Cleveland Regional ITS Architecture Update

Kick-off Workshop

February 1, 2017

Kimley»Horn

TN TDOT Department of Transportation

Cleveland Urban Area METROPOLITAN PLANNING ORGANIZATION

Presentation Overview

Overview of ITS

- What is ITS?
- ITS Benefits
- ITS Applications

Overview of Regional ITS Architectures

- What is a Regional ITS Architecture?
- Regional ITS Architecture Update Process
- Benefits of the Regional ITS Architecture

Discussion

- Existing and Planned Projects in the Region
- ITS Needs in the Region
- Interagency Connections

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What is ITS?

ITS is an acronym that stands for
Intelligent Transportation Systems

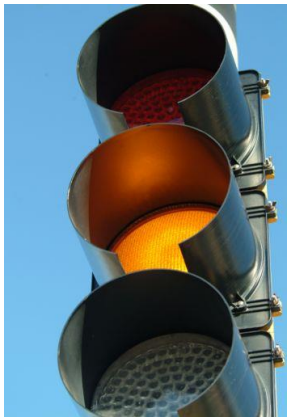
One definition of ITS:
The application of data processing and data communications to surface transportation to increase safety and efficiency.

ITS Applications

- Traffic Management
- Traveler Information
- Emergency Management
- Maintenance & Construction Management
- Public Transportation
- Commercial Vehicle Operations
- Archived Data Management
- Vehicle Safety (Connected & Autonomous Vehicles)

Traffic Management

- Data Collection
- Control
- Roadside Traveler Information



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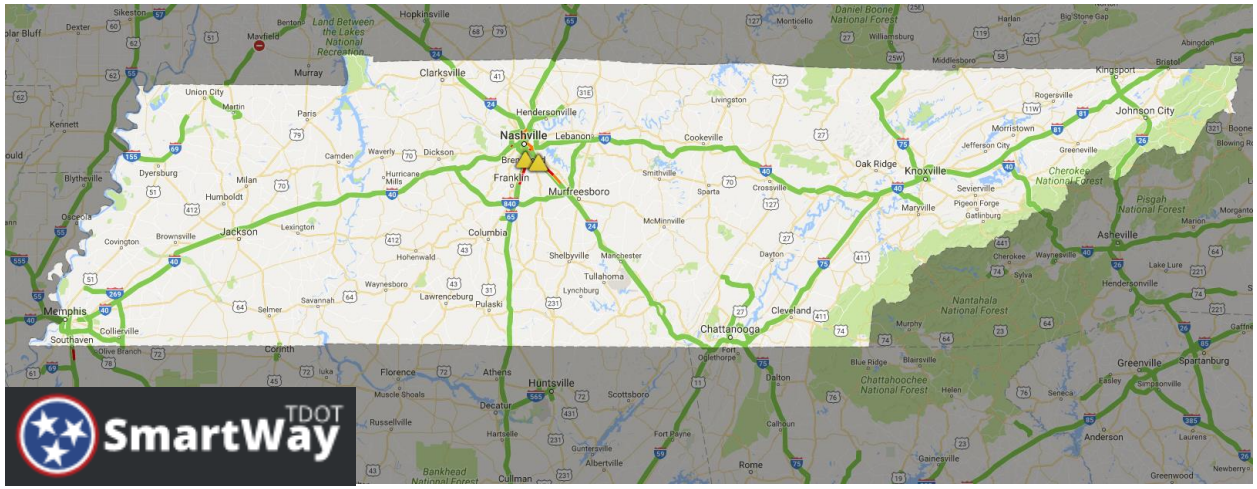
Traveler Information

Traveler Information Website

511 Traveler Information Phone Number



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Emergency Management

- Computer-aided Dispatch Systems
- AMBER Alerts
- Traffic Signal Preemption
- Video/Information Sharing
- Coordinated Incident Management

