Bifurcating the User

Nicholas True[1,2(✉)], Shad Gross[1], Chelsea Linder[1], Amber McAlpine[1], and Sri Putrevu[1]

[1] Angie's List, 1030 E. Washington St., Indianapolis, IN 46202, USA
nic.true@angieslist.com
[2] Department of Informatics, Umeå University, MIT-huset Campustorget 5, Umeå Universitet, 901 87 Umeå, Sweden

Abstract. Within the design of technology, the notion of the user, and user-centered design, has become a guiding principal for creating successful products. However, the concept of "user" is a non-trivial notion. HCI has historically viewed "the user" as an abstract concept, that is to say, it has been a reductive definition. As the field has become increasingly transdisciplinary the definition of "the user" has evolved overtime to reflect more breadth and depth. However, this is not always the case within industry practice. In this paper we present a situation and case study where, in industry, the reductive notion of the user posed distinct impediments to progress, how we were able to identify those and blend academic thinking into an industry approach to more success than either alone.

Keywords: Service Design · Sharing Economy · HCI · Design

1 Introduction

Within the practice of design, the concept of user-centered design [10, 17] has had considerable traction and success as a philosophy and method for how designers should approach solving problems. Within this approach, considerations of the user – a person who a designer considers or involves in the making of an interface, system or service – are quite important and fundamentally guide design decisions. Due to this, knowing the user, or the different tiers of users [3] that a system is designed for is an important part of creating useful and usable designs.

While considerations of the user and user involvement are powerful tools for design, this way of thinking may not be sufficient to cover the changes resulting from shifts in the ways that technology, products, and services have changed. For example, the move from individual, owned products to a "Sharing Economy" [14] introduces systems and interfaces intended to bring together people with different motivations and goals around a shared artifact and Service Design [22] where numerous different people are brought together, often through different interfaces, around a service. In both of these contexts, the idea of a singular user or a tiered set of users may be blurred as the very aspect that makes these approaches valuable is the coordination of multiple sets of perspectives and goals.

A. Marcus and W. Wang (Eds.): DUXU 2017, Part III, LNCS 10290, pp. 313–329, 2017.
DOI: 10.1007/978-3-319-58640-3_22

In this paper we detail and reflect on a case study of a business model that does not readily fit into classifications of primary, secondary and tertiary users. Specifically, we describe the challenges that arise from having two primary user groups with different scales, concerns, and goals. These differences may put users at odds with each-other. While this case does not aim to give singular, prescriptive solutions to the situation of multiple primary users, it does explain what seems to be a trend in design (through businesses such as AirBnB and Uber), highlight some of the unique challenges that come with such a situation and, as these situations become more common, directions for find context-specific resolutions. We then apply these newer concepts of the user to the context of our own ethnographically-inspired investigation at Angie's List—a company focused on facilitating and assisting transactions and providing a marketplace for those transactions. Finally, we reflect upon these different situations in juxtaposition – highlighting the particular challenges and difficulties that arise from designing for multiple primary users.

2 Previous Work

The idea of multiple primary users is rooted in three main areas of thinking. First is User-Centered Design (UCD), from which the idea of "users" and the division of users into different classes emerges. The second is the Sharing Economy, in which the idea of a single, primary user is challenged by the notion of the "Sharing Economy". Finally, the third concept is Service Design, in which there are further differences between the people who are users of any given interface, all with differing roles and perspectives on how the service will unfold.

2.1 User-Centered Design

While it is not exclusive to the design of interfaces and technology, much of the relationship between HCI and design practice is rooted in the concept of UCD. The concept originated in the work of Norman and Draper [18] and subsequently developed further in The Psychology of Everyday Things [17]. This approach became of significant importance leading to the establishment of an international standard through ISO 13407 [8] (which would later be replaced by ISO 9241-210 [10]). While UCD has had a couple of different names and specific standards attached to it, it is evident that the concept is wide-spread and accepted as an approach to design.

In Abras et al.'s Encyclopedia of Human Computer Interaction, UCD is defined as "a broad term to describe design processes in which end-users influence how a design takes shape…. There is a spectrum of ways in which users are involved in UCD but the important concept is that users are involved one way or another." [1]. The core element of the process, then, is the involvement of the user. From this perspective, understanding users psychologically [e.g. 17], cognitively [e.g. 19], and even phenomenologically [e.g. 4] is important because it will aid in making design decisions that are better and, ultimately, interfaces that are better in usability or "the extent to which a system, product or service can be used by specified users to achieve specified goals

with effectiveness, efficiency and satisfaction in a specified context of use" [9]. The idea of "specified users" is important here – as the different means of understanding users also can result in divisions across different groups of people. This is echoed in the sentiments of social informatics with regards to the effects of technology – "ICT (Information Communication Technologies) uses shape thought and action in ways that benefit some groups more than others and these differential effects often have moral and ethical consequences" [21]. Thus, reaching the goals of UCD begins with understanding who the user is.

