Agenda

- ► *Welcome and introductions*
- ► *What is ITS?*
- ► *Existing Regional ITS*
- ► *Sample ITS Benefits*
- ► *SE Nebraska Project Status*
- ► *Your Input*
- ► *Summary and Wrap-up*

ITERIS

ITS Definition

Intelligent Transportation Systems

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

…Includes both Technical and Institutional attributes

ITERIS

What is ITS?

Roadway Management

Traveler Information

Rural Systems

Goods Movement

Emergency Management

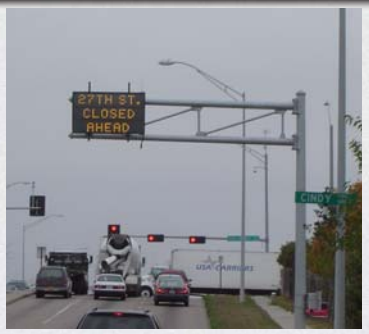
Transit Systems

Maintenance and Construction

ITERIS

Existing Systems

- Traffic management
  - Signal control
  - Monitoring



ITERIS

Existing Systems

- Automatic warning systems

ITERIS

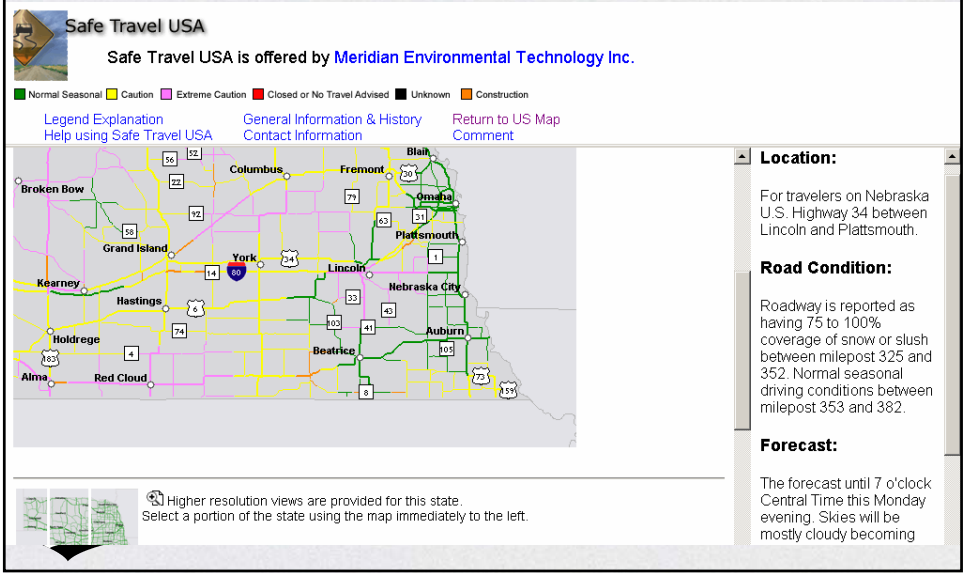
Existing Systems

- Traveler information
  - Dynamic message signs
  - 511
  - Websites