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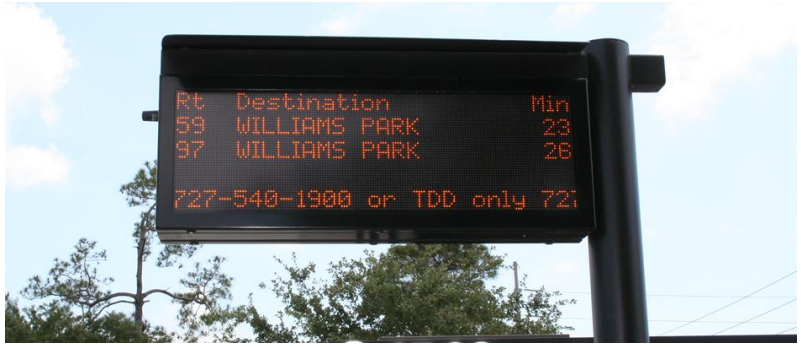
Public Transportation

- Automated Vehicle Location
- Real-Time Bus Arrival Information
- Transit Signal Priority
- Smart Fare Payment Systems
- Automated Passenger Counters
- Alarms and Video Security Systems



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Commercial Vehicle Operations

- Commercial Vehicle Parking Systems
- Speed Warning Systems
- Weigh-in-Motion
- HAZMAT Management

Commercial vehicles operations are not a large component of the Regional ITS Architecture because CVO programs and policies are generally set at the state level

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Maintenance & Construction Management

- Smart Work Zones
- Flood Detection and Closure Systems
- Anti-icing Systems
- Vehicle Tracking Systems

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Archived Data Management

ITS Data Mart

ITS Data Warehouse / ITS Virtual Data Warehouse

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Emerging ITS Technologies

- Automated Vehicles
- Connected Vehicles
- Active Traffic Management
- Integrated Corridor Management
- Decision Support Systems
- Privatized Traffic Data

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ITS Benefits

- Increased Roadway and Transit Efficiency
- Enhanced Incident and Special Event Management
- Improved Safety for Travelers, Public Safety, and Maintenance Personnel
- Accurate and Timely Traveler Information

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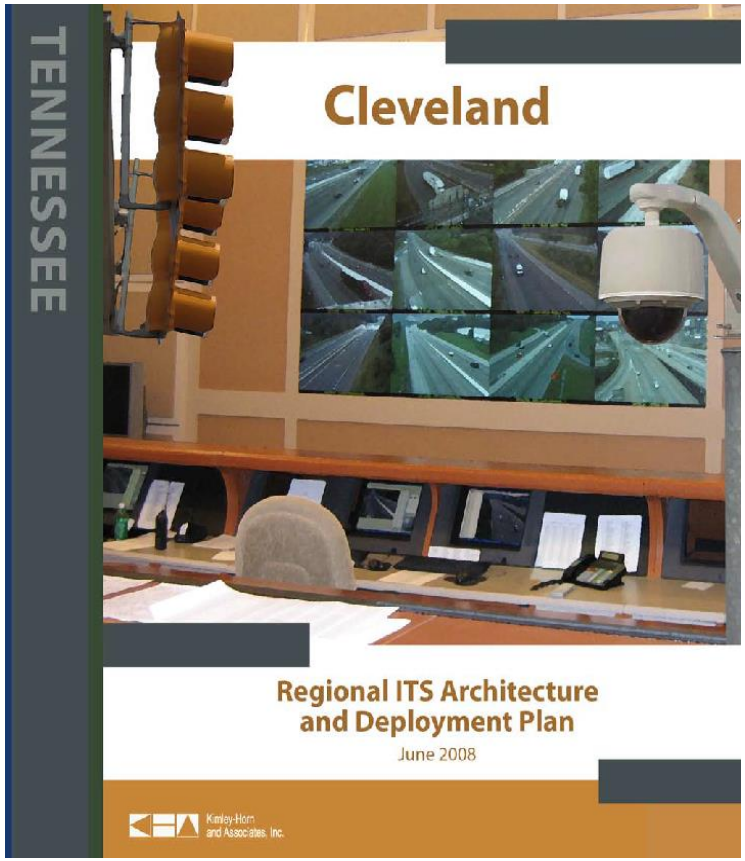
Cleveland Regional ITS Architecture

