



SBEnc ARC LP170100341 Project

# Improving Road Network Operations under Non-recurrent Events

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The primary aim of this project is to develop an innovative approach for improving Road Network Operations under non-recurrent events through big data analysis and computational modelling. Current studies lack sufficient insights into the impact of non-recurrent events, such as accidents and inclement weather, under a seamlessly spatial and temporal context, especially the possible spatial and temporal lag effect due to non-recurrent events. A key focus of the project is to ease the current scientific bottleneck of image and data fusion, analysis and sharing in Road Network Operations. The expected outcome is to optimise traffic control strategies and traffic design, reduce the maintenance costs for road infrastructure and improve quality of life.

## Objectives

This project will develop and integrate advanced modelling and computing technologies in spatial and temporal analysis, image and sensing data fusion, and cloud computing to improve the use of data from Intelligent Transport Systems and meteorology monitoring systems.

The research will address:

1. How to detect non-recurrent events automatically.
2. How to assess the impact of non-recurrent events on Road Network Operation variations.
3. How to provide real-time updates and share early-warnings to road users.

## Industry Outcomes

1. For the general public, improvements in Road Network Operation performance monitoring and early warning systems, through efficient modelling, robust analysis and intuitive visualisation, will help road users to avoid congestion and road accidents.
2. For the owner/operators, a significantly higher return on investment will be gained through the more reliable digital and modelling methodologies and optimisation of network management.
3. For technology providers, adapting image and big data analysis, as well as instant information sharing by cloud computing in Road Network Operations will open a new market in intelligent transport systems, with better information on network needs and capacities.
4. Nationally, the improved systems will support a more sustainable transport network that meets the social, economic and environmental needs of today.



**Professor Keith Hampson**  
BEng(Civil)(Hons) MBA PhD  
FIEAust FAIM FAICD FTSE  
Chair, Project Steering Group



**Professor Yong-Hong Wu**  
PhD  
Project Leader, Curtin University  
E: [Y.Wu@curtin.edu.au](mailto:Y.Wu@curtin.edu.au)



**Assoc. Prof. Benchawan Wiwatanapataphee**  
PhD  
Project Manager, Curtin University  
E: [B.Wiwatanapataphee@curtin.edu.au](mailto:B.Wiwatanapataphee@curtin.edu.au)

