Telesaurus JV
Telesaurus VPC LLC
AMTS Consortium LLC
Telesaurus Holdings GB LLC
Intelligent Transportation Wireless LLC

www.telesaurus.com

Nationwide spectrum & solutions for ITS & environment

Berkeley California

Ex parte presentation

July 2, 2007

Marlene Dortch
FCC, Office of Secretary
445 12th Street, SW
Washington, DC 20054

Re: WT 06-49, LMS-M NPRM: Further Response to Progeny and Part 15 Coalition Recent Presentations:

Why LMS-M must be maintained for Intelligent Transportation Systems ("ITS"), and no rules changes made, including no reduction in power or time of use.

Major public safety, energy and environmental benefits of ITS wireless: in accord with US and International standards, and sound, detailed Commission reasoning in establishing LMS-M last decade.[1] Attached description.

The Telesaurus LLCs (listed above)[2] herein address the above-listed topics. European, Japanese, and other nations are forging ahead in ITS wireless (including location and wide-area communications): advancements include those summarized below in *essential* Transportation, Safety, Environment, and Energy Improvements.

The US is advancing in ITS DSCR (DOT VII) for short-range wireless, and Telesaurus has recently described in presentations in this docket its plans under a research

---

[1] In its presentation filed 4.30.07 on EFCS (dated 4.19.07) Telesaurus provided the relevant excerpts from WT 06-49, along with an initial outline version of the paper attached hereto.

[2] Telesaurus Holdings GB LLC holds and affiliates, listed above, hold the largest amount of spectrum dedicated for ITS in the nation: approximately 80% of the 900 MHz LMS-M A block (the block least used by Part 15 devices, as previously shown), the majority of geographic spectrum in the 217-222 MHz bands in the US on a geographic basis, and over 300 other geographic licenses. The 200 MHz spectrum range has been found exceptionally useful for major ITS applications. See, e.g., "Evaluation of 220 MHz Frequencies for ITS Experimentation," FHA-DOT Research Report SPR-235-00-1F / KTC-02-03, Kentucky Transportation Center, 2002. In addition, for similar (propagation) reasons, the same lower 200 MHz band is used increasingly in nations employing T-DMB mobile TV and data broadcasts for ITS purposes (traveler and traffic information, etc.). See Telesaurus website. Nationwide 900 and 200 spectrum is an ideal combination for wide-area ITS. See Telesaurus website.

contract with the University of California's ITS center (CCIT) to develop in the US, based on its LMS-M, wide-area location and communication systems integrated with DSRC (mainly the US DOT's nationwide VII program). Core ITS goals and applications include public safety on roadways (including direct uses by public safety organizations), pollution reduction and environmental_protection, and support of a what is being planned as a major beneficial change in the US energy systems: vast improvements in electric-power production, storage, and delivery systems by "V2G" (Vehicle to [electric] Grid) which requires ITS wireless for effective implementation.

Progeny (only recently has an alleged officer appeared) and of the "Part 15 Coalition" (whose members do not officially appear, nor have vested rights to LMS-M spectrum) have manufactured an artificial debate, avoiding the purpose of LMS-M: wide-area ITS radio service. They seek to carve up for private interests a radio service entirely needed in the US for the *essential* public interest goals noted above, and detailed in the attachment hereto. Progeny and the Coalition:

- Ignore the high public interest reasons for LMS-M: wide-area ITS wireless, and show no reason that ITS and ITS wireless, including essential wide-area location and monitoring, advancing world wide, will not succeed in the US.

- Would make LMS-M ITS systems practically impossible in the vast majority of the US, by reducing the power and time of use of LMS-M systems (verses the current rules' reasonable, well-considered allowances).[3]

- Offer no public interest justification for seeking to divert LMS-M from ITS to other vague and general purposes, including by trading power and time of use for use "flexibility." As the attachment hereto reflects, ITS a huge field, and the current rules allow ample use and technical "flexibility" to pursue it in various ways.

Attached is a paper (a near final draft) accepted for presentation at the 2007 ITS World Congress, this year in Beijing. It was prepared by ITS and wireless engineers at the University of California CCIT (ITS) center along with Telesaurus.[4]

In this paper, we present the goals and specific applications of nationwide wide-area ITS wireless—providing integrated transportation, public safety, environment, and energy benefits—and subsidized and sustained by synergistic commercial applications. We also outline the need for and practicality of its integration with DSRC.

---

[3] Progeny, in RM-10403, offered to trade technical rights for "flexible" use rights, but in this NPRM proceeding first retracted that, then changed again. The Coalition first insisted on no rule changes, and now seeks to quash LMS-M for any useful wide-area purpose, by seeking decimation of power and time of use, in the guise of accommodating Progeny.

[4] As previously noted in this docket, Telesaurus has contracted with the University of California, a leading international center for transportation and wireless research, to collaboratively develop and test out the Telesaurus nationwide ITS wireless plans.

Just as the Commission and most others involved in public safety wireless now agree that pubic-private partnerships are the most practical or one good means to implement wide-scale public safety wireless networks (as in 700 MHz), similarly, ITS wireless is a practical and complementary convergence of pubic-agency and private-enterprise goals, applications, and operations, as reflected in the attachment hereto.

Likewise, as in public safety mobile spectrum, ITS LMS-M spectrum in the 900 MHz range (and the nearly nationwide 200 MHz licenses spectrum the Telesaurus LLCs obtained to complement LMS), is required for wide-area, cost-effective, mobile vehicular coverage, and must have adequate power and no time limitation on use—no LMS-M rule changes. General purpose and more localized wireless can be pursued in the various (generally higher-frequency) extensive unlicensed and licensed bands allocated for such purposes.

For reasons given above, in the attached, and in the preceding presentations of Telesaurus, the Commission should reject both Progeny's and the Coalition's proposals and make no changes to the rules. It should support ITS wireless and licensees pursuing it for all the reasons it enthusiastically projected when allocating LMS-M last decade that are proving entirely correct in the now rapidly unfolding ITS field.

Respectfully,

Warren Havens, President
Telesaurus Holdings GB LLC
2649 Benvenue Ave, 2-6
Berkeley, CA 94704
510.841.2220 – phone. 510.841.2226 –fax

Attachment

Email copies to:

Chairman Kevin J. Martin
Commissioner Michael J. Copps
Commissioner Jonathan S. Adelstein
Commissioner Deborah Taylor Tate
Commissioner Robert M. McDowell
Bruce Gottlieb, Office of Cmmr. Copps
Barry Ohlson, Office of Cmmr. Adelstein
Aaron Goldberger, Office of Cmmr. Tate
Angela Giancarlo, Office of Cmmr. McDowell
Fred Campbell, Chief, WTB
Julius Knapp, Chief, OET
Ron Chase, OET

Ira Keltz, OET
Ahmed Lahjouji , OET
Geraldine Matise, OET
Bruce Romano, OET
Alan Stillwell, OET
Karen Rackley, OET
Hugh van Tuyl, OET

Janice Obuchowski, Freedom Technologies Inc.

