INTELLIGENT TRANSPORTATION SYSTEMS ARCHITECTURE REPORT

November 2025

DOCUMENT OVERVIEW

INTRODUCTION

The Wichita Area Metropolitan Planning Organization (WAMPO) Regional Intelligent Transportation Systems (ITS) Architecture serves as a framework for the planning, deployment, integration, and operation of technology-driven solutions within the transportation network. Applying electronic technologies and communications with this framework improves the efficiency and safety of the transportation system and enables stakeholders to establish a long-term vision for the region's ITS infrastructure that is strategically broken down into manageable, fundable projects. This framework is crucial for encouraging interoperability and resource sharing among diverse agencies and jurisdictions, as well as identifying and applying relevant ITS standards that facilitate seamless integration.

BACKGROUND & PURPOSE

Imagine a city or a region's transportation network – its roads, traffic signals, public transit, emergency services, and even information for travelers. Now imagine trying to make all these various parts work together as smoothly and efficiently as possible. This is where ITS Architecture plays a key role. Think of it as a blueprint for how technology is used to improve our transportation systems.

ITS is the use of electronics, communications, and computer processing to make our transportation network safer and more efficient. Everyday examples include traffic signals that adjust to traffic flow, electronic signs that display delay information, and mobile apps that provide real-time updates. Now, similar to how a blueprint is needed to build a house, an ITS Architecture is needed to plan and build these technology-based transportation improvements in a coordinated way across the region. The ITS Architecture acts as a framework that guides how different transportation systems and technologies should work together. It helps different agencies, like city traffic departments, state transportation agencies, and transit authorities, to share information and resources. Here is why ITS Architecture is important for everyone, even for those that are not transportation experts:

- **It helps make transportation safer.** By coordinating systems and providing timely information, ITS can help prevent accidents and improve emergency response.

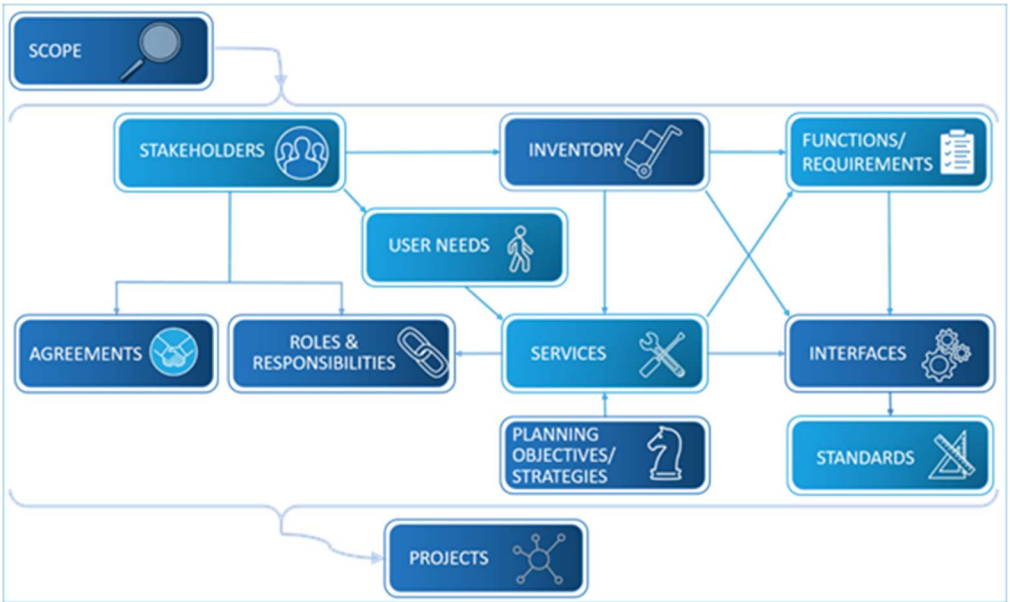
- **It makes getting around more efficient.** ITS Architecture helps plan for things like better traffic flow, reduced delays, and improved public transit - making commuting and traveling easier.

- **It ensures that technological investments are smart.** With a regional plan, agencies can avoid building isolated systems that do not communicate, saving money and ensuring that new projects align with a broader strategy.

- **It can unlock federal funding.** Developing and maintaining regional ITS architecture is a federal requirement. The WAMPO ITS Architecture is one example, based on the National ITS Architecture version 2.2 – renamed in 2017 to the Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT).

To qualify for federal funding, any region planning to use Intelligent Transportation Systems (ITS) – like smart traffic signals, digital signs, or traffic management tools – must have an approved ITS Architecture in place. This ensures that all technology projects are well coordinated and work together as part of a larger system. This requirement has been in effect since 2001, starting with the Transportation Equity Act for the 21st Century (TEA-21), and continues under newer laws like SAFETEA-LU and the FAST Act. The ITS Architecture must also meet specific content guidelines set by the Federal Highway Administration (FHWA):

- A description of the region, including its geographic definition, timeframe, and operations.
- A listing of stakeholders involved.
- Identification of the roles and responsibilities of stakeholders.
- Agreements (existing or new) for operations identified in Regional Architecture.
- System functional requirements.
- Interface requirements and information exchanges with planned and existing systems.
- Identifying the technical standards that help different ITS systems communicate and work smoothly with each other.
- A sequence of projects in the region.

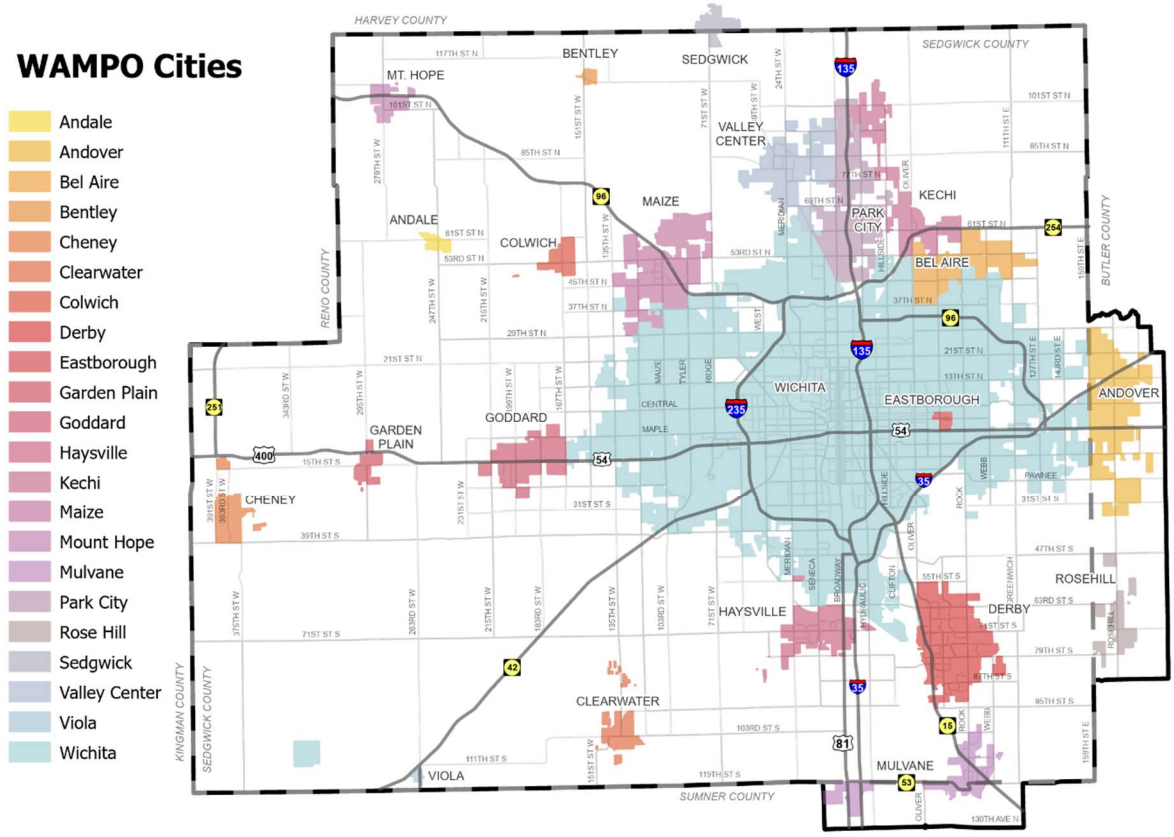


Regional ITS Architecture guide arc-it.net

The illustration shows the relationship of these requirements within the architecture. This document will report on details of these requirements in subsequent sections.

SCOPE OF THE ARCHITECTURE

The WAMPO region is home to 547,230 people and is the largest metropolitan area entirely within the state of Kansas. The region is responsible for 18% of Kansas's Gross Domestic Product (GDP) and is the second-highest GDP by rank (counties) in the state. Wichita, the largest city in the region and in the state, serves as a central hub for business, education, healthcare, and entertainment. It is home to 70% of the regional population, which includes an additional twenty-one (21) cities. The remainder of the WAMPO region is comprised of productive agricultural areas in Sedgwick, Butler, and Sumner counties.

