

# *Development of a Regional Intelligent Transportation System Architecture*

## **Stakeholder Meeting #2 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:*

***ITERIS***<sup>™</sup>



*In association with*

**RCC Consultants**

**March 10, 2005**

# Agenda – Day 3 Executive Overview

- Continental Breakfast
- Introduction
- What has been done so far?
- Architecture Website
- Projects
- Communications
- Next Steps

# Project Objectives

- Develop a **Regional ITS Architecture** for the Wichita-Sedgwick County region (**Volume 1**)
  - Integrating advanced technologies
- **Development of Implementation Plan (Volume 2)**
  - Planning of ITS projects
  - Regional project development
- **Development of Communications Plan (Volume 3)**
  - Identify Communications Resources
  - Analyze Communications Needs
  - Identify Network Architecture Options

# 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 Architecture

Structure or framework for deploying  
Integrated Transportation Systems

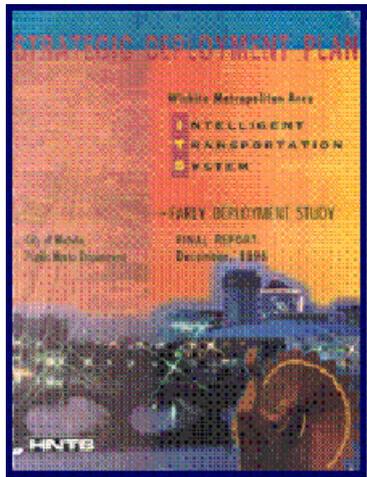
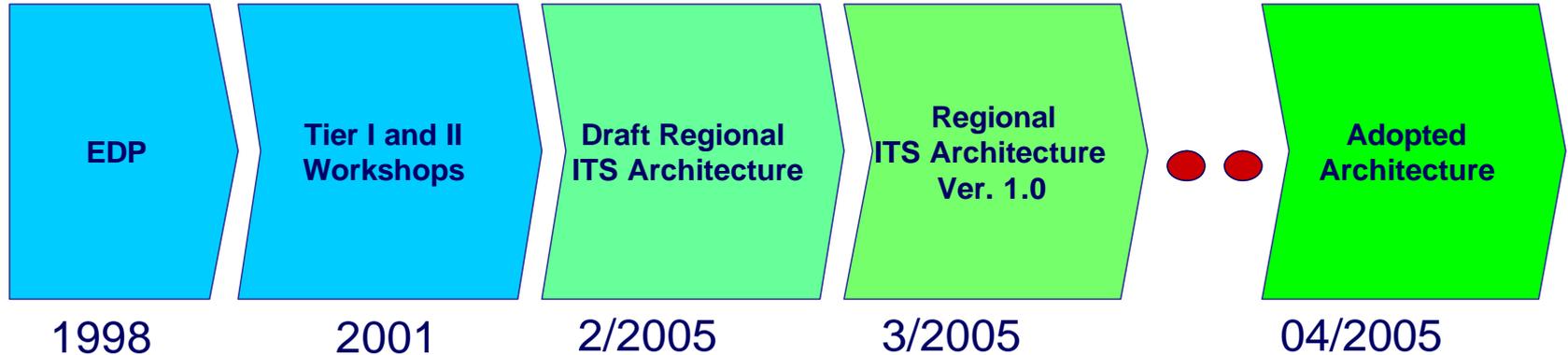
- blueprint for effective  
cooperation



# 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

# Wichita – Sedgwick County Regional ITS Architecture



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

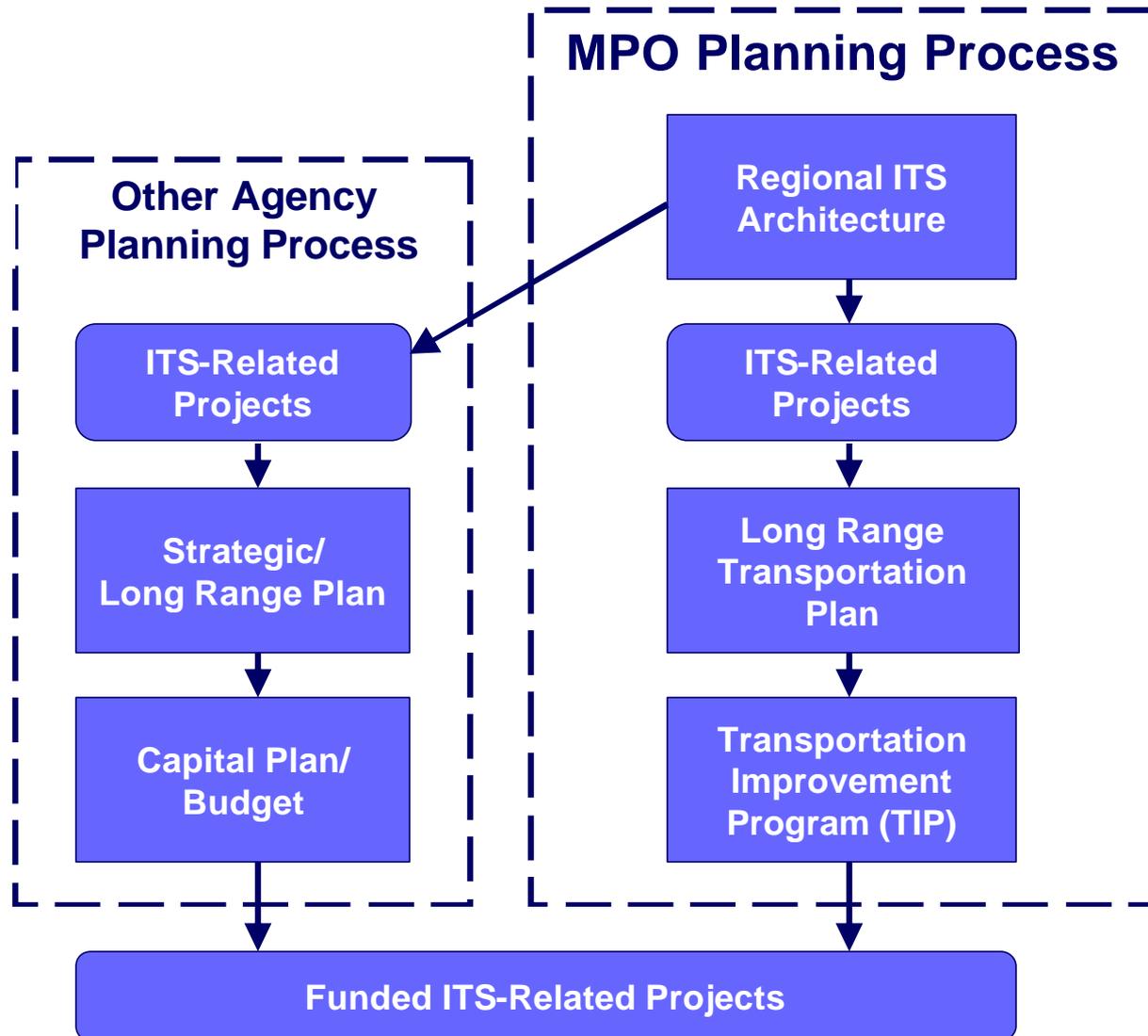
# Partnering Memorandum of Understanding January 2002

