



Innovation underpinning Australia's  
built environment industry



*Project Steering Group Chair:*

**Dr. Ken Michael AC**

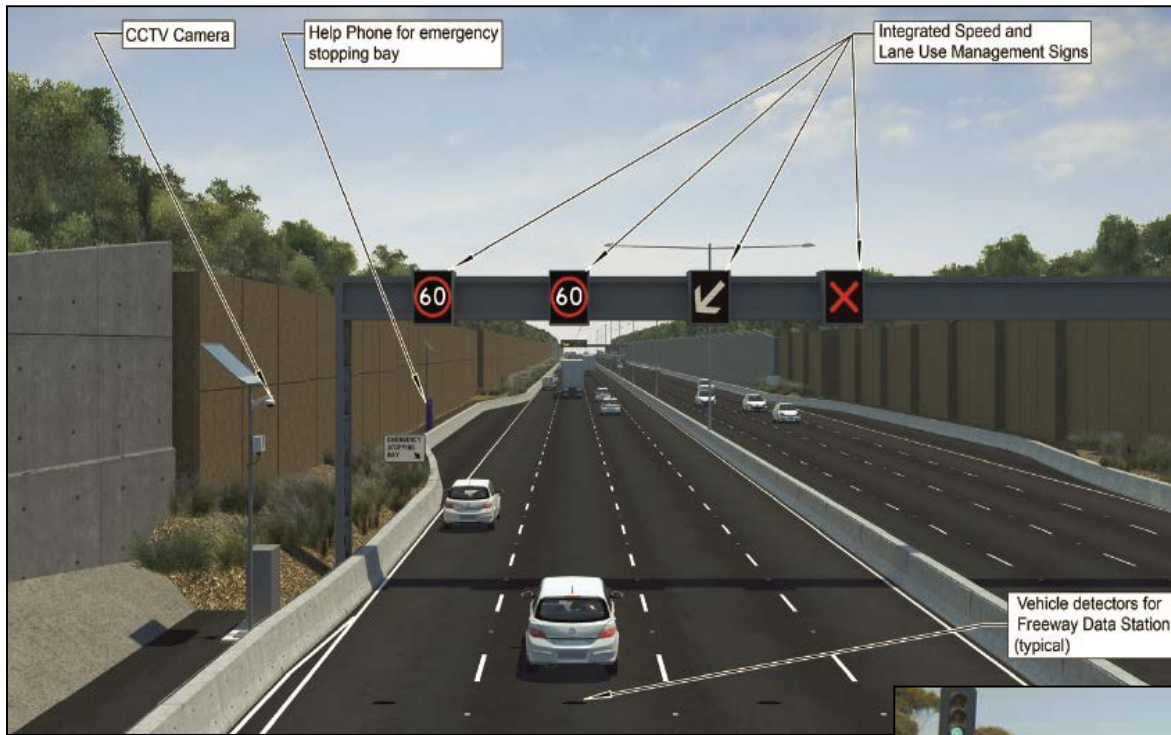
30th Governor of Western Australia  
Western Australian Commissioner of  
Main Roads (1991-96)

# 1.45: Big Data, Technology and Transportation - Relieving peak congestion and improving emergency responses across the transport network (October 2015-March 2017)

