# tuuls

An on-demand renting service
that makes power tools accessible
through knowledge

| | |
|---|---|
| Title: | **tuuls**: An on-demand renting service that makes power tools accessible through knowledge |
| Authors: | Paméla Schmidinger & Tamara Trabucco |
| Matrikel-Nr.: | |
| Paméla Schmidinger | 14-734-222 |
| Tamara Trabucco | 18-686-980 |
| Date: | May 2021 |
| Mentors: | Prof. Jürgen Späth, Florian Bruggisser & Mona Neubauer |

Typeface: Shrimp, Poppins

# Abstract

There is no convenient alternative to purchasing for city dwellers who need to access professionally-serviced power tools. Bosch is working towards addressing this problem by developing an on-demand tool-renting service, targeted at DIYers. Our intention was to improve the concept by exploring possibilities to build upon it.

The aim of this project, *tuuls*, was to determine how the users' experience of a professional power tool-renting service can be designed to cater to the needs of users with varying skill levels, going beyond DIYers. Specifically, the needs of differing target groups, namely young adults who are inexperienced and advanced tool users, and how to support them was investigated.

Our hypothesis was that people wanted to have resources that accommodated their skill levels and supported them. To test this, we took a human-centric approach by involving our new target group in our process by means of a survey, interviews, collaborative workshops and user tests. The results confirmed our hypothesis, showing a need for various forms of support, including direct (community) and indirect (tutorials) forms, but also showed a correlation between the avoidance of tools and gender stereotypes.

These results suggest that users' needs are currently not met. Through our design, we intended to address these problems in order to build upon the main aspect of tool rental by improving the user experience and making it more accessible to a variety of users.

# Acknowledgements

Throughout the writing of this thesis we have received a great deal of support and assistance.

First and foremost, we would like to thank our mentors, Professor Jürgen Spath, Florian Bruggisser and Mona Neubauer. Their expertise and guidance were invaluable throughout our process. Their inputs helped us sharpen our thinking and push our idea further. Also, we would like to thank Nicole Foelsterl and Matthias Kappeler for their helpful technical inputs for our video project.

We wish to thank Bosch for the opportunity to collaborate on this project. We were extremely grateful for their continuous support. We especially would like to thank Pascal Scheidegger for finding the time to participate in our online workshop and answering economic-related questions.

A big thank you to all people participating in our surveys, interviews and user tests. We were immensely grateful for their honest opinions and constructive feedback.

Our appreciation also goes out to both our family and friends for their encouragement and patience all through our studies, especially this last semester.

# Table of Contents


**1. INTRODUCTION** **9**
1.1 Partner 13
1.2 Research Question and Hypothesis 15

**2. RESEARCH** **19**
2.1 Background & Context 19
2.1.1 Sharing 21
*2.1.1.1 Types of Sharing* *22*
*2.1.1.2 Issues of Sharing* *22*
*2.1.1.3 Summary Sharing* *23*
2.1.2 Human-centred Design 24
*2.1.2.1 Definition* *24*
*2.1.2.2 Benefit and Implications* *25*
*2.1.2.3 Rationale for adopting this approach* *25*
*2.1.2.4 Summary HCD* *26*
2.1.3 Motivation 28
*2.1.3.1 Definition* *28*
*2.1.3.2 General Inhibition* *28*
*2.1.3.3 Learning and Community* *29*
*2.1.3.4 Summary Motivation* *30*
2.1.4 Conclusion: Background & Context 31
2.2 Related Work 32
2.2.1 Competitors in renting services 33
2.2.2 Sustainability focused services 37
2.2.3 Content according to skill level 39
2.2.4 Community 42
2.2.5 Summary Related Work 45
2.3 Situating Our Work 46

**3. METHODOLOGY** **47**
3.1 Angle 49
3.2 Intended Contribution 50
3.3 Outline Field Research 51
3.4 Field Research 52
3.4.1 Survey, Interviews and Findings 52
*3.4.1.1 Quantitative Survey* *52*
*3.4.1.2 Qualitative Interviews* *58*
*3.4.1.3 Conclusion* *61*
3.4.2 User Journey 62
3.4.3 Empathy Map and Value Proposition 65
3.4.3.1 Conclusion 69
3.4.4 Personas 69
*3.4.4.1 Conclusion* *71*

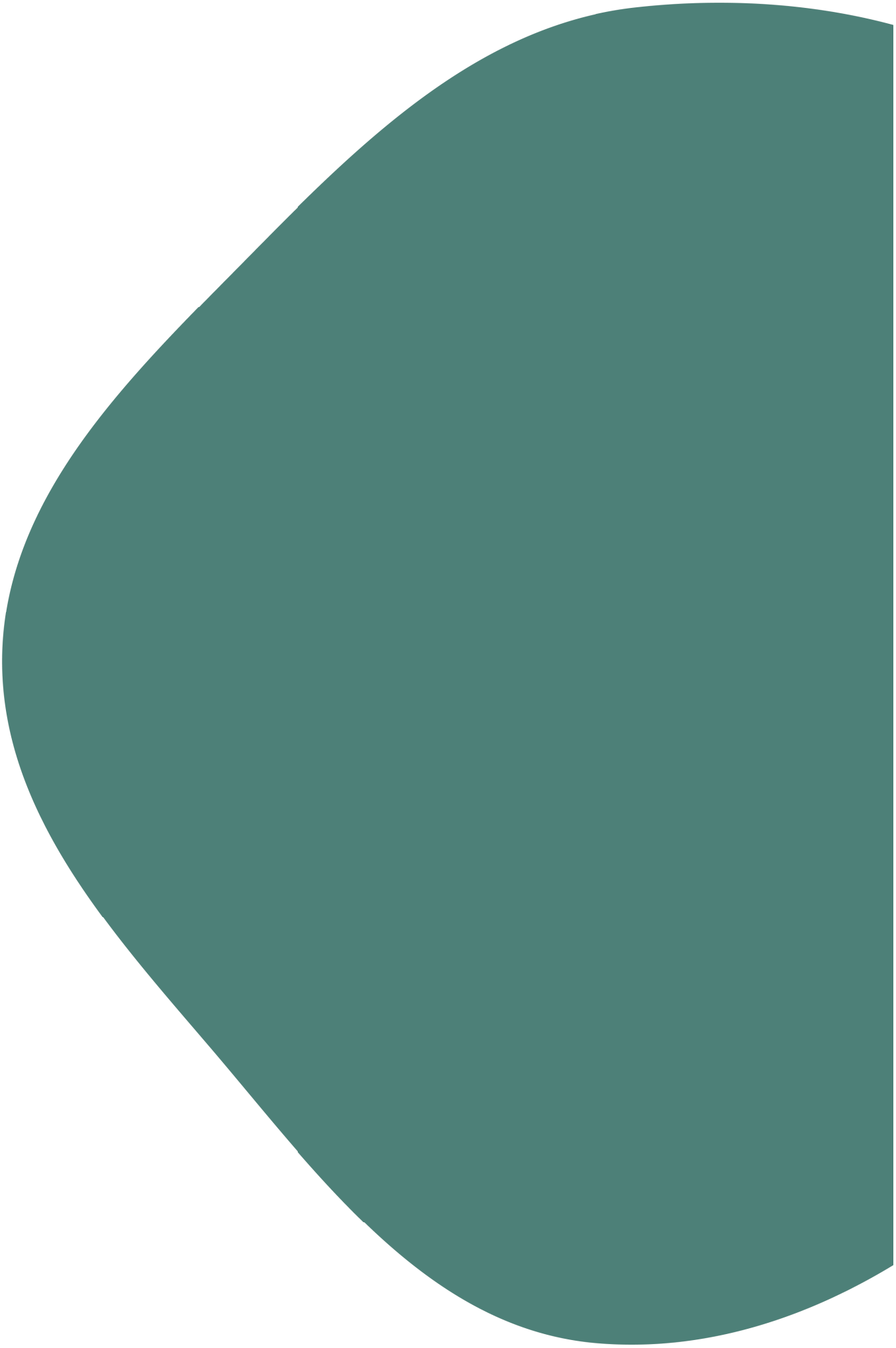
3.4.5 Context Immersion 71
*3.4.5.1 Conclusion* *74*
3.4.6 Collaborative Brainstorming Workshop 75
*3.4.6.1 Self Test* *78*
*3.4.6.2 Workshop 1 - Advanced User* *79*
*3.4.6.3 Workshop 2 - Advanced User* *81*
*3.4.6.4 Workshop 3 - Advanced Users* *82*
*3.4.6.5 Workshop 4 - Novice Users* *83*
*3.4.6.6 Workshop 5 - Bosch* *84*
*3.4.6.7 Adjustments* *85*
*3.4.6.8 Findings* *85*
3.4.7 User Tests 87
*3.4.7.1 Results* *88*
*3.4.7.2 Findings* *91*
*3.4.7.3 Conclusion* *91*
**3.5 Concept** **93**
3.5.1 Conclusion 97
**3.6 Next Steps** **98**

**4. PROJECT DEVELOPMENT** **99**
**4.1 App Development** **101**
4.1.1 Main Screens and Functions 101
4.1.2 Quick Prototypes 104
**4.2 Wireframes** **107**
4.2.1 Iteration 1 108
4.2.2 Iteration 2 115
4.2.3 Conclusion 123
**4.3 User Flow** **124**
**4.4 Design** **129**
4.4.1 Colour Style 130
4.4.2 Style guide 131
**4.5 Usertesting of final screens** **133**
**4.6 Results: Screen images** **135**

**5. CONCLUSION** **141**
**5.1 Design Context** **144**
**5.2 Reflecting on Our Process** **146**
**5.3 Learnings** **148**
**5.4 Contribution** **150**
**5.5 Future Steps** **151**

**6. BIBLIOGRAPHY** **153**
6.1 References 155
6.2 Video 160
6.3 Figures 160

# 1. INTRODUCTION



Tools are effectively an extension of our hands. They enable us to perform simple tasks or engage in creative pursuits. Finding clever solutions to practical problems has become increasingly possible due to the development of power tools, which has made this sphere available to non-professionals.

However, this increased availability has raised concerns about sustainability, because tools are resource intensive and tend to remain idle for most of their lifespans *(Yang, Ma, Zhang, 2018)*. Thus, more people are starting to look for alternatives to buying a tool to make more conscious choices about their consumption. Sharing underutilised commodities such as tools can help one to maximise their use, which in turn reduces the resources required and therefore emissions caused by production *(Mi, Coffman, 2019)*.

People who do not use tools daily tend to be reliant on other people who have them. If this is not an option, they need to buy them, which can be inconvenient. Bosch has recognised the economic potential of addressing the convenience issue by employing the principle of a sharing economy. Through an on-demand renting service of their own power tools, they investigated the viability of their concept targeting DIYers. They did this via a working prototype of a station containing the tools in highly-frequented locations in cities, complemented by a website on which to make reservations.

However, there is potential in expanding the target group the service is currently catering to, since offering easy accessibility to tools combined with knowledge of how to handle them can transform the service from being a fringe to a mainstream offering. Therefore, through a collaboration with Bosch, we worked on improving their concept by exploring how to expand it. Providing not only the tools but also information on how to use them seemed a promising prospect that would get more people interested in Bosch tools.

Our intention was therefore to include groups of people who had little to average experience of tools, and whose lack of knowledge and experience could discourage them from working with power tools.

With a view to creating a service that catered to the needs of our new user groups, we adopted a human-centric approach. Through interaction with the user through surveys, interviews, workshops and user tests, we formulated possible solutions iteratively based on their feedback. Our goal was to improve the user experience of the renting service and create greater accessibility to tools by providing users with the support and knowledge they needed and by creating a novel user experience.

# 1.1 Partner

For our Bachelor project, we worked in collaboration with the Bosch Purpose Team: New Business Department for Power Tools in Zuchwil, Switzerland.

Their intention was to launch a 24-hour on-demand power tool renting service in cities across Switzerland. Their target group consisted of city people practising DIY who did not own certain power tools. The service concept consisted of physical stations that stored tools in key locations and a website on which the renting process was carried out. Their goal was to make the renting of power tools more ubiquitous, provide a professional alternative to buying tools and to increase their market share in the area of renting. Bosch had launched a pilot in Bern, where they were able to test the service on real users. The feedback they received was positive because the users appreciated the spontaneous nature of the service, in terms of not being restricted by shopping hours, and the central locations. The users also enjoyed using high quality tools at a low price. However, they observed that not all the people visiting their website ended up renting a tool.

They aimed to increase the usability of their service through a collaboration with students of the Zurich University of Arts. They expected new features to supplement the service while also offering the possibility to start on a conceptual level. During our first meeting, we discussed possible tasks and the frame of our project. We met two of their team members, Wolfgang Pleuger, the head of the Purpose Team New Business, and Pascal Scheidegger, the innovation manager. Scheidegger was our primary person of contact in the further development of the work.

Due to the Corona virus pandemic, Bosch suspended this project for the time being. Unfortunately, we had been unable to test their initial model before that. Despite the suspension, we decided to continue working on this topic of tool rental, because the situation gave us more freedom to rethink the service.

# 1.2 Research Question and Hypothesis

Our objective was to create a proposal for a renting service in the format of an app that offered an intuitive renting process while also supporting users in the choice and usage of power tools, together with inspiration. We intended to do this by creating wireframes, a graphical user interface that would then be presented in a clickable prototype. Thus, we formulated a primary research question and two subsequent questions to achieve our objective in extending the Bosch service by proposing a modified prototype.

**“What form would the optimal digital tool-renting service take?”**

- How might we encourage people to feel supported in their DIY endeavours by offering resources relevant to their needs?

- How might we create an intuitive user experience for a renting service?

Our hypothesis is that if Bosch’s service was expanded beyond the renting function to include resources that empowered users with the knowledge to use the tools, their tool-rental service would attract more customers.

We intended to address this by offering skill-related assistance in various formats in order to respond to user needs.

# 2. RESEARCH

# 2.1 Background and Context

In the following sections, we present research related to our design context and indicate how we approached this project. The first section deals with how the service is situated in the economic field to provide an orientation. The second section is about theoretical considerations regarding our users, while the third section is concerned with fostering their motivation.

## 2.1.1 Sharing

Nowadays, sharing and renting is not practised much outside the circle of family, friends and acquaintances, because trust plays a vital role *(Yang, Ma, Zhang, 2018)* (Frenken, Schor, 2017, pp. 3-10). Capitalism and the resulting need to consume puts ever-increasing pressure on our finite amount of raw materials and, through planned obsolescence *(Hadhazy, 2016)*, we end up with mountains of waste. The term 'sustainability' is becoming increasingly ubiquitous and more people than ever before take this aspect into consideration in their daily decision-making processes. Naturally, not everything that is owned ends up being replaced over and over again. Owning offers significant advantages over renting, such as freedom in our actions and security in the form of owning real estate.

*Figure 1* is an illustration of the dimensions of a sharing economy. However, the most relevant one for this project is the B2C (Business-to-Customer) sphere, which relates to generating a profit *(Yang, Ma, Zhang, 2018)*. Our collaboration partner, Bosch operates in the B2C sphere by acting as distributor of their idle tools to users, who pay a renting fee to utilise them temporarily.

Digitalisation has drastically changed how we rent by replacing physical stations and offering physical items such as DVDs or CDs in a digital form through streaming services at any time. Also, many things are now offered and mediated via a digital platform, resulting in a reduction in the cost of sharing. Hence, renting has steadily moved away from the traditional P2P (Peer-To-Peer) transaction and entered the sphere of B2C (Business-To-Customer) *(Yang, Ma, Zhang, 2018)*. Examples

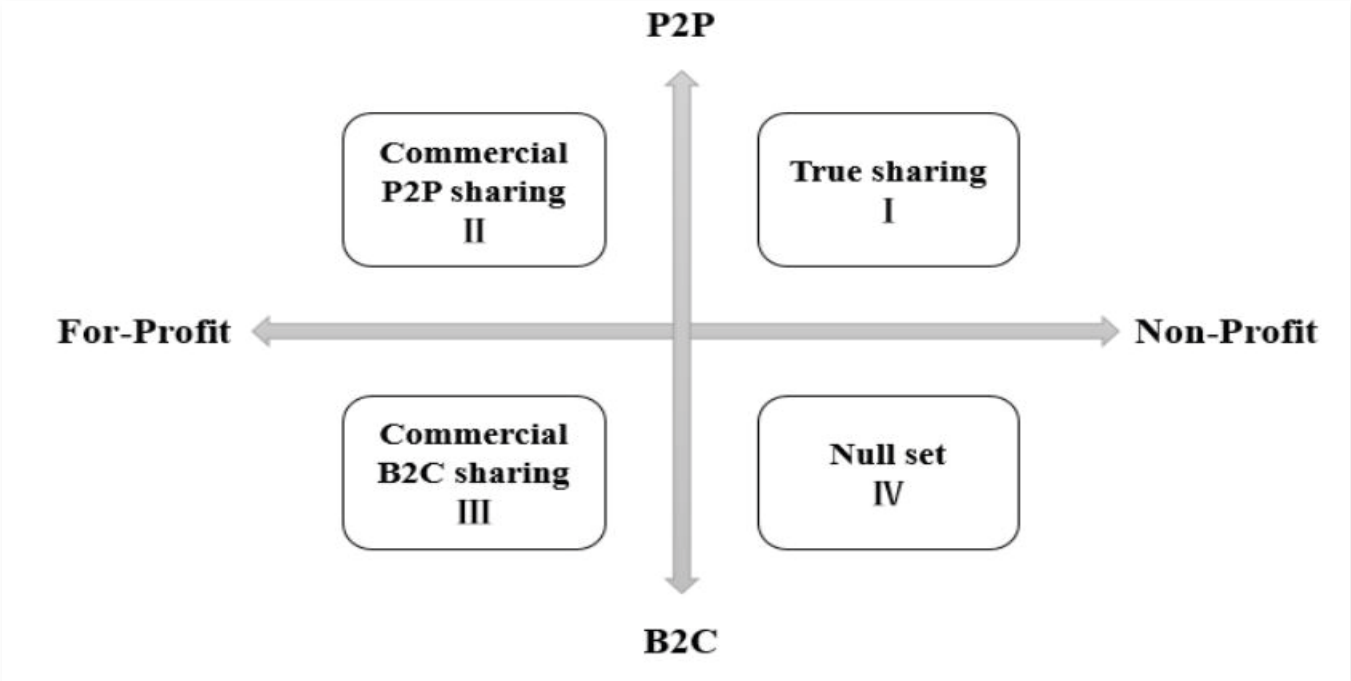



*Figure 1: Types of sharing economies, (Yang, Ma, Zhang, 2018)*

of this shift are Airbnb and Mobility Carsharing, which have simplified renting and leasing online. In most other areas, however, the potential for sharing is far from exhausted. Our partner Bosch has recognised that many people tend to use their tools only occasionally and that the tools are therefore poorly utilised. Additionally, the high prices of quality tools have resulted in more people reconsidering purchasing them, making renting the cheaper alternative. These small changes in perspective lead to more sustainable choices, which are becoming increasingly important for many people.

### 2.1.1.1 Types of Sharing

As seen in *Figure 1*, there are spheres that can be either profit or non-profit orientated, and either Peer-to-Peer (P2P) or Business-to-Customer (B2C). A non-profit oriented P2P is when people share things in communities, such as with their families, friends or acquaintances, whereas a profit-oriented P2P is, for instance, renting their own housing, as done by Airbnbs. On the other hand, B2C's mode of sharing is of a commercial nature, whereby a professional provider rents out his products to private customers or companies. The primary goal is to make a profit while also offering the clients commodities in a convenient manner *(Yang, Ma, Zhang, 2018)*. Our collaboration partner, Bosch, is thus located in the sphere of B2C, because they act as the distributor of their tools.

The application of the concept of sharing has also been changed by digitalisation. Streaming platforms have steadily increased in popularity due the simplified access to a variety of goods and services that they offer. For distributors, the burden of stocking a large number of physical objects has been removed, while the customers, in turn, have easier access. Modern technology is thus a main driver of the sharing economy, giving rise to third party platforms on which resources, in our case tools, can be offered for a fee. In this way, the use of these resources can be maximised while also yielding economic value *(Yang, Ma, Zhang, 2018)*. This is the case not only for digital goods and services; a similar trend has been observed with physical objects as well. For example, Airbnb has created serious competition for hotels with its online platform, whereby people can put up their homes for rent and rent them out directly to others. This is an example of an extremely successful P2P mode, in which value is created for both landlords and tenants. The process of finding and renting a home has been simplified for tenants, which also profits the landlords and widens their reach.

Similarly, there is a clear trend in the area of transportation of moving away from owning vehicles, especially in urban areas. This is because, in cities in Switzerland, for instance, parking lots are scarce and rather expensive, while public transport is well developed. Nevertheless, the occasional need to use a private vehicle still exists. Therefore, Mobility has entered the B2C space of urban car rental. The agents thereof offer a variety of cars in various locations in Switzerland that are in close proximity to public transportation hotspots. Through the use of their app, users can rent their cars and pay for the time and distance driven. This mentality of paying only for what is actually used has proved to pose a viable alternative for many people in terms of cost and sustainability.

As mentioned previously, the ecological aspect has gained increasing importance in our society, such that businesses are striving to develop more sustainable solutions

for their business models. Thus, the idea of sharing existing resources and promoting the reduction of consumption of others is a key factor for business success. Car-sharing is an obvious example of this. Sharing cars means they are less often idle, thus reducing the need for new cars *(Frenken, Schor, 2017, pp. 3-10)*.

When this is applied to power tools, production requires a great deal of resources, thus driving costs up. In addition, once bought they tend to be idle for a lot of their lifespan, because most people use tools only sporadically. Therefore, by relinquishing ownership and circulating tools between people who truly need them, the time in which they are idle can be reduced significantly, along with the cost for the people who use them, because they need to pay only for the duration of the use. Buying cheap tools is also an alternative for many, yet, due to inferior quality, they have a shorter lifespan than the more durable high-quality tools. This ends up becoming more expensive, because the broken tool has to be replaced more frequently, while also being worse for the environment. This cost benefit, together with the environmental angle, constitutes a significant motivation for many people seeking to minimise their expenditure by seeking renting or sharing options.

### 2.1.1.2 Issues of Sharing

While sharing and renting bring a plethora of advantages to its participants, it also has its drawbacks. Platforms such as Airbnbs do not have the responsibility of providing landlords with benefits, leaving them in a vulnerable and in a weak position. Moreover, it also impacts the housing market in urban areas, because it is more lucrative for landlords to rent out their houses on the platform rather than to locals (Frenken, Schor, 2017, pp. 3-10). Sharing only works if there is a certain level of trust on the part of the consumer. Without it people are reluctant to participate (Yang, Ma, Zhang, 2018). For example, the threshold of sharing an item that is expensive or of personal value with strangers is much higher than that of an older and emotionally less important item. Items that are shared on P2P platforms are often items that do not hold emotional value or are not the newest, so that the owners will not be upset if they are damaged. Moreover, trust also extends to privacy, because these transactions usually occur physically, requiring one party to give their personal address, which is again based on trust. Hence these types of platforms need to provide credibility and social credit through reviews and mutual ratings (Ghose, Ipeirotis, Sundararajan, 2005, pp.150-154).

Thus a professional provider must find ways to mitigate some of these pain points to provide a successful service. Although having slightly higher prices than P2Ps, B2Cs offer the certainty that the products are properly insured

and maintained, because if they are already established in the business, they can rely on their reputation and credibility. In the case of Bosch, they offer their own tools, which have prestige and are of high quality; thus, they are able to offer a consistent experience, as well as focused assistance.

### 2.1.1.3 Summary Sharing

Professional rental offers various advantages over private rental for users, in terms of credibility and trust, as well as in quality. Since trust is a premise for sharing economies, a reputable player such as Bosch lowers the barriers for people to participate in sharing by providing their own high quality products. In particular, because sharing is moving to the digital realm, it is crucial to provide users with a consistent and understandable digital user experience, which they would expect from Bosch as a global player.

## 2.1.2 Human-centred Design

In this project, our main focus was the users and their needs, because we intended to attract a larger group to the service. We therefore had to be mindful about how we approached this.

### 2.1.2.1 Definition

Human-centred design is a methodological approach in which the focus is primarily on the users identifying their needs and defining their requirements in order to make systems useful and relevant for them. This step of making a determined effort to understand the users by showing empathy leads to the increased effectiveness and efficiency of goods and services, while also increasing satisfaction and a sustainable system in the long run. *(Giacomin, 2014)* In addition, the goal of this approach is to move away from superficial design and towards an empathetic understanding of the user. Depending on the sources, a human-centred design consists of three or four phases. The first phase revolves mainly around gaining a sound understanding of the users' needs and defining the problem that needs to be solved. This is followed by ideating possible solutions to the previously-defined problem and prototyping. The last step consists of evaluating the previous choices *(Bartl, 2017)*.

Joseph Giacomin uses a pyramid to illustrate the asking of an incremental number of questions to determine the relationship of a design artefact or a service to a person. It utilises classical rhetorical questions of who, what, when, in what way and why. The hierarchy of questions is based on human physical, perceptual, cognitive and emotional characteristics, since the questions become more complex in relation to increasingly complex interactions and considerations *(Giacomin, 2014)* . There are also many parallels to Sinek's 'Golden circle' which has questions relating to what, how and why that progresses in a similar manner *(Sinek, 2011)*.


*Figure 2. The human-centred design pyramid by Giacomin (Giacomin, 2014)*

### 2.1.2.2 Benefit and Implications

Understanding the user by asking a plethora of questions and empathising with them should lead to the interaction between the consumers and the service becoming more organic. This means that a wider range of affordances can be created, making it easier for the product or service to be integrated into their everyday lives and suitable for a wide range of users. In our project, we aimed to create a service that was welcoming to many types of consumers and easy to use. In order to understand what this meant for differing user groups, we focused on empathising with both the users who were already targeted by the scope of the service and those who were not.

The human factor in this method was key, because there are potential obstacles when utilising a human-centred design, of which we needed to be aware when reflecting upon in our design process. We, as designers, needed to strike a balance between our knowledge and the users' needs, while simultaneously considering current practices and envisioning new ideas *(Steen, 2011)*. Moreover, while all these steps needed to be executed and examined carefully, the process could not take too long because the users' needs might have evolved by the time the service was launched.

### 2.1.2.3 Rationale for adopting this approach

With their service proposition, Bosch has defined their target group as follows: The service is available to anyone over the age 18 and is legally allowed to rent things and execute monetary transactions. They are urban dwellers, do not already own any power tools and do not have space in abundance for things to

be stored. Moreover, they frequently use power tools in their free time for DIY projects. Because we aimed to expand this target group further, there were several considerations to take into account. This entailed having potentially differing age groups and specific subgroups with differing needs, and obstacles that needed to be identified and examined. Moreover, we also wanted to specifically focus on subjective characteristics, such as emotional responses, and find overlaps between the user groups.

- Skill Levels

With this in mind, we wanted to explore who else could benefit from this service and thus expand the target group. As mentioned above, we aimed to address a large variety of people. Therefore, we needed to consider that there was a variety of levels of knowledge of tools and how to handle them. People might have had differing amounts of exposure to tools throughout their lives.

- Gender

The current tool-rending landscape involves targeting predominantly middle-aged, male DIYers. This exclusion of women and non-binary people results in the alienation of those who are potentially interested but do not fit this cliché. The reasons for this lack of inclusion might stem from stereotypes that are still prevalent in our Western society. For example, the traditional educational systems used to teach crafts as a gender-segregated subject that was split into technical craft work for boys, taught chiefly by men, and textile craft work for girls, taught by women teachers *(Lepistö, Lindfors, 2015)* . This separation could signal to children what women or men are better suited to do, which can influence the perception of their abilities. For our project, we wanted to continuously observe and question stereotype issues and to include these insights into our work, especially when trying to open up this stereotypically masculine sphere of technology and building. We did not want to focus on gender per se, but rather prioritise the actual needs of the user group that we wanted to determine through interviews, workshops and user tests. However, we aimed to maintain a certain gender balance in order not to exclude either gender in the process. We were of the opinion that we needed to be mindful of the masculine hegemony in this sphere, but without seeking to exclude men either.

## 2.1.2.4 Summary HCD

For our project, we wanted to prioritise the needs of all our users and understand the various obstacles that they faced when using our service. Our goal with our contribution to Bosch's service was to create a service that caters to the differing requirements and merges them in such a way that it becomes an offering that a variety of people can

benefit from. By following a human-centred approach, we hoped to elicit the views of a wide variety of people by asking increasingly complex questions of their different interactions with the service. We wanted to employ this method early on in our research in order to remain flexible. We wanted to offer several options, without them becoming obstacles for some potential customers, thus creating increased accessibility. It was important that the service should not exclude whole groups of people, but create value in the right places. In addition, we wanted to examine and identify the differing perceptions and emotional responses of several user groups in order to better understand their requirements, and whether or not they differed and to what extent. We did not seek to reduce them solely to their gender, but aimed to use these insights to better understand possible correlations.

## 2.1.3 Motivation

Before starting with the design, we needed to understand what drove people to start or abandon a project. Therefore, we investigated how we could use this knowledge to encourage people to use tools, especially those who were not doing so yet.

### 2.1.3.1 Definition

People have a variety of drives that motivate them to take action, which are highly subjective. There are two main forms of motivation, intrinsic and extrinsic. While intrinsic motivation relates to an internal interest, extrinsic motivation arises for reasons other than subjective delight *(Ryan, Deci, 2020)*. There are specific categories within extrinsic motivation related to behaviours that are driven fully externally, and partly externally and partly internally *(Ryan, Deci, 2020)*. The self-determination theory (SDT) framework was developed to indicate people's intrinsic motivations and to provide them with support through facilitating environments *(Ryan, Deci, 2020)*. Furthermore, Touré-Tillery introduces a third form of motivation called the 'self-concept'. Here the focus is on how individuals perceive themselves and want to be perceived by others *(Guay, Stupnisky, Boivin, Japel, Dionne, 2019), (Möller, Pohlmann, Köller, Marsh, 2009), (Touré-Tillery, Fishbach, 2018)*.

In this instance, people are motivated to maintain or display a positive image of themselves to themselves (self-signalling) and others (social signalling). Social signalling is driven by the desire to achieve a goal, such as social acceptance, while self-signalling comprises a focus on the self, such as behaving according to one's moral beliefs *(Touré-Tillery, Fishbach, 2018).*

### 2.1.3.2 General Inhibition

While examining the various aspects of motivation, we needed an understanding of obstacles that undermined motivation in our user groups. A subcategory of extrinsic motivation is introjection, whereby the motivation is driven by avoidance of negative feelings *(Ryan, Deci, 2020).* Therefore, it could be deduced that tool usage inhibition could be the result of introjection for people who have had negative experiences with tools, because people are motivated to avoid an action they do not feel confident about. This results in them not being particularly willing, for example, to begin a DIY project using power tools. However, if the stimulus is strong enough, for instance, if the person is moving house, they might have no choice but to confront this situation.

Another inhibiting factor lies within the subject of stereotypes in the sphere of technology and building. It is important to note that the stereotypes go both ways, because differing expectations are placed on women and men. Stereotypically, men are attributed with more agency, that is, taking control, whereas women are characterised as having more communality, that is, concern for others (*Keller, 2002), (Hentschel, Heilman, Peus, 2019).* This places expectations on men to excel in STEM field areas (science, technology, engineering and mathematics), while for women these expectations remain low. This stereotyping of abilities can put pressure on men, who might fear performing poorly in fields in which they should excel *(Keller, 2002), (Cheryan, 2000), (Steele, Aronson, 1995).* On the other hand, women face the opposite challenge, whereby the pressure to fulfil this negative stereotype can result in impairing their performance *(Keller, 2002), (Cheryan, 2000), (Steele, Aronson, 1995).* The way in which people perceive themselves is formed when they are children and is largely shaped by the environment and the beliefs of the society in which they are raised. They then carry these beliefs about the expectations of their gender and 'appropriate' abilities into adulthood *(O'Dea, Lagisz, Jennions, Nakagawa, 2018)*.

In the context of using a power tool renting service, motivation manifests in a variety of forms, depending on the user. Within our user groups we expected to find both intrinsic and extrinsic motivations. One externally-motivated reason to use an on-demand tool renting service is the instant availability of a rather inexpensive option, whereas the motivation to start a DIY project has a more intrinsic quality. The former type of motivation can include a broad spectrum of users, which can be used as a vehicle to introduce this service and the usage of tools to more people. It tends to be harder to motivate a person to engage in an action that is at odds with societal expectations. Therefore, it is important to understand the various internal hurdles of users, because the more an action deviates from the norm, in this instance using power tools, the more the person performing it will perceive their action as indicative of the type of person they are. Thus, if they do not identify themselves with the currently stereotypically represented person practicing DIY, they might not want to engage in the action in the first place *(Touré-Tillery, Fishbach, 2018).*

### 2.1.3.3 Learning and Community

The motivation to learn something or engage in a particular activity that is required infrequently is extremely relevant with regards to tool usage. Contact with tools

often occurs in school settings and is abandoned afterwards, unless a craft apprenticeship is pursued or an intrinsic motivation is present. Online tools and services have a big impact on how knowledge is shared and consumed beyond the classroom and create new possibilities for learning. Both doing and learning are processes that require individuals to engage in an interchange with their environments and other individuals *(Gibson, 2019), (Kimmerle, Moskaliuk, Oeberst, Cress, 2015)*. In a digital environment, the interchange or exchange with other individuals can occur in online communities. We see potential in providing knowledge in the area of tool use through a community, which can be used to address the questions and concerns of users in an empathetic way.

Providing safe and supported spaces ensures that novices feel comfortable to experiment with their learning and to ask questions *(Terry, Nguyen, Peck, 2019)*. Moreover, a sense of collegiality and relatability provides grounds for people in the same or a similar position to meet and exchange ideas, which in turn helps new members to assimilate into an existing community *(Hertzog, 2002)*. The empathy for others that share a similar struggle might activate users to participate in answering questions or creating content. This coming together through shared interests or goals is suited to a community that develops organically over time, especially in so-called communities of practice *(Terry, Nguyen, Peck, 2019).* Moreover, this format has the possibility to grow into whatever the users need from it and remain dynamic, rather than a structure being forced upon them.

For our service, we saw the potential for an online community that offers help to others but also inspires. We wanted to provide a variety of media formats of knowledge, from step-by-step tutorials to forums, help hotlines and workshops, to offer each user the choice of how they preferred to learn and to what extent they wanted to interact with others.

### 2.1.3.4 Summary Motivation

Using the framework of self-determination theory (SDT) as a reference, we wanted to take the various types of motivation into account during the development of our concept. Providing novices with an environment that facilitates learning in order to foster intrinsic motivation seemed to be a promising route to consider. This would be especially advantageous in light of the benefits an online community offers. Put in the right context and frame, it provides a space for an exchange between like-minded people in which novices feel encouraged to ask questions and progress in their learning. Although not all users were likely to engage in a community, it would nonetheless create value for those who needed it. In regards to inhibition about

using tools, it was important to acknowledge existing stereotypes and to understand their impact on how people might identify with a perceived service or not. These aspects should not be underestimated or overlooked. Therefore, it was necessary to examine the aspects of the various types of motivation to encourage more people to use tools through our service.

## 2.1.4 Conclusion: Background & Context

Understanding this conept helped us to understand in which sphere our project was located and on which premise the sharing economy relies. The benefits of Bosch's value proposition of convenient access to high quality and professionally-maintained tools, as well as their reputation, would facilitate a favourable entry into the market. We expected users to choose this service for a variety of reasons, such as economic considerations, low frequency of usage, moving or for leisure projects. Thus, proceeding to expand Bosch's digital capacities to accommodate user needs was an important next step.

Through a human-centred approach, we wanted to understand the users' true requirements, while attempting to strike a balance between them. Our intention was to involve users throughout our design process to assist us to create several options to address their needs, without any of them becoming obstacles for others. Moreover, it was important to consider how and to what extent gender played a role in their requirements, while attempting to take an unbiased approach.

Another important factor for us to understand was which type of motivation was present in each user group. This gave us an indication of what type of support or format they required to achieve their goals. In addition, persisting stereotypes had to be addressed, because they might have played a role in how people wanted to be perceived by the society around them. This would influence both their behaviour and the notions or activities they wanted to be identified with. We believed that this could be mitigated by providing a space that facilitated learning through exchange with others and access to formats that delivered knowledge, giving users a choice in their learning path.

# 2.2 Related Work

In the following section, we describe several services that overlap with aspects we wanted to include in our service. These areas were:

- competitors in renting services
- sustainability-focused services
- content according to skill level
- community
- knowledge services

We explored services from several areas *(see figure 3)* in order to analyse their approaches and propose values from which we could draw inspiration. We will not analyse these services as a whole but rather aspects of them. The structure in the following section will follow a pattern of a short description of the service, followed by a list of what we deemed positive and negative aspects.

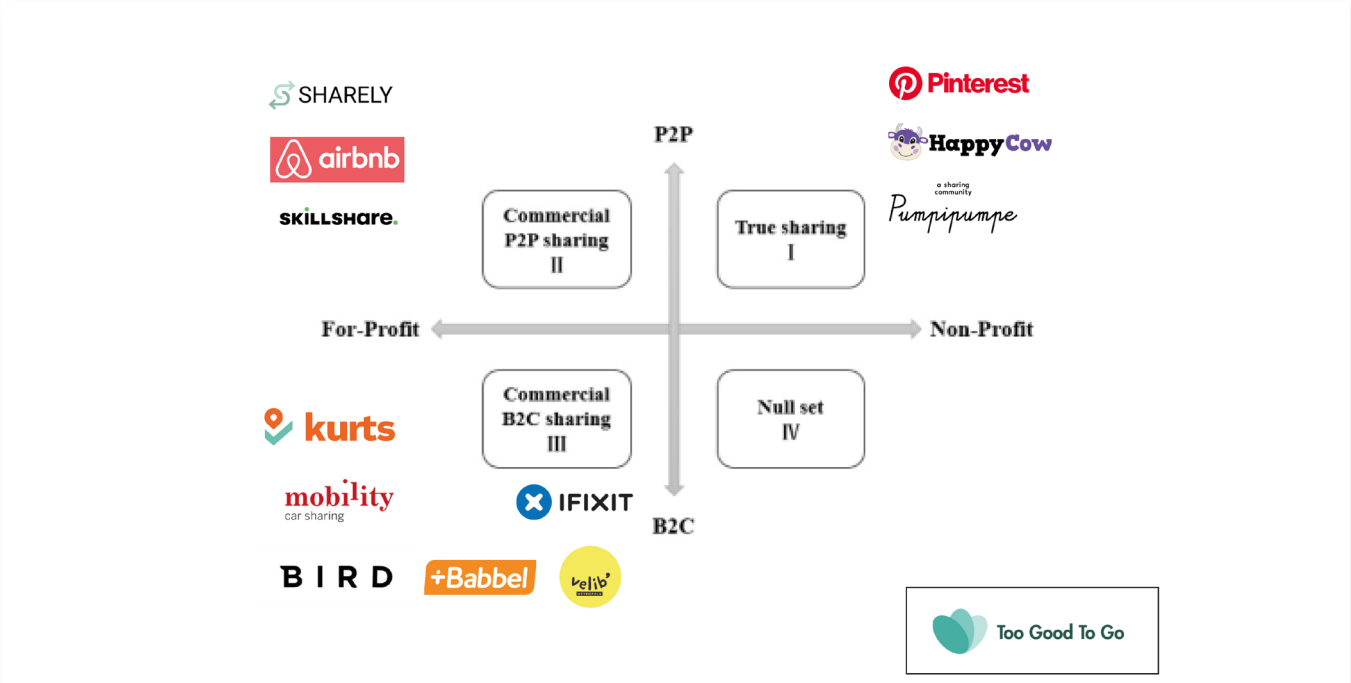



*Figure 3 Matrix of related work based on Figure 2 (Yang, Ma, Zhang, 2018)*

## 2.2.1 Competitors in renting services

We reviewed competitors in the field that offer a similar value proposition to Bosch's service. It was especially relevant understanding what was already on offer in the market.


*Figure 4 Toolbox Stations by kurts toolbox*

Kurts toolbox

Kurt's is an on-demand tool-renting service. They offer a selection of tools via an app, on which users can rent the items. The tools are picked up and returned to a physical station. The prices vary depending on the duration and the item. Their stations vary in size and the tool selection depends on the location. This service is designed for DIYers.

PROS:
- Two types of pickup stations, depending on the location
- Available 24 hours
- App version
- Good visuals
- Tool Categories

CONS:
- Targets only users who are experienced with tools
- Only three stations in Switzerland at the time of writing
- Cliché user group – middle-aged male DIYer

Sharley

Sharley is a platform on which people can share their personal belongings and rent out everyday items. A map shows users where they can find specific items and provides the contact data of the persons renting them out so that the renter can pick them up. The price depends on the item and duration of the rental. The service is aimed at people who are looking to rent and those who want to offer items for rent because they do not need them at that time.