  - Kiosks

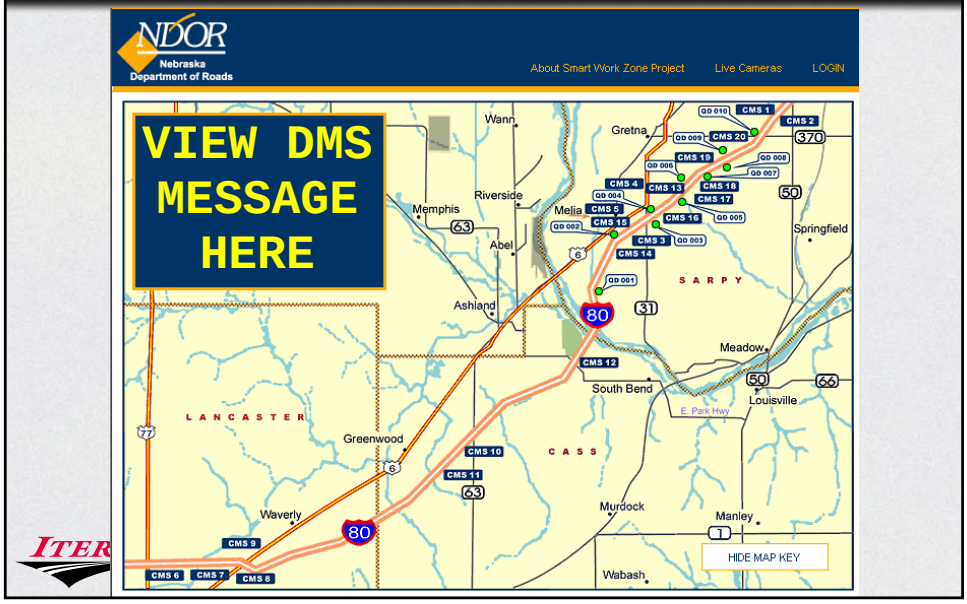
511 Travel Info

ITERIS

NDOR Website



NDOR I-80 Work Zone Web



Lincoln Traffic Cams

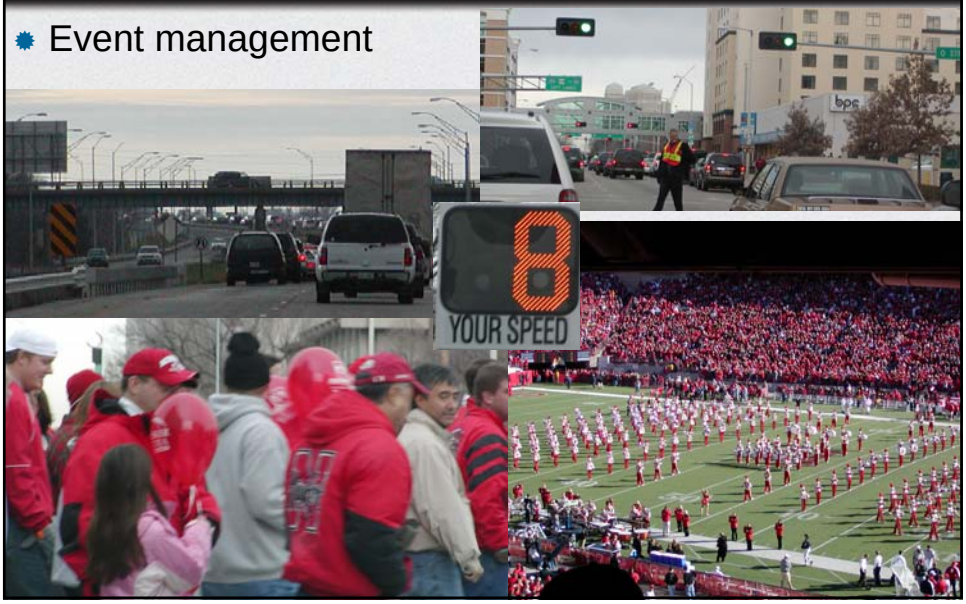
NDOR Traffic Cam

Existing Systems

- Emergency & incident management

Existing Systems

- Event management



Existing Systems

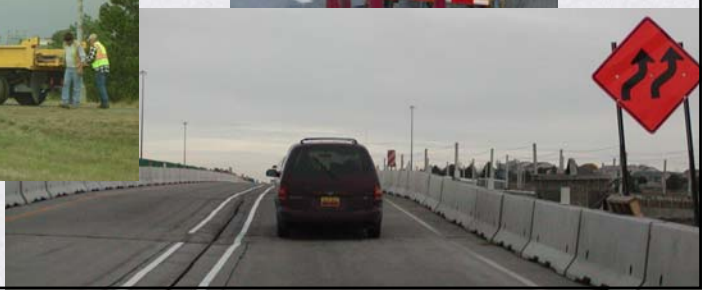
- Public transportation and parking

Existing Systems

- Commercial vehicle operations
  - Weigh-in-motion
  - Oversize/overweight permitting
  - Pre-pass
  - Hazmat

Existing Systems

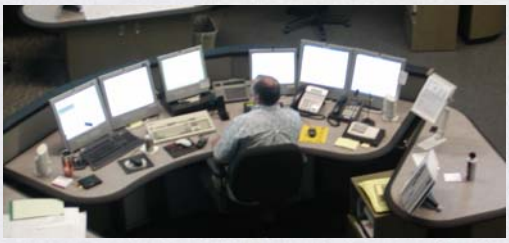
- Construction and maintenance
- Automated work zones



ITERIS

Future ITS

- Regional operations centers
  - Traffic incident and event management
  - NDOR DOC
  - Lincoln TOC
  - 911/emergency operations
  - Emergency routing
  - Mayday support



