



Ostbayerische Technische Hochschule Regensburg
Faculty for Mathematics and Computer Science

Lend'n'Rent

Journey of designing a software

Human Computer Interaction

January 3, 2022

Authors: Anna Breithaupt (MatrNr 3202199)
Dimitri Fritzler
Maxim Schiffmann
Tobias ...
Simon Pröls (MatNr 3202793)

Contents

Context of use	1
Idea of the application	1
User roles	1
Lender	1
Renter	1
User journey maps	1
Use1 journey map for the renting person	2
Use2 journey map for the renting person	2
User Stories	3
Stories for the renter	4
Stories for the lender	5
Design Guidelines	6
Information Architecture	11
Competitive Analysis	12
Sketching and Paper Prototyping	13
Sketching	13
Paper Prototyping	13
Prototyping	16
Usability Guidelines	20
Consistency and standards	20
Support the user in avoiding errors	20
Minimize mental stress	21
Jakob's Law	21
Law of common region	21
Law of similarity	21
Law of uniform connectedness	21
Evaluation	22
Evaluation from group one	22
Recap	22

1 Context of use

1.1 Idea of the application

The idea behind Rent and Lend describes a software with the help of which one can lend tools to neighbors and borrow tools from neighbors.

Products on offer in the vicinity are to be displayed. The exchange with the other person is to take place via a chat.

1.2 User roles

There are two user roles that can use the application. On the one hand there is the person who offers products to borrow. And on the other side there are people who can borrow these products.

It is important to say that these two roles can also overlap.

1.2.1 Lender

Lenders offer products. They provide the things that can be lent.

A lending person has the concern that their products are easily found and they are contacted by many interested people. It is also important to ensure that their tools are handled with care. A lender wants to be confident that they will get their money and that their items will not be stolen or damaged. For these reasons, the lender may need more frequent service and support.

1.2.2 Renter

The borrowing person has the concern to find items quickly and easily. He wants the details of a product to be easy to read and at a glance.

Furthermore, he hopes to be able to reach the lender fast and reliable. The goods should be as described and he should not be held responsible for any damage that the equipment has had before.

1.3 User journey maps

For a greater understanding of future design choices and possible requirements, a user journey map for the lending and renting part of the application is created respectively. The different phases a user traverses are defined in the first step. The second step consists of finding possible activities the user performs in the phases. In the last step the users feelings while performing the activities are depicted. This helps finding possible phases of the journey that may be difficult and finding a solution to simplify these phases.

1.3.1 User journey map for the renting person

This journey map consists of the following phases with the related activities:

Awareness	Compare	Decide	Contact	Negotiate	Pay	Get item	Give item back	Rate
needs specific or expensive tool	compares item in store	Decides to rent item over our page	contacts lender	negotiates over pricing and lend duration	transfers money to our website, where it is stored until the lending is fulfilled	gets item delivered	sends item back	rate lender
is pursuing a new project and misses tools	considers buying used item	Finds perfect offer for his project		determine when and where to collect the item	gives deposit as security	collects item	returns item	
needs tool very rarely and wants to save money	Looks through the Internet for rental offers					items get picked up		get money back when tools were returned in a good condition

Figure 1: User journey map for renting user

The corresponding feelings and the graph are determined this way:

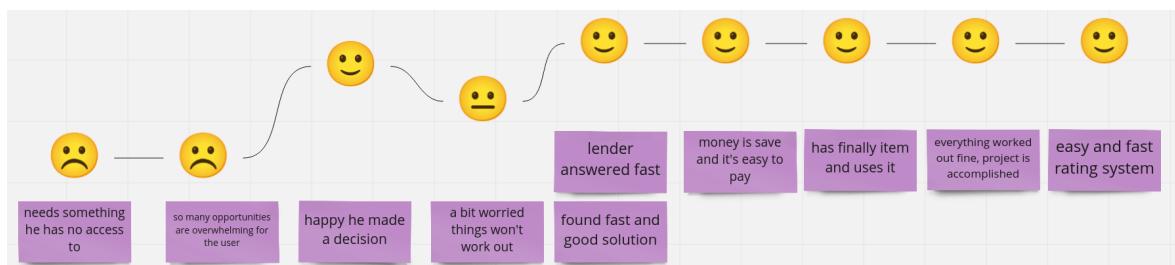


Figure 2: Feelings for renting user

1.3.2 User journey map for the renting person

The counterparts for the renting persons journey looks like this:

Define	Compare	Decide	Contact	Negotiate	Deliver item	get item back	Rate
Review inventory	Compare different apps/services	Decide based on the offer and the person who wants to rent the tools	gets contacted by other user who wants to rent the item	Negotiates over pricing and lend duration	Item gets picked up	Check if you got your tools back in an acceptable state	Rate other user
Select items to lend	Compare similar offers (regarding price etc.)	decide whether renting is more profitable in the long term than selling	by multiple request the customer can decide	Determine when and where to collect the item	Delivers item	get payment	Conscientious handling of the tools
Define target audience + check for potential matches	calculate price difference between sale and rent of the item	Is the neighborhood trustworthy enough to lend items					customer verified your trustworthiness
Decide on how long somebody can rent the items			Does the app grant enough security functions				
wants to find local customers			Is my private data safe				
would like to support his community							

Figure 3: User journey map for lending user

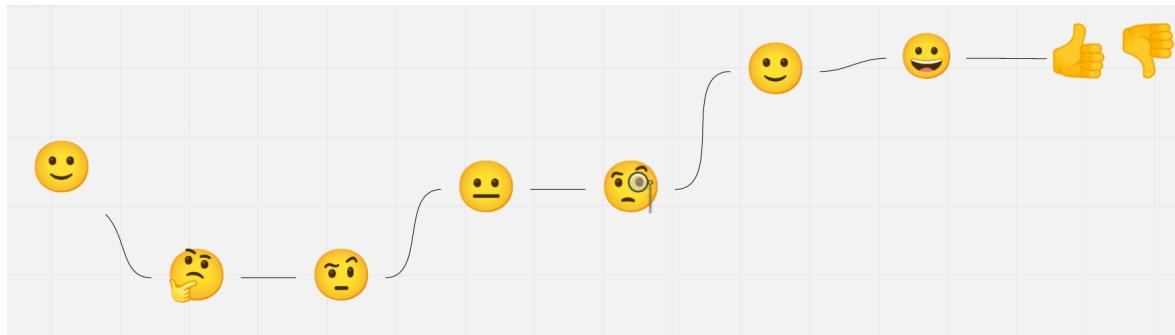


Figure 4: Feelings for renting user

1.4 User Stories

User stories were developed to precisely identify the needs of the users in their roles. To illustrate this, the stories were listed in a mind map. Here, the map can be read from the inside out as follows:

As a **<role>** I want **<goal>** so that **<benefit>**

The stories are sorted from top to bottom by importance.

