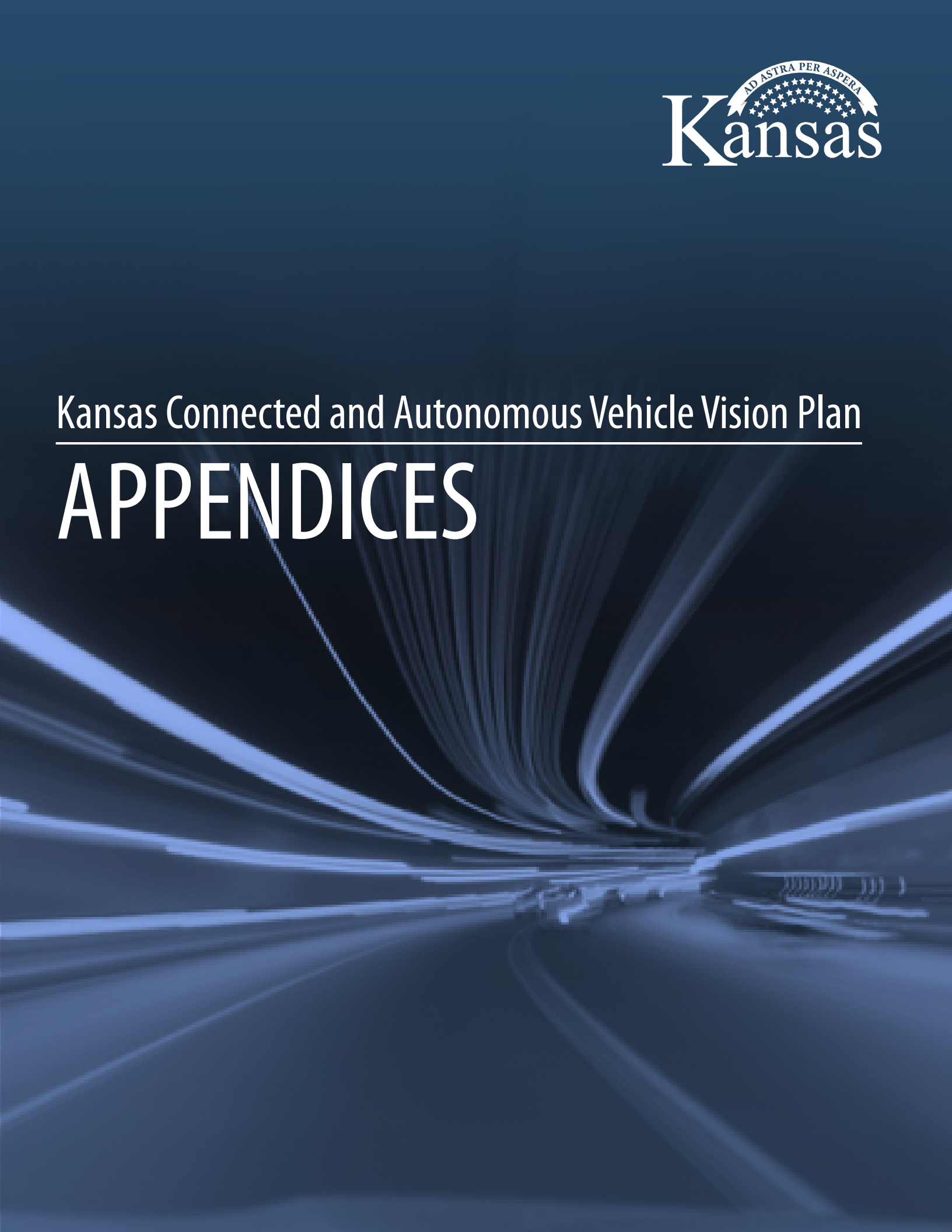Kansas Connected and Autonomous Vehicle Vision Plan

APPENDICES

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Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX A:
Kansas State Agency Blueprints

Kansas Connected and Autonomous Vehicle Vision
DEPARTMENT OF AGRICULTURE BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Department of Agriculture can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Department of Agriculture to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Kansas Department of Agriculture Mission

The Kansas Department of Agriculture is committed to a balanced approach of:
- Serving Kansas farmers, ranchers, agribusinesses and the consumers/customers they serve;
- Providing an environment that enhances and encourages economic growth of the agriculture industry and the Kansas economy; and
- Advocating for and promoting the agriculture industry, the state's largest industry, employer and economic contributor; while
- Helping to ensure a safe food supply, protecting natural resources, promoting public health and safety, protecting animal health, and providing consumer protection to the best of our ability.

CAV Challenges

- Limited access to infrastructure necessary for broadband, particularly in rural areas.
- Inconsistency of highway infrastructure conditions, infrastructure needs, and funding among jurisdictions (state, city, county, region).
- Knowledge level regarding big data use, ownership, and liability.

CAV Opportunities

- Rail and truck automation solutions can reduce transportation costs and achieve greater efficiencies.
- Increased opportunities to develop an agricultural hub for Kansas.
- Agriculture is an early adopter of CAV technology and knowledge of the technology is relatively high.
- Use of CAV technology in agriculture may have applicability to the transportation industry (for example, mowing operations).
- CAV may help address agricultural worker shortage.
- The Department of Agriculture may have access to federal grants to pilot advanced CAV technology.

System Needs

- Data - address broadband challenges, privacy, compliance, truck tracking, transportation flow statistics, partnerships with surrounding states
- Network - reliability and expansion
- Infrastructure - agribusiness group partnering with CAV, roadway markings, volunteering to pilot agriculture subsectors
- Agency Organization Structure - education and outreach training
- Funding - university partnerships, activate agriculture stakeholder group
- Policy/Legislation/Regulation - agriculture stakeholder group input for data and equipment
- Workforce, Public - CAV impacts related to agriculture workforce shortage
- Public Education and Outreach - agriculture industry testimonials with general public

Strategies

To address identified challenges and maximize opportunities, several strategies were identified:
- Leverage CAV industry to help reduce stress on workforce during peak agriculture seasons.
- Explore with the Kansas Department of Transportation and other state agencies how agricultural CAV solutions may have applicability in a transportation environment.
- Focus on freight mobility solutions to support the safe and efficient movement of agricultural products within Kansas and across the nation.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is low for the Department of Agriculture during this transition as they are not a regulatory agency or funder of infrastructure. The agriculture industry is already more advanced than most related to CAV.

Relative Cost

Low   **High**

(1) —— 2 —— 3 —— 4 —— 5

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Utilize partnerships with existing users of technology to promote CAV to the general public.

