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Report of the Intelligent Transport Systems (ITS) High Level Policy Roundtable

Monday 10 October 2016, Melbourne Australia

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Introduction

The *23rd Intelligent Transport Systems (ITS) World Congress* was held in Melbourne, Australia from 10 October 2016 to 14 October 2016. The aim of the annual congress is to bring together the world's transport leaders and policy makers to discuss the role of emerging technology in improving transport safety, effectiveness and sustainability.

"Intelligent Transport Systems Enhancing Liveable Cities and Communities" was the theme of the 2016 congress.

The first key event of the congress was the *Intelligent Transport Systems High Level Policy Roundtable* (the Roundtable). This event preceded the official welcoming and opening ceremonies and was attended by International Transport Ministers, Mayors and other senior ITS experts.

The Hon Darren Chester MP, Australian Government Minister for Infrastructure and Transport, and Mr Brian Negus, President of Intelligent Transport Systems (ITS) Australia hosted the Roundtable, which welcomed 100 participants, representing 22 Countries.

Delegates at the Roundtable shared the top three ITS challenges within their countries and outlined current and or emerging ITS initiatives. These were followed by regional overviews from four ITS Regions – Asia Pacific, America, Europe and Australia.

Opening 1

The Hon Darren Chester MP, Minister for Infrastructure and Transport, Australia

Good afternoon and on behalf of the Australian Government welcome to this High Level Policy Roundtable on Intelligent Transport Systems and to the 23rd World Congress on Intelligent Transport Systems.

I see today as an opportunity to share information on our past successes and to map out an informed approach to future challenges in the area of intelligent transport systems.

The two themes that we've asked you to focus on today are:

- What are the top three ITS challenges facing your country or city over the next three to five years to enhance the liveability of cities and communities?
- What are the top three initiatives being undertaken by your government or city over the next three to five years to enhance the liveability of cities and communities?

Of course, now is the ideal time to have these conversations, as the opportunities and challenges have never been greater, and the pace of change has never been faster. By 2031, Australia will grow to just over 30 million people, with the majority of future growth expected to occur in and around our capital cities.

Australia, like many nations, will experience challenges associated with a larger population.

Innovation and technology must be part of the answer and my Government's Smart Cities Plan, released earlier this year, ensures that this will be a key part of our approach.

Transport is a critical factor in supporting productive, accessible, liveable cities that attract talent, encourage innovation and create jobs and growth.

While urban growth is seemingly inevitable, at least part of the solution to urban congestion is increased regional development. As a government, we are working to grow regional centres through investment in better communication links, transport infrastructure and projects to improve the liveability of rural and regional Australia.

In past years, ITS has delivered important but incremental changes to our transport systems. In Australia, we've seen significant benefits from deployments of dynamic speed zones and active lane management, ramp metering, traveler information systems, e-tolling and other well established systems.

As you know, these kinds of technologies tend to be low cost and high return. They've helped us avoid or delay expensive construction works, or take a smarter approach to road operations and maintenance. This is crucially important, as Australia faces strong growth in demand for infrastructure and at the same time, significant budget constraints. For these reasons the Australian Government will continue to prioritise investment in proven ITS technologies.

However, the technologies that are on the horizon right now have the potential to be much more disruptive and transformative. Rather than delivering us incremental improvements, there is the potential to change the fundamentals of our transport system.

Road safety, for example, is an ongoing problem in large part because of the fundamental limitations of human drivers. With advances in vehicle automation and connectivity we have, for the first time, the realistic prospect of making the next great leap in improving road safety and reducing deaths on our roads.

Technological change also has the potential to make our infrastructure more efficient on an ever increasing scale. In addition to automation and improved vehicle connectivity, developments such as big data and the internet of things, more real-time travel information and new digitally based business models will deliver significant efficiency benefits.

It's important that we don't underestimate the impact that improved mobility can have on the lives of everyday people. Using more on-demand transport to deliver improved services in regional areas or giving people with a disability more options through automated transport are particularly exciting prospects.

It's my strong belief that in order to realise these benefits we, as senior leaders, must engage in the debate in this area. The days of ITS being a field only for engineers and technical experts are well behind us. I believe that our success in the future will depend on the extent to which we make sound policy, regulatory and investment decisions in response to the emerging challenges.

These challenges include:

- safety, security and privacy;
- the need for new digital infrastructure;
- how we manage and use data;
- keeping pace with innovation; and
- integrating with existing systems, especially across internal and external borders.

We are facing these challenges today in the industry of remotely piloted aircraft systems, commonly known as drones. And today I announced an air safety review on how we can effectively regulate the operation of drones in Australia.

It is important we strike the right balance between managing safety and security, and allowing innovation to help grow the industry. Regulations alone will not make it safe and we need to look to other technologies to mitigate the risks.

With all this in mind, Australia is undertaking a number of actions to prepare for the future. In August this year myself, and my ministerial colleagues from state and territory governments, agreed to a *National Policy Framework for Land Transport Technology*. This Policy Framework sets out principles that will foster a national policy approach to emerging transport technologies, as well as providing certainty to industry about the role of government.

The policy principles in this document will help us deploy systems in a way that is interoperable across our internal borders, while still taking account of important local differences. Integrating systems across borders is going to be a challenge across the world, be it Europe, Asia or the Americas.

The Policy Framework is underpinned by a three-year action plan, which includes priorities such as:

- establishing a regulatory framework for testing automated vehicles;

- considering how our infrastructure might need to change for connected and automated vehicles;
- encouraging innovation by making more transport data available as ‘open data’; and
- exploring how we can increase the uptake of various ITS technologies.

In addition, Australia is currently reviewing the regulatory barriers to automated vehicles, expected to be finalised later this year. Following the outcomes of this work we will remove any identified barriers and introduce any new safety measures as required.

Again, it will be important to achieve a consistent approach to future regulation for automated vehicles. As a principle, we will look to follow international leads to reduce costs to industry and make Australia an attractive deployment destination.

Finally, the Australian Government is partnering with governments at all levels to deliver innovative test and trial deployments. Near Sydney, we are jointly funding with the NSW Government one of the world's first large scale trials of vehicle-to-vehicle and vehicle-to-infrastructure communications in heavy vehicles. These vehicles are receiving a range of safety warnings in real time, such as forward collision alerts.

Much more work is planned in this area, and I will continue to have a very strong focus on collaborating with my state level counterparts. I have no doubt we all leave today with a richer understanding of how we can harness the potential of intelligent transport systems to enhance the liveability of our cities and communities.

On behalf of the Australian Government, I welcome you to the 2016 ITS World Congress and hope you have an enjoyable week.

Thank you.

Opening 2

The Hon Luke Donnellan MP, Minister for Roads, Road Safety and Ports, Victoria, Australia

What are the top three ITS challenges facing your country/city over the next 3-5 years to enhance the liveability of cities and communities?

Challenge 1: Population growth: last year an extra 100,000 people chose Victoria as their home, and by 2050, Melbourne is set to become a city of 8 million people. This represents growth of around 1.8 per cent annually – a rate unseen in most developed cities around the world.

Challenge 2: Liveability: Melbourne's famed liveability is being threatened by lengthening trip times and more crowded public transport.

Challenge 3: Productivity: Victoria is highly reliant on road transport to support its strong commodities exports and the nation's busiest container and general cargo port.

Almost all goods in the metropolitan area and more than 80 per cent of goods in country Victoria are transported by road.

Much of the Victorian economy, including tourism, depends on the efficient and effective management of the roads. Congestion is forecast to cost the state $9 billion annually by 2031 unless action is taken.

What are the top three initiatives being undertaken by your government/city over the next 3-5 years to enhance the liveability of cities and communities?

Initiative 1: Managed Motorway: following the upgrade of the West Gate Freeway, Melbourne will soon have the world's longest managed motorway.

Initiative 2: Sydney Coordinated Adaptive Traffic System (SCATS): VicRoads has led the development of the implementation of public transport priority systems through SCATS which includes tram and bus priority.

Initiative 3: Regulatory reform: we want Victoria to be open for business when it comes to developing, trialling and introducing automated vehicles. Currently there are barriers to testing automated vehicles where a licensed driver is not in control of the vehicle. We'll be pushing ahead with reforms to ensure Victoria maximises the benefits that automated vehicles can deliver.

Thank you.

Speaker 3 – New Zealand

The Hon Simon Bridges MP, Minister of Transport

Thank you very much and it's great to be here.

Choosing the top three challenges is always difficult.

But I think very much, as we've already heard, in New Zealand I'd say first is congestion and dealing with the high-growth centres that we have that are growing strongly, with more cars every week going onto our roads. Ensuring there is economic efficiency, but also very much liveable cities in our country. To that end, it's been great to see today the discussions today about rapid transit and some of the innovations coming on there and what they may mean for places such as New Zealand and Australia.

Safety is clearly incredibly important. In New Zealand we've seen a trending down consistently over quite a period of time. Albeit in the last two years, we've seen it tick up again and this is something that is very concerning to us. But again we know with ITS we can see encouraging possibilities in terms of safety benefits.

And then thirdly, environmental sustainability and the low emission vehicle technology we're seeing from the OEMs around the world. For New Zealand this is exciting given our renewable profile, with over 80 percent of our electricity generated from renewable resources, particularly in relation to electric vehicles.

In terms of initiatives that New Zealand believes can deal with these issues, again it's hard to choose.

From an ITS perspective, I've been really excited about what we've been doing as a country in relation to electric vehicles. A comprehensive and ambitious programme that we have, to accelerate the uptake of these vehicles in New Zealand so that we are powering our cars with clean green, home-grown electricity.

I'm also shepherding through our Parliament legislation that deals with ride-sharing, which fundamentally helps with getting more people into our vehicles and shuttles that we have in our cities. And that I think is going to make a very significant difference longer term.

Then, just as we've heard again from my Australian friends, an unprecedented investment in transport and planning is going on like never before, particularly in relation to our biggest cities but also, as the Honourable Darren Chester said, in regional New Zealand as well to make sure that we can stay moving. That involves smart network management as well as work on smarter pricing.

Thank you.

Speaker 4 - Romania

Mr Petru Sorin Buse, Minister of Transport

Dear Colleagues, Ladies and Gentlemen,

It is an honour for me to participate in the 23rd ITS World Congress and present Romania's objectives on the implementation of ITS systems.

The main objective of the European Union and of Romania is to provide quality transport by means of new technologies, used both in vehicle manufacturing and management, and in road traffic and transport infrastructures management. This objective must respond efficiently so that EU's transport system should fully accomplish its mission to meet the mobility needs of the European economy and society.

Development of ITS systems is crucial for progress, more efficient use of existing infrastructure, mobility and better quality of life, enhanced transport safety and saving human lives, traffic optimisation, better transport demand management, and greener road transport.