*Figure 5 - Landing Page of SHARLEY*

PROS:
- No fixed locations
- Cheap alternative to purchasing
- The objects are insured
- App version
- Local
- Community aspect
- Browse through selection

CONS:
- No high quality tools on offer
- The items are picked up at someone's home
- Inconsistent visual language
- The description of and information about the items are not uniform
- Not beginner friendly due to the absence of relevant information, such as manuals

Vélib

Vélib is a bicycle rental service with stations in Paris. Anyone can rent a bicycle at a reasonable price and return it to any of the locations. They offer differing subscription rates, depending on the frequency of use. The service is aimed at locals and tourists. It has developed a dense network of rental stations, which makes it convenient to use.

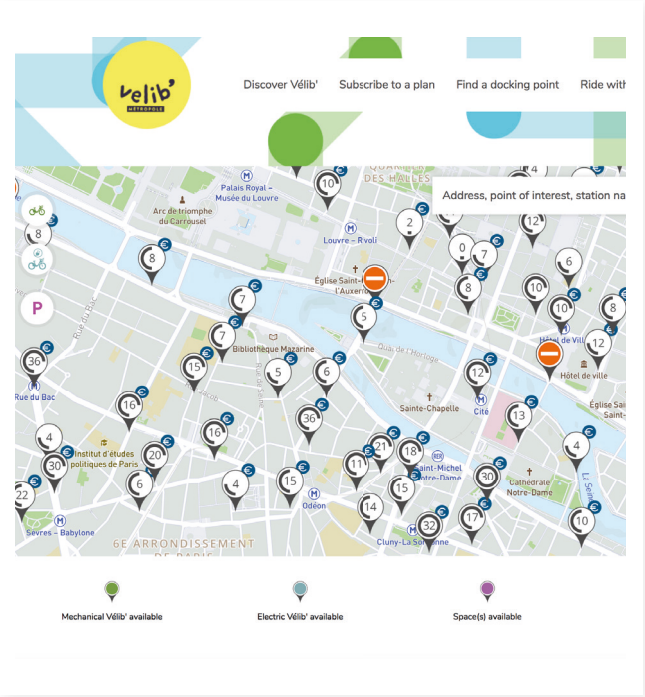



*Figure 6 - Landing Page Vélib*

PROS:
- Differing pricing rates
- Dense network of locations
- Helpful information and tutorials
- Well-functioning combination of app and physical locations
- List of safety factors
- Inspiring blog

CONS:
- None

Airbnb

Airbnb provides a space that connects people who want to rent out their private homes to people who are looking for holiday accommodation. This service is available all over the world and is extremely popular, especially in big cities. Therefore, it competes directly with hotels by offering a cheaper alternative and a different kind of experience.

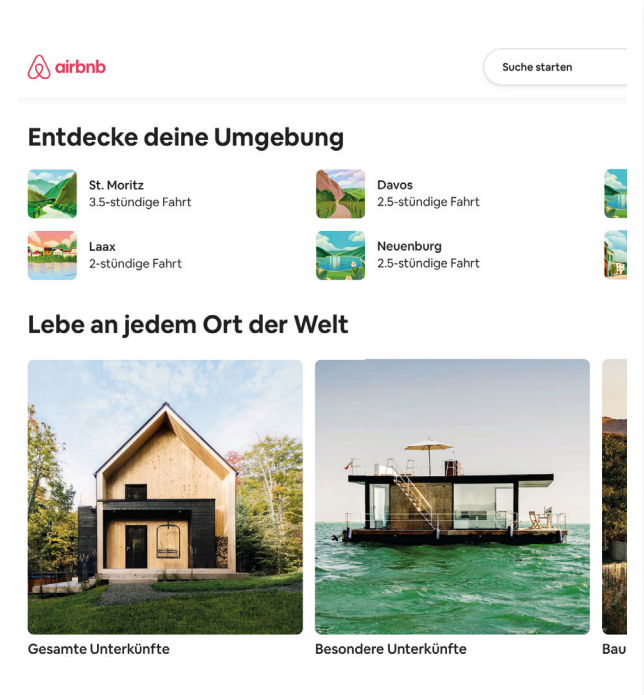



*Figure 7 - Landing Page of Airbnb*

PROS:
- Inspiring online appearance
- Great hierarchisation and standardisation of information
- Consistent visual language
- Well suited for browsing and for people who know what they want
- Cheaper than most hotels

- Community of hosts sharing their experiences
- Offers location-specific experiences

CONS:
- None

## 2.2.2 Sustainability focused services

We specifically took into account projects in which sustainability was a primary factor. We also examined the importance the users' place in this aspect, what compromises they were willing to make and how this was implemented.

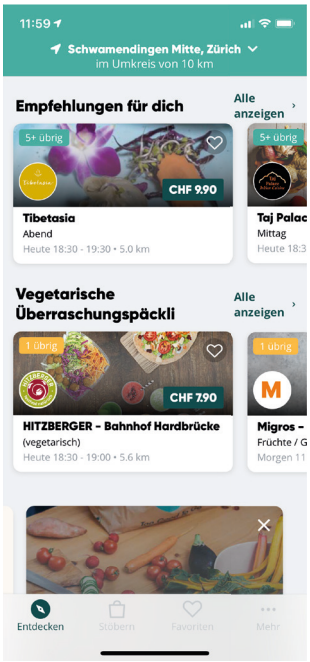



*Figure 8 - App Landing Page Too Good To Go*

Too good to go

The app 'Too good to go' gives stores and restaurants the opportunity to offer leftover food at a reduced price instead of throwing it away, with the objective of mitigating food waste. It is a good example of practising sustainability. It is used mostly in urban places where there are many restaurants that have leftover food at times. It is used by both consumers and providers.

PROS:
- Gives people the option to act more sustainably
- Lower price
- Spontaneous
- The location service shows relevant restaurants in proximity

CONS:
- Only pickups; no delivery
- Time restrictions
- Dietary restrictions not always considered
- More convenient for stores than for consumers

ifixit

ifixit is a community-based online platform on which the users themselves post content about how to repair electronics. It is a resource people can use free of charge in order to make simple repairs themselves rather than throwing items away. Everyone is invited to contribute to the platform, be it in the form of tutorials or by adding higher quality images. The community aspect and the spirit of DIY was especially interesting for us.

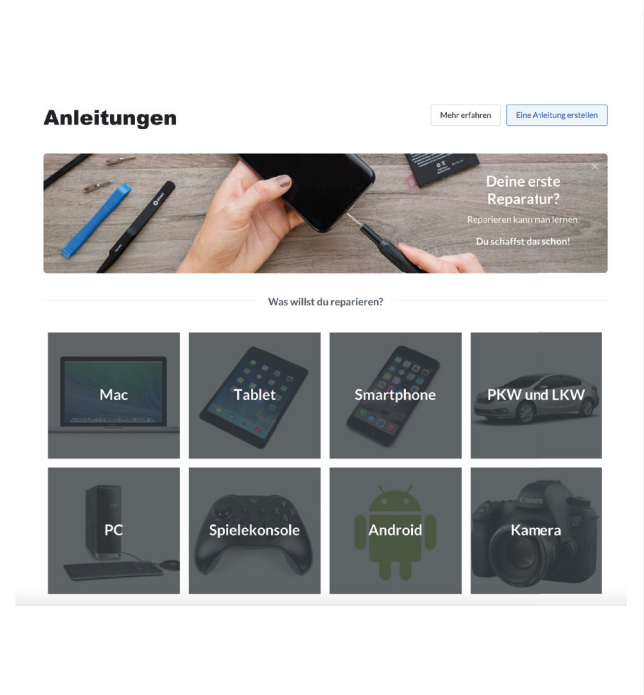



*Figure 9 - Categories from ifixt*

PROS:
- Empowers users to repair their own electronic items
- Functioning community
- Suitable for all levels of experience
- Cheaper than buying new items

CONS:
- Verification of effectiveness of tutorial unclear
- Tutorials are very text based
- No app version

## 2.2.3 Content according to skill level

The confidence to start doing things was also a topic that we wanted to explore. We were interested in how we could provide fuel for intrinsic motivation and personalisation. We also wanted to see how to address peoples' self-doubt about their abilities. Therefore, we looked at services that specifically addressed the various skill levels to reduce possible barriers of the various user groups.

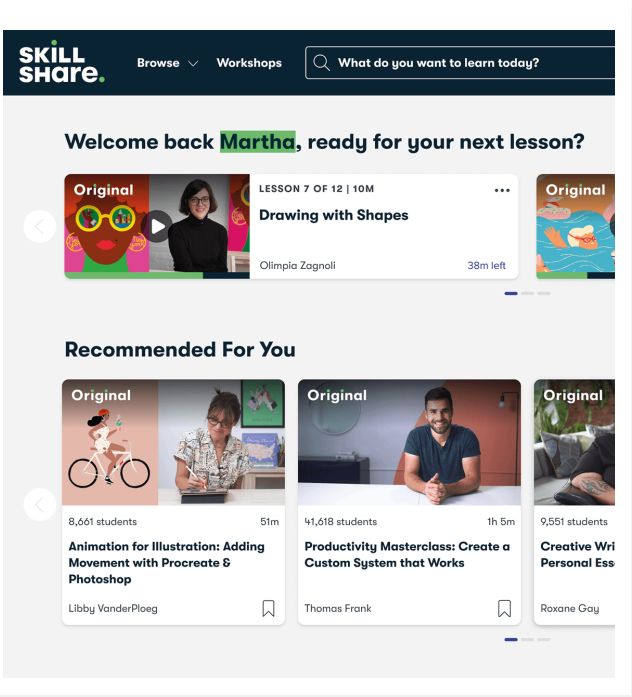



*Figure 10 - Landing Page Skillshare*

Skillshare

Skillshare is an online platform for learning a large variety of skills. The content is created by people with several skills, mostly experts in their field. It is used by people who are actively seeking to learn or improve their skills. Beginners and advanced learners can watch videos specifically adapted to their level of difficulty.

PROS:
- Suitable for all skill levels
- Appropriate categories and filter settings
- Short tutorials
- Personalisation of content
- Promotes learning by doing
- Community aspect for teachers and students
- Blog accessible to the public
- Encouraged to share process

CONS:
- None

Wegwandern.ch

Wegwandern is a website that provides relevant information about hiking trails in Switzerland. It was originally started as a blog by two women hiking enthusiasts who combined information from several sites. Now it is used by people who are looking for inspiration for a trip and want to know the difficulty level of the trail or what amenities it offers.

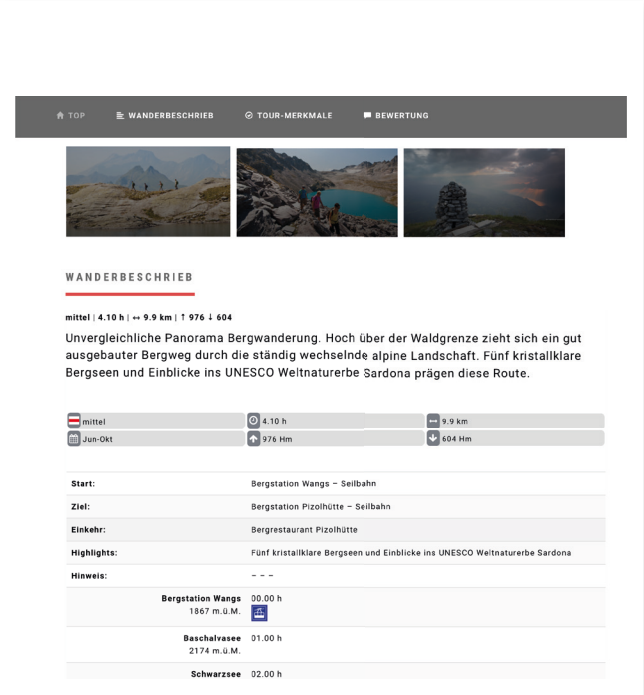



*Figure 11 - Blog Entry Wegwandern.ch*

PROS:

- Suitable for all levels of skill for both walkers and athletes
- Users can self-assess their skill levels
- Information about the experience in addition to hiking

CONS:

- None

Babbel

Babbel is an app that enables one to learn languages in short lessons. It offers online lessons that build on each other, enabling users to learn a new language at their own pace. It also aims to give beginners confidence in another language by making it easy to learn and encouraging them to speak it, which in turn motivates them to continue learning.

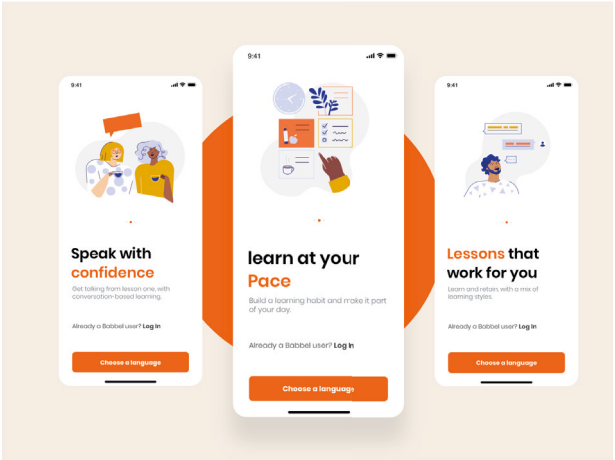



*Figure 12 - Babbel App*

PROS:
- Suitable for all levels of skill
- Individualised learning
- Keeps users motivated by making small successes visible
- Gives beginners confidence in other languages
- The user experience is pleasant
- Lessons in relevant contexts

CONS:
- No overview at the beginning, such as how many tasks are involved
- The structure of the tasks can become repetitive

## 2.2.4 Community

This category refers to how users support and motivate each other to do something with the help of an online community. We were interested in what it took for people to voluntarily participate and to pass on their knowledge to others, and in what ways and areas such formats were used.

*Figure 13 - Illustration by Pumpipumpe*

Pumpipumpe

Pumpipumpe is a local sharing platform through which people can share their personal belongings.
It works at a local level by design, connecting residents of the neighbourhood. Items that can be shared can be entered on a digital map of the city or shown in the form of stickers on one's mailbox . Users can plan when they want a certain item via the digital map and it can also be used spontaneously via the mailbox stickers and simply knock on the corresponding person's door to ask for the items.

PROS:
- Local community of like-minded people
- Connecting residents of the neighbourhood
- Digital map for planned use
- Mailbox stickers for spontaneous use
- Cheap alternative to buying

CONS:
- Quality of tools might not always be the best
- Availability not guaranteed

Pinterest

Pinterest is a platform that offers a catalogue of ideas and thus inspires users in diverse areas. It is also known as a visual search engine and users can like posts on the website, create their own or repost them. The posts are linked to other websites and therefore have a wide reach. The website encourages users to keep scrolling by providing similar suggestions to their pins or items selected in past searches. Also, no specific knowledge or skills are required to use this page.

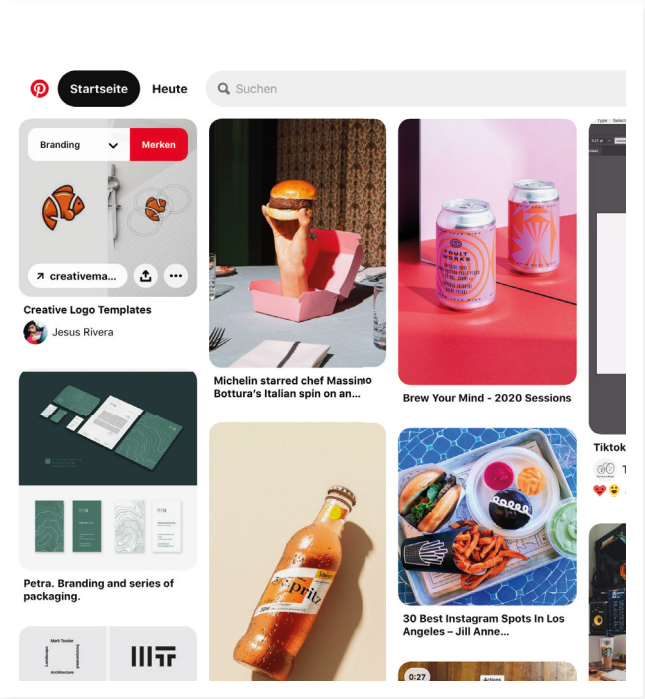



*Figure 14 - Landing Page Pinterest*

PROS:

- Large community providing content
- People are motivated to share their ideas, knowledge and projects online
- Personalised suggestions relating to topics of interest
- No specific knowledge needed
- Metaphor of pinning ideas on a wall
- Making own collections

CONS:

- Easy to get lost when scrolling
- No overview
- No interaction with people who posted content

HappyCow

HappyCow is a crucial app for vegetarians to find restaurants in foreign locations. It relies heavily on people who empathise with the struggle to find a fitting restaurant to create the content. Through an online platform, users can share their experiences with others or find restaurants directly on the map.
If users write a review, they are rewarded with badges.

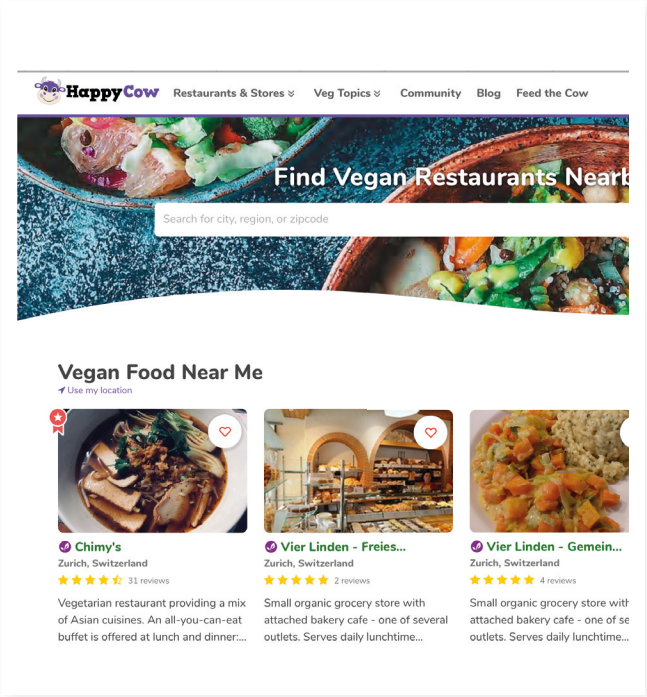



*Figure 15 - Landing Page HappyCow*

PROS:
- The users were motivated to participate through good use of gamification
- Empathy with strangers was generated by having a common struggle
- Functioning online community of non-experts
- Interaction with community members in forums
- Writing comments about one's experience of the restaurant
- Global and local network
- App version
- Blog

CONS:
- None

## 2.2.5 Summary Related Work

One of our core values was to design a service that put the user at the centre of their decision-making process. With this in mind, we evaluated our competition to learn new tricks of the trade and perspectives.

In this section analyse approaches of our competition and consider aspects that we would like to incorporate or avoid.

With Kurt's toolbox, we noted that their service focused on an extremely narrow user group, namely the clichéd middle-aged man who was an experienced DIYer. We wanted to move away from this outdated perception and broaden the target group to include people who were not yet experienced. Our logic was that demonstrating empathy with those who are inexperienced with using tools might result in these people being more interested in using tools in general.

We also wanted to motivate our users by assisting them to attain their goals and by providing them with an immediate sense of achievement. Babbel does this quite well: the lessons are short and tailored to the individual's skills, which keeps them motivated to continue in their endeavour to learn a language. Airbnb has also created a convenient way for landlords to rent out their homes and for users to rent them. They manage to present the most important information to their users in a clear and concise way, so as not to overwhelm them, giving them a satisfying experience and result when booking.

Renting out infrequently-used items means these resources can be used efficiently. Therefore, we wanted to see how being sustainable could be integrated into the digital sphere and influence the users' real-life habits. The app 'Too Good to go ' is a good example of empowering the users to make sustainable choices by doing something to mitigate food wastage.

Pinterest is one of the most popular platforms for finding inspiration, because it is easy to find new ideas on this site. For our service, we wanted to combine finding inspiration with providing the knowledge required to complete the project. In order to achieve this, we wanted to offer several support formats and provide users with exchange possibilities that were relevant to their projects. The content in HappyCow comes from real people who have empathy for each other, because they can relate to the struggle to find a suitable restaurant. This motivates the users to participate and they can decide how active they want to be.

# 2.3 Situating Our Work

To sum up, for our thesis we wanted to provide a service that could be used intuitively and lead the users efficiently through the process of renting. By providing additional resources such as knowledge articles, tutorials and community-created inspiration projects, we aimed to address the needs of a variety of users without interrupting the user flow of other users. For this to happen, we needed to create a safe environment in which people felt comfortable asking for assistance and felt accompanied in a way that boosted their self-confidence. Finally, in the long run, it was intended that the service would inspire and motivate people to use tools more frequently and feel confident using them.

# 3. METHODOLOGY

# 3.1 Angle

The collaboration with Bosch was especially intriguing to us because it enabled us to work in the service design field while simultaneously participating in a project that would be implemented in a real-life context.

At the beginning of our research, we intended to explore sites to determine where the pickup stations could be located, because for us this service could only be sustainable if the environment and interactions within it were suitable. During our initial research, we decided that it was more important to understand our users before concerning ourselves with the location.

After doing our background research, we understood that we needed to further investigate the main use cases of our target group, as well the obstacles to using power tools in general, in order to develop something meaningful for them. As we had encountered that renting services and the DIY domain were still stereotypically designed for a masculine user, we were motivated to challenge this notion. Thus, we wanted to bring a more inclusive angle of empathy into this world of people who were accustomed to handling tools. Conceptualising a mobile phone solution to give users support in areas with which they were not familiar, for example, in the form of a community, was one avenue that arose from our research and we wanted to investigate it further.

To summarise, our angle for our project was to focus on the overall user experience to make the most excellent tool rental service. By involving our user groups, we wanted to prioritise their voices in our decisions to make power tools more accessible and to create a safe and inclusive environment that encouraged learning.

# 3.2 Intended Contribution

We see our contribution to the field of service design as that of creating a service that has both a physical and digital aspect, and which does not target stereotypes.

By targeting a larger user group, we intended to cater to inexperienced tool users. It was not our intention to exclude proficient users, but rather to offer various gateways and various types of knowledge, such as hands-on or technical knowledge. We saw potential in adapting the visual language to help users identify themselves with a service that does not target the cliché craftsperson. Collecting all the relevant resources in one knowledge page on the app would make it possible to retain more people on the service page, since it would provide them with all the information they needed. Thus, we wanted to contribute to service solutions by offering an all-in-one experience rather than a single functionality.

While renting tools on demand still remains the core of the service, its reach would be enhanced through the additional functionality that provides value to the user but still related back to the tools themselves, hence helping the users to find the right tools for their endeavours.

# 3.3 Outline Field Research

The methods described below were chosen to help us take a human-centric approach that would enable us to empathise with our users' needs and uncover their subliminal needs. Moreover, we used participatory methods to give the participants an active voice in our process.

- Quantitative Survey

We conducted a quantitative survey to generate a general overview and understanding of the participants' opinions on the topic of sharing or renting in general. We took this approach in order to enter this project with an open and unbiased mind since we wanted to collect our own and not be reliant on Bosch's data.

- Qualitative Interviews

Later in our process, we conducted qualitative interviews in order to get to know our users and to question or verify previous assumptions that stemmed from the quantitative survey. Through more focused questions regarding the topics of renting, tool usage, motivation, sustainability and community, we tried to elicit the participants' attitudes to these topics. Our goal was not to be provided with solutions but to gather information on subliminal motivations. When planning the interviews, we made sure to interview users with varying skill levels and application areas, as well as equal numbers of men and women, to facilitate a balanced evaluation. All the interviews were conducted via Zoom.

- User Journey

Through a user journey , we wanted to gain a better understanding of the steps of the current process of Bosch's prototype to make it more tangible for us. We paid special attention to the user's goals and identifying possible points of intervention in order to improve the service. This helped us to visualise the process our users follow and create a talking point within the team.

- Personas

We created *personas* to make our findings from the interviews more tangible rather than just a collection of data. Through this step, we wanted to create empathy with the user groups and thereby uncover more specific needs, while identifying their differentiated interactions with the service. Throughout our process, we used these personas to verify whether our idea would correspond with their needs or behaviour.

- Context Immersion
We immersed ourselves in the context of moving apartments with a view to analysing the situation, because we saw this as a relevant case for our service. The self-immersion enabled us to gain new information that would not have been revealed through an interview. It also enabled us to observe the procedures and states of mind of the participants in the process. We participated in the move and observed the situation, the dynamics between the people and task distribution.

- Collaborative Brainstorming Workshops
We held workshops that were designed to ease the users into the topic of tools. It had three stages, starting with talking about how they approached projects, ideating ideas by pairing two words and freely speculating about possible scenarios. Through these workshops with our users, we were able to gain concrete insights into their needs and tendencies, while also developing new ideas with them. We also wanted to include our users in the ideation process, so as to follow a human-centric approach in our process. Thus, we invited users who were already targeted by Bosch and those who were not yet. We wanted to uncover subliminal tendencies, what the various users pay special attention to, what they value and what tendencies they show. Due to the Covid-19 restrictions, we held all the workshops online using Miro.

- User Tests
In March 2021, Bosch gave us access to their new clickable InVision prototype. The new version had not yet been implemented on a website because it was still a work in progress. The main changes to the previous version were the design of the landing page, an improved filter and search function, and adjustments to the payment option and tariffs. We tested this prototype with novice and advanced users to get direct feedback on the service from several user groups. This generated information about the hurdles they encountered in the renting process and what information or functions they felt were still missing.

- Testing our Prototypes
Here we wanted to get feedback on our wireframes , such as whether it  was clear to the users and which parts still needed to be iterated. We tested our wireframes on users frequently in order to remain close to the users and be more agile in our iterations. Our tests included wireframes that contained features that would have a significant impact on the user flow. We carried out these tests digitally over Zoom.

# 3.4 Field Research

In our research we found that there were differing drivers for each user group to use our service, namely intrinsic, extrinsic motivators or maintaining a positive self-concept.

Our hypothesis was that extrinsic motivation was present more often in beginners and professionals, whereas intrinsic motivation was more prevalent in the DIY group, while the advanced user could be in either category. The need to preserve a certain self-image, on the other hand, might be more difficult to change in the short term, because it is something that slowly develops and is highly influenced by society at large (Touré-Tillery, Fishbach, 2018). Because we wanted to put our focus on the user, we aimed to maintain a human centred approach throughout.

From the knowledge gained through the initial research, we developed assumptions and hypotheses regarding the various user groups, which we then verified and updated as we went along. Moreover, we did not want to rely solely on user data from our partner Bosch, but rather come up with our own which we could then compare and review our assumptions. For this purpose, we conducted a quantitative survey and qualitative interview. These helped us create *personas*, highlight the similarities and the differing needs of the user groups.

## 3.4.1 Survey, Interviews and Findings

We decided to conduct interviews as early as possible so as to not be led too much by assumptions in our design process. Thus, at the very beginning of the research phase, we sent out a quantitative online survey  to validate whether there was a genuine interest in such a service. At a later stage, we were more interested in conducting longer and more thorough interviews with people in order to elicit more in-depth insight into their views and opinions.

### 3.4.1.1 Quantitative Survey

We used a google forms survey that allowed the respondents to answer the questions anonymously. There were a total of 222 participants , who answered six basic questions about themselves and 12 questions related

to the topic of lending and renting. We sent the link to our survey to our acquaintances who then resent it further to theirs.

Before formulating our questions, we gathered tips from the book Improving Survey Questions by Floyd *(Fowler, 1995)* in order to get the most out of our survey. We put a great deal of thought into the phrasing of the questions to avoid misunderstandings and awkward emotions.

Our approach was to get a rough overview of the situation, which would help us to circle in the target group, aspects of the service, the frequency and form of tool use, and areas of potential, that is, locations and additional equipment.

The first six questions were designed to ease the user into the survey through basic questions about themselves. This was important for our analysis and the definition of our target users.

**- Question Topics**

The following two questions were about their familiarity with lending, as well as the main reasons for them to lend more in the future. With the subsequent questions, we wanted to determine how much importance they attached to time independence, their tendency to plan or their spontaneity, and the effort they were willing to put in to rent a tool, which would be relevant to determining possible locations.

In the section about tools, we were especially interested to determine the levels of experience with handling tools and the context in which the participants used them the most. It was also an attempt to gather information about which types of tools would be most useful to them and whether there was a need for additional equipment, such as screws.

In addition, it was important to determine their opinions on whether or not they wanted to rent tools in more context-specific places (e.g., hardware stores) in case we needed to consider and approach possible partners.

*Figures 16-21* show the questions posed while *figures 22-23* show the results.

