



Dr Andrew Allan Dr Stuart Clement Professor Stephen Hamnett Ms Doris Hooper Dr Nicholas Holyoak Mr Bruce Perkin



Dr Frank Primerano Dr Raluca Raicu Professor Derek Scrafton Dr Sekhar Somenahalli Mr Branko Stazic Dr Wen Long Yue Dr Rocco Zito

Transport System Centre Team

The TSC is made up of a professional, highly-talented team of researchers. They are fully-versed in the latest technology and have expertise and experience in management policy and regulation; planning; modelling and analysis; management and control; information technology and engineering aspects of transport and logistics systems. The Director of the Transport Systems Centre, Professor Michael Taylor, has more than 30 years experience in transport and traffic engineering. His research focuses on all aspects of urban transport systems. Professor Taylor is a Fellow of the Institution of Engineers, Australia, the Institute of Transportation Engineers and the Chartered Institute of Logistics and Transport.

Dr Andrew Allan

Dr Andrew Allan is the Program Director for the undergraduate urban and regional planning degree program and lectures in transport, urban and regional planning. His research and consultancy interests are from an urban planning perspective and include light rail transit, local area traffic calming, pedestrian and cycle networks, environmental impacts of urban transport activities, the management of main street environments and the urban design implications of urban transport.

Dr Stuart Clement

Dr Stuart Clement is a Research Fellow and has been at the TSC since March 1992. His research interests include: the application of Intelligent Transport Systems technologies to transport, the operation of the taxi and hire car industries in Adelaide, the role of education in transport planning and engineering, road network microsimulation modelling and the optimisation of traffic signals.

Professor Stephen Hamnett

Professor Stephen Hamnett is the Professor of Urban and Regional Planning at the University of South Australia. He has long-standing interests in metropolitan planning and in the integration of land use and transport planning as part of the task of making human settlements more sustainable.

Current interests of particular relevance to the TSC are in transport in developing countries and in 'retrofitting' Australian suburbs to make reduced car use and healthier lifestyles more feasible. Steve is a Fellow of the Planning Institute of Australia and a Commissioner of the Environment, Resources and Development Court in South Australia.

Ms Doris Hooper

Doris Hooper is the Research Centre Administrator for TSC she provides support to Professor Michael Taylor and is responsible for taking leadership of and responsibility for providing the smooth operation of the Centre's office. Doris coordinates national and international conferences, workshops and seminars for the Centre. She also provides support for research and research education activities all of which assists in promoting the Centre's capabilities.

Dr Nicholas Holyoak

Dr Nicholas Holyoak is a Research Fellow at the TSC. His research focuses on travel demand modelling, with a special interest in the representation of management policies in the modelling process. He has international transport planning experience with expertise in the use of numerous modelling software packages. Other interests include the application of GIS to transport management and the environmental impacts of travel.

Mr Bruce Perkin

Bruce Perkin is the Business Development Manager for the TSC and works with a broad range of research concentrations in the Division. Bruce is able to assist clients to identify the appropriate expertise and resources within the University to meet their needs and provides project management experience in accordance with the University's quality-accredited project management system.

Dr Frank Primerano

Dr Frank Primerano is a Research Fellow at the TSC with research interests in the areas of interactive transport and land-use planning and policy evaluation, accessibility, travel behaviour modelling, travel demand modelling, vehicle emissions modelling and traffic micro-simulation

Dr Raluca Raicu

Dr Raluca Raicu is a Research Fellow at the TSC. Her research and consultancy interests include: computer modelling of transport and logistics systems, intelligent transport systems and transport network modelling.

Professor Derek Scrafton

Professor Derek Scrafton is the Adjunct Professor of Transport Policy and Planning for the TSC. Professor Scrafton possesses a wealth of experience and knowledge on Transport and Planning related issues after 25 years as the Director-General of Transport in South Australia.

Dr Sekhar Somenahalli

Dr Sekhar Somenahalli is a Research Lecturer in the TSC and the School of Natural and Built Environments. His duties include teaching GIS courses in the School and working on research projects in the TSC. His core research interests are in transit service planning and the application of GIS in transportation planning. His earlier experience includes six years of consulting in India in the area of transportation planning and three years of teaching experience at the University of Malaya, Kuala Lumpur, Malaysia.

