



# Office of Operations

SERVING THE TRANSPORTATION COMMUNITY  
WITH INTELLIGENT SOLUTIONS

TURNER FAIRBANK  
HIGHWAY RESEARCH CENTER



THE OFFICE OF OPERATIONS RESEARCH & DEVELOPMENT, AND TECHNOLOGY SERVICE  
MENT OF THE MOBILITY AND SAFETY GOALS

DEVELOPMENT WITHIN FHWA'S RESEARCH,  
BUSINESS UNIT (SBU) FOCUSES ON ACHIEVE-  
OF FHWA'S NATIONAL STRATEGIC PLAN.

## We Develop

...advanced signal control systems that will reduce travel time and delay and increase reliability of travel time by adapting signalization to changing traffic conditions more effectively in an intelligent infrastructure. We develop advanced simulation models for planning, project development, and project analysis and weather-related models and decision support systems.

## We Support

...advanced technologies affecting the four vehicle platforms of the Intelligent Vehicle Initiative (IVI)—passenger cars, trucks, buses, and specialty vehicles as well as studying cross-cutting issues among the platforms. Our efforts focus on driver assistance and crash avoidance concepts for snowplows and infrastructure-based intersection collision avoidance.

## We Enhance

...advanced enabling technologies such as the Nationwide Differential Global Positioning System (NDGPS) and Dedicated Short-Range Communications (DSRC). The deployment of NDGPS is improving GPS accuracy, and the development of standards and roadside applications for DSRC will enable future Intelligent Transportation Systems (ITS) services through infrastructure-vehicle cooperative systems.



# TRAVEL MANAGEMENT TEAM

THE OFFICE OF OPERATIONS R&D IS COM-  
PRISED OF TWO TEAMS—THE TRAVEL  
MANAGEMENT TEAM AND THE ENABLING  
TECHNOLOGIES TEAM. THE TRAVEL  
MANAGEMENT RESEARCH PROGRAM IS  
FOCUSED ON APPLIED RESEARCH TO  
DEVELOP THE NEXT GENERATION OF TRAF-  
FIC MANAGEMENT SYSTEMS AND MODELS.



**ADVANCED TRAFFIC MANAGEMENT SYSTEM  
RESEARCH ANALYSIS DATABASE SYSTEM  
(ARADS)** is a tool for data exchange  
among a variety of analytical traffic  
models. The final version of the Traffic  
Software Data Dictionary and Object  
Model developed under the ARADS  
effort is available as a free download at  
[www.tfhrc.gov](http://www.tfhrc.gov).

**Contact: Gene McHale,**  
(202) 493-3275,  
[gene.mchale@fhwa.dot.gov](mailto:gene.mchale@fhwa.dot.gov)

**ADAPTIVE CONTROL SOFTWARE (ACS)** will  
adjust signal timing to accommodate  
changing traffic patterns. These decen-  
tralized prototypes operate at the local  
intersection level. A report is available  
on CD-ROM.

**Contact: Raj Ghaman,**  
(202) 493-3270,  
[raj.ghaman@fhwa.dot.gov](mailto:raj.ghaman@fhwa.dot.gov)



**ADVANCED TRANSPORTATION CONTROLLER  
AND CABINET** is the next generation of  
hardware that will support multiple  
advanced transportation applications.  
Specifications for advanced transporta-  
tion controllers, cabinets, and applica-  
tion program interfaces have been  
developed to assure interchangeability  
and interoperability between applica-  
tion programs and hardware. More in-  
formation on the Advanced Transpor-  
tation Controller and Cabinet can be  
found at [www.ite.org/standards/atc/  
index.htm](http://www.ite.org/standards/atc/index.htm).

**Contact: Raj Ghaman,**  
(202) 493-3270  
[raj.ghaman@fhwa.dot.gov](mailto:raj.ghaman@fhwa.dot.gov)

**DYNAMIC TRAFFIC ASSIGNMENT (DTA):** The  
Traffic Estimation and Prediction Sys-  
tem for Planning (TrEPS-P) supports  
transportation network planning and  
operations analyses in ITS and non-ITS  
environments. Two prototypes—DYNA-  
SMART-P and DynaMIT-P—have been  
developed; however, only DYNAS-  
MART-P is currently being field tested.  
For further information, visit the DTA  
website at [www.dynamictrafficassign-  
ment.org](http://www.dynamictrafficassignment.org).

