Week 8 Deliverable

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Finalised Product Description Statement

‘Household Hero’ is an interactive tablet application that considers the electricity usage of a user’s household to provide personalised feedback on electricity expenditure and encourage sustainable living through monetary savings and rewards.

Context Scenarios

Context Scenario For User With A Disability

Alistar is a 30-year-old who is suffers from poor eyesight and is deaf. He lives in a two-storey house with his wife and 3 children. He is currently unemployed and relies on a disability support pension as well as income from his wife. Alistar considers himself an environmentalist and cares very much about living sustainably and preserving the natural environment so that his children can have a future to look forward to.

Alistar likes to read up current environment-related issues on his tablet. He relies on a screen magnifier to enlarge the size of the screen font. When that is insufficient, he uses a screen reader that represents the on-screen text in braille that vibrates whenever his fingers hover over it.

Alistar has become frustrated about the fact that the websites that he views and the applications that he uses provide insufficient accessibility support. Oftentimes, the words are illegible when zoomed-in and much of the content is in audio or video format, rendering it impossible for him to consume it. Alistar would like a way for the content to be centralised and presented in a legible manner.

Lately, he has become concerned about the impact of his household's energy consumption on the environment. With this in mind, he searches for "living sustainably" in the app store and stumbles across "Household Heroes". After installing and opening the app, Alistar notices that there are native accessibility options such as increasing the font size, text-only mode and changing the background colour.

After setting his configuration, he finds that the app has a monthly newsletter on Australia's energy consumption and its effect on the natural environment and eagerly signs up for it. Also the app provides him with suggestions on long-term changes that he can make within his household to minimise his environmental footprint such as installing solar-panels. He also involves his children, teaching them to turn the lights off whenever they leave an unoccupied room. After following these suggestions for a while, Alistair's progress is reflected in the monthly report. He is pleased that the content is supplemented with large and easy-to-understand diagrams, one of which is a graph showing a decrease in his household's greenhouse gas emissions. Knowing that his efforts create real change, Alistar is motivated to continue to use the app.

Context Scenario For A New Parent

Martha is a 27-year-old new parent finishing off her PHD studies whilst working part time as a tutor in her university. She currently lives in an electric inefficient household however wants to make sure her new born child lives in an environmentally safe world.

She put her child into its crib and talked with her husband about leaving a better environmental footprint for their child. Her husband and herself are both beginners and have no experience with sustainable living.

She spent time researching alternatives however did not want to make immediate drastic changes and wanted to be realistic about it. Her husband suggests they try alternative electricity sources, and see which alternative produces the best outcome.

She went to the application store to find any application that can give feedback on the electricity consumption in place at the current household. She decided to try out the application “Household heroes”. She opens the application and signs up to the application as it came with the promise of helping users keep track of the electricity consumption, in the household.

She performed one month of no heaters on the application, and in the progress report she observed that she had reduced her electricity consumption by a certain amount. She then performed one month of LED light bulbs and observed the progress report

Martha decides that she will only fully implement electricity saving techniques that affect the electricity score by drastic amounts, as this is her measure of how impactful an appliance is to the environment.

Context Scenario For Student Living With His Girlfriend

Alex is a 20-year old part-time student at UTS. He has been living with his girlfriend in an apartment, working full-time to afford living accommodations and essentials. He Upon inspecting his bills, Alex notices that his electricity bills have been fluctuating quite drastically and wants to get to the root of the problem.

Alex began to around the household and observe any key electrical appliances such as a heater, air-conditioner, dryer, washing machine, microwave and device chargers. He notices that many of the appliances contain energy efficiency stickers, however he has no clue about what they mean. Alex would like to learn about the various labels and ratings associated with the appliances as well as find the devices that contribute the most to the volatility in his bills.

One day, Alex sees an advertisement for the application “Household Heroes” and downloads the app in the hopes that it could help him manage his electricity consumption.

Upon downloading the app, he completes the signup process and is ready to start using it.