Immediate Key Actions

❑ Promote use of CAV technology in agriculture industry to demonstrate value and potential for expanded use in the transportation industry.

❑ Include a session at the 2019 Kansas Agriculture Growth Summit on CAV opportunities.

❑ Continue to work with the Kansas Department of Transportation and other state agencies as part of the CAV Task Force to share lessons learned regarding CAV advances for agriculture that might be applied in transportation.

❑ Work with the Kansas Department of Transportation to explore truck automation solutions to support the agricultural industry.

Time Frame

Expected time frame when CAV will impact the agriculture industry:

0-3 years **4-7 years** **8-11 years** **12-15 years** **16+ years**

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Improved efficiency	Customer surveys or focus groups
Mobility	Travel time
Reliability	Planning time index

Contact

Kerry Wefald, Marketing Director
Kansas Department of Agriculture
Kerry.wefald@ks.gov

Kansas Connected and Autonomous Vehicle Vision

DEPARTMENT OF COMMERCE BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Department of Commerce can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Department of Commerce to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Kansas Department of Commerce Purpose

As the state's lead economic development agency, the Kansas Department of Commerce strives to empower individuals, businesses, and communities to achieve prosperity in Kansas.

CAV Challenges

- Some businesses are cautious with new technology and are not eager to be early adopters; others are overzealous.
- Safety and liability concerns from businesses.
- Customer acceptance and adoption rate is unknown.
- Customer data security and privacy concerns.
- Creation of viable business models and frameworks for support of the CAV business community.
- Development of innovative financing, procurement, and public-private partnership processes to support CAV initiatives.
- Understanding the impacts of CAV on land development, real estate, and economic growth.
- System compatibility with neighboring states.

CAV Opportunities

- Engage the business community to understand their interests and needs in order to increase private sector investment in CAV.
- Engage businesses with incentives or other mechanisms to entice pilot projects and/or partnerships.
- Demonstrate efficiencies and improvements to the business environment in Kansas through universal access to high-speed communications services, improved commercial vehicle operations, asset management, more efficient manufacturing processes, workforce development and job growth.
- Utilize partnerships with original equipment manufacturers (OEMs) and their local presence (GM Fairfax plant and Ford plant in the Kansas City metropolitan area).
- Leverage state exports, logistics centers and parts supply.
- Evaluate decommissioned plants and facilities (Sunflower and Parsons) for pilot projects due to large infrastructure, surrounding network and controlled environments.
- Leverage Kansas legacy regarding aviation to support Unmanned Aircraft Systems (UAS) research and development.
- Utilize CAV and related technologies to improve the efficiency, effectiveness, and coordination of state government business processes across all departments.

System Needs

- Data - standards, security and management
- Network - security, segmentation, improved rural broadband
- Infrastructure - consistency, logistics, transportation
- Agency Organization Structure - internal staff training, outreach to businesses, capitalize on CAV business opportunities, build relationships with OEMs and suppliers
- Funding - develop CAV sector business incentives, educational institution partnerships, OEM partnerships
- Policy/Legislation/Regulation - standards, OEM input, CAV manufacturer certificate and fast-track permitting
- Workforce, Agency - continued staff training
- Workforce, Public - technical school CAV training and OEM-developed curriculum; collaboration with universities for advanced degrees
- Public Education and Outreach - statewide promotion, case studies; start with public transit

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Better understand facility requirements for from site developers.
- Evaluate and develop incentive programs to support CAV initiatives and growth in the CAV industry.
- Seek international partnerships to support CAV business interest in Kansas.
- Leverage local OEM partnerships to develop pilots and build on existing relationships.
- Consider partnering with OEMs or suppliers on business education programs.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is moderate. Incentives to attract businesses could be very expensive, but staff training costs and costs to engagement and develop strategy internally is low.

Relative Cost

Low   **High**

1 — 2 — **3** — 4 — 5

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.
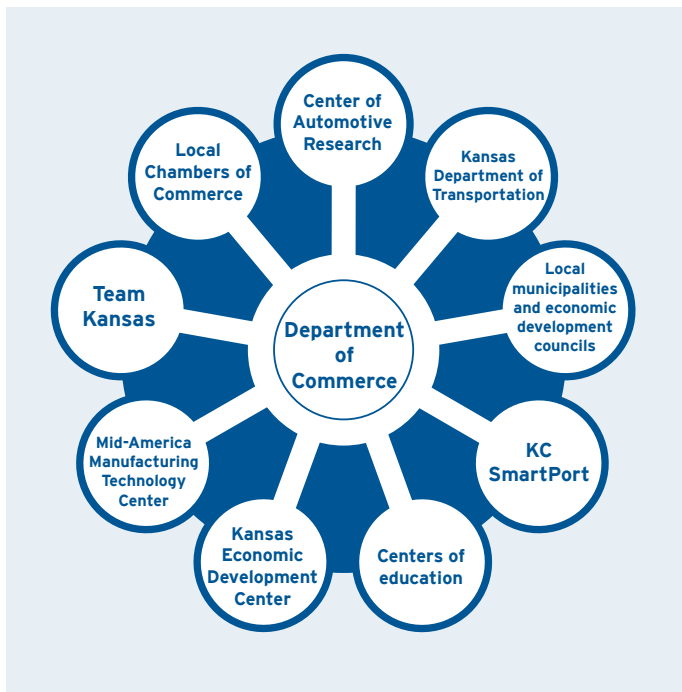
Educational Audiences

- Existing businesses that work with the Department of Commerce through existing commissions and partnerships.
- New businesses to attract to Kansas based on the state's CAV vision and strategy.
- International businesses with an interest in locating CAV facilities in the United States.
- Local and regional Chambers of Commerce to support education, outreach, and partnering opportunities.

Immediate Key Actions

- ❑ Understand technology and applications.
- ❑ Identify strategic businesses and partnership for potential future pilots.
- ❑ Begin developing strategies for logistics, goods movements, and processes to motivate companies to come to Kansas.
- ❑ Develop potential incentive packages.
- ❑ Start discussions with Universities and Vocational Schools.

Time Frame

Expected time frame when CAV would impact Department of Commerce:

0-3 years	**4-7 years**	**8-11 years**	**12-15 years**	**16+ years**
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Job growth	Net new job and wage growth
Efficiency	Incentive dollars per job created or program costs per million dollars of announced capital investment

Contact

Chang Lu, International Trade Representative
Department of Commerce
Chang.lu@ks.gov

Kansas Connected and Autonomous Vehicle Vision
DIVISION OF EMERGENCY MANAGEMENT BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Division of Emergency Management can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Division of Emergency Management to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Division of Emergency Management Vision

Building sustainable capabilities across all phases of Emergency Management in Kansas through selfless service.