**Contact: Henry Lieu,**  
(202) 493-3273,  
[henry.lieu@fhwa.dot.gov](mailto:henry.lieu@fhwa.dot.gov)



## TRAVEL MANAGEMENT TEAM *Continued*



**ITS DEPLOYMENT ANALYSIS SYSTEM (IDAS)** is a software tool designed for transportation planners to estimate the costs and benefits of ITS deployment concepts and strategies. IDAS is available from McTrans and PC-TRANS.

**Contact: Gene McHale,**  
(202) 493-3275,  
[gene.mchale@fhwa.dot.gov](mailto:gene.mchale@fhwa.dot.gov)

**TRAFFIC RESEARCH LAB (TReL)** contains sophisticated computers and traffic signal control hardware that operate in a controlled environment to allow researchers to fully assess the efficiency, safety, and mobility benefits (or disadvantages) of strategies before they are deployed in the field. Group tours are available.

**Contact: Raj Ghaman,**  
(202) 493-3270,  
[raj.ghaman@fhwa.dot.gov](mailto:raj.ghaman@fhwa.dot.gov)



**STRATEGIC WORK ZONE ANALYSIS TOOLS (SWAT)** provide a suite of user-friendly computer software that will accurately analyze and reliably predict work zone impacts during pre-planning, planning, design, and operation of construction or maintenance phases. For further information, visit [www.tfhrc.gov/its/swat.htm](http://www.tfhrc.gov/its/swat.htm).

**Contact: Deborah Curtis,**  
(202) 493-3267,  
[deborah.curtis@fhwa.dot.gov](mailto:deborah.curtis@fhwa.dot.gov)

**TRAFFIC SOFTWARE INTEGRATED SYSTEM (TSIS 5.0)** allows traffic engineers and planners to simulate traffic conditions and evaluate alternative operational improvements in a corridor of surface streets and freeways. TSIS software is available from McTrans and PC-TRANS.

**Contact: Gene McHale,**  
(202) 493-3275,  
[gene.mchale@fhwa.dot.gov](mailto:gene.mchale@fhwa.dot.gov)



**QUICKZONE** is a user-friendly SWAT tool to estimate delay in work zones. It is an open-source, Microsoft Excel-based application suitable for both urban and inter-urban corridor analysis. Quick-Zone Beta is available as a free download at [www.tfhrc.gov/its/quickzon.htm](http://www.tfhrc.gov/its/quickzon.htm).

**Contact: Deborah Curtis,**  
(202) 493-3267,  
[deborah.curtis@fhwa.dot.gov](mailto:deborah.curtis@fhwa.dot.gov)



# ENABLING TECHNOLOGIES TEAM

THE ENABLING TECHNOLOGIES TEAM RESEARCHES SPECIFIC TECHNOLOGIES THAT CAN IMPROVE THE PERFORMANCE OF ITS SERVICES AND SUPPORT TO IVI.



**DEDICATED SHORT-RANGE COMMUNICATION (DSRC)** standards will provide a reliable and flexible communications system between vehicles and the infrastructure to support current travel management applications, as well as the next generation of vehicle infrastructure cooperative systems.

**Contact: James Arnold,**  
(202) 493-3265,  
[james.a.arnold@fhwa.dot.gov](mailto:james.a.arnold@fhwa.dot.gov)

**INTELLIGENT VEHICLE INITIATIVE (IVI)**, which is a cooperative program with industry and includes partnerships with States, will accelerate deployment of in-vehicle and infrastructure cooperative systems that reduce motor vehicle crashes and incidents. Reports on the Automated Highway System, IVI Societal and Institutional Issues, and Sensor-Friendly Vehicles and Roadways are available from the ITS Electronic Document Library at [www.its.dot.gov/welcome.htm](http://www.its.dot.gov/welcome.htm).

**Contact: Robert Ferlis,**  
(202) 493-3268,  
[robert.ferlis@fhwa.dot.gov](mailto:robert.ferlis@fhwa.dot.gov)



**HIGHWAY CAPACITY MANUAL (HCM) 2000** has been released by the Transportation Research Board (TRB). FHWA's Office of Operations R&D participated in this activity by conducting research on freeway systems analysis and developing the multi-platform highway capacity analysis software known as HiCAP 2000™. HCM 2000 is available from TRB. HiCAP 2000™ is available from Catalina Engineering, Inc. on the web at [www.hicap2000.com](http://www.hicap2000.com).