Mitchell Lazarus, Part 15 Coalition
Henry Goldberg, Part 15 Coaltion

Attachment

The following is a draft of paper accepted for presentation to the 2007 ITS World Congress, Beijing.

The paper included in the Congress proceedings may vary in form and details from the below but not in overall themes and rationale.

In addition, following the below paper are attached summaries of some principal ITS wireless programs of the European Union. With CCIT, Telesaurus is studing, as well as exchanding information with, these programs, commencing with meetings in Europe last year at the 2006 ITS World Congress.

W. Havens, Telesaurus

ITS WIDE-AREA WIRELESS NETWORKS

Saneesh Apte
Associate Development Engineer
California Center for Innovative Transportation
2105 Bancroft Way, Berkeley CA 94720-3830, United States
(510) 642-5478 – san@calccit.org

J.D. Margulici
Senior Development Engineer
California Center for Innovative Transportation
2105 Bancroft Way, Berkeley CA 94720-3830, United States
(510) 642-5929 – jd@calccit.org

Warren Havens
President
Telesaurus LLCs - ITS Group
Berkeley California, United States
(510) 814-2220 – warrren.havens@sbcglobal.net

Abstract

The California-based consortium of Telesaurus LLCs and related nonprofit foundations have acquired FCC radio spectrum licenses throughout the United States for wide-area location, data, voice, and other intelligent transportation systems (ITS) services. Telesaurus intends to partner with government, TV stations, power utilities and other infrastructure enterprises to offer nationwide wireless ITS services. The California Center for Innovative Transportation (CCIT) is investigating such wide-area wireless ITS networks from public policy, technical, and economic perspectives. This paper presents the methodology and some early findings. Of particular interest is the possible tight integration between wide-area and short-range ITS wireless networks, specifically Dedicated Short-Range Communications (DSRC).

Main Text

INTRODUCTION

Background

Over the past several years, a Berkeley California based consortium of Telesaurus LLCs and the related nonprofit Skybridge Spectrum Foundation (together "Telesaurus"), has acquired substantial radio spectrum in the lower 200 MHz and 900 MHz "LMS" ranges authorized for use in the vast majority of the United States (US) for location, data, voice, and other intelligent

transportation systems (ITS) services (principally under Title 47 CFR Part 90 Subpart M). Telesaurus is also eligible under FCC rules to use DSRC spectrum in the 5.9 GHz range nationwide. The California Center for Innovative Transportation (CCIT), which focuses on the deployment of transportation technology, and works with researchers, public agencies, and innovative companies, is investigating how this spectrum can be leveraged to deploy wide-area wireless networks for ITS services.

Vision

The vision that drives the present investigation is a standards-based nationwide ITS-centric wireless network providing ITS services with applications for commuters, travelers, government, commercial fleets, transportation operators, first responders, as well as other communication, position, navigation, and timing services.

The network would be unique in the United States in (1) its use of especially suitable radio spectrum (200, 900, and 5900 MHz) and architecture for mobile, vehicular (and other long-range) wireless coverage and links, (2) in its efficient design and operation for ITS and related Energy and Environmental applications, and (3) as critical nationwide supplement and backup of GPS. In sum, a nationwide ITS, Energy, and Environment Wireless Network.

These high public-interest network functions, mostly not-for-profit and closely tied to governmental goals and operations, would be subsidized and sustained by compatible commercial applications built upon the success of the former. Telesaurus has advocated an synergistic "public-private" approach from its inception.

Envisioned network components and applications are described below.

Scope

In partnership with Telesaurus, the goal of the CCIT investigation is to explore the concepts and key features of a wide-area wireless network that would serve transportation and related sectors. Providing ITS services and applications over such a network is an ambitious project that raises a set of fundamental questions: (A) What exact services and applications would be provided? (B) What technologies would enable the network? (C) What value would the network add to existing and planned ITS services and initiatives? (D) Who would support or partner to realize the initiative and how? (E) What work in these areas has been done by others in the ITS field in the US and internationally?

Answering those questions requires not only analyzing technical and business elements, but also factoring in stakeholders' perspectives, including local and state transportation authorities, the FCC and US DOT, established ITS companies, wireless equipment manufacturers, automobile companies, ITS entitles in other nations, and the like.

AREAS OF INVESTIGATION

At this phase the investigation concentrates on concept exploration to assess the technological, economic, business, and institutional feasibility of the network. We start with needs, then look at technology, and ultimately intend to outline deployment steps.

Determine Network Services

The first question to be asked is what needs or opportunities would the network fill. A wireless network providing wide-area, core ITS services may enhance the safety and security of the transportation system, ease congestion, and reduce pollution in significant ways. The proposed network may provide services to three major groups—the traveling public and vehicle fleets, transportation operators, and public safety agencies. All three groups currently consume various wireless services, and in order for the proposed network to improve the value delivered to each group, it is necessary to understand current utilization. We will therefore survey and classify existing and planned services to potential users and extrapolate to determine how an ITS-specific wide-area wireless network would add value, either by enhancement or introduction of services.

Technology and Standards

This area of investigation consists of surveying current and developing technologies and evaluating which are best positioned for the envisioned network. The choice of wireless protocols and related technologies will substantially influence what services can be offered on the network. The set of requirements and constraints to be considered include: signal modulation, priority settings, privacy, mixing multiple services and user categories, maintaining bandwidth and reliability, terrestrial wide-area pseudolite and GNSS location and timing, etc. We will review technical standards and protocols including those involving DSRC- VII, ISO TC 204 and 211, CALM, CVIS, GST, dedicated mobile wideband digital broadcast and use of non-peak capacity of digital TV stations, wide-area pseudolites, TETRA releases, WiMax, WiFi, MIMO, optimization of vehicle platform for communications including integration of mobile WWANs and WLANs, integration with commercial wireless networks, etc.

Implementation and integration into the existing ITS landscape

Implementation in the ITS world requires more than technology. Identified needs, funding, champions, user acceptance and institutional support is the name of the game. A key implementation question underling the development of a wide-area wireless ITS network is how the network will complement, enhance or replace other networks, existing or planned. This includes the Federal Vehicle-Infrastructure Initiative (VII) (DSRC-based), networks deployed by state and local transportation authorities, commercial wireless networks, GPS and GNSS, outfitting government fleets, and other future networks such as municipal broadband and 4G. A clear picture of the interactions with these other networks will be required to move forward.

Another key aspect of the implementation strategy is the necessity to deploy the system in successive, scaled stages. This is necessary because the proposed network concept is large,

pervasive, and depends on the adoption and attachment of add-on third-party services. Therefore the analysis will separate what can be accomplished quickly from the longer-term vision, and establish a path between those two points.

