FEDERAL REPORT
UNITED STATES DEPARTMENT OF TRANSPORTATION
ITS AMERICA
BOARD OF DIRECTORS MEETING
March 17, 1995

Departmental Restructuring

Departmental restructuring efforts continue. The purpose of consolidating the Department into three agencies is to focus resources more sharply on our fundamental missions: ensuring the safety of the travelling public, investing in transportation infrastructure, and maintaining national security. A newly proposed Intermodal Transportation Adminstration would provide state and local agencies with one-stop shopping at the Federal level for their needs. It would also more effectively link the different forms of transportation to promote the safest and most efficient movement of people and goods. The ITS program would be totally managed within this Administration. Although discussions on the proposed structure of this Administration continue, no major changes are anticipated in ITS program management.

1995 Rescissions and 1996 Budget

Fiscal Year (FY) 1995 Rescissions - The FY 1995 budget included $114.5 million for General Operating Expenses (GOE) and $113 million in contract authority. The House of Representatives is proposing to rescind $24.5 million of ITS funds made available in FHWA's GOE account:

- $10 million in R&D,
- $2 million in Commercial Vehicle Operations,
- $3 million in the Automated Highway System,
- $7.5 million in Advanced Technology Applications, and
- $2 million in Program Support.

The Senate is also considering rescission of FY 1995 funds; we are not sure how the Senate's proposals will affect ITS funding, if at all. It does appear likely however that we will lose at least some FY 1995 funding through Congressional rescissions. None of the funding provided by the Intermodal Surface Transportation Efficiency Act (ISTEA) would be affected under the House rescission proposals.

FY 1996 Budget - In addition to the $113 million in contract authority provided in FY 1996 by the ISTEA, the President's budget as submitted to the Congress includes $238.579 million for the ITS program (excludes Federal Transit Administration funding but includes $17.2 million for NHTSA Crash Avoidance R&D). Included in this funding request is $100 million for the Trailblazer Initiative together with funding for the other ITS program elements.

Program Management Activities:
Maps for Deployment

The Department of Transportation is currently in the process of developing long range deployment plans for ITS. The first step in creating these long range plans is the development of "maps" which lay out the long term vision of the ITS Program. Four maps or flow diagrams have been developed which attempt to visually portray how the major areas of ITS (i.e., Advanced Traffic Management Systems/Advanced Traveler Information Systems, Commercial Vehicle Operations, Automated Highway System, and Advanced Vehicle Control and Safety Systems) are likely to be developed and deployed. These draft

maps will be reviewed and revised over the next several months and become the basis of the DOT's program planning process.

ITS Quarterly Coodination Meetings

The Department of Transportation has completed its first round of ITS In-House Quarterly Coordination Meetings, the objectives of which are to highlight major issues that need strategic action and to identify "opportunities" that can be eleveated. The four areas of emphasis were Commercial Vehicle Operations, Advanced Traveler Information Systems/Advanced Traffic Management Systems, Automated Highway System, and Advanced Vehicle Control and Safety Systems.

Proposed Trailblazer Initiative

Advanced Traveler Information

General - This would be a model deployment of traveler information systems which would provide people and businesses with easy access to accurate, reliable and timely multimodal traveler information on a region-wide basis in a limited number of metropolitan areas across the United States. These initiatives would involve creating (or building on an existing one) a regional multimodal traveler information center incorporating the information from all of the freeway, arterial street signal, public transit and emergency service operations centers in the region. The center would provide this information to businesses and citizens at home, work, in vehicles and other places via a variety of devices through partnerships with the private sector telecommunications and information services.

Goals/Objectives - The goals of the program are to create regional travel information systems in U.S. metropolitan areas to

- Provide travelers with current transit and traffic flow information via a variety of devices (in-vehicle, personal communications devices, kiosks, computer bulletin boards, cable TV, etc).
- To enable the commercial marketing of traveler information devices and value-added traveler information services that rely on real time/current traffic flow and transit information.

With the above goals/objectives, it is important that the selected urban areas have substantial elements of core infrastructure under construction or in place collecting some level of current traffic flow and transit information, and have active regional incident management and transportation management programs.

Commercial Vehicle Operations (CVO)

General - The CVO component of the Trailblazer Initiative is a FY 1996 Departmental effort which would provide up to $70 million for roadside electronic verification. The Trailblazer will accelerate the model testing and deployment of roadside operations now called Electronic Verification. This includes safety assurance (initially carrier safety data and inspection technologies), credential verification, and size and weight check. The CVO Information Exchange System (IES) and network, and related technologies will target high risk and illegal vehicles, but will allow safe and legal transponder-equipped trucks to bypass automated weight and inspection stations and State ports-of-entry.

Expected Benefits of the Trailblazer Initiative - The Trailblazer will increase commercial motor vehicle safety and state efficiency, reduce pavement damage, increase motor carrier productivity, and level the

playing field by using technology/information at fixed and mobile roadside sites to electronically verify safety, credentials, and weight. The Trailblazer initiative is also an important component for the safe and efficient freight transportation at the international borders with Mexico and Canada.