Future ITS

- Public transportation
  - Transit vehicle tracking
  - Demand response transit operations
  - Transit security
  - Multi-modal coordination

Future ITS

- Vehicle systems
  - Transit vehicle tracking
  - Maintenance and construction vehicle and equipment tracking
  - HAZMAT management

ITERIS

Future ITS

- Infrastructure based systems
  - Intersection collision avoidance
  - Regional parking management
  - Transportation infrastructure protection
  - HAZMAT security detection and mitigation

National ITS Benefits

Example Projects

ITERIS

Example Project - Traveler Information

- Personalized, Real-Time Traveler Information for the Southern California freeway network
- User Defines:
  - What He Wants
  - When He Wants It
  - How He Is Going To Receive It
- Multiple Report Options:
  - Travel Time Reports
  - Route Comparison Report
  - Incident Reports
- Multiple Devices supported
  - Desktop computer
  - Cell phone / text messaging
  - PDAs / wireless devices

ITERIS

CommuteView Users . . .

- Operational Since February ’04 (in demonstration)
- Over 750 current users

2. Tell Us About Your Commute

1. My typical commute between home and work is . . .

	Response Percent	Response Total
I don't commute to work	1.5%	2
Less than 20 minutes	4.5%	6
Between 20 and 30 minutes	6.8%	9
Between 30 and 45 minutes	15.8%	21
Between 45 and 60 minutes	30.1%	40
Over 1 hour	**41.4%**	**55**
Total Respondents		**133**
(skipped this question)		0

ITERIS

Initial User Feedback . . .

7. Since Using the CommuteView service, I have . . . (check all that apply)

	Response Percent	Response Total
Changed my normal commute route (i.e. I take a different freeway)	26%	25
Saved time on my commute	37.5%	36
Decided against taking a certain route / trip	50%	48
A better sense for when I will arrive at home / work	**57.3%**	**55**
Found no improvement in my commute (no time saved, no stress eliminated)	17.7%	17
Not been listening to traffic reports on the radio as much as before	12.5%	12
Grown tired of receiving all those emails or text messages	9.4%	9
View Other (please specify)	10.4%	10
Total Respondents		**96**
(skipped this question)		37

ITERIS

Saving Time

7. CommuteView Saves Me Time

11. Using CommuteView ALWAYS saves me at least _____ per trip?

	Response Percent	Response Total
less than 5 minutes	5.6%	2
5 to 10 minutes	**33.3%**	**12**
10 to 15 minutes	22.2%	8
over 15 minutes	5.6%	2
Using CommuteView doesn't ALWAYS save me time	**33.3%**	**12**
Other	0%	0
Total Respondents		**36**
(skipped this question)		97

Always . . .

12. Using CommuteView OFTEN saves me at least _____ per trip?

	Response Percent	Response Total
less than 5 minutes	11.1%	4
5 to 10 minutes	22.2%	8
10 to 15 minutes	**41.7%**	**15**
over 15 minutes	22.2%	8
Using CommuteView doesn't OFTEN save me time	2.8%	1
Other	0%	0
Total Respondents		**36**
(skipped this question)		97

Often . . .

13. Using CommuteView has saved me as much as _____ on a single trip.

	Response Percent	Response Total
5 minutes	2.8%	1
10 minutes	8.3%	3
15 minutes	25%	9
20 minutes	22.2%	8
30 minutes	**36.1%**	**13**
View Other (please specify)	5.6%	2
Total Respondents		**36**
(skipped this question)		97

As much as . . .

ITERIS

Example Project – Transit Vehicle Location

- GPS-based vehicle tracking
- Digital mapping at dispatch to visually track vehicles

ITERIS

Example Project – Transit Vehicle Location

- Improves Safety and Security
  - Kansas City emergency response times reduced 3 minutes per call
- Improves operating efficiency
  - Maryland saves $2 million a year on vehicles
- Improves scheduling and customer service
  - 23% better schedule adherence in Kansas City
- Costs on average $16,000 to $30,000 per vehicle in fleet depending on scale and communications

ITERIS

Example Project – Train Detection

San Antonio Train Detection

- Acoustic sensors and radar guns detect oncoming train speed, presence and length
- Duration of blockage is estimated
- Dynamic Message Signs alert drivers so they can reroute
- Roadside alerts TMC of train presence
- Roadside alerts emergency management of train presence so vehicles can be rerouted

