

Technical Memorandum 3.4

Florida's 2003 Intelligent Transportation System Strategic Plan Update

Recommended Initiatives for an Intelligent Transportation System Professional Capacity Building Program

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List of Acronyms

AVL	Automatic Vehicle Location
BCC	Bethune-Cookman College
C2C	Center-to-Center
CAD	Computer-Aided Design
CEI	Construction, Engineering, and Inspection
CEU	Continuing Education Unit
CITE	Consortium for ITS Training and Education
CPM	Critical Path Method
DMS	Dynamic Message Sign
EDL	Electronic Document Library
FAMU	Florida Agricultural & Mechanical University
FDOT	Florida Department of Transportation
FEEDS	Florida Engineering Educational Delivery System
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FSU	Florida State University
FTA	Federal Transit Administration
ICDN	ITS Cooperative Deployment Network
IDAS	ITS Deployment Analysis System
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
ITSA	Intelligent Transportation Society of America
JPO	Joint Program Office
MOU	Memorandum of Understanding
NAWG	National Associations Working Group (for ITS)
NHI	National Highway Institute
NTI	National Transit Institute
PCB	Professional Capacity Building
PDF	Portable Document Format
PDH	Professional Development Hour
RITE	Research, Integration, Training, and Education
UCF	University of Central Florida
UF	University of Florida
USDOT	United States Department of Transportation
USF	University of South Florida

1. Purpose

This *Technical Memorandum* contains information and recommendations that will be used to develop and promote a structured training curriculum for intelligent transportation system (ITS) professionals throughout Florida. This document will define participating agency roles and responsibilities, identify specific training modules, and outline opportunities for funding assistance and training logistics support.

2. Background

Since its formation in 1992, ITS FloridaTM¹ has always strived to provide ITS training for Florida's transportation professionals. Widely recognized as a pioneer in this area, ITS Florida was one of only three state ITS chapters in the country during the early 1990s that piloted a state-supported ITS training program under the direction of the United States Department of Transportation's (USDOT) Volpe National Transportation Systems Center. During these early years, the Florida Division Office of the Federal Highway Administration (FHWA) provided the seed money to start the training program. The Florida Department of Transportation (FDOT) and the University of Florida (UF) assisted in several significant ways as well.

Over the last several years, the chapter's training mission has intensified with the formation of the ITS Florida Professional Capacity Building (PCB) Committee and a somewhat regular offering of courses. The ITS Florida PCB Committee has followed the national ITS PCB concept that the USDOT and FHWA developed, and a national survey, which is currently being updated, identified areas of professional development needs. It should also be mentioned that ITS Florida conducted its own initial survey of training needs across its membership in 1997, and, in 2001, key PCB participants around the State were interviewed.

In January 2003, the ITS Florida PCB Committee completed its development of a business plan for the PCB program. The basic components of this plan identified 15 training modules that were based on the Florida ITS community's needs and the FDOT's ITS deployment priorities; created module sponsorship opportunities and incentives; and outlined a program of training delivery and an operating budget for the next 12-month period. The 15 modules included:

- General ITS Introduction
- Procurement and Funding
- Management and Operations
- Telecommunications
- Construction, Engineering, and Inspection (CEI)
- Performance Measures and Evaluation
- Traffic Engineering Using ITS
- Maintenance
- Contract Management
- Transportation Planning
- System Engineering
- Legal Issues
- Value and Impacts of ITS
- Electronic Payment Systems
- Traveler Information

¹ ITS Florida is a trademark of the Intelligent Transportation Society of Florida.

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The proposed training schedule called for three deliveries of each module per year around the State, alternating between Tallahassee-Jacksonville, Orlando-Tampa, and Miami-Fort Lauderdale. Sponsorship was estimated at \$40,000 for the 12-month delivery program that consisted of the 15 previously identified modules delivered three times a year each, and sponsorship opportunities were offered at different levels, including for the entire program, for a module, or for the single delivery of one module.

The ITS Florida PCB business plan also included cost estimates for a \$5,000 program-launching event; a \$5,000 sponsor recognition day; \$45,000 for course development; \$52,000 for program administration and management; and \$67,500 for registration fees. Assuming all sponsorships were picked up, the program would be capable of generating modest revenue. The program also incorporated a provision for professional development hours (PDHs) and/or continuing education units (CEUs).