Mr Branko Stazic

Branko's first contact with the TSC was in 1996 when he enrolled in a Postgraduate Diploma Course in Transport Systems Engineering. After completing this course in 1997, for which he received an award for excellence, he started working as a Traffic Operations Engineer at the Metropolitan Region of Transport SA in Adelaide.

Branko is now a Research Associate with the TSC and has worked on many research and consultancy projects involving traffic network modelling. He has expertise in the use of Paramics aaSIDRA and CUBE (formally TRIPS) software.

Dr Wen Long Yue

Dr Wen Long Yue is a senior lecturer in Transport Systems Engineering. He is an expert in simulation modelling for transport systems and parking systems. Dr Wen Long Yue lectures in transport and traffic engineering at postgraduate and undergraduate levels and is the Program Director for the postgraduate programs in Transport Systems Engineering and Transport Management and Logistics.

Dr Rocco Zito

Dr Rocco Zito is the Deputy Director of the TSC and a Senior Research Fellow. His fields of research include: transport applications of GPS and GIS, the environmental assessment of transportation: the use of alternative fuels, and the modelling of transportation systems.

University of South Australia

Transport Systems Centre



Transport Systems Centre delivering:
→ innovative, practical and cost-effective solutions for transport and logistics problems

A Message from the Director

Professor Michael Taylor



The Transport Systems Centre has become one of Asia-Pacific's leading centres for academic excellence in transport studies.

The centre prides itself in its multi-disciplinary approach – its strong links with government, industry and community, its strong national and international collaborative links, and its inclusivity and capability for lateral thinking.

Activities include strategic and applied research, expert consultancy, teaching and learning at postgraduate and undergraduate levels, and professional development programs.

TSC is an international node of excellence in transport systems modelling, transport-land use-environment interaction, intelligent transport systems, and transport policy analysis.

The centre's research and its graduates are having a significant impact throughout our region in developing more sustainable transport and logistics systems.

The centre was one of the first research centres at UniSA to gain formal recognition by the University and is now working with key UniSA centres with expertise in systems and technologies to form the new Institute for Sustainable Systems and Technologies. The Institute will provide advanced multi-disciplinary capability across a range of systems and technologies which underpin Sustainable Human Settlements.

TSC is dedicated to the long term solution of transport related problems through academic and research endeavour.

TSC Mission Statement

To deliver quality multi-disciplinary education, training and research programs in transport and logistics that meet the needs of industry and the community for improved transport and logistics systems in Australia and the Asia-Pacific region.

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University of South Australia

The Department of Transport and Urban Planning has over many years built a strong relationship with the Transport Systems Centre. DTUP values the high level of technical and professional skills that the TSC offers, and the major contribution it makes to the ongoing transport policy, planning and engineering agenda of DTUP. TSC's close links with the UniSA's Urban and Regional Planning discipline also augurs well for the quality of the services offered by TSC. As well as being an important source of advice and consulting services, TSC is expected to play a key role into the future in the education and training of transport professionals.

Dr Peter Tisato

Senior Adviser, Transport Policy, Policy Analysis & Research at the Department of Transport and Urban Planning, Transport Planning Agency

KEY AREAS

- SUSTAINABLE URBAN TRANSPORT
- INTELLIGENT TRANSPORT SYSTEMS
- INTEGRATED LOGISTICS
- TRAVEL DEMAND MODELLING AND TRANSPORT NETWORK ANALYSIS
- MICROSIMULATION
- ENVIRONMENTAL IMPACTS OF TRANSPORT
- TRANSPORT VULNERABILITY AND RELIABILITY
- SPATIAL INFORMATION AND COMMUNICATIONS TECHNOLOGY
- TRANSPORT ENERGY AND EMISSIONS
- TRANSPORT IN DEVELOPING COUNTRIES
- TRANSPORT POLICY AND DECISION MAKING
- ROAD SAFETY

I was attracted to study at the TSC by its international research reputation in transport and logistics and in particular that of Professor Michael Taylor. I completed my PhD in 'Development of a decision support tool for the multicriteria environmental impact evaluation of urban road networks' in 1998 and since my return to my home country of Thailand have maintained regular contact with Professor Taylor and key TSC research staff. The TSC provided an active and vibrant research environment which was enhanced by their strong links with industry and government.

