

Transport Portfolio University Group

Memoranda of Understanding between
Queensland Transport, Main Roads, Queensland Rail
Queensland University of Technology & University of Queensland

Strategy for Cooperative Research & Professional Development 2005–2007



THE UNIVERSITY
OF QUEENSLAND



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Memoranda of Understanding (MoU) have been established to outline the cooperative relationship between Queensland Transport (QT), Main Roads (MR), Queensland Rail (QR) and Queensland University of Technology (QUT) and the University of Queensland (UQ) to achieve mutual benefit through a joint approach in transport through research, education, training and service delivery, and any commercial opportunities that may accrue.

Objectives

The high level objectives of this arrangement between the agencies and the universities in relation to the MoUs are to:

1. Develop a cooperative working relationship between the parties.
2. Enhance the capabilities of each organisation to achieve their goals by sharing expertise, knowledge and resources.
3. Develop appropriately skilled professionals for the transport sector and facilitate a critical mass of education and research expertise.
4. Progress interdisciplinary research and development in transport, education and training, opportunities for joint ventures in research and development, and the provision of professional services.
5. Promote these arrangements within the partner institutions and in the community to facilitate informed debate on transport issues and solutions.

Portfolio University Group

A Portfolio University Group (PUG) has been established to:

- overview transport research & professional development activities across the universities;
- prepare a draft annual program and budget in accordance with broad objectives outlined by the Strategic Management Committee, including quantitative and/or milestone objectives for approval by the Strategic Management Committee;
- monitor and review progress against the annual program; and
- facilitate collaboration between agencies and universities and seek research funding leverage through ARC grants.

QUT Chair in Transport

The Chair in Transport, which has operated within the School of Civil Engineering since 2000, is a key element of the MoU between QUT, MR and QT. Under this alliance, the Chair is charged with, undertaking an agreed program of transport research, as well as education and training activities. The Chair also provides expert advice to the two Portfolio agencies.

UQ Centre for Transport Strategy

The Centre was established at the University of Queensland in 1998 as a collaboration between three State transport agencies – Queensland Transport, Main Roads and Queensland Rail; and three University Schools (Engineering; Economics; and Geography Planning & Architecture) to undertake research and provide professional development and consulting services.

Strategy for Cooperative Research & Professional Development

The purpose of this strategy is to provide direction for research and professional development activities of Chair in Transport QUT and Centre for Transport Strategy UQ, for the purposes of developing research proposals, including funding proposals under grant schemes, and postgraduate study and preparing professional development programs and short courses.

The Research & Professional Development Program

The universities place a high priority on the relevance of research and professional development to industry and government needs. This transportation research and development strategy, developed in consultation with the Portfolio Agencies and the transport industry, is based on:

- developing industry oriented approaches, including tailoring best practice approaches to integrated transport, public transport, traffic, intelligent transport systems, logistics and freight planning and management and strategic asset management; including sustainable transport issues relating to economic, social, safety and environmental impacts;
- progressing modelling and evaluation methodologies; test conceptual frameworks and demonstrate feasibility of approaches and set up a transport modelling and traffic simulation laboratory and research capability in cooperation with industry partners and other higher education institutions; and
- developing strategic alliances with other higher education institutions and transport research centres and maximising access to resources including leveraging funding through research grant schemes

The Focus for Research & Professional Development

To ensure maximum benefit is obtained from collaborative research & professional development undertaken as part of this strategy a number of principles need to be considered:

- focus on a limited range of strategic issues of importance to the transport agencies and aligned to expertise available in the required timeframe
- where appropriate commit resources to fewer larger research projects to achieve economies in administration – either by collaborating with other agencies or industry or by combining a number of smaller projects into a cohesive program
- undertake research & professional projects utilising transport agency staff where feasible, as this enables postgraduate research qualifications for staff and development of in-house expertise and capability for transport agencies as well as solutions to agency problems
- look for potential leverages of transport agency resources by identifying potential research grant funding opportunities and alliances with industry
- identify potential visiting researchers from national and international universities and research centres, who can add particular aspects to the research program
- consider synergy of research and professional development activities
- increase the research & professional development related collaboration between the two universities through joint projects which recognise the specific expertise and capabilities of each institution

Professional Development

QUT and UQ provide a multi-disciplinary approach to training and graduate study in transportation.

