PIARC

AUTOMOTIVE INDUSTRY REVIEW AND UPDATE

Friday 24 October 2003 (1.30 - 5.00 p.m.)

SESSION AGENDA & INTRODUCTORY REPORT

22.39.E

SESSION AGENDA

1. **Session Introduction**

Mr. Martin ROWELL (Session co-chairperson, Vice-President, FISITA)
Ms. Sandra SULTANA (Session co-chairperson, C16 Chairperson/CANADA-QUEBEC)

2. **In Vehicle Telematics: The government perspective on ITS development**

ir. E. KENIS and ir. G. WILS (Flemish Road Authority/BELGIUM)

3. **Vehicle Probe Processing to Support Infrastructure Management**

Mr. T. Russel SHIELDS (Ygomi LLC/USA)

4. **Pushing the Telematics Market by Using Electronic Toll Collection as a platform for Value Added Services**

Dr. Thomas-Axel STENSKE
(DaimlerChrysler Services Mobility Management GmbH/GERMANY)

5. **Panel Discussion**

    a) **Telematics in support of road authorities activities**
    b) **Value added services, and best practices**
    c) **Developing new partnerships between public authorities and the private sector**

6. **Mobility and Sustainable Development**

Mr. Tsutomu KAGAWA (Japan Automobile Association Inc./JAPAN)

7. **The Sustainability Challenge: Automotive Industry Readiness for Road Authority Innovations**

Mr. Lars NILSSON (Swedish National Road Administration/SWEDEN)

8. **Road, Road Vehicles and Road Infrastructure Interface : Challenges and Opportunities in the Transportation Network**

Mr. Paul MULVANNY and Mr. Steven FARMER (Qinetiq/UK)

9. **Panel Discussion: How is the automotive industry adapting to support sustainable development and the goals of the Transport and Road authorities**

10. **Session Conclusion**

Mr. Martin ROWELL (Session co-chairperson, Vice-President, FISITA)
Ms. Sandra SULTANA (Session co-chairperson, C16 Chairperson/CANADA-QUEBEC)

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INTRODUCTION

Within the coming decades, cars and commercial vehicles will continue to evolve, with inceasing applications of electronics and Intelligent Transport Systems (ITS), which will have impacts on the whole transportation environment. The designers of road infrastructure and the management of road networks cannot ignore these evolutions. Conversely, the design of new vehicles will take advantage of infrastructure and telecommunications developments. A special session jointly organised by PIARC and FISITA, the International Federation of Automotive Engineering Societies (the world body for automotive engineering, representing over 158 000 automotive engineers in 32 countries) will promote better understanding and cooperation between the automotive industry and the road sector.

This session features keynote speeches from automotive industry representatives together with leading edge presentations from PIARC C14 (Sustainable Development and Road Transport) and C16 (Network Operations) Technical Committee experts.

The session will be co-chaired by Martin Rowell, FISITA VP - International Relations, and Sandra Sultana, PIARC C16 Chairperson.

The session programme is as follows:

13:30 – 13:40	Session Introduction
13:40 - 13:55	In-Vehicle Telematics – The government perspective on ITS development (i*r. E. Kenis and G. Wils, Flemish Road Authority)*
13:55 – 14:10	Vehicle Probe Processing to Support Infrastructure Management *(T. Russell Shields, Ygomi LLC)*
14:10 – 14:25	Pushing the Telematics Market by Using Electronic Toll Collection as a Platform for Value Added Services (*Dr. Thomas-Axel Stenske, DaimlerChrysler Services Mobility Management GmbH)*
14:25 – 15:00	Panel Discussion: • Telematics in support of road authorities activities • Value added services, and best practices • Developing new partnerships between public authorities and the private sector
15:00 – 15:30	*Break*
15:30 – 15:45	Mobility and Sustainable Development (*Tsutomu Kagawa, Japan Automobile Association Inc.)*
15:45 – 16:00	The Sustainability Challenge – Automotive Industry Readiness for Road Authority Innovations (*Lars Nilsson, Swedish National Road Administration)*
16:00 – 16:15	Road, Road Vehicles and Road Infrastructure Interface - Challenges and Opportunities in the Transportation Network (*Paul Mulvanny and Steven Farmer, Qinetiq)*
16:15 – 16:45	Panel Discussion • How is the automotive industry adapting to support sustainable development and the goals of the Transport and Road authorities
16:45 – 17:00	Session Conclusion

