

ToolTaxi: Affordable & Convenient Tool Rental

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Problem and Solution Overview (1 paragraph)

The problem we're taking on is the high cost of power tools/heavy equipment relative to the needs of the average DIY homeowner for a project. While a home repair may occasionally require specialized tools, there is often no regular use case for the average person after the job is completed. Our goal is to save power tool users/DIY'ers money by encouraging the use of equipment rental instead of outsourcing the job to a contractor or buying the equipment outright for a high cost. Our solution to these problems is a convenient and cost-effective tool rental service, specifically targeting the average homeowner rather than professional contractors. We would purchase a wide variety of small to medium-duty tools from retailers in order to offer them for rental, as well as sourcing tools from local communities to encourage goodwill among locals and save on costs. With this service, users would be able to search for tools for specific projects, have them delivered along with detailed instructions and suggestions, and have the tools picked up from their own home at their convenience. By involving the community and offering a convenient, cost effective solution to a problem that many homeowners face, we believe that more jobs around the house will be done for less money.

Design Research Goals, Stakeholders, and Participants (1 page)

Design Research

We decided to use a survey research method in order to quickly gather feedback from a large group of people, as the tool rental service is intended to operate/provide on a community scale. This allowed us to assess the need for a tool rental service in local communities, as well as gather feedback about how current tool rental services could be improved. We also decided to use an interview style design research method as a follow up with about three participants. These interviews had the purpose of getting longer and more detailed accounts of the average owner's tool rental experience, giving us a better idea of problems we can fix and processes we can improve with our service.

Stakeholders and Participants

Matt is a middle-aged homeowner in a middle-class neighborhood. Essentially an average/slightly above average person in a nice neighborhood. We learned that there is definitely a need for a cheaper option for tools, and according to our first participant, they only need tools a few times a year. This shows that there is a user base in need of our product. One difficulty encountered is the current competition landscape. People already are aware of the current competition, and don't have many negative opinions on renting from a big box store such as Home Depot.

Carly is a middle-aged single mother and homeowner in Illinois, who was sent and responded to a survey through email. She rarely works on DIY projects or home repairs and has only performed small landscaping work and general maintenance and upkeep. She currently owns most tools she needs for projects, including basic hand tools, power tools, and some specialty tools, and has previously rented from Lowe's. Problems she faces when getting tools are the cost and that she doesn't use them often

enough, and existing tool rental services have inconvenient pickup/return options. If she were to rent, which she said was unlikely, it would typically be for a weekend, and she would prefer to have them delivered to her home. She feels that in a rental service, high quality and maintenance of the tools would be her top priority, as well as convenience and thorough safety instructions.

Jason is a late-20's homeowner and hobbyist who works on home repairs, renovations, and automotive projects a few times a year. He owns some basic hand tools but does not own everything he needs and has previously rented tools from Home Depot. This shows that he is already familiar with the rental market, and sees value in renting when ownership doesn't make sense. His pain points are tools being too expensive to buy, not using them frequently enough to justify the cost, and dealing with maintenance issues. He also finds current rental options frustrating due to limited availability and inconvenient pickup and return processes. Jason typically rents a tool for only a few hours, so short-term, flexible rental periods would be important. He is open to picking up tools from a physical store, but was also interested in the idea of a delivery service. For him, a rental service must offer lower costs than buying, convenience, high-quality/well-maintained tools, and support such as instructions and insurance.

Design Research Results and Themes (1 page)

There were some shared themes across all three participants. All of them are homeowners who only need certain tools occasionally, whether a few times a year or just for specific projects. Cost was a consistent issue. Each participant answered that tools are too expensive to buy, especially when they are not used frequently enough to justify ownership. Convenience is another pain point. Carly and Jason answered that existing rental services have inconvenient pickup and return processes, and they were interested in delivery. At the same time, we learned that participants are already aware of big-box stores like Home Depot and Lowe's, which presents a competitive challenge. The surveys revealed several things that are important for us to design for: affordable pricing, flexible rental durations (from a few hours to a weekend), convenient pickup and/or delivery options, clear instructions and safety guidance, and indicators of quality and trust such as reviews and insurance options. Competing directly with established stores may be difficult, especially since according to the survey, there are no strong problems with the current options. Overall, our survey confirms a real need for service, but convenience, trust, and differentiating our service will be critical to success.

