



AUSTRALIAN LOGISTICS COUNCIL

**NATIONAL INNOVATION WORKSHOP
HELD ON 30 MAY 2006
ORGANISED BY
THE AUSTRALIAN LOGISTICS COUNCIL
(ALC)
REPORT ON MAJOR FINDINGS
AND
RECOMMENDATIONS**

**Professor Jane Marceau
June 7 2006**



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Introduction

On May 30 The Australian Logistics Council (ALC) organised a half day National Innovation Workshop for the Transport and Logistics Industry attended by 12 representatives on the industry, relevant government departments, the Transport and Logistics Centre (TALC) and the research world. The aim of the Workshop was to begin to determine what a national innovation agenda for the industry could be composed of and what kinds of research and other innovation-related activities should be priorities. It grew out of the recognition by the Action Agenda (AA) for the industry that more should be done to stimulate innovation in the industry, described in the AA as one of 'incremental adaptors', and the suggestion that more needed to be known about the sources of innovation in the industry and about the players involved and their relationships. The Workshop was facilitated by Professor Jane Marceau and was intended to be the first in a series of meetings to further the innovation element of the T&L industry Action Agenda, finalized in 2002.

Format and focus of the Workshop

The Workshop considered priorities for innovation in the T&L industry, considering the needs of T&L firms themselves and their users. Discussion was enriched by input from the ALC, TALC, from regulators in two States and from a researcher. A list of participants is attached to this report as an Appendix.

Innovation is usually considered to be most effective industry development tool when major groups of players in an industry work together to develop new products and ways of doing and organizing operations. All major industries nowadays are highly regulated and the T&L sector is no exception, especially in the areas of OH&S and environmental matters. Some areas of the regulatory framework directly concerns practices in the industry itself while in others the issues addressed derive from the interactions on the activities of the industry with major aspects of its operating context. The latter aspects are especially important when the operations take place in crowded arenas.

Workshop participants had been provided with some background notes on the role of innovation in competitiveness more generally and with an article summarizing the most important considerations in innovation in the T&L industry more specifically. The presentation included the suggestion that the nature of the industry, notably from a supplier-dominated to a client-dominated sector, a shift to being time-critical rather than distance critical with the shift in many industry management techniques (e.g. JIT) behind the time/distance change and changes associated with the rise of e-commerce and associated e-logistics – all ICT-intensive. Workshop participants were also provided with a list of reasons why it is important for industry to conduct and use research.

The morning session was devoted to suggesting several areas where innovation is needed if the industry is to operate more effectively in the future and took note of current pre-



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occupations in the field in the European Union and the OECD. These include the broad areas of mobility of people and goods, infrastructure and integration, modal and inter-modal transport management (EU) while the OECD Transport centre is focusing effort on investigation of problems related to infrastructure (investment, planning, development and regulation, economic impact), traffic congestion in cities, road safety, the contribution of different kinds of transport to sustainable mobility and sustainable society, and the interactions between transport efficiency to international trade and regional development among other socio-economic issues. The research and innovation agenda pursued by these important international bodies indicates further where Australia should be looking in constructing a national research and innovation agenda for the T&L industry. In Australia, currently important areas of concern are issues such as technological change (e.g. new fuels, environmental technologies, new physical transportation 'engines'), organisational re-design (e.g. supply chain integration, client relationship management, skills) and responses to policy issues such as environment, infrastructure and what is known overseas as 'city logistics'. Addressing these issues may well require input from the social and management sciences as well as from the natural and engineering sciences.

The morning session was also particularly focused on the *dynamics* of the industry as they appear in two approaches.

The first approach shows the importance of considering the differing innovation-related capacities, performance and activities of four sets of players outside the industry as normally understood but who are suppliers to different segments of the industry. These suppliers include firms concerned with service activities such as environmental clean-up, equipment sale and repair, fuel provision and infrastructure building. Also heavily involved in the industry's well-being are product/service providers in fields such as IT systems, toll technologies and intelligent transport systems. Innovation capacity and activity in all of these affect the good functioning of the T&L industry and attention needs to be paid by the industry to trends in these areas.

The second approach involves estimating the interactions and particularly knowledge flows between a slightly different group of four sets of players. These are: the industry producers (T&L firms), the users of T&L services, the researchers and other public sector training players who assist the industry and the regulators (largely government but also standards bodies and industry associations) who set the framework rules of the game.

