



Transport Technology Connecting Australians

**National
Intelligent Transport Systems Strategy
2010-2015**

DISCUSSION DRAFT

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INTRODUCTION

Our national transport system faces unprecedented challenges. These challenges affect the safety and mobility of its users across all modes of transport and the ability of government agencies to effectively manage, operate and meet environmental goals. Traditional solutions alone cannot hope to solve these issues; new approaches are needed.

Intelligent Transport Systems Australia (ITSA) has a charter to facilitate the contribution of Intelligent Transport Systems (ITS) across Australia to:

- transport safety
- transport security
- operation and management across all modes of transport
- the efficient movement of freight
- the environmental impacts of transport
- transport information for the community across all modes of transport.

This ITSA proposal for a National Intelligent Transport Systems (ITS) Strategy encompasses a five year timeframe from 2010 to 2015. The strategy focuses on priority directions and the implementation of tangible actions designed to support the strategic objectives laid down by Australia's key transportation agencies and broader industry.

No single organisation has the capacity to deliver the strategy. It will require a co-operative approach amongst industry, government, transport operator and supporting organisations, such as ITSA. Suggested roles for various parties are presented within this draft and ITSA welcomes feedback on both the content of the proposed strategy and the role definitions.

**Norm Pidgeon
President, ITS Australia**

THE NEED FOR A NATIONAL ITS STRATEGY

Well designed and deployed Intelligent Transport Systems enhance the safety, efficiency and environmental performance of our transport network. However, solutions developed in isolation will not deliver true benefits to the nation. A national strategy for the development and delivery of ITS solutions is required, so that:

- Delivered solutions can work seamlessly together and provide consistent outcomes for each region and jurisdiction
- Emerging global standards can be applied in a uniform way, providing access to global technology and supplier solutions
- Transport users gain access to reliable information about all modes of transport, delivered in familiar ways
- Economies of scale are achieved, as projects delivered in each jurisdiction build on the achievements of each other
- A coherent position on priority projects can be presented to transport agencies as well as feed into the development of national priorities for infrastructure and technology development.

This National ITS Strategy will provide a framework for addressing these issues across government, industry, transport operators, academia and the community.

At a practical level, benefits will be derived as the National ITS Strategy is used as a framework to:

- Provide direction to the development and deployment of ITS solutions to optimise transport system performance
- Reduce barriers to the deployment of ITS by appropriately incorporating ITS into the development of transport infrastructure
- Enable investors in ITS solutions to maximise the available benefits through open interfaces that support information exchange and sharing of resources
- Enable deployment and operational costs to be reduced by encouraging the use of open, shared platforms, resources and data
- Reduce the barriers to deployment of ITS by reducing risks associated with the lack of open interfaces and the lack of seamless interoperability
- Enable ITS applications and services to work seamlessly across geographic and jurisdictional boundaries
- Enable applications of ITS promoted by the public and private sectors to inter-work and share resources and information as appropriate
- Promote a strong, competitive market for ITS products and services
- Reinforce investment in ITS by fostering ITS innovation, research and development in a targeted way.

THE NATIONAL ITS STRATEGY

In November 2009, ITSA and the Victorian Government hosted the inaugural Australian ITS Summit. This was used as a working forum for representatives from across the nation and invited international experts to explore ideas for the development of components of a national ITS Strategy. Outcomes from the summit have been captured and sorted into strategic themes, project concepts, policy opportunities and potential action plan components. These have been refined by ITSA to provide the basis for this national ITS Strategy.

Safety, Mobility and the Environment

The Strategy is aligned to three core pillars of **Safety, Mobility** and the **Environment**. This matches the themes used in the program of national transport reform, under the auspices of the Australian Transport Council (ATC) and the National Transport Commission (NTC).

Within the strategy framework, an overall vision of community outcomes for each of those pillars is postulated, to provide a context for the ITS contribution. The target outcomes are seen to be:

- zero harm to users of the transport network,
- zero avoidable congestion, and
- a significant (50-70%) reduction in transport greenhouse gas emissions.

