SE Nebraska Regional ITS Architecture

Stakeholder Outreach

Presented by

ITERIS

In association with
Olsson Associates

November 4, 2004

Agenda

► *Opening Remarks*
► *What is ITS?*
► *What is Regional ITS Architecture?*
► *About the SE Nebraska Project*
  - *Goals and objectives*
  - *Scope of work*
  - *Project outcomes*
  - *Current status*
► *How could you participate?*
► *Summary and discussion*

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The Problem

- 40,000 People Killed Annually in U.S. Traffic Accidents
- Traffic Increasing 20 Times Faster Than New Roads Being Built
- Economic Impact: $220 Billion

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The Solution!

Intelligent Transportation Systems

Use of technology to improve the efficiency and safety of our transportation systems

…Includes both Technical and Institutional attributes

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What is ITS?

Roadway Mgmt

Traveler info

Rural Systems

Goods Movement

Emergency Management

Transit Systems

Maintenance

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Travel and Traffic Management

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Roadway Ops & Maintenance

- Information Dissemination
- Asset Management
- Work Zone Management

WORK ZONE SAFETY SIGN

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Road Weather Management

- Surveillance, Monitoring, and Forecasting
- Information Dissemination
- Traffic Control
- Response and Treatment

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Commercial Vehicle Operations

* Fleet/Freight Administration
* Electronic Clearance
* Safety Assurance
* Electronic Screening
* Security Operations
* HAZMAT Management

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Emergency Management Systems

* Emergency Medical Services
* Response and Recovery
* Hazardous Materials Management

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Transit Management Systems

* Safety and Security
* Transit Demand Management
* Fleet Management
* Information Dissemination

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Traveler Information Systems

* Pre-Trip Information
* En-route Information
* Tourism and Events

TraveLink

511

Nebraska Traveler Information

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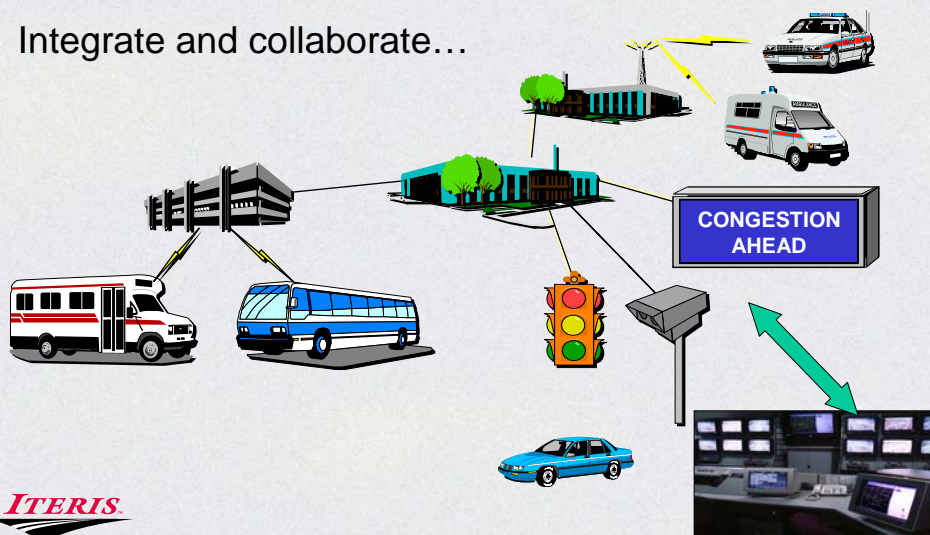# What is a Regional ITS Architecture?

...Is a Framework to :

- Introduce and interconnect ITS services across the region.
- Identify "gaps" in systems and services for communications.
- Assist in the development of cooperative agreements between involved entities.

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Integrate and collaborate…

CONGESTION AHEAD

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Why develop a Regional ITS Architecture?

* To define integration opportunities
* To provide for information sharing
* To efficiently structure implementations
* To prepare for future expansion
* To assist in estimating/leveraging funding
* To deploy consistent projects/systems
* To comply with Federal rule

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What does a Regional ITS Architecture include?

