

**Bus Industry Confederation Conference,
Grand Copthorne Hotel, Singapore. 8 – 11 November 2015-11-02
What is Government's Role in Innovation?
10.00 am, Tuesday 10 November 2015**

Introduction

Good morning delegates and thank you Michael for the introduction and the opportunity to present my thoughts and information from the National Transport Commission. We believe that the BiC is to be congratulated for its courage in hosting this conference in Singapore. This gives us all a first hand opportunity to learn how one of the World's most efficient cities manages its transport systems, which are leading edge in many respects. The NTC is very pleased to have this opportunity.

Today I want to try and focus on the future, and perhaps speculate on what we and our children and their children will face in years to come. I will also cover what the NTC is doing to prepare for the future, what the NTC is doing to be in a position to share with your industry appropriate thought leadership, and to provide professional support to governments throughout Australia.

The key question I will address is, "What is Government's role in innovation?"

Just eight years ago no-one in this room had a smartphone.

Just eight minutes ago many people in this room were reading their emails, checking Facebook or playing Angry Birds on one.

Change has a habit of creeping up on us.

Twenty nine years ago - location Ballarat Victoria - as Regional Manager for the then Victorian Road Authority I received my first desk-top personal computer. They had only recently been invented. What to do with it? Why, give it to the accountants of course, nobody else could have any use for it; virtually none of us could type anyway.

Thinking back over the course of my life it's obvious that change is leaping now at an ever increasing speed. I've seen the birth and the death of the fax machine. I've seen mobile phones shrink from being bigger than bricks to something you can fit on a watch. I've seen mobile phones turn from being mobile phones to almost everything else.

Our butcher no longer takes cash. All transactions have to be by card.

My wife, Sue, and I have six personal computing devices between us. Yet our kids (in their late 30's or early 40's) still say that we are technical conservatives.

In the information age technological change doesn't move in a linear fashion, it jumps ahead in fits and starts, reforming previously stable areas and shaking them up.

I've seen this in different ways across Australia's transport network. New ticketing systems have been rolled out. New ways of communicating real-time arrival and departure data have arrived. People can check the traffic conditions on their commuting routes on a tablet, while finishing their Vegemite on toast.

Uber is shaking up the taxi industry and I believe will soon affect swags of the bus industry.

But more things will need to change – because ultimately transport consumers don't like sitting in traffic or being delayed for any reason. They'd prefer to spend that time with their family and friends.

The next younger generation relies almost fully on technology to find destinations. They are more concerned about the environment than any generation in the past. This does not mean that they will all take to public transport. One of my son's friends once said to me "Public Transport is for the public, and I don't have time to wait for them."

Changes in consumer preferences are about to drive massive changes in transport services. This means Australia's regulatory and compliance regime will need to keep pace, just as companies and governments have had to get on board with emails, facebook, twitter and the next big thing that hasn't even been invented yet.

Right now, every time someone invents a new type of mobility device Australia's road rules need to be updated to let people use it. That approach isn't going to cut it in the future. How are consumers going to get things like fully autonomous cars if the government has to approve every make and model, and every software update?

At the moment the general approach used in road transport is more prescriptive than performance based. But the performance-based approaches work pretty well. These include performance based standards, the Commonwealth's Australian Design Rules and, increasingly, chain of responsibility laws.

I think the national rail safety laws are a good case study in how a range of transport laws might look at some stage in the

future. Australia's rail industry benefits from a safety management system approach.

A safety management system is a way of ensuring high levels of safety are maintained without the government red tape – or at least a lot less of it.

Australia's rail operators - both rail track owners (called below rail) and train operators (called above rail) – have to be accredited by the national rail safety regulator. These rail operators develop their accreditation proposal that outlines the way they will manage rail safety risks. The rail laws take a more performance-based approach to setting out the requirements of the accreditation, although there are still some prescriptive elements in the law. The rail operator submits its accreditation proposal to the national rail safety regulator for approval.

What's really interesting is the size of the national rail laws compared to the national heavy vehicle laws.

Why do we potentially want to move down that path? The answer to that lies in my crystal ball.

Looking far into the future can have great benefits if done well. Back in 1899 the French looked at what the year 2000 might look like. I haven't seen too many whale buses, so they missed the mark on this one.

But let's see if we can do a better job than they did. Let's imagine what the bus industry, your business operating models and the regulatory environment might look like in 2070.

Let's imagine that all of Australia's transport industry is governed by a Safety Management System (SMS) approach like our rail industry enjoys right now.

This would give operators much more responsibility and flexibility. Instead of spelling out everything a transport company must do down to the types of widgets you have to buy, it asks you to put in place policies and procedures that you develop to suit your own business, within agreed safety standards. It requires rigorous hazard identification and risk mitigation, safety investigations and audits, and appropriate monitoring, but includes back office audits of safety management systems.

It means *no roadside enforcement*.

Imagine a world where police agencies can deploy their resources to chasing murderers and thieves, instead of checking whether your drivers have got the right kind of tyres on their vehicles or whether their headlights meet the appropriate government standard.

