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CSE 440AB (Cleaning and the Internet of Things)
Assignment 2d: Contextual Inquiry Review

Intro
We were able to recruit four participants for the accelerated user research portion of this project. The methodology used was interviews in context. We visited participants in their homes and conducted semi structured interviews to understand the motivation and practices around cleaning behaviors. After completing the interviews we saw the emergence of common themes, problems, and practices. For example, cleaning was rarely scheduled and actually only emerged in the presence of triggers. In addition, a clean environment was something was desired but never prioritized.

Participants
Mark is a 28 years old software engineer at Google Kirkland. He moved to Seattle 18 months ago with his wife. They own a condo in Capitol Hill. Commuting is a big part of Mark's routine, he spends about and hour and a half every day driving or riding the bus. He is a very active person. Mark loves to watch and participates in sports and he also goes to the gym regularly. Mark is a very busy guy and he has been taking over the household cleaning activities since his wife started grad school. His wife also works full time and goes to school which means, she does not have a lot of free time. Therefore, they decided that Mark will be the one who is mainly responsible for the housework until she finishes her degree and has more time to help.

Bo is a 23 years old Master's student in Architecture who lives in the dorms with 3 other roommates. Since her major requires a lot of work inside and outside her apartment she doesn't have time to clean. She always procrastinates and her room is a mess. She starts to clean in two conditions, if her apartment's floor starts to become invisible from all the mess, and if someone is coming over. To avoid her messy apartment and clean-ups she spends most of her time on campus or in coffee shops.

Madolyn is a 21 year old undergraduate nursing student at the University of Washington. She's lived around Seattle all of her life and comes from the eastside, specifically Issaquah. However, she lives somewhat close to campus now in a house of eight total roommates. Madolyn has various time commitments. First, she commutes on average 20-30 minutes to school and another 20 minutes to work at Harborview Medical Center takes. Second, Madolyn participates in the Husky Master Swim Team, which has several routine practices a week, each of which take approximately 2 hours. In addition to being a full time student, she is also a nursing technician, spending 20 hours a week at Harborview Medical Center.

Pranav is 20 year old undergraduate student at the University of Washington. He is currently pursuing his pre-med and hopes to apply to medical schools in the near future.Now a Junior, he recently moved into a 2-bedroom condo in Belltown, a neighborhood of downtown Seattle. His parents are currently the owners of the condo and are renting the other bedroom out. He

commutes to school everyday using public transit which he says is sometimes time consuming. In addition to his heavy course load, Pranav is part of several on campus organisations which often leads to him staying late on campus and coming back to his condo very late. Pranav, by nature is a very clean person, but is finding it hard to keep up with his busy schedule.

Themes

From the information that we gathered, it was evident that most people have a desire to maintain a clean environment. Although the definition of what clean entails might be different from person to person, most of the people we interviewed saw the benefits of a clean environment. Contrary to our initial belief that some people scheduled their cleaning we found that cleaning was almost exclusively 'triggered' by internal and external factors. For some people, the internal factors included things like pent-up guilt that would build over days as was the case with Mark. He says "I would tell myself that I should clean, then I tell myself the same thing for several days until I notice that I have been telling myself the same thing very frequently, then I clean". For others, the internal triggers included an innate desire to maintain a clean environment as was the case with Pranav. Pranav remarked, "I believe that a mess free environment results in better organization and focus". External triggers were commonly the result of friends or family coming over. An interesting thing to note is that external triggers commonly resulted in the cleaning of the 'outer' areas of the home such as the living room or kitchen. We can infer that the reason behind this is that those areas would be visible to incoming guests or spouses. Internal triggers often resulted in the cleaning of private areas such as the bedroom.

When house maintenance was brought up another thing we were able to glean from our contextual inquiry was that maintenance of the house and appliances was largely related to ownership. Those that owned their house or apartment showed more interest in the maintenance of their house. The reason behind this became apparent as we completed more of contextual inquiries. We found that for renters, maintenance of their heater or refrigerator was performed by their landlord or apartment complex whereas for owners, fixing a broken heating unit required either time on their part or money. Monetary interests are what really drove people to take household maintenance into their hands.