Understanding the user may not be straight forward. As a means of accounting for this, Eason [3] divides the singular concept of "user" into three distinct groups: Primary users who frequently directly interact with the system through input and output; Secondary users who occasionally interact with the system or must work directly with the output of the system; and Tertiary users who do not directly interact with the system but are in some way affected by it. Although not to the same degree, this notion of different ranks of users has also been raised in less formal contexts as a means of describing interactions with technology in the context of hospitals: describing the doctors and nurses as the primary users and their patients as secondary users [23]. In both cases, the idea of a single user gets changed to include considerations of other users who are effected by the system.

The concept of the user, and a weighted hierarchy of users, create an extremely useful model for pursuing the goals of UCD. However, there have been changes to the ways that users are understood that also seem to prompt some reconsideration. Specifically, the rise of the "Sharing Economy" and Service Design will be presented as two such concepts, which we will examine here through the examples of two contemporary, successful examples – AirBnB and Uber.

2.2 Sharing Economy

In one sense, the two examples presented here are part of what has been described as the "Sharing Economy." This has been defined as "collaborative consumption made by the activities of sharing, exchanging, and rental of resources without owning the goods." [14]. Alternately, the Sharing Economy has also been defined as "The peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services." [7]. Combining these definitions, we arrive at our working understanding of the Sharing Economy – it involves collaborative consumption of durable goods or services and frequently some sort of digital networking to make connections. While the idea of sharing is not something new, its ubiquity across large populations, the goods in question, and the electronic means of making connections all present new opportunities and challenges to this system of sharing.

Two of the most successful examples of the Sharing Economy in action are AirBnB and Uber. AirBnB (www.airbnb.com) is a platform where people who wish to visit a place (guests) can connect with people who have a place to stay (hosts). The shared element in this system is the living space, with the hosts generally owning or at least leasing the space and sharing that space with guests based on a pre-determined

agreement. Uber (www.uber.com) applies similar thinking to automobiles. Like a taxi, the driver picks someone up who has requested a ride and takes them to their destination. In this example the shared item is the automobile, like the living space in AirBnB, with the driver frequently owning or leasing the vehicle and sharing the ride with the person who has placed the request.

Both examples not only fit the definition of "Sharing Economy" – they are peer-based networks based off the sharing of durable goods and, indeed, are raised as examples of the concept both in a more beneficial light [e.g. 7, 13, 20] and a negative one [e.g. 15, 16]. Regardless of larger social benefits of such a mindset, it has proven to be a viable business model at the least.

Framed by the Sharing Economy, the matches between users for both AirBnB and Uber make sense. The person who hires an Uber driver does not need their own car, they just need an easier, less expensive, and often better maintained means of transportation than alternatives such as taxis, while the person who owns the car is given an additional means to earn income. Similar things can be said of AirBnB, where the value of having lodging that is cheaper and more culturally embedded than a hotel drives one side and the monetization of property drives the other. The important factor, then, becomes creating an interface that connects these two groups.

Considering the different needs of the different user groups means creating different interfaces for them. For example, the levels of access, intentions and needs for information would be quite different for an Uber driver versus a passenger. The passenger needs to have expectations set for the trip, including a tracker for when the car will arrive, what kind of car it will be, and who will be driving it—all of which are provided by the passenger interface. Alternately, the driver needs to know how to get where the passenger is going, should no specific course be offered. These are low level concerns, but when creating features of an application they become the core needs of the users that are being fulfilled.

For AirBnB, the host may be lining up several different guests at once, while the guests are most likely planning a one-time visit, hosts may be coordinating the plans of multiple guests. In both this and the case of Uber, there is a difference in terms of goals and what is needed from an interface to fulfill those goals. Hence, it seems reasonable to declare both user groups for the service, even if there still may be some way to shoehorn these different users into primary, secondary, and tertiary status.

The companies AirBnB and Uber provide these different groups of users with different senses of how the interaction should take place, with different applications and features to reach their individual goals. While this relationship is not intrinsic to the Sharing Economy, it does seem like it is a part of current, successful implementations. The implication is that in such a context, the designation of one of the types of user as primary, secondary or tertiary, at the level of the business, seems murky.

2.3 Service Design

Another rising concept that equally challenges the idea of a singular, or neatly ranked set, of users is Service Design. "Service Design is an emerging field focused on the creation of well thought through experiences using a combination of intangible and tangible

mediums" [22]. Like other user experience approaches, the focus on Service Design is the creation of an experience for one or more people. However, unlike the notion of the Sharing Economy presented above, there is not necessarily a specific physical object that the experience is connected to. A somewhat older, more business/operations –centered definition focuses on the "service concept," breaking this down into operation, experience, outcome, and value of the service [2, 6, 11]. From this perspective, the core components of a service are how the service is executed, the over-all feeling of the service for the user, the result for that user, and the value of those results.