Dr Pongrid Klungboonkrong

Lecturer, Department of Civil Engineering, Khon Kaen University

Excellence in Research

The TSC places a high priority on the excellence and relevance of its research. The TSC contributes strongly to many major international conferences. It hosted the 15th International Symposium on Transportation and Traffic Theory in Adelaide in July 2002. The ISTTT is the world's peak gathering for transportation scientists. TSC researchers have been honoured with several major awards and grants in recognition of the excellence of their research. These include:

- Rodney Vaughan Prize for best research student paper at the 2003 Conference of Australian Institutes of Transport Research awarded to Frank Primerano for his paper entitled 'Mobility considerations in restricting choice sets in modal choice models'
- Outstanding Paper Award at the 5th Conference of the Eastern Asia Society for Transportation Studies (EASTS 2003) awarded to Mr Nikolaos Vogiatzis, Professor Hideto Ikeda (Ritsumeikan University, Japan), Dr Jeremy Woolley (University of Adelaide) and Mr Yu He (Ritsumeikan University, Japan) for their paper entitled 'Integrated multi-nodal traffic network system'

- David Willis Memorial Prize for the best paper by a student or young professional at the 25th Australasian Transport Research Forum (2002), awarded to Ms Min Xu for her paper entitled 'A comparison of two methods for imputing missing income from household travel surveys'
- Yasoshima Prize for best paper presented at the 3rd Conference of the Eastern Asia Society for Transportation Studies (EASTS1999) awarded to Dr Pongrid Klungboonkrong for his paper entitled 'A microcomputer-aided system for multicriteria environmental impacts evaluation. The City of Unley Case Study Australia'
- Young Transport Professional of the Year, 1999, awarded to Dr Rocco Zito by the Chartered Institute of Transport in Australia (SA Section).
- David Willis Memorial Prize for the best paper by a student or young professional at the 22nd Australasian Transport Research Forum (1998) awarded to Stuart Clement for his paper 'Optimising fuzzy logic traffic signal control systems'
- Outstanding paper award at the 2nd Conference of the Eastern Asia Society

- for Transportation Studies (EASTS 1997) awarded to Dr Glen D'Este for his paper entitled 'Hybrid route choice procedures in a transport network context'
- WCTR Prize for best paper at the 1995 World Conference on Transport Research awarded to Dr Glen D'Este for his paper on the modelling of intermodal freight transport
- Rodney Vaughan Prize for best research student paper at 1996 Conference of Australian Institute of Transport Research awarded to Pongrid Klungboonkrong for his paper 'A multicriteria environmental sensitivity evaluation of the urban road network: a fuzzy multiattribute decision making approach'

The TSC has strong collaborative links with international software developers in the transport field, including Quadstone Inc and Citilabs Inc. Quadstone is the international developer of the Paramics microsimulation software. Citilabs is the developer of the CUBE travel demand modelling package. TSC is a Citilabs' SPECTRE (Special Centre for Transport Research and Education), one of only five such university centres around the world.

Education and Training

The TSC specialises in multi-disciplinary studies that take a systems approach and offers a unique opportunity for training and postgraduate study in transport and logistics. The centre offers a range of training and professional development programs tailored to the needs of industry and government for both Australian and international students.

Opportunities for postgraduate study in transport and logistics are available at Graduate Certificate, Graduate Diploma and Masters degree levels. Research studies leading to Masters and PhD degrees are a significant part of the centre's active research program.

The TSC has a long track record of attracting industry-sponsored research degree scholarships, including Australian Postgraduate Award (Industry) scholarships.

Opportunities are also available for postgraduate study of specific economic, operational, social and environmental issues associated with transport and logistics.