CAV Challenges

- Technical challenges such as training to use equipment and maintain efficiency.
- Safety, liability, and privacy concerns (internal and external).
- Unknown capabilities to CAV technology and human interaction, roadway impediments, construction, weather, and debris.
- Connectivity - Limited access to infrastructure necessary for broadband, particularly in rural areas.

CAV Opportunities

- CAV technology could aid in disaster response and streamline evacuations and provide access to transportation for vulnerable populations.
- Reduce number of emergency first responders in harm's way.
- Reduce personnel exposure in completing on-ground and aerial damage assessments.
- Strategic and better-informed response for first responders.
- Provide new data points during emergency response and incidents.
- Better data and simultaneous awareness to track incidents and response techniques and outcomes over time.

System Needs

- Data - security, privacy, data storage, data management
- Network - privacy and security
- Infrastructure - consistency, investment in CAV technology to support emergency preparedness and response capabilities

- Agency Organization Structure - new response strategies based on CAV capabilities and the state's access to CAV technology
- Funding - funding for new CAV technology
- Policy/Legislation/Regulation - agency interaction, clarify jurisdictional responsibilities
- Workforce, Agency - training on response to CAV incidents, specialized licensure/training for the use of CAV technologies to support emergency preparedness and response capabilities (automated support capabilities, unmanned aerial vehicles (UAV), robots, etc.)
- Workforce, Public - training in operations and management of CAV systems
- Public Education and Outreach - education and training about technologies in use and how the state uses them

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Learn from experience with UAV for fire investigation and emergency response.
- Use the division's work with UAV as the foundation for building the case for future CAV technology in emergency response.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is low to moderate for the Division of Emergency Management. The majority of the costs are anticipated to be capital investment in new technologies to assist with existing procedures in the short term.
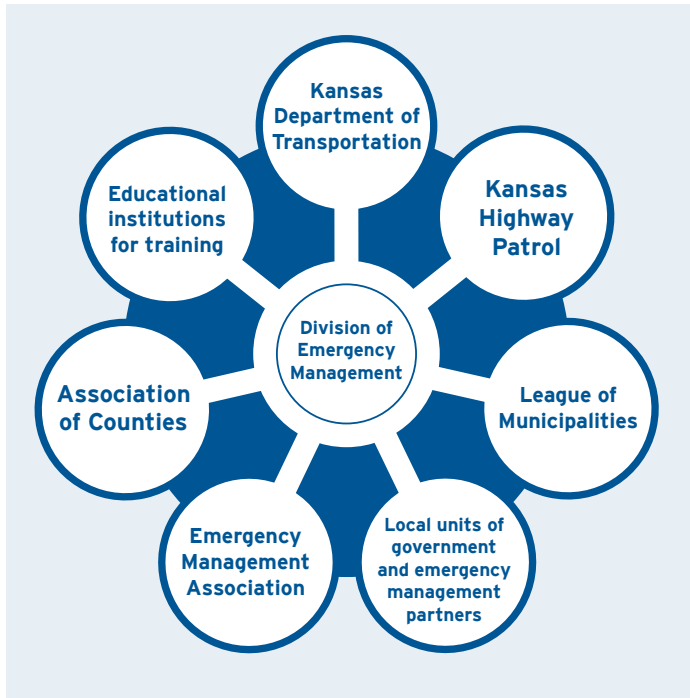
Relative Cost

Low   **High**

① —— ② —— ③ —— ④ —— ⑤

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Education for stakeholders is not likely and would be dependent upon the need for stakeholder training. If needed, training and outreach would be focused on awareness, uses, potential implementation, and other considerations such as safety or privacy concerns.

- Education should also focus on safety measures, including the fail-safes in place for CAV stops and overrides.

Immediate Key Actions

- ❑ Develop CAV emergency response guide.
- ❑ Develop procedures for informing the public after incidents involving CAV.
- ❑ Initiate UAV training for emergency responders.

Time Frame

Expected time frame when CAV will impact the Division of Emergency Management:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Safety	Reduced number of driving incidents
Incident response time	Response time

Contact

Jonathan York, Branch Director
Division of Emergency Management
Jonathan.r.york5.nfg@mail.mil

Kansas Connected and Autonomous Vehicle Vision

DEPARTMENT OF REVENUE BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Department of Revenue can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Department of Revenue to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Department of Revenue Purpose

The Kansas Department of Revenue collects taxes and fees, administers Kansas tax laws, issues a variety of licenses, and provides assistance to Kansas citizens and units of government.

CAV Challenges

- Key policy, legislative, and legal solutions needed to support CAV.
- Liability insurance and determining responsibility.
- Electronic recorder data and privacy concerns.
- Balancing data accessibility with privacy/protection concerns.

CAV Opportunities

- Receptive government(s) and conservative juries.
- Strict monetary limits on tort liability by manufacturer or operator.
- Provides mobility solutions for persons with medical conditions, elderly.
- Reduces risk of persons operating vehicles while under the influence.
- Improved system for used car technology verification.

System Needs

- Data - security, accessibility, privacy transparency, accuracy, privacy act, law enforcement access, state-to-state interoperability, management
- Network - privacy, security, maintenance
- Infrastructure - software updates and data storage
- Agency Organization Structure - committee for CAV registration, staff for data analysis, determine potential revenue loss/gain, third-party titling and registration for private clients, and uniform process for CAV operators
- Funding - educational initiatives, taxing structures to address Transportation as a Service (TaaS), employee training, CAV operator licensing, network needs

- Policy/Legislation/Regulation - CAV operator requirements, consistency with federal standards, data ownership, interactive certificates of safety, clarified federal and state responsibility, clarified International Registration Plan, modified insurance model, access to black boxes for driver's license privileges, equipment issue reporting
- Workforce, Agency - initial startup, real-time data analysis staff, new requirements for training, software capability
- Workforce, Public - technology training for older individuals
- Public Education and Outreach - begin with public acceptance of TaaS, Uber, Tesla, Lyft, etc.

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Adopt a framework for testing CAV technology and fostering an environment that will encourage CAV industry and education in the state.
- Promote alternative transportation strategies to Kansas citizens that cannot lawfully obtain Kansas driving authority.
- Evaluate adjusting existing laws to anticipate owner/driver liability for events occurring while CAV operates on roadways and highways.
- Modify the Department of Revunue's strategic goals, insurance models, ownership models, and driver's licensing and record-keeping processes.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is moderate to high as there is the potential for revenue decreases from electric and autonomous vehicles. Furthermore, changes will likely be required to upgrade technology, hardware, and software to maintain information systems.

