

Development of a Regional Intelligent Transportation System Architecture

Stakeholder Meeting #1 Executive Overview

In cooperation with:

Wichita-Sedgwick County Metropolitan Area Planning Department

City of Wichita

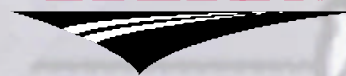
Sedgwick County

Kansas Department of Transportation

Federal Highway Administration

Presented by:

ITERISTM



In association with

RCC Consultants

January 20, 2005

Wichita-Sedgwick County Regional ITS Architecture Workshop

Project Overview



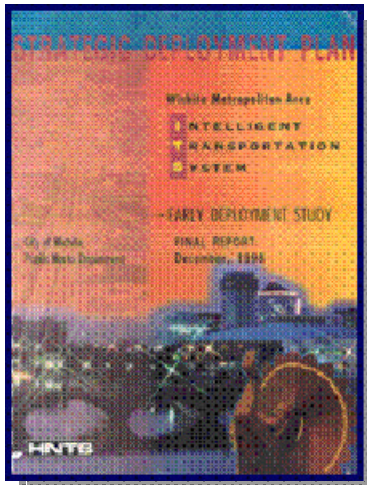
Agenda – Day 3 (Executive Overview)

- Continental Breakfast
- Project Overview
- Selected Wichita – Sedgwick County ITS Architecture Examples
- Next Steps

Project Objectives

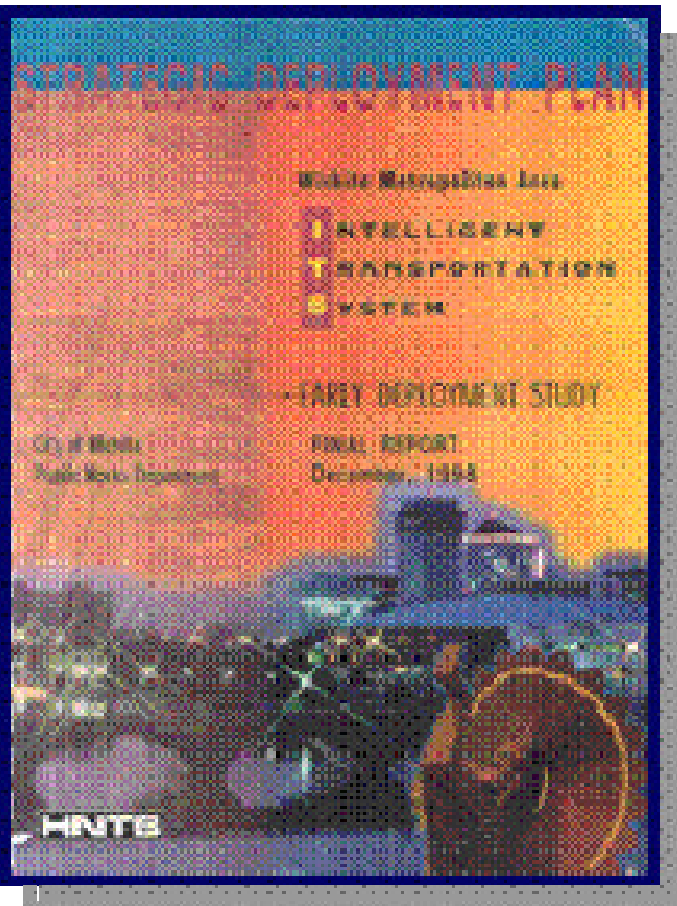
- Develop a **Regional ITS Architecture** for the Wichita-Sedgwick County region that will facilitate:
 - Integrating advanced technologies
 - **Development of an Implementation Plan**
 - Planning of ITS projects
 - Regional project development
 - **Development of a Communications Plan**
 - Identify Communications Resources
 - Analyze Communications Needs
 - Identify Network Architecture Options

Wichita – Sedgwick County Regional ITS Architecture



Based on 1998 ITS Strategic
Deployment Plan and 2001
Regional ITS Architecture

ITS Strategic Deployment Plan



- 1997 – 1998
- Focused on the Existing Transportation Facilities
 - Both Freeways and Arterials

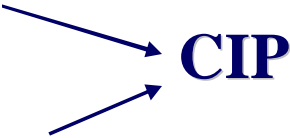
ITS Strategic Deployment Plan

- **Participants**
 - **Wichita and Sedgwick County Public Works**
 - **Wichita and Sedgwick Emergency Services
(Fire, Police, Sheriff, EMS)**
 - **Sedgwick County Emergency Communications**
 - **MAPD**
 - **Wichita Transit**
 - **Kansas Department of Transportation**
 - **Kansas Turnpike Authority**
 - **Kansas Highway Patrol**
 - **Federal Highway Administration**

ITS Strategic Deployment Plan Recommendations (partial)

- Traffic Operations Center (TOC)
- Incident Management Plan (including freeway diversion)
- AVL for Emergency Response Vehicles
- Signal Preemption on Major Arterials
- Railroad-Crossing Gate Status

Partnering Memorandum of Understanding January 2002

- \$6.25 Million Total
 - \$3.75 Million (60%) KDOT
 - \$1.25 Million (20%) City of Wichita
 - \$1.25 Million (20%) Sedgwick County
- 
- CIP
- MAPD - lead local coordinating agency
 - Guiding Document – *Wichita Metropolitan Area ITS Strategic Development Plan*

Partnering Additional Federal Earmarks

FY	Grant	Recipient
● 2002	\$1.00 Million	Wichita Transit
● 2003	\$4.00 Million	MAPD
● 2004	\$0.75 Million	Wichita Transit

Partnering Projects

Automatic Vehicle Location (AVL)

- Needs Assessment Completed
- Involved 19 agencies
- Funded by KDOT-Wichita-Sedgwick County
- Lead Department: Wichita IT

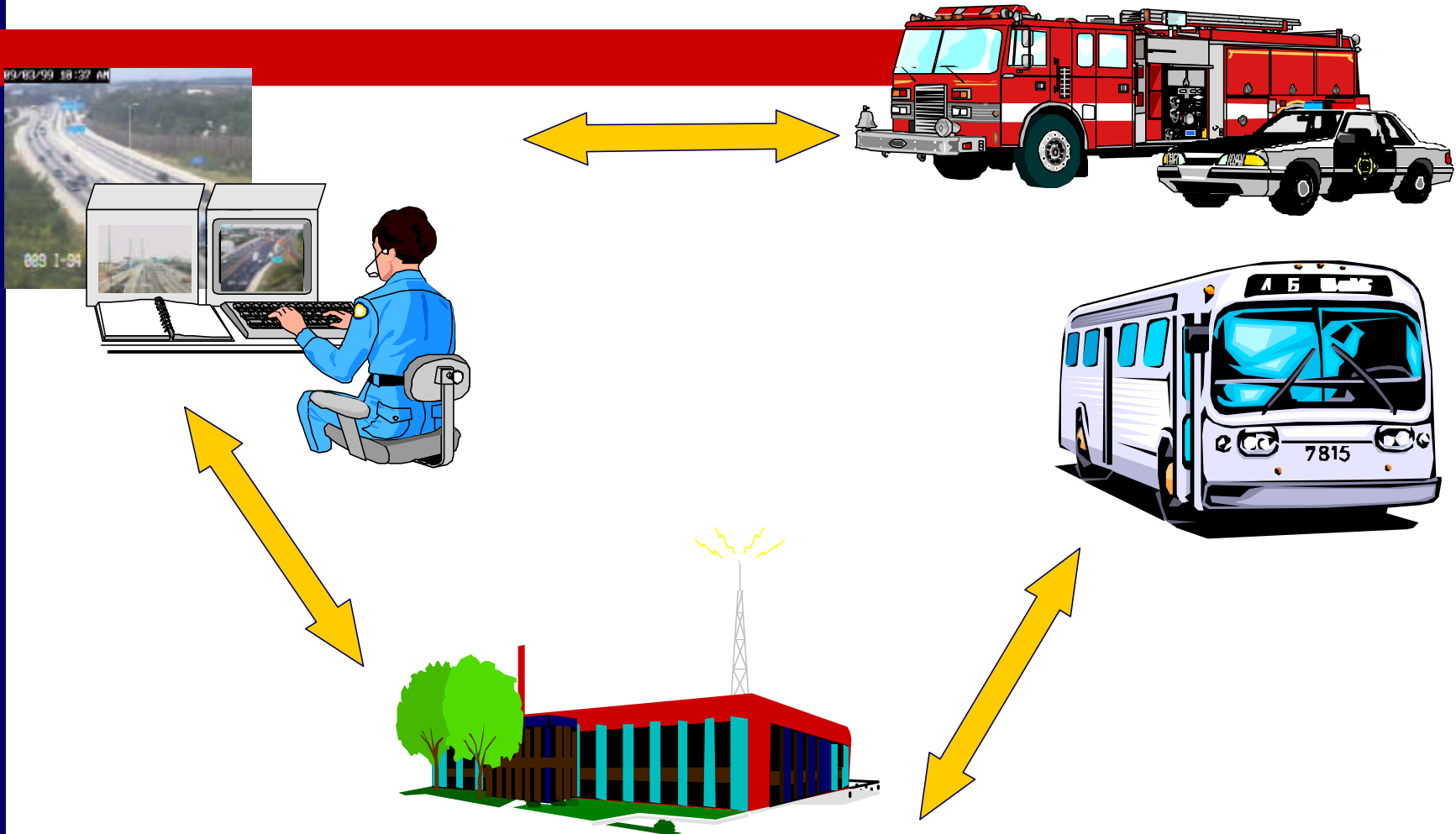
Partnering Projects

Automatic Vehicle Location (AVL)