TSC Commercial Products

The outcomes of the TSC research have been translated into a number of successful commercial products, including:

- Trafikplan – computer database system for local area traffic planning
- SARAH
- NetNoise
- Cabal
- PATRON

Consultancies

The TSC has a proven record of successful consultancies to industry and government, both locally and overseas. The centre provides expert advisory services in the full range of areas in transport and logistics described above.

The TSC also works collaboratively with other UniSA research concentrations to deliver multi-disciplinary solutions.

Relationships with industry and government partners are built around the UniSA research ethos 'people you can work with' as encapsulated in the following testimonial from Philip Hewitt:

The Adelaide City Council and the University of South Australia have formed a 3 year partnership to develop innovative approaches to manage the city's road transport network and measure its performance. Leading edge expertise is being provided by UniSA to construct a model of the transport network and develop advanced technology 'add-on' solutions to inform transport policy by predicting network capacity, driver behaviour and the environmental impact of CBD growth.

Philip Hewitt

Principal Transport Planner, Adelaide City Council

TRANSPORT MODELLING AND SIMULATION



INTELLIGENT TRANSPORT SYSTEMS

Research Activities

The TSC research program addresses the major issues of contemporary transport and logistics including:

TRANSPORT PLANNING AND POLICY

- transport policy and regulation
- transport systems market research
- analysis of network vulnerability and reliability

TRAVEL DEMAND MODELLING

- model development and data analysis
- multi-modal transport systems and modelling
- comparative applications of software packages
- optimisation, simulation and dynamic control
- microsimulation of traffic and travel

LOGISTICS

- distribution, operations and fleet management
- city logistics
- systems planning, simulation and performance evaluation
- logistics systems modelling

SUSTAINABLE TRANSPORT

- transport, land use and environmental interaction
- planning for bicycle and pedestrian modes
- accessibility to facilities and services in metropolitan areas
- transport and urban futures

ENERGY AND ENVIRONMENTAL IMPACTS OF TRANSPORT

- fuel consumption and emissions modelling
- environmental impact assessment
- alternative fuels

INTEGRATED LOGISTICS

INTELLIGENT TRANSPORT SYSTEMS

- applications of intelligent transport systems technology
- advanced traffic management systems
- railway systems control, simulation modelling, scheduling and timetabling
- energy conservation technology
- advanced transport information systems
- advanced traffic control systems

SPATIAL INFORMATION TECHNOLOGY

- integration and application of global positioning systems (GPS)
- geographic information systems (GIS)
- integration of GIS and travel demand models

ROAD SAFETY

- analysis of traffic speed policy and practice
- compliance behaviour and issues
- crash analysis and identification of hazardous locations
- road safety engineering
- road safety audit

TRANSPORT NETWORK ANALYSIS



ENVIRONMENTAL IMPACTS OF TRANSPORT

Specialised Equipment and Facilities

The TSC blends theoretical and practical research and has access to state-of-the-art computing facilities and an impressive range of specialised equipment to support its research programs. These facilities include:

- Advanced computer systems facilities including a specialist transport network modelling and analysis laboratory and GIS facilities.
- The National Laboratory for Transport Network Analysis houses copies of the major transport network software packages and is a centre of excellence for the development of new software and methodologies for transport network modelling and analysis
- The TSC operates several instrumented research vehicles for realtime collection of information on traffic flow characteristics and fuel consumption. These are currently



SUSTAINABLE TRANSPORT

- Online database management system (MySQL) running on a Linux/Intel (RedHat 9.0) platform
- GPS/GIS software including TransCAD, MapInfo, ArcInfo and ArcGIS
- Traffic noise measurement equipment and noise pollution and dispersion modelling software
- The TSC Library has an extensive range of journals, conference proceedings and books on all facets of transport

In addition the Transport Systems Centre collaborates closely with other transport research groups in Australia and overseas including:

- The Institute of Transport Studies University of Sydney/Monash University
- Institute for Applied Research, Pforzheim University of Applied Sciences
- The Institute for Transport Studies, University of Leeds
- The Transport Operations Research Group, University of Newcastle upon Tyne
- The Department of Civil and Structural Engineering, Hong Kong Polytechnic University
- The Institute National des Recherches sur les Transports (INRETS)

TSC has access to the full range of facilities and resources of the University of South Australia.