Relative Cost

Low   ①——②——③——④——⑤   **High**

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Kansas Department of Transportation

Customers (commercial and public)

Kansas Insurance Commissioner

Department of Revenue

Private entities and consultants

Kansas Highway Patrol

Centers of education

League of Municipalities

Educational Audiences

- Existing customers through education about new processes and changes in licensing.

Immediate Key Actions

❑ Evaluate peer models of alternative revenue sources including a mileage-based user fee.

❑ Identify potential new transportation funding sources.

❑ Develop financial scenarios to evaluate potential impacts of electric and autonomous vehicles on state revenues.

❑ Evaluate impacts and potential options to adjust to new vehicle ownership and registration processes, moving from vehicle ownership to TaaS.

Time Frame

The Department of Revenue anticipates implementation and deployment and agency impact of CAV within the 0 to 3-year timeframe.

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Customer satisfaction	Customer surveys or focus groups
Increase collections	Voluntary or automatic compliance

Contact

Kent Selt, Driver Services Manager
Kansas Department of Revenue
Kent.selk@ks.gov

Kansas Connected and Autonomous Vehicle Vision

DEPARTMENT OF TRANSPORTATION BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Kansas Department of Transportation (KDOT) can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for KDOT to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

KDOT Mission

To provide a statewide transportation system to meet the needs of Kansas.

CAV Challenges

- Demonstrating and proving CAV technology safety and reliability.
- Keeping pace with industry and national CAV developments.
- Transition phase with some CAVs and other vehicles.
- Upgrading infrastructure to appropriate base-line.
- Impacts to revenues from transition to electrification.
- Assist in providing broadband coverage to all areas of the state.
- Impacts of uninformed, conservative or resistant population on deployment opportunities.

CAV Opportunities

- Improved safety for all users; reduced crashes and fatalities.
- Increased mobility for aging or disabled population.
- Leverage CAV technologies to advance VMT mileage-based funding.
- Continual feedback on condition of infrastructure for asset management and maintenance decision support.
- Robust real-time data on traffic conditions and patterns.
- Robust real-time data on weather conditions and events that impact travel and highway maintenance.
- Partnering with neighboring states for CAV initiatives.

System Needs

- Data - permissible uses, exchange records, access determination, consistency, exchange mode, security and monitoring, management, standardization, conform with local and federal regulations
- Network - security, vehicles, charging stations
- Infrastructure - additional resources, private pilots, retrofit signage, urban and rural infrastructure needs and communications networks, electrical infrastructure, grid modernaization

- Agency Organization Structure - education and public outreach positions, support for data retention staff, determine departmental CAV requirements, senior leadership engagement and support, internal policies, partnerships with other Kansas departments
- Funding - private partnerships, statutes to allow revenue generation, communicate CAV benefits to legislature, federal grants, pooled fund initiatives with other states, CAV research, CAV benefits for disadvantaged populations
- Policy/Legislation/Regulation - define inattentive/impaired driving, revise liability issues, data ownership, compliance with federal laws/legislation to ensure federal funding eligibility, harmonization of state and federal statutes, permit requirements for CAV oversize/overweight loads, legislation for black box access
- Workforce, Agency - data analytics staff, new expertise, training
- Workforce, Public - educate/update driver's education teachers, partnerships universities and community colleges to grow the workforce of the future
- Public Education and Outreach - statewide promotion, case studies from peers, commercial and individual motorist education, Kansas CAV brand development and optimization

Strategies

- To address these challenges and maximize opportunities, several strategies were identified:
- Model pilots to be nimble (fail fast, if needed).
- Develop a CAV strategic plan focused on improving motorist experience related to safety, reliability, and KDOT's infrastructure costs to improve operational efficiencies.
- Identify system needs and timelines and how they correspond with CAV Vision.
- Focus on mobility and safety enhancements of personal and freight trips.
- Take advantage of roadside connections and the statewide fiber optic network.
- Leverage the KDOT vehicle fleet for early CAV pilots and tests.
- Investigate public-private partnerships for pilot project implementation, seek federal grant funding to support pilot implementation.
- Evaluate how CAV can support asset management and maintenance decision support capabilities.

Cost and Funding

The relative cost and ease to implement CAV within the KDOT system is moderate based on KDOT's existing financial environment to test and implement technology and other state needs. While there are vast statewide needs, CAV technology benefit-cost ratio will continue to outperform large infrastructure benefit-cost ratios and prove to be a smart investment. Investigate P3 opportunities and federal grants as seed funding.

Relative Cost

Low   **High**

1 ── 2 ── **3** ── 4 ── 5

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.
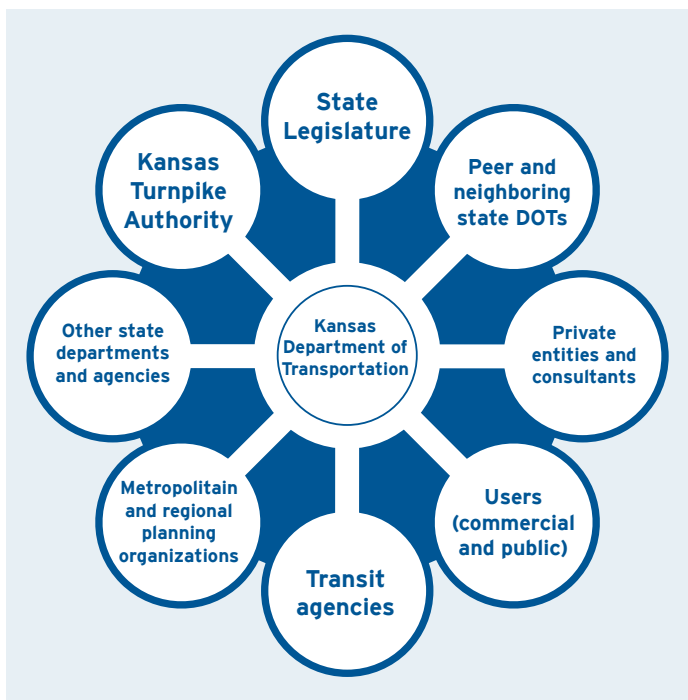
Educational Audiences

- Disseminate information to other state departments.
- Solicit commercial transportation providers to gain freight perspective on CAV technology and implementation.
- Develop comprehensive outreach plan (multifaceted to cover public, policy makers, and industry).
- Establish brand and marketing program for CAV.

- Establish internal webinar series and training to educate KDOT and other Kansas state staff.
- Present and communicate with legislators on a regular basis.

