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I. INTRODUCTION

It has recently become increasingly common for states and regions across the country to consider the potential of planning, developing, and deploying Intelligent Transportation Systems (ITS) solutions for their rural and small urban areas. Some of the most progressive states have also examined these opportunities from a statewide perspective. However, while there is a body of experience developing in this area, it has not been shared effectively with all potential users. As such, each group that embarks on efforts such as these typically has to start from scratch and has to develop their own techniques for successfully deploying an ITS initiative.

In order to address this issue, the United States Department of Transportation (USDOT) has invested in the development of documents such as the *Rural ITS Toolbox*. While the toolbox is extremely valuable, the unfortunate truth about paper reports is that when the practitioners receive them, they are all too often put on a shelf and forgotten. In addition, practitioners sometimes use the excuse that they won't use the resource unless instructed by their managers or directors.

Therefore, the National Highway Institute (NHI) is initiating the development of a program to update and deliver the training course, Rural ITS Toolbox. By presenting the material in the form of a one-day training course, it is hoped that the practitioners will become familiar with the toolbox and learn how to apply it. In addition, since the course is only one day, managers and directors can attend it, so that they can learn the value of the Toolbox and encourage its use within their operations.

The Rural ITS Toolbox Training Course will discuss successful Rural ITS Projects and Statewide ITS planning initiatives from across the nation. It will guide participants through proven processes and initiatives for the successful deployment of Rural ITS. The Training Course will investigate the transferability of Rural and Statewide ITS initiatives to other locations and will describe some "lessons learned" during the deployment process.

II. COURSE ORGANIZATION

This one day course will be presented by qualified instructors using the curriculum materials, Rural ITS Toolbox, a Participant's Workbook and various visual aids, such as computer-generated slides, overhead transparencies, easels and similar tools.

All Participants will be provided with copies of the Rural ITS Toolbox and the Participant's Workbook for this course.

The Rural ITS Toolbox identifies successful rural ITS projects and statewide applications from across the nation. ITS Tools referenced in the document are categorized on the basis of the seven Rural ITS Development Tracks defined in the FHWA document "Rural ITS User Needs". The seven tracks are: emergency services, tourism and travel information, traffic management, rural transit and mobility, crash prevention and security, operation and maintenance, and surface transportation and weather. Information designed to help planners evaluate the appropriateness of a given ITS application is provided for each tool. This information includes: needs addressed

by the tool, a concise description of the tool, deployment examples, lessons learned from each deployment, benefits, implementation issues, institutional issues encountered, references, and other potential uses for the tool. To assist users, tools may be referenced by one of three methods: based on one of the seven tracks (e.g., emergency services), by location of implementation (e.g., state), or by the need addressed (e.g., work zone safety). ITS Toolbox is intended to support agencies and groups that are beginning the process of rural or statewide ITS deployment by making the body of experience associated with various ITS application deployments accessible to potential new users.

A hard copy of the slides used in the presentation, class exercises, example problems and other materials to be used in the course will be included in the Participant's Workbook.

A detailed preliminary agenda has been prepared. This agenda will be revised prior to the teaching of the course in various regions.

This course is typically designed to run from 8:00 a.m. to 4:00 p.m. Other time frames can be accommodated, provided notice is given at the time of the course request. However, sessions and learning objectives may also require modification. A sample agenda is shown in Section X.

List of Sessions

Session Number	Description and Text Reference	Time (Minutes)
1	Introduction	30
2	Rural Challenges and Transportation Technology	60
3	Planning for Success	75
4	Rural ITS Tools	150
5	Information Resources and Course Summary	60

Total Time: 6:15

III. COURSE COORDINATION

Communication for scheduling and arranging the course will be through the NHI Training Officer, the Contractor for this course, FHWA Course Instructors and the local DOT Training Coordinator. A DOT Training Coordinator contacting the NHI Training Coordinator, who, in turn, contacts the Course Contractor, usually initiates the process. The Contractor contacts the DOT Training Coordinator and discusses possible dates for the course. Then, the Contractor checks availability of Instructors, starting with FHWA Instructors, for the possible dates. The delivery date for the course is confirmed to the State Coordinator, and to the NHI Training Coordinator and Instructors, by the Contractor, after Instructor availability has been confirmed.

