

Dr Hussein Dia

Consulting and Private Sector Leadership Roles

- Hands-on leadership of ITS projects at the most senior level
- Ability to give sound advice based on a good understanding of the principles underpinning ITS project strategic planning, design and delivery methods
- Expertise in managing project technical and operational risk to the benefit of all project stakeholders
- Ability to advise stakeholders on technical and financial issues in ITS project investment context
- Knowledge of ITS standards and practices across the Asia Pacific Region
- Ability to create ITS solutions to complex technical and operational problems through detailed analysis and awareness of latest developments gained through worldwide interaction with specialists
- Expertise in operational modelling of effectiveness and impacts of ITS projects
- Infrastructure asset management and contract and project management

Key Industry Technology Project Experience

Recent ITS and Transport technology projects include:

2012/2011

Bruce Highway Managed Motorways – ITS Tender Design – Stage 1, Leighton Contractors

- Responsibility for leading the ITS team to develop a Preliminary ITS Managed Motorway design for the 33-km Motorway between Brisbane and Caboolture. Also responsible for coordination of ITS and Managed Motorway aspects of the project with Leighton, VisionStream and the ultimate client, TMR.

Travel Time Information Project, Department of Transport and Main Roads, Queensland.

- Responsibility for leading the development of a combined options analysis, business case and concept design for an en-route travel time information system on the M3 in Brisbane.

Traffic Incident Management System, Hong Kong Department of Transport, Hong Kong

- ITS specialist providing input into the automated incident detection algorithms and system required for effective incident management in Hong Kong. Role also includes specialists services on the requirements for data fusion of the many systems currently implemented by the Client in Hong Kong.

Congestion Management and ITS Study, Marina Coastal Expressway, Land Transport Authority, Singapore

- Responsibility for leading the identification and development of ITS options and strategies for reducing congestion in the tunnel and surrounding road network

ITS Strategy for Department of Transport and Main Roads, Far North Region, Queensland, Australia

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- Responsibility for leading the development of a comprehensive ITS strategy for the Far North Region in Queensland, Australia. Hussein is currently working with the client to develop a vision for the short-term (5 years), medium-term (10 years) and long-term (20 years) ITS technologies and applications for the region, and for developing tactics and actions for achieving the objectives of the strategy.

Development of Ramp Signalling Operational Strategies, Department of Transport and Main Roads, Queensland.

- Responsibility for leading the development of Ramp Signalling Operations Strategy (OS) reference document for use on the Pacific Motorway (M3) between Loganlea Road and Cornwall Street. This document is aimed at guiding staff in the operation of the new state-of-the-art dynamic and coordinated ramp signalling system (HERO algorithm), which is being implemented on the M3.

SCATS Service Transition Plans, Brisbane City Council., Queensland, Australia

- Responsibility for leading the review of the documentation and approach to the service transition plans from BLISS to SCATS traffic signal control system for the Brisbane Metropolitan Region.

Advanced Traffic Management Using ITS Technologies, Roads ACT

- Responsibility for developing an ITS strategy for the ACT to provide directions for the short, medium and long-term deployment of ITS to improve road network performance, safety and mobility for road users in the ACT

Review of Mobile Speed Camera Technologies, Roads ACT

- Technical lead for a study to review current mobile speed camera technologies available in Australia and overseas, and evaluate their suitability for implementation in the ACT

Fremantle Ports – Access and Traffic Control Technologies

- Project Director for a study aimed at identifying access and traffic control technologies for improving management of truck movements, such as vehicle booking system for the container terminals and the Truck Marshalling Area (TMA), to manage truck queuing during peak freight periods

2010

Gold Coast Rapid Transit – Project Scope Requirements (PSR), Queensland Government

- Responsibility for providing specialists ITS services for the PSR documents including the Annexure on Control Systems. The role involved liaison with key stakeholders and drafting of the ITS functional requirements.

Bruce Highway Upgrade Project, Department of Transport and Main Roads, Queensland

- Responsibility for leading the ITS design team and identifying different ITS options for improving operational performance and road safety, including investigation of variable speed limits, point-to-point speed enforcement and incident management systems.

Logan Motorway Corridor Plan, Department of Transport and Main Roads/Queensland Motorways

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- Responsibility for leading the ITS component of the project, including review of existing ITS equipment and applications, establishing future year operational requirements and identification of a number of ITS options to ensure that the Motorway operates efficiently and safely under future year conditions.

Box Hill Transit Station, Department of Transport, Victoria

- Responsibility for leading the ITS component of the project, including the functional design of a Bus Management System coordinated with passenger information and a number of ITS and control systems to facilitate the efficient and safe operations of the interchange. This includes dynamic bus stop assignments, automated management of bus movements within the interchange, monitoring of utilisation of bus layover facilities, bus detection and tracking, real-time passenger information, automated door locking and unlocking systems, and automated passenger counting.

Hoddle Street Planning Study, VicRoads

- Responsibility for leading the ITS component of the project, including identification of ITS options for the efficient and safe movements of vehicle traffic and public transport on the corridor.

2009

Northern Busway Concept Design and Impact Management Plan (CDIMP) Project, Department of Transport and Main Roads

- Responsibility for the operational modelling aspects for the above project. This involves coordinating the meso modelling activities and testing of a number of options for the proposed Northern Busway Project in Brisbane, including evaluation of operational impacts and staging of different components of the project.

2009

On-demand Bus Call-up ITS Project, Translink Transport Authority, Queensland

- Responsibility for the development of a number of ITS options for an on-demand bus call-up system to be used on Caseys Road on the Gold Coast. The work included identification of options including hardware and operational requirements; undertaking an evaluation of options to determine a preferred solution; and estimation of costs for implementation. The evaluation was based on a number of criteria including ease of use, reliability, low maintenance, cost and limited opportunity for misuse.