1.4.1 Stories for the renter



Figure 5: Renter Story

1.4.2 Stories for the lender

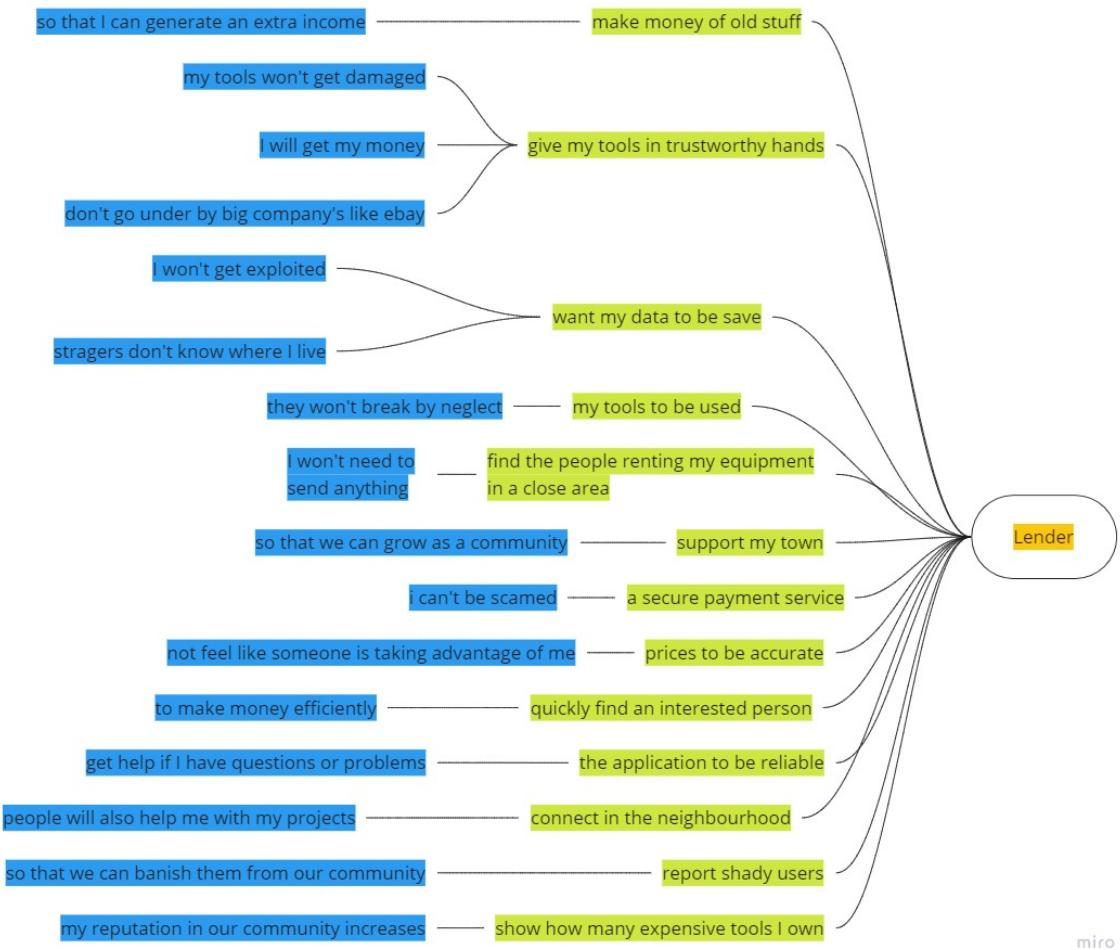


Figure 6: Lender Story

2 Design Guidelines

In order to create the application with a simple to understand and familiar design, design patterns are used in the later prototyping process. The following design patterns are considered useful after a session of brainstorming:

- Steps Left Pattern
- Cards Pattern
- Autocomplete
- Input Feedback Pattern
- Rate Content Pattern
- Chat Pattern
- Product Page Pattern
- Gallery Pattern
- Calendar Picker Pattern
- Password Strength Meter Pattern
- Dashboard Pattern
- Status-Quo Bias Pattern
- Chunking Pattern
- Main Navigation
- Shortcut Dropdown
- Preview Pattern
- Flagging & Reporting Pattern
- Categorization Pattern
- Personalized "My Site"
- Pay to Promote Pattern
- Reduction Pattern

Steps Left This pattern is used when both lending and renting parties are communicating via the chat. A overview of already completed and pending steps is displayed next to the chat window.

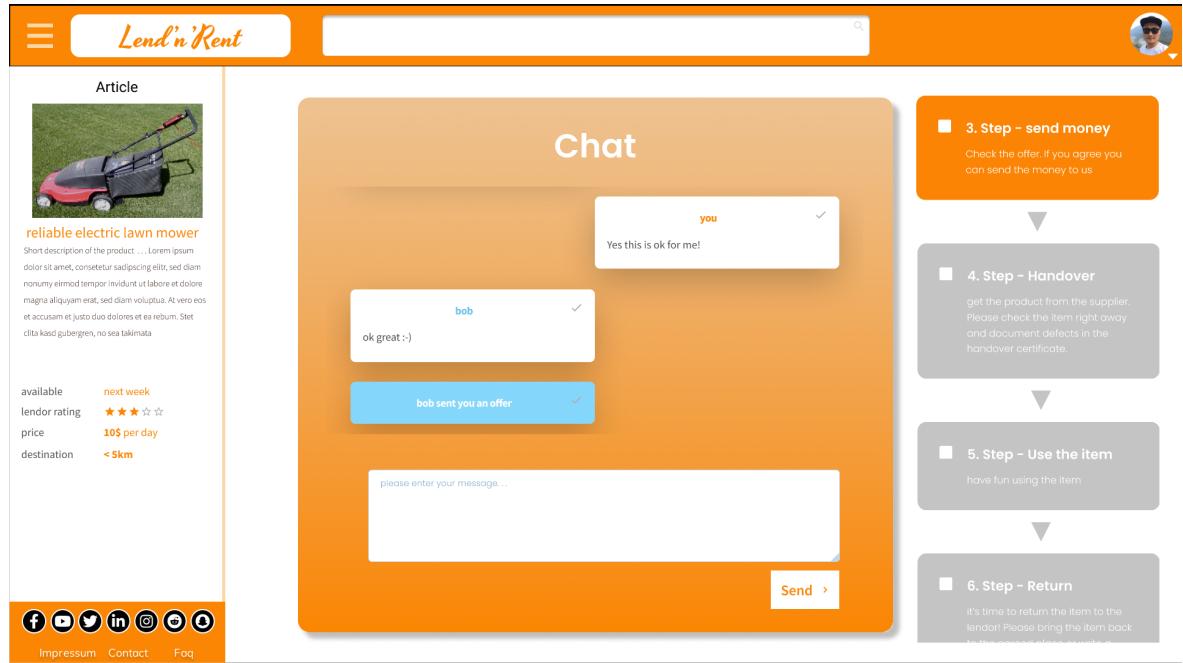


Figure 7: Steps Left pattern next to the chat window

Cards Every offer as well as advertisements in the offer detail page is placed within a separate card including a picture of the item, the description, the price per day, the proximity to the users location and when it is available. With this pattern each offer can be distinguished from the other offers at the first glance.

