DAY 2: CONCURRENT PANEL SESSIONS (PANEL 3B)

Information Technology

Theodore Prince, *Kleinschmidt, Inc., Moderator*
John Allen, *American President Lines, Ltd.*
Gary Maring, *Federal Highway Administration*
Kenneth Wavering, *Lieutenant Colonel, U.S. Transportation Command*

OVERVIEW

Theodore Prince

This session focuses on emerging technologies in the areas of equipment identification, electronic commerce, equipment monitoring and transfer information systems, data systems (both commercial and military), and the military's global transportation network. The broader issue to be considered is how technology in the intermodal world is improving productivity, substituting information for infrastructure—that is the real challenge. This reiterates what Ken Wykle of the Federal Highway Administration (FHWA) talked about earlier, citing the great job we did investing in infrastructure in the 20th century and of the need in the 21st century to focus on better execution and improved productivity. Information technology is certainly a large part of that. In my view, however, when you think of how well the freight industry has done in this area, the failures outnumber the successes. For all the talk of leading edge technology, too often we succumb to "bleeding edge." We have spent the money, and the infrastructure productivity improvements have not really been achieved.

FREIGHT IDENTIFICATION TECHNOLOGIES

John Allen

John Allen is Director of Intermodal Operations, Americas Region, for American President Lines, Ltd. (APL). Domiciled in Oakland, California, his responsibilities are the business process design relating to truck and rail operations for North and South America. Before joining APL, Allen was the manager of E-Business Solutions at Velocity, and before that he spent 11 years at SeaLand, beginning in the company's management training programs and advancing over the years to Regional Manager for the Southeast and then to Equipment Management. He was at SeaLand when the company began to experiment with global process ownership, as opposed to the traditional geographic means of controlling equipment, and helped develop an organizational model to support that new business design. He is actively involved in many industry organizations such as ITS America.

Freight identification technologies, specifically within the intermodal and steamship industry, are indeed bleeding edge. From a technology standpoint, we do not have a good infrastructure. We have not taken advantage of what exists in the market from a technology standpoint and we need to move forward. Ted is absolutely correct when he says that information management is the key to improving productivity within our organizations. The term freight identification technologies is a bit misleading in that my focus is very much asset based instead of freight based, because, as a steamship owner and operator, I need to concentrate on the asset first. My focus today is on describing some business situations in which device technology specifically can be applied as well as the rationale behind it.

What are some of the options from a technology standpoint today? Where are we leaning? Where are we

with respect to use of these devices from a packaging standpoint, utilization, and ultimate integration into our operation? I will share some high-level results of some financial drills we have done that demonstrate the need to do this and the financial return associated with it. Where are we relative to working with device providers and other system providers in getting at this issue? I will discuss an emerging model that may be a collaborative effort. I will give a briefing on our involvement from the private sector standpoint and regarding an ongoing intelligent transportation system (ITS) venture.

Initially, we looked at an international intermodal shipment and broke it down into about 10 core nodes and milestones. We needed to branch out and look globally, because, from a commercial standpoint, what the customer desires and what the various operating infrastructures provide vary considerably. For example, in North America, there is a pretty extensive radio frequency identification (RFID) reader network to provide in-transit information for the rail moves. That does not exist anywhere else in the world. We needed to make sure as we scoped this issue to look at every possible scenario globally to ensure that our ultimate device technology solution met all our needs.

We then looked into each of those core nodes to see what was going on. We broke it down into two basic processes. The first is the order-to-cash process, which is a listing out of each of the individual transactions—order to cash—that are occurring to either trigger the process or support the process of the shipment life cycle. The second process is what I call supply-to-disposition—where do I get the asset to support the cargo demands; how do I manage the physical transportation through its flow and the various nodes and events that occur; what do I need to capture and track from an information standpoint; and finally, what do I do with the box after I am done? How do I dispose of it? This is the process we spend most of our time looking at when it comes to identifying opportunities that may be supported or improved through device technology.

