



**20** Forum  
**10** Highlights

# Transport & innovation

Unleashing the Potential





# Transport & innovation

---

Unleashing the Potential

© OECD/ITF 2010

No reproduction, copy, transmission or translation of this publication may be made without written permission. Applications should be sent to OECD Publishing [rights@oecd.org](mailto:rights@oecd.org) or by fax +33 1 45 24 99 30

This work is published on the responsibility of the Secretary General of the International Transport Forum. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the governments of its Member countries.

Design/Layout: Scheunemann Public Relations Consulting  
[www.scheunemann-pr.de](http://www.scheunemann-pr.de)

Photo credits: Simone M. Neumann - Internet: [www.simonemneumann.de](http://www.simonemneumann.de) - E-Mail: [simonemneumann@aol.com](mailto:simonemneumann@aol.com)  
Marc-Steffen Unger - Internet: [www.ms-unger.de](http://www.ms-unger.de) - E-Mail: [info@ms-unger.de](mailto:info@ms-unger.de)  
Marco Urban - Internet: [www.marco-urban.de](http://www.marco-urban.de) - E-Mail: [mail@marco-urban.de](mailto:mail@marco-urban.de)  
Jana Both, Universum - Internet: [www.universum.com](http://www.universum.com) - E-Mail: [jana.both@universum.com](mailto:jana.both@universum.com)  
Federal Ministry of Transport, Building and Urban Development, Germany  
[www.istockphoto.de](http://www.istockphoto.de)

ISBN: 978-92-821-0288-6 (PDF)

## Introduction

The International Transport Forum: Shaping the Future of Transport .....	4
<b>Jack Short:</b> A Look Back at the 2010 Forum .....	6
<b>Rob Merrifield:</b> Innovative Solutions to Transportation Challenges .....	8
<b>Peter Ramsauer:</b> We Need Innovation for Tomorrow's Mobility .....	10

## Transport and Innovation: Unleashing the Potential

<b>Horst Köhler:</b> "The World Needs Better Mobility" .....	14
<b>Bertrand Piccard:</b> "New Ideas Are Not Enough" .....	16
<b>Henry Li</b> "You Have to Think Out of the Box" .....	20
Key Ministerial Messages from the 2010 Forum .....	22

## Expert Panels

Innovation in Transport: Setting the Scene .....	28
Supply Chains: Green and More Efficient .....	30
What is the Future of Air Transport? .....	32
Getting to Seamless Passenger Travel .....	34
Interconnected and Integrated: Optimising Intelligent Infrastructure .....	36
Public Sector Leadership: New Ideas Need Innovative Public Policy .....	38
The Wireless Revolution and the Transformation of Transport .....	40

## Decision-Makers' Day

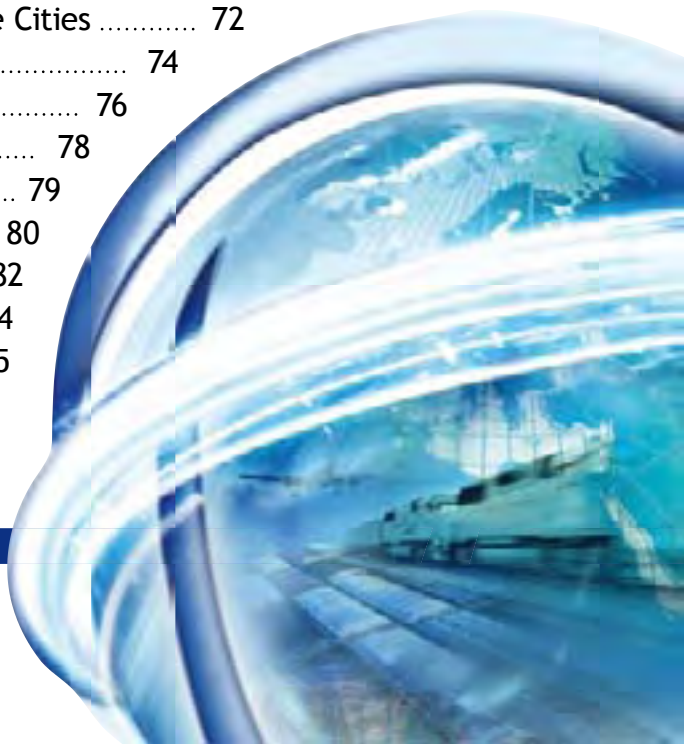
<b>Ian Goldin: "Genius Unleashed"</b> .....	44
The Global Transport System of the Future .....	46
<b>Siim Kallas: "End the Patchwork!"</b> .....	48
<b>Amar Bhidé: "Venturesome Consumption"</b> .....	50
Meeting the Challenges: Pathways to Innovation .....	52
Sustainable Transport: Is the Future Electric? .....	54
Disseminating Innovation: Meeting the Demands of a Changing World .....	56
Innovators' Corner .....	58
Global Fuel Economy Initiative Round Table .....	60

## Implementation Sessions

<b>John Micklethwait: "Doing More with Less"</b> .....	64
<b>Wolfgang Mayrhuber: "We Are on the Way"</b> .....	66
Getting Down to Business:	
Partnerships for a More Innovative Transport System .....	68

## A Focal Point of Exchange

Mayors' Round Table:	
Intelligent Strategies for Mobility in Large Cities .....	72
Awards 2010 .....	74
Children's University .....	76
Forum Exhibition .....	78
Field Visits and Cultural Programme .....	79
Alphabetic List of Speakers .....	80
Forum 2011: Transport & Society .....	82
Recent Publications .....	84
List of Exhibitors .....	85





# The International Transport Forum

## Shaping the Future of Transport

// The International Transport Forum is a strategic think tank for the transport sector, and the leading global platform and meeting place for leaders from transport, logistics and mobility. Here, transport Ministers from over 52 countries discuss strategic policy challenges with key figures from industry, research and civil society.

Member countries of the International Transport Forum include most member countries of the Organisation for Economic Co-operation and Development (OECD), as well as many countries in Central and Eastern Europe and India. In 2009 and 2010, China also actively participated.

### A global response

The goal of the International Transport Forum is to shape the global transport policy agenda, and ensure that it contributes to economic growth, environmental protection, social inclusion and the preservation of human life and well-being.

The challenges to transport are numerous: climate change, infrastructure investment and pricing, economic fluctuations and congestion, accessible mobility, safety and security, among others. The issues are global in scope, and the responses must be as well. To this end, close collaboration

4



across borders and among all stakeholders is required.

The International Transport Forum provides the platform to take forward the global dialogue on how to shape our future mobility. The engagement and involvement of a broad range of actors from the world of transport and beyond make the International Transport Forum truly unique. The Forum's Joint Transport Research Centre contributes evidence-based input for the debate, as well as supporting transport policy making in Member countries through collaborative research programmes.

## Global in scope

The International Transport Forum was established in 2006 as an intergovernmental organisation by transforming the European Conference of Ministers of Transport (ECMT, in place since 1953) from a European body to a global institution, moving from a closed meeting of Ministers and high-level civil servants to one that is open to a wider audience of transport stakeholders. The ITF tackles all modes of transport, considering mobility as an integrated whole.

The creation of the International Transport Forum reflects the desire to foster a

constructive, global dialogue on the future of transport among all societal stakeholders, with the ultimate aim to better address strategic issues of mobility in a relevant and forward-looking fashion.

## The annual event

Each year in the last week of May, the International Transport Forum welcomes decision-makers from government and politics, business and industry, research and civil society to Leipzig, Germany, for three days, to debate a pressing issue in the field of global transport, logistics and mobility. While the meeting of Ministers is at the heart of the Forum, it is integrated into a thematic setting including expert panels and debates, an exhibition, various side events and networking opportunities. The Key Messages emanating from the Forum are intended to act as important signals to policy makers, the transport sector and society at large.

Every year, a different member country presides over the International Transport Forum. Following Canada, which held the presidency in 2010, the 2011 Forum will take place in Leipzig from 25-27 May 2011 under the auspices of Spain and will address the theme "Transport and Society". \

Albania  
Armenia  
Australia  
Austria  
Azerbaijan  
Belarus  
Belgium  
Bosnia-Herzegovina  
Bulgaria  
Canada  
Croatia  
Czech Republic  
Denmark  
Estonia  
Finland

France  
FYROM  
Georgia  
Germany  
Greece  
Hungary  
Iceland  
India  
Ireland  
Italy  
Japan  
Korea  
Latvia  
Liechtenstein  
Lithuania

Luxembourg  
Malta  
Mexico  
Moldova  
Montenegro  
Netherlands  
New Zealand  
Norway  
Poland  
Portugal  
Romania  
Russia  
Serbia  
Slovakia  
Slovenia

Spain  
Sweden  
Switzerland  
Turkey  
Ukraine  
United Kingdom  
USA  
  
Morocco (Observer)  
  
China and Brazil are  
invited to participate.



Jack Short, Secretary General of the International Transport Forum (ITF)

# A Look Back at the 2010 Forum

## Jack Short

// Everyone is in favour of innovation. It is a positive concept conjuring up new, improved applications which will be welcomed by all. How then can the International Transport Forum devote three full days to such an uncontroversial topic?

The answer is that what at first sight seems simple is not always so. There is a wealth of issues, not at all straightforward. How does innovation occur? Which innovations can make a real difference? Can governments help innovate? If so, in what way?

This publication presents the highlights of the 2010 International Transport Forum, held in Leipzig in the last week of May. It reflects the variety of events and contributions that were made there and in the preparation, and aims to convey the flavour of the rich and numerous themes that were treated.

## Inspiring innovators

The 2010 Forum provided an opportunity to meet with inspiring innovators, like the Swiss aviator **Bertrand Piccard**, whose aim is to fly around the globe in a solar powered plane, or with **Juwan Yoo**, a 17 year old schoolboy from Korea, who has created a mobile phone application for public transport in Seoul that is used by over half a million people. There were kite-like sails on ships, new types of trucks and innovative rail technologies as well as web-based applications for transport users.

Not least, this year's Forum allowed reflection on the nature of innovation. Harvard's **Amar Bhidé**, for example, drew attention to the nature of innovation as an inclusive consumer driven process. Leading political figures and CEOs shared

their perspectives in keynote addresses.

The exhibition in the conference centre and in downtown Leipzig presented many fascinating innovations to the public, and the Children's University gave an opportunity to local schoolchildren to express their vision of transport's future.

Innovation in transport used to be driven by higher point-to-point speed, argued **Yves Crozet** of the University of Lyon, but in future it may well be transport reliability. Traditional actors argued how innovation was central to what they were doing. Others claimed that innovation resides more in small companies or is emerging from parts of the world where it might seem less expected. **John Micklethwait**, the Editor-in-Chief of The Economist, argued forcefully that innovation is not the preserve of the rich countries. India and China, in his view, will produce many innovations in services and products and will force the West to relook at its own models.

Much innovation occurs naturally through market processes. But these do not necessarily lead to innovations that meet policy aims, like improving safety or reducing environmental harm. Here, it seems that the pace and the nature of progress need to be steered and directed. Many potential innovations - new fuels, new engines, and new materials - carry a cost premium that, at the least, requires a price for carbon to assist in implementation.

Thus, the 2010 Forum saw much discussion on the role for government, and many ideas are presented in these pages as well as in the conclusions for Ministers. Among the ways governments can help are providing support for research, giving good



example in their own actions, using more flexible tendering procedures and forming partnerships with emerging actors. For Ministers and transport ministries, a key lesson is the need to be more nimble. They will do well in assessing more quickly the potential of new developments and being ready to facilitate their introduction.

## Governments to support innovation

Many innovative policies were mentioned in Leipzig: For instance, the idea of preventing drunk driving by having Alcolocks on cars, or facilitating night deliveries to better use scarce road capacity. The fundamental safety principle whereby the driver is “in control” of his vehicle could be changed to “in command”, as in aviation, thus opening up a range of new technological possibilities for computer-aided driving.

A recurring theme was that transport innovations are subject to organisational and institutional blockages more than technical ones. The sessions on Wireless and Intelligent Infrastructure showcased innovations that are technically ready,

but where implementation is slow and complex. In safety innovations, the technical possibilities are well ahead of liability and insurance provisions. Another example concerns travel data, where new technologies have enormous potential to provide better services, but which are being blocked by vested interests or limited assessments of potential advantage.

I hope this publication evokes some of the spirited exchanges at the Forum and draws readers’ attention to the quality and quantity of valuable material presented. Even more detailed summaries and additional material can be found on the web at [www.internationaltransportforum.org/Pub/forumpapers.html](http://www.internationaltransportforum.org/Pub/forumpapers.html). Sincere thanks go to the Canadian presidency of the 2010 Forum, represented by Minister of State for Transport, the Hon. **Rob Merrifield**. We are grateful for the generous support of Germany’s Federal Minister for Transport, **Peter Ramsauer**. The Lord Mayor of Leipzig, **Burkhard Jung**, deserves warm thanks for his involvement. Finally, sincere thanks go to the member countries of the International Transport Forum for their continuing support and active participation. \\\





The Honorable Rob Merrifield, Minister of State for Transport, Canada

# Innovative Solutions to Transportation Challenges

Rob Merrifield

// As Canada's Minister of State (Transport), I had the honour of presiding over the 2010 International Transport Forum with the theme of "Transport and Innovation: Unleashing the Potential."

The Forum brought together transport Ministers and sector experts from all transportation modes and from many countries. It provided a unique opportunity to exchange ideas and best practices to advance transportation policy and promote a global transportation network that is safe and secure, efficient and clean.

When Canadians proposed the innovation theme for 2010, we wanted to approach it from a broad, strategic perspective. The diverse programme in Leipzig lived up to our expectations by presenting key transportation topics through an innovation lens.

For example, participants discussed issues such as the impact of innovation on air transportation, greener and more efficient supply chains, intelligent transportation systems and the potential of wireless technologies. At plenary sessions, transport Ministers and expert panellists considered the transportation system of the future and discussed how governments, researchers and the private sector can collaborate to achieve it.

Throughout the sessions, several trends emerged. Among these were issues relating to energy and the environment, urbanisation, logistics and supply chains, security, mobility and public-sector leadership.

## Innovation is about applying advances in knowledge

The many productive discussions focused on understanding the various factors that drive innovation and ways to overcome barriers to it. Comprising much more than simply new technologies, innovation is about applying advances in knowledge. Innovation increases productivity. It also stimulates economic growth and can help advance sustainability without compromising efficiency or competitiveness.

As we move forward, solutions to many transportation challenges will increasingly depend on innovation. Investing in the right technologies, research and business practices will support global trade and competitiveness. The use of innovative products, services and processes can help make businesses more efficient and industries more resilient, even in tough economic times.

## Efficiency, safety, security

Innovation can also play a key role in achieving goals relating to sustainability, social well-being and quality of life. For example, efforts are increasingly focused on improving efficiency, safety and security, as well as on reducing environmental impacts.

Typically, innovation results from the interaction of industry, stakeholders, researchers and users. Partnerships and collaboration are therefore major drivers for innovation. They make it possible for

businesses to keep up to date with current developments, expand their market reach, and access a broad base of ideas and technologies.

## Better outcome for all through collaboration

Through collaboration, the unique capabilities of various partners can be brought together to deliver better outcomes for all. Global networks that link businesses, universities, public research organisations and governments are gaining ground because they help us respond to change, address challenges and capitalise on opportunities.

Importantly, the 2010 Forum did more than provide opportunities to talk about change. The Forum exhibition at the Congress Center Leipzig showcased new technologies, best practices and ongoing research from many countries. In the city centre, there were also interactive demonstrations and displays of transport innovations that were open to delegates and the public alike. These dynamic events allowed visitors to envision future developments in a tangible way and were met with an enthusiastic reception.

The 2010 International Transport Forum provided a significant venue for a diverse group of delegates from around the world to focus on the role of innovation in critical areas of transport, and I was very proud that Canada was invited to preside over such a prestigious gathering. The sessions were thought-provoking and provided many valuable insights, and I would like to thank all of the participants for their contributions. I would also like to express my sincere thanks to our German hosts and to the International Transport Forum Secretariat for making this event so successful.

We must now assess the views and trends expressed at the Forum to determine the way forward. I am confident that we will

all benefit from this exchange of ideas and from our collaborative efforts to put them into practice. Strong and sustained policy commitment will be essential to see real results. Improved coordination across modes, between countries and regions, and among different levels of government and international organisations will also be key.

It is clear that innovation is indispensable to the transport sector as it seeks to improve performance and better meet the needs of users. What is more, innovation is crucial if the sector is to continue to promote quality of life and social cohesion, in addition to its historical and ongoing role of facilitating trade.

It is therefore fitting that Transport and Society will be the theme of next year's Forum. Many of the ideas expressed in 2010 will have a direct bearing on this topic, and I look forward to further stimulating discussions in 2011. I would like to congratulate Spain as next year's president, as well as Switzerland and Mexico as co-chairs for the 2011 task force that will plan the event. I wish them, and all participants, every success. //





Peter Ramsauer, Federal Minister of Transport, Building and Urban Development, Germany

10

# We Need Innovation for Tomorrow's Mobility

Peter Ramsauer

// The International Transport Forum has been held in Leipzig annually since 2008, and this year, once again, it was one of the most important global platforms for mobility and transport. Over 900 delegates and fellow transport Ministers from around the world were brought together to focus on the theme of innovation. There were many fruitful bilateral and multilateral discussions with my counterparts. We all agreed that innovation - in the field of mobility and transport - emanates primarily from the spirit of development and the ingenuity of engineers and scientists. First and foremost though, it requires the boldness and creative will of entrepreneurs who are willing and able to foster and implement an idea or a development. Only then does it really become an innovation. What the political sector must do, is identify innovative areas that are relevant to society and the economy and ensure their market maturity and practicality by way of judicious research and development policies and by supporting pilot projects.

The ability to innovate is crucial in our globalised world. The global sharing of knowledge and experience and the competition for the best products and services has increased immensely. In this world, those with the greatest chances of success are those who champion the greatest number of top-quality developments and get them onto the market. Hence, the vigour of a national economy can be measured in particular by its ability to innovate.

By the same token, many political, economic and societal challenges can only be

addressed internationally - climate change for instance. They demand international exchanges and close cooperation.

## Policy-makers play a dual role in innovation

Policy-makers play a dual role in the innovation process. At the national level, they must improve the basic environment for innovation for the benefit of their own economy. At the international level, they must do their utmost to collaborate in identifying global challenges and addressing them with great resolve. This requires sharing experience and knowledge across borders. The International Transport Forum in Leipzig provides the perfect platform to achieve this.