ITS Roadshow

Through a series of strategic planning sessions with members of the ITS outreach community, a need has been identified for a major outreach activity referred to as the ITS Roadshow. The Roadshow has been conceived as a series of high-profile events around the country targeted at top state and local transportation decision-makers, business leaders, and elected officials. The event itself might consist of press briefings, an invitation only breakfast, lunch, or reception with ITS presentations from top officials, and business donated products to touch and feel. The objective is that at the conclusion of each event, the local transportation officials and business leaders will be invested in ITS deployment and will pursue a course of action towards implementation.

The key elements of an ITS Roadshow include:

- Core message development
- Presentation of ITS successes and benefits
- Advance teams for each site
- Targeted selection of attendees to include DOT decision-makers, business leaders, and elected/appointed officials
- Programs tailored to each location and its specific characteristics
- Appearances by high-level DOT officials

ITS Operational Tests

The most recent Federal Register solicitation for the operational testing program closed February 21. The solicitation focused on three areas: automated collision notification, intelligent cruise control, and international border electronic clearance. An announcement of the selected offers is expected by mid-May.

System Architecture Status Update

Under the sponsorship of the Federal Highway Administration (FHWA) and in coordination with ITS AMERICA, a program was launched in September 1993 to define a National Architecture by exploring alternative concepts. A system architecture is the framework that describes how system components interact and work together to achieve total system goals. It describes system operation, what each component of the system does, and what information is exchanged among the components.

During the past year and a quarter, the first phase of the development process has been completed. Four independent private/public teams produced four architecture system concepts. These concepts were subjected to rigorous technical analysis and extensive public scrutiny in order to expose all the issues. Of the four team that participated in Phase I, the Loral Federal Systems and Rockwell International-led teams were selected by the Department to continue into Phase II of the Architecture Development Program and synthesize the concept into a single national architecture.

Work on Phase II began on February 1, 1995. Phase II is a cooperative effort and is scheduled to continue until mid 1996. The goal of this phase is to develop a single consensus National ITS Architecture. The Loral and Rockwell teams spent their first month reviewing all the architectures developed in Phase I. Based on this review and the feedback received from public review in late 1994, the teams will develop and evaluate an initial proposed National ITS Architecture by the fall of 1995.

The Phase II efforts will be available for review by the national stakeholder community throughout Phase II as part of an extensive public/private outreach effort, with the goal of reaching agreement on a single national ITS framework/(architecture) by early 1996. As part of this outreach program ITS AMERICA has scheduled two workshops in July and August 1995 to provide forums for technical/consensus exchange with ITS AMERICA committees.

The final architecture will be complete in July 1996, although we will undertake simultaneous efforts, at the earliest possible opportunities, to identify critical standards requirements and guidelines to smooth the way for widespread ITS implementation.

ITS Standards Activity

Standards and Protocol Catalogue - A standards and protocol catalogue has recently been produced by the Jet Propulsion Laboratory under contract with the FHWA. This catalogue provides a listing of existing standards that may be relevant to ITS applications and is a starting point for defining what the various ITS standards are and their status towards completion. Copies of the catalogue are being provided at both the FHWA and ITS AMERICA booths during the ITS AMERICA Annual meeting. Comments and additions are encouraged.

National Traffic Control/ITS Communications Protocol (NTCIP) - A NTCIP workshop sponsored by FHWA was held in Reston, Virginia in February 1995. The NTCIP will provide a non-proprietary communications protocol for ITS. The lack of such a protocol has been identified as a major potential barrier to the deployment of Advanced Traffic Management Systems. This workshop was designed to involve users and system integrators in the requirements definition process. FHWA will continue to support this effort to develop the standard.

Electronic Data Interchange (EDI) - The Johns Hopkins University Applied Physics Laboratory (JHU/APL) under contract to the FHWA has produced an Operational Concept Document for a Commercial Vehicle Information Systems Network. JHU/APL is also currently developing the architecture for commercial vehicle operations (CVO), which will allow for information exchange by defining standard EDI transactions among carrier and government systems. JHU/APL has begun working with the American National Standards Institute to develop EDI common formats for standardization.

CVO Vehicle to Roadside Communication - As part of the above-noted CVO architecture task, JHU/APL is also working in partnership with the ITS AMERICA CVO subcommittee on Architecture and Standards to define vehicle to roadside messages for CVO operations. Also, under this effort they contributed to the development of the user requirements document for electronic toll and traffic management begun by ITS AMERICA and will continue to support the development of appropriate standards.

International - The US is active with efforts to develop international standards through the International Standards Organization (ISO). Through contracts and interagency agreements, the FHWA supports

- two experts to Working Group 1 on System Architecture,

- one expert to Working Group 9 on Integrated Transport Information, Management and Control, and
- one expert on Working Group 3 on Transportation Information Control Systems Database Technology.

Map Database - Oak Ridge National Laboratory (ORNL) under contract to FHWA is currently working on a location referencing system to allow different location databases to be able to identify the same physical location. This effort is being coordinated with the Society of Automotive Engineers' International Travelers Information Interchange System Working Group. Also, an ITS Profile for the US Geodetic Service's Spatial Data Transfer Standard is being developed to "translate" definitions of terms in various databases. ORNL is coordinating this effort with the Standards and Protocols Map Database and Information Systems subcommittee and the international community through ISO.