IN-VEHICLE TELEMATICS - THE GOVERNMENT PERSPECTIVE ON ITS DEVELOPMENT

ASSESSMENT OF THE ADDED VALUE OF A SINGLE TELEMATICS PLATFORM AND ISA (INTELLIGENT SPEED ADAPTATION) FOR TRAFFIC AND ROAD SAFETY MANAGEMENT

Authors: Ir E. Kenis & G. Wils - Flemish Road Authority,
Ministry of the Government of Flanders/ Dept. Traffic & Transport Management,
Brussels, Belgium.
ericjm.kenis@lin.vlaanderen.be

Road Authorities are nowadays faced with the challenge of providing the best possible network, the processes behind it and the overall cost/benefit ratio, while trying to match the expanding need for mobility. At the same time, new (private) players are emerging in this field, claiming to be better placed to meet road user needs regarding comfort and safety. Encouraged by the successful development of fast (wireless) communication modes and powerful information technology, these so-called 'service providers' are concentrating on (personalised) traffic and transport information, mobile services and additional safety devices, such as personal assistance and emergency handling. This successful development, which can no longer be ignored, falls under the single heading of '*vehicle telematics'*.

In the context of losing the competitive advantage in the control of roadside equipment and/or fixed communication lines, Road Authorities are no longer the sole owner of 'mobility services'. However, their overall mission can be strongly supported by particular in-vehicle applications like 'Additional Driver Assistance Services' (ADAS) – which have a real, positive effect on Road Safety, and personalised traffic information and/or route guidance – that *could* support their Traffic Management strategies.

Furthermore, taking advantage of the fact that the industry (car manufacturers) equips the vehicles with additional intelligence, it might be interesting to see how public bodies could realise *their own* 'policy-related' services in a more cost-effective way. Onboard provision of messages could provide a solution for language independency and the inherent de facto lack of continuity caused by the use of road-related equipment. Onboard intelligence would enable new applications like Floating Car Data or Intelligent Speed Adaptation.

In our opinion, Road Authorities should look for opportunities that allow for or require cooperation with third (even private) partners in order to investigate new road maps to innovative, effective and economically justified services being part of their core business, and be open-minded about ways how to realise these goals. A shared use (and funding) of critical components in the vehicle (a positioning unit (GPS), a local storage/ calculation unit (PC), a communication module and a Human-Machine Interface) might be the solution for many issues.

As an important step in its in-vehicle telematics strategy, the Flemish Road Authority together with private sector partners launched a major on-road test in 2001.

The aims of the project were:

- to investigate a larger scale deployment of a single telematics platform allowing for a variety of in-vehicle safety applications and commercial services, provided by different 'providers';
- to investigate the potential of combining comfort and safety applications, and the organisational issues regarding public-private partnership in this field;
- to assess the potential for a specific in-vehicle safety application: *Dynamic* 'Intelligent Speed Adaptation' (ISA).

The first results indicate that combining comfort and safety applications on a single platform may prove to be a successful concept, both at the level of acceptance and rapid deployment, and at the level of cost.

Despite the complexity of *Dynamic ISA*, this application looks most promising as regards the effects on driver behaviour and enhancing road safety.

Key words: ITS/In-vehicle telematics/Public-Private Partnership/Intelligent Speed Adaptation (ISA)

VEHICLE PROBE PROCESSING TO SUPPORT INFRASTRUCTURE MANAGEMENT

Author: T. Russel Shields
Principal, Ygomi LLC
Chicago, USA
shields@ygomi.com

Probe processing is the centralized collection, fusion, analysis, and distribution of sensor data from road vehicles. The aim of probe processing is to build a comprehensive and accurate picture of the driving environment for use by a variety of applications. Using many vehicles to provide the sensor data, and combining it with data from multiple other available sources, can clearly provide a better picture of the driving environment than can be produced by an individual vehicle or from roadway sensors alone. The cost is for additional communications and processing. The primary intended uses for probe processing are improving the performance of in-vehicle safety systems and providing real-time and predictive traffic information. However, the results of probe processing are also widely applicable for helping to manage the infrastructure in such areas as:

- Improved traffic management through the rapid detection of incidents or building congestion and, equally important, good information on the state of alternate routes, including arterials as well as major highways
- Improved information on pavement conditions: early detection of developing rough spots and pot holes
- Improved information on road conditions: early detection and prediction of icy spots on roads and bridges, both to provide more reliable information to drivers and to help guide effective treatment
- Managing traffic flow in times of emergencies, including natural disasters and terrorist attack, both to evacuate at-risk populations and to get responders to the scene
- Detecting changes to roadside features, including missing or obscured signs
- Micro-level weather reporting, to accurate track temperature fronts, advancing precipitation, etc.