The examples of AirBnB and Uber equally fit within these definitions. There are also divisions that emerge. There are some issues that apply broadly to both the host and the guest such as the concerns of the "nebulous regulations surrounding Airbnb" [16] that could result in concerns for safety of goods or person. The goal of the experience, overall, is to replace those concerns with a more positive experience. However, others are more pointed at one end of the moral hazard problem of damage to the renter in AirBnB transactions [24]. Similarly, one could imagine a similar situation when hiring an Uber driver – the lack of knowledge about the driver presenting the chance that the passenger could have a bad experience during the ride, due to bad driving or unsafe vehicles, or worse. This is not to say that being a guest at an AirBnB house or a driver for Uber is without its own risks and concerns, more that these concerns differ in terms of objects and nature. Returning to the core components of a service concept, there is a broad similarity between the hosts and guests but they also provide different operations for the service—e.g. hosts set up the space, guests find it, different experiences—e.g. having someone stay in their house, visiting a different culture, outcomes—e.g. making money and staying somewhere, and value—e.g. mitigation of moral hazard, staying somewhere cheaper than a hotel.

One telling aspect of the ways that these services create two groups of primary users is in how AirBnB models their experience. Storyboards and journey maps are common tools of Service Design [22]. A unique aspect of AirBnB's approach is that the story is told from different perspectives [12], namely the host and the guest, and that these stories create two distinct yet intertwined journeys. These two different journeys highlight the idea that there are two different users, both of which who have some claim to primacy within the service, but have considerably different operation, experience, outcome, and value of the service.

From the examples of AirBnB and Uber, framed through the lenses of the Sharing Economy and Service Design, the concept of a single, primary user begins to break down. In both situations, there is not just one user, but rather the interrelation of different users, each with their own set of concerns. To further explore this, we now turn to research done in a context that presents a similar situation, with regards to the consideration of multiple primary users.

3 Historical Context of Angie's List

The business context for this work is Angie's List – a company focused on facilitating and assisting transactions and providing a marketplace for those transactions between providers of home services (Service Providers) and those that consume home services

(Home Owners). Angie's list was founded in 1995 in Indianapolis, Indiana by Angie Hicks and Bill Oesterle as a continuation of their Columbus Neighbors venture which, itself, was a continuation of the Indianapolis Unified Neighbors venture. Across these initial ventures, the core component was bringing together people's information and resources as a neighborhood community. One such resource that became extremely useful was reviews of Service Providers, which helped the members of the community to make decisions regarding who to hire when they needed work done on their homes. This concept was moved from Indianapolis to Columbus and then back to Indianapolis, focusing on the specific concerns and pools of Service Providers in these areas.

In 1999 Angie's List began the transition from analog to digital when the website was launched. This extended the reach of the original business model, meaning that it no longer had to be limited to the specific area where the business was located. This broadening of reach came with a narrowing of focus, moving from a more general fostering of community action to the useful and popular reviews – written descriptions of working with Service Providers within a specific area. What grew from this was a subscription-based crowd-sourced repository of reviews for Indianapolis service providers. As part of the focus on reviewing Service Providers, users could submit reviews of the people that they had worked with, and those reviews were accompanied by a "grade" of A, B, C, D or F (like the American school system) with an A representing exceptional work and F representing work that had failed in some way.

In the 7 years that followed the initial introduction to digital services and the web, Angie's List continued to extend the breadth of areas covered – going from the Midwestern United States to encompassing the entire country. This had the benefit of expanding the business and the reach of the services, but also presented new challenges for the subscription-based model. Specifically, the focus on a few small communities had become more about the evaluation of service providers. As of 2016, the member base had extended to 5 million registered users with 10 million reviews from all over the United States (https://www.angieslist.com/news-releases/angie-s-list-membership-tops-five-million.htm). There still was a community element to the services but, as the reach of Angie's Lists' services extended, the focus of the community became increasingly about the evaluation of Service Providers and less about other aspects of the community.

This shift of focus from communities to the Service Providers who work in them also brought about a reconsideration of the company's business model. In response to this, the company moved away from the subscription model and began to focus more on the connections between Service Providers and Home Owners - facilitating connections, offering guarantees to work, and facilitate positive experiences between Service Providers and Home Owners. Whereas initially the focus of the company, and subsequently the concept of primary user, was attached to Home Owners, now Service Providers had become invested in the service to a degree like those described in the AirBnB and Uber examples. While it wasn't obvious at the time, at this point those focused on User Experience at Angie's List were dealing with two primary users. How we became aware of this situation was through the process of an ethnographically-inspired investigation with the goal of understanding our users.

4 Researching the Users

This study was conducted with Angie's List members, both Homeowners and Service Providers, in Indianapolis, Indiana and surrounding areas during August and September of 2016. The goal of our research was to understand the experience of getting work done around the home. One of the main tools that we aimed to employ to this end were the kinds of alignment documents commonly employed by companies to help gain alignment on customer experiences. Within this approach, however, the first of the divisions between our users became apparent. Due to the prior focus on Home Owners and their experience of having work done on their homes, one of the key alignment documents – a customer journey map – had already been constructed. This meant that even though our research would be simultaneously looking at both the Service Provider and Home Owner experiences, the specifics of how the research would unfold would need to be adapted to bring the level of understanding regarding the Service Provider experience up to the pre-existing level of the Home Owner experience.