Federal Communications Commission Ruling Supports ITS

In a February 6, 1995 Report and Order, the Federal Communications Commission demonstrated strong recognition of the growth of the national ITS program by implementing rules for the licensing and development of ITS services using 902-928 MHz portion of the radio frequency spectrum. The FCC has created a new category, Transportation Information Radio Services (TIRS) to regulate spectrum requirements for ITS services. In its report, the FCC stated that the creation of the "TIRS clearly demonstrates the agency's commitment to the continued integration of radio-based technologies into the nation's transportation infrastructure and our commitment to the development and implementation of the nation's intelligent transportation systems of the future."

Institutional and Legal Issues Program

Experts in institutional and legal issues recently spent a full day considering how DOT's Institutional and Legal Issues Program should be restructured to focus more closely on deployment of ATMS/ATIS. Participants identified three priorities for the program:

- Cooperation among public agencies
- Involving the private sector in information delivery
- Mainstreaming ITS in state and local transportation planning

The Joint Program Office is now considering a number of initiatives which would encourage state and local transportation officials and private sector companies to address these issues in their own jurisdictions.

Work planned or initiated in areas of environmental and societal implications, privacy, and contracting will continue. For example, the Department is modifying its cooperative agreement with George Mason University to extend work in benefits assessment, regional economic development, privacy, and socioeconomic issues.

ITS User Acceptance Research

Three areas of user acceptance research have been identified to date and they are in various stages of implementation. A study of acceptance of Commercial Vehicle Operations services among truck and motor coach drivers is underway. Penn & Schoen is the contractor for this project, and they will have interviewed 1600 drivers by the time the study is completed in May. Proposals for a second study

dealing with consumers were accepted through March 3. That study will begin in a few months and will examine consumers' interest in sixteen ITS user services targeted at travelers. Another study of travelers is the Department's Nationwide Personal Transportation Study, and questions about travelers' perceptions of travel problems and potential solutions relevant to ITS have been added to this periodic study of household travel. The NPTS will survey 25,000 households and will be completed in 1996. The third area of user acceptance research dealing with transportation managers is under development.

On April 12-13, the Department is sponsoring an ITS training seminar, *Applying Consumer Research Methods to ITS Challenges* at the Copley Plaza Hotel in Boston. The seminar is being produced by the John A. Volpe National Transportation Systems Center to provide ITS program managers, partners, and evaluators with a better understanding of why and how to incorporate consumer research into ITS field tests and deployment programs. For information, contact Jane Lappin at 617-494-3692.

ITS Outreach to Minority Businesses, Educational Institutions and Communities

Many minority institutions have technical, computing, communications, finance, institutional, and legal expertise, which could make a significant contribution to the development and deployment of ITS. Yet many of these minority institutions are not aware of this dynamic, rapidly growing transportation program.

In September 1994, the FHWA awarded a cooperative agreement to ITS Consortium, Inc. to provide a 3-year outreach initiative to Minority Business Enterprises (MBEs), minority educational institutions, and minority communities.

This outreach effort will provide minority institutions with information on ITS research, development, testing, deployment, and partnering opportunities with the U.S. Department of Transportation and with state and local governments, universities, and private sector organizations. Examples of outreach activities include developing conferences focusing on minority participation in the ITS program and participating in activities sponsored by organizations like the National Society of Black Engineers, the Society of Women Engineers, the National Black Caucus of State Legislators, and the National Association of Black Women Entrepreneurs.

The ITS minority outreach effort will also provide technical assistance to minority institutions in taking advantage of ITS opportunities, including information on Federal-aid and state procurement processes. The outreach effort will further enhance opportunities for minority institutions by providing information to FHWA and states on the capabilities of minority businesses and universities related to ITS.

The ITS Consortium recently implemented an internship program for students at minority educational institutions. Students will receive hands-on training and experience at major private corporations, minority owned businesses, and other organizations involved in ITS planning, research, development, deployment, and evaluations.

New Staffing in the Joint Program Office (JPO) for Intelligent Transportation Systems (ITS)

Michael Schagrin, who coordinated the system architecture consensus effort, was promoted to the position of ITS Standards (Technical) Coordinator. Mr. Schagrin will oversee work supporting the

preparation and maintenance of ITS standards defined from national and international efforts. **Michael Halladay**, formerly with the Federal Highway Administration's (FHWA) Office of Traffic Management and ITS Applications, recently started the position of Program Assessment Specialist in the JPO. Mr. Halladay will be responsible for planning and monitoring a broad range of studies that assess progress achieved in the national ITS program. He will also provide advice and assistance both nationally and internationally in the development of a coordinated assessment process. **Ray Resendes** joined the JPO on March 6 in the position of Advanced Vehicle Control and Safety Systems Program Coordinator. Mr. Resendes, formerly with the Department of Defense, will be responsible for coordinating the development of strategies, plans, and budgets for these activities, working closely with other agencies, primarily the National Highway Traffic Safety Administration (NHTSA), within the Department. **Melvyn Cheslow** joins the Joint Program Office on March 20 as the Advanced Systems Specialist. Mr. Cheslow will serve as technical specialist on the development of advanced intermodal surface transportation systems, including the automated highway system. He will be responsible for developing ITS program strategies, plans, and budgets to support these activities. He will coordinate activities with parties within the Department and with external organizations, with considerable emphasis on defense and aerospace public and private organizations. **Cheryl Ashton**, formerly the secretary to the JPO's Deputy Director, was promoted to the position of personal assistant to Christine Johnson, Director of the Joint Program Office on March 6. **Maria Prince** joined the JPO on March 6 as secretary to Gary Euler, the Deputy Director of the JPO. **Shelley Lynch**, the ITS Program Communications (Outreach) Coordinator, will be leaving the JPO on March 20 to join the Federal Highway Administration's (FHWA) Region 4 Office in Atlanta to coordinate various ITS activities for the Olympics. In addition to the Communications (Outreach) Coordinator position, the JPO is hiring for two Coordinator positions for Commercial Vehicle Operations and Advanced Public Transportation Systems.