Two basic parties are very interested in this information and I define them as commercial and operational. The commercial party is made up of two entities: (*a*) my customer, who has demands of me from an information standpoint, and (*b*) the internal sales and marketing people, who often put more pressure on me as an operator than my customers do. There are three core questions the commercial parties ask: Can I see from origin, from manufacturing, and from sourcing locations what my orders are and what I have coming to me, and how effectively can I package that together to have an understanding of what is coming at me? The second question is: While it is moving, can I operationally manage it effectively enough so that I can be proactive, can react very quickly to customer requests, and make the necessary execution decisions that they are requesting? The third question is at the destination end: Now I have my cargo and need to move on to distribution, can I have access and visibility to the single cargo unit (SKU) data and line item data?

If you look at the dot.coms of the world and at the technology enterprises, they are really focussing on Questions 1 and 3. They are trying to be the end-all and be-all visibility tool to all the customers, such as high-tech goods, apparel people, and most of the consumer product goods–type entities. However, they are missing the boat on that middle question and I think they are underestimating the size and importance of it. I can get your order information, I can tell you where the SKU is, or what the SKU is, but I cannot circle back around and tell you where it is in an effective manner. Therefore, our focus as an enterprise is to really drill down into Question 2 so that I can be proactive and have the ultimate visibility of the transportation events that happen at each segment and each leg.

Everybody in North America knows the issues we have with chassis. If you were to ask any operator what is their hit ratio on finding them, they would more than likely say that if they did a physical inventory today, they would not be able to find 5 to 7 percent of it. We understand that issue and it is one of the big focuses for device technology. However, a lot of people are ignoring the issue of containers and saying, "You've got to be kidding me. You know where your container is. It is at a port, it is in a rail yard, it is at a container yard, it is at a customer's location." This gives rise to two fundamental issues that I will illustrate with an example of a decent-sized steamship company. Let's say they have one million loads that collectively come in or go out of the lower 48 states. Statistics say the steamship line is responsible for delivering 60 percent of those loads to the customer's location. That leaves 400,000 containers for which the customer is arranging the trucking. The truck is going into Port Elizabeth and they are delivering to the customer's location. We do not have a clue where that container is going. We do not have a clue when it is empty until it actually returns. This means there are 400,000 instances in North America where I am underutilizing that asset. If I had visibility to where it was in the hinterland, could I make better decisions in my dispatch matching? Could I make better decisions in my repositioning? Could I save the customer more money? Could I make money with the trucker? Absolutely, and we need to get visibility to do that.

The second piece is the 60 percent we are delivering to the customer. Again, the statistics are saying that, whether it be an empty spotting at the customer or a load being delivered to the customer's location, we are dropping about 50 percent of those there and coming back to get it later. Some fundamental questions arise: Is the customer using that box to run around the countryside to do domestic loads? Is the trucker doing the same thing?

Does a bear do his business in the woods? Absolutely. We need to get control of that data. We need to get control of our assets to improve the velocity through the system to reduce the number of assets that I need, and to improve my bottom line. Guess what? I am not getting any money from increased rates. I need to find a better way to operate.

What are the options? Everyone knows that RFID AM-FM–type tags can give you location messages, cell technology in a Global Positioning System (GPS) fashion and, ultimately, GPS technology. The question is: Where is our head at? When you go back to the issue of geographical differences from both a customer standpoint and an operating standpoint, we initially approached this problem saying we have to track everything. We have to put high-end GPS and sensor technology on all my containers and all my chassis. As we begin looking at this and looking at the monetary value on the returns, the business needs, and so forth, we are coming down to an approach that says at the outset, let me put intelligent devices on my chassis assets in North America. The desire here is actually cell-based, because if you think of line-of-sight issues for triangulation of a GPS and start going through urban areas, cell is your best bet. You are going to get more consistent reads and it is considerably cheaper. The desire is to get all the location information that you can as well as be able to give some semblance of motion—that is, motion detection to allow me to detect that I am hooked up to a truck or not hooked up and to get that distinction. A lot of people will say the trucks are putting GPS technology in their cabs and everything else. However, that does me no good, because a truck can become untethered from an asset and the truck could be down at the donut shop while my asset is sitting in a cornfield somewhere. I need to be able to track the asset.

