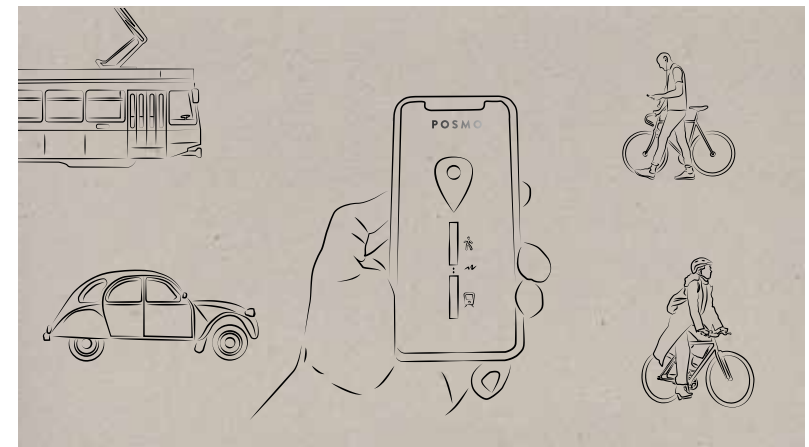
Fig 4. *Scene from the videos*

These videos will then be tested for the appropriate message as part of Claudia Wenzel's doctoral thesis.

Fig 3. *Workshop with some of the participants of the pilot project*

Problems with Implementation

During the project, various problems and challenges emerged that the members of the project team had to face.

In an interdisciplinary team, it is important that the team speaks a common language and is aware that not everyone understands their specialist language in the same way. Clear and regular communication must be ensured here. Also, the actual needs of the project from other disciplines were not always clear. A complicating factor was that, due to Corona, much was done via Zoom meetings, which made personal exchange and team-building more difficult.

In the project, it is important to plan enough time and time reserves. It was not always possible to keep to the schedule, which is why additional time is needed to make up for the delay or to coordinate with studies.

For the applications, the various requirements of the app stores must be taken into account. There were corresponding delays in the publication at the Apple Store, as Apple, for example, had recently implemented new specifications.

The use of two applications with two almost identical names leads to confusion and could be solved better. The dilemma with recording mobility data is battery consumption. If one wants to achieve accurate data, it needs more battery. A high battery consumption is of course frustrating for a user. The dilemma becomes apparent with the so-called geofence, which saves battery and can be set. The geofence is a virtual circle around the user. Tracking only starts when the user leaves the circle. This saves battery power but leads to inaccuracies. Especially in densely populated areas, this can lead to tracking problems.

Interim Conclusion

The topic of data donation is very current and has also become an issue in politics. In order to set up a project on data donation, a well-coordinated interdisciplinary team is needed in which there is an understanding of the different approaches of the various disciplines.

The existing studies show that it is essential for which specific reason the data should be donated and to whom it should be entrusted. The majority of respondents said that they would prefer to make their data available to a public authority or a research institution. In the present project, the data is donated to POSMO, a cooperative under private law. Through its cooperative structure and its appearance, I see the potential for POSMO to gain the corresponding trust of data donors. POSMO offers self-determined data donation by allowing donors to become cooperative members and have a say in how the data is used. It also shows that there are approaches in psychology that can be applied in the communication towards the potential user and in the design of the application in order to motivate the population to donate data. These psychological approaches will be discussed in detail later in this paper.

3.
Research
Field

Related Projects

The first step for my research was to explore which concepts exist for data donation. In doing so, I looked at the following projects. All projects motivate the user to donate sensitive personal data. I was particularly interested in how these projects manage to motivate the user to donate data.
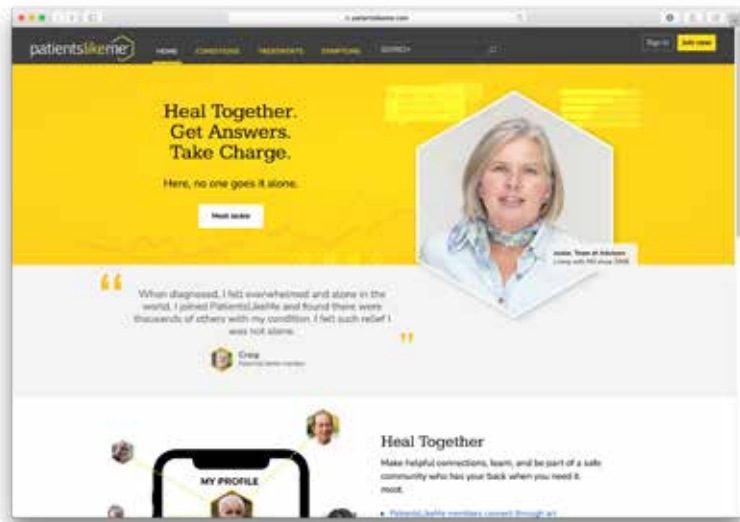
PatientsLikeMe:

Fig 5. Patientslikeme Website (PatientsLikeMe, 2022)

Description:
PatientsLikeMe is a health information-sharing website for patients. They can get detailed information about medicines, supplements, and devices and learn what works. To learn from other patients and get in touch and share. *(PatientsLikeMe, 2020)*

Why have I chosen it?
With a chronic illness, the doctors often leave people alone because the treatment is often over after a few visits, and the patient has to live with this state. Through such a platform, patients can exchange information and hear what has worked for them in their treatment, what has not, and what new findings are. For me, such a platform is an excellent example of Data generated by people to serve a greater purpose.

SwissCovid App:
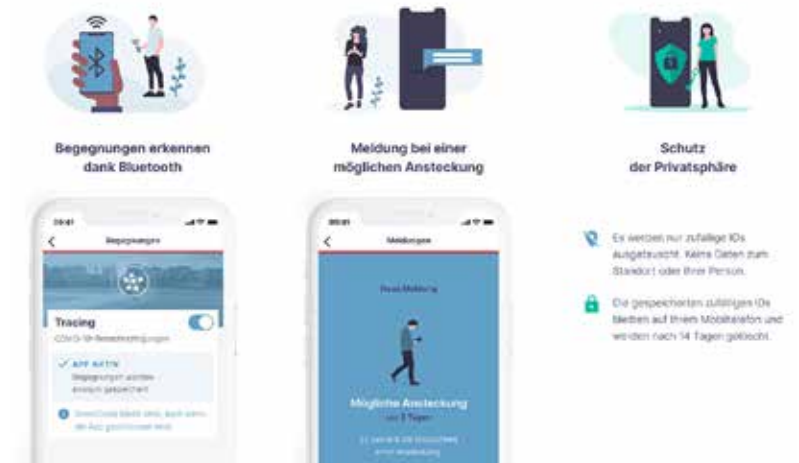
Fig 6. SwissCovid App Screens (BAG, 2021)

Description:
SwissCovid is a Swiss App used for contact tracing to contain the COVID-19 pandemic. The App was developed in collaboration with EPFL and ETH Zurich on behalf of the Swiss government and implemented by the Developer company Ubique. The App is based on voluntariness at every stage and helps with the early detection of a possible infection. *(Wikipedia, 2021)*

Why have I chosen it?
The SwissCovid App is a current, local project and an excellent example of very good data protection. The technology works flawlessly, but unfortunately, the communication with the population inside and outside the App was not optimal, and thus the real success of the App failed to happen. The UX and UX-Writing in the App have room for improvement, which can be attributed to the short duration of the development. I can certainly learn a lot from this project for my BA work. (Note: I investigated the App as part of the Service Design module (Spring Semester 2021), and a new version is out).

Mozilla Rally:

Fig 7. Mozilla Rally Website (Mozilla Rally, 2022)

Description:
Mozilla has launched an opt-in program called Mozilla Rally to voluntarily provide browsing data for research studies to make Big Tech transparent. The data w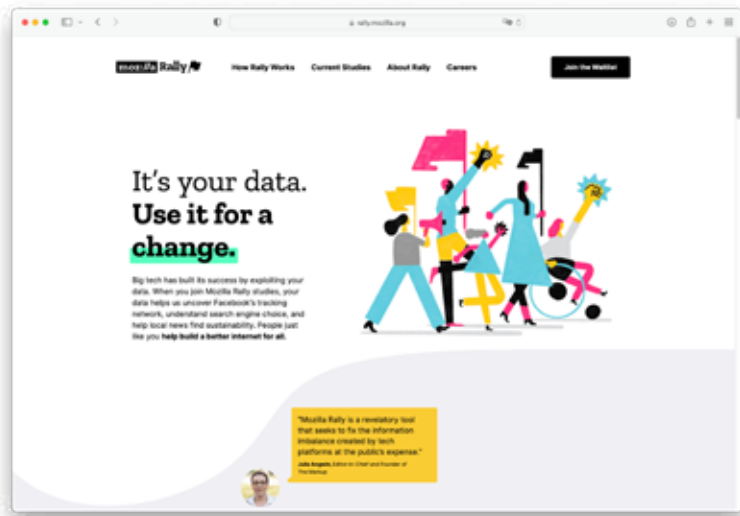ill help address and understand ethical AI, online privacy, algorithmic bias, discrimination, and misinformation to create tools, resources, and policies for a better internet for all. *(Mozilla Rally, 2022)*

Why have I chosen it?
Mozilla is trying to help make the Internet a better place through this project and has set guidelines and goals around the issue of data donation. They create a clear context for which studies users can choose to participate in and where their data may or may not be included. They can have the data deleted unless the study has already been completed and the data used.