Immediate Key Actions

- ❑ Develop a detailed KDOT CAV strategic plan and framework for deployment.
- ❑ Continue to engage the Task Force and legislators.
- ❑ Peer review of how other DOT's are approaching CAV's.
- ❑ Collaborate with standards development organizations to review and update KDOT standards for highway design, signage, striping, signals, and other traffic control devices.
- ❑ Identify, prioritize, and implement CAV initiatives and pilot project(s).
- ❑ Develop standards for V2I and V2X.

Time Frame

Expected time frame when CAVs will impact the KDOT system:

| **0-3 years** | **4-7 years** | **8-11 years** | **12-15 years** | **16+ years** |

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Driver satisfaction	Surveys or focus groups
Safety	Crash records
Mobility	Travel time
Reliability	Planning time index
Readiness and maturity	Percent of state highway network ready for CAV
Success	Pilot test success rates

Contact

Mike Floberg, Division Director, Innovative Technologies
Kansas Department of Transportation
Mike.floberg@ks.gov

Kansas Connected and Autonomous Vehicle Vision
INFORMATION SECURITY OFFICE BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Information Security Office can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Information Security Office to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Information Security Office Purpose

Over the years technology has been woven into the very fabric of everyday life and while this has made us more efficient and more responsive, it has also introduced dependencies that are inherently vulnerable. Whether criminal or just an "oops", the resources we rely upon every day to serve the public are constantly tested.

As stewards of these resources, it is our collective responsibility to ensure they are secure, and to that end it is the hope that this site provides essential tools and information that enables everyone to participate in securing the resources with which we are entrusted.

CAV Challenges

- Fast pace of technology changes.
- Complexity is still unknown.
- The current Security Credential Management System solution for connected vehicles may not be scalable..
- Network firewalls and partitions are both necessary and may pose challenges.
- Key policy, legislative, and legal determinations must be made regarding responsible parties for securing connected vehicle networks.
- Staff needs further information about CAV technologies and the scope of change to better prepare for and address CAV technology.

CAV Opportunities

- New information security management solutions are being developed to support the evolving CAV environment statewide.
- New technologies, like Blockchain, offer more secure data transactions and can be applied in a CAV environment.

System Needs

- Data - security, standards, storage, management and privacy
- Network - privacy and security
- Infrastructure - consistency, software updates and data storage
- Agency Organization Structure - potential transition to state-managed network for CAV
- Funding - upgrading servers and data network, additional employee and staff training, additional staff needs
- Policy/Legislation/Regulation - clarify responsible parties for securing connected vehicle networks and data ownership
- Workforce, Agency - recruitment, new requirements for training, software capability
- Workforce, Public - IT curricula focused on cybersecurity and information management
- Public Education and Outreach - public education about network and data security is critical to CAV adoption

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Identify weaknesses and risks in the data network and IT processes.
- Develop partnerships with peer agencies to facilitate sharing of best practices, lessons learned, and strategies.
- Develop communications plan about Information Security within Kansas state government to gain consumer trust.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is moderate due to increased staff needs as well as capital and operating cost increases assumed from expansion of the network to accommodate CAVs. Staff will need to be distributed throughout the state and not only within the central office.

Relative Cost

Low   High

1 — 2 — **3** — 4 — 5

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Education and training with other state agencies and departments.
- Educate other agencies to address data network and privacy concerns from consumers.

Immediate Key Actions

- ❑ Determine the needed cybersecurity of the technology associated with CAVs.
- ❑ Evaluate network risks and data management needs.
- ❑ Continue to assess cybersecurity needs of technology associated with CAVs.
- ❑ Forge partnerships with other state agencies to define common challenges and strategies to support data and network security in a CAV environment.

Time Frame

Expected time frame when CAV will impact the Kansas Information Security Office:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Security	Number of threats detected, threats neutralized
Readiness	Industry security standards met, reliability of information, quality of service measures
Costs	IT equipment costs, personnel costs

Contact

Jeff Maxon, Information Assurance Manager
Kansas Information Security Office
Jeff.maxon@ks.gov

Kansas Connected and Autonomous Vehicle Vision
INSURANCE DEPARTMENT BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Insurance Department can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Insurance Department to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Isurance Department Mission

We believe our primary responsibility is to the people whose personal lives or business endeavors are protected by an insurance product in the state of Kansas. We recognize that we are here to serve them and consider this responsibility to be an honor.

CAV Challenges

- Forecasting technology impacts on the insurance industry.
- Determining impacts of road testing and pilot projects on insurance.
- Legal unknowns and liability policies.
- Privacy and security concerns.
- Weather-related concerns.
- Consumer acceptance.
- CAV/vehicle certification (e.g. resale of vehicle with technology).

CAV Opportunities

- Reduction and elimination of driver error and increased safety.
- Potential drop in exposure to accidents; which may lower the amount of liability coverage needed.
- Involvement in the National Association of Insurance Commissioners (NAIC) Committees initiative that focuses on CAV.
- Reduced law enforcement needs on the road.

System Needs

- Data - security, standards, data storage, management and privacy
- Network - privacy and security
- Infrastructure - consistency, software updates, data storage
- Agency Organization Structure - familiarize government affairs division with CAV needs and issues, training preparations, interagency communication

- Funding - increased campus visibility to recruit for skilled positions
- Policy/Legislation/Regulation - definition by department of motor vehicles, clear "driver" and "responsible party" definitions
- Workforce, Agency - staff training, recruitment, increase in policy review, projections and forecasting, statute and policy training, investment in educational opportunities, increased discussion
- Workforce, Public - revamp current insurance training to take CAVs into consideration, legal training for future lawyers related to insurance regulations
- Public Education and Outreach - communications to bring public awareness, legislation support for insurance industry

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Develop CAV road and insurance laws.
- Consider impacts and implications of roads, testing and insurance laws.
- Closely follow plans to address impacts of CAVs with the NAIC and develop plans/goals through existing task force.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is low to moderate for the Kansas Insurance Department. Most of the impact with be on staff time and training regarding new areas of compliance and liability.

Relative Cost

Low   **High**

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Staff to attend industry conferences to gain insight on ways to address issues and potential future changes.
- Collaborate with industry representatives.

Immediate Key Actions

- ❑ Review potential CAV insurance products within existing insurance frameworks.
- ❑ Engage in on-going discussions with NAIC on CAV impacts to the insurance industry.
- ❑ Collaborate with other state agencies to address data management, security, and privacy concerns.