Advanced Traveler Information Systems/ Advanced Traffic Management Systems (ATIS/ATMS)

Recent Highlights

- Two TravTek cars are now located in the Department of Transportation's headquarters building and are available to provide demonstrations of an in-vehicle navigation system for visitors, members of Congress, etc. For more information, contact Bob Rupert, FHWA HTV-10, 202-366-2194.

- A prototype of the Traffic Management Lab (TML) is now open for demonstrations. The TML will provide offline, pre-deployment testing and evaluation of newly developed traffic control strategies, support systems, and traffic management center hardware and software. The prototype TML was unveiled at the December ATMS conference in Florida, and also demonstrated at TRB. Additional demonstrations are being given during the ITS AMERICA Annual Meeting at the Turner-Fairbank Highway Research Center. A paper describing its design is also being presented at the Meeting.

- The functionality of 26 individual support systems for a mature Advanced Traffic Management System have been defined, along with the platform on which they would reside. The modular design gives users the flexibility to implement only the systems that they choose. Three 1-day workshops are planned to discuss the study's approach and progress to date. The workshop dates are: March 16, 1995 8:00 a.m. to 5:00 p.m. at the Omni Shoreham, Hampton Room; March 29, 1995 at the Beckman Center, Irvine, CA; and March 31, 1995 in Dallas, TX. For more information, contact John MacGowan, FHWA HSR-10, 703-285-2027.

- Twenty-seven scenarios depicting the use of ITS to encourage multi-modal applications have been completed. For example, if two people in the same neighborhood have similar commuting travel destinations and departure times, this study identified possible ways for them to make that connection and benefit from use of carpooling facilities. The report, entitled "Responsive Multi-Modal Transportation Management," will be available through the ITS AMERICA clearinghouse.

- The GPS Augmentation study was completed and the report is now under consideration by the Secretary of Transportation. Among several recommendations, the most significant was that DOT and the Department of Commerce should cooperate to install a Coast Guard-like beacon system for nation wide GPS coverage. The private sector has challenged this recommendation and discussions on the future direction of GPS deployment are continuing.

- Twenty-seven new ITS Early Deployment Planning studies were recently approved, bringing the total number of studies underway or completed to 77. The FHWA field offices are beginning negotiations with new participants. An Early Deployment Planning workshop will be held March 14, 1995 to bring together Federal, State and local officials to discuss the early deployment planning process, lessons learned, and next steps.

- The ADVANCE operational test has reached the important stage between system development and deployment, and the project partners have been reviewing the original scope and goals of the project. The partners - FHWA, Illinois DOT, Motorola, the Illinois Universities Transportation Research Consortium, and the American Automobile Association - have decided upon a "Targeted Deployment" for ADVANCE. This option involves approximately 75 in-vehicle units, with 30 in-vehicle navigation and routing devices (instead of the originally planned 3,000-5,000) used for testing the ADVANCE subsystem components. The testing will be done by project staff, paid drivers and some previously recruited drivers. This specific testing will occur over a seven month period with all on-road testing completed by the end of December 1995, and the completed evaluation will be ready by September 1996. The ADVANCE Traffic Information Center will then be transitioned to a corridor transportation information center for the Mid-west ITS Priority Corridor, and will serve as a extremely beneficial prototype for the entire three-state area.

Core Infrastructure

The Department has developed a "Version 1" set of definitions for seven elements which form the "core infrastructure" for deploying ITS traffic management and traveler information services in a metropolitan area. The definitions constitute today's "state-of-the-art" implementation of ATIS/ATMS, which will establish a foundation for deployment of future ITS user services to be provided by both public and private sector entities. The document defines seven core infrastructure elements:

1. Regional Multimodal Traveler Information Center
2. Traffic Signal Control System(s)
3. Freeway Management System(s)
4. Transit Management System(s)
5. Incident Management Program
6. Electronic Fare Payments
7. Electronic Toll Collection

Of these elements, the Regional Multimodal Traveler Information Center provides a key bridge between the general public and transportation system managers. Through linking data from the other elements

into a comprehensive regional information system, deployment of these Centers will exemplify assertive movement towards advanced ITS user services.

By developing and circulating these definitions, the Department of Transportation intends to guide near-term deployment decisions being made in metropolitan areas, and to maximize future opportunities to implement widespread, advanced ITS user services. Through discussion at various opportunities during the ITS AMERICA annual meeting, the Department will be inviting comments and reaction.

