

Getting It Right: Report of the Interoperability Forum




IBTTA 
International Bridge, Tunnel and Turnpike Association
DRIVING CHANGE SINCE 1932

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BACKGROUND AND PURPOSE

On October 29, 2009, in Washington, DC, IBTTA assembled a group of experts from different stakeholder organizations, all of whom have a keen interest in the future of mobility and interoperability in North America, to focus on this question: “What is IBTTA’s role in advancing universal tolling interoperability?”

This report presents the highlights of the discussion that took place during the forum based on verbatim transcripts taken at the time. We have condensed the actual discussion to fit this space. The “pull quotes” you see throughout the report all came from participants at the forum.

While the participants whose comments appear on the following pages are experts, there are dozens of other individuals inside and outside the toll industry who could have contributed to this discussion with distinction. My colleagues on the IBTTA Executive Committee and I took responsibility for selecting this particular group of individuals to be reasonably representative of a wide range of views that could be expressed on the subject of tolling interoperability. It was not our intention to shut out or exclude any voice or point of view. We simply managed the size and composition of the group to facilitate a robust discussion that could happen in the space of one day.

Therefore, this report represents the beginning of a discussion on this important issue. Through the discussions at the forum and subsequent conversations that will take place in other venues, we hope to give the IBTTA board, elected officials, regulatory officials, and other stakeholders a clear grasp of the technical, institutional, legal, regulatory, financial, and logistical challenges that must be addressed to achieve interoperability at regional, national, and, possibly, even international levels. As the proceedings from this meeting show, achieving universal tolling interoperability is not a simple matter of flipping a switch. It will involve flipping a hundred switches and changing the way thousands or millions of people go about their daily routine.

We invite you to join the discussion by clicking on the “Interoperability Forum” link that we are creating on the IBTTA website and sending your comments on this report.



Steven Snider

President, IBTTA and General Manager and CEO, Halifax Harbour Bridges

January 6, 2010

THE PARTICIPANTS



JOHN AUGUSTINE is deputy director of the Intelligent Transportation Systems (ITS) Joint Program Office (JPO) of the U.S. Department of Transportation, a position he has held since October 2007. Mr. Augustine is

responsible for a \$110 million annual budget to advance research and operational demonstration of ITS technology to support the U.S. DOT's goals of improving safety, reducing congestion, and improving the environment and economic productivity. The ITS program is a principal research agency within U.S. DOT's Research and Innovative Technology Administration.



JAMES CRAWFORD is executive director of the E-ZPass Interagency Group, a position he has held for more than four years. Mr. Crawford is a transportation planner with over 30 years experience. Previously, Mr.

Crawford served for eleven years as executive director of the South Jersey Transportation Authority operating the Atlantic City Expressway. He spent two years with TAMS as a vice president. Mr. Crawford started his career with the New Jersey Department of Transportation where he served for 16 years and seven of those years as assistant commissioner.



RICHARD CUNARD is the engineer of traffic and operations for the Transportation Research Board (TRB) in Washington, D.C. Mr. Cunard is responsible for the TRB technical activities related to traffic

engineering and control, traffic operations, intelligent transportation systems (ITS), and vehicle-highway automated systems (V-HA). Mr. Cunard has served with TRB for more than 20 years and has over 30 years of experience in traffic engineering, operations, and safety for public and private agencies.



GLENN DEITIKER is the original founder of Caseta Technologies and is now president and chief technology officer for Telvent Caseta, Inc. Mr. Deitiker has more than eighteen years of information technology systems

experience in the toll collection industry. He is involved in a number of industry panels and boards, served on the IBTTA Electronic Payment Systems (EPS) Workgroup, and is an original founding board member of the OmniAir Consortium, which he represents in this forum. Mr. Deitiker was the original author of the OmniAir EPSNIS paper and currently serves as the executive chair for the Electronic Payment Services Committee.



JJ EDEN is the chief operating officer of the North Carolina Turnpike Authority and serves on the board of IBTTA and as Chair of the Alliance for Toll Interoperability. As Assistant Chief Engineer for the Pennsylvania

Turnpike, Mr. Eden managed all facility designs, construction and maintenance including design of the toll collection and ITS systems. Mr. Eden co-authored the industry's first Management Online Maintenance System while a founding member of the Interagency Group/E-ZPass. As Director of ETC-ACS for Lockheed Martin, Mr. Eden oversaw development of advanced operations, lane and violation processing systems.



IAN GROSSMAN is the senior director of government affairs for the American Association of Motor Vehicle Administrators (AAMVA) where he serves as the association's chief advocate before Congress, the

administration, and other organizations. Mr. Grossman is a seasoned communications and government affairs professional with a broad array of experiences in the public and private sectors including positions in government, political campaigns, and private consulting. His background includes leading integrated image campaigns that have touched on all aspects of marketing and communications.



PATRICK JONES (facilitator) is executive director and CEO of the International Bridge, Tunnel and Turnpike Association. Since assuming this position in 2002, he has built IBTTA into the principal advocate for

toll-financed transportation and the leader in producing high quality educational experiences for toll industry professionals. Mr. Jones has nearly 30 years of experience in

association management, fundraising, strategic planning, grassroots advocacy, marketing, and business development. He previously worked for the Health Insurance Association of America, American Trucking Associations, and American Public Transportation Association.



DAVE KRISTICK is director of operations for the E-470 Public Highway Authority and manages E-470's customer services, public safety, public relations and marketing activities. In addition to helping E-470 earn

the International Bridge, Tunnel and Turnpike Association's Customer Service and President's Awards in 2006, Dave was part of the leadership team that led E-470's transition to cashless operations in July 2009.



WALTER KRISTLIBAS serves as project director for the National Tolls Technology Division of PBS&J. Mr. Kristlibas has 40 years of program management and contract negotiations experience in the toll

industry. He previously served as director of the New Jersey electronic toll collection (ETC) program for the New Jersey Turnpike Authority and before that as director of the regional E-ZPass programs for The Port Authority of New York and New Jersey. He served as chairman of the E-ZPass Interagency Group's executive and policy committee.



JOUNG LEE is associate director for finance and business development for the American Association of State Highway and Transportation Officials (AASHTO). Mr. Lee reviews surface transportation policy and legislative

matters with state departments of transportation, executive branch, and congressional staff. He also examines highway and transit funding scenarios, evaluates options and proposals for innovative financing of federal highway projects, works with capital market representatives to facilitate capital project funding, and delivers funding and financing presentations to interested parties.



GREGORY LE FROIS is vice president and fellow for HNTB Corporation. Mr. Le Frois has 30 years of engineering and design experience, with 27 years specializing in toll transportation facilities with HNTB.

He is director of HNTB's national Toll Facilities Group, which specializes in consulting services for revenue collection systems, operations, and management for toll and parking facilities. He also assists in firm-wide oversight of HNTB's toll consulting practice. Mr. Le Frois is a leader in the toll industry and has made many presentations, written numerous articles, and served as key advisor to many toll agencies.



FRANK MCCARTNEY is executive director of the Delaware River Joint Toll Bridge Commission. Mr. McCartney is active in a wide range of transportation public policy issues. His industry leadership positions

include serving as vice chairman of the E-ZPass Inter Agency Group (IAG), and as a member of the board of directors of the Southeastern Pennsylvania Transportation Authority (SEPTA), which operates all public transportation in Philadelphia and its suburban counties. Mr. McCartney serves on the board of directors of IBTTA and will become second vice president in 2010.



PETRA MOLLET is vice president, strategy for the American Public Transportation Association (APTA). Ms. Mollet is responsible for long-range strategic planning and leads a number of APTA's sustainability initiatives, including the recently launched Sustainability Commitment for APTA members. Before joining APTA in February 2008, Ms. Mollet was the director of corporate development at UITP, the International Association of Public Transport based in Brussels, Belgium where she led UITP's worldwide expansion and external relations.



JACK OPIOLA is the senior partner with D'Artagnan Consulting LLC (DCL). Mr. Opiola has been a pioneer and global thought leader for cashless, open road tolling (CORT) or multi-lane, free flow (MLFF) tolling

as it is referred internationally. He has designed systems and converted conventional tolling into MLFF tolling and advanced the technology to other road user charging applications. Mr. Opiola has pioneered GPS based tolling in Hong Kong, New Zealand, Australia, the United Kingdom, and Germany. He has conducted electronic road pricing/congestion charging work in Singapore, Hong Kong, Taiwan, New Zealand, Australia, the USA, Europe and the UK.