To account for the differing level of pre-existing understanding, two main groups were formed within the team. Two researchers were dedicated to engaging in Home Owner research and two researchers were dedicated to Service Provider research. In addition to these teams, there were two researchers who would float between the teams. One of these researchers split his time between visits to homes and visits to businesses; the other researcher focused more on synthesis, bringing together pre-existing data from surveys together with the new data and more generally aiding in the synthesis process. One consequence of this division was that, despite the floating team members, the planning, execution, and sharing of research were handled separately by each team, independent of the other. In sum, this meant that even though the research was done under the heading of one project, the felt experience of the researchers was closer to two projects running in parallel.

For the Home Owner side of the project, participants were collected by means of a screener survey. This survey contained questions about demographic information (e.g. gender, age group, family status, etc.) as well as some more specific questions about home status (e.g. home ownership status, value of home). In addition to the questions, the survey outlined how participants would be reimbursed for their time participating in the study. From this information, we selected participants that were homeowners in the greater Indianapolis area (where the research team was based). This selection process was based off the goals of our study – with homeowners having greater ability and, subsequently, experience getting work done around their homes - and pragmatic considerations of project budget, timeline, desired number of participants, research team size and risk of fatigue with travel. Additionally, we targeted the age group 21–34 a little more than other age groups due to an under-representation of this age group within our pre-existing surveys. Beyond these aspects, we attempted to get a variety of participants based on gender, marital status, and family status. Specifics of our participants can be found in Table 1.

In terms of data collection, two approaches were used – on site home visits and probes. The first, which had ten participants, was based off contextual inquiry – taking

Table 1. Home Owner Participants

Participant	Gender	Age	Marital status	Family status	Visit/Probe
P1	M	21–34	Married	No children	V+P
P2	F	65+	Separated	No children	V+P
P3	M	21–34	Married	Children	V
P4	M	55–64	Married	No children	V
P5	M	55–64	Separated	No Children	V+P
P6	F	21–34	Partnered	Children	V+P
P7	F	45–54	Separated	No children	V+P
P8	M	65+	Married	Children	V
P9	F	35–44	Married	Children	V
P10	M	35–44	Married	Children	V
P11	F	55–64	Single	No children	P
P12	F	21–34	Married	Children	P
P13	F	35–44	Married	Children	P
P14	F	35–44	Married	Children	P

the form of a home tour to highlight various work done, semi-structured interviews, and a canvas activity over the course of three to four hours. We had initially wanted to time our research activities to coincide with actual work getting done on the home. This, however, proved to be prohibitively difficult, due to a combination of the infrequency of work done on the home both in terms of number of projects and time of day that work is done. So while we could not conduct research in the middle of work being done with all participants, we did have participants who were at various stages in projects.

The probes were helpful in this regard, allowing us to extend our data collection to a longer timeline.

For the home tour, participants were prompted to give us a guided tour of as much of their home as they felt comfortable sharing, speaking aloud about the different aspects that they thought were important and highlighting areas that they had work done. Following this, the semi-structured interviews involved researchers following-up on topics and concepts that came up during the home tour as well as inquire further into pre-defined areas of research (e.g. what makes you decide to have someone do work on your home as opposed to doing it yourself, how do you feel about the current state of your home?). Finally, the stimulus activity involved having participants look at sheets of stickers with either words or images on them related to experiences. Participants were directed to pick out the words and images that they associate with success and arrange them into groups on a large sheet of paper. As with the tour, participants were encouraged to talk through their process. The goal of this was to define what values were most important to our participants, flesh them out, and obtain more details around who they are as people and what core values drive their decisions.

The second approach that we used for data collection was a probe kit. The probe kit was loosely designed off cultural probes [5] and contained a set of prompts, activities, and artifacts for participants to encourage consideration and reporting of their feelings

during work on their homes. Most of these items were arranged into envelopes to be opened daily throughout the time that participants had the probe. For example, on the first day of the probe participants opened an envelope to find two cards. One card read:

> *DAY ONE Record your thoughts about the work being done to your home. The prompt is a suggestion, but feel free to tell us anything else we need to know from today.*
>
> *Prompt: When you are starting a project, how do you decide to DIY or hire a professional? If you choose to hire a professional how do you go about this process?*

The second card had a few more pointed prompts created to both inspire as well as amuse, with prompts ranging from What if you had unlimited money? How would you change your home? to What if the roof of your house suffered meteor damage? What steps would you take to initiate the repair process? In addition to the daily cards, the probe kits contained a frame for participants to draw in, a suggestion box, and (for half of the probes) a digital camera. We dropped the probes off at nine houses, five of which were also part of the home visits (see Table 1 for the breakdown). Participants had the probes for five days, after which we would come and pick them up. Of the 9 probes we sent out, we only got 7 back, with two participants ceasing contact with the research team.

Like the Home Owner side, Service Provider participants were gathered by means of a screener. While this screener did ask demographic questions that were like the Home Owner side, there were also several questions oriented more towards the nature of providing services. Specifically, participants were selected to give a variety of different company sizes - based off the number of employees and general job duration – based off the type of job done in the industry. See Table 2 for a breakdown of these aspects of our Service Provider participants.