Mainstreaming Deployment

In addition to work on the ITS Core Infrastructure, the cornerstone of our efforts to mainstream deployment continues to be the Early Deployment Planning (EDP) Program. We have now funded early deployment planning studies in over 70 locations and some of the earlier efforts are being completed. Since we have largely reached our original goal of involving the largest 75 urban areas in the EDP program, over the next several months, we will be reviewing the scope of the EDP program to ensure that the program remains properly focused on facilitating early deployment of appropriate ITS technology and strategies.

A contract will be awarded in late-March 1995 to establish a set of processes and strategies for facilitating ITS deployments within the established planning and environmental processes of ISTEA and the Clean Air Act. To meet the study objectives, the contractor will investigate the universe of early deployment and operational test sites as well as other sites where major ITS deployments are being planned or constructed. It is anticipated that problems, barriers and issues relative to accommodating ITS deployment in the "mainstream" processes for program planning (e.g., Transportation Improvement Plans and Long Range Plans) can be identified from the universe. The study will then focus on a limited number of cases studies in order to develop the guidelines for ITS deployment. Handbooks for States and metropolitan planning organizations, which establish the planning, air quality and management systems requirements and offer guidance for the successful deployment of ITS projects within these constraints, will be the products of this effort. An interim handbook will be developed in 10 months and will be available to practitioners for guidance in ITS deployment. The final product will be a more comprehensive handbook based on feedback relative to the interim handbook and results from in-depth case study analyses. The total performance period is 30 months.

Training and Education

Similar to the beginning of the Interstate program, we recognize the need for a cadre of trained professionals at the Federal, State and local levels who will be responsible for planning, designing, implementing, operating and maintaining ITS technology and strategies. In order to achieve this goal, a number of activities are underway or planned:

- We have initiated a comprehensive assessment of on-going and planned ITS training activities which will examine training needs for the ITS community, number and types of courses currently offered, technical training content, delivery mechanisms, and appropriate Federal roles. This activity is designed to consider and be complementary to training and education activities being pursued by ITS AMERICA, the Institute of Transportation Engineers (ITS) and others.

- Through the National Highway Institute, the FHWA's Office of Technology Applications, universities, and the private sector, we continue to develop and offer detailed technical training on the

"building blocks" of ITS technology and strategies, such as traffic signal systems, traffic management strategies, incident management, and traffic modeling and analysis software.

- We continue to expand and update our training inventory to ensure that it reflects the current state-of-the-art in areas such as ITS planning issues, communications, freeway surveillance and control systems, and integration of traffic management systems.

- We continue to pursue non-traditional training opportunities. Through the ITE, we are supporting the development and testing of an intensive post-graduate traffic operations curriculum which includes extensive coverage of ITS strategies and technologies. We have also worked closely with ITE and the American Association of State Highway and Transportation Officials (AASHTO) to sponsor scholarships for over 80 public sector ITS professionals to attend technical study tours in Europe, Japan and North America over the last three years. We are also working with the Oak Ridge National Laboratory to develop a prototype traffic management training facility. The facility design documents, when completed later this year, will be available to the ITS community to develop training labs for use by State and local agencies to provide initial and recurrent training to operations personnel.

Automated Highway System

The Department of Transportation's Automated Highway Systems (AHS) Program has moved into the Systems Definition Phase with the announcement of the National AHS Consortium (NAHSC) as a fully operational organization in October 1994. The NAHSC Core Members are Bechtel, Caltrans, Carnegie-Mellon University, Delco Electronics, General Motors, Hughes, Martin Marietta, Parsons Brinckerhoff/Farradyne Systems, and PATH, in partnership with the US DOT. The NAHSC will select and prototype-test the AHS system approach chosen by the stakeholders for potential deployment in the United States. The consortium will also conduct a proof-of-technical-feasibility demonstration of AHS technology in 1997.

Because of the high risk nature of this research, the Department of Transportation is funding 80% of the costs. In addition, as a member of the consortium, the Department is representing the Nation's transportation and societal needs and is continuing to provide the long range vision of our surface transportation in the 21st century.

Opportunities are available to participate in the NAHSC at three levels: Associate Member, Outreach Participant, and/or Contractor. Each participation type implies a different level of commitment to the program. A workshop on these opportunities is being held March 27-28, in Sterling Heights, Michigan.

The NAHSC is currently developing a Systems Description Document that defines AHS: its goals, objectives, and functions. The stakeholder community will get an opportunity to comment upon the content of this draft document at a workshop being held April 12-13, in Ft. Lauderdale, Florida. Another current NAHSC activity includes planning for the 1997 proof-of-technical-feasibility demonstration of AHS technologies. A detailed work plan has been prepared, and the NAHSC members are actively implementing this plan. Goals of the demonstration have been set, and the content is to be finalized this fall. Alternative test sites have been identified and the chosen site(s) are to be named this summer.

(For further information on NAHSC workshops and other activities, contact the NAHSC program office at (810) 649 9519.)