JOSHUA SCHANK, director of transportation research at the Bipartisan Policy Center, has worked on federal and state transportation policy for the last ten years. Mr. Schank previously worked as a consultant with Parsons

Brinckerhoff, one of the world's largest transportation planning and engineering firms. Before that, he was the transportation policy advisor to Senator Hillary Clinton, working on the most recent reauthorization of the surface transportation bill (SAFETEA-LU). He has published numerous articles on transportation policy and planning, and his first book, *All Roads Lead to Congress: The \$300 Billion Fight over Highway Funding*, was published in October 2007.



STEVE SNIDER (facilitator) has served as general manager and C.E.O. of the Halifax-Dartmouth Bridge Commission located on the East Coast of Canada for the past 14 years. With a staff of over 130

people, Mr. Snider oversees the maintenance and operations of the two suspension bridges that span Halifax: the Angus L. Macdonald and A. Murray MacKay Bridges. Combined, these two bridges handle over 32.5 million crossings annually. Mr. Snider is first vice president of IBTTA and will become president in 2010.



HAROLD WORRALL is the founder of Transportation Innovations, Inc., a consulting firm dedicated to stimulating innovation in transportation. His career includes serving as assistant secretary in three state departments

of transportation, the executive director of a major toll operation for 12 years, and consultant to DOTs. He was president of IBTTA, chairman of ITS America, and is currently chairman of Citilog, Paris, France. He has written academic and industry articles and a book entitled *A System at Risk: The Economics of Transportation*. He has taught in the masters program at the University of Central Florida for a decade.



KRIS WUESTEFELD is vice president and manager of the toll and parking system design division of Wilbur Smith Associates. Mr. Wuestefeld has worked in the toll industry for more than 25 years and is responsible for

managing the electronic toll collection, open road tolling (ORT), and parking system design group. Major areas of project experience include fully electronic ORT and high occupancy toll (HOT) system planning, evaluation, design, development of specifications, toll contractor implementation oversight, and system operations. Mr. Wuestefeld has directed more than 25 electronic tolling and HOT lane projects in his career.



LARRY YERMACK is president of Telvent Transportation North America, the leader in the planning, design, deployment, management and operation of intelligent transportation systems (ITS), open road toll systems,

and intelligent transit solutions. He has served in senior executive positions in the public and private sectors, including chief financial officer of the Triborough Bridge and Tunnel Authority and first deputy commissioner of the New York City Department of Transportation. He founded the Interagency Group that created the toll collection system called E-ZPass. He is chair of ITS America's Environmental Task Force and is actively pursuing sustainable transportation initiatives.

EXECUTIVE SUMMARY





The participants in the forum discussed a wide range of topics. These include:

- + models of interoperability outside the toll industry;
- + what customers and toll operators want from interoperability;
- + how a system of interoperability would be governed; and
- + the role of IBTTA in advancing interoperability.

The concept of using a nationwide vehicle miles traveled (VMT) charging program to fund transportation infrastructure was another major theme of the forum.

The discussion shed light on the current barriers to successful implementation of interoperability and the wide divergence of views on the subject within the toll industry. The participants seemed to agree, however, that the industry must move forward on the issue or face the prospect that policy makers outside the toll industry would establish an interoperability system that may be less than ideal.

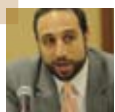
The participants in the forum agreed on two complementary objectives:

- + First, focus on completing several small, practical, short-term projects to demonstrate a pattern of success in advancing interoperability. One example would be to connect regions of interoperability such as E-ZPass and SunPass.
- + Second – a longer term proposition – establish an overarching structure for nationwide seamless systems of interoperability that could ultimately become the foundation or pillars to support a national VMT charging program.

The forum participants and IBTTA staff believe the industry would need to invest significant resources and people to advance these two objectives.

INTRODUCTORY STATEMENTS

The forum participants introduced themselves and raised several issues important to interoperability. Two thread lines emerged. One thread line is about having several short term successes to connect regions of interoperability. The second thread line looks at a national system of tolling interoperability that could lay the groundwork for a universal VMT charging program.



My first interest is how we can make interoperability a reality for a national user fee to fund the federal transportation program.”

— *Joshua Schank*

MR. SNIDER The aim of the forum is to frame the issues that the IBTTA board needs to consider to answer the question, “What is IBTTA’s role in advancing universal tolling interoperability?”

At the end of the forum, we hope to have a clear grasp of the potential legal, governmental, financial, technical, and logistical challenges that are impeding or likely to impede interoperability at regional, national, and possibly even international levels.

MR. MCCARTNEY Our customers in the Northeast spend a fair amount of time in the Sunshine State (Florida). It would be a positive development if we were able to work out some form of interoperability with Florida and eventually take that example and expand it.

MR. SCHANK My first interest in this discussion is how we can make interoperability a reality for a national user fee to fund the federal transportation program. Second, I think interoperability is interesting from an innovation perspective. So I would like to think about ways that the federal government can encourage that type of innovation.

MR. EDEN I think the immediate challenge for IBTTA is to find a way to link the two islands of interoperability in Florida and the Northeast. When you talk about interoperability, some of the barriers to the back room side of things involve cooperation between the motor vehicle agencies in a number of states. In North Carolina, we are caught between the two technologies, E-ZPass in the north and SunPass to the south. Interoperability is not only important for tolls. If we don’t do it in tolls, somebody else is going to do it. We are already seeing E-ZPass Plus on the parking side. So we either lead, follow, or get out of the way.

MR. OPIOLA Interoperability is really the technical, operational, and financial dimensions that allow a driver or individual to use any road, any lane, any facility, and not have to worry about being a violator. In other words, it’s about a driver being able to get from A to B and to make the payment process simple and easy.

MR. YERMAK Not many years ago, tolling was the darling of the transportation community. There was excitement about toll financing, about private financing, about electronic toll collection and open road tolling. Now we are looking at a draft authorization bill in the House that suggests that Congress has the right to regulate toll rates across the country. I think the issue of VMT alone – not to mention the congressional issue – provides the greatest threat to the toll industry that it has seen in decades.

Sleepy industries aren’t threatened. But industries that are in the forefront of the transportation debate are vulnerable to other forces with other interests. I think it’s important for IBTTA to get control of the interoperability issue before the interoperability issue gets control of IBTTA.



Interoperability is the technical, operational, and financial dimensions that allow a driver to use any road, any lane, any facility, and not have to worry about being a violator.”

— *Jack Opiola*

MR. CRAWFORD The biggest problem is our own institutional inability to reach agreements among ourselves. Interoperability is essentially a system of agreements and a system of trust. You need to have that whether you are using a bank, another agency, another customer service center, or whatever you use as your means of collecting your toll revenues.

MR. WORRALL The first question I think we have to ask about interoperability is, “Do we need it? And if we do, for what reasons?” If VMT comes to be, we will need interoperability. I see the trucking industry as a very, very big player in this question of interoperability because of the importance of freight movement.

The other question is “Who puts it in place?” Is it the public sector that puts it in place, or is it the private sector that puts it in place? Think about what the ATM system would have looked like had we done that through government. I don’t think that is the way this is going to happen. There may be some public policy agendas that are established, but I cannot see the public sector being the ones to implement this. I think it is going to be the private sector.

Then we talk about specific features and technologies such as GPS, 5.9 DSRC, license plate registration accounts, etc. Whatever we do, there has got to be some sort of a national registry.

Regarding VMT, I totally disagree with the idea that VMT would be applied to all road systems. There is a basic social justice question about access to transportation that has nothing to do with the interstate system. It has to do with the local streets. I was up in Illinois visiting my sister a couple of weeks ago, and I cannot imagine paying VMT to ride those country roads. I just don’t see that happening.

I can see it happening on the interstate. If you go to Missouri today, the interstate highways are falling apart. They have got to do something. There is no source of revenue from the federal level. So, I think they are going to do VMT from the state up, rather than the federal down.

I think the private sector will eventually pull it all together in some ATM-type system. It won’t be government, in my opinion.

MR. CUNARD One of my responsibilities at TRB is to annually visit on-site with administrators of state departments of transportation (DOTs). One of the objectives of this field visit program is to discuss the important issues and learn of problems facing the DOTs.

Almost universally, the number one issue facing state DOTs is financing. It has been for a number of years. At the state level, there is tremendous resistance to raising the gas tax. So they are actively looking at other means to increase revenue. This includes new tolled facilities, High-Occupancy Toll (HOT) lanes, variable pricing, VMT charging, etc. Thus, interoperability of ETC is an important consideration as states look to some form of tolling to increase revenue – while recognizing that their roadway users, both public and com-

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— *Harold Worrall*



The number one issue facing state DOTs is financing.”

— *Richard Cunard*

mercial, are not just residents – but many are coming from outside the area which may have tolled facilities in their area using different ETC technology. Thus it is important for IBTTA to look at interoperability in terms of its impact on the ability to generate revenue for maintaining our transportation network.

