Virtual simulation will test new transport services

March 3 2017

Credit: University of the West of England

As part of the Mobility on Demand Laboratory Environment (MODLE) project, Transport Systems Catapult, University of the West of England (UWE Bristol) and Esoterix Systems are developing a micro-simulation platform. The MODLE Simulation Platform gives new, dynamic insight into where people are moving to, from, how and why in much greater detail than previous transport modelling systems.

Traffic congestion and related air pollution cause 10,000s of premature deaths and cost billions of pounds every year in the UK alone. However, car use will only go down if alternative options are good enough. There

is a clear need for improved public [transport](#) services but starting new services can be risky, and it can take a long time before they become commercially sustainable.

The MODLE Simulation Platform uses big data (e.g. mobile network data) to find unmet transport demand and then tests proposed services using a human behaviour model. So an operator, for example, can understand where there is sufficient potential demand for a new [service](#) and then explore which exact route and type of vehicle to use for the service to attract passengers. This takes some of the risk out of new service implementation.

Kristoff van Leeuwen, of the [Transport Systems Catapult](#), says "The system generates dynamic agents that reflect the behaviour and movement patterns of people. This agent-based approach is what makes this project exciting. Most similar modelling is at the macro-level and doesn't provide the detailed data that enable the potential of urban mobility services to be fully analysed in the way this system does."

David Stewart, Esoterix CEO, says, "The MODLE Simulation Platform is more than a moving picture, it's a virtual test bed. The agents in the simulation respond to new options so we can look at how they react to see the benefits or otherwise of a proposed service. In essence, will the proposed services be sufficiently quick, convenient and cheap to challenge car use?"

The agents are informed by a human behaviour model calibrated by the Centre for Transport and Society at UWE Bristol. Professor John Parkin (UWE Bristol) says, "We know people choose different transport options for a range of reasons. We look forward to better understanding how people weight those choices and we will use that behaviour to calibrate the MODLE Simulation Platform. Being able to virtually test proposed routes against consumer preferences will help operators

develop and offer sustainable services people want."

The simulation is being developed as part of the MODLE project in Bristol but the platform is transferrable to other cities.

Provided by University of the West of England