Ecotecture

Application Proposal

Lisa Jung & Jason Chen

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Context

We decided to create a prototype of a smartphone app that will display information of energy consumption for each college building. Faculty, staff, and students especially may not know how much resources the dorm rooms or campus facilities use up each day, which is a problem because the groups listed above typically spend a majority of their day on campus. So they should be aware of how much an impact the buildings that they work in are making. With that, the purpose of this app is to first inform users about the energy usage of the buildings that are around them and then provide ways of reducing emissions as an individual.

Features

The application will allow users to either search for a building they are close to, or the app can auto-detect the building they are currently in, or close to. With the building selected, the app will display the energy usage in the following categories: water, electricity, natural gas, trash, recycling, and pages printed/paper used. Consumption would be displayed as a pie chart, to show what resource contributes to the overall consumption each month. Then, the user would select the section/category of consumption, which would then go into the specifics of consumption: monthly consumption trend and specific statistics. On top of displaying the energy usage, the app will have a page to show what "green" features the building has, for example Doherty Hall has a green roof. The app will also show users on what key resources the building uses more, and users can learn small tips and tricks on how to reduce consumption. Additionally, an incentive would be put into place for users like, each month, the building with the biggest decrease in emissions would have a sale once a month for the dining places near it, or the dorm that has the least consumption each month will have a pizza party, and so on. For a list of the key features, please refer to the paper prototypes.

Persuasive System Design Principles

Several persuasive system design principles were considered in the process of designing this app: reduction, social comparison, simulation, and real-world feel.

The first design principle identified and implemented for this application was reduction. This app has a function to detect the building location based on the user's GPS location (since it is a smartphone application, the GPS location can be obtained), and that would automatically provide the user with the relevant building information and statistics. On top of that, there are methods of working around this, as the user may want to find out information about other buildings, so there is a search bar/map function.

The next design principle chosen was social comparison, which is defined as users can compare performance with others. This application is not so much geared towards personalized efforts, but users can compare building emissions, especially in dorms for students or offices/facilities for professors. As mentioned above, there would be rewards to increase incentive for users, which will be applied on certain cafes or stores in the building that had the most decreased consumption per month. The social comparison between buildings (which are based solely on the user's efforts as a whole) can help achieve rewards for users.

Simulation was also a design principle implemented in the application, as users would be able to see the connections between cause and effect. Users would be able to see monthly trends in the building's energy consumption as well as a detailed breakdown of each category of resource consumed. With that, the user will be given an infographic (a tree with many leaves to show a eco-friendly energy consumption levels and a tree with little leaves to show high consumption) that will serve as a metaphor of how the consumption is impacting the environment. This will help the user in understanding the information as well as the impacts of their actions.

Last, real world feel was implemented in the application because the main objective was to inform the users about building features, which is a very unknown topic towards many of the users in the university.

User Stories

Difficulty: Easy

Actor	User Story
Student	As a student, I want to see energy consumption of each building so that I can see what I can do to reduce energy usage of each building.

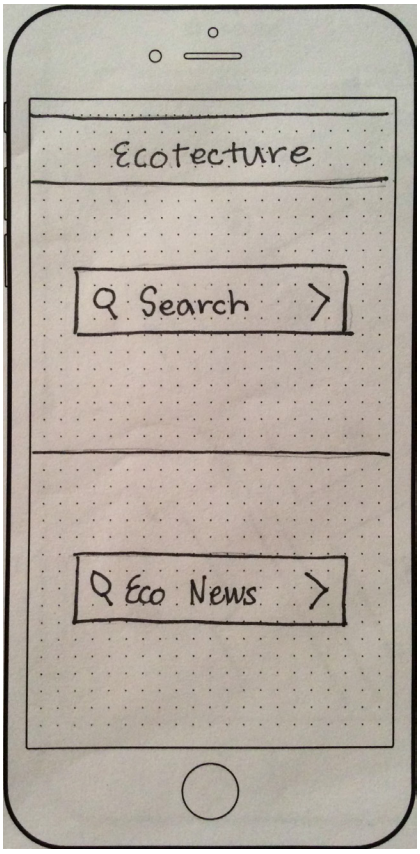
Difficulty: Medium

Actor	User Story
Professor	As a Professor, I want to find ways to reduce emissions within the classroom or my office so that I can improve my work environment as well as community as a whole.

Difficulty: Hard

Actor	User Story
Student	As a student, I want to improve energy usage of school buildings so that I can save money by getting discounts at one of the school's cafes.