Both universities offer a range of education and training opportunities and provide a developing, flexible approach to continuing professional development and technology transfer for transport professionals tailored to the needs of industry and government. These include graduate and continuing education courses and programs such as:

- Short courses, seminars and workshops
- Undergraduate education in transportation through civil engineering and urban & regional planning degrees
- Graduate coursework programs (Graduate Certificates, Diploma and Masters degrees).
- Graduate research degree courses (Masters and Doctorate degrees)

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... *Priority Areas*

Priority Areas [note these areas are not listed in any order of priority]

1. System Performance – evaluation frameworks, data & information

To develop sound and transparent economic, social and environmental evaluation frameworks to facilitate multi-modal investment decisions regarding transport infrastructure and management of system performance.

Strategic Issues

- identify range of benefits and costs – economic, social, environment
- regional implications and access considerations, regional development, industry facilitation, opportunity cost dimensions
- impacts of externalities such as greenhouse gas emissions, safety, noise and congestion
- interaction of urban and non-urban transport, capacity constraints and utilisation
- determinants of investment and budgetary processes – maximising allocative efficiencies
- appropriate performance measures and targets
- evaluation methodologies, eg for transit and intelligent transport systems projects and programs
- changing nature of demand

Potential Areas for Research & Professional

- economic justification modelling for transport infrastructure – model specifications and functionality, ownership and management, accessibility, freight/passenger interaction – eg assist with AusLink assessment methodologies
- best practice review of multi-modal evaluation framework models & transit evaluation methodologies
- system efficiency versus operator efficiency driven transport planning
- infrastructure funding models – potential models for funding the development of transport infrastructure
- appropriate performance indicators for evaluation purposes
- transport system case studies – review of specific project case studies – economic and commercial imperatives, policy impacts etc
- cross-institutional issues associated with transport – eg role of various institutions and implications of purchaser-provider framework
- urban transport organisation and institutional issues
- integrated public transport – effectiveness and impacts of modal integration in Australian cities from various perspectives – customer, purchaser, provider, political etc

2005 Work Program – Research

- Transit evaluation methodology/approach – South East Transit/Busway (UQ/QUT)
- Transport policy options for SEQ (UQ/QUT)
- Data needs for freight and transit planning and evaluation (QUT/UQ)
- Regional Transport Strategy Implementation (UQ)
- Sustainable transport (PostGrad UQ)
- Integrated public transport (PostGrad UQ)
- Funding transport infrastructure (PostGrad UQ)

Professional Development

- Transport and Traffic Planning Models: a hands-on introduction: short course (QUT/UQ)
- Transport Strategic Planning: theory and practice: short course (UQ/QUT)
- Targeted postgraduate research study, seminars & workshops identified & resourced by transport agencies

2. Freight and Logistics – heavy vehicles & asset management

To undertake research focussed on improving the efficiency of the freight and logistics sectors, whilst minimising the potentially detrimental impacts on the environment.

Strategic Issues

- Modal performance
- Asset management
- Environmental impacts
- Inter-modalism
- Governments as players in the better management of supply chains (SC)
- Heavy vehicle technology trends
- ITS applications

Potential Areas for Research & Professional

- Identify the most appropriate and effective roles of governments at all levels, in the management of SCs
- Develop an appropriate evaluation framework for the evaluation of freight modal alternatives, using specific case-studies.
- Identify the role of ITS in the improvement of freight and logistics activities and in the management of SCs
- Identify how e-business and e-commerce can/should be integrated with ITS initiatives for better SCs
- Identify and quantify the major determinants of freight modal choice
- Quantify the effects of more freight efficient vehicles on modal shares; asset damage; environmental and urban amenity impacts