The dual policy challenge mentioned above applies especially to mobility issues: Germany plays a leading role in areas such as car manufacturing, logistics or transportation, so it is important to secure and expand this position through visionary innovation. Internationally, we are faced with the issues raised by climate change, which can only be addressed collectively. After all, transport is responsible for about 20 % of global CO<sub>2</sub> emissions, according to the International Energy Agency (IEA).

An innovation-friendly policy framework has to meet a number of conditions. It has to support research and development, especially in areas where important answers to key questions are expected.

Applied economic policies always constitute a significant share of mobility policy.





This is why promoting innovation from research to marketability is so important to the German government. Electric mobility is a key segment with immense international relevance and we, from the federal government, are supporting it with much dedication. The growing public awareness of this subject is facilitating our task. Innovations always rely on acceptance and a spirit of enterprise. Electric mobility combines environmental sensitivity with achieving and expanding technological leadership in the automotive sector. And it contributes to reducing our dependence on finite fossil fuels. In other words, this new technology will help keep mobility affordable in the long term.

## One million electric cars by 2020

The German government is in a good position. We consider battery and fuel cell technology as complementary aspects of electric mobility. We do not have to choose, since both approaches are promising. Like our competitors in Asia and the USA, we support open technological development. We have a successful ongoing national innovation programme for hydrogen and fuel cell technology. Using 500 million euros from our Stimulus Package II, we were able to launch a series of programmes and measures involving battery technology.

But this innovation, too, relies on all parties weighing in. The growing involvement of our domestic automobile industry is crucial to ensure that the “car of the future” comes from Germany. Car manufacturers need to create compelling concepts and turn good engineering developments into marketable products. This means that our goal of at least 1 million electric cars by 2020 is perfectly attainable and realistic.

The field of transportation has many areas for innovation. Let us consider logistics, for example, with its considerable challenges in transportation, storage and handling of goods. Noise is another issue that is calling for innovation, and the federal government is also actively involved in making its contribution. In the interest of our citizens, we support the use of silent asphalt for roads and low-noise brake systems for rail vehicles. And we are examining the possibility of an increased use of photovoltaics in noise barriers.

I predict that the International Transport Forum 2011 will again provide valuable ideas and concepts in the interest of our mobility and general welfare. I will continue to believe in the joint work of the political, scientific and industrial sectors - and in the spirit of freedom which also means freedom of movement. //





# Transport and Innovation

## Unleashing the Potential





Horst Köhler, then  
Federal President,  
Germany

# “The World Needs Better Mobility”

Highlights of the Keynote by **Horst Köhler**

// A few weeks ago half the world was looking spellbound towards Iceland. Everyone was talking about the ash cloud from the volcano. It couldn't be seen or smelt in Europe, but its effects could be felt almost everywhere because it paralysed air traffic. Our highly mobile society experienced what happens when just one form of transport fails because nature imposes limits on us.

There are now nearly 7 billion people on the planet. In 2050 that figure will probably have risen to well over 9 billion. Experts reckon that the number of motor vehicles could double between 2002 and 2030. Air transport in Asia and South America will expand rapidly. Already, 13 to 14 % of global greenhouse gas emissions are caused by travel and transport and many estimates put the figure much higher.

## "A global effort"

We cannot and must not simply let the situation continue. The world does not just need more mobility, it needs better mobility. I know, ladies and gentlemen,

that you are aware of that. That is why you are working to make the worldwide travel and transport sector more efficient and more environmentally friendly. Your success is important for everyone. It depends on many factors: astute political decisions, technological progress and the awareness that all those involved have a responsibility. The International Transport Forum can bring all those factors together. That is why it is a key place for dialogue about sustainable mobility and why I was very pleased to accept the invitation extended to me.

In Germany, we are planning to reduce greenhouse gas emissions by 40 % by 2020. The European Union wants to see them reduced by up to 30 %. Other parts of the world will not be able to avoid similar reductions, out of pure self interest. What can the transport sector contribute to the global effort that lies before us?

Anyone who thinks that innovation just means greener cars is being short sighted. Let us think about what in our mobile lifestyle gives us pleasure and what merely





costs us time and stress, what is worth keeping and what is not.

## Cost truth can be achieved

That immediately raises the question of what we value and what it costs. Anyone who moves people or goods around has to pay for fuel, staff, carriers, fees and tolls. But they pay little or nothing for atmospheric pollution, noise pollution, health costs and damage to the environment and the climate. I am convinced that consumers are willing to pay a little more if that helps save the environment. Those things are also very valuable to most people, but all too often, unfortunately, they still have no price. Cost truth would lead to more environmentally friendly solutions. And cost truth can be achieved, or compelled if necessary, through political decisions. I see a role for the European Union in that.

An important first step towards cost truth is being made in air transport. Next year it will be included in the emissions trading system. But shouldn't we be going further than that? Would it not be fair, from the standpoint of the equal treatment of transport modes, to end the energy tax exemption for kerosene and fuel for ships? I know that means difficult international negotiations. But we should get down to it, and there are representatives from all around the globe present here who would like to work together.

Cost truth fosters intelligent logistics. Cost truth helps the spread of innovations. And with cost truth, we would make more of an effort to avoid many journeys altogether. Less transport demand does not necessarily mean that we have to make economic trade-offs. For example, the creation of industrial clusters has a very beneficial effect on the transport balance because they mean shorter



journeys. The rediscovery of regional economic circuits can also help to reduce transport.

It is important to stop thinking in purely sectoral terms, with regard to individual transport modes, economic sectors, countries and even continents. Everything must connect with everything else. We have long grown together on a global scale. Now we need corresponding international mobility strategies and policies. Let us shed our old ways of seeing and thinking, at least let us question them. Together let us look for new ways towards a mobility that is not just a privilege in the here and now but remains a possibility for everyone, including in the future. A mobility for which policy-makers provide a sound framework, and for which entrepreneurs offer new solutions with pride and a feeling of responsibility. A mobility that all users help to shape, a mobility that brings people and nations all over the world closer to each other in an environmentally friendly way. \\\

(Abridged from the manuscript)



Bertrand Piccard,  
Initiator and Chairman of  
Solar Impulse

16

# “New Ideas Are Not Enough”

Bertrand Piccard on unleashing the pioneering spirit

// We have a great number of challenges for our future. Not only the economic crisis but also energy, environment, poverty, trying to get better governance for this planet. How are we going to solve these challenges? Some believe that we need new ideas. That's not enough. New ideas are easy to have. If we all close our eyes for a minute, we will all come up with a lot of new ideas. This is not the issue.

The issue is how to go from idea to reality, from vision to implementation. For this, we must understand that we need not learn how to get new ideas, but how to get rid of the common assumptions, the certainties, the habits that keep us prisoners of old ways to think and old ways to act. This is innovation. This is the pioneering spirit.

For hundreds of years, it was deemed impossible to fly. Until somebody flew. Nobody climbed Mount Everest for centuries, so everybody thought it was impossible. Until somebody climbed it.

Walking on the moon? Only science fiction, until 1969.

## “Certainties are ballast”

A good metaphor to explain the pioneering spirit is ballooning. In a balloon, you are pushed by the wind, fully dependent on its direction and speed. If you want to travel in one direction and the wind blows the other way, you will not go where you want to go.

But as a balloonist, you learn that the atmosphere is made up of several different layers of wind, which all blow in a different direction. If you want to change your trajectory, you only need to change your altitude in order to find a better wind.

That is exactly what we should learn to do in life. We have visions, we have dreams, we have hopes, we have targets. But very often the winds of life won't allow us to go in that direction. So, to innovate, create,







Photo: Francis Demange

be pioneers, we may have to change altitude, psychologically, philosophically or even spiritually, in order to find other influences, solutions or strategies that will reorient our trajectory in a better way.

### “A thousand ways to think”

It's a nice metaphor, quite poetic - but still useless. Because how do we achieve it? To change altitude in a balloon, you drop ballast overboard. Then you will climb to a higher level. Now it starts to be more practical. Because in life, and especially in politics or business, we carry a lot of ballast. It is called certainties. Safety. Common assumptions. Convictions. Exclamation marks. Habits. Paradigms. Dogmas. All of the things that we tend to cling to, because we believe they will reinforce us. It's not true. They do not reinforce us. They just make us heavier.

If we want to invent a better future, we need to identify our ballast and throw it overboard. That means to try thinking the opposite of our convictions. Not because the opposite is a better answer. But because, between our convictions and

the opposite, we now have thousands of different ways to think. In politics, we can take ideas from the left, and ideas from the right in order to make our own political opinion. We can belong to a religion, but still understand the faiths of others and integrate it in our beliefs to broaden our own spiritual life. We can do it for economics, for education, and, of course, for technology.

If we think like this, if we manage to act as a balloonist, the future will no longer be one straight line going in one dimension in one single direction. No, the future will be made of all the possible lines going in every possible direction at every possible altitude, in three dimensions. Pioneering spirit will then consist of exploring all the different altitudes, all the different ways to think and to behave, until we find the level or approach that pushes us in the direction we wish to take.

### “A question that changed my life”

It's not always easy. We need advisors. But they should be advisors with different



18

ideas from ours, otherwise it is a useless exercise. When I flew around the world non-stop in a balloon in 1999, the weatherman in mission control told us to keep an altitude of 8 000 metres at a speed of 60 km/h after we had been in the air for four days. We disobeyed and found a jet stream at 9 000 metres blowing at 120 km/h. An argument started.

And then the weatherman asked me a question that changed my life. “Hey you, great pilot - what do you want? You want to go fast in the wrong direction, or slowly in the right direction?” At 120 km/h our balloon would have soon hit the front of a low-pressure system, which would have driven us completely off our course around the world and sent us straight to the North Pole.

It is important to have good weathermen, not just for ballooning, also in governance. The world is going very fast right now. We have mobility, we have money, we have comfort. But for how long? We burn

1 million tonnes of oil every hour. Our way of living is pushing us into a wrong direction very, very fast.

## “Disconnect the auto-pilot”

My partner and I succeeded in flying around the world in a balloon only because we accepted to slow down. It was difficult. At one point we feared that we would ditch in the Pacific. But fear is not something bad. It obliges you to disconnect the autopilot in your head and to have more awareness, to use the resources and potential you have within yourself. There is no more business as usual. It’s the moment where you realise something has to change.

And we changed everything. We changed the flight plan; we threw everything overboard to gain altitude. In the end, we succeeded: 20 days in the air, 45 000 km covered. The longest flight ever in the history of aviation. But it was tight. We took off with 3.7 tonnes of liquid propane, we landed with 40 kilos. It was the last moment to land. If we hadn’t found a 230 km/h jet stream over the Atlantic, we’d have ditched. On that day, I made a vow: to fly around the world with no fuel at all.

The capsule of my balloon is now in the Smithsonian Air and Space Museum in Washington, along with the capsule of Apollo 11 and the planes of Charles Lindbergh, the Wright brothers and Chuck Yeager. I was very proud. But I also asked myself what might be on display there in the next generation?

## “The future is about impossible things”

I promised myself that there would be a solar-powered airplane on display. The future is about impossible things and paradigm shifts. I believe the most interesting one is overcoming our dependence on fossil energy. If we can fly around the world with no fuel, just

solar power, nobody will be able to argue that it is impossible to do the same for cars, for heating systems and air cons, for computers, for electric lamps and so on.

We now have this airplane, it is called Solar Impulse. The first test flights have been successful. In 2013, we will attempt the flight around the world. The airplane will take off on its own. It will climb to 8 500 metres, the sun will simultaneously load the batteries and run four electric engines. Then the pilot will have just one goal: reach the next sunrise before the batteries are empty. If the airplane is too heavy, if the pilot does not fly steady, if the technology does not deliver, we will not make it through the night and crash before sunrise.

With our world, it's the same thing: if we fail to implement the new technologies we have at hand, we face disaster. Don't believe those who want to wait for more innovation before implementing energy savings or renewable energies. We can

reduce our dependence on fossil fuels by at least 50 % with what we have.

### "A very strong symbol"

This airplane, flying day and night without fuel, is a very strong symbol: a symbol of what innovation and the pioneering spirit can bring to our world. We will not be transporting 200 people in a solar-powered airplane next year, and maybe not even in 20 years. But when Charles Lindbergh flew solo across the Atlantic in 1927, no one would have thought that there would be 200 passengers on regular transatlantic flights 25 years later.

So, in the end it is all very simple. Just ask yourself: "What would I like to do? Which ballast do I have to throw overboard? Which altitude do I need to reach in order to find better winds that will bring me closer to my target, my visions?" Then you will have found the pioneering spirit. \\\

(Abridged from the transcript)







Henry Li, Senior Director of BYD Company Limited and General Manager of the BYD Auto Export Trade Division

20

# “You Have to Think Out of the Box”

## Henry Li on answers to the mobility needs of emerging economies

// It is my great pleasure to be here to share with you some views on the future of transportation, on challenges to and especially innovation in our sector.

A few words about BYD: The company was founded in 1995. It started out with 20 people; today we have more than 150 000 employees. Ten per cent of them are R&D engineers that work in different fields, including telecommunications applications like mobile phones or laptops. Another field is energy, where the focus is on rechargeable batteries, solar batteries and power storage systems, but also on cars, and electric vehicle studies in particular.

### “E-mobility is one of the hottest topics”

E-mobility is one of the hottest topics in transportation. There is a lot of interest, and many have invested in this area. From China's perspective, we are facing greater challenges than OECD countries. In China, as in other emerging economies, higher living standards have greatly increased demand for transportation. Energy shortages are our major concern, not primarily CO<sub>2</sub> emissions. Today, of our total primary energy consumption, about 83 % comes from coal. Of the oil we consume, about 33 % is used in transport, and half of the oil has to be imported.

These are great challenges to China. At the same time, the traffic problems in our megacities are getting worse and worse. Many big cities are facing very serious problems with air pollution. Just one example from China's transportation

reality: every year, the Chinese celebrate 40 days of spring festival. For this, many people travel back home for a family reunion, especially people who have moved from the inland to China's coast areas in search of jobs.

So statistically, in 2009, during the peak season, about 192 million Chinese travelled by train, and more than 2 billion people travelled by coach on the road. Despite these figures, you could still see pictures of people queuing or fighting for tickets to make it back home. So there is a huge demand for transportation.



This is the reality in China. It is totally different from that of developed countries, from most OECD countries. In Beijing, one of the biggest cities in the world, there are already more than 4 million registered vehicles on the road today. In the peak hours in the morning, the average speed of traffic in Beijing is roughly 24.3 kilometres per hour. In the afternoon, it is 30 kilometres per hour.

And it's getting worse. The car park will continue to grow fast. In 2009, car sales in China were number one in the global market, with more than 13.6 million cars sold. And we still forecast a strong growth in 2010 and onwards. By 2020, we estimate a total car park of around 290 million vehicles on China's roads. That is roughly four times today's number.

So we can foresee a terrible situation. If we carry on with business as usual, where do we get the oil to fuel all these cars? And how can we address the traffic problems and air pollution problems in cities?

### “We have a green dream”

Fortunately, there is some movement. A big project in China is the extension of the rail network by 40 000 kilometres to a total of 120 000 kilometres by 2020, including 16 000 kilometres of high-speed rail links. Moreover, 28 Chinese cities are expanding their urban railway networks. This will lower the pressure on the transport system, and because these systems are electrified, we can dramatically reduce pollution. Finally, the Chinese government has made a strategic decision to promote electric mobility, including electric passenger cars, electric buses and so on.

A decision not directly linked to transportation, but essential if we talk about e-mobility, is the promotion of clean and renewable electricity production. Even today, electricity from coal is already cleaner than combustion engines, but that's not enough.

For mobility, we have a green dream for the year 2020. We are assuming that by 2020, the cost of oil will be above USD 120 per barrel and that battery charging stations will be in place. There will be a battery cost reduction of more than 30 % compared to today.

All this will boost the electrification of transportation. Hybrid cars will have become the basic technology in passenger cars. From 2020 on, the electric vehicle will take over a major role in passenger car transportation; it could dominate the market from some point between 2020 and 2030.

This is a vision we have as a company, and a lot of people are doing research to make it come true. Because it's a big system, we work on other areas than traditional vehicle construction, from the generation of electricity to its transmission, storage, and distribution via smart grid to the end users, electric vehicles. You have to think out of the box for transportation.

We believe that for future generations, more and more green energy will be available to power their daily lives, including their mobility needs. \\\

(Abridged from the transcript)





# Transport and Innovation: Unleashing the Potential

## Key Ministerial Messages from the 2010 Forum

These Key Messages are supported by a Secretariat Background Paper and by analytical work on transport and innovation carried out for the 2010 International Transport Forum, which are available at [www.internationaltransportforum.org/2010](http://www.internationaltransportforum.org/2010).

// Transport Ministers met in May at the 2010 International Transport Forum with leaders from industry, civil society and research, to discuss ways of strengthening innovation efforts to further improve the transport sector's performance. Innovation in policies, processes and technologies is key to accelerating recovery from the economic crisis and to putting transport on a path of greater productivity and sustainability.

transport will remain fundamental to independent living, to trade and to social cohesion, as well as a positive force for integration and economic development. The vision for transport is that the sector will fully realise its potential to be safe, clean, interconnected, secure and accessible, and provide for the smooth flow of passengers and freight.

To realise this vision, transport must now embark on an ambitious and continuous process of transition. Several parallel and co-ordinated transition pathways must be established, encompassing policy action, research road maps, industry initiatives and business investments.

