WORKSHOP ON
INTELLIGENT TRANSPORTATION SYSTEMS

Sponsored by the
National Institute of Standards and Technology (NIST), in cooperation with Centrum dopravního výzkumu, v.v.i. (CDV)

Radisson Blu Alcron Hotel
Prague, Czech Republic

29 September - 1 October, 2010

Draft Agenda

Wednesday, 29 September, 2010	
12:30 pm to 1:00 pm	**Registration**
Opening Ceremony	
1:00 pm to 1:45 pm	**U.S. Ambassador John Ordway**, Chargé d'Affaires Embassy of the United States, Prague, Czech Republic **Mr. Stephen Kern**, Team Leader, Global Technology Exchange Program, Office of International Programs, U.S. Department of Transportation, Federal Highway Administration (FHWA), USA **Overview of CDV** Prof. Dr. Karel Pospíšil, MBA, Institute Director Centrum dopravního výzkumu, v.v.i. (CDV) (English), Czech Republic **Overview of NIST** Dr. Belinda Collins, Director, Technology Services National Institute of Standards and Technology (NIST) , USA
The ITS Landscape Part One: ITS Architecture	
1:45 pm to 2:15 pm	**ITS Architecture in the Czech Republic and Overview of the Region** Presentation on ITS Architecture in the Czech Republic in relation to the French (OSCAR) and the European (FRAME) Architectures. Dr. Petr Bureš, Assistant Professor Czech Technical University in Prague, Faculty of Transportation Sciences Czech Republic
2:15 pm to 3:00 pm	**U.S. National ITS Architecture: A Framework for ITS Standards and Regional Institutional Integration in the U.S. and Other Countries**

	The U.S. National ITS Architecture has been used as the framework to develop over 300 regional ITS architectures in the U.S. and throughout the world. The presentation will describe the U.S. National ITS Architecture and how it used to document requirements for ITS standards development, and as a framework for regional ITS architectures used to document interoperability requirements for regional ITS projects. Examples will be shown from regional and national ITS Architectures recently developed including the State of Israel and regions in the United States. Dr. Robert Jaffe, President Consensus Systems Technologies (ConSysTec), USA
3:00 pm to 3:30 pm	**Refreshment Break**
3:30 pm to 4:00 pm	**Transit ITS Architecture** A presentation of the ITS Architecture developed and deployed by King County Metro Transit in Seattle, Washington. The presentation shows the relationship to the National architecture where general categories are replaced by specific systems and communication technologies. The discussion will include technologies, standards and systems being integrated, their benefits, and inter-agency relationships. Mr. John C. Toone, ITS Program Manager, IT Program Management Office Transit Intelligent Transportation Systems, Metro Transit Division, King County Department of Transportation, USA
The ITS Landscape **Part Two: ITS Standards Framework**	
4:00 pm to 5:00 pm	**ITS Exchange Standards – Center-to-Center & Center-to-Field Devices** This presentation will discuss the National Transportation Communications for ITS Protocol (NTCIP) standards for exchanges between traffic management centers and typical ITS roadside devices such as intersection traffic controllers, message signs, video cameras, etc. It will cover the architecture for the standards, the protocol standards, and the device communications standards for each ITS device and will demonstrate how they are used and the benefits achieved. The presentation will also include a discussion of both the center-to-center protocol standards and the various message sets and data elements used for traveler information, incident management, and traffic management. The final section will address the adaptations which have been made to the standards for their use on wireless networks and typical communications paradigms such as polling, exception based reporting, point-to multipoint operation, and point-to-point communications. Mr. Robert Rausch, Vice President TransCore, USA
5:00 pm to 5:30 pm	**Q&A Discussion**

