



Project Summary Report 1439-5
Project O-1439: TxDOT Support of the Texas A&M IVHS Research
Center of Excellence

Author: Thomas Urbanik II

The Texas A&M ITS Research Center of Excellence, Project Summary

PROJECT SUMMARY REPORT

The Texas A&M Intelligent Transportation System Research Center of Excellence (originally IVHS Research Center of Excellence) was a partnership formed as the result of a Federal Highway Administration (FHWA) solicitation. The U.S. Department of Transportation desired to fund three national centers for the benefit of the evolving program that became known as Intelligent Transportation Systems, or ITS.

The Texas Transportation Institute (TTI) took a leadership role in developing a regional

partnership for ITS. Key supporters included elected officials, technical experts, and a number of funding partners including the Texas Department of Transportation, TTI, Houston Metro, and Dallas Area Rapid Transit Authority, as well as some private sector supporters.

What We Did . . .

The Texas A&M ITS Research Center of Excellence had three fundamental program missions: research, human resource development, and technology transfer. After FHWA selected the three national centers, Texas

A&M University, University of Michigan, and Virginia Tech, it asked Texas A&M to be the lead organization for technology transfer for all the centers.

The Texas A&M ITS Research Center of Excellence established a national panel under the leadership of former Federal Highway Administrator Tom Larson to guide the partnership. The panel met before the proposal was developed in order to shape the direction of the project. The panel met every six months to review progress and chart future efforts.



Railroad grade crossings near traffic signals are one example of the complicated traffic signal issues addressed in the Texas A&M Intelligent Transportation Systems (ITS) Research Center of Excellence (RCE) program



The research program was divided into three technical thrusts, reflecting the needs of the partners and the unique environment of the region. The technical thrusts were transportation management services, public transportation management services, and international border transportation services.

What We Found . . .

The research program developed over 150 products. Material is available on the web, along with products from the other centers, at <http://rce.tamu.edu>. The products include manuals, self-teaching CDs, software, presentations, workshops, and numerous reports on methods, successes, failures, and results.

Traditional research projects often have limited scopes and budgets resulting in less than optimum results. The ITS Research Center of Excellence



The many products developed in the project will be delivered directly to districts using research implementation funding. The picture shows how a railroad preemption workshop might be delivered using actual field equipment.

provided a long-term commitment to several themes that allowed sustained effort on several initiatives, fostering an opportunity for creative

investigation. This approach allowed researchers the opportunity to solve problems identified in the research in a timely fashion.

PRINCIPAL RESEARCH EFFORTS

Project	Title	Project	Title
TM-01	Develop Real-Time, Multimodal Traffic Adaptive Diamond Interchange Control System	PT-04	Improve Rural Transit Service Delivery
TM-02	Integrate Railroad Information	PT-05	Enhance Transit Operations and Innovative Services
TM-03	Expedite Incident Response and Management by Improving Police Vehicle Technologies	PT-06	Enhance Travel Demand Management and Transportation Control Measures
TM-04	Commercial Vehicle Operations (CVO) Weight Enforcement Screening	DO	Director's Office
TM-05	Develop an Intelligent Bus Priority Algorithm for Arterial Street Systems	II-01	Research Institutional Issues
TM-06	Evaluate Automatic Vehicle Identification for Travel Time Estimates and Incident Detection	II-02	Institutional Issues
TM-07	Improve Isolated Traffic Signal Controller Operations	TI-01	Technology Integration Issues
TM-08	Screen New Technologies for Traffic Detection	TI-02	Establish a Framework for Identifying Unique Routes in the Transportation System
IB-01	Improve Transportation Efficiency in the U.S. - Mexico Border Area through the Use of ITS Technology	TT-CC	Centralized Clearinghouse
IB-02	ITS Benefits Framework	TT-PC	Professional Capacity Building
PT-01	Improve Specialized Transportation Delivery	TT-TL	Technology Transfer Training Lab
PT-02	Integrate Transit into Advanced Traffic Management Systems	TT-TT	Technology Transfer
PT-03	Enhance the Houston Smart Commuter IVHS Operational Test	TT-WS	Workshops/Seminars





ITS Vision

“A transportation system that operates as if under single ownership and management.”



