A PANORAMIC IMAGE-BASED APPROACH
TO BUYING AND SELLING SECONDHAND GOODS ONLINE

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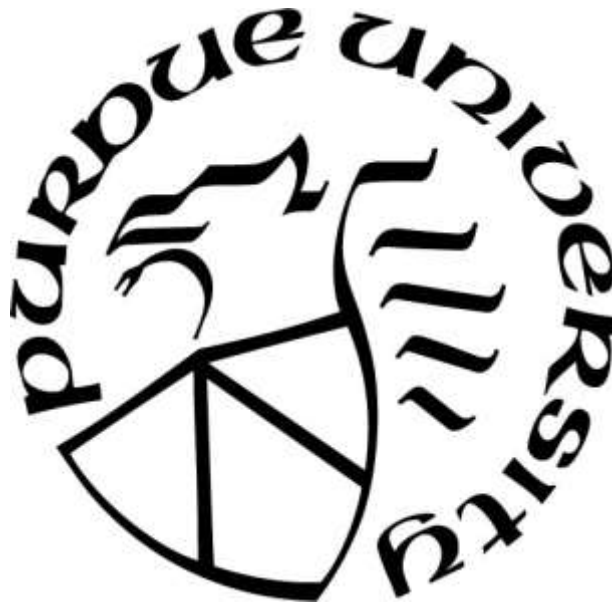
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ABSTRACT

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Title: A Panoramic Image-based Approach to Buying and Selling Secondhand Goods Online
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The purpose of this project was to investigate and propose a solution to gaps identified in existing paradigms for buying and selling secondhand goods online. Through a review of existing literature, the secondhand market was explored together with the variety of reasons for individuals' participation. Different modes of collaborative consumption and some of the challenges unique to peer-to-peer markets were also examined. A computational approach to identifying items and actions within digital media was reviewed in support of the proposed solution. Research discoveries uncovered through directional surveys, semi-structured interviews, and an analysis of peer products were summarized. These discoveries were consolidated into a list of requirements, including 1) being able to sell many items at once, 2) disbursing items quickly and with minimal effort, 3) making lower value items worth selling, 4) establishing and maintaining trust by designing for safety and encouraging quality, and 5) reducing the need for communication between buyers and sellers by managing the sale, condition, and inventory status. After multiple rounds of concept development, a principal direction based upon the "make me move" concept in the real estate industry was selected. Combined with panoramic images, the resulting solution relied on computer-driven tagging of items for sale. This allowed many items to be listed at once through a single image while making it possible for buyers to find and place offers. Offers were suggested in lieu of bids or an immediate checkout process to avoid some of the negative, bid-related behaviors and minimize the communication required to complete a sale. An interactive prototype was created to evaluate the concept and usability via online user testing, which included surveys and cognitive walkthroughs. The results were analyzed and prioritized to refine the final details of the solution. Overall, I demonstrated a unique concept for buying and selling secondhand goods which supports selling many items, efficiently and safely, while eliminating much of the back and forth communication required to facilitate transactions on many existing platforms.

CHAPTER 1.   INTRODUCTION

Whether we buy items or receive them as a gift, it isn't unusual to accumulate many *things* over the course of our lifetime. Regardless of their original usefulness or meaningful place in our lives, that status often changes for one reason or another. When that time comes, we have a decision to make about whether we consciously try to dispose of an item or allow it to occupy some dark corner of a closet or basement, perhaps in a box amongst other such items. The disposal can take many forms, for example: placing the item in the trash, dropping it off at a donation center, regifting it to a friend or relative, or attempting to sell it to someone else. It is the latter form I explored through this project.

The inspiration for this project stemmed from my use of platform Craigslist, which rose to prominence at the turn of the century as an online replacement for classifieds—traditionally the domain of newspaper publishing companies. The low cost (most listings are free) helped it expand across the United States and eventually throughout the world. What intrigued me about Craigslist was that it seems to continue to grow, even as the web has matured and competitors with more sophisticated and better-designed interfaces enter the market. I also read of some developers reskinning Craigslist—essentially redesigning the look and feel of the interface but still relying on it as the data repository. All of this indicated healthy demand for what Craigslist offers. Certainly, competitors have built their platforms using modern design principles and worked to refine the listing process, for example, to make it easier and faster to sell an item. However, upon review, I believed the new platforms were often duplicating much of the same, core functionality. They offered incremental improvements, but I saw few approaching the problem of buying and selling secondhand goods online in a unique manner.

Through this project, I researched several online marketplaces, surveyed and interviewed potential users, and analyzed data to identify the most important issues and gaps—all to design an entirely new model for buying and selling secondhand goods online.

I began this body of work by reviewing existing literature related to buying and selling secondhand goods in Chapter 2. I defined the secondhand market, collaborative consumption, and discussed available data on secondhand market participation. I then reviewed the literature on peer-to-peer markets and described a technological development that supports my final design. Next, I laid out my approach for identifying requirements, developing concepts, and iterating through the

design, prototyping, and evaluation process in Chapter 3. I wrote in detail in Chapter 4 about the user research I completed, including a number of directional surveys, interviews, and related data analysis. In the same chapter, I summarized my research through a list of discoveries and translated them into requirements. My concept development and design process, including brainstorming, wireframing, and prototyping were reviewed in Chapter 5. The details of my concept evaluation and refinement efforts were also included. My final section, Chapter 6, summarized how I developed a unique concept for buying and selling secondhand goods online which addressed many of the gaps identified in existing solutions.

CHAPTER 2.   LITERATURE REVIEW

Whether we wish to admit it, most of us have a psychological dependence on *things*. Mihaly Csikszentmihalyi argues in "Why We Need Things" that objects provide order—or boundaries—for our otherwise untamed minds (Lubar & Kingery, 1993). At some point, though, order may turn to chaos, or at least unease, when we find ourselves with too many things. In the following sections, I review various perspectives on one means of disposal—the secondhand market. I also briefly discuss an alternative, collaborative consumption, which has so far been unsuccessful in curbing individuals' accumulation of goods. I also discuss the characteristics and challenges of peer-to-peer markets, which are the most pervasive form of the secondhand market. Finally, I provide support for a core feature I chose to implement in my proposed solution: computer-generated, item descriptions.

2.1   Defining the Secondhand Market

The secondhand market is broadly defined as the exchange of durable or semi-durable goods which have had one or more prior owners ("Kijiji Second-Hand Economy Index 2018," 2018). The exchange could be temporary though sharing, lending, or paid rental, or permanent through donation or sale. For some, the secondhand market offers a means to reject, counter, or at least minimize participation in that cycle. For others, buying used goods allows them to purchase what they could otherwise not afford or justify. Economy or thrift is certainly considered the default explanation for individuals' interest in secondhand goods, but alternative and multi-faceted perspectives have been considered in recent decades (Williams, 2003). Some others enjoy the experience of finding something unique, a good deal or simply interacting with other people in the process. Whatever their reason, a growing percentage of individuals participate in the secondhand market (Guiot & Roux, 2010). The industry has taken notice, enticing entrepreneurs and established firms alike to support, develop, and expand solutions to facilitate the exchange of secondhand goods.

2.2 Collaborative Consumption

While efforts to facilitate temporary exchanges have been made, they have not yet shared the same level of success as platforms designed for permanent sale. One such attempt to build a platform to facilitate loaning tools could never gain traction. The company, Neighborrow, was able to generate enough interest to build an inventory, but borrowers were lacking ("Lessons from failure borrowing tools from your neighbors," 2013). In the words of its cofounder, "It turned out that people didn't really want to borrow anything. They didn't mind buying things and just letting them sit unused. Plus, we weren't solving a real problem. We weren't top of mind. Most of the people who signed up never came back. They just forgot about us ("Lessons from failure borrowing tools from your neighbors," 2013)." In other instances, outside the secondhand market, companies have been better able to capitalize on the sharing economy.

Platforms designed to sell excess housing (e.g. Airbnb) or automobile capacity (e.g. Uber) have seen tremendous success. Even with some resistance from local governments and the traditional lodging industry, Airbnb in the third quarter of 2017 doubled its revenue from the same period the year prior, with roughly 60 percent more bookings ("Airbnb is said to double revenue to $1 billion last quarter," 2017). Operating a peer-to-peer ridesharing platform, Uber's growth continues to beat expectations, with the company seeing 150 percent more ride requests in 2017 than a year earlier (Helft, 2017). Perhaps the cost of these large assets is what makes them more palatable to rent.

2.3 Secondhand Market Participation

The exchange of secondhand goods has long been a local phenomenon in the United States, experienced primarily through flea markets, garage sales, swap meets, and other in-person venues. Along with commercial thrift outlets like Goodwill Industries, founded in Boston in 1902, they grew over the last century to serve an increasingly large demographic. Some argue this growth was due to the reduced purchasing power of the middle class (Roux & Guiot, 2008). Others have noted that used goods, especially clothing, began to represent rebellion and individuality (Le Zotte, 2017). Regardless, by the end of the 20th century, with the proliferation of the Internet, these exchanges began to move online and continued their growth by facilitating a larger pool of buyers and sellers. This expanding pool made it possible for sellers to command higher prices for their

goods and buyers to find collectibles and other hard-to-find products without leaving the house. Two of the oldest, most-recognized companies facilitating the exchange of secondhand goods—eBay and Craigslist—were founded in 1995. Despite their age and the aging appearance of Craigslist, they continue to be the largest players in the market. Newer entrants have found it challenging to build up the critical volume of buyers and sellers required to maintain momentum without significant capital and effort—a situation Craigslist enjoys, at least for now.

Kijiji, a wholly-owned subsidiary of eBay started in 2005, has been publicly tracking participation in the secondhand market since 2014 in the "Annual Kijiji Second-Hand Economy Index." The company's platform was an attempt by eBay to challenge Craigslist's online classifieds, but its success so far has been limited to Canada. One article speculated this was in part due to market timing but also due to Canadians' perhaps slightly thriftier tendencies (Austen, 2015). Most importantly, however, Kijiji's annual index provides one of the clearest and most up-to-date views of the modern, secondhand market participant. Of note, the report states "85% of Canadians have participated in the secondhand market" at some point, with about 2.3 billion goods exchanged in 2017 ("Kijiji Second-Hand Economy Index 2018," 2018). In terms of quantity, the top five most popular categories of goods exchanged were, in order:

- Clothing, Shoes, and Accessories
- Entertainment Items (DVDs, Books, etc.)
- Baby Clothing and Accessories
- Furniture
- Games, Toys, and Video Games

Of those Canadians who participated in the secondhand market in 2017, the average person earned $1,134 from selling their secondhand items and saved $825 by purchasing used instead of new goods ("Kijiji Second-Hand Economy Index 2018," 2018). How closely these figures translate to the secondhand market in the United States is unclear, but a similar level of participation has been reported in the United Kingdom (Chahal, 2013). Scholars have historically been more interested in understanding the motivations and considerations of those that choose to participate rather than tracking the market's aggregate growth.

The decision to partake in buying and selling goods through the secondhand market is often viewed from an economic angle. This perspective is natural, of course, as goods can be found on the secondhand market for less than retail cost. Scholars contested the notion in recent decades,

however, and for a time, dismissed money-driven motives altogether. They then came to understand that a number of factors drive participation (Williams, 2003). Affordability plays a role, but it is often interwoven with social aspects and a desire for "originality." As scholars have dug deeper to understand the non-financial motives driving participation, they have begun to note the influences of impulsivity, exploration, and atmosphere as well (Roux & Guiot, 2008). The degree to which these factors are involved and which factor takes precedence is influenced by a participant's socioeconomic status, with less well-to-do individuals being primarily motivated by economic necessity (Williams, 2003). Others may still be motivated by economic considerations, but they may be secondary or tertiary.

Others have explored this supposed dichotomy by comparing economic (necessary) to hedonic (experiential) shopping, noting that thrift shopping, specifically, shares qualities of both (Bardhi & Arnould, 2005). The concept of thrift described by Bardhi and Arnould (2005) parallels Williams' perspective. They describe, for example, five thrifty behaviors prove helpful in understanding individual participation in the secondhand market:

- Preplanning and pre-shopping
- Minimization of first-hand shopping
- Bargain hunting
- Restricting available resources when shopping
- Recycling

Preplanning refers to the process of defining a shopping list upfront to limit the temptation of purchasing items at random, based on emotion. Minimizing first-hand shopping means limiting the purchase of goods from retail outlets to avoid paying full price. Bargain hunting is self-explanatory while restricting resources refers to artificially limiting available funds when shopping in order to limit spending. An individual may take, for example, only $50 to spend in an afternoon of shopping instead of bringing his or her entire wallet. The concept of recycling is one of reuse, sometimes for an alternative purpose. Bardhi and Arnould's (2005) later mention of "avoiding waste" provides an adequate and convenient summary of all these aspects.

It would be interesting to explore whether some of these behaviors hold true for online shopping. As an example, the ability to limit spending resources by simply carrying a limited amount of cash is not possible. Do consumers then practice alternative means of controlling their spending? Notable, too, would be to consider and compare perspectives on the value of time

between those that actively participate in secondhand markets and those that do not. The hypothesis, of course, is that there is a tradeoff between spending time and money in the pursuit of thrift and what has been understood as avoiding waste may shift along the socioeconomic spectrum.

2.4   Trust in Peer-to-Peer Markets

Many of the platforms facilitating the resale of secondhand goods are considered peer-to-peer, and such markets present unique challenges. In general, participants are casual non-professionals on both sides of a transaction. Buyers and sellers also rely on a platform for finding each other, which means the mechanisms by which this occurs must be accurate and efficient. (Einav, Farronato, & Levin, 2016) The same can be said of any pricing mechanisms employed by the marketplace. Einav et al. (2016) discuss situations in which it can make sense for a marketplace to both perform the buyer-seller matching and to set the price with little involvement from the participants. Peer-to-peer, secondhand markets usually provide support for these processes but are decentralized, allowing significant freedom. Some platforms have begun to suggest the price at which an item is listed, for example, but the number is ultimately the seller's decision.

Einav et al. (2016) also discuss the trust which must exist between a buyer and a seller. Reputation-based approaches are noted as having limitations but as being successful in facilitating trust on a number of well-known platforms. Some research has investigated eBay's mechanism specifically, in which both the buyer and seller provide feedback on a completed transaction (Bolton, Greiner, & Ockenfels, 2011). Bolton et al. (2016) called into question whether this reciprocity results in reliable feedback. Another drawback of feedback mechanisms (e.g. ratings) and external validation (e.g. certifications) is the barrier it creates for new market entrants (Einav et al., 2016). In an established marketplace, buyers may be wary of purchasing from a seller without a visible history. Of course, it's difficult to establish a history without making sales. Other approaches include providing a guarantee, warranty, or some other means of third-party regulation—either through upfront verification or regular inspections of some kind. There is some doubt guarantees alone are effective, given natural skepticism by buyers about their ability to realize a refund or credit if a claim is filed (Roberts, 2011). No matter the approach, minimizing the transaction costs and overall friction of buying and selling must be balanced with a certain degree of regulation or oversight to help guarantee safe, quality, and trustworthy transactions

(Einav et al., 2016). To succeed, any new platform serving as a peer-to-peer marketplace must account for these challenges.

2.5   Computer-Generated Item Descriptions

One of the critical technical assumptions to facilitate the solution proposed through this project is that computers systems are capable of understanding the contents of various media and are therefore able to generate sufficiently correct text descriptions or metadata. Computers are now nearly as capable as humans at identifying objects within an image—not only seeing a bird within a photo, for example, but identifying the exact species ("The revolutionary technique that quietly changed machine vision forever," 2014). Work in more recent years has been focused on generating more complex descriptions. Otani et al. describe successful attempts to generate metadata for static images on the web by relying on contextual information already present in surrounding HTML (Otani, Nakashima, Rahtu, Heikkilä, & Yokoya, 2016).

With standalone videos or images, as used in my project, this context is missing and some other means of generating text descriptions is necessary. To do just that, Otani et al. trained a neural network to understand differences in descriptive sentences by using multiple sentence variations and their related image results from an online search. The resulting solution was demonstrated by Otani et al. to be very capable of accepting a video input and generating a description as a short sentence.

As described in an article entitled "The Next Big Step for AI? Understanding Video," researchers are still honing the ability of computers to detect subtle nuances in the actions present in dynamic media (Knight, 2017). It suggests the next, major evolution will be to train computers to transfer their learning from one scenario to another—to understand and describe a human running, for example, and then to apply that understanding to interpret an animal running, too. Nevertheless, based upon the state of the art, I am confident in suggesting a computer system would be capable of identifying individual items within an image and automatically generating searchable, text-based descriptions.

2.6   Summary

In summary, I reviewed existing literature that describes the secondhand market and individuals' reasons for participation. I also discussed an example of how alternatives to buying and reselling goods have struggled to be successful. I reviewed some of the challenges inherent to the most popular manifestation of the secondhand market—the peer-to-peer market. Finally, I provided evidence to support a technical feature of my proposed solution, which removes the need for sellers to create individual, item descriptions.

CHAPTER 3.   METHODOLOGY

I completed this project through an iterative design process. More specifically, I sought first to understand the disposal of used goods by researching existing solutions and exploring related consumer behaviors and preferences. I then identified unmet needs, established requirements, developed concepts, selected a primary direction, designed a solution, created mockups, and evaluated and refined the design. The latter part of the development process, including design, prototyping, and refinement, was repeated, helping to mature the concept over time to ensure it met the requirements established earlier in the process.

3.1   Identifying Needs and Establishing Requirements

First, I sought to understand the process of buying and selling secondhand goods, which eventually led to broader reflection regarding the disposal of used goods in general. Early on, I developed multiple questionnaires, each one seeking to more clearly identify the reasons behind individual behaviors and preferences. Over time, the questionnaires became more focused on buying and selling secondhand goods online, regardless of how the items were finally exchanged. Of note, the questionnaires were directional (the sample sizes never exceed 250). Their value was primarily in challenging my own assumptions, forcing me to ask more questions and investigate further, in an iterative process of its own. To that end, I also performed a peer product review, researching and documenting the business model, user interface, and my own subjective evaluation of the ease of buying and selling of five popular and unique online, secondhand marketplaces.

This early research, in turn, informed my approach to interviewing a number of individuals about their anecdotal experiences buying and selling secondhand goods online. I had begun to notice a recurring consideration of the amount of time and effort required to sell an item and the determination of whether it was "worth it." It was at this point I began to focus on the particular issues encountered by those looking to move, whether it be across town or further yet. The project was never meant to solve the issues of moving but evolved to specifically target a related pain point—getting rid of many used items at once, within a relatively short timeframe, through a manageable effort, while potentially extracting some of the items' remaining value. The detailed notes I took during each interview along with their audio recordings were then coded and analyzed

using ATLAS.ti in a bottom-up approach ("ATLAS.ti," n.d.). A bottom-up qualitative analysis works by reviewing data, identifying themes, and recording them simultaneously. Once a theme exists, another instance can be labeled by simply referencing the existing theme. After all the data is reviewed, the top themes are then categorized and ranked by their level of occurrence.

From the questionnaires, peer product review, interviews, and analysis, I developed a primary user persona and journey map to reference in the latter stages of the project. They served as one means to synthesize specific discoveries, challenges, and opportunities. I then arranged, rearranged, and finally prioritized a list of findings by their relative strength—a subjective measure of their impact and influence on the process of buying and selling secondhand goods online.

3.2   Developing Concepts

Next, I turned to brainstorming and developing initial concepts. This, again, was its own iterative process, with the effort starting as a handful of simple mind maps to draw out themes and ideas quickly, without requiring time to pause and sketch details. From the mind maps, each theme was then reflected upon and developed into a more detailed set of concepts. Each concept was sketched, titled, and detailed on its own, with sketches sometimes simply serving as abstract representations. After some time, I chose a handful of concepts from which to start the mind mapping process over again. Each concept was the central theme of the new mind map, and sub-themes and related, new concepts were developed in such a manner.

Once a sufficient number of concepts had been developed, I began evaluating them to determine which best met the prioritized or primary) requirements. I presented six concepts to my committee, who provided feedback and helped confirm my direction. One final round of brainstorming generated a few additional ideas, which were added to the pool, then grouped and consolidated through an affinity diagramming process. This process helped eliminate a number of ideas that were not robust enough to stand alone. These were instead added to a list for evaluation as features of the remaining, stronger concepts. One primary direction was selected because it had the best potential to address the requirements, and it approached the problem differently than existing solutions, making it more likely to stand out in a crowded market.

3.3   Design, Prototyping, Evaluation, and Refinement

With the primary direction selected, I began designing the foundation of the concept's information architecture through a Hierarchical Task Analysis (HTA). Breaking down users' expected tasks and logically arranging them in an HTA chart provides essential scaffolding around which to design and is more likely to result in an end product that makes sense to the user. After several iterations, the contents of the HTA chart were converted into wireframes, providing another layer of detail which prompted additional inquiry and thought. Wireframes are ideal for beginning to convert a collection of simple functions into a full-fledged interface. Enough questions arise about how best to arrange the information on the screen when using a collection of boxes and placeholders, and this method makes rework and the development of alternatives less time-intensive. My wireframes were then converted into low-fidelity, static mockups which provide another layer of detail, including colors and fonts, without necessitating transition, motion, and full-fledged interaction development.

