

Big Data, Technologies and Transportation: Relieving peak congestion and improving emergency responses across the transport network

1 October 2015 - 31 March 2017

A key focus for the management of main roads is to consistently deliver users decent travel times, safe higher speed travel and reduced interruptions, while achieving minimal operating costs and reducing capital investment in infrastructure upgrades. Rapid developments in the area of Big Data now provide significant opportunities to reduce congestion and increase traffic throughput. This is important to national and state road and transport agencies as it can lead to the deferment of investment in infrastructure upgrades by allowing greater utilisation of existing assets, referred to as 'sweating the asset'. Given the growth of Australian cities, the use of Big Data to support such non-build options to extending the operational life and economics of road infrastructure will become increasingly important; this project seeks to prepare Australia to capture the associated benefits.

A second key area that may benefit from Big Data and associated technologies is in enhanced disaster resilience and supported disaster response, which stands to reduce infrastructure maintenance and repair costs and reduce impacts to business and the community from disaster damage. It is anticipated that this element of the project will be developed in collaboration with state disaster management groups as well as local disaster management committees and agencies in Townsville, Broome and Grafton, building on from the successful stakeholder engagement workshops held in SBEnc Project 1.35 Transport Network Resilience: Disaster Logistics and Infrastructure Vulnerability.

Objectives

This project will build on previous SBEnc findings and focus on providing road and transport agencies with guidance as to the suitability of the use of Big Data and associated technologies to deliver tangible reductions to peak congestion and enhance transport network resilience. The project will focus on how to harness Big Data from a range of sources to provide predictive information to inform anticipatory analysis rather than reactive or retrospective information. Current technology trends and options will be assessed in the areas of sensing (drones, fixed sensors, cameras and smart phones) and information systems (to undertake data analytics and visualisation). The effectiveness of using innovative low cost data collection options will be investigated, such as 'participatory sensing' through the crowdsourcing of transport user data using smart phones to detect mobility patterns and improve user experiences.

Industry Outcomes

The outcomes of the project will ensure road and transport agencies in Australia are well informed as to the application of new Big Data technologies (collection, analytics and visualisation) to road and transportation networks that stand to deliver tangible benefits. This will involve the review of emergent technologies to reduce congestion in a manner that increases throughput of vehicles (such as active traffic management methods) along with contributing to disaster response. It is anticipated that these outcomes will inform trials to implement such solutions that can be used as verification of the use of Big Data in this context.



Dr Charlie Hargroves
BE (Civil), PhD
Project Leader, Curtin University
E: c.hargroves@sbenrc.com.au



Dr Ken Michael AC
Chair, Project Steering Group