In Romania, the challenge in ITS systems development is to overcome the current barriers, which may be grouped in five main categories:

- technical barriers due to low infrastructure capacity and difficulties in ensuring maintenance for certain ITS systems;
- financial barriers due to permanent efforts to adapt to technical progress, to develop and maintain systems;
- operational barriers due to lack of interconnectivity between the ITS systems and other IT systems;
- organisational barriers due to the lack of an ITS Monitoring Centre for road transport at national level; and
- social barriers due to traffic congestion along the national road networks and urban corridors, low number of safe parking facilities for trucks and commercial vehicles, and insufficient specialised human resources within the public authorities.

There are various difficulties for the joint regulation of exchange of information between various transport means and environments. For example, the trend to turn information systems into user-centred open systems leads to security risks. Therefore, Romania highlights the importance of research, development and innovation to identify transferable, collaborative solutions.

The main priority of the Ministry of Transport is to develop the national and European transport infrastructure, especially the trans-European network established at EU level.

In terms of problems faced in the implementation of the TEN-T network projects in Romania, we mention the natural risks, such as: landslides; flood erosion; rockfalls; avalanches; floods; and massive snowstorms. These natural risks also lead to numerous accidents causing important loss of human life and damage every year.

Romania's objectives for the ITS systems implementation in the forthcoming period focus on ensuring compliance with the EU policy requirements and initiating activities to cover current and future needs in this field. For the forthcoming period we intend:

- to ensure fair and accurate validation and availability of relevant data for all stakeholders, in order to ensure safe and systematic traffic management, having regard to the increasing traffic levels, and promoting environmental sustainability and energy efficiency at national and EU levels;
- to ensure traffic safety, including by the implementation of complex emergency and safety services, development of secure parking facilities along the TEN-T network; and
- to develop and operationalise a National Road Traffic Management Centre, which will manage the necessary information for the roads of the central TEN-T network, for the efficient information of road infrastructure users.

At European level, Romania, together with other EU Member States, has successfully participated in various ITS projects such as: EasyWay, EasyWay 2, Crocodile, Corcodile2, EIP, EIP+, HERO (eCall system).

The Ministry of Transport will soon commence the project "*Intelligent early warning system for road traffic risks*", whose goal is to implement ITS systems on the TEN-T road network. The objective of this project is to implement an intelligent, compatible, accessible and interoperable transport system, which will provide online traffic and travel information in all European languages, improving traffic safety and reducing road traffic congestion.

Multidisciplinary research (in fields like transport, environmental protection, information technology) is the competitiveness factor which brings added-value to the efforts of bringing new technologies and services in the market.

Romania believes international cooperation in pilot projects to test innovative technologies is both necessary and beneficial. This would enable the development of new traffic models which would include automated vehicles and human controlled vehicles, for more efficient passenger and freight flows in urban and extra-urban areas.

Romania supports the acceleration and coordination of implementation and use of intelligent transport systems in road transport, including of interfaces with other transport modes in order to support the development of more efficient, safer and greener passenger and freight transit within the European Union.

Thank you for your attention.

Speaker 5 – The Republic of Singapore

Mr Chee Meng Ng, Senior Minister of State for Transport

Good afternoon to all of you. Challenges in Singapore are not unique to ourselves. We have a growing population to contend with, and in the small city-state of Singapore, all 720 square kilometres, we have competing land users.

Also, given the advancements of my country, there is increasing population expectations of transportation standards.

So all these challenges come together in a good way to propel us forward for the next 15 to 20 years.

Three key areas that we are looking forward to:

- One is that we intend to develop public transport mode-share. We intend to double our mass rapid transit lines from 180 km to 360 km in the next 15 years. That doesn't sound like much but it will involve major budget expenditures, up to a few tens – maybe a hundred billion dollars over the next 15 years.
- We have also embarked on an ambitious program to improve our bus services. We put in almost a billion dollars worth of new buses onto the roads to relieve the pressures that have been building up over the last five years.
- Beyond this, we want to make public transport the main backbone of transportation in Singapore, and in the near future, we probably will cap vehicle growth in Singapore to zero.

So all these are pretty bold policy steps that we are have made promises to our population.

So besides these major initiatives, we also intend to make the first mile and last mile of public transportation more accessible. The first mile being home to the train station or to the bus stops, and also from the bus stop or train station to the work place.

We intend to do this by enabling cycling, personal mobility devices in our housing estates, so that workers, school kids can be under some form of shelter to bring themselves to the nodal areas where then they go on to the public transport system.

We also intend to explore self-driving vehicles where mobility on demand on your smart phone, and all those things, we are trying out currently in Singapore. Hopefully, within the next 10-15 years they can become a reality.

Lastly, we intend to embark on all the different innovative technologies that are happening around, including ITS Conference, ongoing to enhance productivity and to make transportation seamless.

One major project that, in the next five years we will put in place will be the next generation, electronic route-pricing, so that uses satellite technologies to make transportation for private car owners and public transportation systems a lot more convenient for all.

Thank you.

Speaker 6 – The Federal Republic of Germany

Ms Dorothee Bär, Vice Minister, Federal Ministry of Transport and Digital Infrastructure

Thank you very much Honourable Darren Chester, dear colleagues. Thank you for having me, and the German delegation, here in Melbourne.

So what are we going to do in Germany?

First of all, we adopted an Electric Mobility Act, which enables local authorities to, for instance, allow the use of bus or other dedicated lanes by electrically powered vehicles, grant exemptions from access restrictions or make special regulations governing parking and stopping.

Due to the rapid increase of e-commerce, and the tendency of small shops to operate without storage facilities on site, electric mobility is especially important for delivery vehicles.

The Federal Government is establishing 6 digital test-beds in German cities. Besides our big test-bed on the German Autobahn in Bavaria, we will have it in six cities, for example, in Hamburg and in other ones, to enable our industry and the research community to gain experience in real world conditions and in driving situations with varying degrees of complexity.

While these sites are useful for conventionally-driven cars, their potential for electric mobility is really significant.

Greater use should be made of the potential inherent - that sounds maybe a little bit strange but we had some nice research on that - in cycling, in order to further increase its share of total vehicle mileage. We strive to provide an attractive cycling infrastructure and there is also an increasing prevalence of cargo cycles for courier, express and parcel services, and comparable services effort.

But the magic word for us is data, so you can call it big data or small data, it doesn't matter, but we think that we need the data. The exchange of data between public transport operators, sharing providers, town and cities, so the mobility data market place – that's how we called it – was developed on the initiative of our Ministry. There is a platform that makes traffic data easily available and minimises the effort involved in providing the data.

We have a very special going on – last year for the first time and this year for the second time – in December we will initiate our second data run. It is a hackathon, where coders have 48 hours to develop applications for mobility, using our data. So we are the only Ministry in Germany who gives all of the data we have to the hackers, to the coders, not only for transport data, but also for weather data and everything with that. So they develop applications for mobility using our data and the best concepts will receive funding to be further developed, and hopefully to contribute to the mobility systems of the future.

Thanks.

Speaker 7 - Japan

Mr Hiroshi Tabata, Vice-Minister for Transport, Tourism and International Affairs

Japan's Prime Minister Abe has announced that in order to provide autonomous driving transfer services at the 2020 Olympic and Paralympic Games in Tokyo and make automated driving on expressways possible, we will develop systems and infrastructure by 2017, including measures to enable the necessary verification tests.

To achieve this goal, Japan has been implementing the following policies relating to ITS and automated driving:

Firstly, in the Innovation of Automated Driving for Universal Services under the Cross-ministerial Strategic Innovation Promotion Program (SIP), which was established in 2014 by the government, industry and academia, we have been carrying out activities such as developing technologies, with a view to realizing highly automated driving by the 2020 Olympic and Paralympic Games in Tokyo.

Secondly, in 2015, we established a Study Group on Automated Driving Business as a forum to discuss issues related to the extremely competitive automated driving sector. These issues include the areas that should be addressed jointly by the government, industry and academia as well as the technologies where business is expected to develop.

During the next 3 years, based on the results of their discussions, we plan to develop and verify technologies such as "truck platooning" and "transport system in underpopulated areas, etc." These technologies are expected to solve problems that Japan is facing right now, including the shortage of truck drivers and the inconvenience of transport systems in underpopulated areas.

Thirdly, under the World Forum for Harmonization of Vehicle Regulations, or Working Party 29, Japan and Germany are co-chairing a working group to develop international safety regulations regarding automated driving technologies for automatically changing lanes on expressways and for entering and leaving expressways. We have been working with other countries towards reaching an agreement in 2018.

At the G7 Transport Ministers' Meeting held in Japan last month, from the 23rd to the 25th of September, we provided information regarding these activities to the G7 States including the United States, the United Kingdom and Germany, thus sharing their merits (necessity) with them.

Thank you.

Speaker 8 - Greece

Ms Marina Chrysoveloni, Deputy Minister of Infrastructure, Transport and Networks

It is a great honour for inviting me here in Australia at the High Level Policy Round Table. First of all, I would like to express my gratitude to the Australian Government and ITS Australia for rendering us their valuable support in hosting today High Level Policy Round Table, in association with the 23rd ITS World Congress 2016.

Greece applauds the many benefits that ITS technologies bring to our daily life and to our global economy. So, I am ready to describe to you Greece's ongoing efforts towards these challenging issues, by trying to give you a clear input in the two themes of the High Level Policy Roundtable.

Let me begin with the first one: what are the top three ITS challenges facing your country/city over the next 3-5 years to enhance the liveability of cities and communities?

Many challenges encountered by our citizens and our economies, especially in urban areas, are linked with the extensive use of automobiles. Some of them are:

- *Road safety*: growing traffic in urban areas is linked with a growing number of accidents and fatalities, especially of young people. Accidents, apart from the major social consequences that cause to our population, comprising loss of health and life, account for a significant share of recurring delays in the transport networks, but also with a significant loss in GDP. Effectively, as traffic increases, the impact of road accidents increases, leading in transport users who feel less safe to use the road network.

- *Pollution and related energy consumption*: environmental impact of transport, including both emissions and noise, has incrementally become a serious barrier to the liveability of cities and communities. Despite the new car technologies, promising to minimize emissions, traffic-generated pollution is deteriorating the quality of life for millions of citizens, and even causing severe health problems, especially to urban populations. Moreover, energy consumption has dramatically increased which, along with the soaring energy prices stimulate our strategies to turn towards more efficient and sustainable transport practices.

- *Traffic congestion* is one of the most common problems of transport policies, linked with the extensive use of automobiles. Even though the traditional approach to this problem is to build-up new infrastructure, ITS provide a wide set of tools to combat congestion, enable mobility and increase capacity in the existing network, while saving valuable funds. Consequently, extreme motorization has increased the demand for parking spaces, and vice-versa, with our transport activities to face major space problems, particularly in urban areas.

