

Data—Informed Design Experiments

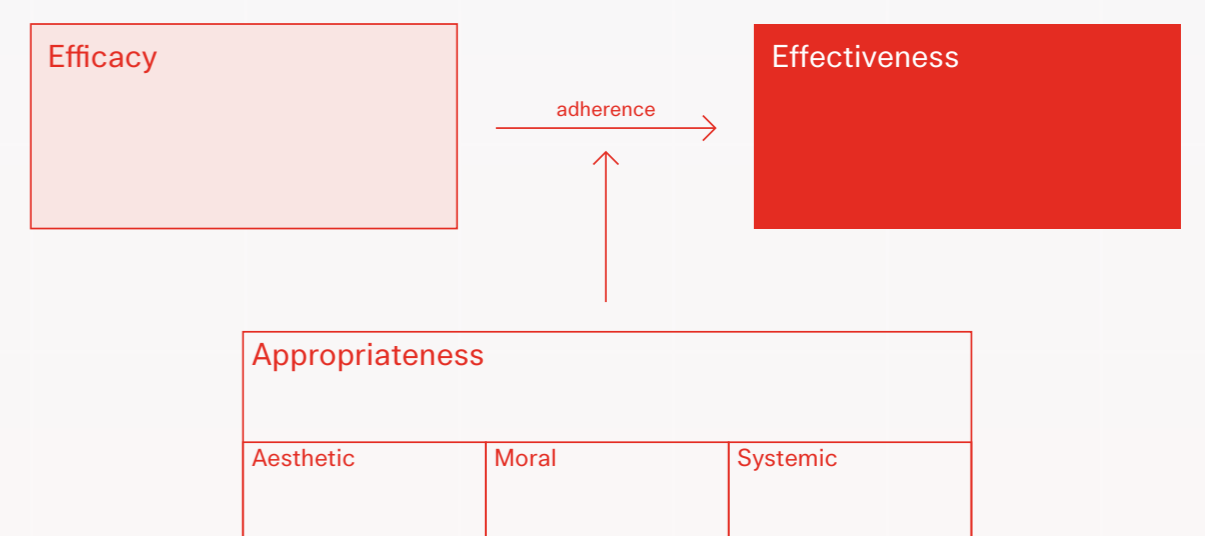
Assessing the effectiveness and appropriateness of design for behaviour change

Our society is facing a number of great challenges which will require all of us to significantly change our lifestyle in the coming years. To support people in those transitions, next to systemic changes, new design interventions have to be crafted that intentionally aim to redirect behaviour for the common good. As changing behaviour intentionally comes with great responsibility, social and behavioural design calls for sound and deliberate design and evaluation.