Acquisition – Emergency System Only

- In conjunction with Emergency Dispatch Upgrade
- Developed jointly by Emergency Communications Advisory Board
- Funded out of Wichita's 2002 federal earmark and 911 funds
- Lead Department: Sedgwick County Division of Public Safety

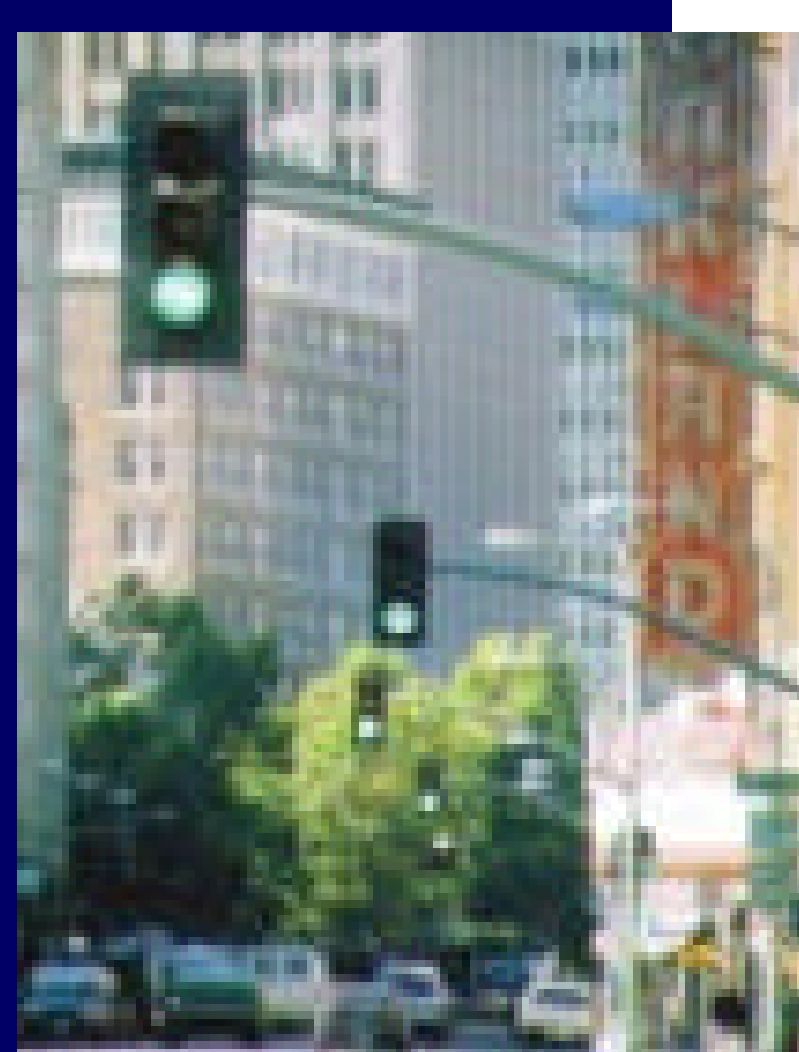
Sedgwick County AVL System



Partnering Projects

Traffic Signal System Upgrade

- Needs Assessment with Solutions
- Planning Study with capital and operating cost estimates
- Coordination and central control of 415 existing traffic signals
- Freeway traffic diversion plan
- Funded by KDOT-Wichita-Sedgwick County
- Lead Department: Wichita Public Works



- Coordinated signals
 - City Wichita: 380 intersections
 - Sedgwick County: 35 intersections

Partnering Projects



Advanced Traffic Management System (ATMS)

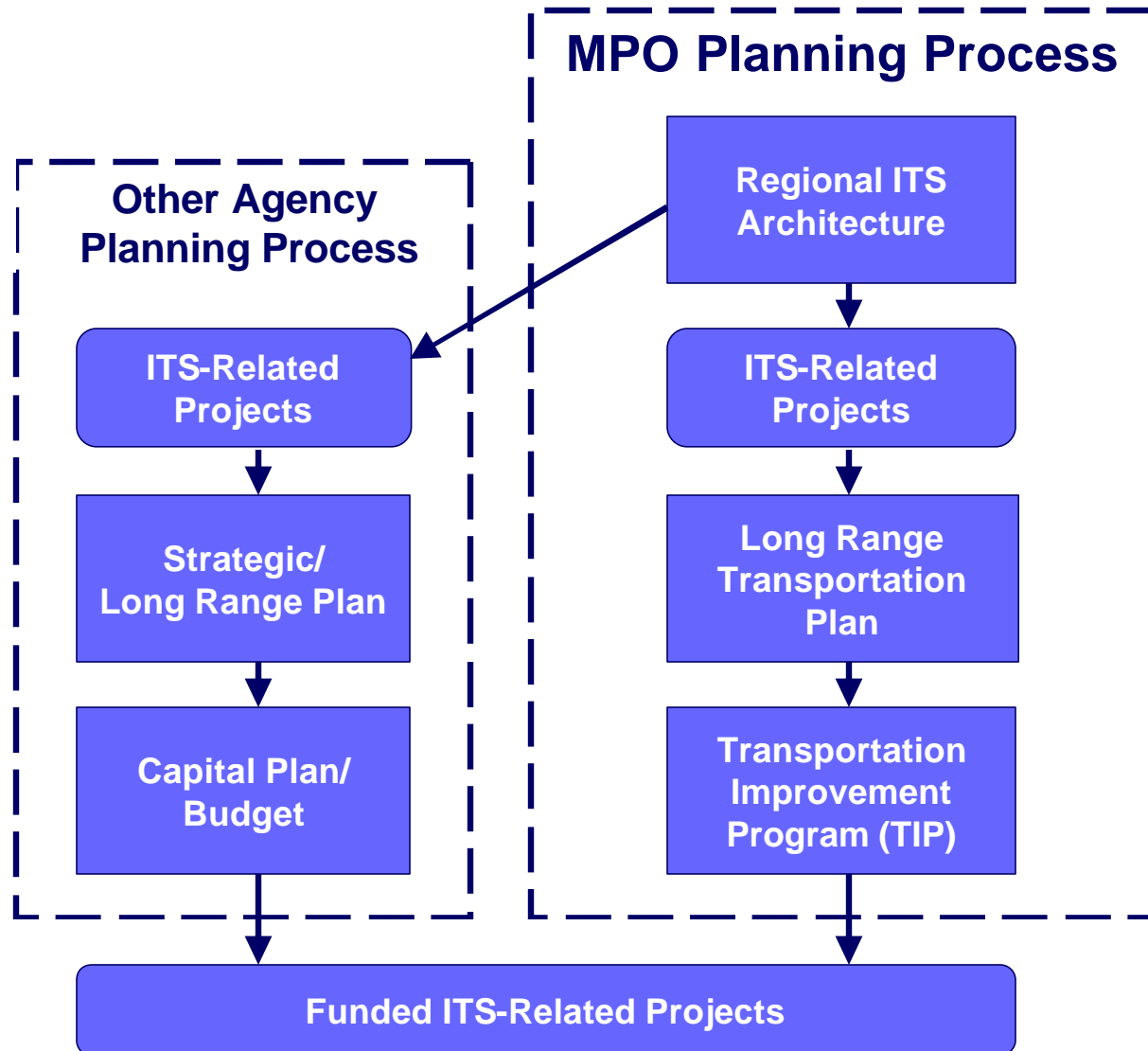
- Retain an independent project manager
- Design and procure field elements, communication system, Traffic Operations Center equipment
- Funded by KDOT-Wichita-Sedgwick County and Federal earmark
- Lead Agency: KDOT





- Incident response
 - Freeway diversion

ITS Planning Process



Workshops

- Two Workshops to review and gather inputs
 - Architecture
 - Implementation Plan/Communications Plan
 - Both are Three-day Workshops
 - Two days for Detailed Review
 - One half-day for Management
- Plus a MPO – Show and Tell

We Have Significant Input!

- This Architecture forms the Blueprint for Transportation System Integration for the Region
- This is Your Architecture and Needs to Reflect Your Existing and Future ITS projects
- Over the Last Two days Many of the Stakeholders have Told us if Anything is Not Characterized Correctly or is Missing

What is ITS?



“ITS represents the application of information processing, communications technologies, advanced control strategies, and electronics to the field of transportation.”

23 CFR Parts 655 and 940



ITS?