And to briefly continue with the second theme of the Roundtable: what are the top three initiatives being undertaken by your government/city over the next 3-5 years to enhance the liveability of cities and communities?

What ITS do is that they provide solutions to address users' needs. In Greece, we opted to ensure that a policy framework is in place, like the implementation of the National ITS Strategy and National ITS Architecture for the next decade.

As regards Road Safety, it is a top priority for Greece and also the main strategic objective of ITS. In this direction, I refer to the case of Attica Tollway, which was recently awarded with the 1st Prize for Road Safety by the International Road Federation (IRF), and the e-Call system.

However, my belief is that safety in road traffic is primarily a matter of Education. Characteristic of our effort is the development of an electronic e-drive academy, an online training platform on road safety, which relates to all road users giving special emphasis on children and especially the children above the age of 6.

Finally, with the ambition of improving road safety and traffic congestion, our Ministry is involved in European projects, like HeERO 2, as well as in CROCODILE 2.

Greece is also working towards making our country an international hub for the transportation of goods between Asia and Europe making full use of ITS and intermodality, building on new mobility concepts and technologies, based on the continuously increasing importance of the Piraeus port and its connection with all transport modes (train, airports, highways etc.) and logistics areas.

With regard to the pollution and related energy consumption Greece has implemented the following actions:

- The EU project citimobil2, a pilot platform for automated road transport systems, our Ministry in cooperation with the Municipality of Trikala "e-trikala SA ", supported for the first time the worldwide circulation automated road means in urban environment without physical presence of the driver inside the vehicle in real traffic conditions.
- Regarding the electromobility, I should refer to the initiative of the Attica Prefecture to start up in a pilot phase with the installation of charging stations in selected public areas.
- The adoption of a national policy framework for the development of the market as regards alternative fuels in the transport sector and the adoption of strategic plans for a sustainable urban mobility

Closing my speech, personally, since my assumption as Deputy Minister for Transport, I took part, and consequently earned significant experience and transferred the know-how to my officials.

In the Ministers' Roundtable "Automated and connected driving and data issues: Big Data in the Digital Age" on the occasion of the 2016 Annual Summit of the International Transport Forum (ITF) - In the Roundtable with the topic "Use of Modern Technologies and Tools to Ensure Quality of Transportation Services and Build Up Potential of Civil Society Institutions" in the framework of the Sixth International Congress on "Road Safety for the Safety of Life" on 29th September 2016 in Russia.

In the InnoTrans Berlin 2016 on September 2016, the leading international fair for transport technology, with widespread ICT innovations that enable rail operators to optimize passenger and freight digital experience through Mobile broadband, Internet of Things applications, Cloud platforms for a smarter, sustainable and liveable mobility.

I sincerely hope the discussions at today's roundtable are rewarding and fruitful in a number of ways, and in closing, be certain that I will continue to give my full, personal and direct support to the deployment of ITS towards a new technology manifesto.

Thank you all for your kind attention.

Speaker 9 - Malaysia

Ms Datuk Rosnah Abdul Rashid Shirlin, Deputy Minister, Ministry of Works

Let me begin by congratulating the organizer of the 23rd World Congress On Intelligent Transport Systems Melbourne 2016 for organizing this conference. Indeed, it is a great pleasure for me to be here today at this special event. I would also like to thank the host for the invitation and honoured to be with my colleagues on this stage today.

Smart technology has become a crucial commodity and investment in the fast growing urbanised smart cities. Fundamentally, smart city encompasses components that will solve urban problems such as wastage of energy and utilising new technology to source further sustainable energy management, reduction of urban traffic, incorporating smart buildings and smart healthcare management and decreasing barriers and blocks of sustainability.

Malaysia has been progressing on smart city concept especially in major cities, economic development zones as well as new urban housing areas. There are six components that support a strong foundation to construct a smart city and there are Smart Economy, Smart Environment, Smart People, Smart Government, Smart Transport and Smart Living.

Currently, the Internet-of-Things (IoT) is becoming a growing topic of conversation within the ICT industry and is also getting more prevalent in the use of IoT to improve productivity, safety, quality of life in various industries such as manufacturing, transportation and others. IoT plays an important role in materializing Smart Cities and are elements of Digital Malaysia. Digital Malaysia under the purview of Multimedia Development Economy Corporation (MDeC) an agency under the Ministry of Communications and Multimedia Malaysia.

Digital Malaysia will be able to create an ecosystem that promotes the pervasive use of ICT in all aspects of the economy to connect communities globally and interact in real time resulting in increased Gross National Income, enhanced productivity and improved standards of living. This will result in a developed digital economy that connects and empowers government, businesses and citizens and to provide a better quality of life for all in Malaysia using ICT applications.

As being stated, as Malaysia targeted on adopting the Smart City concept, the main focus will always be on the road. As cities continue to grow, demands on urban infrastructure will also increase. It is therefore, vital to develop a transportation method which are mainly driven by intelligence, integration and innovation. Along this line, my ministry has set a target to fully utilize Multi Lane Free Flow (MLFF) on highways in Malaysia by the year 2020, as a first step in establishing Smart City in terms of mobility. Currently, all possible options are being explored and evaluated before MLFF is ready to go.

The Klang Valley Mass Rapid Transit Project which involves the construction of a railway network which will form the backbone of the Klang Valley's public transport system is another government initiative mooted to reduce traffic congestion. The project is a crucial component of the Greater Kuala Lumpur/Klang Valley National Key Economic Area (Greater KL/KV NKEA). Once completed, it will significantly improve the coverage of rail-based public transport in the Klang Valley and enable 40% of all trips in the Klang Valley to be done on public transport by 2030.

Bus Rapid Transit (BRT) has started as another type of public transport as the first line has begun operation on 2015 consisting a total length of 5.4 km and serving 500,000 residents. All the buses in service are purely running on electric thus making this BRT one of the greenest public transportation

among available in Malaysia. The existing LRT too is getting a boost in coverage area via the extension project that is already in place at this very moment.

In Malaysia's perpective, the main challenge in implementing ITS is the cooperation between the related government agencies and effort in bringing the initiative together with the private sector. The policy and objective of integration has been setup and led by Ministry of Works, but obtaining confidence and certainty that it will bear the expected outcome will always be in other agencies thoughts in collaboration towards ITS implementation. However, with a document currently being developed together with cooperation from other related government agencies and combining with opinions from the private sector on the next step on ITS implementation, it was seen as a broadening back the way of nationwide ITS implementation in Malaysia.

Funding is always an issue that clings along any program, no matter on what or where they are to be carried out. As government budget were always allocated to more important or earlier identified sectors, the obstacles seems to be the dampening factor in ITS implementation. Thus, the initiatives were not carried out as a whole package or in planned stages, and in Malaysia's perspective, more to individual effort by the private sector or in small and separated effort of a government agencies thus making it difficult to work as a whole system and integration in the future. Realizing of this scenario, discussions have been made that private sector too have to play a role in term of funding which could lead to '*government driven - private funded*' cooperation of implementing ITS in Malaysia.

The Government of Malaysia is losing millions of Ringgit from damaged roads due to overloading of heavy vehicles. Currently there are weighbridge stations built all over the country but studies found that a better way of curbing overloading is by installing the Weigh-in-Motion (WiM) system. A back end support for the WiM will make it an automated enforcement to prevent overloading.

It's time to bring this presentation to a close and I hope that you have gained some insights on Malaysia's perspective on ITS.

Thank you.

Speaker 10 – European Commission

Ms Claire Deprè, Head of ITS EU

Thank you so much. Thank you for welcoming me here.

In a few words, strong commitment from the European Commission on three major policy goals:

- Low emission mobility: we have recently published a strong strategy on this topic, but also towards a zero-emission vision.
- As well as a better integration between the modes. We really see better integration between the modes and multi-modality as a way to promote more efficiency on the mobility as a whole.
- Of course, ITS plays a strong role in participating to find the right solution.

At the European Commission level, and I would say, really, together with the member states, because we are not working on our own, we are trying to push forward the digitalisation agenda in transport.

One of the first elements is the data sharing. Through our ITS Directive, we have tried to support mechanisms for sharing data, working on interoperability issues and standardisation. This is an important topic. We have been working not only on the road sector, but more recently, indeed fostering multi-modal information services.

The second element is cooperative and automated driving. This year, 28 transport Ministers adopted a declaration in Amsterdam in April, setting the scene for deployment activities across Europe. The same declaration asked the Commission to support the deployment across the EU. We are working on this. Towards the end of the year we will adopt a master plan on the deployment of cooperatives systems, and later on, in 2017, a strategy for automated vehicles.

Let me come back onto multi-modality topic, because it is an important one. My Commissioner is very much involved and committed to deliver on this topic, so 2018 will be for the transport portfolio within the Commission, the year of multi-modality. Of course, this is an agenda we share with cities. They want to promote multi-modality, they want to promote more sustainable transport modes, active modes, but also collective mobility. So public transport is a key. Whatever we are trying to support through ITS – through connected and automated driving - they have to be part of the solution.

Thank you

Speaker 11 – Organisation for Economic Cooperation and Development

Professor José Viegas, Secretary-General, International Transport Forum

Everybody is fascinated with autonomous cars these days, electric cars are there and the range limitations no longer seem to a matter for serious concern. Many people recognize the need for serious work to be done on legal and regulatory aspects around autonomous vehicles.

While no doubt autonomous vehicles will provide large benefits (of safety and efficiency) if we think of their use as similar to that of current vehicles, they are essentially so different that they will be used differently. And it is simply not possible to anticipate all its future uses, especially because it will be combined with other changing elements.

At the International Transport Forum (ITF) we are now starting to work at this more complex question, linking several innovative features together:

- the autonomous driving;
- the clean propulsion (electrification, hydrogen, biofuels, …);
- the sharing economy; and
- the digital connectivity underlying all of these.

We are also see what are the value-added combinations and the value-reduction combinations that may result for:

- safety;
- convenience for citizens;
- equitable accessibility;
- car-ownership vs. Mobility as a Service (MaaS);
- efficiency (and in particular reduction of congestion);
- jobs (in manufacturing and drivers mainly, but possibly quickly extending to logistics) and how to manage the transition;
- quality of urban life in general; and
- fiscal sustainability.

The clear outcome of our reflection at this early stage is that policies and regulations in any one of these domains must be carefully thought through and should not be done in isolation from the other domains. There are indeed multiple value-adding combinations but there are also multiple value-reduction combinations, some of them quite perverse.