Time Frame

Expected time frame when CAV will impact the Kansas Insurance Department:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	◉	●	●	●

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Safety	Number of claims, value of claims
Economic Impact	Number of claims, value of claims, cost of crashes (fatal, personal injury, property damage), underwriting costs, insurance job numbers, premium costs

Contact

Lee Modesitt, Director of Government Affairs & Communications

Kansas Insurance Department

lee.modesitt@ks.gov

Kansas Connected and Autonomous Vehicle Vision
LEGISLATOR BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how Kansas Legislators can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for Kansas Legislators to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Legislator Mission

The Kansas legislature is made up of elected representatives, who consider matters brought forth by the Governor or introduced by its members to create legislation that becomes law. The legislature also approves the state's budget and initiates tax legislation and articles of impeachment. The latter is part of a system of checks and balances among the three branches of government that mirrors the federal system and prevents any branch from abusing its power.

CAV Challenges

- Coordination and consistency with other state policies and legislation.
- Creating a policy environment that supports public-private partnerships.
- Conservative, pragmatic nature of constituents and general public acceptance and constituent support.
- Uncertainty in industry shift away from personal vehicle ownership.
- User privacy and security concerns.
- Ability of legislation to keep up with quickly evolving technology.
- Legislator turnover and need for continuous education.

CAV Opportunities

- Improved safety for all roadway users; reduction in crashes and fatalities.
- Increased mobility for aging or disabled population.
- Timely and automated emergency response and resource assistance during incidents and natural disasters.
- The state is a center for trade and can greatly benefit from increased efficiencies in transportation.

System Needs

- Data - standards, privacy policy consensus, address Kansas Open Records Act concerns
- Network - ITEC Review, security, privacy, reliability
- Infrastructure - pilot project bill
- Agency Organization Structure - continued community involvement, required interagency meetings
- Funding - appropriate budget funds, public-private partnerships, statutory change to allow testing
- Policy/Legislation/Regulation - review of statutes and amendments, consistency, harmonization of state and federal statutes, conformity with Freedom of Information Act, Kansas Open Records Act, Federal Driver Privacy Protection Act, and records preservation laws
- Workforce, Agency - educate legislative staff on the primary issues related to CAV
- Workforce, Public - legislative initiatives related to STEM workforce development, assess impact on motor vehicle companies and the mobility industry
- Public Education and Outreach - hearings and presentations

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Enable legislation to support new technology and testing.
- Foster environment to test test new technologies and allow flexibility as technologies change.
- Consensus building by participating in working groups like the Kansas CAV Task Force.
- Engage the CAV Task Force and the Kansas Department of Transportation through annual presentations to legislators.
- Encourage efforts to inform the public and keep constituents updated as technology matures.
- Include CAV initiatives in appropriations language to support mainstreaming of innovation in statewide transportation services.
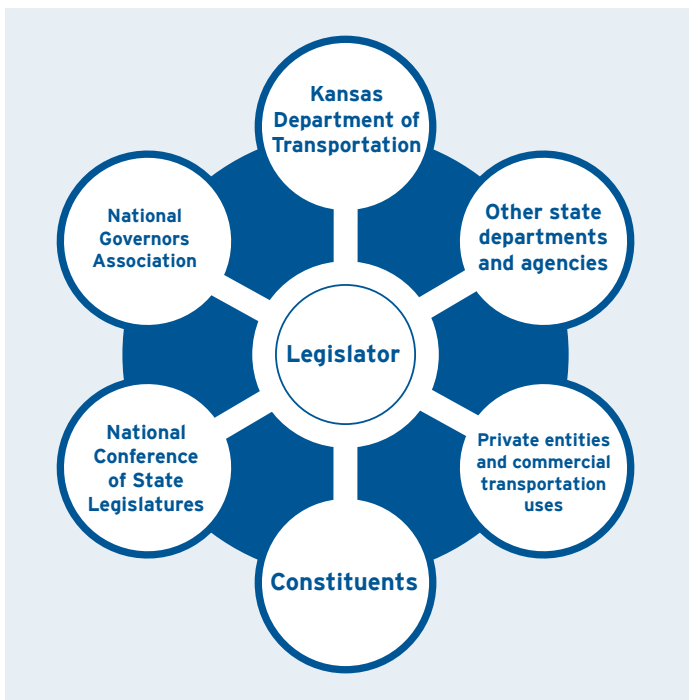
Cost and Funding

The relative cost and ease to implement CAV in the state of Kansas is low to moderate based on the state's existing financial environment to test and implement technology balanced with other state needs. Several state agencies will require additional resources for the CAV transition.

Relative Cost

Low   **High**

1   **2**   3   4   5

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Kansas Department of Transportation · Other state departments and agencies · National Governors Association · **Legislator** · National Conference of State Legislatures · Private entities and commercial transportation uses · Constituents

Educational Audiences

- Internal education of legislators and legislative staff.
- Collaborate with the commercial vehicle industry to gain freight perspective on CAV technology and implementation.
- Collaborate with the agricultural industry to gain perspective on their specific needs in the CAV space.
- Work with the Kansas Department of Transportion and the Kansas Turnpike Authority to support outreach and public education related to CAV benefits, costs, and impacts.

Immediate Key Actions

- ☐ Understand what state and federal laws allow and what they do not.
- ☐ Conduct a peer review of state laws concerning CAV.
- ☐ Assign legislative representative(s) to the Kansas CAV Task Force.
- ☐ Work with the Kansas Department of Transportation to develop a one-page briefing paper on CAV for Kansas.
- ☐ Identify legislative champions to spearhead policy initiatives related to CAV.

Time Frame

Expected time frame when CAV would impact Kansas Legislators:

0-3 years	**4-7 years**	**8-11 years**	**12-15 years**	**16+ years**
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Public perception	Surveys and focus groups
Sufficient resources	Track funds allocated to projects and pilots

Contact

Rep. Shannon Francis
Kansas House of Representatives
Sfran83384@aol.com

Jill Shelley, Principal Research Analyst
Kansas Legislative Research Department
Jill.shelley@klrd.ks.gov

Kansas Connected and Autonomous Vehicle Vision

STATE HIGHWAY PARTOL BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Kansas Highway Patrol (KHP) can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the KHP to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Kansas Highway Patrol Mission

The Kansas Highway Patrol is devoted to improving quality of life through spirited and dedicated service. We pledge to be responsive to concerns of citizens and public safety partners. We will do this by providing professional law enforcement services and share resources in the most effective and efficient manner possible.

We believe in treating all persons with courtesy and respect. The preservation of individual dignity and constitutional rights is paramount in performing our duties. Protecting the rights of coworkers and providing a safe, secure working environment are of equal importance.