The best example of the value of this research approach is the work relating to railroad preemption of traffic signals. It became apparent from the collaboration of several efforts, two outside the ITS Research Center of Excellence, that a serious safety issue existed. Building on the knowledge developed in several projects, the ITS Research Center of Excellence developed a comprehensive training module to help traffic engineers understand the complex issues.

Another benefit of this type of project resulted from the partnership structure of the project that allowed

for leverage of both ideas and resources. Joint funding allows sharing of resources. Perhaps more important, the partnerships enable the sharing of ideas. Transportation system operation is a complex issue involving multiple agencies, multiple disciplines, and multiple jurisdictions. Solutions that provide maximum customer satisfaction require bridging the differences this institutional complexity brings to transportation system operation. The Texas A&M Research Center of Excellence was successful in developing solutions that bridge institutional boundaries because of the nature of the partnerships.

The Researchers Recommend . . .

The research team recommends that TxDOT consider opportunities in the future to focus project funding on topically oriented programs that require sustained effort and diverse resources to:

- achieve mission-critical goals and
- take advantage of the benefits of research partnerships.



For More Details . . .

Visit the Texas A&M ITS Research Center of Excellence web site at: <http://rce.tamu.edu> for a detailed listing of products accessed via searchable archives. Many of the products listed are available on-line in pdf format. The products are categorized in the following areas:

- Transportation Management Services (e.g. Report 1439-6, *Signal Design Manual for Diamond Interchanges*)
- Public Transportation Services (e.g. TTI/ITS RCE-01/03, *Transit ITS Proof-of-Concept Tests*)
- International Border Transportation (e.g. TTI/ITS RCE-99/01, *Problems of Hazardous Materials Transport in Texas and the Potential Applicability of ITS Solutions*)
- Institutional and Technology Integration Issues (e.g. *Technology Integration: The Foundation of ITS Implementation*, Proceedings of the 1996 ITS America Annual Meeting)
- Director's Office (e.g. Report 1439-11, *Texas A&M ITS Research Center of Excellence*)
- Technology Transfer (e.g. TTI/ITS-RCE 00/01, *Development of a Systems Engineering Education Module for Undergraduates*)

A product listing is available in Report 1439-11, *Texas A&M ITS Research Center of Excellence*.

To obtain copies of the report, contact Dolores Hott, Texas Transportation Institute, Information & Technology Exchange Center, (979) 845-4853, or e-mail d-hott@tamu.edu. On-line catalog available at <http://tti.tamu.edu>.

TxDOT Implementation Status January 2001

The research program developed more than 150 products. Many of these products have been or are being implemented by TxDOT. Some of the products will be implemented in the future.

An Implementation Plan and Recommendation (IPR) has been approved to assist with further implementation of these products.

The TxDOT funds will be used to continue to implement these products in the districts and divisions. Some of the tasks included in the IPR are:

- developing and presenting workshops to TxDOT personnel,
- developing design guides for specific products and applications,
- providing technical assistance with field implementation at specific district locations, and
- maintaining a record of site-specific applications and posting them on the TxDOT intranet for reference and use by the districts and divisions.

For more information, please contact Dan Maupin, P.E., RTI Research Engineer, (512) 302-2363 or email dmaupin@dot.state.tx.us.

YOUR INVOLVEMENT IS WELCOME!

Disclaimer

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Texas Department of Transportation and the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. It is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Tom Urbanik II, Ph.D., P.E. #TX-42384.

The researchers would like to thank Gary Trietsch, TxDOT project director, for his assistance, support, and direction throughout the conduct of this research project.