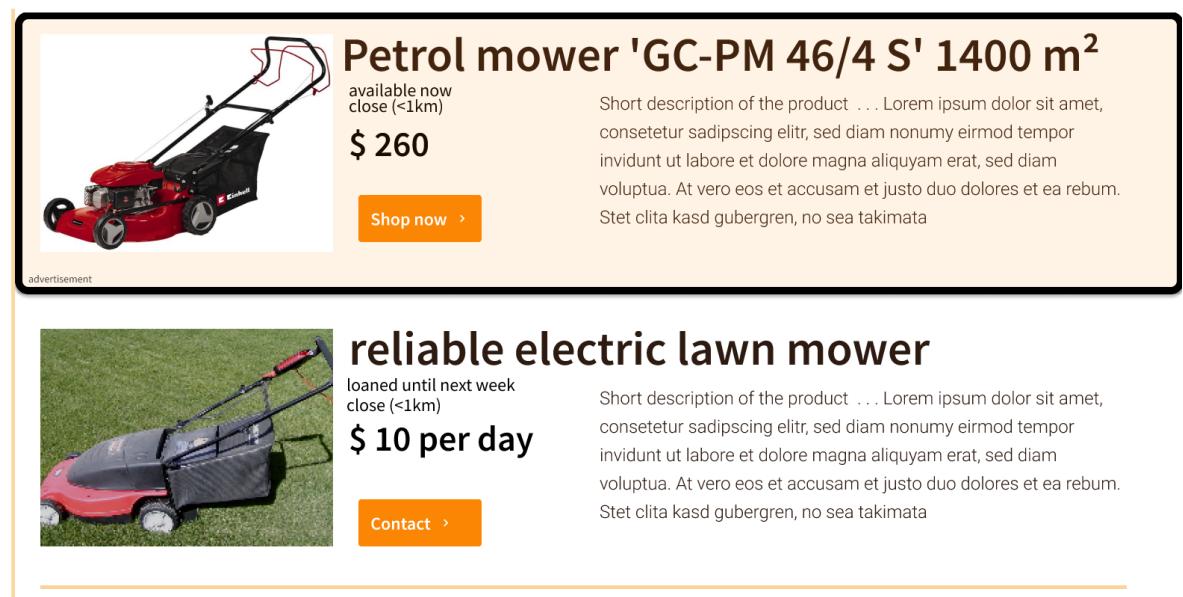


Figure 8: Offer and advertisement cards

Autocomplete and Input Feedback These patterns are used when searching for items and editing the profile. The search query in the search bar and the users address will have suggestions for autocomplete based on previous queries and location services. The inputs will be validated and will have a green tick mark if the format is correct.

Rate Content When the item is returned after it has been used, both parties can rate each others trustworthiness. This helps future parties to decide if they can trust this user when borrowing from the user or lending to them. This rating takes place in the chat window as a part of the steps to complete the deal.

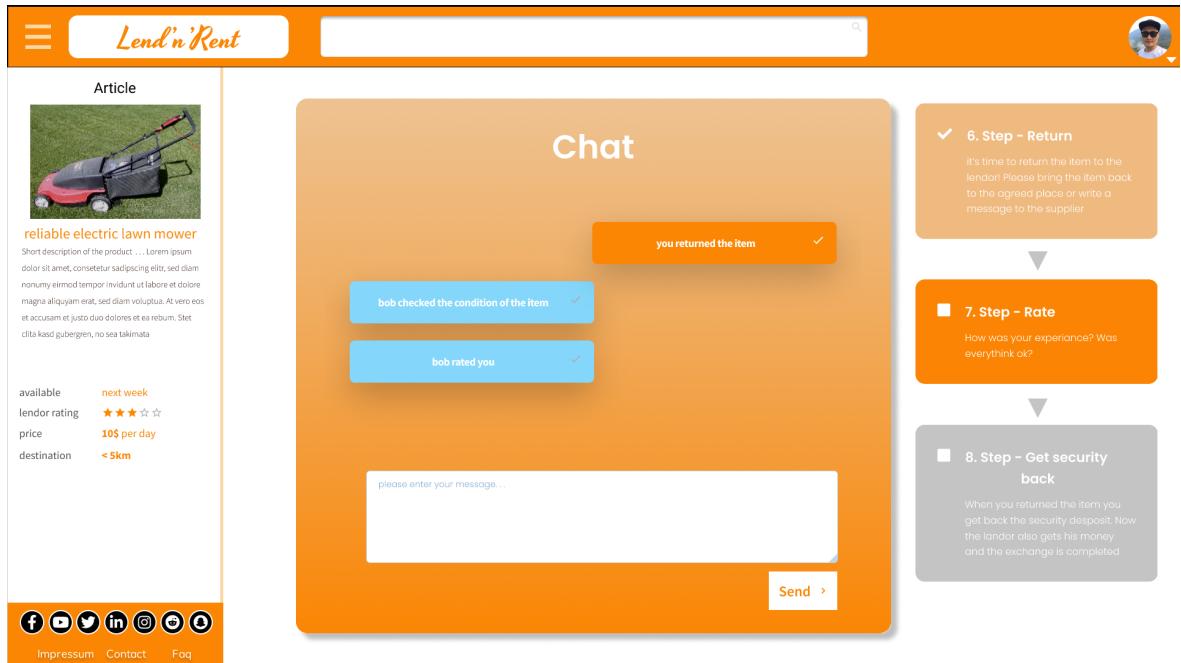


Figure 9: Rating the users

Chat The Chat is the main tool for communication between the lending and renting parties. It is used to

- contact the lender
- agree on the terms of price, deposit and duration
- initiate the transfer of money
- rate the other party

Product Page At the product page the user can read the description, contact the lender, see the price, availability and proximity at one glance.

Gallery Galleries are used on the product detail page when the lender uploads more than one picture for their item. This is used to prevent that all images appear at once and overwhelm the user. It also adds structure to the page.

Calendar Picker When the lender adds a new offer, they can pick a date to that the item is available for borrowing. The calendar picker appears after clicking the icon next to the input field. This adds comfort for the user because they do not have to enter the date manually and have a visual representation of the weeks.

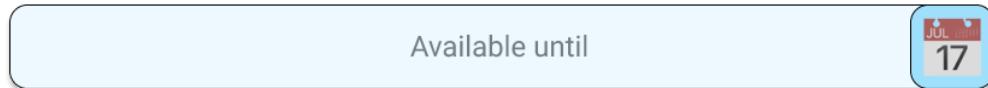


Figure 10: Calendar picker

Password Strength Meter When a user creates a new account or changes their current password, the password strength meter will indicated how secure the new chosen password is.

Dashboard The overview of all messages has certain dashboard functionalities. The user can see all of their incoming and outgoing messages and navigate into the different chat rooms. The incoming and outgoing messages are separated into two tabs.

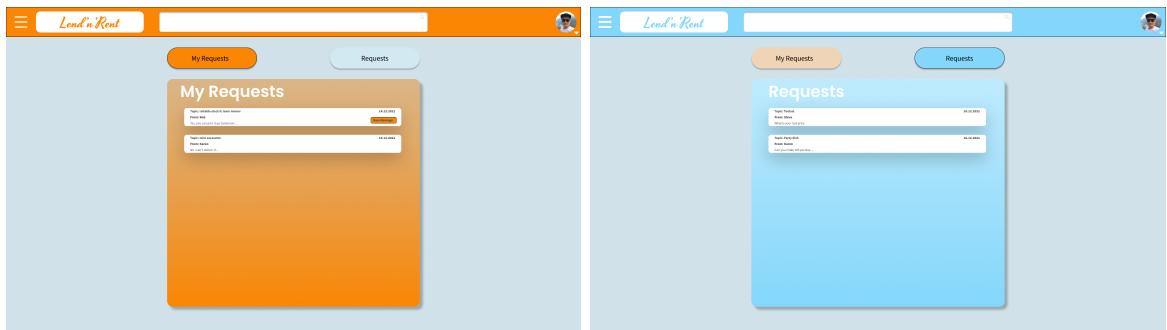


Figure 11: Message dashboard

Status-Quo Bias The landing pages color scheme is set to orange that signals the user that they are using the borrowing part of the platform. This decision was made because most of the time the users probably want to search for items and compare them with their needs. The assumption that was made is that only more experienced users want to offer their items for borrowing.

