

Title: Smart Transport Systems – The Role of Advanced Transport Technologies

Abstract:

This presentation explores the role of advanced transport technologies and highlights how transport of the future will utilise a range of technologies and smart algorithms to meet consumer demand for better service and safer travel. Collectively known as Intelligent Transport Systems (ITS), these technologies are aimed at maximising the efficiency of available infrastructure, reducing delays, enhancing safety, and keeping travellers well-informed throughout their journeys.

The presentation will highlight how ITS provides innovative solutions that support economic growth and competitiveness, through an advanced transport framework comprising an instrumented and interconnected transport infrastructure. The introduction of ITS delivers substantial benefits through improved network management systems, better informed travellers, and enhanced connectivity between vehicles and the transport infrastructure. Given the maturity levels and affordability of smart transport technologies, these benefits can be achieved at a fraction of the cost of investment in new transport infrastructure. It is argued that ITS can promote sustainable transport systems in three ways: first, by advocating a paradigm shift in the provision of transport infrastructure by placing more emphasis on improving efficiencies through proactive transport technologies; second, enhancing the performance of the transport system by reducing its negative impacts; and third, by enabling travellers to change their route, time and mode of travel to avoid congestion based on current information and anticipated traffic conditions.

The presentation will describe the functional components of ITS and the smart adaptive algorithms and decision support tools that comprise the backbone of ITS solutions. The presentation will also cover cooperative mobility, an emerging field within ITS, which aims to create cooperation amongst drivers, their vehicles and the road and transport infrastructure. Using a suite of technologies that provide connectivity with and between vehicles; between vehicles and roadway/railway infrastructure; and among vehicles, infrastructure and wireless devices, these systems aim to increase drivers' situational awareness and reduce or eliminate crashes by advising or warning drivers of dangerous situations. Similarly, using vehicle to Infrastructure capabilities and anonymous information from travellers' wireless devices, these systems will also provide transport agencies with improved quality and quantity of real-time data for more effective decision making and management of traffic in real-time. A number of proven ITS technologies and proof of concept examples for cooperative mobility applications will also be presented.

While the presentation highlights the potential promise that ITS holds for making the transport system more compatible with sustainable development, it also emphasises that this can only be achieved if ITS deployment is part of a comprehensive strategy that integrates social, environmental and economic goals.

Biography

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Hussein Dia is Director and ANZ ITS Technical Leader at AECOM. He has 28 years of engineering experience in public and private sector organisations. He previously held a number of ITS positions including Director of the ITS Research Laboratory at the University of Queensland (1998-2008). Through his research and consulting background, Hussein has made significant contributions, innovations and extensions to best practice in the areas of ITS and traffic simulation and modelling. His standing in the ITS profession is highlighted by more than 100 publications in the ITS field, invited presentations to conferences and symposia, and invitations for peer review of national and international ITS projects. Hussein is part of the AECOM Global ITS Team, and represents AECOM on a number of ITS executive committees and boards at the national and international levels. Hussein is Fellow of Engineers Australia, Fellow of the American Society of Civil Engineers and Fellow of the Institute of Transportation Engineers. He currently serves as a Director of ITS Australia and Editor of the IEEE Transactions on ITS.