EARLY FINDINGS

Physical Network Overview

The envisioned network has three main hardware system components, and a fourth ancillary component, each with wide-area coverage. (1) "Broadcast"-- long-range broadcast stations to provide a high volume of one-way traveler information to vehicles, (2) "TwoWay"-- medium-range stations along the roadways for vehicles to send small but frequent amounts of information back and for certain two-way communications, and (3) "Location"-- pseudolite location stations mostly collocated with the Broadcast and Two-Way stations. The Two-Way stations can initially be built every tens of miles along the roadway (and other near routes, rail-lines, utility pipelines, etc.), as analog cellular did in its early stage, to provide the talk-back and two-way functions from whatever nodes (vehicles) are present, and can later be made denser as the number of nodes increase.

This set-up is much more efficient than commercial wireless networks since the bulk of the information is broadcast rather then sent point-to-point, since coverage to vehicles requires less stations than to handheld radios, and since the network will be designed to be extensible so adding nodes is uncomplicated. Also, commercial mobile phone providers are limited by their current network set-up in the number of cell sites they can add without self-interference: a limitation absent in wide-area broadcast from one or numerous same-channel stations.

Further, the Broadcast and Two-Way stations and their timing components can be used as platforms for the Location stations employing TDOA signals for GNSS pseudolite enhancement (4) "Fixed Wireless"-- Finally, all three main network station classes can provide wireless communication, location and timing services to the network itself, for roadway authorities, and for environmental monitoring, via fixed wireless links (including movable devices such as certain electronic highway signs). Fixed Wireless is a supplemental fourth network component class using the spare capacity of the three main components. With essentially the same amount of FCC licensed spectrum everywhere (and using similar system architecture) there will always be substantial spare capacity outside the urban areas with highest traffic: areas where Fixed Wireless is especially important, and certain capacity for Fixed Wireless will be reserved in all areas.

Application Classes

Described above are several examples of applications that could become available on the envisioned network, but because there are so many, it is useful to combine them into groups or application classes. This kind of structure has two uses, one is to understand what kinds of network services are needed to enable a particular application class and help design the network architecture, and the other is to present, in a uniform way, the world of possible uses to potential

partners, stake-holders, or other interested parties. Also, while there is overlap, we group the classes into several broad Groups.

Identified application classes and class Groups include:

Essential Information Group—Traveler & Road Information Reporting & Collection.

- Traveler Information Dissemination—Continual dissemination of publicly available data to vehicles most essential for travel. Includes, but not limited to, traffic, weather, and detour information, transit, airline and rail schedules and conditions, road tolls and fast lane options, critical roadside merchants and facilities, etc.

- Traffic and Environmental Data Collection—Regular collection and upload of traffic and environmental data from vehicles (equipped with "probes") to the network, including but not limited to vehicle location, speed, and current road conditions, and forwarding the date to public authorities and others.

Location, Navigation, Control & Timing Group—E911, AVC, AVL & Other.

- Enhanced-911—Applications where, in emergencies, a vehicle or occupant transmits its position and status, in data and voice, for efficient dispatch of services, including automatic crash notification.

- Automatic Vehicle Control ("AVC")—Applications of roadway authorities for critical safety control of vehicles, e.g., Intelligent Speed Adaptation (ISA), lateral lane control, and non-emergency wireless communication control (restrictions in severe road conditions).

- Vehicle Navigation and Parking—Applications providing step-by-step real-time directions, digital maps, alternative routing (based on ETOA speed, and other criteria), and (with cooperation of facility authorities) parking directions to available spaces.

- AVL and Fleet Management Applications—Applications that require the real time tracking of and essential communications with a fleet of vehicles (public or private). Can also apply to non-vehicle objects, such as shipping containers, heavy equipment, etc.

- Special PNT—Special applications (other than ITS) involving Position, Navigation, and/or (precise) Timing, using the Network's wide-area pseudolite-GNSS hybrid subsystem. For example, this could (i) back up and/or extend-enhance similar localized hybrid systems at major airports, and for construction, agriculture, resource extraction, seismic-monitoring, robotic repair, rescue and missions, and other operations, (ii) back up GPS-GNSS location and timing over wide regions if it was deliberately jammed or spoofed, or otherwise fails, (iii) back up and extend GPS-GNSS timing for various operations and industries.

DSRC-VII Extension Group.

- Carrying on DRSC Applications on WAN—Applications using the planned Wide Area Network (WAN) to extend over geography and in time many of the essential Vehicle to Roadside, and Vehicle to Vehicle Dedicated Short Range Applications (DSRC) applications planed for the US DOT's VII localized systems. (See below section for more on this Group and its rationale.)

<u>ITS & Public Agency Services Group—Tolling, Emergency Preemption, & Enforcement.</u>

- Facility and Segment Tolling—Automatic collection of tolls for facilities (bridges, tunnels, etc.) and limited-access highway segments, using vehicles' electronic identification as they pass by locations, determined wirelessly (GNSS+pseudolites) or by beacon stations.

- Open Road Tolling—Automatic tolling applications that require details of vehicles travel along any specific roadway segments or distances over time.

- Preferential and Pay-to-Go Lane Use—Applications that involve authorization for and enforcement of fast lanes for HOV, preferred-fuel vehicles, and other priority vehicles, and for pay-to-go and market-based lane-use (or segment use) programs. Would include interaction with drivers for authorizations, warnings, enforcement, charging, etc.

- Law Enforcement Assistance—Applications in which vehicle identification and position information is supplied to law-enforcement in real-time, to assist in arrests, investigations, and alerts.

- Electronic Traffic Ticketing—Applications where the vehicle identification, speed, and position is used for automated, non-real-time traffic ticketing, with real-time warnings and near-real-time delivery of e-tickets with proof of violation.

- Emergency Pre-emption—Applications which cause or require that network components be preempted in whole or in part by a government agency in a time of emergency, for highway flow and safety, individual aid and reporting, etc. *Essential in major emergencies with population fleeing in vehicles.*

<u>Energy & Environment Services Group.</u>

- V2G Support—Dissemination and collection of needed to support Vehicle to Grid networks, both to vehicles when moving, and when parked and uploading electric power from or downloading to the Grid. Also, Fixed Wireless links to support V2G stations and infrastructure.

- Environmental Monitoring—Very wide area wireless links to monitoring stations in urban to very rural areas, for data and video collection day-to-day, and in natural or man-made environmental emergencies.

<u>Infrastructure Support Group.</u>

- Network links—Wireless links between network infrastructure station components.

- ITS Data Backhaul—Applications which use the network for backhaul of ITS data, including but not limited to transmission of probe data from fixed sensors: for ITS public agencies including support of and interoperation with DSRC stations.

Commercial Applications Group.

- Retail Transaction Applications—Applications that require the ability of a vehicle (owner) or occupant to conduct financial transactions with providers of goods or services.

- Vehicle Warranty, Insurance, and Lease Applications—Automatic reporting of vehicle use and systems status for preferential warranty, insurance, maintenance and lease, and roadside assistance contracts.

- Container Transport Tracking and Monitoring—Applications involving location, tracking, and security and status monitoring of major shipment containers.

- Onstar) for the direct benefit of the vehicle occupants.

- Broadcast Entertainment—A broad application class encompassing all streaming quasi-real-time entertainment, news, and other media services on subscription or per-item basis.