- \$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	City of Wichita
● 2003	\$4.00 Million	MAPD
● 2004	\$0.75 Million	Wichita Transit
● 2005	\$1.25 Million	MAPD

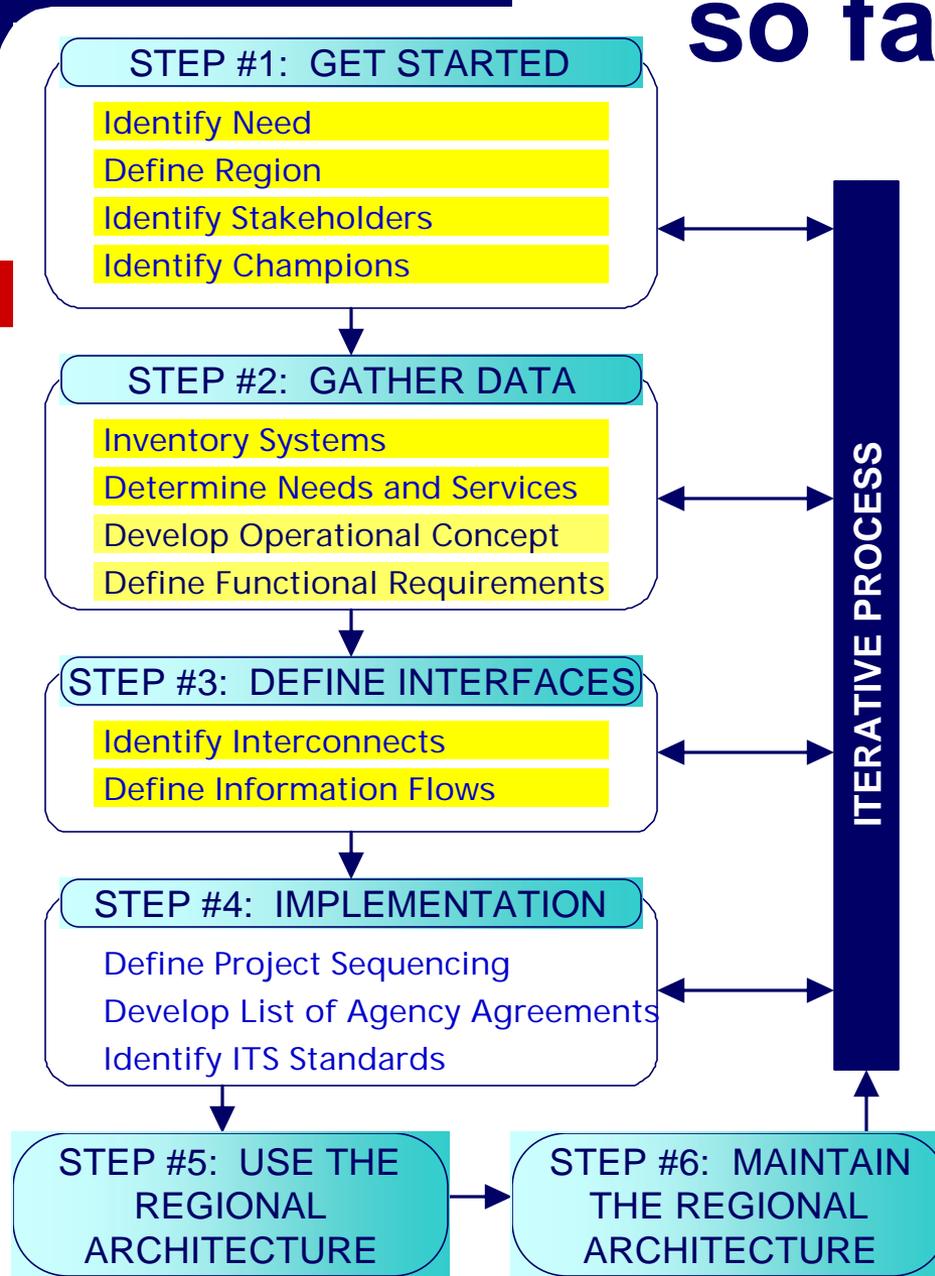
# ITS Planning Process



# Workshops

- Three Workshops to review and gather inputs
  - Architecture
  - Implementation Plan / Communications Plan
  - (2) Three-day Workshops
    - Two days for Detailed Review
    - One half-day for Management
  - (1) One-day workshop to finish Emergency Management Services
- MPO – Executive Overview
- MPO-sponsored Public Forum

# What has been done so far ?



# Wichita Architecture Website

## www.iteris.com/wichitaarchitecture

Home - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.iteris.com/wichitaarchitecture/

bLink Customize Links Explore the Web Free Hotmail New User Search Support The Arena

National ITS Architecture Home

### Wichita Regional ITS Architecture

Home  
Workshops  
Architecture  
Documents  
Resources  
Comments

Version 1.0  
Site updated: 03/04/05

Welcome to the Wichita Regional Intelligent Transportation System Architecture web site. This site will provide you with information on the development of the Wichita Architecture..

The map displays the Wichita-Sedgwick County Metropolitan Planning Boundary, which is outlined in blue. Within this boundary, urbanized areas are shaded in a darker blue. The map includes a legend in the top-left corner with a scale bar (0 to 8 miles) and a north arrow. Labeled counties include Sedgwick, Bentley, and Sumner. Labeled cities and towns include Garden Plain, Cheney, Goodland, Haysville, Clearwater, Mulvane, Rose Hill, and others. Major highways like I-135 and I-49 are also shown.