Theory development

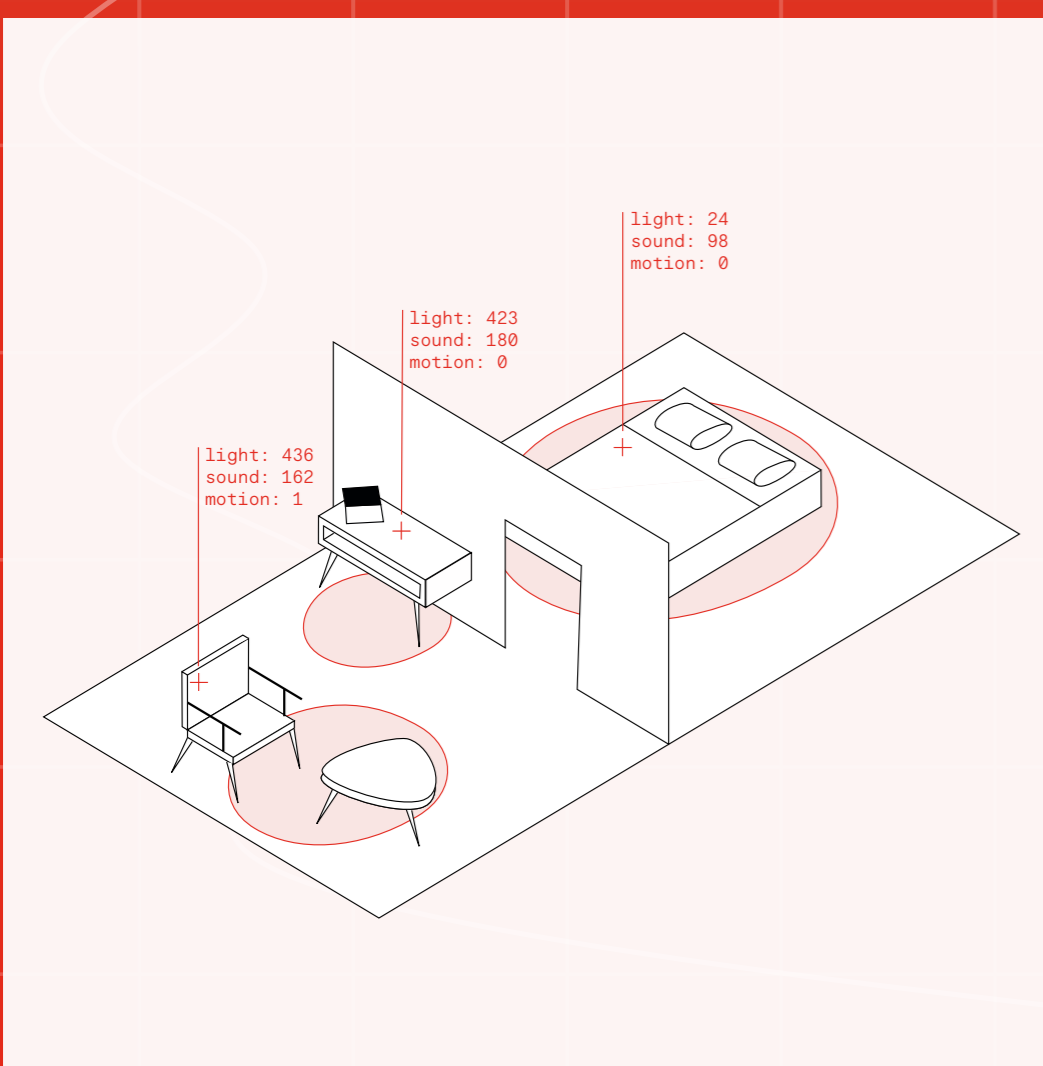
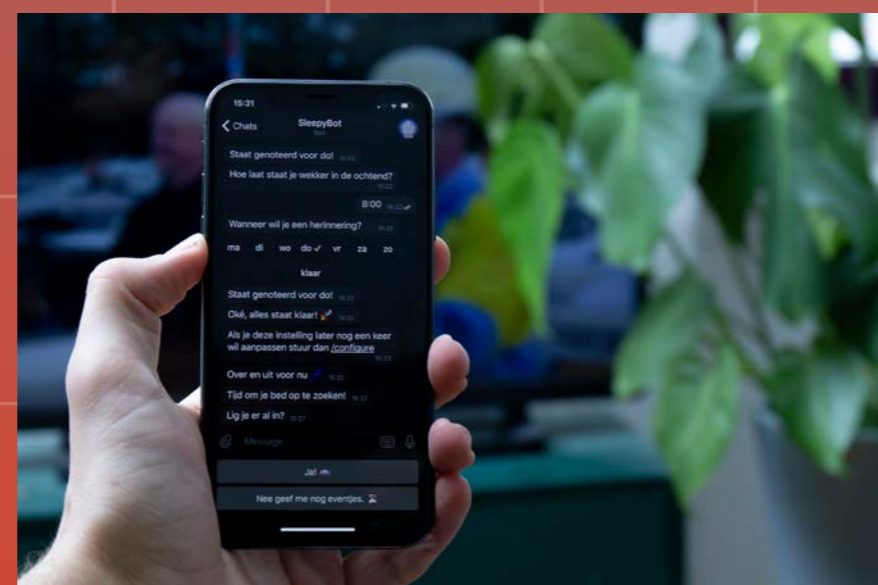
When designing for effect—especially when the intent is to change behaviour in a way that is beneficial to society—it is vital to understand the degree to which that effect manifests itself and what the consequences of introducing that effect are. However, changing behaviour is something that takes a long time to materialise durably and thus conventional qualitative user-centered approaches to evaluation may not be the most suitable. On the other hand, quantitative approaches measuring only the outcomes of the behaviour similarly do not provide detailed insight into the performance of the intervention. This project explored how a combination of quantitative and qualitative perspectives on the situation can improve the evaluation of design interventions on their effectiveness and appropriateness

Studies that investigate the effectiveness of interventions often find that the effects induced in the short-term were not sustained (Abrahamse et al., 2005). A theoretical model was developed that conceptualises the underlying mechanism of this observation as the transition of the design being efficacious (works when people receive an intervention) to being effective (works when people are offered an intervention), which is influenced by the appropriateness of the intervention to its context. This appropriateness can be further operationalised into three types: aesthetic, moral and systemic appropriateness.