And in particular, the full digital connectivity will allow us to evolve to a whole new style of regulation, moving from "data-poor, regulation heavy" to a "data-rich, regulation light" paradigm, in which the data generated by the system and made available to authorities allows quasi-real time adjustments of acceptable system parameters.

My time today is limited, so I cannot go into details. Just let me tell you to pay attention to what the ITF is publishing and come to our Summit in Leipzig next May, dedicated to the theme of Transport Governance. More detailed results and recommendations are coming.

Thank you.

Speaker 12 – Turkish Republic

Mr Erol Yanar, representing the Mr Ahmet Arslan, Minister of Transportation, Maritime Affairs and Communications

Thank you very much. Dear Ministers and participants, good afternoon.

First of all, I am greeting you on behalf of the Minister of Transportation, Maritime Affairs and Communications of the Turkish Republic. It is a really great honour for me to be with you this morning at the 23rd ITS World Congress, Melbourne.

I am delighted to see in this distinguished gathering today, participants and experts from all over the world.

Turkey is located at the junction point of Asia and Europe, as well as the Mediterranean and Black Sea basin. It is a geographic, social, cultural and economic issue. Turkey is identified as the natural centre of Europe and Asia. Eight of the world international transport corridors, in having a length of 12,500 km, and connecting Asia to Europe, is passing through Istanbul.

During the period of the government taking into account these facts, transport of Turkey was rescheduled as a world including road, railway, maritime, air transport and logistic centres, and a roadmap was set out by defining the parameters.

Our main goal is the following by 2023, which is the 100 year of the foundation of the Turkish Republic. Our main target is quality, safe and reliable transportation:

- to have our highways reach 37,000 km with separated roads;
- to construct 12,000 km of high speed rail line; and
- to reach the capacity of airways terminal, which will service 350 million passengers per year.

We are focussing on the completion of infrastructure to reach the goals.

We are in the beginning of the ITS field. First of all, we prepared a roadmap: we prepared a National ITS Strategy Statement and we are in cooperation with international institutions.

Firstly, we became a member of ERTICO, we built ITS Turkey and prepared draft ITS architectures.

Dear participants, we constructed 18,000 separated road network to connect these. There are approximately 24,800 km of separated network underway.

Big projects, connecting the Asian and European continents, are being constructed in Istanbul. These are the Marmaray Railway Tunnel and the third Bosphorus Bridge. Another big project is the Avrasya (Eurasia) road access which will unify the two sides of the Bosphorus [a road tunnel project].

In railway, the construction of the high-speed train line is continuing. Today we have high-speed train services in seven main stations, including the biggest stations in Istanbul and Ankara.

Our airways reach 208 different points and it has the best airway company title in Europe. The construction of the Istanbul new airport project continues. The first stage of the project has 150 million travellers capacity. It will be completed in 2018 and will be the biggest airport in the world.

As you know, Turkey is the bridge between Europe and Asia, there is traffic congestion in the big cities including Ankara, Izmir and Istanbul. Particularly, we have been continuing a very big project

to reduce traffic congestion and carbon dioxide emissions and provide very safe and secure transport: a good environment for the last 14 years.

Dear attendees, I thank you all: the Australian authorities and people who work in this organisation on behalf of my country and the Ministry.

Thank you.

Speaker 13 – The Republic of France

Mr Hervé Philippe, representing Mr Alain Vidalies, Secretary of State for Transport

Dear Mr Chairman, distinguished guests, I now deliver the message of Mr Vidalies.

Dear Mr Chairman, dear attendees to the High Level Policy Round Table, thank you very much for your invitation to participate to the High Level Policy Round Table.

You will open the 23rd ITS world Congress in a few minutes and the first challenge for ITS that I would like to introduce is the fight against climate change. Last year, as France was welcoming the 22th ITS World Congress in the city of Bordeaux, Ms Bulc, European Commissioner for Transport and I had the honour to co-chair the ministry round table whose central question was which developments for ITS to benefit to fight against climate change.

Indeed, ITS has a great potential to achieve sustainable mobility for people and for goods. They are easy and fast to deploy. They should more and more contribute to monitor greenhouse gas emissions and to assess the efficiency of new technologies, solutions and policies in this specific domain. One of the 15 transport initiatives listed during COP21 in Paris was « ITS 4 Climate », an initiative Launched by ATEC ITS France and TOPOS Aquitaine, and there are now almost 60 organisations world-wide who joined it.

The second challenge I would like to point out is to successfully integrate the upcoming world of connected and autonomous cars. This challenge is a technological and industrial challenge but to succeed we have also to collectively address, especially within the relevant international bodies such as ONUCE, G7, EU, ISO, CEN and so on, and solve very important and fundamental questions about reliance, viability, robustness, road safety and also responsibility, privacy, standards, homologation, social acceptance, progressive introduction and transition. As far as I am concerned, I am currently developing a new regulation to safely experiment on open roads autonomous cars, including urban autonomous shuttles.

I have also decided to set up a national permanent workshop for the prospective on driverless mobility. This workshop will focus on long-term impacts and scenarios and should not interfere with the many current working groups on autonomous cars. It aims to propose long-term visions and prospective to national decision makers. It will be concerned by social, economics, urban planning, environmental matters. One of its first priorities will be to identify and contact similar initiatives in the world.

To conclude this short speech, it's my pleasure to speak about the next ITS European Congress which will be organised by ERTICO, in France with Strasbourg Euro-Metropole under the general thema « ITS beyond borders ». Mr Dobrindt, German federal ministry for transport and digital infrastructures and I, jointly with Strasbourg Euro Métropole and the city of Kiel in Germany have just announced the launch of an international challenge on autonomous shuttles to take place during the European congress. You are all welcome to attend and participate to this congress and to this challenge.

Once more, my sincere and warmful thanks and my best wishes for the coming 23rd ITS World congress.

Speaker 14 - Austria

Mr Ingolf Schaedler, representing Mr Jorg Leightfried, Minister for Transport, Innovation and Technology

What are the top three ITS challenges facing your country/city over the next 3-5 years to enhance the livability of cities and communities?

Nowadays we speak more of Mobility challenges than ITS challenges. ITS is one opportunity to solve current mobility issues and challenges. But we have to consider more than the technological perspective and possibilities. Additional to technological transformations, we have to deal with social developments and changes.

Two of the main challenges regarding mobility and ITS are Decarbonisation and Digitalisation. E-mobility and alternative propulsion technologies will be part of integrated mobility services. Digitalisation as chance and challenge, can just work out, when you keep the issue of interoperability and harmonization in mind. Over all modes and areas. We have to offer possibilities for all modes of transport and give the user the chance to choose his/her preferred solution – always keeping in mind to provide solutions that make mobility safer, more environmental friendly and more efficient. Our goal has to be to act cooperatively, involving all transport modes in cities, and to guarantee an optimized communication between all modes. Mobility as a service could be one way to bring all these possibilities together, to ideally utilize digitalization and to advance decarbonisation on all levels. This complexity shows that we have to face these challenges with long-term goals and measures.

The next Transport Research Arena, taking place in Vienna in 2018, will also focus on Digitalization in Transport. This European Transport Research Conference brings together high-level representatives from Politics, Research and Industry, to discuss the long-term vision for future mobility in Europe.

Each ITS topic referring to Digitalization and Decarbonisation has to be discussed for itself. But even more important is, to link all of them and get an aligned and harmonized view regarding the overall transport system. Therefore more than 3000 participants will discuss at the TRA 2108 about highly relevant key topics as:

- artificial intelligence in transport;
- digital transport infrastructure;
- future transport research in Europe;
- decarbonisation – how to transform the system;
- the future of cities;
- automated, connected, e-mobility, smart vehicles; and
- governance and innovation deployment.

EU wide frameworks and directives can be a good driver to find harmonized solutions. Additionally, all countries should try to find solutions that meet their national requirements and needs. Austria tries to face these challenges as early as possible and is always interested in involving all

stakeholders. So we can define measures and activities that provide the best conditions of all modes of transport, for all needs of the users and all involved stakeholders.

What are the top three initiatives being undertaken by your government/city over the next 3-5 years to enhance livability of cities and communities?

Initiatives:

- *RDI- roadmap & research programs*: The aim of the national RDI Roadmap was to foster the development of a sustainable mobility system in Austria. The requirements are beyond ITS as technological solutions, there is a need for integrated mobility services. Based on European Strategies and Framework Programs, Research Roadmaps and activities, the key trends and developments have been identified and goals have been defined. Mobility as a service has been identified as synonym for an integrated mobility system. The key topics for Austria are:
    - connectivity;
    - traffic management;
    - automated driving; and
    - sharing mobility.

  Austrian Pilot projects like SMILE, which combines the various mobility services in one offer for the user, are crucial for the further development of this topic. Living labs and the early integration of research activities and the identification of research topics in local, national and international context are seen as essential tasks. National projects like kombimo develop “mobility points” that offer various transport modes on one central place, free to choose alternative transport modes and to share them.

- *C-ITS deployment Strategy*: Our possibilities offered by cooperative systems, to make transport safer, more efficient and sustainable, are constantly growing. The jointly deployment of C-ITS services is an important step for Austria in order to better network transport infrastructure and vehicles and to coordinate the mutual exchange of data. The Austrian C-ITS Strategy focuses on the further development of C-ITS on the high level road network and beyond. The strategy includes a vision of possible scenarios by 2020 and highlights concrete goals for Austria as:
    - recording 50% of the events generated by C-ITS equipped vehicles on high level road network; or
    - at least 5 C-ITS services available on the equipped road network; and
    - reduction of the transmission time of Decentralised Environmental Notification Messages (DENM´s) to less than 180 seconds.

  Additionally to national activities and initiatives, Austria takes an active part in international cooperation and projects like ECO-AT and C-Roads, which focus on the international coordination and harmonized deployment of C-ITS infrastructure and services. The goal of the C-Roads project is to install C-ITS pilot sites across Europe and to test “Day-1-Use-Cases”. OEMs and the industry will be able to use infrastructure to test systems and services. All C-Roads pilot site installations will be done in a harmonised way by ensuring interoperability

based on international cooperation. Additional Europe-wide activities and projects on cooperative systems and connectivity with active involvement of Austria are the:

  - Amsterdam Declaration;
  - Gear 2030 Roadmap;
  - C-ITS platform;
  - Oettinger roundtable; and
  - STRIA Roadmap.

- *Action plan automated & connected mobility*: the current developments in mobility as digitalization, e-mobility and social developments as sharing have a significant impact on our society and also provide opportunities for road safety, environment and for Austria as a business location. To develop an action plan that covers all requirements and needs of the various stakeholders, the ministry initiated a process, where about 140 national stakeholders discussed about the demands of the further development of automated driving. The output of this 6-month process was a national action plan for automated driving, including nine measures and seven use cases for short-term implementation. The prioritized uses cases are:

  - Safety +: driver assistance systems with information and warning functions and sensor based automatic systems contribute to improve road safety.
  - Flex ´n´Easy: Route optimization, driving times tailored to personal preferences, convenient connection mobility, including new vehicle concepts and information and booking services.
  - Transport Works: Efficient, automated and connected freight transport can help relief the traditional transport routes.