Regional ITS Architecture Defines

- ITS Inventory and Needs
- ITS Services and Agencies Involved
- Projects to be Deployed



Last updated in 2008

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Cleveland Regional ITS Architecture History

- First Regional ITS Architecture completed in July 2008
  - Used National ITS Architecture Version 6.0 (Currently on Version 7.1)
  - Used Turbo Architecture Version 4.0 (Currently using Version 7.1)

- This current effort is the first to update the Cleveland Regional ITS Architecture

ITS Architecture Requirements

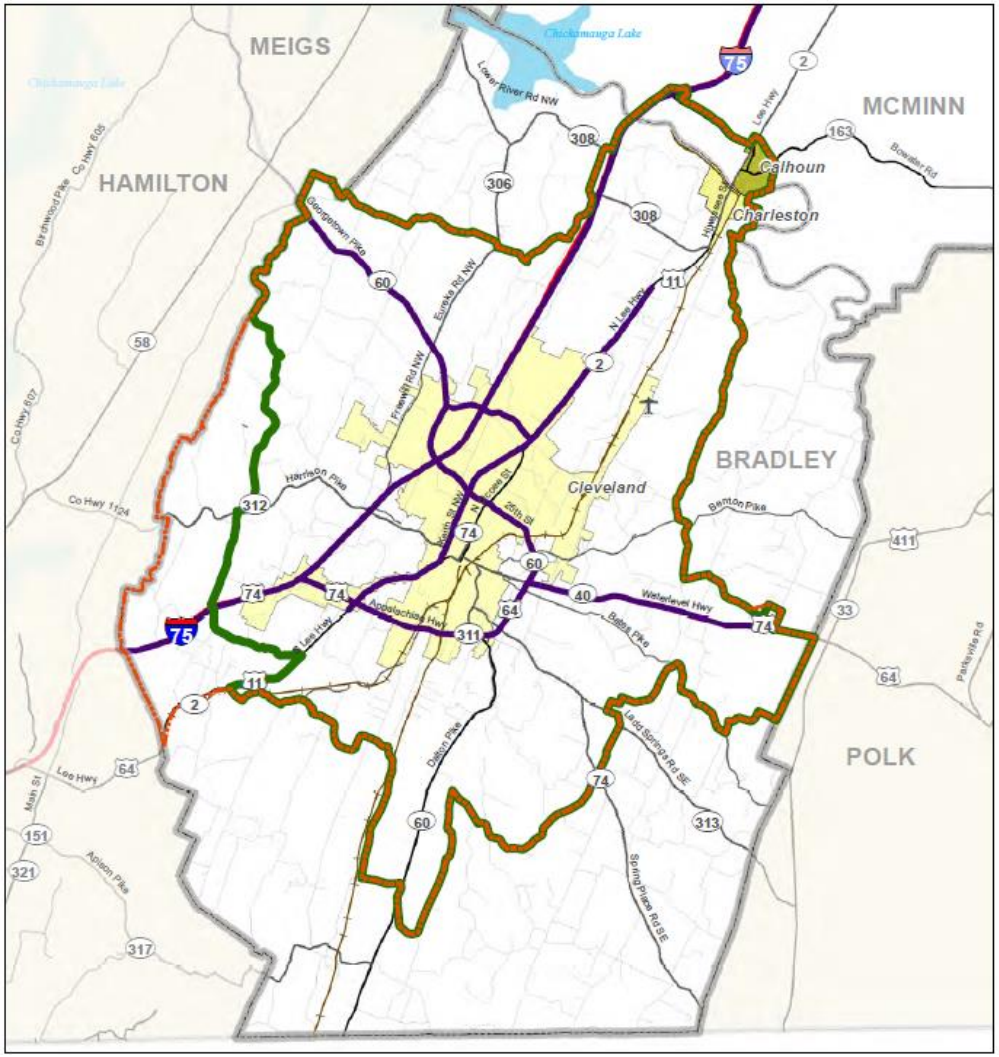
1. Description of the Region
2. Identification of Stakeholders
3. ITS Needs
4. ITS Services to Implement
5. Information Flows Between Elements
6. ITS Standards
7. Sequence of Projects
8. Maintenance Plan