Let's now consider the container. The question is: Is there really a pressing need for this visibility? Consider the intermodal network in the United States, a very complicated intermodal network with more than 200 container yards. Most shipping lines have 50 to 80 container yards. Add on another 50 truck yards, your 13 to 15 port locations, and another 500 to 700 customer pools. You have a very intricate network that you need to capture. Obviously, RFID is a nonoption. To be able to set up that type of infrastructure, you need some type of positioning technology. Although Europe is getting more and more complex, the transits are shorter, there are fewer door deliveries to the customers, and it is primarily shorter transits—overnight-type rail transits. Demand for tracking from the customer is a lot less. What about a combination that the chassis device has location capability, whether it be GPS or cell—we say cell—and RFID capability? This enables me to capture the benefits of a fixed infrastructure with readers. In addition, when we place an RFID tag on the container, we can get an association message.

The big issue in the marine ports is that when containers come off the ships and are placed on a chassis, we are not getting an association at that time. We need to be able to capture the data so that we have an understanding of whether the chassis is there, whether it is covered. This is especially important out in the rail route network where the rails do not really recognize steamship chassis, so they are floating in and out. The ability to create an association message between my chassis and my container now allows me to track that container and the trip plan associated to the customer. Now I have the benefits of cargo tracking with a simple RFID tag on the container.

Holes certainly do remain. One of the biggest benefits of intelligent devices on a container is a message on the status of the container—specifically, is it empty or is it loaded? Another issue is when we take the container out to a customer, we drop it there, and we assume they are not abusing it and running it around the countryside. But, guess what? We cannot be sure. We are trying to solve problems with infrastructure, but we will not spend any money on head counts; I do not have the people to pick up the phone every day to track these containers. In a low-margin business, you simply do not have the people to do that tracking. The ability to get a status update would be beneficial, but under this model, we would not get it. The financial drills we have done suggest that, based on today's prices for these devices, it is not beneficial enough to move ahead with that decision right now.

What we are considering and laid out as an industry standard is a GPS-based device that costs about $250. Cell can be done cheaper, but why not go for the whole kit-and-caboodle at the outset? The $250 device price includes sensor technology that operates tethered, untethered, and in motion—a $14.00 RFID tag for the container plus installation costs, recurring maintenance, activation fees, and every other associated cost including $12.00 a month for the GPS-based device transmission charges, which are at the high end. Spread that over a 5-year time period and we project, based on the benefits we perceive from the information, we will get a 176 percent internal rate of return with a payback, assuming a quick ramp up, of just over 1 year. It should also be noted that this assumes no labor savings at any facility, just purely operational and fleet reduction savings.

It also assumes that the steamship lines and operators have some backroom office functionality to do something with these data. Can I accept that into my systems and can I produce some decisions report out of the data? It is a leap of faith and there is some investment that has to go along with that but, based on the return, we think it is a viable solution. We look at spending multimillions of dollars on ships, and the only thing that adding ships into the network does is drive rates down. We are trying

to posture to convince companies to go in this direction. It is a tough sell because it is a big leap of faith; however, we firmly stand behind the application and use of it.

Where are we today? We have saddled up with several vendors in the network and have done a lot of lab testing. We have legitimately proven the RFID and cellurgy positioning system device association in the field. We have run them around the countryside and gotten good data. We are still having an issue with field testing; we have not done enough to convince everyone we need to move forward fast and furious. I want to see a trailer-on-flatcar move on a train, get moved across country. I want to see a truck bang into the side of it. I want to see the device stand up to being stacked in a marine yard. I want to have it battle tested. As of this week, APL has put 10 of these types of devices on chassis, based in Phoenix, and is going to start letting them roll around the countryside; the field testing is just beginning.

Another issue we have to address is that we are dealing with some small players—start-ups who are working with the Motorolas of the world to get their technology but are packaging it together themselves. I see the big players taking a standoffish approach to things and not getting into it wholeheartedly. Players we are dealing with appear to be fixated on the information cell, spending 90 percent of their time trying to build applications to do something with the data instead of getting me a device that will produce the data. We are trying to shift around that mindset.

This has led us to a three-pronged approach, where there are multiple sources of data that can come in. It can be rail electronic data interchange (EDI). It can be marine yard EDI. It can be coming from a container yard. It can be coming from a customer. It can be coming from a cell-based device. People in the field right now are starting to specialize in being that acquisition and capture entity. There are also people out there trying to posture themselves as the industry database. They want to be the warehouse for the cargo information and for the asset information, and they want to be the one-stop conduit to which companies can attach themselves. I liken it to a Standard & Poor's-type model that wants to be everything and anything to everybody. Unfortunately, that can produce a mediocre solution. I want to create an environment that, with an open architecture, allows somebody to package together the best-of-breed suite of applications to fit my needs. We are actively working with several providers to create such a consortium. If the right people come together to do this, we believe they will get the critical mass to move it forward.