- On-Demand Entertainment—A broad application class encompassing all entertainments services, such as video and audio services, that must be requested by the user in the vehicle, and which do not require real-time delivery.

- Commercial Wireless Systems Support—Provision of various location and other functions to commercial wireless network operators.

Emergency, Maritime, and Air Services Group.

The 200 and 900 MHz high-power mobile equipment used for the ITS highway systems will be especially suitable for the following applications, and the eventual volume will make these cost effective.

- Emergency Services with Portable Repeaters—Applications using caches of equipment (portable repeaters and handheld version of the vehicle radios) that can be flown in for use in major emergencies to supplement the wireless systems of relief workers.

- Rural Air-to-Ground Services— In rural areas where the network would have extra capacity (using same architecture and spectrum) as in urban high-traffic areas, use of the capacity to provide high-speed mobile links to commercial and private aircraft, along well-used flight paths. (Supplement to the US 850 MHz air-ground wireless.)

- Maritime Services—Optimization of long-range coverage in costal and inland major waterways, for both location and high-speed communication links to maritime vessels, similar to those provided on land.

Data Dissemination Group—Network Website, and Handoffs to Other Wireless.

- Network Website—Collection, processing, and dissemination of data involved in the above dissemination and collection applications. Most disseminated over the Internet with GUI display, including handoff to commercial mobile wireless networks, and additional data provided to public agency networks. Website data presentations may in large part follow Global System for Telematics (GST) (or alternative vehicular GUI display) for the same classes of data.

Integration Issues

A key factor to the appeal and ultimate success of a wide-area wireless network is how it complements and enhances existing or other planned services. In particular, the envisioned wide-area network should support or ideally become an integral piece of the puzzle in the federal Vehicle-Infrastructure Integration (VII) initiative based upon Dedicated Short-Range Communications or DSRC. (The FCC recognizes and classifies LMS and DSRC as the two US ITS radio services, but leaves integration up to the spectrum licensees and operators.)

With regards to VII specifically, it is essential to demonstrate that a wide-area network could not only complement but in fact accelerate the deployment of the federal vision for VII. The prevalent research approach for VII currently focuses on high-availability, low-latency, short-range communications through a protocol operating at 5.9 GHz and known as Dedicated Short-Range Communications (DSRC), that would be needed to provide safety-critical applications involving real-time data transmission when a possible crash is imminent, and for various other ITS services, from essential safety to commercial in nature. Short-range and wide-area network ("WAN") and protocols may complement each other in important ways:

(1) Certain applications are more suited to short-range, low-latency communications, at strategic locations (like intersections) while other may be better or only served by a wide-area network with continual communications, and in large part, mutli-QoS communications;

(2) Vehicle users will expect substantial and consistent coverage from any wireless capability built into vehicles, and even with hundreds of thousands of DSRC stations at major intersections and interchanges, the vast majority of roadways will not have coverage without complementary wide-area wireless systems (and expecting a wireless safety function to operate regularly when it often does not, may even be counterproductive or dangerous);

(3) Adopting a mix of strategically located short-range beacons within an encompassing regional wide-area wireless network, where the two forms of communication are substantially integrated, may be a practical and cost-effective approach to a global ITS wireless network;

(4) A WAN can be built and operated far more quickly and cost effectively than the desirable number of DRSC stations in a given major urban area, and thus, the WAN can provide regional network coverage in which the local DSRC stations can be increasingly added over time: the two each providing and coordinating many if not all important ITS services; and

(5) For these reasons, short-range and long-range communications may leverage off each other to offer a more compelling business case both in shorter term longer terms. The last two points are particularly crucial because the emergence of safety-critical applications made

possible by DSRC requires a high-penetration rate for DSRC receivers--buy-in by automobile makers and the public--leading to a so-called "chicken and egg problem."

By coordinating the deployment of wide-area systems with that of DSRC stations, it should be possible to support dual-system, multi-band end-user vehicle transceivers that provide drivers with immediate benefits of many core ITS applications via wide-area systems, and use them to support increasing numbers of DSRC stations and the additional ITS safety functions they will provide at their strategic locations.

FURTHER READING

The Telesaurus website, telesaurus.com, contains descriptions, depictions and URL links related to the above.

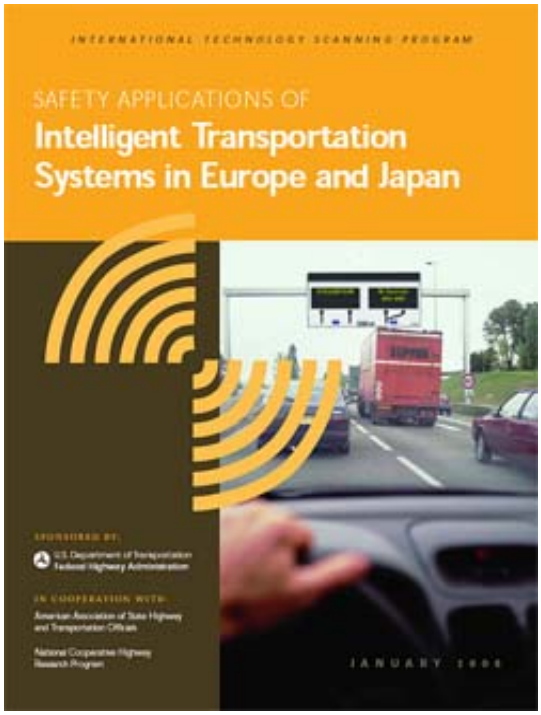
U.S. Department of Transportation
Federal Highway Administration

FHWA Home | Feedback

Intelligent Transportation Systems in Europe and Japan

Table of Contents and Executive Summary

Also avalible as a PDF file: ipsafety.pdf (3,557 KB)
To view PDF files, you can use the Acrobat® Reader®.



- Executive Summary
- Sample Initiatives and Applications
- Summary of Findings and Recommendations
- Planned Implementation Actions
- 1. Introduction
  - 1.1. Study Objectives and Focus Areas
  - 1.2. Study Organization
  - 1.3. Panel Composition
  - 1.4. Amplifying Questions
  - 1.5. Implementation
- 2. Observed Applications and Initiatives
  - 2.1. Communicating Via Overhead Message Signs
  - 2.2. eSafety Initiative
  - 2.3. eCall: Connecting the Driver to the Rest of the World
  - 2.4. Image Processing to Assist the Driver
  - 2.5. Electronic Toll Collection Transparency
  - 2.6. SafeMAP: Digital Information for Safer Driving
  - 2.7. Speed Management and Enforcement
  - 2.8. TPA Speed Horizon
  - 2.9. Video Detection for Traffic Management
  - WILLWARN: A PReVENT Project
  - Code of Practice
  - SARI: Predicting Roadway Characeristics
  - Driver Assistance
  - Optimizing Facility Throughput
- 3. Findings and Recommendations
  - 3.1. Findings
  - 3.2. Recommendations
- 4. Implementation
  - 4.1. Automated Enforcement Systems
  - 4.2. Evaluating Advanced Video Detection and Incident Analysis Technology
  - 4.3. Advanced ITS Signing for Safety and Mobility
  - 4.4. Safety Benefits of Vehicle-Infrastructure Integration Systems
  - 4.5. Dynamic Speed Limits: Improving Safety and Mobility
  - 4.6. Top-Down Safety Leadership Commitment: Making it Personal
  - 4.7. Enhanced Roadway Features Database
- Appendices
  - Appendix A: ITS World Congress, Japan
  - Appendix B: International Contacts
  - Appendix C: Team Members
  - Appendix D: Amplifying Questions
- Figures
  - Figure 1: Annual number of fatalities.