Done

# Documents

The screenshot shows a Mozilla Firefox browser window. The address bar contains the URL <http://www.iteris.com/wichitaarchitecture/html/documei>. The page title is "Documents". A sidebar on the left contains navigation links: Home, Workshops, Architecture, Documents, Resources, and Comments. The main content area features a table with the following data:

Date	Document
March 2, 2005	<a href="#">Turbo Architecture database</a> ( <a href="#">Turbo Architecture™ 3.0 software</a> required)
March 3, 2005	<a href="#">Volume 1 Wichita Architecture</a>
March 3, 2005	<a href="#">Volume 2 Implementation Plan</a>

At the bottom left of the browser window, it says "Version 1.0" and "Site updated: 03/04/05". The status bar at the very bottom of the browser shows "Done".

# Comments

Comments - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.iteris.com/wichitaarchitecture/html/commer

bLink Customize Links Explore the Web Free Hotmail New User Search Support The Arena

National ITS Architecture Comments

## Comments

Name:

Email:  Phone:

Organization:  Architecture Version:

Comment:

Cancel Submit

Done

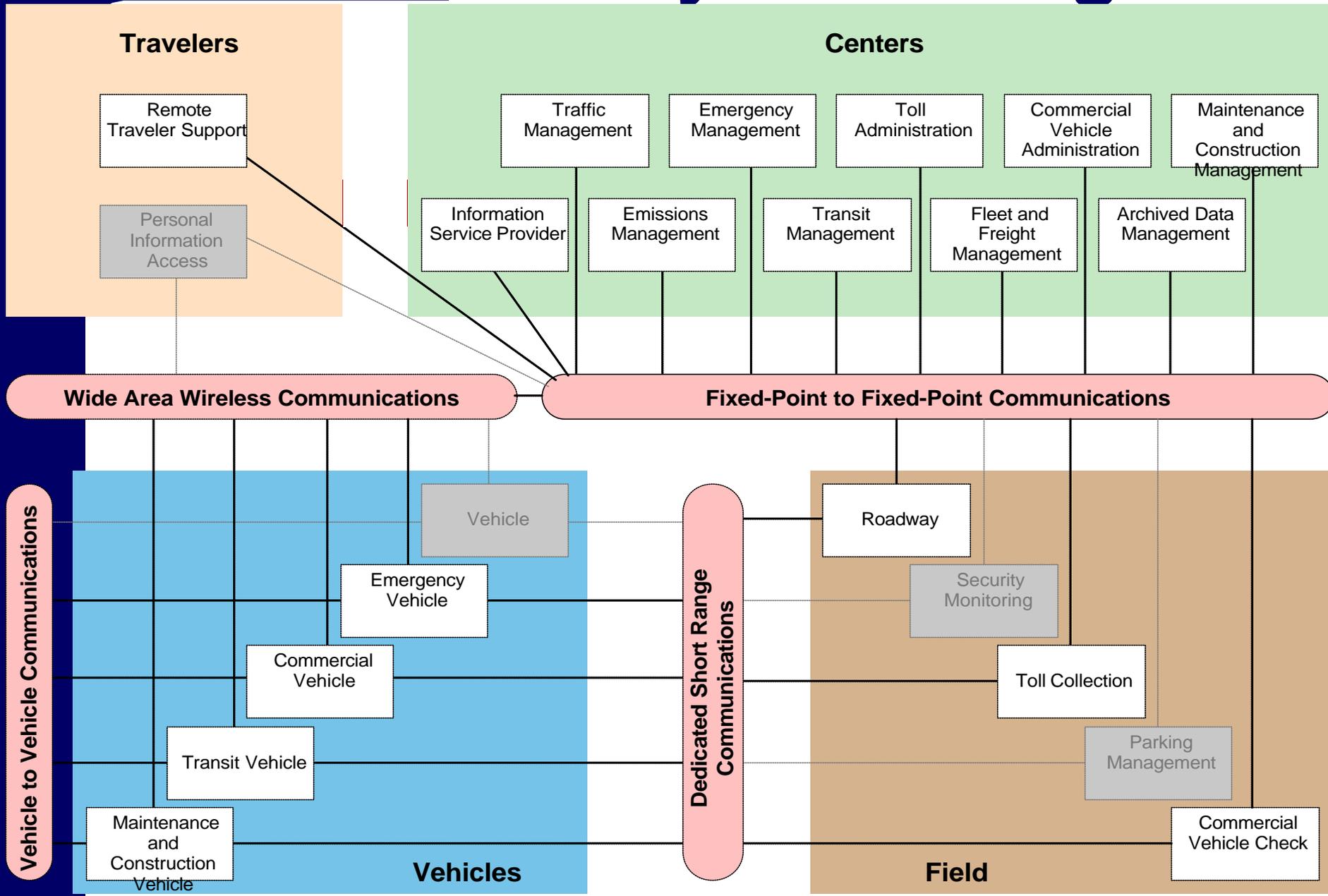
Home  
Workshops  
Architecture  
Documents  
Resources  
Comments