I would like to talk briefly about the intermodal freight technology working group from the private sector standpoint. This group, sponsored by ITS America, started up a little over a year and a half ago and pulled together private and public sector people to improve information visibility in the intermodal environment. The group has been very focused on device technology. We have sent requests for proposals to device providers and those with whom we are working. We are somewhat disappointed in the progress the device providers are making, so we are expanding our scope to try and pull in other players not only from a device standpoint but also from an operational standpoint. We have representation from truck, rail, and steamship sectors, and we are looking at the third-party logisticians (3PLs) to come in as well. We are looking at shippers to come in and expand the horizons and get some momentum on this. We have started to organize field testing in various locations, with the support of port authorities and other government agencies. It has been a good effort, because it has been able to rally resources, and we hope it will take us to the next stage. Thank you for your time.

ITS Applications to Intermodal Freight

Gary Maring

Gary Maring is Director of the Office of Freight Management and Operations at FHWA. This is part of the new freight office that was created as a result of the recent FHWA reorganization. The mission of that office includes a broad program of intermodal freight activities covering policy analysis, institutional development, infrastructure assessment, financing, planning operations and safety, technology to promote efficient and seamless flows, and the whole role of intermodal connectors both within the United States and at the borders. Before his current position, Maring was in the Office of Highway Information Management and the Office of the Secretary of Policy Development. Before joining FHWA, he held various positions as a highway engineer and community planner.

The earlier presentations by Ken Wykle and Christine Johnson set the stage for what I will discuss today. They talked about the 20th century being focused on completing the physical transportation infrastructure and the 21st century being focused on providing the infostructure, the information structure for intermodal freight and logistics.

The key question is, what is the role of the government in the information highway, the information structure needed for efficient freight and logistics? Only recently has the government begun to see that it has a role in this area. In 1996 the first effort was made to convene the private sector players to talk about the role of the public sector in creating an architecture for the information era;

the response was a real cold shoulder from the private sector. However, in 1998 at the Conference on Intermodal Freight Technology in Reston, Virginia, there were a number of suggestions that perhaps the public sector did have something to offer in this area. Some modest efforts got under way as a result of that conference, including establishment of the Intermodal Freight Technology Working Group. Currently, there is a $1 million program within the U.S. Department of Transportation (DOT) ITS budget—a small, but important, part of the overall ITS program.

As mentioned in earlier presentations, there is a new freight office within FHWA. In both the U.S. DOT strategic plan and the FHWA strategic plan, there is a focus on advancing U.S. economic growth and competitiveness through efficient and flexible transportation. This new freight office focuses on FHWA's strategic goal of productivity and the U.S. DOT goal of economic growth and trade. Our first task was to create a road map of where we want to go in the intermodal freight arena. After reviewing the literature and talking with stakeholders in the government and the private sector, the critical issues break down into four main categories: institutional, infrastructure, operations and safety, and regulatory.

I will talk first about the operations and safety area, because our focus is primarily on how to better operate the system and bring technology to bear on that. There are four initiatives under way:

- The first initiative—the Intermodal Freight Technology Working Group (IFTWG)—is aimed at furthering cooperation between the public and private sectors. The mission of the group is to look for opportunities to apply ITS technology to improve freight and equipment visibility throughout the global intermodal logistics chains, which admittedly is quite a challenge. To make any improvements in the intermodal freight logistics process from the information technology side, the process must be understood from end to end. The IFTWG has identified as many as 40 different individual movements a container potentially goes through in its move from origin to destination in an international transaction—the various modes, handling, and facilities involved. The challenge is how to deal with the physical tracking and also the information flows and the handoffs from each segment to the next. It is a huge challenge. The focus is on three main areas:
  - The intermodal business process mapping is looking at the end-to-end process, mapping the information flows, beginning to analyze the opportunities for technology to improve that process.
  - Through ITS America, IFTWG is helping develop user-defined requirements, some common requirements across the modes, and putting out solicitations to allow vendors to tell us what they have to offer in terms of providing the technology to improve the process, whether it is on the equipment tracking side or the information side.
  - The IFTWG is also sponsoring technology demonstrations, one of which John talked about earlier: the chassis tracking project. Another is the information highway demonstration, which would display all the different information as cargo flows from one segment of the intermodal process to another—the various handoffs between players in the intermodal system, the mixing and matching of the data requirements, different data standards, definitions, and the various systems this information has to flow across. It is a huge challenge to address and bring technology to bear on that process. This effort would define potential highway information demonstration scenarios, address potential standards issues on data as well as the fears that some people have about the federal government playing a role in defining an information architecture, which has yet to evolve. There is a Transportation Equity Act for the 21st Century (TEA-21) earmark project to try to create a logistics information architecture, with the data being acquired from a number of sources and various technologies (GPS, RFID, and so forth) and then consolidated as it comes in from the various sources. There will also be a data distribution architecture to get the information back out to manufacturers, shippers, asset owners, 3PLs, or whoever else needs to have the information—an information architecture for the future.
- The second area involves the intermodal freight operational test U.S. DOT is sponsoring. The objective is to bring together a few partnerships to demonstrate technologies out there that are of benefit to both the public and private sectors. The benefits to the private sector include improving on-time performance for the industry, and on the public side they include helping learn how to deal with highway congestion, port congestion, and congestion throughout the intermodal system. It also involves working with the rest of the ITS program, which is creating architecture and a framework for dealing with the public side, managing congestion, and the information that needs to flow to do that. FHWA put out a solicitation in spring 1999, received a number of proposals, and funded two operational tests.
  - One test resulted from an innovative proposal on highway to air cargo, submitted by the ATA Foundation. There had been some effort through the Federal Aviation Administration to test smartcards for security at airports and this project piggybacks on that work. As somebody mentioned earlier, the future of air cargo is on the ground, so it is not surprising that a trucking foundation is sponsoring this. The ATA Foundation is working with the state and federal agencies, freight forwarders, and shippers and carriers basically to look

at an end-to-end process using a smartcard, including electronic manifests on the smartcard, and using a biometric identifier to identify drivers as they arrive at the air cargo terminal. The idea is to expedite transfers of freight all the way from the manufacturer to the receiver at two test locations: Chicago O'Hare and Newark International airports.

– The second test is a port to highway cargo movement in Washington State. In an earlier session, there was a presentation on the FAST corridor and other things being done in the Pacific Northwest. This operational test will complement those initiatives and will include participation from the state, the metropolitan planning organization, the ports, the trucking association, SeaLand, and others in the private sector. The project will involve attaching electronic cargo container seals to improve mobility, visibility through the port, and along the I-5 corridor to the destinations—whether it is domestic or across the northern border—and will test integration with some of the other ITS projects. Importantly, there are some public side benefits; we will be collecting freight movement data as the containers move through the system, getting movement for the planning process for the freight planning in the metropolitan area and for the state.

• The third area is the international border clearance program, an effort to bring technology to bear on facilitating clearance across international borders, with a focus on the land borders. Some of the funding for this initiative has also come from the ITS program. Most of you are familiar with the transportation challenges at the borders, the customs and immigration processes, the limited available resources, and the weaknesses in the physical infrastructure. There continue to be struggles with the U.S. Treasury Department and the U.S. Customs Department in implementing a new trade processing system. U.S. DOT is working with other federal agencies to implement an automated clearance process at the border—one-stop or nonstop processing for compliant commercial vehicles and cargoes at the border, the ability to target limited resources on noncompliant commercial vehicles and drivers, and improved coordination among all the federal agency interests to expedite cargo clearance at the border.

It is an institutional nightmare at the border, with an array of stakeholders involved. In addition to the federal agencies, there are international partners and private industry partners. Over 100 federal agencies have an interest in what happens at the border, either directly controlling it or requiring information about a border crossing. For example, efforts to develop common elements for the international trade data system (ITDS) require agreement from 104 agencies—quite a challenge. We are trying to determine whether ITS technology can be applied to and benefit this whole process. At least seven sites have ITS dedicated short-range communication technology readers at border sites on the northern and southern borders installed either through the U.S. DOT program or through other federal or state programs.