- Figure 2: Annual fatality rate.
- Figure 3: World Health Organization fatality and injury report.
- Figure 4: International symbol.
- Figure 5: Changeable message signs.
- Figure 6: Variable message sign.
- Figure 7: Variable message sign with congestion indication.
- Figure 8: Variable message sign with congestion indication - ground mount.
- Figure 9: Static overhead sign.
- Figure 10: eSafety Forum logo.
- Figure 11: eSafety Forum organization chart.
- Figure 12: Liber-t.
- Figure 13: Enforcement cameras and speed limit signage on the A7.
- Figure 14: Fixed speed enforcement camera.
- Figure 15: Speed enforcement signage.
- Figure 16: Measured results of automated enforcement.
- Figure 17: Automatic speed enforcement process diagram.
- Figure 18: LAVIA logo.
- Figure 19: TPA speed horizon system.
- Figure 20: Speed profile diagram.
- Figure 21: WILLWARN logo.
- Figure 22: PReVENT project approach.
- Figure 23: Crashes in Germany 1998-2002: loss-of-control crashes.
- Figure 24: Driving support system - poor visibility.
- Figure 25: P-MAC warning system - work zone.
- Figure 26: VICS.

- Tables
  - Table 1: Scan itinerary
  - Table 2: Team members and organizations

U.S. Department of Transportation
Federal Highway Administration

FHWA-PL-06-001 HPIP/1-06(3.5)EW

Notice

The Federal Highway Administration provides high-quality information to serve Government, industry, and the public in a manner that promotes public understanding. Standards and policies are used to ensure and maximize the quality, objectivity, utility, and integrity of its information. FHWA periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

Technical Report Documentation Page

1. Report No.: FHWA-PL-06-001
2. Government Accession No.:
3. Recipient's Catalog No.:
4. Title and Subtitle: Safety Applications of Intelligent Transportation Systems in Europe and Japan
5. Report Date: January 2006
6. Performing Organization Code:
7. Author(s): John Njord, Dr. Joseph Peters, Michael Freitas, Bruce Warner, K. Craig Allred, Dr. Robert Bertini, Robert Bryant, Robert Callan, Martin Knopp, Lyle Knowlton, Carlos Lopez, Tom Warne

[

Draft Business Plan of
ISO/TC 204 - Intelligent Transport Systems

Introduction

ISO Technical Committees and Business Planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure, which forms part of a major review of business. The aim is to align the ISO work programme with expressed market needs and to allow ISO/TCs to prioritize between different projects, to identify the benefits expected from the availability of International Standards and to ensure the adequate resourcing of projects through their development stages in the ISO/TCs. Your role in the implementation of the Business Planning concept will contribute significantly to the overall effectiveness of international standardization.

We express our sincere appreciation and thanks for your time in reviewing this Business Plan.

International standardization and the role of ISO

The foremost aim of international standardization is to maximize long-term benefits to users, industry, and society by facilitating the exchange of goods and services through the creation and adoption of common technical approaches for trade and commerce.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 130 countries (organizations representing social and economic interests at international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the Industry Technical Agreement (ITA) as a deliverable, which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the ITA is developed by ISO workshops and forums, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

Page 1 only

SAE International
The premier society dedicated to advancing mobility engineering worldwide.
www.sae.org

ISO/TC204 Transport Information and Control Systems (TICS)

Standardization of information, comunication and control systems in the field of urban and rural surface transportation, including intermodal and multimodal aspects thereof, traveller information, traffic management, public transport, commercial transort, emergency services and commercial services in the transport information and control systems (TICS) field.

Excluded:
In-vehicle transport information and control systems (ISO/TC22)

Note:
ISO/TC204 is responsible for the overall system aspects and infrastructure aspects of transport informatin and control systems (TICS), as well as the coordination of the overall ISO work programme in this field including the schedule for standards development, taking into account the work of existing international standardization bodies.

Draft Business Plan of ISO/TC204
The objectives of preparing a formal business plan are to require the technical committee to analyze conditions and trends in the market sector which it serves and explicitly to link its work program with the sector's requirements.

CHAIRMAN:
J. Martin Rowell
Vice President Industry Relations, Navigation Technologies

SECRETARIAT:
Pat Copelin
International Standards Developer, Society of Automotive Engineers Email: pcopelin@sae.org

Participating Members (P-Members)
Observing Members (O-Members)
Internal Liasons
External Liasons

Working Groups
Working Group 1 - Architecture
Working Group 2 - Quality and Reliability Requirements
Working Group 3 - TICS Database Technology
Working Group 4 - Automatic Vehicle Identification
Working Group 5 - Fee and Toll Collection
Working Group 6 - General Fleet Management
Working Group 7 - General Fleet Management and Commercial/Freight
Working Group 8 - Public Transport/Emergency
Working Group 9 - Integrated Transport Information, Management, and Control
Working Group 10 - Traveller Information Systems
Working Group 11 - Route Guidance and Navigation Systems
Working Group 14 - Vehicle/Roadway Warning and Control Systems
Working Group 15 - Dedicated Short Range Communications for TICS Applications
Working Group 16 - Wide Area Communications/Protocols and Interfaces

©2007 SAE International. All rights reserved.
CustomerService@sae.org
U.S. & Canada: 1-877-606-7323
International: 1-724-776-4970

See also ISO TC 211: ITS location and GIS.

See Telesaurus.com

ERTICO ITS EUROPE

Search ERTICO.com:

SITEMAP | A-Z INDEX | CONTACT

ERTICO - ITS Europe
Blue Tower
Avenue Louise 326
B-1050 Brussels
Belgium

Tel: +32 (0)2 400 0700
Fax: +32 (0)2 400 0701
info@mail.ertico.com

Efficiency & Environment

The estimated 300 million drivers in Europe today would all appreciate more efficient road networks. Congestion costs the EU €50 billion every year, or 0.5% its GDP.[1] As the number of cars and the distance travelled continue to increase, this figure is estimated to rise to 1% by 2010. Over the last 30 years, the number of cars per 1000 persons has doubled and the distance travelled by road vehicles has tripled. As a result, 10% of Europe's roads are congested daily.[2]

Commercial transport and today's just-in-time logistics operations both depend on reliable, predictable delivery times. Unforeseen delays have a great impact in terms of additional transport costs – borne by customers – and increased energy use and emissions, a burden that generally falls on the local population.