### A vision for transport

Transport is an essential facilitator of economic growth and social interaction. Bolstered by innovation across the sector,





## Getting to the transport system of the future

Meeting these ambitious goals requires bold, innovative action now. Priorities include:

- Improving logistics and intermodality within and across borders through new, integrated approaches, employing interoperable technologies that will enable increased electronic exchange of information.
- Better managing congestion, including new mechanisms that lead towards more efficient use of network capacity, ensuring strong linkages between land use and transport planning, and applying innovative traveller information and traffic management systems supported by mobile communications and other technologies. Air traffic management can be significantly improved, for example by introducing new systems to allow more aircraft to fly more closely together on more direct routes, reducing delays, with benefits for the environment through reductions in carbon emissions, fuel consumption, and noise.
- Preserving open markets and competition in the provision of services, including in the deployment of innovative technologies.
- Reducing transport's impact on the environment and climate change through the promotion and use of integrated policy approaches that include alternative fuels and energy sources, measures that encourage transport behaviour change, more intensive use of public transport for urban and inter-urban travel, and the promotion of fuel-efficient technologies and designs across modes. As a result, transport will emit significantly less greenhouse gas and be far less dependent on fossil fuels, with transport activity increasingly decoupled from the consumption of carbon-based fuels. As one example, in rail, energy recovery systems and advanced efficient drive systems based on hybrid technology show significant carbon mitigation potential.
- Enhancing passenger and freight transport, notably through use of advanced innovative technologies such as intelligent transportation systems (ITS), to increase the performance and service quality of the transport system.
- Improving the accessibility of transport services and networks for all users of the system - a growing priority given the unmet demand for transport in rapidly growing emerging economies, as well as the ageing population in more mature economies.
- Continuing to reduce deaths and injuries - especially on roads - through a



Peter Appel



Magnhild Kleppa



Suat Hayri Aka & Moritz Leuenberger



Jason Clare



Igor Levitin



Kiyomi Tsujimoto

systems approach to the development of safety policies, including improved enforcement of safety measures and increased use of advanced technologies, such as advanced driver assistance systems and co-operative vehicle highway systems, as well as collaboration on the adoption of technologies and practices to combat distracted driving.

- Improving the efficiency and effectiveness of transport security systems through advanced scanning and screening techniques and procedures, and improved information exchange, while ensuring respect for individuals and their privacy.

## Unleashing transport's potential for innovation ...

Both public and private actors must stimulate and encourage innovation. Industry will innovate to compete in the market,

meet regulatory requirements and generate profit. Governments should incentivise and promote innovation through outcome-based policy that drives industry innovation. Ways to improve outcomes include:

- Setting clear policy targets and ensuring strong commitment towards them.
- Improving co-ordination across modes, between countries and regions, and among different levels of government and international organisations.
- Ensuring a legal, regulatory and fiscal framework - harmonised across jurisdictions where needed - that incentivises appropriate investment in innovation and encourages the application of new ideas. Harmonising performance standards will allow for more universal application of innovative technologies and systems (e.g. ITS).



- Integrating new ideas and technology into relevant public-sector processes, including procurement and investment plans.

- Providing for appropriate levels of basic education and research to ensure a workforce that is endowed with the necessary skills and knowledge in the transport sector to generate and adapt to new ideas.

- Investing strategically in research and development of global significance, including in pilot projects aimed at the deployment of innovation and sharing of best practices. Enhanced collaboration within countries and regions, throughout industries and across borders will help to ensure that R&D resources are optimised.

- Building intellectual property regimes that provide incentives for investment in innovation and protect innovators while enabling new ideas to be disseminated. These should incorporate risk management and liability measures that adequately address the risks associated with new innovations.

- Ensuring strong political commitment to innovation in transport, and effective public communication to encourage and sustain public support for innovation.

- Fostering more open innovation systems that facilitate collaboration between public and private actors.

- Creating new partnerships, involving all actors in the transport sector - industry, consumers, stakeholders and researchers - to build support and impetus for innovation.

- Better connecting academic research and industry innovation, which can help accelerate the technological development, commercialisation, and market deployment of innovation in the transport sector.

## ... through partnerships to promote innovation

Enhanced international co-operation and partnerships involving Governments, regional bodies, industry, associations, companies and research institutions will help promote innovation in transport. International transport stakeholder organisations and intergovernmental bodies are invited to contribute to a new dynamic in the sector.

Transport Ministers can help to ensure the ability of the sector to serve the needs of society and the economy by setting a policy and institutional framework in which innovation can flourish, and by leading national, regional and international partners in the development, deployment and diffusion of new technologies, practices, policies and ideas in the sector.

The International Transport Forum should continue to act as a catalyst in this process, encouraging innovation in the sector, highlighting policy options, disseminating examples of good practice and facilitating dialogue with industry and other stakeholders.

The sector can and will improve its performance to better serve the needs of transport system users. Innovation is an essential tool in allowing the sector to meet the needs of society.

Transport and Society will be the theme of the 2011 International Transport Forum. \



The Forum opened with an inspiring keynote by aviation pioneer Bertrand Piccard, highlighting the crucial importance of harnessing the pioneering spirit for real innovation. Experts from around the globe presented their latest research findings and exchanged views on forward-looking practices and technologies.





# Expert Panels

Wednesday 26 May

# Innovation in Transport: Setting the Scene

// Why is innovation now so essential for the future of transport? Which sector has not reached its full potential? Which innovations are key? And how can the benefits of innovation in transport be made available to as many people as possible? These were the issues that set the scene for the 2010 International Transport Forum's opening panel, following the keynote of Swiss aviator and pioneer **Bertrand Piccard**. The panel was moderated by **Nisha Pillai**, international journalist.

Historically, innovation in transport has been about getting from A to B faster, as panel chair **Yves Crozet**, Professor at the University of Lyon 2, reminded the audience. But, he argued, "speed will not play the same role tomorrow as it did yesterday". Average transportation speed is now close to the maximum and will be very difficult to increase. Also, there appear to be little gains from further improving speed while the cost of energy is rising. Therefore, a completely new issue

emerges, as Crozet pointed out: "The new challenge is to unleash the potential to improve the time we spend in the transport system."

In his view, a future focus of innovation will be to reduce the time spent in idle, for instance in congestion. Some innovations in this area will be useful from a collective point of view, though to some extent inconvenient for individuals - electronic speed control or road charging, for instance. Another aspect is to improve the quality of time spent waiting at security checks or for connections, for example by providing e-mail access.

## Transport in an urban world

Another mega-trend that is setting the scene for innovation needs in transport is urbanisation. By 2030, around 60 % of the world population will be city dwellers. This process will need adjustment and planning, as urban areas increasingly need







to manage the demand profile. The key to this are Intelligent Transport Systems (ITS) that provide great possibilities, for example to monitor networks, provide incentives (namely through charges), provide traveller information and enable use of in-vehicle devices. “We see a number of initiatives applied in an urban environment to affect, alter and manage how people travel”, noted **Scott Stewart**, Managing Director of IBI Group, which specialises in services focused on the physical development of cities. “Key to all of that are Intelligent Transportation Systems.”

These developments call for a re-thinking of governance mechanisms that will improve delivery of adequate transport solutions. Innovation is needed in finding ways to foster co-operative solutions involving both the public and the private sector. The recognition that the private sector can often deliver solutions much faster should be followed by concrete steps to harness the power of the market. Presently, the connections that bring new ideas to life in the real world are often not being made. “There are so many innovations”, noted **Susan Zielinsky**, Managing Director of the SMART programme at the University of Michigan, Ann Arbor, “but really they

are not coming together in a way that it either makes sense for the user or our urbanising world.”

## A government “link-tank”

How can available and often overlapping systems be connected? How can a multi-modal, seamless, door-to-door, IT enhanced transportation system be created? Only within a policy framework that supports putting users first, argued **Susan Zielinsky**. This also requires addressing the role of the public sector in creating these frameworks, and removing barriers to bring the relevant actors together, for instance in formats like the “living lab” concept. Governments should move from regulation to a “link-tank” role, bringing the public and private actors together to generate “public-private innovation”.

**Martin Lohss**, Managing Director of the German start-up SkySails, presented an entrepreneur’s perspective on innovation. His company is developing the seemingly straightforward concept of using kites to harness wind power to help propel ships. The kites bear up to 25 times the power of a traditional sail, explained Lohss, and can reduce energy consumption and CO<sub>2</sub> emissions by an average of 10 to 35 %. Since about 90 % of global transport in volume terms is done by shipping, such efficiency improvements hold great potential to reduce energy use and CO<sub>2</sub> emissions.

Perfecting this high-tech adaption of an age-old technology, however, requires time and commitment. Lohss reminded policy-makers that a considerable part of the innovation process lies in time-consuming trial-and-error iterations to get it right. Thus, it is important for innovators to operate within a clear policy framework that allows for planned, incremental perfection of an innovation and does not limit itself to putting a premium on innovative scoops. \\\

# Supply Chains: Green and More Efficient?

// The session on supply chains focused on innovative approaches to making freight transport more efficient, reducing environmental impacts, and ensuring that environmental performance becomes part of freight business decision-making. Chaired by **Zoltan Kazatsay**, Deputy Director General, Coordination of Transport Activities and Transport Security Matters at the European Commission's Directorate General for Mobility and Transport, the panel examined the potential role of government and political leadership in delivering better outcomes across supply chains and discussed changes in individual behaviour, particularly that of consumers, to reduce environmental impacts.

Panellists emphasised that outsourcing the production process on a global scale has resulted in a dramatic increase in the complexity of supply chains over recent years. At the same time, the transport industry as well as many manufacturing plants have committed themselves to high emission reduction targets.

## Information flow is critical

Many examples of the private sector working towards reducing carbon emissions were presented, and the intent to make environmental protection a business opportunity was emphasised. One example showed that it is possible to reduce transport and logistical costs, while keeping a high-level of service delivery and simultaneously reducing environmental damages.

In this case, the flow of information between the different actors of the transport and supply chain was critical, highlighting the importance of connecting each actor and sharing information through

platforms all actors can access. Using an agreed information platform is part of making every shipment easier to handle, notably from an intermodal perspective.

## Right economic incentives

Several key ideas emerged from the discussions between panellists **Sean Doherty**, Associate Director and Head of Logistics and Transport Industry at the World Economic Forum, **Petra Kiwitt**, Executive Vice President of DHL Solutions & Innovation, **Stewart Oades**, President of the UK Freight Transport Association, **Enno Osinga**, Senior Vice President Cargo at Amsterdam Airport Schiphol and **Declan Supple**, Partner at Accenture in charge of the Global Supply Chain Management portfolio:

- There is a need for an end-to-end process evaluation that includes consideration of procurement through to after sales customer service.
- A total-life-cycle approach for all goods consumed - by transport operators and individual users - must be considered in relation to creating greater efficiencies. For example, improving packaging design, recycling of different material and reuse of some parts (including packaging used for transport purposes) should be considered when looking for efficiencies.
- Raising consumer awareness through labelling and education regarding energy use in the home versus the energy used in the supply chain to deliver the same products.
- Carbon-reporting schemes have to be developed and used consistently across the industry. An example of a voluntary



fuel reporting scheme, whereby the fuel usage is calculated into a carbon emission measurement, was cited as a way for road transport to measure their carbon impact. But credibility rests on consistency.

- Use of modes that are most efficient for freight movements remains a valid concept.
- The political dilemma is to put in place the right economic incentives and regulatory measures that encourage efficient, cost effective transport services for all users. In the environmental debate, the price signal is very important but is not the sole element available to policy-makers. Reducing regulations that make it difficult to either implement or simply test new schemes is essential.

costs that can be singularly attributed to freight transport. The question of allocating infrastructure capacity between freight and passenger transport adds complexity to transport pricing. In some instances this has been addressed through higher prices for specific transport options, for example congestion charges for road use in cities.

The session concluded noting that there is still a long way to go in addressing the key ideas mentioned above. The way forward is to work towards a close collaboration between all levels of government - from urban planning through to transport regulation - and the transport industry actors, which span borders and transport modes. \\\

## Close collaboration

An intervention from the audience challenged the panel in relation to pricing to incorporate carbon emissions, suggesting that pricing should integrate all external costs. While this is recognised as valid, there is an issue of measuring external



# What is the Future of Air Transport?

// As air transport recovers from the global economic crisis, it faces major challenges: It needs to reduce emissions substantially and it needs to make much more efficient use of scarce resources, which include not only oil but also air space and airport capacity. These issues were debated by a panel moderated by **Eric Kroese**, Special Advisor on International Aviation Policy to the Minister of Transport of the Netherlands.

The panellists, among them **Dave Knorr** of the US Federal Aviation Administration, **Bo Redeborn**, Director Cooperative Network Design of EUROCONTROL and **Johannes Reichmuth**, Director of the Institute of Air Transport and Airport Research at the German Aerospace Center, noted that innovative business models have driven a major expansion of the industry. Following two decades that have seen “flags dropping off the tails of national carriers” and strong growth but no profits, projections see global passenger traffic doubling or even quadrupling by 2050, depending on what happens in China and India.

For the size of losses, exit from the market has been limited. This reflects intervention to rescue national carriers and a wave of consolidation with, for example, 19 companies in Europe merging into two alliances, Lufthansa and Airfrance-KLM. The alliances “stand for competition and quality”, as panellist **Matthias von Randow**, Director at German low-cost carrier Air Berlin, noted. But their expansion underscores the importance of antitrust authorities if competition is to continue to be the motor of service innovation.

Opening of the markets saw the rise of low-cost, low-service operators.

The future may see something different - hybrid companies that operate services for all parts of the market. This is already the model emerging for companies like Air Berlin. Asia is seeing a similar pattern. Low cost airlines have arisen even without complete liberalisation and have quickly transformed into hybrids with the addition of long haul operations.

Such changes have a profound effect on airports, as hubs require very different facilities from other airports. Changing airline business models will dictate future airport development, although **Angela Gittens**, Director General of Airports Council International, remarked that “passengers saving money on low-cost air tickets do not necessarily want a low cost environment at the airport.”

## Carbon-neutral growth by 2020?

Aircraft today are 70 % more efficient than 40 years ago. There is a strong incentive for efficiency because fuel has to be carried on-board, trading-off payload and range for fuel. The industry aims at carbon neutral growth by 2020 and 50 % emissions reductions by 2050. The largest gains will come from technological and operational improvements.

Technological innovation was seen as a more effective route to reducing CO<sub>2</sub> emissions than attempting to limit demand - demand is real, and truncating it carries a high economic cost. Emissions trading is viewed by the industry as driving a marginal part of the improvement in the medium term. Aviation's first concern is to see revenues from trading used to fund R&D.

Another key requirement is for regional trading systems to be made compatible, although the researchers joining the debate voiced pessimism. Only a single global trading system would avoid serious distortions of the market. Multiple trading systems would result in some long haul flights paying twice and others diverted on longer routes with higher emissions to avoid paying charges on part of the route.

## Betting on biofuels

The industry sees biofuels as the main plank of decarbonisation in the long term, although “two years ago, no one would have bet a cent on biofuels being used in aviation”, as **Christian Dumas**, Vice President of Environmental Affairs at Airbus, noted. Now, they are expected to account for over half of reductions from around 2050 onwards. Drop-in synthetic biofuels are now authorised for blending with aviation fuels. But biofuels cannot be produced in huge volumes without unacceptable environmental impact, and costs continue to make them uncompetitive.

## “Ditch old habits”

There is a lot of old technology behind air traffic management, and **Bertrand Piccard’s** advice to “ditch old habits” to advance is apposite. The link between air space and ground control is particularly weak, still reliant on analogue voice radio. A revolution is in progress for air traffic management (ATM), driven in the US and Europe by the NextGen and

SESAR programmes. Priorities differ but both aim to improve service, improve safety and improve the efficiency of the way air space and runways are used.

The suite of technologies needed is available now. These include transmitting detailed flight plan revisions to pilots in real time to avoid storms and aircraft location technology so planes can interact and fly closely spaced on very precise routes.

Managing the transition process is more complicated than developing the technologies. Some delay results from ensuring systems are forward and backward compatible, necessary because of the great range of plane generations in the skies. Some lag is due to attitudes that fail to embrace technology, for example the need to move away from a sector-by-sector air space control system. Recruitment and retraining programmes are underway to cope with the transition although in the long term many more planes will be handled per controller, accommodating growth.

Gate-to-gate management will become increasingly important. Three quarters of the delays are on the ground or a result of delays to earlier legs of a plane’s rotation. Getting ground side transport information integrated into system could make a big difference. It is clear that innovation in air traffic management will be able to successfully cope with the massive increase in demand for air travel. Managing delays on the ground, in airports, is a tougher challenge, and financial sustainability is the toughest challenge of all for the sector. \



Eric Kroese



Christian Dumas



Matthias  
von Randow



Angela Gittens



Dave Knorr & Bo Redeborn



Johannes Reichmuth

# Getting to Seamless Passenger Travel

// Seamless passenger travel in urban areas has largely been the domain of the automobile for the past 50 years, but this model is reaching its limits in many urban areas. Can seamless, multi-mode passenger mobility services provide a more compelling model than the status quo? In this session, chaired by **Yves Crozet** of the University of Lyon, discussants representing government agencies, transport operators and key private sector network and information service providers debated that question.

Present on the panel were **Paul Brubaker**, Senior Director for Internet Business Solutions, Cisco Systems; **Rita Daguiard**, Research Management Director with the US Federal Transit Administration; **Florence Diss**, Manager for Strategic Partner Development at Google France; **Pat Jacobsen**, Corporate Director at New Flyer and former CEO of Translink Canada; **Chang Kyun Kim**, Director, Seoul City Transport Operations and Information Center; and **Dominique Laousse**, Director of Prospective and Innovative Design, RATP, Paris.

The technologies for real-time multi-mode travel planning, parking reservation, toll and fare payment and multi-mode navigation exist today.

The rise of the “internet of things” is well underway and will include inter-communicating cars, parking spaces, buses, tramways, metros, streets, shared bicycles or other vehicles and service

providers. Cities such as Seoul and Paris are already deploying these technologies to provide travellers with ubiquitous information about travel options. These same systems can be used to manage traffic on both road and public transport networks.

## The missing link

One key missing link is useable and transparent information on public transport routes, schedules, and especially, fares. Many travellers still do not have access to the internet or cell phones. Others face real cognitive difficulties in assimilating map and trip guidance information. Others still have physical disabilities which make it difficult for them to use multiple travel modes. Innovation must ensure that these impediments do not render travel information or options inaccessible.

The greatest barrier to the development of seamless passenger services is the slow pace of innovation in regulatory structures and transport operators. Greater acceptance of new concepts and adapting regulation to rapidly changing business models are necessary and political leadership and buy-in from key operators is essential. Combining authority for all transport

modes at the regional level can help to keep management structures flexible. In Vancouver, for instance, non-car travel increased from 12 % to 35 % in nine years of operation of a combined authority.





Getting to “seamless” regulatory oversight and management will require new skills that are currently not taught to future regulators and managers - there is a real need for new forms of training in this respect.