Table 2. Service Provider Participants

Participant	No. Employees	Location	Industry
SP1	1	All onsite	Painting
SP2	4	Onsite + Office	Garage work
SP3	3	Onsite + Office	Electrician
SP4	5	All Office	Auto repair
SP5	10+	Onsite + Office	Roofing

One major difference between the approach taken with the Service Providers and the Home Owners was the duration and location of the visits. While the Home Owners had one centralized location to visit, Service Providers frequently have an office that they work out of as well as the onsite visits that comprise their services to homeowners. Two of our participants did not map directly to this; one participant worked out of his truck and the mechanics had a garage that customers would bring their cars to, meaning that they did not do onsite visits. The remaining three spent their time divided across working in an office and visiting homes. With this in mind, we wanted to get experience with both the office and onsite aspects of the job, and oriented our visits accordingly. Visits lasted for a full day (approx. 8 h) and were scheduled around when

participants would be doing onsite work. Overall the goal of this was to get exposure to the whole of the service provider experience.

The data collection approach was like the approach on the Home Owner side, involving a combination of participant observation, semi-structured interview, and stimulus activity. The only difference in approach was that more questions were prepared in advance, as opposed to organically emerging from the participant observation. This was due to the need to bootstrap our knowledge of Service Providers and to gain their perspective on the issues that had emerged from previous research on Home Owners. For example, from the Home Owner side, a major pain point is Service Providers who do not return calls requesting service. As such, we wanted to ensure that we probed service providers regarding why this happens, what other issues exist, and ultimately where meaningful interventions can be made.

In addition to the in-situ visits we also sent out two surveys, one for Home Owners (n = 1335) and one for Service Providers (n = 1589). These included several questions based on the findings of the qualitative research to give some quantitative support as well as more open-ended questions to supplement the data already collected.

Even just in describing the approach to research, schisms between our two sets of users emerge. On one hand, Home Owners represent users with a centralized location, infrequent work, and with a strong emotional connection to their site. Alternately, Service Providers had multiple locations that they work at, engage in several jobs in a single day, and have a different kind of emotional relationship with their business. These different elements of scale and connectivity would continue to play out across the narratives that we collected.

5 Research Findings

We present our findings as a series of concerns for both Home Owners and Service Providers. Through this, we hope to highlight some of the differences that these two user groups have and the challenges that these present to designing for both of them.

5.1 Home Owner Concerns

Through the semi-structured interviews we learned much about people, their homes, and their home projects. Home Owners have many concerns when planning and commissioning services for their homes. These concerns are broad in nature, some of the most often mentioned concerns include security, communication/scheduling, and price/speed.

Security. For this study security is defined as the feeling of safety when allowing a previously unknown person into someone's home. Home, as we mentioned, is an emotional space, and allowing an unknown person into the home can be a difficult experience. For example, one participant (P2) said "…I don't like to leave people alone in the house" about completing home projects. Another participant (P8) mentioned "Once I've selected a contractor, by doing due diligence up front, I trust them." [In reference to having work done in a home with children.] Security as a feeling by Home

Owners often ladders up to a general feeling of trust in the Service Provider. In the case of security, trust has more of an emotional connotation with many participants pointing to the importance of feeling comfortable with the provider and establishing trust. For Home Owners, allowing someone into their home is a very different experience than for Service Providers, who often enter homes to complete projects. Through our research we found that online reviews, especially those on Angie's List, are a way for people to begin to build trust with the Service Providers they hire.

Communication. Another top concern among Home Owners was communication. Again, due to the strong emotional attachment to the home as being the most expensive thing most people own communication emerged as a concern when working on projects. Firstly, communication was indicated as a metric of success for a home project. "The responsiveness and communication you have with a service provider are the key to getting the job done and being satisfied with how is (sic) turned out. …if they don't communicate well to their client, it may not be a good experience" (Survey Response). This sentiment was echoed many times over, so regardless of the overall quality of the job, without adequate communication the experience suffers. Other comments simply and directly stated how important communication was: "Contact with us is very important" (P11). In other cases, communication was referenced contextually: "Dealing directly with the service provider has been working well…" and "We were attached at the hip" (P2). While these comments may not overtly mention communication, efficient and reliable communication were key to positive outcomes. The research points to communication as being of such high importance because people want to know what is happening to their home due to the high emotional and financial investment the home represents. While the work being done may be routine for Service Providers, it is more unusual for Home Owners. Relevant, timely, and open communication, have been found, are reliable indicators of the overall experiential quality of home projects. This is due, in part, to the correlation of communication and trust between parties.

Scheduling/Speed/Price. While there were, many concerns uncovered during our research we have chosen to focus on the most often stated. While not mentioned as frequently as security and communication scheduling, speed, and price were oft echoed concerns. Scheduling was mentioned in the context of wanting to know when things were going to be started and completed. Specifically, pain points tended to revolve around delayed start dates and unforeseen issues necessitating extended time-tables. One tale of a particularly large project mentioned the frustrations scheduling can cause: "Sometimes we've had to work around the weather and be flexible with that even so far as waiting from fall to the following spring once and vice versa. And just waiting for supplies to come in and then planning around the workers' schedules on my own. We always make it work. Always" (P2). This project even involved a work stoppage over winter where the participant and their family had to live with work-in-progress for an entire winter. Overall, most Home Owners, drawing from the emotional attachment to their home, want their projects to be scheduled and completed quickly so they can get back to enjoying their home.