ITS, coupled with appropriate investments in infrastructure, can help increase the efficiency of our transport networks.

Improved systems that collect and deliver real-time traffic information to urban traffic control centres will help infrastructure operators manage the traffic more efficiently, potentially reducing standstill traffic and congestion by up to 40% according to recent estimates.[1] However, ITS technology has already made great strides to improve the efficiency of the road network. Systems such as coordinated traffic control, ramp metering, variable message signs, and traffic and incident detection systems have been implemented across Europe to monitor road conditions and provide for quick and smooth journeys.

ITS technology designed to improve travel efficiency can also bring corresponding benefits to the environment. In 2002, road transport consumed 83% of the total energy used by the transport sector, representing 26% of EU's total energy consumption.[3] With improved traffic management, this number could be significantly reduced.

Research shows that the fuel consumption of road transport could be reduced by up to 50% by encouraging efficient driving behaviour and reducing traffic congestion.[4]

Route guidance, traffic information services and driver assistance systems can contribute by informing users of traffic jams and the best routes, while systems such as parking guidance send drivers directly to an available space.

In addition to seeking such efficiency-related environmental benefits, ERTICO plans to look into how ITS can directly contribute to making transport more environmentally friendly through two main activities: developing support tools for driving in a more fuel-efficient way and technologies to supply route-specific information on traffic conditions, topography and air quality to vehicle engine management and emission control systems.

[1]Communication from the Commission: "Keep Europe moving – Sustainable mobility for our continent." (Mid-term review of the European Commission's 2001 Transport White Paper), COM(2006)314 final, 22 June 2006
[2]Communication from the Commission on the Intelligent Car Initiative - "Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles", COM(2006)59 final, 15 February 2006
[3]Ibid.
[4]Communication from the Commission: "Keep Europe moving – Sustainable mobility for our continent." (Mid-term review of the European Commission's 2001 Transport White Paper), COM(2006)314 final, 22 June 2006

Efficiency and environment-related initiatives involving ERTICO:

AGILE — making the most of satellite navigation services

CVIS — helping vehicles and infrastructure cooperate

ETNITE — improving ITS training and education

EuroRoadS — meeting Europe's road data needs

FRAME Forum — providing continuity and compatibility for European ITS architecture

RCI — contributing to free-flow road charging

SISTER — making road transport more intelligent with satellite communications

TMC Forum and the Road Traffic Information Group — supporting the global market for TMC services

© ERTICO 2004-2007. All rights reserved. Disclaimer

ERTICO - ITS Europe
Blue Tower
Avenue Louise 326
B-1050 Brussels
Belgium

Tel: +32 (0)2 400 0700
Fax: +32 (0)2 400 0701
info@mail.ertico.com

CVIS looks to the future of mobile wireless communication

Date: 12 June 2006

Meeting on 24 May in ERTICO headquarters in Brussels, CVIS Partners and representatives of metropolitan wireless network vendors and operators discussed cooperation opportunities for the future.

CVIS is developing core technologies and an integrated platform for installation in the vehicle and roadside equipment to allow vehicles to interact with each other and with equipped roadside systems. The platform is based on interoperable wireless communication standards such as Wi-Fi (wireless LAN), DSRC (Dedicated Short Range Communication), GSM/UMTS (2nd and 3rd generation cellular telephony), and infrared.

While the current Wi-Fi standard does not support mobile use, a version suitable for moving vehicles is being developed, and CVIS technologies will adopt this new ISO standard ("CALM", or "continuous air interface for long and medium range communications").

Metropolitan wireless network sector booming
Today, metropolitan wireless networks are being deployed in a rapidly growing number of cities throughout the world. The technologies used are a mix of "mesh networks" of many Wi-Fi hot-spots, each covering a few hundred metres, and a new standard called "Wi-MAX" that can provide wireless broadband connectivity over an area of several kilometres. Both these systems are much less expensive to deploy than a cellular network such as UMTS, and user terminals should also be available at reasonable cost.

The objective of the 24 May meeting was to encourage the suppliers and operators of metropolitan networks to adapt future infrastructure deployment to enable use by vehicles. If this is not done, there is a risk that tomorrow's vehicles, equipped with a CVIS-compliant network platform, will not be interoperable with the existing metropolitan wireless networks.

At the meeting, CVIS Partners presented the requirements to enable such interoperability and thereby allow vehicle-based users to take advantage of city-wide broadband connectivity. Topics of discussion included frequency allocation, the co-existence of different network media, mobile Internet access, authentication issues, data security and support for geo addressing (addressing vehicles by their location rather than their network address).

Cooperating for mutual benefit
Among the key players present at the meeting, were CVIS partners Efkon, Volvo Technology and Q-Free. Metropolitan wireless system vendors included Cisco Systems, LastMile Communications and Skypilot, while Traffic Wales attended as a potential wireless network operator. DaimlerChrysler represented the Car-to-Car Communication Consortium.

There was broad agreement among participants that increased cooperation would be beneficial for all involved. A decision was therefore taken to start a contact group that will meet at regular intervals in order to maintain a dialogue between the players active in the area of city-wide wireless communication. The intention is to build this group into a comprehensive and representative grouping of stakeholders in the field, and work towards the mutual adoption of fully interoperable technologies.

For more information, please visit the CVIS website or contact Project & Development Manager Zeljko Jeftic.

© ERTICO 2004-2007. All rights reserved. Disclaimer

ERTICO - ITS Europe
Blue Tower
Avenue Louise 326
B-1050 Brussels
Belgium

Tel: +32 (0)2 400 0700
Fax: +32 (0)2 400 0701
info@mail.ertico.com

CVIS

Helping vehicles and infrastructure cooperate

The CVIS project aims to design, develop and test the technologies needed to allow cars to communicate and network directly with the roadside infrastructure.

With CVIS, drivers can influence the traffic control system directly and get individual guidance with the quickest route to their destination. Speed limits and other road sign information, as well as warnings of approaching emergency vehicles and similar urgent messages will be sent wirelessly to the vehicle and displayed to the driver.

To validate the project's results, CVIS technologies and applications will be tested at one or more test sites in seven European countries: France, Germany, Italy, Netherlands/Belgium, Sweden and the UK.