MR. KRISTICK I work for E-470 Public Highway Authority in Denver, Colorado. We are and have been an ORT facility since 1991 and recently made the transition to cashless toll operations. Once you make a decision to go cashless, you de facto become interoperable. Your conventional paradigms no longer apply to your business model. You are encouraging people to use your facilities and you have to accommodate those customers regardless of what payment mode they choose. If you are unwilling or reluctant to accommodate those customers, you will pay a financial price for that.

We have taken the approach that if you use our facility, we will take your money in any way, shape, or form, whether it’s an ETC transaction or a non-ETC transaction. The burden falls upon us to notify you that you have used our facility and haven’t paid, and then create that relationship with the customers.

MR. DEITIKER I represent OmniAir today. OmniAir is not just about 5.9 DSRC. Quite frankly, OmniAir is about interoperability. OmniAir is in the process of doing a pilot interoperability test between one of the IAG members, Texas and Colorado to demonstrate interoperability. It’s a temporary pilot program, but just the politics of trying to make this happen are very complex. It’s temporary yet it’s still incredibly political.

The most significant reason that we should care about interoperability is the efficiency it brings. If you’re a small toll operator – let’s say you operate five miles of road in Texas – you can’t afford to have a back office and, frankly, you can’t afford to use one of the existing back offices in the state. Broad-based interoperability using existing non-toll financial services would bring significant economies over the existing way most of us process transactions.

It is also important that we get involved in this process and evaluate the standards required to determine what works for our industry. We can’t afford to just wait and allow the banks to come in at some point in the future and dictate to us how interoperability works.

MR. AUGUSTINE We view this forum and everyone around this table as a stakeholder of U.S. DOT’s ITS program. At USDOT, our number one goal is safety. What we are doing in ITS through the IntelliDriveSM program is how to bring about the technology to reduce crashes, fatalities, and injuries. However, we are also looking at the mobility and environmental benefits that IntelliDrive applications will provide. Tolling is one of the core mobility applications that we foresee, and we would like to contribute to future discussions regarding how ITS technologies can advance tolling systems interoperability.

MR. LE FROIS It is a little ironic that back when all agencies and facilities accepted cash, we had national interoperability from a customer standpoint. As we take cash away as a payment option for customers in the lanes, there's a greater need to look at interoperability. In my view, interoperability is something that allows a customer to use any toll facility with a single account and receive a single statement, not unlike a credit card. Interoperability is driven by customer need, so the regional areas that have interoperability have it because that is where it makes the most sense.

MS. MOLLET From a customer perspective, people will not think simply "Can I drive across five states using the same toll tag in my car?" In addition, they will ask "Do I have access to all mobility services with one payment system?" I think it is inevitable that we will get there because the market for mobility will only get larger.

MR. KRISTLIBAS I've heard a couple of things this morning. I've heard some people talk about a universal approach to interoperability. I've heard other people talk about more immediate challenges. I think we need to define for ourselves why we are here and what we want to accomplish.

If we can't solve JJ Eden's immediate problem, I think we are wasting our time seeking a universal solution. Technology changes too quickly. Every two years technology basically turns over. If we try to project ourselves into what an interoperability model might look like in a couple of years, we may miss the boat. If we can't solve the easier and more immediate problem, we are unlikely to make the universal approach work.

MR. EDEN We talked a lot about the technology. I think one of the problems in solving this is that we get too wrapped up in the technology. Really, the hard part is the business rules. In the future, we're going to be dealing with multiple technologies.

MR. KRISTICK We want to make a decision that is smart for our customers, smart for our investors, and smart for us as a business. But we don't want to have to buy it four times in the next 10 years, and we don't want to have to make incremental, piecemeal decisions to accommodate the final solution. That in itself is going to beget some costs that are just prohibitive for a small agency like us. The big agencies will have similar cost implications.

MR. YERMACK I would ask, "What do the operators want?" The fact is unless the agencies sign up for a plan, there is no plan. Unless we explicitly articulate the cost benefit calculus for an agency to participate in some interoperability regime, we will not get a solution that everybody signs on to.

MR. CRAWFORD If you are going to go that route, you have to ask is there going to be a future for the toll industry with VMT?

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Interoperability using existing non-toll financial services would bring significant economies over the existing way most of us process transactions.”

– Glenn Deitiker

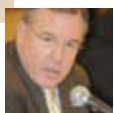
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Interoperability is driven by customer need, so the regional areas that have interoperability have it because that is where it makes the most sense.”

– Gregory Le Frois

“ We want to make a decision that is smart for our customers, smart for our investors, and smart for us as a business. But we don’t want to have to buy it four times in the next 10 years, and we don’t want to have to make incremental, piecemeal decisions to accommodate the final solution. ”



– Dave Kristick

MR. YERMACK I honestly think it is a huge mistake to associate this discussion with a proposed policy that has not been adopted yet. I think IBTTA should be working with the toll industry to create interoperability. Let interoperability be a beacon to the VMT discussion. But don’t directly engage in the VMT discussion.

MR. KRISTICK If we keep our eye on the long horizon, we may miss the immediate opportunity. I think this organization should be focusing on the immediate opportunity to demonstrate working models for interoperability. At the same time, we can keep our eye on the horizon for things like VMT, IntelliDriveSM, or whatever else may take shape. Otherwise, we, the IBTTA, become nothing more than some futuristic conceptual organization that hasn’t accomplished anything.

MR. WORRALL Well, I go back to my ITS America days when we had lots of solutions for which we were seeking a problem. Let’s not do that.

I think we should start with the question “What is the policy we are trying to resolve?” Are we trying to put in place an electronic infrastructure that will do electronic vehicle registration, all the ITS applications especially safety – which is a very big issue in the U.S. DOT and ITS America agenda – and are we trying to put electronic payment systems in place?

What is the policy set we are dealing with when we talk about interoperability? That is the first question. I happen to completely agree with what Walter just said. I think there are two steps, maybe multiple steps, but the first one is the now, the here, us, interoperability.

The other one is this longer term policy question. There are two separate things. They are going to be tied together, but if you tie them together now, you get into this cloud of discussion and there is no resolution.



NON-TOLLING MODELS OF INTEROPERABILITY

The participants discussed several different models of non-tolling interoperability. These include mobile phones, credit cards, ATM cards, debit cards, the Internet, and retail. The retail model assumes the existence of a set of entities outside of toll agencies that would be responsible for carrying out interoperability requirements.

MR. LE FROIS We looked at several examples of non-toll models of interoperability that work today. Certainly the cell phone industry is one example. You have one device, you can use it anywhere in the country, and you have a single account.

Other examples include credit cards, ATM cards, debit cards, smart cards to some degree. The Internet is an example. Anyone can take a laptop, log on to the Internet and there are many interoperable things that can be done over the Internet.

My question for the group is which one of these do you feel most closely resembles the tolling interoperability model that would exist with the different toll agencies around the country?

MR. CRAWFORD The cell phone industry is probably the closest example. There are some national standards that were adopted after people developed individual protocols that eventually allowed the two competing systems to be able to speak to the main network and to each other. So the national standard helped to consolidate it.

Each of them still operates as an individual company. They still have their own customers, but they pay roaming fees and they pay charges based on where the activity occurs. The one big drawback is that each of the companies still in business is trying to have a total network of their own so that they don't have to pay fees to other networks. I think the toll industry could end up in exactly the same scenario.

MR. LE FROIS Looking at common denominators, it would appear that some involvement from a national level has occurred, but it is certainly not totally controlled on a national level.

MR. CRAWFORD It's not controlled. I don't think any of them are controlled.

MR. WORRALL No, they are not regulated.

MR. LE FROIS Certainly, private industry had a huge impact and a huge effort in bringing about these interoperable systems.

MR. CRAWFORD It was all customer demand.

MR. WORRALL That's a force of the cellular industry.

MR. KRISTLIBAS But I think there is a huge difference between private industry and what you just described. There is an incentive of profit. Putting on a toll agency hat, what is my incentive to join the national interoperability system? I kind of like things the way they are. Don't give me anything that is going to cost me more money or allow the feds to interfere in my toll rate setting. Just leave me alone. If I want to become interoperable with someone, I will just go ahead and work out the details through a back office agreement.



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“What do the operators want?”

The fact is unless the agencies sign up for a plan, there is no plan. Unless we explicitly articulate the cost benefit calculus for an agency to participate in some interoperability regime, we will not get a solution that everybody signs on to.”

– Larry Yermack

MR. LE FROIS What we are trying to do here is see if there are any other examples of interoperability that we can consider that would be close to what we think we want with a minimum of governmental intervention.