Version 1.0  
Site updated: 03/04/05

# Comments received to date

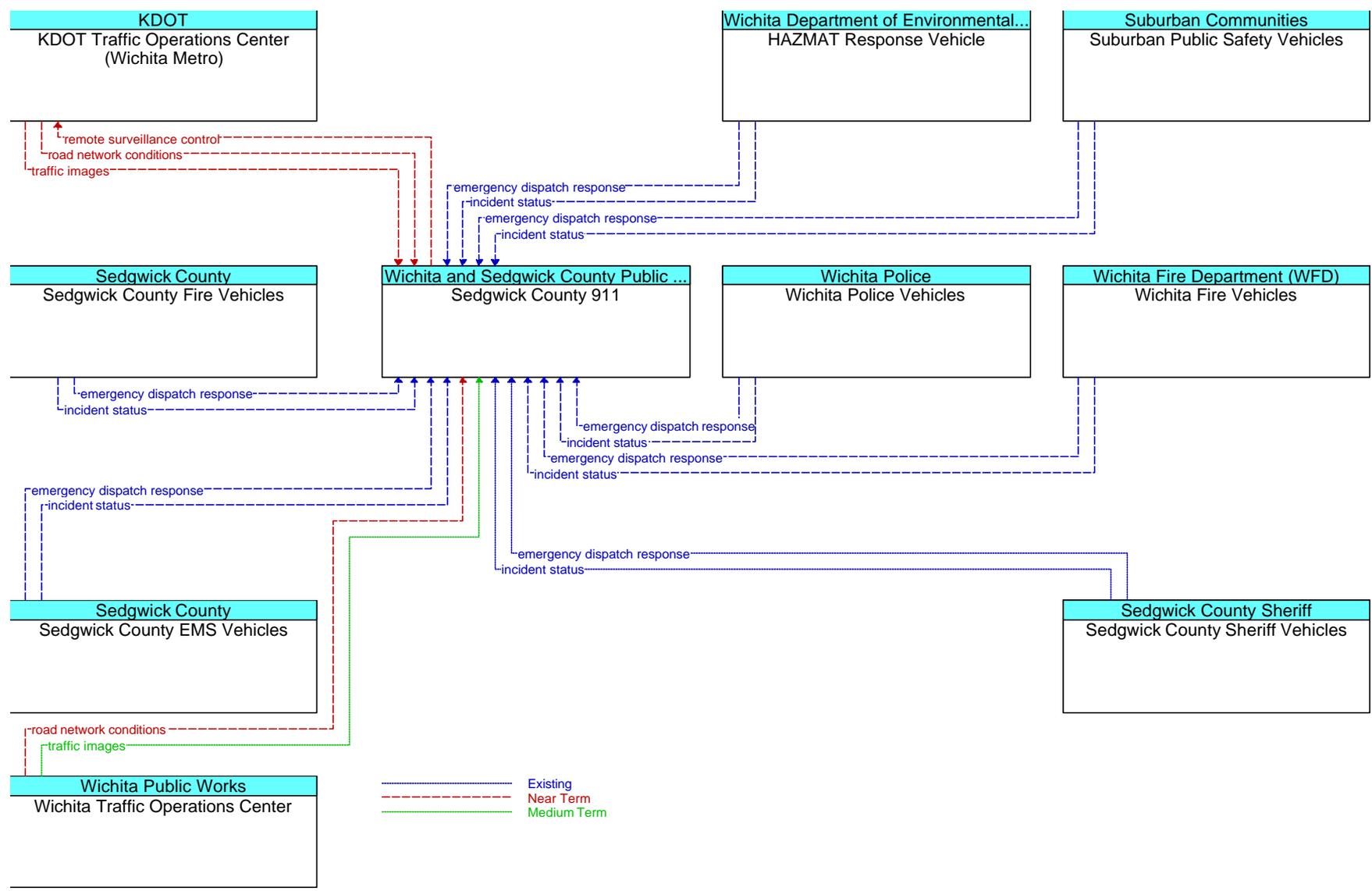
- 9 On-Line Comments Received
  - Wichita Dept of Environmental Health (6)
  - Kansas Highway Patrol (1)
  - City of Wichita (1)
  - KDOT (1)
- Approximately 15 Comments received over the past 2 days from participants

# Subsystem Diagram





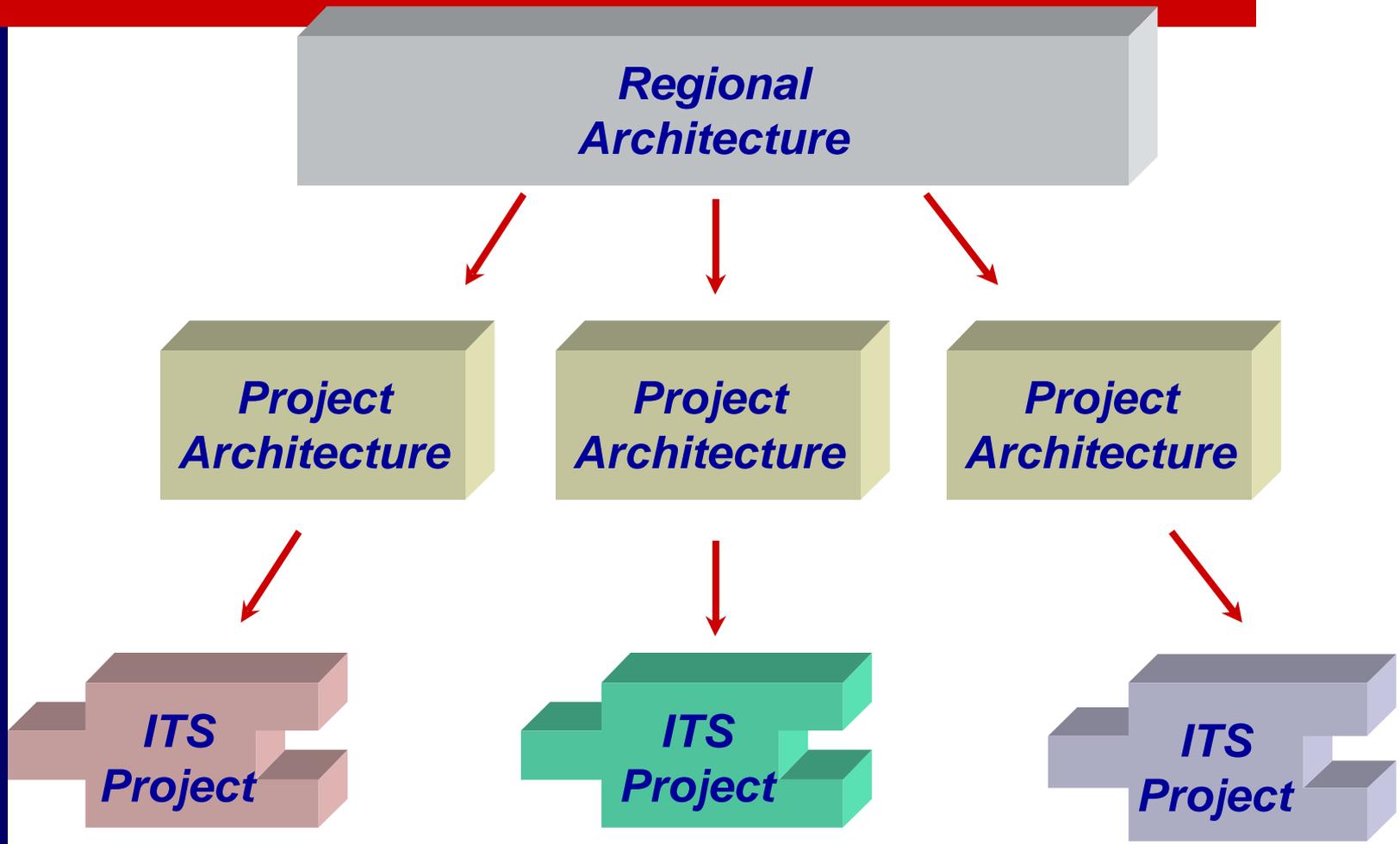
# Sedgwick County 911 Flows



# The Architecture is Ready for MPO Adoption

- This Architecture forms the Blueprint for Transportation System Integration for the Region
- This is Your Architecture and it Reflects Your Existing and Future ITS projects
- Over 60 stakeholders have participated on this activity