The mockups were reviewed first through a simple analytical evaluation by my committee members. Their varied backgrounds provided perspectives on the design, logic, and business model of the primary concept. This initial feedback was used to refine the static mockups and begin developing higher-fidelity ones. The goal of the high-fidelity mockups was to provide the semblance of a working application such that I could conduct further evaluations. Feedback was gathered through an online, remote user testing platform to help refine the business model and application components. The application's design and usability were tested via cognitive walkthroughs, which sought to ensure the primary tasks laid out in the HTA chart were translated into the visual design such that they remained logical and intuitive. Feedback from these evaluations and an embedded survey was used for one final round of refinement of the high-fidelity mockups.

Overall, my design process included problem identification, concept development, design, evaluation, and refinement. While the process may seem linear when described as above, many of these phases overlapped. Downstream efforts often fed information back to an earlier phase, resulting in a new iteration. Various tools were used in each phase to help ensure valid, meaningful outcomes—the details of which are discussed in the following chapter.

CHAPTER 4.   USER RESEARCH

User research builds the foundational understanding required to develop a meaningful solution to a problem. Since I had had some experience buying and selling secondhand goods before starting this project, I especially wanted to capture the thoughts, feelings, and concerns of my target user group to challenge and ultimately supersede my own. I developed and executed four directional surveys, each one seeking to understand an aspect of disposing secondhand goods. The early results of this process led me to focus on online marketplaces. To understand several existing solutions and their niche in the market, I developed a peer product review. I then created a semi-structured questionnaire to use while interviewing a small number of target users. The interviews were recorded and then later coded to identify the most common perceptions and experiences. Together with the survey findings, I used them to specify the top five requirements a new solution would need to consider, if not address.

4.1   Directional Surveys

Each directional survey was built and executed using the platform Ask Your Target Market ("AYTM market research," n.d.). The platform provides a robust but friendly set of tools for developing and analyzing surveys. Respondents were recruited through Amazon Mechanical Turk with minimal selection criteria used to limit participants. Additional demographic questions were implemented through Ask Your Target Market (AYTM) and reported along with the survey results.

4.1.1   Selling Secondhand Items

The initial survey sought to understand how often users attempt to sell an item they own and get a sense as to what keeps them from doing it more often. The following questions with skip logic were answered in full by 142 and in part by 5 respondents:

1. In any given year, about how often do you try to resell an item you own? (The item can be used, like-new, new, etc.)
2. About how often are you successful in selling the item?
3. Is reselling these items a significant source of income for you?
4. Do you own any items you would like to sell?

5. What keeps you from selling those items? (Select one or more.) [randomized]

6. What's the approximate, total value of all the items you would like to sell?

7. About what percentage of those items are new or like-new?

8. Do you have any other thoughts to share regarding what keeps you from selling items you own? [open ended] [optional field]

9. Do you have any feedback to share regarding the survey itself? [open ended] [optional field]

The results (see Appendix A) indicated most respondents (62%) only try to resell an item a few times in any given year, and the money generated is relatively insignificant related to their overall income. Roughly two-thirds of respondents stated they had an item in their possession they wished to sell but found it to be "too much of a hassle." The next two most popular responses related to what keeps them from selling included they "just don't feel like it" and the "time required." Eighty percent of the respondents had less than $200 in total of items they wanted to sell. Overall, the results began to suggest looking into the value equation more closely—that is, understanding the time and effort required to sell an item versus its potential monetary value if successfully sold.

4.1.2   Receiving and Returning Gifts

Since some respondents in the first survey indicated a portion of the items they wished to sell were new, the second survey sought to understand more about receiving and returning gifts, assuming they might be the source of such items. The following questions with skip logic were answered in full by 140 and in part by 16 respondents:

1. Of all the gifts your household receives, about what percentage are returned to the store?

2. Of all the gifts your household receives, about what percentage do you/they want to return but can't for some reason?

3. In a given year, what's the approximate, total value of all the gifts your household wishes they could return but can't?

4. Please provide one or more examples of gifts your household wishes they could return but couldn't. [open ended]

5. What are the top reason(s) for being unable to return the items? (Select one or more.)

6. What happens most often with those gifts that can't be returned?

7. If you could return the items, which would you prefer?

8. Do you have any feedback to share regarding the survey itself? [open ended] [optional field]

The results (see Appendix A) indicated for most respondents (more than 75%) their household had only a small portion (5% or less) of gifts they wanted to return but couldn't for one reason or another. In the event they couldn't return an item, most often (about 75% of the time), the item was kept anyway and only a few respondents (less than 20%) attempted to sell it. Given the results of the survey, this direction was abandoned as a potential to explore further.

4.1.3 Buying and Selling Secondhand Goods Online (v1)

For the third survey, I decided to focus specifically on exploring behaviors and preferences related to buying and selling secondhand goods online. The following questions with skip logic were answered in full by 145 and in part by 27 respondents:

1. Within the last year, how often have you used a website or mobile app to *buy* a secondhand (used) item of any kind?

2. Which type(s) of items are you most often looking to *buy* secondhand, and why? [open ended]

3. Which website and/or mobile app do you prefer for *buying* secondhand items, and why? [open ended]

4. Within the last year, how often have you used a website or mobile app to *sell* a secondhand (used) item of any kind?

5. Which type(s) of items are you most often looking to *sell* secondhand, and why? [open ended]

6. Which website and/or mobile app do you prefer for *selling* secondhand items, and why? [open ended]

7. How do you feel about buying and/or selling secondhand items locally (instead of having items shipped to you)? [polarity rating]

8. What is the biggest shortcoming, if any, of existing solutions for buying and selling secondhand items? [optional] [open ended]

Most respondents in this survey (73%) bought a secondhand item using a website or mobile app less than 2 to 3 times over the past year. Electronics, games, books, furniture, and clothes were the most commonly mentioned examples. eBay, Amazon, Craigslist, and Facebook were mentioned most often as the preferred platform for buying secondhand items. Often, familiarity was cited for reasons respondents preferred these platforms.

A significant portion of respondents (nearly 85%) sold a secondhand item using a website or mobile less than 2 to 3 times over the past year. Half of those respondents never sold an item over the past year. Items mentioned by sellers were very similar to those mentioned by buyers and didn't indicate a potential gap in that case. eBay, Amazon, Craigslist, and Facebook were again mentioned most often as the preferred platforms. Surprising to me, respondents felt buying and/or selling secondhand items locally was generally preferred, easy, and safe. Respondents indicated a number of shortcomings of existing platforms, including:

- Security concerns when exchanging items and money
- Trust
- Inability to verify reliability of the seller
- Fees charged
- Inaccurate descriptions or pictures
- Item condition isn't guaranteed

See Appendix A for the full results of the survey.

4.1.4 Buying and Selling Secondhand Goods Online (v2)

For the fourth and final survey, I decided to combine aspects of the previous surveys, solicit feedback on a number of concept directions I was considering, and send it to a slightly larger respondent pool. To the extent possible, my goal was to see if my findings from previous surveys would be confirmed or refuted. The following questions with skip logic were answered in full by 198 and in part by 17 respondents:

1. In any given year, about how often do you try to resell an item you own? (The item can be used, like-new, new, etc.)
2. As a seller (or potential seller), which do you prefer?
3. Do you own items right now you would like to sell?
4. What are the items you would like to sell? [open ended]

5. What keeps you from selling items?

6. As a seller (or potential seller), how likely are you to use the following? [sliders] [sub-question randomization]

    a) Public lockers to allow buyers to securely view and purchase your secondhand items anytime

    b) Website and/or app to help you determine what your items are worth

    c) App to guide you in taking product photos for listing an item

    d) Service to help sell your items by matching with predefined buyer wish lists

    e) Website and/or app that only allows new or like-new secondhand items

7. Do you have any other thoughts to share regarding selling items you own? [open ended] [optional]

8. In any given year, about how often do you buy a secondhand item?

9. What keeps you from buying (or buying more) secondhand items? [open ended]

10. As a buyer (or potential buyer), which do you prefer?

    a) Exchange items in person

    b) Selling items online and shipping them

    c) Other: [open ended] [optional]

11. As a buyer (or potential buyer), how likely are you to use the following products or services? [sliders]

    a) Website and/or app that only sells new or like-new secondhand items

    b) Public lockers to securely view and purchase secondhand items at any time

    c) Service to create a wish list and alert you when an item is listed matching your criteria

The results (see Appendix A) indicated most respondents (78%) try to sell a secondhand item they own only a few times a year or less. Two-thirds (64%) preferred selling items online and shipping them over exchanging items in person. A majority (86%) indicated they have items currently that they'd like to sell. This time, the most oft-selected (49%) barrier to selling was that the respondent simply "hadn't gotten to it yet." Another significant percentage (41%) indicated selling their secondhand item(s) felt like "too much of a hassle," which was the most popular response in the second survey. About a quarter of respondents felt being "unsure of their [items']

worth" kept them from selling, too. Of the potential directions mentioned in the survey, a "website and/or app to help determine what items are worth" received the most positive response.

Turning to the buy side of the equation, most respondents (76%) indicated they try to buy a secondhand item only a few times a year or less. When asked what keeps them from buying (or buying more) secondhand items in a free response question, "quality," or concerns about the lack thereof, was referenced the most. As with selling, more respondents (62%) preferred buying items online vs. exchanging items in person.

4.2   Peer Product Review

To better understand how existing solutions for buying and selling secondhand goods online are positioned in the market, I developed a peer product review. I compared the business model, user interface, ease of selling, and ease of buying on five, popular and unique platforms, including Craigslist, OfferUp, Facebook, VarageSale, and Everything but the House (EBTH). Some of the findings from the review include:

- Craigslist is local, mostly free, but requires a lot of communication between buyers and sellers to complete a transaction ("Craigslist," n.d.)

- OfferUp is mobile-first, easy to list on, has a Pinterest-style layout, and is optimized for browsing (versus searching) experience ("OfferUp," n.d.)

- Facebook Marketplace's most significant competitive advantage is its massive user base of authenticated users who already spend significant time using the social media platform ("Facebook Marketplace," n.d.)

- VarageSale relies on local moderators for better safety and to facilitate trust, but its semi-centralized approach is less scalable and likely has limited its growth trajectory ("VarageSale," n.d.)

- EBTH is unique in that it's full service, with professional photographers and appraisers who help turn a house full of goods into retail-like listings; of course, that level of service also comes at a cost to the seller ("EBTH," n.d.)

Additional details comparing the platforms can be found on the diagram on the following page.

Peer Product Review

	Description	Business Model	User Interface	Ease of Selling	Ease of Buying
Craigslist	Original online classifieds platform coffering a vast array of goods and service categories for local buyers, sellers, job seekers, and more.	Supported by fees for a small number of listings, including jobs in six major cities, car listings by dealers, and apartments in NYC.	Begins with a text-based interface, but once within a category many posts have images with descriptions and prices underneath. Posts are of varying quality based upon the user's formatting selections.	It's quick and easy to make a post, but sellers can get inundated with communication from buyers. Payment arrangements must be made outside the system.	Buyers have some concerns about the quality of goods. It takes time to arrange a meeting with the seller. Some people are uncomfortable with the negotiating aspect. Listing isn't always up to date.
OfferUp	Local, image-friendly, mobile marketplace with secure messaging, ratings, badges, and transaction history. Offers TruYou identify verification using Facebook profile, phone number, and email.	Free to use, it's currently supported by multiple rounds of outside investment, but not yet monetizing transactions.	Individual images account for roughly 50-75% of the overall screen layout, which is modeled after Pinterest's offset photo cards. As you scroll, additional items appear, providing browsing continuity.	A mobile-first platform, they often advertise that "posting takes less than 30 seconds" in part because it's easy to snap a photo of an item directly from your phone into the app.	It's clear if a seller is willing to negotiate, and communication between buyer and seller are within the platform. While cash is encouraged for now, shipping and OfferUp app-based payments are growing.
Facebook	Local, image-friendly, mobile marketplace with secure messaging, ratings, badges, and transaction history. Built directly into Facebook to tap into the existing user base.	The marketplace is free to use, with advertising revenue supporting the primary service.	Categories, location and price filters available on the left side menu, with a large search bar at the top of the screen and individual listings all of the same size with similar text formatting below.	The marketplace relies on some of your profile data to make the selling process faster. Communication and even payments can be handled through the messenger application.	Your location is used to narrow the list of items near you. Because it's designed for buying locally, a big part of the process is arranging to meet. Messenger payments, PayPal, and cash are encouraged.
VarageSale	Billed as a virtual garage sale for buying and selling goods locally, with local groups moderated by admins. Uses Facebook and the admins to verify users for safety.	Free to use, it's currently supported by outside investment dollars, but not yet monetizing transactions. Some advertisements are visible at the top of the search results.	Search bar, categories, and filters available near the top of the screen, with a collection of results primary shown as pictures with a price, a mini seller photo, and a short light gray description.	Requires a title, short description, and price, and allows up to five photos to be uploaded for a listing. Private communication to settle on a price and meeting location. Payments handled in the app.	Buyers message sellers when interested in an item, and unlike other platforms the seller can "reserve" the item which essentially shows it's pending sale.
EBTH	Hand-off service for auctioning a group of goods all at once, perhaps best described as a virtual estate sale.	Sellers earn a portion of the final sale, from 50% up to 85% depending on each item's sale price and the selected service level.	Main site includes an overview of how it works, with a search bar, and category, featured, boutiques, and auction close date filters. More detailed filters available on a results page, including ship vs. pick up.	Ideal for large quantities of items, selling is simple because it's handled entirely by their staff—from taking photos to pricing to listing the items for sale online.	Buyers bid on individual items and choose, if they win, whether to pick them up locally or have them shipped. As a major differentiator, even large items have a shipping option.

Figure 1. Peer Product Review of Online Secondhand Markets

4.3   Semi-Structured Interviews

To better understand individuals' experiences buying and selling secondhand goods online, I began to explore a context which can force people to buy and sell many items at once, in a short amount of time—relocation. Each of the six interviewees was selected because he or she had experienced a move of more than a two-hour driving distance within the last four years. They ranged in age from 23 to 32 years old. Three were female and the other three were male. Four relocated for a new job and two for school. One interviewee spent considerable time buying and selling secondhand goods as a source of income while in school. Each audio-recorded interview lasted approximately 45 minutes. To guide the semi-structured interviews, I developed a set of questions, including:

- In any given year, about how often do you try to resell an item you own? (The item can be used, like-new, new, etc.)
- Do you prefer selling online and shipping items or selling locally?
- How do you determine the price at which to list your item(s)?
- Do you have any items you'd like to sell but haven't yet?
- What, if anything, makes you hesitate to sell an item?
- Would you consider using a secure locker to exchange goods locally vs. meeting someone in person?
- What problems, if any, do you see with current solutions for selling secondhand goods?
- What's the hardest part about listing a new item for sale?
- How often do you buy secondhand goods?
- Do you prefer buying secondhand goods online or locally?
- What problems, if any, do you see with current solutions for buying secondhand goods?
- Do you think overall existing solutions do a good job of matching buyers and sellers?
- Are there any specific problems you encounter buying and selling hand items when you're moving to or from a new place?

During each interview, I took copious notes. After all the interviews were completed, I imported the audio clips to ATLAS.ti to begin the bottom-up, coding process ("ATLAS.ti," n.d.).

4.4   Coding and Data Analysis

Analyzing unstructured data (e.g. text or the spoken word) requires a different approach than is typically employed with structured data. In this case, I relied on ATLAS.ti, a tool designed for qualitative data analysis and research. I imported the audio recordings of all the interviews and while listening to each one, tagged or coded any moment the interviewee said something I felt was important. As patterns emerged, these codes were grouped using terms like action, method, barrier, reason, buyer, seller, process, and motivator. Once all the audio recordings had been coded, I identified the most common codes and observed their frequency. Together with the notes taken during each interview, I developed a list of discoveries, which will be discussed in the next section.
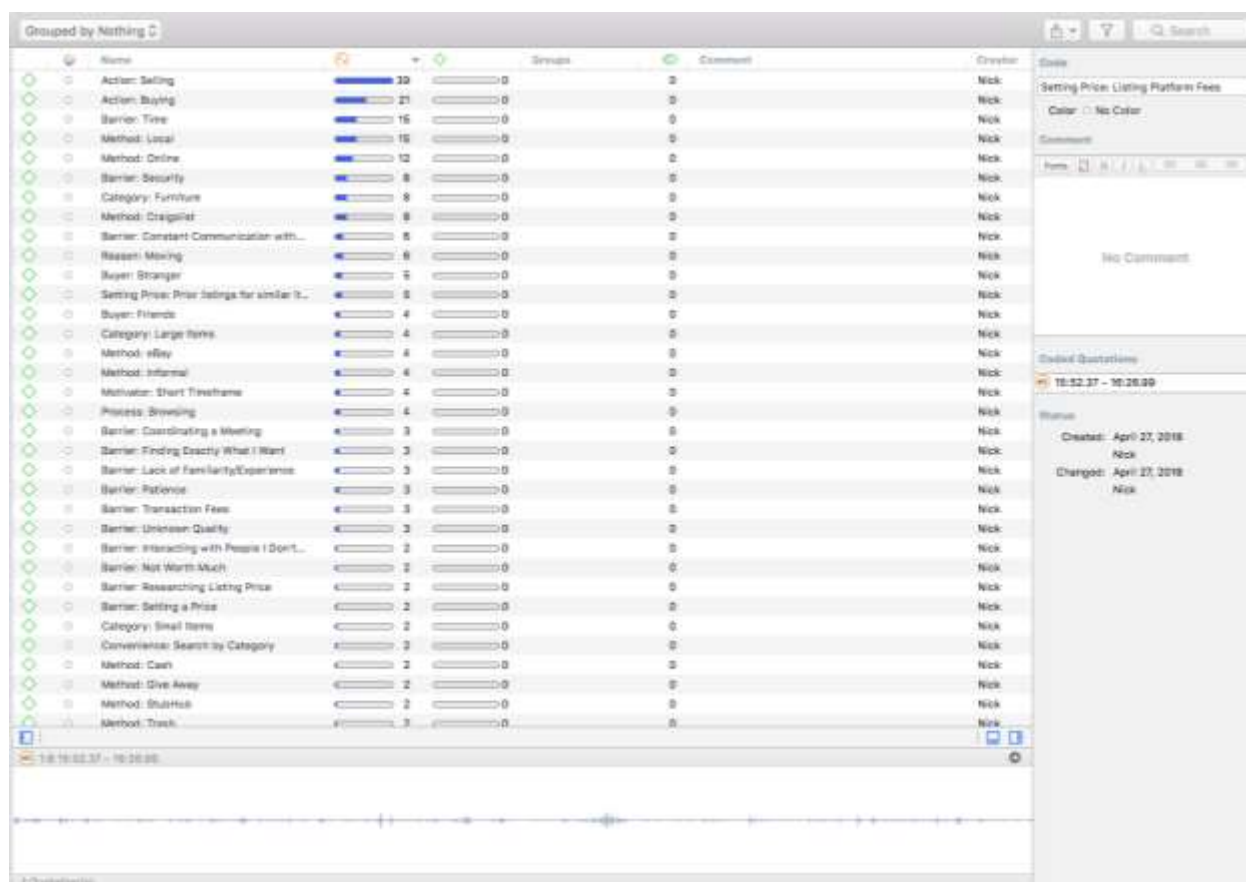
Figure 2. Qualitative Coding of Interview Results in ATLAS.ti

4.5   Discoveries

While some of the findings from the surveys, peer product review, and interviews have already been mentioned in previous sections, the following serves as a standalone summary. Overall, some of the issues and concerns identified from the surveys included:

- Condition/quality not guaranteed
- Buyer/seller security
- Overall lack of trust
- Online marketplace policies and fees/expenses
- Unprofessional/unknown reliability of sellers
- Spammers, fake posts, and fake interest
- Shipping cost and time
- Effectively matching buyers and sellers: what they want, right condition, the right price
- Out of stock; wasting buyer/seller time with unavailable items

While single, free-form responses carry less weight than a popular response on a large survey, they can often lead to insight not possible otherwise. The interviews and coding process resulted in the following, detailed discoveries:

- From a co-occurrence analysis of the codes, the following code pairs were identified as having a relatively strong relationship:
  - Action: Selling
    - Method: Local
    - Method: Craigslist
    - Barrier: Time
    - Barrier: Security
    - Barrier: Constant Communication with Others
  - Category: Furniture
    - Method: Local
    - Action: Selling
  - Method: Local
    - Reason: Moving
  - Action: Buying