MR. OPIOLA There is one example that you didn't touch and I would put it on the list. It is called retail. I am a toll road. I can either sell a single product – access onto my road – or I am selling a lot of other value added services. It all depends on what I decide I want to put inside my store.

All I want is to have as many passengers come to my store as possible, and then I am working with other agencies, credit cards, banks, and everybody else for payment. I will take cash, I will take credit cards, I will take debit cards, and I will take a check. You can buy my one product or multiple products. In effect, as a toll road (in a retail model), I am like a store front, and it is just a question of how many people pass through and what I offer them as a means to pay. I am depending on other people for the payment mechanism rather than doing it myself. While I set the business rules for selling and purchasing in “my store,” the technical aspects interoperate from many suppliers, and the financial dimensions (banking, credit card, clearing houses) handle the transaction and transfer the revenue into my store account. The interoperability is that we are not going to do the financial dimension inside the store other than tracking the transaction for the access or value added service sold. It is going to be someone external to the store that does it – the existing banking and financial system regulated by Treasury.

MR. SNIDER Good discussion. Thank you very much. Issue number two is what do the operators want?



WHAT DO OPERATORS WANT?

The participants agree that one of the things toll operators most want is to stay independent. Two key questions emerged: what type of customer service should operators provide to their customers? Also, will a specific level of customer service be part of a national interoperability requirement?

MR. CRAWFORD The operators all want to stay independent. As the interoperability model turns into something that is a lot less expensive and risky, because there are toll guarantees, the importance of independence will wane. But it is not going to happen overnight.

MR. DEITIKER Does independence mean back office independence or agency independence? As long as your agency is independent, do you care if your back office is independent?

MR. KRISTLIBAS Part of the reason for the desire to stay independent is employment. We need to remember that tolling agencies serve as a place of employment for an awful lot of people, and they want to continue to do that.

MR. LE FROIS We are working with an agency that said “I need to manage my customer accounts.” I happen to be a customer of this agency and said, “You have never contacted me, ever. I have never gotten a violation that I shouldn’t have gotten, and you have no reason to talk to me. So what is so important to you about maintaining me as a customer?”

MR. SNIDER What I think they mean is “I need to manage my violators.”

MR. LE FROIS I would agree with that.

MR. YERMACK I think it is a short-sighted attitude on the part of an operator to assume that the traveling public feels a sense of loyalty to a bridge or a train or a highway. They are just trying to get from here to there. But it’s the industry that says “They are my customers.” It is self-serving and I don’t think it’s helpful.

MR. OPIOLA You are absolutely right. That person just wants to get A to B the fastest, easiest way he can. His loyalty is to the fastest mode of transport – not the toll road, bus, train, or tram.

MR. KRISTICK I don’t buy that. When things go wrong and the customer doesn’t get the service they want, somebody owns that issue. It doesn’t get solved at 50,000 feet. It gets solved by somebody who is on the bottom line. You talk to any business out there – the “Good to Great” Jim Collins type stuff – successful businesses stay close to their customers. The ones that take a 50,000 foot answer are going out of business.

MR. CRAWFORD There is one reason why an agency wants to own their customer: they get paid that day for your transaction. If somebody else owns your customer, you have somewhere between a week and a month before you get paid for the transaction. If you own it, you get paid for it that day.

MR. KRISTLIBAS That is because of the terms and conditions of the written agreements that are in place. There is no reason why those agreements can’t be modified so that toll revenues can come to a host or an away agency faster.

“



The operators all want to stay independent. As the interoperability model turns into something that is a lot less expensive and risky, the importance of independence will wane.”

– James Crawford

“



When things go wrong and the customer doesn’t get the service they want, somebody owns that issue. It doesn’t get solved at 50,000 feet. It gets solved by somebody who is on the bottom line.”

– Dave Kristick



There is one reason why an agency wants to own their customer: they get paid that day for your transaction.”

– James Crawford

MR. CRAWFORD And we are working on that right now.

MR. LE FROIS That’s how it works in Florida. The agencies in that state exchange daily. That is just how they set it up.

MR. DEITIKER I hope that doesn’t imply that customer service business rules are going to be part of some larger interoperability. The last thing anybody wants to see is national interoperability that encompasses how the phone gets picked up.

MR. YERMACK I want to stay with this issue of what’s included in national interoperability. Some say that the customer service function is part of it, others say no. If the national system of interoperability also embraces the customer service component, then there wouldn’t be any competition and there would be nowhere else to go. Clearly, the agency has to have the opportunity for alternative ways of meeting the interoperability requirement that it has. Also the customers might have different perspectives on the interoperability requirements they desire even if the agency only provides vanilla.

The agencies are obviously going to have standards that have to be carried out; otherwise there is significant risk to the leadership of the agencies if their customers are not being treated properly.



WHAT DO CUSTOMERS WANT?

The participants agree that customers want to get from A to B as conveniently and safely as they can with a minimum of disruption. They also want reliability and predictability in their trip.

MR. WORRALL What do customers want? The customer wants to get from A to B. They want to do it as conveniently and as safely as they can with a minimum of disruption. They don't care about your road; they want to get from A to B. They care about getting their statement, that it's correct, and that you have connected up correctly with their credit cards.

The issue of privacy depends on how you treat your customers. I think we've done a pretty good job of dealing with privacy in our industry. When we go to a national scheme, we'll have to deal with privacy all over again.

MR. GROSSMAN The issue of privacy will get elevated as you move to more open road tolling and cashless systems.

MR. CRAWFORD Right now virtually every toll road has a competing free road, usually at a much lower average speed, with lower safety and other amenities. So people are willing to pay for a premium service. You have to be able to show your customers that they are getting something of value or they won't use it.

The people who pay electronically are not as concerned about what they are paying per transaction. Cash customers, on the other hand, are very concerned about what they pay per transaction.

MR. OPIOLA I agree with everything that Hal said. I would only add the words "reliability" and "predictability." I want to get A to B. I don't mind paying more but what I don't want to do is pay the toll and sit in traffic. Then it is considered a loss of value because it is no better than a state or local road. The journey has to be "predictable" and it has to be "reliable" or it is not worth paying for it.

“ The customer wants to get from A to B as conveniently and as safely as they can with a minimum of disruption. ”

– Harold Worrall



MILESTONES IN OPEN ROAD TOLLING AND INTEROP



Alesund, Norway
The world's first electronic toll system.



The E-ZPass Interagency Group (IAG) was formed with three states (New York, New Jersey & Pennsylvania) and seven agencies.



Georgia 400 and Oklahoma Turnpike
Sites of the first express high-speed electronic toll collection systems in the United States.



Toronto, Canada's 407 ETR The world's first all-electronic, barrier-free toll highway opens.

1984 1987 1989 1990 1991 1993 1995 1997 1998

Multi-lane, free flow Urban Road Pricing demonstrated in **Hong Kong** (predecessor to Singapore and started concept of road user charging).



First U.S. installations of ETC seen by Crescent City Connection (formerly the Greater New Orleans Bridge), Oklahoma Turnpike Authority and Dallas North Tollway.



The E-470 Public Highway Authority opened as one of the first non-stop, high-speed ETC lanes in the United States.



First Open Road Tolling demonstrated as feasible – Newcastle University, UK by Professor Peter Hills using Saab Combitech (now Kapsch) DSRC tags.



Portugal becomes first country to apply a single, universal system to all tolls in the country, the Via Verde, which can also be used in parking lots and gas stations.



First E-ZPass Interoperability NYSTA and MTA Bridges & Tunnels.

State Route 91 in Orange County, California Opened first All-Electronic Toll Collection and High Occupancy Toll (HOT) lanes in the country in 1995.



Singapore opens the world's first urban-area electronic road pricing system using smart cards.



Express Lanes at Toll Plazas Many agencies across the US begin converting existing toll plazas to incorporate high-speed express lanes.



ERABILITY



CityLink a 22-kilometer automated tollway in Melbourne, Australia opens.

2000



North Texas Tollway Authority Nation's first system wide conversion of toll plazas to include express electronic toll collection lanes in 2002.

2001

2002



New Jersey Turnpike Authority First to offer five side-by-side express lanes for highway speed Electronic Toll Collection in 2004.

2004



Trans Israel Highway opens with open road electronic toll system.

2005



Alliance for Toll Interoperability forms with initial member agencies.