# Project Deployment Using an Architecture



# Review of Wichita – Sedgwick County Region's Projects

- Name
- Timeframe
- Services
- Stakeholders
- Approximate Cost
- Benefits
- Project Sequencing and/or Dependencies
- Agency Agreements

# Timeframe



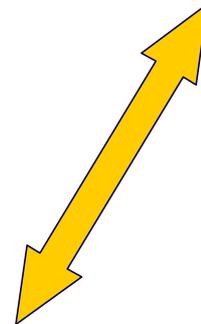
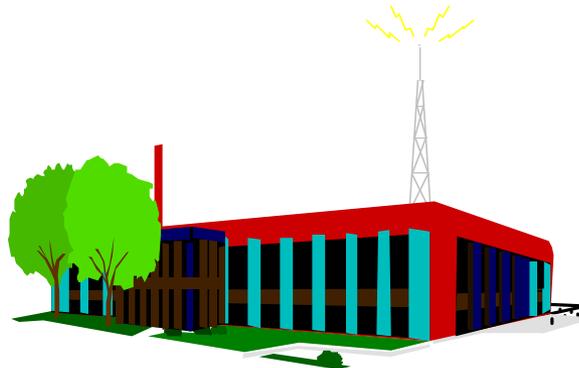
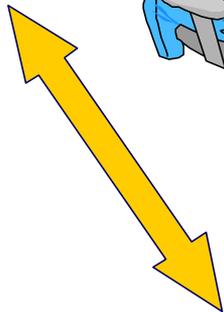
- Existing
- Near Term 0-5 years
- Medium Term 6-10 years
- Long Term 10+ years



# Projects

- Identified 30 Projects
  - 16 Near-Term
  - 11 Medium Term
  - 3 Long Term
- Examples
  - Winter Maintenance
  - Transit Vehicle Tracking
  - Regional 5-1-1 Traveler Information
  - Coordinated Emergency Call-Taking and Dispatch

# Partnering Projects Sedgwick County AVL System



# Partnering Projects

## Traffic Signal System Upgrade

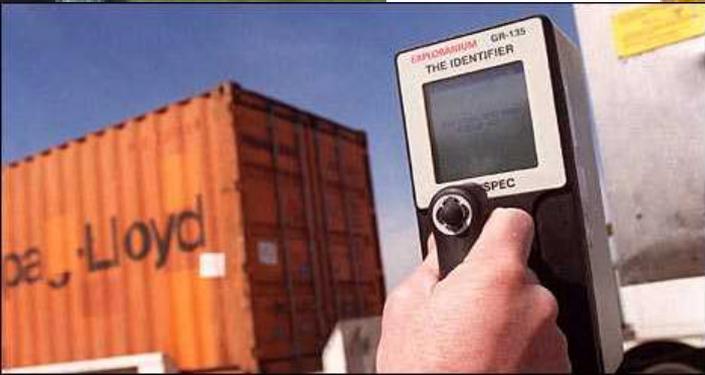


- Coordinated signals
  - City Wichita: 380 intersections
  - Sedgwick County: 35 intersections

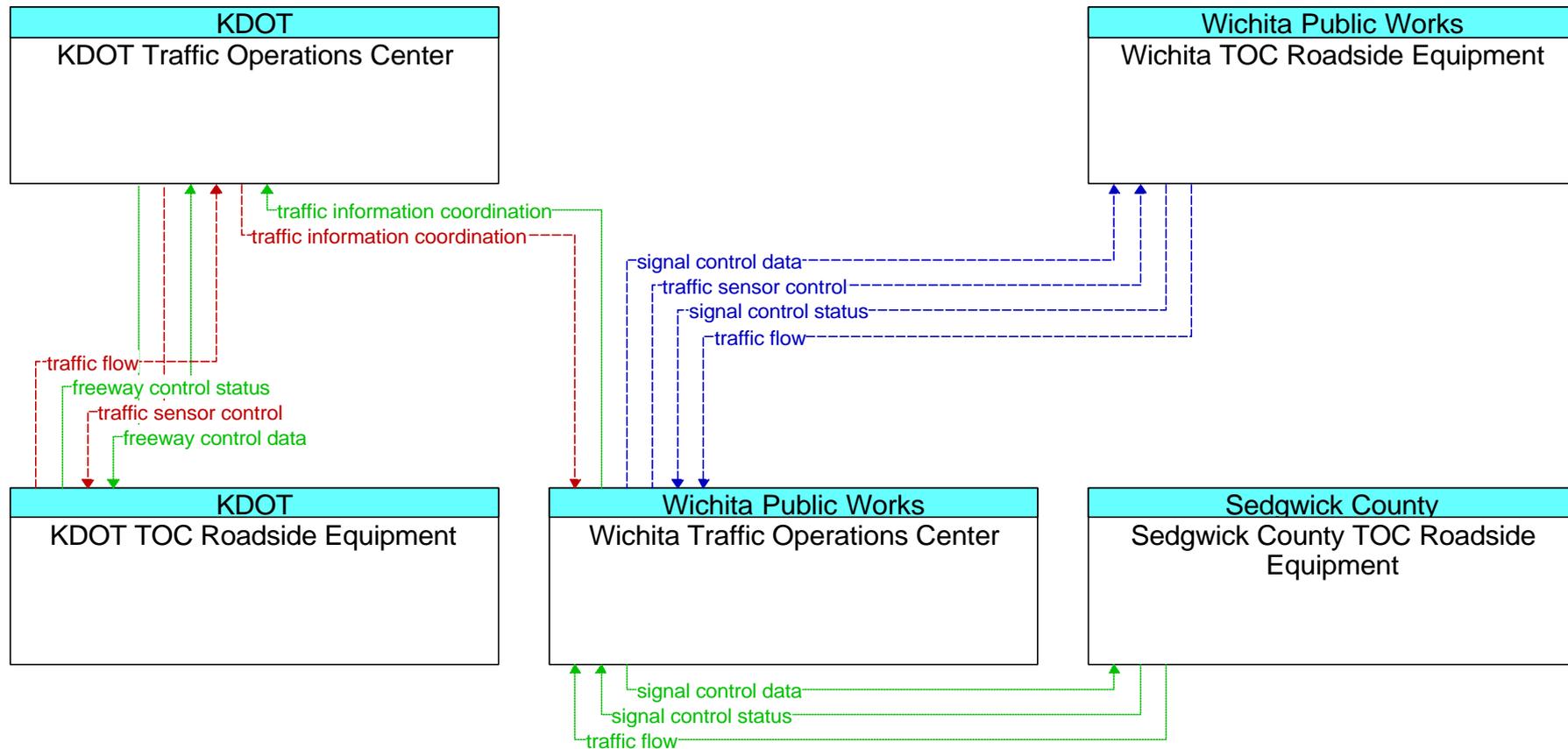
# Partnering Projects KDOT Advanced Traffic Management System (ATMS)