**Integrated
Intelligent
Transportation
Systems**

ITS Architecture

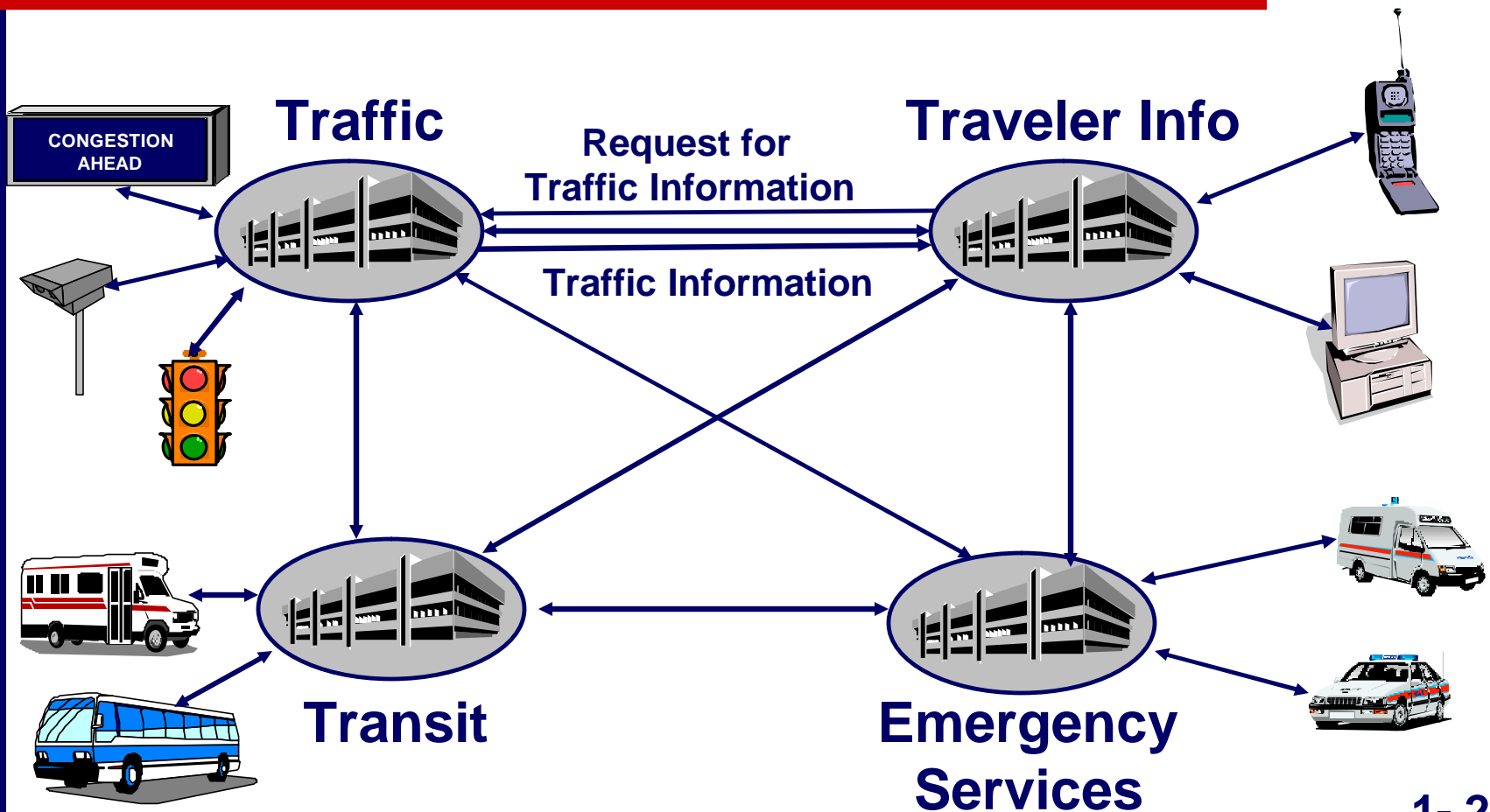
Structure or framework for deploying
Integrated Transportation Systems

- blueprint for effective
cooperation



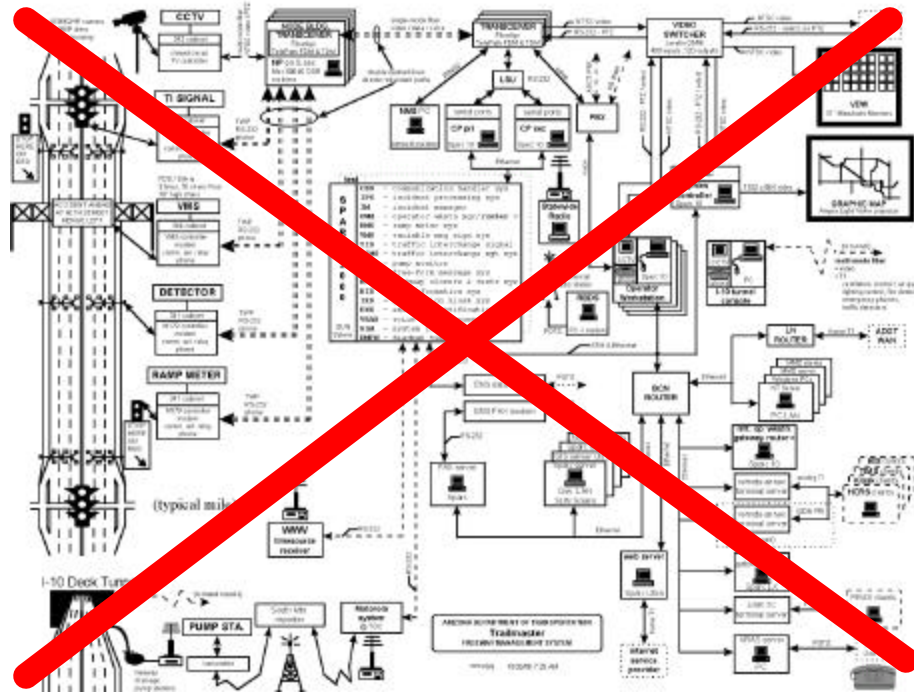
ITS Architecture Includes:

Agencies , Systems, Connections , Information Flows



ITS Architecture is not ...

- A design document
- Technology prescriptive



Why develop an ITS Architecture?

- Identify integration opportunities
- Efficiently structure implementations
 - Prepare for future expansion
 - Leverage funding
 - Deploy projects consistent with plan
 - Identify standard interfaces
- Identify gaps in ITS services
- Comply with FHWA Rule/FTA Policy

ITS Legislation

Section 520.6(e) of the Transportation Equity Act for the 21 Century (TEA-21) requires that all ITS projects funded through the Highway Trust Fund be in conformance with the National ITS Architecture and applicable standards

Regional ITS Architecture

Framework or plan for deploying Integrated Transportation Systems in a specific area

- Agencies involved
- Transportation systems
- Transportation system services
- Connections between systems
- Information exchanged electronically between systems

Statewide ITS Architecture

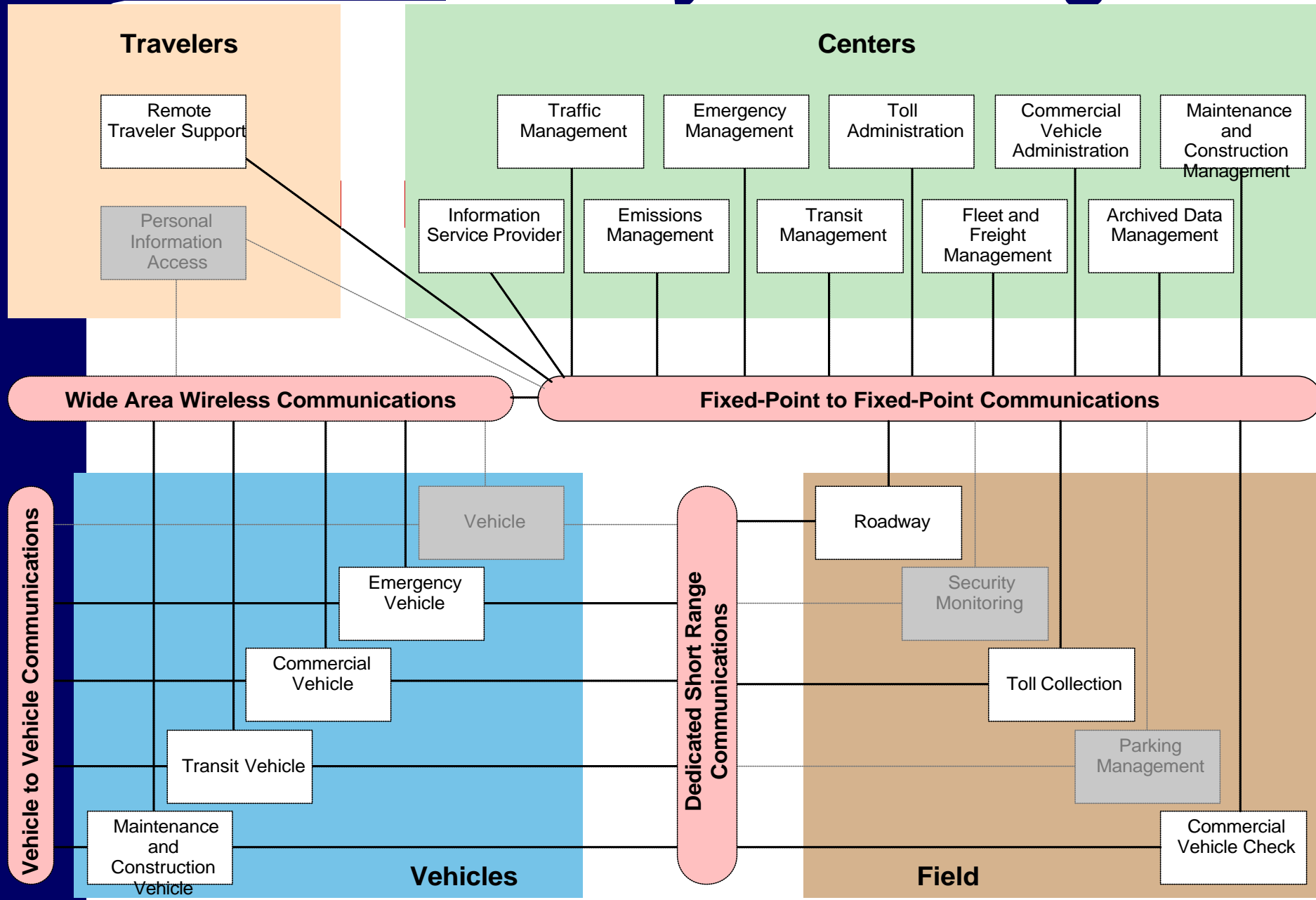
Framework for deploying ITS in the state of Kansas

- Include state-level systems and services
- Links to regional ITS architectures for details

National ITS Architecture

- An ITS framework defining
 - Potential participants
 - Potential system functions
 - Possible connections between systems
- Used as a template to create a plan for integration in a region (a.k.a. regional ITS architecture)