ITSA recognises that ITS is not able to achieve such a vision on its own. Such a vision requires many other factors such as land use planning, engineering design, civil works, social behaviour, and government economic policies to all work together. However, ITS can make a very important and significant contribution to attainment of these targets and in many cases, provides a relatively low-cost way to enhance the performance of existing infrastructure and optimise the impact of new investment.

Drawing from the collected outcomes of the Australian ITS Summit, ITSA has articulated components of a vision for the contribution ITS can make to the three pillars. These are summarised in Table 1:

Safety	Mobility	Environment
Intelligent systems will help prevent accidents wherever possible and minimise harm when they occur.	Readily accessible information will improve traveller mobility and optimal choice of modes (including public transport). Intelligent systems will support management of transport demand, increasing network productivity and reliability.	ITS will be recognised as a key enabling technology in reducing the environmental impact of transport.

Table 1 - Contribution of ITS to the three pillars

Enabling Solutions

Intelligent Transport Systems use a range of communication, detection and processing components to support solution delivery. For the purposes of describing strategic options, the solutions have been grouped into eight categories:

1. Advanced Traffic Management Systems, such as lane control and ramp metering components of controlled motorway solutions
2. Vehicle detection and enforcement solutions to support tolling systems, access control and providing a base for road user charging systems
3. Driver assistance solutions, such as predictive terrain cruise control and in-vehicle warning systems
4. Intelligent speed adaptation, automatically updating the vehicle with speed-limit information
5. Systems delivering information to drivers and traveller information across all modes
6. Vehicle to vehicle and vehicle to infrastructure communication solutions, delivering automated safety solutions, information and potentially further pricing options (“Cooperative ITS”)
7. Vehicle performance tracking and monitoring, using in-vehicle logging systems and communication options, with a preference for a single operational platform in freight vehicles
8. Solutions to enhance the performance and utility of low emission vehicles, for example managed charging of electric vehicles

Appendix A shows the potential alignment of these solutions to the three pillars of **safety**, **mobility** and the **environment**.

ITS Action Plan

The proposed Action Plan for the development of ITS in Australia over the next five years has been defined with two interlocking components.

The first is a program to develop a framework of strategic underpinning tools, resources and information for the efficacious development of ITS options, consisting of a technical architecture, a roadmap of potential development paths and supporting information on resources, best practice strategies and potential impact on government objectives.

The second component defines actual project development opportunities, some of which span safety, mobility and the environment and some which can be anchored to one of these pillars.

Table 2 provides a summary of the components.

Table 2 - ITS Action Plan Summary

ITS Strategic Framework and Architecture	Adopt a National ITS Architecture drawing on world best experience i.e. USA, Europe or Japan		
	Develop a road-map for the potential application of ITS in Australia over the next ten years		
	Establish a universal database for the gathering and sharing of transport performance information		
	Establish and maintain a database of current ITS expertise, research and capability (including human resources)		
	Determine the best practices in ITS deployment strategies both nationally and internationally		
	Evaluate the contribution of ITS initiatives to the attainment/enhancement of government transport objectives		
	Potential Project Opportunities	Vehicle to vehicle and vehicle to infrastructure trial and demonstration program	
Deployment of ITS field operational tests in every State (test-beds)/demonstrators using the adopted ITS architecture			
Application of ITS to support transport infrastructure management, monitoring health of structures, roads and tunnels			
Safety		Mobility	Environment
Intelligent speed assist/adaption		Expansion of next generation route navigation systems based on real time traffic information	Evaluation tools to test the environmental impact of ITS initiatives, pricing regimes.
Heavy vehicle driver fatigue and speed management		A multi-modal transport portal, with ability to opt in or out, incorporating articulation of true performance and cost of all journeys and real-time journey planning	Support for real-time tracking of environmental performance of fleet vehicles
Promotion of advanced driver assistance solutions		Management of road and lane access and enforcement, e.g. transit priority, dynamic bus lanes, priority based on passengers, on-board vehicle mass monitoring	Evaluation of opportunities to support Green Car concepts, such as providing feedback on driving behaviour and its impact on emissions.
		Optimised managed motorway solutions, including ramp metering, LUMS, signal timing	
		Demonstration of ITS capabilities to deliver new pricing schemes	
		Support for freight enhancement solutions including portals for co-operative logistics	
		Next generation rail signalling (cab based)	