We are committed to providing protection of life and property through active enforcement of traffic, criminal, and other laws of the State of Kansas, and by supporting homeland security initiatives. We recognize our responsibility to uphold and enforce this authority in a competent, fair, and honest manner.

CAV Challenges

- Address use of CAV technologies in KHP fleet vehicles.
- Policy updates and training of personnel.
- Laws regulating the use and operation of CAVs in Kansas.
- Policies that reflect new statutes and procedures.
- Enforcement of accident investigative technology.
- Determining how much control the driver has/had over the vehicle.
- Ability to monitor contrabands.
- Ability to quickly identify what level of CAV technologies are onboard vehicles.
- Access to data from onboard systems for crash investigations and other enforcement activities.

CAV Opportunities

- Reduce KHP's responsibilities and or staff time monitoring commercial operators' hours on the road.
- Fewer traffic violations.

- Improved safety through crash avoidance technologies and removing human error.
- Reduces risk of persons ddriving while under the influence.
- More easily and accurately determine cause of crashes.

System Needs

- Data - standards, policy, security, onboard vehicle data for crash investigations and enforcement
- Network - reliability
- Infrastructure - reporting mechanisms, backup infrastructure, appropriate signage and technology in case of emergencies
- Agency Organization Structure - agency override, method for reporting equipment issues, informed staff, continued work with the Kansas Department of Transportation, maintain strong relationships with federal, state and legal partners
- Funding - equipment and technology needs, officer training and education
- Policy/Legislation/Regulation - guidelines on how to interact with vehicles and potential contraband suspicions, information sharing with the Kansas Department of Transportation
- Workforce, Agency - new expertise, training on levels of autonomy
- Public Education and Outreach - public acceptance of technologies, new traffic rules regarding enforcement for CAVs

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Engage in national forums to learn from other highway patrol agencies.
- Work with state legislators and the Kansas Department of Transportation to collaborate with manufacturers. Ensure that law enforcement needs are considered in the development and regulation of CAVs (e.g. override and intervention when necessary).
- Collaborate with other state agencies to identify available data and future vehicle data needs. Coordinate internally with team to determine what KHP requires to complete their responsibilities in a CAV future.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is moderate for the KHP. The cost is relatively low to educate and train staff, however, the potential revenue loss from reduced traffic violations may be significant.

Relative Cost

Low   **High**

① — ② — ③ — ④ — ⑤

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Kansas Department of Transportation

Commercial Vehicle Safety Alliance

Motoring public

Kansas Highway Patrol

Other state highway patrol organizations

State Legislature

Kansas Traffic Safety Resource Office

Educational Audiences

- Existing motorists that may be unaware of CAV capabilities.
- Crash investigation teams.
- Other state agencies on KHP's needs.

Immediate Key Actions

❑ Identify law enforcement and crash investigation needs that must be met.

❑ Coordinate with chart team to determine what they will require to complete their job in a CAV future.

❑ Forecast potential budgetary scenarios for KHP if traffic violations and fees are reduced.

Time Frame

Expected time frame when CAV will impact the KHP:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	●	●	●	●

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Improved safety	Reduce number of crashes, motor vehicle fatalities, and injuries
Education/Outreach	Number of public outreach events or persons reached

Contact

Andy Dean, Captain in Public & Governmental Affairs
Kansas State Highway Patrol
Andrew.Dean@ks.gov

Kansas Connected and Autonomous Vehicle Vision
TRAFFIC SAFETY RESOURCE OFFICE BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Traffic Safety Resource Office can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the Traffic Safety Resource Office to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

Traffic Safety Resource Office Mission

To provide public information and education to protect Kansans from avoidable injury or death on Kansas roadways.

CAV Challenges

- Unknown reliability of CAV technologies.
- Potential intra-agency coordination.
- Challenges for testing include funding and buy-in from legislators.
- Privacy concerns with passenger/user information.
- Performance specifications and non-traditional methods to validate performance of CAV technologies.
- Cybersecurity and systems which allow a "hacking" of operations.

CAV Opportunities

- Mobility and safety benefits for transportation-limited populations.
- Improved safety through crash avoidance technologies and removing human error.

System Needs

- Data - inventory, security, use data, standards on data access, accuracy, reliability, data for safety regulations
- Network - security and reliability
- Infrastructure - local ownership of network maintenance
- Agency Organization Structure - innovative staff ideas, leadership, continued partnerships, emphasize unified message
- Funding - cross-sector support, transition incentives, new vehicle fleets and equipment, educational grant money, law-enforcement opportunities, financial support for communities, partner with schools to demonstrate CAV

- Policy/Legislation/Regulation - standards and methods of operation that accommodate various levels of automation, tracking when driver has control, determine when certification is necessary, safe driving incentives, crash investigation
- Workforce, Agency - awareness and training of emerging technology, education in CAV capabilities and public engagement opportunities
- Workforce, Public - school training, CAV technology career paths
- Public Education and Outreach - acceptance and trust of technology, about increased safety and mobility, eliminate CAV fears

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Test procedures with pilot projects with Kansas Traffic Safety Resource Office before CAVs are pushed to implementation.
- Widespread strong public education efforts to inform drivers of mobility opportunities and safety benefits and to keep drivers up-to-date on future CAV advancements.

Cost and Funding

The relative cost and ease to accommodate CAV and related impacts is moderate due the relatively low cost of staff training and effort to produce education information and outreach costs.

Relative Cost

Low   1   2   **3**   4   5   High

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Existing motorists that may be unaware of CAV capabilities.
- Young populations who can be captured in educational settings.
- Elderly populations who could benefit from CAV opportunities.

Immediate Key Actions

- ❑ Train staff on benefits of CAVs.
- ❑ Ensure that staff engaging with the public understand CAV capabilities and terminology.
- ❑ Develop informational materials to be used for community outreach and education.
- ❑ Engage with pilot projects to assess potential impacts and new procedures.

Time Frame

Expected time frame when CAV will impact the Traffic Safety Resource Office:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years
●	○	○	○	○

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Improved safety	Reduce number of motor vehicle crashes, fatalities, and injuries
Education/Outreach	Number of public outreach events or persons reached

Contact

Norraine Wingfield, Program Director
Kansas Traffic Safety Resource Office
nwingfield@dccca.org

Kansas Connected and Autonomous Vehicle Vision
TURNPIKE AUTHORITY BLUEPRINT

The safety, economic and personal mobility opportunities for Kansas residents, businesses, and visitors will expand tremendously with the evolution and deployment of connected and autonomous vehicles. This blueprint provides a high-level plan for how the Kansas Turnpike Authority (KTA) can incorporate connected and autonomous vehicles (CAV) into their business planning. The blueprint is a starting point for the KTA to advance CAV planning and should be adapted, revised, and updated as the state advances with CAVs.