Initial analysis of the literature on the industry suggested to the Workshop convener, Professor Marceau, that information flows in the T&L industry were far from ideal and did not involve equal flows between all players. Industry representatives in the room agreed with that diagnosis and were asked to bear it in mind when discussing an innovation agenda for the sector later in the day.



This analysis was also designed to underline the importance of bringing in the social and management sciences to an innovation agenda and participants were also asked to bear that in mind in the discussions later in the day.

The afternoon sessions were designed to begin to tease out what participants playing different roles in the sector thought were most important both for action and for further discussions. Participants were assigned to one of three groups, one representing T&L industry service providers and one their clients (service users) while the third combined researchers and regulators. Each group involved participants from each of the four relevant sets of players, some of whom had to role play while also contributing their specific expertise.

Group 1: Users

Participants in this Workshop group discussed user innovation needs as they relate to what they want from T&L service providers. All agreed with the proposition that the industry had shifted from being supplier-dominated to being client-dominated. While recognition of this shift by no means denies the importance of the activities of T&L firms themselves – and many are indeed independently shaping many of the industry’s operations – it does mean that user needs can constitute priority area for research and innovation.

The Workshop group ‘Users’ described use high priority requirements as:

- Cost reduction. Costs to consider include elements reducing risk, improving cash flow and reducing inventory. This must be achieved without compromising safety;
- Lock in of suppliers and customers (which could be translated as reliability, long term contracting instead of spot contracting, development of partnership relationships);
- ‘suppliers to grow with clients’, both in domestic and international markets.

Sometimes these issues required national solutions (through training)

The *research* suggested related to four major areas of activity:

- information flows;
- RFID and bar coding;
- training as linked to recognising and satisfying customer needs;
- the refocusing of ‘corridor’ research into ‘network’ research.



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The group also proposed a T&L Cooperative Research Centre (CRC), to be supported by customers both in relation to funding and to defining the research agenda, as the main vehicle for undertaking the suggested research.

Comment

The research proposed is essentially social and management science-focused. This part of a national innovation agenda for the T&L industry requires:

- one or more programs of work relating to organizational innovation in the industry;
- a program of work bringing together organisational theorists and engineers working on new technologies for the industry currently under development around the world, notably, for example, intelligent transport systems and automated freight transport;
- a program of work examining existing and potential networks of relationships between different 'levels' of the supply chain and ways to improve their management and especially raising the capacity to build joint long term linkages between sets of clients and suppliers. The consensus among the workshop participants was that levels of *trust* between players are not high enough which limits innovation capacity within the whole chain. An example was suggested: research to ascertain ways in which major clients may be persuaded to think less about the immediate benefits of use of proprietary software systems and more about the operational efficiencies that could be gained, and the associated financial benefits, of using a common system, perhaps set through the development with input from all players of an appropriate Australian/international standard. This in turn could be linked to research on information flows between groups of players and supply chain partners as a way of leveraging capacity all along the chain.

Group 2: Producers (T&L firms themselves)

The suggestions for priority actions for innovation and the associated research made by the producer Group in the Workshop were very specific and involved both engineering and physical sciences and the social and management disciplines. Their major suggestions concerned:

- *Vehicle designs.* The group was especially concerned with
 - a) vehicles for deliveries in metropolitan areas and wanted designs that further improved on flexibility of delivery and delivered better OH&S outcomes within transport and distribution in urban areas;



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- b) long haul vehicles which need improved fuel efficiency and flexibility in relation to different types of loads;
- c) long and short haul vehicles that are adapted to the requirements of inter-modal activities and facilitate road-rail-port exchanges;
- *Track technologies.* The aim would be to create and implement standards for labeling from order-to-cash through all links in the chain. This would overcome current problems where many systems ‘stop at the farm gate’;
- *In-cab technologies.* Research would focus on:
 - a) issues concerning relationships between T&L firms and their sub-contractors
 - b) enabling the creation of a communication gateway standard for the industry
- *Broad scheduling and planning tools.* These are needed to enable the coordination of pick-ups and deliveries across multiple companies (shippers and receivers) and logistics provider firms. The research could include examination of the feasibility of universal dock scheduling reservation systems;
- *Intelligent/integrated transport systems.* These are needed to improve flows through key infrastructure bottlenecks, notably ports and other inter-modal terminals;
- *Industry awareness of the commercial imperatives driving innovation.* R&D agencies (and governments) to find ways of increasing industry awareness of the commercial imperatives faced and their role in driving innovation. They should also research and provide ‘change management roadmaps’ to provide incentives for improvements among logistics service providers and their customers. This was seen to especially involve a focus on achieving better commercial outcomes through collaboration along the chain.