By legalizing tests and realize a future legal frameworks including data protection, liability, …, we can create possibilities for our industrial stakeholders and researchers to support the development of automated driving in a safe and secure way. The Austrian Action Plan pursues the goal to build and run test-environments, focus on short term deployment by prioritizing Use Cases and include not only technological issues, but also social questions and impacts into their considerations.

Automated driving can only work out, if we combine it with connectivity and C-ITS. Therefore the action plan focuses on technology competences, digital infrastructures, and scientific competences (emerging research) to strengthen the national USP and increase the value added potential.

There digital infrastructure plays a special role. It has to be a digital copy of the transport infrastructure, added with:

- communication networks between infrastructure and vehicles (C2X via ITS-G5 & 4G/5G) and protocols;
- information management processes and procedures;
- traffic management and information centres;
- positioning infrastructures;

- identification infrastructures and systems;
- sensors, sensor networks and monitoring systems; and
- system architecture (operating systems, IT HW/SW).

We have to make sure that we can guarantee a “fair and balanced” participation of all sectors and stress out the advantages of the Collaboration of the European DGs!

One main goal across all activities is to provide possibilities for testing and mutual learning.

Therefore we would like to invite international industrial stakeholders and service providers to join the Austrian Action Plans and Strategies, use our open testbeds for cooperative and harmonized research and testing. We all have the same goal: to make our mobility system safer, more efficient and more environmentally friendly. Together we can face these challenges.

Thank you.

Speaker 15 – The Republic of Finland

Ms Paivi Antikainen, representing Ms Anne Berner, Minister of Transport and Communications

We strongly believe that the future of transport is digital. The future, especially for our companies, depends on the ability to use data.

Data is the fifth form of transport: it is fuel for a digital economy. The digital disruption treats governments, cities and communities alike. Our challenge is to create as future-profit decisions and policies as possible.

Finland has already made some important moves. A wide regulative initiative the so-called Transport Code was passed to the Parliament by the Government two weeks ago. The aims of the Code are to ease the access to the market for all service providers and to enable new innovative services and business models. The aims are executed by means of heavy deregulation and streamlining.

The Transport Code entails important provisions on data. It is obligating all service providers, including platforms to open key data sets and open ticketing and payment interfaces to third parties. These regulative changes are needed in order to enable Mobility as a Service.

Data drives new markets and growth in business when the market is open and data is interoperable.

The Finnish government made a resolution on use of data for business activities in May. The Internet of Things and artificial intelligence will generate an enormous amount of data. The enormous amount of data creates enormous business opportunities. This needs to be fully utilized.

Data drives value only if it is in use. This is why we need to promote open data policies and to encourage private sector to open its data for re-use.

Personal data has also become a valuable asset. This is also why the business use of personal data needs to be balanced with privacy.

The Ministry of Transport and Communications of Finland has promoted trust in the utilization of personal data. We call it MyData. In MyData the user is at the centre: it means that people take their personal data in their own control and decide on the reuse of it no matter whether it is forbusiness or other purposes. The concept is in many ways like MaaS.

In this MyData world, MaaS can be upgraded to Mobility as a Personal Service.

The transport sector like any other has the opportunity to benefit from “MyData” development in order to create better services and more personalized services. In our view we should not miss this opportunity.

Thank you.

Speaker 16 – The Kingdom of Denmark

Mr Morten Kabell, Mayor of Technical and Environmental Affairs, City of Copenhagen

Introduction: ITS raises a fundamental question about cities

Since the invention of the car we have created more or less intelligent systems to mitigate their existence in our cities. From a man with a flag and a bell walking in front to shooting your gun in the air when crossing an intersection, the solutions have tried to avoid harm and spooking of horses.

However, decades of urban development aimed at cars have presented us with a new challenge. Cars are, unfortunately, what many cities are built for. This has led to our cities clogging up with polluting metal boxes and have pushed human beings outside of cars to the fringe of the city.

In this way, the challenge of creating a smarter transport system becomes symptomatic of our attitude towards cities. Are they places for efficient worker drones that live their actual lives in the suburbs, or are the cities places for living in themselves?

ITS promises solutions to many problems

I think there can be no doubt that I think the latter is correct. We need to grab at the root of the problem and design our cities with a focus on quality of life rather than cars and concrete.

Intelligent Traffic Systems promise us solutions to many of these problems. Alleviating congestion, reducing pollution and opening up for a better use of urban space.

Some places by simply letting traffic flow better – as we are trying in the Compass4D test cities by giving busses green priority – some places by allowing for a better use of space – in Copenhagen we are testing different ways to use the potential of empty parking slots during the day. Other places the technology will allow us to further transport modes that make better sense – such as creating green waves for busses and bicycles.

Round off: we need to create frameworks for a good life

The development of new technology allows us to develop new ways of thinking of our cities. To think in smarter ways to ensure that we can all coexist and that our cities stay functional.

These solutions are however nothing in themselves. They are not the holy grail of traffic design. Because they are only a part of a larger agenda – designing cities with a focus on life. For that same reason we must never put the technology ahead of our citizens – and data collection must never infringe on the right to privacy.

We need to design cities that make it possible for Copenhageners, Singaporeans or the people of Melbourne to enjoy the framework of a good life – without spending half of it stuck in a queue or waiting to cross a death trap of a busy road.

Speaker 17 - Canada

Councillor Aref Salem, Councillor, City of Montreal

Aware of transportation issues across its territory, the City of Montreal is investing heavily in its transportation infrastructure to improve mobility across its territory.

The City of Montreal first became committed to promoting active and public transportation with the unveiling of its ambitious Transportation Plan. The Strategic Plan on Intelligent Transportation Systems (ITS), adopted by the municipal administration, optimizes investments in Montreal and ensures maximum benefits resulting from the use of new technologies applied to field of transportation. It presents many intelligent systems projects that will become milestones towards Mobility as a Service.

Inspired by best global practices, Montreal, a digital smart city, places strong emphasis on the deployment of intelligent transportation systems to optimize mobility while ensuring the development of sustainable, resilient and intelligent mobility.

The goal is to make travel more efficient, reliable and seamless between different modes of transportation.

Specifically, the City of Montreal has equipped itself with a centralized infrastructure for the management of urban mobility called the Urban Mobility Management Centre (UMMC) commissioned in 2015. The City of Montreal can thus monitor its overall territory on the lookout for any disruption that could affect mobility and respond quickly to restore normalcy.

Collaboration between transportation partners is crucial to the implementation of integrated mobility projects such as integrated mobility corridors and Mobility as a Service (MaaS). The sharing of real-time data, the interoperability of systems and the development of joint operational and decision-making processes enable the development of more complex mobility projects. These essential milestones to Mobility as a Service allows an advantageous supply of transport services tailored to the needs of the population by ensuring collaboration among the many transportation services providers (public transport agencies, bicycles and self-service vehicles and taxis).

Montreal was recently named the 2016 Intelligent Community of the Year by the Intelligent Community Forum for its achievements and projects in the field of mobility. This prestigious award recognizes its many efforts in intelligent mobility and confirms once again why the City of Montreal was chosen to host the 2017 ITS World Congress. Organized in collaboration with ITS America and ITS Canada, this event will be held from October 29 to November 2 and will bring together all the major players in the field of Intelligent Transportation Systems (ITS). This will be the first time that this important event will be held in Montreal and I personally invite you to participate to this congress whose theme will be "Integrated mobility, driving smart cities”

Furthermore, I ask for your help in order to mobilize the broad transportation and information technology local community and to promote the 2017 ITS World Congress. Delegates and visitors will have the opportunity to discover Montreal and its many attractions, and this, in the year of its 375th anniversary.

Speaker 18 – The People's Republic of China

Mr Zhongze Wu, President, China ITS Association

What are the top three ITS challenges facing your country/city over the next 3-5 years to enhance the liveability of cities and communities?

With the comprehensive urbanization and the acceleration of economic restructuring in the regional economy, in the next five years, around 100 million farmers will migrate to cities for working, residing and living. This will cause enormous impacts to the capability of the infrastructure and the quality of services. In addition, it is quite urgent to enhance the livability, inclusiveness, safeness (disaster prevention and reduction) of the city.

In the meanwhile, China is developing a comprehensive integrated transportation network which covers all the way from the east to the west, from the north to the south, and from the inside of the country to the outside of the world. This also includes the construction of high-speed railway network and the enhancement of the national-wise high-way network and the airports.

With these massive constructions of transportation infrastructures, it becomes a critical issue for China to regularly maintain and optimize the usage of these transportation infrastructures.

In this context, the Chinese intelligent transportation development will raise many challenges and the followings three aspects are the most critical ones:

1. *Under the process of urbanization, how to greatly improve the efficiency usage of transportation infrastructure, and improve the safety, convenience and fairness.*

   There are more than 640 cities in China, built-up area of 49,700 square kilometers, urban construction land of about 100 square meters per capita (density of population is 10,000 / square kilometer) and a road area of only 15 square meters per capita. In addition, there is a high demand for transportation. However, the shortage of transportation infrastructure remains. Currently, China's urban transportation development will focus on demand management, improving the efficiency of the road usage and providing the public with convenient and efficient travel services.

2. *With the substantial growth in regional transportation demand, how to integrate different modes of transport, and to improve the reliability and connectivity between inside and outside of the city.*

   With the rapid development of Chinese high-speed railway and highway, there is a substantial growth in demand for transportation for inter-city travel. However, the poor collaboration and coordination among railways, highways, aviation and other modes of transportation has become major threats. In addition, to ensure an effective and efficient connection from intercity to urban transport is also challenging.

3. *Facing the new technologies, how to improve the integration, collaboration and innovation across different sectors. How to guide the innovation in the development, and optimize the chain of the intelligent transportation industry.*

   Advances in new technologies, such as internet, big data, Telematics (IoT-automotive internet of things in vehicles) has greatly accelerated the integration of intelligent transport with other industries such as information, manufacturing, services etc. At the current stage, the development of Chinese intelligent transport should adhere the current demand and

plan ahead for the future requirements, optimize the integration, collaboration and innovation with the latest technology in sectors such as information systems and artificial intelligence as well as other industries such as in the automotive and logistics.

What are the top three initiatives being undertaken by your government/city over the next 3-5 years to enhance the liveability of cities and communities?