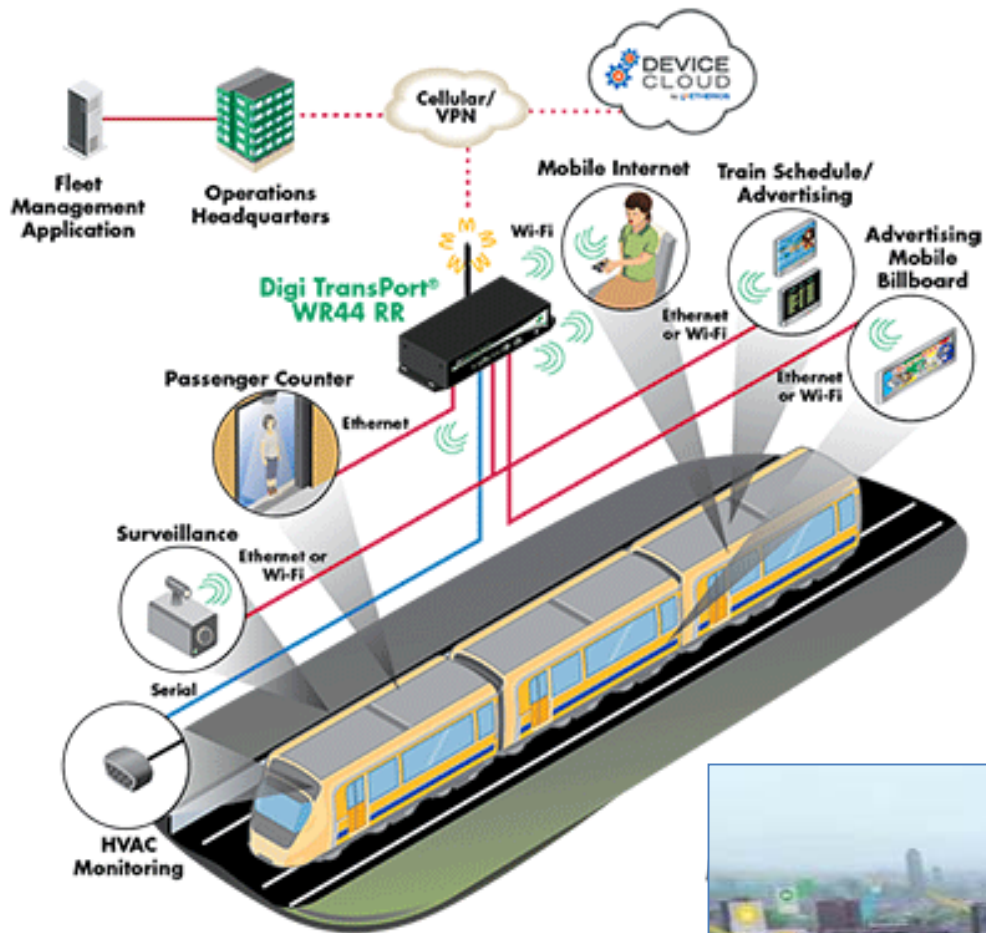
# Project Team

Ken Michael AC (Chair)	
Peter Newman (Program Leader)	Curtin University
Charlie Hargroves (Project Leader)	Curtin University
Xiaobo (Bob) Qu	Griffith University
Kamal Weeratunga	MRWA
Rebecca Monckton	NSW RMS
Kim Thomas	Aurecon
Daniel Conley	Griffith University