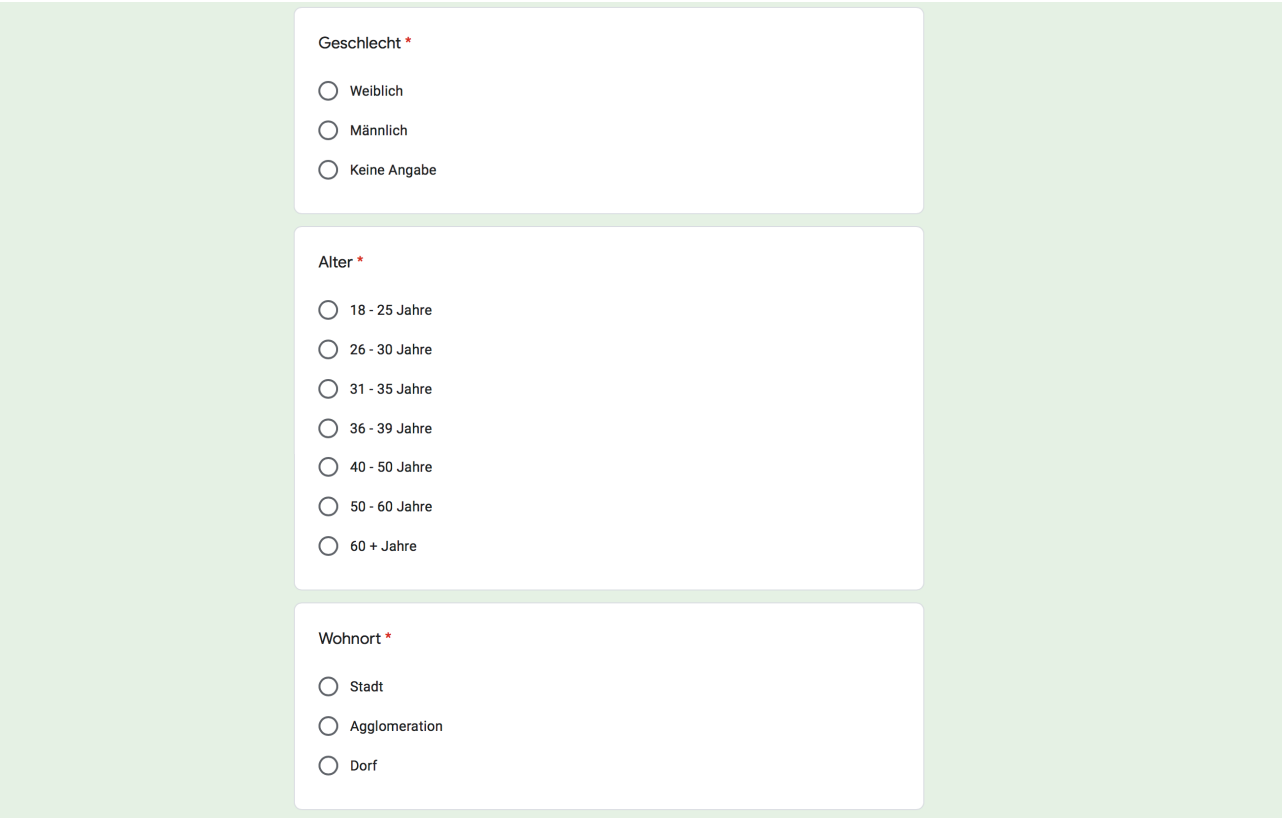



*Fig. 16 - Quantitative Survey, Google Docs*

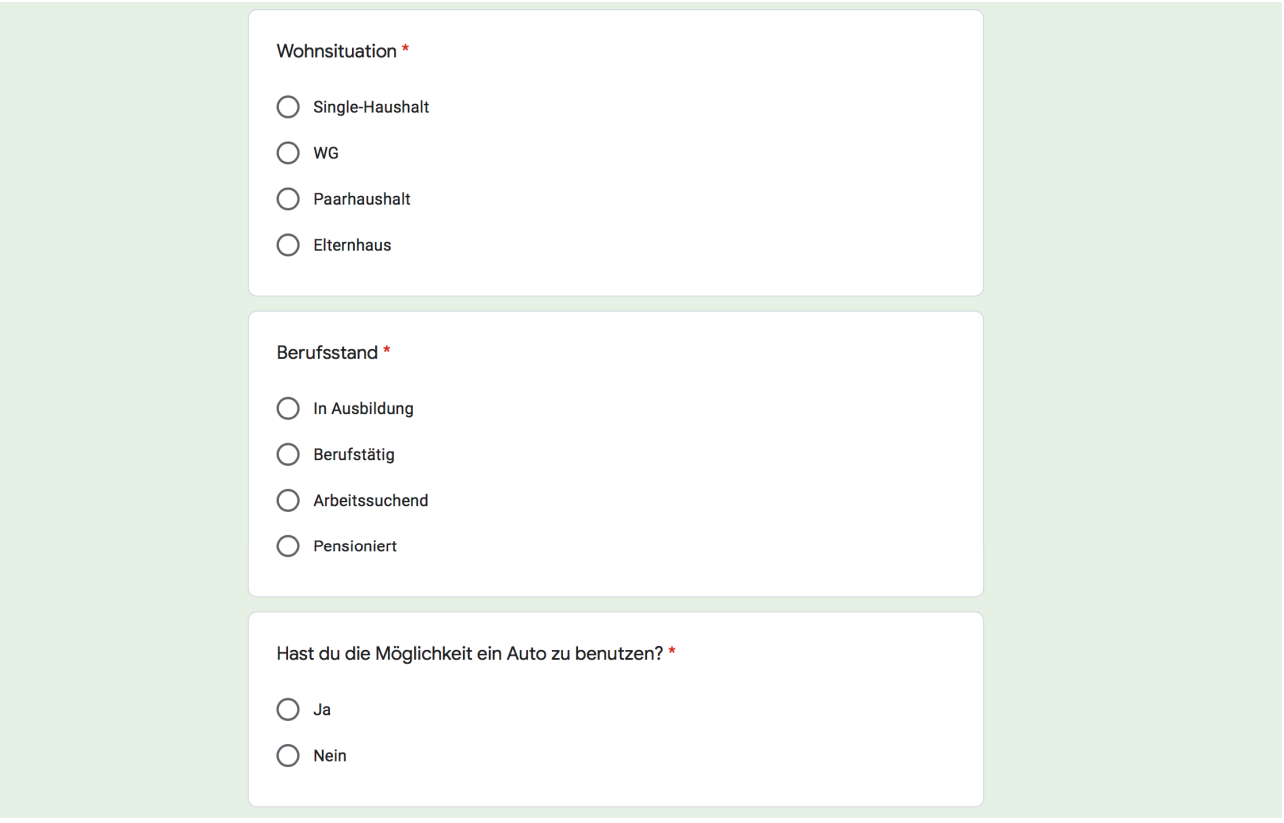



*Fig. 17 - Quantitative Survey, Google Docs*

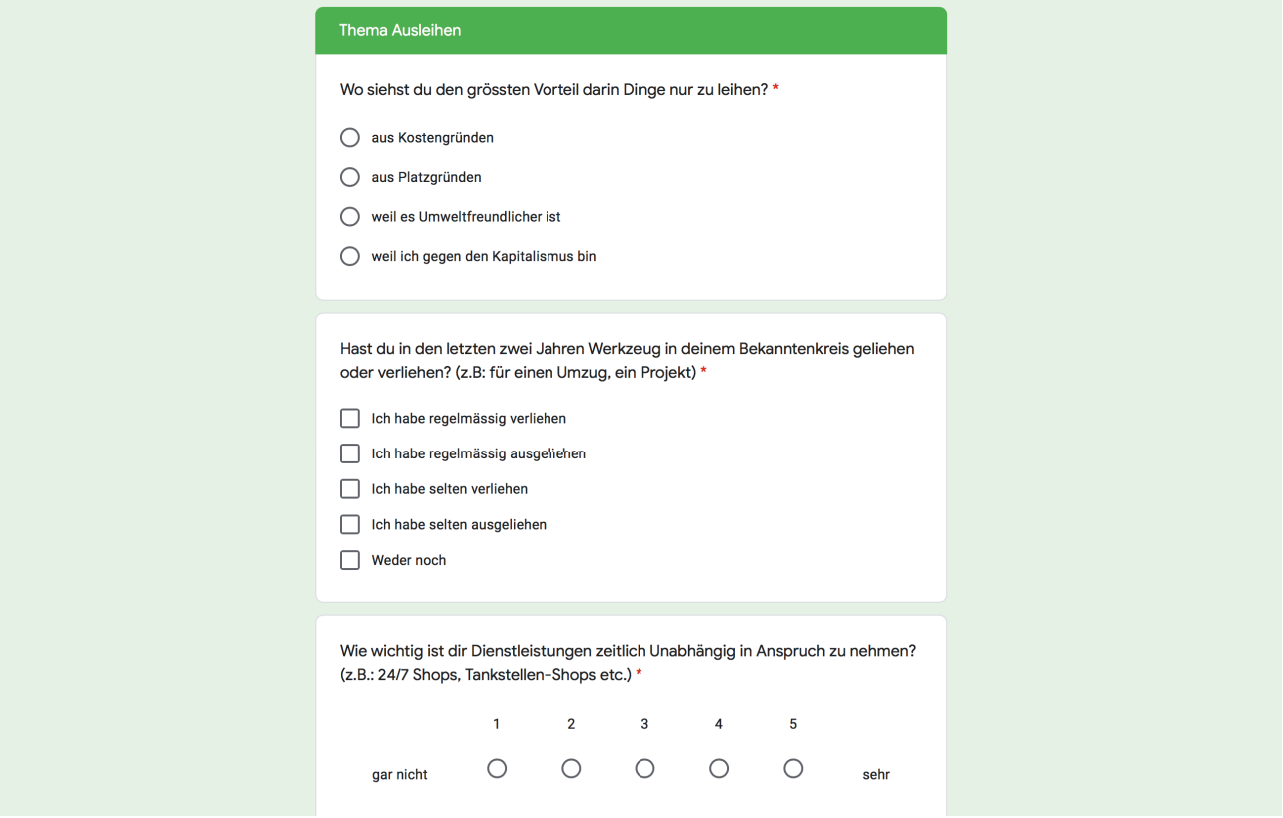



*Fig. 18 - Quantitative Survey, Google Docs*

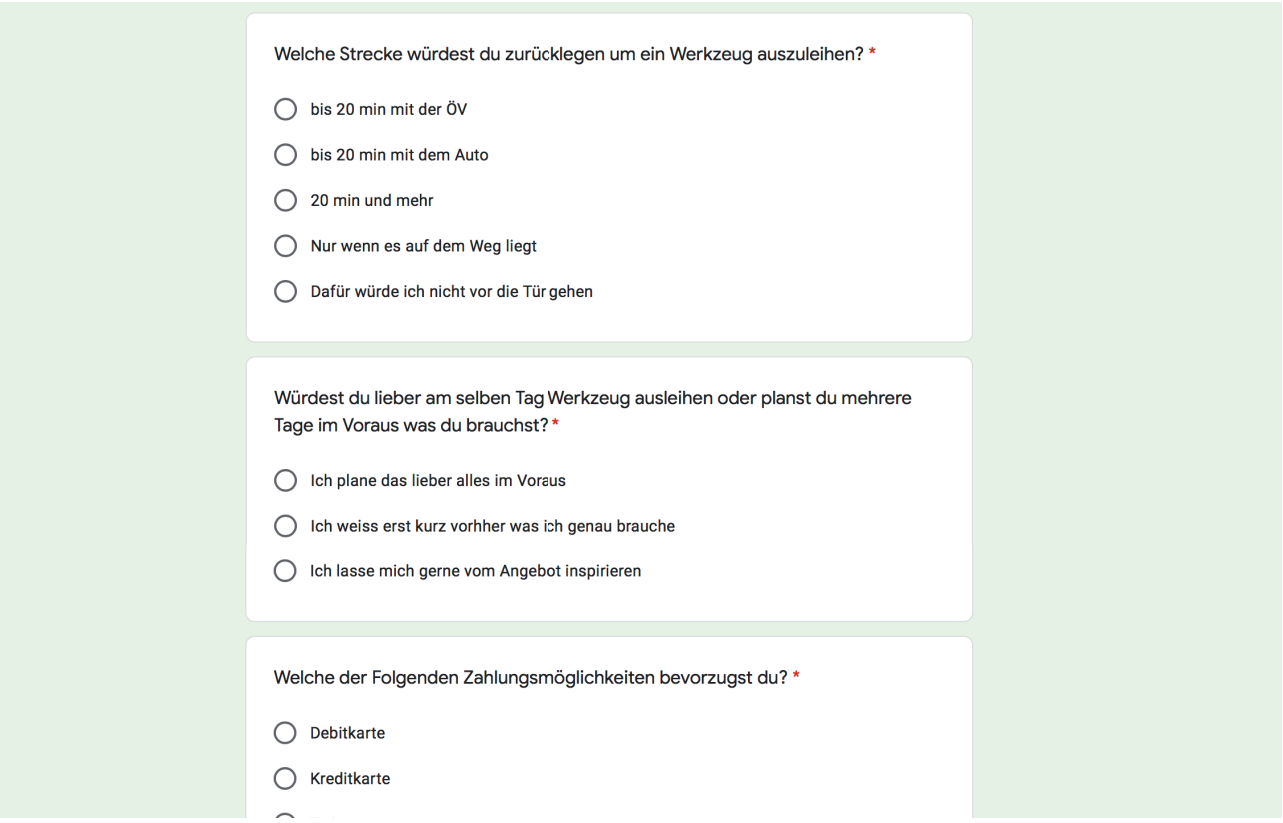



*Fig. 19 - Quantitative Survey, Google Docs*

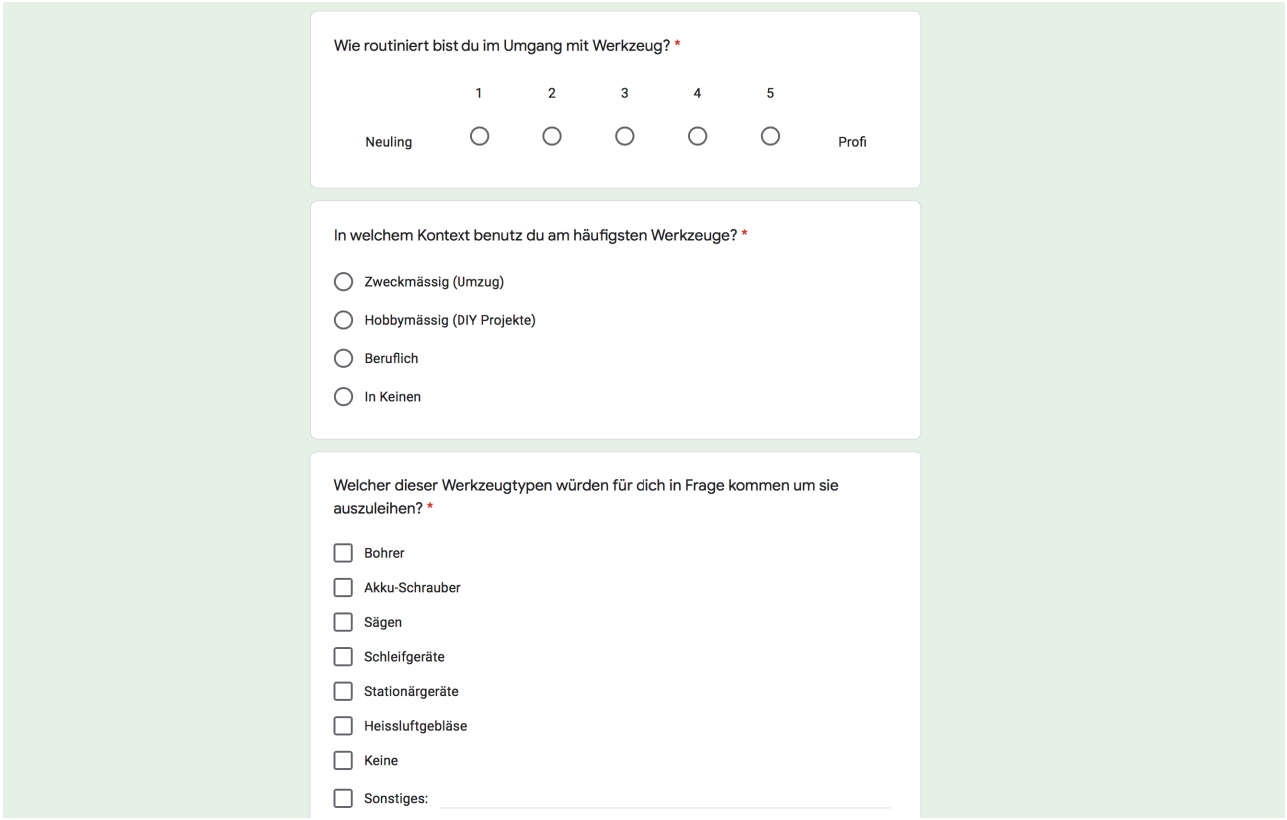



*Fig. 20 - Quantitative Survey, Google Docs*

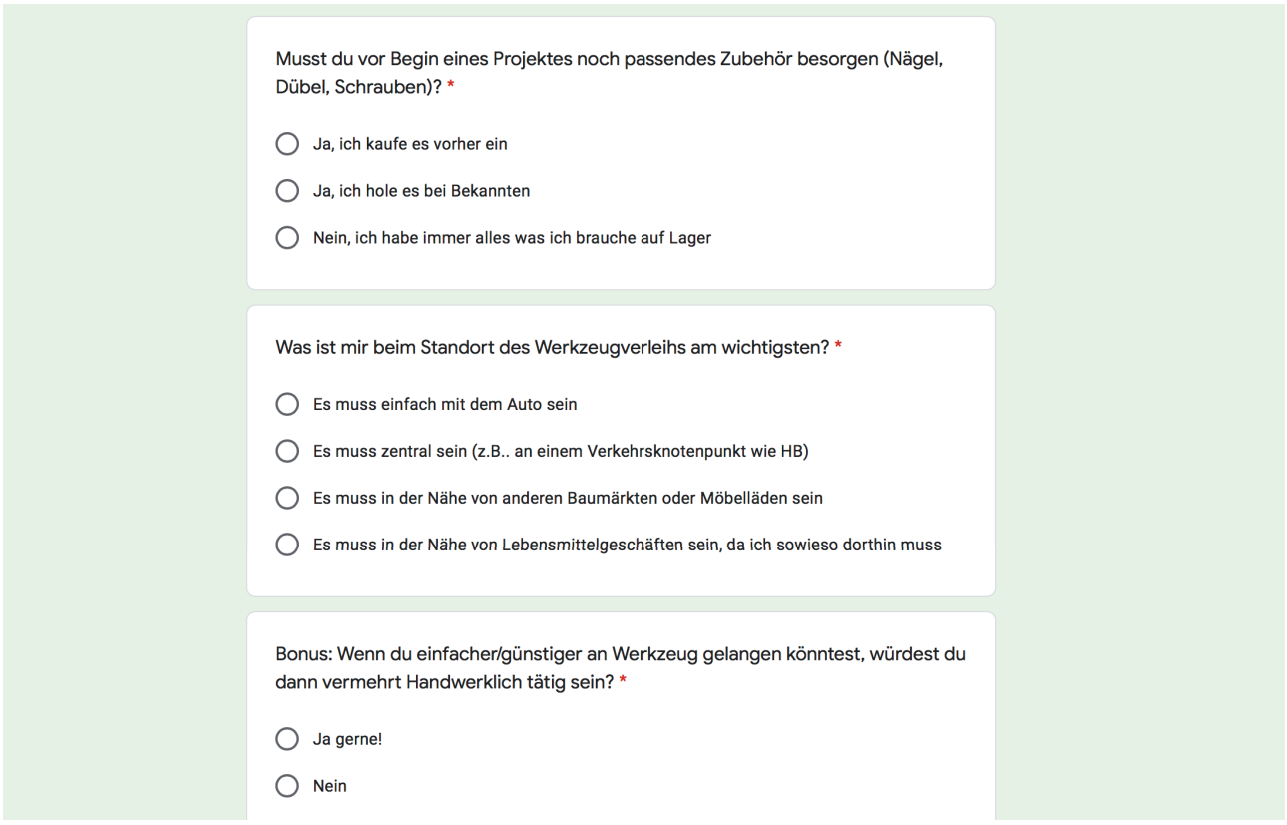



*Fig. 21 - Quantitative Survey, Google Docs*

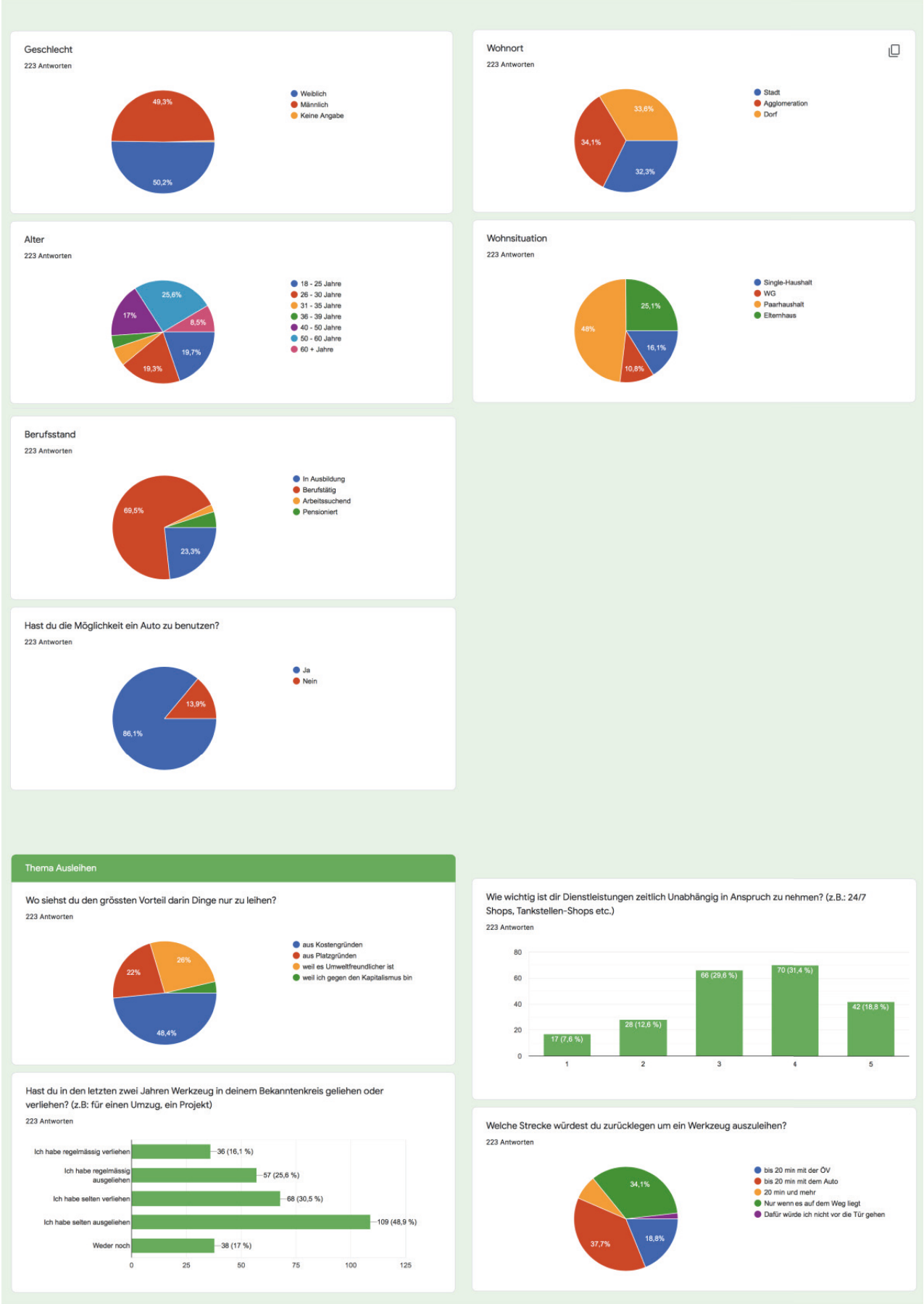



*Fig. 22 results from Quantitative Survey*

- Results and Analysis

- 50/50 of planning and being spontaneous.

- Three-quarters of the respondents preferred to pay instantly for a service, which led us to conclude that it was more convenient to pay on the spot, rather than having to worry about it later.

- 56% of the participants said they used tools mainly for purposes such as moving houses, while only 36% used them for their hobbies.

This was especially interesting for us, because offering tools for people who are moving house could be a way to inspire more users to rent their tools.

- 50% said that the tool-renting stations needed to be accessible by car.

This implied that people preferred transporting heavy tools with cars and might be a crucial reason for not using the service. On the other hand, we also needed to ensure that the other 50% could access these stations without a car.

- 74% were more interested in the convenience of getting to the location rather than it being close to relevant stores

- Moreover, 80% of participants did not have all the items required and needed to buy more items (e.g., nails and screws).

This seemed to be an opportunity for a possible expansion of the service that was being offered by Bosch.

- In addition, the majority said that they had mid-level skills.

However, here we wanted to dig deeper, because there was a possibility that they answered in this way in order to not be exposed as beginners.

- 49% saw the main benefit of sharing as being that it was a cost effective alternative, while 26% valued the spirit of sustainability related to sharing.

This indicated that the economic factor was a selling point for many. However, by highlighting sustainability, more people could be made aware of its ecological benefits.

- The majority also appreciated the fact that there was no time limit for using the service and that they did not have to put in extra effort to get to the renting location.

These general insights provided a direction and an indication of clearer areas that we could use for more in-depth interviews with actual users.

### 3.4.1.2 Qualitative Interviews

We conducted eight qualitative interviews with people from the entire spectrum of our user group to facilitate a balanced evaluation. The span of the interviews was between 40 to 70 minutes. The focus of our questions this time was on the areas of renting and lending, how the interviewees acquired and used tools, their motivation, sustainability and how actively they participated in a community.

From the insights gained through our research and the previous survey, we were able to identify possible areas which we wanted to examine more. Our goal was to challenge the current positioning of our service and determine whether it matched the users' requirements. We also wanted to gain insights into how they themselves perceived their skill levels and learn why they might have a skewed view of their abilities.

- Question Topics

Our questions revolved around their experience, stance, opinions and assessment of the importance of these areas. The areas which contained the most questions were renting and tool usage. The questions within the topic of tool usage consisted mainly of when, how, how often and where they used tools. In the renting section, we were interested mainly in their experiences of using services such as Airbnb or Mobility. In the section on sustainability, our interest lay in eliciting their opinions about sustainability, if and where they applied it, and about discovering their priorities. The questions about motivation stemmed from our research, as well as the initial survey about what drives each user group. By learning about differing motivation types, we wanted to see which of drivers were most prevalent in each user group, as well as how they motivated themselves, such as through apps or websites. With the questions about online communities, we wanted to determine what their activities or behaviours were in relation to these platforms, what they saw as obstacles and benefits, and what could motivate them to participate more, if they did not do so already. The last two questions were more speculative, because they concerned their preferences with respect to a renting platform.

With these intentions in mind, we once again referenced Floyd (*Fowler, 1995)*, as well as Bartl *(Bartl, 2017)*, when designing the questions.
For each topic we posed a set of general, specific and experience-

related questions. The reasoning behind this was to introduce a topic and then steadily dig deeper, while letting the users do most of the talking. Experience questions usually developed into discussions, during which the interviewee subconsciously revealed important information that helped us uncover values, obstacles and potential contradictions. On the other hand, the specific questions were aimed at getting a more direct answer out of the users, which helped us get concrete answers. Lastly, before concluding each interview, we posed a wish question, and the responses served as a pool of inspiration for us.

After each interview, we quickly evaluated the responses while the memory of what had been said was still fresh, highlighting the most important insights and quotations. We also used this as an opportunity to communicate to the team which questions did or did not work, if there were any misunderstandings, or if some questions required more examples in order to adjust for the next interview. However, we did not always perceive those 'hiccups ' as something negative; by revealing something personal, we were able to reduce the perceived hierarchy in an interview situation and get more honest answers from the participants. Nevertheless, we tried to be careful to still let the interviewee do most of the talking.

- Results

As we had already assigned each participant to a user group, we could cluster their answers in their corresponding groups. We started with the following three groups: novice, advanced and proficient.

- Goal conflicts

- None of the user groups were particularly active in traditional online communities (posting), but always offered support, either in real life or online (encouraging, empathising)
- All the user groups wanted resources (tutorials) but did not want to provide content themselves
- Insecurity about tool usage was most prevalent among the advanced users and novices, but not to the same extent

- Motivation

- The proficient and advanced users liked challenges. However, they should not be overwhelming
- The aspect of ease of navigation was important to all the user groups
- All the user groups had some goal in mind when approaching a project
- All the groups said they would appreciate tips for their projects
- The novices had a need to research more and compare options

- General needs

We looked for answers that indicated intersections across groups, while also looking for aspects that were unique to each group. We then proceeded to formulate the clustered insights into needs and obstacles. At this point, we realised that the majority of the insights, when transformed into needs, were true for two or all groups. We separated the needs into must-haves, motivations, usage needs and extras. This categorisation enabled us to identify the three most important needs for all the groups. They are found in the consideration and conversion phases.

- The users expect easy interactions that help them to orient themselves and navigate the page as efficiently as possible.
- They want to have the most important information immediately visible because they do not have a high tolerance for having to search for it for too long.
- When using a service, they expect it to reassure them by representing trustworthiness before they are prepared to give out personal information

These needs represented the minimal requirements that our service needed to fulfil if it was to be used in the long run. Bosch has tried to address these needs in their prototype, which we wanted to build upon.

- Individual Needs

The individual needs to relate to why people would use the service, and whether their motivations are intrinsic or extrinsic, or are associated with a positive self-concept. Also, people like to either plan their project or approach it in a more spontaneous manner, as we had learnt from our quantitative survey. Bosch had focused on the spontaneous user in their prototype; therefore we needed to decide whether we wanted to address both needs or also focus on only one.

The responses indicated that seeking support or finding the appropriate resources was not reserved exclusively to one skill level. However, the novices needed it the most *(Terry, Nguyen, Peck, 2019).* The advanced users could also take advantage of support platforms, because they might not be experts in the field and require some assistance too. The advanced user might also empathise with novices and would be more likely to offer their help, because they might have been in a similar situation. The exchange of ideas and finding inspiration is also evidently more prevalent among advanced users. Reaching out for help is not always easy; thus, empathy needs to be present in such a sphere, which can result in encouragement. Moreover, while not being a primary need of the other user groups, it can still create additional value for them. However, it should not create hurdles in their user flow.

- Obstacles

The identified obstacles referring to the service concerned usability and efficiency in the consideration phase of a service. The users indicated low tolerance for hurdles in the process, which could lead to abandonment of the service altogether if they do not need a tool urgently. This indicates the importance of the visual impression of websites or apps in terms of converting users. We learnt from the interviews that a lack of information about the tools increased a sense of emotional insecurity, leading to an abandonment of the task involving tools. Another obstacle was a lack of motivation for using tools due to missing knowledge and experience.

## 3.4.1.3 Conclusion

Our goal with these interviews was to gain an enhanced understanding of our users, to test our assumptions and to elicit possible directions for relevant solutions. In our opinion, the interviews definitely generated valuable knowledge that helped us to better position our project. *Figure 24*, comprises an outline of our points of focus and how they relate to each other. 'Good UX' refers to the simple process of finding and renting the right tool. The term 'support' is a part of Good UX because it provides the right information in the right places, while also representing knowledge resources such as tutorials. During the interviews, we became aware of a need for more targeted support for novices and advanced users. At the time there was nothing that provided more guidance if certain knowledge was absent; hence this finding needed to be explored further. Lastly, 'community' is encompassed by 'support', because it can be more personalised; thus, we wanted to look into how communities of practice provide safe and supported spaces *(Terry, Nguyen, Peck, 2019)*. They often surface organically through a shared interest, endeavour or pursuit, similarly to HappyCow. Nevertheless, renting power tools remained at the core of this project and could not be allowed to be overshadowed by other functions. Instead, they had to provide further points for more users to connect to.


*Figure 24 - Conclusion of qualitative interviews*

## 3.4.2 User Journey

Simultaneously with our interviews, we conducted the first user test using the existing service by Bosch. We did this in order to follow the users' train of thought, as well as their emotions while using the service, revealing aspects that worked and those that didn't. It is important to note that we were only able to test the digital product, because the boxes containing the tools were unavailable due to Bosch's decision to freeze the project for the time being. For the physical interaction, we relied on a promotional video and a review video on YouTube (Blum, 2019). Moreover, it is important to note that, after this first test, Bosch created another iteration of the digital service, which we also tested later in our process.

- First User Journey

The task for the user was to find and rent a specific tool. He was prompted to think out loud to provide us with insight into their thought process and decision making. Our first user was an advanced, male, tool user who usually borrowed tools from his father.

The user mentioned that the hierarchy of information on the landing page was unlike other online pages, that it was unorganised and that he expected to find relevant information, such as how the service worked, more towards the top rather, rather than reviews by other people. He also found the lack of a search function a big inconvenience, because his task was to find a specific tool; thus, he was now forced to scroll down too much for his liking. The absence of a price in the first viewing of the relevant tool, together with unclear wording, evoked feelings of being possibly misled. The price was visible only when the tool was selected. Another hurdle was the CHF 200 deposit for the reservation, paired with a small pop-up that

prompted him to give his credit card information. At this point, the user was too uncomfortable to proceed, because he thought this looked too ‘shady’ and that CHF 200 seemed unreasonable.

As a next step, we tried to visualise a user journey which consisted of five phases:

- Awareness of why he had the need to use the service

- Consideration of whether to continue to browse the page further

- Conversion to creating an account and renting a tool

- Physical use, as in picking up and returning the tool

- Loyalty if he becomes a recurring user.

Because we performed this first test with an advanced user who was focused on convenience, we took his perspective into account when creating the user journey, focusing on his specific goals and pain points in each phase. The user’s main pain points were that the structure of the page was confusing, because other online shops had a certain structure which users had become used to. Too much scrolling was required and the viewport did not offer any action for the user to take. Moreover, if he had not had such a clear task, he said he would have felt a bit lost regarding where exactly this tool might be used and for what purpose. In addition, the payment option almost led to abandonment of the service altogether because he did not deem it trustworthy enough to give out such confidential information.

In order to alleviate these problems, we looked for points within the process where we could intervene. Possible solutions were better structuring of the information, providing support in terms of knowledge provision, using categories of tools and providing more context-based information on the tool’s usage.

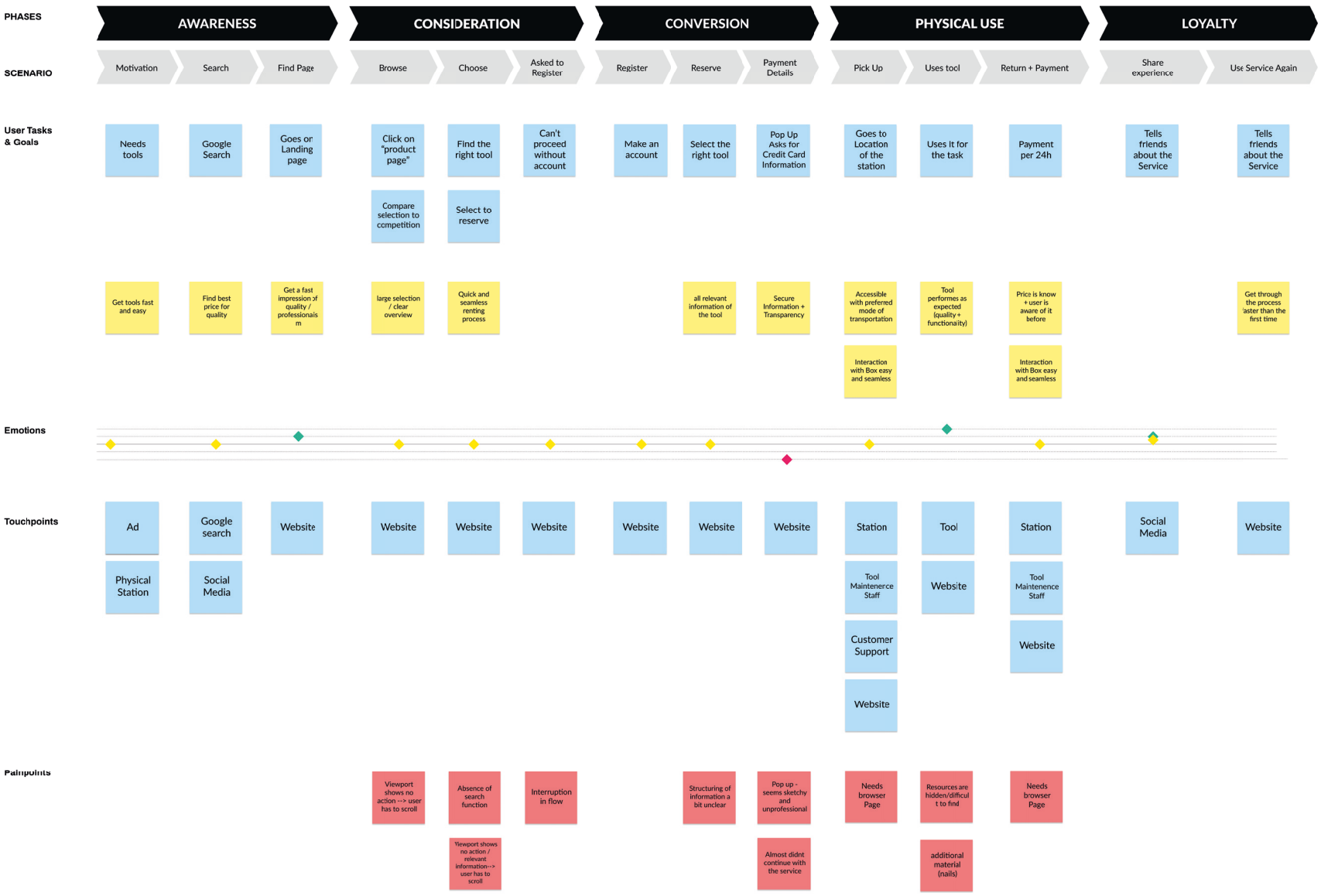



*Fig. 25 – User Journey, Renting Service Bosch*

## 3.4.3 Empathy Map and Value Proposition

We decided to create our own value proposition on the basis of the insights gained from the interviews, building upon the empathy map, which was a summary of our previous results. Although the main values remained the same across all groups, there were still variations within the categories, because each user had a specific emphasis on a differing aspect. In the next step, we first tried to define solution spaces in the form of gain creators and pain relievers. Furthermore, we made the decision to do this before creating the personas in order to check whether we had overlooked something and to get a better grasp of the differences and similarities within our differing user groups.

- Empathy Map

We deemed the journey of the advanced user to be the most neutral, containing potentially overlapping points with the other groups. Thus, we decided to start with them. Similarly to the previous user journey, we tried to imagine the process the users went through, as well as their thoughts, and mapped them out using digital sticky notes. We used this as a template for the other users, in order to highlight similarities. We greyed them out to make the differences stand out even more.

Advanced users are eager to learn more and would be happy to help others with their knowledge of tools, such as if the other user knows how to use certain tools but not the exact name of it or needs some assistance with planning their project. Also, they might own some small tools and would use the service as a substitute. Moreover, on a more subliminal level, this user group might be struggling to meet the expectations placed upon them in terms of handling tools. To sum up, the outcome was the need for resources, the provision of knowledge and inspiration and, to some extent, exchanges with like-minded people.

The proficient user, on the other hand, is already well equipped with tools and uses them in a professional context, in contrast to the others. They rely heavily on their vehicles, especially to travel to clients and construction sites. Their contracts are usually planned weeks ahead and they rely heavily on planning a job beforehand. However, there might be instances in which they need tools on short notice. In addition, they have a different timeframe to other users, because they need the tools mostly during the week and are more likely to pick them up in the early morning. The most important aspects for them are accessibility with a car and planning ahead.

The main difference to the novice user is the latter's insecurity in terms of utilising tools, which is mainly a mental hurdle. They also are the ones with the lowest level of tolerance with respect to the efficiency of the renting process, because their main motivator is extrinsic. Thus, having supporting resources bundled into one place is key for them. Because convenience is also rather important for this group, exploring a delivery option for tools was considered as an option for them. Moving house was one of the main use cases we saw for this group, and the date for such an event was usually set; therefore they needed to be sure that the specific tools would be available when they needed them. Moreover, more assistance was needed to assist them to pick the correct tool, so the difference between the tools needed to be explained. Due to their insecurity about handling tools, they were also not really able to assess the duration of their endeavour and had more safety concerns than the others. In addition, having the same struggles as others helped to create empathy; thus having a space in which novices had the opportunity to exchange ideas was expected to encourage them in their projects.

After mapping out each user group, we clustered overlapping needs.

- The advanced and proficient groups might be interested in giving support or finding inspiration

- None of them want to spend much money for things they do not use very often

- All the user groups have, to a certain degree, a need to plan their projects ahead of time

- Novice and advanced users might not always know the correct term for each tool

- All the user groups want to see the most relevant information first; that is, they want efficient, easy navigation

- All the users appreciate transparency in the pricing

- None of the users want to put in more effort than necessary to pick up the tool

- All the user groups appreciate the sustainability aspect; however, it is not their main focus

- All the user groups appreciate not having to rely too much on others; they prefer being independent

### - Value Proposition

In the next step, we attempted to address these needs in the form of gain creators and pain relievers. We again created a value proposition for each user group. The gain creators shared by all the user groups were the existing value propositions established by Bosch, and the 24-hour availability and spontaneity it facilitated. On the other hand, common pain relievers, which we saw potential to address, were that relevant information for each user group needed to be visible and easily accessible. There was also a need to plan projects and thus to be able to reserve tools beforehand. In addition, the users wanted price transparency and be shown the payment method beforehand.

### - Advanced user

This is the value proposition of the advanced user

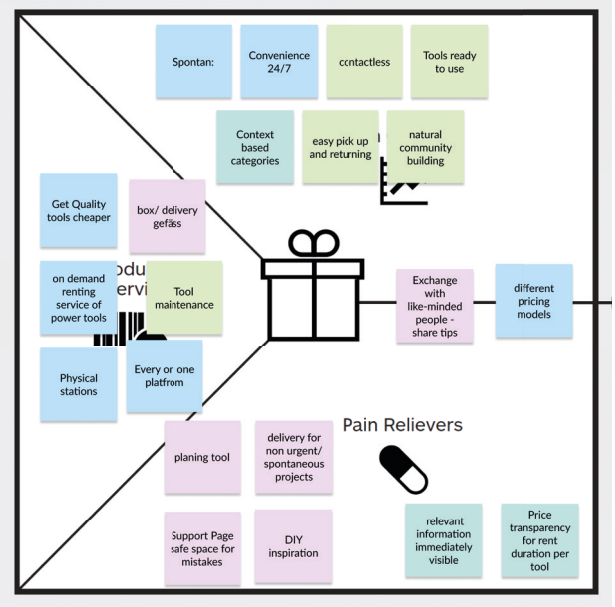



*Figure 26 - Value Proposition Canvas Advanced User by stategyzer*

- **Proficient user**
This is the value proposition of the proficient user

- **Novice user**
This is the value proposition of the novice user

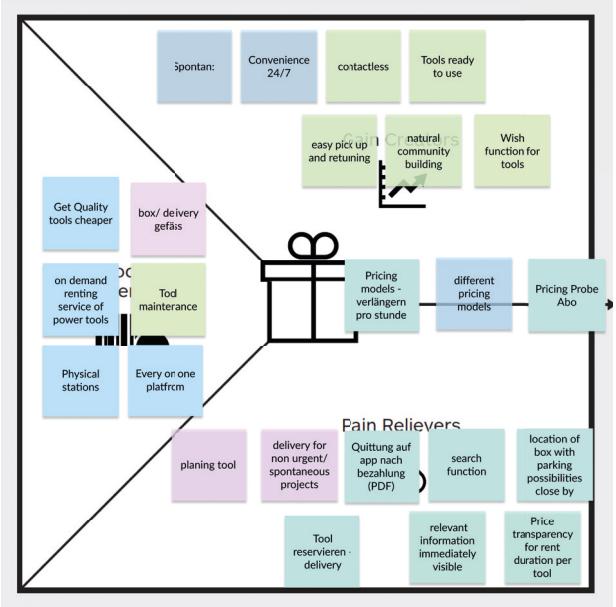



*Figure 27 - Value Proposition Canvas Proficient User by strategyzer*

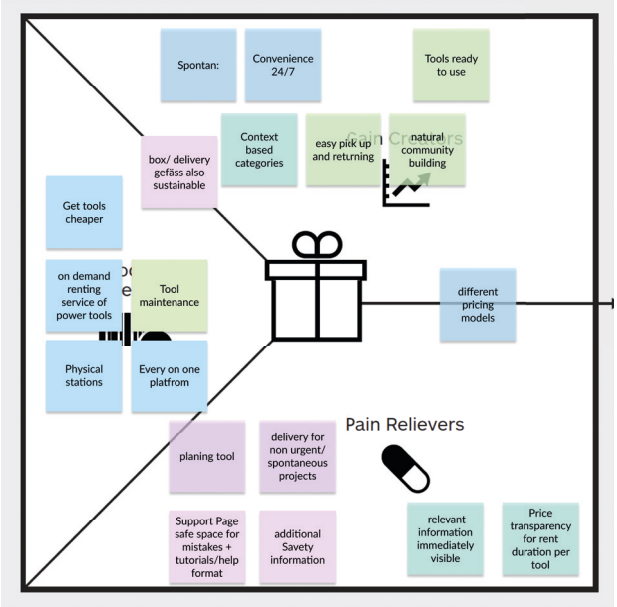



*Fig. 28 - Value Proposition Canvas Novice User by strategyzer*

### 3.4.3.1 Conclusion

After having mapped out the users thoughts and processes, we've been able to clarify and identify more overlapping needs between different user groups. However, the main difference is in the way they use tools. Through this method we've become more aware that in certain stages the novice and advanced users require more support and are more interested in an exchange and finding inspiration in comparison to the proficient user. In all user groups we've seen a need to plan as well as remain spontaneous, similar to the results in the quantitative survey. This method has helped us identify more specific needs, providing us with a more solid foundation for creating personas in the next step.

## 3.4.4 Personas

By creating *personas*, we hoped to be able to empathise with all the user groups and uncover more specific needs, as well as identify their varying interactions with the service. In the Bosch prototype, the target group was the experienced DIYer, but they were, of course, also aware of the other user groups. We saw immense potential in incorporating the needs of other user groups to expand upon the current value proposition of a convenient service.

We started with four personas that encompassed the array and complexity of both current and potential users:

**- Novice**
Patrizia seeks more independence through this service. Her motivation is of an extrinsic nature, because she is in the process of moving house. Since she is not too familiar with tools, she requires some help with how to use them, as well as safety information. However, she does not want to be overwhelmed with information.

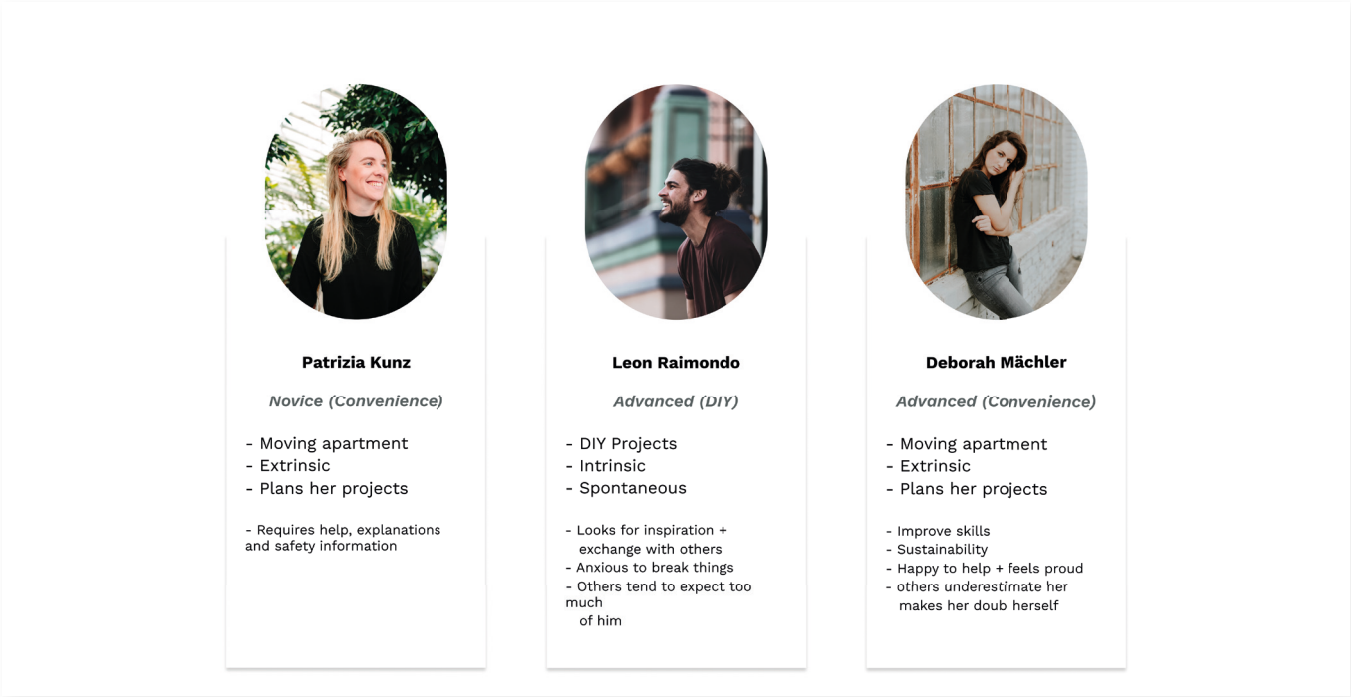



*Figure 29 - Personas, their most important Needs*

### - Advanced

For the advanced user, we used two personas, because there were some nuanced needs that we deemed important to consider.

Leon approaches his projects in a spontaneous manner and likes to build things in his free time. He is intrinsically motivated, enjoying the process of building, and is always on the hunt for inspiration for projects. He welcomes feedback from his peers and seeks out exchanges of knowledge. However, due to his passion for DIY projects, he feels that his environment places a little too many expectations on his skills and at times feels pressured. He is a bit nervous about breaking something because he has had a bad experience in the past.

Deborah likes to plan ahead for a project in order to set time apart. With a clear goal in mind, she then goes ahead and makes detailed lists of what she needs in order to attain this goal. She tries to incorporate more sustainable habits into her daily life, such as reducing food waste. In her shared apartment, she is always the first to be asked for help, which she likes to do, which fills her with pride in her abilities, which others recognise. She often looks for inspiration or tutorials online, but she has not had the courage to post her own projects yet. She has had some bad experiences in the past regarding her abilities, which has caused her to doubt her skills and makes her anxious when confronted with new tools. Thus, she is extra cautious and prefers to double-check the manual, just in case.

- Proficient
Simon utilises tools on a daily basis and uses the service for commercial reasons. He is more interested in accessing high quality tools than the others. He wants a straightforward service without having to take any detours; thus a solid search function is key for him. He also seeks to minimise costs by accessing specialised tools of high quality without having to buy them. This enables him to take more lucrative contracts that he otherwise could not accept. However, since these contracts are not spontaneous, he needs to plan them beforehand and be sure to have the right equipment available for them. In addition, stations need to be accessible by car for him.

### 3.4.4.1 Conclusion

The goal of creating these *personas* was to use them as a tool in the ideation process in order to review our ideas and check whether they corresponded with the users' requirements before moving on to the design. We were aware that these personas represented generalisations of the various user groups that had been merged together. However, we attempted to focus on the more subjective features that arose from our finding, such as self-doubt in one's abilities. By understanding how the users felt, we could better comprehend their actions and find more adequate intervention points. We considered our personas to be dynamic and we keep on refining them during our process, especially after gaining further insights from workshops. In addition, through the creation of these personas, we come to the realisation that the proficient users' had been covered by our other personas. Hence, we decided to focus on the novice and advanced users as possible user groups. Therefore, this was definitely a valuable exercise for us to implement all these learnings in a more comprehensible form.

## 3.4.5 Context Immersion

Incidentally, the friends of one of the researchers, Tamara, were moving apartments in Zurich; thus, she decided to make use of this opportunity by immersing herself in this context. We assumed that many people could use this service for their move, and that it might even be a main use case for utilising our service. Hence, we checked data regarding this for the city of Zurich to get an overview of how many people could possibly be targeted. We found statistics of how many moves there were each month in districts one to 12. On average, 2,300 apartments were newly occupied each month in Zurich. Between 2015 and 2019, an annual average of 28,000 apartments were

newly occupied, representing 12.6% of the housing stock *(Rey, 2020)*. This confirmed our assumption that this might be the main reason for using our service. The couple she helped had set aside two days, with a total of seven people helping them, including one professional (carpenter), three advanced users, two beginners and Tamara. Since several skill levels were involved in this move, it was an excellent opportunity to observe the dynamics and task distribution. Moreover, she paid special attention to the preparation for the move, the use of tools and the emotional states of the participants.