Answers to Task Analysis Questions (2 pages)

1. Who is going to use the design?
 - Homeowners and DIYers, and contractors who need power tools for a temporary amount of time, as well as individuals who own tools and want to rent them out.

2. What tasks do they now perform?
 - Users currently buy expensive tools, borrow from their neighbors, or rent from big hardware stores.

3. What tasks are desired?

Users need to be able to easily browse nearby tools, compare prices, rent or list tools, schedule pickups or deliveries, and complete payments in the app. They should also be able to review the tools. The key is ease of use.

4. How are the tasks learned?

Tasks are learned through familiar app design patterns similar to other apps like doordash, along with a simple onboarding process.

5. Where are the tasks performed?

Most of the tasks are performed on the mobile devices or the desktop version. Physical interactions like pickup or delivery occur in real life at people's houses.

6. What is the relationship between the person and data?

Users will have to provide some personal info as well as payment information while interacting with listings and transaction info. Owners of the tools can also manage their own listings, and the system should track use history, ratings, and activity.

7. What other tools does the person have?

Users will have smartphones with access to maps, messaging and payment

apps, along with their own transportation for picking the tools up.

8. How do people communicate with each other?

Communication happens in the app. There will be in-app messaging, along with notifications about your orders. In some cases people can also communicate via phone.

9. How often are the tasks performed?

These tasks are performed occasionally, and it depends on the person. Renters will probably use the app more infrequently, while people who rent their tools out will use the app more often.

10. What are the time constraints on the tasks?

Users will expect a quick browsing experience that needs to be quick and easy in order for people to consider using the app.

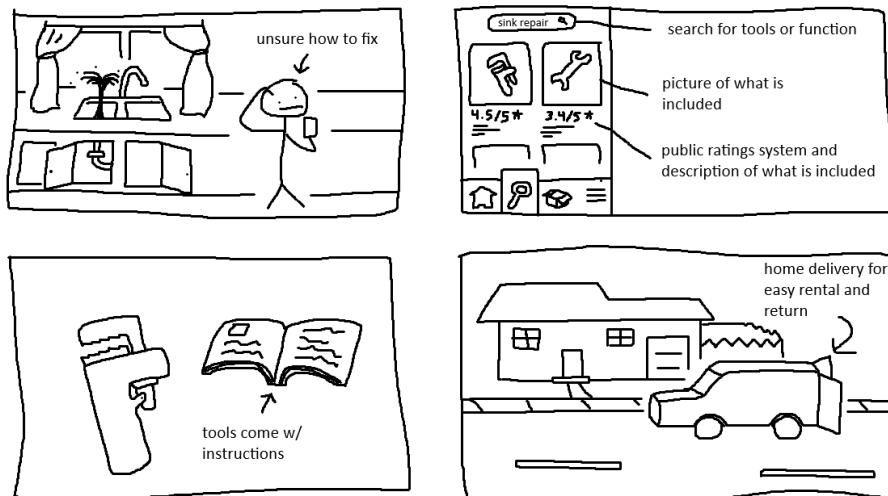
11. What happens when things go wrong?

Issues like late returns, damaged tools, or payment disputes can happen. So there needs to be a system that supports features like refunds, user support, ratings and possible penalties for users.

Proposed Design Sketches (1 page)

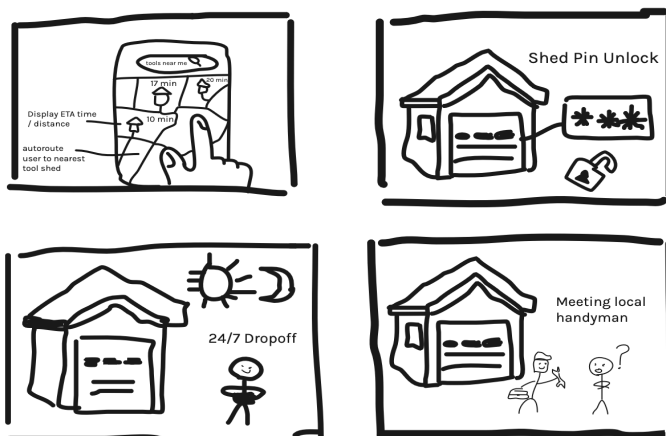
Design 1: Online Delivery and Pickup

This design includes a website or app-based interface to allow users to search for tools, view information on a tool, and have tools delivered and picked up from their homes after the rental period expires.