Cleveland Regional ITS Architecture Update

- Current effort will complete the Regional ITS Architecture update in 2017

- Reason for update
  - Changes and additions to the National ITS Architecture
  - New stakeholder agency representatives in the Region
  - New ITS deployments in the Region
  - Updated Regional ITS Architecture important to meet USDOT ITS architecture conformity rule
  - Stakeholders set a goal to update the plan every 4 years

Cleveland MPO Planning Area



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Cleveland Regional ITS Stakeholders

CITIES & TOWNS

City of Cleveland

COUNTIES

Bradley County

Hamilton County

TRANSIT

Cleveland Urban Area Transit System

SETHRA

MPOs

Chattanooga/Hamilton County/North Georgia TPO

Cleveland MPO

Southeast RPO

STATE

Tennessee DOT

Tennessee Emergency Management Agency

Tennessee Highway Patrol

FEDERAL

Federal Highway Administration

OTHER

Cleveland/Bradley County Chamber of Commerce

Cleveland Utilities

Southeast Tennessee Development District

Cleveland/Bradley County Emergency Management Agency

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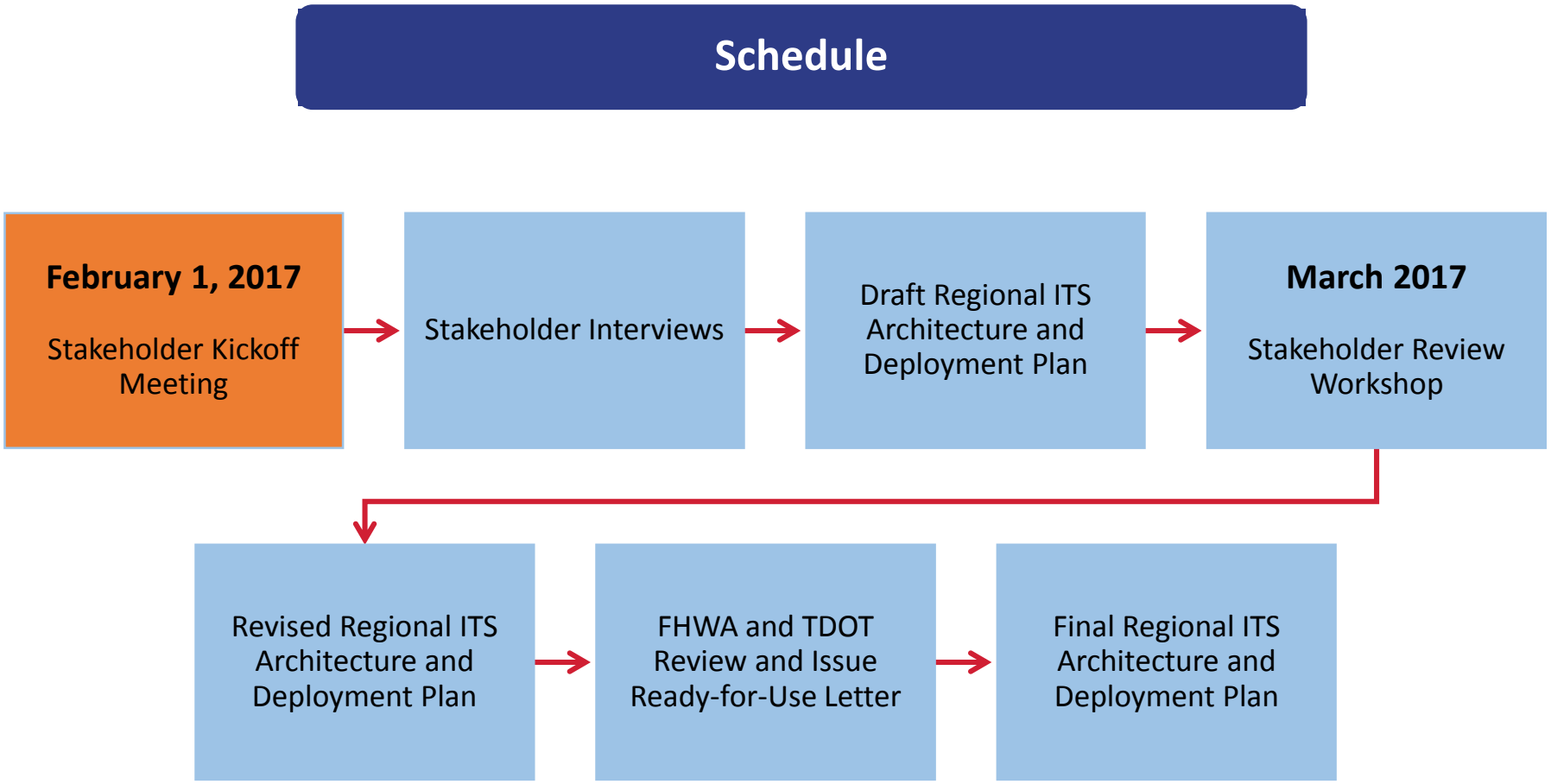
Update Process