* Description of the Region
* List of Stakeholders
* Current and Future ITS Elements
* Information Exchange between the ITS Elements
* Operational Concept for the ITS Services
* Functions of each of the ITS Elements
* Applicable ITS Standards
* Project Sequencing
* List of Agreements

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What isn't included?

* Selection of Specific Technologies or Designs (technology neutral)
* Inventory Counts of Devices/ Elements (or location)
* Confirmation that Specific Projects will be Funded or Method for Funding.
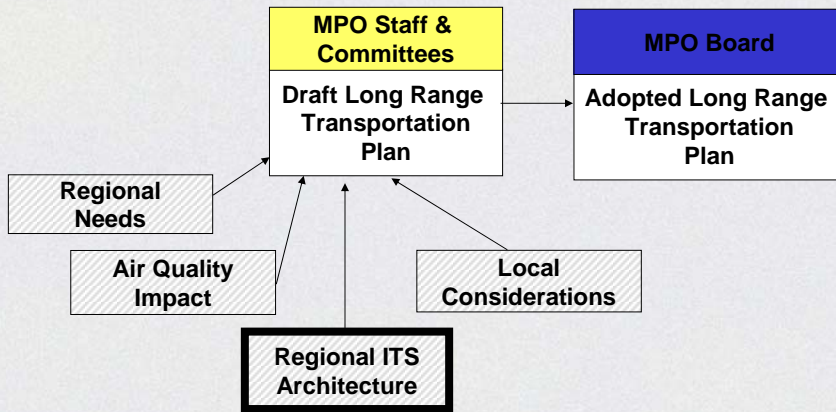
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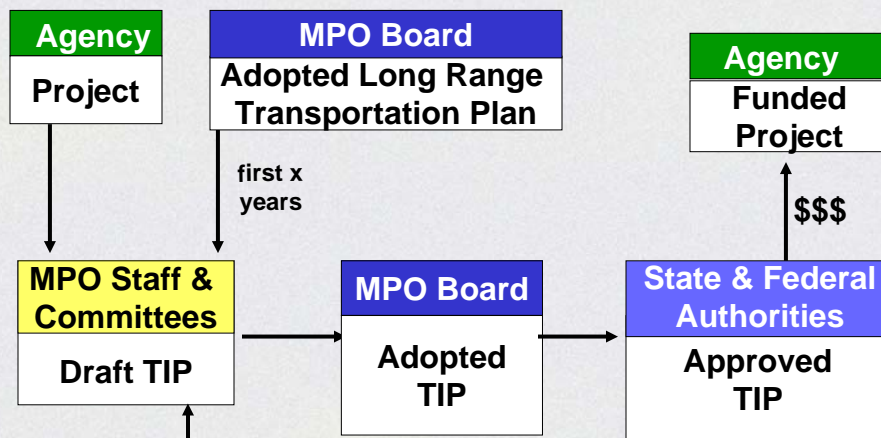
Application to Local Planning

A Regional ITS Architecture supports development of the Regional Transportation Plan (RTP) and the Transportation Improvement Program/Plan (TIP/STIP).

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Metropolitan Long Range Transportation Planning

MPO Staff & Committees

Draft Long Range Transportation Plan

MPO Board

Adopted Long Range Transportation Plan

Regional Needs

Air Quality Impact

Local Considerations

Regional ITS Architecture

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Example : Transportation Improvement Program

Agency

Project

MPO Board

Adopted Long Range Transportation Plan

first x years

Agency

Funded Project

$$$

MPO Staff & Committees

Draft TIP

MPO Board

Adopted TIP

State & Federal Authorities

Approved TIP

Regional ITS Architecture

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SE Nebraska ITS Regional Architecture Project Goals and Objectives

Highlights:

* Improve the safety and efficiency of our roadways
* Provide enhanced and timely traveler information
* Enhance Transportation related services such as transit and emergency response
* Empower the travelers with reliable and accurate weather information, roadway conditions and information to make inform decisions about their trip

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SE Nebraska ITS Regional Architecture Project Goals and Objectives

Highlights (continued):

* The Regional Architecture (RA) will address the importance of Public Information and Education relative to ITS
* The process should identify the roles and responsibilities of partnering agencies
* The RA will describe the interaction and interfaces among physical components and systems

