Design of Inclusive Products

Modelling Interaction between Product Features and Human Capabilities

Anna Mieczakowski, Dr. Patrick Langdon & Prof. John Clarkson

UNIVERSITY OF CAMBRIDGE

Problem Statement

This project is part of the Inclusive Design movement aimed at encouraging designers to design more accessible, usable and desirable products, without the need for special adaptation. The key factor of the research is to better understand user capability and product demand. The measurable and success criteria involve the design of more usable products and improved customer satisfaction.

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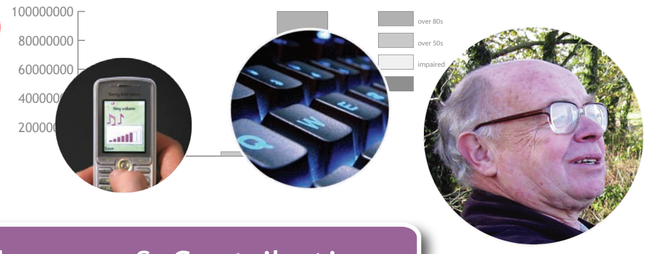
9.8 Million
Impaired people

30 Million
People over 50

Over 80s
Growing sector



Areas of Relevance & Contribution

The nature of this project lies in the area of Engineering Design, however, there is a number of other disciplines that need to be investigated in the process of carrying out the research.

The main areas of relevance

Engineering Design - i.e. inclusive design, user-centered design theory.

Usability & Accessibility - i.e. latest findings, existing guidelines.

Cognitive Psychology - i.e. memory, attention, perception, reasoning.

Social Science - i.e. data on disability and ageing, capability classification.

Ergonomics - i.e. classification of product features, movement measures.

Computer Science - i.e. human computer interaction, modelling tools.

The main area of contribution

This project intends to contribute to a better understanding of the 'human versus product' interaction among the design community in the Engineering Design domain.

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Research Questions

This research sets out to answer the following questions:

1. What operational difficulties do impaired and older users encounter when using product interfaces?
2. Is there a difference between a 'standard' user model of interface operation and impaired population's user model?
3. How can the interface design be improved?

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Research Approach

There are three problem areas that this research attempts to address: user capability, product demand and model development. Apart from literature review, the most relevant approaches to understanding these problems, that should yield important information about 'human versus product' interaction, are as follows:

User capability - concurrent protocols and retrospective protocols will be used to elicit data on users' models of device operation and users' functional abilities.

Product demand - laddering method and/or shadowing method will be used with designers from British Telecom (BT) in order to elicit information on how designers go about designing their products.

Model development - models of interaction will be drawn using a software package to represent the mismacth between user capability and product demand.

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Expected Results

Based on the extensive review of literature on inclusive design, the usability, accessibility and desirability of everyday products, as well as the results of experiments with users and designers; this research is planned to yield the following results:

Model of interaction - it has been stressed that designers require a variety of tools to expand their empathic skills beyond user groups to which they belong. Therefore, a provision of a model that guides designers in matching product features against user capabilities would be of great value to the design community.

Guidelines for designers - the occurrence of mismatches between product demands and users capabilities leads to lower customer satisfaction and decline in sales, which in turn has a severe impact on design companies. Therefore, a provision of a set of guidelines on what to do when designing features on product interfaces would be also beneficial to the design community.

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Contact Information

Anna Mieczakowski - PhD Student
Engineering Design Centre, University of Cambridge
akm51@cam.ac.uk

Dr. Patrick Langdon
Engineering Design Centre, University of Cambridge
pml24@eng.cam.ac.uk

Prof. John Clarkson
Engineering Design Centre, University of Cambridge
pjc10@eng.cam.ac.uk

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