DataSkop:

Fig 8. DataSkop Website (DataSkop, 2022)

Description:
Using the data donation platform DataSkop, AlgorithmWatch, in a research association with universities and media educators, analysed YouTube's recommendation system during the German federal election campaign in the summer of 2021 based on data donations via the video platform YouTube users. *(AlgorithmWatch, 2020)*

Why have I chosen it?
The platform allowed users to collect data, read it and visualize it on the users' devices, and then they had the option to donate their data, where the data is sent to the DataSkop server to be analysed. This gave users the opportunity to understand their own data and analyse it for themselves before deciding whether to donate it.

Conclusion & findings:

Various platforms and projects use data donations to uncover the intransparent and challenging situation on the Internet and improve it. I see the difficulties in people's trust in such matters, which is justified because technology alone is not enough to convince people and get them on board.

I find it interesting that with PatientsLikeMe, users were willing to share their most intimate health data, and with the SwissCovid app, many in the population had reservations about data security, although there was no reason for concern there. I see the difference here clearly in the direct benefit for the user, which is not really tangible with the SwissCovid app.

Mozilla Rally and DataSkop are two exciting projects to drive studies on data donation and misuse thanks to data.

How might we Questions

To set a focus in my work, I asked myself two How might we Questions. On the one hand, there is the question of motivation: What makes people donate their data and what does it really take for them to actually donate this data? On the other hand, what could such an app contain for society to have added value with the data?

How might we encourage people to donate their data for a good cause?

How might I design an app that uses personal data to achieve together as a community something for a good cause and where people share in the benefit?

Hypothesis

I derive my hypothesis from my experience with the existing POSMO application. My focus is on the friction points, i.e., the user experiences, that cause the app user not want to use the app. My hypothesis is that the friction points with the user experience are so great that the personal advantage of having a tracking diary and history on a map does not outweigh the subjective disadvantages and thus little data can be collected.

Motivation

Significant challenges of our time, such as climate change, need new ideas and technologies to address them together as a society. Data donation can give research and development an insight into our everyday lives to use the knowledge to drive positive and meaningful innovations.

With my project, I would like to offer the possibility to engage with the topic of data donation. Due to increased data scandals and the new data law of the EU, the topic of data security is becoming more and more present in our everyday lives, which can lead to uncertainties and questions. That is why I think it is essential that there are platforms where you can donate your data in a secure and appropriate setting if you would like to do so.

My cooperation partners' app for their project has an excellent technological and conceptual approach. However, I see great potential in improving the user experience and expanding the app.

Intended Contribution

I see the project on the one hand as a contribution to the environment, where a traffic turnaround can take place, and on the other hand as a contribution to the well-being of the residents. In the city of Zurich, cycling is highly valued by the population, but this is not reflected in the urban planning measures. For example, cycle lanes end abruptly or the signposting is insufficient so that cyclists cannot find the best route. This is why data from the population is needed, which is spe-

cifically included in the planning. In this project, the population has the opportunity to help shape their city.

Interaction design methods can make a significant contribution to data donation, namely in an area of great relevance. Especially since data is donated for free, it is imperative that the user experience is flawless.

Methodology

Preparatory Research:

The aim of the preparatory research is to learn more about the problem. One should take the user's perspective and try out similar products. This is how I studied the above-mentioned in depth.

Desk Research:

For me, desk research was a central starting point. On the one hand, to get a basic knowledge about the world of data, the new laws, the resulting new opportunities and the risks and fears of people. On the other hand, I was able to understand what motivates people to donate and how this can be transferred to data donation.

Group Interviews:

In a group discussion, collective phenomena, processes, and orientations are focused on and conducted very openly. It could be an already existing group that knows each other or a group that has been put together. Groups of two to ten people are ideal to avoid a group falling apart and maintain the possibility of comprehensibility. In order to be able to deal with a topic in-depth, a certain homogeneity in the group can be advantageous because the constellation should lead to exploration. Therefore, the interviewer should behave passively and not steer or intervene too much. *(Müller, 2018)*

Analysing the Existing:

Since my work is based on an existing framework, it makes sense to look at it first. Also, the City of Zurich can address more and more diverse members of the population with its surveys and therefore

their cooperation with the population is an important basis for me.

Service Design Approaches:
Service design is used, among other things, to record and analyse the expectations of customers or users of a company, a particular product or a service. At the same time, service design ensures an optimal design of the service provision. The goal of service design is to increase customer and user satisfaction as well as the efficiency of service provision. In recent years, service design has become an important instrument for the design of services.

In the present project, this approach has great relevance; from the user's point of view, an application has to offer a good user experience so that the motivation to donate data is not destroyed by a poor user experience.

Own Interests and Focus:
I would like to focus the thesis on the psychological aspects and psychological theories, which are my interests. I think it is the basic knowledge to investigate what motivates people to donate data and how motivation can be increased.

4.
Investigation
of the Field

In my research, I have come across various studies and surveys. The city of Zurich has already conducted extensive surveys and workshops, and has set up a participation platform. In this way, a broad population could be addressed, which I would not have been able to achieve on my own.

Self-test POSMO App
Since the start of the pilot project in December 2021, I have been able to test three different versions of the POSMO app and thus experience a first-hand user experience. The three versions did not differ very much, so the first impression remains relevant for me as learning. Although I was informed about what it was about and I knew who was behind the app, I had a rather queasy feeling when I started using the app. A feeling of possible surveillance was and still is very present, maybe also because I know who could see this data and only very few people are testing this app at the moment. It is also very unusual for me to always have the GPS tracking set, as I have in mind what other apps could do with this information to their advantage. The battery consumption was also very high in the first versions, so I only ever

set the tracking for certain routes for testing. I have described my experiences and findings from registration to results in section 6.1.
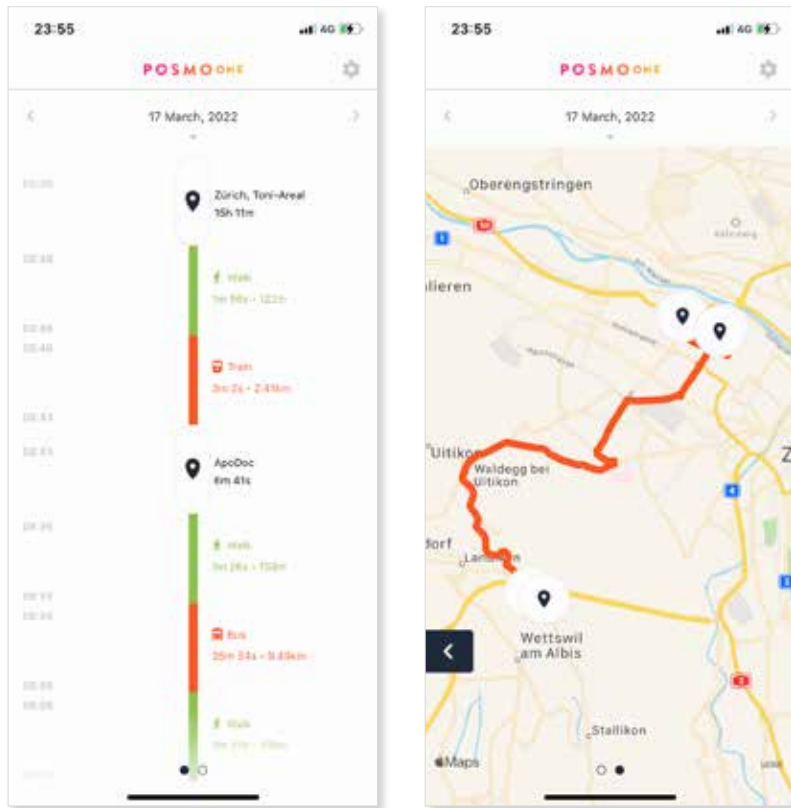

Fig 9. Printscreen POSMO one App in Use (POSMO, 2022)
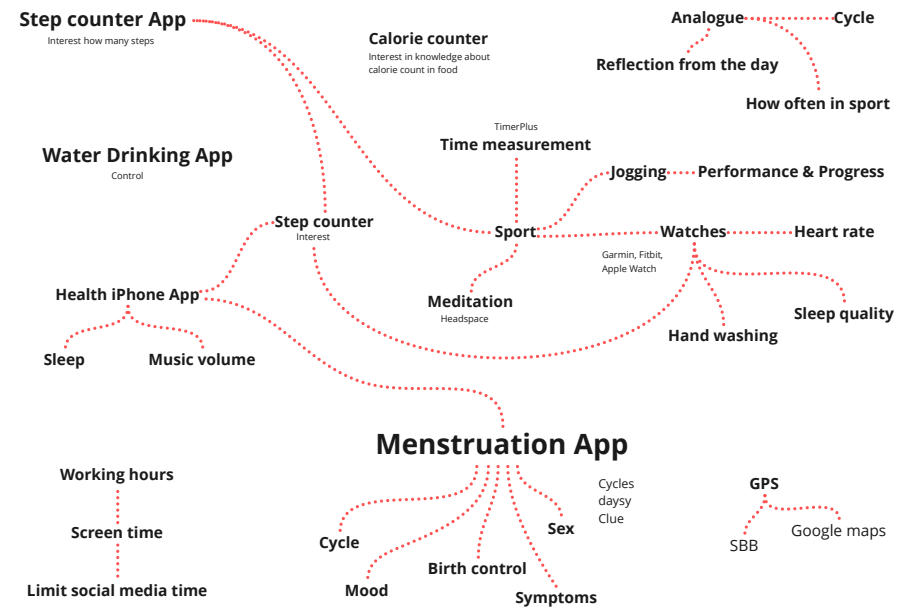
Fig 10. Evaluation of the survey as a mind map

Tracking Survey

Since tracking was mentioned as the main advantage of POSMO, I made a survey about the tracking behaviour in my environment. (Age 21-36) Almost all respondents track themselves in an analogue or digital way (manual data entry vs. automatic tracking). Those who do not track themselves nevertheless look from time to time at figures that the computer or smartphone has recorded independently, for example the number of steps or the screen time per day.