- ▪ Method: Online
- One interviewee acknowledged there might be apps to help provide alerts when a particular item is listed, but he didn't use or explore them; he didn't seek out these apps because the item he wanted was more of a want than a need
- Even for people who prefer to buy and/or sell online, larger items like furniture necessitate local, in-person transactions because shipping isn't possible or is too expensive relative to the item's value
- For event and concert tickets, specifically, some retail platforms no longer provide historical data showing how much a particular type of ticket sold for in the past, leaving sellers to guess or find the data elsewhere; this has resulted in a larger price spread and volatility in third-party ticket resale circles
- Security is a primary concern of both buyers and sellers, and it keeps some from participating in certain transactions altogether such that they can avoid having to meet a stranger in person
- For some transactions, it's as much about finding a good home for an item as it is about getting money for it; sometimes, the money is a bonus but not the primary driver, especially in the cases where a friend can be identified that needs or wants an item
- Buying has gotten easier over the years, but it still takes some time to sift through listings to find what you want, at the price you want, nearby (in the case of larger items)
- Transaction fees and system design do introduce friction in the listing process
- Sellers seem to dread having to manage the selling process, especially the communication with potential buyers, answering questions from them and then coordinating a time to meet to see the item in person and completing the transaction
- Some of the older platforms like Craigslist do not have built-in methods to facilitate a transaction safely, so fraud can be rampant and affect or discourage even experienced buyers
- People often browse listings casually, especially if they aren't in a hurry to purchase the item (e.g. if it's a want vs. a need)
- Selling items online allows access to a larger buyer pool that often is looking for a specific item, which means a better sale price can be received than at a garage sale

- As a buyer, it's difficult to gauge the quality of an item just from the pictures or listing that the seller provides; one of the benefits of buying locally is that you can verify the items condition before handing over any money to the seller

From these findings, I was able to map the representative user journey below. This effort helped organize some of the identified problems by placing them at different stages in the buying, receiving/using, and disposal process.
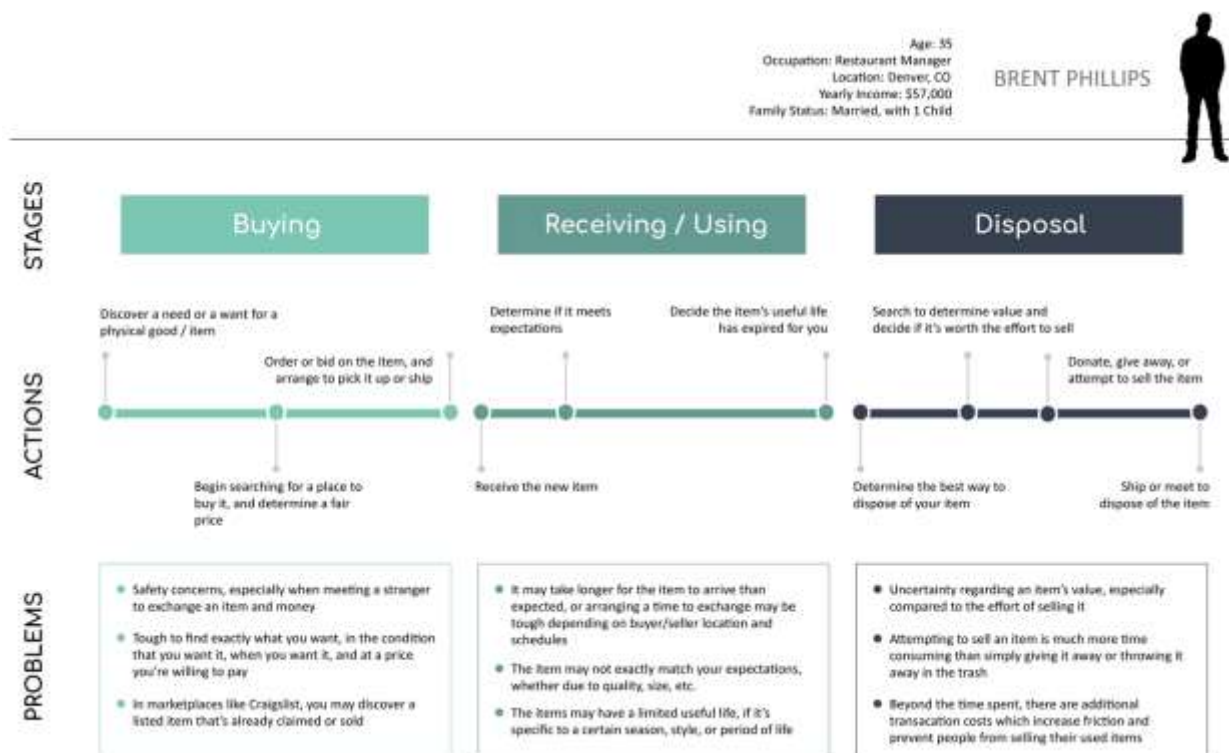
Figure 3. Representative User Journey Map, Buying and Selling Secondhand Goods

4.6 Requirements Specification

These discoveries made while completing the user research resulted in a condensed list of core concerns of those buying and selling secondhand goods online:

1. Selling many items at once
2. Get rid of things quickly, with minimal effort
3. Value
   1. ROI—is it worth it?

4. Trust
    1. Safety
    2. Quality
5. Communication
    1. Condition
    2. Inventory
    3. Sale / Transaction

These core concerns, in turn, served as the primary requirements any suggested concept would need to address in part, if not in full. They were a constant reminder of the most important findings I had uncovered throughout the user research phase of the project, serving to prioritize and eliminate potential solutions.

4.7   Summary

The four directional surveys, peer product review, and semi-structured interviews and analysis helped me develop a fundamental understanding of people's behaviors and experiences as they participate (or not) in buying or selling secondhand goods online. I found that while surveys provide very measurable outcomes, semi-structured interviews are capable of unlocking lines of thinking one might otherwise not consider. Ultimately, this user research process helped me generate more, viable options earlier in the concept development phase.

CHAPTER 5.   DESIGN PROCESS AND EVALUATION

Though the user research, ideation, evaluation, and refinement stages defined herein may appear linear, the overall process was, in fact, naturally iterative. Findings from an individual survey would spark a new line of thinking, feeding a new round of brainstorming, which would often generate more questions. In turn, this would eventually result in the launching of a new survey, more brainstorming, and so on. At every point in the process, progressing to a downstream phase would help me think about concepts in more detail. The following sections describe these points in the process, how my thinking evolved, and the emergence and refinement of my primary direction.

5.1   Brainstorming

The brainstorming phase of the design process took two forms—ideation by sketching out individual concepts and by constructing mind maps around a central idea or direction. Selecting a central idea and writing out related thoughts in a mind-map form enabled me to think broadly and avoid getting too caught up in the details of any single thought. On the other hand, the traditional ideation by sketching helped me capture details of a single concept. Even if the primary idea, in that case, did not get developed further, often a single detail would live on—through a later mind map or by being integrated with a different concept altogether. Later, these concepts were transferred to sticky notes and discussed in a group setting. After the discussion, I grouped them through a method called affinity diagramming, which helped to organize and prioritize them for further consideration.
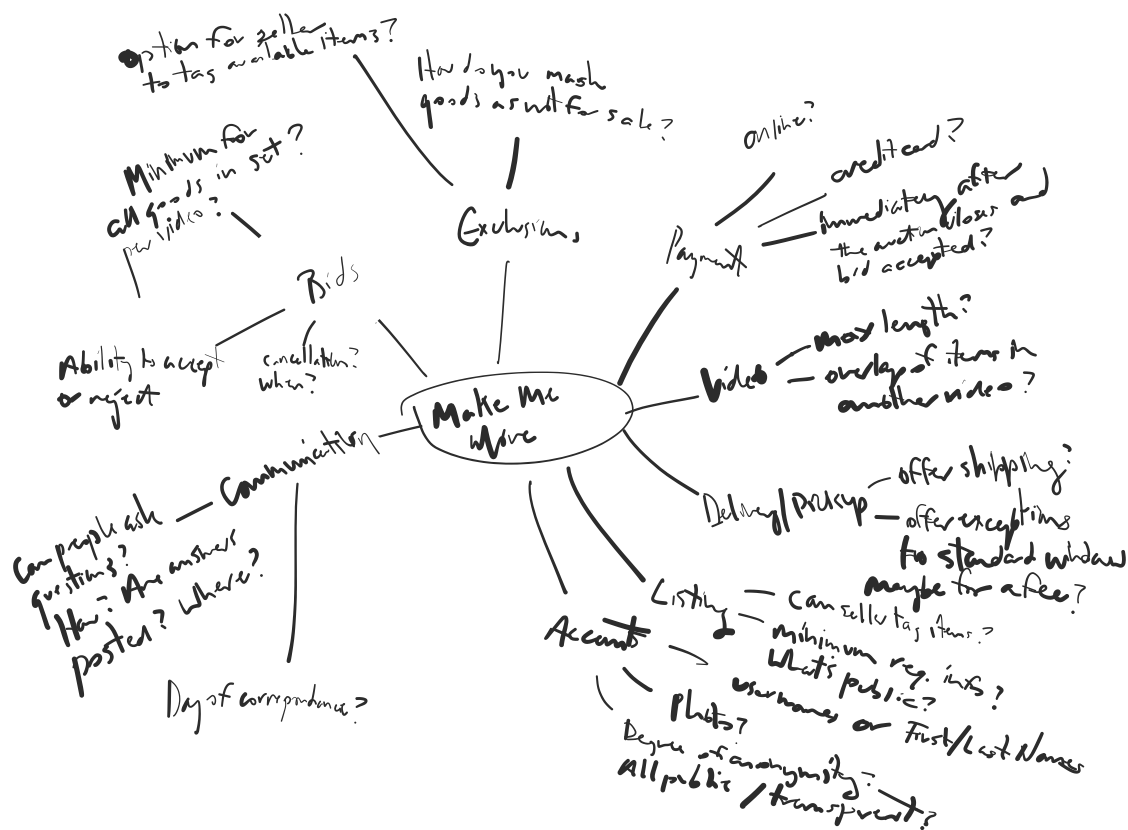
Figure 4. "Make Me Move" Concept Mind Map

RENTAL SUBSCRIPTION

$/mo. to access inventory of goods
- free shipping
- $/item per day
- reduce accumulated goods

TAG, DROP, SCAN, LIST, AND DONATE
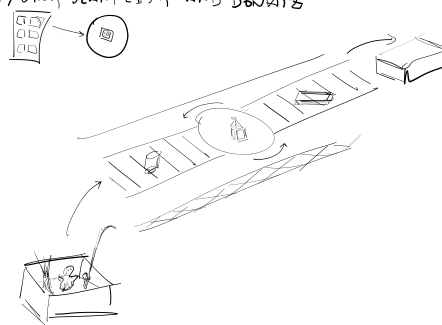
WHITE GLOVE FOR LARGE ITEMS

- Transaction support/facilitation specifically designed for large items like furniture
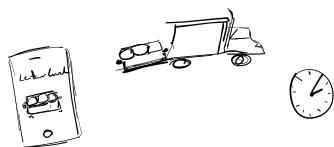
BOT/AI CONVERSATIONAL GUIDED MARKETPLACE

- web or text-message based

"I'm looking for a used canoe."
      "How big are you thinking?"
"Up to 15 ft"
      "Any particular colors?"
"Green, blue..."
      "How far are you willing to travel?"
"60 miles"
      "Okay, I have 3 results for you to review"
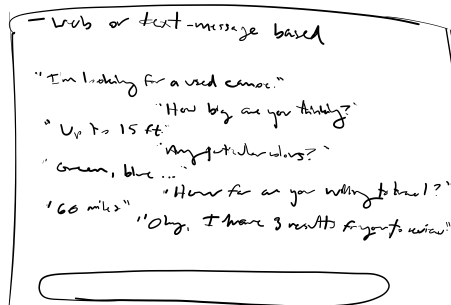
BUYER DRIVEN MARKETPLACE

Listings entirely driven by buyers and their wants, creating a database of good and the prices the buyers are willing to accept.
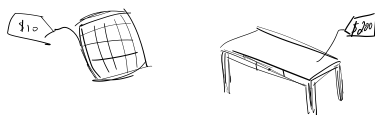
PERSONAL SELLER

- virtual version of the eBay resale stores that popped up for awhile
- you take pictures or record videos and the virtual assistant deals with the listing details, communication, and payment
- boxes w/ prepaid labels are shipped to you to load items which are dropped at UPS/FedEx.

INTEGRATED DESIGN/
HUMAN-CENTERED DESIGN SUPPORT SYSTEM

CONCEPT
DEVELOPMENT
EVALUATION
REFINEMENT
GOAL: Only build what people want and will keep
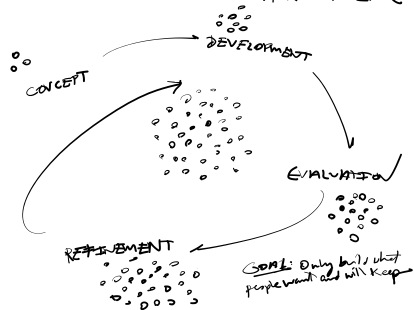
PRICE/TRANSACTION HISTORY

- Camel camel camel for the web, or at least for secondhand marketplaces
- analytics based upon scraped data or other data sources

Table Saw, Bosch

Cheapest:
Delivery speed:

Figure 5. Concept Sketches

Figure 6. Brainstorming
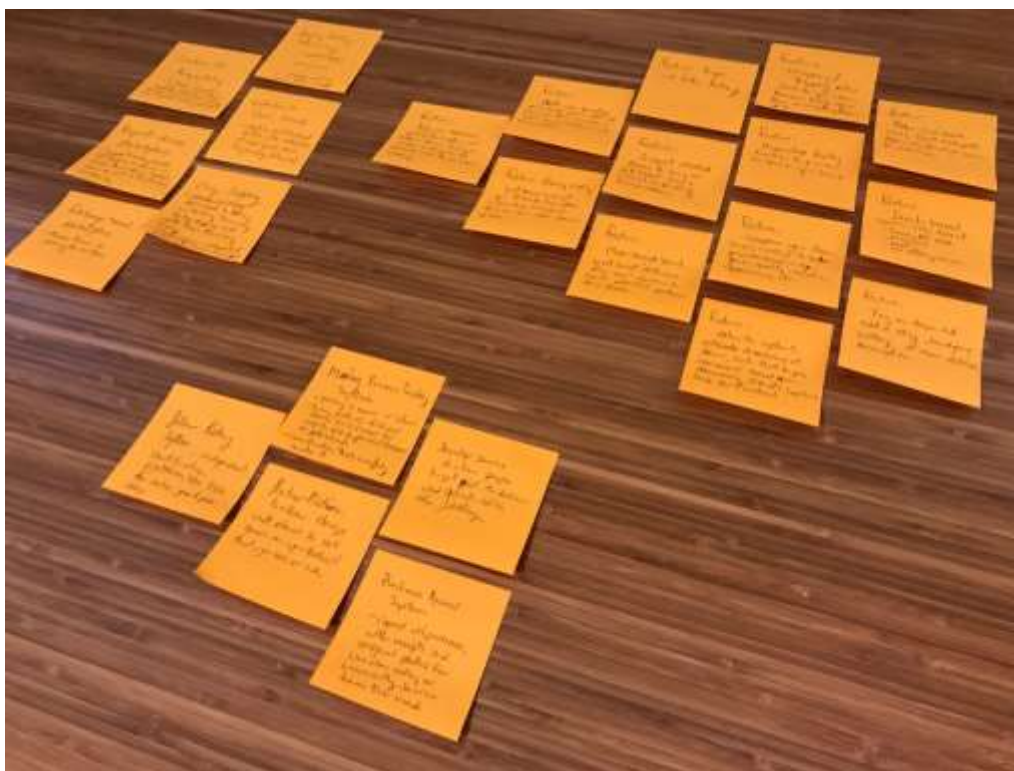
Figure 7. Affinity Diagramming

Some of the directions I explored through this process included:

- Focused or niche marketplace
    - Items too large to ship or move with one person, especially furniture
    - Construction materials / home goods only
    - B2B (e.g. office furniture, computers, printers, dental equipment, etc.)
    - Expensive toys only (e.g. electronics, toy helicopters)
    - Re-gift or like-new only items
- Sharing, targeting underutilized assets
- Aggregating and helping with the matching process
    - Helping to solve for the situation where what you're looking for doesn't show up for six months and you miss it or when people can't find what you're selling
- Meaningful connections
    - Match donations with people needing the donations
    - People can write a story about what they want and why
- A version of a physical donation center but where the person can have the opportunity to get some money for the item
- Help people determine "is it worth selling?"
- Invite-based private marketplace
    - Listings are only visible to friends and certain number of degrees beyond
    - For situations where the who is more important than when and how much
    - The number of degrees could increase as the listing ages, giving preference to those closest to you but still allowing a broader buyer audience in the future
- Better listings
    - Reference object to help gauge the size of an item
    - Steady camera or guided photo-taking experience for higher quality images
- Secure locker
    - Standalone sales and exchange solution, keeping buyers and sellers from meeting
- Make me move
    - List items together in a video and see what offers people will place on them
    - As a seller, accept any offers you feel are acceptable

Through careful consideration and feedback from my committee, the "make me move" and "secure locker" concepts were selected to move forward to the next round of development.
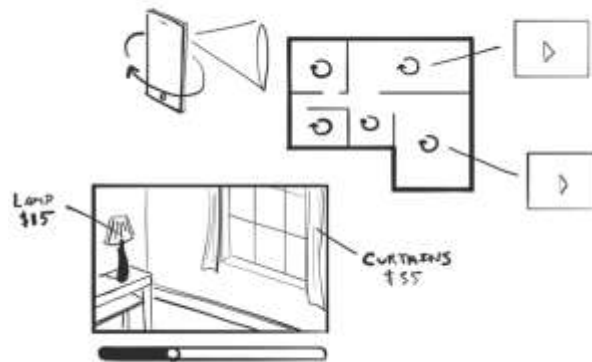
Figure 8. "Make Me Move" Concept Sketch

Figure 9. "Secure Locker" Concept Sketch

I spent the next few months working to refine the concepts and turn them into a single, cohesive direction. I faced some challenges doing so, including determining which concept would take precedence and the best way to integrate them to solve the core problems identified earlier. The possibilities I presented for discussion were to:

- Focus on the locker as a sales and exchange platform, and build a supporting application
- Build a marketplace based upon the "make me move" concept and fully integrate it with the locker concept
- Focus on the marketplace concept with the locker supporting disbursement options only

Wanting to both address the core concerns and deliver a unique solution, I selected the third option to develop the "make me move" marketplace as a platform (initially, as a mobile application), with the locker concept supporting disbursement methods. One of the primary ways I then developed the functionality of the platform was by drafting a hierarchical task analysis chart.

5.2   Hierarchical Task Analysis (HTA)

An HTA chart lays the foundation for a new application by defining the primary tasks a user would need to perform. Beginning with even a handful of tasks, gaps and conflicts quickly become evident. In this case, I started with the two primary tasks any marketplace built for buying and selling secondhand goods would need to support—that is, *buying* and *selling*. Defining the tasks required for something basic like signing up a new user, for example, you can begin see in the following diagram how even a small application can end up with dozens of individual nodes.