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Thursday, 30 September, 2010	
8:30 am to 9:00 am	**Registration**
The ITS Landscape **Part Two: ITS Standards Framework (continued)**	
9:00 am to 9:30 am	**ITS Equipment Standards in the United States** Various ITS equipment standards used in the United States are presented including National Electrical Manufactures Association (NEMA) TS 2, TS 4 and the Advanced Transportation Controller (ATC) standards. These standards create user-maintainable, interchangeable, and multi-purpose field platforms for ITS applications. Mr. Ralph W. Boaz**,** President Pillar Consulting, USA
9:30 am to 9:45 am	**New York City Implements Standards-Based Traffic Control** While the procurement of controller equipment for a city the size of NY is certainly not typical, it demonstrates the benefits to employing the standards discussed above (NTCIP, TS2, ATC) in a cost effective design using standardized components & subassemblies, open communications standards, and well documented functionality. This presentation will examine how NYC pulled all of these standards together to purchase one of the most advanced controllers in the market today at a very low cost (~$4,000 USD) with multiple bidders. By insisting on open architecture and standards based protocols, they are now deploying these units in a large scale wireless network and the equipment has proven to be flexible, reliable, and extendible; as an example, it was used during the 2008 ITS World Congress to demonstrate a wide variety of VII applications. Mr. Robert Rausch, Vice President TransCore, USA
9:45 am to 10:00 am	**TCIP Transit Standards, Status and Applications** The presentation will discuss the Transit Communications Interface Profiles (TCIP) standard, its scope and efforts underway to deploy the standard. The speaker will discuss the tools that were developed to help public agencies specify and deploy the standard. Ms. Paula Okunieff, Senior Technical Staff, Consensus Systems Technologies (ConSysTec), USA
10:00 am to 10:30 am	**Illustration of Widespread Deployment of NTCIP Standards in the U.S. and Around the World** The presentation will illustrate the widespread deployment of NTCIP standards throughout the U.S. and other countries around the world, followed by a discussion on lessons learned, some of the challenges and a practical

	approach to testing and specifications. Mr. Michael Howarth, Vice President Intelligent Devices Inc., USA
10:30 am to 11:00 am	**Refreshment Break**
11:00 am to 11:15 am	**Q&A Discussion**
U.S. Department of Transportation (U.S. DOT) ITS Programs	
11:15 am to 11:30 am	**Overview of the U.S. DOT ITS Research and Standards Programs** An introduction to the U.S. DOT ITS Joint Program Office and its overall research program. Brief discussion including an overview of IntelliDrive^{SMi}, ITS Architecture and Standards programs along with international cooperation agreements. Mr. Steve Sill, Program Manager; Vehicle Safety Technology, ITS Architecture and Standards, U.S. Department of Transportation (U.S. DOT), Research and Innovation Technology Administration (RITA), Intelligent Transportation Systems Joint Program Office (ITS-JPO), USA
Transportation Management Systems **Approaches to Predicting and Actively Managing the Transportation Network**	
11:30 am to 12:00 pm	**Active Traffic Management** Proactive systems for controlling the flow of and otherwise managing traffic flow in the United States are discussed. These include cameras for speed detection and red-light running, incident detection systems, and lane management. Traffic signal priority for Emergency vehicles and transit are also discussed. Scope includes current technologies, breadth of acceptance and application examples including benefits derive. Mr. Gerald Conover, Managing Director PRC Associates, USA
12:00 pm to 12:30 pm	**ITS Data** Intelligent Transportation Systems consume and generate huge amounts of valuable data. This presentation introduces the key concepts of data fusion/data warehousing with examples of analysis not available through routine reports. The discussion will include the generation, storage, sharing and mining of data created by ITS and the sharing and use of data in real-time with potential for center-to-center applications for transportation management. Mr. John C. Toone, ITS Program Manager, IT Program Management Office, Transit Intelligent Transportation Systems, Metro Transit Division, King County Department of Transportation, USA
12:30 pm to 1:30 pm	**Lunch**