In many cases, the existence of probe capabilities eliminates or greatly reduces the need for infrastructure-based sensors and provides information for roads (e.g., primary and secondary arterials) for which infrastructure-based sensors will never be economic.

This presentation will discuss the promise of probe data processing, both in general and with a particular focus on effectively and economically meeting the needs of infrastructure managers.

PUSHING THE TELEMATICS MARKET BY USING ELECTRONIC TOLL COLLECTION AS A PLATFORM FOR VALUE ADDED SERVICES

Author: Dr. Thomas-Axel Stenske
Daimler Chrysler Services Mobility Management GmbH
Germany

Germany will start a vehicle autonomous toll collection system in August 2003. With this innovative system, no road side infrastructure is needed other than for spot enforcement. From next year on, Germany will run the most advanced ETC system in the middle of Europe. A variety of other ETC solutions are spread in the adjacent countries. European freight forwarding companies are challenged by a new toll collection system and need to decide which of the possible installations in their trucks will be appropriate. The new powerful On-Board-Units installed in each commercial vehicle bigger than 12 t are able to handle more than just one application. They are able to run different payment protocols, for different ETC architectures as well as for upcoming telematics services. By this, the gap between different European ETC systems is getting closer.

In addition, the use of Electronic Toll Collection (ETC) systems becomes more and more widespread. At the same time, the market for value added telematics services does not take off. Using ETC systems as a platform for offering value added services will have two positive effects: The use of telematics services is stimulated, and the overall acceptance of ETC systems can be increased. In this paper, the opportunities of using ETC systems as a platform for value added services are explained. An example for a common system set-up of ETC with value added services is given under consideration of an open system architecture to enable an open competition.

MOBILITY AND SUSTAINABLE DEVELOPMENT

Author: Tsutomu Kagawa
Former Executive Vice President
Japan Automobile Association Inc.

1. The Future Prospect of Energy

It is expected that the energy resources, such as crude oil, can meet the demand without any problem throughout this century. But on the other hand, there is an increasing worry that environmental pollution will be getting worse owing to the economic development mainly in the developing countries and therefore efficient use of energy is becoming even more important issue than ever.

2. Sustainable Development and Automotive Industry

2.1 WBCSD (The World Business Council for Sustainable Development)

The Sustainable Mobility Project was started in November, 2000, with an aim to make an assessment of the environmental impact resulting from the transportation industry and also to draw up the future vision to meet increasing traffic needs.

2.2 UNEP (United Nations Environment Programme)

A report "Industry as a Partner for Sustainable Development" was completed in cooperation with automotive manufacturers. This report refers to assessment of the past achievements of the automotive industry and also states the targets and challenges for the future sustainable development of the industry.

2.3 OICA (Organisation Internationale des Constructeurs d'Automobiles)

On the "Business Day" under the sponsorship of WBCSD, a statement titled "Sustainable Development and Contribution of World Automotive Industry" was announced in order to demonstrate how the automotive industry is coping with the issue of sustainable development.

3. Environmental Activities by Automotive Manufacturers

3.1 Activities to achieve fuel efficiency standards and reduction of exhaust emissions

The environmental regulations for automobiles are becoming more and more strict, as seen for example in the targets set for in the Kyoto Protocol and intensified restrictions of exhaust emissions. It becomes indispensable for the automotive industry to achieve these targets as early as possible in order to continue growth as an industry in the future.

Examples: 2010 Fuel Efficiency Standards (Japan), Voluntary Commitment on CO_2 emissions by ACEA, JAMA and KAMA (EU), ZEV Regulation (USA), etc.

3.2 Activities to promote recycling

The recycling activities are being pushed by legislation in Japan (Recycling Law and Initiatives) and EU (ELV Directive). But in USA, the recycling industry already exists and autonomously tackling with this issue.

4. Environmental Methods and Technologies of Automotive manufacturers

4.1 Promotion of LCA (Life Cycle Assessment)

In the product development of automotive manufacturers, using LCA methods is indispensable to achieve efficient use of energy and less environmental impact without sacrificing mobility.

4.2 Development of Environmental Technologies

It is assumed that the conventional fuel vehicles (gasoline and diesel engine) will continue a dominant position for some time. However, from the viewpoint of efficient use of energy and less environment impact, it is necessary to reconsider the present line up of the products, relying excessively on the gasoline and diesel vehicles, and to develop and spread clean-energy vehicles, as below-mentioned.