Figure 10. Sign Up Process HTA Chart

The final HTA chart shown below evolved throughout the concept development, evaluation, and refinement process.
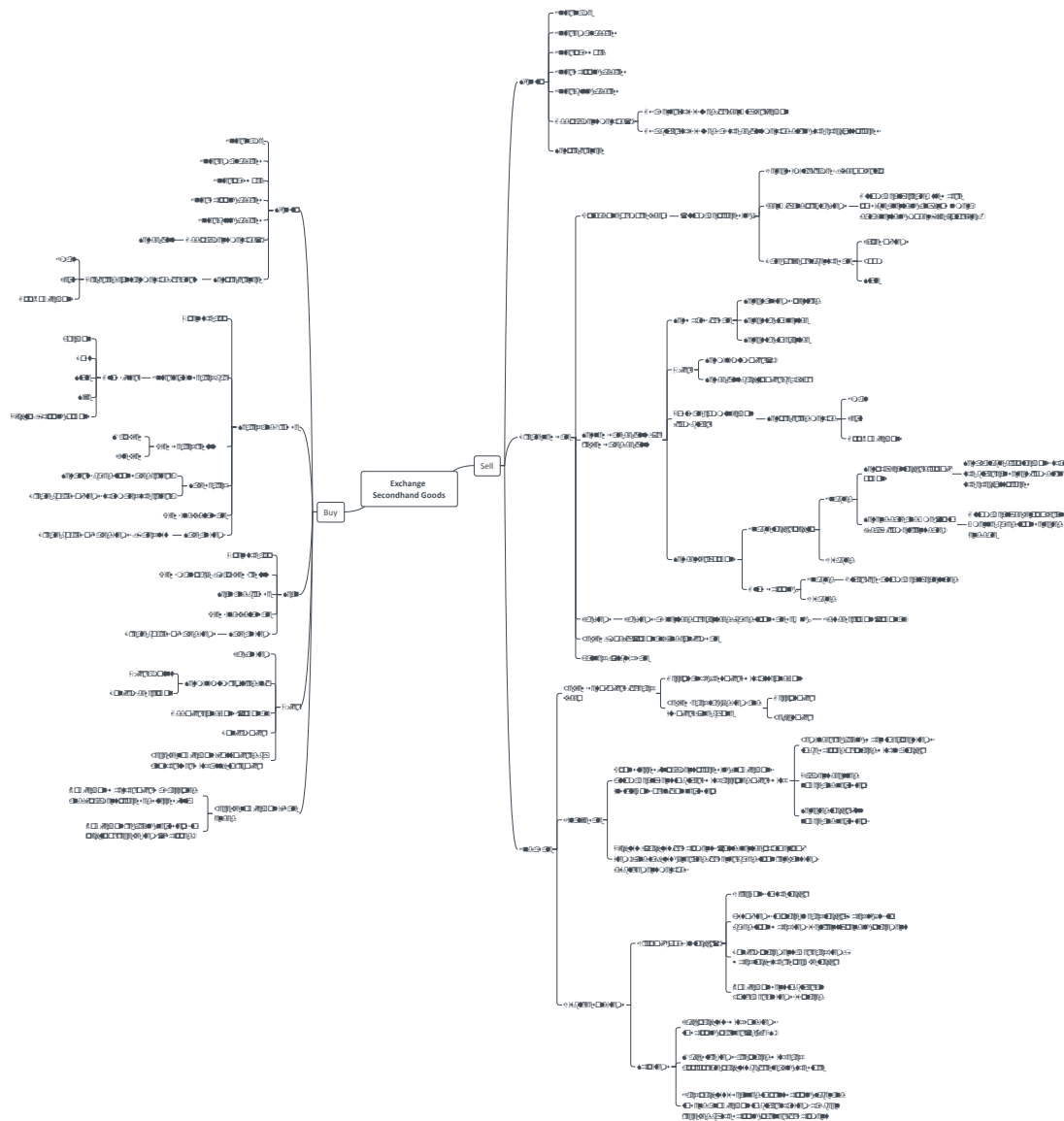
Figure 11. Final Version of the HTA Chart

As one example of how this occurred in an iterative manner, I originally planned to support more in-app communication between buyer and seller. This was to address a concern raised during an early, analytical review that buyers may want to request more detail or additional images of an item, particularly to ascertain its condition. To support this, I started adding related tasks to the HTA chart. However, I later developed a functionality called "offer conditions," which sought to supplant the need for this type of communication. Doing so resulted in some simplification of the

interface and user experience, as the tasks central to two-way messaging were no longer required. Offer conditions were added by the potential buyer during the existing offer process and reviewed by the seller during the existing offer review process. As the HTA chart matured, the next step in the design development process was to translate this overall information architecture to wireframes of the interface.

5.3   Initial Wireframing

Wireframing serves as an intermediary between *what* a user needs to accomplish and *how* he or she will do so. I spent a number of weeks creating these diagrammatic representations of the user interface from the tasks defined in the HTA chart. The following is an example of early wireframes built with InVision Freehand.
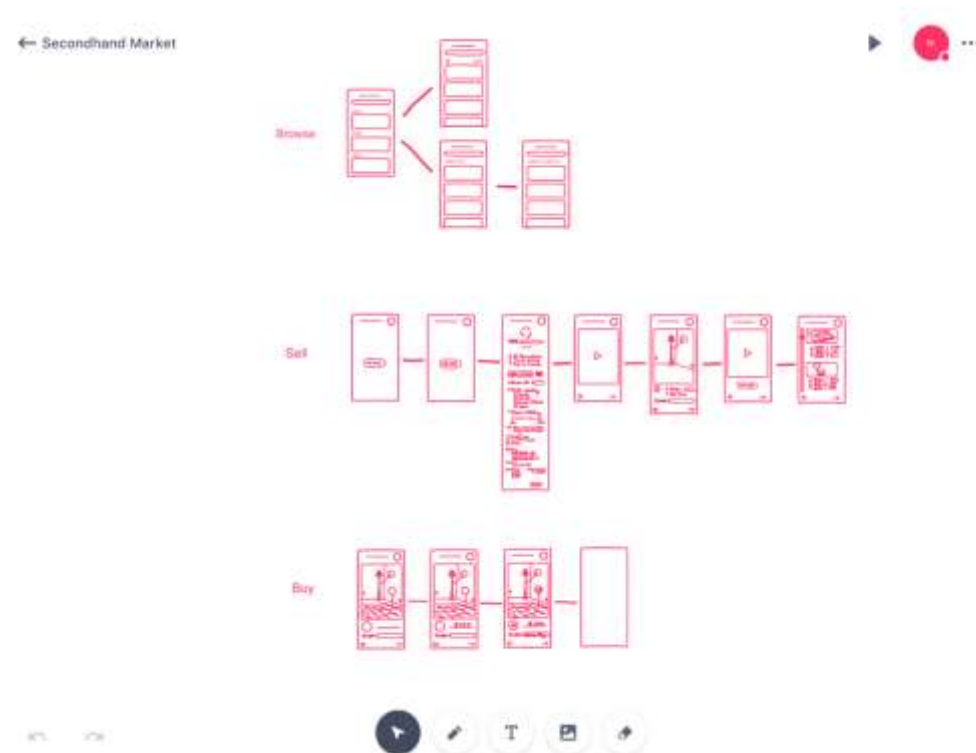
Figure 12. Early Application Wireframes

5.4   Shifting from Videos to Panoramic Images

Even sketching a handful of these initial wireframes forced me to think in more detail about the video-based listing functionality central to my original concept. To better understand how this could work, I captured three videos of different areas of my house using my mobile phone's camera. While doing so, I envisioned sellers capturing videos of groups of items to list from their own homes. I intended that this would enable them to potentially list many items at once, while giving buyers a more realistic view of their potential purchase. Seeking to minimize a seller's effort to list items, I also envisioned that buyers would be responsible, perhaps even rewarded, for labeling or tagging individual items within the videos such that others could more easily search for and buy them. After taking the videos, I reviewed them and started describing how the visible items could potentially be tagged by buyers, including individually and as grouped items (e.g. flowers and a vase separately versus flowers in a vase as one item).

Test Video 1: Table with items displayed

Duration: 29 sec

Individual Items: 15

- Table
- White candle
- Steel and glass candle holder
- Champagne glass (2)
- Rewined candle
- Purple candle
- Ceramic dish
- Glass vase
- Decorative twigs (6)

Potential items if logically grouped: 6

- Table
- Candle in glass holder
- Pair of champagne glasses
- Rewined candle
- Candle in ceramic holder

- Glass vase with twigs

Test Video 2: Circular bathroom shelf display

Duration: 32 sec

Individual Items: 9

- Circular wooden shelf
- White washcloths (3)
- Oil diffuser with oil and sticks
- Rewined candle
- White candle
- Copper pot
- Air plant

Potential items if logically grouped: 6

- Circular wooden shelf
- White washcloths
- Oil diffuser with oil and sticks
- Rewined candle
- White candle
- Copper pot with air plant

Test Video 3: TV Stand, TV, cushions etc.

Duration: 15 sec

Individual Items: 6

- TV
- Sound bar
- TV Stand
- Apple TV
- Cushions / poufs (2)

Potential items if logically grouped: 5

- TV
- Sound bar
- TV Stand

- Apple TV
- Cushions / poufs

During and after the review, I captured and categorized the following notes about the ways in which users would create and interact with them. The effort revealed some problems I would need to consider and resolve to make the video-based listings work.

- Speed
  - How fast should the video scan?
    - It felt too slow in Test Video 1.
  - Should the speed be detected through the app and encourage you to slow down (like with taking panoramic photos in iOS)?
    - Could the system detect the number of objects seen per second to help suggest speed in a dynamic fashion?
  - Add the ability to easily speed up, slow down, fast forward the video.
  - Could the system systematically normalize the video speeds after they're uploaded to help make them all feel similar?
- Tagging
  - Can items be tagged while the video is playing?
  - Should the clicking to tag pause the video until you complete adding your bid?
  - Click and drag (or Ctrl + Click) to bid on a group of items all together?
    - Could the system be able to detect and group individual bids from others and compare them to your group bid, which may include a mix of items that have and have not been bid on?
- Questions
  - Should tagging with a question be allowed?
    - e.g. Is the plant in Test Video 2 living or not?
    - e.g. What is the short white object on the shelf in Video 2?
    - Should the seller choose whether or not to allow buyers to ask questions?
    - Could the seller maybe even charge a small fee for questions?
- Sound
  - Should narration and/or sound be allowed?

- o Would it be possible to provide enough information audibly to match the video speed? (Likely not since visual processing is much faster.)
- Zoom Level
  - o Should an overview video be provided and then following, a zoomed in sequence? Or would that cause issues with duplicate / overlapping listings and tags?
  - o What is the appropriate level of zoom to show the items to sell? Could the application help suggest getting closer or further away based upon the object sizes it detects on screen?
    - ▪ Not getting too close would be helpful to show relative size of the items against things people know—doors, trim, light switches, table heights, light bulbs, ceiling heights, etc.
- Angle
  - o The application should guide the user to capture most items at an angle from above because sometimes looking at things straight on made them difficult to identify.
    - ▪ e.g. the short white candle in Test Video 2.
- Video Quality
  - o What level of video quality is required to see the items and be able to know what they are, their condition, etc.?
  - o Can contrast, brightness be enhanced automatically upon upload for the video's target purpose of listing items? Would this help provide a more consistent, if not more pleasing, experience for buyers browsing the video listings?
- Content
  - o Should electronics be recorded while "on" to prove that they work?
  - o Should mechanical items be shown moving / starting?
  - o Should flaws in the items be called out or shown?
- Safety / Security
  - o Remove metadata, especially location data from the videos upon upload
  - o Discourage / help limit people including PII, street signs, landmarks, etc.
- Duration
  - o Need to study and test what the right length is for the videos, and why

It was through this effort I determined panoramic images would provide many of the same benefits as the videos, while eliminating a number of problematic issues (e.g. normalizing the video speed and the related browsing experience). Sellers could continue to capture and list many items at once, and buyers could still have a similar experience tagging items. From this point forward, I continued to develop the "make me move" concept but as a panoramic image-based platform.

5.5   Additional Wireframing and Static Mockups

To continue developing the concept, I turned back to sketching other wireframes by hand—giving me more freedom to explore several different ideas quickly.

Figure 13. Additional Wireframes

The following examples of the landing screen, new listing, and sale view exhibit my process for developing these wireframes, which included:

- Choosing a high-level task or task category

- Sketching concepts for how the functions to achieve the task and its subtasks would be arranged on the screen

- Taking notes regarding how I envisioned a view being arranged or certain functions working
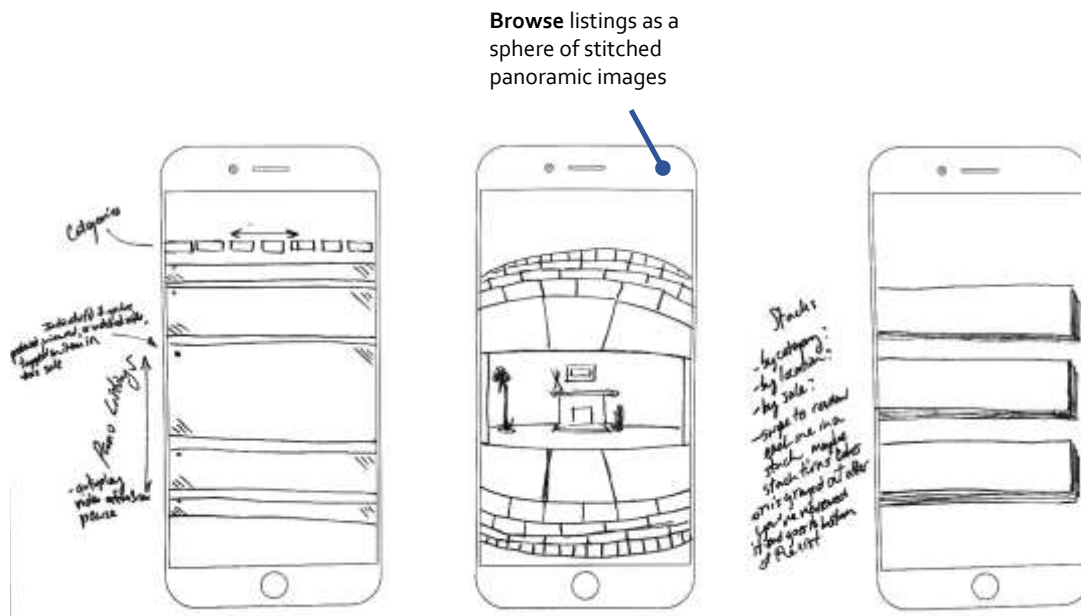
Figure 14. Wireframes for Browsing Listings
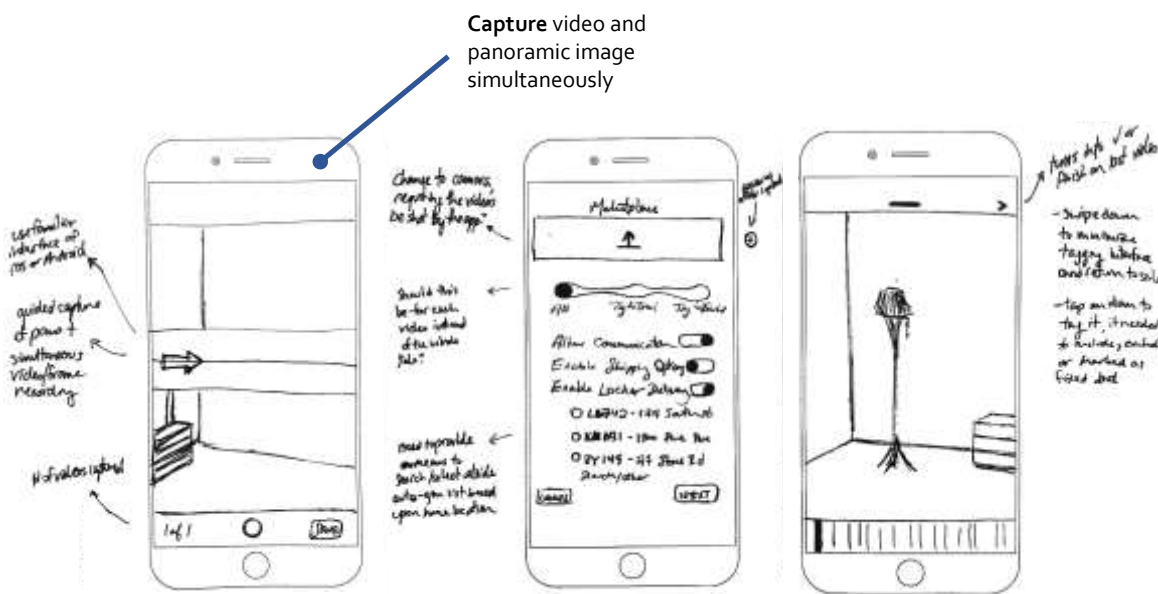
Figure 15. Wireframes for Creating a New Listing

Once the initial wireframes were developed, I selected the best among them to begin creating static mockups of the platform's interface. This process introduces more detail and starts to look like what a user would see in a fully functioning application. The purpose is to introduce specific visual elements (e.g. color, font choice, spacing and arrangement) to understand how well they come together in support of the tasks and functionality in the selected wireframes.

In selecting and designing the mockups, I chose to introduce a map-based visualization as the initial landing page when opening the application. I wanted to avoid the traditional, card view and filter design of most online platforms for buying and selling secondhand goods. Because I wanted the platform to be chiefly designed for local transactions and knowing from my research that location then plays a larger role, I wanted to give buyers the ability to browse at a higher level. In a traditional card view, the buyer will typically scan the listings, find an image, description, or price that's enticing, and then only later find out how close it is to him or her. Instead, this abstracted view increases the probability a buyer will find an item closer to his or her desired location from the start.

Figure 16. Style Guide

In lieu of a long list of filters, which traditionally includes categories, colors, age of the listing, price range, etc., I opted for a free-form search box. Once a search string is entered, each of the words is converted into tags beneath and listings with matching metadata are shown on the map. In this manner, a buyer can understand the number of items available, how soon matching listings expire, all relative to his or her current location and search criteria. Note, a buyer can override his current location by simply including a zip code or other location identifier in a search string. Users can zoom in on the map and the markers reveal a preview of the listings contained within them. At a certain zoom level, the map view snaps into a tile view for easier browsing. Offering both a search (map-based) and browsing (tile-based) interface gives users the flexibility to choose between the different navigation paradigms depending on their current intent. Switching back and forth between them is also possible as user intent changes. The following images highlight some of the aforementioned functions.

Once a buyer identifies a listing of interest (or item within a listing) he or she can tap the listing preview to enter the sale view. In this mode, the listing is expanded to take up maximum vertical height to show items more easily and is viewed by panning across the image with a thumb-based slider at the bottom of the screen. Deciding upon an item of interest, a buyer can then tag an item to place an offer. Of note, as the concept developed, I shifted from using the term "bid" to using the term "offer" to describe how a buyer effectively expresses interest in purchasing an item.

This reflects my decision to both prevent a common behavior on bid-based platforms to wait until a listing is about to expire before placing a bid and encourage a buyer to place an offer based upon what the item is worth to him or her.

Another evolution in the concept revolved around the process to tag items in a listing. Working through the wireframes, mockups, and my own testing, I realized asking potential buyers to tag items could be problematic and limit the platform's growth potential. Even if buyers were rewarded in some way for tagging items, doing so might introduce too much friction in the purchase process and prevent the platform from reaching the scale needed to be enticing to both potential buyers and new sellers. Through additional research covered in the earlier literature review, I found evidence to support the idea of having items tagged automatically by a backend, computational process. Eventually, I settled on enabling a hybrid approach in which the system would be expected to individually identify and tag the majority of items within one or more panoramic images in a new listing, but users would still be provided the flexibility to add or modify tags as needed.

A critical event to complete a sale is for the buyer to deliver payment and the seller to deliver the item. While some platforms rely on the buyer and seller to arrange the payment on their own, this practice can be prone to safety and fraud issues. Other platforms help facilitate the transaction by accepting payments directly and offering some level of guarantee for both the buyer and seller. I wanted to support payments similarly but while continuing to encourage local exchanges, especially for items too large or expensive to ship. The secure locker identified earlier in the concept development phase became the foundation of my approach. Originally, I had envisioned a standalone locker that could be placed in a mall or other public setting. However, as a means to provide customer support and allow larger items to be sold without requiring the buyer and seller to meet, I modified the concept slightly through solicited feedback. I suggested including a kiosk and a more compact, secure locker for electronics, jewelry, and other high-value but small items. Also, instead of placing such a setup in a public location unattended, they could be installed in retail stores (e.g. an antique store) where existing staff could help accept items from sellers and disburse items to buyers. In this manner, there would be considerable flexibility to accept items of all shapes and sizes and avoid the cost of using a shipping carrier. The retail store could utilize excess space and potentially draw in additional foot traffic to their own business, enticing them to

provide the service at a low cost. Both sellers and buyers could rely on these locations and the platform's mobile application to help facilitate successful transactions safely.
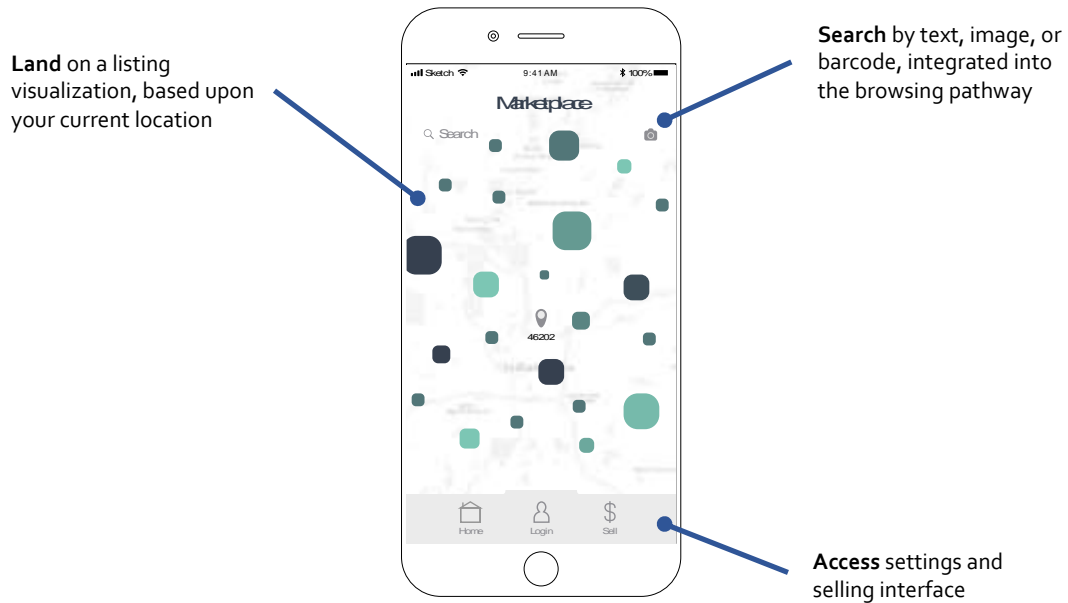
Figure 17. Landing Screen Static Mockup
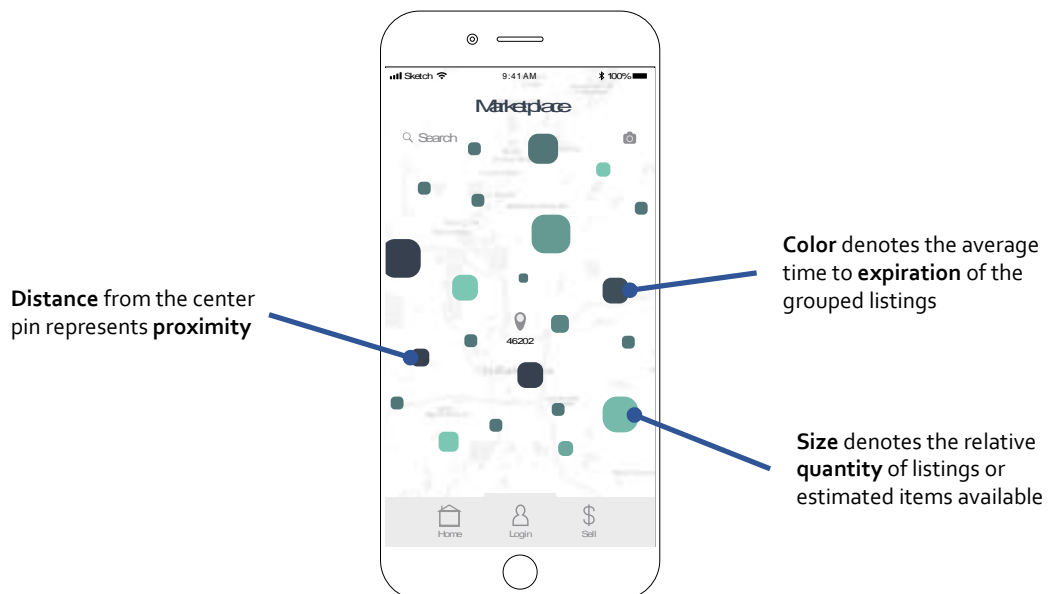
Figure 18. Map-based Visualization Static Mockup

