

Mobile Designs to Support User Experiences of Energy Conservation: A Study of Energy Conservation in Hotels

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Introduction

Why studied hotels?

1. Hotels in the U.S. do not have a smart key card system that automatically turns off the electricity.
2. Hotels prioritize their customers' satisfaction, and may engage in unnecessary energy use to please the customers [1].
3. Evidence suggests that hotel customers are not likely to reduce their energy use even when they claim to be energy conservative [1, 2].
4. Energy consumption in hospitality is different in nature from consuming energy in the home or office. On one hand, hotel customers have limited controls over energy use compared to household energy use. On the other hand, hotel customers have more controls than the typical office workers.

Research questions

How do hotel customers feel about consuming energy in their rooms?

What are the mobile design opportunities for maintaining user's satisfaction while motivating them to save energy?

“ If I am going to the bathroom, I am going to get confused, or run into any furniture, so I just left the bathroom lights on there at least I could find my way to the bathroom. ”

Unfamiliarity
(Participant #11, female, hotel, attending conference)

“ But in the hotel room, I would typically keep the hallway light on when I am awake. So it just makes me feel safe. ”

Safety concerns
(Participant #5, female, hotel, attending conference)

Methodology

13 diary studies

20 semi-structured interviews

Participants are either doctoral students who earned money to afford their lives and studies, or people who had a job and could pay for themselves.

Findings

Preparation for the Unknown

Unfamiliarity means the danger of stumbling, falling over, or failing to find one's way in a hotel room at night. Lights are kept on all night to prevent potential danger. 10 participants mentioned that they had *safety concerns* of staying in a hotel room. Keeping one light or two lights on in the evening can increase the sense of security.

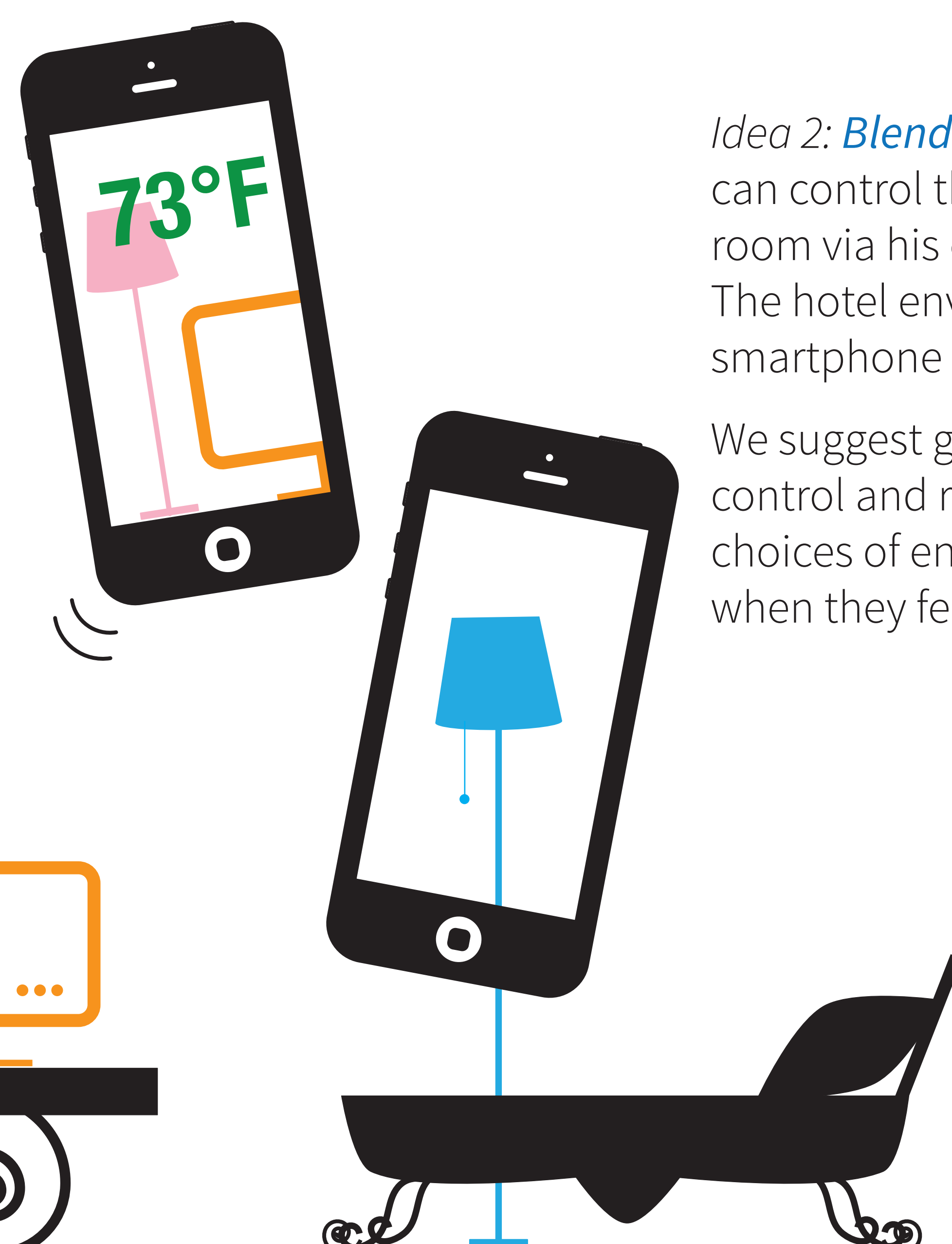
Luxury

Personal comfort means achieving higher comfort levels in a hotel room usually comes at the cost of greater energy use, e.g., keeping the air conditioning or heating on once it reached a comfortable temperature. Participants expected high-quality hotel service (*desire of being catered to*) and unlimited use of energy during their stay.

Design

Idea 1: Location-based Energy Conservation: automatically turn on / off the electronic devices in a hotel room based on occupancy.

We suggest giving more controls to a smartphone system rather than a person when energy consumption is caused by luxury or forgetfulness.



Idea 2: Blending Lights: a person can control the lights in a hotel room via his or her smartphone. The hotel environment and the smartphone are blending together.

We suggest giving more personal control and respecting people's choices of energy consumption when they feel unsafe.

“ One thing that I did in the hotel is that I always kept my AC on in case I came back the room was cool. ”

Comfort
(Participant #9, male, motel, attending conference)