From our inquiries were also able to get a better understanding of what was stopping people from completing their cleaning chores. As mentioned, keeping a clean area was basically a universal desire but most people failed to make it a priority or consider when planning out their day. For a lot of the people, cleaning was an annoyance and some did not feel it was worth their time. Others kept ignoring the problem until it became too massive to ignore.

Lastly, we were able to get a better picture of what motivates people to clean or lack thereof and we were awarded with better understanding of the cleaning behaviors of people. While some people liked to complete chores in short bursts, others prefered saving all the cleaning to one day. We will have to keep this in mind as we design our product moving forward and we will

have to make sure that we understand people's motivations so that we can present our design and product as something that *will* be worth their time and energy.

Task Analysis

    1. **Who is going to use the design?**

This design is primarily for people for which cleaning is not a priority. This includes people who have a hard time keeping the house clean and organized. It could also be those who want to prevent their guest from arriving to a messy home. Additionally, this design will serve those who want to visualize the cleaning state of the house and identify aspects about "hidden" cleaning/maintenance activities like changing the AC filter or the hand towels in the bathroom.

    2. **What tasks do they now perform?**

There are a few common tasks that these people currently perform. First, most people create some sort of mental to-do/priority list. Second, they shame themselves or get pressured by others into doing cleaning. This sometimes include responding to cleaning when presented with a visual trigger. Finally, some, though most definitely not all, note in their calendars important cleaning dates.

    3. **What tasks are desired?**
- sync to calendar
- set up reminders
- enter cleaning milestone
- enter forgetful tasks
- assign task to sensor (if we decide to go with the sensor raute)
- monitor areas of the house
- track progress of milestone
- obtain cleaning history

    4. **How are the tasks learned?**

Our design will aim to be an intuitive interface where the user will be able to track, obtain, and analyze data acquired from using other interfaces. We want to make the tasks related to obtaining and tracking cleaning information as easy and simple as possible. Thus, the interface will be design with ease of use in mind such that the learning curve is as small as possible. If we decide to go with a peripheral hardware solution, an included tutorial and instruction set would help the user learn the tasks required to set this up.

    5. **Where are the tasks performed?**

There are numerous places of interest where the tasks will be performed. Each living space has specific requirements and to-do lists that have to be completed for the cleaning task to be finished. A few places include, but are not limited to: living room, bathroom, bedrooms, backyard, kitchen, garage, lawn.

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

The relationship between the person and the data is very personal and intimate. The person will have full control of the data and its respective privacy and uses. Of the data's uses, the person will receive benefits. From being able to track cleaning tasks' duration to scheduling cleaning events, the person will be able to be more organized about cleaning as it has now become more concrete timewise.

7. **What other tools does the person have?**

The person could potentially have apps for scheduling cleaning, paper to do lists, house boards to distribute cleaning tasks and note when was a task last performed or other ways of keeping their house clean.

8. **How do people communicate with each other?**

People would communicate with each other through the design. The design calls for syncing of calendar events in order to keep people up to date on when to clean. This syncing would also allow for people to schedule different cleaning sessions in order to avoid conflict, or plan a session together to clean bigger areas when more than one person is responsible for a particular chore in a household.

9. **How often are the tasks performed?**

The duration and frequency of the tasks to be performed are dependent on the individual. Some factors that come to mind that would affect frequency would be how messy this person of interest is, how regularly he or she cleans, and how consistently he or she thinks about or wants to clean. However, as a baseline estimate, we think the average person will clean, in some form, one to two times a week.

10. **What are the time constraints on the tasks?**

Often times, especially people with busy lifestyles, cleaning is not considered a priority. They find that it is a better use of time to do something else. Thus, there is not a lot of free time set aside specifically for the tasks of interest. For us to properly motivate people to complete these tasks, we need to convince them that it is worth their time to set aside time, or make it easier/less time consuming to schedule and complete these tasks.

11. **What happens when things go wrong?**

Health issues tend to occur when things go wrong. Often times, when maintenance tasks such as cleaning an air filter aren't completed, the results are bothersome to a person's health. In the example of the air filter, the air quality in the room or house would drop, resulting in potential for more present allergens. This is rather stressful for those who suffer from seasonal allergies. Additionally, these failures can pile up, creating a negative feedback loop that dominoes and harms other health related areas.