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E-technologies means e-easy for customers

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Abstract

E-technology will create incredible opportunities to develop new transport systems that customers, operators and government policy makers will find more helpful and easier to use.

However, there is a need to maximize the interaction between public policy and technology to ensure that we are not simply automating some of the current operational processes.

Addressing this need may avoid some of the difficult and, at times, bitter struggles to establish more equitable and more efficient transport systems for the benefit of the whole community. E-technology will open the way to substantial reform of public policy areas including the facilitation of a more equitable user-pay system for motor vehicles.

Products and services, to capitalise on these opportunities, will require new business arrangements and stakeholders from both the private and government sectors working together.

NRMA has set a new strategic direction to embrace e-mobility that will provide a wider range of products to serve all modes of transport.

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INTRODUCTION

Anyone who has had to wait in a long queue at a road toll booth or has struggled to find the correct coins to pay a bus fare, will look forward to automated systems that make payments easier.

Business operations will also benefit from improved processes. Before the introduction of automated fare collection, Hong Kong had to deal with 24 tonnes of coins everyday from its public transport system so it is not hard to sense the potential business benefits of replacing cumbersome, labour intensive activities with technology.

By improving the collection of public transport fares and vehicle tolls, e-technology will bring about reduced delays, lower costs, less inconvenience and stress and reductions in pollution and congestion. This is a situation where consumer expectations and technology have the opportunity to come together.

But if we only automate the existing systems, we are ignoring enormous opportunities to move in new directions. This will involve the value of linking public policy and product development.

A quick look at transport history shows how public policy areas, such as vehicle taxation, have always been hard to change. E-technology provides the opportunity for substantial reforms in this area.

GENERAL TAX OR USER-PAY? THE NEED FOR SUBSTANTIAL REFORM

HISTORY

History shows that it has not been easy to identify and collect user-pay taxes from individuals using the road system. History also shows us that if taxing systems are not equitable then inefficiency and civil unrest may follow.

Tax Systems For Funding And Maintaining The Road Network

Over centuries, various methods have been used to raise funds for road construction and maintenance. Religious penance, the curvee system where people gave some of their time and labour, taxes on the local communities and taxes on other commodities (e.g. French salt taxes) have all been tried.

A common assumption is that those who derive the most direct benefits from the road system should contribute directly to its construction and upkeep. Tolling travellers was an obvious choice. However, it is not easy to keep track of who is using the system, determine how much they should be charged and then collect the taxes.

The Rise and Fall of Road Tolls

In his seminal work "Ways of the World", Australia's Dr Max Lay says that the first reference to tolls was in India around the end of the fourth century BC.

In the centuries that followed, tolls on roads were applied with a mixture of practicality, politics and ruthlessness. However, it seems the basic issues have remained the same.

- For a start tolls couldn't be collected everywhere. Only at certain locations was it easy to establish a toll collection point such as on major roads, gateways through protective walls around towns and cities, bridges and crossings of private land.

   Nonetheless, by the eleventh century tolls were common throughout Europe.

- Hypothecation of toll money for road maintenance was often the intended policy. London Bridge, for example, had a toll for over 500 years starting in 1286. The income from the tolls maintained and rebuilt the bridge and also funded construction of several other crossings of the river.

- The benefits of taxing travel were also apparent in the USA. After the War of Independence, many states introduced turnpikes to help build and maintain their road system.

Ironically it was the development of the steam engine for railways and canal travel that contributed to the decline of the turnpike era. These other modes of transport became the major carriers of freight, passengers and mail.

Tolls are still being used today, often to fund specific projects but rarely are they implemented as a comprehensive system extensively covering entire road networks.

Civil Unrest

Toll systems can cause difficulties and hardships to many people if they are onerous.

Bridges are selected as toll points because there are usually no alternatives and they are harder to avoid. In earlier times, even bridges that did not have a toll would attract beggars who would stand to seek alms from travellers.

Even now, only those who have to cross the bridge pay the additional tax whereas those who do not have to cross and pay the extra tax, may still make considerable use of the road network.

Community anger has always become most intense when tolls are used to raise general revenue rather than fund road improvements and when tolls or taxes in general are not administered fairly.

