

Benefits and Difficulties for Industry when Designing for Sustainable Behaviour

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To reduce products environmental impact, the field of eco-design has hitherto mainly focused on production and end-of-life phases in the product life cycle, e.g. on eco-friendly materials and design for disassembly. Nevertheless, for many products the use phase is the largest contributor to the total environmental impact of a product. The research field Design for Sustainable Behaviour (DfSB) focuses on the important matter of users' impact on the overall product sustainability and suggests strategies for changing user behaviour through product design (Lilley, 2009). A number of design strategies have been proposed that can be applied to create products that promote more sustainable user behaviours (Lockton, Harrison, & Stanton, 2010; Zachrisson & Boks, 2010). Research has highlighted the potential for design interventions to influence behaviour and several studies have reported resource savings up to 20% due to adoption of more sustainable behaviour patterns (Darby, 2006; Fischer, 2008). In addition, a high user acceptance regarding some DfSB products has been noted, indicating that consumers are willing to embrace new behaviours if equipped with the right tools (Lidman, Renström, & Karlsson, 2011). DfSB thus provides opportunities for companies to further reduce their products' environmental impact, but unfortunately design strategies for sustainable behaviour are not systematically applied in industry. To better understand why this is, this paper aims to highlight benefits and point out difficulties that companies and designers face when applying design strategies for sustainable behaviour in the product development process. A master thesis project carried out by students at Industrial Design Engineering, Chalmers University of Technology, in cooperation with Electrolux AB is used as a base for discussion. The aim of the project was to develop a refrigerator concept for the near future that enables users to adopt sustainable behaviours in the interaction with the refrigerator. To identify problem areas and users' barriers to sustainable behaviour, a thorough literature review and subsequent user studies were performed. Findings from the studies were analysed and gained insights were used as a basis for development. Several strategies for facilitating and encouraging different sustainable behaviours were applied in the final refrigerator design to support non-wasteful consumption of both food and energy. This paper reports on the experiences of the people involved in the project in relation to the product development process and final result. Firstly, the DfSB project focus resulted in new user insights related to user behaviour that led to innovative functionalities in the refrigerator concept. Both students and company employees found this to be one of the greatest advantages of working with the DfSB methodology. One issue highlighted as troublesome and perceived as a probable cause for the occasional perplexity and indecisiveness in the final phases of the project was the lack of a defined method for choosing between different DfSB-strategies. How the design team dealt with this issue and other difficulties that arose when applying design strategies for sustainable behaviour is discussed both from a designer and a managerial perspective.