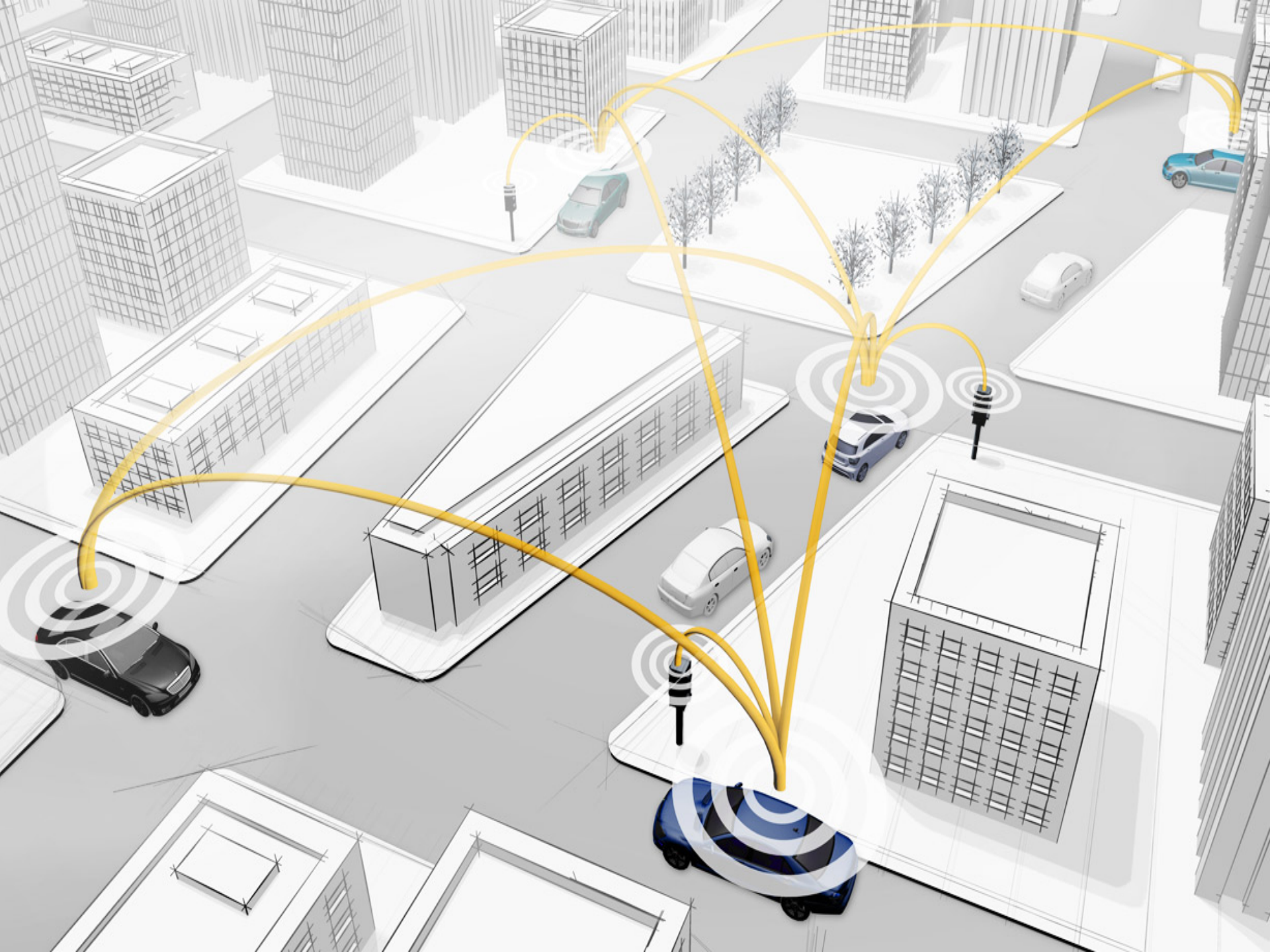




*How can Big Data assist in relieving congestion and differing capital investment in main roads?*











Phone activity  
 Building elevation  
 Intensity of lightning  
 Location of pets  
 Coverage of affected areas  
 Demographics in buildings  
 Density of people  
 Value of affected buildings  
 Humidity  
**Design life of structures**  
**No. of emergency vehicles available**  
 No. of displaced people  
 Building design capacity  
 No. of building occupants  
 No. of children in community  
 Water capacity of emergency vehicles  
**Location of fallen trees**  
**No. of medical personnel**  
 Drone temperature sensing  
 Level and density of rainfall  
**Volume of local traffic**  
**No. of distress calls made**  
**Wind velocity**  
**History of flooding in area**  
 No. of fallen trees  
 Location of people  
 Level of water in rain water tanks  
**Type of road surfaces**  
**No. of vehicle ownership**  
**Stress level on bridge crossing**  
 UV index  
 Task allocation  
 Flow capacity of gutters  
 Twitter trends  
 Back-up power supplies  
**Access to mobile networks**  
 Status of surrounding vegetation  
 Average response time  
**Sources of electricity**  
**Real time visual inspection**  
 Access to radio  
**Road blockages**  
 Type of insurance coverage  
**Location of fallen power lines**  
 Range of radio coverage  
 Location of live stock  
**Capacity of shelters**  
 No. of people trained in first aid  
 Elevation of affected area  
 Soil moisture content  
 Temperature  
 Insurance premiums of buildings  
 Location of deployed units  
 Updates on social media  
 Porosity of road:

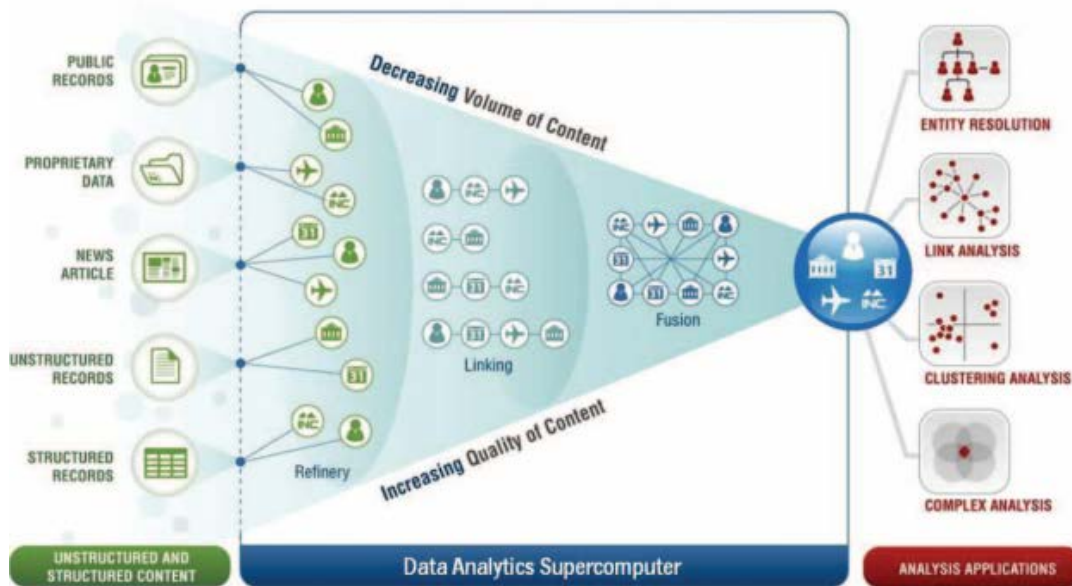
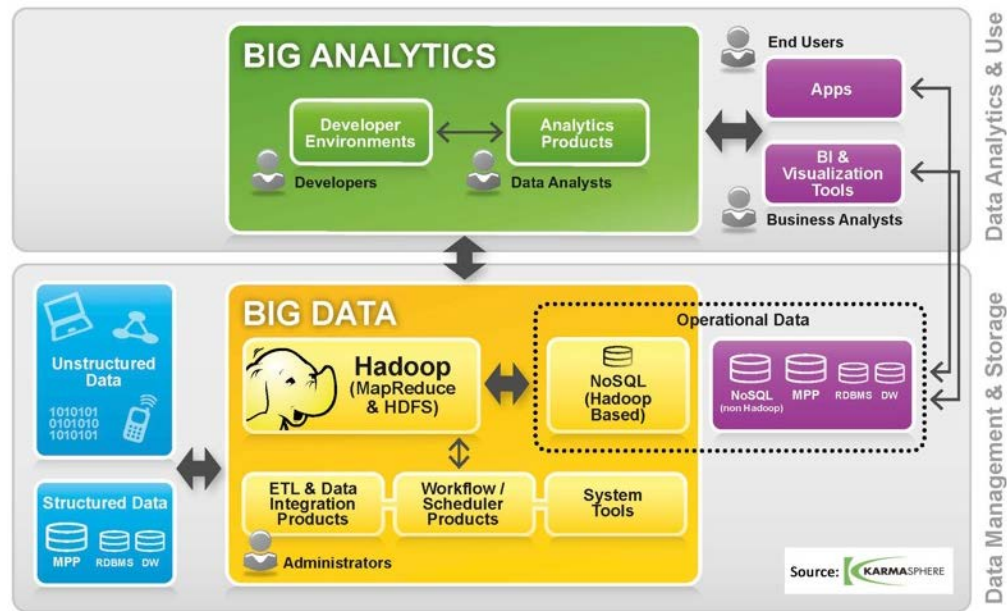
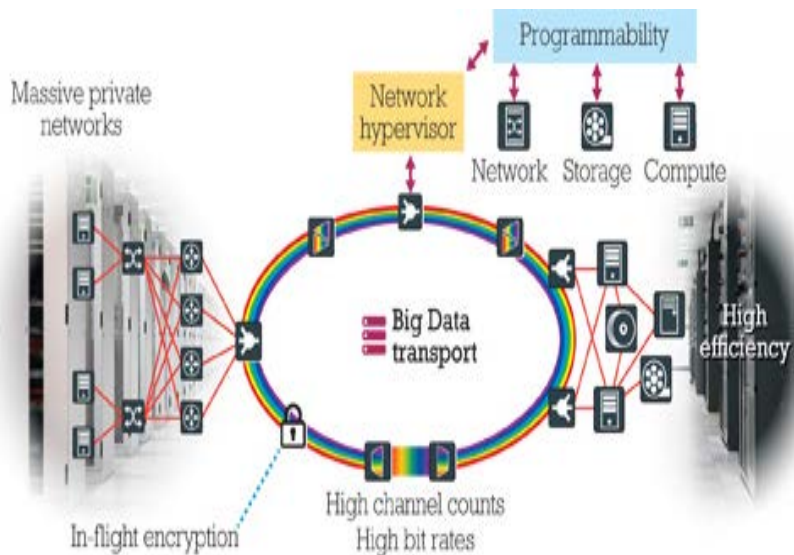