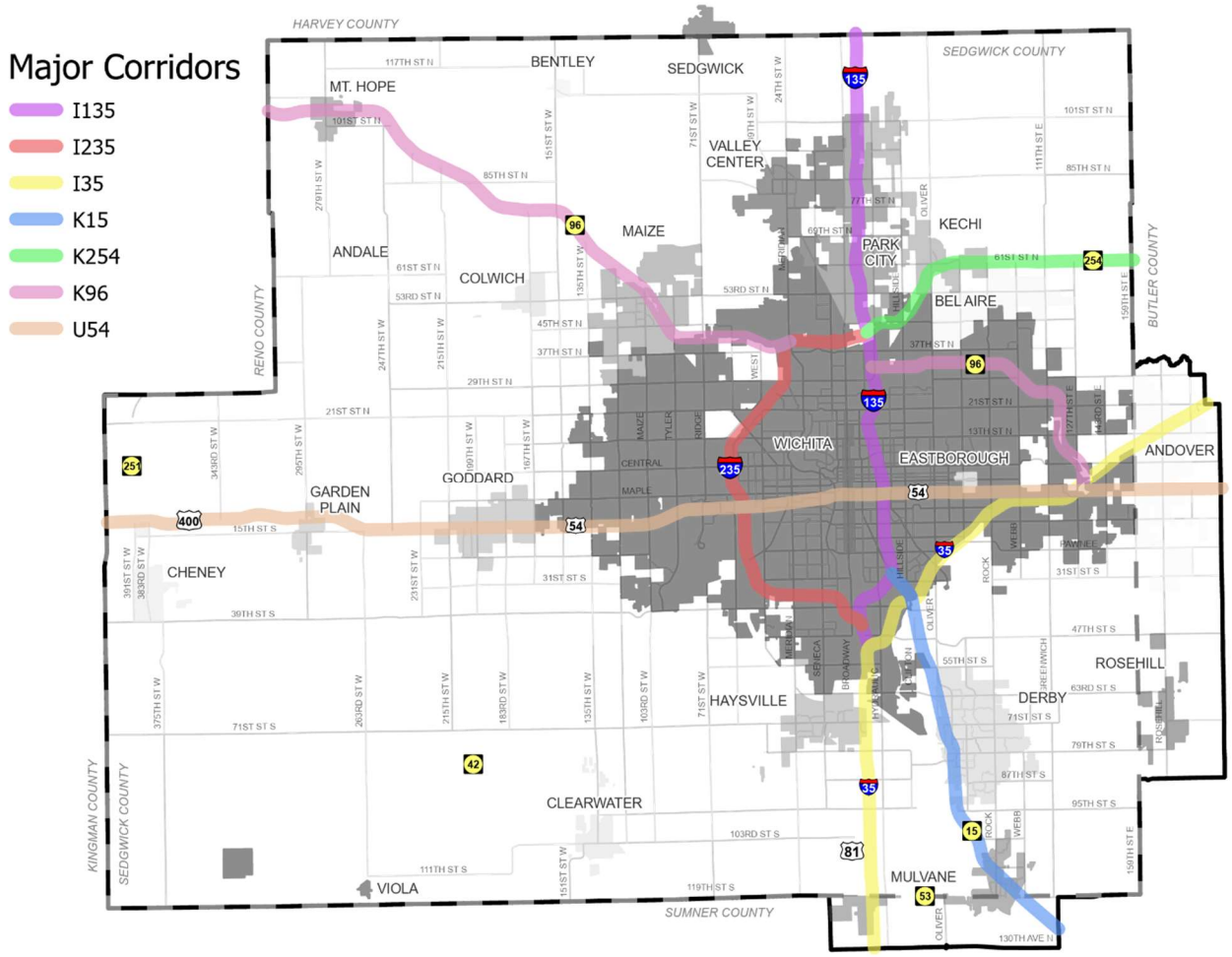


Map of the WAMPO Region with each of the 22 cities highlighted wampo.org

The transportation network of the WAMPO region contains 7 major corridors:

1. I-35 (the only North American interstate connecting Canada, US, and Mexico)
2. US-54 (main east west corridor also known as Kellogg Ave.)
3. I-135 (connecting WAMPO to I-70 north of the region)
4. I-235 (pinwheel interstate corridor around the west side of Wichita)
5. K-15 (connection to the southeast area of the region)
6. K-254 (connection to the northeast area of the region)
7. K-96 (connection to the northeast area of the region)

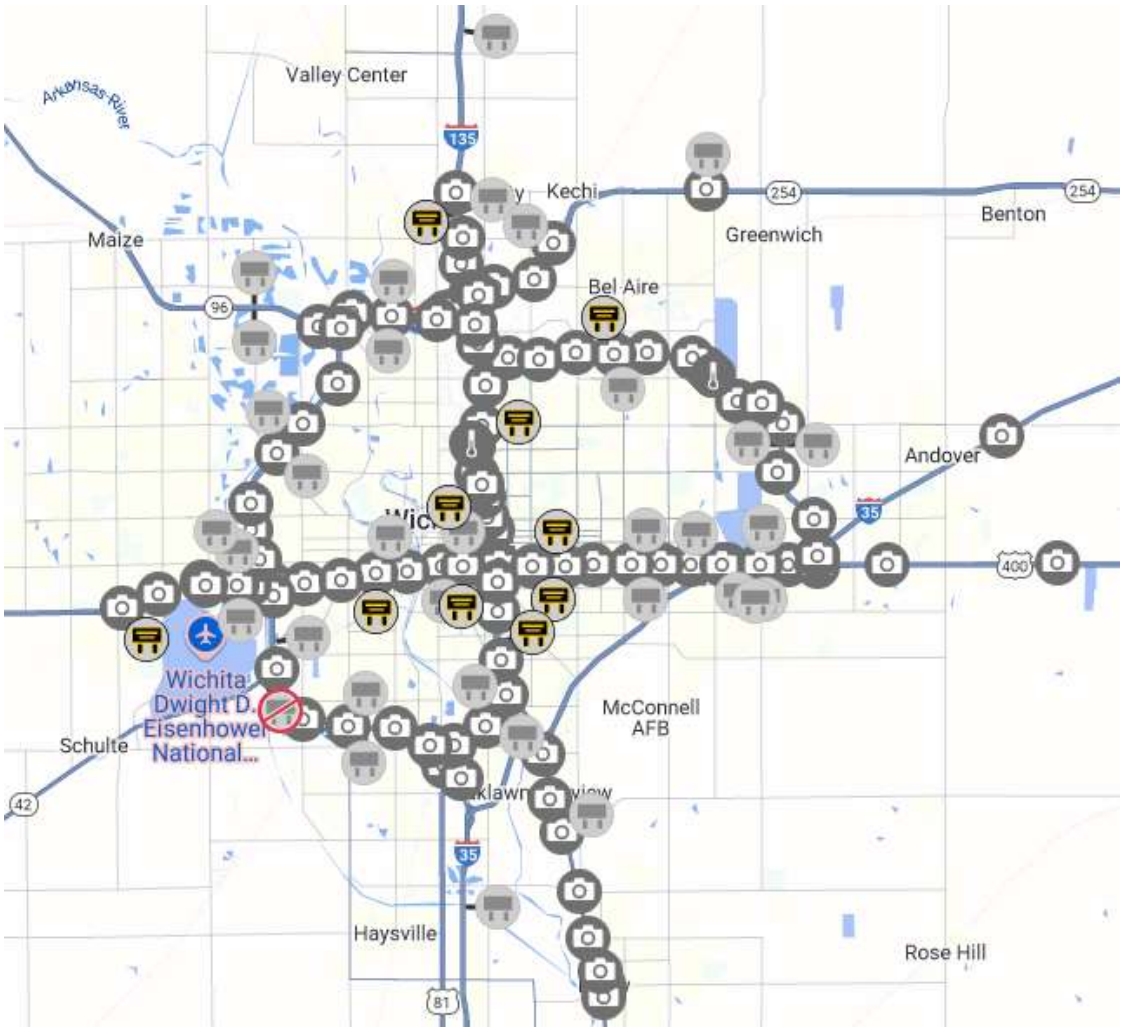
These along of the rest of the transportation network are illustrated here:



