The role of ICT in a low carbon transition for transport

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Mobility is an essential human need however transport faces a number of challenges in the coming decades. Currently, the sector contributes around a quarter of the UK’s greenhouse gas emissions and will need radical change if it is to meet the 2050 targets of an 80% reduction in emissions. In addition, problems of congestion, air quality and capacity mean that radical socio-technical changes must take place, for a sustainable transport sector.

Socio-technical systems

There are important values that must be maintained in pursuit of the goals of emission reductions, such as equity and accessibility, and considerations such as air quality targets.

Processes and procedures are integral to the applications of ICT to transport systems. For example, managed motorway schemes require detailed processes and procedures to deliver effective traffic management and information to drivers, in order to ensure free flow of vehicles.

Our current mobility culture is centred on private passenger cars as the primary method of travel. ICT can be used to help to reduce emissions while maintaining this culture, or to facilitate transitions to a lower or alternative mobility culture.

The objective of this research is to explore the potential for better use of excess capacity within an urban transport system and to understand the emission reduction potential. Additionally it could combat congestion and allow more effective management of peaks in travel demand. There could be a range of approaches to aid travel decision making that make the best use of capacity in urban transport systems. This work will explore the ways that ICT could be used to facilitate this.

Most urban transport systems suffer from heavy congestion and overcrowding during peak travel hours which are challenges that must be addressed in conjunction with decarbonising the sector. At present average car occupancy is 1.6 occupants per car driver stage and 61% of car driver stages are single occupancy, although these numbers vary by journey purpose. If more effective use of the systems could be achieved this could deliver emissions savings and improved efficiency in the system.

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