ITERIS

Example Project –Train Detection

San Antonio Train Detection

- Estimated 19% reduction in travel delay for travelers who reroute
- 16% reduction for all travelers at intersection
- Total Project cost for one intersection = $440,000
  - Includes 12 sensors
  - Prototype development
  - Development costs
  - Central server
  - communications

ITERIS

Example - Road Weather Management

Services Include:

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

Types of Measured Benefits:

- Safety
- Productivity

ITERIS

Example - Road Weather Management

Benefits

- In Idaho, weather warnings on freeway dynamic message signs reduced speeds:
  - 35% speed reduction with signs
  - 9% speed reduction without signs
- In Maryland, comprehensive incident mgmt. systems reduced average incident duration:
  - 57% in 2000
  - 55% in 1999

ITERIS

Example – Other Projects

Benefits

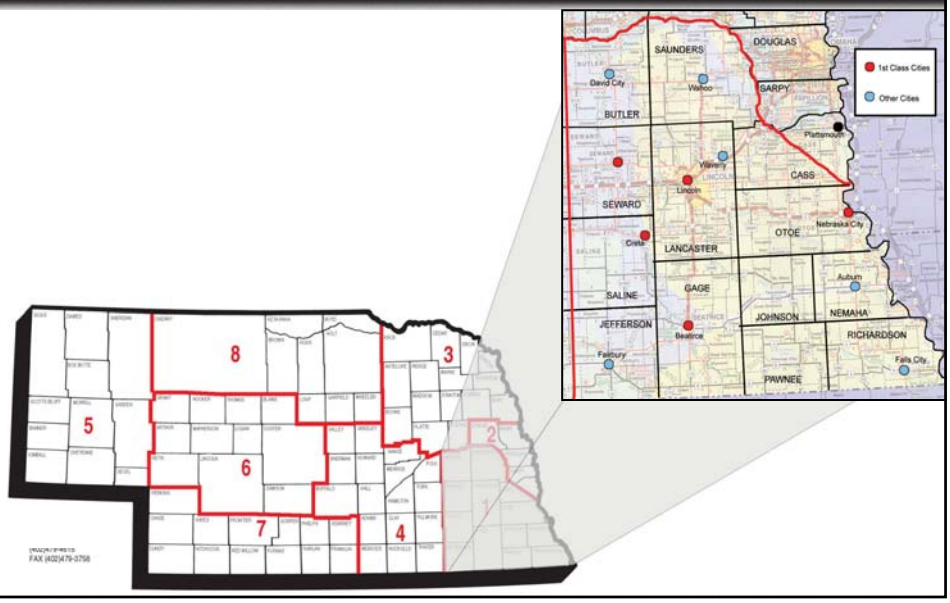
- On I-70 in Colorado, a dynamic speed warning system improved safety for trucks heading down steep grades.
  - 13% reduction in truck accidents
  - 24% reduction in use of runaway ramps
- In Ames, Iowa, an automated train horn system decreased areas impacted by noise levels greater than 80 decibels by 97%.