Shortcut Dropdown The user can filter their search results by category either by navigating through a tree of submenus or by using a dropdown menu above the search results.

Categories | All > Gardentools > electric tools sort by category ▾



available now
close (<1km)

\$ 260

[Shop now >](#)

advertisement



loaned until next week
close (<1km)

\$ 10 per day

[Contact >](#)

Figure 12: Dropdown Shortcut

3 Information Architecture

4 Competitive Analysis

5 Sketching and Paper Prototyping

5.1 Sketching

For Sketching out team met every Monday and Tuesday to discuss our ideas. Everyone had time to present. Everyone had the opportunity to share his ideas with the team. After that we discussed the pros and cons of the ideas and decided which functionalities and aspects we can include in our project.

5.2 Paper Prototyping

For the first draft of the landing page we did a paper prototype. We used some elements from this first drafts to design our layout for Lend'n'Rent.

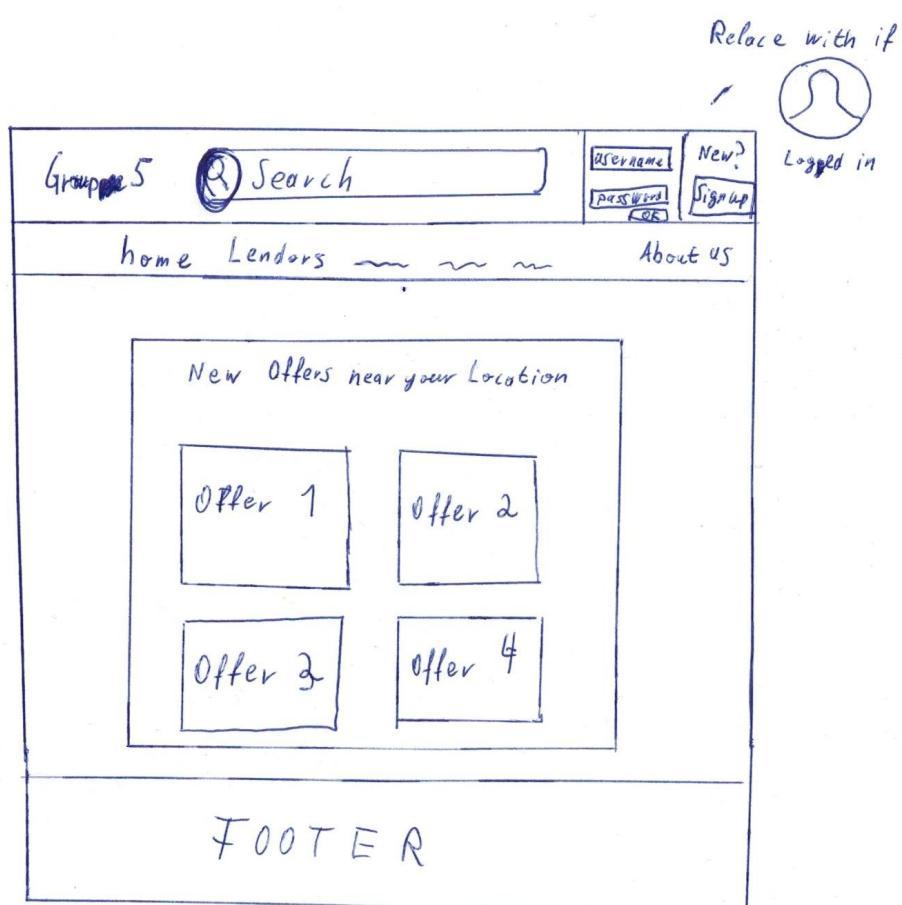


Figure 13: Landing Page Paper Prototype 1

From the first Paper Prototype we take over that the search bar and the Profile picture are included in the navigation bar on top of the website. The Offers we worked into the categories page.

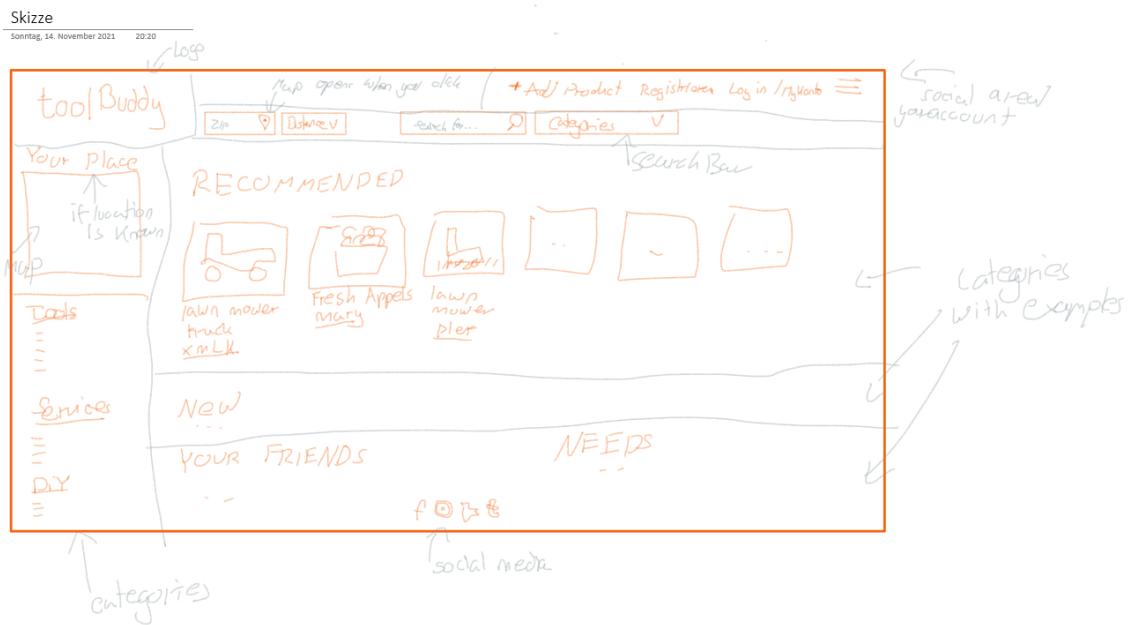


Figure 14: Landing Page Paper Prototype 2

From Prototype 2 we taken over the left sidebar for the majority of our page flow including the functionality to use a map to look for tools around your area instead using a formula where you need to type your location.