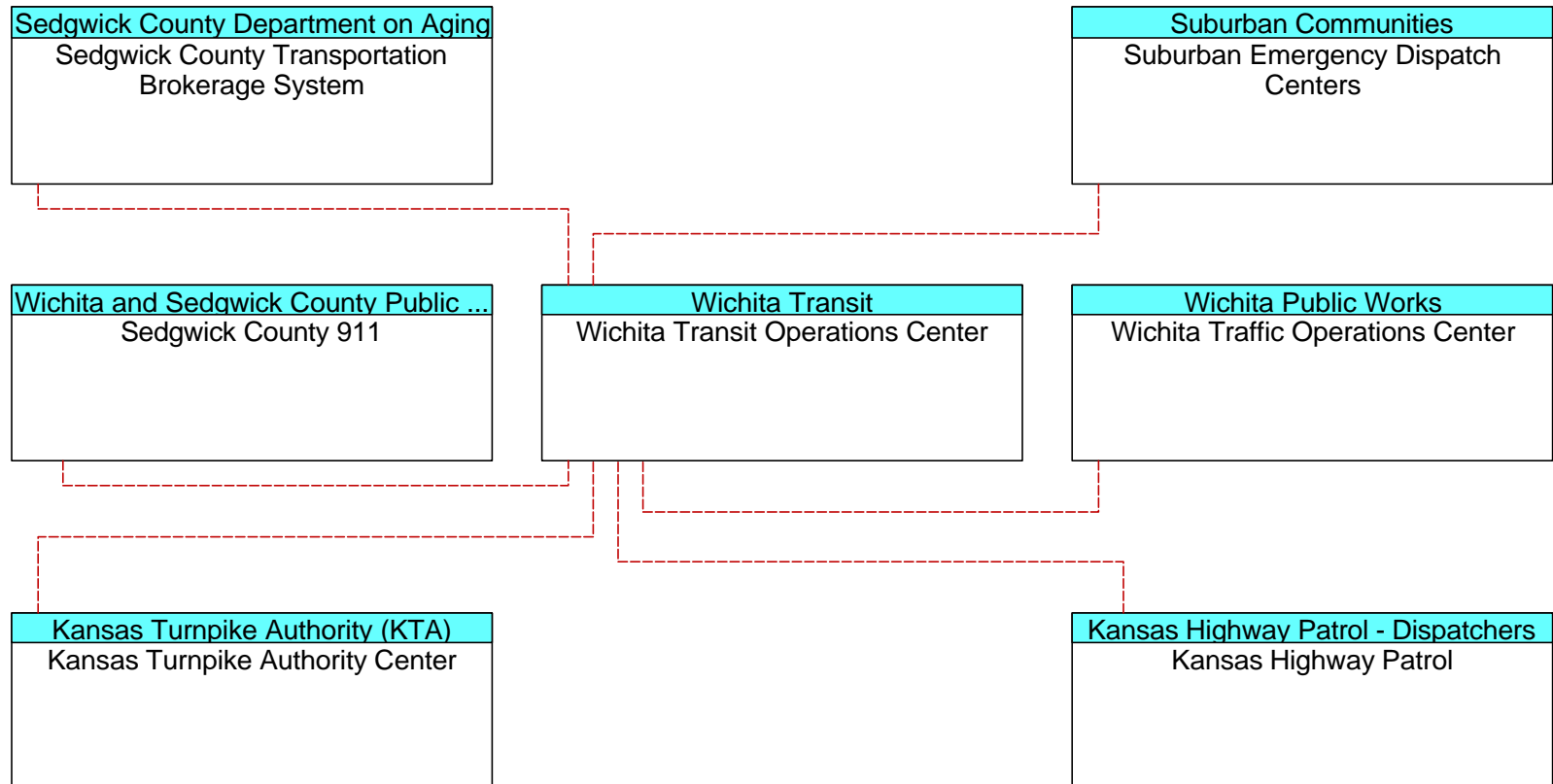
Subsystem Diagram



“Interconnects” identify Connections between Systems

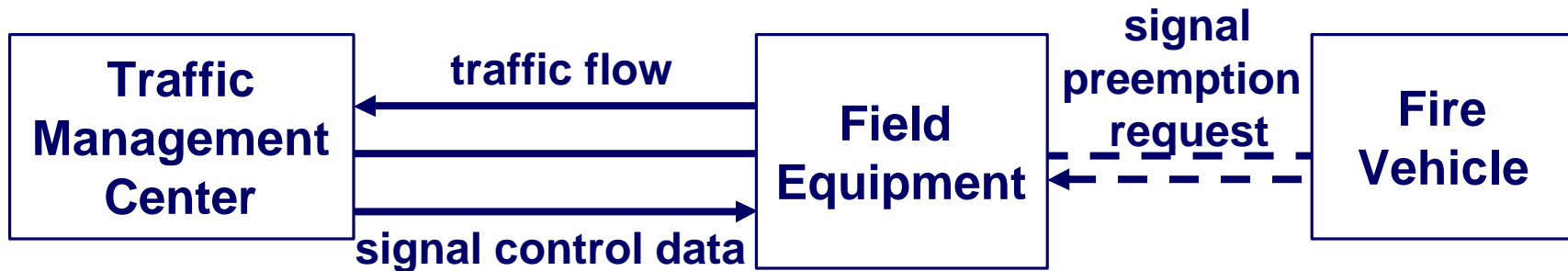


Example of Interconnect Diagram



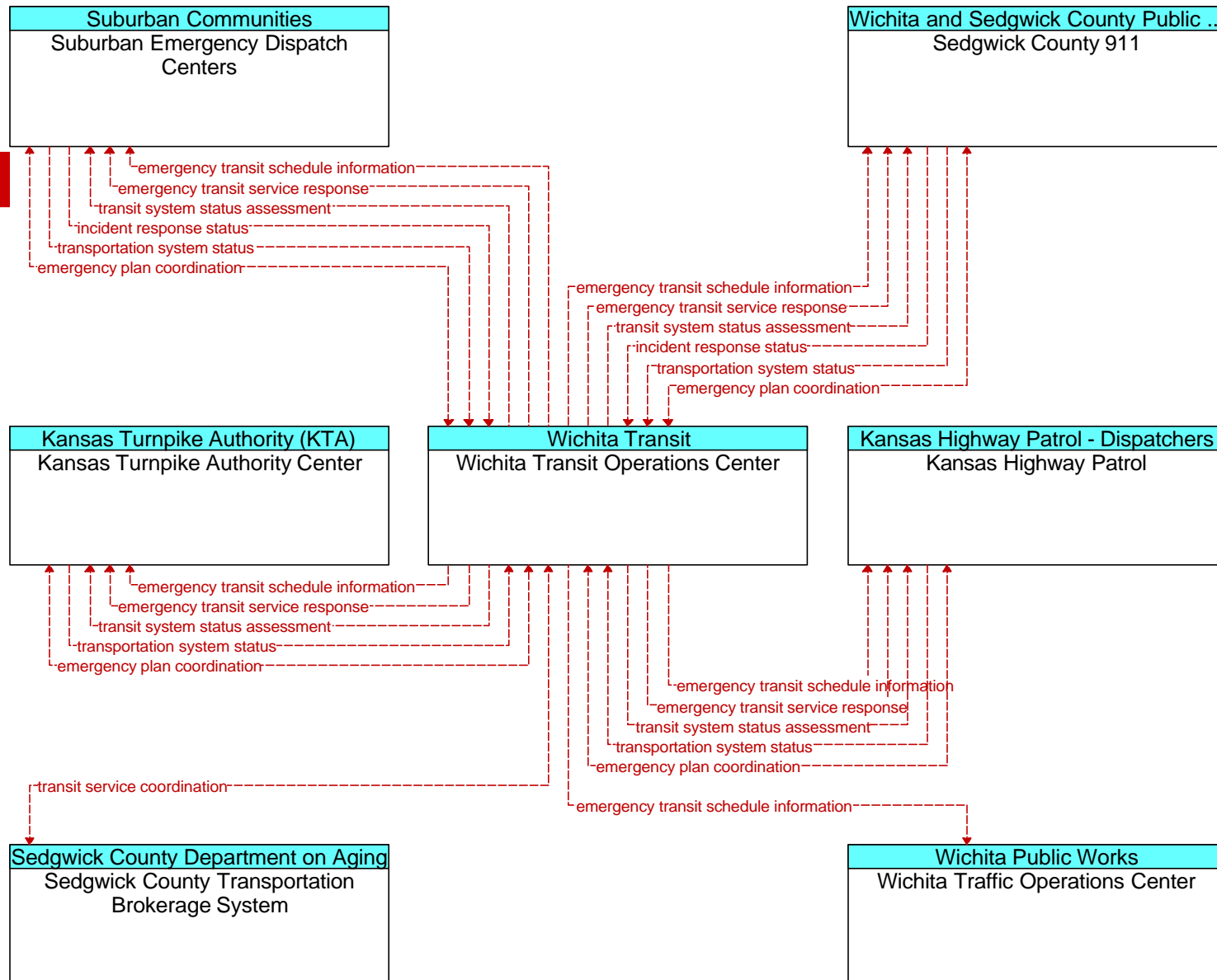
----- Near Term

“Architecture Flows” identify Information Transfers



An interconnects carries one or more architecture flows.