Unfortunately, sponsorship interest could not be generated. Consequently, the ITS courses now being offered are limited in variety because the PCB program has no funding. Atlantic Scientific, Inc., and PBS&J are conducting the only line of courses being offered. PBS&J has offered their live “webinars” by way of a company account with WebEx™,² which uses the Internet for Microsoft® PowerPoint®³ presentations and a teleconference telephone number for audio. PBS&J’s courses have included subject matter on systems integration; electronic payment systems; telecommunications; procurement techniques and approaches; traveler information; and traffic engineering using ITS. Atlantic Scientific has developed a beginning and advanced, though not yet scheduled, surge protection course via the traditional classroom medium. During 2003, a total of 374 people attended these ITS Florida training course offerings.

The Institute of Transportation Engineers (ITE) has offered training courses in Florida, including the *ITS Standards Overview Year 2003*, *Center-to-Center (C2C) Communications Year 2003*, *Dynamic Message Signs (DMS) Year 2003*, and *Actuated Traffic Signals/Advanced Transportation Controller Year 2003* courses. Additionally, the FHWA’s National Highway Institute (NHI) has sponsored and conducted several ITS courses over the last several years, including a new course for ITS architecture update, two *ITS Deployment Analysis System (IDAS)* courses, and the *Introduction to Systems Engineering for Advanced Transportation* course in July 2003. The FDOT sponsored and conducted several courses, including a systems engineering course in January 2002; the *Regional ITS Architecture and Rule 940 Implementation Workshop* held in October 2002; the Hurricane Evacuation Workshop held in September 2003, and a Critical Path Method (CPM) Scheduling using Primavera®⁴ course held in January 2004.

² WebEx is a trademark of WebEx Communications, Inc.

³ Microsoft and PowerPoint are registered trademarks of Microsoft Corporation in the United States and other countries.

⁴ Primavera is a registered trademark of Primavera Systems, Inc., in the United States and other countries.

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The FDOT and several ITS Florida volunteers adapted an ITS and safety workshop for their particular audience, and offered the workshop free of charge in March 2004. The workshop, which was developed by the FHWA Resource Center, was presented during the FDOT ITS Working Group Meeting in Clearwater. PBS&J sponsored and conducted the *Electronic Payment Systems: Beyond Transportation* program on April 25 during the Intelligent Transportation Society of America's (ITSA) Annual Meeting in San Antonio, Texas.

The remaining 2004 ITS Florida PCB schedule has just been released. The program consists of 10 two-hour lunch-and-learn sessions provided at satellite downlink locations throughout the State via WebEx. PBS&J is the program sponsor and is providing all course materials. All participants are eligible for two PDHs or 0.2 CEUs per session. The entire program is free to all, although preregistration is required. The schedule is as follows:

- May 25 – *Telecom Wireless*
- June 8 – *Defining Performance Measures*
- June 22 – *Funding & Procurement*
- July 27 – *CAD/AVL Technologies for Transit*
- August 10 – *Consulting Skills & Technology*
- August 24 – *Computer Telephony Integration*
- September 28 – *Controllers*
- October 12 – *Biometrics & Other Identification Technologies*
- October 26 – *FEMA Project Technologies*
- December 7 – *Panel Discussion*

The instructing companies are absorbing all training-related costs, although preregistration is required and class size is usually limited to 30, and revenue-generation goals are currently *not* part of the program. It is hoped that other ITS Florida members will participate and freely offer their expertise as a service to the ITS community, thereby furthering the ITS Florida PCB effort.

Intelligent transportation system professionals who are interested in course offerings can obtain general information and register online by visiting the ITS Florida training page at www.itsflorida.org/html/its_training.html. Those with questions, or requests for new training courses and materials can direct them to the training@itsflorida.org email address.

According to those most directly involved with the ITS Florida PCB activities to date, program sustainability and growth will require a cooperative effort among all previously participating agencies, including the academic sector members of ITS Florida, and a greater number of volunteers from the private sector members. The consensus also favors ITS Florida taking the leadership role in managing and coordinating the PCB program. However, it must be recognized that ITS Florida is not an operating agency and, therefore, cannot be the organization responsible for carrying out the program without some source(s) of revenue.

