ATA SUBMISSION TO AUSTRALIAN GOVERNMENT PARLIAMENTARY INQUIRY INTO INTELLIGENT TRANSPORT SYSTEMS

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OVERVIEW

Intelligent Transport Systems (ITS) should be used to boost safety and productivity across the nation. It can improve the way the Australian freight task is moved, with productivity enhancing technology in heavy vehicles and modernizing the way heavy vehicles interact with the roads, light vehicles and other freight transport modes. Specific uses referred to in this submission are in:

- Traffic flow and network management
- Regulator enforcement
- Operator and vehicle features
- Road and asset management

THE AUSTRALIAN TRUCKING ASSOCIATION

The Australian Trucking Association (ATA) was originally established in 1989 as the Road Transport Forum and is the peak national body uniting and representing the interests of the Australian trucking industry.

Membership of the ATA's General Council comprises the peak state and sector based trucking associations, the Transport Workers' Union, some of the nation's largest transport enterprises and elected representatives of small fleet owners and owner drivers.

BACKGROUND

IMPLEMENTATION

Technology fixed to infrastructure can be applied on national or local basis, covering a portion or all road users.

While ITS can provide significant benefits to all users in certain situations, the perspective of individual users needs to be considered. Road freight businesses operate in a highly competitive environment and are already forced to be highly efficient.

From the perspective of these users, any benefits of ITS need to be deliverable, in a cost-effective way. With the introduction of new technology there can be unintended consequences that need to be considered. If overlooked, the introduction or mandating of technology can have detrimental effects on operators business' and general productivity. Costs borne by industry or users needs to be included in feasibility studies. New technology needs to be cost effective for regulators and users.

New technology for vehicles is best utilised by encouraging business demand. By promoting market based solutions, it ensures technology will:

- Be fit for purpose, and utilised where demand is sufficient,
- Allow innovation to thrive
- Be such that the cost of technology will be borne by those with a desire to pay, not enforced through regulation.

Experience shows that where technology is manifest in regulation, it is in danger of:

- Burdening users and operators financially
- Working ineffectively, thereby not achieving objectivities and stifling production
- Limiting technological progress.

The result of using technology needs to be a better transport system for users at introduction and in the long term. This submission focuses on the attributes of technology that the heavy vehicle industry can be exposed to and what options are available for the future to better move Australia's freight task.

BENEFITS AND DRAWBACKS OF ITS

ITS should be about making the interaction between the transport system and users operate better. This connectivity can happen with technology installation in the road network and traffic management systems, through individual users uptake of the technology or an interaction of the two.

Technological advancement is happening in a number of areas concerning heavy vehicles. From vehicle improvements, to road and network management and enforcement and charging systems. ITS can aid traffic flow and reduce travel times, allowing efficient business to take place for the benefit of the Australian economy as a whole.

From a communication perspective, technology can improve the traffic situation by providing better information about road conditions, road user demand and communicating changes effectively. This helps users to make informed decisions and use transport systems more intelligently

The drawbacks of ITS need to be carefully understood and accounted for. This can happen at an individual or organisational level. Issues addressed in this submission include privacy, dealing with false offences and high technology costs.

TECHNOLOGY FOR TRAFFIC FLOW AND NETWORK MANAGEMENT

Intelligent speed communication

In locations where there is a change in the posted speed, either permanently, at different times of the day, or extraordinarily (eg road works) external signal that communicates with in-vehicle GPS systems can aid speed compliance significantly.

For some road users, this is an affordable and beneficial investment. To ensure this tool is useful, real time speed zone information needs to be freely available from road agencies to GPS service providers. This should be an obligation of road agencies in providing the road service and aiding users to comply. It would be useful if real time information could also be available on a website or through subscription email/sms alert system.

To help avoid accidental speeding, location specific speed advice can be communicated to in vehicle GPS mapping devices. Law abiding motorists might miss a change in the posted speed, and this improves the communication of the change. In Australia, WA has led a 'real time information to driver' trial using commercial (low cost) GPS devices.

This has potential to be a significant network management initiative that will have safety benefits. The value proposition of portable and in-vehicle GPS devices would improve greatly if the average person could reliably avoid the risk of an accidental speeding fine. One low range speeding fine almost pays for a portable GPS unit in the current market.

Speed for conditions advice at network level and in vehicle

In vehicle communication of this type can also be used to update road users on changed conditions due to accidents or weather. This has significant safety benefits, by improving compliance and awareness, and allowing users to choose different routes. Route information and alternative travel decisions are aided by the coordination of network management information and operators technology systems. This is especially important for heavy vehicles that do not operate under general access and suitable alternative routes need to be available.

