ITS ePrimer
Introduction and Overview

ITS Professional Capacity Building Program
ITS Joint Program Office
U.S. Department of Transportation
Instructor

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Welcome

- USDOT is committed to advancing ITS
- The ITS ePrimer provides an opportunity to bring state-of-the-art information to professionals, students, and public officials
- The online platform takes advantage of advancements in Internet-based learning
ITS ePrimer Overview

- Update to 2000 Intelligent Transportation Primer
- Target audience
  - Practitioners – public, private, vendors
  - Students and academicians
  - Public officials and decision-makers
- Multimodal focus
- Internet-based to allow
  - Multi-media resources
  - Easy access by target audience
  - Timely updates and additions
Project Structure

- Project Management Team
  - USDOT ITS Joint Program Office (JPO)
  - FHWA Office of Transportation Management
  - Federal Transit Administration
  - Institute of Transportation Engineers (ITE)
  - ITS America
  - Technical Editor
- 14 Module Authors
- Volunteer Peer Reviewers
Products

- Series of 14 Web-based modules providing a basic introduction to key ITS topics
- Full set of detailed PowerPoint slides to accompany each of the ePrimer modules
- The ePrimer is posted on the ITS Professional Capacity Building Program Web site of the USDOT’s ITS JPO at: https://www.pcb.its.dot.gov/ePrimer.aspx
Learning Objectives

- Presents Module 1: Introduction to ITS
- Introduces the 13 subject modules
- Provides an overview of the online format
- Announces upcoming webinars on other modules
What is ITS?

- ITS applies information, technology, and systems engineering to the management and operation of surface transportation facilities.
- It is an engineering discipline that encompasses:
  - Research
  - Planning
  - Design
  - Integration
  - Deployment
Introduction to ITS

- ITS brings diverse disciplines together to deliver
  - Safe,
  - Efficient, and
  - Sustainable transportation

- ITS enhances transportation infrastructure investments

- ITS supports system management and operation
  - Multimodal
  - Local, regional, state
Examples of How ITS Enhances Our Lives

Adaptive signal control technology uses real-time traffic information to

- Cut costs
- Reduce congestion
- Improve traffic flow
- Reduce emissions
- Respond to incidents, special events, and recurring congestion

Examples of How ITS Enhances Our Lives (cont’d)

Active traffic management
  - Reduces collisions
  - Reduces congestion
  - Enhances emergency response
  - Enhances emergency management

ITS Applications

- Multimodal
  - Auto
  - Transit
  - Freight
  - Bicycles
  - Pedestrians

- Facility Types
  - Highways
  - Arterials
  - Fixed guideways
  - Bikeways
  - Sidewalks
  - Multimodal facilities
Transportation Challenges

- Increasing demand: 95% increase in VMT over 30 years
- Minimal increase in capacity: less than 9% increase in number of lane miles in same period

Percent Change 1980-2010

Transportation Challenges (cont’d)

- Funding levels have not kept pace with needs, increasing pressure to do more with less

Highway Trust Fund Expenditures (in billions)

History of ITS

- 1988: Mobility 2000 – working group focused on national program of automated technology
- 1991: ISTEA – encouraged new technologies to improve safety, information exchange, system capacity, and travel times
- 1990s: National Architecture and Standards Program initiated
- Late 1990s: Term ITS emerged to include more multimodal focus
History of ITS (continued)

- 2012: Moving Ahead for Progress in the 21st Century (MAP-21) – created a streamlined, performance-based surface transportation program with an increased focus on system management

- 2015: Fixing America’s Surface Transportation (FAST) – largely continues previous program structures with an 11% increase in funding over 5 years
Poll Question 2

How familiar are you with the ITS architecture for your agency?