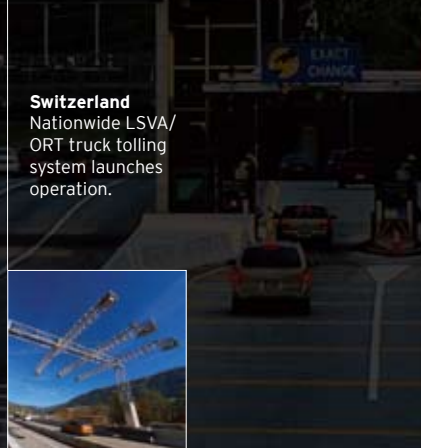


Distance-based charge for trucks on motorways in Germany Nationwide open road tolling system; still the world's only toll system based on use of GPS satellites.

2006

All-Electronic Toll Conversion Projects Initial Wave of converting existing toll roads to AETC starts in earnest.

2007



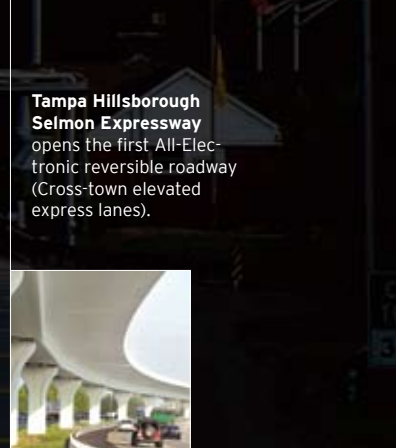
Switzerland Nationwide LSVA/ORT truck tolling system launches operation.



ASFINAG - introduces national heavy vehicle electronic tolling system in Austria.



Autopista Central in Santiago, Chile opens the first urban all electronic open road tolling facility in Chile soon to be followed by four other all electronic and interoperable open road tolling facilities in the city.



Tampa Hillsborough Selmon Expressway opens the first All-Electronic reversible roadway (Cross-town elevated express lanes).



Westpark Tollway opens as All-Electronic Toll Road in Houston (Harris County Toll Road Authority).



Launch of NORTIS Multi-country interoperability of toll systems in Scandinavian countries (EasyGo service).



WHAT DOES GOVERNANCE LOOK LIKE?

Jim Crawford defined the issue quite well. He said governance is basically the framework upon which toll operators agree to cooperate so that each receives the appropriate toll from the customers of the collective group for the payment of their tolls.



The key issue is that everybody has to be willing to give up something to get something that is for the biggest benefit of the collective network. The reality is that 66 percent of all the tolls collected in the United States today are collected on an interoperable system.”

– James Crawford

MR. CRAWFORD Governance is basically the framework upon which toll operators agree to cooperate so that each receives the appropriate toll from the customers of the collective group for the payment of their tolls. The real issue for governance is how do you reach agreements and how do you make those agreements work effectively so that the toll operator that had the toll transaction gets its money from the toll agency that is holding the money.

One option would be to have private companies come in and basically do what the original MasterCard and Visa did. They might say, we will set up a system and you pay us a fee to use it. If somebody came in and said to the toll operators we will build your next generation of electronic toll collection system, we will operate it, and we are going to charge you 10 percent of what we collect, you probably would see agencies say “go to it.”

MR. WORRALL You betcha.

MR. CRAWFORD Now if the card company said we want 25 percent, the agencies are going to say “forget it.”

The key issue is that everybody has to be willing to give up something to get something that is for the biggest benefit of the collective network. If Congress passes a law on governance of interoperability, everybody is going to give up a lot in order to get that. If we can collectively come together and say here is how we are going to do it, we can achieve it and that will be much better than if Congress compels us to do it. The reality is that 66 percent of all the tolls collected in the United States today are collected on an interoperable system.



WHERE DO WE GO FROM HERE?

There were two main thread lines from this discussion about IBTTA's role: the need to establish an overarching structure for a nationwide seamless system of interoperability; and the need to achieve some small, practical, short-term victories – connecting regions of interoperability – to demonstrate a pattern of success.

MR. SNIDER What should IBTTA's role be in moving interoperability forward?

MR. GROSSMAN I am confused as to why there is a question about how you would not be taking the lead, how you would not be trying to set the example for how this could work.

MR. LEE I'm observing that there seems to be a great deal of fear about a possible VMT system supplanting the existing toll agencies. If you were to take ownership of a successful, national interoperability system, that could eventually lay the groundwork for and be incorporated into a nationwide VMT system.

MS. MOLLET I think that one day we are going to have just one payment system for all of our mobility services. If you are the enabler of interoperability amongst yourselves, then that will be a platform for wider interoperability. If IBTTA can take the lead and bring other organizations like AASHTO and APTA to the table to talk about that future, I think that would really be the pathway.

MR. SCHANK Beyond the task of interoperability is the task of dealing with federal legislation that only IBTTA is equipped to do for people at this table.

Several people mentioned before some really dangerous possibilities for legislation, and the federal government has the opportunity to stand in the way of interoperability more than anything else.

So, protecting yourselves from that is a huge role. On the other hand, recognizing the incentives that the federal government is going to provide that are beneficial, not only for the industry, but for interoperability in general, and knowing those when you see them, is going to be essential for you because not every federal government intervention is a bad one. It's just very easy for them to make a bad one.

But that doesn't mean you can't be on the side of recognizing where there is some value for your industry. Going forward, there will be a greater emphasis on competitive grants from DOT in the next authorization bill, for example, and in the climate legislation.

What are the criteria for those competitive grants and how do those criteria affect interoperability and this industry? If you look at some of those grant competitive criteria, they range from let's make sure everyone is riding public transportation, taking bicycles and walking all the way to let's make sure that we are getting the most possible money for our investment, and somewhere in between there is something that could be useful.

There is definitely the possibility of those criteria being hijacked and used in a way that actually can hinder not only this industry, but transportation in general.

MR. GROSSMAN If you are eventually moving to a place where you have more and more shared back-end systems, you can build the specifications that fit your needs. A third party that comes in to do this may build something that works, but it is going to be at the low-



One day we are going to have just one payment system for all of our mobility services.”

– Petra Mollet

est common denominator and may not take into account all the other business practices that may need to be met.

Another point I want to mention: there is no public champion right now for the toll industry, and you need one fast. The other thing that Rich mentioned, which needs to be taken out of the public dialogue, is this idea of a free road. There is no free road. We pay and we pay a lot.

MR. KRISTLIBAS Anyone who is waiting for the feds to come with a solution anytime soon should forget about it. It won't happen. I think IBTTA needs to step forward right now to help develop these interoperable models. I think the feds will eventually follow when a successful model can be demonstrated. If we don't do it, we will be saddled with some kind of model eventually developed by the administration that none of us likes.

MR. DEITIKER Interoperability is actually going to save us money if we get the model that is even close to being as efficient as the private sector transaction processing model. Interoperability is going to save many orders of magnitude more money than it currently costs to process toll transactions.

MR. EDEN There are a lot of things we can do to start influencing where everything goes at the federal level and elsewhere. I go back to what I said earlier: lead, follow, or get out of the way. At this point, somebody is waiting for somebody to lead.

MR. YERMACK When we talked about industries where interoperability worked, there were always some agreed-upon standards in some area of that business that allowed for companies to come in and compete on that basis. You wouldn't have an interoperable phone system unless you had some agreement about processed phone calls. Here's my question: what is the minimum congruence that is required in toll collection for there to be national interoperability?

MR. CRAWFORD This is what you need to get to that congruence you're talking about. IBTTA ought to bring together a group of toll operators and people in related businesses to look at:

- + Common business rules
- + License plate file standards
- + File standards for exchanging information for vehicles that have been identified
- + Privacy and security standards
- + Accounting rule standards, and
- + Roaming file standards

Those sound like a lot of things, but, in fact, that is what interoperability is. I am not saying that IBTTA necessarily adopts them – although that would be my nirvana – but it would be good.

If IBTTA could get people to come together and set aside their own personal agendas and define the best standards of all the different ones out there, we would be a long way towards achieving national interoperability.

Second, I think it would be very helpful if IBTTA, either alone or in conjunction with I-95 corridor coalition or others, conducted a nationwide survey to find out what customers of electronic toll collection think is important. We also want to find out what people who don't have electronic toll collection but use toll roads hold as the reasons why they haven't gone to electronic toll collection.

Congress reacts very well when they are given some facts. As an industry, we have an awful lot of good information, but it is not something that is easily documented in a format that members of Congress rely on.

There is one other big issue and that is toll facilities that are traditional ticket systems. That's where you get registered on entry and you pay on exit for the distance traveled. Anything that is not a fully interoperable transponder system becomes problematic.

MR. EDEN ATI does have a program in place in which we are working on a solution to the closed ticket system. We're working with the New York State Thruway on this.

MR. SNIDER Just to circle around one more time, have you all had a chance to share with us what it is that you think IBTTA could or should be doing to help move interoperability forward?

MR. LE FROIS IBTTA should facilitate small, simple interoperability examples.