Flow Diagram Example

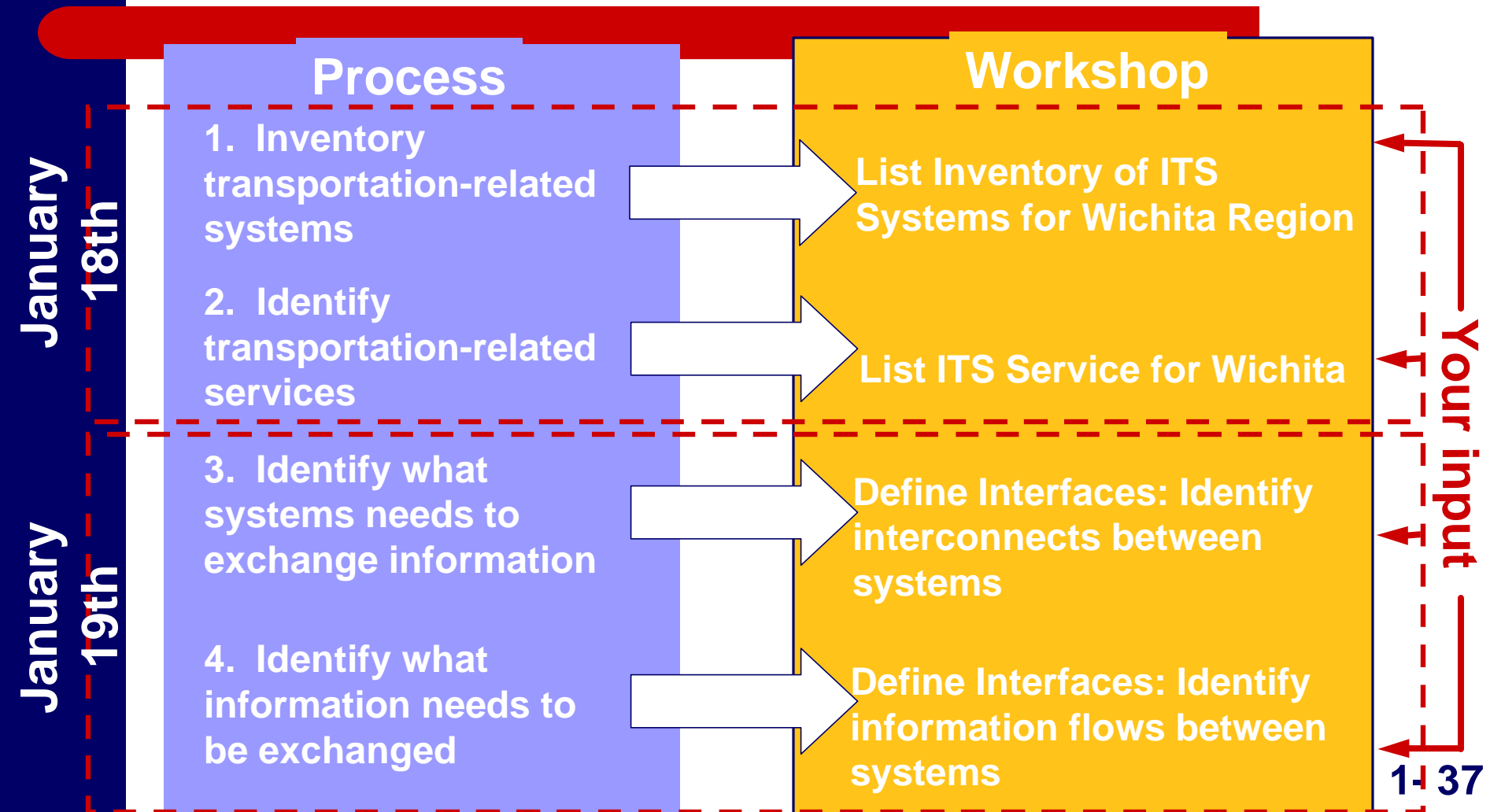


How will the Wichita Regional ITS Architecture be developed?

Four step architecture development process:

1. Inventory transportation-related systems
2. Identify transportation-related services
3. Identify what systems needs to exchange information
4. Identify what information needs to be exchanged

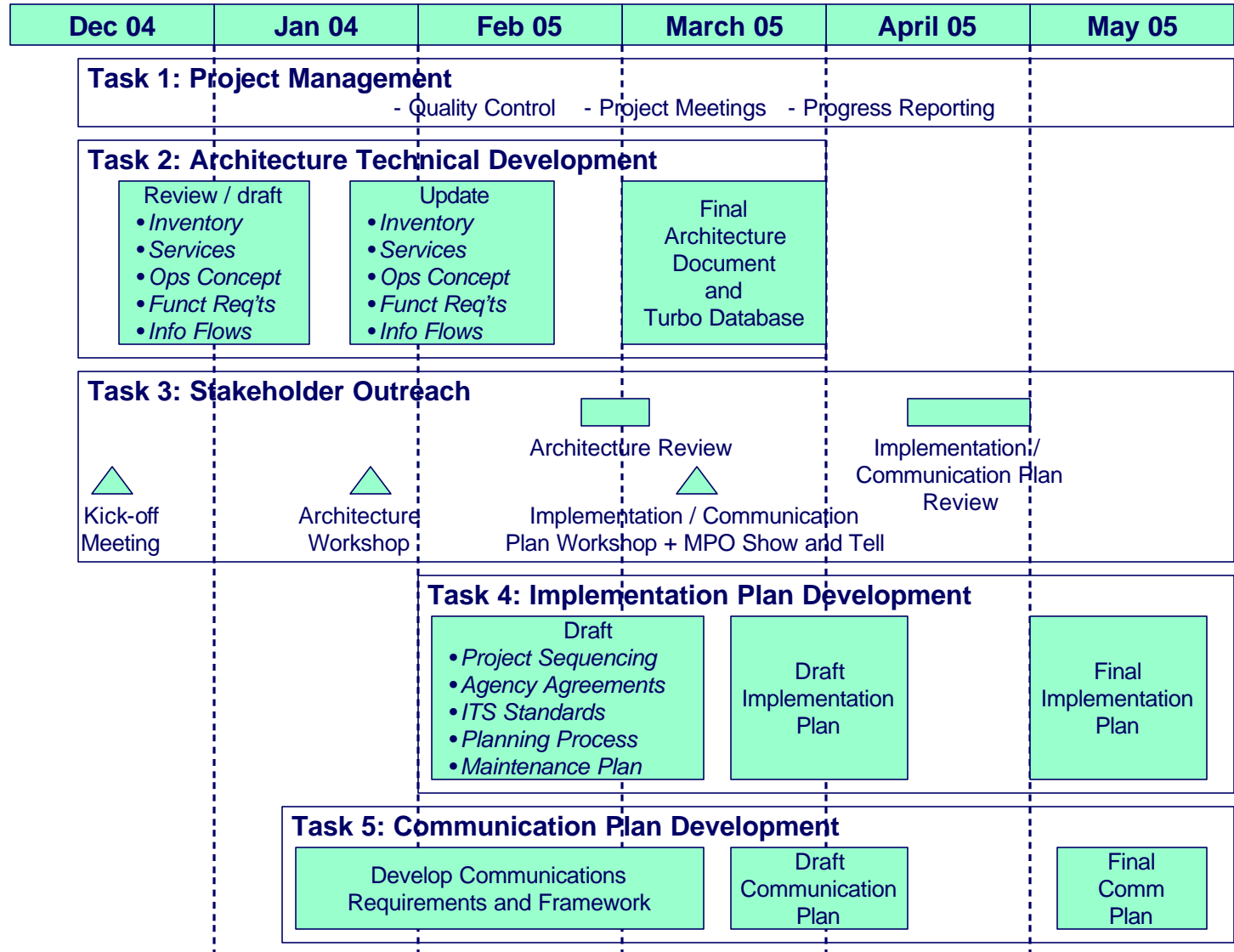
Architecture Development



Architecture Development

- Previous Two Days – Review and Feedback
 - Stakeholders
 - Inventory and
 - Services
- February 15th - Updated Architecture including Operational Concepts and High-Level Requirements
- February 15th to March 4th - Stakeholder Review
- April 1, 2005 – Finalize Wichita Architecture