In addition to the NAHSC activities, other AHS efforts are continuing. The AHS Precursor Systems Analyses are now complete. Fifteen contractor teams completed studies in 16 activity areas and analyzed the issues and risks associated with AHS. The results indicated that although there are a number of challenges to be addressed, there are no "show stoppers" to AHS. Final reports from these 15 different contractor teams will soon be available from the National Technical Information Service (NTIS) report system.

The AHS Human Factors Analyses are progressing. A draft AHS Human Factors Handbook has been completed for internal review, and empirical studies are continuing on the Iowa Driving Simulator. This project is scheduled for completion in March 1996.

Commercial Vehicle Operations (CVO)
Recent Highlights

CVO Architecture - The John Hopkins University Applied Physics Lab (JHU/APL) completed the preliminary draft report on the Commercial Vehicle Information Systems Network (CVISN) operational concept and architecture. The document focuses on the envisioned CVISN architecture and defines the interfaces among the systems by specifying electronic data exchange (EDI) standards. The report makes clear that the role of the stakeholders and the need for their involvement and cooperation are critical to achieving the CVO Vision. Copies of the report are now being circulated to the stakeholders of the CVO community for their review and input. The goal of this review is to achieve a wide consensus of support by the CVO community for a final version of the document.

EDI Transaction Standard - The plan to develop national ITS/CVO Electronic Data Interchange (EDI) Standards has been announced. A contract will be awarded sometime in August of this year to provide the engineering expertise necessary to develop the ITS/CVO EDI in cooperation with the CVO community. Since EDI deployment will be based on these standards, it is imperative that there be a consensus among the stakeholders.

Tag Transponder Standards - Development of standards for a system utilizing the reading of license plates and transponders as a method of motor carrier identification to ensure interoperability is underway.

On-Board Automated Mileage Collection Test (Iowa, Wisconsin, Minnesota) - The State of Iowa is serving as lead State in a three-state operational test project to test and evaluate using the Global Positioning System (GPS) and first-generation on-board computers to record the miles driven within a State for fuel tax allocation purposes in a manner acceptable to State auditors. The system will automatically record mileage by specific roadway as sell as State border crossings using GPS and vehicle location technology with a map-matching algorithm. The test will conclude in May of 1995, and the report is due out in July.

I-75 AVI Operational Test - ADVANTAGE I-75 has successfully launched four sites along I-75 which are testing the Automated Vehicle Identification (AVI) System. Over the next six months thirty additional sites -- from Florida to Ontario -- will be brought on-line to test AVI which is designed to allow transponder-equipped and properly documented motor carriers to travel any segment along I-75 at mainline speeds with minimum stops for weight/inspections.

ATA Foundation Cost-Benefit Study - The ATA Foundation, Inc. has released its preliminary results of the ITS/CVO Cost/Benefit Study with regard to the motor carrier survey and the technology vendor pricing research. Some 4,000 carriers were surveyed and preliminary results indicate the following:

- A significant number of respondents expressed a desire to automate administrative regulatory functions.
- More than 45% of respondents would like to use EDI for registration and fuel tax filings; and presently some 27% use EDI technology.
- 29% use on-board computers for monitoring vehicle performance or hours of service regs; 32% use log scanners or automated log auditing systems; and 7% use electronic logs.
- 51% of respondents conduct on-road safety monitoring of drivers.
- 54% of respondents indicated that on-road compliance checks do not impact their operational efficiency or have a net positive impact.

ITS/CVO Cross-Border Operational Test - Proposals have been received in response to an RFP for an operational test regarding:
- Develop electronic credentials and records for checking the shipper, cargo type, carrier credentials, and safety records of commercial traffic moving across U.S. borders into Canada or Mexico.
- Evaluate strategies to facilitate commercial traffic movement along the U.S./Mexico border.
- Extend the electronic clearance concept for state border crossings to the Mexican border in support of NAFTA.

The process for final selection of a contractor should be completed by late-April.

Solicitation for additional 100 Motor Carrier Safety Assistance Program (MCSAP) Sites - Plans are underway to increase the number of MCSAP (fixed/mobile) to include at least 100 by the end of CY '95 which will perform the following functions:
- Using prior carrier safety data to guide the selection of vehicles/drivers for inspection.
- Electronically checking driver license (CDL) status.
- Electronic input of inspection data used pen-based computers only.

Pen-Based Computers Project - There are presently ten states participating in the "Roadside Data Technology Project". This project uses pen-based computers with ASPEN inspection software at the roadside. Thus far, the project has been successful in demonstrating that pen-based computers and ASPEN have major benefits to the MCSAP program, and the technology has been well received by inspectors working in the field.

Traveler Information Showcase in Atlanta, Georgia

The Department is working with the Georgia DOT and MARTA (the transit authority in Atlanta) to develop a Traveler Information Showcase which will be a model deployment of the provision of "real world" traveler information. This will be an important component of the transportation services available to visitors to Atlanta in the summer of 1996. During December and January, the Department reviewed responses to a November 30th formal "Request for Information" requesting information from private sector firms and other entities which are interested in providing or have plans to provide traveler information in the Atlanta metropolitan area during the summer of 1996. As a result of the favorable responses, the Department has decided to move very quickly over the next few months to fully frame and develop this showcase. Implementing the Traveler Information Showcase in Atlanta during the summer of 1996 presents the U.S. ITS Program and the U.S. computer and telecommunications industries with a golden opportunity to show the world our excellent capabilities.