MR. WORRALL We need to do two things. First, we need to recognize that VMT is coming. The draft transportation authorization bill in the House talks about interoperability standards, and we need to be engaged in that process. We need to bring together organizations like AASHTO, the motor vehicle administrators, the truckers, and others to establish an industry position on interoperability standards. IBTTA ought to lead it.


Second, we need incremental approaches to connect regions of interoperability. JJ is working on that through ATI. IBTTA needs to be engaged in that process also.

MR. GROSSMAN I want to offer you guys some tough love on that. So far, you haven't figured out how to connect the E-ZPass agencies in the Northeast with SunPass in Florida. You can't get along among yourselves yet you want to do something larger? That's not a viable proposition in my view. Someone said it's not a technology issue or a policy issue; it's an ego issue. If you want to get AAMVA, AASHTO and ATA to play along, it would help if you did the easy things – pick the low hanging fruit and clean up your own house.



Anyone who is waiting for the feds to come with a solution anytime soon should forget about it. If we don't do it, we will be saddled with some kind of model eventually developed by the administration that none of us likes.”

– *Walter Kristlibas*

“
 Somebody is waiting
for somebody to lead.”
– JJ Eden



MR. KRISTLIBAS I agree with what others are saying. We can't even get along amongst ourselves. We need to have a success story. We don't have that yet. The incremental approach that Hal is talking about is absolutely critical to this, and it can be done.

MR. DEITIKER We need to make sure that everyone who's working on this is speaking and playing together nicely and setting their egos aside.

MR. KRISTLIBAS We need to ask ourselves what we need to do to make something happen. It is one thing to come together and discuss things at a conceptual level. It's another thing entirely to get people to roll up their sleeves and do the dirty work. You need both.

MR. EDEN I would like to see IBTTA as the clearinghouse. If ATI is doing something, or OmniAir is doing something, or the I-95 Corridor Coalition has two or three projects underway, there needs to be a clearinghouse of what is going on with respect to interoperability in tolling. We need an organization that's not just disseminating information, but is also deciding whether any one of these projects is something we want to back as an industry.

When we run into an impasse like that between E-ZPass and SunPass, then we need someone to step in to help us resolve those impasses. We need somebody in the middle to help us settle these disagreements because each one of us has too much of a vested interest to be impartial about it. Maybe E-ZPass will emerge as the ultimate model and that will be it. Or we could have some combination of models. But we need somebody to help facilitate that. IBTTA should play that role.

MR. WORRALL The start of that process would be the IBTTA board in January 2010 deciding that they want to take some action.

MR. OPIOLA If you want to move this forward, I think you have about a two year time horizon. After two years, it will be out of your hands. The continuing development of new HOT lanes, the interest that state DOTs have expressed in tolling, Congress's desire to increase revenues through VMT and other measures, all lead me to think that Congress will start making decisions on this. After two years you will simply be on the receiving end.

MR. LE FROIS There is a pilot project that Florida Turnpike is trying to initiate with one of the IAG agencies. Under such a pilot, each agency takes their license plate files from their account holders and swaps them with the other agency. If a person from New York, for instance, happens to drive in Florida, they see the license plate down there, they send the transaction up to New York, and New York sends the tolls back down to Florida. Very simple.

But it has gotten very complicated. It is ending up being driven to be more than just a simple pilot. So, maybe if IBTTA steps in and says, "Look, let's cut everything we are doing, and get it going forward," that could be very helpful.

MR. KRISTLIBAS One of the ways to penetrate the corporate operating shield of the IAG is not to deal with the IAG as a monolithic entity but go directly to the agencies that want and need to do a pilot program. If you get enough agencies to agree to participate in the pilot, the rest will eventually follow when they see the writing on the wall. The complicated and cumbersome governance structure of the IAG is not going to be settled anytime soon.

MR. YERMACK Well, the IAG managed to create the largest region of interoperability in the known universe, so it is not a complete failure. What I want to say, though, really speaks to IBTTA and what it wants to be. IBTTA has never been an organization that develops a policy position, researches that policy, and then develops the underpinning strategies to carry out that policy. It is an association of toll agencies, and it does a lot of excellent information sharing, but it doesn't advance policies.

If IBTTA takes interoperability seriously, it must establish seamless national toll interoperability as one of its goals. Achieving that must be one of the missions of the association.

Once you do that, then you have to figure out what it will take to do it. It's interesting – in 30 seconds Jim Crawford listed the six things you need to have national interoperability. If we challenge that list, maybe we can reduce it to two things. Maybe there are only two things we need to do to get there.

A lot of the work may be getting done in ATI and OmniAir right now. But I don't think they have the political air power to establish the goal of national interoperability. They probably would be happy to work with IBTTA on a national basis to create that air cover.

Whether you write a letter to the Secretary or someone establishes a commission, we need to create an infrastructure for national interoperability, and IBTTA is in a good position to do that.

MR. SCHANK I don't know that anyone will care about your mission of trying to get interoperability. I care because I care about transportation policy, but I don't know that Congress particularly will care about it.

What you could attach yourself to – and this goes back to the beginning of our discussion – is the VMT fee. Congress cares about VMT because it wants to make sure it has money to spend to bring back to their constituents. Thinking about how you might attach your mission of national interoperability to the transition to a VMT fee – to a more effective user based system of funding for transportation – is something you might consider as a strategy going forward.

Interoperability is something that the people around this table care passionately about and it is very important to your industry. And there is a need to get other people to care about it too. Getting that message out will be crucial to your success. However, I think that message is difficult for people in a position of power to appreciate. The more you can figure out how your message works with the larger transportation policy issues on the table, the more successful you will be.

“



We need to do two things. First, we need to recognize that VMT is coming. Second, we need incremental approaches to connect regions of interoperability.”

– Harold Worrall





I would like to see IBTTA as the clearinghouse.

We need somebody in the middle to help us settle these disagreements because each one of us has too much of a vested interest to be impartial about it.”

– JJ Eden



There are many other important transportation policy issues that interoperability can attach itself to. For instance, performance measurement for competitive grants, VMT, and the future of revenue collection at the federal level. Finding other issues to attach yourself to will be crucial for what you are trying to achieve.

MR. YERMACK Congestion pricing works in London because it was presented as transportation policy. When it is presented as a revenue-raising measure, it is defeated dramatically. We need to keep our eyes at a higher policy level on the issues we’re confronting. I’m not too worried about whether anyone in Washington cares about national tolling interoperability. I think if somebody can present them a way of doing it, they will care about it and grab it as a solution for VMT.

MR. WUESTEFELD We need to be proactive here and try to make things happen as quickly as possible. All the issues are on the table and the most critical issue now is how to prioritize them and present them to all the stakeholders.

MR. LE FROIS One thing we need to do now is define what the word “support” means. Is it money, people, endorsement? Does it mean IBTTA stands behind this effort? If we can define what support means, there are a number of people in this room who want to get small projects done, who can succeed in doing so, and literally within 12 months we can show progress. We want to be able to say, “Here, we did this. IBTTA facilitated or helped stand behind this sample project, and it worked.”

In the FHWA responses to the comments on interoperability in the Federal Register rule-making, they seem pretty open to what the industry might propose. If we come up with a plan, I think they are more than willing to say, “If it works, go for it; knock yourself out.”

MR. JONES I have picked up on the same two thread lines in the discussion that everyone else has mentioned: the need to establish an overarching structure for a nationwide seamless system of interoperability; and the need to achieve some small, practical, short-term victories to demonstrate a pattern of success.

Moving forward on this project would require significant resources. It isn’t going to happen with just the volunteer labor and energy of our members. It would require staffing at the IBTTA level. I want everyone to understand before we leave this room that there would need to be a significant investment of new resources to make this happen.

CONCLUSIONS AND NEXT STEPS

There appears to be a clear direction from the participants in this forum to do two things:

- + First, focus on completing several small, practical, short-term projects to demonstrate a pattern of success in advancing interoperability. One example would be to connect regions of interoperability such as E-ZPass and SunPass.
- + Second – a longer term proposition – establish an overarching structure for nationwide seamless systems of interoperability that could ultimately become the foundation or pillars to support a national VMT charging program.

The forum participants and IBTTA staff believe the industry would need to invest significant resources and people to advance these two objectives. The Board of Directors of IBTTA needs to seriously consider whether it wants to make the investment of time, energy, and money to advance interoperability.



In 30 seconds Jim Crawford listed the six things you need to have national interoperability. If we challenge that list, maybe we can reduce it to two things.”

– *Larry Yermack*



APPENDICES

WHAT IS INTEROPERABILITY?

Webster's Dictionary defines "interoperability" as: ability of a system (such as a weapons system) to work with or use the parts or equipment of another system.