- Incident Response
- Ramp Metering
- Work Zone Management
- Archiving



# Coordinated Regional Traffic Control



# Example of Project Sequencing

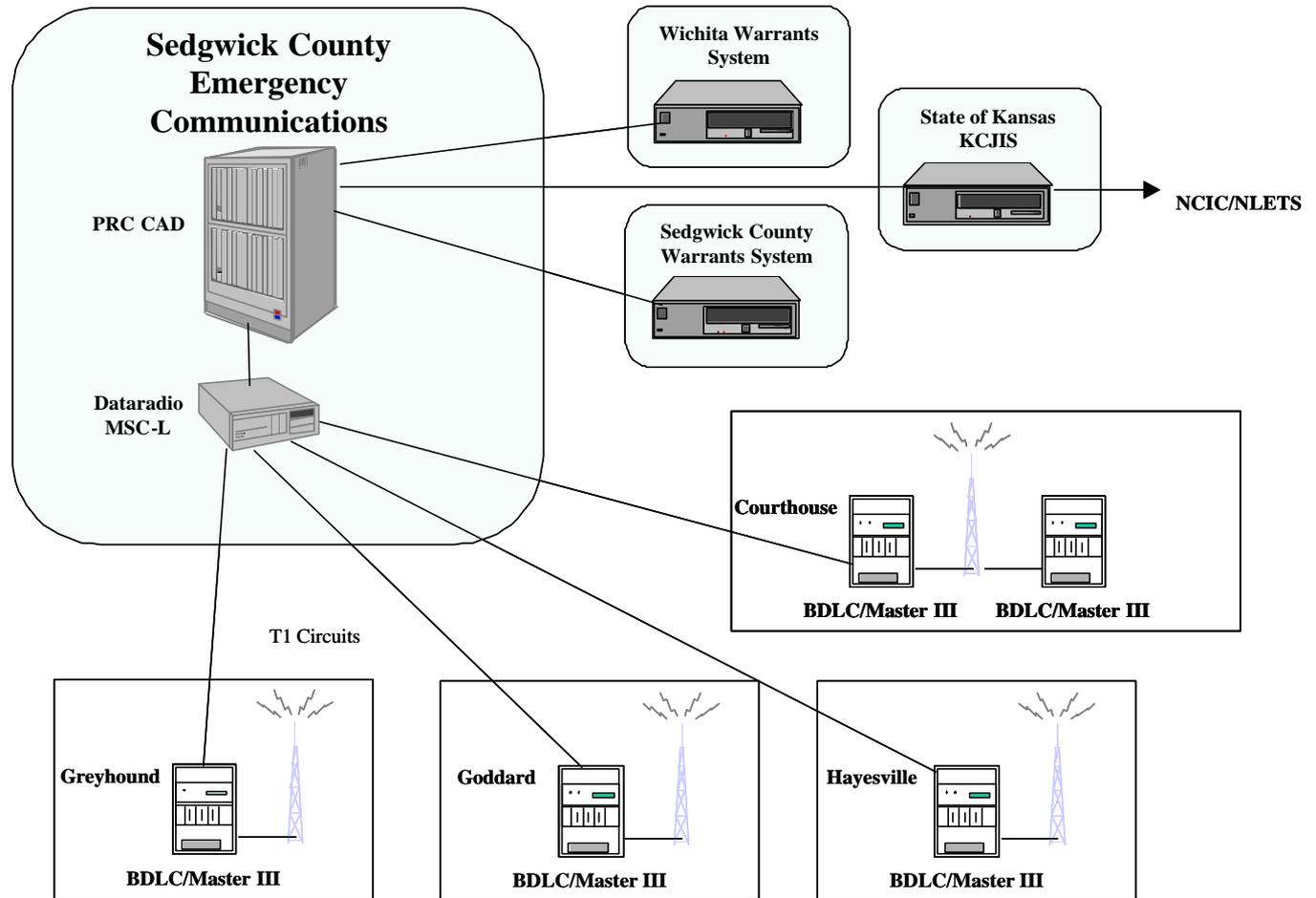
Project Names	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
<b>SHORT TERM DEPLOYMENT PROJECTS (Projects starting in Years 1 – 3)</b>												
Statewide ITS Architecture												
Traffic Operation Center Development												
Critical Infrastructure Monitoring Systems												
Arterial Traffic Management System												
Traffic Incident Management												

Funding Required	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
	\$1,493,571	\$3,657,321	\$4,561,321	\$4,561,321	\$3,056,821	\$2,314,571	\$2,067,071	\$1,079,000	\$1,733,000	\$1,889,500	\$1,316,500	\$400,000

# Communications Plan Approach

- Communications Alternatives
  - WiMax
  - Fiber
  - 800 MHz Voice / Data Radios
- Communications Needs / Requirements by Stakeholder
- Project Dependencies on Communications
- Network Architecture Options

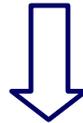
# MCT System



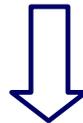


# Using a Regional Architecture: ITS Standards

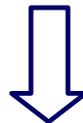
**Regional ITS Architecture**



**Architecture Flows**



**ITS Standards**



**Draft System/Communication  
Specification**

# ITS Standards on the CD-ROM

National ITS Architecture - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <D:\html\af\af106.htm> Go Google

**National ITS Architecture**  
Version 5.0  
U.S. Department of Transportation

Home  
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Document View  
Database View  
User Services  
Logical Architecture  
Physical Architecture  
Market Packages  
Standards  
Security  
Training  
Turbo Architecture

**Traffic Management** → **Emergency Management**

This Architecture Flow is in the following Market Packages:

- [Traffic Incident Management System](#)
- [Early Warning System](#)

This Architecture Flow is in the following Equipment Packages:

- [Emergency Early Warn](#)
- [Emergency Response](#)
- [Incident Command](#)
- [TMC Incident Dispatch](#)