The architecture concept of the border clearance program is that, as international cargo moves across a border, it will have information identifiers relating to the cargo, the vehicle, and the driver that can be read electronically to meet the documentation requirements of U.S. Customs and other agencies. This information could be preprocessed by U.S. Customs and also through the U.S. DOT safety information system and other related information systems. As a truck equipped with the electronic tag comes to the border, the information is read and will have been preprocessed, enabling the customs agent to access on a screen both trade processing data and U.S. DOT safety information. Based on the result, the truck can be given the green or red light at that point at the border. An agreement was signed with the U.S. Customs Department in fall 1999 to develop a joint prototype that brings together the customs' National Customs Automation Program (NCAP) system and the U.S. DOT safety clearance system. The problem is that customs recently issued a federal notice, saying that NCAP would have to be shut down because of lack of funding. This puts our efforts up in the air, because of the uncertain future of customs' new generation of the automated commercial environment system and the ITDS.

• The fourth item relates to efforts to bring together federal investments to begin to address multistate trade corridors and the border processes. The traditional programs did not appear to be doing the job in terms of dealing with multistate corridors and regions and with the border processes; hence TEA-21 included a provision for a borders and corridors program. U.S. DOT was overwhelmed with applications—$2.2 billion in applications, with only $123 million available—so only partial funding could be provided for a number of projects. Ten of those funded were ITS projects. This program will be the main deployment program for further corridor and border activity. Earlier I described research testing through the ITS program and efforts to develop a prototype system for ITS; actual deployment would be through this program or whatever the next generation of that is in the next reauthorization bill. In the fiscal year 2000 solicitation, additional emphasis was placed on getting more focus on the integrated trade transportation processing systems, multistate institutional freight planning, and the operational strategies such as ITS. For the current year, about $2.0 billion worth of proposals have been submitted for about the same amount of money ($122 million). However, congress earmarked $70 million of the $122 million, so there is really only $50 million of discretionary money

available for the $2.0 billion worth of applications received.

Although these four initiatives come under the operations and safety area of our freight program, I also want to mention efforts in other areas. One item is the analysis decision framework, including an effort to better understand North American trade. This will involve mapping North American trade flows, based on the Bureau of Transportation Statistics commodity flow survey, port import–export reporting system data, various private sector data sources, and doing some forecasts of North American trade flows, with the goal of better understanding impacts on the capacity of the intermodal freight system. Also under way are some simulation modeling efforts at the border and other gateways to better understand the operations of the borders and gateways and how technology can be brought to bear to improve those operations.

What is the outlook for short-term improvements in funding programs, in planning, and in technology applications? A lot depends on reauthorization of the surface transportation program, which is likely to be drafted by 2002. Hopefully, our efforts today to test, analyze, and better understand the intermodal freight system will set the stage for us to make reauthorization recommendations, whether it is on the infrastructure funding programs, in planning and coordination, in institution building, or in the technology area. This is the strategy laid out at FHWA as we work with partners within U.S. DOT, other federal agencies, and the private sector. Thank you very much.

Global Transportation Network

Lt. Col. Kenneth Wavering

Lt. Col. Kenneth Wavering is Program Director for the Global Transportation Network Program Management Office within the headquarters of the United States Transportation Command (USTRANSCOM) at Scott Air Force Base. The global transportation network (GTN) provides the in-transit visibility for the defense transportation system at times of peace and war. He served as the project manager for four separate projects before accepting this position last August. Col. Wavering earned a B.S. in engineering from the U.S. Air Force Academy and an M.A. in management from Troy State University. His professional military education includes the Army War College, Air War College, Air Command and Staff and Squadron Officer's School. Col. Wavering is a command pilot with more than 3,000 hours as an airlift and helicopter pilot.

The GTN is an unusual animal and somewhat different from what my fellow panelists have presented. I will introduce the term "virtual intermodalism," which brings together elements from unlike systems and generates information that is useful and meaningful to the military. I will discuss how GTN looks at intermodal systems; what the military may be doing in the future, especially through direct vendor delivery; and what industry can do to help.