Preview listings by
tapping once on a group;
swipe or tap to continue
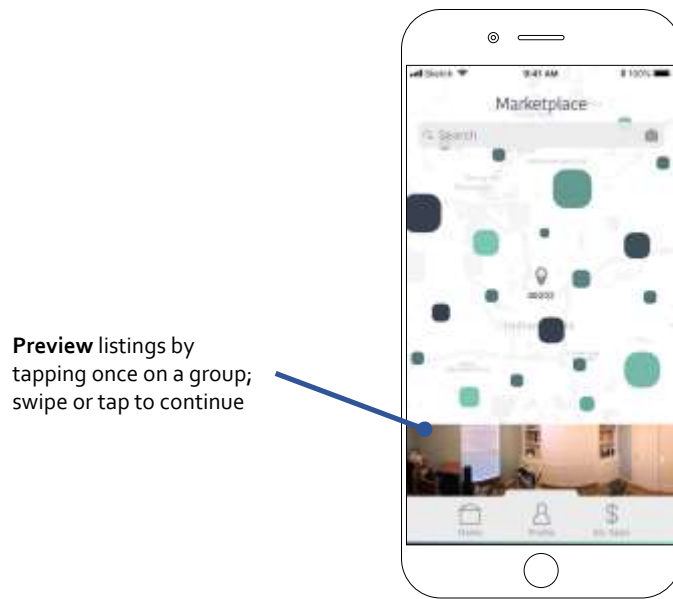
Figure 19. Listing Preview Static Mockup

Transparency represents
the **percentage** of
unviewed listings
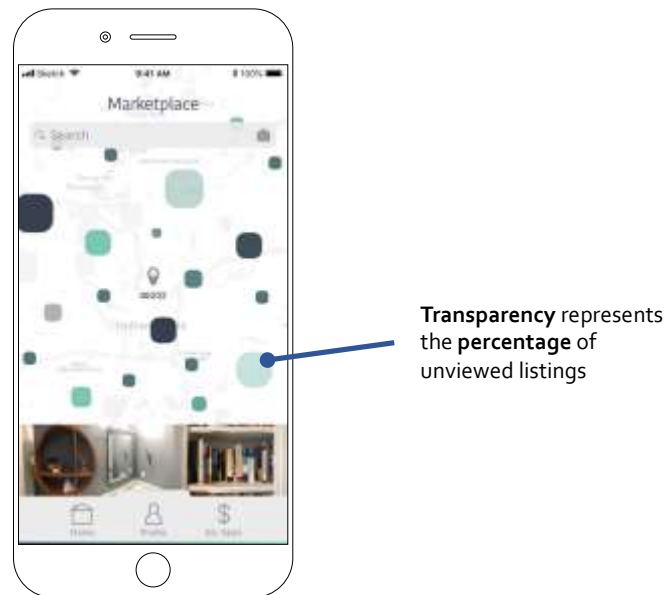
Figure 20. Map-based Visualization Concept Detail Static Mockup

Text search converts to matching item **tags**

Search area can be updated through a "near" phrase, including a zip code or city/state
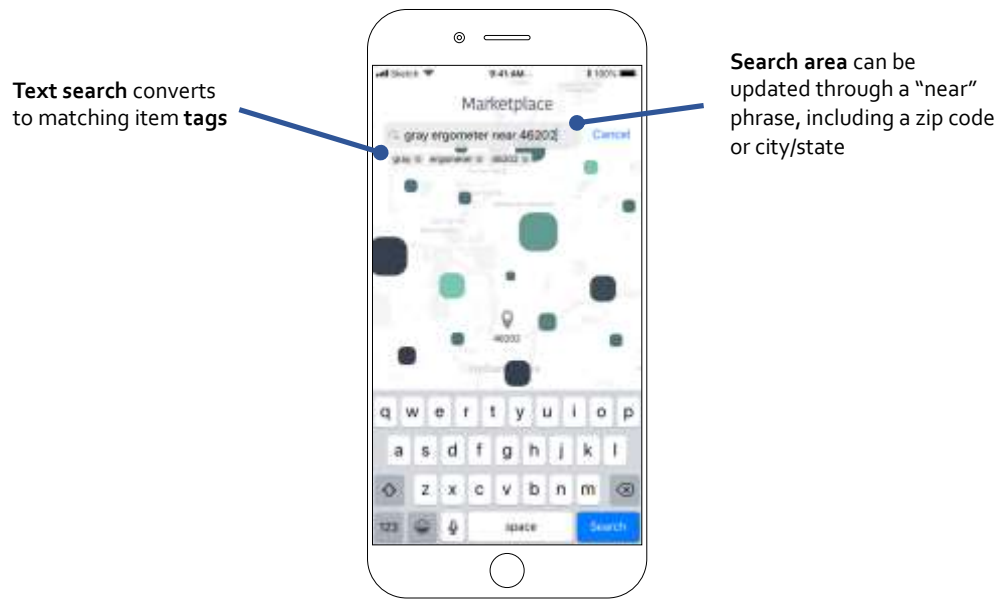
Figure 21. Search Text to Matching Tags Static Mockup

Visualization updates to reflect search criteria, combining the smallest groups
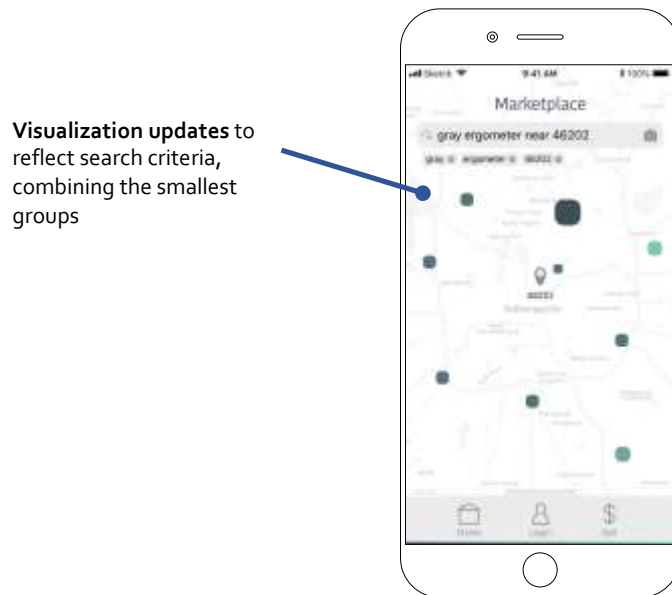
Figure 22. Map-based Visualization Updated After Search Static Mockup

Zooming in begins to reveal the listings contained in a group
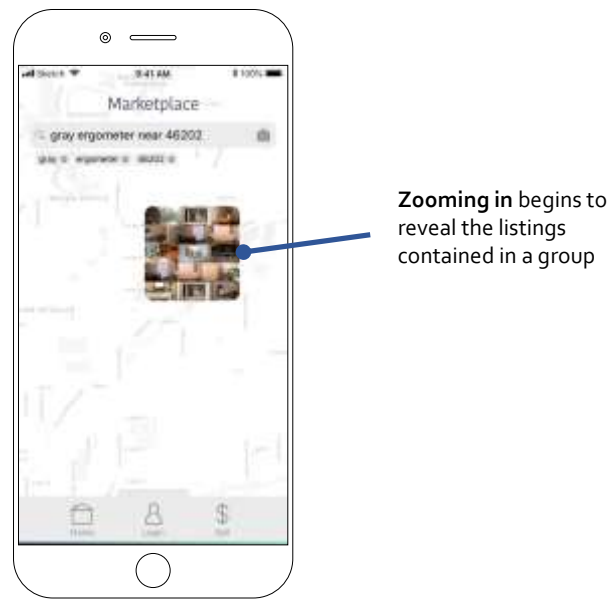
Figure 23. Zoom Behavior on Map-based Visualization Static Mockup

Return to the visualization view by swiping down

Full-screen tile view snaps into place once close to a single group

View more listings by swiping up
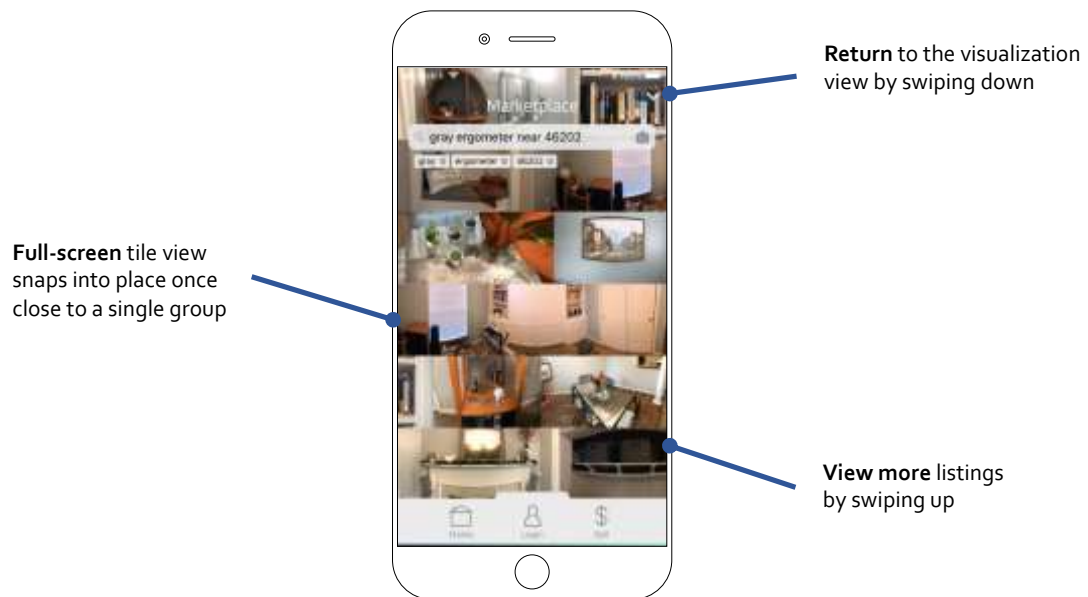
Figure 24. Tile View for Browsing Static Mockup

Frame view of a single
listing launches after
tapping a single panoramic
image

Slider frame view
enables quickly
panning across the
panoramic image
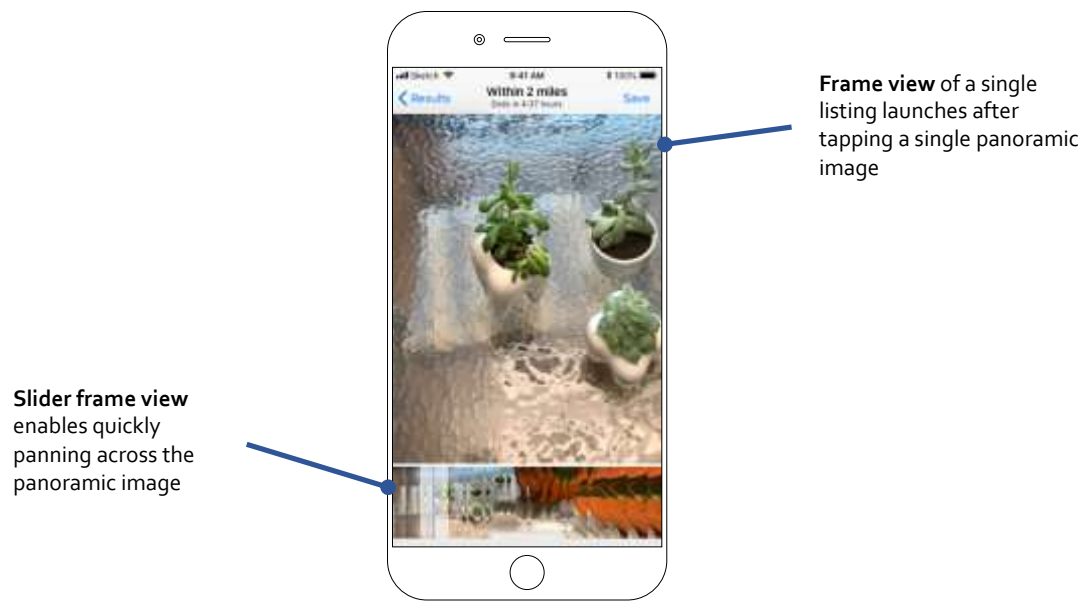
Figure 25. Sale View of Single Listing Image Static Mockup

Tagging a pictured item
requires adding a short
description and offer
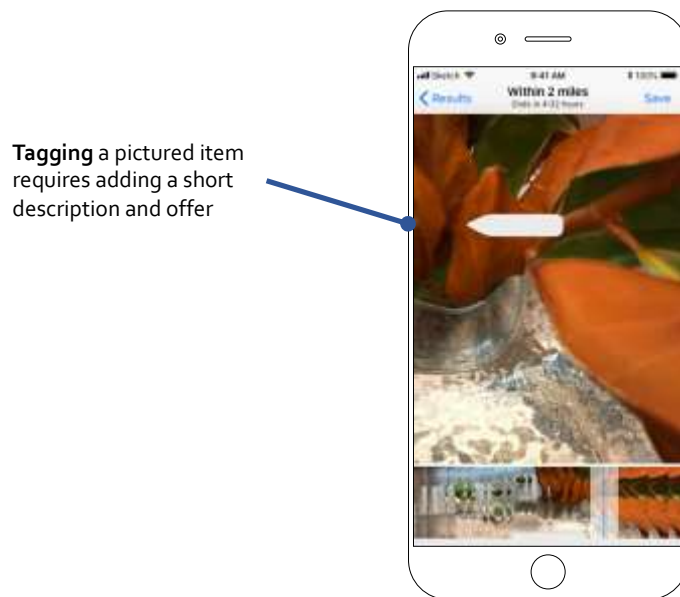
Figure 26. Tagging Concept Static Mockup

5.6   High-Fidelity, Interactive Prototype

Given some of the unique ways the platform was evolving, I was eager to capture feedback from potential users. I wanted to understand not only whether the user interface was successful but the overall concept as well. To do so, I felt obliged to build an interactive prototype that would function as close to my vision of the final application as possible. I quickly found most prototyping tools only account for a small subset of available gestures and transitions that are possible on a mobile phone. Many of them likely originated by and for those building websites, where the interactions are limited—left-click, double-click, click and hold, right-click, and a few other combinations with the keyboard. Disappointed at the time with what I could do with the mockups I built in Sketch and third-party prototyping tools that integrated with it, I came across Proto.io ("Proto.io," n.d.). Excited by the longer list of available interactions (e.g. tap and hold, pinch in, pinch out), I rebuilt my mockups.
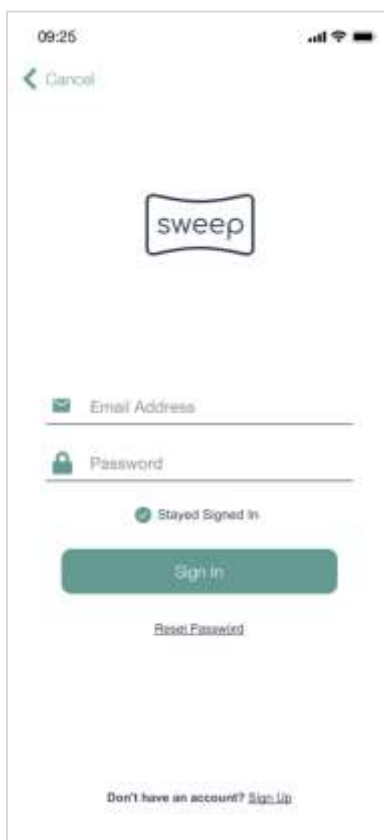
Figure 27. Sign-in Screen Prototype

Figure 28. Map-based Visualization and Preview on Landing Screen Prototype

Figure 29. Tile View with Item Counts, Expiration Indicator Prototype

Figure 30. Updated Sale View Prototype
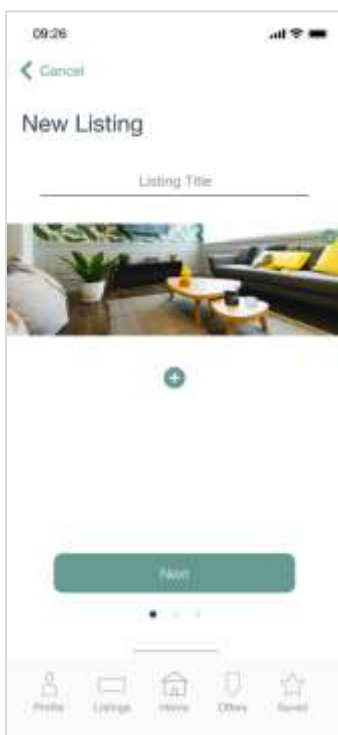
Figure 31. Initial New Listing Screen Prototype
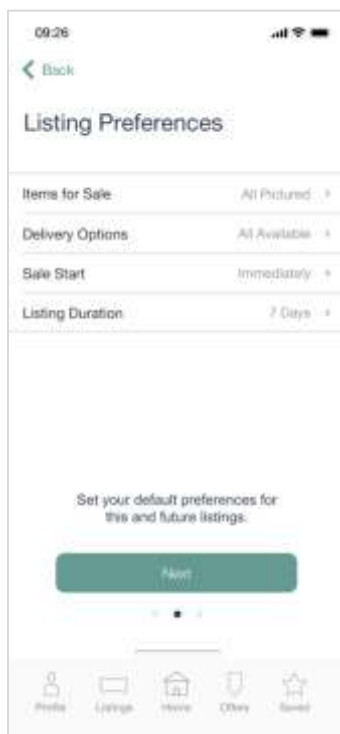
Figure 32. Listing Preferences Screen Prototype
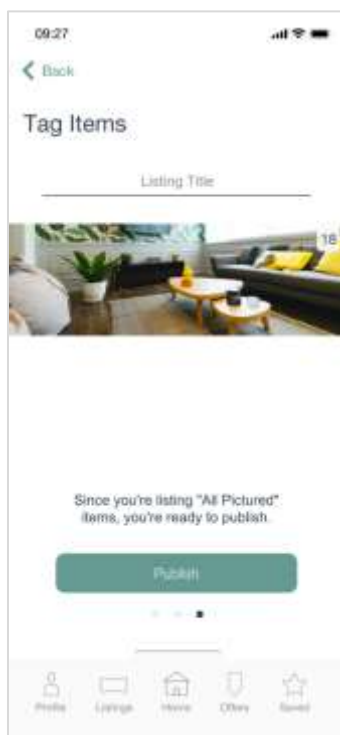
Figure 33. Tag Review and Publish Screen Prototype
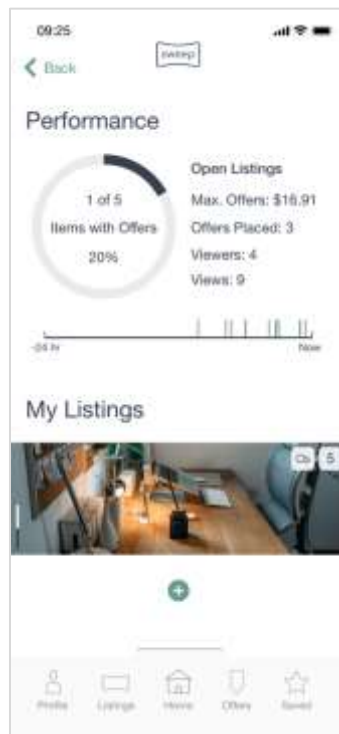
Figure 34. Listing Status and Performance Screen Prototype
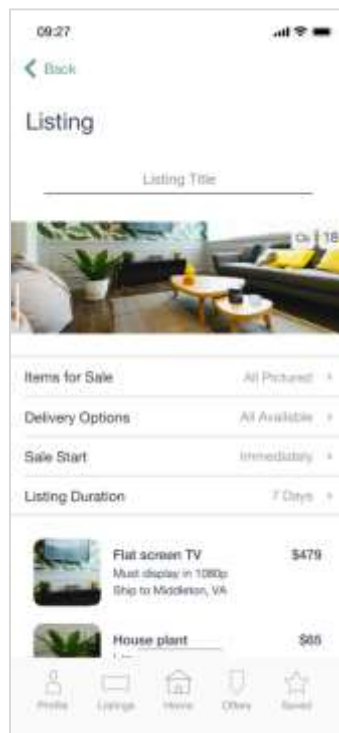
Figure 35. Individual Listing and Offer Review Screen Prototype
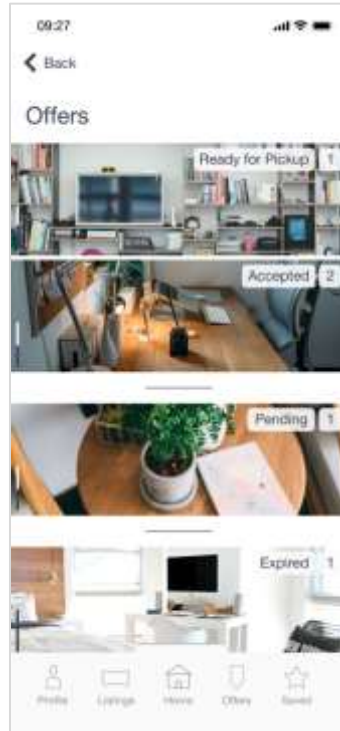
Figure 36. Offer Status Screen as a Buyer Prototype

The above images were static views resulting from the prototyping, evaluation, and refinement process, though more detail about those latter stages follows.