Objectives

- Create a standardised in-vehicle and roadside module capable of connecting continuously and seamlessly using a wide range of communication media, including mobile cellular and wireless local area networks, short-range microwave (DSRC) or infrared.
- Develop techniques for enhanced vehicle positioning and improved local dynamic maps, using satellite navigation and the latest methods for location referencing.
- Define and test new systems for cooperative traffic and network monitoring for use both in vehicle and roadside equipment, to detect incidents instantly and anywhere.
- Develop architecture, software and hardware prototypes for a number of example cooperative applications and services for urban and interurban traffic management, as well as freight and fleet management.
- Create guidelines and tools addressing key non-technical challenges to deployment such as user acceptance, data privacy and security, system openness and interoperability, risk and liability, public policy needs, cost/benefit and business models, and roll-out plans for implementation

Duration and Funding
February 2006 - January 2010, funding through the EC Directorate General Information Society and Media

Consortium
Coordinator: ERTICO - ITS Europe

Partners: 5T s.c.r.l, AVVC, Alcatel Alenia Space, ATC, Autoroutes du Sud de la France, BAE Systems, BMW, Robert Bosch, Centre for Transport Studies, Imperial College London, CNRS/Heudiasyc-Université de Technologie de Compiègne, Communauté Urbaine de Lyon, Cork Institute of Technology, DaimlerChrysler, Department for Transport, German Aerospace Center (DLR), Dutch Ministry of Transport, Public Works and Water Management, Efkon, Forum of European National Highway Research Laboratories (FEHRL), Fiat Research Centre, Gatespace Telematics, Highways Agency, Hessen Traffic Centre (HSVV), HTW, University of Applied Sciences Saarbrücken, Infoblu, INRIA, Intempora, Istituto Superiore Mario Boella, Kapsch TrafficCom, Laboratoire Central des Ponts et Chaussées, Lacroix Trafic, LogicaCMG, Mapflow, mm-lab, Vlaamse Overheid, Mizar Automazione, Navteq, Peek Traffic, POLIS, Provincie Noord-Brabant, PTV, Q-Free, Reial Automóbil Club de Catalunya (RACC), Ramsys, Renault, Siemens, SINTEF, Swedish Road Administration, Technolution, Telcordia Technologies, Tele Atlas, Telecom Italia, Thetis, Thomas Miller, TNO, Transport for London, TRIALOG, Vialis, Vodafone, Volvo Technology Corporation

Contact
Paul Kompfner
+32 (0)2 400 07 32

Contact other members of the CVIS team:
Julie Castermans
Zeljko Jeftic

See all CVIS news articles from the ERTICO Newsroom

Visit the CVIS website

© ERTICO 2004-2007. All rights reserved. Disclaimer

ERTICO - ITS Europe
Blue Tower
Avenue Louise 326
B-1050 Brussels
Belgium

Tel: +32 (0)2 400 0700
Fax: +32 (0)2 400 0701
info@mail.ertico.com

Safety

Advances in passive safety systems - including features such as protective structures, airbags and sophisticated seatbelt systems - have made cars considerably safer over the last decade. Subsequently, European road fatalities have decreased by 50% over the last 15 years.[1]

However, despite such improvements, more than 40,000 people die and 1.7 million are injured annually on Europe's roads.[2] Further progress in reducing these numbers cannot be achieved by merely ensuring the best possible protection when an accident occurs. Greater attention must be devoted to developing and deploying systems that intervene before the accident happens. By decreasing the driver's workload, detecting dangers and providing the necessary support in hazardous situations, Advanced Driver Assistance Systems (ADAS) could save a considerable number of lives every year.

The annual cost of accidents is approximately €200 billion, representing 2% of EU GDP.[2] The number of road fatalities and the associated costs are unacceptably high. Thus, in 2001 the European Commission set the target of halving the number of road victims by 2010. It highlighted that the achievement of this ambitious goal will require the deployment of active and preventive safety systems.

With at least 93% of accidents caused by human error[2], the case for increased driver assistance is clear. Whether due to poor perception of danger or mistaken interpretations of driving conditions, ill-advised decision making causes the majority of accident-producing situations. Several systems can address this problem, such as Adaptive Cruise Control (ACC) that prevents rear-end collision. These systems hold great potential, with estimates showing that as many as 4,000 accidents could be avoided if as few as 3% of European cars were fitted with ACC.[2]

The potential is enormous. To accelerate the development and deployment of these life-saving technologies, ERTICO, the European Commission and the European Automobile Manufacturers Association (ACEA) – launched the *e*Safety initiative in 2002. It is creating the necessary partnerships and leadership, both at the business and policy levels, around one safety vision and an integrated overall programme of action supported by all players.

[1] European CARE Database
[2] Communication from the Commission on the Intelligent Car Initiative - "Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles", 15 February 2006

Safety-related initiatives involving ERTICO:

ADASIS Forum — advancing map-enhanced driver assistance systems

AIDE — allowing safer roads with adaptive driver assistance systems

ERTRAC — coordinating European road transport research

*e*Safety Forum — making Europe's roads safer for everyone

FeedMAP — enabling quick and inexpensive map updates

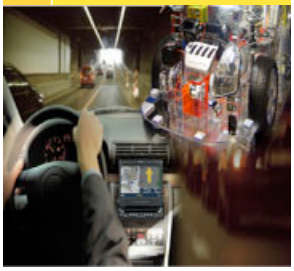
GST — creating easy access to dynamic safety services
- GST Open Systems — facilitating an open telematics mass market
- GST RESCUE — improving emergency services' response time
- GST Safety Channel — helping safer and more efficient mobility with dynamic traffic information

HeavyRoute — supporting quicker and safer freight transport

IP PReVENT— supporting the driver, preventing accidents
- MAPS&ADAS — using digital maps to improve road safety
- RESPONSE3 — bringing ADAS to market quickly and safely

SAFESPOT — supporting smart vehicles on safe roads

SpeedAlert Forum — keeping drivers informed of speed limits at all times



© ERTICO 2004-2007. All rights reserved. Disclaimer

ERTICO - ITS Europe
Blue Tower
Avenue Louise 326
B-1050 Brussels
Belgium

Tel: +32 (0)2 400 0700
Fax: +32 (0)2 400 0701
info@mail.ertico.com

Security

The 9/11 terrorist attacks in the US as well as those in Madrid and London have pushed the issue of security up the political agenda. Security risks exist in all modes of transport and freight flows, and countries all over the world have attempted to react by strengthening transport security measures.

Whether a direct target, or used as a means of attacking other targets, transport systems are under threat. Broadly speaking, transport security risks can be classified as infrastructure or supply chain risks.

Infrastructure risks relate to terrorist acts in which the objective is to destroy transport infrastructure and disrupt transport operations.

Supply chain risks are those in which the terrorist act is aimed at misusing the transport supply chain to create damage or fatalities – perhaps by concealing and transporting explosives, radioactive or biological malignant materials, all of which could be easily disguised as part of legitimate shipments. Cargo transport is particularly vulnerable to terrorist attacks because of the large number and variety of operators in the sector, as well as the lack of controls.

There is consequently a pressing need to protect travellers, transport facilities and those employed in the transport industries against security risks. However, there is also a need to ensure that security measures do not impact excessively on the effectiveness and efficiency of the transport sector.

Ensuring the secure flow of people and goods from origin to destination, without unduly disrupting this flow, is a tall order. But with the help of ITS, the demand for both security and efficiency can be reconciled.

Real-time information on the movement of goods can help prevent dangerous incidents in an unobtrusive manner. For example, container tracking systems can provide anywhere, anytime information on the container using radio frequency identification technology with GPS location and GSM communications. Such services can report not only the location of the container, but also internal temperature, air pressure, speed and whether any doors are opened.