Let's also imagine that only automated vehicles are using our roads.

Automated vehicles only carry passengers (or freight). There will be some vehicles with one passenger in them. There will be some vehicles – like an automated bus – that will have lots of passengers in them.

But get this – there'll be vehicles using our roads with ***no passengers at all.***

Automated vehicles will drop off hardworking city workers and return automatically to the suburbs to make sure the kids get to school on time.

There'll be no steering wheels. Nobody needs a driver's licence, because there are no drivers.

Now under this hypothetical scenario, how will government regulations work?

Let's say Australia's road transport regulations have been overhauled to become a performance-based safety management system - similar to the national rail safety laws that exist now.

The automated vehicle manufacturers are the "above road" operators. They are required to put a safety management case to the national road regulator. The national road regulator has about 100 "above road" operators with an approved safety management system. There are requirements for speed, vehicle maintenance and network access that the "above road" operators need to manage in their SMS. There are also reporting requirements on the "above road" operators, so if there is any non-compliance such as speeding and or a vehicle defect, they need to record this and manage this issue.

The national road regulator also has eight “below road” operators. These “below road” operators are the eight state and territory road managers. They have the same role as the “below rail” operators in they are responsible for asset management, maintenance (and upgrades) of infrastructure and managing access to the network.

Local governments decided to incorporate their access requirements for their local roads under the SMS of their geographic state or territory road manager. They still have active input into the state or territory SMS.

In 2070 some of the long-standing players in the industry still remember the bad old days when heavy vehicles used to be hard for local governments to manage. But now automated vehicles have mass, distance and location measurements. The “below road” operator has set the network access maps with different levels of access. Automated vehicles can only access the levels they are permitted in the “above road” operator’s safety management system and it all happens automatically.

Traditional registration by road managers has disappeared. There are no fuel based charges. The ‘above road’ operators pay for the consumption of the road directly to the road managers and the local governments.

There have been benefits to the road managers – to governments and the community. Traffic lights and traffic signs are a thing of the past. Connected automated vehicles seamlessly flit through intersections, using technology to completely avoid crashes. (If anyone is travelling home through Melbourne Airport, watch how the baggage carousels work).

Insurance premiums drop fast and no one has to see those jarring road safety advertisements on their televisions ever again – or the real-world trauma they are designed to prevent.

It may be interesting to think about this kind of world, but I'm betting scientists *still* won't have invented the *hoverboard*. Did any of you watch "Back to the Future II"? The characters were transported to the future where they used a flying car. Well that future date was in fact 21 days ago. We're practically no closer to flying cars than we were back in 1989 when that film was made.

That might be a bit far-fetched for you all to imagine and let's face it – not all of us are going to be around in 2070 anyway.

So let's think about a more realistic time period - just eight years from now.

A typical bus operator gets out of bed. Let's call him Wayne.

He puts the kettle on and reaches for his smart tablet. The map on the screen shows him that all his buses are running on time and there are enough operational buses in the depot to fulfil the schedule.

No delays and no cancellations. Perfect.

This is great news because he's just signed a new five-year bus service contract with the state government that gives it access to GPS data, providing evidence every quarter that routes were completed and that service levels were reached.

Wayne heads to work. There's unexpected congestion ahead. A breakdown.

The bus industry confederation's members have recently agreed to use an app to alert every bus driver of any traffic

problems, but more than that it's an app that's open to the rest of Australia's driving community. They've realised that getting access to traffic information from bus drivers is useful. Interestingly there is more information now coming from non-bus drivers than bus drivers. It's a symbiotic partnership.

Wayne logs the breakdown into the app, knowing the 471 from Williamstown will be on its way through here in ten minutes' time. He looks out the window and sees a mum, also stuck in traffic, doing the same thing and recommending an alternative route.

On the highway, flexible priority lanes are in operation, allowing buses to use dedicated lanes for their trip and giving them signalling priority.

Finally at work, Wayne's computer tells him he needs to talk to his new drivers. These guys are pretty heavy on the brakes and they're wearing out too fast. The on-board telematics systems have already notified the maintenance teams that a service will be needed ahead of schedule, but breaking the news to the drivers is best left to Wayne and his personal skills.

First meeting of the day – an update from his Technology Manager, Michael, about their latest business venture – an offshoot that runs minibuses on entirely flexible routes, picking up passengers who have installed their app. But this isn't just Uber for buses, they've figured out an ageing population with special mobility needs requires minibuses with wheelchair lifts.

They're now not servicing a limited geographic area, they're servicing a niche demographic market. The new business is booming, taking nannas from their doorsteps to their favourite shop and back again, with no timetables, no routes and no fuss.

Real time customer service data shows the nannas are happy too. Customers can now rate each trip taken on any bus service across Australia, commenting on the standard of the vehicle and rating the driver. Wayne sums up the weekly satisfaction data and fires it off to the state government, helping to shore up his chances of winning the next contract. He also logs a reminder to present this month's highest rated driver, Julia, with a customer service award.