He enters the appliances that he noted earlier into the application and begins to track his consumption. At the end of the month he receives a summary report on his electricity usage. Being a non-frequent user of his tablet due to limited free time, Alex appreciates that this process is automated and does not require constant user input. The report contained information related to his energy usage as well as a Household Heroes score; a numerical representation of his performance.

Alex used this information to find the devices that were consuming the most energy. He implements the appliance-specific tips suggested by the app into his every-day lifestyle including shutting down his work desktop when not in use. He also reads through the app’s educational content on energy efficiency stickers and decides on replacing his existing fan heater with an oil heater.

After a period of months Alex makes noticeable progress towards reducing his energy consumption. While using the application, he also notices that his score can be used for redeeming prizes and entering giveaways. Being a student with very limited disposable income Alex feels a greater sense of motivation, knowing that he can both save on his monthly utility bills and win prizes in the process.

Requirements

Functional Requirements

- Calculate sustainability score
- Return user monthly performance report
- Give personalised tips to users
- Give general tips to users
- Graphs showing the sustainability performance over time
- Gather user household information
- Sign in page
- Appliance management and information gathering
- Give-aways based on performance and some form of chance
- Link to social media
- Account management

Non-Functional Requirements

- Important To User
    - Security of information
    - Compatible with multiple OS
    - Minimalistic interface design
    - User flexibility
    - Consistency across application
    - Easy to learn
- Important to team producing
    - Maintenance of product
    - Testability of the product
    - Stack for development
- Important to the business
    - Branding
    - Cost
    - Time to market

Interview Analysis

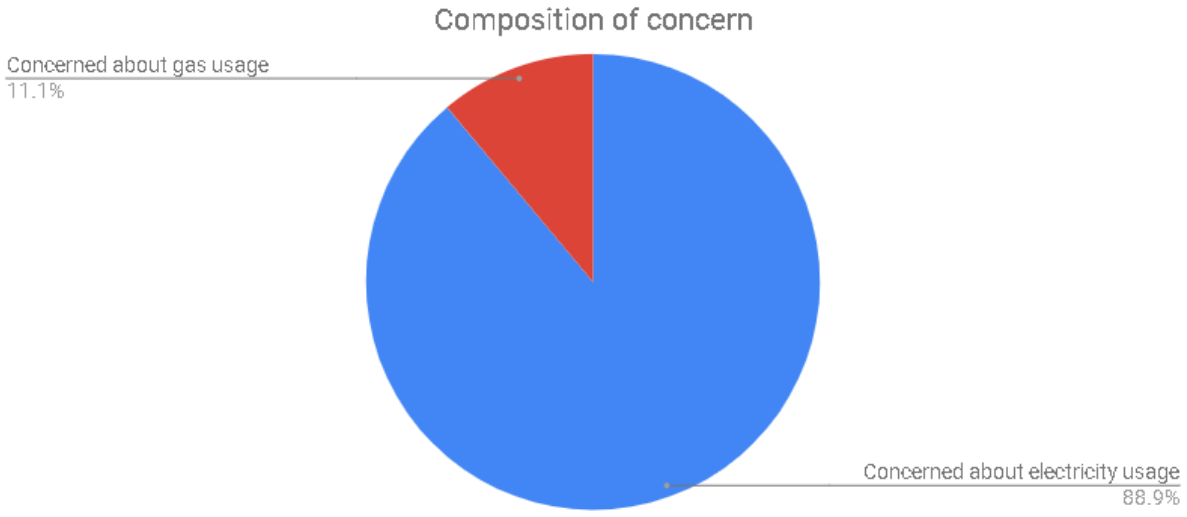
Interview Discoveries

A total of 10 interviews were conducted. During the interview process, one discovery was that it was oftentimes difficult to obtain responses from the participants in particular for the open-ended questions. We found that rephrasing the question or providing examples helped to incite responses. Additionally, asking some of the easier, closed-ended questions were helpful in warming up the interviewee in preparation for some of the more difficult questions. Another discovery was that the households of each interviewee varied greatly from household to household, many of which had wants and needs that weren't exactly captured in our initial context scenarios.