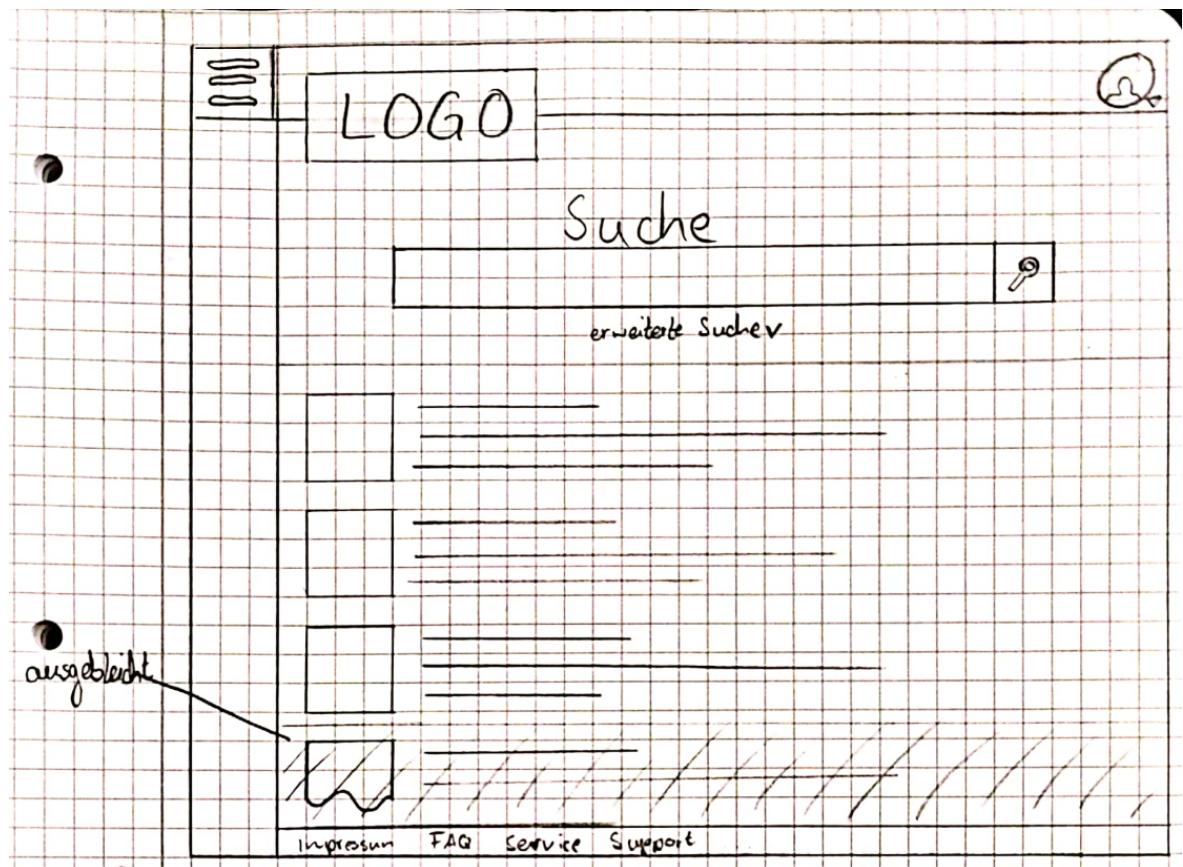


Figure 15: Landing Page Paper Prototype 3.1

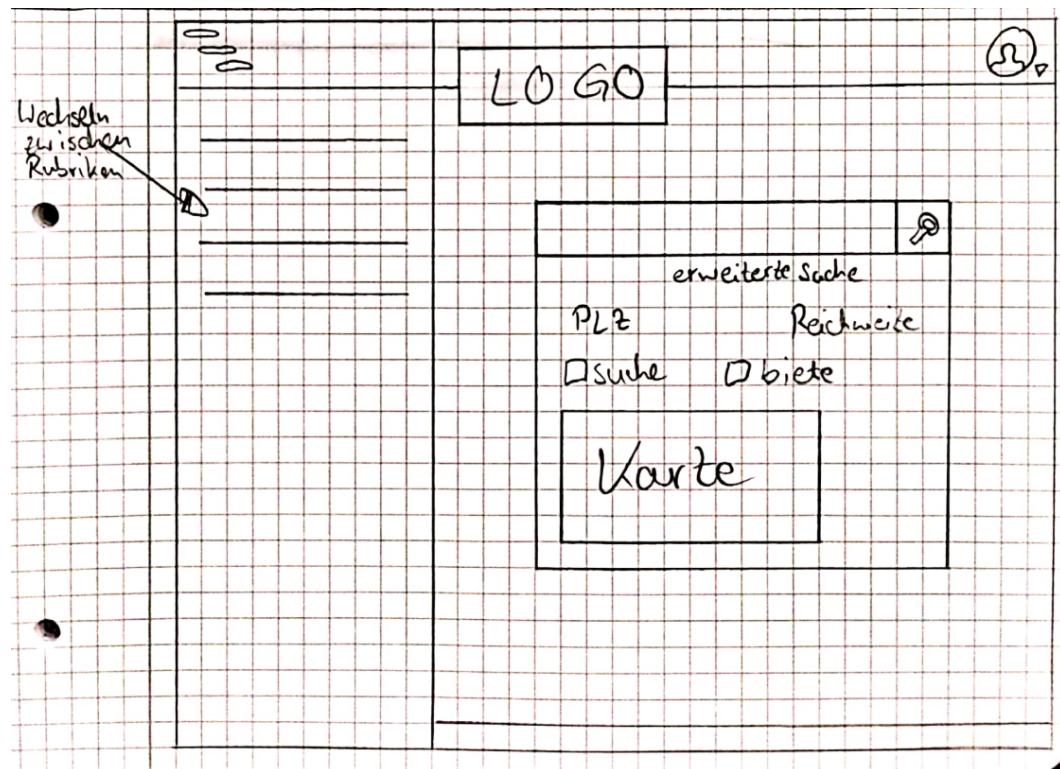


Figure 16: Landing Page Paper Prototype 3.2

From the Prototype 4 we decided to use the arrow under the profile picture to allow user to open a drop down menu to easier navigate.