In the context of Electronic Toll Collection, interoperability is deemed as the ability to recognize and financially process toll transactions from different toll systems in a manner that is invisible to the driver (customer) or at least provides the least amount of complication while maintaining the revenue stream to the operator of the transaction.

Toll agencies recognize different levels of interoperability, mainly "technical" and "operational" and "financial."

"Technical" interoperability means the devices and hardware used in the vehicle and on the roadside can "talk" or communicate with each other and exchange data and information. There are fundamental technical differences between some ETC systems, which means they can only be "seen" or "heard" or both to communicate and exchange transactional data and information through the use of additional hardware by the toll facility operator.

The ability to exchange information via hardware (technical interoperability) doesn't guarantee that a toll payment can be made (functional or operational interoperability). Different operators use different data systems and formats as well as account codes. And only a "home" or ETC tag issuing agency has a binding operational agreement with the driver (customer) for payment of tolls incurred.

"Operational" interoperability consists of the rules that govern the business behavior of the tolling organization and its relationship with its customers, other tolling agencies, and the financial systems that handle the payment and transfer of charges between customers, other toll agencies, and the financial system itself. It is achieved when there is an "agreement" or "contract" between the customers and the organization; different system operators who share account information and/or accept responsibility for toll transactions incurred by their customers on other toll systems; and, financial transfer of revenue or funds between individuals to the toll organization, to other toll organizations and to and from the financial system (banks, credit card clearing houses, other financial institutions and financial system set up by the Treasury).

"Financial" interoperability consists of the financial processing rules and security mechanisms to ensure that revenue/funds/money is exchanged and transferred from one entity to another. It includes all the financial security rules to ensure that each and every transaction generated by the "technical" systems and processed by the "operational" or business rules passes successfully to the agency that handled the transaction and is paid for the service provided to the individual or customer.

Universal interoperability can be defined as the condition in which a driver at one toll road in North America can use that same vehicle on any toll or road pricing facility in North America, without fear of being treated as a violator. In addition, the revenue/funds/money for that service are successfully received by the toll or road pricing facility that generated the transaction for service.

WHY IS INTEROPERABILITY SO DIFFICULT TO ACHIEVE?

Every toll agency that has implemented ETC focuses first on their daily customers, building acceptance for their new system and providing improved services for the growing percentage of their local traffic using their facility. Only after a system is established and local use is well-established does interoperability appear to become an issue for the toll authority, led initially by concerns about drivers using multiple facilities in their trip pattern or long-haul commercial vehicle operators.

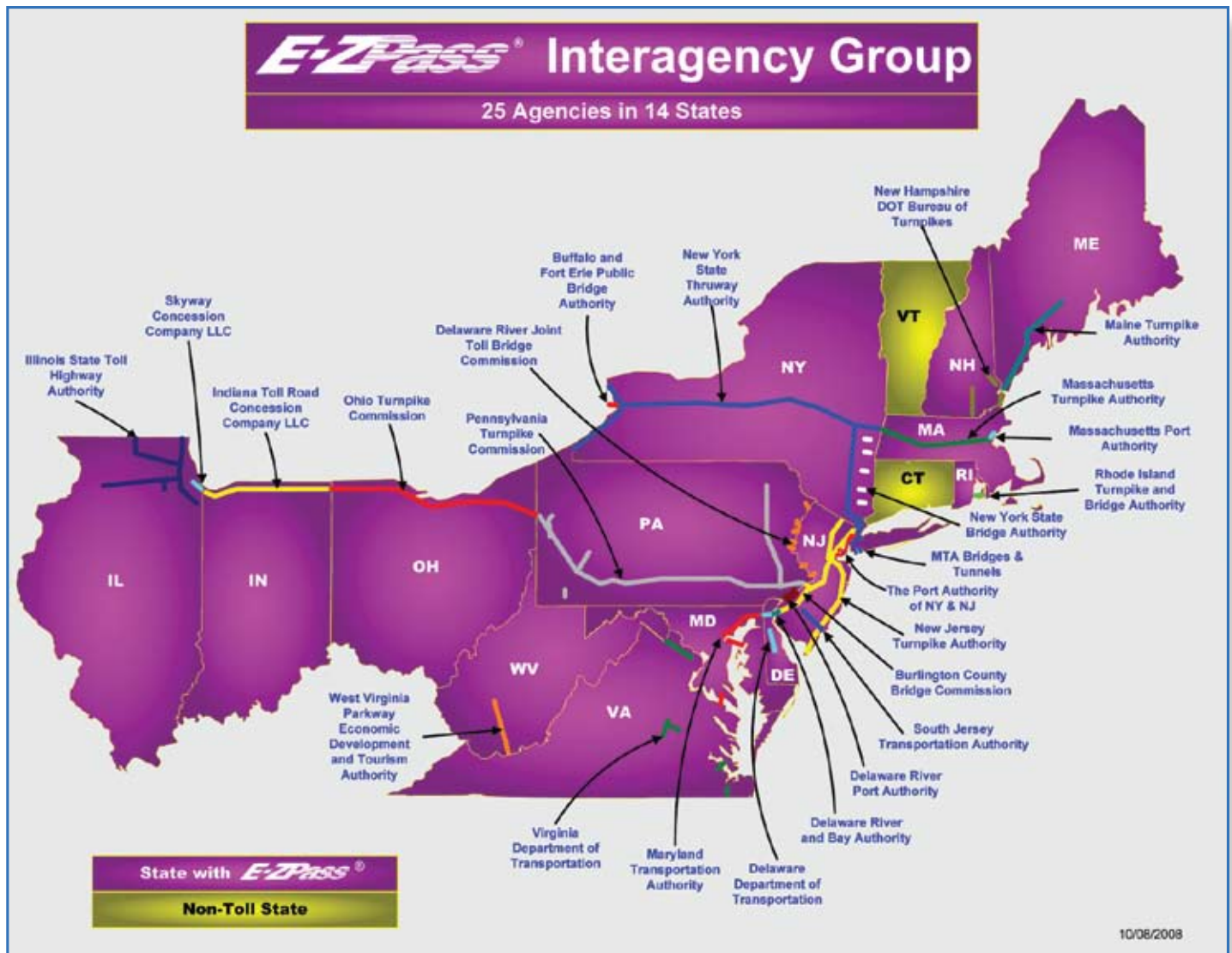
Since the focus has been operational issues of individual authorities, business rules and technology used to promote faster, predictable, and more reliable services have been self-servicing. Technology to date has been provided by only three or four providers and each one's commercial interests have been promoted by proprietary systems that do not interchange data or information at the most basic level. These technical decisions are by individual authorities that have purchased systems for good, sound business practices based on price, rather than larger technical issues or standards regarding interoperability. Hence, technical interoperability and commercial interests have created a regional patchwork of technical systems across the country. Basically interoperability would be something "nice" to have for many agencies but not critical to the daily service of their local customers.

Whether the nature of the system incompatibility has to do with technical or business administration issues, there are costs borne by the local system to identify and process non-local accounts. Should such costs be distributed among the entire ETC user base through higher tolls or can they be allocated only to the "foreign" ETC accounts?

ELECTRONIC VEHICLE REGISTRATION (EVR)

Electronic Vehicle Registration or "EVR" is a growing national movement to use dedicated short range communications (DSRC) or Radio Frequency Identification (RFID) to harmonize national vehicle registration, licensing, insurance, and inspection by using technology. In these systems, a relatively low-cost RFID "tag" or "sticker" is used to identify a vehicle to the national road network. That RFID tag or sticker is supplied by the government's vehicle registry as proof of proper registration for use of the national road network as well as safety (insurance and inspection standards) for the vehicle. It is a field evolving in parallel with tolling and may intersect such that the same tag could be used for tolling, parking, and access control. Countries such as Portugal, South Africa, Brazil, Mexico and Columbia have programs that are embracing this concept.

MODELS OF REGIONAL TOLLING INTEROPERABILITY





E-ZPASS INTERAGENCY GROUP –
 + 19.2 million transponders
 + 25 agencies in 14 states

FLORIDA –
 + 4.6 million transponders
 + 3 agencies

TEXAS –
 + 4.5 million transponders
 + 3 agencies

CALIFORNIA TITLE 21 –
 + 2.5 million transponders
 + 5 agencies

LINKING REGIONS OF INTEROPERABILITY: THE ALLIANCE FOR TOLL INTEROPERABILITY (ATI)

The Alliance for Toll Interoperability (ATI) is a new operating organization comprised of public sector toll agencies, toll authorities, and various state Departments/Divisions of Transportation (DOTs) collecting tolls for roads, bridges, and tunnels (i.e. toll agencies).