5.7   User Testing via Cognitive Walkthroughs

With enough of the application prototype built to support user testing, I began preparing the details of my approach. Another reason I chose Proto.io to build the prototype was that it had been integrated with Userlytics, a user testing platform ("Userlytics," n.d.). Userlytics allowed several different approaches to testing, but I chose to combine a survey with a cognitive walkthrough. In this way, I was able to simultaneously evaluate usability and capture user feedback about certain aspects of the concept. Usability was evaluated by reviewing each video and taking notes as users experienced issues or confusion, the time it took to complete certain tasks, and by asking each user for usability-specific feedback directly. Each user was given no more than 15 minutes to complete the evaluation, describing their actions and thoughts out loud (i.e. through the think-aloud method). The questions and activities were consciously focused, ensuring all users could complete the evaluation within the allotted time.

I completed two rounds of evaluation, with the first only eliciting feedback from a single user to make sure there weren't any critical errors with my prototype or evaluation setup that would invalidate a larger test. Fortunately, I did discover and correct a few issues before launching the second evaluation, including:

- Confusion about how to click from the map-based visualization into search results and enter a single listing
    - I enabled both the preview image and the square markers on the map-based visualization to transition into the tile view
    - To prevent confusion for the evaluation alone, I linked all preview images from the tile view to the detailed sale view, since only one of the images was setup to function as designed
- Misunderstanding the intent of Question 12
    - Reword the question to more clearly ask "What's your preferred platform today?"
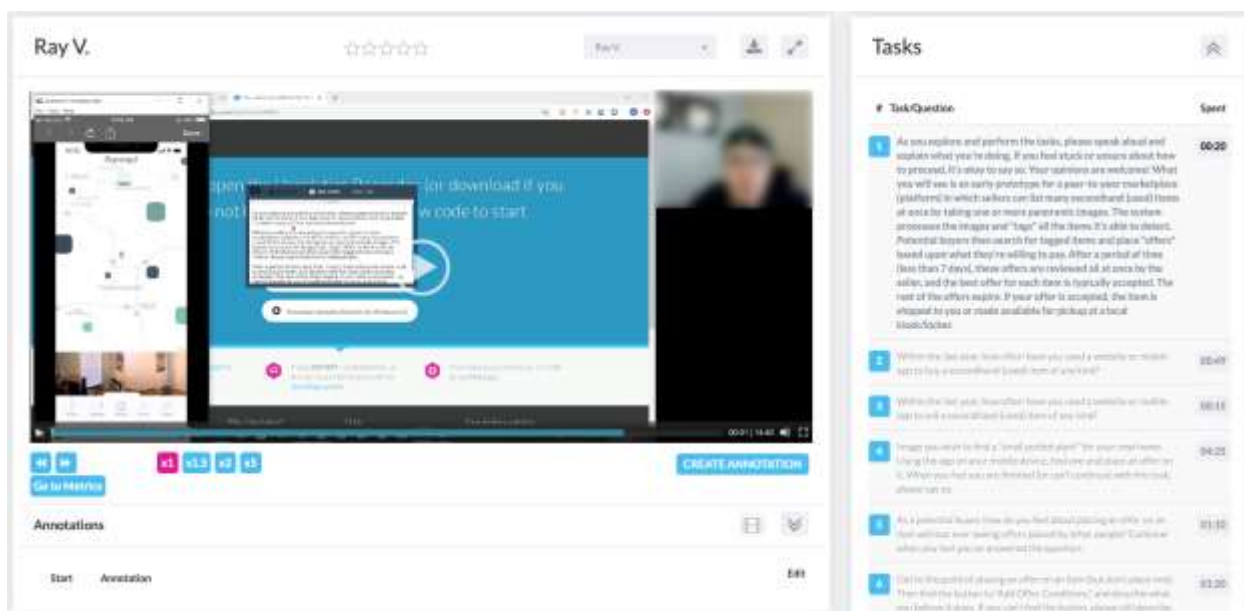
Figure 37. Round One (Ray V.) User Testing Review

The previous image shows the output produced from a completed evaluation. A video clip showing the user, the application interface mirrored to the user's desktop, and his or her view of the evaluation questions is available to watch and download. As the video is reviewed, the active

task or question at that time is highlighted on the right side of the review screen. The timer at the top right of each task or question shows the amount of time it took for the participant to complete it. These metrics are then aggregated in a separate report which shows the minimum, maximum, and average duration for each of the assigned tasks or questions.
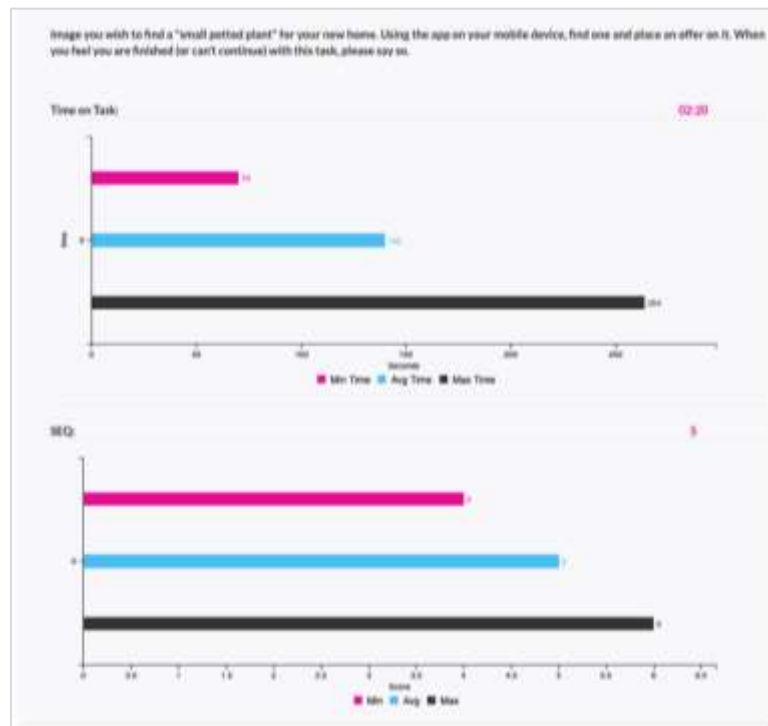
Figure 38. Time on Task and Single Ease Question (SEQ)

With the corrections to the prototype and evaluation in place, the following scenarios and survey questions were launched for the second evaluation.

1. Introduction: As you explore and perform the tasks, please speak aloud and explain what you're doing. If you feel stuck or unsure about how to proceed, it's okay to say so. Your opinions are welcome! What you will see is an early prototype for a peer-to-peer marketplace (platform) in which sellers can list many secondhand (used) items at once by taking one or more panoramic images. The system processes the images and "tags" all the items it's able to detect. Potential buyers then search for tagged items and place "offers" based upon what they're willing to pay. After some time (less than seven days), these offers are reviewed all at once by the seller, and the best offer for each item is typically

accepted. The rest of the offers expire. If your offer is accepted, the item is shipped to you or made available for pickup at a local kiosk/locker.

2. Within the last year, how often have you used a website or mobile app to buy a secondhand (used) item of any kind?
   a) Never
   b) Once
   c) 2-3 Times
   d) Monthly
   e) Weekly
   f) Daily

3. Within the last year, how often have you used a website or mobile app to sell a secondhand (used) item of any kind?
   a) Never
   b) Once
   c) 2-3 Times
   d) Monthly
   e) Weekly
   f) Daily

4. Imagine you wish to find a "small potted plant" for your new home. Using the app on your mobile device, find one and place an offer on it. When you feel you are finished (or can't continue) with this task, please say so. Overall, how difficult or easy was the task to complete, with 1 being "Very Difficult" and 7 being "Very Easy?"

5. As a potential buyer, how do you feel about placing an offer on an item without ever seeing offers placed by other people? Continue when you feel you've answered the question.

6. Get to the point of placing an offer on an item (but don't place one). Then find the button to "Add Offer Conditions," and describe what you believe it does. If you can't find the button, please still describe what you think it does. Continue when you feel you've answered the question. Overall, how difficult or easy was the task to complete, with 1 being "Very Difficult" and 7 being "Very Easy?"

7. Attempt to find where you can see the status of any offers you've placed in the past. What do you think each of the different statuses mean? When you feel you are finished (or can't continue) with this task, please say so. Overall, how difficult or easy was the task to complete, with 1 being "Very Difficult" and 7 being "Very Easy?"

8. Return to the main "Home" screen. Imagine you want to free up some space in a spare bedroom and are willing to sell anything in it. Using the app, attempt to create your own new listing to do just that. Note, the app can't really take a panoramic photo, but when you get to it, click the white button as if you would start taking one. When you get to preferences, the prototype will assume you selected "All Pictured," regardless of your actual choice. When you feel you are finished (or can't continue) with this task, please say so. Overall, how difficult or easy was the task to complete, with 1 being "Very Difficult" and 7 being "Very Easy?"

9. If you wanted to sell secondhand goods, how likely would you be to use a platform like this over existing solutions? For the choice you selected, please verbally explain "Why?" Continue when you feel you've answered the questions.
   a) Not at all likely
   b) Not likely
   c) Neutral
   d) Likely
   e) Very likely

10. If you wanted to buy secondhand goods, how likely would you be to use a platform like this over existing solutions? For the choice you selected, please verbally explain "Why?" Continue when you feel you've answered the questions.
    a) Not at all likely
    b) Not likely
    c) Neutral
    d) Likely
    e) Very likely

11. In your own words, please verbally describe the platform's value proposition. In other words, what do you think makes the platform unique? What problems have you

potentially experienced buying and/or selling secondhand goods that this platform seems to address? Continue when you feel you've answered the question.

12. Assuming you buy and/or sell secondhand goods today, what's your preferred platform for doing so and why?

13. Do you have any other feedback about the app or this usability study you'd like to share?

14. Please rate the following questions from "Strongly Disagree" to "Strongly Agree" [note, these questions were suggested by Userlytics and adopted by me for this evaluation]:

    a) I think that I would like to use this platform frequently.

    b) I found the platform unnecessarily complex.

    c) I thought the platform was easy to use.

    d) I think that I would need the support of a technical person to be able to use this platform.

    e) I found the various functions in this platform were well integrated.

    f) I thought there was too much inconsistency in this platform.

    g) I would imagine that most people would learn to use this platform very quickly.

    h) I found the platform very cumbersome to use.

    i) I felt very confident using the platform.

    j) I needed to learn a lot of things before I could get going with this platform.

In total, five users participated in the second evaluation. The following shows the results and notes taken during each participant's experience with the prototype.
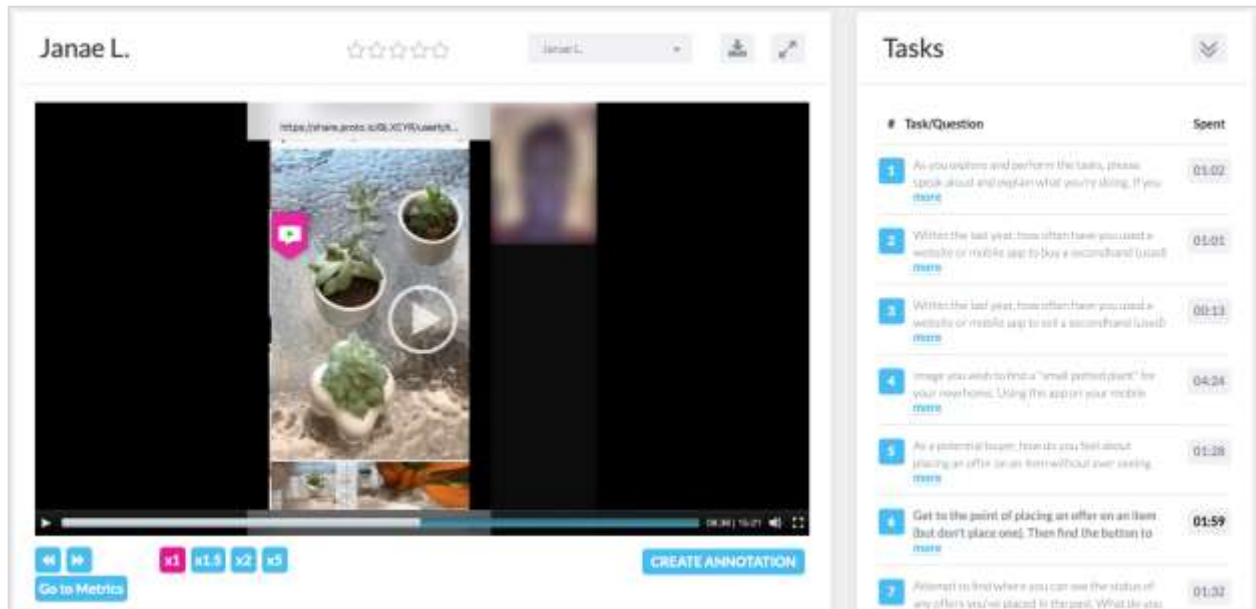
Figure 39. Round Two (Janae L.) User Testing Review

- Janae L.
    o Buy: Once over the last year
    o Sell: Monthly over the last year
    o While using the map and flipping through preview images, said "This is cool."
    o When running the scenario to buy a plant, got to the individual listing but then wondered how to tell the location of the plants (i.e. where the seller is located)
        ▪ Then went back to search and typed "small potted plant Florida"
        ▪ Wasn't sure if she could search by city or zip code
    o Asked aloud "How much is shipping?" and "Is the shipping included?"
    o Intuitively looked for the offer status and found it a pending status
    o Thought she'd like to see the offers of other people to know where her offer stood among others
        ▪ Suggested showing a range, just to have a figure in mind
    o Suggested ideas of what "add offer conditions" would do, but was describing the offers more like bids and didn't ultimately get to the intended answer
    o Did not have any trouble with the offer status descriptions

- o Seemed to really like the idea of listing all the items pictured and not having to list things one by one
- o Neutral on choosing this over other options for listing items
  - ▪ Said she would like to play around with the system more first
  - ▪ Did really like taking a panoramic photo and listing a bunch of items at once vs. having to take a bunch of photos
  - ▪ "I would definitely try it out."
  - ▪ She asked again about shipping and if it's included and the price
  - ▪ Stated she would like to see how it goes with offering something and then the seller accepting or not accepting it
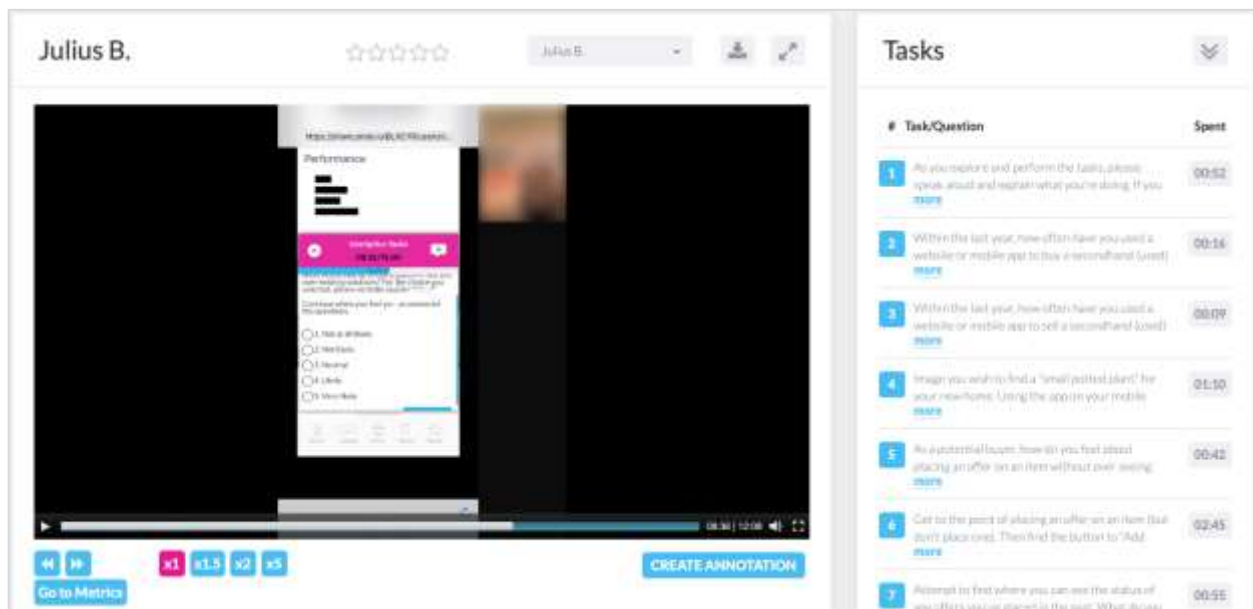
Figure 40. Round Two (Julius B.) User Testing Review

- Julius B.
  - o Reading over the intro, said "This is interesting."
  - o Buy: 2-3 times over the last year
  - o Sell: Never over the last year
  - o Very quickly placed the offer but commented on not being able to see some sort of confirmation

- Noted: I could include a quick confirmation message in the offer tab, and/or could change the tab color on top of the item and have the tab stay there. so the buyer knows he or she placed an offer and its status
  - Was not happy about not seeing other people's offers, saying "I don't like that system because then I don't know the market rate."
  - Eventually found "add offer conditions" but had a hard time locating it
  - Understood that "add offer conditions" meant specifying the terms of the offer
  - Understood the different offer statuses
  - Neutral on using this platform
    - Stated he wanted to see the interface developed further
    - Would have liked to see the dots on the map represent the listings and their locations
      - Noted: They did, in fact; and they would more clearly in a fully-functioning version of the application because you could pinch in to start revealing the listings in each icon
    - Felt the layout needed a little bit of work
    - Thought there are other apps that do this a little better (mentioned eBay later as an example)
    - Did not like the fact that you can't see other people's offers and stated that it was a "huge red flag for me."
  - Value Proposition
    - Found the map unique and interesting
      - "Don't know of any other solutions with that feature."
    - Didn't recognize the "selling many items at once" value, but he also hadn't sold any items within the last year
  - His preferred platform is eBay primarily because of familiarity
    - "I know how it works."
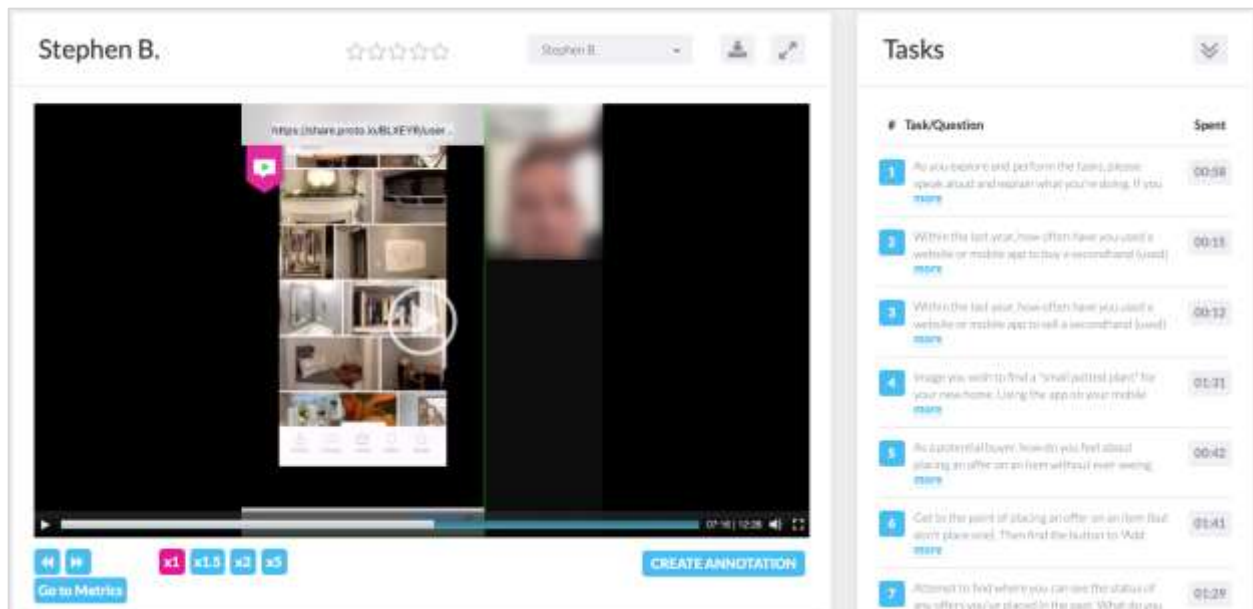
Figure 41. Round Two (Stephen B.) User Testing Review