- Planning

We were interested in how the participants prepared for the move, because we wanted to see if we could find a new aspect to our service that could help the users. Before the actual move, Tamara inquired how they had prepared for it. The couple planned what pieces of furniture they needed and where they would go. Moreover, they compiled a price list. The inspiration for the furniture and decor came from Internet sites such as Pinterest and furniture design sites. They also organised with the helpers when and what tools needed to be brought for the move. Unfortunately, this did not work out well due to a miscommunication. Some tools were missing.

The entire move took two days, during which the professional and one of the advanced users managed to assemble one large and three average-sized cabinets, and to drill holes in the sofa to mount its legs. The couple had planned for the assembly work to be finished on the first day, but the lamps could not be mounted due to a missing concrete drill. This happened because the couple (a beginner and advanced user) did not know that the choice of drill depended on the material to be drilled. Therefore, they had not requested the appropriate drill. Moreover, the setup took a little longer than expected because the battery in a cordless screwdriver was dead and there was no spare battery so they had to switch to an inferior replacement tool.

- Evaluation of the planning

From this observation, we could conclude that organising tools and helpers is time-consuming and almost always involves mistakes and miscommunication. For example, certain tools were missing during the move, which wasted time and made the moving more cumbersome. Also, in the planning phase, many tools were used to assemble furniture, which became increasingly inconvenient. We saw that it was difficult to set a fixed timeframe and that the work might take longer than expected. We saw potential in simplifying and improving communication. Moreover, despite careful planning, some tools were still missing; thus, we realised the service needed to provide the possibility of planning the timeframe of the rental

while still offering quick access to tools.

- Tools used
The following tools were needed over the course of the day:
A cordless screwdriver, screwdriver and attachment set, cutter, scissors, tape, screws, dowels, small ladder, spirit level, nails, hammer and concrete drill. All the tools were brought by the father, who is a craftsman, in a toolbox.

- Evaluation of the tools used
A move always requires a variety of tools, including attachments and spare batteries. It also seems to be essential to have duplicates of the most frequently used tools to make it possible to assemble them in several places at the same time. This led us to the conclusion that people without any tools needed a whole kit for the move, containing power tools as well as smaller additional tools such as screwdrivers. In addition, both the beginner and advanced users did not realise that the choice of tool was largely dependent on the material's nature, in this case a wall, so the wrong drill was brought. This indicated that there was a knowledge gap that could be addressed by our service.

- Dynamics
Right from the start, we noticed that there was an evident distribution of roles. The men (professional and advanced users) took care of assembling the cabinets, lamps and sofa. The women, who were all beginners in using tools, performed tool-free tasks, such as unpacking clothes and cleaning the bathroom. None of the three beginners showed any interest in building anything or working with tools. No one seemed dissatisfied with the situation and all accepted their role. Therefore, there was no need to assign jobs, because everyone knew exactly what they had to do. The cabinets had to be assembled and the sofa was difficult to lift, which was easier for the strong men to do.

Tamara was quite puzzled when she realised that the people around did not expect her to have any skills with tools. Despite having introduced herself as an advanced user, she was asked not to touch the professional's tools without being invited to do so. When she asked the beginner if she wanted to do more herself, she admitted that she would be completely lost and overwhelmed. Moreover, she said that she always looked for help from others instead of trying it herself. In contrast, the professional did not like other people to use his tools and preferred to do everything himself. He was also completely tunnel-visioned, because he wanted to get everything done as quickly as possible. The advanced users supported the professional by holding things for him so that he could assemble. No one dared to interrupt this workflow or interfere.

*Figure 30. - Context Immersion*

*Figure 31. - Context Immersion*

**- Evaluation of the dynamics**
When someone is more experienced in handling tools than others, they take over tasks. The professional did not intend to let anyone use his tools. Nor did he want to instruct others on how to use them properly. It was not about building together but about working as efficiently as possible. It would probably have been more efficient to divide the tasks. Furthermore, the stereotypes were completely fulfilled on this day: the women were given tool-free tasks and they were not even trusted with simple tasks involving tools. On the other hand, the women were happy about not having to do any heavy lifting. It was rather shocking to see how deeply these stereotypes were still entrenched and how everyone was satisfied with them – especially the women, who did not mind that they were not expected to do anything with tools and did not show any initiative to change this.

## 3.4.5.1 Conclusion

We came to the conclusion that there was a great deal of potential for our service in relation to moving homes. The service would have been helpful in this situation. If the couple had been made aware or been able to react quickly by using the service to solve their problems, a lot of time could have been saved. The professional was extremely possessive of his tools and did not want anyone to use them, thus unintentionally delaying the others. If the tools had come from the professional rental service, the tools and work could have been divided more equally among the helpers. However this would probably not have changed much due to the strong stereotypes that were being acted on. Thus, the dynamics also demonstrated the importance of addressing these stereotypes to make our service more effective and broaden its use.

## 3.4.6 Collaborative Brainstorming Workshop

The goal of this workshop was to work collaboratively on developing new ideas with possible users, while also focusing on subliminal information or tendencies. We also wanted to avoid designing without involving the user; thus we tried to invite users that were already catered to by the pre-existing Bosch service and those who were not yet catered for. We wanted to test if and to what extent the areas of our potential solution, that is, support, were of interest to our users or if they prioritised other aspects. In the workshop, we introduced topics such as preparing for projects, handling tools and thoughts or emotions during planning and carrying out the project. We wanted to include both our target users and Bosch's perspective into our workshop.

Due to the Coronavirus restrictions, we conducted all of our six workshops online, using Miro. There were between two and four people who had mainly homogenous skill levels per workshop. This was largely due to organisational issues, because it was difficult to merge too many schedules. Moreover, we wanted to be able to pay sufficient attention to each participant, so that they could all participate equally. In addition, we wanted to determine whether there were gender-specific differences in their approaches or thought processes.

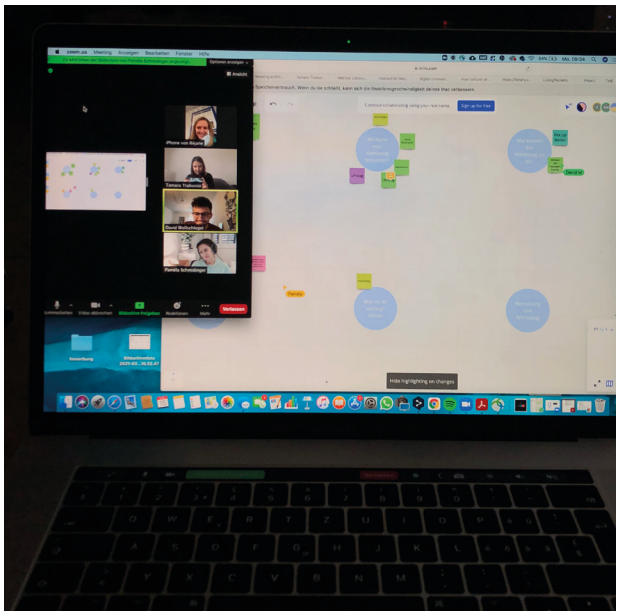


*Figure 32 - Workshop Online*

**- Structure**

We prefaced the workshop by explaining to the participants that no idea was too banal. If an idea was criticised, it should only be constructive and they should not be limited by concerns about the feasibility of their ideas. To avoid silence in the virtual space and create a relaxed atmosphere, we played some music in the background. The participants were asked to complete various tasks from their perspectives.

Stage 1 *(Figure 34)* concerned how they approached their own project . For this we asked them to use sticky notes to describe their process. This was to help them ease into the topic and to enable us to understand their processes.

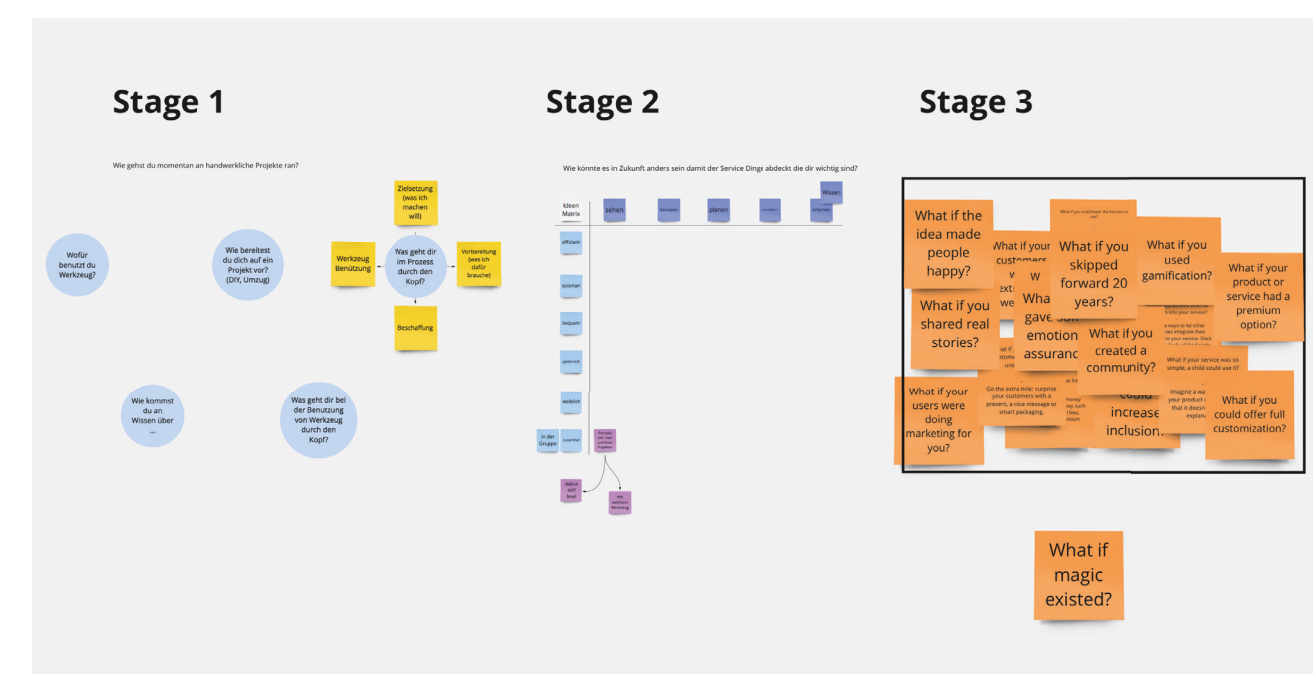



*Figure 33 - Workshop Overview*

Before starting Stage 2 *(Figure 35)*, we guided them through the user flow of the current service so that they could get an overview of the status quo. After we had introduced the creative matrix method, they were asked to develop new ideas that could be adapted or change the service completely, while still approaching it from their perspective.

Stage 3 *(Figure 36)* was about trying to view the service from a new perspective, trying to break free and introducing perhaps a more playful aspect. Questions on inspiration cards served to hypothetically adapt the service to completely different circumstances, and different timeframes or ways of thinking, while remaining in the field of renting tools.

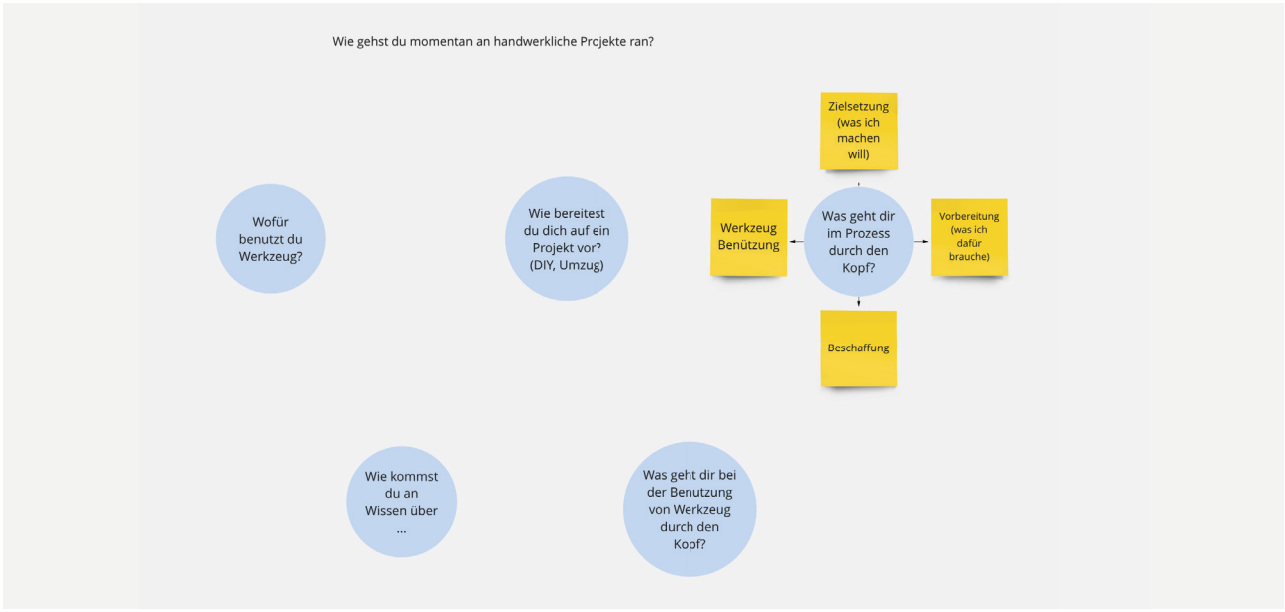



*Figure 34 - Workshop Online Stage 1*

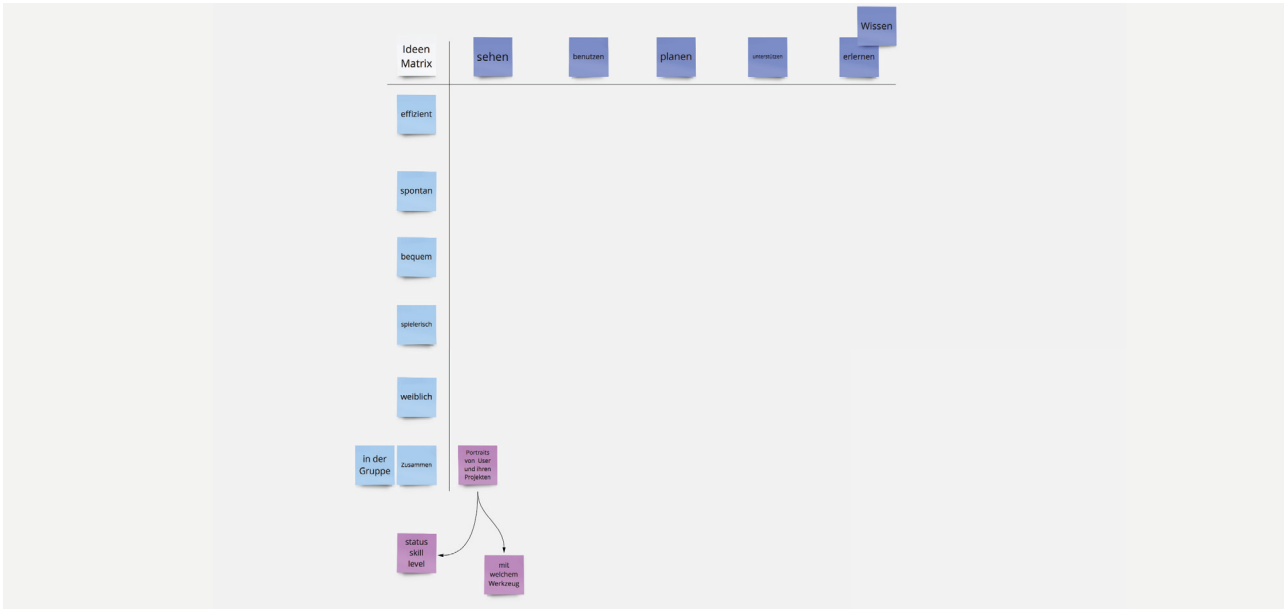



*Figure 35 - Workshop Online Stage 2*

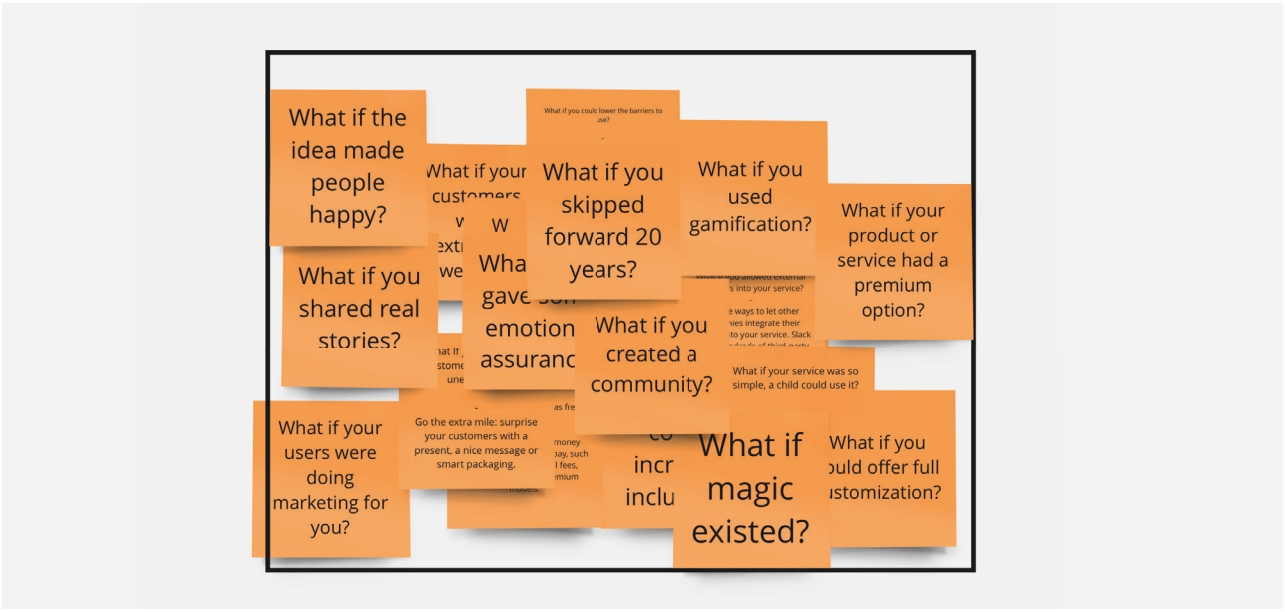



*Figure 36 - Workshop Online Stage 3*

## 3.4.6.1 Self Test

Before conducting the workshop with other users, did a test run to verify if what we had planned would work in practice. We wanted to test if our workshop structure would be both understandable and elicit the desired information from the users without steering them in a particular direction. We classified ourselves as advanced users, since we both had experience of moving house and were well acquainted with the workshop in ZHdK, for which we had already built several prototypes.

In the brainstorming session in Stage 1, we realised that the terms needed to be reworded, because they did not offer enough context regarding what we actually wanted to find out from them. The creative matrix in Stage 2 did not seem promising, because filling it out felt like doing a chore rather than being inspiring. Moreover, the results were mostly the same for both of us . However, since we usually had good experiences with it, we did not yet want to abandon this method. We were most surprised by the inspiration cards in Stage 3, which yielded the most variety of ideas while also being entertaining.

Doing the workshop helped us to identify possible pitfalls before inviting actual users to try it. Although we tried to adopt a user's point of view, we often found ourselves being a little too biased. However, it was a useful exercise because it enabled us to implement all the ideas that had come up previously and gave us the time and space to discuss them in detail.


*Figure 37 - Results Workshop self test*

## 3.4.6.2 Workshop 1 - Advanced User

This workshop was conducted with an advanced user who had experience of using tools in his free time, as well as during a recent move. He was interested in the workshop because he already had some experience of using Miro, but was not yet familiar with some features.

The atmosphere was rather relaxed during the brainstorming in Stage 1. However, the user struggled to understand what was expected of him. In addition, it was interesting to see that, although he systematically planned what he wanted to do and how to get it done, it could still be overwhelming for him at times. Moreover, he used tools for practical reasons, such as moving, as well as for other projects in his free time. Surprisingly, although he was familiar with tools, he wanted to have a sense of safety about using them; that is, instruction or extra information that would be good to know in a specific context. Moreover, he showed concerns about breaking things and thus approached projects very carefully. Additionally, if he had to use a tool that he had no experience using, he was rather insecure about using it.

In Stage 2, he was eager to write down his thought processes when imagining new aspects of the service, which resulted in some ideas. One of these was that users could assess

their abilities in particular areas themselves when creating an account to assist them in acquiring relevant information. However, he missed the inspirational aspect, in terms of what is possible with these tools and what has already been done. He also thought it might be interesting to incorporate the digital aspect of DIY, that is, projects with an Arduino or Raspberry Pi. All these aspects culminated in the idea of creating some sort of community.

The inspiration cards in Stage 3 drew out this notion of a creating community even more, in which people could get help from others for their endeavours. However, he noted that it ought not to be intrusive for those who were not interested and that there might need to be some gamified incentives to participate. Moreover, the missing visual aspect led to the idea that projects undertaken by others or even by Bosch could be showcased on the website or app, so that people could browse and be inspired to build. Assisting users in planning their projects using a quiz was also an idea that came up. Figure 38 contains more ideas that arose from this workshop.

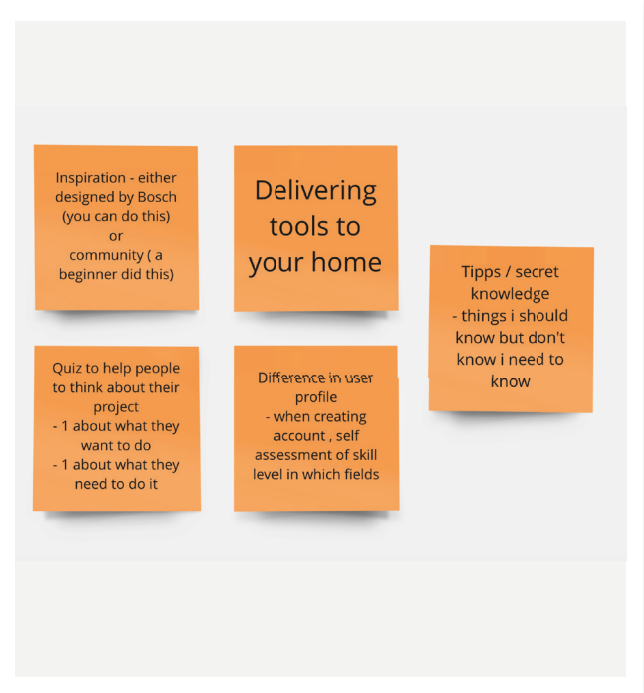



*Figure 38 - Results Workshop 1*

## 3.4.6.3 Workshop 2 – Advanced User

The second workshop was conducted with another advanced user. Due to his craft apprenticeship, he was quite experienced in handling tools. His approach to the workshop was more neutral than that of the previous user, because he had not previously worked on Miro and did not know what to expect.

Stage 1 went as expected, without any problems, while Stage 2 had to be abandoned, despite several explanations and examples. This method did not spark any inspiration for him and caused too much frustration, resulting in us skipping forward to the third stage. One idea that arose was to make a reservation in advance, drawing a comparison to a cinema, where the date is also usually set in advance when one books online. Furthermore, he expected a platform which was easy to use and caused no frustrations. He was also not interested in finding inspiration or additions to the platform. He said he would rather be surprised with simplicity. However, he said that he would appreciate being able to find tools according to a context. He gave examples of possible categories, such as ‘in the kitchen ‘ or ‘hanging a picture’.

Although he considered support from other users as potentially useful, he was sceptical about how that would work, in terms of being actually qualified to help and how such a status could be verified. He mentioned that he would also appreciate warnings and safety instructions, although he should know them.

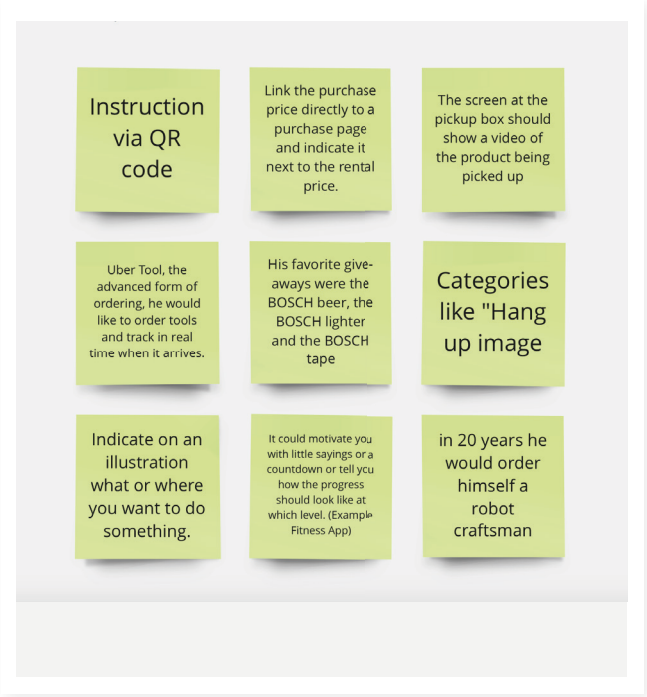



*Figure 39 - Results Workshop 2*

Compared to other users, he often took Bosch’s point of view and always thought about how each idea could be profitable for them, despite efforts to steer his thinking back to his own personal perspective. However, his priority was always to get through a process as easily as possible, with some guidance and suggestions of additions to suit his needs. The reservation issue was important to him because he wanted to know that the tools would be there when he needed them.

### 3.4.6.4 Workshop 3 – Advanced Users

The third workshop was in the context of a weekly Monday morning meetup organised by our Interaction Design program. There were two advanced participants, one female and one male. The participants were from semesters below us and were thus experienced with using tools. They were extremely motivated to participate in our workshop and were eager to help.

Stage 1 was initially not relaxed, because one participant was on the train and the other felt a bit in the spotlight. Moreover, they had to ask some questions regarding how to answer the questions in Stage 1. They both used tools for practical reasons as well as for recreational DIY projects. They usually prepared everything at the beginning of a project, such as the materials. However, they also relied a lot on gut feeling and did not require a manual for everything. The male participant admitted to being unsure or annoyed when using tools when he became frustrated with the project. Due to technical difficulties at the beginning, we had to skip Stage 2 to remain within the time limit. Once we moved to Stage 3, we decided to just let the participants talk rather than have them write down their ideas on sticky notes, which enabled them to talk freely about their thoughts. Something that came up was that they preferred to chat rather than call when they needed help, unless

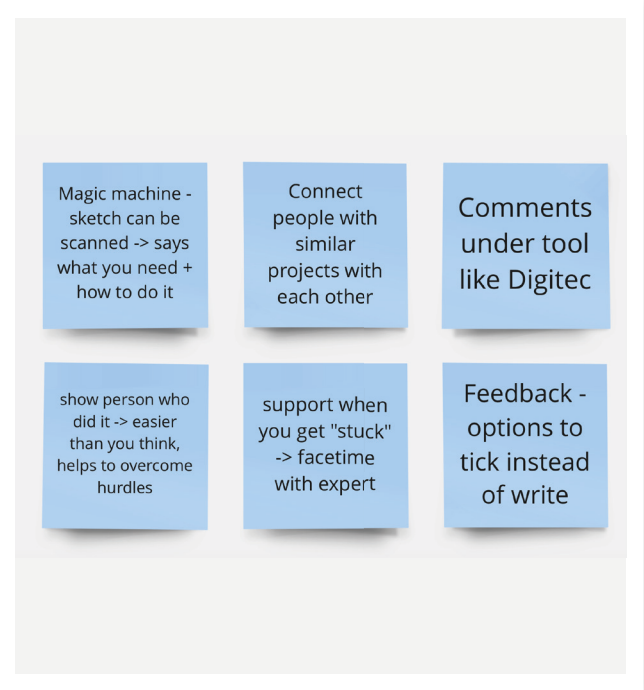



*Figure 40 - Results Workshop 3*

they needed to show something; then they preferred a video call. Moreover, the female participant had the idea to rate or evaluate the help of others in some way, mentioning examples from Ricardo.ch or Uber, so that users could have something to measure regarding trust and safety.

Although we were not able to complete all the stages, we gained some valuable insights. For instance, one idea was to scan a sketch into a machine, which then magically assembles it. While this is unrealistic, it showed that the users approached projects visually in terms of ideating and constructing. At the same time, this was also a subliminal hint that help with independent projects would be required. Furthermore, the need for verification of the received help was a recurring theme.

## 3.4.6.5 Workshop 4 - Novice Users

The fourth workshop was with two female novice users. Here we were able to implement all the information acquired from the previous workshops. We decided to take a more active role in order to encourage more participation and see how the users would build upon our inputs. They had already used some tools, but not very frequently. Both were curious about what was to come, since neither had participated in an online workshop before.

The modifications we implemented in Stage 1 helped to clear up uncertainties that had come up in previous workshops. One participant asked if it was alright to imagine a hypothetical scenario in which she would use the tool, that is, moving, and how she would approach it. This showed us that we still could improve the framing of this exercise because we needed to consider that everyone shares the same experiences. Moreover, both users also planned and gathered the necessary knowledge through tutorials before starting a project and were driven by the outcomes rather than the process. In Stage 2, the lack of visuals led to the idea of showcasing a 'DIY of the week ' to show all the possibilities that these tools offer. In addition, they said they would want safety instructions on a QR code on the toolbox. In Stage 3, the notion of safety, regarding handling the tool or breaking

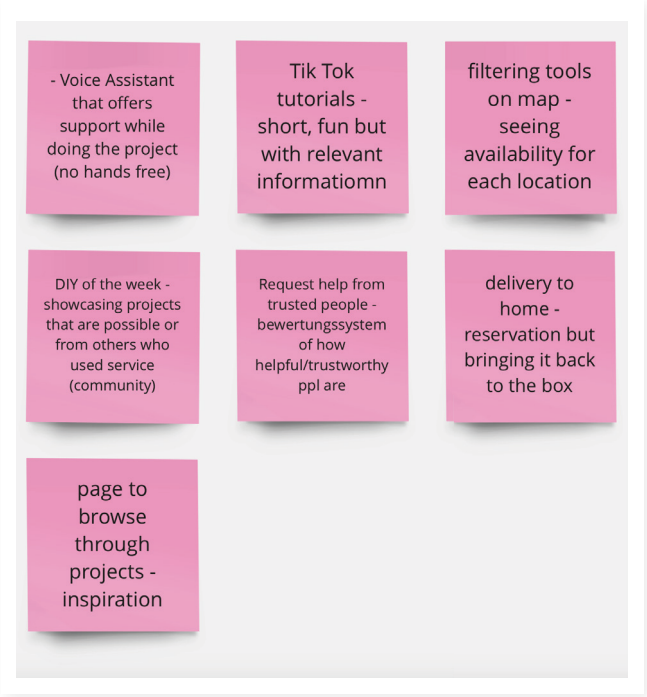



*Figure 41 - Results Workshop 4*

something, was a recurring topic for both the participants. They exhibited the most insecurity in this area. They were also not able to estimate how long they would need the tools for. For example, when asked how long they thought they would need a tool for if they wanted to drill a hole, neither of them were able to answer with certainty that four hours would be enough. This might be due to the fact that they were not experienced with tools and because they would rather leave these sorts of tasks to other, more experienced users. Moreover, they both clearly stated that when embarking a project, they preferred to work as efficiently as possible.

This workshop with two female novice users helped us to delve deeper into the emotional aspect of self-confidence in using tools. Although they wanted efficient information, they wanted it delivered in a visually-appealing manner rather than only in the form of a manual. The idea of a community area in which people

could request and provide help was also of interest to them. However, as another female advanced user remarked, these needed to be verified or controlled in some way in order to be used to their full potential. Thus, the aspect of feeling safe was extremely prevalent.


*Figure 42 - Results Workshop 5 with Bosch*

### 3.4.6.6 Workshop 5 – Bosch

We also wanted to involve our partner, Bosch, in our ideating process. We saw this as an excellent opportunity to exchange our ideas, while also providing a short update on our direction and process thus far. We also were curious to find overlaps of possible expectations and fields of interest. The general atmosphere was relaxed and both parties were curious about the outcome and the subsequent discussion.

Since Stage 1 was about the users 'process, we went through it rather quickly. We deliberately skipped the overview of the current service, because we deemed it unnecessary to do that with him. However, that gave the impression that we had not done that before; thus, it would have been good to mention it quickly before introducing Stage 2. He was not familiar with our creative matrix method and was quite interested in it. Ideas that arose from there were to have checklists for people to help them plan their move, a collection of knowledge or ambassadors. Stage 3 had to be rushed due to time limitations and did not yield any new insights, except that participation in communities required some incentivisation.

In the discussion round after the feedback, it seemed as though we had not uncovered anything they had not already thought of or tried, since they had been involved in this project for two years. It was initially disheartening to hear that, but it also indicated that there were no large gaps between how we wanted to continue and Bosch's expectations. This encouraged us and confirmed the validity of our approach. In the end, we shared the opinion that knowledge transfer and the community field could be two promising areas.

### 3.4.6.7 Adjustments

We had a total of 7 participants and 5 rounds of workshops. We made specific changes after each run, because there were too many questions due to participants not understanding what they had to do during the first attempts. The most significant change was that we changed the first stage entirely and referred only to the current state of the Bosch prototype. In our opinion, the new format of the workshop was well-received, and the participants were able to engage with the topic better than before. Also, the wording that we used during the workshops was significantly simplified. The questions became consistently more precise. Giving examples helped the participants to understand the various methods, especially with the creative matrix, with which they were not familiar and which was the most complex.

### 3.4.6.8 Findings

We gained a great many insights, as well as many good suggestions and ideas. We were able to confirm our hypothesis that both novices and advanced users wanted to be supported in their projects, although in varying degrees. We summarised the core aspects in *Figure 43*, where we split the support area into categories of knowledge and community. This was because our user groups required differing types of support. While novice users need more hands-on knowledge of handling tools and being shown the possibilities that these tools offer, advanced users seek more differentiated advice from others through a community and inspiration for their creative projects.

The intersection in *Figure 43* between knowledge and community represents safety. For novices, safety issues are chiefly related to handling tools (knowledge), while the safe interaction with others (community) was mentioned by both novice and advanced users. Although safety was mentioned by female and male users, they were weighed differently. We did not find any drastic differences between the genders except in their nuanced weighing of aspects. Additional areas that emerged were the need to plan and reserve tools, because every project was planned to some extent. Many participants expressed the wish for a delivery option, because it is an


*Fig. 43 - Conclusion of Workshop Results*

essential part of the convenience aspect. Previous tests by Bosch have shown that this is not advantageous for the service. However, we do not yet want to abandon this avenue, because there might be other ways, for instance a hybrid solution that might accommodate this need. A fast and easy navigation through the process was unanimously mentioned as a core aspect of using such a service. Additional content is desired, but should not result in hurdles in the process of renting.

## 3.4.7 User Tests

The Bosch service has evolved since we started this project. We were given access to the new prototype, which had not been implemented on a website yet. It is an InVision prototype, one for desktop and one for mobile. What was new was the design of the site, improved filters and a search function, and adjustments to the payment option.

We decided to test this prototype on novice and advanced users. This test generated direct feedback on the service, whereas the workshop provided us with information about the hurdles the participants encountered in the renting process and what information or functions were still missing. We were hoping for concrete statements about how they felt about the service at the moment, how they found their way around, and what bothered them in the lending process.

For this we used the mobile version of the Bosch click dummy, since we had decided to go with an app for our project. Moreover, this was consistent with the current trend of 'mobile-first'. In order to visualise the prototype, we recreated the user test with a graphic *(Fig.44)* because we could not publish the original screens.

The users testers were given the task of a drill in Bern, which was the only way through the clickable user flow. We asked the user to think out loud and give us an insight into their decisions and thoughts. As there was only one user journey we sometimes had to provide some assistance to the users.

On the page list of filtered items, we interjected with the question, whether or not they were aware of the difference in drills. We assumed that the user could not tell what he is missing because he does not know that there is something here that he should know. On the one hand, we wanted to check whether this kind of basic knowledge is present in the users and how they react.

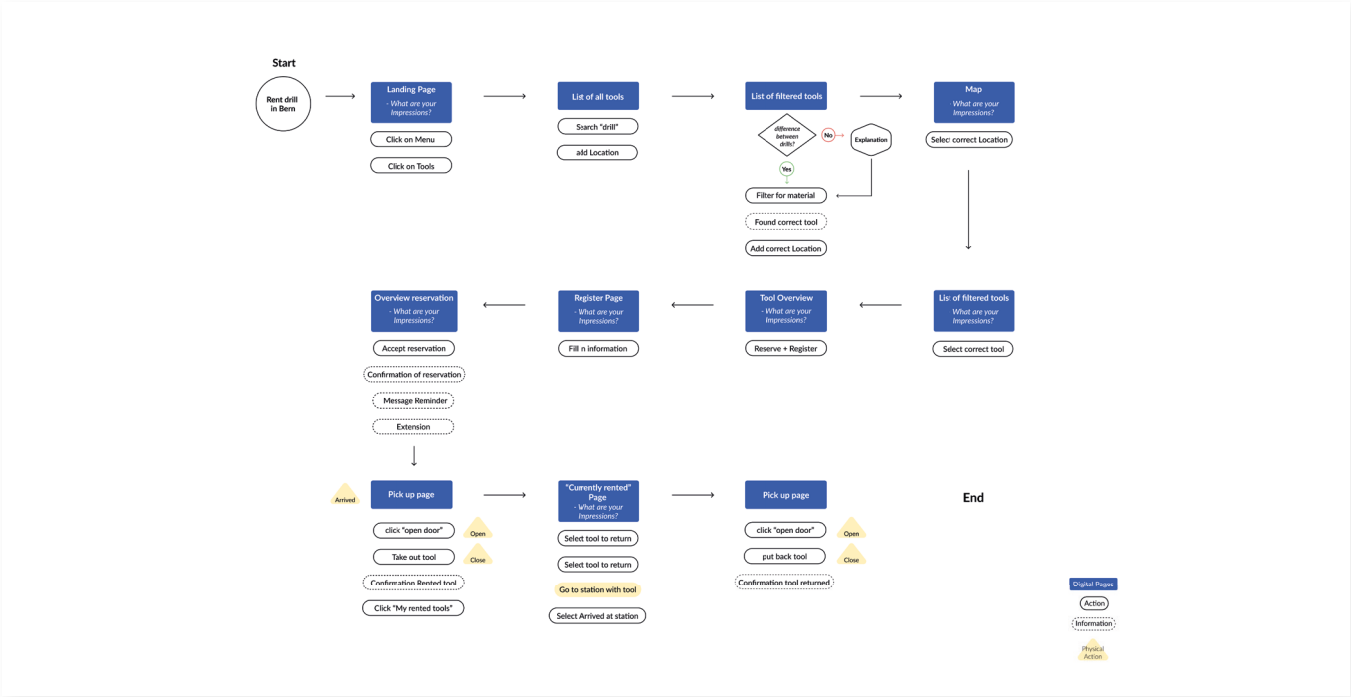



*Fig. 44 - Conclusion of Workshop Results*

## 3.4.7.1 Results

Below we summarise what the users liked, found unclear, felt were missing and disliked.