ATI was created to promote, research, and implement interoperability concepts to expand the reach of toll interoperability through North America with existing and new technologies, to include short-term application of video for interoperable tolling across technology boundaries.

ATI is working to achieve toll payment account interoperability arrangements that span all of North America by:

1. Issuing a Request for Information (RFI) inquiring about potential solutions for achieving toll payment account interoperability for North America.
2. Developing a conceptual set of business rules for toll payment account interoperability that is acceptable to a majority of ATI's members such that the matched vehicle information in 1) can be used as the basis for funds from customer accounts being transferred between/among agencies.

www.tollinterop.org

OMNIAIR

The OmniAir Consortium is the leading advocate for the national deployment of open, effective, and interoperable DSRC (Dedicated Short Range Communications) technologies to dramatically improve the safety, mobility and efficiency of highway transportation. OmniAir Members are organizations and people from the public and private sector intricately involved in ITS and telematics and who appreciate the great potential of DSRC. They reflect the highest degree of business and technical expertise evident in this community. Through the member-defined OmniAir Certification program, members are working for open standards, third-party certification, and competitiveness in DSRC and the telematics industry.

OmniAir is a non-profit technology-focused trade association created to help achieve the deployment of 5.9GHz DSRC systems through the member-defined OmniAir Certification program. OmniAir serves as a catalyst for intelligent transport systems (ITS) in general, but specifically the deployment of DSRC, the communications protocol underpinning the safety and mobility goals of USDOT and IntelliDriveSM.

www.omniair.org

INTELLIDRIVESM

The U.S. Department of Transportation's (DOT's) IntelliDriveSM program is focused on advancing connectivity among vehicles and roadway infrastructure to significantly improve the safety and mobility of the U.S. transportation system. The program is working toward a future vision where vehicles and infrastructure are connected to enable crashless vehicles. In addition, access to real-time data on the status of both vehicles and the roadway would dramatically improve the performance of transportation management systems and operations.

IntelliDriveSM is being developed through coordinated research, testing, demonstration and deployment. The Federal research investment is targeted to areas that are unlikely to be accomplished through private investment because they are too risky or complex. Other stakeholders, including the states, the automotive industry and their suppliers, and consumer electronics companies, also are researching and testing IntelliDriveSM technologies and applications so that the transportation community can realize the full potential and vision of IntelliDriveSM.

The IntelliDriveSM program is a major initiative of the Intelligent Transportation Systems (ITS) Joint Programs Office (JPO) at DOT's Research and Innovative Technology Administration (RITA).

www.intelldriv usa.org

EUROPEAN ELECTRONIC TOLLING SERVICE (EETS)

In 2004 the European Union issued the Directive 2004/52/EC. The Directive is a legislative instrument, a law with which all the European Union member states are obliged to comply. This directive established the EETS and required the service to be delivered via onboard equipment based on a short list of charging technologies, namely DSRC (micro-waves) at 5.8GHz, GNSS (satellite positioning), and GSM (mobile telephony).

This legislation applies to all tolled roads in Europe and might also apply to ferry connections such as those in Scandinavian countries that are a part of longer and mixed road-sea itineraries.

EETS would be complementary to local (state-wide or regional) tolling systems. EETS will be delivered to the customer by EETS providers, which are basically financial companies or entities that will receive the tolls from the customers and will forward them to the toll road operator. EETS providers have the obligation to make the service available along all the EU tolled roads by entering contracts with all the EU toll road operators. Compliance with this obligation is a fundamental requisite to become an EETS provider.

EETS providers will deliver the OBUs to the customers and will make available to them a detailed list of the transactions along the network. In case there is a problem in the transaction of an EETS customer, the EETS provider will pay the toll to the road operator and will clear it with its customer afterwards.

The timeframe for the EETS implementation is as follows: by October 14, 2012 the service must be available to trucks or other vehicles over 3.5 tons, and by October 14, 2014 the service must be available to all vehicles.

In setting up and fine-tuning this legislation, the European authorities launched and co-funded some projects to investigate and solve the main critical issues. The latest of those projects are CESARE (led from the very beginning by ASECAP, the European association of tolled roads) and RCI. The CESARE project dealt with the legal and procedural issues (roles, rights and duties of the actors, etc.) while the RCI project prototyped an on-board unit capable of complying with the Directive.

VIOLATION ENFORCEMENT AND VIDEO TOLLING

With traditional manual toll collection, violation enforcement was pretty simple – if you didn't pay, the toll-gate wouldn't rise or the light wouldn't turn green. Violation enforcement with high-speed electronic toll collection is a little more complicated since typically there is no toll plaza at all. Electronic readers mounted over the roadway “talk” to the transponder in the vehicle to learn the account to be charged for the trip. If the vehicle doesn't appear to have a transponder, the toll system will take an image of the vehicle's license plate. The license plate number will be compared to the toll agency's database to see if the vehicle does have a transponder (which may be malfunctioning).

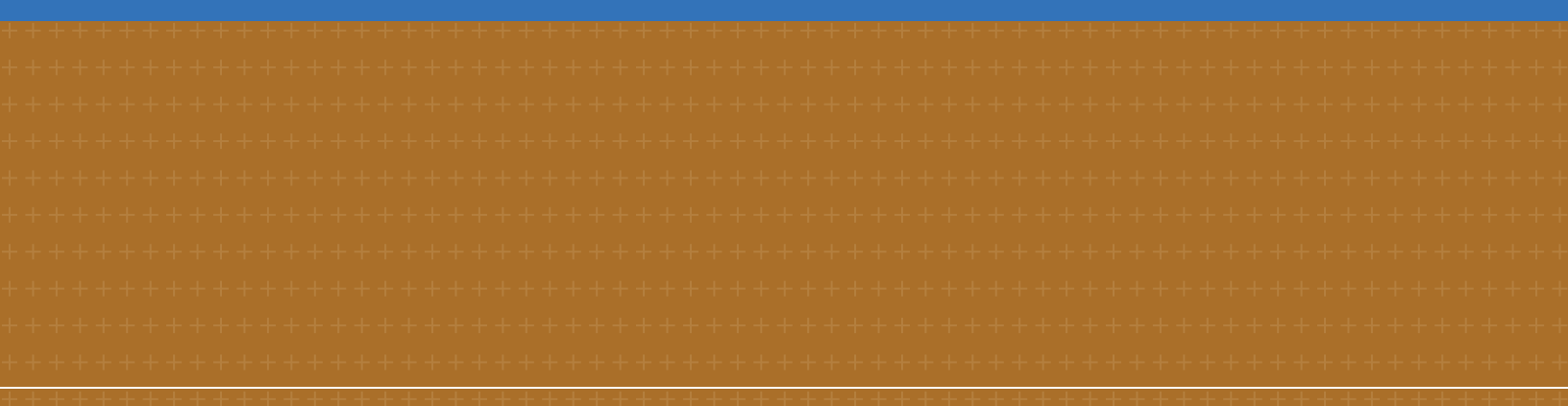
If there is no record of the vehicle, then that vehicle is considered to be a toll violator and the license plate contact information is traced through state motor vehicle records to mail a bill to the vehicle's registered address. The fees in such cases typically include additional administrative fees to offset the additional work needed to seek payment from the violator.

Increasingly, toll agencies are offering “video-tolling” which considers the license plate image to be just another method of vehicle identification for billing purposes rather than a violation. In this case the vehicle is usually charged a slightly higher toll than an ETC transaction and/or an additional fee to account for the additional administrative effort needed to identify and communicate with the driver.

FHWA FINAL RULE ON INTEROPERABILITY REQUIREMENTS FOR AUTOMATED TOLL COLLECTION

A Final Rule on Interoperability Requirements for Automated Toll Collection, as required by SAFETEA-LU Section 1604, was published in the Federal Register on October 8, 2009. This rule applies only to toll facilities receiving tolling authority through the Value Pricing Pilot Program, the Express Lanes Demonstration Program, or the Interstate Construction Pilot Program. FHWA states that it doesn't believe it can effectively establish a national standard at this time. However, FHWA believes that requiring toll agencies to take interoperability issues into consideration in developing their toll collection systems addresses the objective of the statute to accelerate progress toward the goal of nationwide interoperability.

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2009_register&docid=fr08oc09-5



Comment on this report at www.IBTTA.org

The International Bridge, Tunnel and Turnpike Association is the worldwide alliance of toll operators and associated industries that provides a forum for sharing knowledge and ideas to promote and enhance toll-financed transportation services. IBTTA members include owners and operators of toll roads, bridges, and tunnels and vendor organizations that supply products and services to the toll industry. Located in Washington DC, IBTTA has more than 300 corporate members in 25 countries on six continents. Visit us at www.ibtta.org.