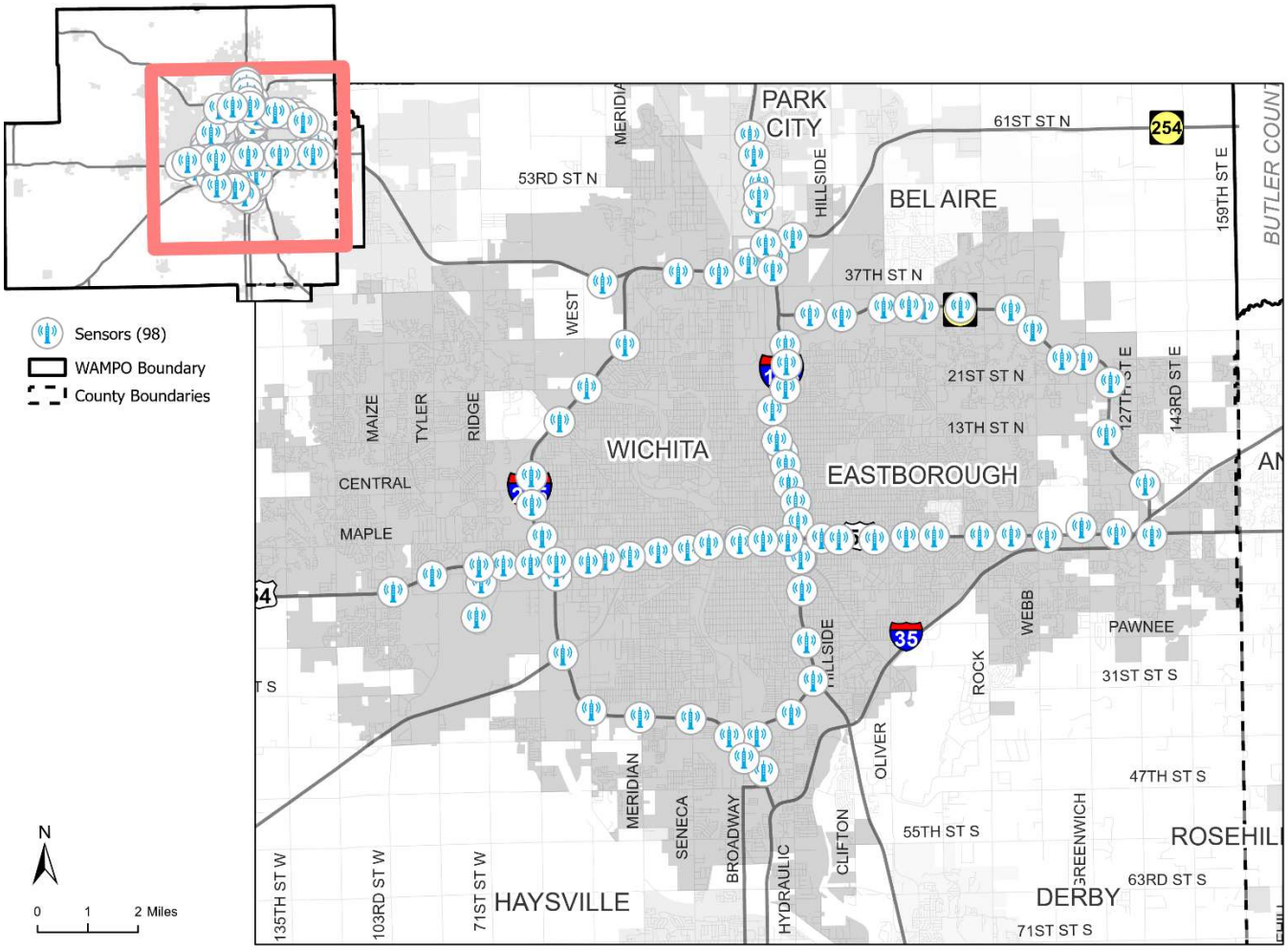
Transportation Network within the WAMPO Region wampo.org

The transportation network is "operated" by Kansas Department of Transportation's (KDOT) Traffic Management Center (TMC) known as WICHway (kandrive.gov). The TMC employs a variety of ITS devices like CCTV Cameras, Speed Sensors, Dynamic Message Signs (DMS), etc. to observe, detect, and disseminate travel conditions in real time to the traveling public.

The following two illustrations depict deployments of CCTV Cameras, DMS, and Sensors around the region.



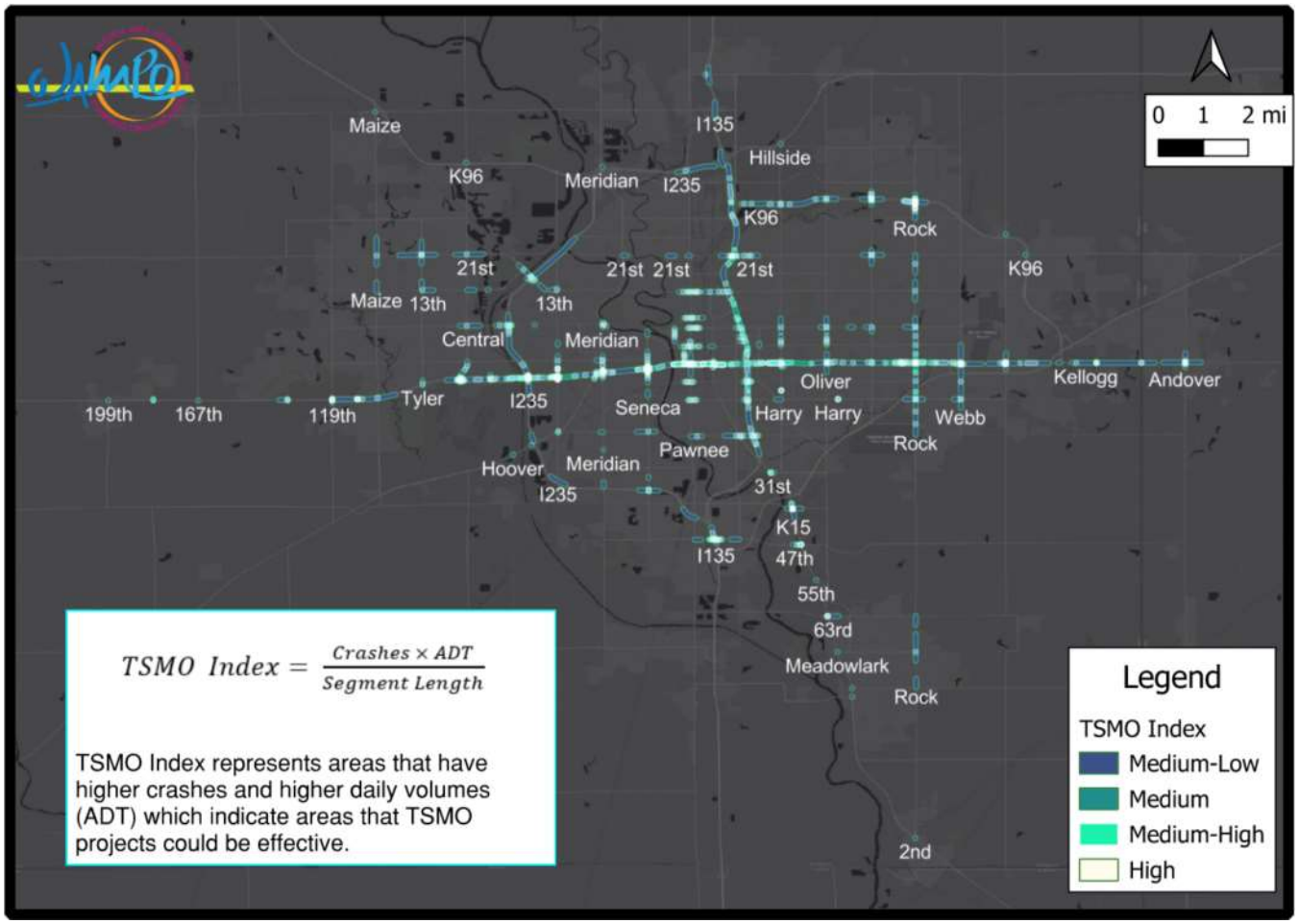
Map of CCTV Cameras and DMS in the WAMPO Region kandrive.gov



Map of Speed Sensors in the WAMPO Region WAMPO MTP2050

Many cities in the region have traffic signals with some form of ITS technology in place, but they are generally managed separately by each local government. Currently, there is little connection or coordination between these traffic signal systems.

Most of the ITS technology in use in the region has been installed along the busiest corridors, where traffic is heaviest. These systems are usually added in response to common traffic problems like congestion or accidents. The next illustration, the TSMO Index, shows the connection between how much traffic is on a road and how many accidents or incidents occur on the road. The 'hot spots' or brighter sections show where ITS is already making a difference or where it could be especially helpful in the future. Additional information about the index and ITS deployments can be found within the ITS Deployment Plan on WAMPO's website.