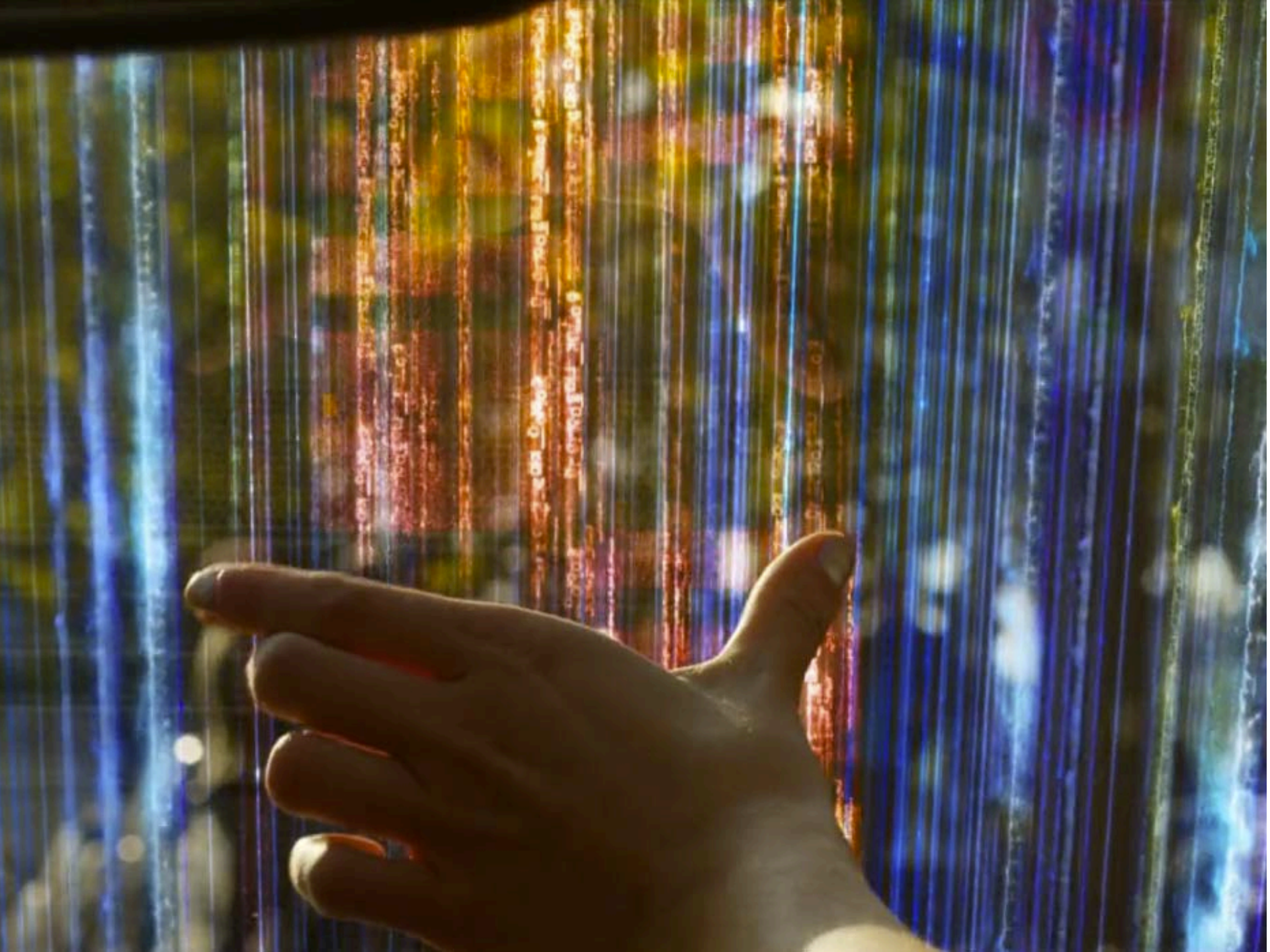














# Outcomes

- **Value of Big Data:** The project has investigated how the shift from 'small data' to 'Big Data' stands to present tangible value to transport system management, in particular in congestion management and emergency responses. The findings have identified specific value that can be created from the analytics and visualisation of an increasing number of urban data sets.
- **Emerging Platforms:** The project investigated the emerging digital platforms for Big Data analysis and analytics and has provided guidance on their application.
- **Recommendations:** Based on the findings above the research team has developed a set of key recommendations to inform the further harnessing of Big Data to deliver real value.