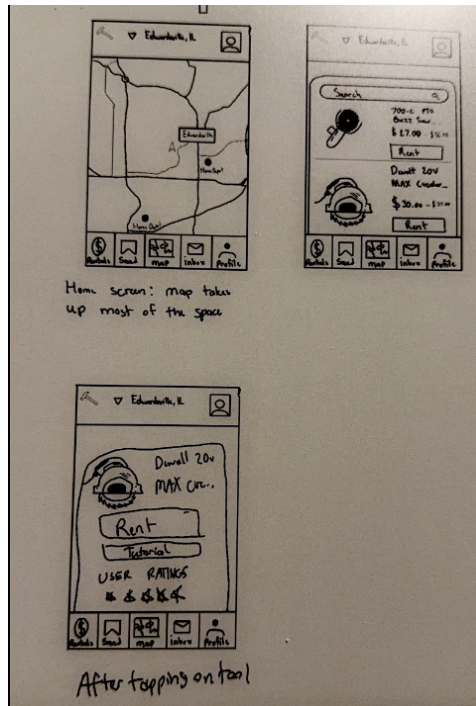
Design 2: Community-Sourced Tool Shed

The aim of a community-sourced tool shed is to provide another avenue of rental for users of the tool rental service.



Design 3: Brick and mortar based pickup and sourcing

Users will be able to see a map of their current location and several stores that contain the tools available for rent. Users can choose which store location they would like to rent from, and the tool selection will pop up after selecting location.



The Design We Chose: Design 1

Ultimately, we chose to pursue our first design, the app-based tool rental and delivery design because it is the most simple and convenient experience for target users. Based on our feedback from the other groups and our survey, users preferred a design that is easy to use on their phone and reduces the need to go somewhere in person. In our survey, people generally didn't have a problem with the current tool rental methods currently available, so our best chance of success was convenience and ease of use. Compared to the other designs, this one puts everything in one place, allowing users to search for tools, view the details, and schedule a delivery and pickup in a clear and organized way. The 2 tasks we chose were: helping users who are unfamiliar with the right tool for the job and helping users who can't return a tool to a store on time. We chose these tasks because they are common problems that users face that directly affect their experience. Focusing on these tasks can make our product stand out, and become the easiest method for renting power tools.

Written Scenarios (1 page)

Task 1: Unfamiliar with the right tool for the job

A homeowner wants to hang a shelf in their living room, but isn't sure what tools they need. Instead of going to a store, they open the ToolTaxi mobile app. On the home menu, they see a search bar labeled - "What are you working on?" and type in "hang a shelf."

The app returns a list of recommended tools, including a power drill, level, and stud finder. There are also brief explanations of why each tool is needed. Each tool listing includes ratings, pricing, and availability, as well as an option to view detailed instructions and safety tips. Then, the user taps on a recommended tool bundle that groups all necessary tools for the task.

After reviewing the bundle and instructions, the user will select a rental duration (same-day use) and choose a delivery time. The app will show a clear checkout screen with the total cost and delivery details. Once they confirm, the tools are delivered to the user's home.

When the tools arrive, the user follows the included instructions (accessible in the app and provided physically) to complete the task successfully. By using the app's recommendation and guidance features, the user is able to confidently select the correct tools and complete the project without prior experience.

Task 2: Unable to return tool in time

A user has rented a power tool for a weekend project through the ToolTaxi mobile app. As the rental period nears its end, the user realizes they won't have time to drive to a store or return location before the deadline.