The TMC and ITS Architecture are a part of a larger function in the transportation world known as Transportation Systems Management and Operations (TSMO). TSMO includes the following:

i. TMC - Freeway and Arterial (major through streets in the local street network) Management
ii. ITS & Communication deployments - Physical deployments of ITS such as smart traffic signals, ITS Architecture, or the system connected to all the components, and methods of communication like fiber that allow the system components to communicate.
iii. Traffic Incident Management (TIM) - A system that helps police, firefighters, and other first responders work together quickly and efficiently when there is an accident or other road incident.
iv. Work Zone Management - Using temporary technology such as message boards and signs to let drivers know about changes or issues in construction zones.
v. Public Communications - Sharing traffic updates that let drivers know about regular and unexpected traffic issues through news, social media, and traffic apps such as WICHway

ITS Architecture Update Process

The following five steps have been taken, encompassing the process of updating the WAMPO region's ITS Architecture for the first time since 2006:

1. **Conduct Stakeholder Interviews:** When updating the region's Intelligent Transportation Systems (ITS) plan, it's important to get input from a variety of groups that will be impacted by the system. This is because ITS goes beyond just roads and traffic. It can involve things like public transit, emergency services, and the cities and stakeholders throughout the WAMPO region. WAMPO's ITS plan includes a variety of organizations, and many of them helped shape the most recent update. The following list of municipalities and agencies were engaged specifically during the update through one-on-one meetings:

    - City of Maize
    - City of Derby
    - City of Haysville
    - City of Goddard
    - City of Andover
    - Park City
    - City of Belaire
    - City of Wichita
    - Kansas Department of Transportation
    - Sedgwick County

    Appendix A identifies the stakeholders that own or operate components of the ITS system within WAMPO Region. The table provides a name and description of the agency, department, or organization represented by the stakeholder. This comprehensive table of stakeholders have been given the opportunity to provide input and feedback on the ITS Architecture and this Report. Details of feedback can be found with the ITS Deployment Plan on WAMPO's website.

2. **Develop a Draft ITS Architecture Update:** Using the information and feedback collected during the stakeholder interviews, the architecture material was updated. This includes:
    - Stakeholders
    - Inventory
    - Agreements
    - Planned ITS Projects

3. **Hold Stakeholder Workshop:** A half-day stakeholder workshop was held on April 22, 2025, to review the draft architecture. Invitations were extended to all stakeholders. The workshop included:
    - Education
    - Review and updates
    - Discussion on future plans

4. **Finalize Updated ITS Architecture:** Following the workshop, updates are completed to the following:
    - Regional ITS Architecture - RAD-IT Tool Output

- The Regional ITS Architecture will be documented using RAD-IT (Regional Architecture Development for Intelligent Transportation). It is a software application developed by the United States Department of Transportation (USDOT). It serves as a tool for documenting and maintaining ITS architecture. The final product is an interactive "website", more than a file, which allows the user capabilities to update and maintain the region architecture information.
- ITS Architecture Report
- ITS Deployment Plan

5. **Develop Final ITS Architecture** Following review by WAMPO staff, the Technical Advisory Committee (TAC) will formally recommend the architecture for approval by the Transportation Policy Body (TPB). Once approved, the architecture will be published and be accessible to the public.

Navigating the ITS Architecture: Terminology and Concepts

Understanding the regional ITS architecture begins with learning key terms and concepts that describe how it is organized and documented. These terms are based on the national ITS framework known as ARC-IT and are recorded locally using the previously mentioned software tool, RAD-IT (Regional Architecture Development for Intelligent Transportation). Every concept (e.g., ITS elements, physical objects, functions, services, and data flows) plays an important role. Together, they help explain how various technologies, services, and agencies are represented and connected in the architecture.

RAD IT produces a set of link web pages that organize this information into a navigable format, which is published on WAMPO's website. This format makes it easier to explore the regional ITS architecture compared to reviewing the raw information within RAD-IT directly. However, these web pages still rely on a basic understanding of the underlying terms and concepts. The following sections are intended to provide that foundation, helping readers make better use of the architecture. This set of linked webpages is simply referred to as the 'ITS Architecture' or 'Regional ITS Architecture' in the content below.

Inventory (ITS Elements)

Appendix B is a table from the ITS Architecture and presents the full inventory of ITS elements in the WAMPO region. They are each tied to a responsible stakeholder and include a brief description of the role the element plays within the regional ITS architecture. Examples include the Kansas 511 traveler information system, city traffic operations centers, public safety vehicles, roadside equipment such as dynamic message signs, and statewide systems like KDOT's Traffic Operations Center.

Physical Objects

Though similar to ITS elements, physical objects in the regional ITS architecture refer to equipment types, device models, or facilities that perform ITS related functions, such as traffic signals, roadside cameras, vehicles, and operations centers. In contrast, ITS elements are customized to reflect how these physical objects are represented locally, often named for the specific agency or system, such as "Wichita

Fire Department (WFD)" or "KDOT Maintenance Vehicle." The list of ITS inventory elements, available on WAMPO's website, can also be sorted by its related physical object.

Standards and Communication

Within the ITS Architecture, there are interfacing (communication) standards and physical standards. Interfacing standards define how different ITS components communicate information, while physical standards describe hardware requirements such as environmental performance, power, and physical security. One example of an interfacing standard is NTCIP Traffic Signal – SNMPv3/TLS, which guides how a traffic management center securely communicates with traffic signal controllers in the field. In the current version of ITS RAD-IT these different standards are grouped together under 'Communication Solutions'. Implementation of these common interfacing standards facilitates deployment of interoperable ITS architecture components even as technology advances and vendors change.

Roles and Responsibilities

In the ITS architecture, stakeholder's roles and responsibilities are documented and organized by an area of service. Or simply an 'Area' as defined by RAD-IT. Examples of service areas include emergency management and traveler information. For Each area, a set of specific stakeholders and their respective roles and responsibilities are defined.

Functions and Functional Objects

Functions are a description of what components of the ITS architecture must do. For example, this includes activities such as collecting traffic data, managing incident responses, or collecting emissions information In the architecture, these most basic tasks are listed as 'requirements' such as this one for Roadway Signal Control: "The field element shall respond to pedestrian crossing requests by accommodating the pedestrian crossing." Given that Roadway Signal Control encompasses far more than pedestrian crossing requests, many of these functional requirements are packaged together in what are called Functional Objects. In this case, the previous example falls under the Roadway Signal Control functional object, which includes a full set of related functions that help manage traffic signals. ITS elements can be linked with one or more of these functional objects (groups of function requirements), which describe what that element is expected to do. These pairings help define the specific role of each ITS architecture element.

Subsystems

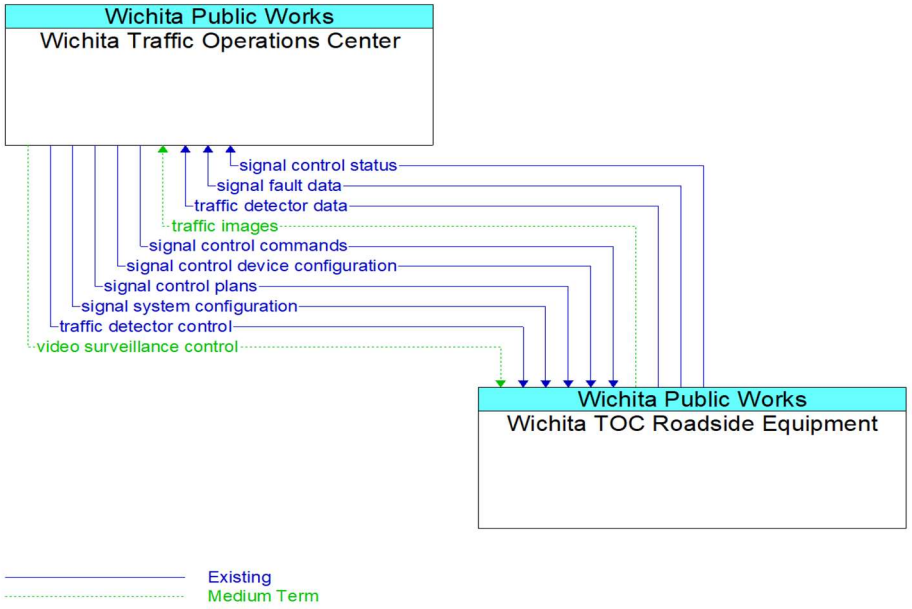
The ITS architecture also groups related functional objects into subsystems. Subsystems represent larger parts of the transportation system that serve a common purpose, such as traffic management, emergency response, or data collection. By organizing functional objects in this way, the architecture shows how individual components (functional objects and their related ITS elements) work together to support broader transportation services (See Services)

Services

Services or service packages, represent distinct slices of the ITS architecture designed around real-world transportation needs, such as emergency management or traveler information. Each service package bundles together a set of ITS elements, physical objects, related functional objects, and data flows (See Interfaces and Data Flows) needed to deliver a specific service (e.g., Electronic Toll Collection, Roadway Closure Management, etc.). WAMPO has adapted several service packages from the set of nationally set of predefined options for use in its regional ITS architecture.

Interfaces and Data Flows

Within an ITS Architecture, data flows are documented through a series of illustrations that allow the user to understand how elements connect with services in the WAMPO region. These data flows are critical to understand as they reveal how the removal of one element affects the operation of services, other elements, and the stakeholders responsible for each. Here is an example of data flows between Wichita Public Works Operations Center and Roadside Equipment. The labeled directional arrows between the boxes are the data flows necessary for this overall connection to operate.