2008

Mudgeeraba Interchange, Robina and Pacific Motorway Simulation Model, Queensland Department of Main Roads

- This project involved the development of microscopic traffic simulation models to inform the planning decisions regarding the upgrade of the interchange.

Burleigh Connection Road and Bermuda Street Traffic Simulation Models, Queensland Department of Main Roads

- This project involved developing a microscopic traffic simulation model for future years 2016 and 2026 and evaluated the impacts of a number of design options and ITS solutions to reduce congestion on the road network.

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2007

Development and Evaluation of Freeway Travel Time Forecasting Models, Queensland Department of Main Roads

- This project developed a freeway travel time forecasting model and tested its performance using a simulation approach. The model is easily transferable and can be used to provide drivers with information on travel times between strategic locations on any motorway facility.

Evaluating the Impacts of Incidents, Queensland Department of Main Roads

- This project used a simulation approach, supplemented with field data, to evaluate the impacts of incidents on the arterial and motorway network on the Gold Coast.

Evaluating the Impacts of Traffic Strategies in Reducing Incident Impacts, Queensland Department of Main Roads

- This study evaluated the impacts of a range of ITS strategies in reducing the impacts of incidents on arterial roads and motorways. The ITS strategies tested included ramp metering, incident management, information systems and adaptive traffic signal control.

Simulation of the Impacts of Heavy Vehicle Restrictions, Queensland Department of Main Roads

- This project evaluated the impacts of restricting heavy vehicles to the slow lanes of motorway facilities. A simulation approach was used to determine localised and network-wide impacts on private and commercial traffic.

Simulation of the Impacts of Arterial Incidents, Queensland Department of Main Roads

- This project analysed the incident data logs from the Gold Coast Transport Management Centre and supplemented the field data with a simulation approach to evaluate both the localised and network-wide impacts in terms of increased travel times, delays, reduced speed, reduced public safety and amenity.

Development, Calibration and Validation of the Pacific Motorway Traffic Simulation Model, Queensland Department of Main Roads

- This project involved the development of a large-scale traffic simulation model for the Pacific Motorway between Logan and the Gold Coast. The model was developed to test a range of ITS scenarios aimed at improving the efficiency and safety of the Motorway.

2006

Development, Calibration and Validation of the Gold Coast Traffic Simulation Model, Queensland Department of Main Roads

- This project developed a detailed traffic simulation model for the main arterial routes within the Gold Coast traffic network. The model was used to evaluate the impacts of major sporting events and to test the feasibility and effectiveness of a number of traffic management and ITS strategies aimed at improving traffic movements and circulation patterns within the areas impacted by the events.

ITS Strategy for South Coast Hinterland District: Situation Analysis, Queensland Department of Main Roads

- In this project, Hussein was commissioned to write a number of chapters of the ITS strategy for the Gold Coast. Those chapters covered the existing situation and documented future ITS strategies to be implemented over the next 10 years.

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Comparative Evaluation of Environmental Emissions Models using Traffic Simulation, CSIRO

- This project involved the use of traffic simulation to compare the performance of a number of power-based vehicle emissions models which have been developed to estimate fuel consumption and pollutant emissions from motorised traffic. Each model was coded in AIMSUN and was tested using second-by-second data obtained from each vehicle in the simulation. The results from each model were then compared to real data to determine model accuracy in replicating field conditions.

2005

Scoping Study- Machine Vision Applications in Intelligent Transport Systems, CSIRO

- This project reviewed and evaluated existing machine vision applications, and identified new technologies and applications with potential for further research, development and commercialisation in the ITS field. The feasibility and market potential of each new technology was evaluated and presented to key stakeholders with the aim of progressing the most prospective machine-vision technology for ITS.

Drive Cycle Data Collection (Austroads Strategic Routes in Brisbane): Second National In-Service Emissions Study, University of South Australia

- This study collected and analysed field data from an instrumented vehicle travelling on a number of strategic routes in Brisbane for use in the NIS Emissions Study. The data was subsequently used to develop models for estimating the fuel consumption and pollutant emissions on the strategic routes.

Scoping Study- Performance Evaluation of Traffic Control Systems Using Traffic Simulation, Brisbane City Council

- This project investigated the application of traffic simulation to evaluate the performance of three systems currently operating in Australia: BLISS, STREAMS and SCATS. The study proposed to interface a simulation version of each traffic control system to a traffic simulation model of a road network in Brisbane. The basic premise of the work was to use simulation to replace the real world actuation of detectors and for the simulator to respond in a realistic manner to signal information received from the Traffic Control System. The scoping study explored the feasibility of the simulation approach, selection of traffic simulator and detailing of study design.

2004

Signal Coordination Benefits – Analysis of Travel Time and Speed Surveys, Queensland Department of Main Roads

- This project analysed before-and-after travel time and speed survey data collected from fourteen signalised routes in the North Coast-Hinterland District. The data was pre-processed and used to determine the impacts of signal coordination on a number of performance measures, including travel times, speeds, number of stops, vehicle operating costs and pollutant emissions

Evaluation of Traffic Signal Control Systems for Brisbane, Brisbane City Council

- This study compared the traffic signal control philosophies and urban traffic management features of BLISS, STREAMS and SCATS. The traffic

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management perspectives including resources, skills, training, support and maintenance were also documented for each system. The study showed that substantial road user benefits can be realised from advanced traffic signal control systems. Summaries of cost estimates, road user benefits and resource requirements for each system were also identified.

Functional Safety Assessment of Adaptive Traffic Control Systems – SCATS2, UniQuest

- In this project, Hussein was engaged by UniQuest (commercial arm of the University of Queensland) to provide technical evaluations to aid the general planning for the SCATS-2 functional safety assessment.