The Traveler Information Showcase initiative is designed to integrate the enhanced availability of very current transit and traffic flow information from a variety of public and private sources with mostly existing, established commercially available information distribution systems. These providers of information distribution include major telecommunications paging companies, suppliers of hotel

interactive televisions, computer network bulletin boards, kiosks manufacturers, personal communication devices companies, and the emerging in-vehicle navigation industry.

The Traveler Information Showcase includes current plans to leave a continuing operational traveler information system in Atlanta after summer 1996.

We strongly urge ITS AMERICA industry members and others to plan to get involved in the Atlanta Traveler Information Showcase and the proposed Trailblazer opportunities.

Advanced Public Transportation Systems
Recent Highlights

- **Operational Tests**

1. Improved Passenger Information Systems are being installed in Los Angeles, Denver, and Bellevue, WA. Interactive Smart Kiosks are now operational at 78 locations in the Los Angles area, providing real-time traffic information, transit itineraries, and carpool matching. Houston Metro's Smart Traveler project is expected to shift approximately 5% of single-occupant vehicle drivers to some form of shared-ride transportation in two travel corridors when it becomes operational later on this year.

2. Electronic Fare Collection Systems - Several tests of electronic fare collection systems are being sponsored under the Advanced Public Transportation Systems (APTS) Program. On February 1, 1995, WMATA began testing a radio-frequency (RF) proximity system at 21 metrorail stations, 5 parking areas, and on 3 bus routes. In Southern California, over a six-month period, RF and contact chip cards were successfully tested in revenue service on 24 transit buses. In Wilmington, Delaware, the Delaware Department of Transportation (DelDOT) is working with the banking community to develop an operational test of a contact chip card for bus fare collection that also facilitates an employer-subsidized transit incentive program.

3. Transit Management and Control Systems improve on-time service and passenger convenience and develop the data upon which traveler information systems and integrated transportation management depend. Installation of GPS-based fleet management systems is underway in Denver, Milwaukee, Baltimore, and Minneapolis.

4. Cellular Phones to Promote Ridesharing - The APTS program supported a successful test of cellular phones, voice-mail and computerized real-time information in carpool and vanpools in Bellevue, WA. The use of cellular phones was successful in improving public perceptions of ridesharing. Forty-two percent of drive-alone commuters expressed strong interest in the idea. A small control group actually used pagers to contact each other and form carpools for a short trial period.

5. Mobility Manager operational testing of APTS technologies to automate scheduling of demand responsive service in Winston -Salem, NC began in September. Eventually the billing for the services will also be automated and these services fully integrated into fixed route services to provide the user convenient user friendly service easily accessed anywhere in the Winston Salem area. Mobil data communication terminals will be used to test quick responses to changing transit service demand.

6. Integration of Transit and Traffic Information - Adaptive traffic signal timing projects have been planned in Anaheim, California; Ann Arbor, Michigan; Orlando, Florida; and Montgomery County, Maryland that will test various technology applications that support reliable bus operations along crowded city arterial streets.

- **Research**

1. Development of Guidelines for Evaluation of APTS Operational Tests - A comprehensive evaluation guidelines document has been developed to assist in the evaluation of APTS operational tests. These guidelines foster consistency of evaluation philosophy and techniques, and comparability and transferability of results to improve the quality and usefulness of the findings and conclusions associated with the tests. The evaluation guidelines document has been widely disseminated and well received by the local partners in the APTS Program.

2. Development of Transit Systems Architecture - In order to ensure that the overall national ITS systems architecture development program adequately consider transit needs, the APTS Program is developing a transit system architecture. Focusing on the APTS-related user services, this system architecture defined the functional and physical entities and the required information flows among the entities. The products from this effort, which has included an overall APTS information flow chart, flow charts for each of the specific APTS user services, and a node/function description, has been provided as input to the four system architecture teams. In addition to its value to the national system architecture development program, the transit system architecture has been of significant utility to transit operators planning ITS technology deployments.

3. Development of Public Transit Communications Spectrum Usages and Future Needs Database - Public transportation is a major user of spectrum for communications to conduct services in a more efficient and secure manner. The application of APTS and ITS technologies will further increase public transit need for communications and thus spectrum. No information or any organization was in place to identify and assess current public transportation spectrum usage and future needs. To rectify this situation, the APTS Communications Spectrum Working Group initiated a process of querying transit properties on current spectrum usage and future needs. A unique base of information has resulted which is being disseminated to interested parties such as the FCC. The information, which will be continuously updated and expanded, has been coordinated with ITS AMERICA and the American Public Transit Association (APTA).

4. Development of APTS Map and Spatial Database Requirements - The APTS Map and Spatial Database Working Group has recently achieved a major accomplishment in its work to develop map and spatial database specifications for transit applications. Formed under the auspices of the APTS Program, the working group defined requirements for the use of map and spatial data in APTS user services including customer information, ridesharing, operations, and planning. This effort has resulted in the "APTS Map Database User Requirements Document," and "Guidelines on How to Use the Spatial Data Transfer Standard (SDTS) -- FIPS 173 for APTS User Services" (December 1994).
5. Study on Multi-Use Remotely Interrogated, Stored-Data Cards for Fare and Toll Payment. One of the objectives of the APTS Program is to foster development of a common standard card-based fare payment system that can be used for various public transit modes. A study has been completed on development of a conceptual design for an automated card that could support fare and toll payment applications. A study report has been completed which presents card design characteristics separately for person-based and vehicle-based applications as well as application characteristics that must be supported by the ultimate card system. The study results will be a

starting point for development of functional requirements by the APTS Committee's Smart Cards/Smart Tags Working Group.

