CT70A3100 - Service Design

Responsible Teacher: Assoc. Prof. Joanna Saad-Sulonen

GROUP REPORT 2 - Enhancement of Freebike Mobile Application

Group 10

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Artificial Intelligence Statement

We acknowledge the use of https://chatgpt.com/ to generate pictures for the enhancement storyboard prototype. The prompts we used were the following:

- **Prompt #1:** Please generate an image with the following context: A student looking at their smartphone with the e-bike app open on the screen. The phone screen should clearly display the message: 'Explore Lahti sustainably! Use our e-bike service to get around the city and to the campus.' Additionally, the photo should be taken from above and over the student's shoulder, with the message facing the student.
- **Prompt #2:** Broader context: The service offers e-bikes through a mobile app in Lahti, which many students use to travel around the city and to the campus. To use this service, an app is required to activate the e-bikes. For this image, please create the following context: The app screen shows a pop-up or banner that reads 'New Feature: Share Your Ride Experience!' Additionally, the phone screen should display 'Add the Following Friends,' followed by a list of friend usernames and small icons of their profile pictures, showcasing a menu where friends can be added. The picture should only include the phone and its display screen with the feature.
- **Prompt #3:** Broader context: The service provides e-bikes through a mobile app in Lahti, which many students use to travel around the city and to the campus. To use this service, the app is employed to activate the e-bikes. For this image, please depict the following context: A student is unlocking an e-bike and riding through the city to campus. The e-bike should be bright neon green.
- **Prompt #4:** Broader context: The service offers e-bikes through a mobile app in Lahti, which many students use to travel around the city and to the campus. To use this service, an app is utilized to activate the e-bikes. For this image, please create the following context: A student is checking their phone after a ride, with the screen displaying the route map, distance, time, and CO2 saved. Additionally, there should be text saying, 'Here's your ride summary. Ready to share your experience with friends?'
- **Prompt #5:** Broader context: The service offers e-bikes through a mobile app in Lahti, which many students use to travel around the city and to the campus. To use this service, an app is employed to activate the e-bikes. For this image, please depict the following context: The app interface allows adding comments, uploading photos, or tagging moments from the journey. The

app should display the message 'Tell your story to friends. Add photos and share thoughts.' The image should show only the full phone display.

- **Prompt #6:** Broader context: The service provides e-bikes through a mobile app in Lahti, which many students use to travel around the city and to the campus. To use this service, an app is utilized to activate the e-bikes. For this image, please create the following context: Students are interacting with shared rides on their phones, liking and commenting as if it were a forum within the app. Additionally, please show someone interacting with the phone screen. The image should emphasize that users can like other users' rides and achievements.

Introduction

Our group has been working on enhancing the Freebike Mobile Application, a service that facilitates mobility across Lahti city using e-bikes. The e-bikes are manufactured by Freebike, but the operations, maintenance, and distribution are managed by local companies such as Mankeli. Similar business models are also in place across other European cities, where companies like Mankeli enable the use of e-bikes within their respective cities. The core service offering of Freebike is the enablement of e-bike access for users, and we have undertaken this project to enhance that offering.

The proposed solution enhances the Freebike Mobile Application with community-driven features that increase user engagement and promote sustainability. These features aim to foster community engagement, provide motivation through gamification, and support environmental goals.

This report will outline the service design process we followed, from research and ideation to the final design solution. We will present key insights gained during our research, including stakeholder and service ecosystem maps, user journey analysis, and ideation outcomes. The report will also discuss the design solution itself, detailing the enhancements we propose, how they address the identified challenges, and the rationale behind our design decisions. Finally, we will reflect on the design process and discuss potential challenges in the implementation of our solution.

Service Design Process

Our service design approach for enhancing the Mankeli Freebike service followed a user-centered design framework, guided by the Double Diamond model. This process involved iterative research, analysis, ideation, and visualization to identify challenges and propose community-driven innovations.