In the first half of the eighteenth century when some turnpike operators in Britain were collecting heavy tolls but were not maintaining roads, rioting occurred. In 1734, to try and subdue the disturbances, George II introduced the death penalty "without clergy" for burning or destroying turnpike gates.

The French and American revolutions, were also fuelled by unfair taxes.

The 1798 French Declaration of the Rights of Man and Citizen, which was strongly influenced by the American Declaration of Independence, abolished many taxes and tolls.

It is worth reflecting on the French Revolution when considering how e-technology can impact on user-pay charges on the road network! Equity for users and respect for their rights, is part of a recipe for success.

WEAKNESSES IN THE PRESENT AUSTRALIAN SYSTEM OF ROAD TOLLS

Perhaps learning from the past, a limited number of tolls have been established in Australia at locations that were selected for their geographic and political expediency.

Community concerns are elevated if there isn't an alternative arterial road system and motorists seek alternative routes through local residential streets. The consequential adverse impacts of noise, safety and increased fuel consumption will be apparent.

Certainly the NRMA, in representing motorists, has the view that "The imposition of tolls should be seen as a last resort for financing major improvements to the road system which cannot be financed from existing road funds due to the impact such funding would have on other priorities". In addition NRMA policies call for an alternative 'free' facility to be available for every toll way.

Our views notwithstanding, motorists are charged tolls that often bear little relationship to the use of the facility. In many cases the same price is charged for using a short or a long section of the same road. By comparison, public transport (though it is usually heavily subsidised) levies upfront charges that are calculated on the nature of the trip.

In addition separate operating companies using different collection technologies have compounded the inconvenience to motorists of tolls in Australia.

Consequently the current tolling of motor vehicles is not a user-pays system. At best it could be called a system where "some users in a few circumstances

are charged an additional fee". The system will still be ineffective even if automated.

E-technologies could make it much easier to collect vehicle user taxes across the network but we need to consider more than just the technology issues. What is needed is good public policy that embraces public equity issues.

THE PUBLIC'S OPINION – UNDERSTANDING THE CUSTOMER

Surveys conducted by the Australian Automobile Association suggest that, in Australia, opinion is divided on the subject of whether to build more toll ways. However, public views are much more united in the belief that should tolls should not be placed on existing roads (AAA).

The Warren Centre for Advanced Engineering at Sydney University recently conducted a survey of community values (Warren Centre). Again there was a dislike for tolls.   Nonetheless there was a wide range of values that could relate to the use of e-technology and its impact on taxing policy. For example:

> The community regards traffic congestion as their number one concern;
> They are prepared to accept some trade-offs in order to see good policy implemented, if the reasons are apparent and justified;
> They want to see good long term planning;
> They dislike development that does not reflect the needs and desires of the broader community.

Australians are prepared to tolerate appropriate taxes especially where there is hypothecation of the revenue collected for road improvements (eg the Bicentenary road fund). However, too often the tax is subsequently used for other purposes or the general revenue raising purpose of the tax is not transparent.

It is clear that the public's dislike of tolls is a culmination of inefficiencies and inequities in the current system and the wide range of taxes on vehicles. At the same time it is clear that developing technologies can be used to develop and implement a more equitable system.

POLICIES FOR SUSTAINABLE DEVELOPMENT

A comprehensive user-pay system can also be an instrument of other public policies.   Policies to influence consumer choice towards sustainable forms of transport have long been in place (subsidies for public transport for example).

Relatively low technology solutions have been applied in some cities such as Singapore where tolls are increased for cars entering the city centre in peak hours.

E-technology provides the opportunity for more wide-ranging systems to measure car use and assign charges. In this case it is essential that a more complete debate be carried out to identify and gain agreement on which travel behaviours we wish to encourage and which we wish to discourage.

It is far too simplistic to assume that we should take a tax sledge hammer to all car usage.

Creative policy approaches should be considered. For example:

> Travel charges depending on the time of travel;
> Special discount rates for park and ride;
> Charges based on the route that you use (including a dis-incentive for travelling on long trips through local streets if alternative routes are available);
> Reward behaviour though "frequent flyer" points which can be cashed in for free trips on public transport;

ASSISTING THE TRANSPORT DISADVANTAGED

A user-pay vehicle tax adapted to support sustainable transport objectives could still disadvantage certain groups in the community, especially those who live in locations with few public transport alternatives.