## New technologies – in search of new partnerships

New mobility services will likely require new revenue models. Integrating multiple service providers can broaden the revenue base. Costs can be cut by operating open, shared networks. Revenue allocation arrangements amongst all actors are a key issue, as many may be reluctant to reduce their current take, even if new mobility services create a growing market.

Partnerships among transport operators and network operators are essential. Defining responsibilities for service performance, investment responsibilities and potential liability issues removes uncertainties and encourages participation. As managing multiple

partners can be challenging, clear rules are necessary. Partnerships can go beyond the level of public and private service providers, extending all the way to national authorities in the establishment of a supportive regulatory framework as in the case of the Liveable Communities programme of the US Department of Transport.

Yet seamless inter-modal mobility services cannot be deployed everywhere, they require relatively dense urban areas for commercial viability. In the long-term, land use planning can elevate densities in low-density urban environments and allow for broader uptake of seamless mobility services. In low density areas and inter-urban transport, care needs to be given to the interface between seamless multimodal services and other transport networks. Travellers’ needs, concerns and abilities must be at the heart of the new seamless mobility services, and information must be delivered to travellers in a form they can use, when and where they can use them. \\\



Pat Jacobsen



Florence Diss & Yves Crozet



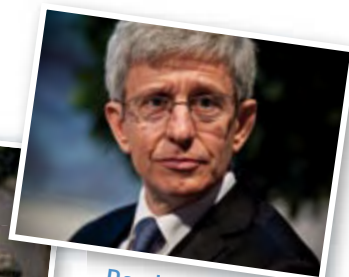
Chang Kyun Kim



Paul Brubaker



Rita Daquillard



Dominique Laousse

# Interconnected and Integrated: Optimising Intelligent Infrastructure

36

// Can the use of advanced telecommunications technologies to interconnect transport systems and users deliver significant improvements in efficiency? The panel on intelligent infrastructure, chaired by **Peter Sweatman**, Director of the Transportation Research Institute at the University of Michigan, reviewed the potential of numerous aspects such as infrastructure-to-vehicle communications, satellite technology and automated highways and guidance systems. The session also considered possible obstacles to the introduction of more intelligent transport systems, such as lack of interoperability between different technologies and regions.

The discussants were **John Augustine**, Managing Director of Intelligent Transportation Systems in Joint Program Office of the US Research and Innovative Technology Administration; **Gabriel Colceag**, Vice President Urban Rail at Thales Transportation Systems; **Volker Kefer**, Member of the Board of Management for Rail Technology and Services at Deutsche Bahn AG; **Joseph Lam**, President Systems Business for Canada and International Operations at Delcan; **Hermann Meyer**, CEO of ERTICO-ITS Europe; **Pedro Pedreira**, Executive Director at the European GNSS Supervisory Authority; and **Kentaro Sakamoto**, Senior Vice President, ITS Japan.

A number of major policy challenges underline the need for intelligent infrastructure to improve the transportation system: pollution, congestion, road safety, to name but



a few. Congestion causes nearly 3 billion gallons of wasted fuel in the United States alone. Around the globe, more than 1.2 million people die in road accidents every year. Yet better information can help users to avoid congestion and travel faster, and improve reliability and efficiency. Vehicle-to-vehicle applications offer potential to reduce road accidents. Lack of funding to improve the current physical infrastructure puts a premium on intelligent solutions that can raise the potential of existing transportation systems.

## Unintended consequences

The potential of intelligent transport infrastructure depends on the capability to bring maximum benefits to the user. Many users require seamless and reliable transport from origin to destination, regardless of the mode. Users and freight operators can be assisted with dynamic route guidance to make a multi-modal trip, saving money and time. Information can also be used to help drivers through

co-operative safety systems that help them to avoid accidents by using data from other vehicles in the same area. Hence, a good policy depends on understanding the user.

But transition towards more intelligent infrastructure needs to be managed well. There is a danger in introducing new technology if there is insufficient design and planning. But rushing to implement new solutions has repeatedly led to sub-optimal solutions that are not integrated with other parts of the system. This can result in unnecessary barriers for subsequent, more optimised solutions for the overall transport development. Attention needs to be given to close co-operation, up-front integration and planned optimisation between all actors involved. The mixture of new and old systems needs to be managed carefully, and there can be unintended consequences, such as new risks through distracted driving. Research on new areas such as human behaviour is therefore critical to successful ITS implementation.

## Compatible systems – and compatible data

Future innovations in intelligent infrastructure will come less from technology and more from the way

information is transformed and distributed. The technology for interoperability and seamless interconnectivity exists, and a lot of information is already available and the volume of information is likely to increase. The challenge will be in integrating, processing and disseminating this information in a way that benefits the user. So not only the systems need to be interoperable, but also the information will have to be made compatible through standards or by creating additional layers to interconnect different data. And in the foreseeable era of information overflow, care needs to be taken in ensuring the reliability of data provided.

Putting information available on an open platform accessible to everyone is likely to help accelerate innovation in intelligent infrastructure. The question of who controls the data and the quality of data remains an open issue. Political leadership is likely needed to ensure the different actors collaborate and foster the widespread deployment of cooperative systems. \\\

37

John Augustine



Gabriel Colceag & Volker Kefer



Joseph Lam



Kentaro Sakamoto



Hermann Meyer & Pedro Pedreira



# Public Sector Leadership: New Ideas Need Innovative Public Policy

// Moderated by former Canadian Deputy Minister of Transport, **Louis Ranger**, the eminent experts on this panel investigated the role of public policy in innovation: **Charlotte Brogren**, CEO of the Swedish Government Agency for Innovation Systems; **Tera Allas**, Chief Economist at the UK Department for Transport; **Michael Robson**, Secretary General of European Rail Infrastructure Managers; **Jean-Eric Paquet**, Acting Director of Trans-European Transport Networks & Smart Transport at the European Commission's Directorate-General for Mobility and Transport; **Dirk Pilat**, Head of the Structural Policy Division at the OECD; and Professor **Sanjivi Sundar**, Distinguished Fellow at The Energy and Resources Institute, New Delhi.

38

There was agreement that governments can stimulate innovation through flexible frameworks and that there is sometimes need to steer innovation towards overarching policy objectives, such as sustainable development. Innovation is crucial in meeting global challenges, including climate change and resource scarcity. It is also needed to stay competitive. Thus, innovation should be a priority. But awareness of the need to innovate is sometimes lacking. Good solutions for many problems exist, so there is no reason for policy makers to wait for the ideal fix. Many problems are pressing and need to be tackled now.

The economic crisis and public pressure to make progress on problems such as climate change are push factors that help overcome complacency and make policy-makers more receptive to change. Fiscal consolidation will force transport providers to work smarter and cheaper, and will push policy makers to be more agile. Traditionally, innovation is seen as being generated by entrepreneurs, with the market as litmus test. Yet there is a growing perception that innovation needs steering to address concerns like sustainable development. This is particularly felt in the transport sector, which is characterised by multiple market failures and strong public involvement.

## A vision to guide innovation

Visions on what the future transport system could or should look like help guide innovation. Some examples are the 2020 Vision of the European Commission and the preparatory work for the 2010



International Transport Forum. While necessity often provides the impetus to change, visions help determine the direction.

Disappointment with public sector performance in innovation is widespread. Public involvement with the sector is perceived to often stifle innovation. Yet this negative view should not lead to government “getting out of the way”, but to innovation in public policy itself. Public involvement is not micromanagement, it is about providing a transparent and reliable framework.

Processes, business models, regulations, institutions, and governance affect transport and all are susceptible to improvement. But since innovation is risky, a stimulating environment requires a tolerance for failure which is not always a feature of governance frameworks. Thus, some beneficial changes are never implemented, or at unnecessarily high cost. In Stockholm, for instance, investment and operational costs of congestion charging were driven up by risk aversion regarding public acceptance.

## Transparent, reliable, flexible

To be conducive to innovation, frameworks must be transparent and reliable. They need to be flexible, since innovation is often driven by newcomers. Moreover, a

comprehensive view on the transport sector is needed; fragmented responsibilities hinder effective policy making. Lower level government could benefit from assistance with sharing good practice, as it has little time for institutional learning. And the scale of transport problems transcends national borders, calling for international coordination.

Good policy also requires evidence. The spread of information technology provides an opportunity for data collection that should not be missed. Measuring innovation is hard, but progress is made, for example within the OECD Innovation Strategy. Ex post evaluation is extremely useful, because it stimulates learning and improvement.

Public procurement, test-arenas and pilot projects should be used more widely. More generally, the public sector can help create markets – an increasingly important function. Attaining policy goals in transport requires recognition of the sector as a system of various modes for passenger and freight movement. The supply of all services relies on a combination of public and private initiative. With imperfect markets and policy, relying solely on private initiative for innovation is risky. Public sector involvement may be needed more strongly than elsewhere, even if making innovation happen at the system level is a major policy challenge. \\\



Tera Allas



Louis Ranger



Sanjivi Sundar



Charlotte Brogren & Jean-Eric Paquet



Dirk Pilat



Michael Robson

# The Wireless Revolution and the Transformation of Transport

// Wireless technology is progressively being integrated into vehicles and transport infrastructure. The essence of the wireless revolution is the fitting of transmitter/receiver units to vehicles and widespread coverage of infrastructure to enable two-way communication between a vehicle and its infrastructure or between a number of vehicles. It has the potential to impact on many aspects of transport, but a number of key challenges remain to be addressed for the transport sector to fully benefit from wireless technologies.

Current wireless applications for transport include travel and communication applications through third and fourth generation cell phones, GPS navigation systems, on-board safety equipment and electronic tolling systems. The next generation of technologies now being developed will bring together the advances in automotive engineering and IT on the one hand with the availability of high capacity wireless linking to and from moving vehicles. The new high capacity wireless solutions potentially hold a wide range of societal and commercial benefits, for instance in road safety, traffic and demand management, or pollutant and greenhouse gas emissions reduction. Wireless technologies will also enable automotive manufacturers and the ITS industry to provide a range of new products and services to road users.

40

These issues were addressed in the panel moderated by AASHTO Executive Director **John Horsley**, that included **Wolfgang Höfs**, Head of ICT for Transport at the European Commission's Directorate General for Information Society and Media; **Takayuki Oba**, Director for ITS Policy at Japan's Ministry of Land, Infrastructure, Transport and Tourism; Professor **Eric Sampson** of Newcastle and City Universities, UK; **T. Russell Shields**, Chairman of Ygomi LLC; and **Carlo van de Weijer**, Vice President Business Development at TomTom International.

## Reaping the benefits of innovation

The underpinning technology is there, but full implementation requires removing a number of barriers and adopting new ways



Eric Sampson



Carlo van de Weijer



Wolfgang Höfs & Takayuki Oba



John Horsley & T. Russell Shields



of co-operation between the different stakeholders from the public and private sectors. While a lot of work has been done on wireless applications, too little thought has been given to the administrative, legal and institutional aspects. Also, much of the research and development in this area has been carried out within one of the various trade sectors, with little apparent co-ordination between sectors.

Reaping the benefits of technological advances will require changing how we do things, e.g. by sharing data and infrastructure, or accepting different regulatory models and different attitudes to risk acceptance. For example, private sector telecom and navigation companies collect a huge amount of real time data from their customers which can be used by government agencies for improving traffic information and management services.

There has also been a tendency to look for the perfect solution with zero failure, which has impeded key policy decisions by governments. A much more realistic, and increasingly acceptable, approach is to assess the net societal benefits and to accept some risks. Field operational tests and ex-post evaluations are needed.

## Concerns about liability

Progress has been also hampered by risk and liability concerns with respect to safety-related applications. The lack of a common international approach to human factor issues such as driver distraction, driver overload and driver underload has been another impediment. For instance, technological progress makes it necessary to take a fresh look at the 1968 Vienna Convention. There, Article 8 states that “Every driver shall at all times be able to control his vehicle or animal”. A solution might perhaps lie in drawing an analogy from aviation, where it is accepted that the “driver” is not “in control” but “in command”.



Should the adoption of new technologies be regulated? With regard to road safety, in many countries, further significant reduction in the number of casualties will become more difficult without adopting some of the emerging technologies on a wide scale. At the same time, a minimum penetration rate will be necessary to observe the positive impact of technologies in terms of safety improvement, traffic flow management and efficiency.

The urgent need to reduce greenhouse gas emissions will help encourage the implementation of technologies. It is likely that the European Union, Japan or the United States will require mandatory vehicle-infrastructure wireless link to cars within the next five years. This needs to be anticipated and a collaboration initiative launched now. International cooperation and standardisation will help to generate economies of scale and facilitate deployment. The panel discussions supported involving a major international body such as the ITF/OECD, to encourage more collaboration and integration in this field. \\\



German President Horst Köhler set the scene for the Forum's political day with a keynote focussing on challenges facing the transport sector. Sessions with Ministers, senior civil servants, industry leaders and renowned academics then examined how to translate visions into policies for unleashing the potential of innovation.





# Decision-Makers' Day

Thursday 27 May





Ian Goldin, Director of the James Martin 21<sup>st</sup> Century School and a Professorial Fellow at Balliol College, University of Oxford

44

# “Genius Unleashed”

Ian Goldin on our common future and how to cope with it

// The one thing we know about the future is that we always get it wrong. The best minds with the best databases, the best institutions, public and private, aren't able to see what's coming across the horizon. Why is it that people who devote themselves to studying the future are increasingly unable to think about it? And what will we do about it as we are planning for tomorrow?

We need to ensure that the decisions we take are informed by the big structural trends. Biggest amongst them are the systemic changes which are happening in the world: the fall of the Berlin Wall, the opening up of China, the ending of dictatorships across much of Latin America, Africa and Asia, the Maastricht treaty. There is also the economic transformation which has led to integration, and the technologies that have gone with this: the internet, fiber optics, containerisation.

Together, these form a tidal wave of globalisation. This connectedness, this ability for an action in one place to connect somewhere else, has brought unprecedented prosperity to the world. We are more innovative than ever before because we are leapfrogging by getting ideas that it took generations of people to form in other places. And as more children get educated, as more people come together, this will go further. There is more genius unleashed in the world now than ever before in human history.

## The underbelly of globalisation

This is good news. It gives us the hope that we are able to enjoy the benefits of globalisation and share them wisely.

The underbelly is the systemic risk from economic integration: integration also means interdependence. We also do not price in the environmental and other costs of this integration, and these are growing very rapidly.

Demography used to be amongst the easiest part of the future to understand. We now know it is just as unpredictable as everything else. There are two key drivers, life expectancy and fertility decline. The amazing story on life expectancy is the leap that we've experienced. This is due to technologies as well as ideas - public health ideas like understanding that smoking causes cancer and that wearing seatbelts is safer.

The collapse of fertility is more dramatic. Life expectancy for newborns in Shanghai, for example, is approaching 90, and fertility is well below one. Thinking this through, within 20 years only Africa will be above replacement level. What we need to worry about is who will be paying our pensions and who will be pushing our wheelchairs. The burden of this on the youth will become unacceptable. The whole world will experience this, although some regions before others. One solution for countries is to allow more migrants as both their unskilled and skilled work will be increasingly valued, as will their contributions to taxes.

All this has very significant implications for where we will live, how we will live, and for our transport systems. In Asia alone, there will be over 700 million people over the age of 60 by 2025, with a dramatic impact on the types of transport they will be using (and when). Many of them will have incomes which will allow them to travel and thus drive tourism. Slowly, our concept

of retirement and pensions will become redundant as financial pressures, our health, and our desire to continue to work beyond retirement age transforms society.

Economic growth is likely to remain robust in emerging markets, which will grow three, four, five times the speed of the rich countries. This will lead to major shifts in global power and also, of course, world transport systems.

## Major shifts in global power

Technological change is a major driver of integration and provides new options. In certain areas, such as computing, exponential growth will continue, so that in 20 years' time or so, handheld devices should be about a million times more powerful than now and we will be in an era of ubiquitous extreme computing.

Whether we'll be able to use these technologies depends on our ability as a collective community to come together. We failed to save the Aral Sea; will we be more successful in halting climate change? Will we be able to do enough quickly enough, and will we be able to realise that collective action is what is needed?

Part of what is required is behaviour change. Transport has an absolutely key role to play in this. Major changes will be needed not only in technology, but in legislation, in regulation, in pricing. Cutting emissions is possible. Already technologies exist but a major research effort is required and this needs to be coupled with economic, social and regulatory changes to ensure that environmentally friendly public and private vehicles are rolled out more widely, and much more rapidly.

## The ITF can provide a driving pressure

The International Transport Forum can provide a driving pressure behind this,

ensuring that we accelerate technologies and the necessary regulatory environment which recognises the externalities associated with carbon are the key issue in the short term. We are locked in to 30 or 40 year old technologies. The key question now is how do we move out of them fast enough and ensure that transport is not part of the problem but a key part of the solution. \

(Abridged from the transcript)



# The Global Transport System of the Future

46

// This panel discussion revealed diverse views, although some common trends were highlighted. The transport system of 2030 will at least superficially resemble that of 2010: It will be based on cars, trucks, trains, planes and ships, but these will be much more efficient than today. Robust growth in car ownership may be tempered by congestion and lack of parking space in large cities. Vehicles will interact with infrastructure and with users, and innovative services will allow more seamless mobility in urban areas. Car-sharing will occupy a growing market share in some urban areas, slowing the growth of car travel and possibly reducing urban vehicle stocks. “The challenge will be to get the right kind of car to the right person at the right time”, observed **Katsuaki Watanabe**, Vice Chairman and Representative Director of Toyota Motor Corporation.

The car fleet will still be dominated by internal combustion engine technology, but it will be twice as efficient and with much higher levels of hybridisation. Electric vehicles may play a role in urban niches, but inter-city and freight road transport will still rely on optimised diesel technology. “Can you see a big construction truck that will use an electric engine?”, asked **Andreas Renschler**, Management Board Member at Daimler AG, “It will not happen.” Freight logistics will be optimised due to much more nimble ICT applications, yet infrastructure investment may fall behind in some regions.

Technical innovations will be necessary to achieve some of the vehicle-related efficiency improvements, but these pose less of a problem than developing new administrative arrangements, partnerships,

business processes and funding streams. Delivering seamless urban passenger travel will require reassessment of current regulatory structures, which need to be less mode and jurisdiction-bound to allow for imaginative new mobility services. “Pallets move from origin to destination in optimised logistics chains and yet we still accept that passengers are confined to essentially single mode journeys”, as **Hermann Ude**, CEO of DHL Global Forwarding, pointed out.