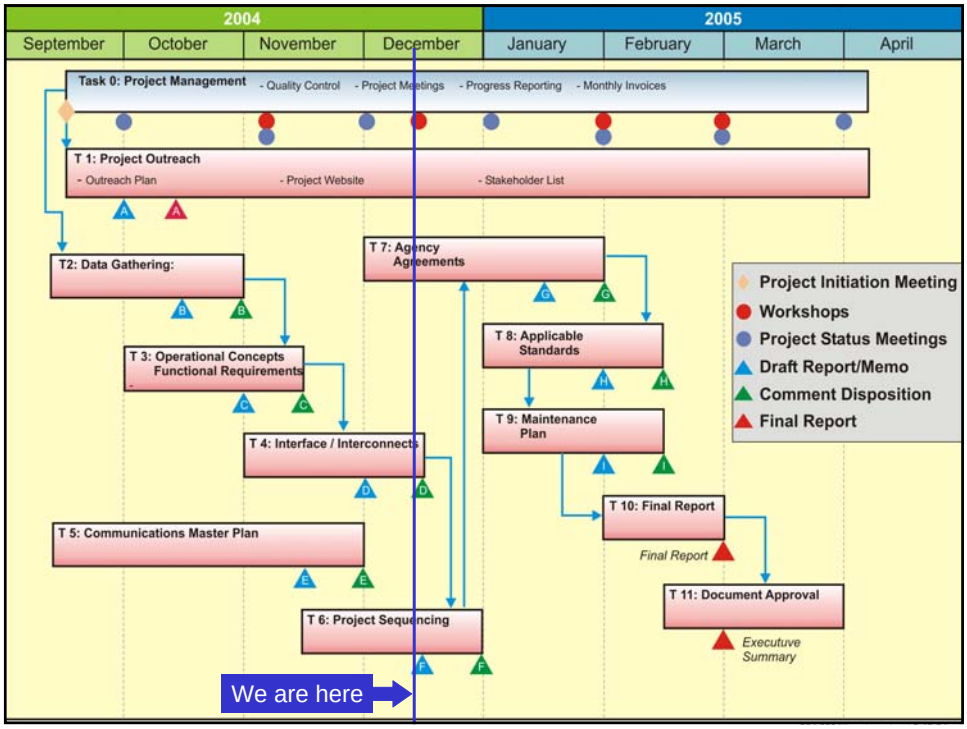
ITERIS

Project Status

ITERIS

Project Study Area





Operational Concepts

- Concept of Operations: defines in detail the specifics of how a system or project operates in different scenarios by combining user and system functions in a narrative fashion.
- Operational Concepts: is a stakeholder-oriented document that describes system operational characteristics from the stakeholder's viewpoint.

ITERIS

Operational Concept

- Focus on a definition of each stakeholder's role in delivering transportation systems and services
- Define Responsibilities
  - Information stakeholder is responsible for
  - How information is used
  - What services will be provided

ITERIS

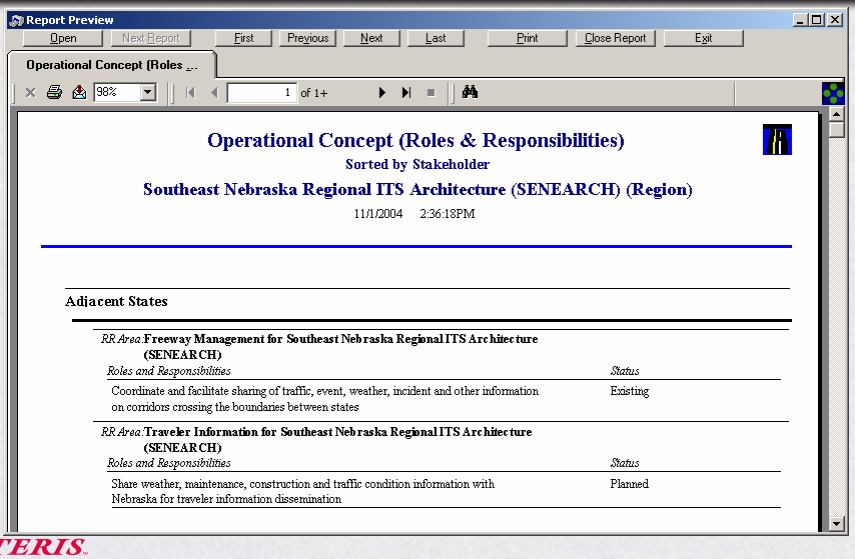
Benefits of Operational Concepts

- Manage expectations.
- Mitigate misunderstandings.
- Clarify accountability.
- Provide coordinated response.
- Avoid conflicts and duplication of efforts.

Sets the stage for data sharing to support roles and responsibilities.

ITERIS

Sample Roles and Responsibilities



ITERIS

Example Operational Concepts

StarTran (Partial List)

- Automatically log ridership through passenger counters
- Maintain and service transit vehicles
- Maintain Transit Center software and systems
- Manage, schedule and dispatch fixed and demand responsive vehicles
- Provide transit fare, schedule and trip planning information to passengers
- Provide transit information to passengers through kiosks
- Take and process paratransit trip reservation request calls