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In light of the recent reorganization of the FDOT ITS Section under the FDOT Traffic Engineering and Operations Office (TEOO), the subsequent ITS Working Group meetings should include meaningful discussion and resolution on the future sustainability of Florida's ITS PCB Program. The FDOT could also take a leadership role in discussing possible partnering with other national ITS training organizations, such as the University of Maryland's Consortium for ITS Training and Education (CITE),⁵ to fulfill the future demand for training from Florida's ITS professionals. (Refer to *Section 3*.)

Other major issues relate to support for continuous marketing, training logistics, and finding the right course levels. According to some participants, courses have been either too elementary or too advanced. There is a need to create incentives to participate, such as an FDOT-sanctioned ITS qualifications or certification training process. At this point, a reasonable training delivery target would be one PCB event every month, at a total cost of about \$10,000 per event. The single biggest issue would probably be deciding whether ITS PCB should be a revenue-based program.

⁵ More information regarding CITE is available online at <http://www.citeconsortium.org/index.html/>.

3. National Training and Educational Resources

There are three nationally based and supported sources of ITS training and education, including the:

- USDOT ITS PCB Program;
- University of Maryland CITE Program, which is also a partner of the national ITS PCB Program; and
- USDOT Intelligent Transportation Systems (ITS) Electronic Document Library (EDL). Intelligent transportation system professionals should make use of some or all of these providers to enhance their own professional development.

3.1 The USDOT's ITS Professional Capacity Building Program

By visiting the USDOT's ITS PCB site, users can find the *ITS Curriculum Guide*,⁶ a Web-based, self-assessment engine designed to help create an individualized course of ITS study that matches available learning opportunities to individual needs or deficiencies. This *Guide* includes five courses for awareness learning, 11 courses for core learning, and 18 courses for specialized learning. Supplemental training and educational opportunities for advanced ITS training are also listed and available from United States universities, vendors, and private sector firms, including distance learning courses.

Principal partners in the USDOT's ITS PCB Program are the ITS Joint Program Office (JPO), the NHI, the National Transit Institute (NTI), the Federal Transit Administration (FTA), the USDOT's Federal Motor Carrier Safety Administration (FMCSA), and the Volpe National Transportation Systems Center. Lastly, in partnership with ITSA, the USDOT PCB Program is assessing whether current ITS course offerings will meet the future needs of transportation professionals.

⁶ United States Department of Transportation, *ITS Curriculum Guide*. Available online at <http://www.pcb.its.dot.gov/CG.asp/>.

3.2 The Consortium for ITS Training and Education Program, Center for Advance Transportation Technology – University of Maryland

Located at the University of Maryland's Center for Advanced Transportation Technology, the CITE Program was created in 1998 as an integrated advanced transportation training and education program. Based on a consortium of 95 university and 7 industry partners, the distance-learning "clearinghouse" program is open to anyone pursuing a career in advanced transportation. The University of Florida (UF), University of Central Florida (UCF), University of South Florida (USF), Bethune-Cookman College (BCC), Florida State University (FSU), and Florida Agricultural and Mechanical University (FAMU) are CITE university partners.

The CITE Program offers two certificate programs – the *ITS Systems* and the *Traffic Engineering and Operations* programs. Each certificate program requires three core courses, two elective courses, and one bonus course, providing a total of 4.2 CEUs for a \$625 cost, compared to more than \$1,400 for taking the same certificate program courses individually. In addition to the 2 certificate programs, 1 full semester course and 23 individual courses are offered, including 2 instructor-led, Web-based "blended" courses.

A second full semester course, the *ITS Applications and Management* course, is now under development. Five of the 23 individual courses were new for 2003, and one became available in early 2004. All CITE courses, which are financially self-supporting, are Web-based and accessible 24 hours a day, seven days a week. However, access to individual course materials is typically limited to a 60-day period.

Recently, ITSA and the CITE signed a two-year memorandum of understanding (MOU) that outlines a commitment to partner in ITS training and education efforts. The ITSA will participate in CITE's committees and annual meeting. The CITE will actively participate in ITSA's Research, Integration, Training, and Education (RITE) Forum. Created less than one year ago, the RITE Forum provides the national voice and inspiration to support the evolution and deployment of ITS services.