- Hybrid vehicles
- Fuel cell vehicles and Hydrogen powered vehicles
- Other alternative fuel vehicles (Natural gas, LPG, bio-diesel, etc.)

At the same time, further efforts are required to apply less pollution measures for the gasoline and diesel vehicles.

M&A and technical collaborations have been seen among automotive manufacturers and large-scale reshuffle of the industry occurred in relation to development of environmental technologies.

5. Conclusion

The sustainable mobility means the capacity that can meet the social needs to have free mobilization, access, deal and establishment of relations, without sacrificing the human and environmental values. (“Industry as a partner for sustainable development”, UNEP)

THE SUSTAINABILITY CHALLENGE

AUTOMOTIVE INDUSTRY READINESS FOR ROAD AUTHORITY INNOVATIONS

Author: Lars Nilsson
Environmental Director
Swedish National Road Administration

A sustainable road transport system is not only a vision but also a necessity in the future. The concept of sustainable development is important to bear in mind. A sustainable development has interdependence between economic, social and ecological development. Thus, the road transport system has to support all three aspects at the same time.

In order to achieve this, a new and more complex approach has to be taken from the road authorities point of view. Traditionally, we have built and maintained roads. Now, we have to be a part of a joint effort to develop the road transport system. The same challenge is set for the automotive industry.

A sustainable road transport system has to rely on renewable energy resources and clean technology. A sustainable road transport system cannot allow people to be killed on our roads. A sustainable road transport system has to support a good accessibility for all and, at the same time, support and promote an economic development.

A system approach is necessary, where infrastructure, vehicles and users are simultaneously analysed. It is necessary that roads and vehicles have other and better qualities than today and that they are compatible with each other and supports the user.

Some of the challenges for tomorrow are:

- A fuel efficient, clean car that allows for the introduction of renewable energy sources. The three-litre or better car is needed. But whether it is a diesel hybrid car, an electric car or a fuel cell car is still unclear.
- Roads and vehicles, compatible with each other, that keeps the crash forces down to a level where people do not get killed or seriously injured.
- Techniques that supports the drivers to drive within the system limits.
- Dynamic information services to the users, where the data collection and distribution systems are developed in co-operation between road authorities and car manufactures.
- Infrastructure improvement and good maintenance to allow new and more efficient transport solutions.

In Sweden the notion of an increasing interdependence between the administration and the automotive industry has led to a number of joint programs. We have research programs in cooperation between the Swedish National Road Administration, the Swedish Environment Protection Agency, the Swedish Energy Agency, the Swedish Agency for Innovation Systems and the Swedish automotive industry. The programs covers four areas, general vehicle research, "the green-car program", emission research and intelligent vehicle safety systems. In addition, the development of "Intelligent Speed Adaptation" and "National Road Database" are examples of individual programs.

However, new technologies have to penetrate the market if the system is to improve. Traditionally, this has been assured, from the authorities point of view, by laws and regulations. The drawback from this approach is that it is slow and sometimes leads to inefficient solutions. Innovation and market penetration through market demand, especially though corporate behaviour, is therefore a prioritised strategy.

The Authorities and the industry have different goals and driving forces, but also a common interest in facilitating a sustainable transport system for the future. A transport system that can truly support a sustainable development.

ROAD, ROAD VEHICLES AND ROAD INFRASTRUCTURE INTERFACE CHALLENGES AND OPPORTUNITIES IN THE TRANSPORTATION NETWORK

Authors: Paul Mulvanny and Steven Farmer
Qinetiq

The success of road transportation is dependent upon increased levels of mobility for goods and services.

In Europe, an increase of 24% above today's levels have been set in the White Paper for Transport adopted by the European Union in September 2001. In the preface it is suggested that congestion will account for 1% of GDP if nothing is done.

With 80% of passenger and goods being transported by road there is a huge opportunity for improvements. Indeed there is a challenge associated with the timescale for improvement. Not only has a target been set for an increase in mobility but at the same time the demand for road traffic efficiencies will increase due to member state enlargement.

A stakeholder analysis for the road network itself, together with the inclusion of stakeholders from interfacing transport modes would be the starting point to identify opportunities for cost effective improvements to the transport system.

The aim would be to achieve a balanced set of requirements between business and user groups that would allow a gap analysis to be derived between existing and new technology options.

The most recent explosion in technology opportunity is in the area of Geodata based services that in principle allows the optimisation of journeys for both passengers and goods.

This paper explores the science and technology that underpins many current Geodata proposals and identifies both roadblocks and enablers to maximise stakeholder benefits, with a focus on the overall performance of road transportation network.