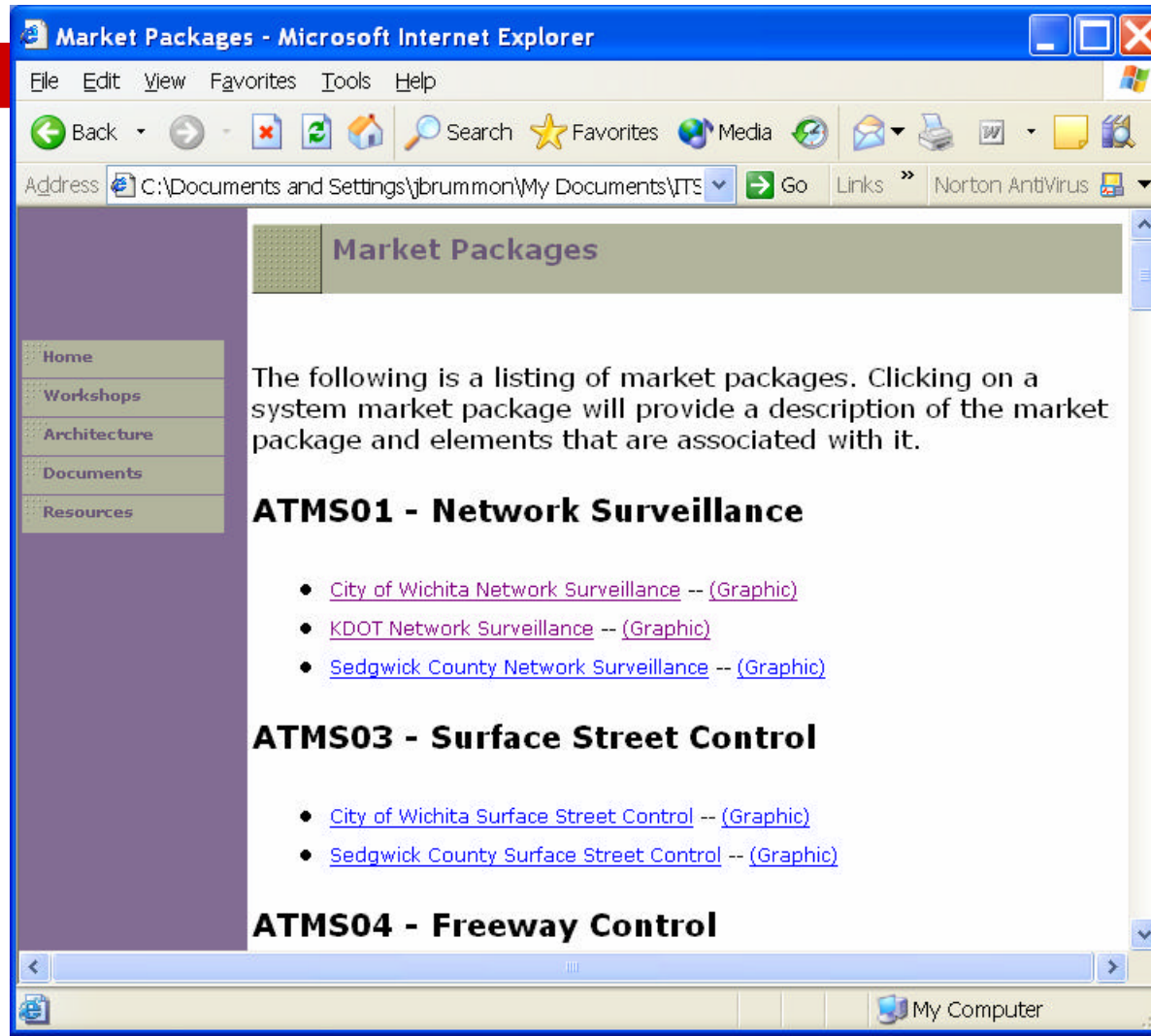
Schedule



First Workshop - Architecture

- Bring Region's Stakeholders Together
- Review **What's New** from the Previous Wichita – Sedgwick County Regional ITS Architecture
 - Changes in the Region's Vision
 - Changes in the Region's Systems
 - Changes in the Region's Interfaces between Systems
 - Changes in the National ITS Architecture
- Result is an **Architecture Baseline** to be Reviewed by the Stakeholders and Finalized by April 1, 2005
 - Website: www.iteris.com/wichitaarchitecture
 - Documents

Wichita Architecture Website



Second Workshop – Implementation Plan

- Bring Region's Stakeholders Together
- Review draft Implementation Plan based on the Baseline Wichita – Sedgwick County Regional ITS Architecture
 - Project Definition
 - Sequencing of Projects
 - Agency Agreements
 - Standards
 - Estimated Project Costs
 - Maintaining the Architecture
- Result is an Implementation Plan that Leverages Your Architecture with Your Planning Processes

Second Workshop – Communications Plan

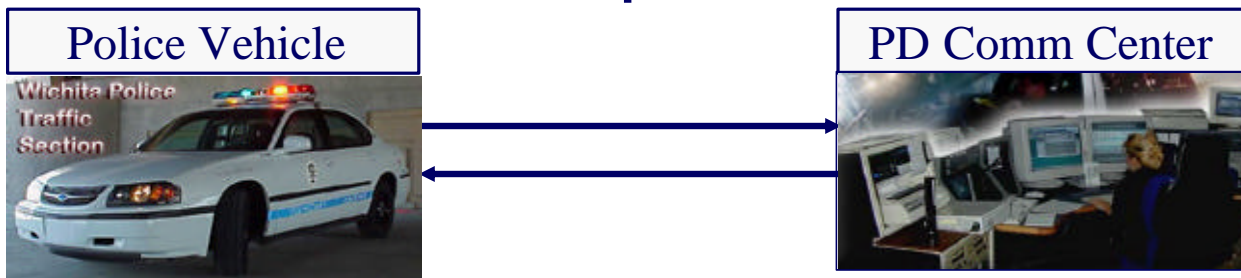
- Review draft Communications Plan based on the Baselined Wichita – Sedgwick County Regional ITS Architecture
 - Identify Available Communications Resources
 - Define and Analyze Communications Requirements
 - Analyze Communications Needs
 - Develop Network Architecture Options
- Result is a Communications Plan that Leverages Your Architecture with Your Overall Communications Planning

Project Results

ITS Architecture for the Wichita Region

- Stakeholders involved
- Transportation systems
- Transportation system services
- Connections between systems
- Information exchanges between systems

ITS Architecture Implementation



Your Role

- Make your systems and services known
- Buy-In on overall integration opportunities with other stakeholders

Our Role

- Make connections from area systems and services to the National ITS Architecture
 - Leverage National ITS Architecture
 - Identify options for consideration
- Help you develop your architecture
- Facilitate discussion

Periodic Architecture Maintenance

- The Wichita – Sedgwick County Architecture is a Living Document held by the MAPD
 - New Projects
 - New Stakeholders
 - Changing Priorities
 - Reorganizations
 - New ITS-related services
- Maintenance Process will be addressed in the Implementation Plan

Wichita-Sedgwick County Regional ITS Architecture Workshop

Architecture Examples

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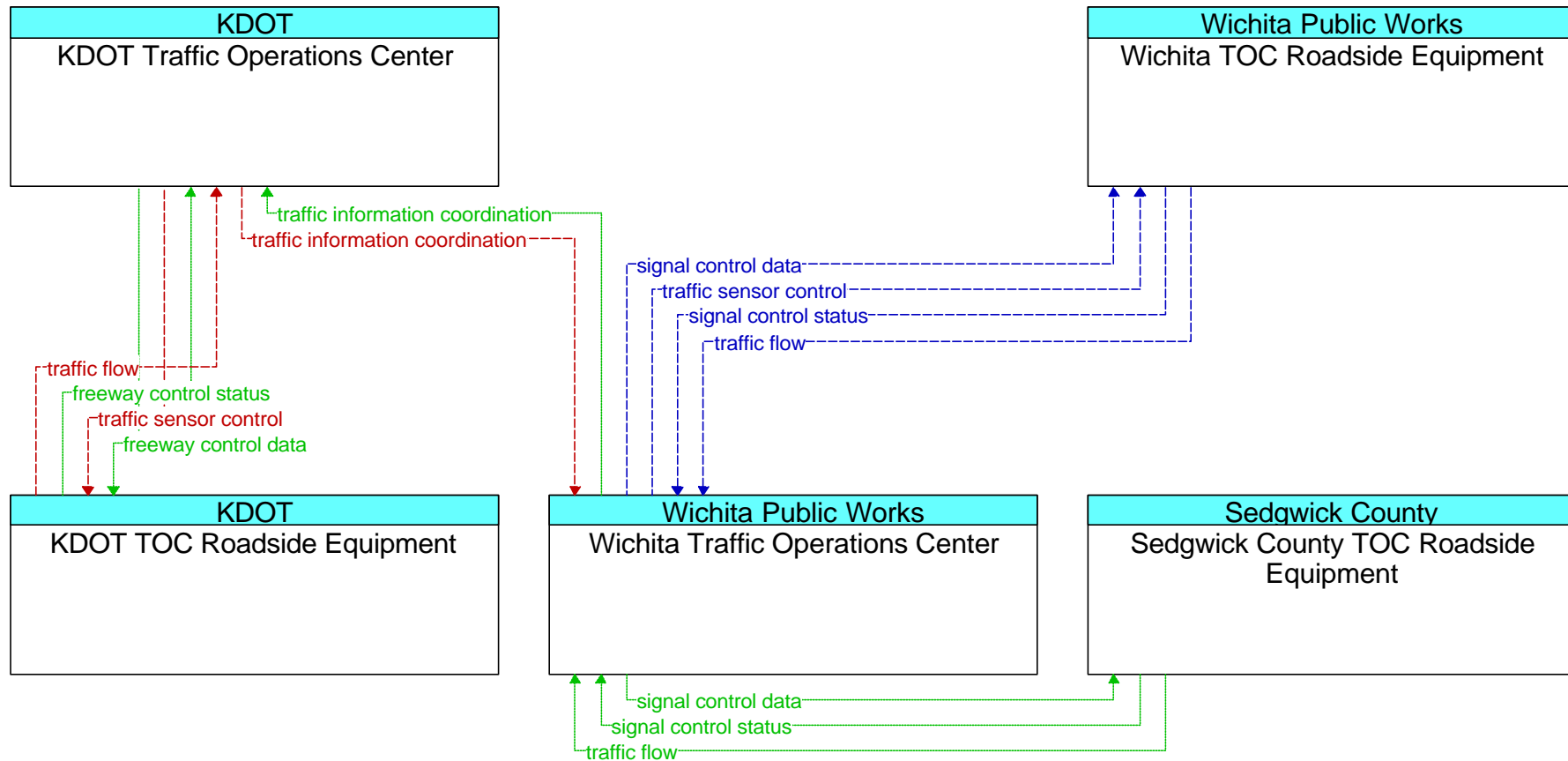
Summary

- The Following Examples show what transpired the last two days and depict integration opportunities within ITS