6. Houston METRO ITS Development - A technical evaluation was completed of the Houston Metro pilot test of a signpost automatic vehicle location (AVL) system. The evaluation assessed performance by simultaneously collecting signposts AVL system data and differential Global Positioning System (DGPS) position reports. A performance profile was compiled by comparing the signposts derived locations to corresponding DGPS reference points. An evaluation report has been prepared and distributed which presents the results as well as the complete evaluation process. Also in Houston, The Request for Technical Proposals has been completed for the Houston Smart Traveler project involving two major travel corridors. The I-10W corridor will focus on shifting SOV drivers to carpools using an advanced ridematching system (computer and software) installed in a large employment center on the Western side of Houston. The I-45N corridor will focus on shifting SOV drivers to transit using approximately 700 passenger information devices in the homes of test participants.

7. Review of and Preliminary Guidelines for Integrating Transit into Transportation Management Centers - There is a concern on the part of the transit community that transportation management centers (TMC) may not be adequately addressing and considering transit. A need was identified for a guidelines document whose objective is to ensure that transit will be considered in TMCs. A study has been completed on a review of existing and planned TMCs and development of preliminary guidelines for integrating transit into TMCs. The study also assessed the status of existing TMCs and the extent to which transit is being integrated, and identified the key issues associated with TMC development and operation.

8. Implementation of Standard Vehicle Area Network - Bus manufacturers are implementing the APTS-sponsored Society of Automotive Engineers (SAE) Standard J-1708T for transit buses, where required by contract. SAE J1708T is the first officially recognized standard for ITS. The standard defines recommended practices and open architecture for interfacing interchangeable transit vehicle components. Designs employing this standard can reduce the number of wires in a bus, thereby decreasing weight, maintenance complexity, and installation costs. Prior to this standard, it was very difficult to interchange transit communications equipment because of manufactures' proprietary designs. Use of the standard will open up follow-on procurements, expand competition and minimize the cost of electronic transit components and systems.

- **Technical Assistance**

Technical workshops were conducted in conjunction with the National Transit Institute to inform transit operators and local planners on developments in geographic information systems and automatic vehicle location systems. The workshops were held in convenient geographic locations and in conjunction with major meetings of APTA and CTAA.

Advanced Vehicle Control and Safety Systems
Recent Highlights

Cooperative Agreement with Delco - In January, NHTSA initiated a cooperative agreement with the Delco Electronics/GM Partnership for development of an advanced collision avoidance system. The major goal of this effort is the development of low-cost sensors. This agreement is for a period of 2 years with an option for a 2-year extension. NHTSA is the technical manager for this project and Federal funding comes from the DOD Advanced Research Projects Agency's Technology Reinvestment Project. The Federal share of the funding is $6.2 million with the consortium matching that amount.

Automated Collision Notification - As part of NHTSA's program to develop an in-vehicle system which can determine that a serious automobile collision has occurred and automatically notify the appropriate Emergency Medical Services dispatcher, the Johns Hopkins University Applied Physics Laboratory has evaluated technology alternatives for the crash sensing, navigation, and communications components of an Automated Collision Notification (ACN) system. A final report outlining their results is now available.

This report was made available to all parties who were interested in submitting an offer to participate in an operational test of ACN systems. DOT is currently evaluating the proposals received in response to this solicitation.

Integration of ITS Collision Avoidance Systems with Other In-Vehicle Systems - The Stanford Telecom Inc., final report to investigate issues associated with integration of in-vehicle electronics for ITS and electronics for other vehicle systems has been completed. This study is a first step toward addressing issues of compatibility and signal priorities as collision avoidance systems move toward and are integrated into the electronic systems in motor vehicles.

Health Effects of ITS Sensors - An assessment of the biological foundation for possible health effects of microwave and infrared sensors has been completed. This, along with a second study of possible levels, forms a solid foundation for developing guidelines for systems designers to ensure designs do not create health problems.

Crash Avoidance Guidelines - Performance guidelines for five crash avoidance technologies will be completed by this fall (guidelines for lane changing will be completed in May). The NHTSA will schedule peer reviews for discussion and dissemination of the guidelines facilitated through ITS AMERICA this May.

Knowledge Base on Crash Occurrences

1. Crash statistics providing information on actual causes of accidents will be available soon. This will make an enormous difference on decisionmaking as to what types of technologies are required to reduce vehicular injuries and fatalities.
2. The NHTSA is collecting information from various highway sites on near misses to provide information on crashes and why they occur. The product being used to monitor the sites is currently being tested.
3. The NHTSA is developing in-vehicle instrumentation to assess how individuals react to various situations while driving. A prototype and field testing of the instrumentation will begin in 6 months.