## Unleashing mobility entrepreneurship

Today’s mobility landscape provides little room for start-ups, yet these have developed some of the most innovative ideas in other fields. “We are too often under the impression that only government or big business will solve our transportation problems”, noted **Robin Chase**, CEO of Meadow Networks, “we need to put tools in the hands of individuals and unleash the potential for mobility entrepreneurship.” New actors must be given access to a level playing field, while ensuring key policy objectives such as safety. Not least, business processes must be much more open to mode-neutral mobility and common standards for interoperability must not be overlooked. Likewise, revenue allocation arrangements amongst service providers will allow more seamless passenger and freight flows.

Infrastructure investment across all modes must not be neglected; innovative funding arrangements will need to be further developed. Sharing risk and liability with public-private partnerships will play a role, as will road pricing. The public perception that such pricing schemes are just an



additional tax needs to be tackled. Clear and transparent pricing rules that are demonstrably revenue neutral and that tie in with other policy objectives are fundamental to make such schemes work. Environmentally-friendly transport policy shouldn't be negative, it shouldn't be sour - it should be positive", declared **Camiel Eurlings**, Dutch Minister of Transport, Works and Water Management.

## Less prescription, more performance

Governments must ensure their policies do not actively work against achieving cleaner, more seamless transport by 2030. Road and maritime cabotage rules, for instance, encourage empty-running and cause inefficiencies. Poorly aligned fiscal and regulatory instruments create uncertainty in the private sector regarding investments in greener and seamless transport. Also, rules biased against informal transport and small volume transport solutions are a barrier to innovation. "Governments need to set the right framework conditions for mobility", argued **Peter Ramsauer**,

Germany's Federal Minister of Transport, Works and Urban Development, "but in a free society and in a free market, individuals should decide on how to get from A to B." **Moritz Leuenberger**, Swiss State Counsellor for Transport, replied that while "we do not want to see peoples' impulse for mobility suppressed", it was necessary "to help people achieve their aims in a way that benefits society as a whole".

Under-investment in critical infrastructure and maintenance can erode the competitive position of countries. Setting a clear, predictable and coherent transport policy framework will do much to foster private-sector innovation. Less prescriptive and more performance-oriented objective-setting can pave the way for imaginative new services that add value for users and generate revenue for operators and authorities. "We can imagine a perfectly seamless passenger transport system where travellers pay for use but this requires coordination amongst public authorities and service providers", argued **Cyrille du Peloux**, CEO of Veolia Transport. \

47

Andreas Renschler



Katsuaki Watanabe



Peter Ramsauer



Hermann Ude



Cyrille du Peloux & Camiel Eurlings



Robin Chase



Moritz Leuenberger



Siim Kallas,  
Vice President of the  
European Commission

48

# “End the Patchwork!”

## Siim Kallas on the European vision for smart, integrated transport

// With its “Europe 2020” strategy, Europe is laying the foundations for smart, sustainable and inclusive growth. The role of transport in making the economy function, regain strength and respond to new political challenges is explicitly recognised in the strategy’s seven flagship initiatives. The Commission is currently preparing a new European long-term vision for the future of transport and mobility.

My view of the European transport system of tomorrow is one that is highly integrated, efficient, cross-modal, resilient and low-carbon. We need to reduce transport’s dependence on fossil fuels, without negatively affecting the social and economic achievements in European mobility. We want to address infrastructure bottlenecks and tackle remaining barriers to the single market - anachronistic remnants of a time of “splendid national isolation”, so heavily exposed by the borderless volcanic ash cloud.

In air transport, the Single European Sky initiative redesigns the European sky

according to traffic flows rather than national borders. Its technological pillar - the SESAR programme - develops an air traffic management system that replaces an obsolete infrastructure. The ash cloud made it evident: we need the Single European Sky as soon as possible.

## “Incompatible national systems”

The European Rail Traffic Management System (ERTMS) will put an end to the current patchwork of often incompatible national systems. River Information Services (RIS) support inland waterways as a reliable, flexible and easy-to-access transport mode. And the ITS action plan and directive focus, among other things, on real-time traffic information services, multimodal travel information, and better vehicle-infrastructure connections.

The recent closures of European airspace show us that all transport modes should be interlinked, as part of one integrated system. The ash crisis led to more than



100 000 cancelled flights and more than 10 million passengers unable to travel. The current planning and ticketing systems are not really capable of addressing this concern.

I am convinced that the potential for intelligent transport systems can only be fully realised in Europe if we move from a limited and fragmented approach to a coordinated one. In this context, I see the forthcoming ITS directive as a powerful tool to foster innovation and technological development in transport. It will allow the Commission to adopt specifications that ensure interoperability of systems and continuity of services.

Innovation is often the fruit of long-term, complex research and strategic thinking. What matters is that we agree on the ultimate objectives. My portfolio combines transport research with the development of policy and infrastructure. So I look at research, innovation and deployment as one integrated chain. Building on the upcoming Transport White Paper, I plan to present in 2011 a dedicated strategic transport technology plan to define priorities for research, technological development, demonstration and take-up for the coming years.

### **“We are ready to deliver”**

Allow me to put before you a question that has been on my mind even before I took up my responsibilities as Commissioner for transport: Why can I not plan or book my journey through Europe, switching from air to rail or sea, to urban or road transport, in one single go?

Today, I can book a flight and rent a car on one website. Another site links road, rail and urban transport. Very good, but limited to one city or one region. No integrated travel planning, not to speak about ticketing. Yet, in many areas of Europe, inter-modal journeys are every day

a reality. I would like to pose an innovation challenge to industry and stakeholders: Come up with demonstrations of real European multimodal journey planners! Ideally such ‘planners’ will be enhanced by reservation and ticketing facilities, to provide seamless ticketing and travel. I am prepared to host a major demonstration event to showcase and test the results of such a competition for the best and smartest new services.

Innovation is not only about technology. It has also a soft side. Caring for one's passengers, clients, employees and their needs helps in identifying innovative solutions and new business opportunities. Service orientation is a must. Interoperability and shared standards and approaches are essential - but it is necessary that there is freedom to compete, develop and fine tune sector-specific or regional solutions. Let compatibility be built in to sustain innovation. We are ready to deliver our bit at European level. But it is for the private sector to take up the challenge and present innovative solutions. \\\

(Abridged from the transcript)







Amar Bhidé, Thomas Schmidheiny Professor at the Fletcher School of Law and Diplomacy, Tufts University

50

# “Venturesome Consumption”

Amar Bhidé on how governments can make innovation happen

// For thousands of years, wealth was taken by force from others and not created. Overall, global per capita income did not grow. Then, in the 19<sup>th</sup> and 20<sup>th</sup> centuries, the world's GDP per capita skyrocketed. Its unimaginable growth was the result of the development and widespread use of new products, services and technologies - of innovation.

Innovation is often equated with the development of cutting edge technologies by a few brilliant scientists and engineers. In this view, their achievements sustain our well-being. From this elitist perspective innovation is a zero-sum game — for a country to prosper, its researchers must file for more patents and win more Nobel prizes than the others.

This conception of innovation spawns techno-nationalist policies. Governments around the world race to pour money into cutting-edge research. In fact, widespread prosperity requires widespread innovation - a good economy harnesses the creativity of many rather than of a few individuals. Innovation is a massively multi-player game to which we all contribute.

## “A multi-player game”

Inclusive, widespread innovation works for at least two reasons. One is that large and dispersed groups are less prone to group-think. Small clusters have value, but they can limit how problems are conceptualised and the kinds of solutions that are considered. Variety is more likely to provide a broader range of approaches. Second, an inclusive multi-player game is critical because of the many kinds of

know-how that are needed for introducing new products. That is even true for products that originate in laboratory breakthroughs - the microprocessor draws on high-level physics, mid-level circuit design and ground-level heuristics in the production plant.

Furthermore, the development of new technologies is not enough. What I have called the venturesome consumption of users plays a critical role. The use of a new product or service is not a passive act, it requires risk taking and resourcefulness. The accumulated risk-taking by computer buyers is many times the risk capital invested by the producers. Similarly, the total time users put into making computers work for themselves is much larger than the total time that all engineers at Microsoft, Intel and Apple have put in.

## “Unimaginable advances”

This general sketch of the multi-player innovation game applies to the transportation sector as well. Here, the last couple of centuries have seen unimaginable advances. Unpleasant as driving or flying often seems today, not many people would dial the clock back to even 20 years ago.

High-level breakthroughs like the steam engine or the motor car played an important role. But new management methods made an important contribution. Awful accidents forced the railroads in the 1840s to introduce the organisational separation into now standard practice in modern organisations. And venturesome consumers played a vital part, too. The

early cars were unreliable, dangerous, and highly expensive compared to people's incomes. If buyers hadn't been willing to take chances, there might have been no automobile industry.

For governments, nurturing a multi-player game is a challenging balancing act. Broad-based innovation conflicts with centralised direction of the economy. Favouring certain technologies is inconsistent with the idea of allowing everyone to exercise their imagination. You can't have a multi-player innovation game by telling people what to do.

### **"A scientific arms race makes no sense"**

At the same time, technological progress increases the role of government on a variety of fronts. New technologies create the need for rules. The invention of the automobile necessitated driving rules and vehicle inspections. Perceived abuses of power by large railroad networks helped trigger modern anti-trust rules at the start of the 20<sup>th</sup> century. Yet new technologies also generate opportunities for unwarranted government meddling - road construction in many places has become synonymous with waste and corruption.

How do governments strike the right balance between doing too much and too little? Let me suggest a set of broad principles.

First, de-emphasise high-level know-how. As new sources of research emerge, a scientific arms race makes no sense. A good score on the public debt to GDP ratio is likely to yield better results than being the world's leader in R&D to GDP.

Second, pay close attention to users of innovations. New products have little economic value unless they are properly and widely used. Here, government has a

role as a consumer of innovations.

The Internet famously emerged out of Arpanet, a US Department of Defense project. But Arpanet succeeded because it tried to solve a specific problem faced by the US military and did not start out as attempt to create a ubiquitous online network.

Third, governments should focus on what private enterprise cannot do at all. In the early days of the automobile industry, private enterprise did put up petrol pumps without subsidies. But the market could not set traffic rules, or a traffic police. Similarly, to subsidise hydrogen pumps today to put more hydrogen powered cars on the road is not necessary. Government should focus on what only it can do, such as congestion pricing.

Innovative societies are open. They do not defer to the decisions of wise elders. Vigorous competition between interest groups is essential. Without a good, open political process it is hard to imagine public choices that sustain innovation - especially in the transportation sector. \\\

(Abridged from the transcript)



Photo: ByD Auto, Roger Wo (flickr - CC)

# Meeting the Challenges: Pathways to Innovation

// Many governments recognise the need for fundamental changes in how transport is organised and delivered in order to support a more sustainable future. Innovation is thus key. But some ideas never make it beyond the conceptual stage, while others are more fully developed and then not deployed. There are areas where there is no clear demand for change, or willingness among individuals to pay for it - for example, there is no market for safety regulations. Also, the benefits of environmental improvements are experienced by society as a whole, which perhaps reduces individuals' incentives to pay for them. Financing is a major challenge. How can economic resources be brought to bear in fostering innovation, and who should muster them? Where risk factors are higher than those markets are willing to take on, what other options exist?

52

To which extent should government become engaged - and how - in order to optimise the use of scarce public resources?

## Innovation needs partnerships

These were only some of the issues considered by the panel on “Pathways to Innovation”, moderated by international journalist **Melinda Crane**. More than in the past, innovation needs to take place in partnerships between public sector and private enterprise. Transport systems are complex and the complementarities between public and private skills need to be exploited to move forward effectively. “Public-private partnerships today are an absolute necessity, especially in view of the current public deficits”, noted **Yves-Thibault de Silguy**, Chairman of Vinci. **B. K. Chaturvedi**, Member of the Government of India's Planning Commission, gave numerous examples of how India is addressing demands on its transport infrastructure with massive public-private partnership (PPP) programmes for all modes.

## Open up to risk and change

Fiscal austerity will push the use of PPPs by governments, thus providing private funds with investment opportunities allowing better service and productivity in the transport system. “There is an enormous amount of liquidity looking for places to invest”, as **Ron Widdows**, CEO of Neptune Orient Lines, pointed out. He argued that in transport, “enormous leaps in some areas can be stimulated by the appetite for investment”. **Christopher Ward**, Executive Director of the New York and New Jersey Port Authority, reminded listeners that while a lot could be done for innovation on





the micro level, “on a much larger level we will simply not be able to innovate” until other parts of the economy such as the health and defence industries “begin to find ways to deliver their services cheaper as well”.

For public-private partnerships to prove productive, the public sector will need to be more open to risk and to change, with flexible contracts and not too many regulatory and administrative constraints. “It takes two to innovate: An innovator, and also a client”, argued **Yves-Thibault de Silguy**. “Public entities need to develop a culture of taking and managing risks, because it is clear that private companies cannot take 100 % of the risks inherent in innovation.” The key question was how to make PPP contracts more flexible, contended Vinci’s chairman, as these are contracts for 20 or 30 years: “We must *live* such a contract.”

“In many ways, the innovative aspect of bringing in the private sector is that it challenges the way things have always been done”, argued **David Martin**, CEO of Arriva: “The private sector can act as a catalyst to change practices across the whole public

sector.” However, external events can also act as catalysts. The volcanic ash cloud crisis, noted Spain’s former President of the European Parliament **Enrique Barón Crespo**, exposed the lack of a Single European Sky, but also pushed change. During the ash cloud months, UK weather forecasts became the standard of reference throughout Europe.

## Get the players to the table

Governments also maintain a key role in shaping innovation through harmonisation of regulation, facilitation of common standards and promoting interoperability. “There are many ideas how to make cars communicate with each other, but we’ll ultimately have to make sure we’re all talking the same language”, advised **Peter Appel**, Administrator at the US Research and Innovative Technology Administration. “Make sure that the right players are around the table, so that with respect to standards we are all on the same page”, advised Appel and added he was “very optimistic that with this kind of Forum, we can do more of that”. \\\



# Sustainable Transport: Is the Future Electric?

// What will be the future energy mix for transport and what will be the speed of transition? What must be done for electricity to play a significant role in transport? What are the basic infrastructure needs? How will energy use in non-road transport develop? These four questions were at the centre of debate among panellists

**Dominique Bussereau**, Secretary of State for Transport, France; **B.K. Chaturvedi**, Planning Commission, India; **Nathan Guy**, Associate Minister of Transport, New Zealand; **Geraldine Knatz**, Executive Director, The Port of Los Angeles; **Henry Li**, Senior Director at BYD Auto Company, China; **Tetsuro Tomita**, Executive Vice President of East Japan Railway Company; **Oluf Ulseth**, Senior Vice President European Affairs at Statkraft, Norway; and **Mitsuhiko Yamashita**, Executive Vice President R&D at Nissan, Japan. The panel was moderated by **Nik Gowing**, international journalist.

Changing the energy mix takes time given that infrastructure is long-lived and massive investments are involved, the experts agreed. Transitions take 15 to 20 years - longer than usually assumed in political debate. Global reliance on fossil fuels will stay at around 80 % until 2030 or so, yet the energy mix varies strongly across countries. Reliance on nuclear power is likely to increase, but effects will only be felt by 2040-2050. In the longer run, solar energy and carbon capture and storage (CCS) hold promise, but their potential remains uncertain.

While there was agreement that electricity will have a role in transport, opinions diverged on how large its potential is. Some see a broad scope, arguing that electricity is the way forward even if electricity production releases carbon, simply because

electric engines are more efficient than internal combustion engines. This view was challenged on the grounds that the additional electricity produced for transport will come from carbon-intensive fuels until the extra demand is large enough to justify investments in other sources.

## Prices are the key

The potential for electric vehicles (EVs) differs among countries. New Zealand strives for 90 % EVs in 2025. In India, on the other hand, constraints on electricity production prevent widespread use of EVs. And in China, power production will rely on coal for the next 20 years at least. The potential for electric cars in those large economies thus seems limited, at least in as far as they are seen as means to cutting transport emissions.

For electricity to play a significant role in transport, purchase prices will have to come down. This can be achieved, through lower battery costs and through scale effects in production. For EVs to be attractive, quick charging mechanisms are needed, such as overnight charging with standard electrical supply. Not least, prices for traditional fuels need to be high - historically, they have not been at a high enough level to induce a shift towards EVs.

So, although hurdles remain, there are large market segments for which good electric technologies exist already. For example, about a quarter of electric cars in Japan are sold in cities and are driven less than 20 km per day. For this type of use, electric cars are well suited; public procurement and graduated ownership taxes can help diffusion.

Lithium supply and the disposal problem are not perceived as a major issue. Batteries last

about a decade, with a first life in transport and a second life in alternative applications. At the end of battery lifetime, there is ample recycling potential, with recycled lithium not necessarily more costly than newly produced lithium. Lithium reserves are sufficient for the next 50 years, even if the market share of EV follows optimistic projections.

## A boost from transport for the renewable power market

The advantage of electricity as a transport energy is that the basic infrastructure for generation and distribution is in place. Public support for recharging options may be helpful in terms of a supply push, but the main issue is to develop the market for electric cars, i.e. demand pull. Electrification of transport can help spur the development of renewable power markets in general. In the short run, renewables - particularly wind energy - can help decarbonize power production, the challenge is to store it. Electric vehicle batteries can help here. A different problem is local resistance against the development of wind energy.

Regarding the future energy mix in non-road transport, panellists saw a large potential for electrification in maritime and in rail transport. Green power and decarbonisation concerns in ports can drive electricity usage here. As **Geraldine Knatz** pointed out, use of solar power is promising in the Port of Los Angeles, the main issue being not production but

transmission lines. The Los Angeles port has more leverage than regulators to make requests from large users. The port sets standards, for instance on emissions from and power supply for ships, which may cost it some growth but is needed to comply with increasingly strict state requirements regarding environmental performance.

As for fast trains, these are fairly energy-intensive. Speed reduction, regenerative braking or weight optimisation could reduce consumption. The newest generation of Japan's Shinkansen high speed trains are about 50 % lighter than their predecessors, indicating there is technological potential to maintain service levels while cutting energy intensity. India is currently pursuing massive electrification of its rail system. With the scarcity of overall electric power supply, this implies a further constraint on large scale electrification of road transport.