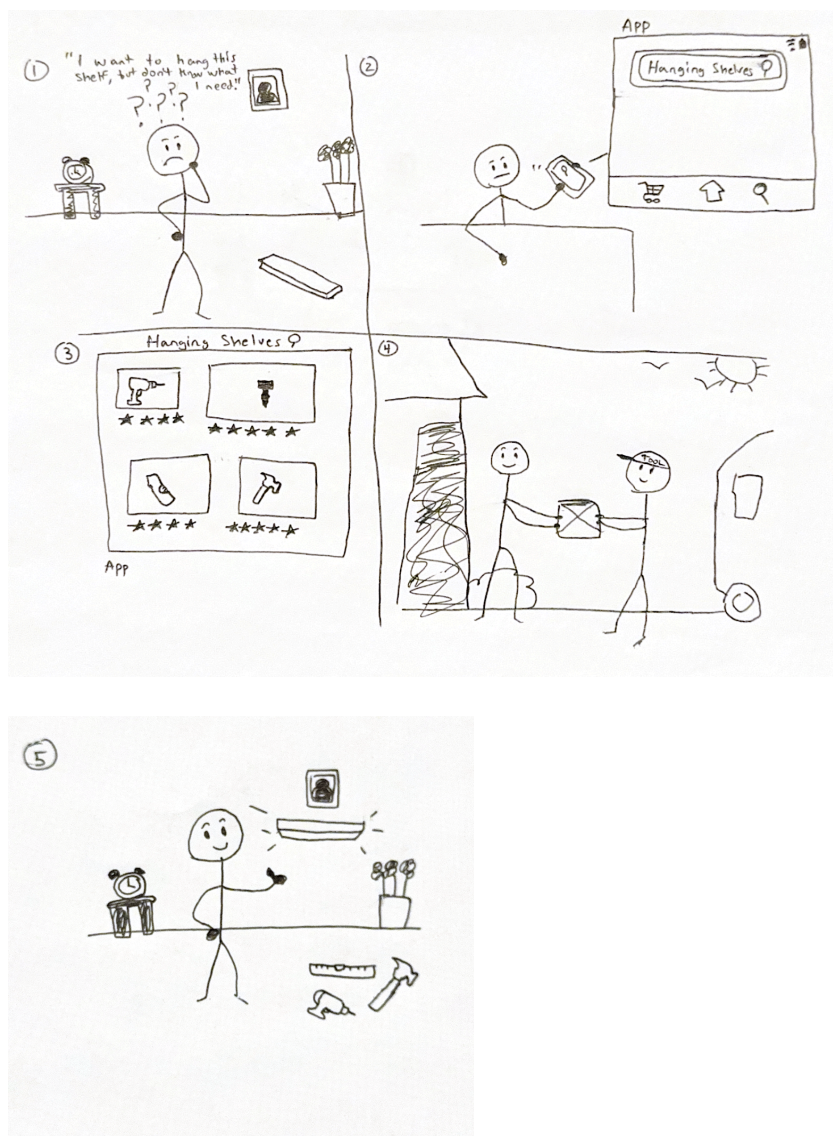
The user opens the app and navigates to their current rental. They see options including "Extend Rental" and "Schedule Pickup." To avoid late fees and save time, they select "Schedule Pickup." The app lets them choose a pickup window and confirm their home address.

After confirming, the app provides a notification that a driver will arrive within the selected time frame. The user places the tool outside or keeps it ready for handoff. A driver arrives, scans the tool to confirm the return, and completes the pickup.