The DOT Coordinator submits a formal course request to the NHI, and it is forwarded to the Contractor, and authorizes the Contractor to teach the course. The Contractor communicates with the DOT Coordinator to: confirm times of instruction; obtain directions to training facility; detail Host State requirements (see Section V; Host State Responsibilities); identify the State Speaker; and obtain lodging recommendations for the Instructors.

The NHI will ship 30 copies each of the Rural ITS Toolbox and the Participant's Workbook to the local DOT Training Coordinator at the address shown on the Course Request Form (1530). **It is highly recommended that the local DOT Training Coordinator distribute these documents to the Participants at least one week in advance of the course and that the Participants be encouraged by local DOT Training Coordinator to scan through the documents prior to coming to the class (and be allowed on-the-job time to review course documents).** In the event that these documents cannot be distributed prior to the course, a copy of each Toolbox should be placed at each Participant's seat by they local DOT Training Coordinator prior to the beginning of the class. Also name tents, a writing pad for performing class exercises and a pen or pencil should be provided for each Participant. NHI will also provide a registration form, name tents, course evaluation form and course certificates. The course coordinator must notify the NHI Training Officer concerning any changes to the number of documents or to the shipping address.

Handout materials supplied by the Contractor are mailed to the DOT Coordinator approximately two weeks prior to the course, or hand-carried by an Instructor. Handouts include agenda, participant questionnaire, and any additional worksheets.

The Contractor transmits (usually by facsimile) to the NHI Training Coordinator the Class Registration Form within five days after the course. The original Class Registration Form, course evaluation, and CEU applications are mailed to the NHI Training Coordinator. A Thank You note to the DOT Coordinator is usually sent by the Contractor. Copies of the evaluation forms are sent to the DOT Coordinator by the NHI Training Coordinator.

IV. CLASS SIZE

The maximum class size permitted by the NHI is 30 people to achieve the learning objectives for this course.

V. HOST AGENCY RESPONSIBILITIES

Audio/Visual Equipment Requirements

Visual aid information will be delivered through PowerPoint Visuals, overhead transparencies, flip chart, and a whiteboard/chalkboard. The following equipment is needed for presenting the visual aids:

- A personal computer with a current version of Microsoft PowerPoint installed;
- High resolution multimedia projector and interface cables for the computer;
- Very large (8-foot width minimum), high quality projection screen;
- An electronic pointing devise (laser-type preferred);
- Two extension cords (one at least 20 feet long and one at least 10 feet long);
- One power strip with a minimum of four (4) grounded outlets;
- A flip chart with large, colored marking pens;
- One whiteboard/chalkboard with markers/chalk and an eraser, or a second flip chart with markers;
- Several (six) large, black marking pens for participants identification placards;
- Additional visual aids, as required for the Host State presentation; and
- Spare batteries for laser pointer, remote controls.

The equipment should be placed in the room and available to be checked the Instructors at least one-hour prior to the beginning of the course. The Host State should provide technical assistance during this checking period, and contact information for technical assistance, if needed during the course.

Room Requirements

The classroom should be a large conference room or a similar room with a flat, level floor, adequate ceiling height to permit visual aids to be clearly seen from the back of the room and with sufficient tables and chairs for about 30 Participants and two Instructors. The tables and chairs should be arranged in the classroom style and laid out in cluster formations to allow teams of four to six individuals to work together in each clustered area. Tables should be separated to permit Instructor access to the participants, as a high-level of interaction will be used to convey the learning objectives. All participant desks or tables should be oriented so that participants face the front of the room; however, participants can move to other positions for team exercises (e.g., opposite side of a table). A table with two chairs should be located at the back of the room as a preparation area for the Instructors. A presentation table should be placed at the front of the room. A table or cart with the personal computer, multimedia projector, any other projection equipment required for the host state presentation and the screen should be aligned with the center aisle. The room should be in a quiet area and if available should have a lighting system that permits convenient dimming of the lights, especially at the front of the room, by the Instructors. Rooms with windows should include working blinds to allow for reduction of light as needed.