## How is electric power produced?

In sum, there is considerable scope for increasing the use of electricity as an energy source in transport. But whether electricity will replace fossil fuels as the main energy source in road transport is not at all obvious. While electric vehicles are competitive in some market segments, their overall potential is conditional on fossil fuel prices to remain beyond historical peaks. In climate change terms, the appeal of electric power depends strongly on how power is produced. //

55

Geraldine Knatz



Henry Li



B.K. Chaturvedi & Nathan Guy



Mitsuhiko Yamashita



Tetsuro Tomita & Oluf Ulseth



Dominique Bussereau



# Disseminating Innovation: Meeting the Demands of a Changing World

// The key innovation that has changed transport over the last two decades is the way information has become available in real time for transport users. This revolution will continue and lead to profound changes. Information is the key to a globalised, outsourced economy, and the entire supply chain depends on effective management of the information flow. Because information systems often show some of the characteristics of a public good - being of most benefit if access is broad - this is an area of innovation that critically requires partnerships between government and business to harness its full potential.

56

Cooperation between countries and partnerships between government and private actors were at the core of this panel debate, moderated by international

journalist **Nisha Pillai**. **Igor Levitin**, Minister of Transport of the Russian Federation, noted that for dissemination of innovation, the problem is less technical in nature, and more one of process. This was echoed by **Klaus Baur**, Management Board Chairman of Bombardier Transportation Germany, who stressed that innovation is more than purely technical, and that the role of politics and public administrations are of equal importance. **Rafael Gallego**, Vice President of Indra, highlighted that implementation of common technology was not a big bang process but consists of interim, ongoing programmes.

Public-private-partnerships need to be balanced to work. They require authorities to set clear objectives, while allowing the private partner a degree of freedom to achieve them. They also need a careful balance between public interest and private profits. The German government's partnership with Toll Collect to design and operate road charges for trucks on 12 000 kilometres of German highways was mentioned as an example for the clear formulation of objectives required. Here, the government side took on board lessons learnt from originally insufficient terms of agreement; the private sector had to adjust to dealing with a single client, the state, for a contract period of 50 years.

## How to set standards

Public administrations often lack experience in dealing with private-sector partnerships, whereas the private sector tends to send teams of lawyers and accountants to negotiate deals. **Marc Juhel**,



Photo: Porsche

Sector Manager Transport at the World Bank, noted that as governments build the capacity to manage such relationships, they may draw on the work of international bodies such as the World Bank, which have accumulated valuable experience in setting up effective frameworks for cooperation. **Hanns-Karsten Kirchmann**, CEO of Toll Collect, stressed that companies should enter new markets with an open mind and benefit from local experience, rather than pushing through their concept. **Weng Mengyong**, the Chinese Vice Minister of Transport, also emphasised the importance of local knowledge.

Setting standards has two dimensions: It can foster innovation by minimising costs for businesses seeking to exploit a new technology. But, because standards generally take a long time to establish, setting them may delay dissemination of innovative technology. So the process needs to be managed to clear deadlines, and the public authorities must avoid the temptation to sacrifice efficiency for the defence of potential national technological champions. If special interests hijack the process, the result is usually standards that are not conducive to innovation.

Well-crafted regulations can foster a concentration of efforts and greatly accelerate dissemination, as the implementation of a number of fuel economy standards and emissions control regulations for road vehicles has shown. Sometimes, national specificities make it difficult to adopt standards, and in many

areas regulation is not keeping pace with change. When implementation appears costly, market forces may not provide the right incentives to adopt standards, and international agreement with transitional phases may be needed. The aviation sector shows the benefits of an international approach - in contrast to rail, where national regulation predominates.

## Economic incentives

Public bodies play the key role by ensuring compliance to national and international standards, but economic incentives may also play a role. It may be profitable for private actors to adopt certain standards, for instance by gaining access to new markets. Tax incentives and subsidies may thus be part of a comprehensive framework for early adoption of technologies that meet future standards, for example in the case of emissions control.

Another aspect of innovation in a globalised economy is how to create an appropriately skilled workforce that adapts to, and embraces, new technologies, products or processes. **George Dragnich**, Executive Director of the International Labour Organization, emphasised that work force adaptation should not be seen as part of the problem, but part of the solution. Generally, the work force is not resisting globalisation, but wants to take part in the debate. Therefore, workers should be involved from the beginning in shaping regulations. //

57



George Dragnich



Klaus Baur



Rafael Gallego & Marc Juhel



Hanns-Karsten Kirchmann



Igor Levitin



Weng Mengyong

# Innovators' Corner

// This special session provided an opportunity to discuss the potential of some striking transport innovations. Presentations were given from both inventors and researchers. Panellists included **Juwan Yoo**, a 17 year-old Korean who developed the Seoul Bus iPhone application; **Hossam Abdelgawad**, Winner of the 2010 International Transport Forum's Young Researcher of the Year Award; and finalists of the International Transport Forum/International Association for Public Transport (UITP) Award for Outstanding Innovation in Public Transport from Spain, India, and the United Kingdom. The Innovators' Corner was presented by **Gerd-Axel Ahrens**, Professor for Transport and Infrastructure Planning at Dresden University.

58

Young Egyptian **Hossam Abdelgawad** presented his award-winning research on "Managing Large-Scale Multimodal Emergency Evacuations", carried out at the University of Toronto in Canada. He was selected for the 2010 ITF Young Researcher Award from a total of 31 research papers entered. Abdelgawad set out his approach

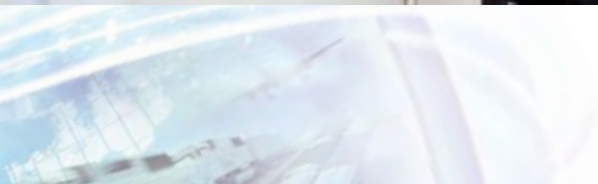
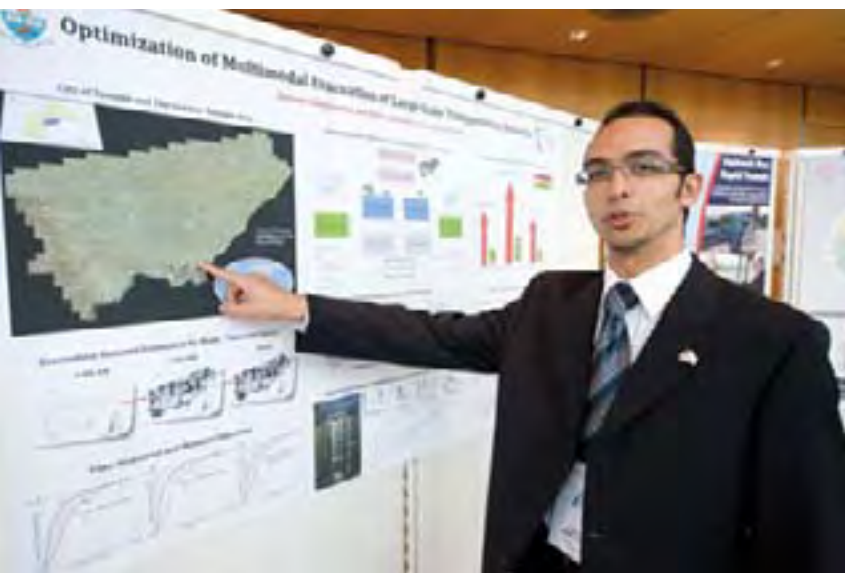
for developing a novel framework to optimise the evacuation of a large city in case of a dramatic event, be it a natural disaster or a terrorist attack. The evacuation model relies on multiple modes, including vehicular traffic, rapid transit and mass transit shuttle buses.

The model was applied to plan for a hypothetical evacuation of the City of Toronto. A first step involved designing a demand estimation model to accurately quantify the evacuation demand by mode (drivers vs. transit users). This reflected demand over time on Day One of the crisis, as well as over space, i.e. location. The output of this demand estimation model was then fed into two optimisation platforms. The complete model shows that there is room for improvement in managing large-scale evacuations, as both waiting and transportation time can be reduced dramatically compared to a no-notice evacuation. The paper also illustrated the various political issues that such research can raise.

## Productive partnerships

All three presentations of the winner and runners-up of the International Transport Forum/International Association for Public Transport (UITP) Award for Outstanding Innovation in Public Transport shared the common theme of illustrating the opportunities available to innovative partnerships to improve public transport services.

The network of interchanges for bus, metro and highways in Madrid, Spain; the Bus Rapid Transit programme in Ahmedabad, India; and Arriva and Kent County Council's Fastrack project in the United Kingdom all involve the extensive participation of the private sector to increase the share of public transport and







operate interchanges. The focus of Kent County's Fastrack project is on the quality, convenience and reliability of the services offered in the framework of a partnership with multinational transportation provider Arriva. Forward-looking agreements have ensured funding from developers to finance some facilities.

## iPhone app battle

The final presentation of the Innovators' Corner was given by **Juwan Yoo** from Seoul, Korea. Aged 17, Juwan has developed the "Seoul Bus" iPhone application, which trawls public transport web sites to provide updates of bus arrival times for all bus stops in Seoul and surrounding provinces. Juwan's vision was to facilitate the movement of public transport users by providing real time information which would allow them to opt for the quickest bus route. The success of the bus application was phenomenal. Within a few months, 88 % of Seoul iPhone users were using the free and easy to use application.

59

contribute to a more sustainable transport system. In this, all three projects excelled. For example, in Ahmedabad, where low income areas were specifically targeted, a 95 % increase in passengers transported was recorded within six months. Fare collection, cleaning of the facilities and parking zones all involve PPP partnerships.

At Ahmedabad's university, which has acted as the main consulting body, the success of the scheme has led to the creation of a Master degree in public transport planning which attracts a lot of interest - a showcase for interaction between research and practical operations. In Madrid, concessions for a 35-year period were granted to

Surprisingly, management of the public bus transport companies were not seduced; they attempted to block the application and demanded its removal from the Apple Store. Following an outcry from the user community, it is now available again. Thus, Juwan's invention illustrates the possibilities of innovation by outsiders as well as some of the institutional barriers and highlighted the sensitive issue of data sharing and ownership - topics extensively discussed in other sessions of the Forum. \\\



Creating the conditions for innovation to meet  
50by50 targets

## Global Fuel Economy Initiative Round Table

// The Global Fuel Economy Initiative (GFEI) organised a session “Creating the Conditions for Innovation to meet GFEI Targets”, chaired by **Lew Fulton**, Transport and Energy Specialist at the International Energy Agency (IEA). The GFEI sets a target of improving the average fuel economy (measured in litre/100km) for the global light-duty vehicle fleet by at least 50 % from projected 2050 levels. This programme has come to be known as “50by50”. The target implies that new light-duty vehicles reach at least a 50 % improvement of fuel economy by 2030.

Formed by the FIA Foundation, the IEA, the International Transport Forum and the United Nations Environment Programme (UNEP), the GFEI met in Leipzig to discuss the measures needed to meet the targets set. The focus of the panel - which included **George Eads**, Charles Rivers Associates International, GFEI Annual Report “Global Fuel Economy 2010”, **K. G. Duleep**, Managing Director at ICF International, **Henry Li**, Senior Director at BYD Auto Company, China, **Steven Plotkin**, Analyst at the Argonne National Laboratory, USA, and **Mitsuhiko Yamashita**, Executive Vice President of Nissan, Japan - was the particular importance of fuel economy standards for the longer term to create stable planning conditions for investment in fuel economy. It also examined how appropriate to non-OECD countries the GFEI targets are.

In presenting the early findings of the GFEI Annual Report, **George Eads** emphasised that technologically, the potential to achieve a 50 % improvement in new vehicles by 2030 compared to 2005 appears to be there, at least for the US and Europe. Nevertheless, it will be quite challenging to reach the GFEI target since - at least in some regions - efficiency gains have been largely used to increase vehicle performance and comfort rather than improve fuel economy.

### The role of eco-driving

Subsequent presentations highlighted the reason for differences in fuel economy across the globe. Most of the difference between the US and other countries are



explained by sales differences, i.e. shares of different market segments and the sizes of cars sold. One key point highlighted throughout the discussions was the need to account for actual on-road fuel economy, not just tested efficiency. How consumers use and drive vehicles must be accounted for. The role of eco-driving in contributing to on-road efficiency gains was emphasised.

The balance between the roles of electric vehicles and internal combustion engine vehicles (ICEs) was also discussed at length. Opinions were split on whether a large shift to electric drive vehicles by 2020 can be expected or not. In this context, the GFEI Round Table cautioned that future reference ICEs will be much more efficient than today's and that achieving marginal fuel economy gains over these with alternative technologies will be much more expensive and technically challenging. By 2030, internal combustion engines will still represent good value for money in fuel economy performance.

### "Attribute creep"

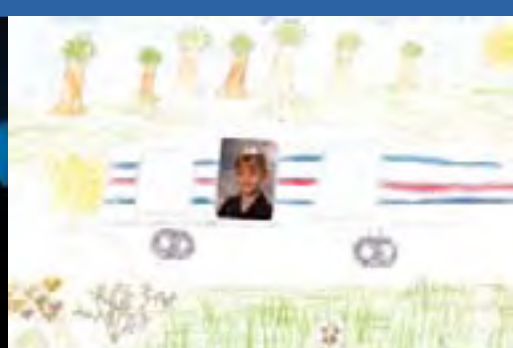
While much can be expected from fuel economy gains due to improvements in

engine technology, the role that non-drivetrain systems and accessories will play in achieving GFEI targets is equally important. This is especially true since ICEs optimised for fuel economy are particularly vulnerable to fuel economy performance degradation due to power draw from accessories and non-drivetrain systems.

Generally, there has been a tendency to use efficiency gains to benefit non-fuel economy related vehicle attributes. Authorities need to be very careful about designing a regulatory and fiscal environment that limits such "attribute creep". Here, long-term, predictable and coherent standards aligned with fiscal instruments can reduce uncertainty for both manufacturers and households about future requirements for fuel economy. This will be important in order to allow manufacturers to make what otherwise might be risky investments against a backdrop of volatile oil prices. \\\







How can good ideas be made to work? The challenge of implementing innovations was at the centre of debate on the final day of the 2010 Forum. Thought-provoking keynotes by John Micklethwait, Editor-in-Chief of The Economist, and Lufthansa CEO Wolfgang Mayrhuber stimulated discussion.



# Implementation Day

Friday 28 May





John Micklethwait,  
Editor-in-Chief,  
The Economist

# “Doing More with Less”

## John Micklethwait on politics, business and the future of transportation

// Reflections on innovation from the perspective of business and of politics were at the heart of John Micklethwait's keynote. The Editor-in-Chief of The Economist argued that the ongoing debate in business circles about the changing nature of innovation and the political debate about the role to be played by the public sector are very much linked - and that transport is one of the areas where they could clash most aggressively.

Big innovations, Micklethwait noted, are usually thought of as breakthrough products, first used by a small elite and then taken up by the masses - the iPhone for instance, or the GPS. Yet the truly big innovations are not new products, but completely new methods and theories on how to produce exciting new things. Japan's car manufacturers overtook the US auto industry 30 years ago not because they had cheap labour, but because Japan had become a hotbed of business innovation that built on an entirely new system of management. Today, lean management and team-based strategies are used across the world.

A revolution of the same magnitude may have started in developing nations such as India and China, suggested Micklethwait. Products from these regions are dramatically cheaper than those of Western competitors. The whole system of how businesses operate is being rethought - from supply chain management to recruitment - and the emerging economies are turning into hotbeds of innovation. Five million people graduate from Chinese universities each

year, three million from universities in India. Huawei, a Chinese Telecoms giant, filed most of the international patents in 2008. Little wonder that Fortune 500 companies operate 98 research facilities in China and 63 in India, as Micklethwait pointed out.

### The frugal production model

What are the implications for transport? In Micklethwait's view, Indian and Chinese cars, airlines and aircraft as well as ships will come to us soon. He mentioned first successes, such as Brazil's Embraer planes or the Tata Nano car from India. The latter is based on a total rethinking of how to produce a car, resulting in a 3 000 dollar vehicle, rather than a 10 000 dollar one.

In general, the “frugal production model”, as Micklethwait termed the emerging economies, has not yet reached transport - India has surged despite its rail, road or aviation infrastructure, and in China the rapid growth of infrastructure is less due to efficiency increases than to government demand.

But sectors close to transport feel the impact. In telecoms, a Chinese and an Indian company are now considered the world leaders. In the public sector, India applies management techniques normally associated with businesses to its health care system - for instance at a 1 000-bed heart specialist hospital, where, due to economies of scale, open-heart surgery is available for 2 000 dollars. In the US, an average heart clinic has 160 beds



and surgery costs tens of thousands of dollars. To reduce its health care costs, currently at 17 % of GDP, the US may well follow the Indian model, Micklethwait suggested. In his view, doing much more with much less is the context in which the public sector in particular will have to operate.

## Two views of the future

The extent of this will also hinge on two competing visions for the future. One view holds that capitalism is broken, spurring a renewed faith in government and a desire to somehow rein in globalisation. The other view contends that government's present share of GDP is unsustainable and a fundamental re-examination of the role of the state is overdue.

Micklethwait pointed to three particular elements of this debate. First, for government, getting better will mean getting smaller. Secondly, the focus could shift from reducing the supply of public sector goods to reducing the demand. Thirdly, transport will be at the heart

of this debate - because it is often an easy place to look for cuts, but also because it offers straightforward ways to raise money, for instance through road pricing or even a carbon tax. The transport sector, argued Micklethwait, is a benchmark for how well the state works, as it traditionally operates on the dividing line between the private and public sectors.

In his opinion, transport has a strong case to make. Firstly, in order to attract the "best and brightest", good universities need to be complimented by other factors - not least a good transport system. Secondly, tighter budgets in the sector can drive forward common solutions - for instance for the environment. Finally, demographic change is something that the transport industry, in particular, will have to deal with. In conclusion, Micklethwait had some advice for transport leaders: Keep in mind those American car makers of the 1970s that were left wondering how clever Japanese car makers had managed to produce all those cheap cars. \\\





Wolfgang Mayrhuber,  
Chairman and CEO,  
Deutsche Lufthansa AG

66

# “We Are on the Way”

## Wolfgang Mayrhuber on how innovation is changing aviation

// The International Transport Forum did well to choose Leipzig as a venue. Here, the famous Monday Demonstrations precipitated the fall of the Berlin Wall 20 years ago. A key motive for people to rise was that they were denied mobility. Mobility is not only about transporting goods and people. The desire to travel can change the world. It will do so in the future, because there are millions out there who want to be mobile, but have no opportunity.