Comment.

Some of these suggestions, notably these relating to improved vehicle design, would need international collaboration, especially for linking design, which could be done here, and construction of the new vehicles which may need production facilities located elsewhere. It may also be that such innovative designs are already on the drawing board or under development or trial elsewhere in the world since most developed countries face similar T&L issues.

Similarly, some overseas research centres may be developing relevant in-cab technologies to perform the tasks mentioned by the Producer group in the Workshop. T&L management researchers may also be working on at least some of the related management issues.



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Finally here, the international literature indicates that coordination technologies of the kind suggested in the Workshop already exist in some European countries at least and have been or are being trialed.

This agenda of research/ innovation proposed by the Producer group in the Workshop suggests that two further activities must be central to a national innovation agenda for T&L in Australia:

- The creation of a mechanism for more effectively scanning the international environment for innovations/ research underway, being trialed or in operation in major centres of T&L activity elsewhere in the world. This scanning should include the development of cutting edge areas of research as these crucially affect the operations of the T&L industry here. In particular, the difficulties associated with T&L operations in congested urban areas was referred to several times in the Workshop and the international literature suggests that an emerging area of research, known as City Logistics, should be one of the first foci of the proposed international scanning. There does not seem to be any center of research in Australia which is currently researching this important area;
- The creation of an effective way or ways to *diffuse* new knowledge throughout the industry, whether the new ideas come from international scanning or local best practice which is not being rapidly emulated by players, especially smaller players.

Group 3. Regulators

The ‘regulator’ (public sector policymakers) group was particularly focused on *actions* to raise the industry’s profile to support industry’s R&D profile. The actions discussed related to coordination and a shift to ‘positive policies’ rather than regulations about industry activities. More specifically in relation to innovation, the group recommended:

- Tax incentives better adapted to the nature of a service industry to encourage more research, especially in relation to ICT
- The development at national level of T&L-specific technology strategies rather than the industry having to rely on the generic approaches currently operating which are not well adapted to the industry’s specific needs. These should be supported by an ‘impact’ or ‘triple bottom line’ statement as the strategies are considered

Overall the group recommended that a way be found to raise the T&L profile in Canberra and, associated with that, the development of a ‘Backing the T&L industry’ package of actions which would include the technology strategies and R&D incentives mentioned above. This package would need to be funded as a way of implementing the recommendations of the Action Agenda already developed and be linked to the



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proposals put forward by the Logistics Industry Action Agenda currently being developed.

Further, the ‘Backing the T&L Industry’ package must be developed as a framework for coordinated strategies and policies devised by the States and federal authorities as well as the industry bodies, such as Freight Councils, concerned. The package would also be the focus for joint activities between relevant government departments – at federal level, notably DoTARS, DEST, DITR and DoCITA – which are currently largely working separately.

Finally, OH&S issues in the industry are urgent and the regulations in place need the development of performance measures and coordination across authorities. Progress on these common concerns could be an initial focus for the proposed framework package.

Comment

The Action Agenda could be reworked as the basis of the ‘Backing the T&L industry’ package proposed not only by the ‘regulators’ but also by the ‘producers’ and ‘users’ groups at the Workshop. If this is to be done as suggested, the priorities recommended by the Action Agenda need to be clearer and to be grouped into related areas for further development as part of the package.

The Australian Logistics Council should establish a high level working group which includes producers, users and government agencies to develop the basis of the package of actions proposed and provide ideas for joint industry-government funding. The package should include a structure for implementing the different elements of the innovation agenda adopted and a timeframe for actions by different groups involved, one of the most important and urgent of which is the National Research and Innovation Forum outlined below.