VI. TARGET AUDIENCE

The primary target audience for this course is transportation professionals involved in the planning and implementation of solutions to transportation needs in rural areas. The course will benefit practitioners familiar with ITS as well as those whose area of expertise or responsibility is not strictly confined to ITS. This course will also benefit staff likely to be involved in ITS planning as key stakeholders on coordination committees or task forces. The primary target audience for this course includes representatives from the following agencies or organizations:

- Transportation Agencies
  - Federal, State, and Local
  - Executives, Engineers, and Planners
- Public Mobility Service Providers
- Public Safety Responders (enforcement, fire, EMS, etc.)
- National Parks and Forest Services
- Other Interested Parties
  - IT Personnel
  - Tourism & Chambers of Commerce
  - Colleges and Universities
  - Consultants and Contractors

VII. COURSE GOAL AND OBJECTIVES

Course Goal

The goal of this course is to introduce the participants to the Rural ITS Toolbox and to familiarize the participants with ITS strategic planning. At the end of the course, the participants should be able to describe the contents of the Rural ITS Toolbox, the benefits of representative tools, and a general understanding of the ITS Strategic Planning process necessary to engage relevant stakeholders in the development of Rural ITS.

Course Objective

1. Define transportation needs and challenges in rural environment
2. Define ITS and advanced rural transportation systems (ARTS)
3. Relate the value of rural ITS Toolbox
4. Describe ITS strategic planning
5. Explain the benefits of ITS applications in rural areas
6. Relate lessons learned in rural ITS implementations
7. Identify information resources

VIII. EXECUTIVE SUMMARY

The executive summary of the course will be utilized by the FHWA Resource Centers and others for presentations to executives, high-level managers, universities, etc. in the public and private sectors. The executive summary is designed to be delivered between one and two hours.

The executive summary is available as two separate NHI publications: a presenter guide with speaking notes (Publication No. FHWA-NHI-03-063), and a handout set to be given to the executive summary attendees (Publication No. FHWA-NHI-03-064). In addition, a CD with a PowerPoint version of the executive summary is available for use by the presenter (Publication No. FHWA-NHI-03-065).

IX. FINAL SESSION PLANS

The final lesson plans presented below are designed to create an environment that allows course participants to achieve learning objectives set forth for each session. Session design emphasizes acquisition of knowledge through an interactive approach that includes participant-participant interaction as well as instructor-participant interaction. Instructors will evaluate participants' attainment of session learning objectives through question and answer periods, discussion, and participant exercises.

Title	Session 1: Introduction and Course Objectives
Performance-Based Learning Objective	Participants will introduce themselves and summarize their backgrounds
Instructional Method	Instructors and participants provide self-introductions – instructors should introduce themselves first to provide participants with an example of the content of the information to be provided as well as a general guideline for the amount of time each self-introduction should take. Participants will be asked to provide brief statements on their experience with ITS. This will help instructors tailor the level of detail that each Rural ITS Tool should be discussed. Instructors will encourage participants to actively participate in the course. Instructors will describe the various activities that will be used to achieve course learning objectives (e.g., scenario role play). Instructors will state course rules for attendance, breaks, and other pertinent administrative information. Instructors will provide a description of course learning objectives. Instructors will summarize the content of the Rural ITS Toolbox in the course of describing learning objectives. Instructors will discuss course evaluation forms and emphasize the importance of these forms.
Time Allocation	Presentation 30 minutes **Total:** 30 minutes
Evaluation Plan	NA
Reference	NA