1:30 pm to 2:00 pm	**Traffic Monitoring Technologies** The presentation will identify traffic data collection capabilities of each sensor, technologies for use in a variety of applications, and the deployment. Mr. David L. Jones, Sr., Transportation Specialist, U.S. DOT, Federal Highway Administration (FHWA) , USA
2:00 pm to 2:30 pm	**Regional Integration and Integrated Corridor Management** Regional integration of various central control systems such as traffic, transit, emergency management systems is the critical component to coordinate transportation management efforts in a region in a holistic, multimodal manner. While there were several previous regional integration projects in the U.S. with various levels of integration, the U.S. DOT initiated a 5-year program called 'integrated corridor management' (ICM). The goals of the ICM program are to use the combined application of technologies and a commitment by the network system operators to work together to transform the way transportation corridors are operated. Unused capacities of the multimodal system operator's systems will be used more efficiently by informing the users in real-time of any available capacities and comparative travel times. Mr. Joerg 'Nu' Rosenbohm, Vice President Intelligent Devices Inc., USA
Real Time Data Collection for Traveler Information Systems	
2:30 pm to 3:00 pm	**Trends in Real Time Information Systems for Transit in the U.S. (including the Role of 3rd Party Application Developers and Crowd Sourcing)** This presentation will discuss regional approaches to collect and disseminate real-time information from multiple public transport organizations. Many regions including New York, Chicago, and San Francisco have regional traveler information systems that are providing real time/situational status to riders. In addition, some of the regional and individual public organizations rely on the private market place to promote and disseminate information on public transport services through Twitter, Facebook, and other social networks. The role of 3rd party developers will be discussed as it relates to "open data" and "open standards". Ms. Paula Okunieff, Senior Technical Staff Consensus Systems Technologies (ConSysTec), USA
3:00 pm to 3:30 pm	**Refreshment Break**
3:30 pm to 4:00 pm	**Electronic Tolling Systems in the U.S.** This presentation will focus on the state of deployment in the U.S. including the technology being used, the various proprietary systems being used, standards (where employed), and the history of the development of this market space. Since there are no U.S. Standards in this arena, it is important to understand that tolling (ETC) in the U.S. is market driven, and as a result, there has been

	high market penetration wherever the technology has been deployed. Interoperability has now shifted to multi-protocol readers and multi-protocol tags so that virtually any agency can read any other agency's tags with the proper equipment. However, widespread sharing in terms of the back office processing and funds exchange remains a challenge, but for an occasional regional example of payment reciprocity. This presentation will also discuss how toll tags (RFID) are being used for real time traffic monitoring where a large number of vehicles have tags. Mr. Robert Rausch, TransCore and Dr. Robert Jaffe, ConSysTec
4:00 pm to 4:30 pm	**Tolling Systems in Europe** Presentations will focus on lessons learned, trends and opportunities in EU tolling. Mr. Martin Hájek, Head, ITS Department Centrum dopravního výzkumu, v.v.i. (CDV) (English), Czech Republic
4:30 pm to 5:00 pm	**Tolling and Future Trends in the U.S.** *(tentative)* Presentation to focus on the political and societal issues with regards to tolling and congestion pricing rather than the technical areas. Includes state of funding and the future uses of ETC and the U.S. movement toward interoperable tolling systems. Includes seeking new revenue sources, charging for VMT (Vehicle Miles Traveled), consideration of congestion pricing, city center tolling zones (i.e. London, Stockholm) and variable pricing systems; the IntelliDrive^{SM} program which may introduce standards for the V2I transactions for tolling, as well as other transactions such as parking. **Fare Payment Systems and Future Trends in the U.S.** *(tentative)* Presentation to focus on public transport fare payment systems (an ISO effort led by the U.S.) and open fare payment systems (an approach pursued by the Utah Transit Authority and NYC Transit).
5:00 pm to 5:30 pm	**Q&A Discussion**