Group 4. Researchers

The ‘researcher’ group at the Workshop focused on the important disconnections in the operations of the industry’s R&D base. The group pointed to the independent, uncoordinated activities of both public sector researchers within CSIRO, universities, relevant CRCs and State and federal governments and those of the large corporate organisations in the industry. In the group’s view, the only connections are personal, not institutional, ones so no coherent agenda is being developed. There are no systematic mechanisms for sharing information either about what is needed for the industry or about what is available in terms both of research programs and the location of skilled RD personnel capabilities. Private R&D is not shared and does not reach smaller players.

The group recommended:



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- Establishment of a 'EUREKA' (an EU program) model program where government R&D funds are linked to collaborative research between players in both public and private sectors;
- The creation of a central (representative) 'voice' for the industry in devising and implementing a national innovation and research agenda. The suggestion focused on the need for the industry to convene a National Research and Innovation Forum (NRF) to consider the outcomes of the Workshop just held and the mechanisms for taking the action needed to improve rates of innovation in the industry and hence the sector's competitiveness.

Comment

The National Research Forum should consider all the recommendations made by the Workshop's members and particularly design a structure for:

- selecting research/innovation priorities for funding;
- bringing together key players in the T&L R&D arena, both researchers themselves and their clients in the industry on a regular basis. This could be done through the National Research and Innovation Forum which would meet several times a year to oversee progress and add new ideas;
- the creation of *ad hoc* consortia of researchers and clients to carry out R&D on themes selected by the NRF (see further comment on this below). These themes should include input from both the engineering and physical sciences and the social and management sciences
- the NRF (through a sub-group) could also act as an interim mechanism for scanning the most important areas of the international research and industry environment and diffusing information as widely as possible to the industry, to the industry's key clients and to government
- the Australian Logistics Council could take the lead in convening (and funding?) the NRF.

It is important to consider the creation of research consortia that cross university and other institutional boundaries. This is because of the issue of the 'silos' referred to in the Workshop but more importantly because in Australia individual research centres do not have the scale needed for most research projects. Moreover, centres are geographically widely scattered, do not have efficient information-sharing mechanisms and are located in organizations that are focused on competition for funds rather than collaboration. Finally, each centre contains only one or two researchers relevant to any given area of work and these people need to have a framework for collaboration. This applies even *within* universities, as institutional arrangements locate researchers in different Faculties and other divisions such as Schools which then compete for funds. This kind of competition is likely to be exacerbated by at least



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some of the changes proposed to national university research funding mechanisms. *Ad hoc* theme-focused research teams, linking social and other relevant sciences, have been found to work well in the UK and are obligatory in Europe for EU funded research. At a later stage, the industry may want to consider the creation of a common research-funding organization along the lines of AMIRA, the agency long ago established by the mining industry (see AMIRA web site for details of organisation and activities).

It is also very important to ensure that researchers undertaking NRF research develop close international links with major research groups in Europe, the US and Asia so they can better keep up with cutting edge work and then diffuse that information here but also so they can develop a comparative view which will enable them to judge better what is or is not appropriate for introduction or development in the T&L industry in Australia.

Summary recommendation

I recommend that the ALC move quickly to further develop the useful and wide-ranging suggestions made by members of the initial National Innovation Workshop and reported in the present document. In particular, the ALC could convene within the next few months, as soon as practicable, the National Research and Innovation Forum (NRF) proposed in the Workshop and whose importance was agreed by all present. This Forum would be charged with proposing a coherent institutional framework for moving the T&L research and innovation agenda forward and could consider the first priorities for research action. In considering research priorities, the NRF should take account of the specific suggestions made by the different groups at the Workshop.



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APPENDIX 1. BACKGROUND MATERIALS



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Background for the innovation workshop 30th May 2006

Innovation is focused on novelty and competitiveness. The Action Agenda identified a number of issues challenging the transport and logistics industry, in Australia as elsewhere, which require companies to think innovatively and perhaps change their practices. The international literature in the field also indicates some areas for priority thought and action. All of these need some research input. While innovation and research are not the same thing, successful innovation often needs to build on experience elsewhere in the world rather than be totally new and to create and diffuse new knowledge. Innovations may be new to the world, new to the country, new to the industry or new to the firm. In Australia, studies suggest that most innovation is new to the country, industry or firm and not to the world. In other words, the key to successful innovation in Australia is most often being a ‘fast follower’ rather than a ‘first mover’, although of course there are areas where first movers take the risks and win the rewards.

