HAPPY BIRTHDAYS


This is the eighth time I try to give a 10-minute summary of about 20,000 minutes of exhilarating, hugely varied transport activity.  I'm not looking for your sympathy; on the contrary it is an exhilarating and hugely varied task made possible by the team of *rapporteurs* who have been my eyes and ears before we started and all week.  Their work and mine ends when we issue a full report at the end of the year where you'll see their names recorded with my profound thanks.

JANNEKE.                    Patience; Persistence; Professionalism                    Pleasure to work


We've had more than 250 sessions and over 500 technical papers.  An extensive exhibition, a wide-ranging set of demonstrations to show what can be done right now and the Smart Cities Pavilion bringing to life the ideas that were discussed in the sessions.

Under its headline theme ***Next Generation Integrated Mobility: Driving Smart Cities*** the Congress was organised into 7 Tracks.  I'll give quick comments on some of the key activities within each one.


**Connectivity and Autonomy** was one of the most popular Tracks.  It doesn't just lead to potential disruption of transport systems and cities; it also poses challenges to legal, institutional, and administrative processes.  And it makes us re-think the concept of 'driver'.

Many discussions were on safety, in particular for vulnerable road users (pedestrians, cyclists, motorcyclists).  Technical papers emphasised the use of artificial intelligence and its application in safety systems like collision avoidance.

Some interesting new ideas were presented such as the prediction of human intention using competitive learning and the visual assessment of lane marking deterioration from data recorder images.  Managing massive fleets of shared automated vehicles is another challenge highlighted for the first time.  Positive and negative impacts of connected and automated vehicles were reviewed to see how to adapt strategies to a region's context and goals.

Many papers and discussions used the word "autonomous" but the idea of relying solely on the vehicle's own sensors is giving way to connected automated driving,            where the vehicle uses an electronic horizon to provide information on events and conditions beyond its own sensors for example empty parking spaces.


**Infrastructure Challenges and Opportunities** covered a very wide area ranging from traveller information and payment      to   procurement   and asset management.  Papers in this Track tended to deal more with technical solutions than with organisational and business issues.  Security, privacy and resilience were fairly light whereas data collection using many different techniques featured regularly.  Fixed devices are still the main sources but probe data from vehicles and mobile phones has increased a lot and we now see data extracted using advanced sensing technology.  Much work is under way on the interactions between on-vehicle sensors and physical highway infrastructure to prepare for automated vehicles.

We had surprisingly few papers covering infrastructure for electric vehicles            and   for   cyclists & pedestrians.   The   use   of   bikes   is increasing rapidly in many cities driving an increasing demand for data for analysis and planning  but also for new services.

Perhaps authors are waiting for Copenhagen next year.

**The Smart(er) Cities Track** focused on integrating transport, energy, telecoms, waste and water systems to create a more liveable city.

We learned about what makes cities smart – its people –   and the deployment and integration of the required technologies.  With support from the National ITS Associations a team based at the Polytéchnique has been working on an overview White Paper exploring this subject.

Most of the papers covered the potential or early deployment of specific technologies; there were few descriptions of more mature systems.

We saw several new ideas among them:

- Strategies to improve air quality
- Fusion of public and private open data for next generation traffic management
- Automated monitoring of freight loading zones for effective enforcement.

Two key messages  – First, although the ITS community is in a position to help cities get smarter current regulations are often stopping cities from doing so.  Second, we are beginning to redefine public transport – it now covers more of the transport system, particularly what were traditionally called "private services" such as network companies, microtransit providers, shared-ride services and (self-driving) vehicles.


**The Track on Data, Security and Privacy** covered open and shared data, security issues, travel speed prediction, machine learning for transport analysis and much more.  Papers on big data management were mainly about data storage rather than data processing.  There were quite a few papers on analysing congestion including queue detection using FCD or comparing multiple data sources.

A number of new ideas were put forward including:

- Enhancing cyber security by adding physical devices.
- Using big data platforms to analyse transport management for special events
- Modelling collision avoidance in driverless vehicles

The public and private sectors are collaborating on systems for Open and Shared data and we heard how studies on data from shared mobility can save public spending and benefit local communities.  Nevertheless many public authorities are still reluctant to fund such services.  A common point among participants was the need to break data silos and establish a market place for data sharing, exchange and standardisation  such as the oneTRANSPORT platform.


The **Integrated Approach: Planning, Operations and Safety Track** demonstrated huge variety.  Papers were predominantly technical with a focus on real-world design, testing, implementation and operation of technology-based systems.