People tracked themselves in sports to measure performance and progress or their menstrual cycle and thus also for contraception. They also tracked their working hours, habits, drinking habits and sleep. Tracking is very personal and the reasons range from interest, curiosity, performance improvement to prevention, control and self-limitation. In the survey, I noticed that the older people were, the more important self-tracking and motivation to improve was to them.

Group Interviews / Discussion

To make my interviews with the population of the city of Zurich more stimulating, I chose group interviews. I threw specific questions into the room to stimulate a discussion. Since I knew the people a little, I wanted to prevent them from giving me answers that they thought I would like to hear and that they could freely introduce topics themselves.

Discussion 1:

There were six people present, aged between 24 and 32. All of them are residents of the city of Zurich and normally get around by bicycle in their daily lives. There was also one person who works part-time as a bicycle courier and thus frequently travels by bicycle in different parts of the city.

At the beginning of the discussion, I felt a great reluctance towards the topic of data donation. The rejection came very quickly and definitely, and only a few voices could be heard that took a more differentiated view and were of the opinion that it depended on what the data was needed for and by whom. So I quickly turned the conversation to the city and the situation with bicycles in traffic. The participants exchanged views on the most dangerous places for cyclists. The most dangerous situations happen in mixed traffic, where all types of vehicles share the road. Very often the problem is that there are cycle paths that simply stop somewhere and then start again somewhere later without making any sense. Likewise, the participants feel that cycle paths that are marked on the road are almost more dangerous, because motorists perceive this as a safe place for cyclists. Therefore, motor vehicles sometimes come very close to cyclists and pay less attention to them. Especially when there are cars or other obstacles in the bike lane. It becomes particularly dangerous when a car door is opened.

Shortly after our conversation, one of the people was hit by a car.

Attempts by the city of Zurich were praised, such as Zollstrasse, which is right next to the tracks in the Gewerbeschule quarter and thus

Fig 11. A view of part of Zollstrasse in Zurich

connects the main station with Langstrasse. It is an important zone as it leads to the only way to cross under the sea of tracks that divide the city. The city has taken the opportunity with the construction of the new buildings next to the tracks to reduce traffic locally and make the situation more friendly for cyclists by allowing motorised traffic in one direction only, but giving cyclists an unobstructed passage.

The scepticism and prejudice towards data donation disappeared when I explained the benefits. Benefits such as Züri Bike, free scooters, discounts for public transport and other monetary benefits (also in the sense of a financial donation, e.g. for Ukraine) proved to be effective in increasing the motivation of participants to donate data.

Discussion 2:

In another interview with two females in Zoom, I asked the participants what and if they tracked anything. They said they measured their cycle and mentioned the SwissCovid app.

A coaching and motivation app was also mentioned to train habits in small steps. Small challenges are suggested and the user is motivated to continue using the app by daily successes and a story that is told in parts. The app also gives small tips on how to change one's behaviour in very small steps. The participants were willing to donate data if the specific use of the data is clearly and understandably stated and not hidden in pages of general terms and conditions. There are reservations especially for market analyses and marketing than for commercial purposes. The willingness to donate data for Non-Profit purposes was greater among the participants.

Conclusion:
The conversations and my small survey have strengthened my assumption that the reason for the data donation should be transparent and clear. Furthermore, data donors should be able to donate data for a specific project or objective. Group interviews I consider an effective method to get people talking in a relaxed environment without them really being aware that they are being interviewed to get their opinions and concerns.

Fig 12. Spot on Europaallee in Zurich

Analysis of the participation process: Participation Mobility and Urban Spaces

In 2021, the City of Zurich sought the participation of the population in the planning of public space and mobility. The aim was to find out the requirements and needs of city residents, businesses and other people who do not live in the city but work, go to school or spend their leisure time there. For this purpose, the city launched the platform "Participate in Zurich's Future". Online and on site, the population could share their ideas and demands and have their say on what Zurich should look like in the future. The city of Zurich offered various opportunities for participation in a digital framework, within a track group, forum events, playful participation, workshops with large companies and a mood barometer. *(Stadt Zürich, 2022)*

Fig 13. View of the railway track near Zurich main station

Public transport, as well as pedestrian and bicycle traffic are the focus of sustainable mobility. The most important demands revealed by the participants are that they want continuous, safe and clearly legible cycle routes without mixed traffic. With sufficient bicycle parking facilities and rental stations throughout the city. For pedestrians, they hope for wide and safe pavements and footpaths with greenery, shade, good lighting and seating. The so-called mobility hubs, where different forms of mobility come together to facilitate their flexible use, are also hoped for. Accompanied by affordable pricing in public transport with reliable offers and fast progress. *(Stadt Zürich, 2022)*

The city as a living space under the sign of climate change requires a reduction of traffic in the neighbourhood, which in turn can offer diverse possibilities of use and appropriation to increase the quality of stay. The demands of the participants are reflected in the desire to cool down the city with more greenery and shade in the streets, with places to sit and relax, as well as sports fields, fitness trails and play opportunities for all age groups without the need to consume. In this context, the desire was expressed for the possibility of appropriating

public space, with contact persons in the city administration and the promotion of commitment. As well as their flexible design for different demands, whereby inclusive design should be taken into account, and space conditions that are fair for society as a whole. *(Stadt Zürich, 2022)*

In the vision of the future, the participants want to have co-decision rights and take responsibility for certain urban spaces. Children and young people could be involved in targeted participation processes and the promotion of citizen-initiated and -responsible projects are desired, so that new decision-making processes can be created for more responsibility of the users for jointly and meaningfully used urban spaces. *(Stadt Zürich, 2022)*

An important foundation for a changing city is technological progress and research. Climate change, globalisation and digitalisation have a direct impact on how urban space and mobility are used and require constant new adaptations. A robust basic structure with continuous monitoring of development dynamics, as well as a step-by-step approach to urban space and mobility help to actively shape the city and secure its functional capabilities even in times of crisis. *(Stadt Zürich, 2022)*

The findings and results are incorporated into the future planning and design of mobility and urban space in the city of Zurich. *(Stadt Zürich, 2022)*

Interim Conclusion

It turns out that participation in projects and the willingness to donate data is greater when one sees a direct benefit. In this specific case, it is about participation and data donation in urban development, especially on cycle paths, which has a direct influence on one's own mobility and even safety. It should not be ignored that for the data donation to show the user a concrete and not abstract benefit, what the data donation can bring about.

Fig 14. A playground and courtyard in Zurich

5.
Research
Theory

Through the cooperation with the project, I came into contact with various stakeholders who have been dealing with the issue of data and data donation for years. I focused my attention on the topic and the connection between psychology and design. In my opinion, the difference lies in the small, perhaps initially inconspicuous details that do not seem important at first.

Prosocial Behaviour

The digitally networked society has given rise to a spectrum of new sharing relationships, also called "digital philanthropy". A process of giving by companies in various types and forms of data for the common good. This can be, for example, crowdfunding to mass digital fundraising and slacktivism. *(Skatova & Goulding, 2019)*

Activities that are undertaken to benefit or protect the welfare of others or society are described as 'prosocial behaviour'. This includes volunteering, helpful interventions, donating blood and giving money
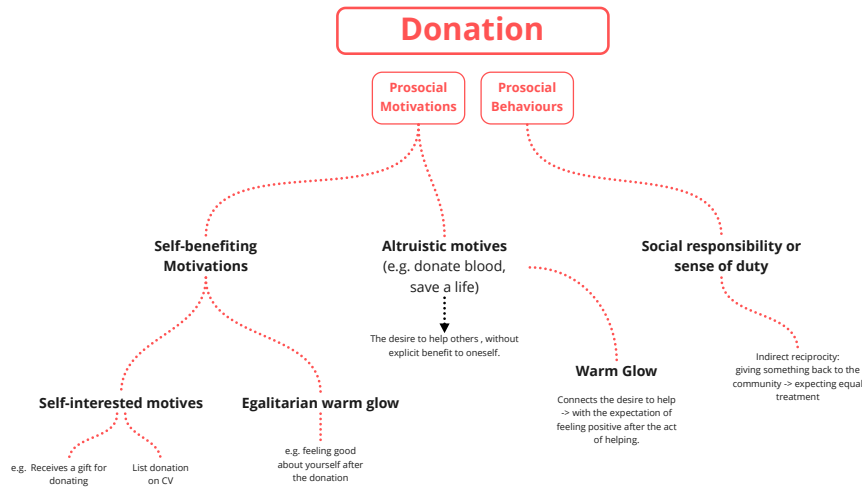
Fig 15. Prosocial Behavoiur Mindmap – sourced from literature

to those in need among other examples. They all involve intentional actions that are intended to help or benefit others, although these behaviours each have their own characteristics. *(Weinstein & Ryan, 2010)*

Research has shown that people – regardless of their financial resources and attitude – are naturally motivated to help others ("I donate blood to help someone") or society ("By donating blood, I contribute to the well-being of society"). On the other hand, motivation is increased by receiving a direct benefit (e.g. a day off work due to blood donation). *(Evans & Ferguson, 2014)*