For example, fog events in coastal freeways could result in both the network's electronic variable speed zone signs and the GPS data streams being adjusted to a new lower temporary speed limit in the fog bound areas. Providing mitigation speeds in those routes feeding into the high risk areas is also an option. This is especially important in situations where the entry lane may not provide time to achieve required merging speed. Advice or speed reduction on the primary road could promote safer merging.

Further capabilities of smart infrastructure could provide information and warnings to particular vehicles in some situations. For example, a high vehicle entering a ramp could trigger an on-demand warning sign to slow down, helping the driver to avoid a roll over. Feedback could also be instantly provided to users travelling at excessive speeds, similar to speed check and advisor signs that operate at road works.

Trucks in Urban Areas

Accommodating the freight task and successfully integrating all road users is a role for ITS. Smart infrastructure could help allocate road space to those that most value it.

Recent trends in rigid truck crashes are a concern. In rigid trucks, fatality rates have increased by 3.5 per cent[1], where there have been decreases in articulated vehicles fatal crashes that undertake significantly more travel.

[1] BITRE Fatal Heavy Vehicle Crash Bulletin April-June 2009.

Heavy rigid trucks are largely used in urban areas, and many of the accidents involve multiple vehicles. This means there is scope for smart infrastructure intervention, especially in reducing the exposure of trucks and other vehicles and prioritising the delivery of the freight task.

For example, the technology and concepts used to provide 'tidal lanes' and 'bus priority lanes' would appear to be portable to enable the establishment of freight priority lanes within urban situations where congestion is damaging the freight task or timely port (or inter modal facility) access is desirable for economic purposes.

Tackling Congestion

Any congestion mitigating policies need to be designed for the characteristics of the congestion problem at hand. Congestion is a localized problem, usually a feature of large Australian cities and any measures should be delivered on a case by case analysis. Any congestion targeting schemes need to be cost effective to provide a net benefit to the community.

Congestion targeting measures need to cover all road users. It is worth remembering that trucks contribute little to congestion, as peak times see large numbers of passenger and light commercial vehicles. Trucks are high value road users, with few alternative options in terms of time or mode choice. Any cost impositions are likely to be passed on to the consumer with little change in behavior.

The urban freight task is demand driven and is conducted to satisfy a community's basic and consumer needs, it is not avoidable.

Variable speeds can be used to ease congestion by reducing the speed of the feeder roads and varying speed levels to suit traffic concentration.

Technology for Improving Vehicle Operation

Regulator Monitoring

Point to Point Speed Cameras

In NSW and SA the truck drivers are subjected to automated oversight by Safe-T-Cam monitoring devices. These devices have operated for many years and aim to kerb speed and fatigue in the heavy vehicle industry.

They are expensive and their usefulness is impaired by procedural and technological problems. There is a long term problem of false offences being notified. Also, it is unfair to only monitor heavy vehicles, not all vehicles, in this way. The same policy applies to point to point speed cameras. If there is a safety justification for their use it would apply to all vehicles, it is illogical to monitor only part of a traffic stream.

The permitted assessment criteria travel is often unrealistic for some trucks. For example, some operators use two drivers per truck. These operators could face a stream of 'please explain' letters. This produced a significant administrative burden. These automatically generated letters each required the operator to find and copy individual driver work diary,

duplicate pages and collate these to the other driver's duplicated work diary pages to demonstrate that there was no breach of the driving hour limits. Many medium and large companies have one fully time employee responding to these letters.

This failure to build technology that reflects 'allowed activities' has generated huge costs of complaint operators and is an example of well intended safety focused smart infrastructure gone wrong.

It must be ensured that any ITS infrastructure measures introduced are user friendly and do not make travel unnecessarily more difficult.

The use of technology will also be more viable if operating arrangements are uniform across Australia and this is one of the reasons the ATA supports the Government's promotion of a national operating environment for trucks.

Road transport driving hours and fatigue management laws were reviewed over a 7 year period and new model provisions agreed nationally in 2007. National uniform implementation of this reform has not been achieved from state governments and the model provisions have become fragmented.

Rather than ineffectively enforcing current regulations, the greatest gains for safety and productivity could be achieved by consolidation of current regulations.

ELECTRONIC WORK DIARIES

Many medium and large companies have developed or purchased systems to allow them to voluntarily closely monitor individual vehicles and drivers to provide compliance guidance to the drivers. As well as managing driving hours and rest, it streamlines operations and promotes better business management.

Businesses make significant financial investment into their own customized systems, which allow them to manage their fleet and maintenance scheduling, as well as monitoring and assist driver performance.

