Submission

Transport Certification Australia

Inquiry into the Economic Costs of Freight Infrastructure and Efficient Approaches to Transport Pricing

12 May 2006

www.tca.gov.au

1. Introduction

TCA is a company limited by guarantee established by the Commonwealth and State and Territory Governments to support the development and implementation of Australia's Intelligent Access Program (IAP), and to manage the certification and auditing of service providers providing telematics services under the IAP.

While TCA does not have a primary role in the development of road (or rail) transport regulatory or infrastructure policy, it does have a responsibility to contribute to effective and informed policy debate on issues relevant to the IAP, particularly where specific reference is made to IAP. TCA seeks to achieve this by keeping the agencies and bodies that are responsible for policy development informed about technological and operational developments which may be relevant to their work.

TCA notes that the Review is to investigate options for transport pricing reform, including moving to mass, distance and location charging of freight transport, and to consider options for implementing any new pricing regime, including practical costs and benefits and solutions of alternative technology options.

The IAP is a voluntary program which provides heavy vehicles with access, or improved access, to the Australian road network in return for monitoring of compliance with specific access conditions by vehicle telematics solutions. The parameters monitored under the IAP are route and temporal compliance, speed compliance, and self-declared information.

The Productivity Commission's Issues Paper identifies the '*Technical feasibility and costs of pricing options'* as an issue for consideration by the Inquiry and makes specific reference to the IAP. TCA welcomes the opportunity to comment on the matters raised in relation to this issue. The aim of this submission is to provide some insight into the knowledge gained and lessons learned in developing and delivering the IAP.

2. Technical feasibility and costs of pricing options

Question 1 *(page 26 of Issues Paper)*

How well have distance and location pricing regimes performed overseas? What have been their objectives and have these been achieved, are there lessons for Australia?

In undertaking the Intelligent Access Program (IAP) feasibility project, Austroads consulted extensively with governments and consultants that had successfully implemented (or were in the process of implementing) similar technologies and capabilities for road pricing applications in other countries. The systems developed by the Swiss, German, New Zealand and UK Governments and their consultants were

identified as being the most relevant and were examined in considerable detail. In fact, the Swiss consulting team who successfully delivered the Swiss road charging system was specifically engaged and brought to Australia to provide input in the development of the IAP Functional and Technical Specification.

The key lesson learned is that the success of distance and location pricing regimes is principally driven by how well the policy objective to be achieved is defined and understood. The Swiss and German systems were ultimately successful because the Swiss and German Governments each had a clear understanding of the problem that needed to be addressed, and a clear policy direction for solving it. For example, in the case of the German MAUT system the problem was the significant number of non-German registered vehicles using German roads, and the inability to recover the cost of this use of these roads. Hence, the system was developed to specifically address this problem. This may appear to be a simple issue, however it is a fundamental consideration which unfortunately is forgotten in many applications.

Importantly, projects of this kind can suffer from an over focus on technology. Where this occurs, the technology tends to drive the solution rather than the policy objective to be achieved. This results in key implementation issues not being addressed. The lesson from the Swiss and German systems (and for that matter the Australian IAP) is that throughout the implementation stage 'forks-in-the-road' are regularly encountered. It is imperative that a clear policy position has been established which guides debate and addresses the problem so that the correct solution can be chosen.

Finally it is vitally important that the balance between policy, technology, regulatory and business case considerations is continually reassessed (during both the development and implementation phases of a project) so that none of these has a disproportionate influence on the structure of the system.

TCA would be pleased to provide the Inquiry with more detailed information concerning implementation processes and fundamental issues relevant to "taking-technology-based systems-to-market".

Question 2 *(page 26 of Issues Paper)*

What technologies have been used? Which have worked best? How practical are GPS Systems? How complex are they and what are the compliance issues and costs?

As noted above, an iterative decision making process is required, which balances the policy, regulation, technology and business case issues. Rather than simply stating what technology is best, it is preferable to focus on identifying the policy solution to the problem and then consider which of the viable technologies will best deliver that solution.

