A Usability Design Approach of Tailored Visualizations for Mobile Applications

Masterstudium: Business Informatics
Romana Jakob

Diplomarbeitspräsentation
Technische Universität Wien
Institut für Visual Computing and Human-Centered Technology
Arbeitsbereich: Human Computer Interaction
Betreuerin: Ao.Univ. Prof. Mag. Dr. Margit Pohl

A lot of mobile applications that help at saving energy can be found on the Web. The problem is that there are a multitude of users with different knowledge and characteristics. Not all users are familiar with energy units of measurements such as kWh.

Motivation

A lot of mobile applications that help at saving energy can be found on the Web. The problem is that there are a multitude of users with different knowledge and characteristics. Not all users are familiar with energy units of measurements such as kWh.

Methodology

RQ 1: Adapt navigation drawer to requirements of user type
RQ 2: Use units of energy for Professionals and Hedonists and monetary units for Optimizers and Indifferents
RQ 3: Use the thrive of Hedonists to program and provide projects for them
RQ 4: Provide diagrams to monitor the consumption rate for all users
RQ 5: Provide the possibility to compare with others for Professionals
RQ 6: Avoid to present comfort limiting energy-saving tips to Hedonists
RQ 7: Provide deeper information for an energy-saving tip for Professionals
RQ 8: Avoid motivating a Professional with gamification elements
RQ 9: Provide optimizers with the information of how much money can be saved when following an energy-saving tip
RQ 10: Reward an Indifferent with game progress for applying a target behaviour
RQ 11: Use gamification elements to sensitize Indifferents to energy-topics
RQ 12: Provide a hotline for trouble shooting for Optimizer and Hedonists
RQ 13: Provide FAQs for Professionals and Indifferents
RQ 14: Use concrete instructions and avoid detailed information for Optimizer
RQ 15: Use praise to motivate all energy-users

Literature Review

Elicitation of User Needs

Questionnaire for User Segmentation

Creation of Paper Prototypes

Analysis of ASCR App

Workshop with Test Users

Refinement of Design Principle Catalogue

Results

Characteristics of user segments

Finding users for workshops

Design Principles

Evaluation of Prototype

Collection of requirements

RQ 1: What are the characteristics of a user segment with the same energy consumption interests?

Professionals
- high technical competence
- high interest in energy topics
- “reasonable” use of hot water and lighting
- interest in home automation and mobile application solutions

Indifferents
- young segment
- no interest in energy topics
- low technical competence
- use of water
- target group for mobile applications

Optimizer
- aim to optimize energy costs
- no technophiles
- little to no knowledge about home automation
- prefer to air manually

Hedonists
- technical competent
- some have programming skills
- hedonistic use of gaming and social media
- no interest in energy topics
- highest number on different device types
- careless use of lighting and hot water

We sent the questionnaire to 57 people, trying to have a good distribution of different ages, educational levels, jobs and interests. 41 questionnaires were returned.

The questionnaire checked the characteristics of the user segments to allocate a user to a user type.

Four workshops with each user segment

Users analyzed the ASCR mobile application and the paper prototypes. Improvements and the requirements of the user segments were determined.

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