Projects

The ITS architecture also serves as a guide for identifying and organizing real transportation projects. Projects within the architecture link ITS elements, services, stakeholders, and interfaces to actual or planned efforts within the region. Projects may include efforts like expanding fiber networks, installing message signs, and implementing connected vehicle systems. Each project listed in the architecture includes a description, participating stakeholders, relevant service packages, and associated ITS elements.

Agreements

The ITS architecture also identifies the need for agreements between agencies to support coordination, and cross-jurisdictional operations. These agreements help define how information moves between systems, how responsibilities and costs are shared, and how ITS infrastructure maintained across jurisdictions. In the ITS architecture documentation, agreements are linked to specific stakeholders and projects. Examples include agreements between a city and KDOT to coordinate on the maintenance and expansion of fiber networks.

Project Deployment Plan

WAMPO has developed a separate ITS Deployment Plan to document current or near-term projects, as well as future potential ITS projects and initiatives within the region. Short-term projects, those that are already underway or anticipated to be completed within the next 5 years, were collected from stakeholder engagement or pulled from the Transportation Improvement Program (TIP). Potential future projects are a result of stakeholder meetings in which issues within the transportation network where ITS deployments may provide solutions are discussed. The ITS Deployment Plan includes a matrix of these projects and initiatives sequenced into short-term (0-5 years), mid-term (6-10 years), long-term (10+ years) time bands for deployment.

Connection to Planning

During the ITS Architecture update project, WAMPO organized an ITS Steering Committee comprised of key stakeholder agency individuals responsible for ITS planning in the region. This committee is responsible for monitoring the use of regional architecture during ITS project planning with WAMPO taking the lead on maintaining the architecture.

How ITS and the Transportation Improvement Program Work Together

ITS projects and the TIP are closely connected – especially when federal funding is used. It's important to make sure that any ITS projects in the TIP follow the plans already set in the Regional ITS Architecture. Here's what the connection looks like:

- **Integration into the Planning Process:** The ITS Architecture is meant to be a routine element of transportation planning in the region. This includes informing project priorities during TIP development. This ensures that the region's overall ITS goals are considered when deciding which projects to fund.

- **Guidance for Project Definition:** The ITS Architecture can help planners include ITS features into projects listed in the TIP. It can also help define project details, show how different systems can work together, and give better cost estimates based on what's needed.

- **Review and Evaluation of TIP Projects:** When new projects are proposed for the TIP, agencies should check to see if they include ITS components, and make sure those components match what's already in the Regional ITS Architecture.

How ITS Architecture Supports Long-Term Transportation Planning

ITS Architecture plays an important role in shaping the region's Metropolitan Transportation Plan (MTP). Here's how they work together:

- **Guidance for ITS Integration:** The Regional ITS Architecture provides a guide for including smart transportation technologies in long-term plans.
- **Alignment with Regional Goals and Vision:** The MTP sets the big-picture goals for transportation over the next twenty-five years. ITS Architecture helps make sure technology projects support those goals.
- **Supports an Integrated System:** ITS focuses on how different parts of the transportation system – like roads, traffic signals, and transit – can share information and work together. This supports the MTP's goal of creating a more connected transportation network.
- **Focuses on the Future:** Both the ITS Architecture and the MTP provide for the future, helping planners think about how today's ideas will grow into tomorrow's systems.
- **Shapes Project Ideas:** The ITS Architecture helps define early ideas for future technology projects. It can outline what these projects might include and how they will help meet regional goals.
- **Helps Prioritize Projects:** The ITS Architecture also helps decide which projects are most important by showing how they fit with long-term strategies, what data is needed, and how everything connects.

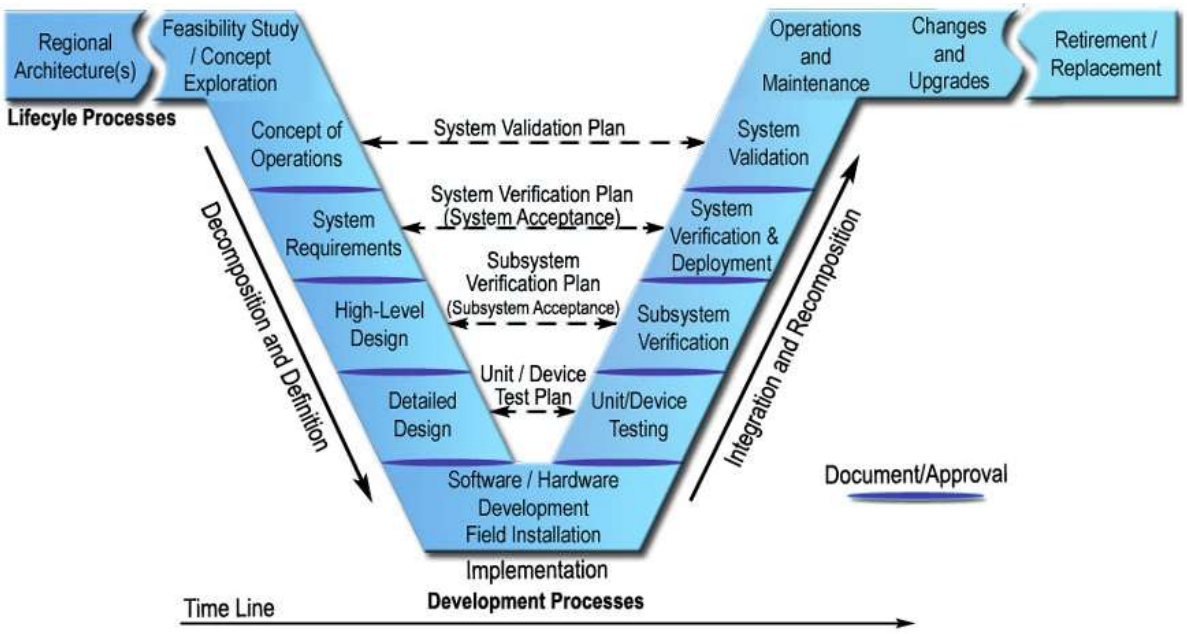
Maintaining the ITS Architecture

WAMPO's Regional ITS Architecture defines a vision for ITS implementation at the time it was developed and is considered a living document. Needs change with growth and advances in technology. Shifts in regional needs and focus, as well as changes in the National ITS Architecture, will necessitate updates to the ITS Architecture. Also, if ITS projects do not conform with the region's architecture, it may be necessary to modify the architecture rather than modify the project. WAMPO has developed a separate ITS Architecture Maintenance Plan to address details of maintenance, updates, and project conformity. The maintenance plan serves as a step-by-step guide for using the RAD-IT based webpages to aid in completing these tasks.

Systems Engineering Analysis and ITS Projects

In addition to ITS Architecture requirements, Final Rule 23 CFR 940 requires each ITS project that integrates with the architecture to be developed using a systems engineering process. Deploying technology includes risks, like becoming outdated or not meeting the needs of stakeholders, resulting in unexpected costs and delays. The goal of performing a systems engineering analysis is to systematically address each component of the project deployment process and demonstrate that thorough consideration and planning was completed to help control costs and ensure schedule adherence. Requiring conformance with the architecture ensures project success for the

reasons noted in the Background and Purpose section of this document.



This Vee Diagram is frequently used in systems engineering discussions to demonstrate where the Regional ITS Architecture and systems engineering process fits into the life cycle of an ITS project. The Regional ITS Architecture is shown unattached from the rest of the diagram because it is not specifically project related and an undetermined amount of time can pass between architecture development and the beginning of project implementation. Moving from left to right along the diagram, the systems engineering process addresses concept exploration, the systems engineering management plan framework, concept of operations, and systems requirements.

The systems engineering process is commensurate with the scope of risk in the project. In determining risk, the following project factors are considered:

- Number of jurisdictions
- Extent of software creation
- Extent of proven hardware and communications technology used
- Number and complexity of new interfaces to other systems
- Level of detail in requirements and documentation
- Level of detail in operating procedures and documentation
- Service life of technology applied to equipment and software

During systems engineering, the ITS Architecture should be leveraged to discover the following:

- Identification of portions of the Regional ITS Architecture being implemented

- Identification of participating agencies and their roles and responsibilities
- Definition of system requirements
- Analysis of alternative system configurations and technology options that meet thesystem requirements
- Identification of various procurement options
- Identification of applicable ITS standards and testing procedures
- Documentation of the procedures and resources necessary for operations and management of the system.