Title	Session 2: Rural Challenges and Transportation Technology
Performance-Based Learning Objective	Participants will: • recognize transportation needs, challenges (technical and institutional), and opportunities typically associated with the rural environment • identify ITS elements, functions, and technologies typically applied in the rural environment
Instructional Method	Instructors will present transportation needs, challenges, and opportunities identified by rural transportation stakeholders during previous FHWA projects (e.g., results of Rural Needs Assessment). Instructors will discuss key aspects of it and why they are more typically associated with the rural environment. Instructors' presentation format will be based on Advanced Rural Transportation Systems (ARTS) Development Tracks. Instructors will ask participants to identify local transportation needs, challenges, and opportunities with which they are familiar. Participants will be encouraged to discuss these and "determine" if they are rural. Instructors will use this discussion to reinforce participants' ability to recognize needs, challenges (technical and institutional), and opportunities typically associated with the rural environment. Instructors will present ITS elements, functions, and technologies typically applied to address transportation needs, challenges, and opportunities typically associated with the rural environments. Instructors will briefly present ARTS Development Tracks. Instructors will emphasize that while not all transportation problems have an ITS solution, ITS can be an effective tool. Instructors will also relay the importance of interagency cooperation for ensuring success in applications of ITS technologies Instructors will ask participants to identify any other ITS elements with which they may be familiar. In the course of this activity instructors will reinforce participants' ability to identify ITS elements, functions, and technologies typically applied to address rural transportation needs, challenges, and opportunities.
Time Allocation	Presentation: 40 minutes Participant Discussion: 20 minutes **Total:** 60 Minutes
Evaluation Plan	Evaluate participants' response to instructors' questions.
Reference	Rural ITS Toolbox, Rural ITS User Needs Report for FHWA

Title	Session 3: Planning for Success
Performance-Based Learning Objective	Participants will: • describe ITS Strategic Planning process • describe the National ITS Architecture • identify main or typical steps in ITS strategic planning process (critical planning elements) • identify major activities associated with each critical planning element in ITS strategic planning process • identify key stakeholders in ITS strategic planning process
Instructional Method	Instructors will describe why states/regions perform ITS strategic planning. In the course of this discussion instructors will cite testimonials from staff involved in development of ITS Strategic planning as to advantages of this process. Lessons learned from case studies of statewide or regional ITS planning efforts will also be presented. Instructors will lead participants through various planning processes performed by various states/regions for ITS strategic plans. Instructors will describe the National ITS Architecture to include its purpose, main elements, and general approach to use (including Turbo Architecture software). Descriptions of planning efforts will focus on plans that addressed rural areas. Implications of the final rule regarding the National ITS Architecture will also be briefly addressed. Instructors will describe various activities and ask participants to ascribe these activities to steps in the ITS strategic planning process. Instructors will ask participants to describe steps they felt most important and key stakeholders (emphasize for those with experience preparing ITS strategic plans). Instructors will use this discussion period to reinforce participants' ability to identify advantages of performing ITS strategic planning and the major steps associated with it. Instructors will guide participants through a series of problem solving activities designed to support learning objectives. Participants will be presented with a scenario that requires them to go through the ITS planning process to address a set of given needs. Participants will use the Rural ITS Toolbox as a reference to develop lists of alternative solutions. Benefits of various approaches will be presented to assist in alternative selection. Participants will discuss their solutions at the end of the activity.
Time Allocation	Presentation: 55 minutes Participants' Discussion/Activity: 20 **Total:** 75 Minutes
Evaluation Plan	Evaluate participants' ability to identify key steps in ITS strategic planning process, advantages of performing the process, activities associated with each step, and likely stakeholders
Reference	Statewide and Rural Deployment of ITS: "Lessons Learned". National ITS Architecture Guidance: Developing, Using, and Maintaining an ITS Architecture for your Region

Title	Session 4: Rural ITS Tools
Performance-Based Learning Objective	Participants will: • recognize seven rural ITS development tracks • use the Rural ITS Toolbox to identify ITS applications to address user needs identified in Session 2 • recognize key stakeholders in the ITS deployment process • recognize advantages of various ITS approaches based on lessons learned • describe various benefits associated with application of ITS in rural areas • identify typical measures of effectiveness for ITS in rural areas.
Instructional Method	Instructors will provide a description of each of the rural ITS development tracks. Each description will include the main user needs associated with each development track. Instructors will describe examples of ITS tools from Rural Toolbox document that address user needs associated with various tracks. Instructors will explain to participants how to reference Rural Toolbox document to find appropriate ITS tool (e.g., by ITS Development Track, by user need, or by geographic location). Instructors will describe key stakeholders typically involved in ITS deployment process. Instructors will present lessons learned (implementation and institutional issues) associated with various ITS approaches to user needs. Instructors will ask participants to cite benefits of ITS applications with which they are familiar. Participants will be encouraged to discuss other possible measures of benefits (in addition to those described by instructors). Instructors will use this discussion to reinforce participants' ability to identify various benefits associated with application of ITS in rural areas; identify typical measures of effectiveness for ITS in rural areas. Instructors will ask participants to recall local rural user needs identified in session 2 and discuss which development track the need would fall under. Instructors will use this discussion to reinforce participants' ability to identify the development tracks and associated user needs. Instructors will ask participants to find ITS applications in the Rural Toolbox document to address various user needs and development tracks. Instructors will use this activity to reinforce participants' ability to use the Rural ITS Toolbox to identify ITS applications to address various user needs.
Time Allocation	Presentation: 60 minutes **Total:** 150 Minutes Participants' Discussion/Activity: 90 minutes (two learning exercises)
Evaluation Plan	Evaluate participants' response to instructors' questions/ability to find ITS applications in Rural Toolbox document.
Reference	Rural ITS Toolbox, Rural ITS User Needs Report for FHWA, ITS Benefits: Continuing Successes and Operational Test Results; ARTS Conference Proceedings.