Currently, the information that goes into the GTN is from uncoordinated feeder systems. This means we have an Army system, an Air Force system, a Navy system, and a Marine system. We have ship scheduling, trucking schedules, commercial information, and so forth. All that comes together into GTN so that people can analyze it and make decisions based on the information being provided. How do we do that? We bring in information from within the Department of Defense (DOD) through automated systems that each of the services has as well as from each of the companies that support military transportation requirements. Our primary function is to provide in-transit visibility (ITV), but we are also able to get command and control information. By bringing the two together, decision makers have the opportunity to better interact to determine where they are going and what they are doing in making both the war-time and peace-time efforts work effectively.

USTRANSCOM's transportation assets come from the various services as well as from the commercial sector. For example, on the air side, we not only have to know how the airplanes move but also how the cargo moves and how the passengers move and the deployment systems tie into GTN. On the water side, we have to know how we bring it in, how the cargo goes on the ships, how it is scheduled, and how all the ships are scheduled. We have radio frequency tag information (RFID), an Army system that brings together information on where things are. We also bring in continental United States freight management and all the commercial information that shows how our feeder systems come together. All this information is put together and then results are generated by a sensitive but unclassified method. We also have a classified information cell that provides secret information that is guarded from the unclassified side and used in war-time operations and exercises.

This system provides robust in-transit visibility of what the DOD assets are and most of what commercial carrier assets are available from the commercial EDI aspect. With a robust infrastructure set up for ITV, we then apply a variety of tools that allow the command and control centers, as well as port managers, to see cargo coming in, see airplanes coming in, see ships and passengers coming in, and better plan daily activities based on this information. A variety of reports are available that enable one to find a specific commodity or a specific box

or container and go to it very quickly by calling up the transportation control number.

For individuals who want to access the system, we have a distance learning tool that allows them to download onto their own system and learn how GTN can be applied in a very short period of time. It is a compact kind of training program.

We also have customer services bases. GTN brings all kinds of information together; it does not create any information on its own. It brings information together and allows other people to use it. We also have a customer base that wants to pull information we have so they do not have to go to all those disparate systems throughout the world. They can come to GTN, pull the information out, and use it for their own purposes. The joint total asset visibility and the global command and control system common operating pictures are just a couple of examples of systems that do that very well.

We have also been able to take GTN to a higher level, to do things for customers so they do not have to be on the system for a long time. For example, if you have a report that you know is due every day that requires looking at all the port information, at the movement information of the day, you can request and schedule it to be e-mailed to you and sitting in your in-box at a specific time. You can pull it down, import it into a PowerPoint slide, and put it up in front of the boss within a matter of minutes. This type of technology savings helps our customers reduce their workload and do a better job in the primary tasks they perform and services they provide.

We bring all this information together and allow our customers to use it, but our customer base has a wide dimension to it. It is not only Joe Airman and the young transportation analyst who need to know what is going on for their specific lower level job, but it is also universal enough to be used by the command and control centers in making global decisions based on how much infrastructure is at a port, how much flows or is routed through that port, whether it is moving in an appropriate manner, and so forth. Decisions can be made about whether alternative facilities could provide a better flow-through, what is going to happen on the other end when all that cargo and all those passengers arrive, are they going to be able to flow out and get to their destinations—based on information readily available in GTN. The beauty of GTN resides in the fact that it is not a box that sits on your desk, with a lot of systems available through a client server. GTN is a totally web-based system, so you can access GTN, pull up any kind of cargo information you needed by simply logging in and entering a password. If flying military air, you can pull an itinerary and determine whether changes are needed for one reason or another. GTN has a wide variety of uses for the common user as well as for the generals and the big war planners in their logistics movement. We are very proud of how practical GTN has turned out to be.

The real beauty behind GTN is how it brings in information and the redundancy of that information. When a transportation officer wants to move a box, it is put into a couple systems and that comprises the system's consolidated freight management system. All those systems talk to other systems and the key is that all those systems update GTN on where that box is as it moves through the system. When the information comes in, it is filed on the primary key and all the trailer information is readily available. When GTN is queried on it, the system pulls up all that information together based on the original query.

To give you an example, we had an exercise called Turbo-CADS 99. It was a munitions shipment from a variety of locations throughout the United States, all moving by truck and rail, going to Sunnypoint, North Carolina. The idea was to see whether we could monitor the movement once the munitions left the depots and moved through the system. Once it got to the port, how was the information put into GTN? Could we follow it, monitor it, and manage it as it sailed to its destination in Korea? Various systems were used to provide information on the shipment to GTN as it flowed into the port. We took the information and were able to follow it through other systems, through the worldwide port system and the Information Command Control and Communications system, and all the way through to its destination. GTN did extremely well in providing information on where munitions were throughout the process.