Appendix A – WAMPO ITS Stakeholders

Stakeholder Name	Stakeholder Description
511 Stakeholder Group	The 511 Stakeholder Group contains the primary stakeholders involved with the Kansas statewide 511 phone-based traveler information services as well as a future Wichita area 511-based traveler information website.
BNSF Railroad	Burlington Northern Santa Fe Railroad.
City of Andale	City of Andale is a city in Sedgwick County.
City of Andover	The City of Andover is located in Butler County.
City of Bel Aire	The City of Bel Aire is a city within Sedgwick County, and it abuts the city of Wichita to the Northeast.
City of Bentley	Bentley is located in Sedgwick County.
City of Cheney	The city of Cheney is in Sedgwick County and it has a police and fire department.
City of Clearwater	The city of Clearwater is in Sedgwick County and the city government has police, fire, public works and building planning and code enforcement departments.
City of Colwich	Colwich is a community located in northwestern Sedgwick County. It has police, fire and maintenance departments.
City of Derby	City of Derby is in Sedgwick County and has engineering, fire and rescue, public works and parks and police departments.
City of Eastborough	Eastborough is located in Sedgwick County.
City of Garden Plain	Garden Plain is located in western Sedgwick County
City of Goddard	Goddard is located in the Southcentral part of Kansas just west of Wichita on US-54/400 Highway in Sedgwick County.
City of Haysville	The City of Haysville is in Sedgwick County. The city has police, planning, public works and recreation departments among others.
City of Kechi	City of Kechi is in Sedgwick County. It has a police department, planning and zoning department.

Stakeholder Name	Stakeholder Description
City of Maize	Maize is a city in Sedgwick County and its list of city departments include engineering, fire protection, police, and public works.
City of Mount Hope	The City of Mount Hope is in Sedgwick County. It has police and volunteer fire department.
City of Mulvane	Mulvane is located on the county line between Sumner and Sedgwick counties, five miles west of the corner of Sumner, Sedgwick, Butler, Cowley Counties. It has an emergency (police, fire, Ems) and public works department and also a planning commission.
City of Park City	The City of Park City is in Sedgwick County. It has planning, park, police, and public works departments.
City of Sedgwick	Sedgwick, Kansas is located in south central Harvey County on the border with Sedgwick County.
City of Valley Center	City of Valley Center is in Sedgwick county and it has public safety (Police, EMS, and Fire) and public works departments.
City of Viola	The City of Viola is in Sedgwick County.
Commercial Vehicle Operators	This stakeholder represents all commercial vehicle operators traveling through Kansas.
CVO Check Station Group	The CVO Check Station Group represents the stakeholders involved with administering the CVO Check Stations.
FMCSA	This stakeholder is the Federal Motor Carrier Safety Administration.
General Public	This stakeholder represents the general public.
Healthcare Providers	This stakeholder represents all of the healthcare providers (e.g., Hospitals) in the Wichita Area.
Kansas Bureau of Investigation	This stakeholder represents the Kansas Bureau of Investigation (KBI).
Kansas Corporation Commission	This stakeholder represents the Kansas Corporation Commission (KCC).
Kansas Department of Emergency Management	This stakeholder represents the Kansas Department of Emergency Management.

Stakeholder Name	Stakeholder Description
Kansas Department of Revenue	This stakeholder represents the Kansas Department of Revenue (KDOR).
Kansas Highway Patrol	The Kansas Highway Patrol (KHP) provides law enforcement services for the State of Kansas including enforcement of traffic and other laws of the State of Kansas.
Kansas Turnpike Authority (KTA)	This stakeholder represents the Kansas Turnpike Authority who is responsible for managing the Kansas Turnpike.
KDOT	The Kansas Department of Transportation (KDOT) is responsible for maintaining approximately 10,000 miles of state highways and their related features across the state of Kansas. KDOT's headquarters are in Topeka with six District Offices, 26 Area Offices and 112 Sub-Area Offices across the state. KDOT is organized into numerous Bureaus with specific responsibilities.
KHP-Turnpike	The Kansas Highway Patrol (KHP) Turnpike dispatchers provide dispatching services for the Kansas Highway Patrol for the turnpike.
KMCA	This stakeholder represents the Kansas Motor Carriers Association (KMCA).
Local Media	This stakeholder represents all of the media companies that plan to disseminate transportation-related information.
MAP	This stakeholder group represents the Motorist Assistance Patrol (MAP) stakeholders.
NOAA	This stakeholder represents the National Oceanic and Atmospheric Administration (NOAA) who runs the National Weather Service (NWS).
PrePass	PrePass operates an automatic vehicle identification (AVI) system that allows participating transponder equipped commercial vehicles to bypass designated weigh stations.
Private Weather Providers	This stakeholder represents private weather service providers who provide value-added weather services to transportation agencies.
Railroad Operators	This stakeholder group represents the railroad operators in the Wichita Area.
Sedgwick County	This stakeholder represents the County of Sedgwick.

Stakeholder Name	Stakeholder Description
Sedgwick County Department on Aging and Disabilities	The Sedgwick County Department of Aging and Disabilities provides services to adults 55+ and individuals with disabilities in Sedgwick County in an effort to assist them in maintaining independence. The Department of Aging and Disabilities is responsible for planning and coordinating a system to meet the needs of older adults and individuals with disabilities in the Sedgwick County area. Special emphasis is given to the needs of low income, minority, frail and disabled adults to prevent costly institutionalization. The department's focus is on providing home and community-based services, including home delivered meals, supportive services, transportation, information and assistance and linking individuals in need to available services through the department or other resources in the community.
Sedgwick County Emergency Communications	The Sedgwick County Department of Emergency Communications (SGEC) provides 9-1-1 emergency call handling and dispatching service for all Sedgwick County public safety agencies including the Wichita Police and Fire Departments and Sedgwick County Sheriff, Fire and EMS Departments. SGEC dispatches nearly 500,000 calls for service annually. SGEC provides 9-1-1 emergency call handling and full dispatch service or some level of incident alerting service for Andale PD, Bel Aire PD, Bentley FD, Cheney PD, Clearwater PD, Clearwater FD, Clearwater EMS, Colwich PD, Colwich FD, Derby PD, Derby FD, Goddard PD, Kechi PD, Maize PD, Mt Hope PD, Mt Hope FD, Mt Hope EMS, Park City Police Department, Sedgwick County EMS, Sedgwick County FD, Sedgwick County Sheriff, Viola FD, Valley Center Fire Department, Eastborough PD, Garden Plain PD, Wichita Police PD, Wichita FD under the Sedgwick County public safety agencies.
Sedgwick County Emergency Management	Emergency Management's mission is to build, sustain, and improve Sedgwick County's capabilities in disaster prevention, preparedness, mitigation, response, and recovery through whole community collaboration, innovative planning, training, and exercise activities.
Sedgwick County EMS	Sedgwick County Emergency Medical Service (EMS) responds to calls for emergency medical assistance in Wichita and the communities of Sedgwick County. EMS provides Advanced Life Support (ALS) services. EMS receives First Responder basic life support (BLS) emergency response support from volunteer Emergency Medical Technicians (EMTs) in Derby, EMS Reserves and EMTs on the Wichita and Sedgwick County Fire Departments.
Sedgwick County Fire	The Sedgwick County Fire Department, District #1(SCFD)provides fire protection and emergency services response for Sedgwick County.
Sedgwick County Public Works	Public Works is responsible for over 600 miles of roads and 657 bridges within Sedgwick County. The Highway Department handles the operations and maintenance of roads, bridges and intersections to ensure safe passage throughout the County. The Stream Maintenance Department maintains certain water courses to help minimize flooding, erosion and property damage. The Noxious Weed Department is responsible for the control and eradication of noxious weeds on all County property.

Stakeholder Name	Stakeholder Description
Sedgwick County Sheriff	The Sedgwick County Sheriff's Department provides law enforcement and criminal justice services to Sedgwick County. Field operations are provided by the Department Operations Bureau that includes the Patrol Division and Investigation Division. The Department Detention Bureau operates the Sedgwick County Adult Detention Facility.
Suburban Communities	This stakeholder group represents all of the suburban communities external to the City of Wichita and in the Wichita Area.
Suburban Emergency Dispatch Agencies	This stakeholder group represents all of the suburban community emergency dispatch agencies external to the Cities of Wichita and Andover in the Wichita region.
Suburban Maintenance and Construction Agencies	This stakeholder group represents all of the suburban community maintenance and construction agencies external to the City of Wichita and in the Wichita Area.
Union Pacific Railroad	This stakeholder represents the Union Pacific (UP) Railroad traveling through the Wichita Area.
WAMPO (Wichita Area Metropolitan Planning Organization)	
Watco Railroad	Watco is the owner and operator of a diverse network of short line railroads, terminals, and ports throughout North America.
Wichita Airport Authority	The Wichita Airport Authority is responsible for the Dwight D. Eisenhower National Airport operations.
Wichita Area Public Safety Agencies	This stakeholder group represents all of the public safety agencies in the Wichita Area.
Wichita Department of Environmental Health	The Department of Environmental Health operates several programs aimed at improving and maintaining the quality of life for citizens of the Wichita region as well as protecting their health and lives. Most activities of the Department are field activities and involve inspections and investigations of complaints receive from citizens or conditions seen while in the field. The Department operates these programs through specialized Sections of the Department, most with field staff assigned for specific duties. The Department programs include air quality. Air monitoring is conducted at a number of fixed sites throughout the City and MSA.
Wichita Fire Department (WFD)	The City of Wichita Fire Department provides fire suppression, fire investigation, fire prevention, citizen rescue, emergency medical services, and hazardous materials accident handling.