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Project Study Area
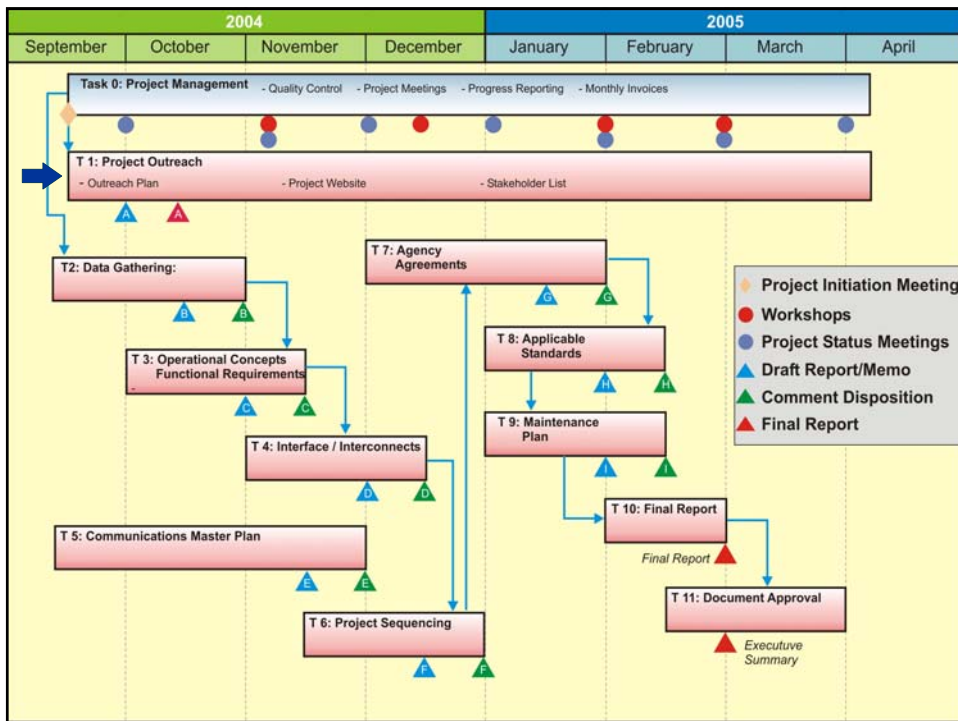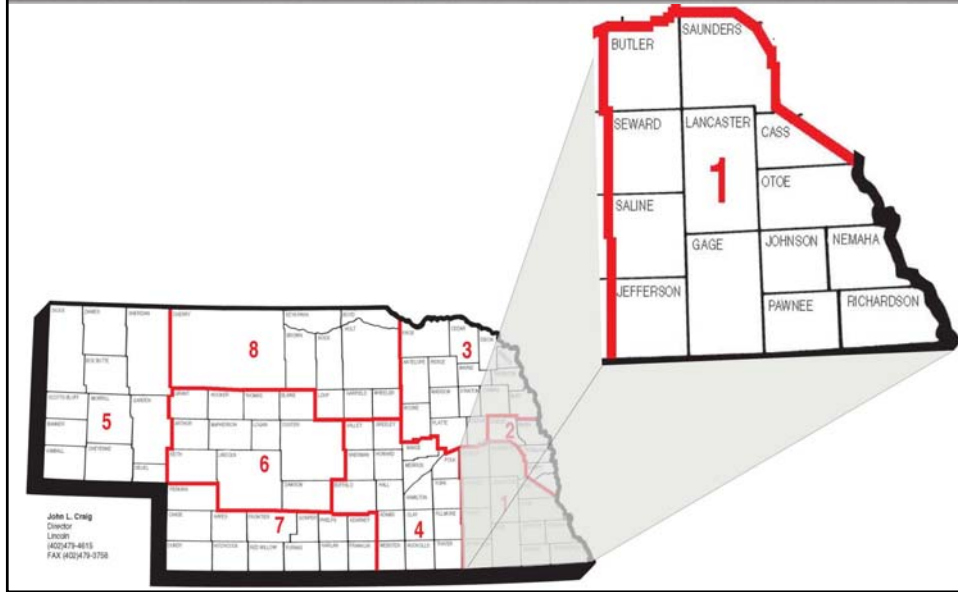
Project Outcomes

