

Modelling Behaviour & Motivating change

Behaviour change techniques are strategies used to promote the adoption of desirable behaviours, such as self-monitoring, a technique that raises a person's awareness of their current behaviour. For example, to encourage people to walk more you can count their steps and encourage them to increase the count. Combining multiple techniques can be more effective than using a single technique and behaviour change theories predict which combinations of techniques are likely to be more effective.

Michie [2] identified five basic techniques:

- **Goal Setting & Review:** Users set goals which are monitored, regularly reviewed, and adjusted.
- **Monitoring, Feedback, & Rewards:** Users behaviour is monitored, feedback is provided, and appropriate rewards are given.
- **(Social) Comparison:** Users are shown how their behaviour compares with their past behaviour, and that of others.
- **Prompts & Personalisation:** Users are given personalised prompts to spur changes in behaviour.
- **Aiding Decision-Making:** Users are provided with contextual information to enable them to make informed decisions about their behaviour.

Theories of behaviour change agree that any voluntary change of behaviour is not an event, but a process. This process can go from not wanting to change, to considering change, to making and maintaining permanent change. Such a process often develops over a long time especially when the problematic behaviour is an everyday habit (e.g. travelling by car) and the order of change and rate of change differ between people.

There are **two models of behaviour change relevant to SUPERHUB**, Michie's behaviour change Wheel [3] and Fogg's Behaviour Model [1]. Each model explains behaviour change by focussing on different factors. The behaviour change wheel builds on the COM-B system which says that behaviour change happens due to the interaction of three conditions, Capability, Opportunity, and Motivation. If a person is sufficiently capable and motivated, and has the opportunity then they may successfully change their behaviour. The COM-B model forms the hub of the wheel which has two further, a ring of intervention functions, and a ring of supportive policies. Applying the wheel requires analysis of the behaviour in terms of COM-B, selection of an appropriate intervention type and related support policy. Fogg's model uses three elements, motivation, ability, and a trigger, which must occur at the same time for behaviour to happen. If you get the motivators right, if the behaviour is made easier for people to do, and if you trigger it, then the behaviour is more likely to occur. Part of Fogg's model is an iterative plan in which a target behaviour and receptive audience are selected, any obstacles to the target are identified and appropriate examples of persuasive technology are selected and applied. If this is successful then the process is repeated, building on any success. The [Behavior Wizard](#) builds on Fogg's

model and is used to select strategies that will facilitate behaviour change by selecting an attitude with respect to the behaviour and the frequency of application.

SUPERHUB aims to support behaviour change in urban travellers by encouraging more sustainable transport choices. This is achieved by developing a user centered system which matches the needs of travellers, so that they want to use the system, whilst also incorporating managed behaviour change. Using a traveller's SUPERHUB profile we can offer an appropriate intervention pathway that is tailored to that user, prompting behaviour change at achievable frequencies, and building on successful interventions. To better understand the needs of our users, research was conducted in SUPERHUB's three trial cities: Barcelona, Helsinki and Milan. A questionnaire was used to investigate attitudes to transport modes. Focus groups were also conducted to explore [scenarios](#) that showcase various SUPERHUB functionalities. This provided a large amount of quantitative data on demographics, current transport use, problems experienced, and mobility preferences. Decisions about how and when to make interventions will be based upon data-mining of users' profiles and travel-behaviour metrics as well as contextual information such as weather conditions. We aim to create a synthesis of automated digital interventions based on intelligent analysis of tracked user behaviour together with goal setting, achievement-tracking, feedback, and incentive mechanisms. By deploying an effective range of behaviour management techniques within a usable mobility system our aim is to help SUPERHUB users to become the most environmentally sustainable urban travellers.

References:

- [1] Fogg, B.J. (2009). Creating Persuasive Technologies: An Eight-Step Design Process.
- [2] Michie S. et al., (2009). Effective techniques in healthy eating and physical activity interventions: a meta-regression. *Health Psychology*, 28(6), 690-701.
- [3] Michie et al. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*.