Overall Findings

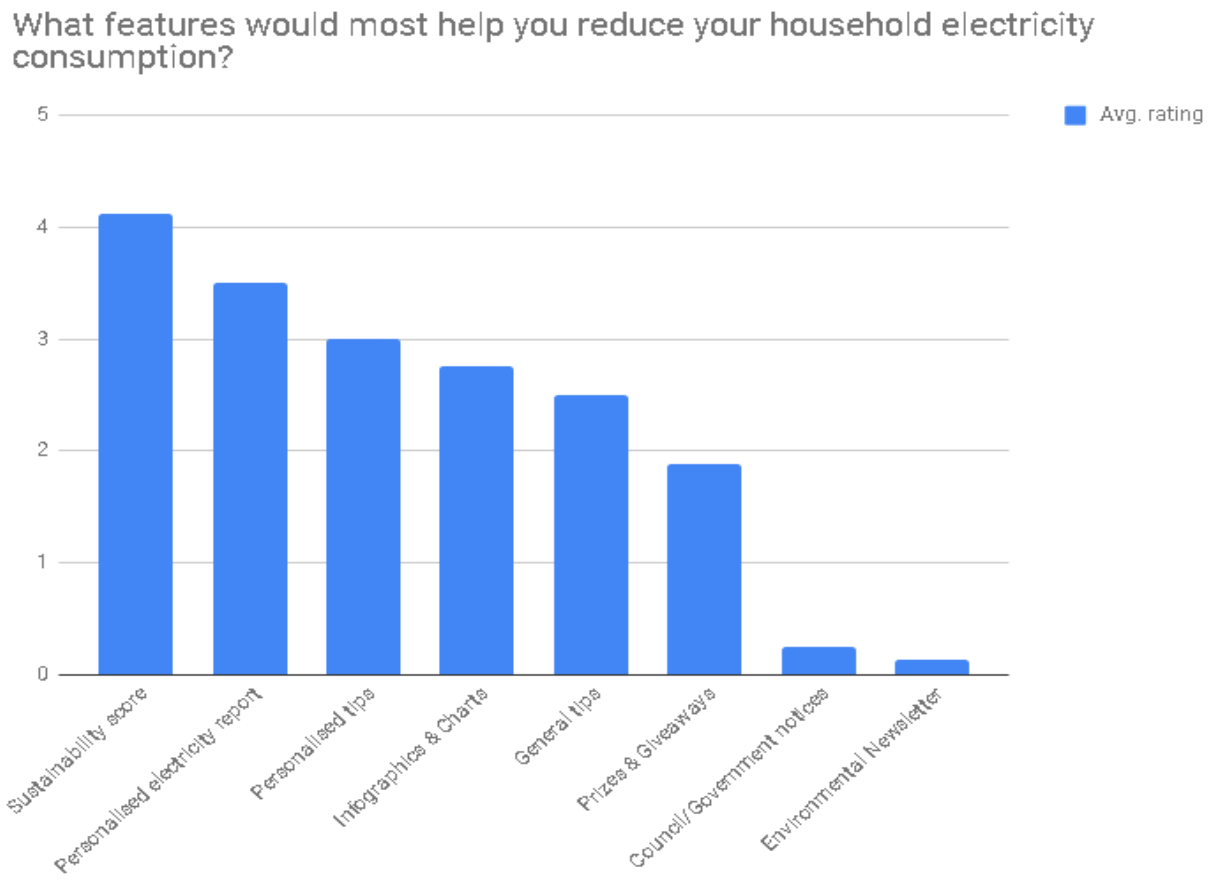
Overall, the average household size of the people interviewed was 3.25 people. In terms of the age distribution, adults accounted for most of the demographic followed by teenagers and then children. As for the interviewees, a majority (6) of them use their tablets for 0-2 hours a day. The interviewees used their tablets primarily for media consumption followed by social media, browsing and productivity.

The quarterly electricity bills for each household was quite evenly distributed among the range $200 - $1000 with the average bill being $650. The vast majority of the interviewees (8) said that they were concerned about their household's electricity consumption. In contrast, the household's quarterly gas bills were on average significantly less at $160. This could explain why only a single participant stated that they were concerned about their household gas consumption.