Stakeholder Name	Stakeholder Description
Wichita IT/IS	This stakeholder represents the City of Wichita's (COW) information technology and information services (IT/IS).
Wichita Office of Central Inspection	The Wichita Office of Central Inspection (OCI) is responsible for on-site inspection of all building construction and remodeling permit work in the City of Wichita, including new construction, additions, remodeling and trade work (trade work includes electrical, mechanical, plumbing, sewer and elevators). OCI also performs inspections of new or altered business wall or pole/ground signage for which permits have been issued, and inspection on code enforcement cases initiated on existing structures and land uses.
Wichita Parks and Recreation	The Wichita Parks and Recreation Department is responsible for city park and parkway maintenance, recreational programming and implementation, athletic programming and implementation and special events.
Wichita Police	Wichita Police Department (WPD) provides law enforcement services to the City of Wichita. The mission of the Department is “to provide professional and ethical public safety services in partnership with citizens to identify, prevent and solve the problems of crime, fear of crime, social disorder and neighborhood decay, thereby improving the quality of life in our community." The Department is comprised of numerous divisions and sections that provide specialized services. The Divisions include Patrol Division, Support Services Division, and Field Services Division among others.
Wichita Public Works	The Wichita Public Works Department provides for the design, construction, maintenance and cleaning of the City’s streets, roads, sidewalks and traffic control devices; maintenance and custodial services for City buildings; and natural resource conservation.
Wichita Transit	Wichita Transit provides public transportation services for the City of Wichita. This includes fixed route bus services and paratransit services for riders with a disability. Other services include special event shuttles and chartered trolley services.

Appendix B – WAMPO ITS Elements

Stakeholder	Element Name	Element Description	Element Status
511 Stakeholder Group	Kansas 511 System	This element represents the 3-digit traveler information phone system for the state of Kansas.	Existing
City of Andover	City of Andover 911	The City of Andover 911 system is responsible for 911 call-taking and dispatch of public safety vehicles in the city.	Existing
	City of Andover Fiber Optic Network	Fiber Optic cable network installed to connect field devices with the city's traffic management center.	Near Term
	City of Andover Maintenance and Construction System.	This element is responsible for providing the maintenance and construction activity for the City of Andover including snow plow operations, traffic equipment repair, etc.	Near Term
	City of Andover Public Safety Vehicles	The City of Andover Public Safety Vehicles represent the public safety vehicles with the jurisdiction of Andover.	Existing
	City of Andover Roadside Equipment	City of Andover's Signal System Equipment.	Near Term
	City of Andover TOC	City of Andover's Traffic Operations Center responsible for controlling the City of Andover signal system.	Near Term
Commercial Vehicle Operators	Commercial Vehicles	This is a generic representation of the various commercial vehicles (e.g., JB Hunt) that will traverse through the geographic scope of the Wichita Area Regional ITS Architecture.	Existing
CVO Check Station Group	Kansas CVO Check Stations	This element supports functionality to allow automated vehicle identification at mainline speeds for credential checking, and roadside safety inspections.	Existing
General Public	Personal Information Access Devices	Personal Information Access Devices used by the general public to send and retrieve traveler information.	Existing
	Vehicle	General Vehicle used for Electronic Toll Collection (ETC) applications.	Existing

Stakeholder	Element Name	Element Description	Element Status
Healthcare Providers	Healthcare Facilities	This element represents emergency care facilities that are in the Wichita Area Metropolitan Planning Organization (WAMPO) planning area.	Existing
Kansas Bureau of Investigation	Kansas Bureau of Investigation (KBI) System	This element represents the Kansas Bureau of Investigation (KBI) system which provides alerts (e.g., amber alerts) and advisories.	Existing
	Kansas Criminal Justice Information System (KCJIS)	The Kansas Criminal Justice Information System (KCJIS) is responsible for sending alerts and extreme weather conditions to all public safety organizations.	Existing
Kansas Department of Emergency Management	National Warning System (NAWAS)	This element represents the National Warning System that provides alerts and advisories on a National basis.	Existing
Kansas Highway Patrol	*47-KHP	KHP Central Dispatch which represents motorist using their cell phones to call in traffic incidents.	Existing
	Kansas Highway Patrol Dispatch	KHP operates throughout the state of Kansas and is organized into Troops. Patrol operates with nine troops. Troup F's region includes Sedgwick County and 12 other rural counties. The KHP also dispatches MAP vehicles.	Existing
	KHP Vehicles	This element represents the vehicles that are dispatched by KHP.	Existing
Kansas Turnpike Authority (KTA)	Kansas Turnpike Authority Center	This center is responsible for providing public safety on the Kansas Turnpike along with managing the toll collection processes on the turnpike. This center will also provide Kansas 511 with traffic congestion information for the turnpike.	Existing
	Kansas Turnpike Authority Environmental Sensors Stations	Environmental Sensor Stations owned by KTA are used to collect road weather conditions along the turnpike.	Existing
	KTA Maintenance Vehicle	This element represents the maintenance and construction vehicles including snowplows for KTA.	Existing

Stakeholder	Element Name	Element Description	Element Status
	KTA Motorist Assistance Patrol Vehicles	This element represents the motorist assistance patrol vehicles operated by the Kansas Turnpike Authority for the turnpike.	Existing
	KTA Toll Collection Equipment	This element represents the field equipment that is used for electronic toll collection and represents KTAG.	Existing
KDOT	CAV Authorizing Center	The Connected and Automated Vehicle (CAV) Authorizing Center provides the functionality needed to enable data exchange between and among mobile and fixed transportation users. Its primary mission is to enable safety, mobility and environmental communications–based applications for both mobile and non–mobile users. The CAV Authorizing Center has some jurisdiction over limited access resources; typically this includes roadside application access and radio spectrum licensing. It may be implemented as an autonomous center or as a set of supporting services that are co–located within another center. This object is generally defined and will be refined as needed.	Medium Term
	CAV-ITS Map Update System	The Connected and Automated Vehicle (CAV)–ITS Map Update System represents a provider of map databases used to support ITS services. It supports the provision of the map data that are used directly by vehicles (e.g., roadway and intersection geometry data sets), travelers (e.g., navigable maps used for route guidance and display maps used at traveler information points), system operators (e.g., map data used by Traffic Operators to monitor and manage the road network, and map data used by Fleet Managers to manage a vehicle fleet). It may represent a third–party provider or an internal organization that produces map data for agency use. Products may include simple display maps, map data sets that define detailed road network topology and geometry, or full geographic information system databases that are used to support planning and operations. This element is tagged as CAV related, but that is only to draw attention to its need for CAV purposes, but it is also valuable for traditional ITS services.	Medium Term

Stakeholder	Element Name	Element Description	Element Status
	KDOT CAV Field Equipment	KDOT CAV Field Equipment represents the Connected and Autonomous Vehicle (CAV) field equipment in the KDOT WAMPO area. In addition to the KDOT Traffic Operations Center (Wichita Metro), this equipment will interface to statewide CAV systems that are required for administrative, security, credentialing, or other support purposes.	Medium Term
	KDOT Maintenance Vehicle	This element represents the maintenance and construction vehicles including snowplows for KDOT.	Existing
	KDOT Planning Archive	This is KDOT archiving system that collects and analyze traffic, incident, and emergency data that can be used for planning future initiatives throughout the region.	Existing
	KDOT SCMS	KDOT's Security and Credentials Management System (SCMS) will support connected and autonomous vehicle operations. The SCMS will enable trusted communications between mobile devices and other mobile devices, roadside devices, and centers and protect data they handle from unauthorized access. As the SCMS interacts with mobile devices and other devices in the Connected and Automated Vehicle (CAV) environment, these devices pass through stages as certificates and cryptographic material are furnished that enable the device to have trusted interactions with other devices in the CAV environment.	Medium Term
	KDOT TOC (Wichita Metro) Kiosks	Kiosks are public informational displays supporting various levels of interaction and information access.	Near Term
	KDOT TOC (Wichita Metro) Maintenance and Construction System	This element is responsible for providing the maintenance and construction activity for KDOT including snowplow operations, traffic equipment repair, etc. KanDrive is KDOTs all things road systems. DOT also has a maintenance and construction system.	Existing
	KDOT TOC (Wichita Metro) Roadside Equipment	Roadside Equipment includes any and all equipment distributed on and along the roadway which monitors and controls traffic. This can include equipment for ramp metering, roadway treatment systems and environmental sensors.	Existing