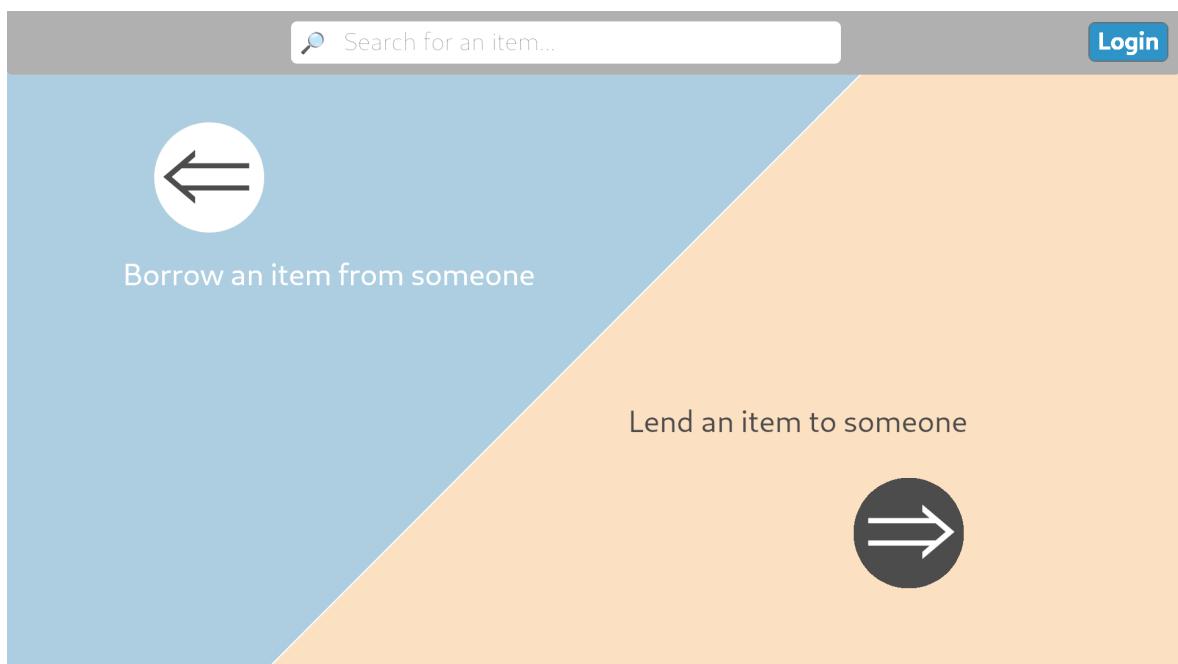


Figure 17: Landing Page Paper Prototype 4

This prototype shows our idea to separate our page flow for our two user groups: Lender and Borrower.

6 Prototyping

The prototype development was done with Figma and is available at the following link:

<https://www.figma.com/proto/Ws8rKV3H7ABW2wM0wyFcfcj/Lend-n-Rent?node-id=102%3A17674&scaling=min-zoom&page-id=96%3A14807&starting-point-node-id=102%3A17674>

Once on the landing page, the user can choose whether to borrow or lend an item by clicking on the relevant page.

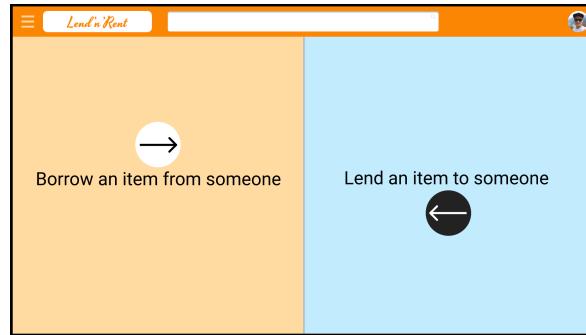


Figure 18: Landing page

The unique color design of our website makes it always obvious to the user whether he is in the role of lender or renter. If the user rents items, his profile page will also be displayed in the respective blue color scheme, or in orange if he removes all items.

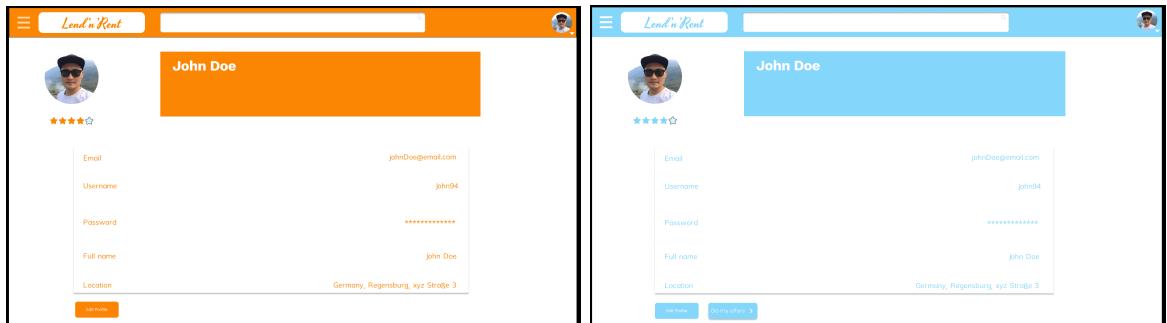


Figure 19: Profilepage lender and renter

The create an offer process is very simple and allows the lender to compare his item with others in order to choose a competitive price.

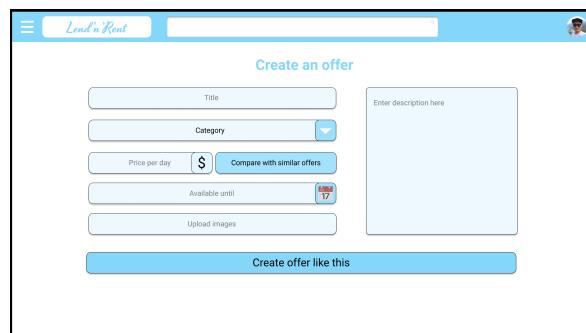


Figure 20: Create offer

After creating the offer, the user is navigated to the item page to get an overview and make any changes. An overview of all items can be found on the my offers page.

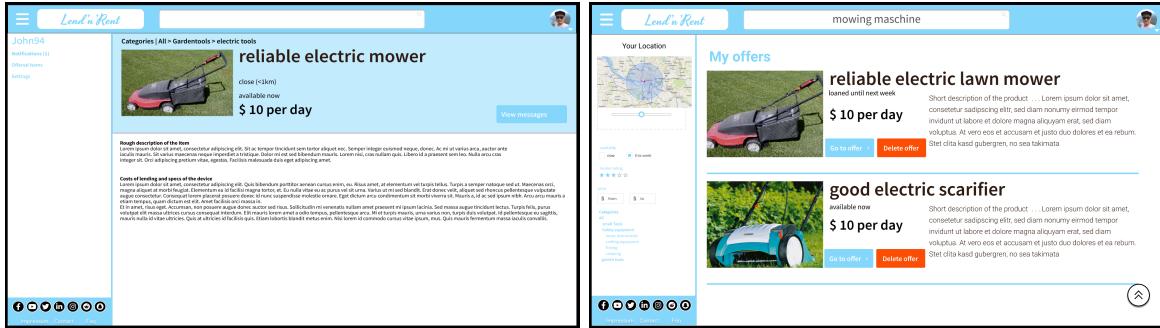


Figure 21: Article and offers page

The category page is designed so that the individual categories are displayed as large images. The idea behind this is not to flood the user with a lot of information, but to leave it up to the user to make a concrete decision.

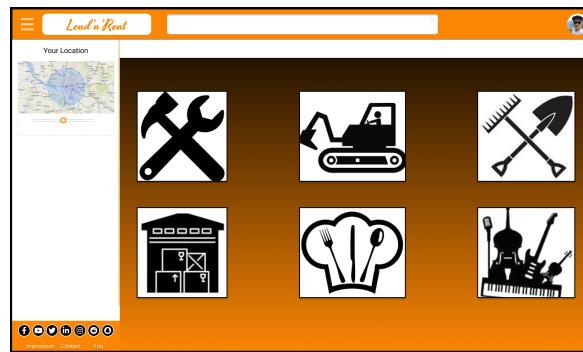


Figure 22: Category page

Only after the user has chosen a category, he will be redirected to the search page and the items from this category will be displayed. On the search page the user has the possibility to choose a subcategory, set the search radius, price range, availability and average rating.