ITERIS

Operational Concepts

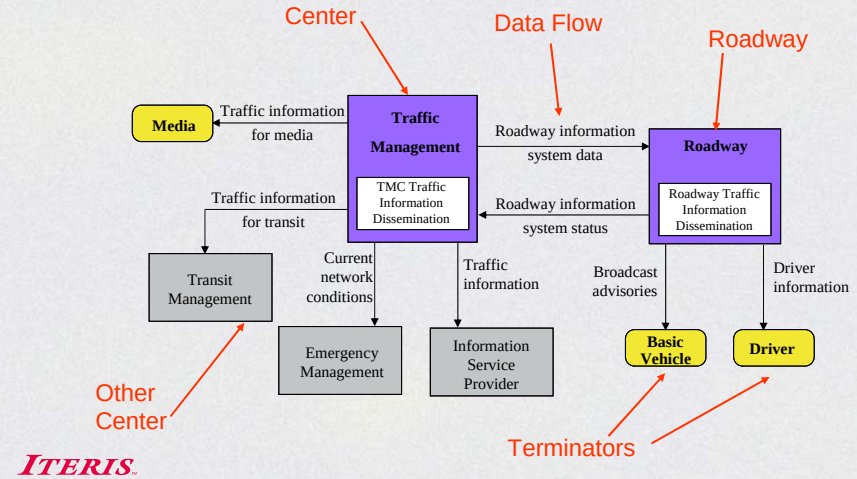
- Draft of Operational Concepts is complete
- As Architecture is refined (adding needs, refining inventory, etc.) the Operational Concepts will also be modified.

Market Packages

- Tailored to address real world transportation needs
- Bring together elements from one or more subsystem that work together to deliver a service
- Designed to directly address transportation problems

Market Package Diagram

ATMS06: Traffic Information Dissemination



ITERIS

SENEARCH Market Packages

AD2: ITS Data Warehouse

APTS1: Transit Vehicle Tracking
APTS2: Transit Fixed-Route Operations
APTS3: Demand Response Transit Operations
APTS8: Transit Traveler Information

ATIS1: Broadcast Traveler Information
ATIS2: Interactive Traveler Information

ATMS1: Network Surveillance
ATMS3: Surface Street Control
ATMS4: Freeway Control
ATMS6: Traffic Information Dissemination
ATMS7: Regional Traffic Control
ATMS8: Traffic Incident Management
ATMS13: Standard Railroad Grade Crossing
ATMS16: Parking Facility Management
ATMS19: Speed Monitoring (enforcement)
ATMS21: Roadway Closure Management

CVO3: Electronic Clearance
CVO6: Weigh in Motion
CVO7: Roadside CVO Safety

EM1:Emergency Call-Taking and Dispatch
EM2: Emergency Routing
EM4: Roadway Service Patrols4
EM6: Wide Area Alert
EM8: Disaster Response and Recovery
EM9: Evacuation and Reentry Management
EM10: Disaster Traveler Information

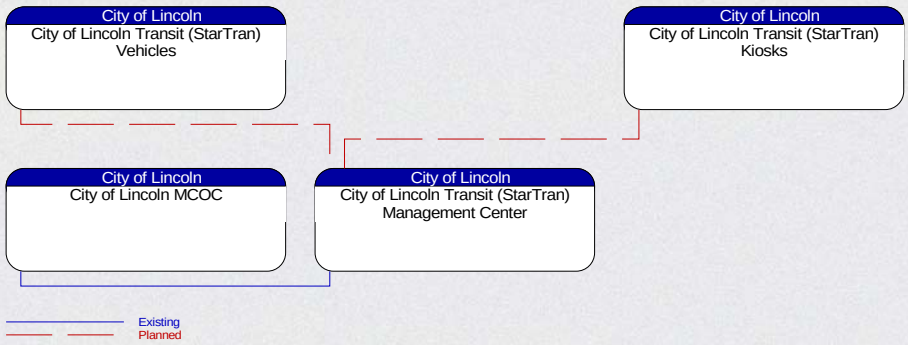
MCO1: Maint. and Const. Vehicle Tracking
MCO3: Road Weather Data Collection
MCO4: Weather Info Processing and Dist.
MCO5: Roadway Automated Treatment
MCO6: Winter Maintenance
MCO7: Roadway Maint. and Const.
MCO8: Workzone Management
MCO9:Workzone Safety Monitoring
MCO10: Maint. And Const. Activity Coordination