Livable city means inclusion and sense of belonging of the city. All the residents will have the ability to enjoy their lives with fairness, safeness, healthiness and transportation continence. China has the following major policies to improve the overall livability:

1. *Improving urban planning and construction management:*

   "Implementation suggestions of CPC Central Committee and State Council on further strengthening urban planning and construction management" has clearly indicated that the whole-process of urban planning, regulation planning and implementing should be people-, environmental- and historical and low-carbon green oriented.

2. *Advance the development of smart city*

   The development of smart city is an important direction for future urban development in China. By 2020, China will build a number of smart cities with unique characteristics. With the help of smart cities and related implementation on urban planning and construction, the efficiency will be improved.

3. *Prioritize the development of public transport*

   China will focus on the acceleration in transformation of urban transportation development, increasing the significance of public transport, prioritizing the development of public transport, enhancing the construction of transport network, improving the supply-chain capacity, optimizing the coordination and connections, improving the quality of services, and ensuring a safe, reliable, affordable, convenient and efficient journey.

Speaker 19 – The United Kingdom of Great Britain

Professor Phil Blythe, Chief Scientific Advisor, Department for Transport

From the UK point of view, and dealing with the urban environment, congestion is still a big issue across all modes, not just road but in all our public transport and railway provision as well. Looking at smart solutions to deal with that is very, very important.

Also at the top of the agenda is emissions, and by vehicle emissions I mean both from an air quality point of view in terms of NO_2 and particulates, but also in terms of CO_2 and other greenhouse gases, from the decarbonisation point of view and the targets we have set ourselves to deliver reductions in carbon.

The third issue with transport, and this is a message right from the top from the Secretary of State, is bringing the user back into the centre of the design of transport systems and ensuring their well-being and acceptance of the transport system. Systems are designed for the user rather than a technology push or a systems push.

Some of the things we are doing to mitigate that and the programs we have in place to try and reduce emissions and decarbonisation: we have set up an organisation called OLEV – Office of Low Emission Vehicles – which is very well funded to encourage the uptake of vehicles – ultra-low carbon vehicles and electric vehicles – and the infrastructure necessary to support that. That has been extremely successful in terms of the increase in ultra-low emissions vehicles in 2014 and 2015 was almost 200% year on year. This is still quite small numbers but it is growing in the right direction. There is a great deal of work on the behavioural and acceptance side of it, as well as on the technical and the delivery of the charging mechanisms to do that.

Automation is also seen as very important. We set up an organisation called the Centre for Connected and Autonomous Vehicles. We are currently running four sets of trials in the UK with different types of autonomous vehicles, bringing in the users, bringing in the insurance industry, bringing in all the stakeholders that would need to inform us on the regulation that is required for taking forward automation.

A number of new trials will be announced later this year for vehicles driving on the road – cars, that is – but also a platooning trial next year. We are pushing ahead with that and we believe we need to have the demonstrations on the road so we can ask those what-if questions and begin to really understand what the challenges are to take it to practical reality.

Linked to the autonomous vehicles is cooperative ITS and Compass 4-D was already mentioned. That, and a number of other significant deployments of cooperative systems in the UK, are already underway, and the evaluation to look at: how such systems can support energy efficient intersections; reduction in fuel use; reduction in emissions; and supporting vulnerable road users.

And finally, mobility as a service: the whole issue of using big data, new business models to deliver transport differently is very much at the centre of our thinking in the UK the moment.

Thank you.

Speaker 20 – ITS Taiwan

Dr Y C Chang, President, ITS Taiwan

Good afternoon Mr Chairman, distinguished guests, and ladies and gentlemen.

As you may know, one thing Taiwan is famous for is the ICT industry, with which high-tech man-power and precious IT industry form a precious asset.

Based on this asset, Taiwan has been working with the ITS industry for over 20 years and has a lot of accomplishment.

Currently, we set up a four-year plan from 2017 to 2020 focussing on: load congestion in main corridors; high traffic-related injury and the deaths in motorcycles; and the transport service in rural areas are the top of the ITS challenges in Taiwan.

The target for the next four years in the ITS plan is to conquer the three challenges and to fulfil the motto of supporting the system: sharing and sustainable.

On the other hand, there are two opportunities in front of us.

Firstly, ICT advancement has brought the opportunity to create innovative transport services by mobile devices.

Secondly, the IOT – Internet of Things – embedded in the vehicle industry and the roadway infrastructure provides the opportunity to implement connected vehicle infrastructure, making our traffic safer and more efficient.

Ladies and gentlemen, it was our privilege to have been honoured by this ITS World Congress Industry Award for the Taiwan high speed rail this year and ECT (Electronic Toll Collection) last year.

With each year's application, we have 94% of penetration, which sets up a very important foundation and infrastructure for IOT and the Smart City for the next few years.

As we are always supporting IT industries, under the leadership of our Deputy Minister Ken Wong, we accomplished over 100 people dedicated to attend this Congress. That is including government officers, industry, as well as academies.

We hope that you can visit us – to visit in the near future.

Thank you very much.

Speaker 21 – The Kingdom of Norway

Mr Terje Moe Gustavsen, General Director, Norwegian Public Roads Administration

Top three ITS challenges facing over the next 3-5 years to enhance the liveability of cities and communities

Urban challenges:

- fast growing population in the biggest urban areas – pressure on land use/agricultural area;
- policy for modal shifts towards public transport, walking and cycling;
- local climate challenges;
- limited capacity at the road network in the peak hours; and
- freight transport should be given priority.

Rural challenges:

- challenging weather conditions (snow, ice, avalanches); and
- long distances, high transportation costs for inland transport and export.

Top three initiatives being undertaken over the next 3-5 years to enhance the liveability of cities and communities

- Development and implementation of emission based tolling systems and ITS systems to stimulate and increase the percentage/share of emission free vehicles.
- ITS solution to increase inter modality and Mobility As A Service (MAAS), development of apps for efficient travel planning.
- ITS solutions to increase traffic safety.
- Introduction of automated transport systems. How to design cities, roads/construction and maintenance for the future transport systems.
- Privacy by design when implementing ITS measures (measures for traffic safety, pay as you drive).
- ITS measures that stimulates walking and cycling.

Thank you.

Speaker 22 – The Netherlands

Mr Tomas De Laat, Head of Division, Ministry of Infrastructure and the Environment

Thank you for the opportunity to tell you more about the Dutch activities in the field of smart mobility and ITS. I am here on behalf of Ms Melanie Schultz, Minister of Infrastructure and the Environment in the Netherlands.

We have high ambitions because we believe that connected and automated driving can help us solving the three major challenges we face today: improve traffic safety, improve traffic flow and increase liveability.

Declaration of Amsterdam

We look back on a successful first half year of 2016, in which we were able to come to a joined approach towards connected and automated driving on European roads.

The Declaration of Amsterdam marks this important step and forms an essential signal on a political level. And we were happy to see that the Declaration has broad support, from European member states, from the European commission and from car manufacturers (ACEA).

We believe this is such an important step because we need to come to a harmonized approach where it comes to regulation, digital infrastructure and topics like privacy and liability.

Learning by doing

In the Netherlands, we believe in a pragmatic 'learning by doing' approach. We do this on a national level: we have adjusted the law to make testing with automated vehicles on public roads possible. And already tests are taking place. Within a short period, even testing without a driver in the vehicle will be possible.

Our recent initiative for the European Truck Platooning Challenge is a nice example. Six truck manufacturing companies drove truck platoons from several European cities to Rotterdam, crossing multiple borders.

The same goes for the Experience on the 14th of April. Owing to an impressive group of international car manufacturers, we were able to drive through some of the busiest parts of the city of Amsterdam and let all of the European Ministers of Transport experience the art of highly automated driving.

Initiatives

The top three initiatives for the Netherlands concern:

1. European cooperation: follow up declaration. We need to set the next step with large scale cross border pilots and learn from these pilots together, not only from a technical side, but also from a policy perspective.
2. Working together on a global scale is also necessary: The Vienna and Geneva Convention are in the way of market introduction of driverless vehicles in the future. To make market introduction possible in the near future we need a guidance for the conventions based on common interpretations of the terms driver and the term in control. The working party 1 of the UNECE had decided that a guidance document can be drafted on the initiative of the Netherlands and the UK, to interpret the Vienna convention on this point. Probably some of you have signed only

the Geneva Convention and encounter the same problems. If you are interested we could see if we can work together in this subject. Based on the experience and future development we can decide later which changes of the convention will be necessary.

3. I believe we need to focus on real life cases with societal benefits. Show the world what the benefits could be! I will mention a few examples in the Netherlands:
   - real life cases with truck platooning on Dutch high ways together with Dutch retail and logistic sector;
   - last mile solutions with autonomous vehicles - at this moment a self-driving pod is moving elderly people in one of the rural areas of the Netherlands;
   - solutions in cities and accessibility of the airport in the Rotterdam/ the Hague area; and
   - at last, relationship with self parking and charging, connected and automated driving as a part of a smart grid.

Thank you.

Speaker 23 – Colorado, USA

Mr Shailen Bhatt, Executive Director, Department of Transportation

Thank you so much. I want to thank the entire panel of distinguished speakers. It has been very interesting to hear everyone's challenges. It is an exciting time to be in this field as we try to solve the common problems that we all face.

For the State of Colorado, which is one of 50 states within the United States, we face many of the same challenges that you have already articulated. We deal with congestion issues, we have climate change issues, whether it's air quality or building more resiliency into our system. We deal with problems all the way from macro problems like freight, to the micro problems of getting pedestrians and cyclists safely through our intersections in a system that has been, quite frankly, built around the car for the last 50 years.

For Colorado itself we have a big problem in that Colorado is a beautiful state that millions of people are choosing to make their home. Unfortunately, our transportation system was designed in the 50s, built in the 60s, for a population in the 1980s that was projected to be 3 million people. We are at 5.8 million people today. We are going to 8.5 million people in the next 20 years and quite frankly, we are not going to be able to build our way out of that congestion.

For us, ITS represents an opportunity, literally a saviour for us, from an emissions standpoint, from a mobility standpoint. What we have undertaken, we have launched a project that we are calling RoadX. The vision for RoadX is a future that is crash-free, injury-free, in which mobility is something people have access to regardless of your socio-economic status, and which also holds environmental sustainability quite high.

We have essentially created a partnership with the private sector because we, as government, while we try to be as innovative as possible, we do not match the innovation that comes from the private sector. What we have reached out to and asked for are any of the ideas that are out there. There are a couple of companies that are here at this conference with which we have entered into partnerships with, both around cellular technology, DSRC, we are participating in the SPAT challenge (the signal changing and timing challenge), and I chair the vehicle to infrastructure deployment coalition.

