

User-Centred Eco-Design



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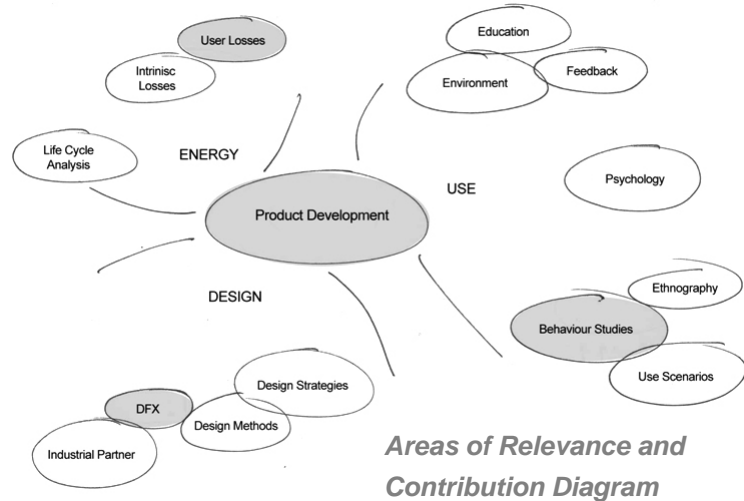
“Improving the energy efficiency of products during their use through behaviour based design.”

Background to the problem:

Energy using products in the home account for over 13% of the UK's domestic electricity use. Since 1970 domestic energy usage on household products has more than doubled. 90% of total energy use of a refrigerator during its lifetime came from the use phase.

Current strategies for improving energy efficiency during use, rely on technology driven “intrinsic” improvements and raising user awareness of energy and environmental issues thus encouraging efficient behaviour.

The method being developed here uses engineering design and the design of products to raise awareness, encourage efficient user behaviour and can also avoid a reliance on user attitude and actions by designing products that are inherently energy efficient during use due to efficient product behaviour.



Areas of Relevance and Contribution Diagram

Research Question and Approach:

“Is it possible to develop a design methodology which enables engineers and designers to incorporate product features into their designs that improve energy efficiency by mitigating or eliminating inefficient user behaviour.”

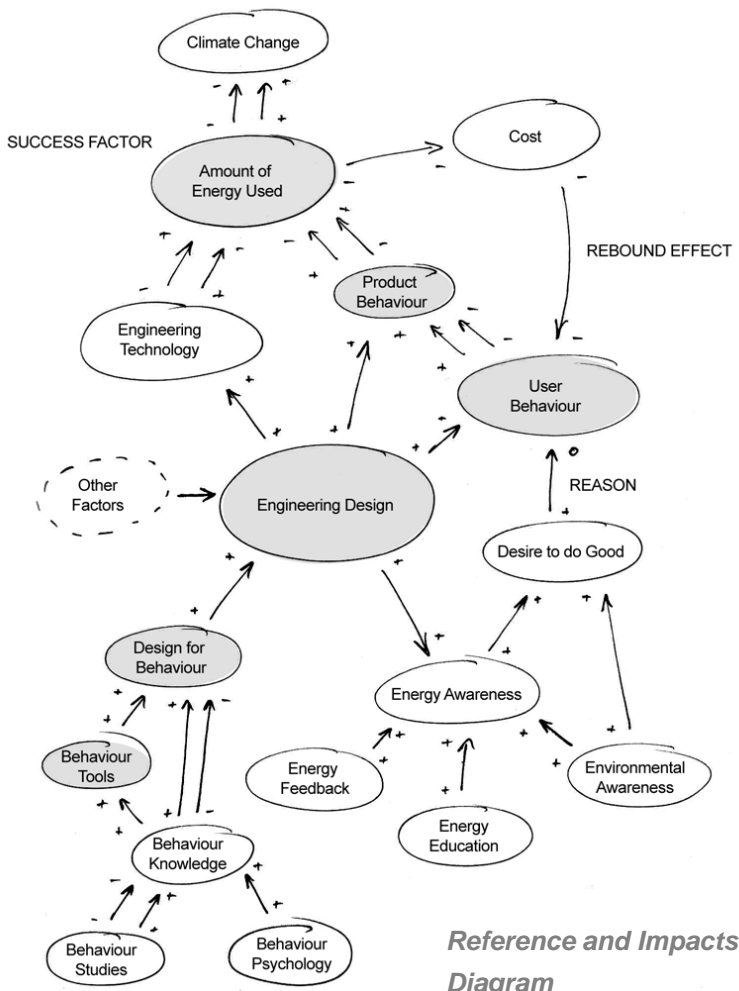
- Demonstrate the case for user-related losses, verifying the reference and impact diagram
- Establish a methodology for measuring and quantifying user behaviours, in terms of energy impact and potential.
- Develop a Behaviour Based Design methodology to address these issues in the design of products.
- Work with industrial partners to verify this research and develop prototypes and products based on their results.

Expected Results:

The initial research so far shows that user-related losses are significant (possibly between 10% and 40% of total energy use) but vary depending on the product.

A design solution focusing on efficient product behaviour will give the best results as this would be more acceptable to the consumer, be highly efficient and eliminate rebound effects.

Industrial partners are very interested in this research to both improve their product portfolio and gain competitive advantage.



Reference and Impacts Diagram