For example, policy makers regularly refer to the need to measure distance when discussing user pays charging systems. However, before considering what technology is needed for such a system, it is imperative that a detailed policy assessment is carried out to clarify exactly what 'distance' it is that needs to be measured. Is it:

1. the total distance traveled by the vehicle (ie. like an odometer reading),
2. the distance traveled on particular road types (eg. flexible or rigid pavements),
3. the distance traveled on certain sections of the road network (eg. the Hume Highway in Victoria or the Pacific Highway in New South Wales),
4. any one of 1 to 3 (above) together with the mass of the vehicle, and
5. the distance traveled on certain sections of the road network during specified periods (eg. peak hour vs non-peak hour use)?

This breakdown of the distance measurement policy question highlights different possible technical solutions. In this case, the practicality and complexity of the technical solution is driven by the amount of information required.

The Swiss road charging system uses a taco-graph to measure distance traveled by the vehicle anywhere in Switzerland. It then uses the GPS as a back-up to confirm the taco-graph measure. Importantly, the Swiss system simply records distance traveled. It does not record type of road or sections of the road network on which that travel took place (Approach 1 above). The German MAUT system applies to certain road sections within Germany. It is a technically different solution to the Swiss system (Approach 3 above). Each technical approach delivers on the identified policy requirements. However, because each of the policy requirement is different, the technical approaches are different. The Swiss system is a simple and elegant solution to a well defined problem. However, it does not readily lend itself to future expansion, if for example, the Swiss Government decided it wanted to specifically identify and charge differently certain road sections. The German system however, more readily provides for this additional functionality.

The technology provides a number of solutions that are all practical. However, the critical policy questions (as identified above) must be addressed and settled. The IAP Functional and Technical Specification does not provide for the measurement of distance traveled. A copy of the IAP Feasibility Report (AP-R223) is attached (Attachment 'A').

In summary, the decision concerning what technology is best for particular application must be based on fitness for purpose and confidence that the policy makers have identified all the necessary requirements so that the application can be delivered with the necessary flexibility.

Question 3 *(page 26 of Issues Paper)*

How cost effective are these technologies? To what extent are they susceptible to tampering/ non-compliance? How secure are they? Are there privacy implications? What are the major risks?

The cost effectiveness of the technologies can be significantly improved by building upon of existing business relationships.

The European systems have all been developed by governments tendering out the process to a private sector consortia to provide the solution. The Swiss and German Governments have effectively been required to purchase through tender the entire operational systems and either provide or significantly subsidise the provision of on-board units to transport operators. These are quite expensive initiatives.

The Australian IAP approach is quite different. It leverages off existing business relationships by allowing service providers to provide, in addition to their current commercial services to transport operators, IAP regulatory services. The approach is one of 'piggy-backing' off an existing framework, rather than creating a new framework to solve a problem.

All technologies are susceptible to tampering and non-compliant behaviour. The important issue is the ability to recognise, capture and report on attempts to tamper with equipment. This is a critical and foundation policy of the Australian IAP. It is recognised that although the technology is very accurate, it is not tamper proof.

All such systems require the presence of reviews and audits to ensure that compliance occurs. These reviews and audits take the form of both on-road and back-office type auditing processes. Ultimately, the audit framework adopted by all such schemes is dependent on the appetite for risk which the regulator is comfortable with.

This raises an important observation that was made during the IAP feasibility project. During the investigation of the European in-vehicle units (or on-board units) it was observed that the 'tamper evidence' requirements not as robust as those being proposed for and subsequently included in the IAP Functional and Technical Specification. On further investigation, it became evident that a cultural element was apparent. The European mind set was one of a culture of compliance. It is interesting to note, however, that since the IAP feasibility project the European 'tamper evidence' requirements have been increased and are now aligned with those proposed in the IAP Functional and Technical Specification.

There are privacy implications in the use of all of this technology. To avoid or not consider privacy is a critical failing of the policy development. All the European systems have a significant policy framework and importantly the Australian IAP has also adopted the highest order privacy principles available in Australia. This is encapsulated not only

in the guidelines and approach which have driven the development of the IAP Functional and Technical Specification, but is also underpinned by legislation. The approach is one in which the owner of the data captured by the in-vehicle unit is the transport operator. The transport operator permits their nominated IAP service provider to transfer, process, and store data, and to only report the necessary information (i.e. non-compliance reports) to the jurisdiction. This means that jurisdictions receive relevant data through exception reporting, but do not receive reports covering all movement of a vehicle. This privacy framework has been established and is commensurate with what would be expected by privacy commissioners.

