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Problem and Solution Overview

In current society, individuals consume an enormous amount of resources, including food, electronics, building materials, and more. Unfortunately, it is often unclear how to dispose of these products, and individuals throw away many materials that could actually be recycled and reused for further products. In an effort to reduce this excessive waste, we intend to inform users about their waste behaviors through analysis of their purchases, and how those materials and others can be recycled or processed properly. Our application will present users with proper recycling procedures and keep track of purchases.

Contextual Inquiry Participants

We chose to visit InterConnection, a specialized recycling facility, because this segment of the recycling market is relatively unknown to the average citizen. It is important that computers and certain other items be disposed properly, and InterConnection is one of Seattle's leaders of computer recycling.

Then we visited West Seattle Recycling to research the motivation of customers to recycle their waste rather than toss it in the garbage. We also were hoping to discover materials often trashed by individuals are that actually recyclable.

Finally, we visited a family at their home in Mukilteo to research their recycling and waste practices. Most personal waste is generated in and around the home, and since our application's target audience is the general population, we wanted to inquire into one particular family's habits.



Art – InterConnection

Art is a former Microsoft employee who manages InterConnection, the non-profit computer recycling facility. With a degree in Computer Science, Art is very knowledgeable of all types of computers and most electronics. Art's motivation for working at InterConnection is the ability to educate customers and volunteers about computers. At InterConnection, volunteers work to repair donated broken computers, test and certify usable components from donations, and properly recycle pieces of equipment which cannot be fixed or do not pass minimum certification requirements. Art led us through the various departments of InterConnection and explained their purpose and functionality. At each station, while we observed the volunteers

working, Art described to us the significance of the station and the impact it has on the company. We also observed Art's interaction with customers as they dropped off unwanted electronics.

Jerry – Student

We met Jerry, a 20-year-old student at Western Washington University, at West Seattle Recycling. Jerry considers himself very aware of his environmental impact, and frequently visits recycling centers to dispose of his recyclable waste. Jerry lives in an apartment with three other students, and he makes sure that their apartment practices proper recycling techniques. The main reason he recycles is he was brought up in a family that recycles, and feels “it’s the right thing to do.” When he needs to dispose of large items, such as the filing cabinets we encountered him with, he actively seeks out a facility capable of handling the materials by checking the internet. While Jerry was unloading the filing cabinets from his car, we were able to ask him about his reasoning for coming to the recycling center and about his practices at his residence.

Alice and Rick – Family

Alice and Rick live in Mukilteo with their daughter, Violet, and believe they are decently environmentally conscious. For example, Alice maintains multiple compost bins that she uses for her garden. Also, Rick recently bought a Toyota Prius for his daily commute to Seattle in order to take advantage of its improved gas mileage. The family tries to recycle their waste whenever possible. However, if the information is not known or instantly available, they often do not have time to research the proper disposal method. At their home, we observed the way the family interacted with and disposed of various items. We noticed that if their recycling bins fill up, the family waits until the next week to recycle the overflow of items. They explained to us their view of environmental awareness and what they do to protect the environment. They also explained many of the questions and problems they encounter in their day to day lives regarding how to dispose of waste and properly use resources, as well as their current solutions.

Contextual Inquiry Results

We noticed two main themes shared between all the people we worked with: monetary opportunities and convenience.

After talking with Art, we learned that customers dispose of their electronics at InterConnection primarily due to the fact that the process was hassle-free and did not cost them anything. Art believes that if people had to pay to recycle their computers, not as many people would participate in the recycling program and would simply throw their computers in their trash. Additionally, people who dropped off recyclable goods at the recycling center received

monetary compensation for their materials. The financial reimbursement provided incentive to bring recyclable materials to the plant rather than putting it in their home waste bins. Additionally, Alice and Rick recycle when it makes sense, but often purchase cheaper products despite the fact that the more expensive alternative is more environmentally friendly. This commonality of economic factors likely plays a large part in consumers' decisions regarding recycling.

The economic value of the recycling process is also affected indirectly by transportation costs. At the recycling plant, we observed that all customers only brought items that would be expensive to dispose of by other means – such as the filing cabinets – or items they could derive financial gain from – such as with copper wire and aluminum cans. If more of the benefits could be shared with the general population regarding the economic advantages of recycling over waste disposal costs, logically more customers would be interested in participating in the recycling process.