2005 Draft Work Program – Research

- Freight & logistics in Queensland: the role of government (QUT/UQ)
- Multi-Combination Vehicles (MCV): road user impacts (2 PostGrads MR/QUT)
- Adoption of e-business in rail (PostGrad QUT/Rail CRC)
- Enhancing track maintenance efficiency and effectiveness (2 PostGrads QUT/QR/Rail CRC)
- Operational optimisation of multi-modal container terminals (PostGrad QUT/Rail CRC)
- Optimise container transfers at multi-modal terminals (QUT/Rail CRC)

Professional Development

- Targeted postgraduate research study, short courses, seminars & workshops identified & resourced by transport agencies

3. Mobility Management – public transport, demand management & land use

The changing nature of travel and the changing transport now and into the future, both passenger and freight transport. To progressively identify and develop transport trends, data & information and models to facilitate improved land use and transport planning.

Strategic Issues

- What data to collect and analyse – travel survey, data collection design – translate into models to inform decision makers and test scenarios
- Census is the only population wide data source. Link this with travel survey. Micro simulation to determine where/what trips are generated
- Appropriate landuse patterns, financial drivers for landuse
- Travel patterns/ Determinants/ Trends/ Forecasting
- Urban and rural issues
- Regional freight
- Impacts of regulatory environment
- Implications of developments in transport, eg high speed rail, land-bridging for imports
- Landuse development and travel

Potential Areas for Research & Professional

- reviewing current global transport planning and policy trends
- progressing transport futures scenario planning work undertaken in Queensland
- transport and the environment – modal shift analysis, greenhouse gas mitigation initiatives, noise mitigation, role of ITS
- freight movements in urban areas - economic evaluation on the restrictions on freight movements, priority lanes for road freight, etc.
- travel survey methodology, transport data requirements and analysis techniques
- integrated transport planning skills for local authorities

2005 Draft Work Program – Research

- Transport Futures (UQ)
- Transit Evaluation (QUT)
- Transit Oriented Development (UQ, APAI PostGrad)
- Transit Oriented Development (PostGrad QUT)
- Kelvin Grove Village – public transit patronage (QUT/QT/QldHousing)
- Transit demand models (PostGrad QUT/Redlands Shire)
- Travel demand management (PostGrad UQ)
- Demand responsive transport (PostGrad UQ)

Professional Development

- Targeted postgraduate research study, short courses, seminars & workshops identified & resourced by transport agencies

4. Transport Operations – traffic & incident management & ITS

To explore initiatives for cost-effective improvements to the capacity and productivity of existing transport infrastructure. To assist in better management of existing infrastructure.

Strategic Issues

- utilisation of technology, intelligent transport systems
- application of systems engineering and strategic asset management to management of assets and resource allocation
- sustainability of transport
- elasticities of demand and supply
- congestion and travel demand management
- strategic asset management
- environmental impacts of transport

Potential Areas for Research & Professional

- identify/evaluate potential initiatives aimed at improving the transport system infrastructure capacity, through inter-modal initiatives, use of technology etc
- infrastructure capacity management – role of individual modes, capacity modelling parameters of fixed infrastructure, inter-modal initiatives, travel demand management, role of ITS in managing and improving capacity
- develop appropriate ITS evaluation methodologies with the use of case-studies. Quantify costs and benefits attributable to ITS system components
- review asset management practices and identify Portfolio R&D projects with high rates of return
- the port-rail interface – improving the efficiency and effectiveness of the interface

2005 Draft Work Program – Research

- Improving safety through better visibility (PostGrad QUT)
- ITS Deployment Guidelines (PostGrad QUT/MR)
- Traffic incident management (UQ, PostGrad)
- Traffic management and ITS research (6 PostGrad UQ)

Professional Development

- Traffic & incident management: short course (UQ/QUT)
- Traffic management coursework: Advanced Transport Technologies; Advanced Traffic Flow Theory; Applied Systems Engineering for Transport Projects; Traffic Systems Operations and Management (PostGrad UQ)
- Targeted postgraduate research study, short courses, seminars & workshops identified & resourced by transport agencies