It was clear that technologies now entering ITS (big data, high speed computing, real-time modelling *etc*) offer opportunities for better solutions to real world problems.  Many papers described innovative ways to tackle previously 'too difficult' problems  or offer new and more efficient ways of working.

Overall there was emphasis on the practical use of technology to assist with today's problems and a general sense of the sessions exploring new solutions  rather than the incremental improvement of things we already know.  This led to many of the sessions looking at new ways of working and importing technologies from other industries and sectors.

This Track also highlighted that Freight transport is still a challenge for ITS policy makers because although data is available privately it's not integrated  and nor does the industry as a system lend itself to easily being optimised.

The emphasis in the **Disruption and New Business Models Track** was on mobility especially Mobility as a Service; freight issues and space sharing in cities; and the impact of new business models. Papers and sessions on MaaS reviewed several aspects such as application in remote areas with low transport demand; achieving a common approach to regulation; and the changing roles, responsibilities and interactions between public and private contributors.

Key questions discussed included:

- Using new technologies for more productive and sustainable freight;
- Understanding the impact of self-driving vehicles on logistics
- Impact of self-driving cars on space allocation in cities.

Two key messages from this Track: the borders between public and private transport and between passenger and freight transport are eroding. Second, Mobility as a Service and its related infrastructure requirements represent an unprecedented need for collaboration between the public and private sectors.

The Track on **Innovation, The New Ideas** included sessions and papers dealing with automated monitoring of traffic for congestion and traffic management; new applications for bus operations; automated road safety monitoring; and ways to integrate ITS solutions in the context of smart cities.

Topics presented included innovative sensing solutions; the use of fibre optics for incident detection; advanced warning systems for roads with low volumes; and thermal imaging systems for tyre anomaly detection and identification of hazardous materials. From the applications aspects we had assessing road surface condition, and monitoring of buses & commercial vehicles and the performance of specific vehicle components.

Several papers dealt with the integration of technologies as part of smart city concepts as well as very specialised concerns such as monitoring flooding and the benefits of advanced travel information systems when dealing with critical events.

As our Congresses have evolved the emphasis has moved away from technology towards application and business issues and today technology is very rarely a concern. Today's problems all derive from using technology and they are social, organisational, commercial, administrative and institutional. Addressing these problems is very difficult and we have tended to make the mistake of looking at them one by one, when what we need is a holistic approach that enables us to see how they inter-relate.

The various 'elements' of ITS – Infrastructure, Vehicles, Services, Travellers and Drivers – are a community of data sources. They influence each other's behaviour so they must communicate with and inform each other. And that points to a second common factor: the reluctance of many sectors to collaborate with other sectors. Cooperation is far better now than it was even 3 years ago but still not as straightforward as it needs to be. And just about everyone seems to want to make a fresh start and not build from the excellent material already produced. This is so wasteful. More generally we need to think how to make better use of what we have rather than install something that aims to replace it.

In the Connected and Automated driving area the market is changing. For automotive companies it's no longer a world of selling something that operates somewhere remote on some infrastructure supplied by a third party. Connected and Automated driving needs a close working relationship with the infrastructure owners and operators as well as the Regulators and in most countries that's not yet the case.

And talk of needing to change users' behaviour is wrong – they're not people obliged to buy your product and then adapt to use it; they're customers and potential data suppliers who will choose to buy something if they find it attractive and if the terms are appealing.

The Regulators, infrastructure owners and operators also need to re-think their approach to collaboration as there are still barriers to the practical trials that will bring widespread deployment. The argument that regulations can't be decided until every small safety case has been explored is short sighted. How do you **prove** something is safe that hasn't been done before ? Deployment brings a strong message for Regulators – stop being frightened of failure and trying to get every last 'i' dotted and every last 't' crossed. You must change your approach from "You can't do this because .. .. " to "You can try this provided that .. .. ".

It's not been the biggest Congress ever but it has been marvellous for the delegates and exhibitors which is what matters. A couple of years ago on UK TV someone was interviewing a world famous 2m tall supermodel [who had better remain nameless] and Dolly Parton. After a lot of chat this supermodel, who looked like a pencil, asked Dolly rather superciliously whether she wanted to be taller. Dolly replied "I may be small, but I am beautifully formed" – and that for me sums up Montreal 2017 – small but beautifully formed.

I hope we will meet again         in a year         in Copenhagen.