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16. Abstract

This report presents an overview of the accomplishments of the Texas A&M Intelligent Transportation Systems (ITS) Research Center of Excellence.

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THE TEXAS A&M ITS RESEARCH CENTER OF EXCELLENCE

by

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TxDOT Support of the Texas A&M IVHS Research Center of Excellence

September 2000

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DISCLAIMER

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Texas Department of Transportation (TxDOT) or the Federal Highway Administration (FHWA). This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes. This report was prepared by Thomas Urbanik II (TX-42384).

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OVERVIEW

BACKGROUND

The Texas A&M Intelligent Transportation System (ITS) Research Center of Excellence (originally the Intelligent Vehicle Highway Systems (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.

CONCEPT

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.

MANAGEMENT

The center 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.

RESEARCH APPROACH

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. Table 1 identifies the various research projects.

RESULTS

The research project developed over 150 products and are identified in the Appendix. 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.

The project is being followed by an implementation project to get the results into the field. Initial implementation products developed as part of the project included a PASSER III optimization software, a diamond interchange signal timing workshop, a diamond interchange

design guide, a training course on non-intrusive detectors, and a traffic signal preemption training course.

LESSONS LEARNED

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

The best example of the value of this 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.

The partnership involved in the project allowed for leverage of both ideas and resources. Joint funding allows for sharing of resources. Perhaps more important, the partnership enables 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 ITS Research Center of Excellence was successful in developing solutions that bridged institutional boundaries because of the nature of the partnership.

CONCLUSION AND RECOMMENDATION

The project met its objectives of research, human resource development, and technology transfer. The research team recommends that TxDOT consider opportunities in the future to focus research funding on topically oriented programs that require sustained effort and diverse resources to achieve mission critical goals, and to take advantage of the benefits of research partnerships.

Table 1. Research Projects.

Project	Funding	Title	TTI Research Supervisor
TM-01	TxDOT FHWA TTI	Develop Real-Time, Multimodal Traffic Adaptive Diamond Interchange Control System	Tom Urbanik II
TM-02	TxDOT FHWA	Integrate Railroad Information	Jack Webb
TM-03	TxDOT FHWA TTI	Expedite Incident Response and Management by Improving Police Vehicle Technologies	Tom Urbanik II
TM-04	TxDOT FHWA	CVO Weight Enforcement Screening	Dan Middleton
TM-05	TxDOT FHWA	Develop an Intelligent Bus Priority Algorithm for Arterial Street Systems	Kevin Balke
TM-06	TxDOT FHWA	Evaluate Automatic Vehicle Identification for Travel Time Estimates and Incident Detection	Larry Rilett
TM-07	TxDOT	Improve Isolated Traffic Signal Controller Operations	Tom Urbanik II
TM-08	TxDOT	Screen New Technologies for Traffic Detection	Tom Urbanik II
IB-01	TxDOT FHWA	Improve Transportation Efficiency in the U.S. - Mexico Border Area through the Use of ITS Technology	Eric Lindquist
IB-02	FHWA	ITS Benefits Framework	Tim Lomax
PT-01	TxDOT FHWA METRO	Improve Specialized Transportation Delivery/METROLift Phase II Assessment	Laura Higgins
PT-02	TxDOT FHWA DART	Integrate Transit into Advanced Traffic Management Systems	Katherine Turnbull
PT-03	FHWA	Enhance the Houston Smart Commuter IVHS Operational Test	Katherine Turnbull
PT-04	FHWA	Improve Rural Transit Service Delivery	Katherine Turnbull
PT-05	FHWA METRO	Enhance Transit Operations and Innovative Services/Bus Notification System Development	Darryl Puckett
PT-06	FHWA METRO	Enhance Travel Demand Management and Transportation Control Measures/Develop Traveler Information System	Bill Stockton
DO	TxDOT FHWA TTI	Director's Office	Tom Urbanik II
II-01	TTI	Research Institutional Issues	Byron Blaschke
II-02	FHWA	Institutional Issues	Byron Blaschke
TI-01	FHWA	Technology Integration Issues	Tom Urbanik II
TI-02	FHWA	Establish a Framework for Identifying Unique Routes in the Transportation System	Larry Rilett
TT-CC	FHWA	Centralized Clearinghouse	Susan Lancaster
TT-PC	FHWA	Professional Capacity Building	Beverly Kuhn
TT-TL	TTI	Technology Transfer Training Lab	Tom Urbanik II
TT-TT	FHWA	Technology Transfer	Susan Lancaster
TT-WS	FHWA	Workshops/Seminars	Tom Urbanik II

APPENDIX: PRODUCTS AND PRESENTATIONS

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