As a tie-in to scheduling is speed, that is, the quickness with which a project can be completed. Once a project begins, the focus moves to, "how effective they are at

beginning on time and finishing on time" (P5). Overwhelmingly, participants commented on how important a project being finished on time, or before, was to the overall experience. Specifically, this can be tied to the disruptive nature of home projects. Having a Service Provider in their homes is disruptive to the Home Owner. Service Providers recognize this as mentioned in our interviews. "…being in someone's home. Their life is still happening, even though this may be just a "job" to you and your staff" (P11). This epitomizes why speed is important to the success of a home project, the faster it is done the faster the Home Owner can return to their normal routine.

Another repeating theme was price. Many of our participants were very concerned with being "charged a fair price". The interesting thing that emerged in this area was that fair price was not always, or even often, associated with the cheapest price. The most common sentiment expressed was some variation of "I want quality work at a fair price." However, it should be noted that many participants cited "fair price" rather than "best price" which is typified by the following statement: "…a fair price - which is not necessarily the cheapest price" (Survey Response). We presupposed going into the study that price would be the biggest concern, and were intrigued when it rated somewhere near the middle. This is interesting because it ladders to trust. People are willing to pay a fair price in exchange for aspects they deem important to the experience, price is not always the largest determining factor. These factors and concerns, and how they are handled, similarly coalesce into trust. In conclusion, when it comes to Home Owner concerns they all hinge on allowing unknown Service Providers into their homes to do projects and managing the life disruption around those projects.

5.2 Major Concerns-Service Provider

During the semi-structured interviews with Service Providers we learned that their concerns have very little overlap with those of Home Owners. For the most part the concerns of the Service Providers, much like the concerns of the Home Owners, are self-oriented. For Service Providers there were many concerns we noted, however the most common were finding quality clients and doing "good" work.

Quality Clients. The concern we noted with most frequency was that of finding quality clients. Through further interaction we developed the operational definition of "quality clients" to mean: clients that are interested and motivated to purchase a service at a fair price and intend to purchase a service in the very near future. This definition is to disambiguate those prospective clients that intend to purchase a service but in the not-so-near future or those who are simply exploring options or those who purchase solely based on the lowest cost option. Many participants commented on providing estimates as a way to determine the seriousness of a client. This fits with the trend of service providers in some areas, most notably plumbing, charging a service call fee to travel to a home. These fees are generally used to discourage less serious clients from requesting a quote/estimate they don't intend to act on soon. Succinctly stated in the following "If customers pay for a quote they are more serious customers…" (SP3) In addition Service Providers may employ tactics to try to screen clients for seriousness. One example we uncovered during our research is that when advertising with coupons

a Service Provider would "always do a 2 week lead time on coupons because it will help weed out customers that aren't really interested." (SP3) A common pain point mentioned by Service Providers is clients who schedule a service but cancel on short notice, this necessitates the evaluation of client seriousness as a way to avoid lost work.

Following seriousness of clients we enter into a desire from Service Providers to find clients that appropriately match their offerings. Service Providers resoundingly have a sense of pride in the professionalism and quality of their work, another are they use to identify quality clients is when they feel the prospective client has hired them due to their reputation for high quality work. This leads to the evaluation of clients based on appropriateness to Service Provider offerings. For example one participant said that after "3–4 years" of running the business they began to be "more selective" of the clients they worked with, looking for people who wanted higher quality work, were willing to pay for that work, and acknowledged the providers expertise. (SP3) These observations, while different from Home Owner concerns, still relate to trust, although this time it is trust in the fact that the prospective client will follow through with the purchase of the service and trust they are purchasing the proper service.

Doing "Good" Work. Continuing on the theme of quality referenced above Service Providers often mentioned "doing good work". We initially took the comment at face value, meaning, Service Providers have a deep sense of professional pride and value performing their trade and achieving excellent high quality outcomes. However, through the research process we discovered that good was used to mean both good as in quality, and good as in virtuous. Service Providers often mentioned performing charitable acts for members of their community that were in need. Doing "good work" in both senses of the term was a source of satisfaction for Service Providers.

Professionalism was a term repeated throughout our studies, this tended to relate to a sense of pride in the practice of a trade, or craftsmanship. The first aspect of doing "good work" we observed is that of producing high quality outputs and deriving satisfaction as a result. The satisfaction experienced by a Service Provider of creating a high quality output can be attributed to two different sources: 1. the pride intrinsic to creating a quality outcome, and 2. the pride of seeing how the work positively impacted the client. For example one Service Provider commented on their attitude toward goodwill "We probably do one pro-bono job every day - single mom, elderly - trying to help by giving back to the community." (SP4).