The drivers are rating the passengers too. Across Australia those that engage in polite conversation get full marks. Drunken louts get marked accordingly and drivers avoid picking up passengers from those addresses in the future.

Most people in this room will be familiar with these technologies. Some will already have implemented some of them. Maybe some people have implemented all of them – or are about to.

But in eight years' time this is very likely to be the norm - with some people leaping even further ahead with technologies we might not have even imagined.

If I have a message for you – and to government agencies like us - it is this: *think, imagine, discuss, share and prepare.*

Only those organisations that are ready for 2024 will be able to enjoy the relative nirvana possible in 2070.

At the NTC we are thinking more about the long term challenges and opportunities Australia is likely to face, particularly from the rapid development of Intelligent Transport Systems (ITS). We are thinking more strategically and we're ready to champion national reforms to help us get there.

To do that we're forming stronger relationships with other countries that find themselves dealing with similar issues and – like us – are looking further into the future to prevent emerging problems becoming entrenched ones.

- NTC officials are providing close input into the organising committee for the Automated Vehicle Symposium 2016 (in San Francisco)
- NTC officials have represented Australia in the International Taskforce for Vehicle Highway Automation (ITS World Congress 2015)
- We periodically organise teleconferences with the US Department of Transport and other US agencies to keep up to date with current issues
- We have a Memorandum of Co-operation with US Federal Highways Agency to share data and knowledge on a regular basis
- We have established links and communication channels with UK Department for Transport and the UK Centre for Connected and Autonomous Vehicles

Earlier this month ministers approved a project that will determine if there are any regulatory barriers to using automated vehicles in Australia, both in the short term and in the longer term.

We will be looking at both the short-term regulatory barriers preventing trials of automated vehicles and the longer-term barriers to realising a more automated future.

There are many other complementary automated vehicle projects in the pipelines of various other government organisations and agencies.

This shows a summary of what that looks like at the moment.

As you can see, the work of these organisations covers three main areas – regulatory, operational framework, and trials and demonstrations.

So, while we are reviewing regulatory barriers nationally, several state government departments are looking at their own regulations at a state-based level.

Operationally, Austroads is looking at a number of things including safety, road infrastructure, and registration and licensing issues for automated vehicles.

Then, several state transport departments are also working on trials and demonstrations involving the technology.

There are many other projects as well, from private, government and research organisations, including from the ARRB Group.

This makes close stakeholder consultation critical to avoid duplication and prevent issues slipping through the gaps.

To this end, we are already working closely with our stakeholders and will continue to do this increasingly as the project progresses.

We are also looking at better ways to measure transport productivity to make sure reforms deliver the productivity benefits we are all so passionate about.

We want to discuss what other views there may be about regulation for the future, recognising that a completely new approach is likely to be essential.

We want to help to ensure Australia fully capitalises on transport technologies like cooperative intelligent transport

systems, electronic work diaries, driverless vehicles and social media based customer service.

We have to be looking further ahead because the increasing pace of change means we need to act earlier to solve the emerging problems of the future. To some extent Australia has been caught out by Uber, and governments are not sure how to handle it.

To that end the NTC has an important role in helping governments and industry be more prepared for change and better able to take advantage of emerging opportunities.

For example, we are always looking at ways to make our existing regulations more efficient, and we welcome industry suggestions for areas to examine.

We will also be working with industry and governments around Australia, as well as our international contacts, to examine future scenarios for growing transport demand, and the regulatory frameworks we might need to consider to maintain growth in productivity of our freight and passenger networks.

Flexible and adaptive regulation is needed to encourage innovation and drive further improvements in the efficiency and safety of our transport systems in Australia to better meet the needs of our community – your customers. We will be hosting discussions with private and public sector representatives - as well as Ministers - into what kinds of (so called) disruptions we should anticipate, what kind of regulatory frameworks provide the right balance between certainty and flexibility, and how the role of government might change over the coming decades.

This information is critical to help us to shape future regulatory frameworks, and ensure actions we take in the short term don't block or impede important productivity and safety innovations in the future.

We are facing the need for cultural change.

So to answer the question – can government agencies help the bus industry use technology to improve safety, compliance and productivity?

The answer is a resounding yes, but only if we have a shared view of the future and we are all ready to change.

To finish, I want to leave you with some key questions.

1. Will passengers ever be comfortable getting in a bus with no driver?
2. Is your current business model flexible enough to constantly roll out innovative new ideas and technologies?
3. Will the bus industry lead other industries into new technologies?
4. Is road transport moving towards a performance based safety management system, like we have in rail, aviation and maritime?
5. What needs to be done in the short term to ensure there are no barriers to technology that will improve mobility, safety or productivity?
6. Is it possible that automated vehicles will force road transport regulation down this path?
7. What will be the changes in transport patterns or demographics – and what do they mean for BIC members, what do they mean for government regulators?

Thank you for your attention and we hope that you enjoy the remainder of this conference.