Denver was one of the finalists for the US DOT Smart City Challenge and we are working with them, particularly around our signals. There is a real opportunity for us to cut down on crashes at intersections.

We are also looking at issues around queues, end of queue warnings, work zone, and for our more rural areas, curve warnings and curve departures. I feel that will be a real challenge for us as we deal with the speed of technology changes as they move forward.

Thank you very much.

Speaker 24 – California, USA

Mr Malcolm Dougherty, Director, Department of Transportation

Thank you. I appreciate the opportunity to be here. Let me, first and foremost, thank the country of Australia, and ITS Australia for hosting this year's World Congress.

Our challenges are very similar to other states, countries and cities around the table.

Searching for adequate funding to be able to address the transportation needs of the people in our jurisdiction, and specifically for ITS solutions, as ITS solutions may be the most cost effective solutions to improve safety, as well as mobility for the people using that transportation system.

The priorities that we employ to utilise those precious resources and dollars to improve the transportation system is going to be very important to us going forward.

The demand: we are asking more of that transportation system than we ever have before, both for the movement and access of people, but also for freight.

That goes directly to liveability of our communities, the quality of life as well as their economic prosperity.

Some initiatives that are being undertaken in the State of California. First on autonomous vehicles, we have draft regulations that are out to the public for comment. We currently have 17 companies testing autonomous vehicles on public roads in the State of California. We continue to work on that initiative as well as connected vehicles, along with several other states in the United States.

Another initiative is to explore an alternative revenue source other than the gas tax, specifically a vehicle miles travelled, a user fee model, of you will. We have a pilot going on with 5000 participants in California and we are in the middle of administering that pilot to see whether or not it is a more effective user fee model than the gas tax.

Vehicle miles travelled continues to increase, fuel consumption is decreasing that is not necessarily a bad thing – it can be a very good thing – unless you are dependent on fuel consumption for your revenue base to take care of your transportation system.

The third initiative I would mention is our aggressive initiatives on climate change and striving for a low carbon transportation system in California. Some of the efforts that are underway to accomplish that: are increasing our investment in transit; increasing our invest in active transportation; as well as making a commitment to increase our fleet of zero emission vehicles; and then investing in the first high speed rail system in the United States.

With that, I thank you for the opportunity to discuss some of these and get into greater detail as the week goes on.

Speaker 25- Maryland, USA

Mr Pete Rahn, Director, Department of Transportation

Thank you very much. I was tempted to say we have no problems and just move on: unfortunately that is not true.

Maryland has serious issues with congestion, as I heard very much around the table. It is fascinating to me the commonality of the issues that we all are having to deal with, therefore the benefit I believe of round tables like this. I found that very informative.

Congestion within the national capital region around Washington DC has now reached number 1 in status for the worst congestion in the United States.

We also have a problem in Maryland of a hugely expensive transit system in the region of the city of Baltimore, in which we spend $1.1 billion per year. It is unreliable, it's inefficient and it's unfair to the riders who utilitise that system.

And issues of safety. I have never run into a situation where 20% of our state fatalities are pedestrians.

We have a number of issues that I believe ITS can be beneficial to.

One of the first is congestion in the region of Washington DC. There is a Request for Proposal that we have out right now on I270, in which it is totally performance-based, non-prescriptive and it simply says you have $100 million. Whoever can deliver to us the system that moves the most vehicles the furthest, the fastest wins the contract and then implements it.

We also are in the process of a $5.6 billion light rail system that is going to semi-circle Washington DC.

We are also dealing with Baltimore's transit system. We have taken on the approach of a complete overhaul: a clear, clean sheet, in which we have said if nothing existed in place today, what we would do to make it work better. It has been quite a challenge but we have been able to lay out 12 high frequency coloured routes that we think people from out of town should be able to understand and utilise. TSP systems for signals, GPS for real time information for the buses themselves. We are adding locations with zip cars for that last mile, and even the bike rentals that will be in place for 60 of the stations.

With the issue of the 100 pedestrian fatalities per year, other than making drunk walking a crime, we are struggling as to how we will be using technology and systems to limit those fatalities.

Thank you.

Speaker 26 – Pennsylvania, USA

Ms Leslie Richards, Director, Department of Transportation

Thank you for giving for giving me this opportunity and it great to add what's going on in Pennsylvannia to all these other ideas that are being shared with this panel today.

As far as challenges for us, the big data issue, not only how we collect it but how we analyse it and how we use it. We see there has been so much in many other departments of transportation. Sometimes we get centred on collection. We are very good at collecting things but the challenge is how do we make that useful and meaningful. Are we collecting the right types of data?

We need to make sure we are not just collecting data to collect it. The reason that is important is that it can help us manage the traffic flow and congestion on our roadways. This idea is always tied to safety. We want to make our roads and communities as safe as possible.

Which leads me to mention our second challenge, and that is the AV – autonomous and connected vehicle technology. With 95% of our accidents being tied to human error and things that could be prevented, I personally feel the AV technology is going to allow us to make a great leap, just like the use of the seatbelt and just like the use of the airbag. This is our next potential huge leap that we can make to decrease the number of fatalities on our roadways, as well as pedestrian, bicyclists and other fatal accidents.

Third, in terms of liveable communities and our ITS challenges are mode choices. Everyone enjoys having different choices of getting where they need to be. It is a big part of their quality of life. It is why people choose to live where they live and why they choose to work where they work. They want to be able to walk when they want to walk, they want to be able to cycle when they want to cycle, they want to be able to take transit and if they choose to go by car, that's their choice. These mode choices are a huge challenge.

As far as the initiatives of what we are doing, the first is for the first time, possible ever, but definitely in a long time, I went back to our budget and we now have a dedicated line item for ITS. That has not been there for many years. I do not know if it was ever there in previous administrations but I know that it wasn't there in the near past. It is important for our legislators who are coming up with regulation to know we are dedicated to it. We are putting resources behind it. Of course, it is never enough but it is a good start. We are also cooperating with private industry such as Waze. We are one of the top five business partners with Waze and helping not only for us to give them data to allow people to navigate their communities and the state and to connect with other states but we are also taking their data and using it to help us manage our assets in the best way possible.

Second, we have formed an autonomous vehicle policy work group that is working in line with federal guidelines. What is so important because there is so many stakeholders here – there is such a diverse groups of stakeholders as well as assets that need to be managed. We have private sector (General Motors, Uber), we have trucking organisations, we have universities that are on that work group, and we have other government agencies. Most importantly, I sit on it with our secretary of insurance because liability, safety and security are also that we are dealing with. We are excited we are going to have to come up with a report in November.

Lastly, we have a corridor now, I76, the most congested corridor in Pennsylvania and we are giving, through ITS, choices of getting on, getting off, going on transit, and using bike trails. Again giving those modal choices to everybody who is on it to get around safer and faster.

Speaker 27 – Michigan, USA

Mr Kirk Steudle, Director, Department of Transportation

Thank you Mr Chairman. It is great to be with you all today. I would say the challenges have been pretty well discussed - laid on the table. I don't think there is anything new to add to those. I will, in an effort to be brief, focus on some initiatives that have been happening in Michigan.

First and foremost, we are looking at building out the deployment of a backbone communications network that utilises any type of communications protocol, whether it's a DSRC or a cellular-based program. That's primarily in south east Michigan where 370 research and development firms, that's about 75% of the US research and development in an automotive space, are located. That platform will be used to leverage the internet of things, which to me is the blending and the enabler for smart cities.

Frankly, the discussion of smart cities is an opportune time now but it probably couldn't have happened earlier, because the technology wasn't ready yet. I think we are at a great tipping point to allow that to go forward.

The second piece that we are looking at in Michigan is legislative reforms that allow for automated vehicles. The package of bills, which is set to pass right after the election in the remaining chamber, allows for complete operations. It limits liabilities and clearly defines who has the liabilities, addresses cyber security, and allows for truck platooning, not in a form of testing but in a form of operation.

The last piece: many of you around the table have heard of our autonomous village, which is called M-city at the University of Michigan and that has been so fully subscribed we are now moving to a much larger facility to complement it for validation and certification testing. That is called the American Centre for Mobility. It is located at Willow Run airport, which is located about 10 miles to the West of Detroit Metro Airport. It is about 330 acres. That centre will facilitate high speed testing, multi-level interchanges, urban, rural, and even very rural testing sites as well.

We are looking forward to moving forward to that, Mr Chairman.

Speaker 28 – Iowa, USA

Mr Paul Trombino III, Director, Department of Transportation

Thank you Mr Chair. It is an honour to be here with all these distinguished people.

I believe organisational transformation is the number one task transport agencies must undertake to remain relevant and enable better outcomes in the future for our customers. We must climb out of the traditional government box and join the ranks of the disrupters. Transport agencies are well positioned to create positive disruption that can lead to improved safety, mobility and economics of the system.

We can convene and partner with other private disrupters to accelerate change. We have deep insights to our transportation infrastructure, its capabilities, its limitations, and how it is performing at any given time. We are driven by the public interest. These qualities form a strong foundation for building a new culture of innovation and partnership for positive change focussed on the customer.

In the State of Iowa we are focussed on implementing ITS technology across communities, both rural and urban. In rural areas we are seeing increased demand for ITS as technology advances in agriculture and rural manufacturing fully automate their processes in order to reduce costs to be competitive in a global marketplace.

New expectations from customers in urban areas, as the choice of transportation they want to use for all modes to be seamlessly connected at the customers will.

Lastly, we have been seeing a large shift in energy use and changes in how energy is moved. These changes have created challenges as our current transport funding structure does not always allow investment in a more diverse, modal system being demanded by both rural and urban needs.

As a result we have undertaken the following initiatives to push forward real change in the transportation system. We have developed non-traditional working partnerships with companies focussed on improved outcomes with new technologies.

Understanding the movement of commodities on the system – product type, value, demand, an automated technology project in pushing forward to test real truck shipments with level 4 automation. Our automated technology project, in partnership with the company Here, is focussed on high definition, 3-D mapping of paved roads in our urban areas, predictive travel modelling and validation, especially focussed on freight truck, cloud-based communication to and from automated vehicles and to provide advance alerts and information.

We are continuing the advancement of our supply-chain design of all product movement in the state, refreshing the data and developing an opportunity to mine the data for economic and transport advantage for our businesses and state.

Thirdly, we are focussed on the role of Iowa Department of Transportation as a convenor, to enable ITS technology testing and advancement for businesses and citizens. This will allow freight companies, insurance companies, agribusinesses, advanced manufacturing to undertake early adoption: to understand the shifting sands in transportation that is happening today.

Finally, we are co-leading a long-term state energy plan with the Iowa Economic Development Authority, which will enable the state to be proactive when looking at energy risks and opportunities for the state. The energy line will then become part of our long-range transportation plan and to ensure the Iowa DOT is an enabler of sustainable, long-term energy for businesses and people.