We recognize that no system is perfect. Issues remain as to how information is put into the system—a lot is still done on paper. We want to automate things, because the more people we have putting information into systems by hand, the more opportunity there is for errors. However, based on what was put into the system and what GTN provided to the customer making a query, GTN did extremely well in the munitions exercise.

Where do we see ourselves in the future? With direct vendor deliveries and with our current system, we have a portion of what the overall defense transportation system movements are. We know what we control and we know how much of that information we have; this is what GTN really focuses on. Right now, I estimate we are 70 to 80 percent able to capture that information. However, not all the information on transportation is within DOD—a portion is direct vendor deliveries, contract logistics support, and local purchase. We need to capture more of that information to fully understand and perhaps improve our processes and transport flows.

I will give you two scenarios on direct vendor transactions. In the current system, when consumers want to order something, they have to go through the supply system, which goes through the depot, which ends up going to the commercial supplier, back to the depots, and then

back out to the customer who will use the product. What we want to do is allow the customer to go directly to the vendor and then have the vendor ship it directly to the customer. What we need to do is follow the transaction electronically to make sure we capture all that data. We have to look at whether this is something worth going after.

I will give you an idea of how important it is to have this information. The amount of activity that falls into this category, and for which we are unable to get complete information, is estimated at $8.0 billion worth of activity and about $300 million worth of transportation assets to move it—a significant amount. We estimate this volume is going to double in the next 5 years and will be a big chunk of our business as we go more and more to outsourcing certain aspects of our business. We know congress is trying to force us to go in that direction and we need to capture as much information as we can because this is going to be the wave of the future for us.

We have created and will be testing a model next week. We took one commodity—medical supplies—needed in a hospital in Germany and available from a pharmaceutical company in Indianapolis. When the customer in Germany wants to order the medical supplies, they call the vendor in Indianapolis directly, prepare an electronic bill of lading, and contact their contract all-cargo air carrier to move the shipment from Indianapolis to Germany. The company in Indianapolis will also send that electronic bill of lading to USTRANSCOM, which then provides the information to me for transmission to Military Traffic Management Command (MTMC), which handles the payment once the transaction is complete and the cargo has been delivered by carrier to the customer. MTMC will handle payment to the vendor for the product delivered and to the carrier for transportation services provided. We at USTRANSCOM know the shipment status, when it is moved, and when it is delivered—we have visibility throughout the entire transaction. We are enthusiastic about this model, which will be tested over a 2-month period. We will then make some operational adjustments and expand it to a variety of commodities.

GTN is only as good as the data that go into it—we do not create the data. Therefore, one of our biggest issues with everyone, including us, is data quality. If we do not have good interfaces with the systems and if we do not provide a good foundation and good standards then, in essence, no matter how GTN is wired together, it is going to give you only what you put into it—if garbage goes in, garbage comes out. We need to come together with all the services and with the commercial sector to agree on standard terminology. We need to have standard data elements. We need to have standard bills of lading, so we all understand where we are going and what we are doing. There are a variety of organizations starting to get on that bandwagon to bring this all together. In our view, this effort needs to be stepped up, because we need this information and it would be easier to get if we could just agree on standards and terminology.

For example, the defense shipper looks for and provides to GTN information such as military standard and transportation movement procedures information, requisition numbers, transportation control numbers—the sorts of things we operate with on a daily basis. Direct vendor shippers have a totally different system and they look at different things—purchase order numbers, commercial bills of lading, reference numbers, and internal things—because they are all stovepiped. It will help us tremendously to make GTN better in the future when standards come together and are put in a neat package.

Automated information technology is going to be the wave of the future. Instead of us trying to hand GM information, we are going to give people smartcards that will give us all the data. They swipe the smartcard and we get the information and can track the flow of the movement through the system. Standardization, accuracy, consistency, and reliability are going to enable GTN to take a monumental leap in having the capability needed to track forces, track requisitions, track assets, and so forth and will allow senior leaders to make important, accurate decisions about what is going on in the transportation flow. Thank you.