**Contact: Dave Gibson,**  
(202) 493-3271,  
[david.gibson@fhwa.dot.gov](mailto:david.gibson@fhwa.dot.gov)



**IVI SPECIALTY VEHICLES** program is evaluating the use of advanced technologies to assist drivers of snowplows and other specialty vehicles, such as ambulances and police vehicles. These IVI technologies will provide drivers with roadway guidance during harsh weather conditions. For more information on snowplow technologies, see the recent *Public Roads* article at [www.tfhrc.gov/pubrds/janfeb01/safeplow.htm](http://www.tfhrc.gov/pubrds/janfeb01/safeplow.htm).

**Contact: Randy VanGorder,**  
(202) 493-3266,  
[randall.vangorder@fhwa.dot.gov](mailto:randall.vangorder@fhwa.dot.gov)





## ENABLING TECHNOLOGIES TEAM *Continued*

# SOURCES



**NATIONWIDE DIFFERENTIAL GLOBAL POSITIONING SYSTEM (NDGPS)** will provide accurate positioning and location information to travelers with 1- to 2-meter accuracy (and possibly better in the future). This will enable improved collision notification systems, cooperative vehicle-highway collision avoidance systems, and more accurate in-vehicle route guidance systems. A virtual workshop GPS/NDGPS CD-ROM is currently available.

**Contact:** James Arnold,  
(202) 493-3265,  
[james.a.arnold@fhwa.dot.gov](mailto:james.a.arnold@fhwa.dot.gov)



**RURAL ITS AND WEATHER** are demanding increased research attention. We are working to enhance weather information systems for traveler information and to develop a Maintenance Decision Support System for improved winter weather system operation.

**Contact:** Rudy Persaud,  
(202) 493-3391,  
[rudy.persaud@fhwa.dot.gov](mailto:rudy.persaud@fhwa.dot.gov)

**We are involved in many exciting areas of operations and intelligent vehicle research and development. We work cooperatively with both our internal and external customers to deliver products and services that are driving the future of surface transportation technology.**

**The IDAS and TSIS 5.0 software are available from:**  
McTrans

P.O. Box 116585  
Gainesville, FL 32611-6585  
Tel: (352) 392-0378 • Fax: (352) 392-3224  
E-mail: [mctrans@ce.ufl.edu](mailto:mctrans@ce.ufl.edu)  
Website: <http://mctrans.ce.ufl.edu>

PC-TRANS  
Kansas University Transportation Center  
2011 Leaned Hall  
Lawrence, KS 66045  
Tel: (785) 864-5655 • Fax: (785) 864-3199  
E-mail: [pctrans@kuhub.cc.ukans.edu](mailto:pctrans@kuhub.cc.ukans.edu)  
Website: <http://www.kutc.ku.edu/pctrans/>

**Orders for the NDGPS and the ACS CD-ROMs should be made to:**

Office of Operations R&D, HRDO  
Federal Highway Administration  
Turner-Fairbank Highway Research Center  
6300 Georgetown Pike, Room T-204  
McLean, VA 22101-2296  
Tel: (202) 493-3302 • Fax: (202) 493-3419  
E-mail: [operationsr&d@fhwa.dot.gov](mailto:operationsr&d@fhwa.dot.gov)

**Orders for the HCM 2000 should be made to:**

Transportation Research Board  
Lockbox 289  
Washington, DC 20055  
Tel: (202) 334-3213 • Fax: (202) 334-2519  
Website: <http://nationalacademies.org/trb/bookstore/>

**For additional Operations R&D, information go to:**

[www.tfhrc.gov/its/pubs.htm](http://www.tfhrc.gov/its/pubs.htm) or  
[www.tfhrc.gov/its/its.htm](http://www.tfhrc.gov/its/its.htm)



**VISIT US ON THE WEB AT: [WWW.TFHRC.GOV](http://WWW.TFHRC.GOV)**

**This RD&T marketing brochure communicates  
the benefits and developments of our Operations  
Research and Development Program.**

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