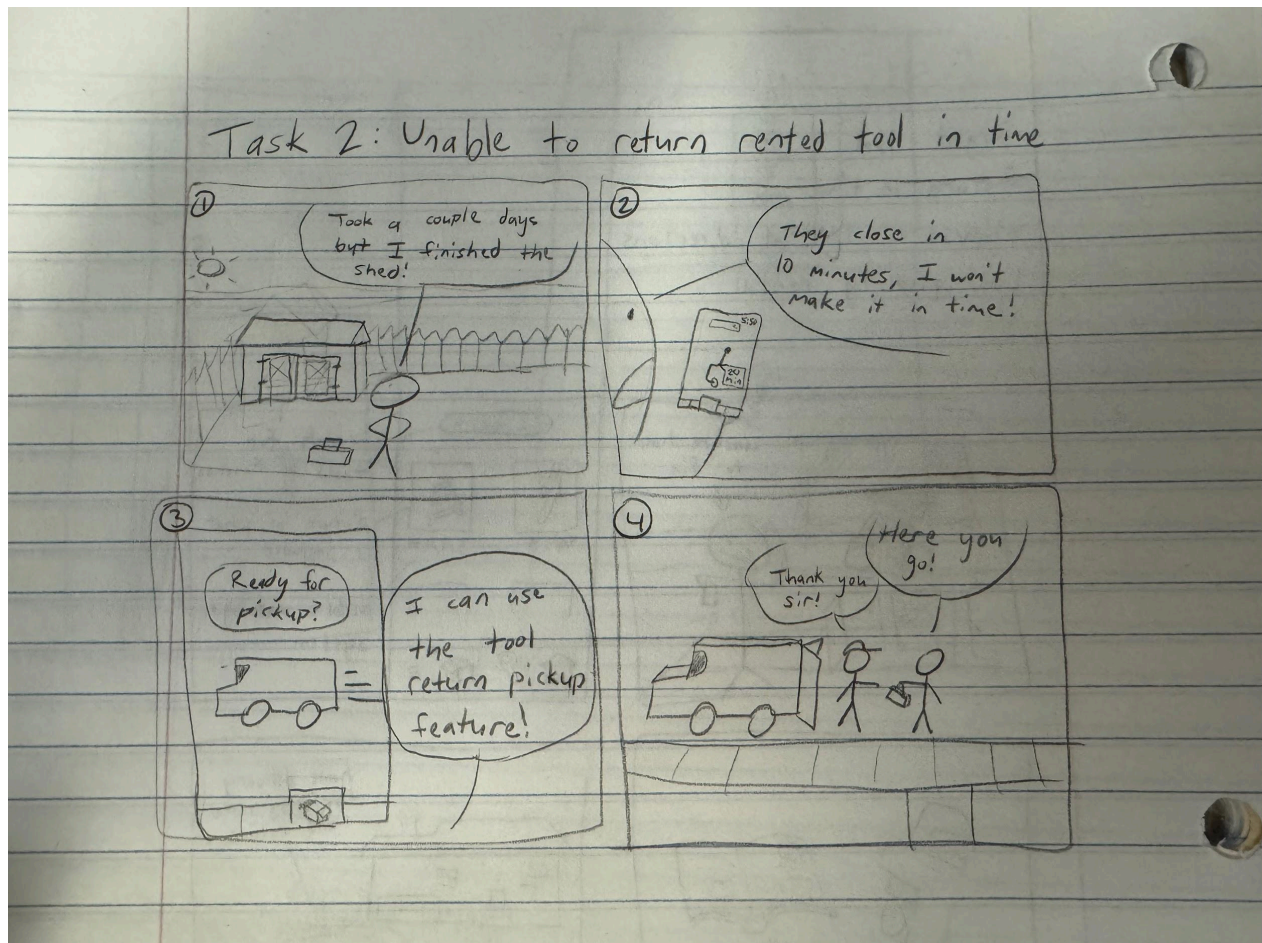
The app updates the rental status to "Returned" and sends a confirmation notification and the receipt. By using the pickup feature, the user avoids late fees and eliminates the inconvenience of traveling to return the tool.

Storyboards of the Selected Design

Task 1: Unfamiliar with the right tool for the job



Panels 1–3 show the user struggling to determine what tools are needed for a task. They want to hang a shelf but are unsure what to use, so they enter their task into the app. The system then recommends the appropriate tools with helpful guidance. In panel 4, the user obtains the recommended tools. In panel 5, they successfully complete the task.

Task 2: Unable to return tool in time

These panels show the user finishing up a project, then realizing they won't have enough time to make the drive to return the tools they rented. The next panel shows the user selecting a tool return pickup option, and a driver goes to the user's home to pick up the tools, saving the user the hassle of having to wait until the next day to return and pay the late fees.

Appendix of Feedback Sessions and User Research

Feedback for User Design Research

Based on the feedback, we could alter our design research plan by adding additional questions to the survey about current tool rental services from big box stores. The goal would be to gather feedback about any problems or improvements that could be made to a tool rental service from a home improvement store and solve those grievances in our service. We could also include questions that ask users to identify what would separate or make a tool rental service unique among current services. By providing an easy-to-use service and solving common grievances that users experience, our tool rental service will be able to stand on its own against the current competition.

Feedback for Task Analysis

We received a small amount of feedback from Jalen, Sean, and Nate. Their only suggestion was to split one of our situations up into multiple tasks or make it less contrived, and they thought the rest of our scenarios were solid.

Feedback for Initial Designs

The feedback we received for our initial designs was to consider how similar the designs were overall. The tool shed was recognized as a novel idea, but the pickup process seemed similar for the two other designs. Based on the feedback, we considered more ways to differentiate our design from existing competitors, and potentially consolidate aspects of the brick and mortar pickup as well as app pickup for the design we chose.

Contributions

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