*LIKED*

*- Icons at "this is how it works" as they are quick and easy*
*- Search function on the landing page*
*- It needs a menu in whatever a form*
*- To be able to search for activities*
*- Shows that it's available - they understand the green dot*
*- The material filter*
*- The look of the map*
*- Google Maps link*
*- Listing of payment options*
*- Weight indication for tool*
*- Selected location in product detail view*
*- Section "Ready to Work" is very appealing*
*- Registration is necessary only at reservation*
*- Registration was understandable*
*- SMS code good substitute for password*
*- SMS for extension (but one hour is concise)*
*- Info about sustainable act well placed*
*- Instructions for returning tool*

*UNCLEAR*

*- Can you click through the process at the "this is how it works"?*
*- Are the supplies included in the rental price?*
*- Is consumable material included?*
*- What does the overview look like with multiple tools (ongoing rentals)?*
*- What would happen if it's brought back later, like 4 hours? How much more expensive?*
*- Will it be cheaper if you rent multiple tools at the same time?*
*- Product details view: Question mark icon at the rate, shows what info?*
*- Product details view: What information is under the description?*
*- When does the reservation start?*
*- When will your money be withdrawn?*
*- When exactly does the rent start?*
*- how do I log in?*
*- do I have an account now?*
*- how do I access my reservations?*
*- how is the process of bringing it back, picking it up?*
*- What happens when I press the open button?*
*- What happens if the door is not closed?*
*- Is it possible to extend the time by calling customer service?*
*- Can I open the box with my smartphone?*
*- Why not open the box on the spot via QR code?*
*- Is there also a warning SMS before the short-term rate is over?*
*- Why aren't the past borrowings listed in the profile?*

*IS MISSING*

*- Explainer video on the landing page*
*- Missing the FAQ page*
*- Tips and tricks category*
*- Automatic additions in search engine*
*- Price filter*
*- Examples/samples in material filter*
*- Note/explanation for drill on the difference in material*
*- Zoom in on the map*
*- At the location, info: approximate way, public transport stations*
*- Time to location (by foot, car, bike)*
*- Recommendation to the following location*
*- Info button/icon at accessories*
*- Shopping basket icon*
*- Info button at the tariff - reference to 24 hours tariff*
*- Info/warning about different materials for drills*
*- Besides the rental price also the purchase price/link to purchase page Bosch*
*- safety instructions*
*- indication that there is a manual*
*- for each tool, the average usage time from other users*
*- a few, dowel nails included or at least bookable*
*- suggestions to take more tools - user data + location*
*- reservation / later time of reservation hour*
*- Pay as a guest*
*- info how to login*
*- home delivery (heavy tools/ no car)*
*- user should be able to extend the reservation time with a button*
*- hint what happens in case of a late return*
*- visual hint that extension was thriving rather than just numbers or text*
*- Share button to forward tool selection*
*- confirmation that you are on site (QR code)*
*- instructions on the box what to do - maybe they closed the page?*
*- in profile - option to re-lend*

*DISLIKE*

*- Weird viewport on screen*
*- Review of service too big*
*- The title doesn't give relevant information*
*- Call to action not visible (search)*
*- Illustrations of app screens on the landing page are confusing*
*- On the menu - they would expect to find tools in "lend" and not in "tools" - because you want to lend first*
*- Menu no subcategories*
*- Second explanation on the list view unnecessary*
*- Do not understand all items in supplies*
*- By supplies, they expect stuff to pop up below*
*- Weird process to add a specific location - why not in the "search bar"?*
*- BERN(3) - expects 3 of those items at this location, not that there are 3 locations in Bern*
*- Product detail button does not indicate reservation*
*- Ready to work --> looks like a different context - also, why the reserve button at the bottom? if a button then a bring me back up icon*
*- 60 minutes to pick up very short*
*- Want to schedule when he wants to pick it up - wants to decide --> it says "flexible pickup," which would include that you can plan and reserve*
*- 4 hours is too short with the way to the box*
*- Would not pick up and bring back on the same day for the move*
*- Reserve button--> put in the cart; this would allow him to continue browsing, else it gives the impression that he can't browse and needs to go through this process each time*
*- Mail instead of the mobile number*
*- Registration - too many screens for simple action*
*- Use timeline consistently and till the end (illustration)*
*- Reservations overview button too far up*
*- Tariff change shown too late*
*- "I have arrived at the box" button too weak*
*- The box illustration is annoying because it offers no added value*
*- Remaining time is double*
*- When bringing back, the map does not have to be displayed again*
*- 4x confirmation to bring back too much*
*- Successful conclusion of tenancy -> should be further above*
*- Profile point " Your boxes " irrelevant*
*- Currently reserved would be a relevant point as completed rentals*
*- Overview illustration in the profile is not relevant and is also not expected at this point*

### 3.4.7.2 Findings

We conducted a total of four user tests. It is noticeable that negative points were made more than positive ones. We did not take this as a rating but as an indication of what was most noticeable to the users.

Their first impressions were generally positive. They could recognise the patterns of other online services, which made it easier for them to understand. Nevertheless, there were too many stumbling blocks during use, which often led to confusion. The user flow was interrupted too often and the users missed things they were used to but did not find here, such as shopping carts, category overviews, or FAQs. They had a hard time finding their way around and needed a long time to understand the process instead of quickly placing their reservations. We found out that the users were used to established patterns and processes and expected to find them in our service. Any deviation from these patterns resulted in frustration for them. Furthermore, the users felt that certain functionalities were not self-explanatory or that some items appeared in the wrong point in the process. This would lead to early abandonment for most of them, because it is too much hassle for them. They appreciated things they were used to, such as: a menu, filters and a payment method display, which they also want to use on other online service sites. In terms of knowledge or lack thereof about tools, the advanced users knew that there were differences in drills, whereas the beginners did not. This basic knowledge was not available, so not knowing what one should know remains a big hurdle.

### 3.4.7.3 Conclusion

The user testing was beneficial for us because it provided us with factual statements from the users about how they felt about the service, how they found their way around and what bothered them during the renting process. Adhering to known patterns and knowledge gaps were interesting learnings we took from these tests. Therefore, the next step was to find out how big the knowledge gap was, at what stage in the process and in what form we could make the users aware without being too intrusive for others. We wanted to focus on where and how we could intervene in this process with a combination of the findings from the user tests and the ideas from the workshop to find solutions for the needs of our users.

# 3.5 Concept

During the field research we prioritised the user's perspective on the service, which is why we continued to follow a user-centric approach. Our focus was therefore more on the user experience than on the economical aspect of the service, because that is Bosch's expertise. What remained similar to Bosch's original concept was that it targeted people living in urban places who did not own many power tools, but practised DIY. While this is already a narrow group, it lacked variety and was homogenous.

Thus, we concluded our field research by defining our target group as young adults, including novice users and goal-oriented advanced users. From our research we had learnt that younger people tended to move frequently and were unlikely to own any power tools. Moving house was a main use case, because it marked a point where people were confronted with tools. Our research of motivation and the ubiquity of stereotypes helped us develop a service which provided a touchpoint for hesitant users who were goal- or process-oriented, providing them with support and resources that would help them in their DIY endeavours.

At its core, our intention was to be inclusive of differing knowledge degrees and genders. We aimed to meet users at varying degrees of tool knowledge at eye-level by offering support and the ability to acquire and use tools independently. In our process, we ensured we had an equal number of men and women in the interviews, surveys, and workshops. Our intention was to identify possible differences or similarities in their needs, as well as including them in our process equally. We found that there were many overlaps in needs. However, the weighing of the needs was differently nuanced.

In the following section, we outline the needs of our three *personas* that surfaced during our research, interviews, workshops and user tests.

- The Needs: Advanced DIY
- Wants to get tools quickly + easily, without detours

- Exchange with others

- They want to browse for inspiration They feel nervous/cautious when using new tools, needs resources

- They are looking for challenges to improve their skills

- The Needs: Novice
- Novices have low but differing levels of knowledge of tools

- They may not know which tool to use depending on materiality

- They are anxious to feel insecurity when having to use tools

- They often look for others, more skilled people to help them

- They often want their tools delivered

- The Needs: Advanced Convenience
- Need several tools at the same time

- Want to reserve tools ahead of time

- Exchange with others, looking for specific help for their projects

- Want to help others with their knowledge/experience

- They feel the need to prove themself to use tools

Next, we outlined how we want to address these needs concretely.

To meet the needs of the advanced convenience users, we want to:

- Add a shopping cart function to continue browsing after the first selection or to get additional suggestions.

- Adjust the reservation time to be able to make reservations not only one hour in advance.

- To go directly and quickly through the reservation process
Strengthen and improve the filter function

To accommodate the needs of the advanced DIY users, we want to:

- Consider a community where one can ask questions directly.

- Provide an inspiration page that is constantly growing through the community and with content from Bosch.

- Make it easier for them to find the information that is important to them.

To meet the needs of the novices users, we want to:

- Suggest enough knowledge to be able to use each tool completely without prior knowledge.

- Provide a good orientation on the app

- Point out things they are not aware of during the process

- Find out the best place for assistance

- Provide a sense of security and a safe environment

Our project will be in the shape of an app which will, additionally to the renting function, contain additional functionalities that address the needs mentioned above. The following section comprises a summary of our project aspects that we want to include on the tool-renting platform.

- Renting tools

Rethinking the existing user experience and flow is crucial in order for it to be intuitive for users to use. The lack of missing functions, such as a shopping cart and a feedback option resulted in ambiguity in the process.

- Planning Date and Time

Planning and checking availability for specific dates or time is an additional function we want to add. Planning does not remove the aspect of spontaneity, which was a common complaint among users who performed the tests. It was perceived as too restrictive and stressful by users to have their choices removed.

- Pick Up / Delivery

The users also mentioned that delivery of the tools would be more convenient for them, for reasons of time and weight when transporting them without a car. The tests also showed the willingness to pay an extra fee for delivery. We are aware that the delivery option is not a simple implementation from an economic point of view, and brings other implications to consider, such as renting time, so this proposal is purely the user's point of view. For our project, we envision a hybrid solution, such that users can choose between delivery or pickup options, both for receiving and returning. We propose entering a collaboration with another service provider such as Uber, providing personnel and infrastructure for the delivery aspect. Of course, Bosch could also hire their own delivery drivers; however, the delivery option would have to be designed to be just as flexible as Uber's offering.

- Community
We also want to provide the space in the app to grow a community. The idea is to provide a space in which future users can share projects and ask each other questions about them. It represents an active form of aforementioned knowledge and support formats, because it will enable users to connect and encourage their learning process. Everyone should have the opportunity to participate without being forced into it and get the help and inspiration they want.

- Knowledge
A passive form of knowledge options would be content that provides technical and hands-on instructions and tips; for instance, articles or step-by-step instructions. The content for this could be provided by Bosch, because they already offer similar resources on their other pages. Moreover, these types of content also evoke trust in their correctness in users. We also see the potential to link this practical information to the rental process, because many users consult resources to find out what tool they need, usually on other platforms. This convenient placement will assist customers to find the appropriate tool for their endeavour more efficiently, meaning they will be likely to use it again.

- Visual Language
We consider visual language to be a gateway to a more inclusive environment, while also creating an inspiring mood and encouraging users to make things. We place importance on the hierarchisation of information, as well as the colour scheme to provide visual hints for inexperienced or insecure users, while also eliciting creativity.

## 3.5.1 Conclusion

Our intention in our research was to approach this project in as unbiased a manner as possible, having the user in mind first and foremost. Our research indicated that the use of power tools was not widespread and that stereotypes were perpetuated in this field, which could be demotivating for some. Key features we found in our research were a need for an inspiring platform that offered knowledge through articles or a community in a gender-neutral way. The offering a mix of planning possibilities and spontaneity would ensure that the platform remained flexible enough to be used in relation to a variety of contexts or circumstances. Our concept proposal therefore entailed restructuring the renting process while also adding new features to the service.

# 3.6 Next Steps

After arriving at a more concrete direction for our project, we could direct our attention towards visualising what the possible solutions could contain and look like. We sought to continue our collaborative efforts with the users by frequently testing our output with them and working iteratively from their feedback. This included functionality testing as well as the visual appearance of the app. How could we create a creative atmosphere for our target users without causing distractions in the user flow?

# 4. PROJECT DEVELOPMENT

# 4.1 App Development

Before starting with the design, it was important for us to take a step back. We wanted to detach ourselves momentarily from existing solutions and think solely about how we could address our users' needs, as mentioned in the concept description. The reason for this was to develop solutions rooted in the users' needs and not make assumptions about existing concepts. We wanted to create something innovative that fitted our users well.

We started with quick sketches to visualise possible solutions and to have a basis for discussion. We focused on specific user requirements, such as novices' lack of knowledge about tools. For this, we came up with a 'quick fact' button next to the tool that briefly summarised the most important facts in a pop-up, as well as the context of the usage *(see figures 45 and 46)*. Another example was the need for the advanced DIY user to rent several tools. A direct access point to the rented tools on the home screen displays the most relevant information about them.

Those quick sketches were the first visualisations we created and they helped us to find common ground and set focus points. It enabled a more creative approach for us, tackling abstract concepts such as what 'knowledge ' could look like. From there, we then moved from the abstract to the concrete by establishing our main screens for the app, together with its functions.

## 4.1.1 Main Screens and Functions

The core aspect of this service remained the selecting and renting tools. Gaps in the user experience and the flow of renting tools were highlighted during our user tests. During our collaborative efforts with the users, they voiced the need for support, which we tried to provide in the form of a community and a collection of knowledge about tools. We decided to keep the renting, community and knowledge aspect separate in an attempt to be mindful of differing user needs, so that their user flow would not be disturbed.

In the following section, we describe the content of our main screens, as well as their functions:

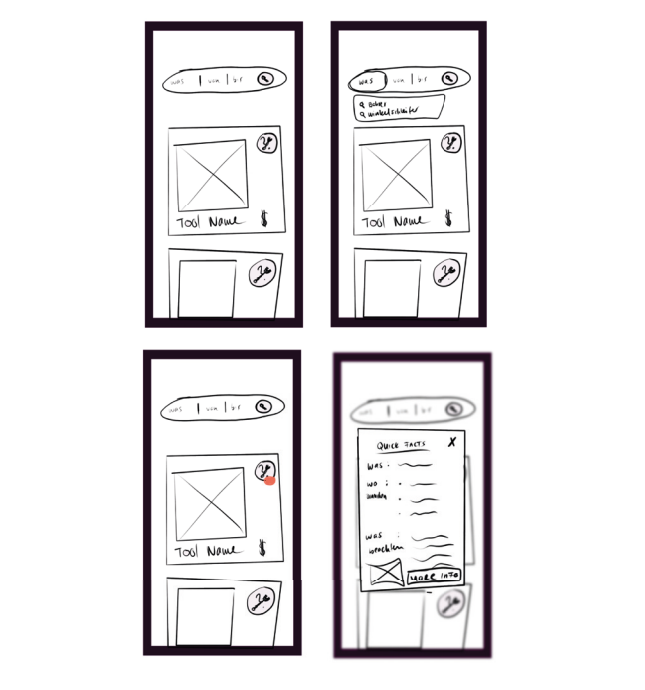



*Figure 45 - Sketch of new function*

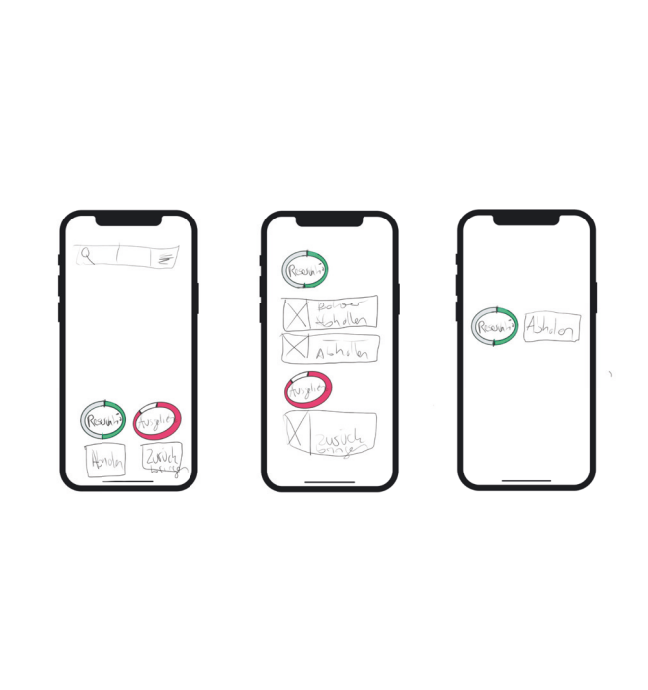


*Figure 46 - Sketch of new function*

**- Home**

Because the home page is the first image the user sees when opening the app, it is especially important to make a good impression. The page contains a summary of the advantages and features of the service. It needs to provide access to other pages on the service, such as the community and knowledge pages, via quick access actions to encourage users to explore the diversity of the service. We also wanted to make sure the search function was highlighted and in a place where the users would expect to find it. Instead of a simple search bar, we tried to create a filter search to encourage novice users to think about important parameters, such as materiality. Moreover, the need for planning when to rent a tool was mentioned by all the user groups, which we attempted to address by adding a date and time filter. The choice between picking up the tool or having it delivered is also located there.

**- Categories**

As an alternative to direct searching and filtering, tool categories give users an alternate way to find tools through browsing. In the user tests, certain users mentioned that they wanted to search for tools through categories, which is a familiar pattern on e-commerce sites. Therefore, we believed that our service could benefit from this pattern.

**- List View**

This list view appears once the user has entered a search query, either by using the search bar or browsing through the categories. It marks the place where the users make their decisions about a tool. It contains crucial information, such as rates, availability, and the name and function of the tool. The visual language has to be simple and clear in order to avoid misunderstandings. The goal here was to convince the user to either complete the reservation directly or direct them to

a detailed view of the product and to reserve the tool from there.

- Product View
This page contains a concise summary of the search query and filter parameters, as well as further information about the tool and the context in which it is used. It includes standard and technical data, manuals, safety instructions, and what accessories go with it. Additionally, it would be a suitable place to link knowledge resources to, such as tutorials or helpful articles. After the user has decided to reserve the tool, they have the option to continue browsing by simply adding their item to the shopping cart, without having to finalise their reservation.

- Shopping Cart
The shopping cart is required by those who want to rent several items at once or continue browsing further and do not want to complete the process immediately. This function is also a familiar pattern in the e-commerce sector, with which customers are already accustomed.

- Profile
The structure and the content of the profile caused a great deal of confusion in user tests. Thus, we aimed to look towards other familiar patterns by placing personal information, settings, and information and explanations there. Also, we saw the profile as a place where users could find explanations about the renting process to get an overview.

- Community
We decided to focus more on indirect support in the forms of an FAQ page, tutorials or instructions and articles or blogs. Therefore, we had to consider the location of the community, as well as the visualisation, so that people could post and answer questions in a written form. We imagined this to be similar to a blackboard or starting threads, as in other community pages. Additionally, we imagined the community page to be a place where people could post images and descriptions of their projects, and provide inspiration for others. Articles or blog posts will help users to find the right tool for their project. We wanted this page to be a separate navigation point in the app, so that the user flow of other user groups would be disturbed if they do not need exchange or inspiration.

- Knowledge
In this section we wanted to address questions that arose when choosing and using tools. Moreover, we believe an interactive approach through a quiz would help customers to decide which tool to choose, or at least remind them of important aspects. We see particular added value here for all user groups, because they are not all equally versed in all areas and can acquire new knowledge or refresh existing know-how.

- Navigation
In the next step, we looked at how our users could access all the core aspects of renting, community and knowledge. Since our service was app-based, it was vital for us to reference typical app patterns, such as thumb accessibility. After some discussion, we decided on a navigation bar at the bottom of the screen. For this, we had to see if we could break our service down into five navigation points and which ones they would be.

- Physical Interaction
Once the users have reserved their tools and are picking them up at a physical station, we want to enable them to get their tools quickly. We imagine that some written instruction on the box itself will explain the process to users without them having to open the app. In order to access the tool, the users can scan a QR code, which will open the correct door containing the tool. This is also to avoid possible abuse of the functionality of opening the box remotely, as well as acting as confirmation that the user is indeed in front of the box.

Having made the user's needs the central focus, how we incorporate them into our service and whether this fulfils their requirements remains to be tested. Thus, we decided to start to wireframe in order to test our screens with our user.

## 4.1.2 Quick Prototypes

Our goal was to create quick and easy prototypes in order to test aspects of the content in an agile way. Through this approach, we also intended to remain close to the user and not get too caught up in designing screens that would need to be discarded.

The next section contains a list from each section and what we wanted to test.

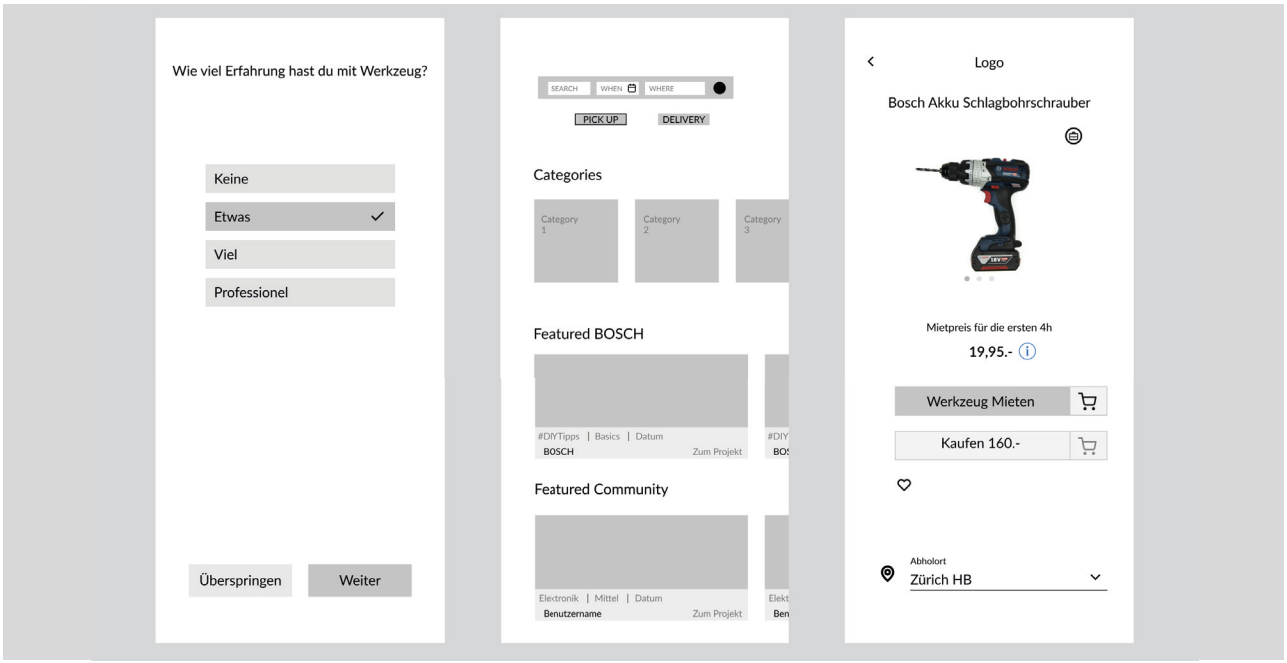



*Fig. 47 - Quick and easy Prototype Wireframes*

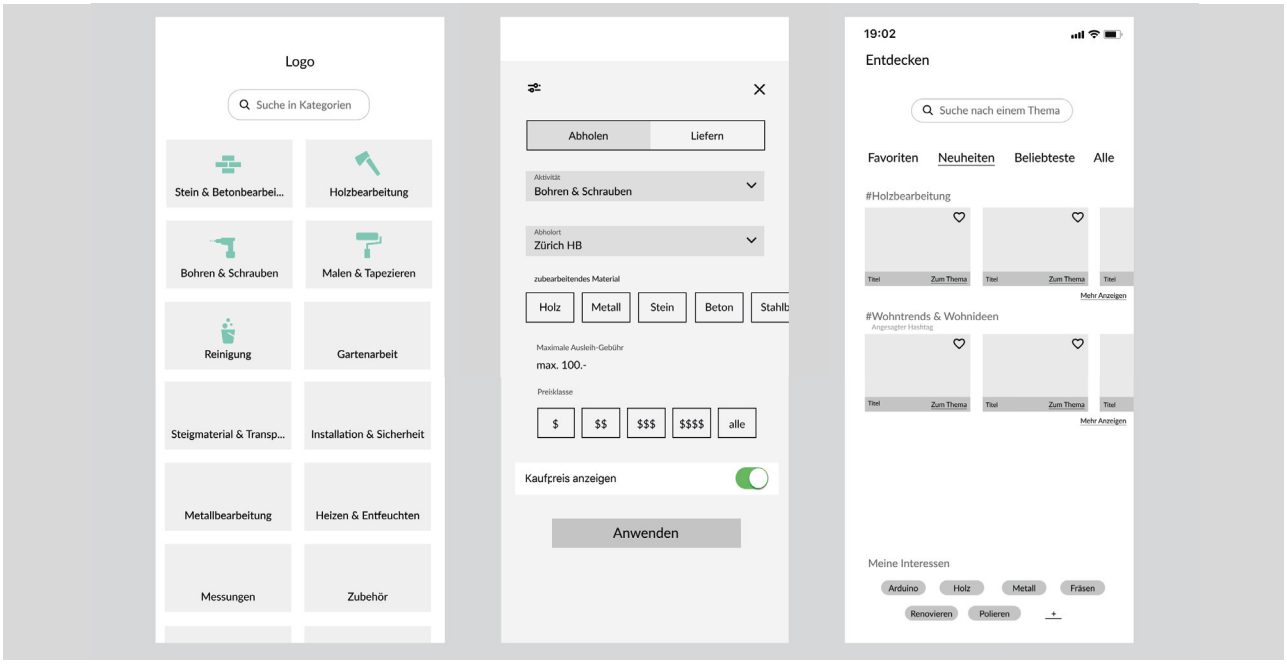



*Fig. 48 - Quick and easy Prototype Wireframes*

From the renting section:
- Presentation of landing page

- Search

- Search box

- Filterbar + number of filters

- Select options delivery / pick up

- Buttons

- Dropdown

- Order overview with a quick access on the landing page

- Dropdown filters in list view

- Placement of selected filters in product page

- Shopping cart button + reserve button in product page

- Pop up confirmation of shopping cart

- Category view

- List

- Tile

From the community section:
- Community page

- Post question

- Search question

- How to separate the content providers - community content, bosch content, knowledge content

From the Knowledge section:
- Onboarding - explanation screens

We realised that we would need to adjust the presentation of the screens before we ran these tests. The test users needed more context to make it possible to give beneficial feedback. Screens that are too abstract do not have sufficient context, making it difficult for users to imagine the service. Next time, we will try to put the aspects we want to test more into context from the beginning, making the whole screen more detailed. Therefore, it did not make sense for us to try these screens in this way, and we decided to first develop the screens further.

# 4.2 Wireframes

We continued to develop our wireframes to provide the user with more context. The following section is a description of how we tested our screens and the new features in two iterations. In the first round, we had three users at different times doing a think-aloud. We included their feedback for the second iteration with two users. All the tests again performed on Zoom.

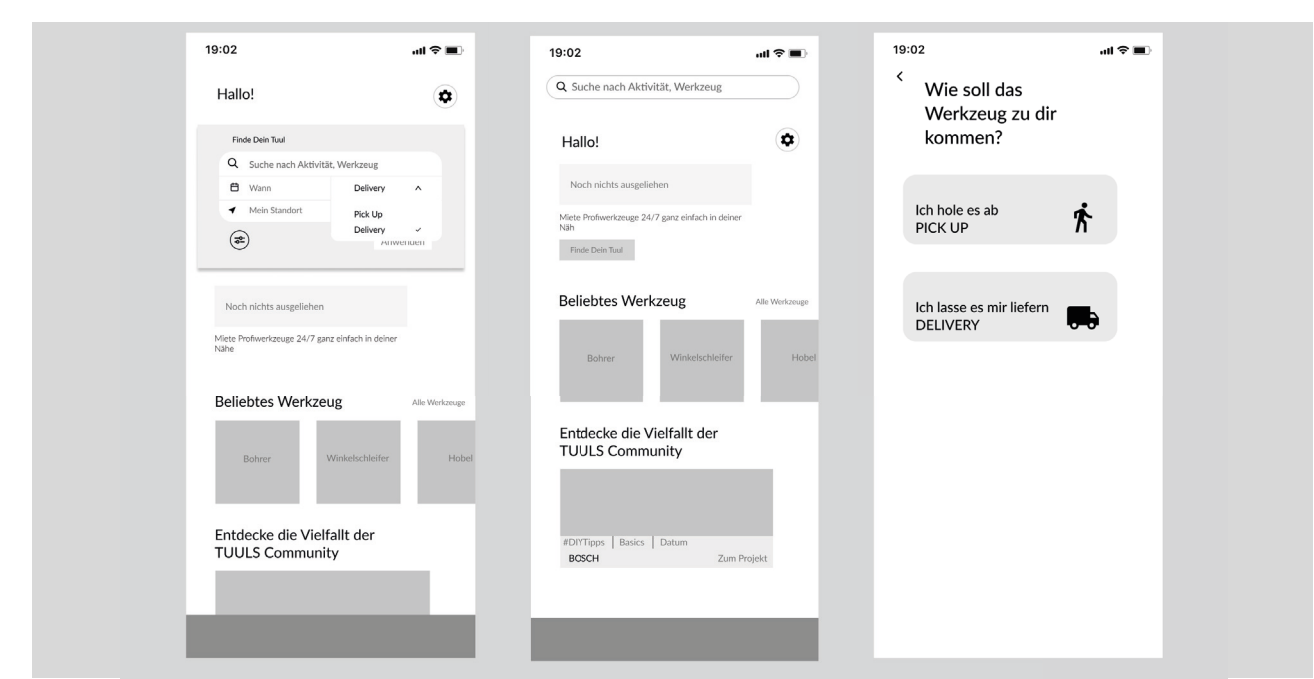



*Fig. 49 - Search function*

## 4.2.1 Iteration 1

**- Search: Why did we test this?**
Since the search is an integral part of the renting service, we wanted to ensure that it assisted all the users find the tools they needed. One served the purpose of seeing how the users reacted when only a search bar with separate filter fields was present. With the separate fields for certain filters, our intention was to assist the users by giving them an overview of important parameters. For instance, novice users were unaware of the importance of the processed material when choosing a tool. It was, therefore, important for us to test this with novice and advanced users to see whether it was purely skill related and how it impacted their user flow. The other filters displayed as separate buttons were pickup or delivery, and time and date.

**- How was it received?**
All the users liked having the additional filters featured more prominently because they felt these gave them an indication of what could be important, helping them in the process. However, on closer inquiry they admitted that, due to the design of the fields, they felt they had to fill out everything in order to start searching. Two out of three liked this option, while one user liked the version with the standalone search bar.

**- Our change**
We decided to retain the version with more filter fields. We felt this option had the most potential and, when designed right, it might yield benefits for all our users.

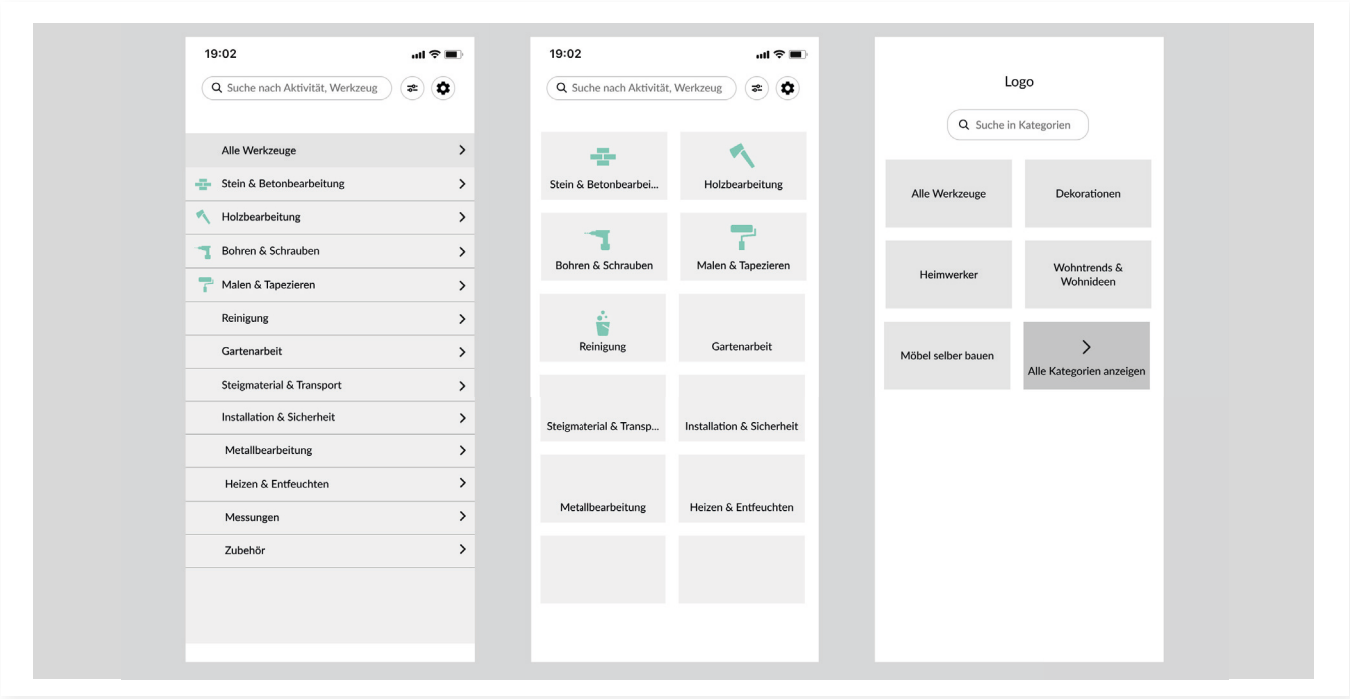



*Fig. 50 - Categories*

**- Categories: Why did we test this?**
We wanted to test which view gave the users the best overview of the extent of information on the list.

**- How was it received?**
The users found the tile listing more convenient. They also liked having icons representing the category of tools.

**- Our change**
We decided to continue with tiles and icons, because they offered more space to click on them than the list.

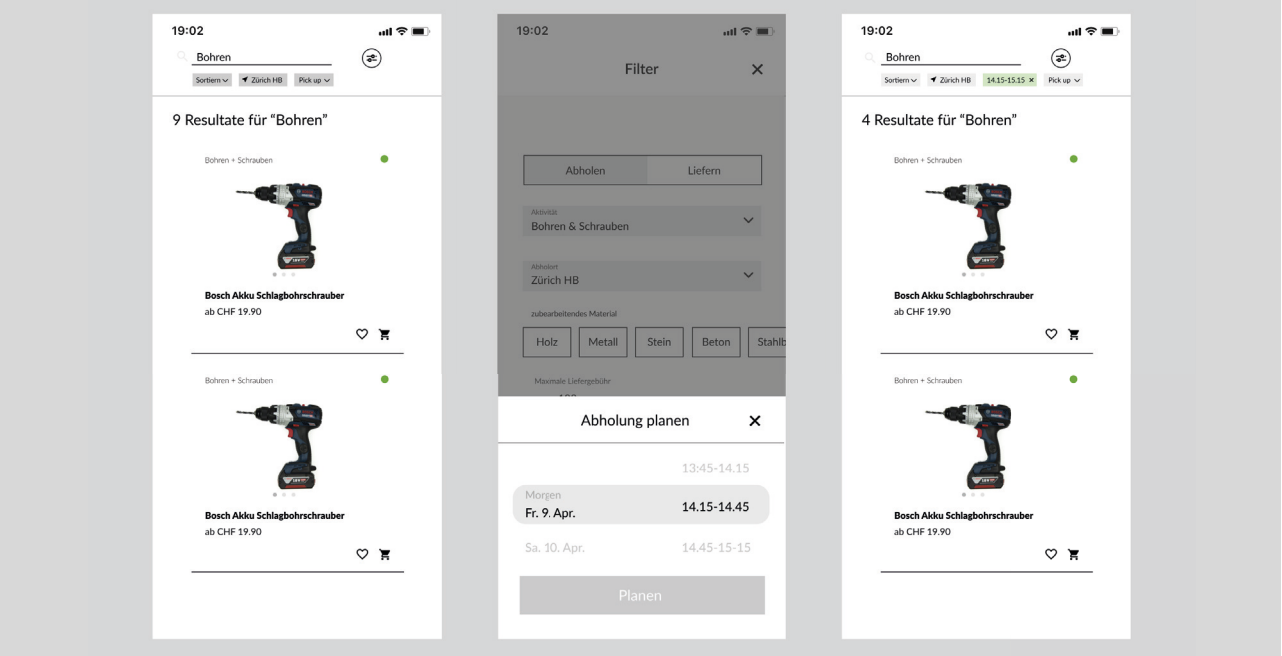



*Fig. 51 - List View with Filters*

**- List view with filters: Why did we test this?**
To see how understandable the filter page on the list view was, and if the interaction with the filter worked.

**- How was it received?**
The users understood how to interact and what to expect from the page. However, selecting the timeframe was visually not clear. This called for an icon to catch the user’s attention when glancing at the page. The actual interaction with the pop-up to set the timeframe was clear. After the filter was applied, the users were missing alternatives if there were more tools available at a slightly different time.

**- Our change**
We added an icon to the time and rate display. On the list view, we added an icon that enabled users to adjust the time filter if the desired time was the only factor contributing to the unavailability.

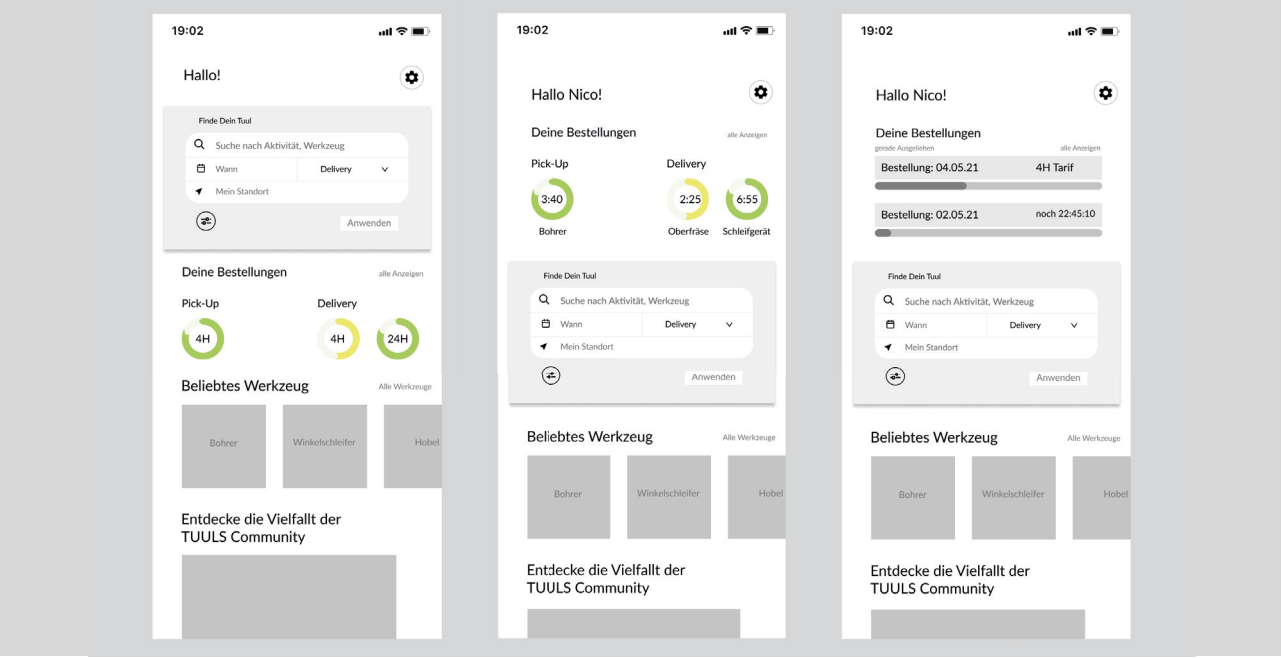



*Fig. 52 - Rented Items*

**- Rented items: Why did we test this?**
We wanted to see what information was needed in the overview of items that were reserved or rented at the time and past rentals. Additionally, we wanted to test whether this distinction would make sense to the users visually.

**- How was it received?**
The function of the screen was understood. In terms of content, there were still some questions. The users claimed that the lack of visual separation between sections and the titles were confusing.

**- Our change**
We tidied up the page, changing titles and creating a better separation of sections using colour. We also had to rethink the hierarchy of important information.

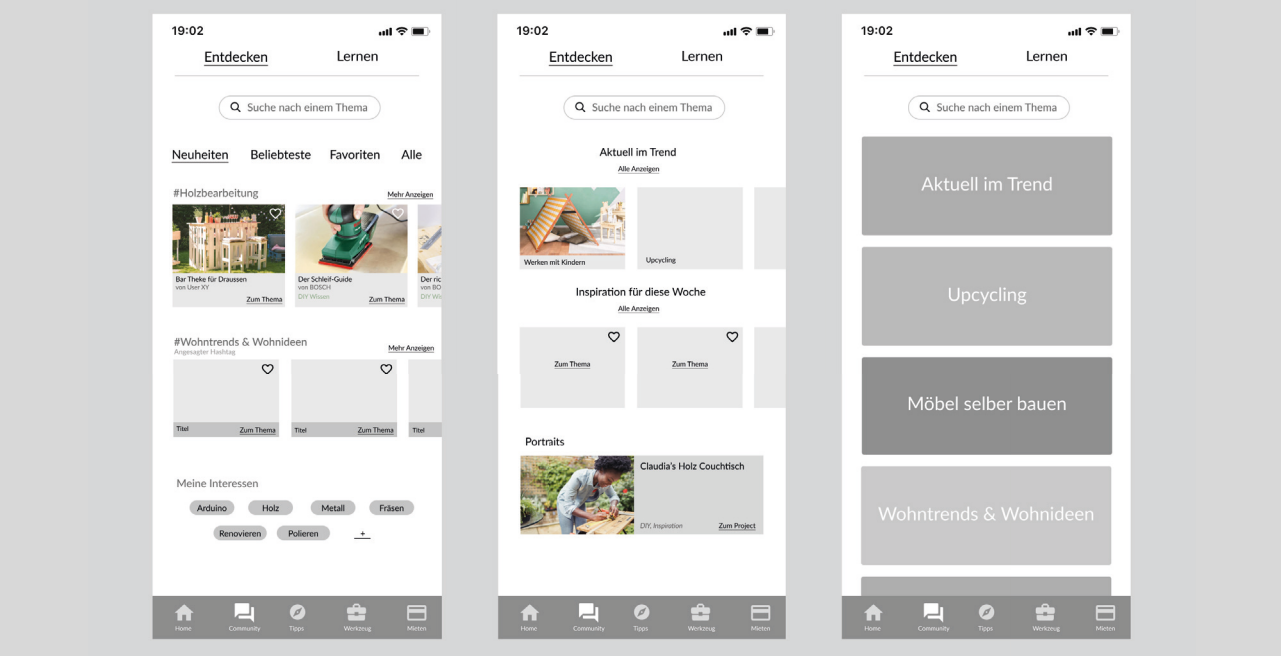



*Fig. 53 - Community*

**- Community: Why did we test this?**
We wanted to test how the users reacted to a community and if the format was suitable. Moreover, was the content displayed as expected, welcomed or dismissed?