*Data Flows\*:*

- [wrong way vehicle de](#)
- [incident response cle](#)
- [incident alert](#)

*Security Considerations:*

- [Emergency](#)

*Standard\* Activities:*

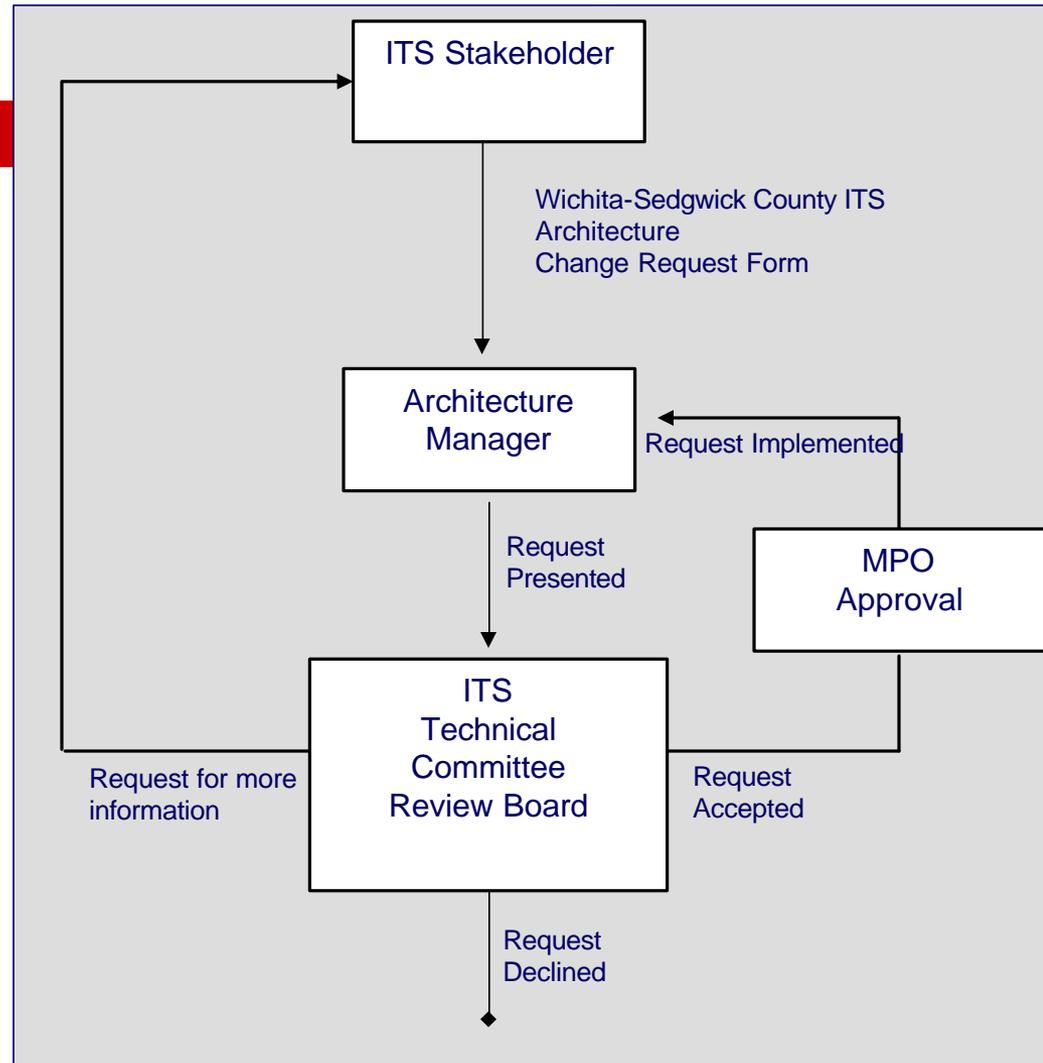
- [IEEE IM: Incident Management Standards Group](#)
- [NTCIP C2C: NTCIP Center-to-Center Standards Group](#)
- [ITE TM 1.03: Standard for Functional Level Traffic Management Data Dictionary \(TMDD\)](#)
- [ITE TM 2.01: Message Sets for External TMC Communication \(MS/ETMCC\)](#)