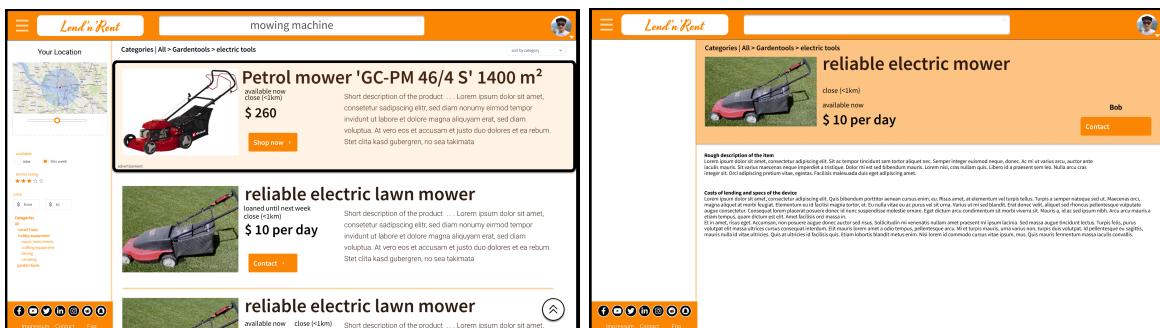


Figure 23: Search and article page renter role

As soon as the user has chosen an item, he has the possibility to contact the lender via the article page.

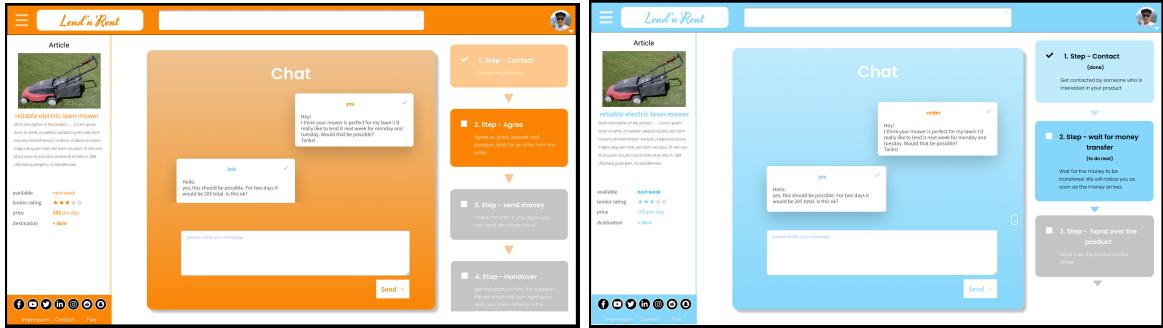


Figure 24: Negotiation Step Contact and Agreement

Once the users have agreed, the renter must fill in and confirm the offer form.

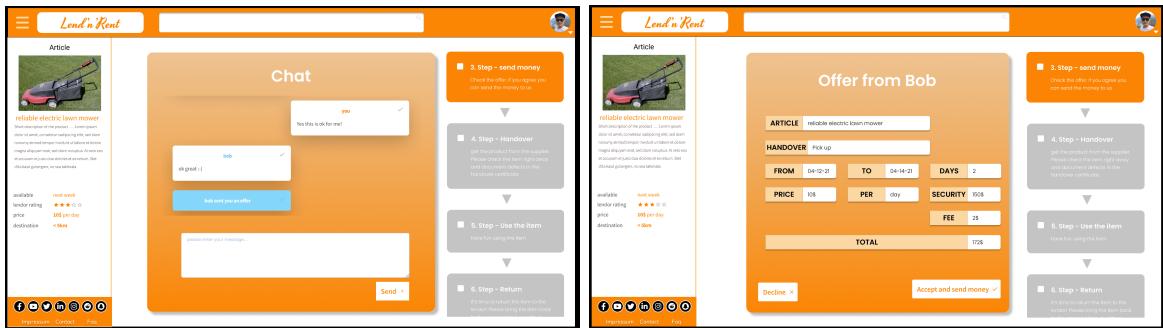


Figure 25: Negotiation Step Payment agreements

After the handover, the renter must inspect the item and describe its condition in the "Handover Certificate" and send the certificate.

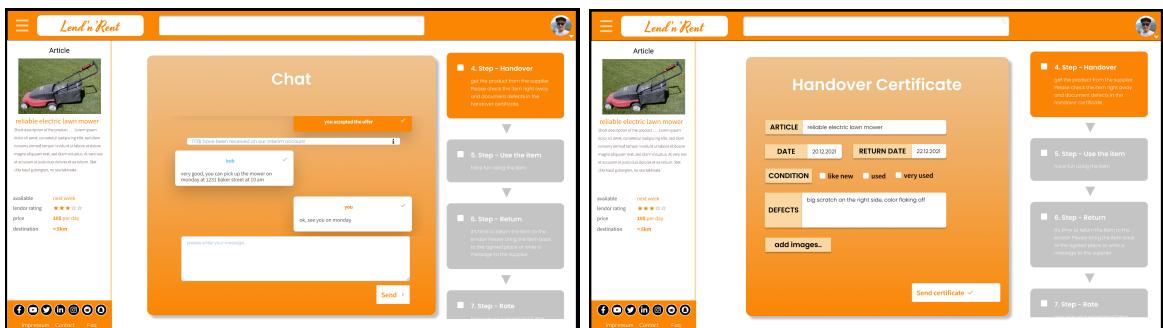


Figure 26: Negotiation Step Handover Certificate

After the transfer of the certificate, the renter can use the item. About the time of return both will be notified in time and have the opportunity to clarify the exact time in the chat.

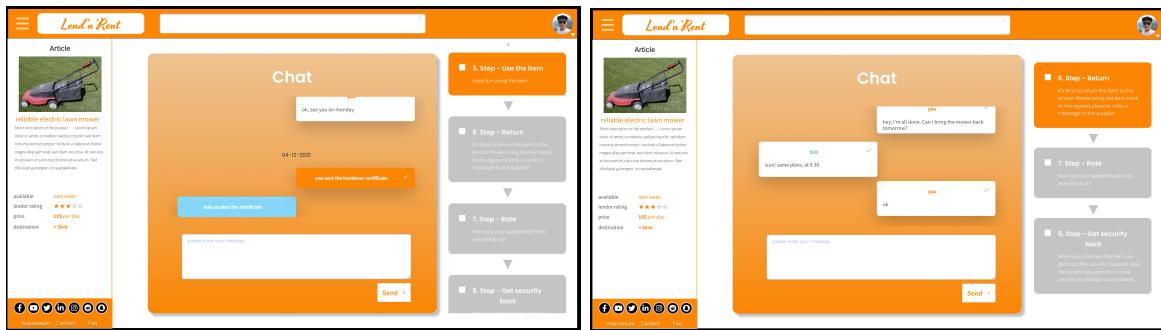


Figure 27: Use and Return

After the return, the renter can rate the lender. if the item is returned in the same working condition, the renter gets back his security deposit and the lender gets the money.