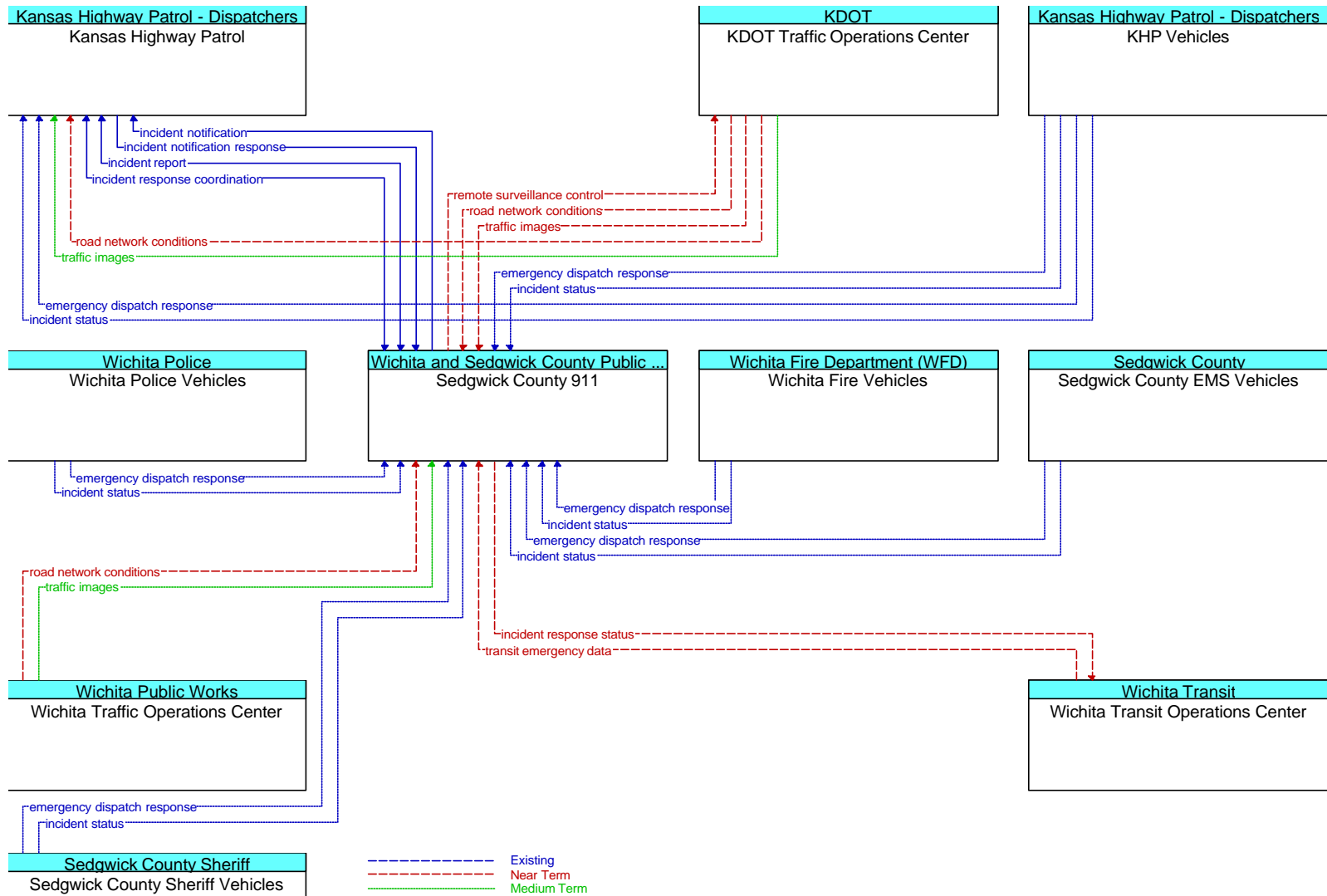
Numbers

- Over 60 stakeholders identified
- 59 ITS-Related Elements Defined
- 41 ITS-Related Services Defined
- 138 Interconnects
- 949 Information Flows