For research and data collection, we used various methods to understand the service and user experience (Table A1). These included statistical analysis, observations, stakeholder mapping (Figure B1), and journey mapping (Figure B2), which revealed key pain points and opportunities. Interviews and service blueprints (Figure B3) further clarified user needs and service processes,

forming the foundation for ideation and design. Building on research insights, our ideation focused on enhancing the app with community-driven features.

Prototypes (Figure B4) were created to test and refine our design ideas based on insights from each research step. Observations and journey mapping informed early prototypes, which included group-sharing features and leaderboards. Emotional mapping and interviews provided feedback on user satisfaction, prompting iterations in the gamification and social integration aspects. The service blueprint process revealed technical and operational dependencies, which guided adjustments to ensure the feasibility of the proposed features.

Analysis and Gained Insights

Our service design process provided key insights that informed our design improvements. Stakeholder and ecosystem maps revealed logistical challenges, such as uneven station availability and dependencies on external approvals for signage. These insights highlighted the need for better coordination between stakeholders to improve service efficiency.

User journey and emotional mapping identified critical pain points in the user experience, including unclear payment plans and occasional frustration during bike operations. Despite these issues, the mapping also uncovered moments of satisfaction, particularly when rides were completed seamlessly.

The service blueprint showed backstage complexities between the Freebike app and Mankeli operations. It emphasized the need for streamlined processes and better transparency in how data flows between user actions and backend systems to improve responsiveness and usability.

Finally, prototyping validated the importance of introducing social features like groups, ride-sharing, and leaderboards. Feedback from iterative prototyping helped refine gamified elements, ensuring they effectively enhanced user engagement while addressing core service challenges. Detailed maps, diagrams, and prototypes supporting these insights are included in the appendix (see Tables A2).

Design Solution

The proposed design solution enhances the services of Freebike by including community-oriented features and gamification aspects to its mobile app. This approach elevates the functional bike-sharing service to a social engagement and motivational service ecosystem all at once. These improvements connect with the user's values, the sustainability objectives, and the research gained through our ideation and prototyping.

The core functionalities involve creating social connections, an awareness of the environment, and user involvement. These functionalities are designed in a way to encourage community participation, create some extra motivation through the gamification technique and ensure environmental objectives are achieved:

- Friendship and Group Formation: Users can add friends and create groups for a more social and personalized experience.
- Community Joining: Users can join open communities to interact with others who share similar interests, even if they aren't direct friends.
- Ride Data Sharing: Users can share their ride data, such as distance and CO2 saved, with friends to encourage motivation and accountability.
- Leaderboards: The app will feature leaderboards tracking metrics like miles ridden and CO2 saved, creating friendly competition and motivating users to ride more.

The strategy for this design solution was developed through iterative ideation involving relevant "How Might We" (HMW) questions such as how collaboration can be made easier, payment clarified, and motivation increased. With the aid of AT-ONE Cards, we developed several ideas that included smartwatches and CO_2 emission tracking, bike availability as well as revising ideas for new payment methods. Community motivation via gamification scored the highest in terms of feasibility, impact, and relevance to users.

Prototyping in our design solution had a very important and integral part to refine and polish the features. The use of storyboards and early prototypes gave us a clear vision of the user's interaction with the leaderboards, the group features and the challenges. The feedback collected during these sessions led to changes in how the navigation, the data and user flows were presented. A contextual

prototype, however, proved the hypothesis that gamification would motivate the riders to make sustainable choices and remain engaged over time.

Other possible enhancements like modernized payment system or smartwatch integration are promising but gamification and community features were the most direct ways to address the identified challenges. They increased user satisfaction by socializing, motivating and adding an element of fun to the service experience, and they complemented the sustainability goals of Lahti by promoting the environmental advantages of cycling. In addition, these improvements based on software required less alteration of the existing infrastructure, so they were more straightforward to deploy and expand.

To translate these conceptual features into a coherent user experience, we developed to-be journey map that illustrates how the community components integrate into the app touchpoints of the service. The to-be journey map fragments that have been updated from the as-is journey map are located in the appendix in Figure B5, showcasing 3 new service moments and the respective positive emotions.