Potential public policy development initiatives

While Table 2 shows the proposed development initiatives related to actual intelligent system solutions, the outcomes of the Australian ITS Summit also included ideas for the promotion of adoption of ITS through public policy initiatives.

These include options to promote the adoption of advanced ITS applications across government fleets and operations, to support the adoption of international standards wherever possible and raising awareness of opportunities.

Of particular note is a proposal to establish a national centre of transport excellence, to encourage co-operation amongst transport operators in the deployment of ITS. This can be a virtual centre, with distributed national participation and coordinated governance and oversight.

Table 3 provides the full set of proposed initiatives.

Table 3 - Potential public policy development initiatives

Establish a plan for the education of the community on application of ITS and benefits which service their needs		
Establish a distributed national centre of transport excellence to encourage co-operation in the deployment of best-practice ITS		
Safety	Mobility	Environment
Raise awareness of ITS amongst security and emergency agencies to integrate ITS in their response protocol. ITS is a potential communication medium for a national/ state response to an emergency	Leverage the public infrastructure as a source of comprehensive data about the transport network, demands and performance	Foster the development of engine and vehicle technology aimed at reducing environmental impacts
National integration of all operators emergency plans leading to integration of the disaster recovery and business continuity services	Adopt where possible international standards for network level instrumentation and data exchange	Engage and support motorists with ownership and responsibility, for example - rewards & incentives
Government vehicle, taxis, and bus fleets fitted with safety/ITS devices to accelerate adoption	Mandate rollout of international standards, platforms, infrastructure to install co-operative mobility (including platooning & other ITS capabilities)	
Evaluating, adopting and mandating standards to improve vehicle safety e.g. Electronic Stability Control, Lane Departure Warning, safe following and auto braking and other advanced schemes	Implement regulatory legislation for creation of basic transport data sets, including mandatory reporting. (eg, public transport)	

ROLE OF ITS AUSTRALIA MOVING FORWARD

ITSA is an industry association, which has limited resources to undertake the actual development of ITS projects within this strategy framework. However, it can be a key driver in fostering the high level of co-operation required across industry, government, transport operators and research organisations to pursue fulfilment of the strategy.

ITSA will act as the principal national forum for championing the development and delivery of the elements of the National ITS Strategy by:

- Communicating and promoting this strategy across all relevant groups, especially those that contributed to its formation through participation in the inaugural ITS Summit.
- Advocating to Governments the role that ITS technologies play in the overall transport sector, including safer vehicles and safer roads and supporting implementation of these technologies on a national and international scale.
- Enhancing the awareness of ITS benefits amongst decision makers and opinion leaders to ensure the appropriate incorporation of ITS into the improvement of existing transport infrastructure operation and the planning and development of future infrastructure.
- Providing a coordinating role in the development of an Australia-wide view of ITS capability and resources as well as data-sharing opportunities.
- Providing opportunities for interaction between its members and other industry players and government to facilitate and support members to achieve best-practice in developing, operating and managing ITS.
- Fostering participation in the development of standards that are appropriate for Australia.
- Connecting Australia internationally with the latest developments from overseas through its affiliate associations and linking Australian development into the international ITS community.
- Developing knowledge and understanding of ITS through the provision of seminars and forums, its internet site and other resources for professional exchange and development.