Regional Traffic Control

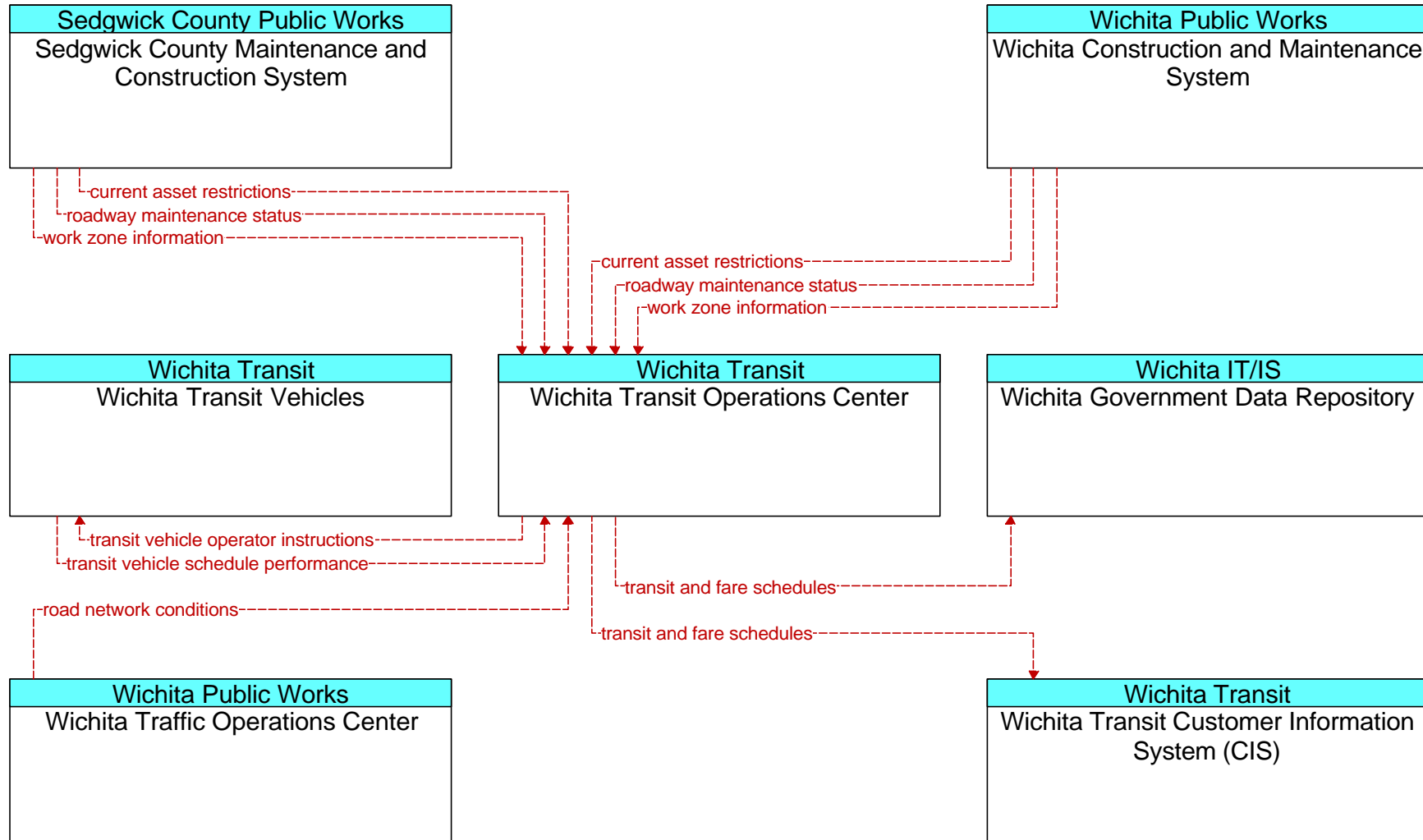


Emergency Call Taking and Dispatch

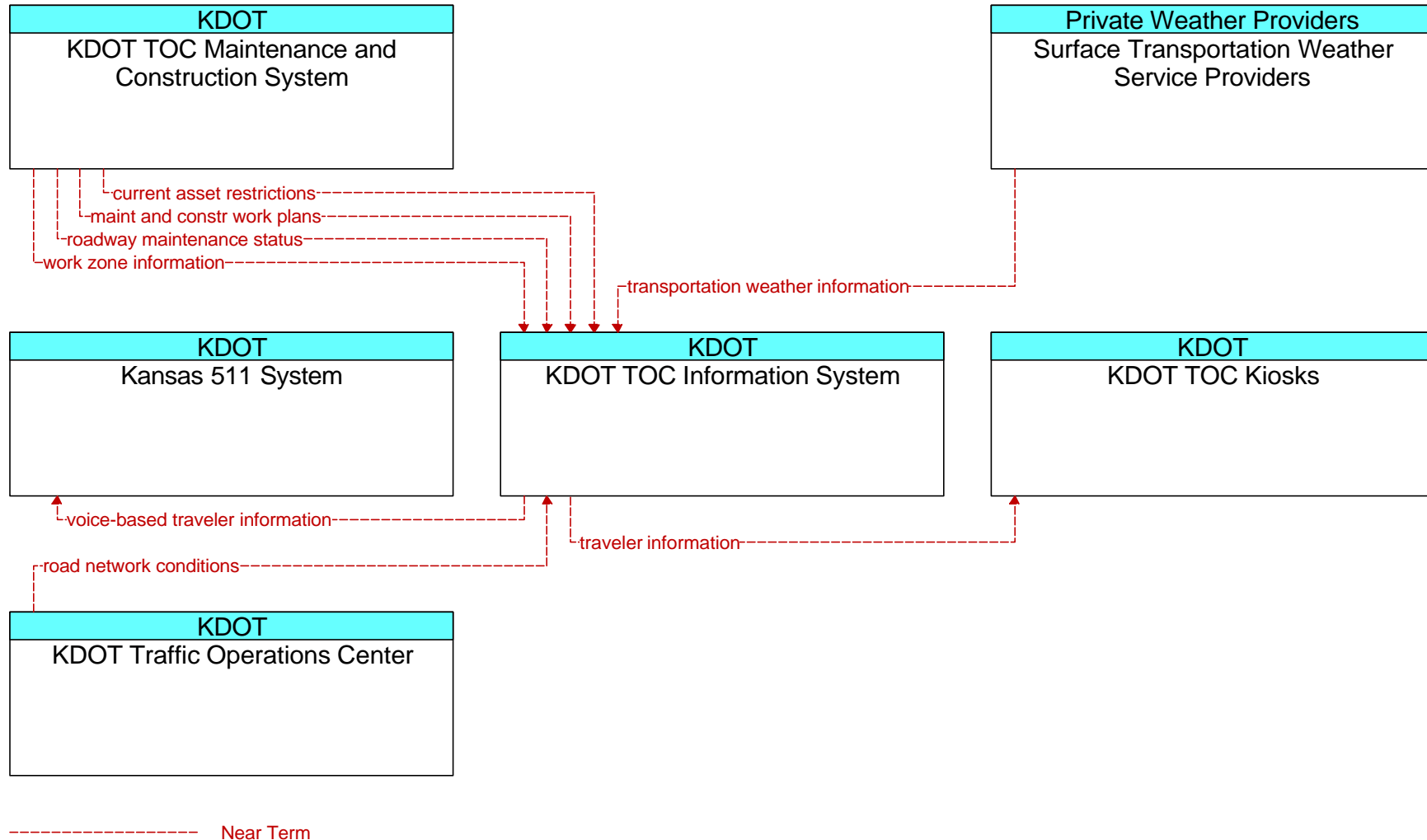




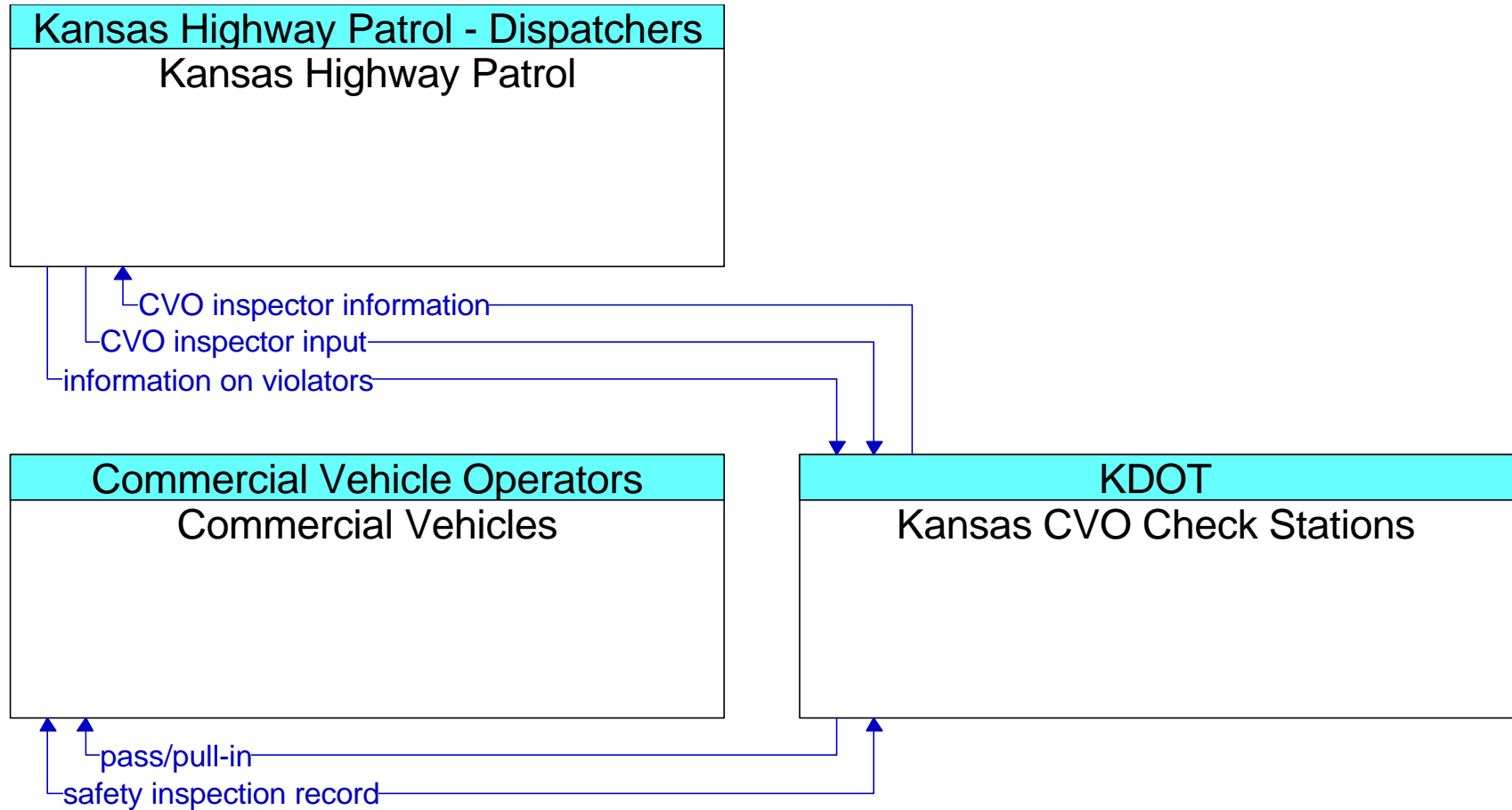
Transit Fixed Route Operations



Traveler Information



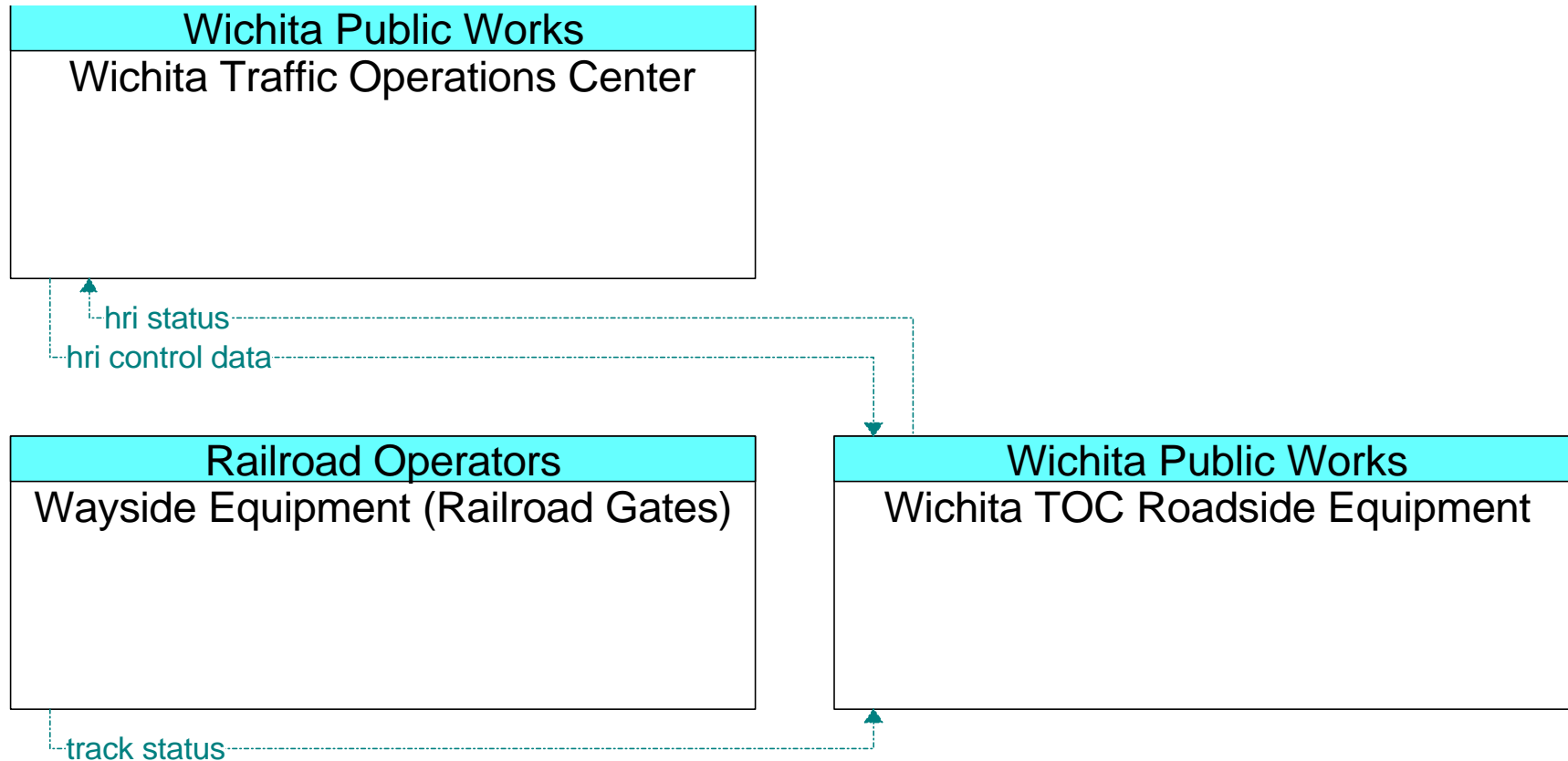
Roadside CVO Safety



Existing



Standard Railroad Grade Crossing



Long Term

Wichita-Sedgwick County Regional ITS Architecture Workshop

Next Steps



Things to Think about...

- Others Who Should Be Involved
- Opportunities to Share Funding/Resources
- Opportunities for Integration
- Opportunities to Share Regional Architecture Effort with Policy and Decision Makers

Accomplishments / Next Steps

Discuss Architecture with Stakeholders/Groups:

- ☒ Investigate Inventory Items that were not Defined or Not Defined Well
- ☒ Finalize List of Services
- ☒ Tailor Connects Between Systems
- ☒ Tailor Information Flows Between Systems

Next Steps after the Workshop

- We Need your Support for Staff Review of
 - What we covered the previous two days
 - Stakeholders
 - System Inventory
 - Services
 - Interconnects
 - Updated Flows between Systems
 - Operational Concepts based on Architecture
 - Requirements based on Architecture

Wichita – Sedgwick County Regional ITS Architecture Development

- Completed Stakeholder Architecture Workshop #1
- Next Workshop will focus on the Review of the ITS Implementation Plan and the ITS Communications Plan
 - March 8-10
- Architecture complete by April 1, 2005

Wichita – Sedgwick County Regional ITS Architecture Information

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