Speaker 29 – Republic of Korea

Dr Chang Woon Lee, President, Korean Transport Institute

[Please note: Dr Chang was not able to speak at the event and has provided the speech that he would have given.]

I would like to celebrate the 23rd ITS World Congress in Melbourne on behalf of Ministry of Land, Infrastructure and Transport in Korea. And it is my great honour being invited at the High Level Policy Roundtable here for making a short speech on Future ITS Challenges in the next 3 to 5 years in Korea.

Korean government is now facing on upcoming transportation issues including urbanization, climate change and global warming, aging society, mobile technology and social networking, and so on. So that, three major challenges should be taken into consideration in Korea utilizing ITS over the next 3-5 years to enhance liveability and/or sustainability of our peoples living in the cities.

These challenges are electrification, automation, and mobility integration.

Firstly, electric vehicles as electrification in transport systems are now gradually penetrating in domestic markets in Korea, such as about 50,000 cars sold until this year, and expecting 200,000 cars to be sold until 2020.

But one thing I would like to take your attention is the vision 2030 in Jeju Island, "Carbon Free Island", in which 100% of registered vehicles more than 350,000 cars are planned to be replaced by electric vehicles until 2030.

Secondly, automated driving technology is now under development in Korea by the inter-disciplinary plan between governmental ministries.

In July 2014, three Ministries have decided to designate the Automated Vehicle Technology as one the most creative economy areas to promote industries with the future markets not only in Korea but in the world. And the collaborated strategic mega R&D project for targeting the Level 3 & 4 technologies of automated driving until 2025 is now under process of feasibility study in order to start from the next year.

Finally, I would emphasize mobility integration with a concept of sharing economy utilizing information and communication technology, which is called ICT.

This integration is a customized service through mobile platforms, connecting all transport modes from door to door, including public transport, car sharing, personal mobility, and walking.

Therefore, we need to discuss here in this ITS World Congress, not only how electric vehicles and automated vehicles could be promoted, but also how the future transport systems in the cities could be further liveable, sustainable, and innovative without any traffic problems.

Thank you very much for your attention.

Regional Overview 1 – ITS Europe

Mr Cees De Wijs, Chair

First of all, I would like to thank you for being here today to exchange on the current status of deployment of ITS and upcoming challenges and opportunities for further deployment.

ITS deployment is important to improve safety, comfort, efficiency and sustainability of mobility.

What has to be done?

1. We need a common vision between public and private stakeholders and a clear understanding about the transition towards our common vision.
2. We need to establish a dialogue with the public to explain the opportunities of ITS and we have to address concerns like privacy.
3. We need to ensure interoperability on a technical and organisational level so that industry achieves economies of scale and the customer avoids high costs and vendor lock in.
4. We need to cooperate to achieve a bridge between research/development efforts and the industrialisation of the services. Business cases in the domain of ITS need investments to come from different corners – cooperation is key.

We see in Europe most important developments to achieve deployment of Cooperative ITS, Connected and automated driving and Mobility as a Service. The European Commission has taken a very active role to define necessary common specifications and solutions and to remove possible legal roadblocks. Especially in the context of cooperative ITS and automated driving, there are now many pilots and testbeds established co-funded by the European Commission, Member States or local communities, which will provide the necessary support for ultimate deployment and industrialisation of these services.

The ERTICO Partnership actively supports these activities. We strongly believe in the need of coordinated, coherent and cooperative approaches to the deployment of ITS in Europe and on a global level. This dialogue today is therefore so important to create this common understanding and to further strengthen cooperation to improve mobility in all aspects for the good of society.

Regional Overview 2 – Asia-Pacific

Mr Hajime Amano, Secretary-General

Thank you. Twenty-some years ago we started the development and deployment of intelligent transport systems as an area of application of state of the art technologies in those days, such as radio-communication and data processing and electronic control, focussing on primarily road transport challenges.

Over two decades of efforts under public and private cooperation, the initial objectives have been more or less achieved. Now we are facing a new set of challenges, which are not frozen within the transportation domain. Those are, for example, mobile roaming, globalisation of economic activities leading to virtually a single market, natural and man-made disasters, aging population and so on.

Efficient, sustainable and resilient mobility of people and goods has fundamentally important roles for our society to cope with challenges and to enhance our quality of life.

Then we have come to realise that we have to look at associated challenges first, then develop and apply ITS technologies as an integral part of the solutions with their implications in mind.

The topics covered in this high-level policy round table is exactly what the ITS community should look at. This is an important step forward for the transition of ITS World Congress topics to be carried on to Montreal in 2017, Copenhagen in 2018 and Singapore in 2019.

Thank you for this opportunity.

Regional Overview 3 - ITS America

Mr Ken Leonard, representing ITS America

Thank you for the opportunity to speak. Twenty five years ago in the United States we formed a joint program office and also ITS America as the principle trade association to advance intelligent transportation systems in the United States.

We share a common belief that intelligent transportation systems are an absolutely necessary component in meeting the societal needs around transportation of enhanced safety, enhanced mobility, and a fuel and environmentally efficient transportation system.

We are also united in the belief that partnerships are a key component in implementing that. In the United States, we have partnerships with industry, our state and other government partners, but also the international cooperation with our colleagues in Europe and Asia and around the world in advancing these technologies.

The three themes that I think have been constant in intelligent transportation systems for the last 25 years, and certainly the ones we are dealing with today is the nexus of technology and data and people.

I think in listening to all the remarks that were made here today, those themes were hit over and over and over again.

The technologies have changed in 25 years. Now we are talking about connected vehicle deployments, maturing automated vehicle technologies and moving on and creating smart city technologies.

We are looking at new ways to handle the vast volumes of data that are going to be absolutely necessary to realise an intelligent transportation system.

We are recognising we do all this because of the people, and to meet societal needs.

The challenge I think we really face is how do we integrate all these complex issues in a way that we do meet those societal needs at large.

We look forward to continuing in partnership with all of you in this room to advance ITS globally.

Thank you.

Regional Overview – ITS Australia

Mr Brian Negus, President and Chair – 23rd ITS World Congress

Thank you all for your adherence to timeframes. As Minister Chester said at the start, that was really great. It gets us to the stage of finishing pretty much on time.

I would like to briefly summarise some of the key issues so we can leave you with a common theme.

Clearly, congestion, sustainability, climate change, mentioned by some, and safety were some of the keys in terms of the challenges or the issues.

In terms of the initiatives, they range fairly widely, but I think they came down to:

- a national policy framework for ITS was mentioned by a number of high level round table participants;
- the importance of a legal and regulatory framework and reform for automated vehicles;
- big data analytics has been mentioned by everyone, data sharing, the internet of things, and platforms for those;
- mobility as a service came through very strongly – seamless, multimodal transport regardless of mode;
- increased priority for public transport and public transport services;
- digital infrastructure – electric cars as part of the sustainability framework;
- engaging the community came out several times; and
- I liked the last point, by Mr Leonard, about the interface or integration of data, technology and people – very powerful and that really is an overarching theme, to some degree.

We will hear many ideas and see innovation of many ideas during this World Congress, and certainly I also urge everyone to share your ideas and to help us in Australia to implement the best ideas for ITS implementation.

In closing, I want to record my thanks to Minister Chester for coming to chair the High Level Policy Round Table. He explained the difficulties we have in our Federal Parliament so he had to get back there pretty quickly.

Thank you all for participating. It has been really great to hear some of those ideas and innovative issues and challenges you are confronting.

We will make our way now to the official opening, which commences at 4.00 o'clock.

Thank you everyone for your participation.

Attendance at the High Level Policy Roundtable

Melbourne, Monday 10 October 2016

The Roundtable was co-chaired by:

- The Hon Darren Chester MP, Minister for Infrastructure and Transport, Australia
- Mr Brian Negus, President of ITS Australia and Chair of the 23rd ITS World Congress

The following States attended the High Level Policy Round Table:

- Austria – Mr Ingolf Schaedler, representing Mr Jorg Leightfried, Minister for Transport, Innovation and Technology
- Australia – Hon Luke Donnellan MP, Minister for Roads, Road Safety and Ports, Victoria, Australia
- Canada – Councillor Aref Salem, Councillor, City of Montreal
- China – Mr Zongze Wu, President, China ITS Association
- Denmark – Mr Morten Kabell, Mayor of Technical and Environmental Affairs, City of Copenhagen
- France – Mr Hervé Philippe, representing Mr Alain Vidalies, Secretary of State for Transport
- Finland – Ms Paivi Antikainen, representing Ms Anne Bernen, Minister of Transport and Communications
- Germany – Ms Dorothee Bär, Vice Minister, Federal Ministry of Transport and Digital Infrastructure
- Greece – Ms Marina Chrysoveloni, Deputy Minister for Infrastructure, Transport and Networks
- Japan – Mr Hiroshi Tabata, Vice-Minister for Transport, Tourism and International Affairs
- Malaysia – Ms Datuk Rosnah Abdul Rashid Shirlin, Deputy Minister, Ministry of Works
- Netherlands – Mr Thomas De Laat, Head of Division, Minister of Infrastructure and the Environment
- New Zealand – The Hon Simon Bridges, MP, Minister for Transport
- Norway – Mr Terje Moe Gustavsen, General Director, Norwegian Public Roads Adminstration
- Romania – Mr Petru Sorin Buse, Minister for Transport
- Singapore – Mr Chee Meng Ng, Senior Minister of State for Transport
- United Kingdom of Great Britain – Professor Phil Blythe, Chief Scientific Advisor, Department

of Transport

- United States of America -
    - Mr Malcolm Doherty, Director, California Department of Transportation
    - Mr Shailen Bhatt, Director, Colorado Department of Transportation
    - Mr Paul Trombino III, Director, Iowa Department of Transportation
    - Mr Peter Rahn, Director, Maryland Department of Transportation
    - Mr Kirk Steudle, Director, Michigan Department of Transportation
    - Ms Leslie Richards, Director, Pennsylvania Department of Transportation

The following regional organisations attended the High Level Policy Round Table:

- European Commission – Ms Claire Depré, Head of ITS
- ITS America - Mr Ken Leonard
- ITS Asia Pacific - Mr Hajime Amano, Secretary-General
- ITS Europe - Mr Cees De Wijs, Chair and Mr Erol Yanar, General Director, Strategy Development Department
- ITS Taiwan – Dr Y C Chang, President, ITS Taiwan
- Organisation for Economic Cooperation and Development – Professor José Viegas, Secretary-General, International Transport Forum

Note, Dr Chang Woon Lee, President of the Korean Transport Institute, representing the Republic of Korea, was not able to speak at the event and has provided the speech that he would have given.