ITERIS

Red = Planned

SENEARCH Interconnect

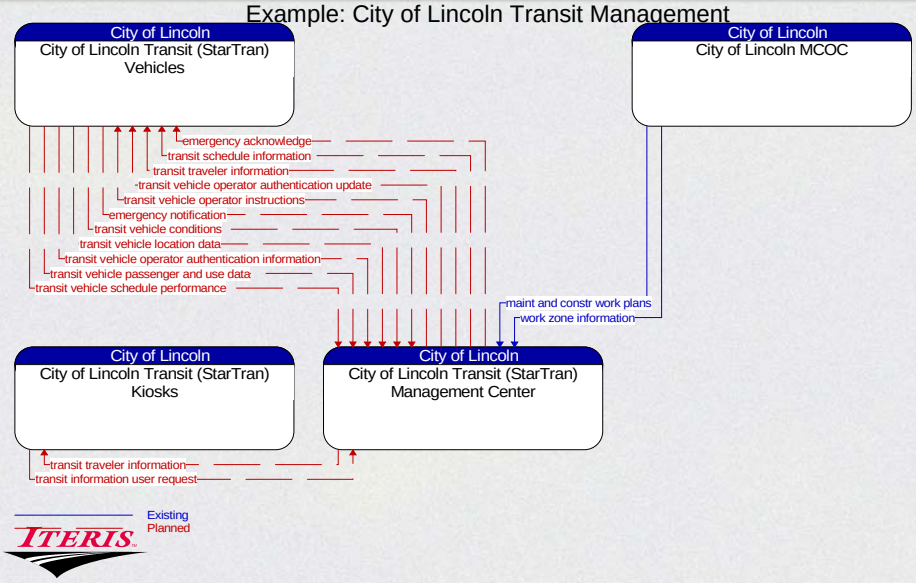
Example: City of Lincoln Transit Management