Another avenue of "doing good work" as a concern of Service Providers is applying their chosen trade in such a way as to produce excellent outputs through craft. One Service Provider spoke to the importance of quality through the framing of interest. They spoke about how applying their trade and seeing how the results impacted the client was extremely satisfying, enough so that they would continue to accept residential jobs even though commercial work pays more. "I like the satisfaction of someone coming out and saying 'wow' at the work you did." (SP1) The same Service Provider also said that at this point in their career they had little interest in working on jobs where quality was not the number one priority: "I'd rather do good work or no work at this point in my life" – (SP1) Our observation here is that there are aspects other than price which impact decision making, that is not to say price is not a factor it is just not always necessarily the primary factor.

6 Discussion and Conclusion

When considering the goals of Service Providers and Home Owners, the level at which they are examined is important. At one level, the goals are quite similar, with the Service Provider wanting to do good work and the Home Owner wanting to have good work done. From this perspective, the job of anyone who is facilitating this experience is only to help encourage good work. However, within this area challenges arise in the operations of good work, the scale at which good work takes place, and the ways that such good work fits into larger plan and goal structures for the Home Owner and the Service Provider. Here we will reflect on these challenges of mechanics, scale, and goal structures.

Challenges of operations were the most frequently reported points where the perspectives of our two Primary Users divided. These are the tasks that either a Home Owner or Service Provider needs to accomplish for work to be done. This makes sense as they are often the most visible and immediately impactful aspects of the interaction.

Along with being more noticeable, challenges of operations make up the components of products or features for multiple users under one business. Just as Uber has one application for drivers and another for passengers, the differences in these applications must, to be successful, relate to the differences between how users fulfill their role in the service. They must also not contradict each other. An application that only tells passengers where drivers are without telling drivers how to get to them would be comparable to a service that solves a problem for a home service provider by exacerbating a problem for homeowners or vice versa. Our approach to this challenge is to weigh different products and features across both sets of users – considering not only the benefits of one opportunity in terms of how it effects the user group who will be directly using the service, but also how it will affect the other user group. This is not an easy task, but the benefit of the approach is that it can give a clear means of evaluating features and keeping them to a manageable set.

Challenges of scale are a step up from the more operational issues that can differentiate two different groups of Primary Users. These are the aggregate of operational challenges, showing how they combine to create larger functional blocks that align at key points but can also diverge at others.

These would be the kinds of perspectives that come from frequency or involvement in a specific service. One example would be AirBnB's situation where a host may have any number of different guests from several different places in a relatively short amount of time. The trip for the guest, alternately, may be a once-per year venture or a once in a lifetime situation. In the case of Home Owners and Service Providers, a similar difference in scale occurs – with some home renovations only happening annually or once in the lifetime of a home from the perspective of the Home Owner, but being daily affairs for the Service Provider. In both example cases, it is the scale of the work that becomes important in terms of the expectations that are set regarding its execution and the overall experience of the interaction.

When facilitating interactions between groups with different operations and scales of functioning in that interaction, even the process of modeling that interaction can become difficult. Finding a common unit, then, becomes one way to move forward. In

our case this meant focusing on intersections between the user groups, and the specific concerns raised within those intersections. The activity of creating alignment documents (Customer Journey Maps, Experience Models, etc) was helpful in this regard, but with a somewhat different approach that that which is normally taken. Rather than representing the journey of one user and aligning it with the touchpoints, products, and features of the business, the journey is represented through a map showing the alignment of the two users and how they do or do not match up throughout the process. This helped us to see not only where some of the mechanics of both sides broke down, but also in the process of creating stages for each side how difference of scale created points for meaningful intervention.

While operations are at the level of individual operations in the interaction and challenges of scale operate at the level of how mechanics are aggregated into larger frames of reference, it is within the challenges of definition, or meaning, that some of the most subtle and impactful challenges seem to arise. These challenges are not always forthcoming, and as such require rich understanding of the two Primary Users as well as the ability to meaningfully discuss their interrelations.

Just as the elegance of AirBnB's system could be described in terms of economic theory that may be felt, but not easily articulated, by the users of that service, these are the ways that mechanics and scale are given meaning in the minds of different Primary Users. In the context of Home Owners and Service Providers, these challenges amount to the ways that trust can be developed in their interaction. This occurs in a context where, for homeowners, good work is positive interactions with work at a place that is important to the user's identity. For Service Providers, the context is one of numerous different sites and continuous reproduction of work across numerous different sites, each having their own sets of Home Owners, as a means of doing enough work to maintain a business. These perspectives are not uniform across Service Providers, but do illustrate how different operations aggregate into different scales which, in turn, aggregate into different meanings. Given that these operations are different across user groups, so too are the meanings.

Compared to the challenges of mechanics, the challenges of definition are much harder to identify and to mitigate in the context of design. Such ideas are often summative of the other challenges, but tacit in nature. The challenge here is not only surfacing these concerns, but doing so well for each individual group. The ethnographically-inspired approach that we took on this project was particularly useful in this regard. By having two different sets of users our individual participation observations built two different empathetic relationships. While this presented its own challenges for the discussion and synthesis of data, it allowed us to materialize those conversations and, within the team, work collaboratively towards resolution.