Suppose ways can be found to encourage and enable individuals to donate their 'digital footprint' to academic research. In that case, personal data donation could become an act of prosocial behaviour in the digital economy, contributing to knowledge in many fields. *(Skatova & Goulding, 2019)*

It is essential to understand that prosocial motivation is multi-layered to understand how different people can be encouraged to engage in prosocial behaviour. Some prosocial behaviours can play an essential role in understanding it. *(Skatova & Goulding, 2019)*

The desire to help others without direct benefit is called altruism. This is often associated with high-cost prosocial behaviours such as donating blood or bone marrow. Research has also identified reluctant altruism, where people donate because no one else will. The behavioural economics literature suggests another form of altruism, 'warm glow,' which emerges as a critical driver for beneficial giving. Here, the desire to help combines with the expectation of feeling optimistic after helping. *(Skatova & Goulding, 2019)*
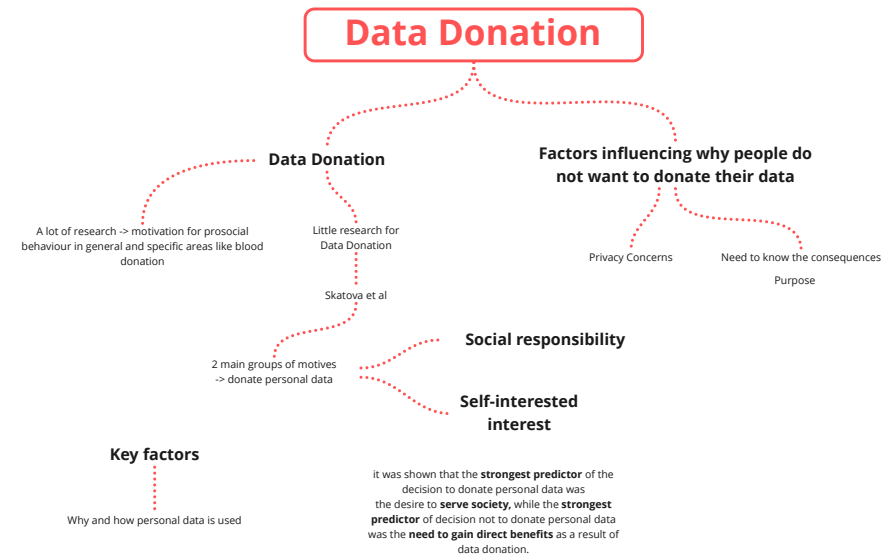
Fig 16. Data Donation Mindmap – sourced from literature

Motivation for Donating Data

Researchers have studied the reasons why people donate their data. The most common motivations include a social obligation, giving back to the community and serving society, and getting a personal benefit from the donation. They also need to understand the consequences of donating data and know what will happen to the data. *(Gomez Ortega et all., 2021)*

Although data donation has excellent benefits, expressing and promoting solidarity and giving individuals the opportunity to participate in scientific research, it also raises some difficulties and challenges. *(Hummel et al., 2019)*

Established donation practices such as money, organ, or blood donation indicate that they can only work if donors expect their willingness to donate not to be exploited and are therefore based on trust. The same is valid for data donation and the expectation that their contributions will be made with adequate precautions to protect them from harm. *(Hummel et al., 2019)*

For this reason, a key challenge is to engage potential data donors, who often have privacy concerns, and provide mechanisms that enable data donors to protect their privacy, have access to information about their personal data, understand how it will be used, and can consent or decline and re-evaluate that decision over time. *(Gomez Ortega et all., 2021)*
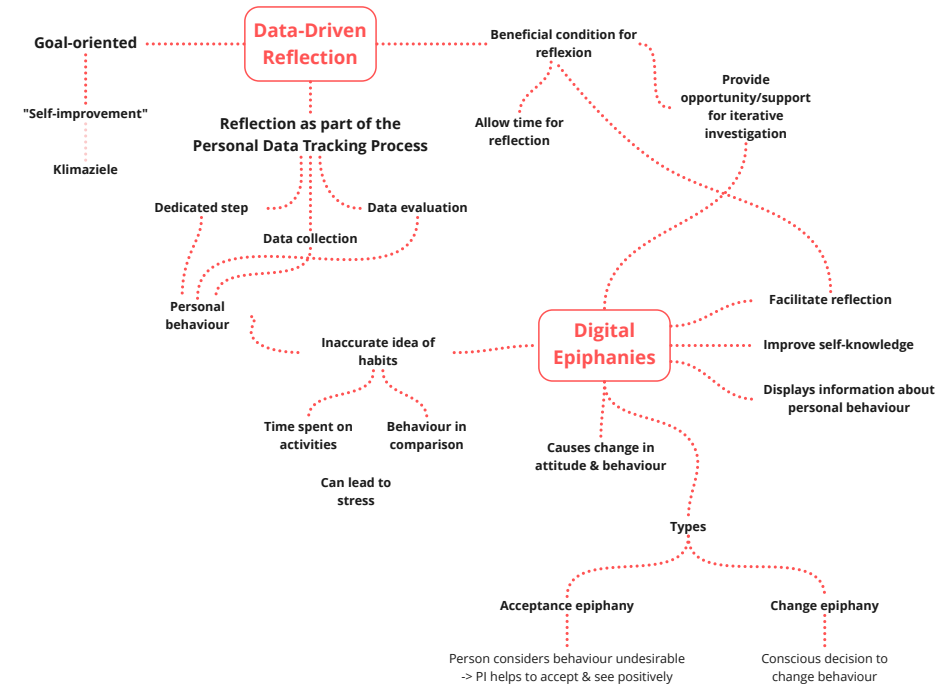

Fig 17. Data-Driven Reflection Mindmap – sourced from literature

Direct Benefit through Reflection

Personal Informatics (PI)-Systems help people collect personally relevant information for the purpose of self-reflection and gaining self-knowledge. With technological advances in sensors and wearable devices, this offers new opportunities and possibilities and a lot of data can be collected. This could be internal states, such as blood sugar levels, or performance metrics, such as the number of steps taken, as well as actions. These tools allow users to self-monitor their behaviour, which ultimately simplifies data collection, management and visualisation. *(Rapp & Cena, 2016)*

The use of a PI-System provides knowledge about behaviour which leads to self-knowledge with a change in perception about personal behaviour. The previously acceptable behaviour can either be addressed as undesirable, which can lead to the person deciding to behave dif-

ferently, or the person perceives a previously undesirable behaviour as acceptable and the person learns to deal with it. *(Cox et al., 2013)*

In their work, Cox et al. describe the conditions under which self-reflection effectively leads to self-knowledge, whereby the information being reflected on should be salient and unambiguous. Reflecting on what one is and does is more likely to lead to insights than finding out why. However, too much self-reflection can be as ineffective in some situations as too little. *(Cox et al., 2013)*

Motivation

It makes sense to deal with people's motivation in a psychological theoretical way; the literature distinguishes between content and process theories of motivation. The former deals with what people want in terms of content, what drives them, and the latter tries to understand how motivation arises, how behaviour takes place and how motivated people make decisions. *(Felser, 2015)*

Content theory explores the question of the driving forces behind human behaviour, using the terms 'motives', 'desires', 'needs' and 'goals'. In the content-theoretical view, motivational behaviour is understood as the interaction of organism and environment. Based on this consideration, an organism with a certain motive structure must act on the suitable environmental condition or also called incentives. When a motive encounters a suitable stimulus, the stimulus is activated. In order for a behaviour to occur, a weak motive needs strong incentives; in the opposite case, weak incentives are already sufficient for strong motives. *(Felser, 2015)*

This perspective builds on the human capacity that mentally anticipates a non-existent reward and acts on that basis. *(Felser, 2015)*

Certain process-theoretical concepts of motivation understand motivation as a 'force' that energises the organism, others see the motivating forces behind a behaviour in terms of the value that the consequences of the behaviour have for the person and the expectation of success with the behaviour. Thus, the person calculates whether the behaviour promises the hoped-for success (expectation) and how much the success is worth to him (value) and acts accordingly. If both factors are highly pronounced, motivation is strong. *(Felser, 2015)*

In the book Motivation and Commerce, Felser *(2015, p. 198)* cites the following quote on the definition of a motive:

> *"A motive represents an evaluative bias '... that gives a meaning – an enticing or threatening character – to a stimulus event in order to initiate a motivational process beginning with goal formation.*
>
> *(The emerging) ... Motivation includes both automatic and conscious processes that are based on a change from predominant to anticipated emotional state. Motivation describes the totality of all internal and external conditioning factors that are responsible for the goal generation, energisation, selective, goal-related information processing and steering (control) of experience and behaviour'*
> *(Schmalt & Sokolowski, 2004)."*

In order to achieve certain target states in the organism, motives serve a regulatory function that helps to reduce tension and deficits. In such regulatory functions, motives take over, for example, for our attention and evaluation of objects and make us particularly attentive to stimuli that fit the respective motives and are thus evaluated more positively. This can, for example, have an influence on our choice behaviour when shopping hungrily. However, the same increase in goals and needs can also be aimed at devaluing an unrelated object. Thus, the customer is particularly attentive to the food in a shop, but they probably spend less in the other product areas than if they had not been hungry. *(Felser, 2015)*

Implementation Intentions

In their paper, Gollwitzer and Sheeran discuss the strategy of creating if-then plans or implementation intentions and conclude that when applied to consumer decisions and their implementation, they can

benefit greatly. Such plans can improve the likelihood of putting a consumer decision into practice. By helping people to start taking action, by protecting goal progress from interruptions, and by enabling them to disengage early from ineffective pursuits and retain the capacity for further self-regulation. *(Gollwitzer & Sheeran, 2009)*