3.3 The USDOT's ITS Electronic Document Library

The USDOT's ITS EDL contains ITS documents published or sponsored by the USDOT.⁷ Most of the documents are in Adobe® Acrobat®⁸ Portable Document Format (PDF). The national *ITS Benefits* and *ITS Costs Databases*⁹ are also available, as well as the ITS Cooperative Deployment Network (ICDN).¹⁰ The ICDN is a shared Internet network containing up-to-date news, insight, and resources. These entire references offer the ITS professional timely and useful information to keep expanding one's individual knowledge base.

⁷ United States Department of Transportation, *The Intelligent Transportation Systems (ITS) Electronic Document Library (EDL)*. Available at www.its.dot.gov/itsweb/welcome.htm.

⁸ Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

⁹ United States Department of Transportation, *ITS Benefits Database* and *ITS Costs Database*. Available at www.benefitcost.its.dot.gov.

¹⁰ National Associations Working Group (NAWG) for ITS, *ITS Cooperative Deployment Network*. Available at www.nawgits.com/icdn.html.

4. Recommendations

Given the aforementioned history of Florida PCB events and activities, and the availability of ITS training and continuing educational resources nationally, the following initiatives are recommended for the future of the Florida ITS PCB Program:

- Intelligent transportation systems training and education should be viewed as an individual responsibility for continuing professional development. However, given the reorganization of the former FDOT ITS Office, the FDOT TEOO should now assume the focal point of leadership in this area, with guidance from the ITS Florida PCB Committee.
- The TEOO's first action should be to request that the ITS Florida PCB Committee conduct and document a formal assessment of the appropriate training courses for each ITS professional level, and to make recommendations for Florida's ITS PCB Program. This should include a new statewide survey of ITS training and educational needs; determination of program funding needs; provisions for course marketing, training logistics, and course content; incentives for developing and conducting new courses; and defining specific roles and responsibilities for ITS PCB agency "partners."
- The TEOO, and a majority of the ITS Florida members, should use the statewide ITS training and education assessment and its findings to develop and promote an ITS PCB business plan that has the ITS community's support. The TEOO should then consider funding for the individual courses. The business model for a successful program should stimulate enthusiasm for professional development; sustain active participation of instructors and attendees; and encourage innovation in delivery and content of ITS training and education.
- The FDOT should view the ITS PCB Program as a "break-even" activity that recovers the costs incurred for course development and delivery. Likewise, public and private ITS agencies should formally recognize and eagerly support the spirit of professional volunteerism typified by PBS&J and Atlantic Scientific in presenting training programs.
- The newly reorganized ITS Florida PCB Committee should be fully supported and guided by its membership in rejuvenating its commitment to development, coordination, and management of a statewide ITS training and education program that fulfills the specific needs of Florida's ITS professionals.
- The FHWA Florida Division, the FDOT, and academic institution members of ITS Florida should all play a much more visible and active role in program marketing and training logistics (e.g., providing training venues, equipment, and course advertising at no cost).

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- Incentives, such as free ITS Florida membership, should be provided to qualified private and public sector volunteers who take leadership roles in course development or delivery. In this regard, ITS Florida's academic institution members should fully explore the utilization of the Florida Engineering Education Delivery System (FEEDS) as a delivery medium for training.¹¹ Additionally, project managers of current Florida ITS deployments should be identified and invited to share their experiences.
- In addition to encouraging member experts to step forward and be course developers or instructors, ITS Florida should identify and recruit nationally recognized experts as trainers in needed courses to generate even greater enthusiasm and participation. In this case, ITS Florida could negotiate with providers on cost recovery, but again the spirit of professional volunteerism and corresponding incentives, such as an opportunity to visit Florida in the winter, could be emphasized.
- ITS Florida should continue to widely advertise and promote an awareness of available national resources for ITS training and education (as described herein).
- To heighten the priority and distinction of ITS training and education, the ITS Florida Advisory Council, with guidance from the ITS Florida PCB Committee, should evaluate the benefits of an ITS qualification or certification process for Florida ITS professionals. This evaluation should be conducted and findings presented to the FDOT in a timely fashion.

¹¹ More information regarding FEEDS is available online at <http://feeds.eng.usf.edu/>.