When asked to rate the usefulness of potential app features (on a scale of least helpful to most helpful), the features that resonated the most were:

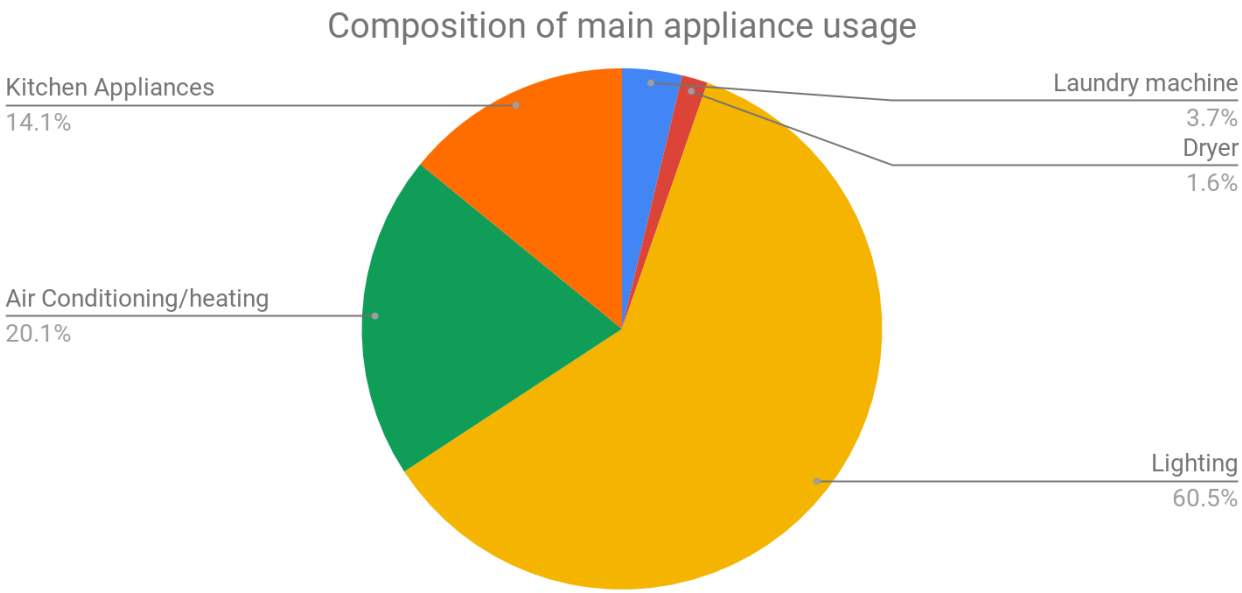
- A sustainability score based on the household's energy usage (rated as Very Helpful with an average of 4.25/5 points)
- A personalised household electricity report (rated close to Very Helpful with an average of 3.8/5 points).



When asked about any other features that would be helpful, some recurring suggestions included in depth guides on how to reduce household electricity usage and the ability to participate with friends (such as a sustainability score leaderboard).

Since the personalised household electricity report resonated strongly with almost all interviewees, follow-up questions were asked about the desired frequency and information to be included in the reports. An overwhelming majority (8) said that they wanted the reports delivered monthly and the main information to be included are money saved (9), electricity consumption (8) and changes to electricity consumption from the previous month (8).

As for household appliance usage, room lighting was the most frequent (60.5%). Air conditioning and heating were also commonly used.



Changes to PDS and Context Scenarios

One of the major changes was that our initial PDS used the term energy; a term referring to both electricity and gas. However, since very few interviewees were concerned about their household gas usage, refined our PDS by replacing “energy” with “electricity”. Also, our PDS mentioned “prizes” as one of the primary features of our app. However, since it was rated on average as only “slightly helpful”, we decided to remove it from the PDS. For our context scenarios, we made the false assumption that our users would be adept at using the tablet. Since most of the interviewees were light tablet users, we incorporated the usage of a help/documentation feature in one of the stories. Also, while the environmental aspect of electricity usage was important to some interviewees, the data shows that they cared much more about saving money on electricity bills. Thus, our context scenarios were modified to place a greater emphasis on electricity management features such as the monthly report.