Behind the strategy of forming implementation intentions is the psychological principle, which is to delegate control to situational cues and thus reduce the burden of conscious, effortful control on a person. People are thus better able to decide what they want to do and can do. *(Gollwitzer & Sheeran, 2009)*

Psychological Distance

The theory of planned behaviour assumes that a certain behaviour of a person is all the more likely, the greater the subjective conviction exists that the behaviour is under control. Control is understood to mean that the person in question has the subjective belief that he or she has sufficient knowledge, skills, abilities or resources at his or her disposal to realise the specific behaviour. *(Six, 2019)*

People experience themselves only in the here and now, but often plan, consider, evaluate situations that are distant in time or space and relate to the experience of others and are hypothetical rather than real. So we mentally traverse temporal, spatial and social distance as well as hypotheticality. We go beyond the present and consider psychologically distant objects, these are distant from us if it is temporally, i.e. in the future or past, or spatially distant. Or relates to the experiences of others and the probability is small that it will occur. *(Liberman & Trope, 2008)*

Even though it is impossible to directly experience reality in the past, future or other places and people, the memories, plans, predictions, hopes and counterfactual alternatives influence our feelings and guide our decisions and actions. How can we understand others' perspectives, plan for the future and imagine hypothetical alternatives to reality? *(Trope & Liberman, 2010)*

The Construal Level Theory (CLT) described above *(cf. 2.6.)* assumes that we form abstract mental constructions of distal objects and can thus remember the past and speculate what might have been, predict the future and imagine other people's reactions. *(Trope & Liberman, 2010)* The theory describes the relationship between psychological distance and mental abstraction, where high psychological distance is associated with high levels of mental abstraction and vice versa. *(McDonald et al., 2015)*

Psychological distance is a construct that refers to the extent to which the self is distant from an object on a temporal, spatial, social or hypothetical dimension. *(McDonald et al., 2015)* These could refer to the reference to probability of occurrence, in terms of time, geographical space or social distance, and also shape processes of information processing, evaluation and decision-making. *(Felser, 2015)*

Using the example of a holiday, Felser *(2015)* shows that if the holiday only takes place in the distant future or there is a low probability that it will take place, it is psychologically a long way off. In this context, people tend to think about it in abstract terms and generally associate it with fun and relaxation rather than with the details of planning. Which addresses the distance facets of time and probability. Things and events are mentally removed from their contexts with increasing psychological distance and unimportant details are faded out. The psychologically closer an event is, the more concretely one can imagine the event and actions with regard to it. Mental abstraction thus decreases with shorter psychological distance. *(Felser, 2015)*

The spatial proximity reduces the psychological distance and thus the mental abstraction. Zurich, for example, has a lower abstraction because the city is where one lives or works or because one consumes other goods in the city. The mental distance can also be imagined like a picture that one looks at from a distance. The closer the picture is, the more details are visible. This is how it is with the human imagination. It therefore makes sense when presenting the advantage for data donation if one can present the advantage to the potential donor in such a way that this psychological distance is small. Thus, advertising the data donation has more effect if, for example, one can show a resident

of the city of Zurich that the bicycle lanes in front of his doorstep will improve as a result of the data donation, or that the reduction of CO_2 emissions will lead to little higher temperatures in the city.

Reactance

Psychological reactance is the motivation to restore restricted or removed freedoms. Reactance is usually triggered by psychological pressure (e.g. coercion, threats, emotional confrontation) or restriction of freedom (e.g. bans, censorship). Reactance in the actual sense is not the triggered behaviour, but the underlying motivation or attitude. The reaction is usually based on the temptation of the forbidden. *(Raab et al., 2010)*

Nordgren & Schonthal describe in their book *(2022)* how one can move from forced insight to self-insight by means of self-conviction in order to be able to avoid reactance. For this, they show three rules for self-persuasion:

• make commitments in Public
• make it meaningful
• getting people to say yes to small request

Conclusion Transition to the Next Chapter

After studying the literature, study reports and talking to residents of the city of Zurich, I have come to the conclusion that the potential data donors need to see a clear, specific benefit before they consider the possibility of donating their data. This could be for a specific project or study where the users are willing to sponsor or support it.

I also believe that they must have either a Specific Benefit with a clear benefit to them or a Benefit in Prospect with a benefit to themselves or society to justify the effort and sharing of personal data.
I consider it most sensible if the data donor and the data user, within a project, would develop a reciprocal relationship.

6.
Project Development

At the beginning of my Bachelor's thesis, I explained the problem of data donation and my involvement in my cooperation partner's project *(section 1 and 2)*. It showed me one way of approaching such a project in an interdisciplinary way. There are interesting approaches that should be maintained and from which I could learn a lot. In the following, I looked at platforms for data donation and possible research methods *(number 3)*, with my own research *(section 4)*. After the theoretical discussion *(section 5)*, especially of psychological theories and principles, I would like to examine in section 6.1. where improvements could be made to the POSMO application, taking into account the knowledge gained. In section 6.2, I will present a concept of what such an application for data donation could look like, using the knowledge I have acquired.
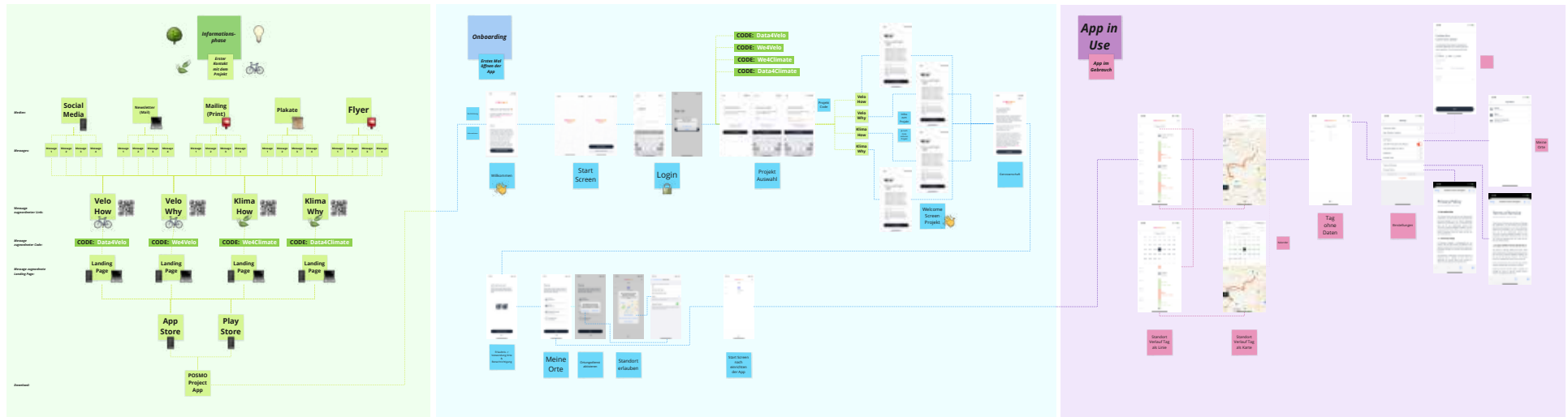
Analysis User Journey Project

Fig 18. *Current State Journey Map – Pilot Project*

In order to understand and record the process of the whole project, I created a user journey. In the following, I analyse the individual steps in detail and try to point out suggestions for improvement based on the theory developed above.
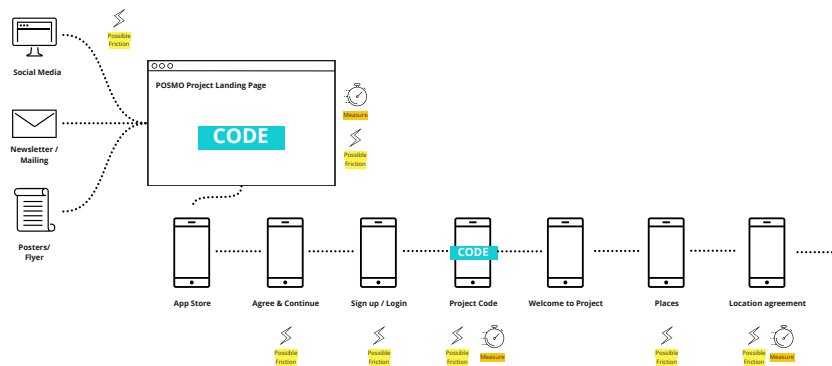