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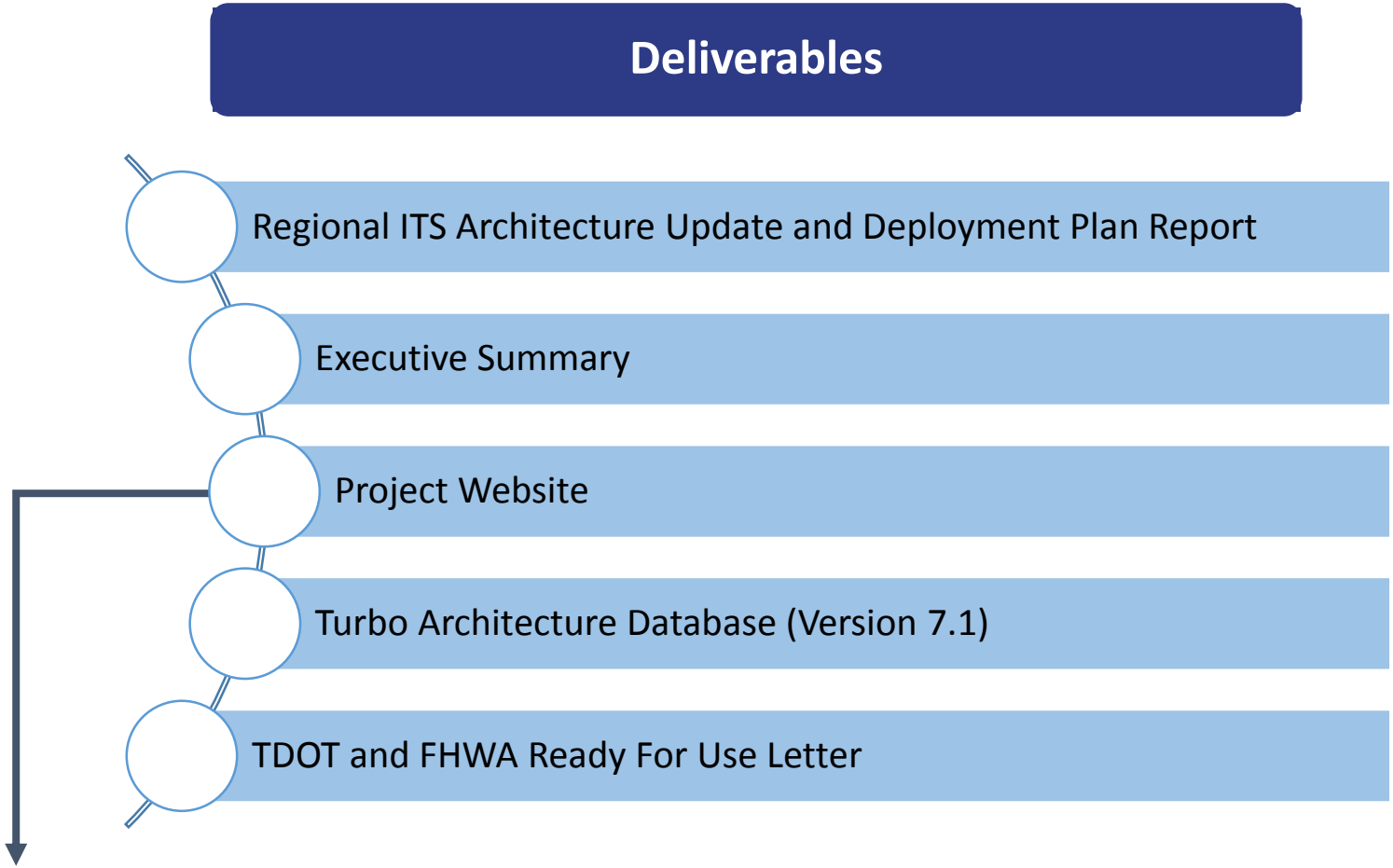