Stakeholder	Element Name	Element Description	Element Status
	KDOT TOC Information System	This element represents the KDOT website that provides transportation related information to aid motorists in trip planning. This website will display incidents, congestion levels, and weather-related information.	Existing
	KDOT TOPS	This element represents KDOT Truck Overturn Prevention System (TOPS) that measures truck's speed in real-time and displays warning message on roadside dynamic message signs if the measured speed is higher than the safe speed on a roadway curve such as on the curve from EB K-96 to EB US 54 interchange.	Near Term
	KDOT Traffic Operations Center (Wichita Metro)	The KDOT TOC is responsible for managing and controlling traffic conditions on the arterials and freeways they operate. Traffic is managed through vehicle detectors, dynamic message signs, and closed-circuit television.	Existing
KHP-Turnpike	*KTA	This element represents motorists using their cell phones to report incidents to the Kansas Highway Patrol - Turnpike.	Existing
	KHP Turnpike Dispatch System	The KHP Turnpike Dispatch System is responsible for providing law enforcement on the Turnpike.	Existing
	KHP Turnpike Vehicles	This element represents the vehicles that are dispatched by KHP Turnpike dispatchers.	Existing
Local Media	Media	This represents information systems that provide traffic reports, travel conditions, and other transportation-related news services to the traveling public through radio, TV, and other media.	Existing
MAP	Motorist Assistance Patrol Vehicles	This element represents emergency patrol vehicles that traverse the Wichita metro area system (except the Turnpike) to assist motorists in emergency situations while also detecting incidents that may cause delays to motorists.	Existing
NOAA	National Weather Service	This element provides atmospheric weather observations and forecasts that are collected and derived by the National Weather Service.	Existing

Stakeholder	Element Name	Element Description	Element Status
Private Weather Providers	Surface Transportation Weather Service Providers	This represents value-added private weather services (e.g., observations, nowcasts and forecasts) provided by private weather providers.	Existing
Railroad Operators	Wayside Equipment (Railroad Gates)	This element represents equipment at a highway rail intersection providing notification of an arriving train that is operated by rail agencies.	Long Term
Sedgwick County	Sedgwick County EMS Vehicles	This element represents vehicles that are dispatched by the Sedgwick County 911/EOC.	Existing
	Sedgwick County Fiber Optic Cable Expansion	Fiber Optic cable network installed to connect field devices with the Sedgwick County's traffic management center.	Long Term
	Sedgwick County Fire Vehicles	This element represents vehicles that are dispatched by the Sedgwick County 911/EOC.	Existing
	Sedgwick County Government Data Repository	Maintain/archive data for a variety of uses and operates similar to a data clearinghouse.	Existing
	Sedgwick County Maintenance and Construction Vehicles	This element represents the vehicles that are dispatched by the Sedgwick County Maintenance and Construction Division.	Existing
	Sedgwick County Roadside Equipment	This element represents vehicle detectors and traffic controllers for Sedgwick County that sends information to the Wichita Traffic Operations Center.	Long Term
Sedgwick County Department on Aging and Disabilities	Sedgwick County Transportation Brokerage System	The Sedgwick County Transportation Brokerage System provides rides through private paratransit providers.	Existing
	Sedgwick County Transportation Brokerage Vehicles	This element represents the vehicles that are dispatched by Sedgwick County Transportation Brokerage System.	Existing

Stakeholder	Element Name	Element Description	Element Status
Sedgwick County Public Works	Sedgwick County Maintenance and Construction System	This element is responsible for providing the maintenance and construction activities for Sedgwick County including snowplow operations, traffic equipment repair, etc.	Existing
Sedgwick County Sheriff	Sedgwick County Sheriff Vehicles	This element represents vehicles that are dispatched by the Sedgwick County 911.	Existing
Suburban Communities	Suburban Communities Traffic Operations Center	The Suburban Communities are responsible for managing and controlling traffic conditions on the arterials they operate.	Near Term
	Suburban Community Fiber Optic Network	Fiber Optic cable network installed to connect field devices with the traffic management center.	Near Term
	Suburban Community Field Equipment	Generic element representing local cities' ITS roadside field equipment not specifically enumerated in other inventory elements. This suggests that these traffic signal systems that are widely scattered throughout the WAMPO area should be integrated in a consistent fashion, when circumstances require. ITS field equipment may include traffic signals, vehicle detectors, CCTV cameras, dynamic message signs, etc., to control and monitor traffic.	Existing
	Suburban Community Traffic Operations Center	The Suburban Community Traffic Operations Center is responsible for managing and controlling traffic conditions on the arterials they operate.	Existing
	Suburban Public Safety Vehicles	This element represents the public safety vehicles that service the suburban areas.	Existing
Suburban Emergency Dispatch Agencies	Suburban Emergency Dispatch Centers	This element provides public safety dispatch in the Suburban areas that are not covered by the Sedgwick County 911 system or the City of Andover 911 system.	Existing
Suburban Maintenance and Construction Agencies	Suburban Maintenance and Construction System	This element is responsible for providing the maintenance and construction activities for the Suburban Cities including snowplow operations, traffic equipment repair, etc.	Existing

Stakeholder	Element Name	Element Description	Element Status
Wichita Airport Authority	Dwight D. Eisenhower National Airport	This element provides airport schedule information to the public.	Existing
	Jabara Airport	Jabara Airport is located approximately nine miles North-East of McConnell AFB and 2.5 miles North of Beech Field. The airport authority shares public safety vehicles with the Eisenhower Airport and can dispatch vehicles from the Jabara Airport.	Existing
Wichita Area Public Safety Agencies	Sedgwick County 911	The Sedgwick County Department of Emergency Communications (SGEC) provides 9-1-1 emergency call handling and dispatching service for most public safety agencies within Sedgwick County.	Existing
Wichita Department of Environmental Health	Air Quality Alert System	The Air Quality Alert System inspects sources of air pollution in the Wichita region, conducts air monitoring, responds to hazardous materials incidences as needed, assists citizens and businesses in resolving indoor/outdoor air quality problems.	Existing
	Air Quality Sensors	These sensors monitor general air quality within a sector of an area and also monitor the emissions of individual vehicles on the roadway.	Existing
	HAZMAT Response Vehicles	This element is a HAZMAT Response Vehicle that responds to incidents involving suspected hazardous materials. The Fire Department relies on this element to identify unknown HAZMAT and assist in other HAZMAT duties as assigned.	Existing
Wichita Fire Department (WFD)	Wichita Fire Vehicles	The Wichita Fire Vehicles are dispatched by Sedgwick County 911.	Existing
Wichita IT/IS	City of Wichita Fiber Optic Network	Fiber Optic cable network installed to connect field devices with the city's traffic management center.	Medium Term
	Wichita Government Data Repository	Maintain/archive City of Wichita data for a variety of uses and operates similar to a data clearinghouse.	Existing

Stakeholder	Element Name	Element Description	Element Status
Wichita Office of Central Inspection	Office of Central Inspection (Event Permits)	This element is responsible for reporting special event activities.	Existing
Wichita Parks and Recreation	Wichita Parks and Recreation System	This element is responsible for reporting special event activities in the region.	Existing
Wichita Police	Wichita Police Vehicles	The Wichita Police Vehicles are dispatched by the Sedgwick County 911 system.	Existing
Wichita Public Works	City of Wichita CAV Field Equipment	City of Wichita CAV Field Equipment represents the Connected and Autonomous Vehicle (CAV) field equipment in the City of Wichita. In addition to the Wichita Traffic Operations Center, this equipment will interface to statewide CAV systems that are required for administrative, security, credentialing, or other support purposes.	Medium Term
	SCADA	This is a supervisory, control and data acquisition (SCADA) system monitoring automated pump stations, rain gauges and water levels.	Existing
	Wichita Construction and Maintenance System	This element is responsible for providing the maintenance and construction activity for the City of Wichita including snowplow operations, traffic signal installation and repair, etc.	Existing
	Wichita Construction and Maintenance Vehicles	This element represents the maintenance and construction vehicles including snowplows for the City of Wichita.	Existing
	Wichita Flood Monitoring System	Wichita flood monitoring system monitors the flood and flood controlling activities in Wichita region and sends the flood and flood controlling information to the Wichita TOC roadside equipment.	Existing
	Wichita TOC Roadside Equipment	Roadside Equipment includes any and all equipment distributed on and along the roadway which monitors and controls traffic.	Near Term

Stakeholder	Element Name	Element Description	Element Status
	Wichita Traffic Operations Center	The Wichita TOC is responsible for managing and controlling traffic conditions on the arterials they operate.	Existing
Wichita Transit	Wichita Transit Customer Information System (CIS)	This element represents the Wichita Transit website that provides transit related information to aid travelers in their planning.	Existing
	Wichita Transit Operations Center	Wichita Transit provides public transit service throughout the Wichita community including fixed route and demand response services.	Existing
	Wichita Transit Vehicles	This element represents the transit vehicles that are dispatched by Wichita Transit. These transit vehicles have ITS devices that support the safe and efficient movement of passengers. These systems collect, manage, and disseminate transit-related information to the driver, operations and maintenance personnel, and transit system patrons.	Existing