The impact of the solution covers the whole user journey. Prior to commencing a ride, users are able to check their friends' activities, group challenges or positions in the leaderboard which helps to build up excitement and purpose. Thereafter, timely updates, suggestions, and notifications of the community are provided to the users, which helps to render the ride more interesting and fosters engaging experiences. After the trip is done, they are able to check detailed overviews of their statistics such as the amount of CO2 they saved, and they can promote these statistics in their networks, making the positive habits more sustainable and further increasing their attachment to the service.

Discussion

The final design solution reflects an appropriate compromise between user experience, sustainable development and practical implementation. By placing emphasis on the community and gamification, the upgrades not only solve the central problems of engagement and motivation but rather it turns Freebike a bike rental system into a participatory service ecosystem. This approach

aligns with the principles of service-dominant logic where value is created through subsequent activities between the users, service provider and the city as a context.

Although it enhances user engagement and motivation, it does not fully solve the challenges of station locations, payment ambiguity and other back-end process issues. These problems, identified through the journey mapping and the service blueprint of the projects, require infrastructural and organizational changes. Another issue is that too much emphasis on social engagement may leave out those who prefer to be more individualistic or are privacy conscious. So, there should be appropriate tools for ease of use and defining data governance.

Overall, the iterative Double Diamond model served as an effective guide although we would have been able to test the community features comprehensively if we had initiated user testing during the earlier stages. We received valuable insights from the digital prototypes but the integration of small-scale, real-life experiments on actual e-bikes with end users would have enhanced design and results in the best possible manner.

If we were to do the project again, we would focus more on conducting technical feasibility studies and start discussions and workshops with the stakeholders including Mankeli and the city administration in the early stages of the project. These steps, along with the real-life experiments would guarantee that the new community and gamification features would fit in well within the context of the service and would be useful for the local population.

Conclusion

This project illustrates how an e-bike sharing service can shift from purely being a functional service to an interactive ecosystem which captivates users, promotes ecological decisions and community participation. By considering users as active participants instead of passive consumers adds more value, versatility and depth to the service. While issues related to the infrastructure and operation are not easily solvable using software changes, our idea provides the support for continuous enhancement through real-life experiments and stakeholder collaboration.

From a broader perspective, our work demonstrates how a complex urban system can be structured by service design thinking. The combination of social participation, as well as environmental goals and technological solutions can yield results that are powerful and will last longer. The insights gained here are not limited to e-bike sharing but can be useful in other diverse contexts where there is an urge to design and roll out those services that would be more flexible, inclusive and responsive to communities they serve.

Appendix A: Tables

Table 1: Research and Data Collection Overview

Encounter	Participants	Duration	Location	Organisation	Data Generated
Statistical Analysis	Team members	N/A	Online sources	Mankeli, Freebike	Usage patterns and seasonal demand
Observations	Team members and users	Ongoing	Service areas	Mankeli, Freebike	Notes and personal insights
Interviews	Team members and users	120 min	Online and in-person around bike stations	Mankeli, Freebike	Feedback on pain points and usability
Stakeholder Mapping	Team members	60 min	Classroom	Mankeli, Freebike, and other identified stakeholders	Stakeholder maps clarifying actor roles
User Journey Mapping	Team members	90 min	Classroom	Mankeli, Freebike	User steps, touch points, and their actors
Emotional Mapping	Team members	45 min	Classroom	Mankeli, Freebike	Emotional journey and pain points
Service Blueprint	Team members	90 min	Classroom	Mankeli, Freebike	Visualized frontstage and backstage processes