**- How was it received?**
This page was positively received and considered beneficial. The users were interested in seeing the projects of others on this page.

**- Our change**
We decided to merge the community page and the discover page, and separate knowledge and inspiration in only one subcategory menu.

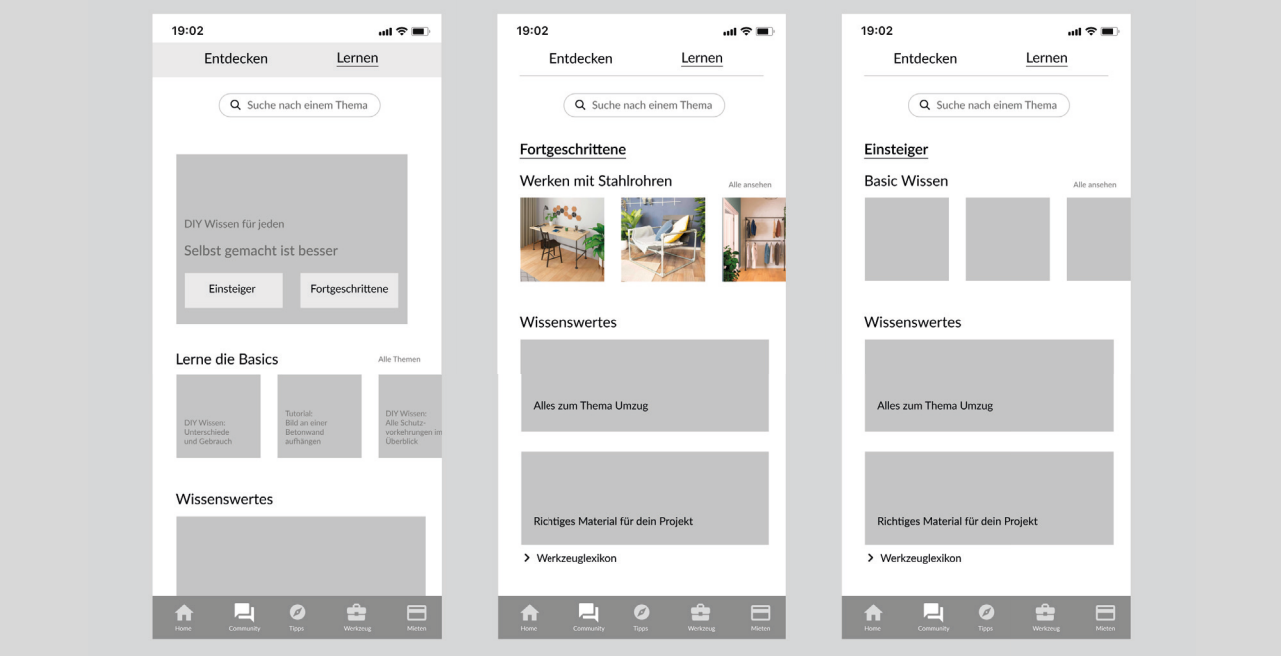



*Fig. 54 - Discover Page*

**- Discover page (learn plus inspiration: Why did we test this?**
Here we wanted to test how the combination of inspiration and knowledge was received. Submenus still separated the topics, but under the same navigation bar point. We imagined this section to feature mainly Bosch content, because they already had many items. Both contained useful articles giving helpful tips or tutorials for DIY projects. Thus, a certain standard of knowledge could be guaranteed. Also, we wanted to test whether the content should be divided according to the users' skill levels.

**- How was it received?**
The users welcomed this combination of projects and articles, but they were confused by the fact that the same community projects that were featured were the same as those on the discover and community pages. They did not like this.

Once again, the duplication of content was noticed. Furthermore, the users did not like the direct entry per skill level. They felt that they were being told what they could and could not do. They did not understand the separation of content, since both the projects by Bosch and the community promoted learning. They wanted to have the opportunity to comment or post questions under projects. They did not appreciate getting content according to their skill level. This gave them the impression that someone else was deciding what they could or could not do. However, on tutorials and projects, they liked the estimations of the time it should take to complete a project or task, because they could then make a subjective estimate.

**- Our change**
We decided to merge the navigation points of community and discover into a new point called 'knowhow'.

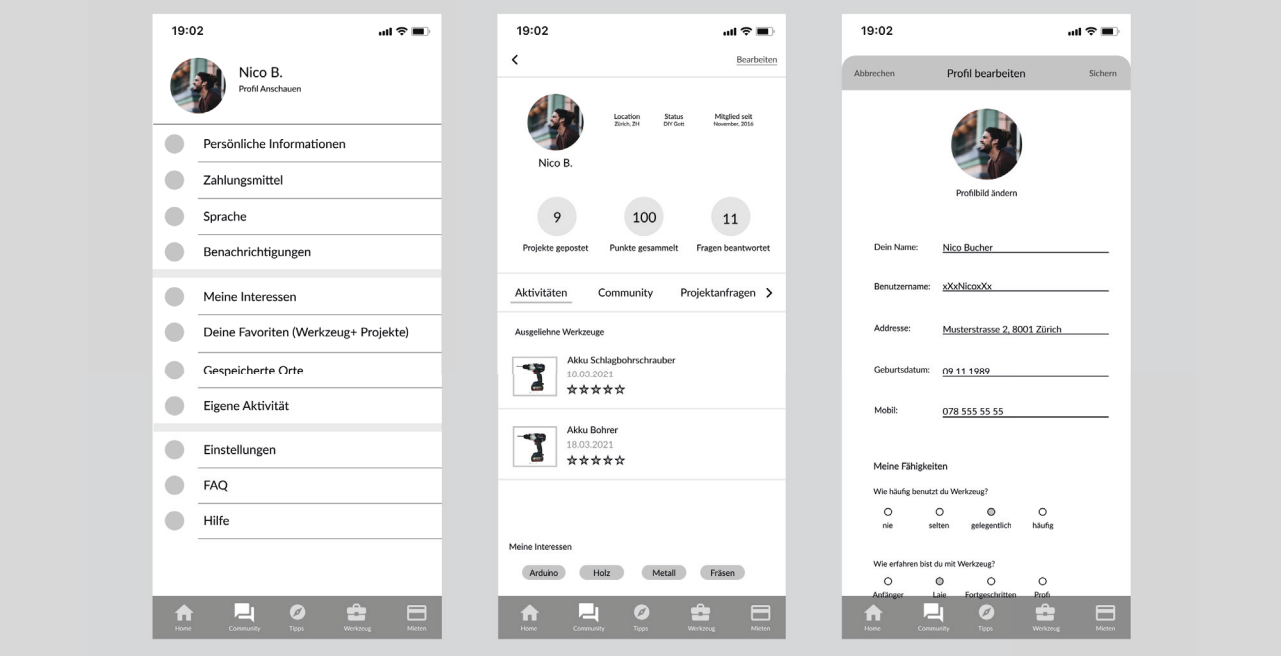



*Fig. 55 - Profile*

We also removed the skill level division, because users should be able to decide for themselves what they wanted to see and do. By merging the pages, we wanted to introduce clear labelling of community and Bosch content. This mix now treats all the content equally and provides the users with differing perspectives on how they can react to problems.

**- Profile: Why did we test this?**
We wanted to see how the profile was received as part of the community feature. It contained preferences, personal settings and activities. Would they like the mixture of the community profile and account profile?

**- How was it received?**
This mixture was not questioned and therefore accepted. The users were not sure what kind of information would be shared publicly.

**- Our change**
We included some labelling to indicate whether information was private or public.

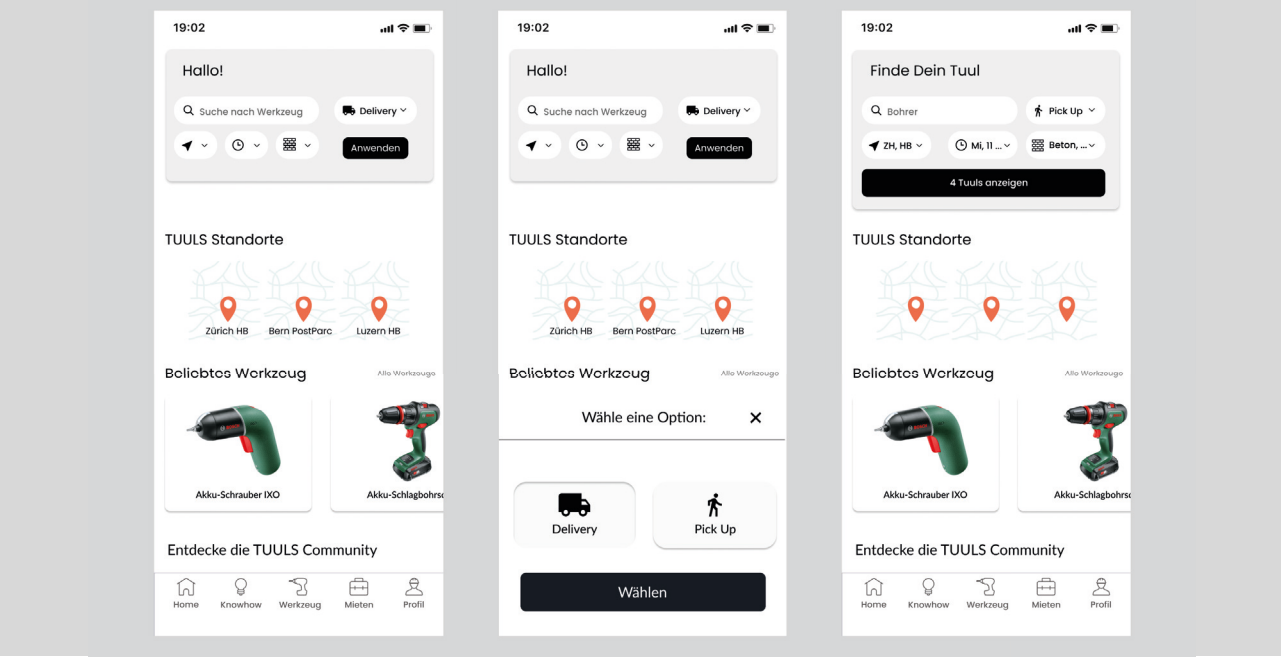



*Fig. 56 - Home appearance and search*

## 4.2.2 Iteration 2

**- Home Appearance and Search:**
**What we wanted to test:**
We tried to mitigate the impression of having to fill out everything in the search and filter section by adding more white space between the fields, as well making them look more like buttons. We also added the map displaying the locations of the pickup stations.

**- How was this change received?**
The users no longer felt they had to fill in everything, but they still liked seeing what they could fill in. One person would have filled out everything initially, the second test person only half at the beginning. They were still unsure what the material icon meant. They liked seeing the map of the locations, but they thought it might become irrelevant after using the service once.

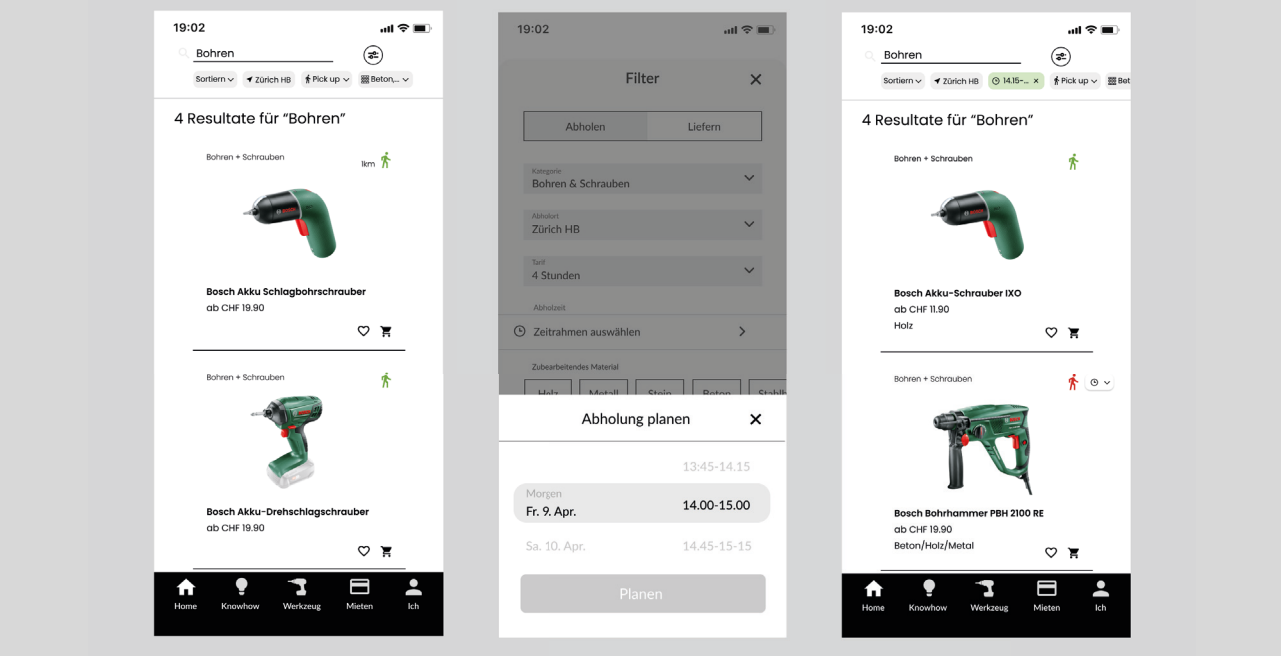



*Fig. 57 - List View and Filters*

**- List View and Filters: What we wanted to test:**
We added an icon that offered an alternative to the desired time if a tool was unavailable in a particular timeframe. We did this to avoid creating a false impression of unavailability if the tool would be available again an hour later. We displayed the selected filter in the page header.

**- How was it received?**
The possibility to change the time using the icon was understandable. The users also said that they would not want this for other filters, except maybe for location, if there was a dense network. The filter button was thought to be too small, causing confusion. They claimed it would be too much effort going to an additional filter page, only to add one parameter. Also, they wanted the time selection to be selectable in full hours and only in an hourly cycle (e.g. 14.00–15.00).

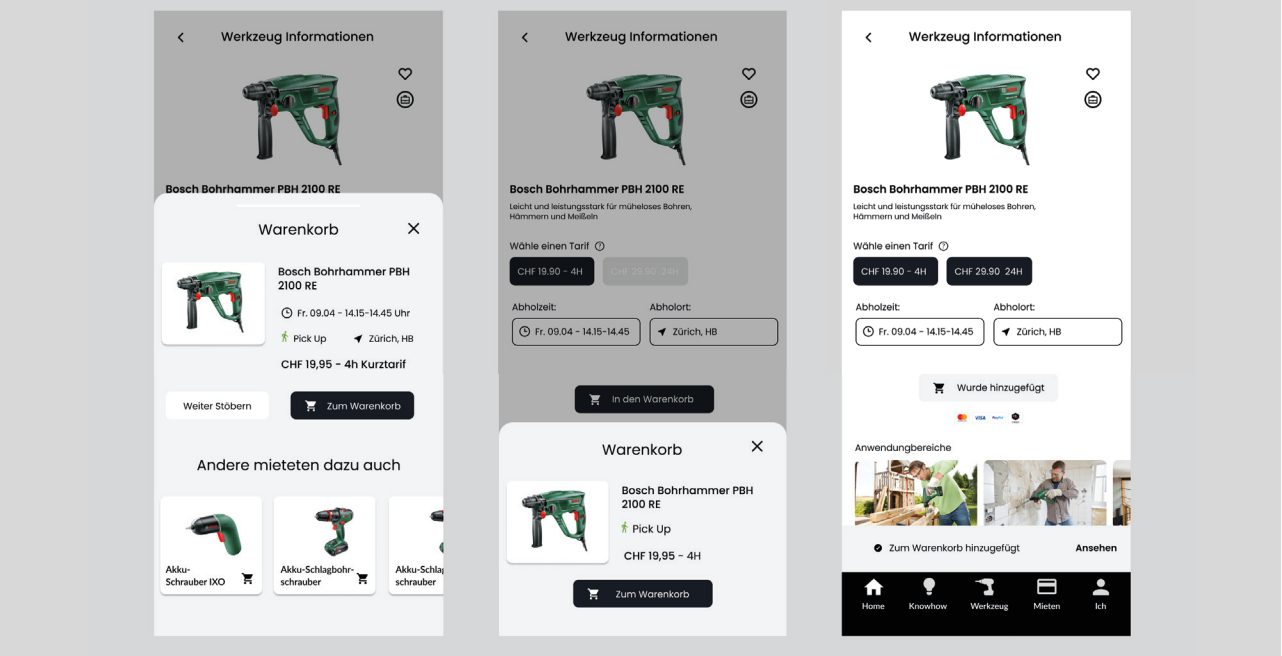



*Fig. 58 - Shopping Cart Pop-up*

**- Shopping Cart Pop-up: What we wanted to test:**
We wanted to test variations of popups when a user placed a tool in their cart, giving them the decision to either continue browsing to go to the cart.

**- How was it received?**
The users found the pop-up with the most information to be the most useful. On pop-ups with less information, confusion arose as to why not everything was displayed. They also did not mind a more minimalistic approach of simply receiving a confirmation that the item had been added. However, this display was still too subtle for the users, and they might have overlooked it.

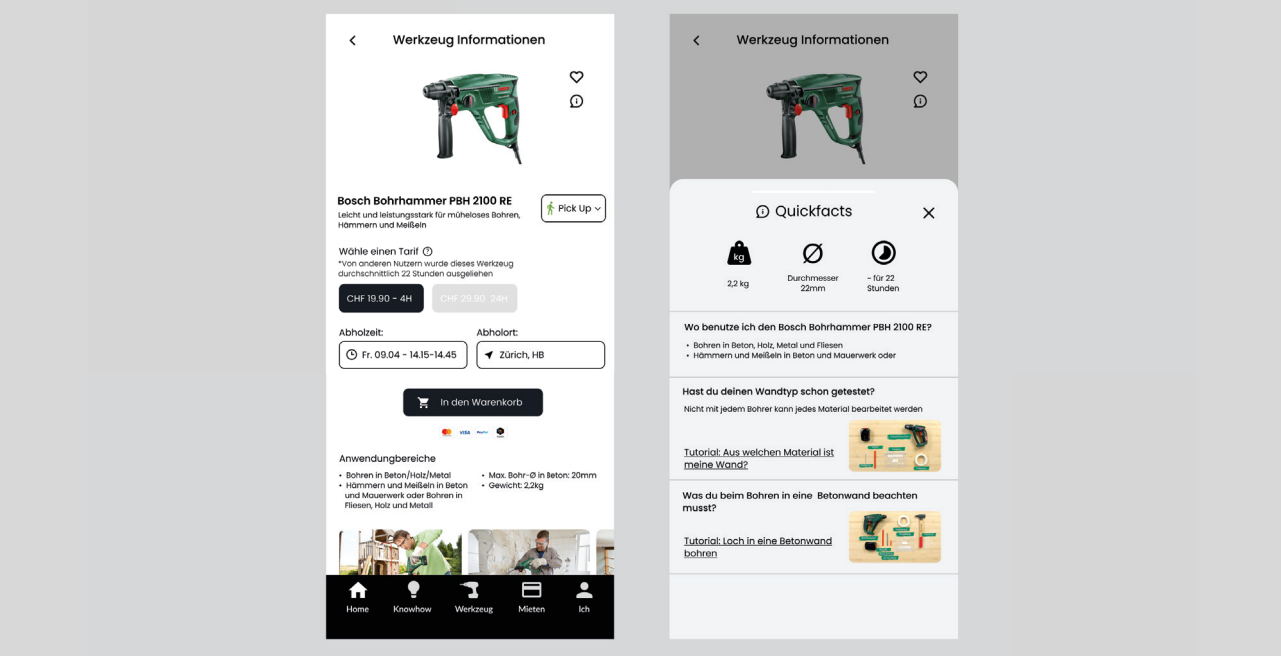



*Fig. 59 - Quick Facts on the Product Page*

**- Quick Facts on the Product View:**
**What we wanted to test:**
Here we wanted to test which additional information the users needed on the topic of tools and where in the process these needed to be placed.

**- How was it received?**
The users liked the Quick fact icon, but they felt it should also be in the list view. Moreover, they said they needed to be pointed to different pages with more detailed information or tutorials.

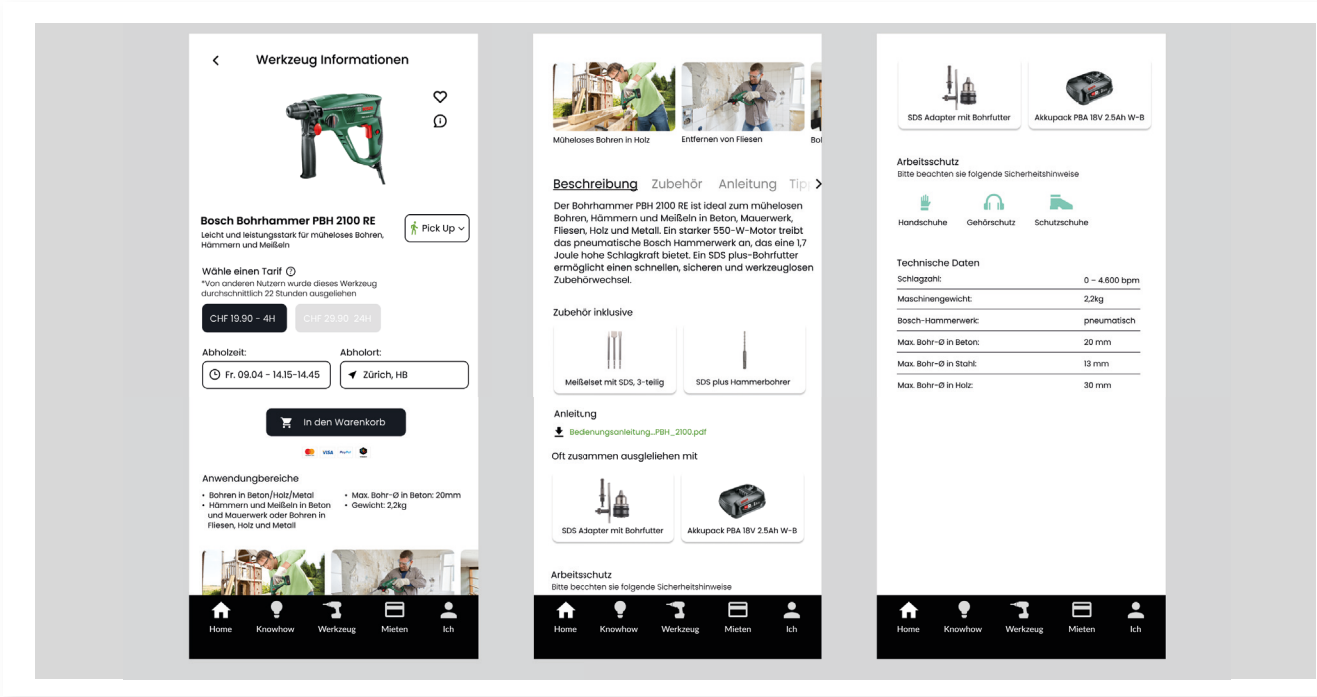



*Fig. 60 - Product View*

**- Product View: What we wanted to test:**
We want to investigate the content in the product page, in particular whether it was clear to the users that the filters could still be changed and if everything was understandable.

**- How was it received?**
The users noticed that both pricing options were listed but the buttons were not clear. They also missed seeing a total price in cases where delivery fees would be added.
Some users liked having context-based images, whereas others did not. They appreciated having suggestions at the bottom and the fitting accessories, and the possibility of clicking on them to get more information.

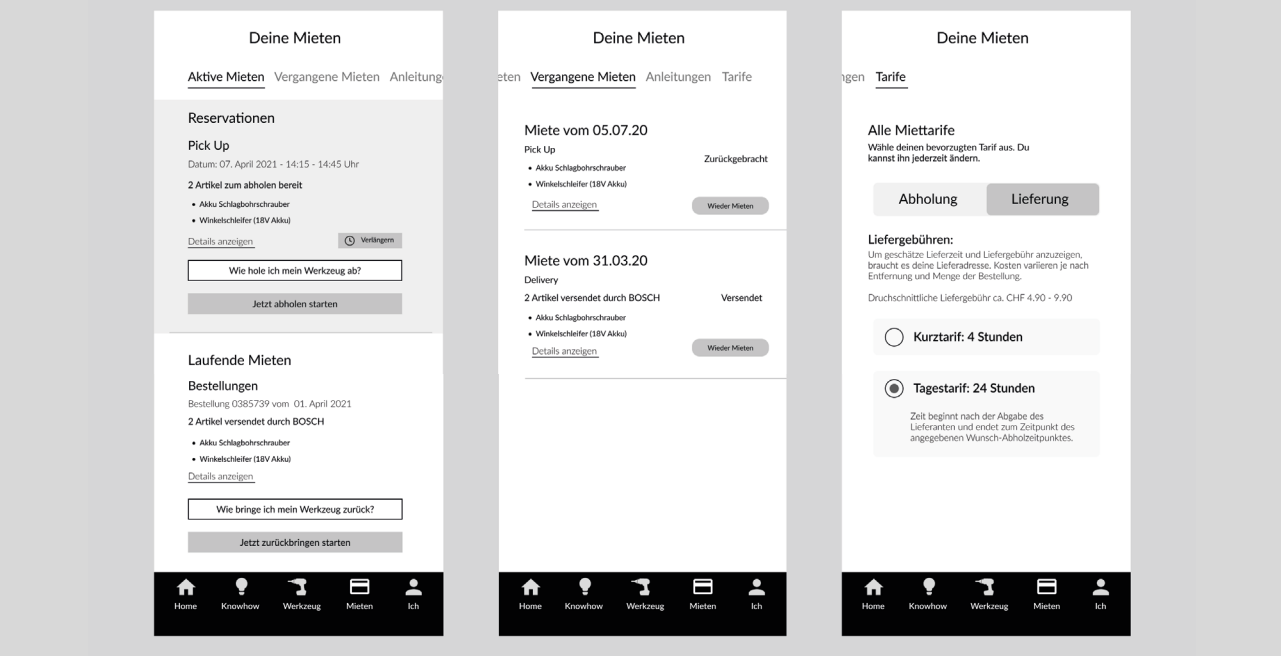



*Fig. 61 - Order Overview Quick Access*

**- Order Overview Quick Access: What we wanted to test:**
We wanted to make the order overview available on the landing page in the form of quick access. Here we wanted to test how much information the users needed and whether they found this presentation understandable and helpful.

**- How was it received?**
It was understandable for them and they appreciated the display of the expiration of the time. However, this also raised the question of the likelihood of having three separate reservations active at the same time, which has an effect on our design.

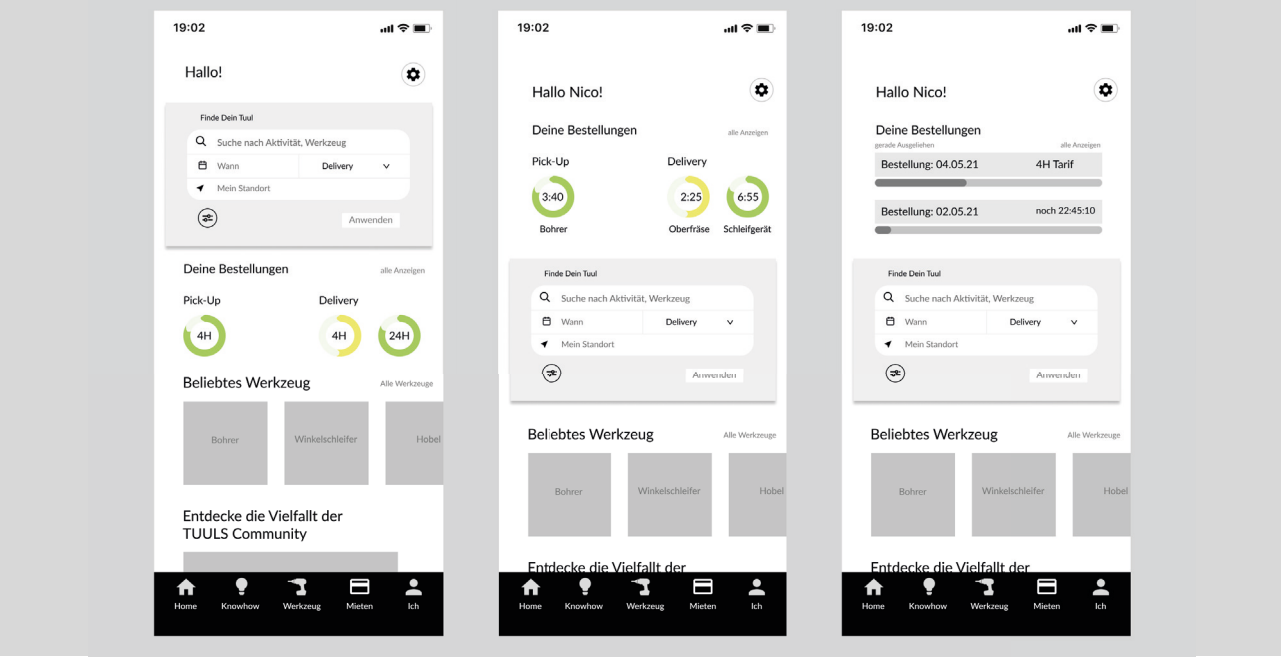



*Fig. 62 - Rented Items*

**- Rented Items: What we wanted to test:**
We wanted to check the revised version from the previous user test. We also wanted to see the importance of this page for users and if it merited being a separate navigation point.

**- How was it received?**
They found the quick access practical and liked it being a separate point, making it easier to find and thus more accessible. The users missed the images of the tools, as well as coherence in the visual language of the quick access from the home page.

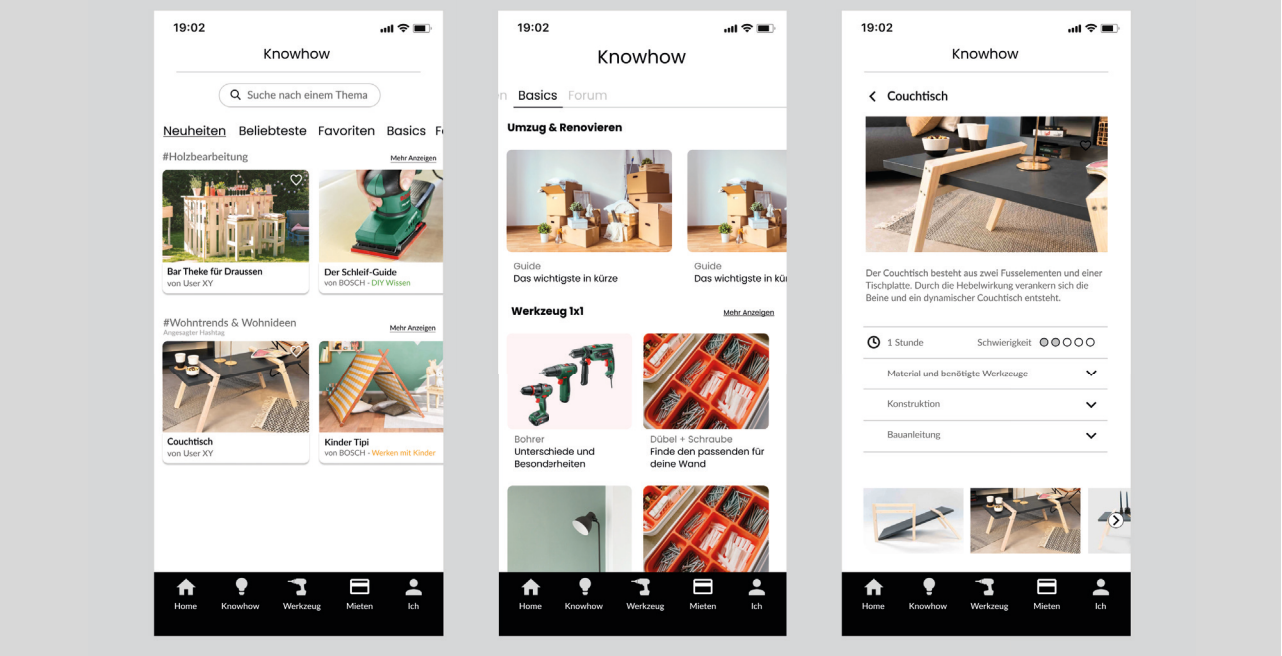



*Fig. 63 - Order Overview Quick Access*

**- Knowhow (Community, Knowhow and Discover): What we wanted to test:**
After the previous user test, we combined the discover and community pages. These pages were now further nested in the new navigation point. Thus, we wanted to test how clear this was for users.

**- How was it received?**
This version was received much better than the previous one and the issue of unnecessary duplication was no longer raised. Instead, the new suggestion was, for instance, to fill the community with content faster. The idea of linking other social media was also mooted by a user. Furthermore, the visibility of the tools suggested for specific projects and suitable tutorials was an issue, because the users found them to be too hidden. It was also suggested that the topics and projects should work via tags. However, it was not entirely clear whether the categories were now displayed individually according to their preferences.

## 4.2.3 Conclusion

We approached the design as in as unbiased a manner as possible in order to create novel ideas that were relevant to our users. Through these new ideas or differing formats, we were able to design an app that we could then test with our users. One of the most significant changes, after all tests, was combining community and knowledge into knowhow.
It also matched our research, in which community was mentioned as a means to encourage learning; therefore it made sense to merge these aspects. By changing the design of how users could search, they could be supported by hinting at important factors that might affect their decision about the tool. The users also welcomed the planning function, which enabled them to plan their reservation date and time up to one week in advance. Our goal was to create a service with a plethora of resources, yet to keep relating back to its core aspect, namely tool rental. Only then could our service truly be a new convenient experience for users.

As a next step, we will concentrate on the most important screens, because they bring the most value to the service. Those are the home screen, the list view, the knowhow page (basic knowledge), tutorials, articles and the community page.

# 4.3 User Flow

In the following section we will outline the app architecture.