***These are the ITS standards that address this architecture flow***

# 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 is addressed in the Implementation Plan

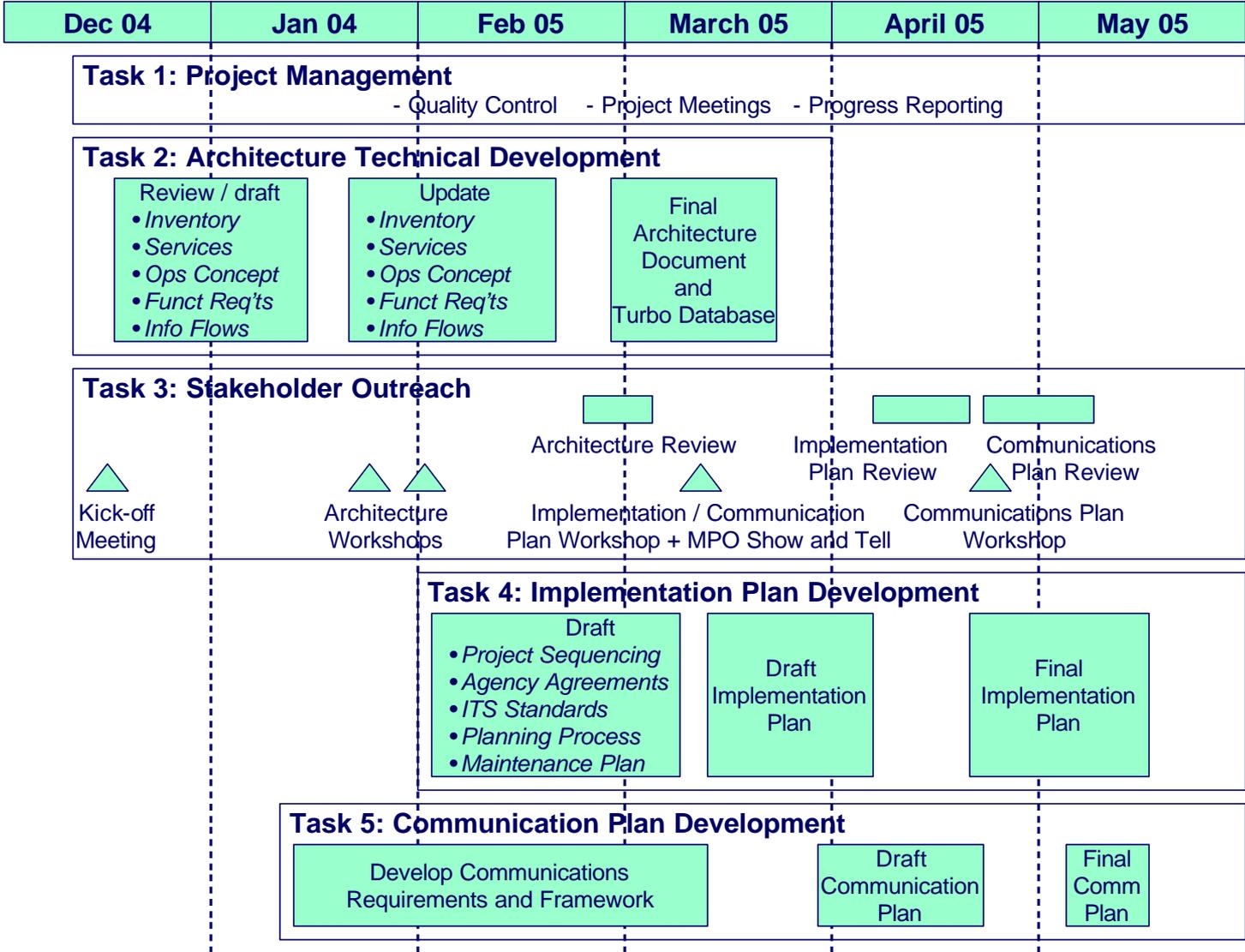
# Architecture Change Process



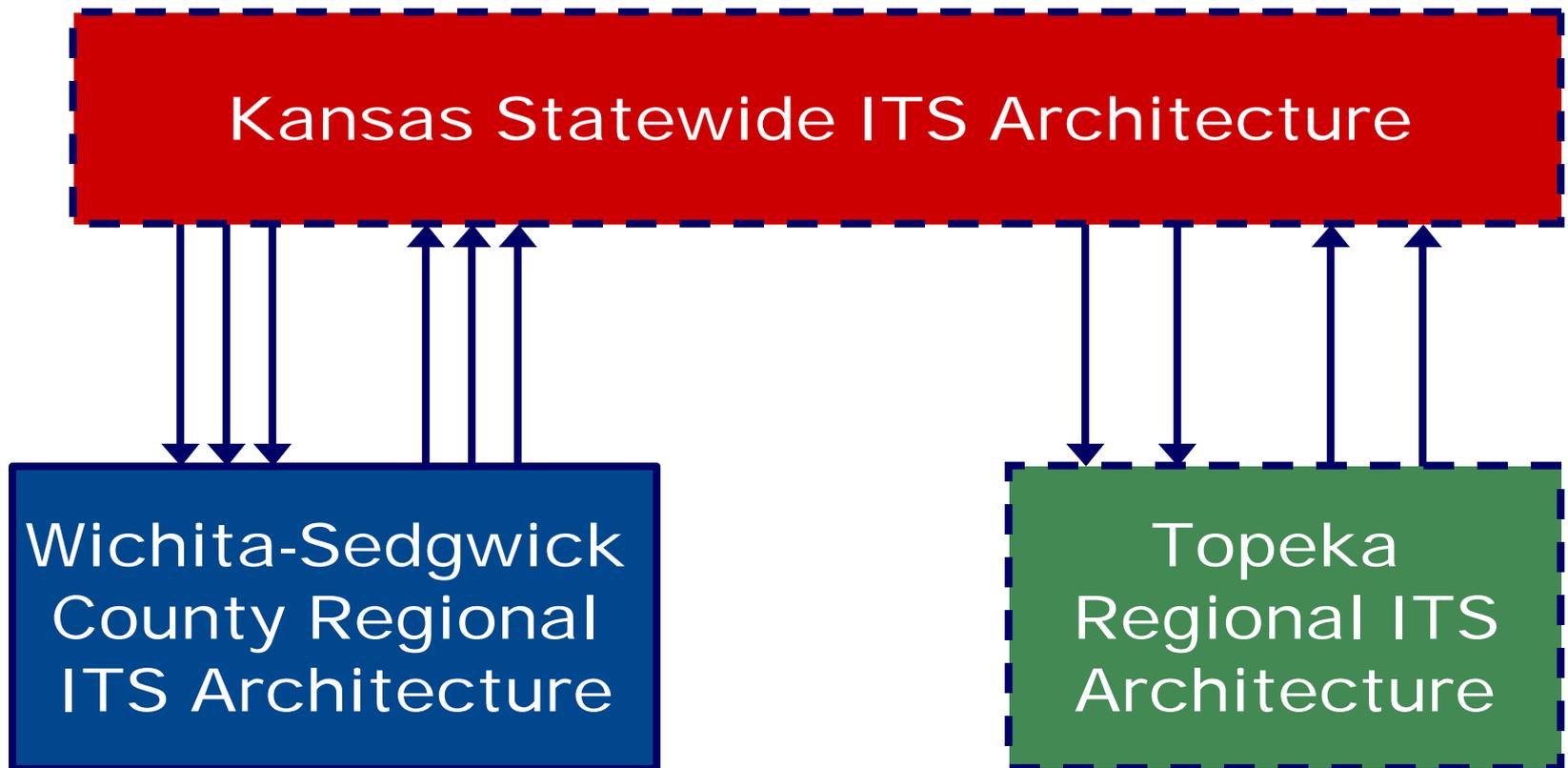
# Change Control

Change Request #:	Change Request Description:	
Architecture Component	Impact(s) of Change	Resolution(s)
Wichita-Sedgwick County ITS Architecture Executive Summary		
Wichita-Sedgwick County ITS Architecture Document		
Wichita-Sedgwick County ITS Architecture Implementation Plan		
Wichita-Sedgwick County ITS Architecture Communications Plan		
Wichita-Sedgwick County ITS Architecture Maintenance Plan		
Wichita-Sedgwick County ITS Architecture Database		

# Schedule



# Scope (Future)



# Next Steps

- Architecture Adoption
- Finalize Project Definitions
- Finalize Project Sequencing
- Identify ITS Standards
- List of Agency Agreements
- Architecture Maintenance Process
- Communications Plan

# Wichita – Sedgwick County Regional ITS Architecture Information

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  - [msm3@iteris.com](mailto:msm3@iteris.com)
  
- Project Web Site
  - [www.iteris.com/wichitaarchitecture](http://www.iteris.com/wichitaarchitecture)