INTERFACES



Home Page

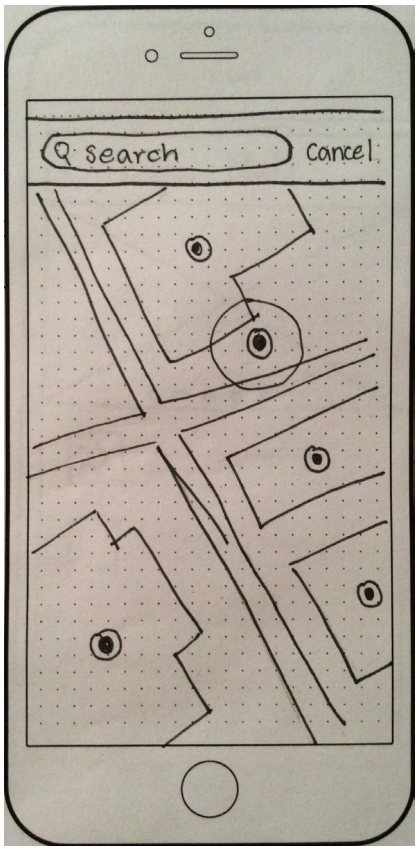
- Search
  Search buildings and view information

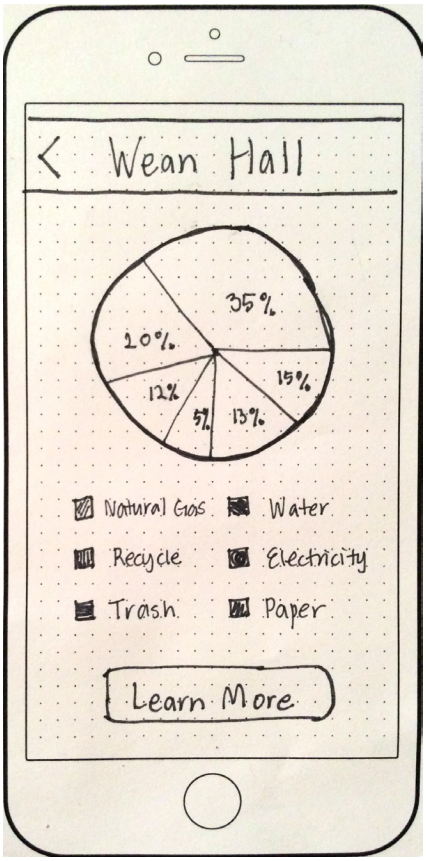
- Eco News
  View tips and events

Search Page

- Search box
  Specific building search

- Map
  View buildings close to the user
  The user can choose any of the buildings



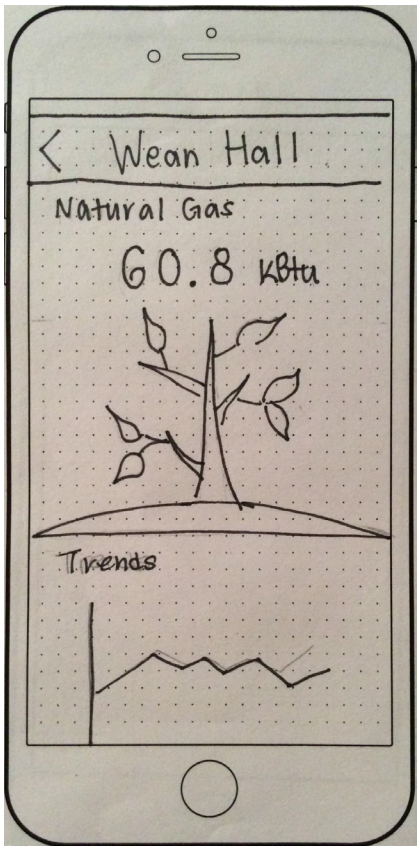


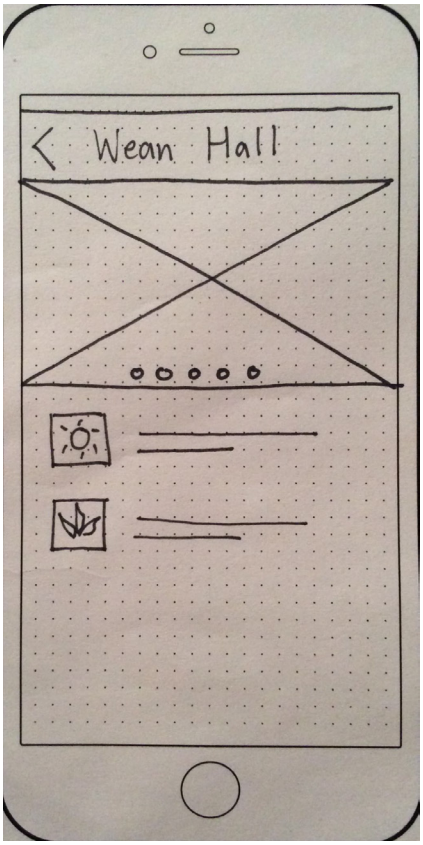
Main Building Page

- **Pie chart**
  Percentage of each energy category
- **Learn More button**
  Green information about the building

Consumption Page

- **Accurate number of consumption**
- **Green Status**
  More leaves it has, less energy consumption happening, compared to that of previous month
- **Trends**
  By months





Building Information Page

- Photos of the building
- Special characteristics
  ex) solar panel, green roof, wind power

Eco News Page

- Sliders
  Top three news
- Other News and tips
  In chronological order