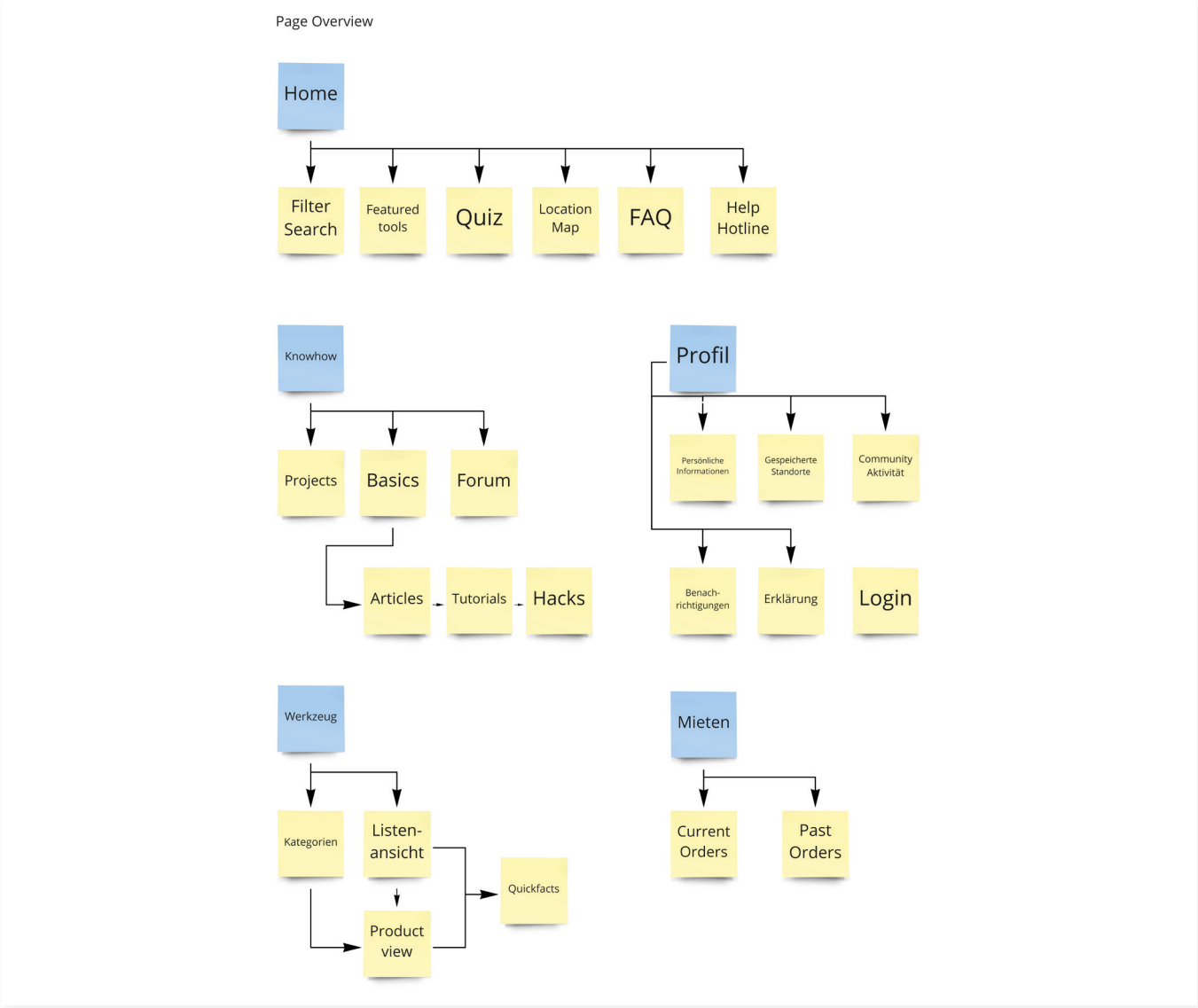



*Fig. 73 - User Flow, General Overview*

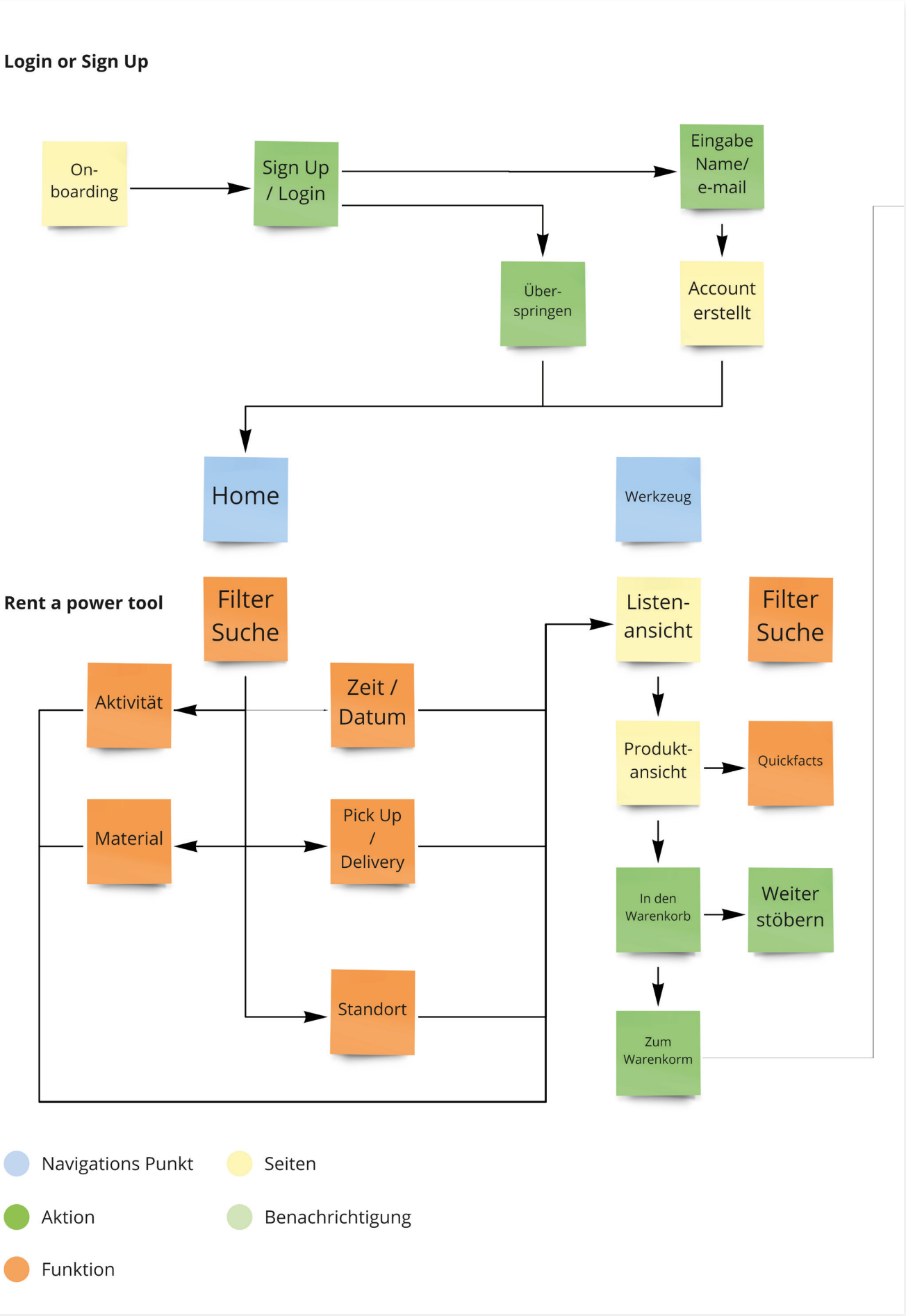



*Fig. 74 - User Flow, Onboarding + tool rental*

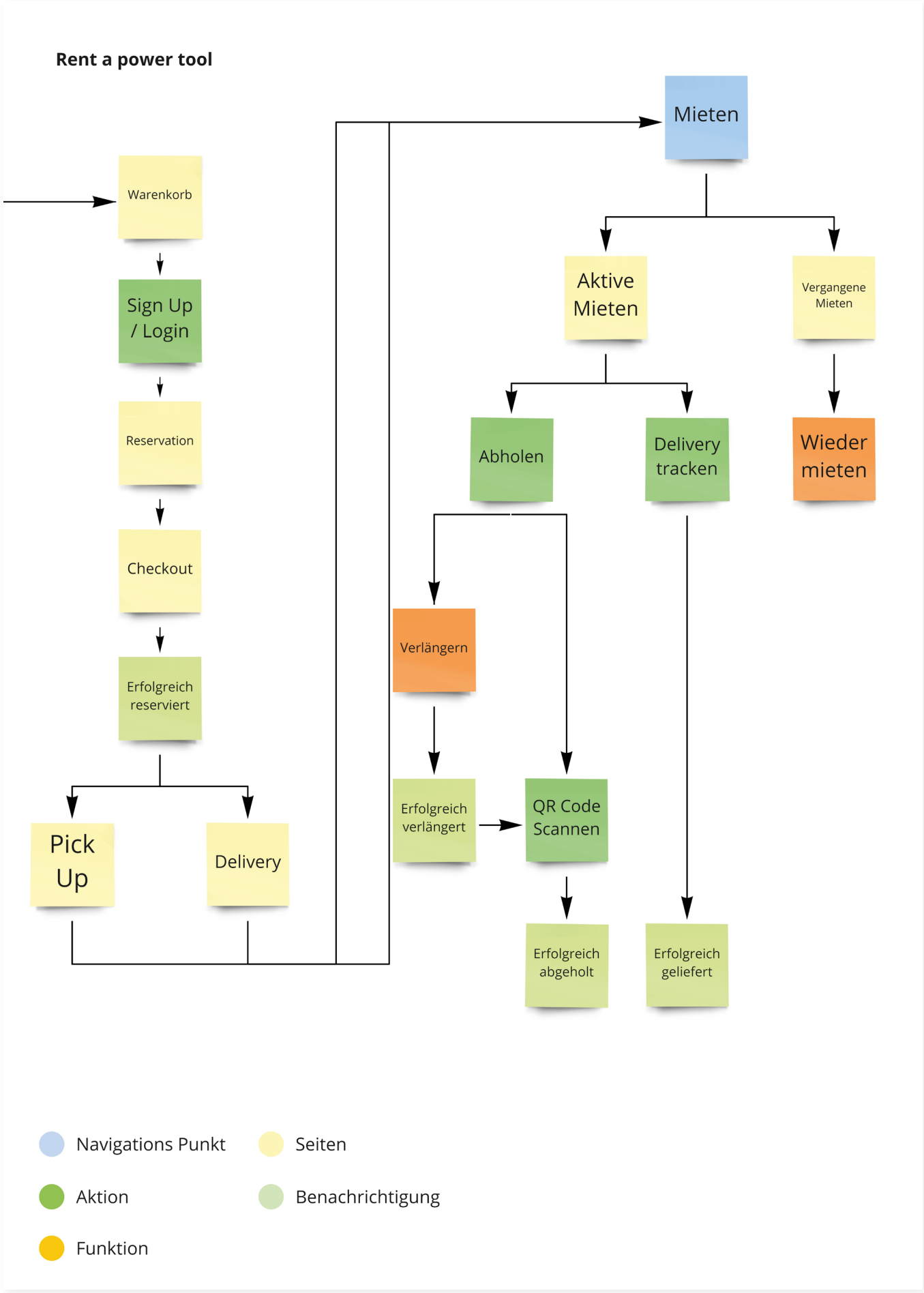



*Fig. 75 - User Flow, Onboarding + tool rental*

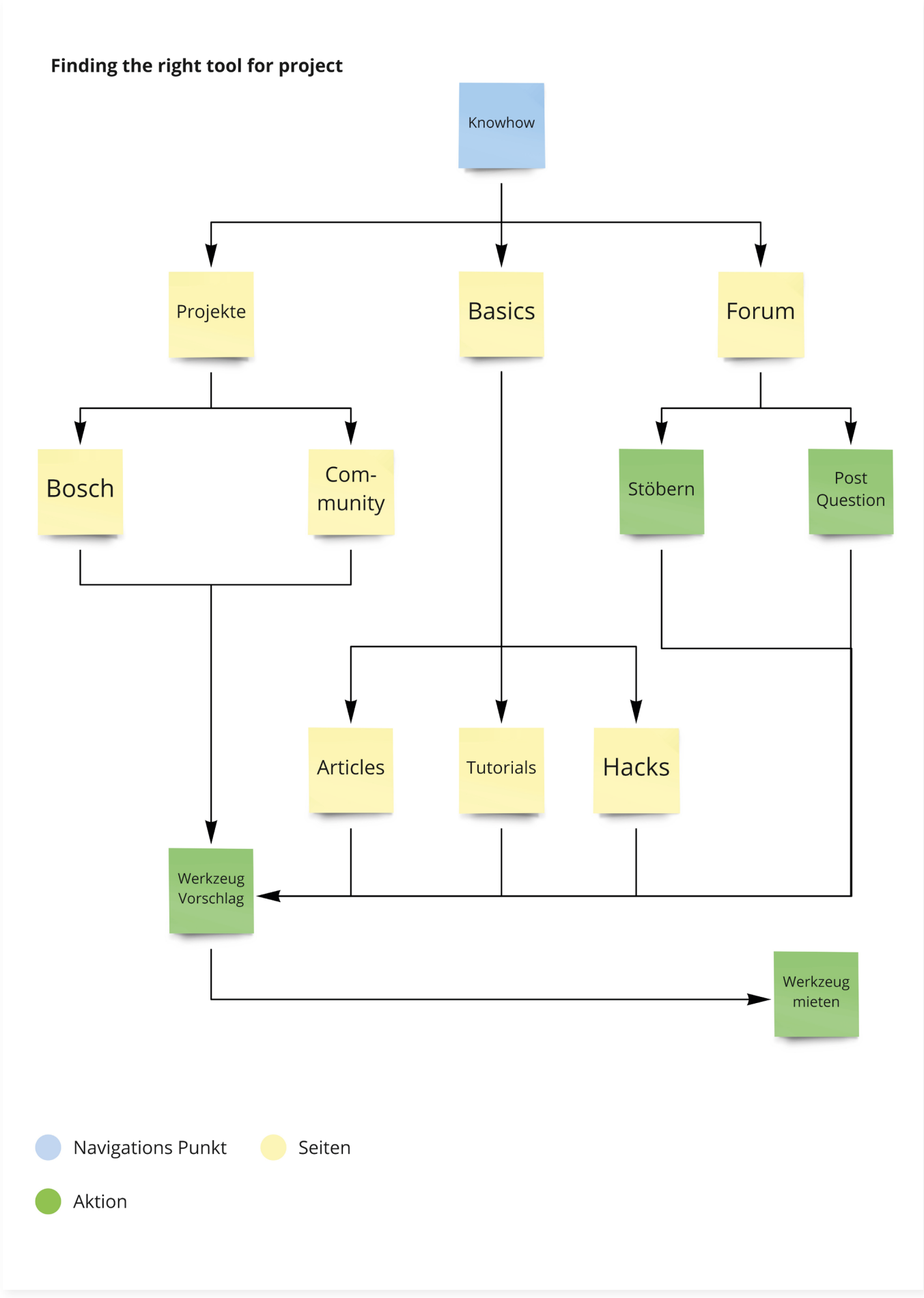



*Fig. 76 -User Flow, Knowledge Resources*

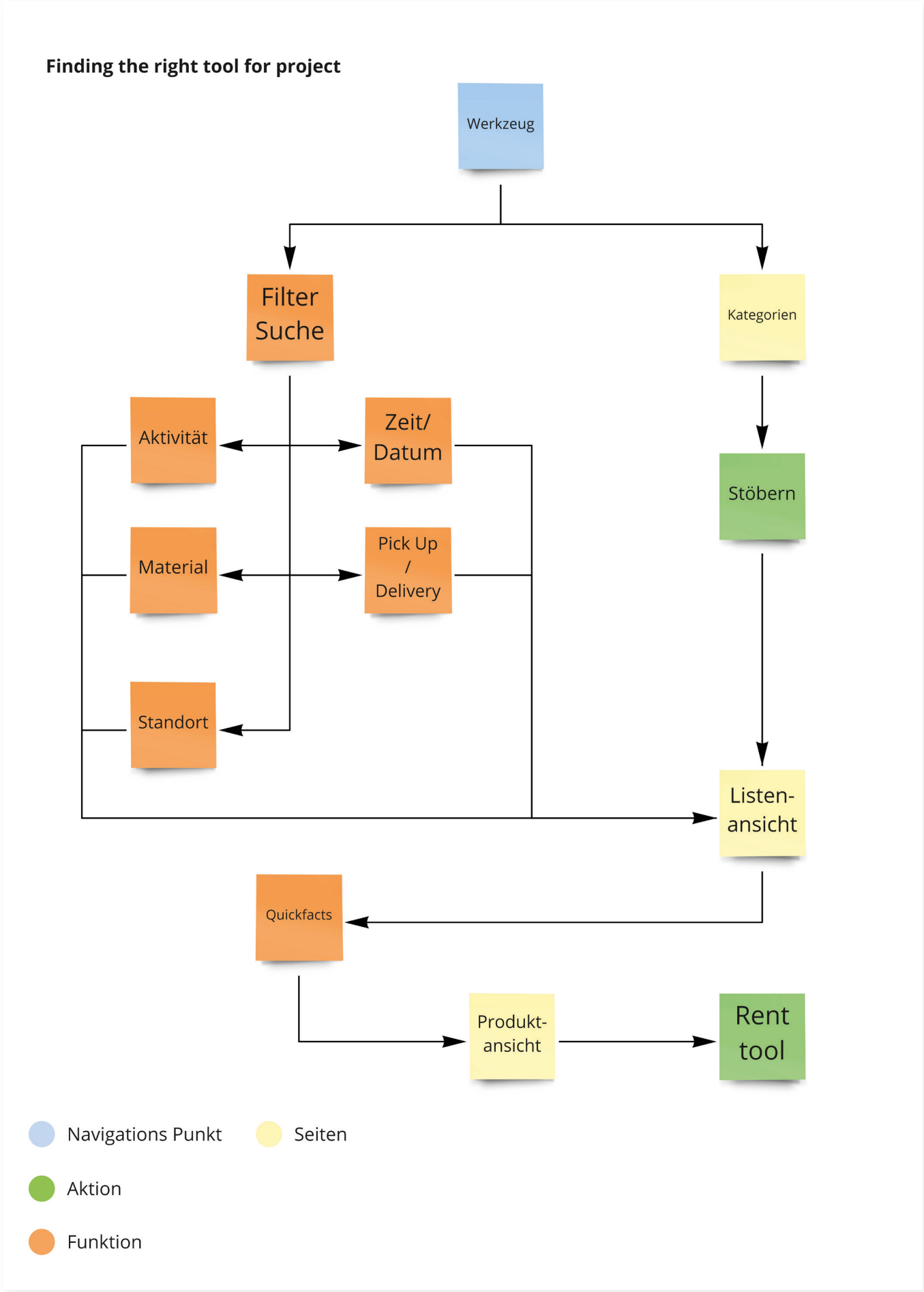



*Fig. 77 -User Flow, Filter search and Quickfacts*

# 4.4 Design

We finally decided to create an independent visual identity, that differed from Bosch's version, with our project, because they informed us that their goal was also to develop their project into a B2B service.
The challenge was to find a way to convey our values, match Bosch's reputation and their products, and be neutral enough for other companies.
Our intention with our new visual language was to meet the needs of our younger target group, as well as challenge the stereotypical connotations related to tools. For this, we wanted to introduce more colours to make it fresher and friendlier, thus creating more recognition value in the current app landscape.

In the following sections, we discuss our design choices.

## 4.4.1 Colour Style

After performing several iterations of colour shades, tints and hues, we decided to use colours that were neutral and harmonised with the Bosch products.

Initially, we experimented with orange and yellow as primary colours for our app, because they stand for creativity. However, it was difficult to find a harmonious composition with such vibrant colours without being too overwhelming and kitsch.
Next, we tried more earthy tones to underline materiality and building. However, the tints of these colours resembled skin tones and seemed to belong more to the cosmetic than the tool sector.

The mustard (DEB35D) we chose in the beginning was used as a highlighting colour. Based on this, we decided on more muted tones of greens and browns. Our primary colour is now a dark pastel green (4C8077) and is used most often for the border elements or to box in the text with images. The light green (9EAFA2), pastel brown (B3886B) and a neutral grey are our secondary colours. They are used to create a visual separation between the content, since they are neutral enough to fill larger areas without being obtrusive. Also, they represent the materiality of wood and metal. We found that these colours harmonised with Bosch's green and red colour scheme. They are neutral enough to accommodate the tools in Bosch's portfolio or third party products. Lastly, we paid attention to readability throughout the app, so high-contrast colours were used for text.

## 4.4.2 Style guide

We decided to use curved elements to create a separation between the sections and for detailing. This was because we wanted to create a recognition value that conveyed creativity and the process of learning. The principle of asymmetry and imperfection found in *Wabi-sabi* tied in perfectly with our aforementioned message *(Tsaknaki, Fernaeus, 2016)*. We see the process of acquiring knowledge as continuous, because learning goes hand in hand with making mistakes. By using imperfect shapes, we wanted to invite people to learn and experiment. However, we also wanted to stick to the rules on how to utilise them to mirror consistency in the inconsistent.

## Colours

### Primary

4C8077

### Primary Variation

A5BFBB

### Background

9EAFA2 B3886B FFFFFF DFE0DF

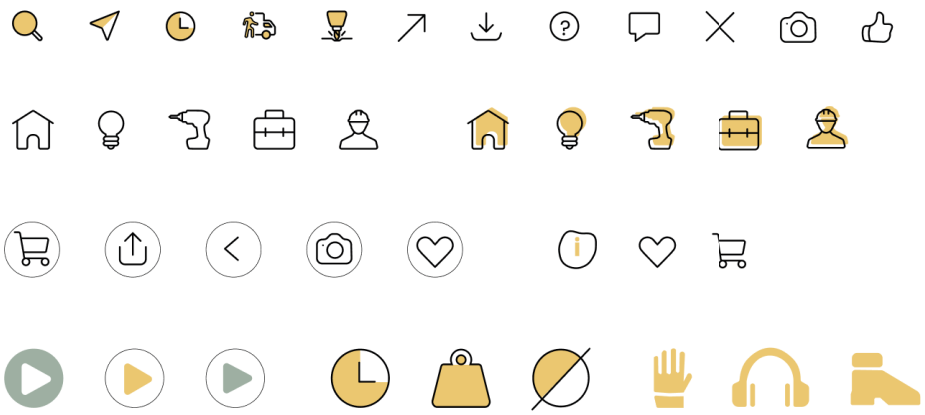
### Accent / Button / Icons

EBC771 FFFFFF E8E2D4 9EAFA2

### Font / System Icon

FFFFFF 000000 6A6A6A

## Icons



## Fonts

| | |
|---|---|
| Heading 1 | Regular / 24 / letterspacing 1.5% |
| Heading 2 | Medium / 18 / letterspacing 1.5% |
| Heading 2 | Medium / 14 / Buttons |
| Body 1 | Regular / 16 / |
| body 2 | Regular / 12 / |

*Figure 64 - Design, Styleguide*

# 4.5 Usertesting of final screens

For our final user test, we examined how users reacted to our latest iteration and how the interactions felt on a mobile phone. We created a basic click dummy that had a specific user path. The test was conducted with two users separately.

During the tests, the users indicated that they had differing expectations of functionality, depending on the word chosen. They were referring to familiar patterns and that they would expect particular words for our functions, such as ‘Transport’. The display of the price in the list was too subtle, contrary to what they expected, and the new functionalities lacked a proper explanation (availability icon in the list). Therefore, in places where we stuck to these patterns, such as the navigation through the pages and interaction, the search was found to be intuitive and easy. Where new functionalities were more prominent, such as the Quickfacts, they were noticed and appreciated. Although the latter functionality could also be found in the list and initially went unnoticed, the users agreed that the placement was solid. The users wanted as much description as possible without being overwhelmed by text, especially in the product view.

In the community section, the users raised questions about the indication of the activity of other users in order to estimate how long they would need to wait to receive an answer, for instance.

We also took the opportunity to get feedback on our visual language. The users found the design and colour selection harmonious and appropriate for a tool rental service. They appreciated the balanced use of colour, without it being too colourful. For them, the visual language was very distinct and therefore recognizable. However, it still blended well with the Bosch products. The colours reminded them of the material or activities they associated with tools, such as gardening and wood. Also, they liked the size of the elements and the contrasts between the text and images.

Overall, our last user test was successful because most of our content and functions were understood. While there is still room for improvement, we are satisfied with how our visual language contributed to our concept in terms of functionality and comprehensibility. In the next iteration, we need to revise

the wording, highlight prices, indicate community activity and introduce new functionalities more clearly. As an essential next step, we see the addition of micro-interactions to the prototype. They will contribute to guiding the users' attention to actions and changes, and emphasise certain interactions. We see potential for these interactions in the navigation bar when transitioning between pages or small pop-ups that point to new features.

# 4.6 Results: Screen images

Our final outcome for our bachelor thesis is a proposal for an app that makes tools more accessible to more people by providing relevant knowledge. Our design of the app provides a novel user experience and possibilities that build upon Bosch's concept of an on-demand rental service. tuuls makes it easy to borrow tools and supports people in both the selection and practical use of tools, thus offering an all-in-one experience. This support takes the form of a community and tutorials for hands-on and technical knowledge.

The app is structured to provide assistance in the tool selection by subtly making users reflect on their endeavours. The most important parameters in the tool selection are located prominently in the search area and highlighted. This change in the visual presentation of the information makes it easier for inexperienced users, who were previously overwhelmed by the selection, to learn what parameters matter for their choice.

We tried to address the need for support and knowledge by providing several forms of support. The new functionality of Quickfacts gives users a quick overview of the most important information regarding the various tools on offer and indicates essential factors for preparation and usage in pop-ups. Tutorials and articles provided by Bosch explain either how to perform power tool-related tasks or present solutions to problems that often arise. tuuls provides a link between knowledge and power tools, such that one always refers to the other. Articles and tutorials refer one back to the power tool available to rent, while the power tool description is linked to suitable tutorials.

The proposed community consists of projects created by users, with options to ask questions related to their projects, as well as a forum for other DIY-related questions. The most significant advantage of the community is that users can ask questions to solve their problems and get specific answers to these questions. This will result in the accumulation of a vast amount of DIY-related information over time. The difference between the community function and tutorials is the specificity of answers provided in the community forum in relation to the problems of the users, which will

take the context of each problem into account. Thus, the community offers a differing form of knowledge, giving a specific angle to a problem that stems from personal experience. The sharing of projects could motivate others to start building and help them to overcome their inhibitions. Thus, our proposed service aims to simplify the renting process but also equip people with the knowledge they need to use the tools.