These systems are being increasingly installed to promote employee well-being and safety[2]. It aids drivers and scheduling staff to manage driving hours and undertake their fatigue management duties better. These systems often include functionality for checking compliance, providing advisor guidance about work rest requirements and shift planning aides.

These systems are already used for other business purposes, and contain the same information requirements that are manually entered into a paper based work diary. Electronic work diaries (EWD) are of equal evidentiary standard as paper-based work diaries.

The duplication of records, between a paper based work diary and an operator's EWD is unnecessary and does not aid compliance.

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[2] Traffic Technology Today. *Trimble research shows driver health and safety is a key factor in telematics investment.* http://www.traffictechnologytoday.com/news.php?NewsID=20388#loaded

The concept of EWDs being voluntarily used as a replacement for paper based work diary has existed in road transport model provisions for some years.

Special enforcement powers and evidence powers have be included into road transport law to make operator client and other chain of responsibility parties electronic data equal in evidence to a paper record.

However, despite this it has been impossible for operators to get any such system approved as road agencies cannot agree on the required administrative standards and approval processes for EWDs. This is further complicated because some regulators a seeking to have standards for EWD that impose a higher burden on drivers and operators than the standards already accepted in paper based work dairies and model legislation.

Road transport operators are in a difficult position, many currently use technology more advanced that the EWD described in model legislation, but it is not legally recognized. Recognizing systems that are of a certain standard and working with industry to create those standards will see technology being used effectively to improve businesses operational safety.

High Risk Monitoring- Intelligent Access Program

Strict command, monitor and automatic reporting can be used to monitor vehicles subscribing to the Intelligent Access Program (IAP). This is a regulated in-vehicle telematics system, where breach reporting is communicated directly to the road agency from the monitoring service provider. It has associated financial and technological costs for operators and regulators.

IAP is suited to high risk situations, where an error and noncompliance will have very significant consequences. It is best utilised on a voluntary basis, where the investment makes commercial sense for an operator. IAP is not a compliance aid it is an enforcement tool.

This would include network access of ultra heavy mobile cranes and similar ultra-high impact vehicles. Movement of these vehicles has traditionally required high levels of road agency oversight, including police escort. In large urban areas such as Sydney and Melbourne these traditional methods were problematic and costly.

An alternative approach where direct command and control was replaced with descriptive command and electronic monitoring was developed.

From this use, the IAP has been expanded to be used for higher mass limits (HML) access arrangements in some states (NSW and QLD). There are no national applications for IAP. In states where IAP has been implemented for HML, the risk profile required to justify IAP monitoring does not exist. In these states the IAP with HML has not been embraced by the industry, as it is not an economically viable investment. In our view a net community loss has resulted as HML benefits are denied to the community. HML has a very low risk profile as other approved vehicle configurations impose greater road wear.

Instead of pursuing productivity gains and improving safety, this has discouraged operators from utilising HML and instead moving similar weight on less specialised vehicles.

Particularly, the use of truck and dog trailer combinations, which may be a less safe way to move freight than an equivalent capacity HML semi-trailer.

IAP is an unnecessary restriction on network users, and has been rejected due to significant costs, which are higher than initially estimated. Further, IAP devices have generally not been able to be integrated into existing operator systems. A system that has no interoperability and duplicates data entry obligations just adds complexity to a driver's daily activities.

Here, the technological enforcement requirement is not necessary, and the final burden on the industry has resulted in less safe outcomes.

This case also highlights the need for efficient investment of government funds. Despite $16 million dollars investment in Transport Certification Australia (TCA) over the last 4 years[3] only 626 IAP devices are in operation nationally. A significant portion of these are in ultra-large cranes and concrete pumps in urban Sydney and Melbourne. Government waist on this comes at a cost to the industry.

Further development of IAP applications should include peak industry input including at decision making level, and should recognise operators systems where they are of sufficient standard.

Privacy Issues

Privacy issues around some forms of ITS are significant. Merits are argued in streamlined enforcement from a regulators view point, but getting the balance right is important for public acceptance. For example, photographs taken by enforcement cameras may invade individual's privacy and provide information to third (not enforcement) parties.

One of the concerns raised by the uniquely Australian IAP, an automated non-conformance reporting system, is that it exposes the operator to undue monitoring relevant to the risks when the applications have low risk profiles. Operators subscribing to IAP will be under closer scrutiny in all areas than other like businesses.

Safety

Advances in vehicle technology have produced significant safety advances at a standard level in the general fleet and greater level in some high market vehicles. Technology like antilock braking systems (ABS), electronic braking systems (EBS), brake assist and vehicle roll stability are common features that help avoid and minimise accidents.