* In Planning
  - Projects aligned with State and Federal funding requirements
* In Design
  - Technical guidelines, functions, and standards for ITS projects to follow
* In Procurement
  - RFP Specifications
* In Deployment
  - Ensures the ability of data exchange and system integration

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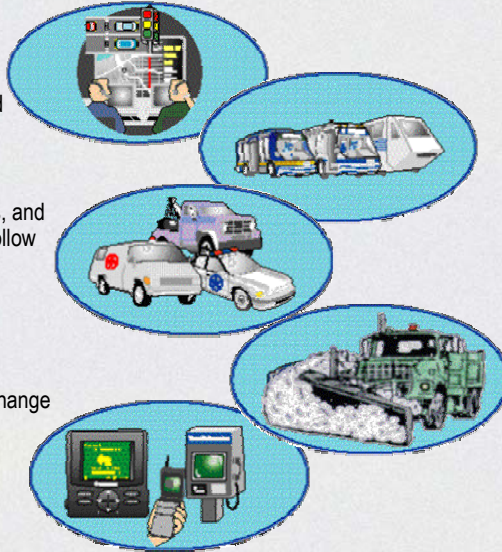
Project Current Status

* System Inventory
  - Agencies
  - Technical and institutional elements
  - Database and mapping software – Turbo
* Communications
  - Importance of communication within the Architecture
  - Regional layout
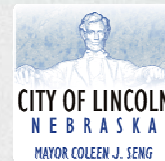* Southeast Nebraska Needs

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Inventory Plan

✳ Collection of system information

- Existing (i.e., closed circuit television camera system)
- Planned (i.e., automatic vehicle location for buses)

✳ Turbo Architecture for Information Flow Representation

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Agencies

✳ Agencies information collected to date

- City of Lincoln
- Nebraska Department of Roads
- Nebraska State Patrol
- Star Tran
- 911 centers
- Other cities and counties

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More Agencies

- ☀ Rural transit providers
- ☀ Counties
  - Sheriff
  - Emergency managers
  - Highway
- ☀ Cities
  - Mayor/Administrator
  - Public works/Engineer/Streets
  - Police
  - Fire

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Existing Systems

- ☀ Traffic Management
  - Signal Control
  - Surveillance
- ☀ Traveler Information
  - Changeable Message signs
  - 511
  - Websites
  - Kiosks

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Nebraska Traveler Information

Existing Systems

- Emergency Management
  - Mobile command post
  - In-vehicle radio systems
  - Motorist Assist
- Public Transportation
  - Bus systems
  - Vehicle Location

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Existing Systems

- Commercial Vehicle Operations
  - Weigh-in-motion
  - Oversize/overweight permitting
  - Pre-pass
- Construction and Maintenance

PREPASS SITE
FOLLOW
IN CAB SIGNALS

NDOR

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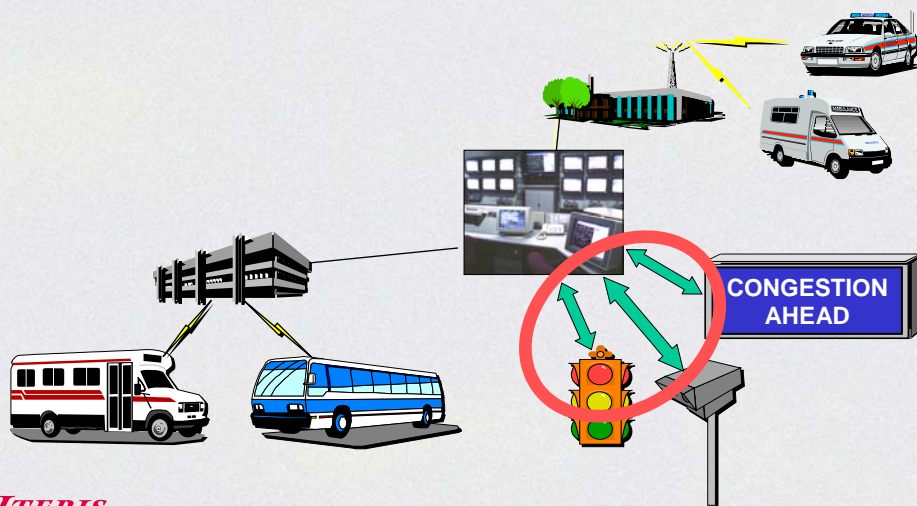
Inventory Tool