Fig 19. *Shortened Journey Map with friction points*

I also marked (Fig 19) some possible friction points on another chart, which could lead to a jump in the process. These are important to identify in order to be able to remedy or circumvent them through countermeasures.
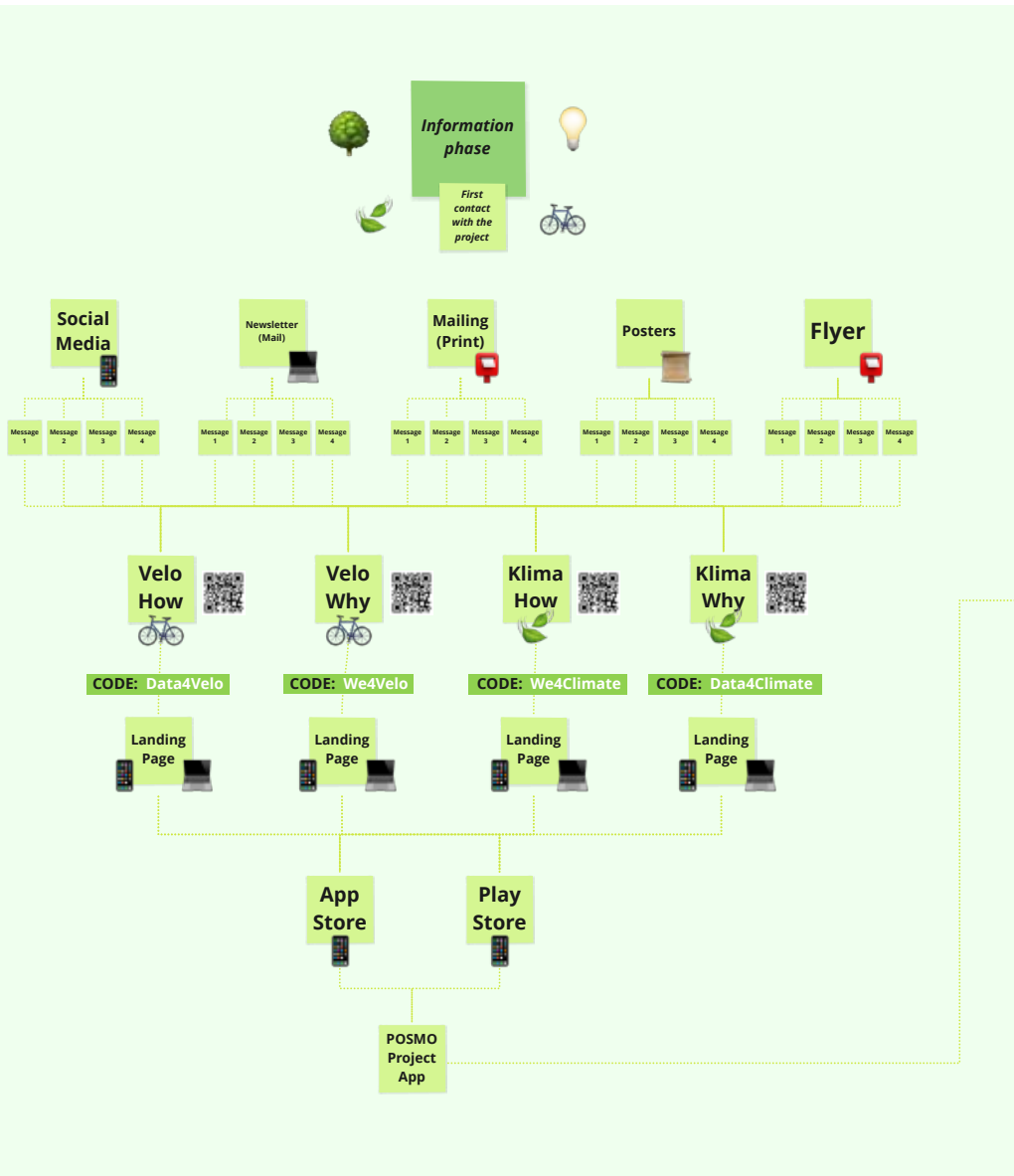
Fig 20. *Diagram of the information phase*

Information phase:
The project aims to reach out to the population through media such as social media, newsletters (mail & print), posters and flyers. For each type of media, there are four different types of messages and content, which are based on the construal level theory that we defined at the workshop. Each message has a different link, which leads to a landing page corresponding to the message. On the landing page, there is more detailed information about the project and about the app for data donation, and a video is used to communicate with the respective message.

A predefined access code should be present next to a QR code and link that leads to the App Store or Play Store where the user can download the app. The access code is used to identify the project in the app. In the case of the pilot project, it also serves to measure which message variant was more successful and which primarily generates more downloads. The first measurement already takes place when the landing page is visited.

My analysis:
I see the biggest difficulties in this phase in the code, which the user has to remember until after login. So that the code occurs a few times beforehand, the codes also appear as a claim in the video.

I see the simplest solution in copying and automatic filling. According to the developers of this app, this is not possible, so the "picture superiority effect" could come into play here.

The picture superiority effect states that photographs and graphic representations are better remembered than words. *(Wikipedia, 2021)*
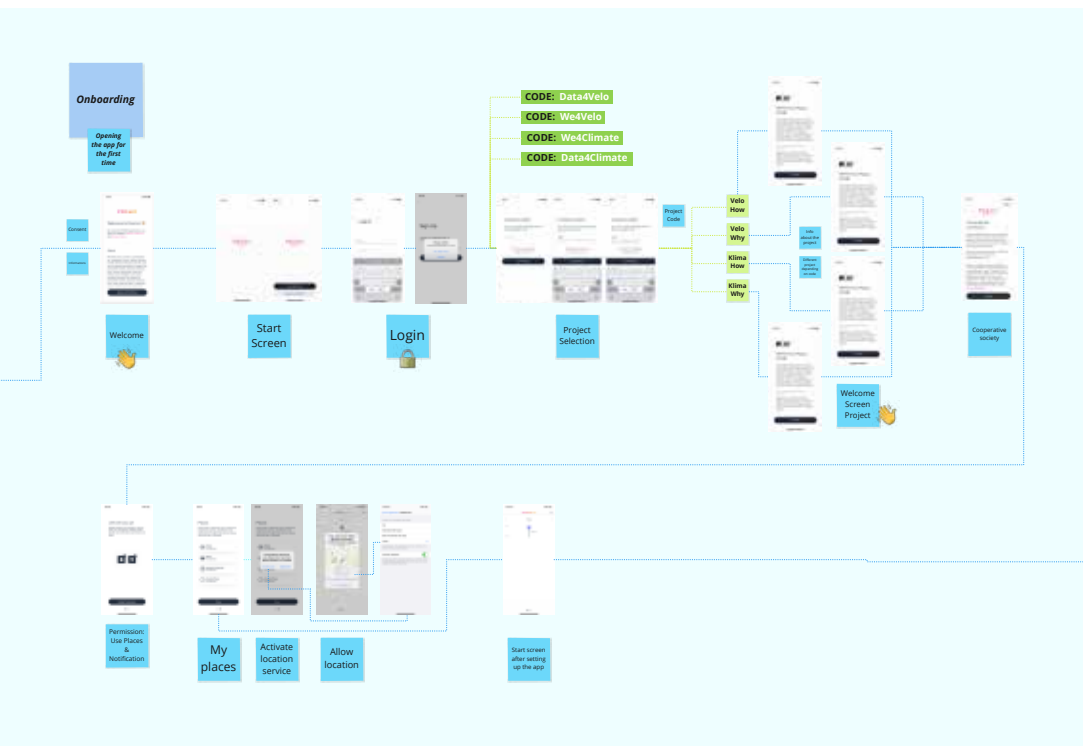
Fig 21. *Diagram of the Onboarding*

The Onboarding:

After the user has downloaded the app, a welcome screen appears with information about POSMO and asks for agreement to the conditions. Then the start screen appears, where you are asked whether you are new to POSMO or already use POSMO. If you are new, the Sign Up Screen appears, where the app asks if this is the correct email address and if you want to sign up.

When you confirm, you will be taken to the next screen, which asks you to enter the project code if you are also a project participant. If not, you should download the POSMO One app. If you have remembered the code from the landing page or the developers have found a solution to insert it automatically, you will be taken to the project welcome

screen. There you get information about the project, and the next screen explains that you are now also joining the POSMO Commons. This means that the data will be added to the POSMO Commons data pool, which will also be made accessible to other projects.

It then briefly introduces that permission to use the app is required for the use of the place and also the notification. This then pops up on the next screen Places, which asks you to enter your most important voluntary places. On the grounds that you help understand the movement better. iOs now wants confirmation to always enable location services, otherwise the app will not work.

After all this, you land on the app's home screen, which contains the day, time and where you are as a time strip.

My analysis:
The first thing the user sees in the app is a screen for agreeing to the Terms of Service and Privacy Policy. This is immediately followed by the login screen. There is no information about what the application is supposed to be good for and why one should need the application.

In my opinion, there should first be a few comprehensible explanations, embellished with graphics or pictures, as to why one should decide to donate data and how the data will be used. After this overview, in my opinion, one is more willing to go through the registration process and is not too firmly deterred by the legal small print.

Nordgren & Schonthal suggest three approaches to reducing emotional friction in their book (2022):

- Allowing a trial or freebie before committing to something;
- The user is given the opportunity to reverse his or her decisions at any time;
- and the ability to contact a service to help users feel comfortable and confident in their decision. *(Nordgren & Schonthal, 2022)*