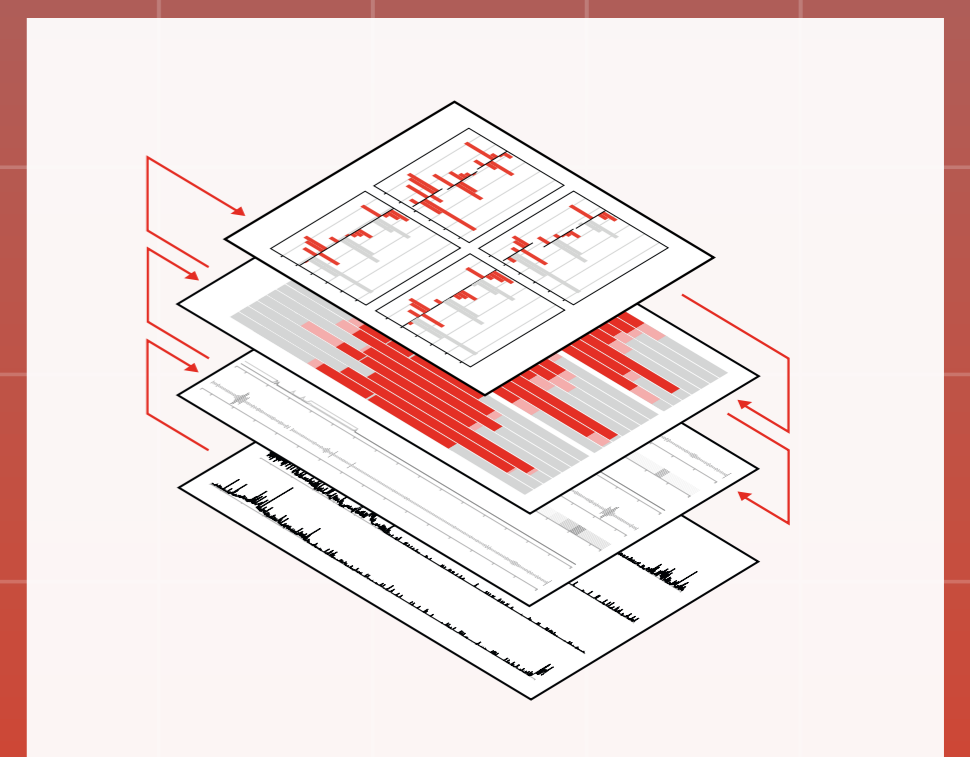


Experimental exploration

The relations between the effectiveness and appropriateness were experimentally explored through deploying research artefacts in the context of the end-user. In this experiment an interactive bedlight and a chatbot were evaluated on their effectiveness and appropriateness in achieving the intended effect, 'adopting regular sleep and wake times', while at the same time understanding their performance in relation to 'sleeping better' and 'balancing sleep and other practices'. In the study several perspectives on the situation were collected and integrated: sensor data from an ecology of instrumented things, data from interviews with the participant before and after using the intervention, and data generated through the interaction with the interventions.



Results



Integrating these perspectives resulted in concurrent insight into the performance of the intervention as it is now and potential elements for improvement. Although some perspectives are more attuned to the efficacy, and others more to the appropriateness—in general the integration of perspectives contribute to a holistic understanding of the situation as the individual perspectives filled in each other's blind spots. In a data-informed design experiment various sources of knowledge are integrated in order to critically examine the merits and limits of a design intervention.

from people and things, and objective observations and subjective inquiries in values. Data is meant to inform the design process in order to assess how the mechanism in the intervention performs, to decide what the right level of persuasive influence of the intervention is and assess whether the intervention is proportionate. Thereby it both provides insight into the performance of the intervention as-is, and potential avenues for improvement.

Data-informed here does not imply the use of sensor or other time-series data only, but a variety of sources that span factors like longitudinal and momentary impressions of the situation, interpretations of the situation

Instead of introducing behavioural cocktails or Swiss Army knives we can structurally assess what elements need to be added, removed, changed or repaired for the intervention to be more effective—or decide that an additional intervention or even systemic change is more appropriate.

Thomas van Arkel
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Committee dr. ir. Nynke Tromp
prof. dr. Elisa Giaccardi