Let me focus on the aviation sector. We are a very young industry. A little over 100 years ago, Oliver Wright first took off. Today, 2.4 billion passengers fly on IATA carriers. Every second, an airplane takes off around the world. Air transport employs 5.5 million people; including the whole value chain we provide 33 million jobs and create 1.5 trillion dollars in GDP.

But there is a mismatch. Of the 6.5 billion inhabitants of this planet, only 15 % account for more than 70 % of air travel. The others want to fly too, and we need to think ahead how we can accommodate them, and how we can do it in a sustainable way.

The recent closure of airspace in Europe has shown that air transport is not a luxury. We were on the verge of a collapse of the value chain, and the impact was huge for the European economy, more than 5 billion dollars lost.

### “Alternatives are very limited”

There has been a debate about aviation's impact on global warming in the past

years. Yet aviation is producing fewer emissions than the World Wide Web. And for much of air travel, there is an optimisation option, but not a substitution option. Eighty per cent of flights cover more than 1 500 kilometres - alternatives here are very limited.



Photo: Dr. Werner Hennies (Lufthansa)

Fortunately, airline managers have a selfish interest in working towards emissions reduction, as 25 % or more of costs are fuel costs. Anybody who wants to survive in this business must work on his fuel bill, and consumption and emissions have dropped 70 % in the past 40 years.

Still more important is an integrated strategy of how we use airplanes. There are 47 air traffic control authorities in Europe. We have abolished frontiers on the ground, but as soon as you are one metre up in the air Europe is divided like on those old maps. Our planes fly an average detour of 54 kilometres on European

routes. The Single European Sky would reduce CO<sub>2</sub> emissions from air travel by 12 % immediately. Airplanes consume fuel because we mismanage them.

## “Airways don’t need to be repaved”

Yesterday you heard remarks from President Köhler on the “true costs” of mobility. We should use true costs for all transport modes. Aircraft fuels are exempted from tax on mineral oil, true. But aviation also fully supports its infrastructure. Lufthansa is paying 1.6 billion Euros a year in fees to airport operators and others. That is the equivalent of one Euro per litre of kerosene.

Until 2020, Lufthansa will cut CO<sub>2</sub> emissions per flown kilometre by 25 % compared to 2006. Our planes currently consume 4.3 litres per passenger on 100 kilometres flown, a highly competitive figure compared to other modes. Our latest fleet additions use an average of three litres. We are on the way.

And we should not only look at passenger kilometres. Airways do not need to be repaved. There are no bridges or tunnels up there. So, by nature, aviation has the smallest carbon footprint, once infrastructure is included. The carbon footprint of the plane itself is also small - it is easy to build and flies for many years over long distances.

We also have to look at fuel. A world consumption of 86.5 million barrels a day will take us only so far, and it is time to think about options like biofuels. Lufthansa is heavily engaged in various fuel user groups with Boeing, Airbus and others. Three years ago, I would have been sceptical. But I have seen progress in the last two years that make biofuels seem a commercially viable option.



## “We will have the 2-litre airplane”

In the 50 years since the jet age started, miracles have happened, not only in aviation. Where could we be in 50 years from now? In my mind, we will have the two-litre airplane. Biofuels make up 50 % of fuel consumption. A new generation of air traffic control management systems will be in place. Planes will be safer, quieter, more comfortable and less polluting. Body-blended wings will have been introduced, and materials that we never thought could fly. Planes will have less equipment on board, because computer data will be sent via satellite.

People should be mobile. Mobile societies are healthy societies. And providing mobility need not be a burden on the next generation, if we grasp the opportunities we have. If we succeed, aviation can contribute to a better world. Millions of people aspire to be airborne. I cannot imagine that we will tell them they are not allowed to fly. \\\

(Abridged from the transcript)



# Getting Down to Business: Partnerships for a More Innovative Transport System

// “How radical is your business prepared to be?” international journalist **Nik Gowing** challenged transport leaders on the final panel of the Forum. The scene had been set by **John Micklethwait**, Editor-in-Chief of The Economist, who in his keynote had argued that transport would need to do “much, much more with much, much less”.

Industry is naturally conservative, not only in transport, and change always driven by a minority, observed **Henri Molleron**, Environment Director of Colas. Where there is innovation, “there is always risk of failure. We must accept this.” Notably the UK had seen some innovative public-private partnerships faltering, but this should not be a reason to abandon such models. The lessons learned by the UK’s pioneering efforts are relevant for the whole world, and the International Transport Forum has a valuable role in spreading the knowledge.

## Crises drive innovation

“How much innovation in transport was ‘pre-emptive’, driven by the desire to be at the cutting-edge”, asked Gowing, and how much of it reactive, forced upon the industry by external factors? **Angela Gittens**, Director General of Airports Council International noted that “innovation often comes from crisis”. The chaos provoked by the eruption of the Eyjafjallajökull volcano certainly accelerated debate on achieving a Single European Sky, which could save aircraft thousands of litres of kerosene each year - a point that was echoed by Lufthansa CEO **Wolfgang Mayrhuber** in his concluding keynote.

**Scott Belcher**, President and CEO of ITS America, pointed to the potential of viral innovation and crowd-sourcing that is not fully exploited, despite some very positive examples. The Massachusetts Department of Transportation recently made all of its transit data freely available to developers, resulting in a traveller information system that is more robust and is provided for free. ITS America organised a “congestion challenge” won by an IT ride share enhancement platform now being deployed by the Federal Government. And New York City’s smart-phone “application challenge” has engendered a system for identifying potholes to fill and an information system for bus arrivals, similar to the Seoul Bus App presented at the Forum by the Korean student **Juwan Yoo**. “There is a great deal of innovation out there that we need to figure out how to capture”, noted Belcher. Yet, as **Peter Frise**, CEO of Auto 21 added, “intellectual property is a key issue that must be sorted out”.

Important advances such as data sharing and inter-operability are being “brought to us pretty much from the outside of the industry”, namely from IT, as **Angela Gittens** observed. The barriers to innovation are often not technological, but in management and decision-making. **Henri Molleron** gave the example of recycling: While some countries with very different conditions are very good at asphalt recycling, others with favourable conditions are not. At some point, innovation is no longer about technological change, but about behaviour change to get it implemented.

## Beyond PPPs

Improved partnerships and international co-operation are essential to maximise the impact of spending limited resources, to share research costs and to share best practice. Thinking here should be “beyond the inevitable PPPs” towards “new forms of partnerships”, suggested **Jean-Pierre Loubinoux**, Director General of the International Union of Railways. Partnerships across modes are crucial in order to improve complementarity, centred on better communications and offering more fluid transport. Yet, in practice, inter-modality remains complex, as **Jean-Marie Woehrling**, Secretary General, Commission Centrale pour la Navigation du Rhin, cautioned: “Often it is easier for a logistics operator to put his freight onto a truck and then leave it in a traffic jam than to participate in a complex co-operative system.”

Well-designed regulation is thus an important tool in encouraging more rapid uptake of innovative technologies and practices. **Janusz Lacny**, President of the International Road Transport Union, pointed out that European emissions standards had reduced air pollution from vehicle fleets by 97 %. Ambitious long term CO<sub>2</sub> emission and fuel economy standards for cars are a key part of achieving greenhouse gas mitigation targets. “Change will come from regulation, but we need realistic regulations”, said **John Lyras**, Chairman of the International Chamber of Shipping’s Policy Committee.

“How much mobility do we need?” was a question raised from the floor by **Peter Sweatman** of the University of Michigan. While rising unemployment and high gasoline prices play a role in reduced travel, data from some countries suggests that - as the IT revolution has made virtual mobility for services a reality - economic growth and mobility are no longer correlated. But many business

models rest on the quantity, not the quality of mobility, as **Enno Osinga**, Senior Vice President Cargo of Amsterdam Airport Schiphol, argued in his intervention. In the Netherlands, a public-private logistics scheme to optimise the supply chain by increasing truck load quotas met with resistance from trucking companies, who have no interest in reducing truck movements.

Society as a whole needs to change its approach to understanding transport issues. Being mobile does not necessarily mean having two cars for every household. Many urban young have grown up much less car dependent and much more reliant on public transport than their parents, seeing the car as something to hire or share when needed rather than owned and used habitually regardless of trip purpose. “Young people are doing what governments fail to do - they change their mind”, observed **Hans Rat**, Secretary General of the International Association of Public Transport. “They still like cars, but they are gadgets to them.” The 2011 Forum on Transport and Society will offer an excellent opportunity to explore how that change may develop and what policy makers can do to foster more sustainable mobility. \\\





An attractive programme of excursions, exhibitions and side events offered Forum participants opportunities to socialise and network. Highlights included the gala dinner featuring the award ceremony for the winners of the 2010 International Transport Forum Awards.





A Focal Point of Exchange

## Mayors' Round Table

# Intelligent Strategies for Mobility in Large Cities

// For the first time, the city of Leipzig and Eurocities, a network of major European cities, gathered mayors and decision makers for a round table on “Intelligent Mobility Strategies in Big Cities: New Approaches, New Policies?” under the auspices of the International Transport Forum.

The great challenges of our time are concentrated in the large cities, from where more than half the total worldwide greenhouse gas emissions originate. Due to this dramatic development, it is the responsibility of large cities worldwide to ask themselves challenging questions for their future: How can mobility be developed as a foundation for competitiveness and business growth? At the same time, how can congestion be avoided? How can the impact of exhaust and noise pollution be reduced? Last but

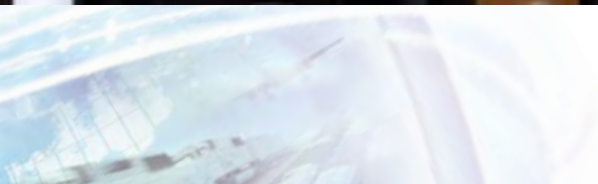
not least, how can the environment in cities be protected and the quality of life for all residents be improved?

Moderated by **Paul Bevan**, Secretary General of Eurocities, the participants in the project, Mayors **Ladislav Macek**, Brno, Czech Republic; **Simone Farello**, Genua, Italy; **Michèle Vullien**, Grand Lyon, France; **Jörn Marx**, Dresden, Germany; **Jean-François Retière**, Nantes Métropole, France; and **Yongliang Zheng**, Director of Transportation of Nanjing, China, presented innovative concepts employed in their cities.

## Changing needs of a changing urban population

The City and County of Lyon, for example, has developed a dedicated city planning strategy by which permissions for new buildings will only be granted for already existing neighborhoods or directly adjacent to public transport lines, to limit the need for individual cars. Dresden presented an innovative traffic guidance system, aimed at preventing traffic jams. A lively debate followed the presentation by **Yongliang Zheng**, who outlined the strategic approach to solving the transportation problems of Nanjing, a city of 8 million inhabitants, in the context of urban planning.

Professor **Andreas Knie**, Managing Director of the Innovation Center for Mobility and Social Change in Berlin, inspired discussion by placing the mobility needs and demands of a changing urban population at the center of his presentation. Knie suggested that new needs of the young generation must be taken into account by policy





makers, for instance increased demand for car sharing. Individual car ownership is on the way out, according to the expert, who called for better integration of Public Transport with other modes, such as cycling. In this context, the “Call a Bike” project operated by German rail carrier Deutsche Bahn was mentioned.

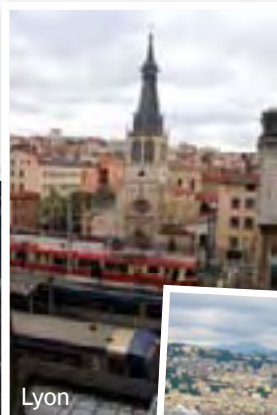
In his concluding statement, the Lord Mayor of Leipzig, **Burkhard Jung**, emphasised the great political responsibility of municipal decision-makers, particularly with respect to transport. Their decisions, Jung noted, directly affect the lives of every citizen, on a daily basis. He called on his colleagues to work towards becoming “Cities of Options”, in which residents are offered solutions which allow citizens to overcome the traditional dependency on fossil fuel-based mobility.

all important questions regarding urban development, such as the environment, infrastructure, land use and urban planning; b) speed needs space and motorised vehicles need energy, and the objective of cities is the drastic reduction in demand for energy; c) the transition to a more sustainable use of fossil energy in cities must succeed and the slogan “stop burning fossils, start burning calories” put into practice; d) that in order to achieve this, reaching and winning over local citizens is crucial. Finally, the Lord Mayor emphasised the necessity of a strong integration of national strategies with local efforts, especially in large cities. To this end, the International Transport Forum should continue to serve as a broad platform for discussion. \\\

## Speed needs space

In his brief summary, Jung reiterated the main points of the discussion: a) the urban transport issue is interconnected with

73





# Awards 2010

## ITF Young Researcher of the Year

// Attracting and supporting young talents for the transport sector is a key commitment of the International Transport Forum. One way in which this pledge is being fulfilled is through the ITF Young Researcher of the Year Award, created to encourage creative work on transport issues by promising scholars of less than 35 years of age from institutes located in ITF member countries. At the 2010 Forum, the award was presented for the third time.

A total of 31 papers from participants of 32 different nationalities (including co-authors) were received this year. "The Young Researcher Award is obviously filling a gap in the transport research scene", said **Jack Short**, Secretary General of the ITF. "We are impressed with the

wide range of approaches to the pressing problems transport faces."

Five contributions were shortlisted by the Jury, consisting of Professor **Anthony May**, Chairman of the World Conference on Transport Research Society; **Andreas Scheuer**, Parliamentary State Secretary at the German Federal Ministry of Transport, Building and Urban Development and representatives of the ITF/OECD Joint Transport Research Committee.

The winner finally selected was 27 year-old Egyptian **Hossam Abdelgawad**, a PhD candidate at the University of Toronto in Canada, for his research into the mass evacuation of major cities in case of a catastrophe. Abdelgawad's model represents a significant step towards efficient large-scale evacuation of cities,



integrating car-based and mass transit-based transport. His integrated approach was successfully used during a simulated evacuation of the City of Toronto. “The numerous man-made catastrophes that menace major communities accentuate the need for proper planning for emergency evacuation,” said Abdelgawad about his work. “My research focuses on coordinating, controlling and optimizing the utilisation of the existing transportation network capacity.”

The award ceremony during the Gala dinner on 27 May was one of the undisputed highlights of the 2010 Forum. Germany’s Federal Transport Minister **Peter Ramsauer** declared **Hossam Abdelgawad** Young Researcher of the Year and presented him with the prize as well as a 5 000 euro cheque for his groundbreaking work.

## ITF/UITP Award for Outstanding Innovation in Public Transport

Innovative public transport solutions were again honoured with a prize jointly awarded by the ITF and the International Association of Public Transport. The Award for Outstanding Innovation in Public Transport aims to highlight excellence in reliable, high-quality, environmentally friendly and integrated intermodal public transport. It specifically acknowledges innovative ideas and projects that address quality of service, sustainability of public transport, intermodal interfaces between public transport and other transport modes to achieve a seamless journey. It also honours collaboration and leadership for innovation within the public transport sector.

Of the 25 entries from 23 countries, the Consorcio Régional de Transportes de Madrid was chosen by the Jury as the overall winner for the Spanish capital’s Integrated Transport Plan. For Madrid’s more than 3.2 million inhabitants, numerous transfer hubs at the intersection

of city centre limits and six main radial corridors facilitate seamless transfer between intercity buses and urban modes.

“It was a difficult task to single out any one particular application”, said **Hans Rat**, UITP Secretary-General and ITF’s award partner, who was delighted with the global response to the call for applications for the award. “The quality of the entries is reflected in the decision by the jury of seven transport experts to honour not only an overall winner, but to also recognise two joint runners-up and three special mentions.”

Arriva Southern Counties and Kent County Council, UK, and Ahmedabad Janmarg, India, were named joint runners-up for their Bus Rapid Transit systems. Special mentions went to Leipziger Verkehrsbetriebe, Germany, for their easy.GO mobile travel information and ticketing service and to Bangalore Metropolitan Transport Corporation, India, for application of innovation through their operations incorporating management, leadership, technology, and employee services. The Swedish Public Transport Association also received a special mention for Strategic Vision of Innovation in Public Transport. \\\







# Children's University

How kids see the future of transport

// It was a very special occasion for around 200 school children aged 8 to 12 from the greater Leipzig area: A face to face encounter with politicians and senior decision makers at the Children's University, held for the third consecutive year under the auspices of the International Transport Forum, in the impressive New Town Hall in central Leipzig.

ITF Secretary General **Jack Short**, State Secretary **Rainer Bomba** of the German Federal Ministry of Transport, Building and Urban Development, **Sven Morlok**, the Minister of State for Economic Affairs, Employment and Infrastructure of Saxony and Leipzig's Lord Mayor **Burkhard Jung** had come to listen to the kids' perspective

on the Forum 2010 theme "Transport and Innovation".

## Solar vehicles and flying cars

The young participants displayed great interest in issues like climate change and oil dependency, and many almost burst with creative ideas: Solar vehicles, alternatively driven by gas from compost waste or by rain water in cloudy conditions, or flying cars that can avoid traffic jams with the help of a propeller were only two of the many visions that were put forward.

In preparation for their big day, the pupils participating in this year's Children's University had developed projects around the question "How do we imagine the future of transport?" Many of the colourful drawings and collages with written





descriptions were on display at the New Town Hall and gave vivid testimony of great inspiration and creativity.

## Thinking freely

The knowledge acquired in that process was put to good use after the kick-off lecture by Leipzig Mayor **Burkhard Jung**, when the children seized upon the opportunity to interrogate their visitors with evident delight and considerable acumen. "In the future, there shouldn't be cars that pollute the environment like they do today", exclaimed 9-year-old Laura. "There will still be cars and airplanes", added 11-year old Julius, "but not fueled by diesel or petrol anymore."

State Secretary **Rainer Bomba** pointed the children to the fact that the future of transportation had already begun in some places: He presented the latest addition to the German Transport Ministry's own fleet of cars, an electric Smart two-seater. "One of the great things about children is that they can still think freely, unencumbered by the everyday", noted an exhilarated

State Secretary Bomba. "They can develop ideas that we adults could never form, because we have so much in our heads."