Friday, 1 October, 2010	
8:30 am to 9:00 am	**Registration**
IntelliDrive^{SM}	
9:00 am to 9:30 am	**Cooperative Systems Research in the US – The IntelliDrive^{SM} Program** A detailed look at the history and evolution of USDOT ITS cooperative systems research. Includes an overview of the IntelliDrive^{SM} program and deployment test beds in the U.S. Mr. Steven Sill, Program Manager, Vehicle Safety Technology, ITS Architecture

	and Standards, USDOT, RITA, ITS-JPO, USA
9:30 am to 10:00 am	**ITS Car-to-Car Communications Standards** The safety aspects of car-to-car communications require very low latency (delay time) in order to be effective. The U.S. and Europe have opted for the 5.9 GHZ band for this, while Japan is still working with in 5.8 GHz. The communications standards that will operate in the US 5.9 GHz are discussed – IEEE 802.11p, IEEE 1609.x and SAE J2735. Mr. Gerald D Conover Managing Director, PRC Associates, USA
10:00 am to 10:30 am	**Human Machine Interface of ITS and Driver's Overload** *(tentative)* The presentation will be focused on standards and recommendations concerning principles of using in-vehicle ITS while driving, including ergonomic aspects and systems integration, with the respect to driver's comfort and safety.
10:30 am to 11:00 am	**Refreshment Break**
11:00 am to 11:45 am	**Transit Signal Priority** New Transit Signal Priority systems currently in the U.S. promote improved public transport (bus) reliability and maximize throughput of people through the intersection. These systems use a variety of ITS public transport and traffic standards and communications protocols that work together to implement different signal control strategies. King County Metro Transit (Seattle, WA) deployed one of the first TSP systems in the United States, using RF tags for detection. The data model from this system was used as the TCIP standard dataset. This presentation shows the second generation of TSP being deployed by King County Metro using IntelliDrive℠ communication and TCIP standards. The discussion will include technologies, innovations and estimates of benefits. Mr. John C. Toone, ITS Program Manager, IT Program Management Office Transit Intelligent Transportation Systems, Metro Transit Division, King County Department of Transportation, USA
11:45 am to 12:30 pm	**Q&A Discussion** An opportunity for representatives from each country to discuss their country priorities and challenges with regards to ITS.
12:30 pm to 1:30 pm	**Lunch**
International Harmonization	
1:30 pm to 3:00 pm	**The U.S. DOT Perspective on International Harmonization of Cooperative Systems Standards** Description of U.S. DOT's interest in harmonizing standards, policies and

	practices along with a description of existing agreements and a progress update. Mr. Steve Sill, U.S. Co-Chair, EU-US Joint ITS Standards Working Group **The Role of ISO and CEN in Cooperative Systems Standards Development** This presentation will discuss the current standards work being undertaken by ETSI and CEN TC 278 WG16 in response to EC Mandate M/453 on Cooperative Systems and the role of ISO TC 204 WG18. Mr. Michael Howarth, Vice President Intelligent Devices, Inc., USA **Review of the Czech ITS Standardization Technical Committee** Focus, history and work procedures will be presented together with results of work of the Committee. Professor Pavel Pribyl Chair, Czech ITS Standardization Technical Committee, Czech Republic **ISO TC 204 WG 8 – Public Transport Data Harmonization** There are many competing public transport data standards world-wide. The ISO TC 204 WG 8 Public Transport Group initiated a work plan to catalogue and harmonize these standards in the area of Passenger Information. This presentation will discuss the project and plan to develop the World-wide Public Transport Data Catalogue. Ms. Paula Okunieff, Senior Technical Staff Consensus Systems Technologies (ConSysTec), USA **Q&A PANEL DISCUSSION**
3:00 pm to 3:30 pm	**Refreshment Break**
3:30 pm to 4:00 pm	**TBA**
4:00 pm to 4:30 pm	**TBA**
Closing Remarks	
4:00 pm to 5:00 pm	**Intelligent Transportation Systems: The Past, Present and Future – What Have We Learned?** Dr. Belinda Collins, Director, Technology Services National Institute of Standards and Technology (NIST) , USA Dr. Josef Mikulik, Institute Council Chair and Senior Advisor

	Centrum dopravního výzkumu, v.v.i. (CDV) (English), Czech Republic

[i] IntelliDrive is a service mark of the U.S. Department of Transportation.