

Design Problem: How can we design technology to provide ambient awareness of in-home energy usage?

IDEO Methods

LOOK: Behavioral Mapping

- Observe the user in their home: the rooms they spend their time in, at what time of day, and for how long
- Make a note of their movement on a floorplan of the house, and the technology nearby, as well as the technology they are directly interacting with (eg. phones, laptops, TVs, etc.)

ASK: Extreme User Interviews

- Interview the user about the current system
- Before the walkthrough, ask the user what kind of information they expect the system to provide, as well as the kind of information that would be helpful to them
- Have the user walk through the current system to access the information

TRY: Experience Prototype

- Create prototypes so that the experience of using them can be simulated
- Make a note of what works/doesn't work especially well

LEARN: Cognitive Task Analysis

- List the user's sensory inputs in various places/times in their home
- Where is the user looking when they are performing energy intensive tasks? Are they visually/audibly distracted by anything?

Justification

LOOK: Behavioral Mapping

- To design an ambient in-house system, it is important to know where and when the user will be in their home. For example, if the typical user moves a lot within the house, a mobile, phone-based app may work better than a stationary, computer-based system.

ASK: Extreme User Interviews

- Depending on what kind of information the user wants/needs, the system can be as complex as an entire display with numbers and graphs, or as simple as a multicolored light that changes its hue based on current energy consumption. This also affects the possible platforms that the system could be on; if it requires a display to output graphs, then it would likely be on a screen that is commonly found in homes (computers, TVs)

TRY: Experience Prototype

- Designing the system is relatively straightforward compared to testing the viability of it
- By simulating the experience, details like location and how ambient/assertive the system is can be fine-tuned

LEARN: Cognitive Task Analysis

- In different contexts, a user may not notice the system.
 - If a user likes to listen to music using headphones, then an audible tone indicating high energy consumption will not be heard.
 - If the user is focused on one screen, another screen may not be looked at often.
 - By studying the users' sensory inputs, we can design a system that can be noticed in different situations.
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Rationale

The LOOK (Behavioral Mapping) and LEARN (Cognitive Task Analysis) methods study the user experience, which will translate into the hardware aspects of the system. Since Behavioral Mapping is a less invasive technique, it provides genuine, but limited, information. To complement this, a more involved ASK method was chosen: Extreme User Interviews. This method allows us to get into the thought process of the user, who is forced to think more critically and provide more in depth answers. The interviews' topic focus on what features the system will have, which will be designed with consideration of the hardware constraints discovered by the LOOK method. Finally, the TRY method (Experience Prototype) puts all information gathered together. Not every nuance will be recognized when designing the system, so it is important to test for overlooked elements. For example, by LEARNING the team may find out an audible tone works best, but the volume of tone is something that can only be perfected by testing the system.