- Stephen B.
    - Buy: 2-3 times over the last year
    - Sell: 2-3 times over the last year
    - Didn't have any issues placing an offer
        - Didn't search as expected and went directly to the tile view and then clicked on the listing
    - Found that offers could be considered insulting, since a buyer may not know where to start or what others are offering
        - Also stated, "I guess you're then placing an offer based upon what you feel the value really is."
    - Couldn't find "add offer conditions" but understood what this meant
    - Seemed unsure that the offers page was the right place to see the status of his offers
        - Kept clicking around elsewhere and coming back
    - Found the listing process relatively easy
    - Neutral on using the platform for selling
        - Not sure I want to be taking a photo of everything in the room
        - Mentioned potential for security issues
        - May not want to list every single item

- Noted: Did not think he noticed users could tag individual items and not have to allow all items to get offers, but then later, he describes this feature so uncertain why he made the statement
- "I see where it has potential but not sure."
- Neutral on using the platform for buying
  - Found with the panoramic images, items can be hard to see
  - Disliked that lack of a visible description like existing platforms have;
  - Was unsure how to know what the condition is with only a photo
  - Felt he would have to ask the seller for more information
- Value Proposition
  - Understood it was listing several items at once all through one process and that auto-tagging was unique among other options out there
  - As far as problems solved, only saw it helping with the current issue of having to create individual listings
- Seemed to prefer the traditional posting method, with multiple photos and a description to mitigate questions
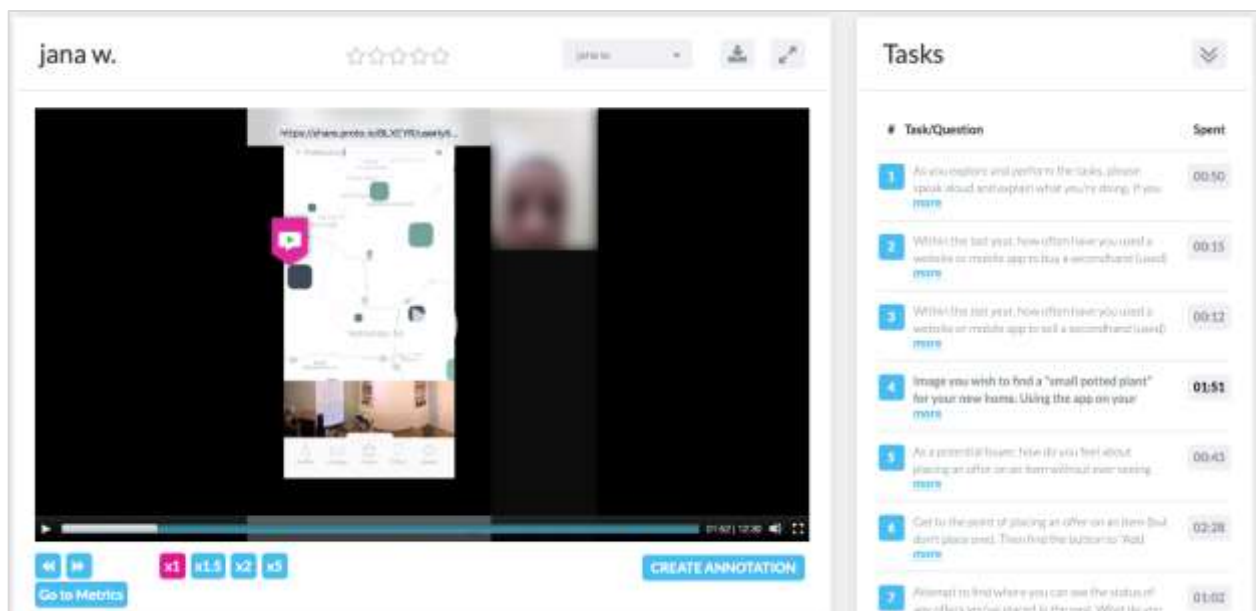
Figure 42. Round Two (Jana W.) User Testing Review

- Jana W.

- o Buy: 2-3 times over the last year
- o Sell: 2-3 times over the last year
- o When looking to find a "small potted plant," initially clicked on listings icon but then went back home and searched
    - ▪ "I like that the pictures come up, but I wish there was a little bit more of a description here."
- o Didn't have any issues placing the offer
    - ▪ She stated again she would like to see more of a description
- o On placing offers without seeing others' offers, she stated "I think it's a normal thing but would like to see a minimum offer maybe."
- o Wasn't able to find the "add offer conditions" button and went back to home screen searching for it
- o Did understand what the conditions button was meant for
    - ▪ Interestingly, she gave an example about how her offer related to another offer, saying it would have to be within 10% of another offer
- o When asked to find the statuses of existing offers, went to the listings screen first but then did find the offers screen
- o Found creating a listing very easy and did not have any issues doing so
- o On using the platform for selling, she stated "Likely"
    - ▪ Stated she likes to use many platforms when selling and would be willing to give it a shot once or twice to see how well it does
- o On using the platform for buying, she stated "Neutral"
    - ▪ Preferred to see descriptions versus only the photos, but did like the idea of using a panoramic photo
- o Value Proposition
    - ▪ Like that a user can see what he or she is looking for all in one area rather than having to click on each listing
    - ▪ Found the offer concept unique but would like to see a range or minimum number to know what the seller is expecting

o   Stated she has had the best luck on Facebook Marketplace because there are a lot of people on there, and she mentioned that platform is more likely to capture random or casual buyers because they actively use Facebook already
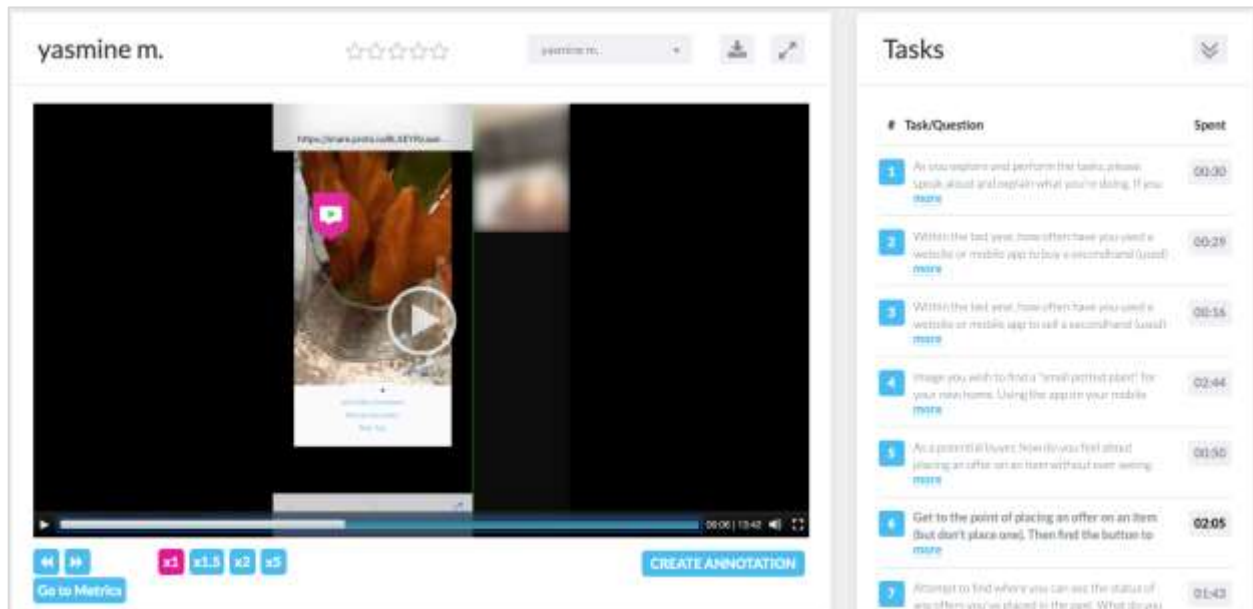
Figure 43. Round Two (Yasmine M.) User Testing Review

- Yasmine M.
  - o Buy: 2-3 times over the last year
  - o Sell: Monthly over the last year
  - o When searching for the potted plant, she started the sign-up process instead
  - o Struggled to find where to locate the listing but did eventually find it
  - o Understood hiding users' offers but thought maybe sellers might get more money and people might be more competitive if they see they're getting outbid
  - o When looking for "add offer conditions" found the unused multi-option wheel by tapping and holding and did eventually find the correct button but stated, "c'mon!"
    - ▪ Thought these were more general terms and conditions for the offer process
  - o Found the listing process easy "because I [have] sold stuff on the Internet before."
  - o Sell: Neutral
    - ▪ (Did not state a reason.)

- o Buy: Neutral
  - ▪ Didn't like that she couldn't see offers but said she "might still try it out."
- o Overall Impression
  - ▪ Found it kind of difficult to find things
  - ▪ Stated that tech savvy people could figure it out but others might not
  - ▪ Recommended a tutorial when you first sign up or start using the app
  - ▪ Stated "it's kind of unique that you place offers, [but I] don't get why there aren't 'Buy It Now' options, too, where people can just buy an item outright immediately."
- o Stated she had only really used eBay for buying/selling and has had a good experience so far
- o Liked the listing preferences functionality

5.8 Refinement

After reviewing all the comments, results, and my own notes, I developed a consolidated list of which feedback would be most important to address as the next round of refinement. These items included the following:

- Add a small, how-to guide for when users first start using the app or a particular function
- Relocate "Add Offer Conditions" to make it easier to find and use
- Provide a better indication that an offer was placed successfully
  - o Show a confirmation message
  - o Leave tag showing in the sale view and in a different color
- Need to integrate shipping cost into the offer process
  - o Inform buyers that if shipping is selected, shipping costs will be deducted from their offer, and that should be taken into account when deciding how much to offer
- More listing information
  - o Add location information to the listing in the sale view
  - o Still show listing expiration in the sale view
  - o In the tile view, include more data like expiration, shipping options, and number of items available for sale

Even with only five evaluators using the prototype for less than 15 minutes each, I was able to gather significant feedback. The resulting changes are visible in the final images in the "High-Fidelity, Interactive Prototype" section.

CHAPTER 6.   CONCLUSION

Through this project, I developed a new platform, entitled "Sweep," for buying and selling secondhand goods through the use of panoramic images, enabling many items to be listed at once. Existing literature on collaborative consumption and data on secondhand market participation was reviewed to understand better how individuals dispose of or disburse the items they own. While their reasons vary, many people participate in the secondhand market, with a large subset buying and selling secondhand items through online marketplaces. The shortcomings of these existing, online marketplaces were the subject of my review through four directional surveys, a peer product review, and in-depth, semi-structured interviews with a group of target users.

Analyzing the resulting data, I constructed a list of core problems not being fully addressed by existing solutions, including 1) being able to sell many items at once, 2) disbursing items quickly and with minimal effort, 3) making lower value items worth selling, 4) establishing and maintaining trust by designing for safety and encouraging quality, and 5) reducing the need for communication between buyers and sellers by managing the sale, condition, and inventory status.

With the core issues in mind, I worked to develop a number of concepts through brainstorming, mind mapping, and affinity diagramming. Through an analytical evaluation with experts, I selected the primary direction, based upon the "make me move" concept borrowed from the real estate industry. I then began developing a hierarchical task analysis chart, which formed the foundation for the platform's design and was refined repeatedly through each subsequent step in the process. My initial wireframing effort encouraged early testing on what was originally a video-based concept and resulted in a shift to panoramic-based listings. The platform was refined further through additional wireframing and low-fidelity, static mockups of the visual design. I then turned my focus to building an interactive prototype capable of allowing users to execute a number of scenarios core to the application's function, including creating a new listing and searching for and placing an offer on an item. I used an online user testing platform to remotely gather both concept and usability feedback, which I then distilled into a list of items to address in the final refinement stage. Overall, I demonstrated a unique concept for buying and selling secondhand goods which supports selling many items, efficiently and safely, while eliminating much of the back and forth communication required to facilitate transactions on many existing platforms.

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APPENDIX A. SURVEY RESULTS

SELLING ITEMS YOU OWN

prepared by Nick Brauer

Apr 27 2018

SELLING ITEMS YOU OWN (V1)

prepared by Nick Brauer
Apr 27 2018

EXECUTIVE SUMMARY

SPECIFICATIONS:
Responses: 142/250
Launched: March 08 2018
Completed: in progress

TARGET MARKET:
Language: English
Ask gender: true
Ask age: true
Ask income: true
Ask career: false
Ask employment: false
Ask education level: false
Ask relationship status: false
Ask children: true
Ask geo: false
Answers IP limit: 0
Answers Cookies limit: 0

ID: 485062

N=142/250

OPEN STAT PAGE ONLINE

OPEN SURVEY PREVIEW

CREATE A NEW SURVEY

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Q1. IN ANY GIVEN YEAR, ABOUT HOW OFTEN DO YOU TRY TO RESELL AN ITEM YOU OWN? (THE ITEM CAN BE USED, LIKE- NEW, NEW, ETC.)

prepared by Nick Brauer
Apr 27 2018

A1	Never	12.6%	(18)
A2	Once	12.6%	(18)
A3	A Few Times	61.9%	(88)
A4	Monthly	10.5%	(15)
A5	Weekly	2.1%	(3)
A6	Daily	0.0%	(0)

	A1: Never	A2: Once	A3: A Few Times	A4: Monthly	A5: Weekly	A6: Daily
Value	18	18	88	15	3	

Page 3   N=142/250

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Q2. ABOUT HOW OFTEN ARE YOU SUCCESSFUL IN SELLING THE ITEM?

prepared by Nick Brauer
Apr 27 2018

A1	Always	18.5%	(23)
A2	Usually (70% or more of the time)	53.2%	(66)
A3	Sometimes	28.2%	(35)
A4	Never	0.0%	(0)

A1: Always	A2: Usually (70% or more of the time)	A3: Sometimes	A4: Never
23	66	35	

Page 4   N=142/250

aytm

Q3. IS RESELLING THESE ITEMS A SIGNIFICANT SOURCE OF INCOME FOR YOU?

prepared by Nick Brauer
Apr 27 2018

A1	Yes	4.0% (5)
A2	No	95.9% (119)
A3	Unsure	0.0% (0)

Page 5   **N=142/250**

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Q4. DO YOU OWN ANY ITEMS YOU WOULD LIKE TO SELL?

prepared by Nick Brauer
Apr 27 2018

A1	Yes	61.1% (11)
A2	No	38.8% (7)

Page 6   **N=142/250**

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Q5. WHAT KEEPS YOU FROM SELLING THOSE ITEMS?

prepared by Nick Brauer
Apr 27 2018

A1	Unsure how	9.0% (1)
A2	Just don't feel like it	45.4% (5)
A3	Time required	36.3% (4)
A4	Too much of a hassle	72.7% (8)
A5	Not worth much	0.0% (0)
A6	Unsure of their worth	9.0% (1)
A7	Prefer to donate	9.0% (1)
A8	Other:	0.0% (0)

Chart values:
- A1: Unsure how — 1
- A2: Just don't feel like it — 5
- A3: Time required — 4
- A4: Too much of a hassle — 8
- A5: Not worth much — (none)
- A6: Unsure of their worth — 1
- A7: Prefer to donate — 1
- A8: Other: — (none)

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Q6. WHAT'S THE APPROXIMATE, TOTAL VALUE OF ALL THE ITEMS YOU WOULD LIKE TO SELL?

prepared by Nick Brauer
Apr 27 2018

A1	Less than $50	0.0% (0)
A2	$50 - $99	36.3% (4)
A3	$100 - $199	45.4% (5)
A4	$200 - $499	18.1% (2)
A5	$500 - $999	0.0% (0)
A6	$1,000 or more	0.0% (0)

Chart values:
- A1: Less than $50 — (none)
- A2: $50 - $99 — 4
- A3: $100 - $199 — 5
- A4: $200 - $499 — 2
- A5: $500 - $999 — (none)
- A6: $1,000 or more — (none)

Page 8 — **N=142/250**

Q7. ABOUT WHAT PERCENTAGE OF THOSE ITEMS ARE NEW OR LIKE- NEW?

A1	0%	**9.0%** (1)
A2	10%	**9.0%** (1)
A3	20%	**36.3%** (4)
A4	30%	**9.0%** (1)
A5	40%	**0.0%** (0)
A6	50%or more	**36.3%** (4)

Chart values:
- A1: 0% — 1
- A2: 10% — 1
- A3: 20% — 4
- A4: 30% — 1
- A5: 40% —
- A6: 50%or more — 4

Page 9   N=142/250

Q8. (OPTIONAL) DO YOU HAVE ANY OTHER THOUGHTS TO SHARE REGARDING WHAT KEEPS YOU FROM SELLING ITEMS YOU OWN?

one	2
mindset	1
dealing	1
little	1
protection	1
lazy	1
ebay	1
paypal	1
point	1
attitude	1
'eh'	1
maybe	1
seller	1
much	1
hassle	1
small	1
return	1
need	1
specialty	1
battery	1
cost	1
$30	1
trusting	1

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Q9. (OPTIONAL) DO YOU HAVE ANY FEEDBACK TO SHARE REGARDING THE SURVEY ITSELF?

prepared by Nick Brauer
Apr 27 2018

thank	8	group	1
thanks	4	everything	1
comment	3	simple	1
survey	3	great	1
sell	3	old	1
pretty	2	magazine	1
eBay	2	grisliest	1
stuff	2	profitable	1
format	2	low	1
nope	2	energy	1
clear	2	end	1
short	2	vintage	1
easy	2	resisting	1
straightforward	2	urge	1
resell	2	regularly	1
item	1	thing	1
strait	1	consuming	1
forward	1	tend	1
big	1	extra	1
re-seller	1	money	1
amazon	1	nice	1
sold	1	across	1
personal	1	seems	1

RECEIVING AND RETURNING GIFTS

So advanced, it's easy!

prepared by Nick Brauer

Apr 27 2018

RECEIVING AND RETURNING GIFTS (V2)

prepared by Nick Brauer
Apr 27 2018

EXECUTIVE SUMMARY

SPECIFICATIONS:
Responses: 140/250
Launched: March 06 2018
Completed: in progress

TARGET MARKET:
Language: English
Ask gender: true
Ask age: true
Ask income: true
Ask career: false
Ask employment: false
Ask education level: false
Ask relationship status: false
Ask children: true
Ask geo: false
Answers IP limit: 0
Answers Cookies limit: 0

ID: 484694

N= 140/ 250

📊 OPEN STAT PAGE ONLINE

👁 OPEN SURVEY PREVIEW

📈 CREATE A NEW SURVEY

Q1. OF ALL THE GIFTS YOUR HOUSEHOLD RECEIVES, ABOUT WHAT PERCENTAGE ARE RETURNED TO THE STORE?

prepared by Nick Brauer
Apr 27 2018

A1	0%	33.5% (47)
A2	5%	36.4% (51)
A3	10%	17.1% (24)
A4	15%	6.4% (9)
A5	20%	2.1% (3)
A6	25% or more	4.2% (6)

Bar chart values:
- A1: 0% — 47
- A2: 5% — 51
- A3: 10% — 24
- A4: 15% — 9
- A5: 20% — 3
- A6: 25% or more — 6

Page 3   **N= 140/ 250**

Q2. OF ALL THE GIFTS YOUR HOUSEHOLD RECEIVES, ABOUT WHAT PERCENTAGE DO YOU/ THEY WANT TO RETURN BUT CAN'T FOR SOME REASON?