When recycling, consumers also focus on the convenience of recycling services. Alice and Rick did not always recycle all of their recyclable materials because they did not know how to handle them, and looking up proper disposal practices is inconvenient. At the waste disposal facility, the owner lamented that the advent of curbside trash collection caused a dramatic decline in the amount of incoming materials regardless of economic incentive. The people that use the facility do so either for the monetary compensation or because the center accepts almost all recyclable materials with little hassle. At InterConnection, one of the reasons people use their facility is the easy and fast nature of collection. Customers are not burdened by paperwork and move in and out quickly. In some cases, the InterConnection volunteers even go out into the community to collect computers, so people do not have to take them to the recycling facility. By lowering the barriers of effort and time someone needs to put forth in order to recycle efficiently, we believe they are more likely to participate in recycling programs and recycle materials they would otherwise trash.

The focus of our project changed with each contextual inquiry. After meeting with Art from InterConnection, we were convinced that convenience was a major determining factor in an individual's decision to recycle. After meeting with Jerry and the owner of West Seattle Recycling, we learned that the economics of recycling also played a key role. Simply put by the recycling center's owner, "Recycling would not exist without a market for the materials." Our research at the recycling center made us aware of the different motivations people have to recycle. And finally after meeting with Alice and Rick, we learned about particular convenience issues they had with their recycling habits. This final contextual inquiry provided the insight we used to develop the basic features of our application.

Tasks



Disposing of a battery (easy)

After months of use, Annie has noticed that the rechargeable batteries in her digital camera are no longer able to hold a charge. Annie wishes to dispose of the batteries properly, but she is unsure whether the batteries can be recycled, and if so, where she should take them to be recycled. First, Annie searches the internet for battery recycling practices and determines that her batteries indeed can be recycled. Next, Annie searches for locations to recycle batteries. After compiling a list of locations, she uses an online mapping service to determine the closest center to her location.

The recycling practices of certain items such as batteries and other electronics are often unknown inconvenient to look up. Additionally, the effort required to determine the best recycling procedure of an item can outweigh the consumer's desire to recycle the item properly. However, if recycling information for an individual item was easily available, we believe people would take the proper steps to dispose of the item in the environmentally correct manner.



Generating less trash (moderate)

Stephen has noticed large amounts of garbage piling up at his house lately. Last week he did not have enough room in his curbside garbage can for all of his waste. Stephen cannot believe he went through 4 small boxes of crackers and 10 cans of soup in such a short period of time. He does not know where all of this garbage is coming from because he cannot grasp the cumulative effect of his consumption habits, and he is concerned that he is not recycling enough due to the ratio of the amount of waste he is producing to the amount of recycling. Stephen goes to the local grocery store to do his shopping, and proceeds to buy his usual goods. Because many of these items contain various elements of packaging that Stephen usually throws away, he goes through the stuff he has bought and figures out what can and cannot be recycled from each package. The next time he goes to the store, he buys 2 larger boxes of crackers which ultimately use less packaging. Stephen also decides to compile the ingredients of his favorite soup and prepare it himself, resulting in more soup and less packaging.

Consumers often do not know whether various products can or cannot be recycled. Information on that specific product's recyclability can often be difficult to find, or at least inconvenient. For many people, if recycling information is not readily available they will simply throw it in the garbage instead of researching for information about proper disposal. This is even more likely if they are disposing a single item. Additionally, consumers have difficulty comprehending the long term aggregation of their waste.

Reducing consumption over time (difficult)

Jake is talking to his neighbor who mentions that the amount of trash she has seen on the sidewalk in their neighborhood has been increasing since she moved in eight months ago. Jake realizes that his trash has been increasing also, and looks through all of his receipts to find the reason. After arduously digging through receipts, he notices that he has bought twice as many non-recyclable items during this month than the same time last year. He figured out which products are producing the most waste, and the next time he goes to the store he purchases more items in bulk rather than individually wrapped.

People do not often track how much waste they generate, and this lack of attention can cause an increase and negligence over time. Alice and Rick provided an example of this, saying the only reason they found a water leak is because of an increase in their water bill. Comparing consumption over previous months can lead to the formation of goals and self pressure to improve.

Sketches