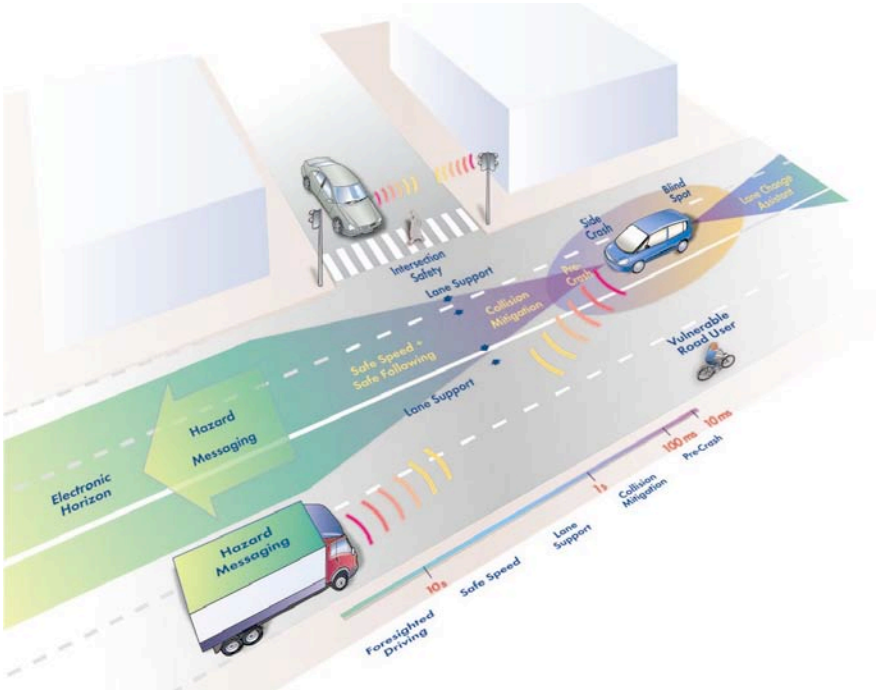
ITS solutions can also significantly improve public transport security. For example, so-called “intelligence vision systems” – enhanced CCTV – can automatically spot suspicious behaviour and alert transport personnel. Automatic tracking and alarm systems can also greatly improve response to threats.

Security-related initiatives involving ERTICO:

ESP21 — building a European security partnership for the 21st century

© ERTICO 2004-2007. All rights reserved. Disclaimer

Function Fields



PReVENT consists of a number of subprojects in complementary function fields:

- Safe Speed and Safe Following
  These functions help drivers keep or choose a speed or inter-vehicle distance, allowing them to safely cope with the road situation they will meet in the following seconds. The approach is mostly autonomous.
- Lateral Support
  This field deals with autonomous applications focusing on the lateral areas of a vehicle to help drivers keep their vehicle at the safest position in the lane, as well as warn them if the vehicle is about to run off the road.
- Intersection Safety
  This function field covers the investigation of autonomous a
  safety applications dedicated at approaching or passing inte
- Vulnerable Road Users and collision Mitigation
  Collision mitigation and pre-crash protection systems focus
  fatalities in case of unavoidable crashes (in particular durin
  the impact). Collision mitigation by braking significantly re
  thereby greatly reducing crash severity.
- Cross-functional Activities
  An additional cross-functional field covering methodologies, common architectures, liability issues, and technology or standardisation oriented activities safeguards a common approach.

In 2007, a common Safety Application Roadshow will be organised, involving all project participants to exhibit the project results and create awareness as an important milestone for the preparation of the European market.

INVENT

INVENT - Intelligent traffic and user-oriented technology

On May 28 2005, INVENT demonstrated their innovations in driver assistance, efficient traffic management, and stimulating future research and progress in traffic policy, at the BMW Research and Innovation Center in Munich. Numerous simulations and demonstrations illustrated the functionality, operation, and value of technical innovations that support drivers in traffic jams (or even prevent them from arising), provide dynamic route guidance, improve the efficiency of logistic services, and promote active safety.

With the goal of improving both traffic flow and traffic safety in the future, the INVENT partners are working together to develop novel driver assistance systems, knowledge and information technologies, and solutions for more efficient traffic management, to prevent or minimise the severity of accidents.

Three research areas, eight component projects

- Detection and Interpretation of the Driving Environment:
  Using laser, radar, sensors and video image processing, cars will acquire datas on road conditions, weather, traffic flow, etc, that will be assimilated and processed to detect danger and intervene promptly and appropriately.
- Anticipatory Active Safety:
  Intersection assistants, which automatically detect crossing cyclists and pedestrians and warn the driver, but also recognize traffic signs, and thus support the driver.
  Lateral control assistants, which support the driver in lane changing and turning manoeuvers.
- Congestion Assistance:
  Automatic cruise and headway control functions to adapt speed to the traffic flow, maintain safe distance and automatically detect potential obstacles, to avoid collisions.
- Driver Behaviour and Human Machine Interaction:
  Solutions for measuring the driver's reactions and response to new systems, to improve the human–machine interface.
- Traffic Performance Assitance:
  Vehicle-based systems collecting and combining data about the traffic state, and communicating the information to upstream vehicles, to achieve optimised traffic flow.
- Network Traffic Equalizer:
  Dynamic route guidance and navigation systems taking the latest traffic data into account to choose the optimal route to destination.
- Traffic Management in Transport and Logistics:
  Intelligent route planning systems for deliveries, and optimised courier services taking into account mobility of customers and duration of trip, guaranteeing precise delivery times.
- Traffic Impact, Legal issues and Acceptance:
  Evaluation of the economic and business implications of the new technologies, as well as potential legal conflicts.

This research initiative brings together 24 companies, among which automobile manufacturers, electronics industry and suppliers, telecommunication and IT companies, logistics service providers, and software developers as well as research institutions. Numerous university institutes as well as small to medium-sized companies are also contributing to the projects as subcontractors.

The four-year cooperation will continue through mid 2005 and has been supported by grants from the Federal Ministry for Education and Research (BMBF).

Partners:
Audi, BMW, Bosch, DaimlerChrysler Research and Technology, the German Aerospace Agency (DLR) Ericsson, the Aachen Vehicle Research Institute (fka), Ford, Hella, Hermes Parcel Service, IBM, the Magdeburg Institute for Automation and Communication (ifak), MAN Commercial Vehicles, Navigation Technologies, Opel, PTV, Siemens AG, Siemens Restraint Systems, Siemens VDO, TransVer Traffic Consultancy of Munich, the German Standards Group (TÜV), the University of Cologne, the law firm Vogt & Co., and Volkswagen.

Contact:
Walter Scholl
INVENT Office
Hülenbergstrasse 10
D-73230 Kirchheim/Teck
Tel: ++49 7021-978181
Fax: ++49 7021-978182
Email: info@wes-office.de

[See www.telesaurus.com for more details and URL links concerning ITS wireless.]

Take me to the INVENT website

Copyright 2005-2007 | Disclaimer