prepared by Nick Brauer
Apr 27 2018

A1	0%	36.4% (51)
A2	5%	30.0% (42)
A3	10%	17.8% (25)
A4	15%	6.4% (9)
A5	20%	6.4% (9)
A6	25% or more	2.8% (4)

Page 4   N= 140 / 250

Q3. IN A GIVEN YEAR, WHAT'S THE APPROXIMATE, TOTAL VALUE OF ALL THE GIFTS YOUR HOUSEHOLD WISHES THEY COULD RETURN BUT CAN'T?

prepared by Nick Brauer
Apr 27 2018

A1	Less than $50	23.5% (21)
A2	$50 - $99	28.0% (25)
A3	$100 - $199	25.8% (23)
A4	$200 - $499	16.8% (15)
A5	$500 - $999	4.4% (4)
A6	$1,000 or more	1.1% (1)

Page 5   N= 140 / 250

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Q4. PLEASE PROVIDE ONE OR MORE EXAMPLES OF GIFTS YOUR HOUSEHOLD WISHES THEY COULD RETURN BUT COULDN'T.

prepared by Nick Brauer

Apr 27 2018

gift	11	product	2
receipt	8	food	2
clothing	8	shirt	2
cloth	7	fit	2
toy	6	accept	2
returned	6	feel	2
return	5	broken	2
need	5	kid	2
received	5	coffee	2
watch	4	inappropriate	2
item	4	oil	2
already	4	awful	2
store	3	collection	2
game	3	box	2
idea	3	bought	2
really	3	daughter	2
video	3	birth	2
one	3	clever	2
home	3	clock	1
wrong	3	maker	1
size	3	appliance	1
opened	3	bottle	1
dress	2	shoe	1

Page 6 **N=140/250**

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Q5. WHAT ARE THE TOP REASON(S) FOR BEING UNABLE TO RETURN THE ITEMS?

prepared by Nick Brauer

Apr 27 2018

Bar chart values:
- A1: Has been opened — 20
- A2: Has been used — 28
- A3: Past the return window — 8
- A4: No receipt — 45
- A5: No store nearby — 15
- A6: Cost to ship it back — 14
- A7: Don't want to hurt the gift-giver's feelings — 29
- A8: No time to deal with it — 18
- A9: Other: — 3

A1	Has been opened	22.4% (20)
A2	Has been used	31.4% (28)
A3	Past the return window	8.9% (8)
A4	No receipt	50.5% (45)
A5	No store nearby	16.8% (15)
A6	Cost to ship it back	15.7% (14)
A7	Don't want to hurt the gift-giver's feelings	32.5% (29)
A8	No time to deal with it	20.2% (18)
A9	Other:	3.3% (3)

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Q6. WHAT HAPPENS MOST OFTEN WITH THOSE GIFTS THAT CAN'T BE RETURNED?

prepared by Nick Brauer
Apr 27 2018

A1	Keep it anyway	**74.1%** (66)
A2	Regift	**26.9%** (24)
A3	Donate	**33.7%** (30)
A4	Try to sell it online (e.g. eBay)	**10.1%** (9)
A5	Try to sell it locally (e.g. Craigslist, garage sale)	**10.1%** (9)
A6	Other:	**1.1%** (1)

Chart values:
- A1: Keep it anyway — 66
- A2: Regift — 24
- A3: Donate — 30
- A4: Try to sell it online (e.g. eBay) — 9
- A5: Try to sell it locally (e.g. Craigslist, garage sale) — 9
- A6: Other: — 1

Page 8   **N=140/250**

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Q7. IF YOU COULD RETURN THE ITEMS, WHICH WOULD YOU PREFER?

prepared by Nick Brauer
Apr 27 2018

A1	Another item from the same store	**21.3%** (19)
A2	Gift card from the same store	**35.9%** (32)
A3	Cash	**64.0%** (57)
A4	Other:	**0.0%** (0)

Chart values:
- A1: Another item from the same store — 19
- A2: Gift card from the same store — 32
- A3: Cash — 57
- A4: Other: —

Page 9   **N=140/250**

Q8. (OPTIONAL) DO YOU HAVE ANY FEEDBACK TO SHARE REGARDING THE SURVEY ITSELF?

prepared by Nick Brauer
Apr 27 2018

word	count	word	count
nice	6	run	1
thank	6	wish	1
survey	6	received	1
gift	5	prefer	1
task	4	useful	1
comment	3	usually	1
thanks	3	much	1
great	3	trouble	1
nothing	3	store	1
return	2	line	1
never	2	topic	1
family	2	ask	1
interesting	2	nope	1
clear	1	card	1
worried	1	though	1
short	1	days-makes	1
rare	1	easier	1
occasion	1	still	1
timer	1	bottom	1
sweet	1	real	1
wrong	1	study	1
size	1	format	1
worked	1	decision	1

Page 10   N=140/250

So advanced, it's easy!

BUYING AND SELLING SECONDHAND GOODS ONLINE (V1)

prepared by Nick Brauer

Apr 19 2019

BUYING AND SELLING SECONDHAND GOODS ONLINE (V3)

prepared by Nick Brauer
Apr 19 2019

So advanced,
it's easy!

EXECUTIVE SUMMARY

SPECIFICATIONS:
Responses: 145/250
Launched: March 05 2018
Completed: in progress

TARGET MARKET:
Language: English
Ask gender: true
Ask age: true
Ask income: true
Ask career: false
Ask employment: false
Ask education level: false
Ask relationship status: false
Ask children: true
Ask geo: false
Answers IP limit: 0
Answers Cookies limit: 0

ID:
484470

N= 145/ 250

📊 OPEN STAT PAGE ONLINE

👁 OPEN SURVEY PREVIEW

CREATE A NEW SURVEY

Q1. WITHIN THE LAST YEAR, HOW OFTEN HAVE YOU USED A WEBSITE OR MOBILE APP TO *BUY* A SECONDHAND (USED) ITEM OF ANY KIND?

prepared by Nick Brauer
Apr 19 2019

A1	Never	14.48% (21)
A2	Once	18.62% (27)
A3	2-3 Times	40.0% (58)
A4	Monthly	18.62% (27)
A5	Weekly	6.9% (10)
A6	Daily	1.38% (2)

N= 145/ 250

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Q2. WHICH TYPE(S) OF ITEMS ARE YOU MOST OFTEN LOOKING TO *BUY* SECONDHAND, AND WHY?

prepared by Nick Brauer
Apr 19 2019

electronics	25	often	4
cheaper	18	best	4
book	16	buying	4
game	13	hand	4
clothing	13	sometimes	4
usually	13	quality	4
price	12	money	4
item	12	online	4
furniture	11	etc	4
expensive	10	bought	4
cloth	10	condition	4
video	9	car	3
buy	9	gear	3
secondhand	7	bag	3
much	6	full	3
mobile	5	paying	3
one	5	deal	3
tool	5	supply	3
thing	5	household	3
toy	5	kid	3
second	5	high	3
shoe	5	save	3
less	5	great	3

Page 4   N=145/250

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Q3. WHICH WEBSITE AND/ OR MOBILE APP DO YOU PREFER FOR *BUYING* SECONDHAND ITEMS, AND WHY?

prepared by Nick Brauer
Apr 19 2019

ebay	65	established	3
amazon	26	yard	3
craigslist	20	safe	3
easy	13	Betsy	3
facebook	13	variety	3
item	12	website	2
selection	9	product	2
site	7	familiar	2
great	7	trusted	2
local	7	convenient	2
price	6	easily	2
seller	6	close	2
always	6	area	2
marketplace	6	quirk	2
lot	5	letgo	2
olx	5	deal	2
trust	5	brand	2
large	5	honest	2
trustworthy	4	app	2
buy	4	year	2
buyer	3	issue	2
reliable	3	feedback	2
poshmark	3	selling	2

Page 5   N=145/250

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prepared by Nick Brauer
Apr 19 2019

Q4. WITHIN THE LAST YEAR, HOW OFTEN HAVE YOU USED A WEBSITE OR MOBILE APP TO *SELL* A SECONDHAND (USED) ITEM OF ANY KIND?

	Bar
A1: Never	61
A2: Once	21
A3: 2-3 Times	41
A4: Monthly	16
A5: Weekly	5
A6: Daily	1

A1	Never	42.07% (61)
A2	Once	14.48% (21)
A3	2-3 Times	28.28% (41)
A4	Monthly	11.03% (16)
A5	Weekly	3.45% (5)
A6	Daily	0.69% (1)

Page 6   **N=145/250**

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prepared by Nick Brauer
Apr 19 2019

Q5. WHICH TYPE(S) OF ITEMS ARE YOU MOST OFTEN LOOKING TO *SELL* SECONDHAND, AND WHY?

word	count	word	count
longer	14	stuff	4
book	13	buy	4
old	13	sale	4
sell	13	laptop	3
item	11	computer	3
electronics	10	lox	3
game	8	household	3
need	8	kid	3
sold	8	order	3
furniture	8	shoe	3
money	8	extra	3
cloth	7	appliance	2
ebay	7	price	2
thing	6	phone	2
clothing	6	accessory	2
rid	5	something	2
toy	5	movie	2
part	5	usually	2
mobile	5	pass	2
video	5	cost	2
online	5	DVD	2
one	4	worth	2
needed	4	good	2

Page 7   **N=145/250**

aytm

Q6. WHICH WEBSITE AND/ OR MOBILE APP DO YOU PREFER FOR *SELLING* SECONDHAND ITEMS, AND WHY?

prepared by Nick Brauer
Apr 19 2019

ebay	38	lot	2
easy	16	site	2
craigslist	10	popular	2
amazon	9	shop	2
facebook	8	customer	2
olx	6	google	2
buyer	5	one	2
large	4	buy	2
prefer	4	quirk	2
local	4	quick	2
base	4	cash	2
quicker	3	platform	2
user	3	sale	2
seems	3	everything	2
easiest	3	shipping	2
free	3	account	2
selling	3	simple	2
trust	3	price	2
list	3	reason	1
easier	3	item	1
deal	3	listing	1
marketplace	3	buying	1
post	3	occasionally	1

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Q7. HOW DO YOU FEEL ABOUT BUYING AND/ OR SELLING SECONDHAND ITEMS LOCALLY (INSTEAD OF HAVING ITEMS SHIPPED TO YOU)?

prepared by Nick Brauer
Apr 19 2019

Undesirable	8.2%
Preferred	35.0%
Complicated	11.7%
Easy	43.0%
Unsafe	10.5%
Safe	38.5%

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Q8. WHAT IS THE BIGGEST SHORTCOMING, IF ANY, OF EXISTING SOLUTIONS FOR BUYING AND SELLING SECONDHAND ITEMS? (OPTIONAL)

prepared by Nick Brauer

Apr 19 2019

word	count	word	count
item	20	risk	4
selling	14	description	3
product	12	nothing	3
quality	12	biggest	3
buying	11	described	3
seller	10	dealing	3
fee	8	sell	3
sometimes	8	eBay	3
condition	7	hard	3
person	7	try	3
online	6	scam	3
really	6	often	3
having	6	finding	3
never	5	safety	3
may	5	price	2
buyer	4	problem	2
picture	4	fake	2
pay	4	refund	2
trust	4	grisliest	2
something	4	verify	2
shipping	4	guarantee	2
money	4	misrepresent	2
secondhand	4	arrive	2

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BUYING AND SELLING SECONDHAND GOODS (V2)

prepared by Nick Brauer

Apr 27 2018

So advanced,
it's easy!

EXECUTIVE SUMMARY

ID: 487142   N= 198/ 250

ill OPEN STAT PAGE ONLINE
OPEN SURVEY PREVIEW
CREATE A NEW SURVEY

aytm powered by aytm.com

Q1. IN ANY GIVEN YEAR, ABOUT HOW OFTEN DO YOU TRY TO RESELL AN ITEM YOU OWN? (THE ITEM CAN BE USED, LIKE- NEW, NEW, ETC.)

A1	Never	9.5% (19)
A2	Once	14.6% (29)
A3	A Few Times	54.5% (108)
A4	Monthly	18.1% (36)
A5	Weekly	2.0% (4)
A6	Daily	1.0% (2)

Chart values:
- A1: Never — 19
- A2: Once — 29
- A3: A Few Times — 108
- A4: Monthly — 36
- A5: Weekly — 4
- A6: Daily — 2

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Q2. AS A SELLER (OR POTENTIAL SELLER), WHICH DO YOU PREFER?

prepared by Nick Brauer
Apr 27 2018

A1	Exchanging items in person	35.8% (71)
A2	Selling items online and shipping them	64.1% (127)
A3	Other:	0.0% (0)

140
120
100
80
71
60
40
20

A1: Exchanging items in person   A2: Selling items online and shipping them   A3: Other:

127

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Q3. DO YOU OWN ITEMS RIGHT NOW YOU WOULD LIKE TO SELL?

prepared by Nick Brauer
Apr 27 2018

| A1 | Yes | 85.8% (170) |
| A2 | No | 14.1% (28) |

180
170
160
140
120
100
80
60
40
28
20

A1: Yes   A2: No

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Q4. WHAT ARE THE ITEMS YOU WOULD LIKE TO SELL?

prepared by Nick Brauer
Apr 27 2018

old	23	iPhone	3
book	18	tablet	3
clothes	16	table	3
shoe	16	couch	3
clothing	14	television	3
game	13	jacket	3
video	13	bed	3
laptop	7	kid	3
computer	6	guitar	3
car	5	player	3
textbook	5	bike	2
card	4	shirt	2
item	4	speaker	2
toy	4	cloth	2
box	4	handbag	2
DVD	3	1	2
phone	3	motorcycle	2
bag	3	jean	2
4	3	graphic	2
brand	3	power	2
Wii	3	air	2
PlayStation	3	unused	2
golf	3	furniture	2

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Q5. WHAT KEEPS YOU FROM SELLING ITEMS?

prepared by Nick Brauer
Apr 27 2018

A1	Never have anything to sell	5.5% (11)
A2	Don't feel like it	14.1% (28)
A3	Haven't gotten to it yet	49.4% (98)
A4	Too much of a hassle	40.9% (81)
A5	Not worth much	17.6% (35)
A6	Unsure of their worth	25.2% (50)
A7	Prefer to donate	12.6% (25)
A8	Safety or security concerns	12.1% (24)
A9	Marketplace listing and/or transaction fees	9.5% (19)
A10	Other:	1.5% (3)

Bar chart values:
A1: Never have anything to sell — 11
A2: Don't feel like it — 28
A3: Haven't gotten to it yet — 98
A4: Too much of a hassle — 81
A5: Not worth much — 35
A6: Unsure of their worth — 50
A7: Prefer to donate — 25
A8: Safety or security concerns — 24
A9: Marketplace listing and/or... — 19
A10: Other: — 3

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Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING?

prepared by Nick Brauer
Apr 27 2018

	Public lockers to allow buyers to securely view and purchase your secondhand items anytime	Website and/or app to help you determine what your items are worth	App to guide you in taking product photos for listing an item	Service to help sell your items by matching with predefined buyer wishlists	Website and/or app that only allows new or like-new secondhand items
A5: Extremely likely	7.6%	29.3%	6.6%	9.1%	14.1%
A4: Likely	36.4%	46.5%	39.9%	49.0%	49.5%
A3: Neutral	18.2%	13.6%	21.7%	22.2%	20.7%
A2: Unlikely	21.7%	7.6%	16.2%	14.1%	9.1%
A1: Extremely unlikely	16.2%	3.0%	15.7%	5.6%	6.6%

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Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING? **SQ1.** PUBLIC LOCKERS TO ALLOW BUYERS TO SECURELY VIEW AND PURCHASE YOUR SECONDHAND ITEMS ANYTIME

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	16.1%(32)
A2	Unlikely	21.7%(43)
A3	Neutral	18.1%(36)
A4	Likely	36.3%(72)
A5	Extremely likely	7.5%(15)

Extremely unlikely	Unlikely	Neutral	Likely	Extremely likely
32	43	36	72	15

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Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING? **SQ2.** WEBSITE AND/ OR APP TO HELP YOU DETERMINE WHAT YOUR ITEMS ARE WORTH

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	3.0%(6)
A2	Unlikely	7.5%(15)
A3	Neutral	13.6%(27)
A4	Likely	46.4%(92)
A5	Extremely likely	29.2%(58)

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Extremely unlikely: 6, Unlikely: 15, Neutral: 27, Likely: 92, Extremely likely: 58

Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING? **SQ3.** APP TO GUIDE YOU IN TAKING PRODUCT PHOTOS FOR LISTING AN ITEM

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	15.6%(31)
A2	Unlikely	16.1%(32)
A3	Neutral	21.7%(43)
A4	Likely	39.8%(79)
A5	Extremely likely	6.5%(13)

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Extremely unlikely: 31, Unlikely: 32, Neutral: 43, Likely: 79, Extremely likely: 13

Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING? **SQ4.** SERVICE TO HELP SELL YOUR ITEMS BY MATCHING WITH PREDEFINED BUYER WISHLISTS

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	5.5%(11)
A2	Unlikely	14.1%(28)
A3	Neutral	22.2%(44)
A4	Likely	48.9%(97)
A5	Extremely likely	9.0%(18)

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Q6. AS A SELLER (OR POTENTIAL SELLER), HOW LIKELY ARE YOU TO USE THE FOLLOWING? **SQ5.** WEBSITE AND/ OR APP THAT ONLY ALLOWS NEW OR LIKE- NEW SECONDHAND ITEMS

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	6.5%(13)
A2	Unlikely	9.0%(18)
A3	Neutral	20.7%(41)
A4	Likely	49.4%(98)
A5	Extremely likely	14.1%(28)

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Q7. (OPTIONAL) DO YOU HAVE ANY OTHER THOUGHTS TO SHARE REGARDING SELLING ITEMS YOU OWN?

prepared by Nick Brauer
Apr 27 2018

item	7	live	1
sell	7	MAX	1
nothing	4	mile	1
selling	4	radius	1
really	3	s	1
lot	3	it's	1
grisliest	3	news	1
eBay	3	gently	1
many	2	rather	1
shipping	2	depends	1
site	2	platform	1
particular	2	seems	1
nope	2	great	1
time	2	completely	1
mind	2	able	1
moment	2	meet	1
large	2	public	1
effort	2	place	1
idea	2	success	1
nice	2	internet	1
deal	2	wary	1
try	2	aggressive	1
thanks	1	haggler	1

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Q8. IN ANY GIVEN YEAR, ABOUT HOW OFTEN DO YOU BUY A SECONDHAND ITEM?

prepared by Nick Brauer
Apr 27 2018

A1	Never	10.6% (21)
A2	Once	15.1% (30)
A3	A Few Times	50.5% (100)
A4	Monthly	19.1% (38)
A5	Weekly	4.5% (9)
A6	Daily	0.0% (0)

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Q9. WHAT KEEPS YOU FROM BUYING (OR BUYING MORE) SECONDHAND ITEMS?

prepared by Nick Brauer
Apr 27 2018

no chart

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Q10. AS A BUYER (OR POTENTIAL BUYER), WHICH DO YOU PREFER?

prepared by Nick Brauer
Apr 27 2018

A1	Exchanging items in person	**36.8%** (73)
A2	Selling items online and shipping them	**62.1%** (123)
A3	Other:	**1.0%** (2)

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Q11. AS A BUYER (OR POTENTIAL BUYER), HOW LIKELY ARE YOU TO USE THE FOLLOWING PRODUCTS OR SERVICES?

prepared by Nick Brauer
Apr 27 2018

- A1: Extremely unlikely
- A2: Unlikely
- A3: Neutral
- A4: Likely
- A5: Extremely likely

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Q11. AS A BUYER (OR POTENTIAL BUYER), HOW LIKELY ARE YOU TO USE THE FOLLOWING PRODUCTS OR SERVICES? **SQ1.** WEBSITE AND/ OR APP THAT ONLY SELLS NEW OR LIKE- NEW SECONDHAND ITEMS

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	3.5%(7)
A2	Unlikely	9.5%(19)
A3	Neutral	14.1%(28)
A4	Likely	49.4%(98)
A5	Extremely likely	23.2%(46)

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Q11. AS A BUYER (OR POTENTIAL BUYER), HOW LIKELY ARE YOU TO USE THE FOLLOWING PRODUCTS OR SERVICES? SQ2. PUBLIC LOCKERS TO SECURELY VIEW AND PURCHASE SECONDHAND ITEMS AT ANY TIME

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	13.6%(27)
A2	Unlikely	22.7%(45)
A3	Neutral	16.1%(32)
A4	Likely	38.3%(76)
A5	Extremely likely	9.0%(18)

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Q11. AS A BUYER (OR POTENTIAL BUYER), HOW LIKELY ARE YOU TO USE THE FOLLOWING PRODUCTS OR SERVICES? SQ3. SERVICE TO CREATE A WISHLIST AND ALERT YOU WHEN AN ITEM IS LISTED MATCHING YOUR CRITERIA

prepared by Nick Brauer
Apr 27 2018

A1	Extremely unlikely	6.5%(13)
A2	Unlikely	11.1%(22)
A3	Neutral	13.1%(26)
A4	Likely	54.5%(108)
A5	Extremely likely	14.6%(29)

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