

IPRO 323 Project Plan
**Developing a Next-Generation Occupant
Engagement System**

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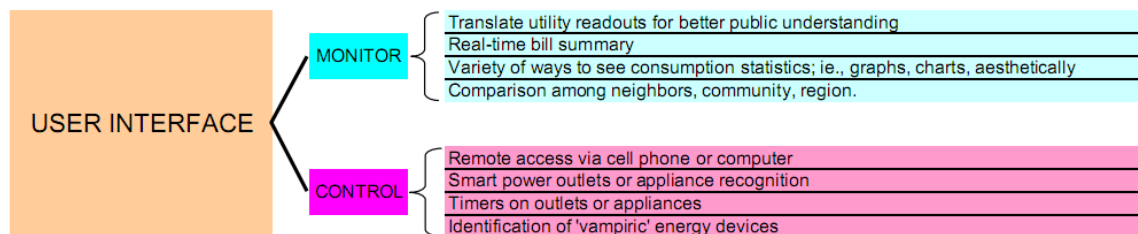
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1.0 Abstract

Education of the public on sustainable development is a necessity if the technology and deployment of green design and construction is to succeed. Facing sustainable challenges in all aspects of energy and natural resource consumption, IPRO group 323 is looking to implement education of the consumer at their foundation-the home.

Translating the sustainable terminology used in the media into a language found in residential life; our group proposes that if resource consumption is made into an understandable, built-in aspect of the home then education also becomes “built-in” to the public’s psyche. Green technology is becoming a common thing in buildings today but without a green consciousness in the public who would utilize these ideals, the technology will not be used to its fullest potential.

GOAL-to design a user interface that makes energy consumption a live, chartable and ongoing process that resident can track. This information when compared with current trends, prices or even equivalent energy consumption by neighbors becomes a powerful tool in illustrating just how important resources in energy are tracked in the individual realm of residential use.



2.0 Background

The IPRO is pending to be sponsored by ComEd in order to research possible methods of energy conservation. The focus of this project is to design a system that encourages energy conserving behavior in residents by use of an interface that displays real time energy use of a residence. For this system to encourage conservation on a significant scale it is necessary that it can be installed in both new and existing buildings. The interface needs to give detailed enough data about the building’s energy consumption for the user to make well informed decisions of how to save energy, but at the same time the data must be presented in an easy to understand format. Also, the unit or units that provide the data must be accessible enough so that the user can at any time be aware of the impact that activating a certain device will have on energy consumption in their home.

The technology to implement such a system as this is already made and on the market. Devices that measure power consumption are already widely used. The information gathered by these devices can be transmitted to a central hub by low bandwidth wireless devices, such as Zigbee. The information could be displayed for the user on televisions, personal computers, wall mounted displays, or cell phones. The software for displaying real time energy use has already been made. However, what is currently on the market is catered more so to businesses, not residences. It is a good example to begin with, but the

IPRO's interface will need not only to tell the resident how much energy is being used, but provide encouragement for energy saving behavior as well.

This system is not the first attempt to reduce excess power consumption at home. New designs of appliances and light bulbs use less power than those before them, and The Museum of Science and Industry's Smart Home exhibit is a life size example of an energy efficient home. Where this IPRO differs though is that whether someone lives in the most energy efficient or energy wasting house in the country our system can help. The way that the system monitors a residence empowers the user to single out items that are wasting power and shut them off. This practice will save users money every month on their energy bills, which will in turn pay for the initial cost of the monitoring system.

3.0 Objectives

The main objectives for this IPRO stem from the need for ComEd to reduce energy consumption through altering consumer behavior. To this end we require a system that will monitor energy consumption, provide occupant's with information that will help them to make more efficient use of their energy resources, and at the same time be energy efficient itself.

4.0 Methodology

For most of this semester our primary goal will be to brainstorm and come up with possible ideas/implementations of a way to monitor energy use and give constructive feedback to the users of the system about their energy usage.

Our first concern is how to gather data from the user's use of the system, we will choose a method of collecting the data from individual devices. We then need to find a way to networking the devices together, along with methods of delivery to the user. We also need to decide which way (or ways, if more than one would be appropriate) that the product can convey information to the user, and which ways will be most likely to cause the user to think more about their energy consumption. We will try to find the most important information to the user, and allow the user to more efficiently access that data, rather than the current system of waiting till the customer receives their bill.

Depending on what our research into products that already exist yields, we may be able to use a pre-existing product for the monitoring, and just add additional methods of communication to the user.

Since our project will mostly be research into the possible paths we can take in this field, we will be relying heavily on sources outside the group, possibly from professionals in the field if possible. We should be able to get a rough plan for the product done in the given time, but it is likely that a working prototype will be out of the scope of our team's goals, so we will work with that in mind. We do want to try to get a specific idea that could be expanded, possibly by further IPRO semesters, and transformed into a working product.