The issues of mechanics, scale, and definition do not present an insurmountable task for the facilitation of good experiences in the interactions between Service Providers and Home Owners. Indeed, these are simply the areas for opportunity to bring together these different primary users in ways like how Air Bnb brings together hosts and guests and Uber brings together drivers and passengers. For us this is a continual process, but as an overall guiding principal it is important to remember the common core elements in these groups. Specifically, that they must interact with each other and take away from those interactions a feeling that the process has been devoid of static,

and full of substance. Thus, rather than a primary user or even two primary users, the focus becomes on the connections, intersections, and overlaps between these people. Thinking about the individual issues that arise in each primary users' respective journey then becomes a process of framing those issues considering the connections, and developing features and products that resolve those issues through the lens of those connections. To use a networking metaphor, the focus should not be the nodes (users) but rather the edges (connections).

The strategies that are presented here are not hard-and-fast answers to this situation. We have had success in applying them, but they may not work in every context. We present them more as considerations as the singular idea of the user becomes something that design may not be able to sustain going forward. Through the examination of Air BnB and uber, along with our own work and reflections on an ethnographically-inspired investigation into Home Owners' and Service Providers' respective journeys, our aim is merely to begin discussions about what it means to have multiple primary users and how these challenges can be addressed going forward.

References

1. Abras, C., Maloney-Krichmar, D., Preece, J.: User-centered design. In: Bainbridge, W. (ed.) Encyclopedia of Human-Computer Interaction, vol. 37, no. 4, pp. 445–456. Sage Publications, Thousand Oaks (2004)
2. Clark, G., Johnston, R., Shulver, M.: Exploiting the service concept for service design and development. In: Fitzsimmons, J., Fitzsimmons, M. (eds.) New Service Design, pp. 71–91. Sage, Thousand Oaks (2000)
3. Eason, K.: Information Technology and Organizational Change. Taylor & Francis, London (2005)
4. Frauenberger, C., Good, J., Keay-Bright, W.: Phenomenology, a framework for participatory design. In: Proceedings of the 11th Biennial Participatory Design Conference, pp. 187–190. ACM (2010)
5. Gaver, B., Dunne, T., Pacenti, E.: Design: cultural probes. Interactions **6**(1), 21–29 (1999)
6. Goldstein, S.M., Johnston, R., Duffy, J., Rao, J.: The service concept: the missing link in service design research? J. Oper. Manag. **20**(2), 121–134 (2002)
7. Hamari, J., Sjöklint, M., Ukkonen, A.: The sharing economy: why people participate in collaborative consumption. J. Assoc. Inf. Sci. Technol. (2015)
8. ISO 13407. Human-centred design processes for interactive systems (1999)
9. ISO/DIS 9241-11.2. Ergonomics of human-system interaction – part 11: usability: definitions and concepts (2016)
10. ISO 9241-210. Ergonomics of human-system interaction – part 210: human-centred design for interactive systems (2010)
11. Johnston, R., Clark, G.: Service Operations Management. Prentice-Hall, Harlow (2001)
12. Kessler, S.: How Snow White Helped Airbnb's Mobile Mission. Fast Company (2012). https://www.fastcompany.com/3002813/how-snow-white-helped-airbnbs-mobile-mission. Accessed 08 Feb 2017
13. Lampinen, A., McGregor, M., Brown, B.: The Role of Money and Reputation in the Sharing Economy. https://scholar.google.com/citations?user=NmdJtOAAAAAJ&hl=en

14. Lessig, L.: Remix: Making Art and Commerce Thrive in the Hybrid Economy. Penguin, New York (2008)
15. Malhotra, A., Van Alstyne, M.: The dark side of the sharing economy… and how to lighten it. Commun. ACM **57**(11), 24–27 (2014)
16. McNamara, B.: Airbnb: a not-so-safe resting place. J. Telecomm. High Tech. L. **13**, 149 (2015)
17. Norman, D.A.: The Psychology of Everyday Things. Basic Books, New York (1988)
18. Norman, D.A., Draper, S.W.: User-Centered System Design: New Perspectives on Human-Computer Interaction. Erlbaum, Hillsdale (1986)
19. Oviatt, S.: Human-centered design meets cognitive load theory: designing interfaces that help people think. In: Proceedings of the 14th ACM International Conference on Multimedia, pp. 871–880. ACM, October 2006
20. Puschmann, T., Alt, R.: Sharing economy. Bus. Inf. Syst. Eng. **58**(1), 93–99 (2016)
21. Sawyer, S., Eschenfelder, K.R.: Social informatics: perspectives, examples, and trends. Ann. Rev. Inf. Sci. Technol. **36**(1), 427–465 (2002)
22. Stickdorn, M., Schneider, J., Andrews, K., Lawrence, A.: This is Service Design Thinking: Basics, Tools, Cases. Wiley, Hoboken (2011)
23. Tenhue, N.: User Experience: Primary and Secondary Users in Healthcare. Medium (2016). https://medium.theuxblog.com/user-experience-primary-and-secondary-users-in-healthcare-8dd4c5c61490#.us8nl6s7y. Accessed 09 Feb 2017
24. Weber, T.A.: Intermediation in a sharing economy: insurance, moral hazard, and rent extraction. J. Manag. Inf. Syst. **31**(3), 35–71 (2014)