## Diplomas for young transport experts

"The children were all so enthusiastic about their involvement, and offered many insightful and informed opinions during the open discussion period and in their exhibited work", added ITF Secretary General **Jack Short**, who was even asked to sign autographs after the event.

True to the idea of a real university, the eager students of the Children's University 2010 were finally honored with diplomas and awards for their ideas and participation. \\\







# Forum Exhibition

## Exhibition and Live Demonstrations

// Both in the hallways of the Congress Center and at Augustusplatz in downtown Leipzig, exhibits and live demonstrations highlighted the innovative potential of the transport sector.



The 2010 Forum Exhibition showcased technologies, cutting-edge practices, ongoing research and innovation connected with transport. The huge model of **Bertrand Piccard's** solar plane - with real solar panels and working engines - was one of the main attractions, as was the model of a freight ship propelled

by an automated towing kite system developed by German company SkySails. The interactive presentations by a number of exhibitors were particularly impressive. Deutsche Bahn and the International Railway Federation (UIC), for instance, offered a live demonstration of EcoTransIT World, an innovative web application that provides carbon footprints of logistical chains on a global level. E-mobility was

a particular focus, with the presentation of electric and hybrid vehicles by the Chinese car manufacturer BYD, an electric Smart two-seater and a live demonstration of wireless recharging technology for battery-powered vehicles.

## The Forum in the centre of Leipzig

For the first time, the Forum reached out to the general public and the citizens of Leipzig in a new way by holding part of the exhibition in the heart of Leipzig, at the historic Augustusplatz. In front of the Leipzig opera house, a Segway circuit offered passers-by rides on the single-axis, self-balancing electric vehicles - an opportunity that even several Ministers did not want to miss. One of the vehicles that ran in the Shell Eco-marathon was on display at the company's stand on Augustusplatz. The Eco-marathon challenges high school and college student teams from around the world to design, build and test energy efficient vehicles. Leipzig's local transport authority, the Leipziger Verkehrsbetriebe, had several state-of-the-art hybrid metro buses on display. \\\

78





# Field Visits and Cultural Programme

// Many delegates of the 2010 International Transport Forum took the opportunity to participate in one or more of several excursions and visits offered to the numerous places of interest for members of the transport community.

## DHL

Deutsche Post DHL, the leading logistics provider, welcomed Forum delegates in its state-of-the-art air hub in Leipzig/Halle - a popular tour, despite the late hour of 10 p.m. The DHL hub sets industry standards, with the largest sorting system in Germany and a hangar floor space of 27 500 m<sup>2</sup>.

## Porsche Leipzig

The Leipzig plant of Porsche, renowned manufacturer of high-end sports cars, encompasses a gigantic logistics centre and a modern pilot and analysis centre. Two of the company's top car models, the Cayenne SUV and the Panamera limousine, are being manufactured in the 25 000 m<sup>2</sup> assembly hall.

## Future Electronics

Operating in 169 locations in 41 countries, Canada-based Future Electronics is a world-class leader and innovator in the distribution and marketing of semiconductor and electronic components. Their Leipzig operation was officially opened in early 2010.

## Guided tours

Bach, Mendelssohn and the Peaceful Revolution of 1989: The guided walk through Leipzig provided many glimpses of the city's rich heritage. The bus excursion to historic Dresden featured a visit to the legendary Green Vault and other splendours, such as the reconstructed Frauenkirche. \\\





# Alphabetic List of Speakers

**Abdelgawad, Hossam** - 2010 Young Researcher of the Year, University of Toronto, Canada

**Ahrens, Gerd-Axel** - Professor, University of Dresden, Germany

**Aldecoa, Javier** - Director of Intermodality, Consorcio Regional de Transportes de Madrid, Spain

**Allas, Tera** - Chief Economist, UK Department for Transport, UK

**Appel, Peter** - Administrator, US Research & Innovative Technology Administration, USA

**Augustine, John** - Managing Director ITS, US Research & Innovative Technology Administration, USA

**Barón Crespo, Enrique** - former President of the European Parliament, Spain

**Baur, Klaus** - Management Board Chairman, Bombardier Transportation, Germany

**Belcher, Scott** - President & CEO, ITS America, USA

**Bevan, Paul** - Secretary General of Eurocities

**Bhidé, Amar** - Thomas Schmidheiny Professor at the Fletcher School of Law and Diplomacy, Tufts University, USA

**Bomba, Rainer** - State Secretary, Federal Ministry of Transport, Building and Urban Development, Germany

**Brogren, Charlotte** - Director General, VINNOVA, Sweden

**Brubaker, Paul** - Senior Director, Internet Business Solutions, Cisco Systems, USA

**Bussereau, Dominique** - Secretary of State for Transport, France

**Chase, Robin** - CEO, Meadow Networks, Founder of GoLoCo and Zipcar, USA

**Chaturvedi, B.K.** - Member, Planning Commission, India

**Colceag, Gabriel** - Vice President, Thales, France

**Crane, Melinda** - International Journalist & Broadcaster

**Crozet, Yves** - Professor, Université de Lyon 2, France

**Daguillard, Rita** - Director, Research Management, US Federal Transit Administration, USA

**Diss, Florence** - Manager, Strategic Partner Development, Google France

**Doherty, Sean** - Head of Logistics & Transport, World Economic Forum

**Dragnich, George** - Executive Director, International Labour Organization

**Duleep, K.G.** - Managing Director, ICF International

**Dumas, Christian** - Vice President, Sustainable Development & Eco-Efficiency, Airbus, France

**Eads, George** - Charles Rivers Associates International, GFEI Annual Report "Global Fuel Economy 2010"

**Eurlings, Camiel** - Minister of Transport, Public Works & Water Management, The Netherlands

**Farello, Simone** - Deputy Mayor, Genua, Italy

**Frise, Peter** - CEO, Auto 21, Canada

**Fulton, Lew** - Transport Energy Specialist, International Energy Agency

**Gallego, Rafael** - Vice President, Indra, Spain

**Gautam, I. P.** - IAS Municipal Commissioner, India

**George, David** - Fastrack Project Manager, Kent Thameside, UK

**Gittens, Angela** - Director General, Airports Council International

**Goldin, Ian** - Director, James Martin 21st Century School, University of Oxford, UK

**Gowing, Nik** - International Journalist & Broadcaster

**Guy, Nathan** - Associate Minister of Transport, New Zealand

**Höfs, Wolfgang** - Head, ICT for Transport, European Commission

**Horsley, John** - Executive Director, AASHTO, USA

**Jacobsen, Pat** - Corporate Director, New Flyer & former CEO, TransLink Canada

**Juhel, Marc** - Sector Manager Transport, World Bank

**Jung, Burkhard** - Mayor, Leipzig, Germany

**Kallas, Siim** - Vice President, European Commission

**Kazatsay, Zoltan** - Deputy Director General, DG-MOVE, European Commission

**Kefer, Volker** - Management Board Member, Deutsche Bahn AG, Germany

**Kim, Chang-Kyun** - Director, Seoul City Transport Operations & Information Center, Korea

**Kirchmann, Hanns-Karsten** - CEO, Toll Collect, Germany

**Kiwitt, Petra** - Executive Vice President, DHL Solutions & Innovation, Germany

**Knatz, Geraldine** - Executive Director, Port of Los Angeles, USA

**Knie, Andreas** - Managing Director, Innovation Centre for Mobility and Social Change, Berlin, Germany

**Knorr, Dave** - Liaison to DFS, US Federal Aviation Administration, USA

**Köhler, Horst** - then Federal President Germany

**Kroese, Eric** - Special Aviation Advisor, Netherlands

Ministry of Transport, Public Works & Water Management

**Lacny, Janusz** - President, International Road Transport Union

**Lam, Joseph** - President, Systems Business, Delcan Corporation, Canada

**Laousse, Dominique** - Director, Prospective & Innovative Design, RATP, France  
**Leuenberger, Moritz** - Federal Counsellor, Federal Department of Environment, Transport, Energy & Communications, Switzerland  
**Levitin, Igor** - Minister of Transport, Russian Federation  
**Li, Henry** - Senior Director, BYD Company, China  
**Lohss, Martin** - Managing Director, Skysails, Germany  
**Loubinoux, Jean-Pierre** - Director General, International Union of Railways, France  
**Lyras, John** - Chairman, Shipping Policy Committee, International Chamber of Shipping  
**Macek, Ladislav** - First Deputy Mayor, Brno, Czech Republic  
**Martin, David** - CEO, Arriva, UK  
**Marx, Jörn** - Deputy Mayor for City Development, Dresden, Germany  
**Mayrhuber, Wolfgang** - Chairman & CEO, Deutsche Lufthansa AG, Germany  
**Mengyong, Weng** - Vice Minister of Transport, China  
**Merrifield, Rob** - Minister of State for Transport, Canada  
**Meyer, Hermann** - CEO, ERTICO-ITS Europe, Belgium  
**Micklethwait, John** - Editor-in-Chief, The Economist, UK  
**Mollerón, Henri** - Corporate Environment Director, Colas, France  
**Morlok, Sven** - State Minister for Economic Affairs, Employment and Infrastructure, Saxony, Germany  
**Oades, Stewart** - President, UK Freight Transport Association, UK  
**Oba, Takayuki** - Director, ITS Policy, Ministry of Land, Infrastructure, Transport & Tourism, Japan  
**Osinga, Enno** - Senior Vice President Cargo, Amsterdam Airport Schiphol, The Netherlands  
**Paquet, Jean-Eric** - Acting Director, DG-MOVE, European Commission  
**Pedreira, Pedro** - Executive Director, European GNSS Supervisory Authority  
**Peloux, Cyrille du** - CEO, Veolia Transport, France  
**Piccard, Bertrand** - Initiator & Chairman, Solar Impulse  
**Pilat, Dirk** - Division Head, Science, Technology & Industry, OECD  
**Pillai, Nisha** - International Journalist & Broadcaster  
**Plotkin, Steven** - Analyst, Argonne National Laboratory, USA  
**Ramsauer, Peter** - Federal Minister of Transport, Building & Urban Development, Germany  
**Randow, Matthias von** - Director, Air Berlin, Germany  
**Ranger, Louis** - former Deputy Minister of Transport, Canada  
**Rat, Hans** - Secretary General, International Association of Public Transport

**Redeborn, Bo** - Director, Corporate Network Design, Eurocontrol  
**Reichmuth, Johannes** - Head, Institute of Air Transport & Airport Research, Germany  
**Renschler, Andreas** - Management Board Member, Daimler AG, Germany  
**Retière, Jean-François** - Vice President Transport, Nantes Métropole, France  
**Robson, Michael** - Secretary General, European Rail Infrastructure Managers  
**Sakamoto, Kentaro** - Senior Vice President, ITS Japan  
**Sampson, Eric** - Professor, Newcastle & City Universities, UK  
**Scheuer, Andreas** - Parliamentary State Secretary, Federal Ministry of Transport, Building and Urban Development, Germany  
**Shields, T. Russell** - Chairman, Ygomi LLC, USA  
**Short, Jack** - Secretary General, International Transport Forum  
**Silguy, Yves-Thibault de** - President, Vinci, France  
**Stewart, Scott** - Managing Director, IBI Group, Canada  
**Sundar, Sanjivi** - Distinguished Fellow, Energy & Resources Institute, India  
**Supple, Declan** - Partner, Global Supply Chain Management, Accenture, Germany  
**Sweatman, Peter** - Director, University of Michigan Transportation Research Institute, USA  
**Tomita, Tetsuro** - Executive Vice President, East Japan Railway Company, Japan  
**Ude, Hermann** - CEO, DHL Global Forwarding & Freight, Germany  
**Ulseth, Oluf** - Senior Vice President European Affairs, Statkraft, Norway  
**Vullien, Michèle** - Vice President, Grand Lyon, France  
**Ward, Christopher** - Executive Director, New York & New Jersey Port Authority, USA  
**Watanabe, Katsuaki** - Vice Chairman, Toyota Motor Corporation, Japan  
**Weijer, Carlo van de** - Vice President Business Development, TomTom International, The Netherlands  
**Widdows, Ron** - CEO, Neptune Orient Lines, Singapore  
**Woehrling, Jean-Marie** - Secretary General, Commission Centrale pour la Navigation du Rhin  
**Yamashita, Mitsuhiro** - Executive Vice President R&D, Nissan, Japan  
**Yoo, Juwan** - Young Innovator in Public Transport, Korea  
**Zheng, Yongliang** - Deputy Director of Nanjing Transportation Department, Nanjing, China  
**Zielinski, Susan** - Managing Director, SMART, University of Michigan, USA



# International Transport Forum

82

Shaping the  
Future of Transport

**20** International  
**11** Transport Forum

---

## Transport and Society





# Save the Date

## The International Transport Forum 2011

# Transport & Society

**25-27 May 2011 in Leipzig, Germany**

Modern lifestyles are founded on personal mobility and readily available goods and services. This demands efficient, clean, reliable and accessible transport systems.

In 2011, the International Transport Forum will focus on the essential role of transport within society and how it can continue to contribute to economic growth and community prosperity.

83

- **How is society's demand for mobility changing?**
- **How can more sustainable, environmentally friendly travel be encouraged?**
- **Who should pay for the transport system improvements and how?**

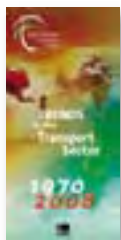
Decision-makers from around the globe representing politics, business, research and civil society will make the 2011 International Transport Forum a focal point for exchange on the role of mobility in modern society.

This event offers opportunities for companies, transport stakeholders, international, national, regional and local authorities to participate as a delegate or as a member of an expert panel, exhibit and demonstrate new and innovative projects, or sponsor Forum activities.

**Mark the 25-27 May 2011 on your calendar now to ensure your availability to attend the 2011 International Transport Forum in Leipzig, Germany.**

# Recent Publications

[www.internationaltransportforum.org/Pub/new.html](http://www.internationaltransportforum.org/Pub/new.html)



**Trends in the Transport Sector 2010**  
ISBN: 9789282102718



**The Future for Interurban Passenger Transport -  
Bringing Citizens Closer Together**  
ISBN: 9789282102657



**Improving Reliability on Surface  
Transport Networks**  
ISBN: 9789282102411



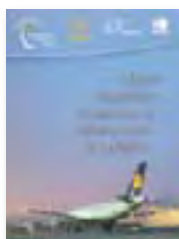
**Effective Transport Policies for  
Corporate Mobility Management**  
ISBN: 9789282102497



*ITF Round Table 146*  
**Integration and Competition between  
Transport and Logistics Businesses**  
ISBN: 9789282102596



*ITF Round Table 145*  
**Competitive Interaction between  
Airports, Airlines and High-Speed Rail**  
ISBN: 9789282102459



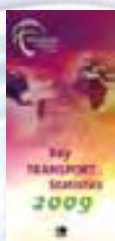
**Airport Regulation Investment and  
Development of Aviation**



**Transport Outlook 2010**



**Reducing Transport Greenhouse Gas  
Emissions - Trends and Data 2010**



**Key Transport Statistics 2009**




**2008 Forum Highlights  
Transport and Energy:  
The Challenge of Climate Change**



**2009 Forum Highlights  
Transport for a Global Economy:  
Challenges and Opportunities in  
the Downturn**

# List of Exhibitors



ADOSE	LCG - Logistics Council Germany
AGES International GmbH & Co. KG	LVB - Leipziger Verkehrsbetriebe
AustriaTech - Federal Agency for Technological Measures Ltd	Metropolregion Mitteldeutschland
BYD Company Ltd	Michelin
CIVITAS - Cleaner and better transport in cities	Ministry of Land, Infrastructure, Transport and Tourism, Japan
Connekt - Sustainable Logistics Programme	Ministry of Transport, Public Works and Water Management of the Netherlands
Daimler AG	Muckati - Sentient Design and Devices
Delcan Corporation	Netzwerk Logistik
Deutsche Bahn AG	NL EVD International
Deutsche Post DHL	OECD
Dinalog	Segway
East Japan Railway Company	Shell Eco-marathon 2010
((eTicket Germany	SkySails
Federal Ministry of Transport, Building and Urban Affairs, Germany	Solar Impulse
GALILEO	Toll Collect GmbH
GFEI - Global Fuel Economy Initiative	TRAFIKVERKET - The Swedish Transport Administration
IBI Group	Transport Canada
IRU - International Road Transport Union	UIC - International Union of Railways
IRD - International Road Dynamics Inc	UITP - International Association of Public Transport
ITS CANADA - Intelligent Transportation Systems Society of Canada	VINNOVA - Research and Innovation for Sustainable Growth
ITS World Congress	VTI - The Swedish National Road and Transport Research Institute
JITI - Japan International Transport Institute	
KLIWAS	

## A Climate Neutral Event

To help offset the CO<sub>2</sub> emissions resulting from the organisation of the annual International Transport Forum, the Forum will be supporting a unique, renewable energy programme in India. A biomass power plant has been constructed in the Karnataka province that uses low-density crop residues for power generation. The power is exported to the state grid, substituting electricity generated by conventional fossil fuels, thus reducing carbon emissions.





The International Transport Forum 2010, entitled “Transport and Innovation: Unleashing the Potential”, took a close look at the role of innovation in shaping transport systems of the future. It highlighted the crucial importance of innovation in the transport sector for our common future in a globalised world.

Through continual innovation, the mobility sector has met the increasing volume demands of a transport-intensive globalised economy while achieving better quality of service. But the sector and those who rely on it face extraordinary challenges. Transport needs to be versatile to respond to the evolving economic and societal context. Demographic changes, notably ageing and fast growth in emerging economies, are shaping future demand for mobility solutions.

The structure of global economic development is changing rapidly, and this is having a major impact on transport needs. The environmental impact must be reduced. Congestion needs to be managed better. And safety cannot be compromised.

These challenges are often global in scope, and the responses must be as well. Close collaboration across borders and among all stakeholders is required. The International Transport Forum 2010 provided the platform to take this global dialogue forward.

This publication condenses the main findings of expert panels and round tables bringing together leading figures from politics, industry, research and civil society.

## International Transport Forum

Offices: 2-4 rue Louis David, 75016 Paris, France

Postal address: OECD/ITF, 2 rue André Pascal, F-75775 Paris, Cedex 16

Email: [itf.contact@oecd.org](mailto:itf.contact@oecd.org)

[www.internationaltransportforum.org](http://www.internationaltransportforum.org)

Gold Sponsor



Sponsors

**BOMBARDIER**