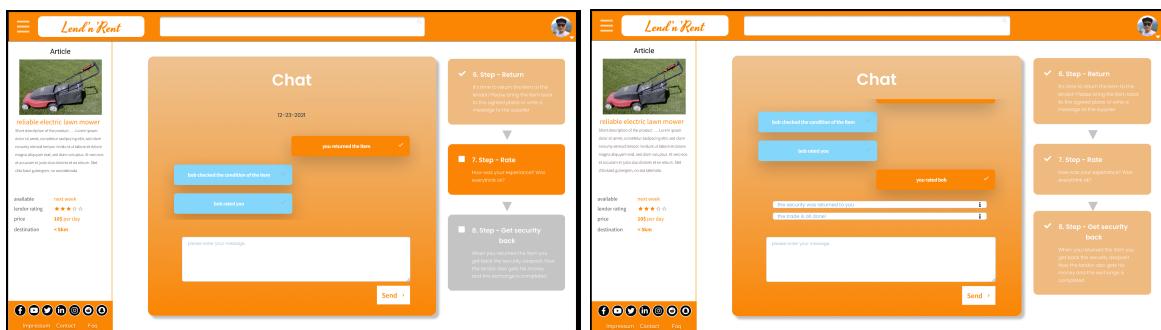


Figure 28: Rating and Payment

The design of the message page is adapted to the page design. In this way, the user can always distinguish whether he is accessing the messages with requests or those where he wants to rent something himself.

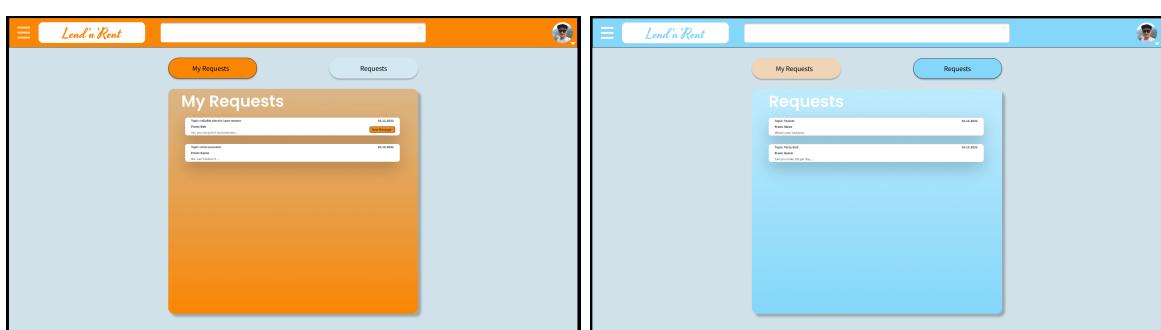


Figure 29: Messege view of lender and renter

7 Usability Guidelines

7.1 Consistency and standards

Rend 'n Lend provides an external consistency.

The searchbar is at the top in the middle of the page and the user profile is on the top right hand corner. The logo is on the top left hand corner. This arrangement can also be observed on many other websites, especially online stores.



Figure 30: consistency heuristic

7.2 Support the user in avoiding errors

When a rental transaction takes place, all agreed details must be recorded on a form. This form is prepared by the lender and must be approved by the renter. This way both parties can check all important information at a glance and misunderstandings or mistakes on both sides can be prevented.

By listing the prices, the renter will not be surprised by any hidden costs.

 A screenshot of a mobile application dialog box titled 'Offer from Bob'. The background is orange. The dialog contains the following information:

- ARTICLE:** reliable electric lawn mower
- HANOVER:** Pick up
- FROM:** 04-12-21
- TO:** 04-14-21
- DAYS:** 2
- PRICE:** 10\$
- PER:** day
- SECURITY:** 150\$
- FEE:** 2\$
- TOTAL:** 172\$

 At the bottom are two buttons: 'Decline X' on the left and 'Accept and send money ✓' on the right.

Figure 31: avoiding errors heuristic

7.3 Minimize mental stress

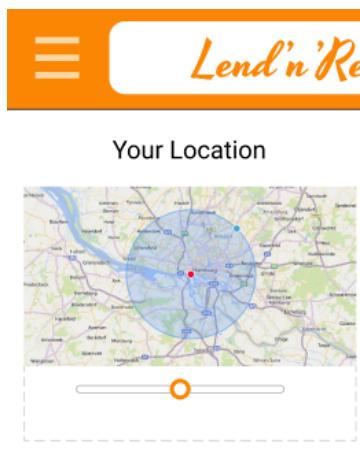
The user should be taken by the hand and guided through the entire process. The pages are kept simple and the icons are large and easy to understand. Advertising is discreetly integrated, but care is taken to ensure that it is clearly marked so that the user does not accidentally click on it.

All this ensures that stress and frustration are kept to a minimum.

7.4 Jakob's Law

As described in section 7.1, the header is arranged exactly as it is on many other pages. This allows the user to quickly find his way around.

7.5 Law of common region



Multiple objects are displayed in a delimited region.

This heuristic can be observed well in the fold-out menu on the left side. In figure 32, for example, details of the search can be specified.

7.6 Law of similarity

Care is taken to ensure that sections are always presented in a uniform manner. On the search page, figure 23, you can easily see that the articles are all of the same size and are displayed according to the same scheme.

Also on the home page the categories follow a similar scheme, see figure 22. The buttons are also consistent.

7.7 Law of uniform connectedness

From the beginning, the page separates by color according to the role of the user. If the user is a **lender**, which means he has at least one item on offer, a light blue color is used. If the user only borrows things, he is a **renter** and an orange color is used. This can be seen very well on the landing page, figure 18.



Figure 32: Common region heuristic

8 Evaluation

8.1 Evaluation from group one

After the first draft of the prototype was finished, it was evaluated by another team. What was immediately noted positively was the idea of using different color schemes. The map used in the search menu to limit the radius was also highlighted.

What the team noticed rather negatively was that the advertising between the found items was not marked conspicuously enough.

Also some errors in formatting, especially inconsistency in icons and the text on the landing page, were chalked up. We were able to respond to this criticism immediately and revise the items.

What was additionally noted was related to the color scheme on the landing page, which is always in the orange renter roll.

During the presentation it was also noted that the chat should be offered even more options directly in the chat format. For example, ready-made answers would be a useful addition. The rating was also lost in the detailed view of the products.

This criticism would definitely be addressed in the further design phase of the application.

8.2 Recap

If you look back at the journey, you can see how useful the individual steps have proven to be.

At the beginning, the classification into different user roles provided a very good overview of what should be possible in the application. A user story map offers the possibility to quickly become aware of the potential use cases.

Through the constant exchange with the team members, it quickly became clear that there were still some ambiguities. Who can lend and how do you handle private data? What can be lent? Should a sale via the platform also be possible?

Through the Journey map, the team was able to clarify these questions early on.

Once the journey of both people became clear, it was a matter of figuring out what should be particularly important and where the focus should be. Initial brainstorming and subsequent sorting according to the importance of user stories proved to be very efficient.

With the help of research on the web, design guidelines could be found. Together we noted which of these we wanted to implement. This helped both with inspiration

and with the creation of initial ideas for the user interface.

The usability guidelines also helped in a similar way.

For the first time, all participants did the paper prototyping independently of each other. This made it possible for different ideas from several people to flow together. In the following discussion we agreed on different elements.

It probably makes sense not to dwell too long on paper prototyping, because otherwise ideas get too complicated and it depends a lot on the first impulse.

Designing a prototype in Figma was difficult at first and threatened to be time-consuming. However, with practice and some tutorial videos, the handling became easier and Figma turned out to be a very helpful tool.

In the end, it can be said that different opinions in the team led to a detailed discussion of the topic and a good solution was found. // It was very exciting to see how an idea was gradually turned into a finished prototype through the many steps.