ITSA will also seek to expand its project co-ordination and management role with a view to making industry and academic innovation and knowledge more accessible to transport operators, Federal and State Governments, industry and the community. It will do this by:

- Proposing projects within the Action Plan shown in Table 2 that can be coordinated by ITSA, potentially in partnership with other agencies. Funding may be sought for specific projects from stakeholder organisations or through alignment with working groups within the ATC framework. Priority will be given to the strategic framework and architecture components of the ITS Action Plan.
- Continue working with government on nationally uniform standards for ITS to enhance the public returns from ITS investments.

- Providing active input to policies, standards and legislation to deliver open interfaces, shared platforms, resources and data, including through the emerging role for ITS Australia in the Austroads' Co-operative ITS initiative.
- Reinforcing the investment in ITS by identifying ITS innovation, research and development needs and potential sources of support to ensure sustainability of ITS solutions into the future.
- Raising awareness among consumers and media of the value of ITS and promote the expanded use of appropriate technology solutions.

ROLE OF GOVERNMENT

Drawing on the collective views from the ITS Summit, the potential role of Government in supporting ITS development is to:

- Provide guidance on the application of ITS solutions through a clear policy framework that sets objectives, performance levels and delivery timeframes for the transport system
- Facilitate, encourage and lead a co-ordinated approach to deploying ITS at technical and organisational levels to support government business outcomes, and policy requirements
- Use its position as a major procurer of ITS, to invest in strategic transport outcomes that deliver sustainable and future – proof solutions
- Set clear standards with industry for ITS applications
- Learn from international policy experience
- Work in partnership with industry, transport operators, research organisations and ITSA, to achieve delivery of the National Strategy
- Foster research and innovation consistent with the National Strategy
- Operate systems and provide services to industry and the community.

The initiatives summarised in Table 3 are specific opportunities derived from the Summit for Government to consider across these areas. Of special note is the proposal to “*establish a distributed national centre of transport excellence to encourage co-operation in the deployment of best-practice ITS.*” The possible funding mechanisms for governance and oversight as well as organisation alignment of such an operation can be explored across Government and industry.

ROLE OF THE PRIVATE SECTOR

The role of the Private Sector in ITS is seen to be to:

- Develop, customise, deliver and operate systems, products and services to meet the needs of transport operators, governments and individual consumers.
- Establish commercial markets
- Research future ITS products and innovations consistent with the ITS vision

- Join with Government, transport operators, ITSA and other industry groups in the exploration and adoption of an ITS architecture and road-map for development, drawing on the best of international directions and experience
- Develop and adopt open interfaces, shared platforms and interoperability to meet customers and Government's expectations in respect to standards and services.

CONCLUSION

This National ITS Strategy that has been generated from the highly co-operative Australian ITS Summit is an important step forward in capitalising on the power of advanced ITS solutions for this country. The value of achieving improved **safety**, **mobility** and **environmental** outcomes has never been higher as the nation comes to terms with the reality of a bounded physical infrastructure.

ITSA is dedicated to supporting the attainment of the National ITS Strategy and welcomes feedback on the proposed components.

APPENDIX A - Categories of Intelligent Transport System Solutions

ITS Solutions	Safety	Mobility	Environment
Advanced Traffic Management Systems	✓	✓	✓
Vehicle detection and enforcement solutions to support tolling systems, access control and providing a base for road user charging systems		✓	✓
Driver assistance solutions (e.g. predictive terrain adaptive cruise control)	✓		✓
Intelligent speed adaptation	✓		✓
Information delivery to drivers and travellers	✓	✓	✓
Vehicle to vehicle and vehicle to infrastructure communication ("Cooperative ITS")	✓	✓	
Vehicle performance tracking and monitoring, with a preference for a single operational platform for in-cab applications for freight vehicles	✓	✓	✓
Enhancement of the utility of low emission vehicle technologies (e.g. electric vehicles and smart charging)			✓