- Unsure if one exists
- Aware of it but am not familiar with the content
- Participated in its development
- Use it regularly as a tool for planning and deploying the ITS system
ITS Architecture and Standards

- National ITS Architecture
  - Guides ITS programs at the national level
- Regional Architecture
  - Developed for regional implementation areas
  - Required for ITS programs using Federal funds
- ITS Standards
  - Provide technical guidance and requirements for each component of an ITS system
More information on the ITS Architecture is available in Module 2 of the ITS ePrimer
Growth of ITS Deployment

- Public sector investment in ITS nearly tripled in 15 years – $18.5 billion in 2010
- 85% of freeway operations agencies using CCTV and DMS in 2010
- 80% of fixed-route buses using electronic fare payments in 2010
- Private sector investment in commercial vehicle management
- Public-private initiatives in tolling and connected vehicle applications
The Future Vision for ITS

Transforming transportation through connectivity to maximize

- Safety
- Mobility
- Environmental performance

Source: USDOT.
How to Use the ITS ePrimer

- Modules are structured around specific topic areas and intended to stand on their own.
- 14 different authors – level of detail varies across modules, and some topics are cross-cutting/overlapping.
- Users should take advantage of interactive nature of modules, including multi-media links imbedded throughout.
Content Outline

1. Introduction to ITS
   Provides an overview of ITS including history, benefits, and future vision

2. Systems Engineering
   Presents an overview of systems engineering and its relation to ITS architecture, planning, and deployment

3. Application of ITS to Transportation Management Systems
   Focuses on the ITS tools and applications used in managing transportation systems
4. Traffic Operations
Demonstrates successful application of ITS systems to the effective operation of the transportation system and examines how traffic management centers incorporate and integrate ITS applications to address safety and reliability.

5. Personal Transportation
Explains the capabilities, features, and limitations of personal transportation applications to enhance traveler mobility and accessibility (GoDenver example).

6. Freight, Intermodal, and Commercial Vehicle Operations
Describes ITS freight applications and discusses benefits including enhanced safety, security, and efficiency.
Content Outline (cont’d)

7. Public Transportation
   Identifies a broad range of ITS applications in public transportation and describes how they enhance efficiency, convenience, safety, and security

8. Electronic Tolling and Pricing
   Provides an introduction to electronic payment systems applications and pricing strategies

9. Supporting ITS Technologies
   Describes various supporting ITS technologies and considers opportunities for deployment and integration
Content Outline (cont’d)

10. Rural and Regional ITS Applications
    Identifies unique transportation needs in rural areas and applies lessons from successful ITS deployments in rural and regional settings

11. Sustainable Transportation
    Explores opportunities to integrate ITS technologies in support of sustainable transportation

12. Institutional Issues
    Defines institutional challenges encountered in planning, deploying, and maintaining ITS and provides guidance on addressing institutional concerns
13. Connected Vehicles (CV)
   Examines current and emerging CV technologies and discusses institutional, policy, legal, and funding challenges associated with CV applications

14. ITS Emerging Opportunities and Challenges
   Explores emerging ITS applications and demonstrates how these technologies are being used to achieve society’s goals and objectives
Multi-media Examples

- **Videos:** Click here to view an example of a video on adaptive signals (Source: Module 3)
- **Online trainings:** Click here to view an example of an ITS Standards training series (Source: Module 1)
- **Technology demonstrations:** Click here to view an example of the Volvo Emergency Break System (Source: Module 14)
- **Smartphone apps:** Click here to view an example of SFMTA’s SFpark (Source: Module 7)
- **Webinars:** Click here to view an example of ITE’s offerings (Source: Module 12)
- **Web sites:** Click here to view an example of ITS America Web site (Source: Module 13)


**ITS ePrimer Online Products**

- Available [online](#)
  - 14 modules
  - PowerPoint slides with speaker notes and suggested audience interaction for each module
For More Information

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Contact and Resources

- T3 Webinars: T3@dot.gov
- CITE: www.citeconsortium.org
- ITE Webinars: www.ite.org

Thank you!