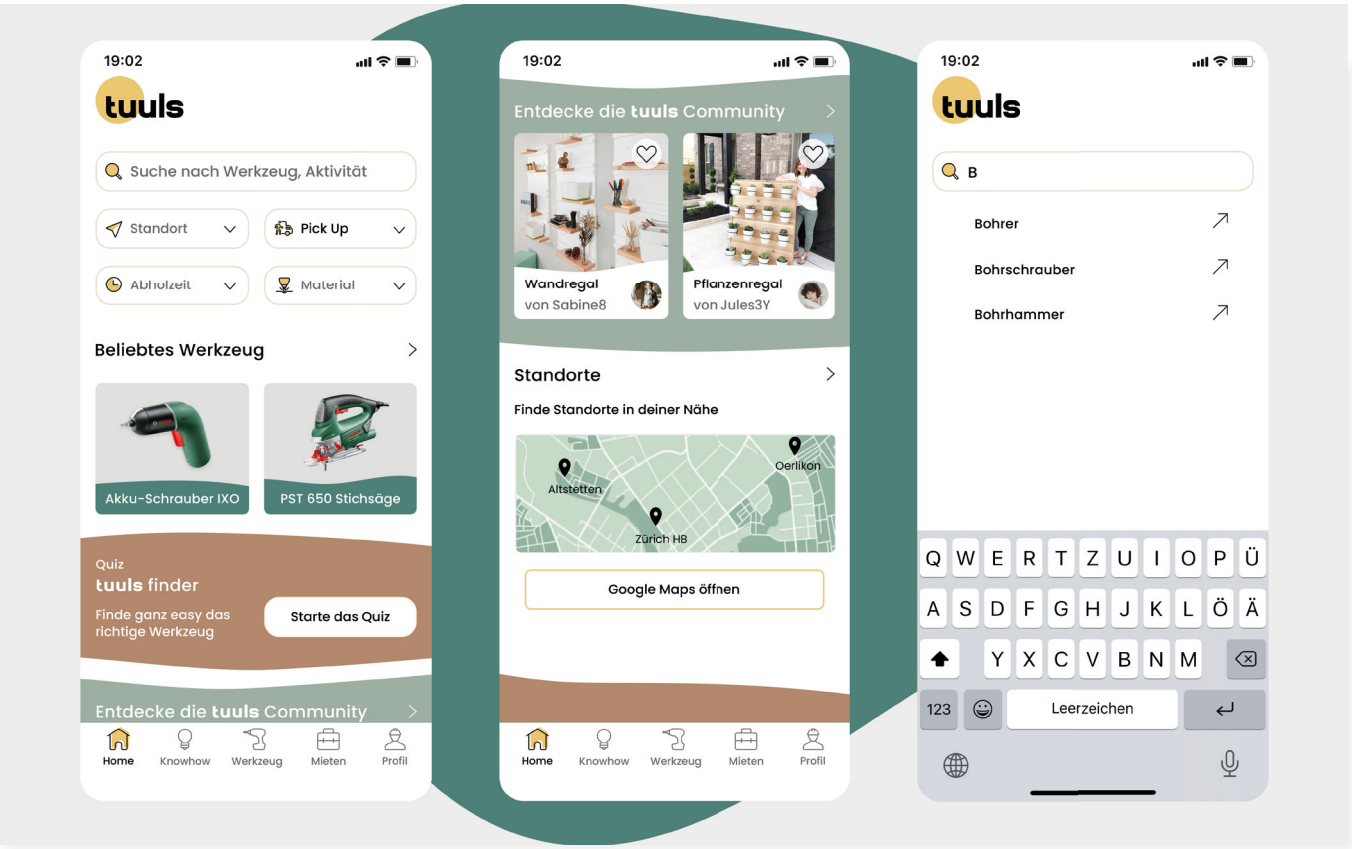



*Fig. 65 - Overview final screens*

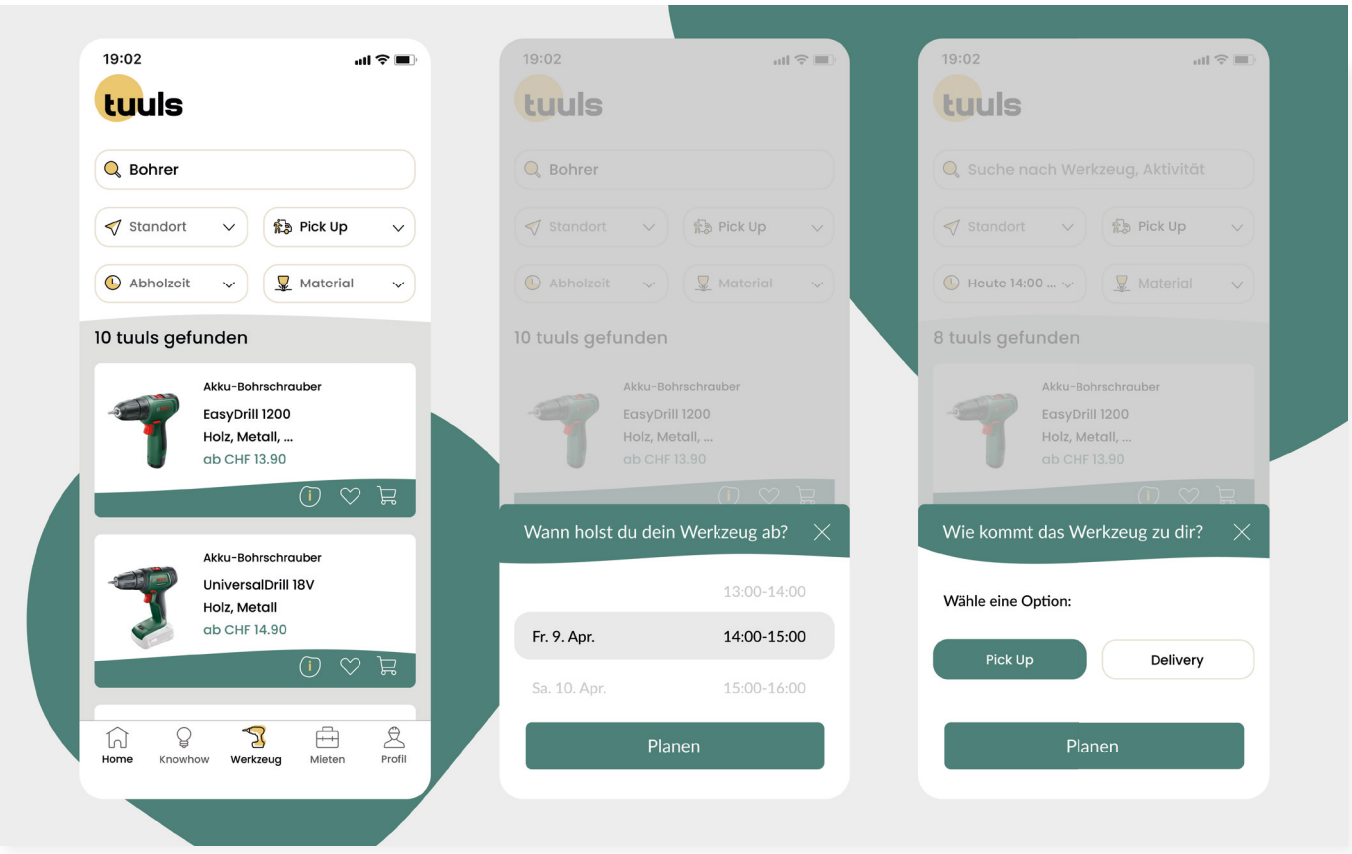



*Fig. 66 - Overview final screens*

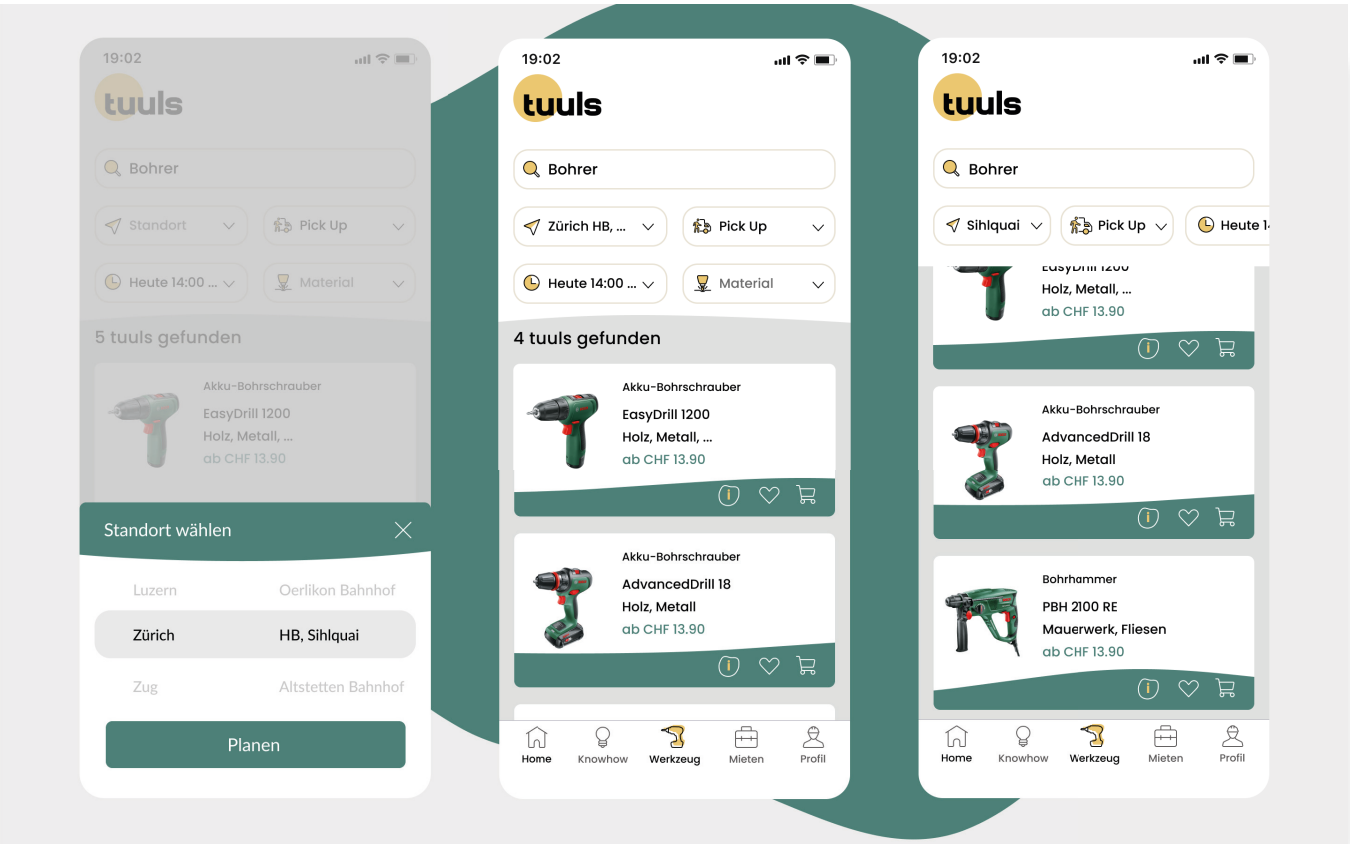



*Fig. 67 - Overview final screens*

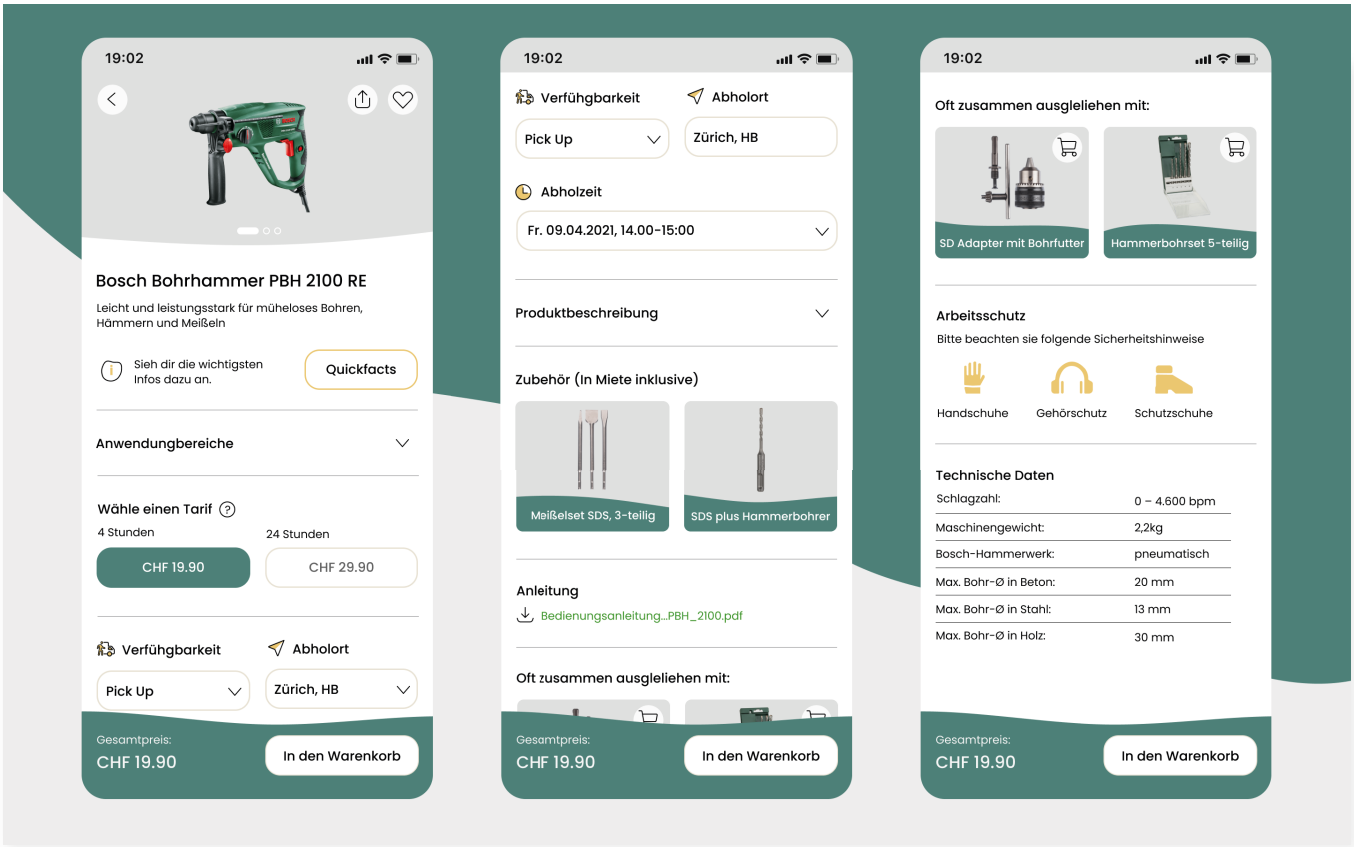



*Fig. 68 - Overview final screens*

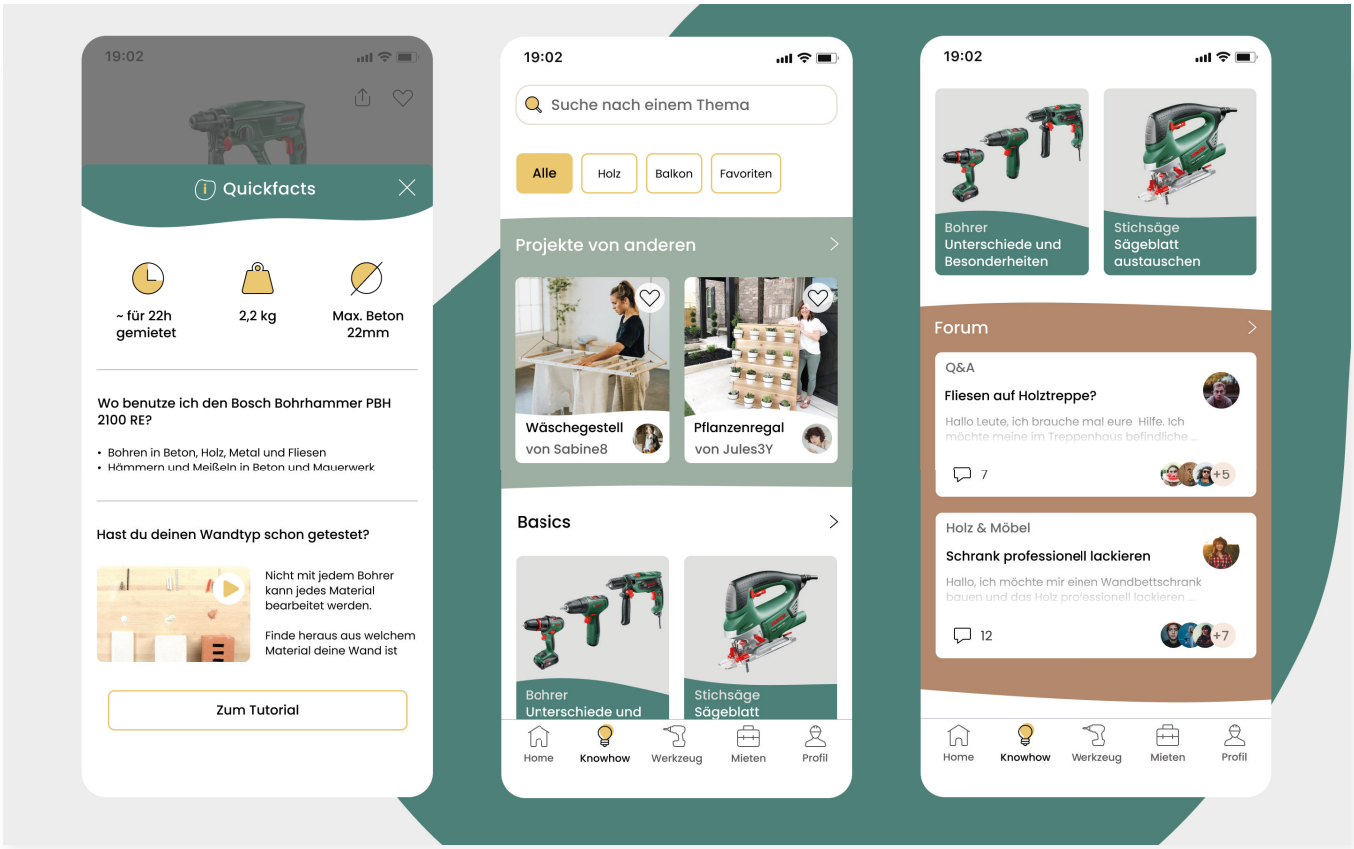



*Fig. 69 - Overview final screens*

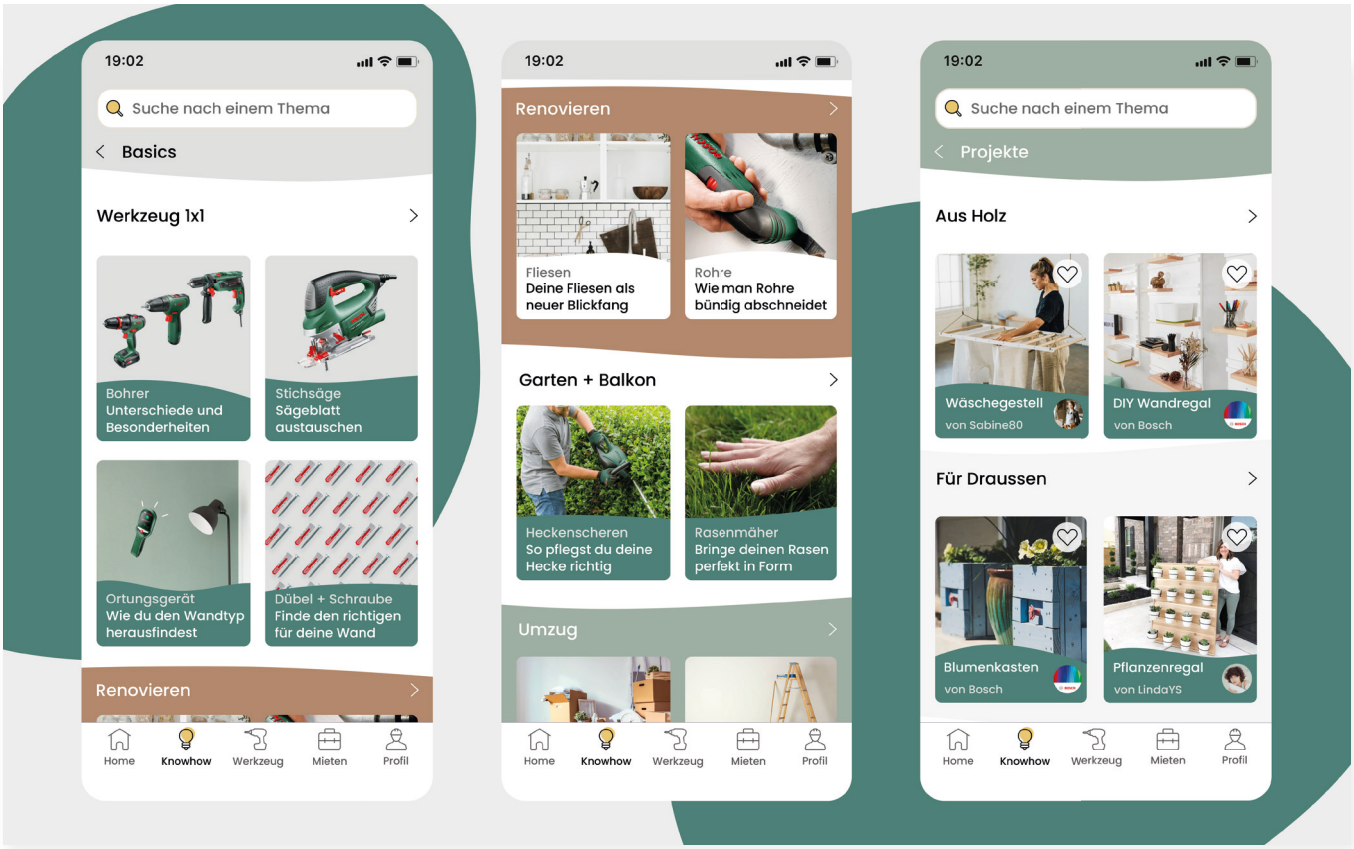



*Fig. 70 - Overview final screens*

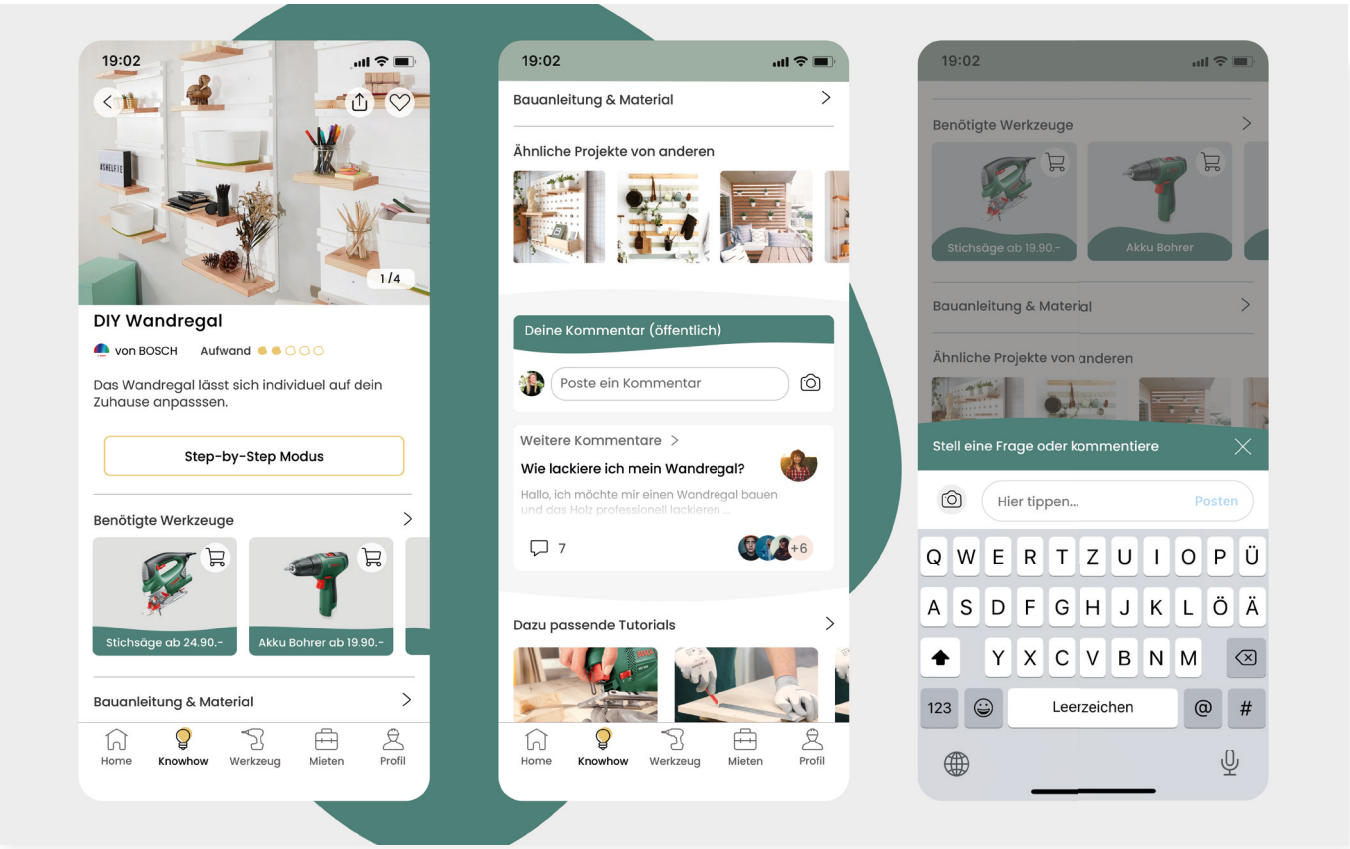



*Fig. 71 - Overview final screens*

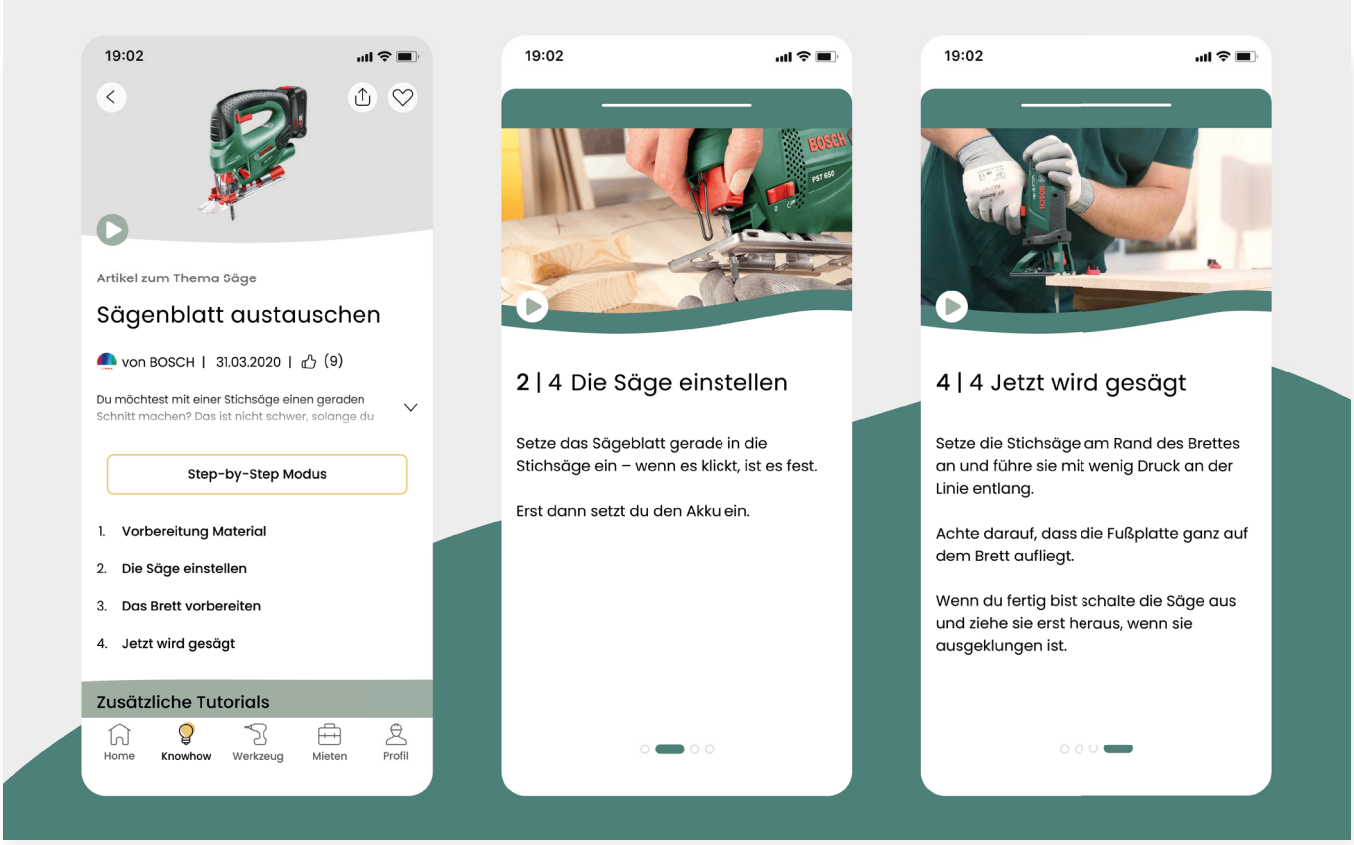



*Fig. 72 - Overview final screens*

# 5. CONCLUSION

This last chapter gives an overview of the developments and the process we went through in the thesis. It starts off with concluding our design context, then continues with a reflection on our process, our lessons learned, our contribution and future steps.

# 5.1 Design Context

For four months, we collaborated with Bosch's new business innovations team in the context of creating an extension of their existing service. Thus, our project, tuuls, is located in the area of service design. Because our concept was situated in the service design context, the economic aspects had to be considered because we aimed to create a viable proposition. This on-demand renting service of tools was situated in a B2C context and the primary goal was to generate a profit, increase revenue and strengthen the brand as a whole, where we as designers serve the role of mediators between the user and businesses.

Our first sub research question, **"How might we encourage people to feel supported in their DIY endeavours by offering resources relevant to their needs?"** addresses the economic requirement through a human-centered approach. It is an economically strategic approach to identify users' wants which then serve as a recommendation to firms where to invest and make economic choices. Entry barriers can be reduced by catering to the needs of users, in our case, provision of knowledge resources. By following this, customer retention rates can be increased which in turn renders power tools more accessible to a broader audience, again attracting more people. We create economic value for Bosch through our user-centric design because we identified user likes which will help them to make economic choices.

Our second sub research question **"How might we create an intuitive user experience for a renting service?"** is concerned in structuring the aforementioned needs in a comprehensible manner. A better user experience in the process of renting tools can result in less frustration in the process which leads to more people ending up with renting a tool. We addressed this by analysing Bosch's current renting process from their prototype and by collaborating with our users in a human-centered approach. The result was an intuitive search and navigation process that followed established patterns that users easily recognize and restructuring of visible information hierarchy.

These sub research questions relate to what we needed to know in order to tackle our primary research question; **"What form would the optimal digital tool-renting service take?"** . To answer this question we followed a user-centric approach to ensure that our service created added value for the users. We did this by continuously

reviewing our decisions and approaches through collaborative methods, such as interviews, workshops, and user tests, and questioning whether our decisions reflected the users' interests. With tuuls, we proposed ways to address a larger target group for Bosch's rental service. Our intention was to therefore make tools more accessible to a wider audience, especially those who did not identify with the clichéd image of a DIYer. Through a distinct visual language we move away from this dated notion. The value of this service lies in being more than just an e-commerce page that only rents objects. tuuls also accompanies the user in the selection process, assisting him or her to utilise the rented tool. Thus, the ease of renting tools is mirrored by information on their handling, which could in turn motivate more people to use tools. Users are invited to post their specific questions in a community forum or can find inspiration from other community members' projects. Providing novice users with enough support will also enable them to gain more confidence in their abilities, which might, in turn, might lead to more regular tool use. By providing users with knowledge resources, we hoped to increase retention rates, and lower frustrations with tool use.

Our new additions to the service, such as community engagement and new ideas, will increase usability and user retention, which will enable Bosch to make more profit in the long run, because it will assist them to retain more users and attract new customers by reducing the entry barrier.

# 5.2 Reflecting on Our Process

Our process can be described as user-centric, because we were always focused on our users. The decision to follow a collaborative process was more time-consuming than expected, as well as challenging in terms of coordination. However, it was well worth it, in our opinion. It was only due to collaboration with our users that we were able to create a service that was of value to them and addressed their needs, which was our ultimate goal.

As designers, one of our main tasks was to investigate people's needs and inputs, discuss them with all stakeholders, and combine them into a balanced solution. The content could be enhanced with visualisation, but we could not rely solely on that. That is why the direct relation and exchange with many users was essential. The methods we used for this were conducting interviews, immersion in the context and holding workshops. During this process, the experiences were mostly positive. Of course, it was helpful that the users were in similar life situations and age groups to us, making contact easier. It was also unusual for us to talk to people about tools; we noticed that many had never consciously concerned themselves with this topic before. For this reason, it was exciting for us to see how each person's interest in tools increased during the conversations. Getting direct feedback on our ideas was especially interesting, since each person paid attention to specific aspects and expected different functionalities  from the service.

Since we implemented the above methods primarily online, it was challenging to create a relaxed atmosphere. This was important, because otherwise the users tried to respond in the way they thought we expected them to, rather than being critical. Workshops requiring physical attendance would have definitely alleviated some of the challenges that we faced in the online format; however, it cannot be inferred that they would have been better. For us, the interactions and the inclusion of opinions from people in an online format were mostly positive and we would definitely do it again. We appreciated that every person we interviewed came up with a new idea and was eager to help, and thus contributed with their views and inputs to turn tuuls into what it is now.

In retrospect, we think that it would have been beneficial to involve other age groups in the process more than we did, in order to have more solid proof of the validity of our choice to target a specific user group. During the process, we focused on skill grouping rather than age grouping. Therefore, we cannot say with certainty the extent to which the user's needs might differ based on age. In principle, the service is for everyone who needs to use tools, regardless of age. During our immersion in a specific context, we observed differences in handling tools based on skill levels and not on age. Next time we would therefore be more careful to include people of over 35 years old in interviews and workshops.

In terms of communication with our collaboration partner Bosch, we would have liked to have handled things differently. While including them in our ideation phase, we did not meet at all in the last month of our project, so we did not update them. At that stage, we were finding it increasingly more difficult to assess what we should present to them and in what format. Since Bosch was not actively pursuing this project for the time being, but still offered their assistance and input, it felt that there was no immediate need for constant updates, which would have been necessary in an active collaboration. Regardless, it would have been more prudent of us to have had short, pre-scheduled meetings and to have been confident enough to show them our unfinished wireframes as points of discussion.

We still positively remember a joint workshop with Bosch, when our ideas and approaches were angled in a similar direction. We also felt that the communication with the Bosch team members was always constructive and straightforward. They were exceedingly accommodating in terms of answering our questions and providing us with the resources we needed. Thus, it always felt welcoming and that gave us the feeling that they would have made more time for us if we had asked them to do so.

After undertaking a project of this magnitude, there was a lot to evaluate and reflect upon. Being critical and questioning past decisions is a crucial aspect of being a designer and working on iterations of past decisions. However, evaluating the positive decisions are important components of this process, since they can be used again in further iterations. Examining past actions helped us to grow in our design practices, as well as in terms of how we approached and handle design challenges because mistakes are part of the learning process.

# 5.3 Learnings

During this extended period we were able to apply many different methods and gained new knowledge and experience that will have an impact on our further design practice.

We learnt a great deal about planning, structuring and executing workshops. For instance, we underestimated the structuring and guiding aspect in workshops. The warmup phase in the beginning is crucial for the users to ease into the topic and understand what is expected of them. Thus, we had to have a clearly defined goal of what precisely we wanted to find so that this objective could guide us when facilitating our workshops. Also, being prepared with examples or analogies was something we learnt to have for every workshop in order to keep the users active and talking. While we wanted to guide them in a certain direction, we did not want to influence them too much with these examples either.

Another unexpected lesson was on the topic of tools. We discovered in our conversations with users that building items oneself was a more personal topic than previously anticipated. For some, utilising tools is a daily occurrence, whereas others have not given it much thought, while for others it was negatively charged. Dynamics such as self-confidence, inner drive and insecurities such as performance anxiety came to the fore. Despite having come across these topics in our research, we needed to view each user as an individual whose experience with tools differed. This was also extremely evident during our context immersion, where the abstract concepts we had read about stereotypes and tools became a reality for us. The men present had a fixed role, namely doing the jobs that required using tools, while the women were cleaning up. The stereotypes suddenly manifested into something real and tangible, which enabled us to realise that they were still prevalent in related to tool use. For beginners, especially for women, barriers to using tools still exist and, without support, some might be less likely to engage with them.

Overall, it was a fantastic experience working closely with other people and becoming mediators between the service and users. Each workshop and interview was worth the effort, because each user brought new enriching perspectives to the service.

In addition, we found it exciting to deal with new topics such as power tools in a design context. Since we do not come from the field of power tools or business, we could start with a neutral view of this topic and were not too biased. We were driven by curiosity to learn about the topic of power tools, find out how people dealt with them and find possible solutions to related problems.

# 5.4 Contribution

One of our contributions in the area of service design is the inclusion of user groups that are not usually targeted. We provide user-driven solutions to specific problems that these user groups experience, which will increase accessibility. This can also be applied to other fields or use cases that are plagued by stereotypes or reduced accessibility. Moreover, we provide an example of how to present information to varying skill levels without interrupting the user flow of others, which is relevant to the field of service design. According to our research, accessibility in terms of assistance is rather untypical of commercial websites. While they offer assistance with the choice of items, the support ends once the payment process has been concluded. With tuuls we offer a different approach by offering a wider audience access to knowledge, which can also be applied to other e-commerce sites.

The placement and presentation of the various knowledge formats is highly dependent on the visual language. According to a paper we reviewed during our desk research regarding self-concept (O'Dea, Lagisz, Jennions, Nakagawa, 2018), self-perception plays a significant role in whether one performs an activity. For instance, if a tool-renting app conveys that its users consist mainly of the stereotypical archetype of a middle-aged male who is an advanced user, people who do not fit or do not want to fit this description will be likely to reconsider using the service. Thus, the app needs to offer values or visuals that users can identify with, in order to encourage them to undertake a certain activity, in this case using power tools. Therefore, we chose a neutral yet creative design to appeal to as many people as possible and not deprive them of the possibility of identifying with it, thus challenging the persisting stereotypes. We see this as a contribution to Bosch in terms of understanding their user groups and providing concrete solutions which can be applied to other areas in their company.

Generally, we see our contribution mainly in the field of service design, where we provide possible solutions to tackling stereotypes, attracting a new user group to a service and providing accessibility of knowledge in the area of e-commerce. Finally, our findings will contribute to Bosch's understanding of their new users, which can be beneficial to them in the future.

# 5.5 Future Steps

Our bachelor project establishes a basis for our proposed service, which needs to be developed further in order to be functional. Thus, testing with more users and interaction with the stations and distribution centres, as well as the delivery option, needs to be examined further.

In the given timeframe, we decided to focus our attention on researching the various users' needs and to explore the service front to back to the best of our abilities. Therefore, we also had to rethink the renting process in order to merge it with the user needs we discovered. The screens that were most significant, and therefore needed developing, were those from the area of the rental process, as well as details of the knowledge-sharing functions and a preview of a possible form of community. Our current clickable prototype, despite not containing all the user journeys, provides adequate insight into our suggested solution. The remaining processes, such as registration, need to be integrated in order to evaluate the user flow as a whole. Additionally, functionalities such as micro-interactions need to be added in order to guide users' attention to relevant places.

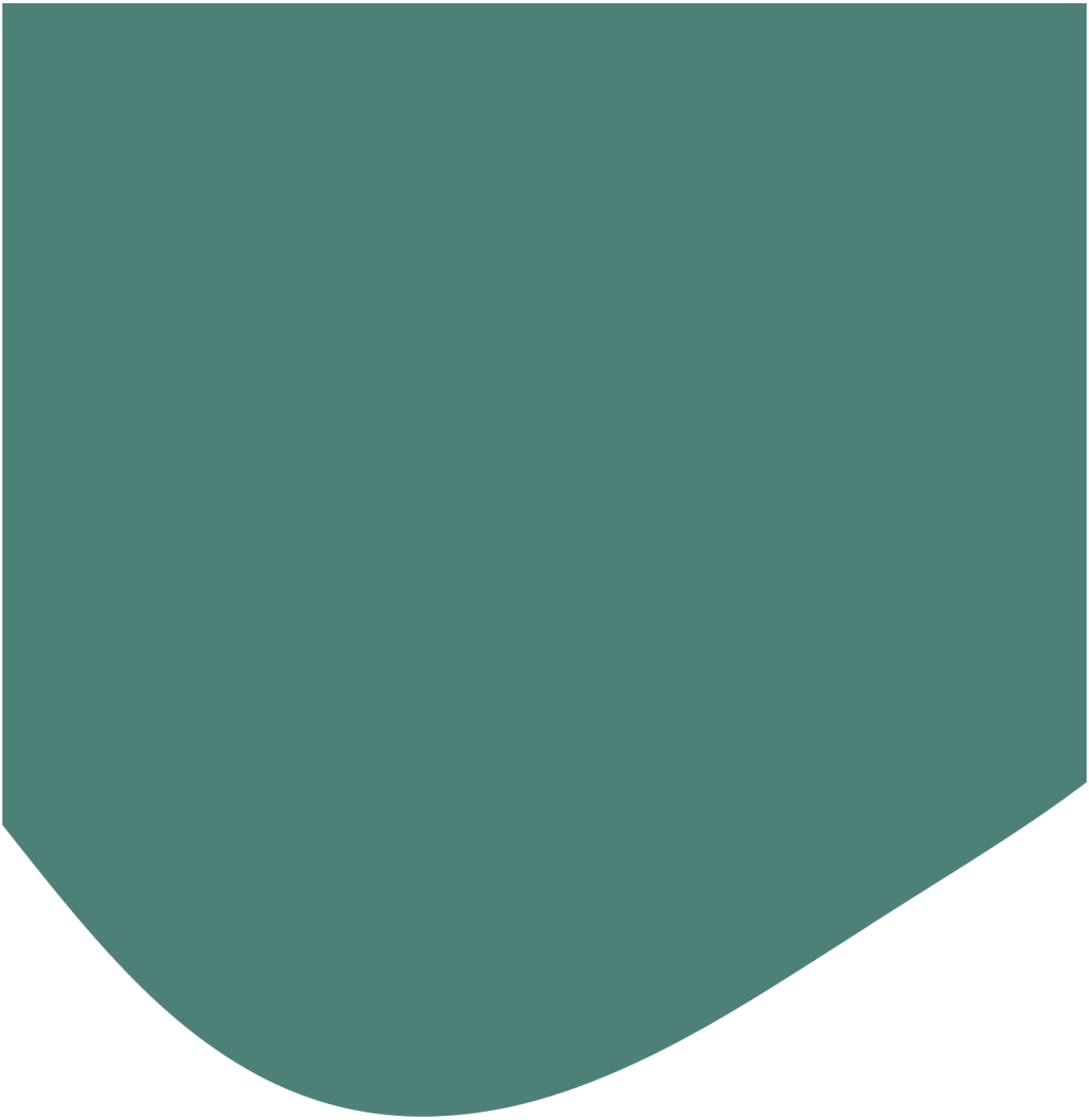
More testing of the positioning, as well as of the interaction with the physical station, is necessary since they were not available during our project . One alternative interaction we imagined was having users scan a QR code directly at the station in order to open the door containing their tool. The distribution and density of these stations also have to be examined, along with the influence of the delivery option. We proposed a hybrid solution consisting of physical locations and the option of delivery. The delivery option did not exist in Bosch's concept at the time of writing; however, offering both options will provide the maximum possible flexibility for users, which in turn will make it more likely that they will use the service often. We recommend a cooperation with Swiss Post in order to test both the delivery and pick up options, because they have the infrastructure to accommodate both functions. Bosch could rent some space at specific locations, determine which ones are most popular and set up their rental stations in similar locations. Another possible delivery cooperation would be to utilise Uber Eats. This company is set up as an on-demand delivery service that delivers food from restaurants in many locations to private individuals in a fairly specific time. This could be a promising venture, because on-demand delivery is becoming increasingly popular. We found

during our research that people were quite willing to pay a fee for the convenience of delivery. These collaborations would have to be tested and the terms negotiated as a next step.

Of course , not all of our ideas can or will be implemented by Bosch, because some components are more complex than others. Therefore we intend to present them with a recommendation on which implementation will have the most impact and bring the most value, for both the company and the users. Firstly, the renting process and the navigation need to be tackled, because they are the core aspect of the service, followed by including all formal functions, such as registration. Then, we would suggest building up the knowledge page by integrating the existing Bosch-created knowledge content, articles and tutorials from their webpage. Lastly, the introduction of the community is a lengthier process, which needs to develop over time. Generally, the service needs to be finalised and undergo further testing before it can be fully deployed. Nevertheless, tuuls constitutes a foundation for a solid service that can be built upon.

Finally, with tuuls, we want to offer more people the opportunity to give their ideas a new form or to be more self-reliant and independent. Seeing tools as an extension of our hands gives one newfound freedom to discover one's abilities and to take pride in and derive joy from them.

# 6. BIBLIOGRAPHY



# 6.1 References


**Books and Book Chapter**

Bartl, D. et. al. (2017), Digital Innovation Playbook: The Essential Exercise Book for Founders, Doers and Managers, Hamburg: Murmann Publishers.

Fowler, F. Jr, (1995), Improving Survey Questions (Design and Evaluation), Sage Pubn Publisher

Sinek, S. (2011), Start with Why: How Great Leaders Inspire Everyone to Take Action. London: Penguin Books.

**Journal Article**

Frenken, K., Schor, J. (2017)
Putting the sharing economy into perspective
Environ. Innov. Soc. Transit., 23 (2017), pp. 3-10
https://doi.org/10.1016/j.eist.2017.01.003

Giacomin, J. (2014), What Is Human Centred Design?, The Design Journal, 17:4, 606-623, DOI: 10.2752/175630614X14056185480186

Guay, F., Stupnisky, R., Boivin, M., Japel, C., Dionne, G. (2019), Teachers' relatedness with students as a predictor of students' intrinsic motivation, self-concept, and reading achievement, Early Childhood Research Quarterly,
Volume 48, Pages 215-225, ISSN 0885-2006, https://doi.org/10.1016/j.ecresq.2019.03.005.(https://www.sciencedirect.com/science/article/pii/S0885200619300419)

Hertzog, H. (2002), Teacher Education Quarterly - pp. 25-41 When, How, and Who Do I Ask for Help?": Novices' Perceptions of Problems and Assistance
https://www.jstor.org/stable/23478388?seq=6#metadata_info_tab_contents (26.10.2020)

Keller, J. (2002), Blatant Stereotype Threat and Women's Math Performance: Self-Handicapping as a Strategic Means to Cope with Obtrusive Negative Performance Expectations. Sex Roles 47, 193–198
https://doi.org/10.1023/A:1021003307511

Ryan, R., Deci, E. (2020), Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions, Contemporary Educational Psychology, Volume 61, 2020, 101860, ISSN 0361-476X, https://doi.org/10.1016/j.cedpsych.2020.101860. (https://www.sciencedirect.com/science/article/pii/S0361476X20300254)

Steele C.M., Aronson J. (1995), Stereotype threat and the intellectual test performance of African Americans. J Pers Soc Psychol. Nov;69(5):797-811. doi: 10.1037//0022-3514.69.5.797. PMID: 7473032.

Touré-Tillery, M, Fishbach, A. (2018), Three sources of motivation. Consum Psychol Rev. 2018; 1: 123– 134. https://doi.org/10.1002/arcp.1007

**Reports**

Cheryan S. (2000), Bodenhausen GV. When Positive Stereotypes Threaten Intellectual Performance: The Psychological Hazards of "Model Minority" Status. Psychological Science.;11(5):399-402. doi:10.1111/1467-9280.00277

**Article**

Mi, Z., Coffman, D. (2019), The sharing economy promotes sustainable societies. Nat Commun 10, 1214. https://doi.org/10.1038/s41467-019-09260-4

Möller, J., Pohlmann, B., Köller, O. & Marsh, H. W. (2009), A meta-analytic path analysis of the internal/external frame of reference model of academic achievement and academic self-concept. Rev. Educ. Res. 79, 1129–1167

O'Dea RE, Lagisz M, Jennions MD, Nakagawa S. (2018), Gender differences in individual variation in academic grades fail to fit expected patterns for STEM. Nat Commun. 2018 Sep 25;9(1):3777. doi: 10.1038/s41467-018-06292-0. PMID: 30254267; PMCID: PMC6156605.

Tsaknaki, V., Fernaeus Y. (2016), Expanding on Wabi-Sabi as a Design Resource in HCI, Mobile Life @ KTH, Royal Institute of Technology, Stockholm, Sweden

Hentschel, T., Heilman, M., Peus, C. (2019), The Multiple Dimensions of Gender Stereotypes: A Current Look at Men's and Women's Characterizations of Others and Themselves, Journal, Frontiers in Psychology, Volume 10, https://www.frontiersin.org/article/10.3389/fpsyg.2019.00011 DOI=10.3389/fpsyg.2019.00011 ISSN=1664-1078

Kimmerle, J., Moskaliuk, J., Oeberst, A., Cress, U. (2015), Learning and Collective Knowledge Construction With Social Media: A Process-Oriented Perspective. Educational Psychologist. 50. 120-137. 10.1080/00461520.2015.1036273.

**Conference Papers**

Ghose A., Ipeirotis P. G., Sundararajan A. (2005), Reputation premiums in electronic peer-to-peer markets: Analyzing textual feedback and network structure[C]. Proceedings of the 2005 ACM SIGCOMM workshop on Economics of peer-to-peer systems, Philadelphia, ACM, 2005, pp:150-154

Yang Z., Ma L., Zhang Z. (2018), Sharing Economy: A State-of-the-Art Survey, Advances in Social Science, Education and Humanities Research, volume 275, 2nd International Conference on Education Innovation and Social Science (ICEISS 2018)

**Web-Journals**

Gibson, M. (2019), Crafting communities of practice: the relationship between making and learning. Int J Technol Des Educ 29, 25–35 https://doi.org/10.1007/s10798-017-9430-3

Lepistö, J., Lindfors, E. (2015) "From gender-segregated subjects to multi-material craft: Craft student teachers' views on the future of the craft subject." Form Akademisk-forskning tidsskrift for design of design didaktikk https://journals.oslomet.no/index.php/formakademisk/article/view/1313/1440

Steen, M. (2011) Tensions in human-centred design, CoDesign, 7:1, 45-60, DOI: 10.1080/15710882.2011.563314, CoDesign International Journal of CoCreation in Design and the Arts,Volume 7, 2011 - Issue 1 https://www.tandfonline.com/doi/abs/10.1080/15710882.2011.563314

Terry, D., Nguyen, H., Peck, B. (2019), Communities of practice: A systematic review and meta-synthesis of what it means and how it really works among nursing students and novices - John Wiley & Sons Ltd https://onlinelibrary.wiley.com/doi/full/10.1111/jocn.15100 (26.10.2020)

**Web-Links**

Hadhazy, A. (2016), “Here’s the truth about the ‘planned obsolescence’ of tech”, BBC retrieved from : https://www.bbc.com/future/article/20160612-heres-the-truth-about-the-planned-obsolescence-of-tech

Rey, U. (2020), Hohe Wohnungs Fluktuation trotz tiefem Leerstand, Stadt Zürich, 29.09.20 retrieved on 06.05.21 https://www.stadt-zuerich.ch/content/prd/de/index/statistik/publikationen-angebote/publikationen/webartikel/2020-09-29_Hohe-Wohnungsfluktuation-trotz-tiefem-Leerstand.html

**Web-Links: Related Projects/Apps**

Airbnb. (2008), [Mobile Software Application and Website] Retrieved 2021, 15 February from https://www.airbnb.ch

Babbel. (2007), [Mobile Software Application and Website] Retrieved 2021, 15 February from https://de.babbel.com

HappyCow. (1999), [Mobile Software Application and Website] Retrieved 2021, 15 February from https://www.happycow.net

Ifixit. (2003), Retrieved 2021, 15 February from https://de.ifixit.com

Kurts. (2020), [Mobile Software Application and Website] Retrieved 2021, 10 January from https://kurts.tools/ch/

Pinterest. (2009), [Mobile Software Application and Website] Retrieved 2021, 15 February from https://www.pinterest.ch

Pumpipumpe. (2012), Retrieved 2021, 15 February from https://pumpipumpe.ch

Sharely. (2018), [Mobile Software Application and Website] Retrieved 2021, 10 January from https://www.sharely.ch

Skillshare. (2010), Retrieved 2021, 15 February from https://www.skillshare.com

To good to go. (2018), [Mobile Software Application and Website] Retrieved 2021, 15 February from https://toogoodtogo.de/de

Vélib. (2007), Retrieved 2021, 15 February from https://www.velib-metropole.fr/en/login

Wegwandern.ch. (2016), Retrieved 2021, 15 February from https://wegwandern.ch/milestones-timeline/

**Web-Links: Pictures App**

All pictures of Tools [Screenshot] Retrieved May 5, 2021 from https://www.bosch-diy.com/de/de/p Copyright 2020 by Robert Bosch Power Tools GmbH

Illustrated Map, Retrieved May 5, 2021 from https://www.shutterstock.com/de/search/street+map Copyright 2021 by Shutterstock Inc.

Logo from Bosch, Retrieved May 5, 2021 from https://www.bosch-diy.com/de/de/all-about-diy/wandregal-selbst-bauen Copyright 2020 by Robert Bosch Power Tools GmbH

Pictures of DIY Wandregal, Retrieved May 5, 2021 from https://www.bosch-diy.com/de/de/all-about-diy/wandregal-selbst-bauen Copyright 2020 by Robert Bosch Power Tools GmbH

Pictures of tools, Tutorial Page, Retrieved May 5, 2021 from https://www.bosch-diy.com/de/de/p Copyright 2020 by Robert Bosch Power Tools GmbH

Pictures of DIY project, Retrieved May 5, 2021 from https://designlike.com/diy-projects-where-to-begin/ Copyright 2017 by DesingLike

Pictures of DIY shelves, Retrieved May 5, 2021 from https://www.pinterest.ch Copyright 2021 by Pinterest

Pictures of moving boxes, Retrieved May 5, 2021 from https://www.w-s-e.de/service/rund-um-haus-und-anschluss Copyright 2021 by WSE

Pictures of painter ladder, Retrieved May 5, 2021 from https://www.pods.com/blog/2021/01/home-staging-tips/ Copyright 2021 by PODS

Pictures of hanging drying rack, Retrieved May 5, 2021 from https://archello.com/fr/product/hanging-drying-rack Copyright 2021 Archello

Icons drawn by Tamara Trabucco [Screenshot] Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

# 6.2 Video

**Videos**

Blum, D. (2019). Im Test: werkzeug-verleih.ch by Bosch Schweiz. Retrieved from https://www.youtube.com/watch?v=yY7eB35POMc

# 6.3 Figures

Fig. 1 - Types of sharing economies, Yang, Ma, Zhang, (2018), Sharing Economy: A State-of-the-Art Survey, Advances in Social Science, Education and Humanities Research, volume 275, 2nd International Conference on Education Innovation and Social Science (ICEISS 2018)

Fig. 2 - The human centred design pyramid by Giacomin, (2014) What Is Human Centred Design?, The Design Journal, 17:4, 606-623, DOI: 10.2752/175630614X14056185480186

Fig. 3 - Matrix of related work based of the Graphic Fig. 2 (Giacomin, 2014) What Is Human Centred Design?, The Design
Journal, 17:4, 606-623, DOI: 10.2752/175630614X14056185480186 - Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 4 - Kurts, Toolbox Stations Reprinted 2021, 10 January from https://kurts.tools/ch/

Fig. 5 - SHARLEY, Landing Page [Screenshot]. Reprinted 2021, 10 January from https://www.sharely.ch

Fig. 6 -Vélib [Screenshot]. Reprinted 2021, 15 February from https://www.velib-metropole.fr/en/login

Fig. 7 - Airbnb, Landing Page [Screenshot]. Reprinted 2021, 15 February from https://www.airbnb.ch

Fig. 8 - Too Good To Go, App Landing Page [Mobile Software Application] Retrieved 2021, 15 February from https://toogoodtogo.de/de

Fig. 9 - ifixt, Categories [Screenshot]. Reprinted 2021, 15 February from https://de.ifixit.com

Fig. 10 - Skillshare, Landing Page [Screenshot]. Reprinted 2021, 15 February from https://www.skillshare.com

Fig. 11 - Wegwandern.ch, Blog Entry [Screenshot]. Reprinted 2021, 15 February from https://wegwandern.ch/milestones-timeline/

Fig. 12 - Babbel, App screens [Mobile Software Application]. Reprinted 2021, 15 February from https://de.babbel.com

Fig. 13 - Pumpipumpe, Illustration, Reprinted 2021, 15 February from https://pumpipumpe.ch

Fig. 14 - Pinterest, Landing Page [Screenshot]. Reprinted 2021, 15 February from https://www.pinterest.ch

Fig. 15 - HappyCow, Landing Page [Screenshot]. Reprinted 2021, 15 February from https://www.happycow.net

Fig. 16 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.com/forms/d/1smlBdn9NBpmI280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 17 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.

com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 18 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 19 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 20 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 21 - Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 4 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit

Fig. 22 - Result Quantitative Survey , Google Docs [Screenshot] Reprinted 2021, 11 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit#responses

Fig. 23 - Fig. 22 - Result Quantitative Survey, Google Docs [Screenshot] Reprinted 2021, 11 January from https://docs.google.com/forms/d/1smlBdn9NBpml280Dig80VeT0Icsw9LTNUJvI0kaWbY8/edit#responses

Fig. 24 - Conclusion of Qualitative Interviews [Graphic]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 25 - User Journey, Renting Service Bosch [Table]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 26 - Value Proposition Canvas Advanced User. Template by Strategyzer [Table]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 27 - Value Proposition Canvas Proficient User. Template by Strategyzer [Table]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 28 - Value Proposition Canvas Novice User. Template by Strategyzer [Table]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 29 - Personas, their most important Needs [Graphic]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 30 - Self Immersion Tamara [Photograph]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 31 - Self Immersion Tamara [Photograph]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 32 - Workshop, Zoom [Photograph]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 33 - Workshop, Overview of the collaborative Workshop. on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 34 - Workshop, Brainstorming, Stage 1. on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 35 - Workshop, Brainstorming, Stage 2. on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 36 - Workshop, Brainstorming, Stage 3. on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 37 - Results Workshop, Self Test on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 38 - Results Workshop 1, on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 39 - Results Workshop 2, on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 40 - Results Workshop 3, on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 41 - Results Workshop 4, on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 42 - Results Workshop with Bosch, on Miro [Screenshot] (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 43 - Conclusion of workshop Results [Graphic]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 44 - User flow of existing Service of Bosch [Graphic]. (2021, March). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 45 - Sketches, important new Functions [Sketch]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 46 - Sketches, important new Functions [Sketch]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 47 - Prototype, Wireframes [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 48 - Prototype, Wireframes [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 49 - Prototype, Search Function [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 50 - Prototype, Categories [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 51 - Prototype, List View [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 52 - Prototype, Rented Items [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 53 - Prototype, Community Page [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 54 - Prototype, Discover Page [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 55 - Prototype, Profile [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 56 - Prototype, Home Appearance and Search [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 57 - Prototype, List View and Filters [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 58 - Prototype, Shopping Cart Pop-up [Wireframes]. (2021, April). Copyright 2021 by Paméla

Schmidinger & Tamara Trabucco

Fig. 59 - Prototype, Quick facts [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 60 - Prototype, Product View [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 61 - Prototype, Order Overview [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 62 - Prototype, Rented Items [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 63 - Prototype, Knowhow [Wireframes]. (2021, April). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 64 - Design, Styleguide (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 65 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 66 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 67 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 68 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 69 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 70 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 71 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 72 - Final Results, Prototype [Wireframes]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 73 - User Flow, Page Overview [Graphic]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 74 - User Flow, Login oder Sign Up / Rent a power tool [Graphic]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 75 - User Flow, Rent a power tool [Graphic]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 76 - User Flow, Finding the right tool for project [Graphic]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco

Fig. 77 - User Flow, Finding the right tool for project [Graphic]. (2021, May). Copyright 2021 by Paméla Schmidinger & Tamara Trabucco