Google: Kimley-Horn Cleveland Regional ITS Architecture

www.kimley-horn.com/Projects/TennesseeITSArchitecture/cleveland.html

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Update Process

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Update Process

Inventory

- Identify all existing and planned ITS components
- Identify all existing and planned connections between components

Needs

- Identify transportation needs in the Region
- Needs can be general or specific to ITS
- Continually update needs list throughout the project

Update Process

ITS Service Packages

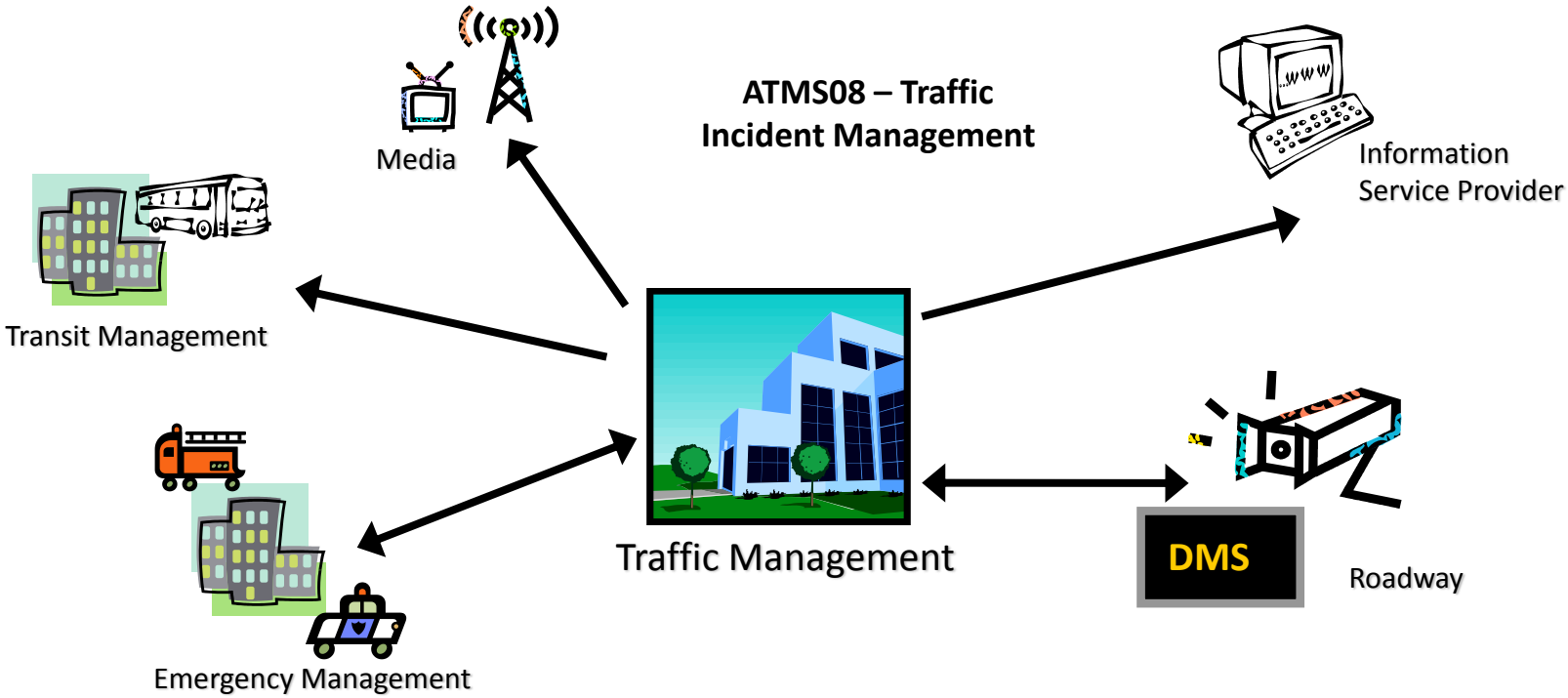
- ITS service packages are the services that ITS can provide in the Region
- A total of 97 service packages exist in the current version of the National ITS Architecture
- 36 were selected for the current version of the Cleveland Regional ITS Architecture

Common ITS Service Package Examples

Network Surveillance
Traffic Signal Control
Traffic Information Dissemination
Incident Management
Road Weather Data Collection
Transit Vehicle Tracking
Transit Security
Transit Signal Priority

Update Process

ITS Inventory and Needs → ITS Service Packages → ITS Deployment Plan



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Update Process

Prioritizes projects into three timeframes (Timeframes may be adjusted)

- Short-term (next 5 years)
- Mid-term (5 to 10 years)
- Long-term (beyond 10 years)

For each project the following information is included:

- Project description
- Responsible agency
- Deployment timeframe
- Funding status