Turbo Architecture™

* Technical
  * Software tool that supports development of regional and project ITS architectures.
  * Uses ITS inventory (existing and planned systems) as input
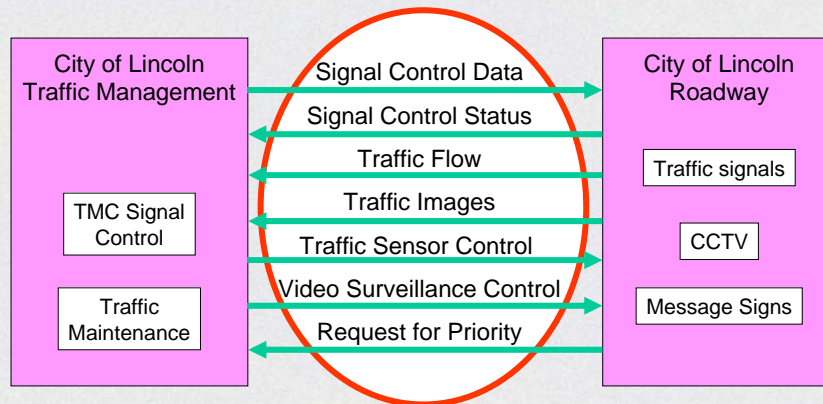 * Output includes reports, diagrams, and preliminary architecture
* Institutional
  * Assists with the identification of agency roles and responsibilities
  * Assists with the identification of likely agency agreements

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Importance of Communication System

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Importance of Communication System

City of Lincoln Traffic Management		City of Lincoln Roadway
	Signal Control Data →	
	← Signal Control Status	Traffic signals
	← Traffic Flow	
TMC Signal Control	← Traffic Images	CCTV
	Traffic Sensor Control →	
Traffic Maintenance	Video Surveillance Control →	Message Signs
	← Request for Priority	

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Communications Master Plan

The Objective:

* Consistent with Statewide Strategic Plan
* Ability to share information agency-to-agency
* Maintain common standards to assist with the sharing of information
* Make use of existing systems where possible
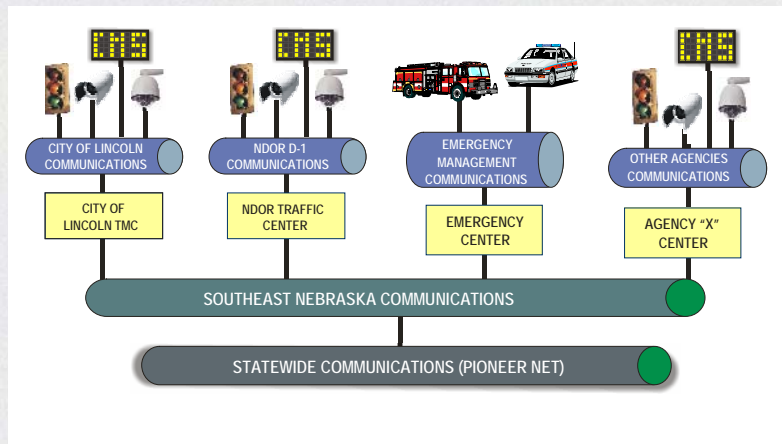* Communicate with ITS elements deployed throughout the area

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Communications

How does it work?
- Field Devices
- Communications
- Centers

CITY OF LINCOLN COMMUNICATIONS (wireless, fiber optics, etc.)

CITY OF
LINCOLN TMC

OTHER AGENCIES
(NDOR, Counties, Cities, Transit, etc.)