This could be implemented in such a way that a corresponding explanatory video is created of the user interface and the functions. The possibility to delete the data and the application at any time is already possible with POSMO. Furthermore, a live chat and a hotline could provide the user with further information and help. This is especially important for older generations who are not as technically proficient and would be happy to have a hotline. The transaction data would not be as comprehensive if only younger and technically skilled generations used the application.
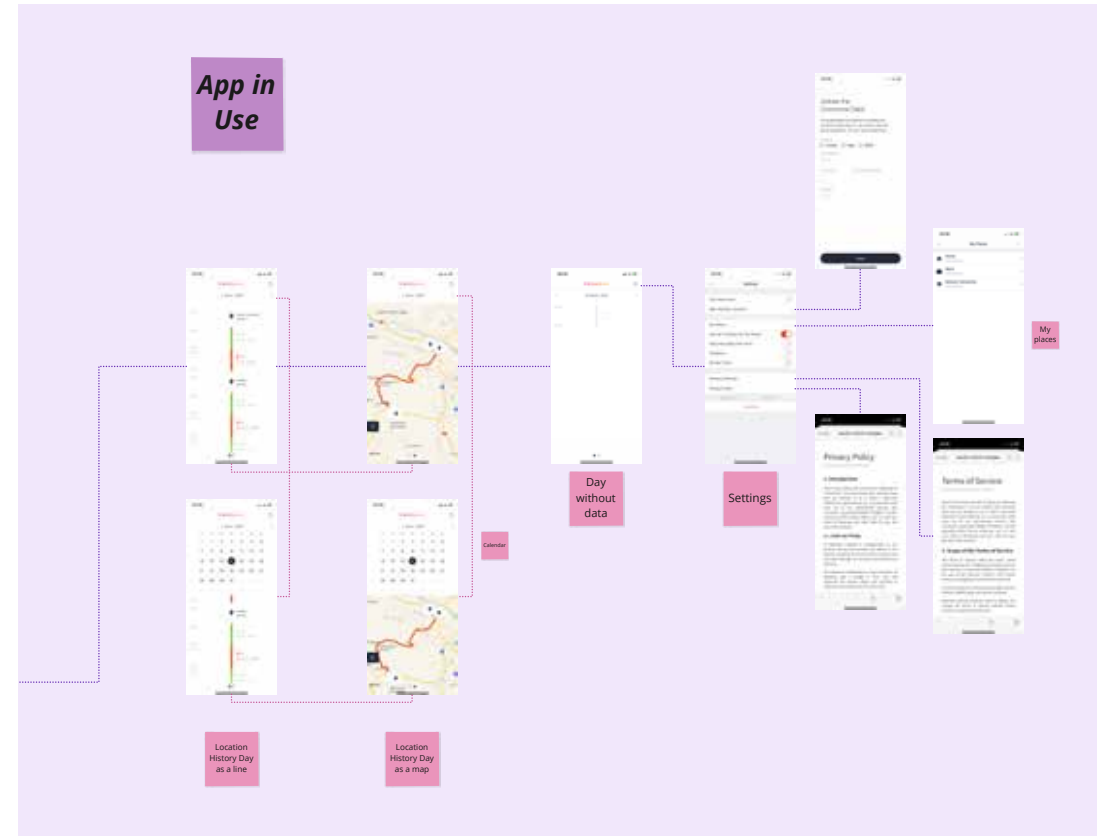
Fig 22. *Diagram of the App in use*

App in Use:
The app in use shows the user his or her movement per day in summary form. Starting point and end point, with the individual sections depending on the means of transport. Either as a timeline or as a marker on a map. As this screenshot is a mixture of POSMO Project and POSMO One, it has the option of switching the commons data on and off in the settings. You can also voluntarily enter your demographic data and locations. You also have the option of not being tracked and to read the Terms of Service and Privacy Policy again.

My analysis:

In my opinion, the data could be presented in a more exciting way. It is difficult to see the benefit to the user that the application offers. The data donation could be made more attractive if the user could get more benefit from the application.

Fig 23. *Start Screen proposal*

Prototype

Concept:

After studying the literature, study reports and talking to residents of Zurich, I have come to the conclusion that potential data donors need to see a clear, specific benefit before considering the possibility of donating their data. This could be for a specific project or specific study where users are willing to promote or support it.

Likewise, I believe that they must have either a specific benefit with a clear benefit to them or a benefit with a prospect of benefit to themselves or society to justify the effort and sharing of personal data.

I consider it most useful if a reciprocal relationship were to develop between the data donor and the data user within a project.

Fig 24. Wireframes – Home Screen proposals

Prototype:

Based on the knowledge gained from my bachelor's thesis, I would like to use an app to explore how to apply and present the knowledge gained. For example, I would make the onboarding as hurdle-free and understandable as possible and provide simple step-by-step explanations. In particular, I would prepare the user for the GPS tracking prompt so that this prompt does not cause the user to jump off. Further, the preparation of the data would need to be improved so that the user can get a better benefit from using the application. I would design the application in a closed system for a specific project. In this case, the technical core of the development would also be applicable to other projects, which would minimise the effort for a project. I would design the application in cooperation with the city for a user case. In the data protection settings, the user should be able to specifically set which data he or she wants to share with the platform.

The project as a whole should be an investigation of different levels and not be limited to a user interface. I don't see this as a goal in my path, but more as an element to communicate my research.

The aim is not to create a finished application. This would go beyond the scope of this bachelor thesis. The technical design in the background would also be more the strength and task of computer science. In the sense of interdisciplinary cooperation, as is the rule in everyday professional life, I limit myself to the conceptual implementation. The aim is to create a concept with visualisations from the theories that have been developed, where the theory is translated into a concrete concept based on the objective.

The concept of the project in the app

Studies on donation practices have shown that it only works if the donor can expect not to be taken advantage of. Donating is thus based on trust. Trust can take place through the representation and involvement of the cooperation partner, in this case the City of Zurich. The studies mentioned in the introduction *(section 2.5)* just showed that the state – also in the Corona pandemic – enjoys great trust. With the legal form of the cooperative as the data owner, trust can be promoted through co-determination of the use of the data.

The project should have the effect of establishing a reciprocal relationship between the city and the data donor, and the population should receive something back in the sense of a sub-project. One such sub-project could be better or new cycle paths. Many smaller projects, which are distributed throughout the city, can establish a connection between data donation and the result achieved. This would be motivating and the population would see that their data donation actually makes a difference. The psychological distance can thus be greatly shortened.

However, caution is required when shortening the psychological distance. This is shown by the following research results on climate change:

Extreme weather events are associated with anthropogenic climate change and despite these events, many people still see it as a distant - i.e. mentally very abstract - phenomenon that does not seem relevant to them personally in their locality and today. These "psychologically distant" perceptions reduce the likelihood of coming to terms with the reality and impacts of climate change, which reduces support for mitigation measures and adaptive behaviour. *(McDonald et al., 2015)*

Research by McDonald et al. *(2015)* and other researchers has shown that approaches that rely on reducing psychological distance to motivate action can trigger a form of defensiveness. While personal experience of weather and climate change events can promote concern and action, the optimal interpretation of psychological distance is based on the values, beliefs and norms of the audience and the need to avoid, as far as possible, the stimulated fear and resulting avoidant emotional responses. *(McDonald et al., 2015)*

Based on these findings, it makes sense to include personal experiences and insights of the population of the city of Zurich in the application in order to avoid a defensive attitude and to motivate them to act. On the one hand, it has been shown that cycling has a high status in the city of Zurich, but this is not reflected in the traffic image. In my conversations with cyclists in the city, some strong emotions have emerged regarding safety and the space given to bicycles in road traffic. There is a great willingness to stand up and fight against these grievances.

This willingness is also noticeable in the monthly Critical Mass in the city, with the number of participants, since its 30-year existence, noticeably increasing. At the Critical Mass, hundreds to thousands of people meet for a joint bike ride through the city, with the aim of reaching a 'critical mass' in order to be able to meet motorised traffic at eye level. This creates a new space in the city where new encounters and ideas emerge. *(Critical Mass, 2021)*

What we could see from the participation process of the city of Zurich *(2022)*, which I went into in more detail in chapter four, is also the desire for a more flexible and affordable use of different forms of mobility. The living space in the city is under the influence of climate change,

which must be taken into account in spatial planning. In addition, a city offers a variety of uses and appropriations, and the population wants co-decision rights and the promotion of citizen-initiated projects, which requires new decision-making processes and commitment.

In order to involve the population and thus offer them a clear goal, I would provide in the application that the data donor is given the opportunity to support concrete projects in return for the data donation. This could consist of a period of time, for example a term of one month, a project could be supported. So one could sign up to support a project. Such a project could be upgrading the neighbourhood with trees, playgrounds, parks, bike workshop/wash, bike racks, etc. The bigger the project would be, the more data would have to be donated over a longer period of time. This could also be used to motivate the population itself to donate data. However, it is important that there are smaller projects with a short donation period that can then be implemented quickly. According to Nordgren & Schonthol *(2022)*, innovations are better accepted if the hurdle for implementing a project is kept low and requirements are low. The results are visible more quickly, which increases the willingness of users to use data donation through the platform in the longer term.

The projects would be proposed by the data donors and elaborated with a concept by the city, after checking the feasibility, if the city decides to implement it at all. The city would finance the project.

By allowing users to initiate a project themselves, this promotes the acceptance of the project. Through involvement and self-determination, users feel part of the whole and have an increased motivation to commit to the project. In addition, another aspect plays a role: if you initiate a project publicly and try to implement it, you enter into a commitment and you make it important for yourself. In this way, you can overcome the problems with Reactance.

The data could be donated to a specific project. Points could be collected for recording the data, which would be awarded accordingly depending on the amount of data, collection period and data quality. The more points a project receives, the more likely it is to be imple-

mented and the faster a project would be implemented. People could come together as a group, such as a club, and exchange ideas and collect points together towards a goal. Such a group dynamic would lead to encouraging more people to donate data and make a commitment to the group.

Fig 25. *Proposal of the project screen in map view*

The projects would be displayed on a map and could be filtered by district or neighbourhood. This would create a spatial proximity and thus a psychological proximity.

To increase the reach of the application, it would make sense to publish the map and the projects on a website.

With the POSMO Project App, there was also the idea that for a project period, data would be collected over a year. However, one year is clearly too long to also receive progress and interim results as a motivational boost.

The city of Zurich's participation project has shown that the idea of implementing city projects works. There, 61 projects have been or will be implemented by the users themselves in the course of this year, with the ideas being financially supported by the city.

In summary, the requirements for the application are that
• a clear and specific goal is to be pursued with the data donation,
• it is intended to provide an advantage to the data donor; and
• a reciprocal relationship is to be established between the data donor and the data recipient.