The western areas of Sydney and regional Australia generally have a poorer level of public transport services and consequently car dependency is very high. The State Government showed some recognition of this when they kept tolls on the M4 freeway (which travels east/west across the city between Strathfield and Penrith) but then provided a system of rebates for locals.

If user-pay charges were to rise (even if other charges declined on average) then consideration must be given to providing compensation to individuals and families in transport disadvantaged areas.

BUSINESS AND PRODUCT ISSUES

E-Mobility

E-technology will offer considerable benefits to the travelling public. However, the best results will not come from incremental and isolated improvements, rather multi functional and flexible products will be best able to serve and adjust to customer needs.

Much of the research and development for e-technology for transport has focused on two areas; to provide seamless travel on public transport and equally, but quite separately, to automate toll collections for motor vehicles.

These are honourable intentions. But to be more effective, these two directions need to converge and incorporate activities for the whole travelling experience. Consumers, for example, should not need to have separate smart cards for "e-fares" and "e-tolls".

The NRMA is responding to this opportunity by developing "e-mobility" products that will cross over traditional barriers between private vehicle and public transport operations.

NRMA will be developing ways to combine multiple mobility applications onto one piece of plastic that is more useful to our members and customers than any other piece of plastic in their wallets.

Mobility is more than just paying for a fare or toll. A comprehensive e-mobility strategy will deal with parking, traffic information, e-ridesharing and time table information.

The e-mobility card which NRMA will produce will also incorporate an "e-purchase " capability to cover expenditure that may be as simple as buying a newspaper to read on the train to organizing a car wash.

E-mobility is the cornerstone of the new strategic direction recently announced by NRMA.

INNOVATIVE BUSINESS STRUCTURES

While the ideas and the technology can be captivating, care must be taken that they are not mesmerizing. Success heavily depends on business issues such as finance, project management and market response and appropriate public policy.

New technologies will promote new business arrangements.   The most obvious might be between providers of similar products in different locations in order to achieve economies of scale.

New technologies will also bring partnerships between organisations that come with diverse experiences. A broad range of knowledge, skills and understanding will be necessary to serve new situations.

The reality for e-technology will be largely dependant upon the actions of many people such as those who are attending this conference. It will involve private and government sectors interacting in new ways.   Interoperability of our systems means cooperation between not only technologies and companies but also governments and interest groups such as NRMA

PRIVACY

E-technology systems will collect enormous amounts of detailed and personal information.

Ensuring that information is up-to-date, accurate, held securely, and open to scrutiny is not only important for fundamentalists, but it also helps avoid mistakes that change peoples' attitudes from supportive to a more cynical view of strong opposition.

Tracking of individuals and on-selling information are concerns in the community. It is not only the collection and collation of information that concerns people but the uses to which it may be put.

Big Brother may well be a popular television program, but it is critical that this industry works together to make sure that *in-car* technology not given that label.

Defining what information is collected and how it is used will be a major role for all stakeholders of e-technology.

Provision to travel anonymously and privately will be an important feature of e-technology systems.

CONCLUSIONS

E-technology provides exciting opportunities to make transport systems easier for customers to use, for operators to manage and for policy makers to influence, for the benefit of the entire community.

However, we have to go beyond incremental changes such as computerising the payment of public transport fares and vehicle road tolls.

The technology is captivating but we must address equity issues and business issues such as finance, project management and market response. This will require new working models and stakeholders from both the private and government sectors working together in new ways.

The community will benefit but they have some strong reservations about issues such as privacy. The law will set requirements on the collection and use of information but the industry will have to be prepared to show leadership on these issues. We will need to address customer concerns openly and immediately, not just wait for legislation to set the parameters. Governments, corporate organisations and community groups all need to take responsibility for this important issue.

NRMA, having established a world leading motoring organisation, now has the vision to embrace the new technology to serve existing and new markets - but we cannot do it on our own.

The reality for e-mobility will be largely dependant upon the actions of many people, such as those who are attending this conference. Interoperability of systems means cooperation between organisations in ways that have not occurred in the past.

The ultimate success will come when the technology is linked with public policy to produce positive and sustainable benefits for the whole community.