Title	Session 5: Information Resources and Course Summary
Performance-Based Learning Objective	Participants will: • identify resources available to assist in ITS planning and implementation
Instructional Method	Instructors will ask participants to discuss key points presented during the course of the session. Points to be addressed will include: • Rural Challenges and User Needs • ITS Applications – Rural ITS Toolbox • ITS Benefits • Lessons Learned Instructors will also provide participants with a list of other resources to assist them in ITS planning and implementation. Participants will be given the opportunity to ask questions regarding information presented in course.
Time Allocation	Presentation: 30 Minutes **Total:** 60 Minutes Participant Questions: 30 Minutes
Evaluation Plan	NA
Reference	ITS Resource Guide 2001, state contacts (specific to training location) such as local ITS America Chapter POCs, and FHWA field POCs will be provided.

X. COURSE AGENDA

NHI Course #137007
Rural Intelligent Transportation Systems (ITS) Toolbox

Course Agenda

Sponsoring Agency	
Location	
Date	
Instructors	

Time			Topic	Session
Duration	From	To		
0:15	08:00 AM	08:15 AM	Registration	
0:30	08:15 AM	08:45 AM	Introduction and Course Objectives	1
0:15	08:45 AM	09:00 AM	Break	-
1:00	09:00 AM	10:00 AM	Rural Challenges and Transportation Technology	2
0:15	10:00 AM	10:15 AM	Break	-
1:15	10:15 AM	11:30 AM	Planning for Success	3
1:00	11:30 AM	12:30 PM	Lunch Break	-
1:00	12:30 PM	01:30 PM	Rural ITS Tools (presentation)	4
0:15	01:30 PM	01:45 PM	Break	-
1:30	01:45 PM	03:15 PM	Rural ITS Tools (exercises)	4
0:15	03:15 PM	03:30 PM	Break	-
1:00	03:30 PM	04:30 PM	Information Resources and Course Summary	5

XI. COURSE OUTLINE

Session 1 Introduction

- Introductions (Instructors & Participants)
- Course Format
- Course Objective
- Course Evaluation

Session 2 Rural Challenges and Transportation Technology

- Learning Objectives
- Traveler Needs
  - Discussion of Local Needs
  - Summary of the Results of Rural Needs Assessment Initiatives
- Rural Challenges
  - Technical
  - Institutional
- ITS/ARTS Development Tracks

Session 3 Planning for Success

- Learning Objectives
- Critical Planning Elements
- National ITS Architecture
- Lessons Learned

Session 4 Rural ITS Tools

- Learning Objectives
- User Needs
- Stakeholders
- ITS Tool/Projects
  - Description
  - Lessons Learned
    - Implementation
    - Institutional issues

ITS Benefits in Rural Areas

- Learning Objectives
- Selected Benefits
  - Emergency Services
  - Tourism and Traveler Information
  - Traffic Management
  - Rural Transit and Mobility
  - Crash Prevention and Security
  - Operations and Maintenance
  - Surface Transportation and Weather

Session 5 Information Resources and Course Summary

- Learning Objectives
- Rural Challenges and User Needs
- ITS Applications – Rural ITS Toolbox
- ITS Benefits
- Lessons Learned
- Other Resources
  - Peer-to-Peer Program
  - FHWA ITS HelpLine