In order to counteract the strong negative feelings that I have experienced from most people about a possible data donation, implementation intentions or if-then plans could be used. If I can create or support a project and thus become a data donor, then I have a certain benefit from it, for example a meeting place in the neighbourhood or a quick repair of a dangerous place. External media can help to motivate people to start an action, in this case supporting or starting a project proposal: e.g. through an external website where people can submit project proposals, which in turn are linked to the app. The presentation of data from others, e.g. what projects are in my area, how many support such a project, how many participants are still missing for the implementation of the project.
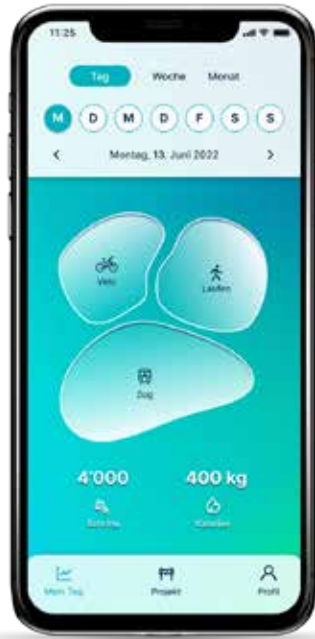
Fig 26. *Proposal of the Home Screen / my day*

Visualisation of data

The visualisation of the data is a central point in such an app. On the one hand, the visualisation of one's own data is important for the purpose of self-reflection. On the other hand, it must be possible to compare one's data with other users of the app. Finally, the application must be able to show the local positioning of the projects in the city and its neighbourhoods.

The data that can be displayed in such an application are, in particular, the mobility data. The application will be able to recognise and display the means of transport through the sensors of the mobile phone. This display shows how the route from A to B was covered on foot, by vehicle, bus, tram, bicycle, etc. Further information can be read from this movement data. For example, steps can be counted, rest periods recorded and calorie consumption and CO_2 emissions calculated by the means of transport. This will support self-reflection.

I consider it useful that the current data should be displayed as a daily view by default. At the same time, the data should be available as a summary in a weekly and monthly view. Statistical changes in behaviour should be highlighted. This should promote self-optimisation and thus motivation to donate data. Goals can be defined, e.g. to move more or to cause less CO_2 emissions. The different forms of locomotion are shown in an information graphic and allow conclusions to be drawn about one's own mobility behaviour.

The distance travelled is shown on a line on a map, with different colours assigned to the various means of transport.

The data of the projects are also shown. On the one hand, you can see the respective project locations on a map, on the other hand, it shows the support participation. Groups can connect and thus encourage others to participate, as I have already described.

The app does not require behavioural change, but self-reflection can have a climate-positive effect by allowing users to see how they are moving. A CO_2 and calorie counter could encourage a user to choose a sustainable form of mobility. This data could also be compared with others, e.g. by showing what the average person consumes in terms of emissions or what means of transport the average person uses most.

Profile and Settings

As already shown by the studies described at the beginning of this paper, which was confirmed by the references used for this paper, the data donor needs a concrete reason and a concrete goal in order to be motivated to donate data. Thus, the data donor should be given the opportunity to see clearly and transparently where exactly this data is going and also be given the opportunity to stop this if they so wish. By deleting and excluding certain data recipients, this should be made possible for the user.

A data donation is based on the foundation of trust, which can only be achieved with transparency. Thus, the information around data collection, data retention and data protection would have to be clearly

and simply formulated. The user should be able to find out about the applicable regulations at any time and access them via the application. Accordingly, it makes sense that the data donor is made aware of the possibility of participating in the use of the data (cooperative principle of data).

Project Communication

In order to stage the bachelor thesis to the outside world and to communicate the central findings, I am initially planning a presentation at the bachelor thesis exhibitions as well as an information video.

In the exhibition, I plan to show the process of data donation on the basis of the app as a mural, and explanations are to be presented by means of animations that are beamed onto the wall by a projector. Symbolic of mobility and an active data donation by means of movement by bicycle, the projector is controlled by a bicycle that is permanently installed at the location. By pressing the pedals on the bicycle, visitors have the opportunity to view the entire animation one after the other.

The information video will briefly summarise the findings of the present work and visualise them by means of animation. The style will be based on the videos already created for the project.
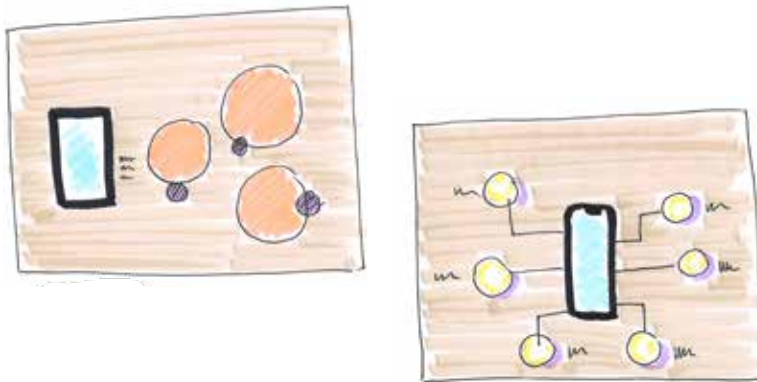
Fig 27. Sketches and ideas for the exhibition – Screen & Touch wall
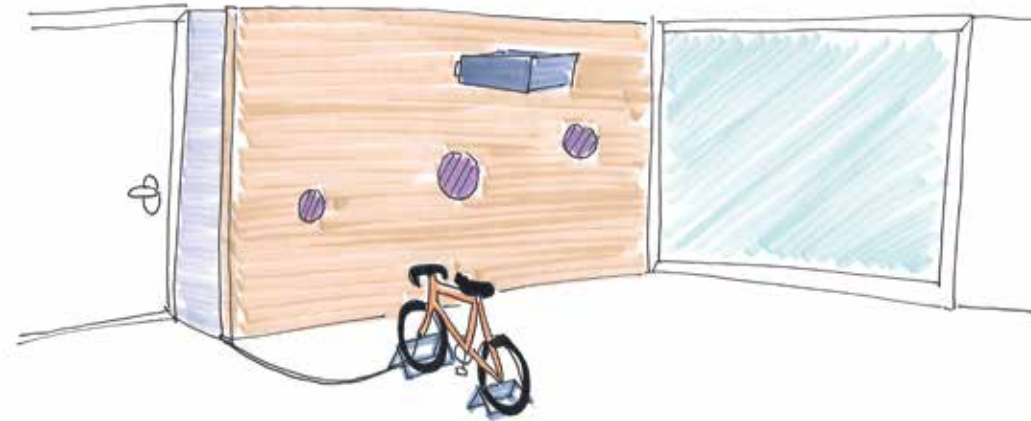
Fig 28. Sketches and ideas for the exhibition – Touch wall with bicycle

7.
Conclusion

This paper shows that the issue of data donation is a much more complex topic than one would initially assume. The public's scepticism about the collection of data, which has been generated by media reports and data scandals, is a major challenge when it comes to data donation. Concepts of projects and the technical design of applications or platforms require meticulous planning and an examination of the relevant psychological findings. Knowledge of the psychological mechanisms at work in a person's decision-making process is essential if one wants to initiate a project that is geared towards data donation. A way must be found to make data donation worthwhile for the user in some way, so that the user is willing to provide data to a project. Incentives need to be found to encourage people to donate data. The focus is not on financial compensation for the data, which would not be financially viable. It is precisely very personal and sensitive data that needs to be processed. Therefore, the confidence of the data donor must be awakened that his data will not be misused.

The central point is to reduce the psychological distance to the target aimed at with the data without provoking a defensive attitude on the part of the data donor.

Reflection & Learnings

The present work first enabled me to gain experience in an interdisciplinary team. The challenges of interdisciplinary communication and project management became apparent. You had to assert yourself in the team and learn to assert your interests in a diplomatic way. As part of the team, I was able to see how a project works over a long period of time and with different interest groups. The cooperation of different actors and interest groups made the project work exciting and instructive.

The exchange with the different disciplines also taught me a lot of non-disciplinary things. I was able to exchange ideas with team members about psychological theories, data protection, technical aspects of an application, (legal) forms of organisation for data owners, etc. I also had the opportunity to exchange ideas with people from other disciplines.

Furthermore, this work showed me how to analyse an existing project through research and how to identify possibilities for improvement. I was allowed to deal with different psychological theories and methods.

The implementation and description of a concept on the basis of the developed theory was demanding and instructive. It required a meticulous familiarisation with a foreign field with corresponding technical terms and theories.

This thesis has taught me to independently familiarise myself with a subject area and to apply this knowledge to projects.

Contribution

I see the topic as increasingly relevant in the future, using technology to address the challenges of our time. Therefore, I see my contribution in the fact that I have worked out the basics and ideas in order to increase the motivation for data donation among the population. This can be relevant as a basis for more complex problems. As a concrete proposal, it can lead to improvements in urban development based on donated data if the idea is incorporated into a project.

Future Steps

As I am still a part of the pilot project, the journey will continue for me as a team member of the project. I hope that the project can provide further valuable insight into how to increase motivation to donate data and that these insights can be usefully carried into further projects.

I would like to create a small brochure for the exhibition and as a supplement, which shows the engagement with the app and complements this thesis.

As described in detail, politics at the federal level is addressing the issue. I hope that politics has also recognised the importance and relevance of data donation and will adopt further measures to promote data donation.

"The future is uncertain
but the end
is always near."

– Jim Morrison

8.
Appendix

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