This in turn indicates that scanning the environment, international and national, is critical to success. It means having very good information gathering facilities in place but it also means having the capacity to sort according to priorities and understand that information and turn it into usable knowledge. It means understanding the dynamics of an industry or industry segment so that the implications of making one change can be thought through.

It is generally thought that innovation occurs in three areas of business activity: products developed, ‘production’ processes used in the business or in the organizational ‘shape’ used for production of goods and services. The transport and logistics industry does not produce goods but it does produce services, its product, and it is critically dependent for competitive success on its processes and organizational forms. These processes depend greatly on both technologies available and on organizational form. The industry is also somewhat unusual in that its success depends directly on provision of very costly infrastructure by third parties, often in the public sector, which in turn may depend significantly on broader public policies, such as willingness to levy tax or borrow money for investment and which are subject much more than others to political and other cycles and fashions, and where major choices and trade offs have to be made.

The international literature also suggests that there are a number of common areas of challenge and opportunity facing the transport and logistics industry.

Putting these in the three innovation categories suggests the following:

‘Product’ (transport and logistics services):

- Speed (time is now critical)
- Individual deliveries (to customer or store) – ‘last mile’
- Capacity to deliver internationally as well as nationally (globalisation)

‘Process’ (how services are developed and provided):



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- Modes used and intermodality (e.g. new mixes of fast and slow modes, ‘mobile’ storage) and their management
- Automation (e.g. automated freight carriers)
- Integrated Transport Systems
- ICT more generally
- OH&S

‘Organisational form’:

- Integrated networks
- Relationships with shippers
- Skills at all levels of the firm

There seems to be consensus among observers of the industry that there are several major challenges facing the industry. These are:

- Environmental regulation (emissions, waste management)
- Urban congestion
- Inadequate infrastructure both within and between major destination areas (few DCs, poor inter-modal connections, especially around ports in cities, poor long distance rail/roads)
- Fuels and their cost
- E-logistics

These have become especially critical to industry success because of the shift of the dynamics of the industry from being supplier-dominated to being client-dominated, the growing importance of time and its relationship with distance, the rise of e-commerce and the associated e-logistics (e.g. many smaller B2B and B2C deliveries).

These may be summarized, as the EU has done in selecting the foci of research carried out within Framework Program 6 for example, as issues concerning:

- Mobility of people and goods
- Infrastructure and integration
- Modal and inter-modal transport management

While Australian issues may be somewhat different the issues outlined above do suggest a framework for thinking about innovation and the research which would need to be associated with it here. I therefore suggest that workshop participants think about where their priorities lie in terms of:

- Technological issues (including fuels, environmental technologies, transport, e.g. automated freight, new kinds of trains or trucks etc)
- Organisational issues (including integration, client relationship management)



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- Responses to policy issues such as new environmental demands, infrastructure requirements and ‘city logistics’

The workshop will discuss the dynamics of the industry further and the ways in which recognition of those dynamics can guide a research and innovation agenda for the industry for the coming years.

Participants are invited to prepare for the workshop discussions by thinking about these issues as they affect their segments of the industry and the industry as a whole in Australia and use these to think about possible priorities for a research and innovation agenda for the industry.



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WHY DO RESEARCH??

Some possible answers

- To use an industry's present resources more effectively
- To develop new technologies e.g. ITS, hydrogen fuels, automated transport
- To enable a firm to adopt new technologies, i.e. have the capacity to recognize, understand and use cutting edge technologies (known as 'innovation absorption capacity'. Whole industry needs to have this capacity as well
- To adapt new technologies to the particular conditions of a firm or industry e.g. Australian climatic or road conditions
- To investigate current trends in different areas of the transport and logistics industry's activities elsewhere in the world
- To develop the capacity to think sensibly about potential futures (foresight)
- To train analytical minds to enhance the skills of industry personnel
- To increase the attractiveness of working in transport and logistics
- As an evidence base for influencing policymakers (e.g. in developing the theme of city logistics)
- To understand how to push innovation out to the smaller players in supply chains, especially those who may be barriers to the introduction of new methods or activities in the whole chain

Remember: 'research' for your industry be in the natural or engineering sciences but probably at least as often a contribution may be made by work in the social sciences – and even the humanities.



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APPENDIX 2 LIST OF PARTICIPANTS

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Dr Daryll Hull, TALC

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