ITERIS

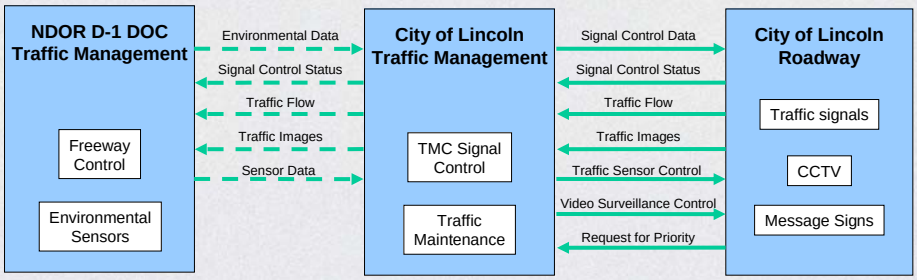
SENEARCH Data Flow

Example: City of Lincoln Transit Management



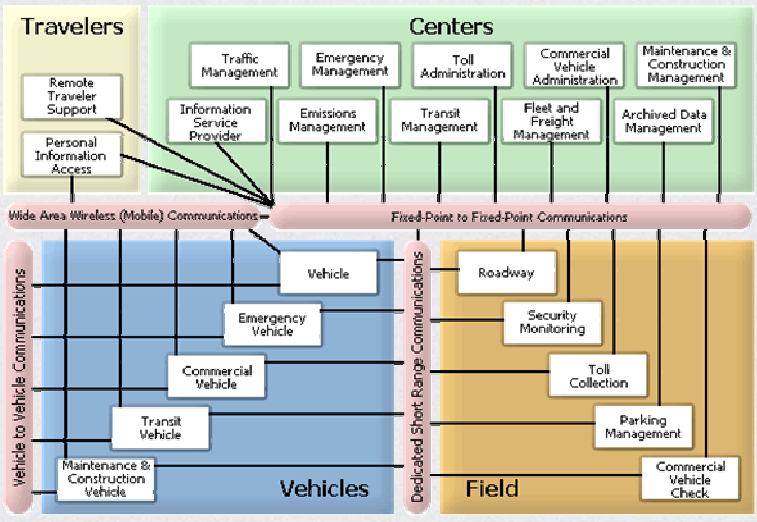
ITERIS

Sample Market Package



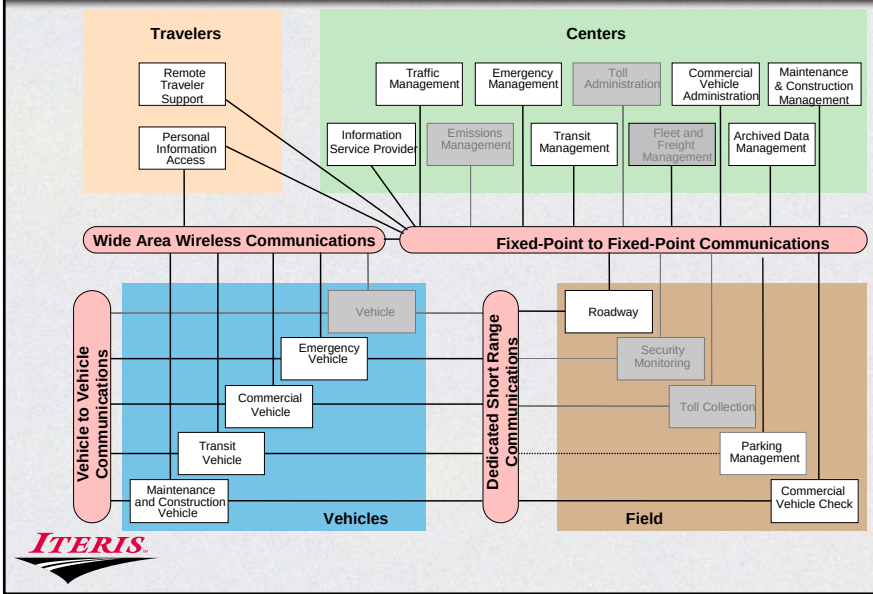
ITERIS

National Architecture



ITERIS

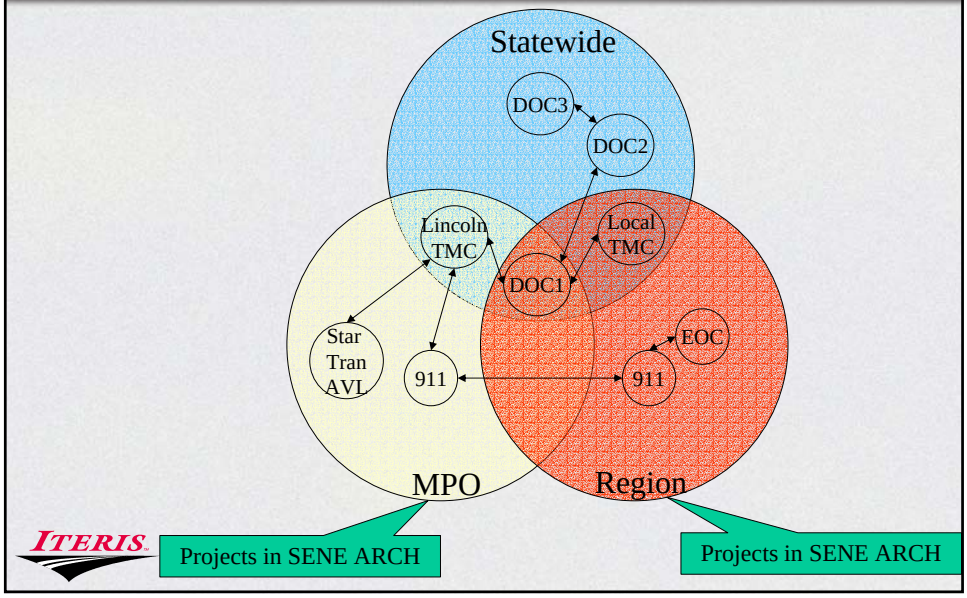
SENEARCH Diagram



Next Steps

- Develop list of potential projects and appropriate proposed sequencing
- Identify the possible interagency agreements to support ITS deployment
- Develop a plan for maintaining the regional ITS architecture

Project Sequencing



ITERIS

10 minute break

ITERIS

Your Input

- Identify ITS services that would assist your agency/organization
- Working together – collaborative efforts
- Discuss how ITS can enhance public safety, security, and reduce congestion
- Priorities for development and implementation of a coordinated regional ITS plan
- Champions

ITERIS

Champions for Collaboration

- City of Lincoln
  - Scott Opfer: Traffic
  - Virendra Singh: MPO
  - Julie Righter: 911
  - Glenn Knust: Star Tran
  - Doug Thomas: IT
  - Dan Schmidt: LPD
- UNL
  - Fred Gardy: Parking
- Lancaster County
  - Doug Pillard: Traffic
  - Joe Lefler: Sheriff Dept.
- Regional Comm.
  - 800 MHz Interoperability
    - Sgt. Todd Beam
    - Julie Righter
  - Fiber/data radio
    - Dave Bernt
    - LES?
- **Your Organization???**

ITERIS

Future SENEARCH Workshops

- **Workshop 3 (January 27)** - How do we deploy them?
  - Project sequencing
  - Agency agreements
- **Workshop 4 (March 3)** - Results
  - Final report
  - Maintenance of the architecture

ITERIS

How to Stay Involved

- Visit our website meeting dates, newsletters, etc.
- Attend future workshops
- Contact information:
  - Mr. Virendra Singh
    - VSingh@ci.lincoln.ne.us
    - 441-7835

ITERIS

Summary and Wrap-up

- What we heard
- Next steps
- Opportunities to stay involved