Table 2: Aspects and Insights

Aspects	Sources	Insights
Station Availability	Stakeholder Map, Observation	Stations further away from city center often lacked bikes due to low usage.
Dependencies on External Actors	Stakeholder Map	Placement of stations required approvals from the city, causing delays in implementation.
Payment Plans	User Journey and Emotional Mapping, Interviews, Observation	Users found the payment plans confusing.
Emotional Pain Points	User Journey and Emotional Mapping, Interviews	Frustration was observed during unclear bike operation steps.
Positive Emotional Moments	User Journey and Emotional Mapping, Interviews	Users experienced satisfaction when completing rides seamlessly.
Backstage Dependencies	Service Blueprint	Complex interactions between the Freebike app and Mankeli systems created potential bottlenecks.
Missing Data Transparency	Service Blueprint	Transparency Limited clarity on backend data processing hindered user experience improvement efforts.
Community Features	Ideation and Prototyping, Interviews	Adding groups, ride-sharing, and leaderboards resonated strongly with user engagement goals.
Gamification	Ideation and Prototyping, Interviews	Leaderboards and milestones motivated users to ride more and share progress.
Station Availability	Ideation and Prototyping, Observation	Addressing empty stations through notifications was seen as a feasible improvement.

Appendix B: Figures

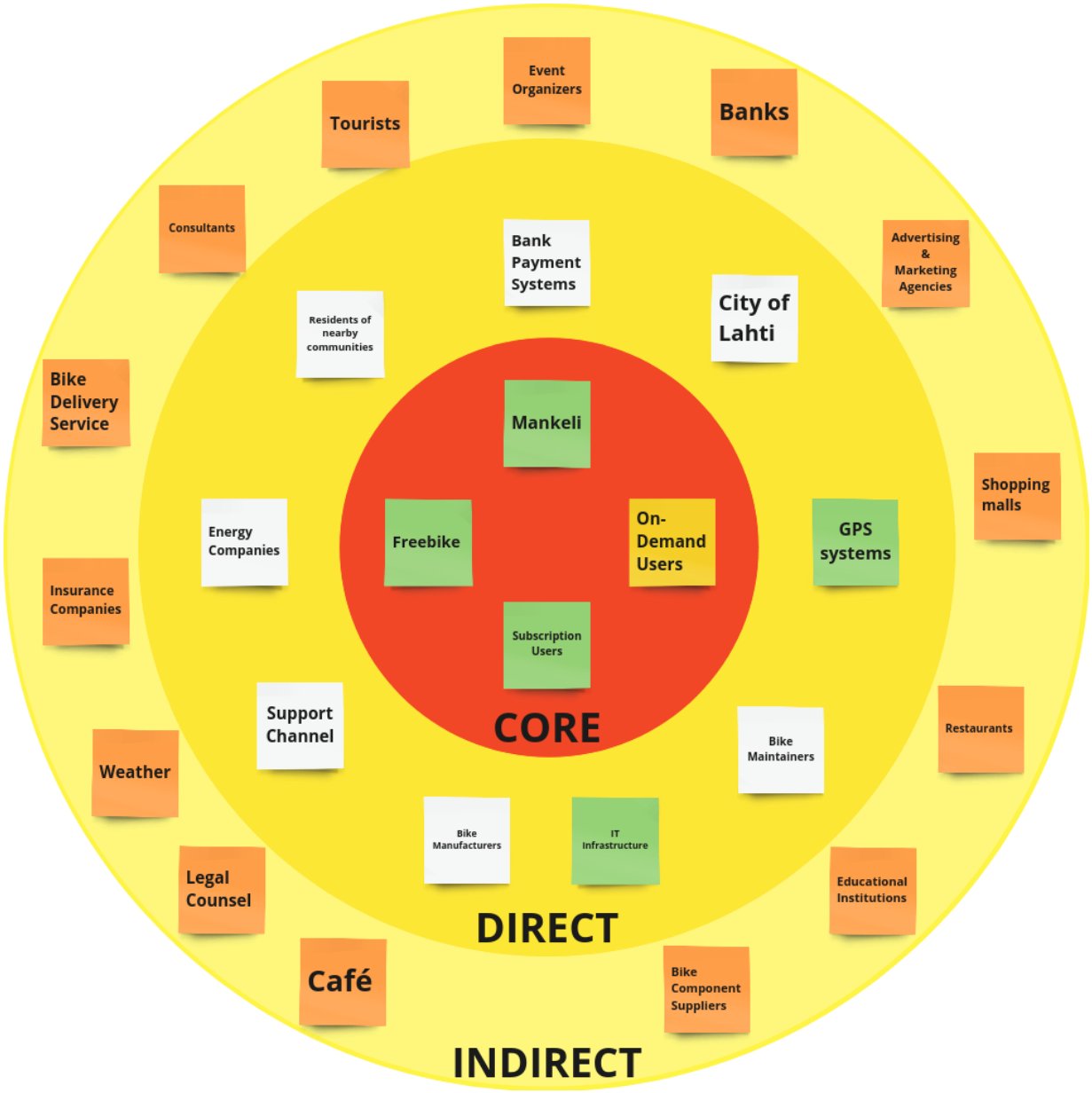

Figure 1: Stakeholder Map

Figure 2: User Journey and Emotional Mapping

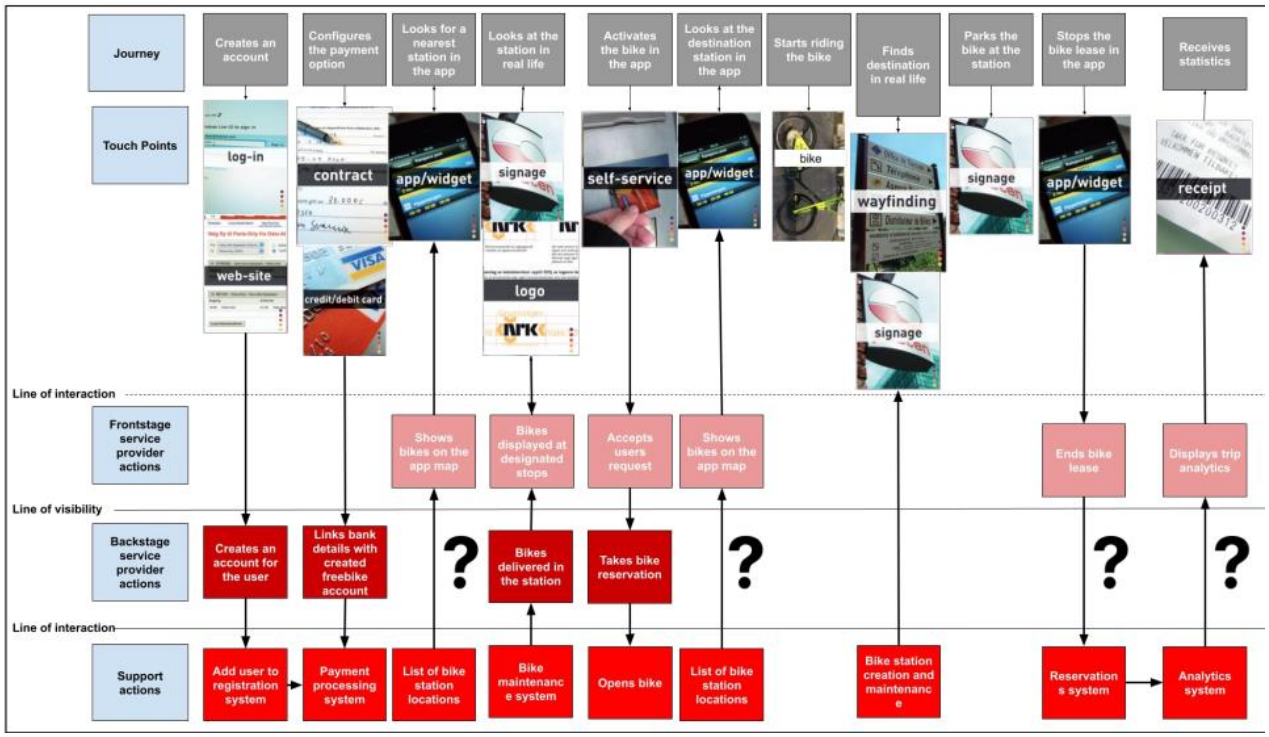

Figure 3: Service Blueprint

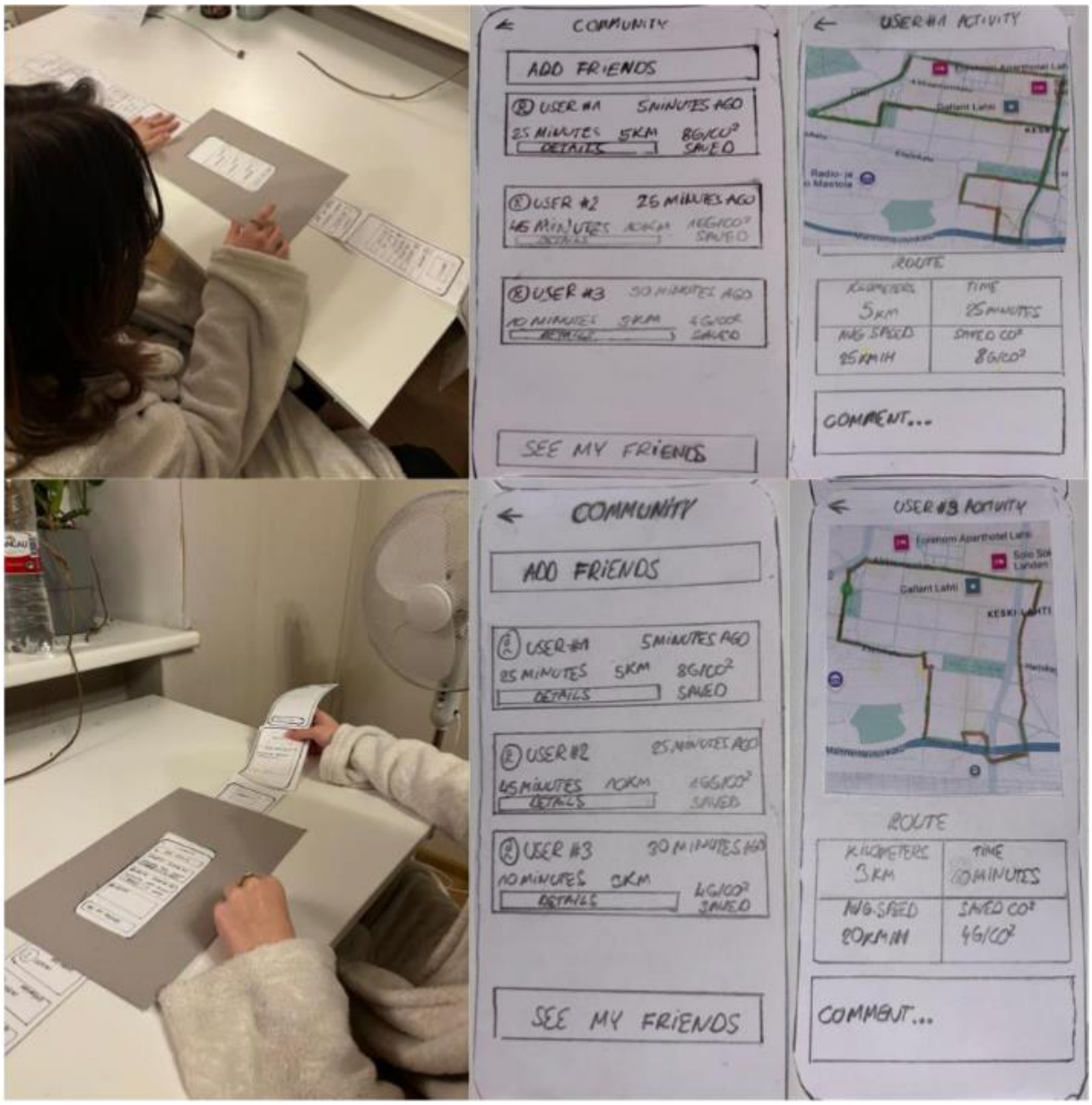

Figure 4: Prototyping

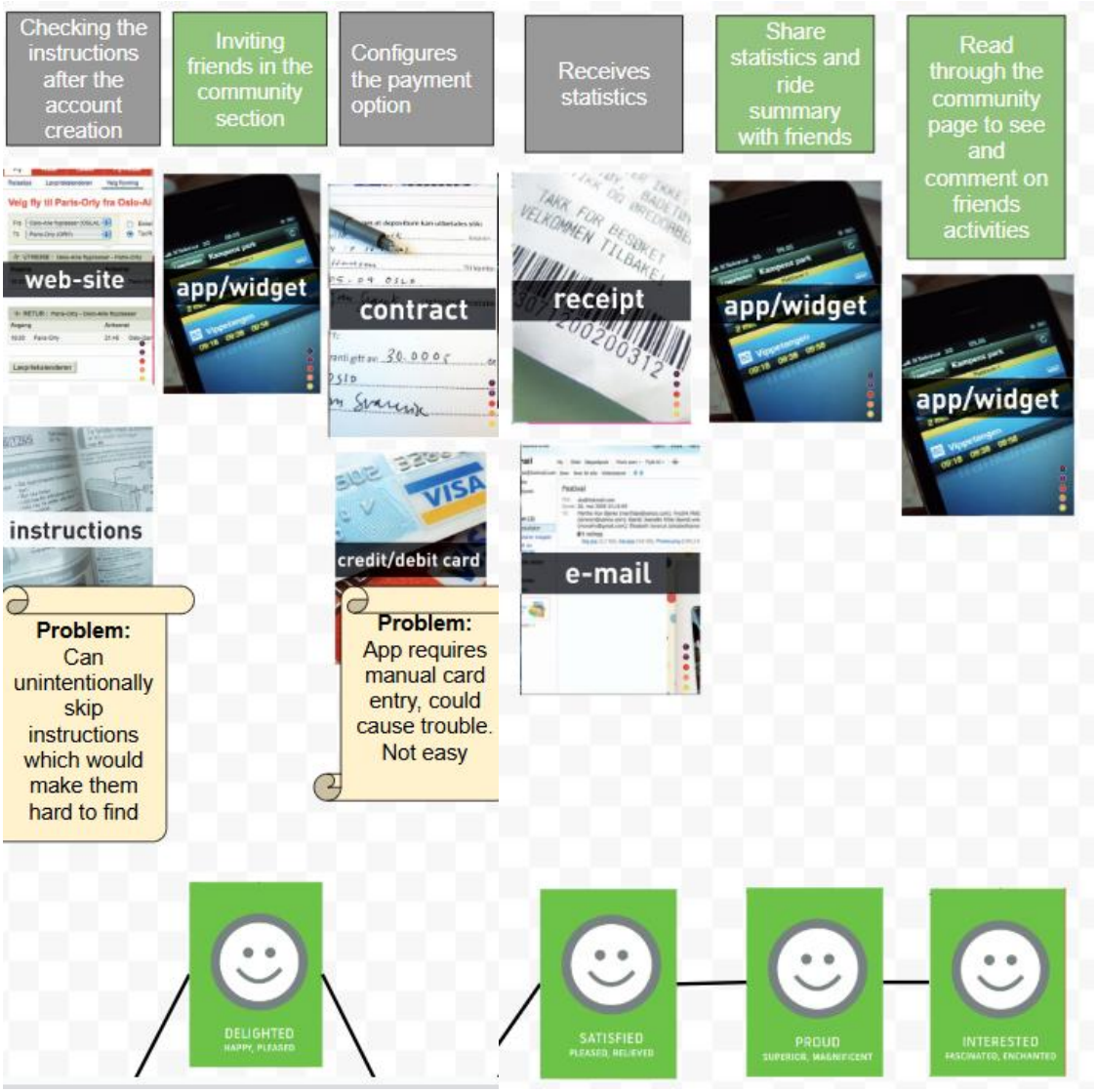

Figure 5: Added Fragments to the To-Be Journey Map Colored in Green