

# Exploiting Digital Technologies to Promote Sustainable Travel Behaviour in Rural Areas

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## ABSTRACT

Passenger information is an important commodity to successful transport service provision. However, it is often operator-centric, incomplete, inaccurate or does not reflect real world situations. The Informed Rural Passenger<sup>1</sup> (IRP) project aims to address this issue by creating an information ecosystem that integrates information from various transport related sources. In this context, this paper describes ongoing, parallel and associated research that aims to extend the IRP project by increasing the accessibility of the information ecosystem and orienting it towards the user needs, in order to encourage sustainable rural travel behaviour.

## Keywords

digital technologies, travel behaviour, rural transportation, passenger information systems.

## 1. INTRODUCTION AND BACKGROUND

It has been argued that the substantial increase in private car use and pollution are repercussions of major cultural, sociological and politico-economic shifts in lifestyle [1]. Previous studies have suggested that these issues can be partially solved by altering travel behaviour. A number of projects have confirmed that high quality information about mode choice, time of travel and route choice have the potential to affect the travel behaviour of passengers (see the review in [2]). Various studies, have demonstrated that pre-trip and in-trip journey planning information can promote knowledge and confidence about the journey, cultivate positive attitudes towards the service provider, create favorable perceptions of efficiency and security, reduce the perceived waiting time and increase the willingness to pay (e.g. [3] [7]).

Indeed, information is such an important commodity that a plethora of authors have argued that informed travellers might be a key nexus to successful transport service provision. This notion has initiated several passenger information and journey planning projects with multiple purposes in diverse contexts (see the review in [6]). However, most of the journey planning scenarios cannot be adequately completed due to the operator data being incomplete, missing, inaccurate, or not reflecting real world situations.

Nevertheless, it has been suggested that supplementing the

operator provided data with the knowledge held by the inhabitants of various communities regarding the performance of existing transport services, as well as suggestions of alternative transport options, has the potential to orient the transport information provision towards users needs, increasing the quality of the available information, helping to promote a more sustainable travel behaviour.

### 1.1 The Informed Rural Passenger project

The Informed Rural Passenger project is investigating issues relating to the provision and use of rural public transport information systems. Due to the limited availability of necessary transport data in rural areas (such as bus location and facilities), IRP is adopting a crowdsourcing approach to acquire transport data directly from the passengers via their mobile phones. This data is integrated using linked data principles [9] with other transport data, such as operator timetables, GIS roadmaps, and roadwork details, along with other data such as passenger profiles and social networks, within an information ecosystem. Overall, the aim of the IRP project is to utilise this information ecosystem in order to improve the rural passenger experience, influence rural travel behaviour, and provide business benefit to operators.

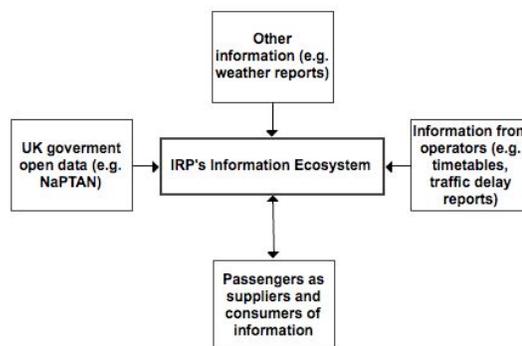


Figure 1 – The IRP information ecosystem

## 2. RESEARCH AIMS AND OBJECTIVES

Given the context described above, the present PhD project aims to increase the information accessibility of the IRP information ecosystem, and orient it towards user needs, in order to promote sustainable rural travel behavior. In order for the aforementioned to be achieved, the following three principal objectives will be addressed:

<sup>1</sup> <http://www.dotrural.ac.uk/irp/>