- Applicable service packages

Does not guarantee funding of the projects

Benefits of an ITS Architecture and Deployment Plan

- Provides vision for ITS deployment and operations in the Region
- Supports resource sharing and interoperability of systems
- Supports long range planning through a phased plan for ITS deployment and integration
- Assists agencies in looking of federal funding opportunities
- Meets USDOT requirement that ITS projects funded with federal transportation funds conform to its regional ITS architecture

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Discussion Items

- Existing and Planned ITS Projects in the Region?
- Suggested ITS Projects?
- Regional ITS Needs?
- Regional Interagency Connections?

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Discussion Items

Regional ITS Needs?

- Traffic Management
- Traveler Information
- Emergency Management
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- Public Transportation
- Commercial Vehicle Operations
- Archived Data Management
- Vehicle Safety (Connected & Autonomous Vehicles)

Discussion Items

- Additional Stakeholders to Include?
- Existing and Planned ITS Projects in the Region?
- Suggested ITS Projects?
- Regional ITS Needs?
- Regional Interagency Connections?

Discussion Items

Regional Interagency Connections?

- Traffic Agency ⟺ Traffic Agency
- Traffic Agency ⟺ Transit Agency
- Traffic Agency ⟺ Emergency Management
- Transit Agency ⟺ Emergency Management
- Emergency Management ⟺ Emergency Management

Thank You!

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