Operating technology such as lane departure and collision warnings, adaptive cruise control and maximum speed limiting all improve the intelligence of the vehicle to handle itself on the road. This technology is used to assist the driver, not replace the technical skill they possess. We believe the effective adoption of safety technology can be achieved without regulation using market forces.

[3] Transport Certification Australia Annual Reports.

LEVEL CROSSINGS AND UHF CUT-IN SYSTEMS.

Smart infrastructure may provide opportunities to enhance level crossing safety. While grade separation is the ultimate road rail cross over, this is not always possible or economically viable. Even fitting crossing traffic controls with barriers is uneconomical for many crossings, especially on low traffic roads. Therefore a solution that enhances safety at relatively low costs is desirable.

In road tunnels across Australia FM radio interruption technology has been used to broadcast warnings about hazards and traffic conditions.

This works by cutting off the radio signal and re-broadcasting over it, which is appropriate in a tunnel but not necessarily on open road. Modifications of this technology exist that have the potential to communicate with all vehicles approaching a level crossing with an oncoming train, and more likely to prompt the desired behaviour in all road users.

To target the interaction of heavy vehicles and level crossings UHF cut-in systems can be utilised to work in a similar manner.

This technology is available and could easily be modified to work on the national rail and road system, providing a low cost effective solution to increasing driver awareness and improving compliance.

Cut-in systems are currently used in emergency vehicles like ambulances and fire trucks, and cut over the AM and FM bands to warning motorists of their approach. This style of device seems to be very close to the type needed on the train network, could be installed in Australia's trains and would be very easily modified to work on the UHF band.

The signal can be limited to vehicles in the direct vicinity and the message can be transmitted more in one direction than another.

After the Kerang rail tragedy in June 2007, the Victorian Government's Road Safety Committee undertook an Inquiry into Improving Safety at Level Crossings[4]. In their findings the committee reviewed the use of cut in systems across the world, and found that it could be feasible to install the cut in technology on high risk crossings.

However, the report noted the use of the technology should not be used as a replacement for highly specified, fail safe level crossing controls.

In the context of this report, it would seem to be more efficient to equip the locomotives with the system (approximately 1829 in Australia today) than on the passive level crossings themselves (more than 6000).

[4] http://www.parliament.vic.gov.au/rsc/Crossings/lc_default.html

ITS USE IN CHARGING AND DATA COLLECTION

Technology is currently used around Australia to monitor traffic flows and collect charges at single points or along a stretch of road. These are effective and have achieved good public acceptance. Though, these charging schemes require little or no investment for users to participate.

The potential to use telematics to charge all vehicles or just heavy vehicles for their use of all or part of the road network is being explored in a few areas of government including the Henry Tax Review and the COAG Road Reform Project. At this stage there is no network wide telematics charging system in the world, and the current state of technology and market demand has not been proven it to be economically viable for national application.

Initial and ongoing costs imposed on businesses, which will be passed on to consumers and effect Australia's productivity need to be considered when looking at applications like this. The complete charging scheme needs to be simple, robust and economically viable, avoiding introducing technology for technologies sake.

Another attraction to direct monitoring of heavy vehicles is data collection. While it is understandable that better data could contribute to infrastructure planning and funding, whether this expense is worthwhile is still to be determined, and whether the financial burden should fall on operators, who will gain less from data availability needs to be questioned.

RECOMMENDATIONS

- Technological solutions need to be demand driven and fit for purpose.
- User friendliness and unintended consequences of infrastructure or operator based technological solutions need to be considered. The high cost of IAP and burden of false offences in point to point monitoring are examples of this.
- There are potential targets for technological improvements in road travel and freight operations. These include:
    - Real time traffic information communication to GPS services and UHF radio
    - Installation of UHF cut-in systems on locomotives to enhance level crossing safety by broadcasting warning to motorists
    - Freight priority systems to improve all traffic flow
    - Warning systems for heavy vehicles in high risk situations
- Regulation and enforcement should only be enhanced by technology where it is necessary and beneficial. In some cases where IAP is currently required, the necessary risk profile does not exist, which is poor policy.
- Regulation should consider industry solutions and give legal recognition to appropriate operators systems, especially for proof of compliance.
- Technology should be utilised by the market where appropriate, not instigated from outside by regulators. To do so risks unnecessarily burdening industry and the Australian economy restricting productivity and limiting technological enhancement.
- The ATA TruckSafe program has a proven safety benefit. The optional TruckSafe Management IT program forms a model for the Committee to examine, as it is a technology that provides a cost effective technology improvement to low or zero technology business systems. It has had strong market uptake.