Question 4 *(page 27 of Issues Paper)*

How successful have trials of the Intelligent Access Program using Weigh-in-Motion telematics? Would this technology be useful in implementing a mass distance road pricing?

It is important to distinguish between a number of different technologies. Weigh-in-Motion technology exists and is the term used to describe equipment installed in roads or on-roads to weigh vehicles as they pass over them. However, the question appears to be more concerned with on-board weighing technology which is built into a vehicle and weighs the vehicle or axles during its journey. The technologies and the terminology used to describe them are examined in the Austroads *Weigh-in-Motion Technology Report* (AP-R168) (Attachment 'B').

On-board weighing was considered as apart of the original IAP feasibility project and subsequently has been tested in a trial. It is important to recognise that this technology does exist and is used by some Australian transport operators for commercial purposes. It is fair to state that the feasibility project and subsequent work have shown that the weighing accuracy is of a reasonable level and the equipment whilst robust it is not yet tamper evident. Additionally the cost of on-board weighing equipment varies significantly, making it feasible for some applications but not for others. (See IAP Regulatory Impact Statement - Attachment 'C').

In summary, on-board mass monitoring appears as an exciting and feasible technical solution. At this stage, however, it has not been demonstrated that the equipment currently available provides the rigor required for a regulatory application. However, there is a proposed project that will specifically assess the feasibility of this technology which will be undertaken by the National Transport Commission (NTC) in leading the project with the support of TCA in providing expertise in the technology and business case environment.

Under the Swiss system, the trailer (if connected) is deemed to be fully loaded. Under the German system, the trailer load is determined according to the number of axles (the more axles the greater the 'deemed' load being carried). Both the Swiss and German

systems lend themselves to a simple approach because they have significant restrictions in their use of trailers. In Switzerland a vehicle can only tow one trailer. The flexibility and innovation in Australia where multiple trailer vehicles are permitted has resulted in the complex arrangement which does not exist in Europe. This difference would need to be addressed in developing any approach for Australia.

An important issue associated with on-board mass monitoring is the interoperability and connectivity of trailer to prime movers. Currently, there is no Australian unified standard that would allow any prime mover system of identification and weighing to communicate with any prime mover in-vehicle unit.

Ultimately, if the technology is accurate and tamper evident and is available at a reasonable cost, then it can be considered for numerous applications.

However, as was noted with respect to question 1 above, the primary consideration with relation to on-board mass monitoring should be identification of the problem, and then the assessment of whether the technology can provide the necessary solution to that problem.

3. Electronic Mapping

An issue not considered in the Issues Paper is the availability and use of electronic mapping.

The IAP uses a single national electronic Intelligent Access Map (IAP). This map has been developed by TCA using the Public Sector Mapping Agencies' *Transport and Topography* dataset. The purpose of the IAM is to ensure route compliance is monitored against one unique map used by all IAP participants. This ensures that IAP Services Providers can operate, and transport operators can be monitored, on national basis and are not subject to the difficulties, inconsistencies and administrative costs which inevitably occur when local and/or proprietary systems are 'networked'.

The availability, updating and accuracy of the road network through the 'Public Sector Mapping Agencies' Transport and Topography Dataset is acceptable for the purpose of the IAP. However, it must be borne in mind that the IAP provides heavy vehicles with access, or improved access, to the road network in return for monitoring of compliance with specific access conditions. That is IAP is a compliance system. No work that TCA is aware of has taken place to assess the availability, updating and accuracy of electronic map data in Australia for the purpose of charging.

In considering the technical feasibility and costs of implementing any telematics based mass distance pricing solution, careful consideration needs to be given to what data is needed. Depending on the answer to this question, and the telematics solution selected to deliver it, a suitable electronic map (or mapping system) may need to be developed.

4. Conclusion

In developing the IAP, a number of important lessons have been learned.

The success of telematics solutions is principally driven by how well the policy objective is defined and understood. Projects of this kind can suffer from an over focus on technology. Where this occurs, the technology tends to drive the solution rather than the policy objective to be achieved. This results in key implementation issues not being addressed.

Instead an iterative decision making process is required, which balances the policy, regulation, technology and business case issues. Once the policy solution has been clearly identified, consideration can then be given to which of the viable technologies and underlying business case will best deliver that solution.

For further information about this submission, please contact

John Baring
National Manager, Stakeholder Relations
Telephone: 03 8601 4600
Email: johnb@tca.gov.au