SOUTHEAST NEBRASKA COMMUNICATIONS

STATEWIDE COMMUNICATIONS (PIONEER NET)

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Regional System

CITY OF LINCOLN COMMUNICATIONS

NDOR D-1 COMMUNICATIONS

EMERGENCY MANAGEMENT COMMUNICATIONS

OTHER AGENCIES COMMUNICATIONS

CITY OF LINCOLN TMC

NDOR TRAFFIC CENTER

EMERGENCY CENTER

AGENCY "X" CENTER

SOUTHEAST NEBRASKA COMMUNICATIONS

STATEWIDE COMMUNICATIONS (PIONEER NET)

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Communications Master Plan

* Serves as the backbone for the deployment of ITS throughout the region
* Provides the means for engineers to control and operate the field elements
* Provides a connection between centers for data sharing

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How Can You Participate?

* Identify needs…and desired services
* Share your thoughts and ideas
* Visit our website and provide comments on our draft documents
* Attend future workshops
* Contact information:
  * Mr. Virendra Singh - VSingh@ci.lincoln.ne.us - 441-7835
  * www.iteris.com/senearch

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Future Key Milestones

* **Workshop 2 (December 16)** - how do the pieces fit together
  * Operational Concepts
  * Interfaces and Interconnects
* **Workshop 3 (January 27)** - how do we deploy them
  * Project Sequencing
  * Agency Agreements
* **Workshop 4 (March 3)** - results
  * Final Report
 * Maintenance of the Architecture

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Summary and Discussion

- We are embarking on an effort that will provide a framework for innovative technical and institutional **collaboration** to improve the safety and mobility of our transportation systems.
- This is **your plan** and **your participation** is essential in this effort
- We would like to **listen** to you!

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System Needs
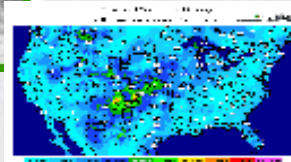
Wind Advisory

Weather Pattern

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What do you need to *Coordinate* traffic signals?

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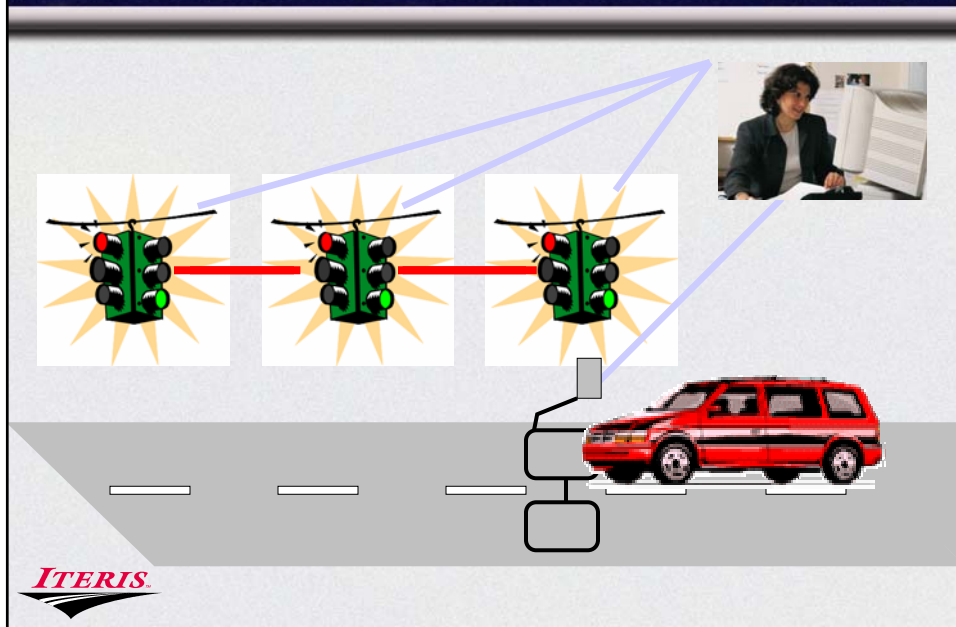
Please share your thoughts with us now!
and/ or
- **Note cards are available today**
- **Visit the website**
- **Attend future workshops**
- **Review reports and comment**

Thank you for attending this workshop and have a great evening

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