Kansas Vision Statement

To support an evolving and partnering environment of innovative and practical CAV solutions for a safe, reliable, and integrated transportation network.

KTA Mission

KTA moves Kansas forward by operating a safe, reliable and customer-valued turnpike system in a fiscally responsible, businesslike manner.

The KTA provides 236 miles of high-quality, user fee supported roadway infrastructure in Kansas. To accomplish their mission, the KTA is focused on safety and mobility while supporting the growth of the Kansas economy. This aligns with the overarching Kansas Vision. The KTA will be one of the lead state organizations with the rollout of CAV in state.

CAV Challenges

- Uncertainty of the CAV implementation timeline.
- Legislative or legal statutory changes or guidance are needed.
- Ambiguity in national CAV policy; Unknown technology and operational changes resulting from CAV.
- New and unknown requirements for striping, signing, and roadside technology.
- Mixed fleet of CAV and non-CAV.

CAV Opportunities

- Improve safety and traffic management of the turnpike system.
- Leverage KTA's existing communication fiber network to support CAV usage.
- Expand electronic payment options.
- Streamline CAV implementation by leveraging KTA's existing institutional and statutory flexibility.
- Build off of CAV lessons learned from other turnpike agencies.
- Identify a CAV pilot project.
- Closed system for the testing of CAV.

System Needs

- Data - network, security, standards, data storage and management

- Network - security, segmentation
- Infrastructure - roadway markings, pilot projects, start planning for RSU's to acquire and share data within the KTA fiber network
- Agency Organization Structure - enhanced internal structure, build on current relationships
- Funding - partner with universities, leverage public/private partnerships
- Policy/Legislation/Regulation - regulations of who owns the data, liability and allowing for testing, access to data, reporting equipment issues
- Workforce, Agency - additional staff with new expertise, training
- Public Education and Outreach - educate leadership and public

Strategies

To address these challenges and maximize opportunities, several strategies were identified:
- Develop a CAV strategic plan focused on improving customer experience related to safety, reliability and KTA's infrastructure costs to improve operational efficiencies and maximizing revenue potential for KTA.
- Coordinate with the Kansas Department of Transportation on a statewide CAV strategic plan that addresses the vision for Kansas.
- Identify system needs and how they correspond with CAV Vision.
- Focus on mobility and safety enhancements of personal and freight trips.
- Take advantage of roadside connections and statewide fiber network.
- Identify location for CAV pilot project.

Cost and Funding

The relative cost and ease to implement CAV within the KTA system is low to moderate based on KTA's existing financial and statutory flexibility to test and implement technology and coordinate with the KTA Board to obtain approval.
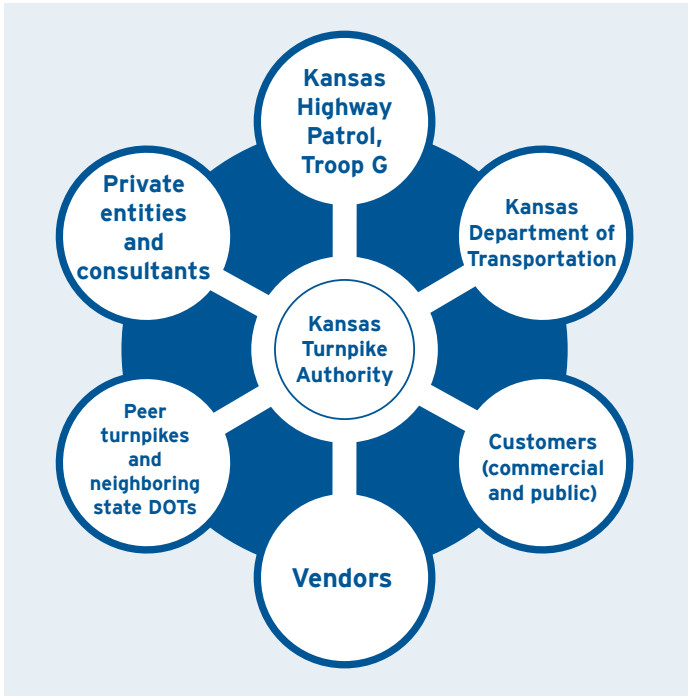
Relative Cost

Low   **High**

①——②——③——④——⑤

TURNPIKE AUTHORITY BLUEPRINT

Partnership Opportunities

Partnerships are a strategic way to maximize CAV opportunities in Kansas. The following identifies potential CAV partnerships and stakeholders.

Educational Audiences

- Existing K-TAG account holders and interoperable partners to provide input on CAV technology and implementation.
- Commercial vehicle customers through fleet accounts or BestPass/PrePass interoperability to provide freight perspective on CAV technology and implementation.
- Video customers license plate capture as larger audience to share information.

Immediate Key Actions

- ❑ Peer review of how other toll businesses are approaching CAVs
- ❑ Presentation of Kansas CAV Vision to KTA Board
- ❑ Identification and implementation of CAV pilot project(s)

Time Frame

Expected time frame when CAV would impact the KTA system:

0-3 years	4-7 years	8-11 years	12-15 years	16+ years

Performance Measures

The current transportation program under the United States Department of Transportation emphasizes performance based planning. Therefore, developing clear, measurable, and aligned CAV performance measures is critical.

PERFORMANCE MEASURE	MEASUREMENT
Customer satisfaction	Customer surveys or focus groups
Safety	Crash records
Mobility	Travel time
Reliability	Planning time index
Revenue	Monthly transactions and expansion of payment options

Contact

Bruce Meisch, Director of Technology
Kansas Turnpike Authority
bmeisch@ksturnpike.com

Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX B:
Electronic Survey Results

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Q2 Agency Name:

Answered: 18   Skipped: 0

#	RESPONSES	DATE
1	Kansas Department of Revenue	2/18/2019 3:30 PM
2	KS Public Transit Assn	2/14/2019 8:26 AM
3	Kansas Division of Emergency Management	2/13/2019 10:28 AM
4	KTA	2/12/2019 1:20 PM
5	Kansas Highway Patrol	2/12/2019 9:59 AM
6	Kansas Information Security Office	2/11/2019 3:37 PM
7	Legislative Research Department	2/11/2019 3:23 PM
8	Topeka Metro Transit Authority	2/8/2019 5:10 PM
9	Mid-America Regional Council	2/8/2019 11:48 AM
10	Senate	2/6/2019 6:06 PM
11	Kansas State University	2/5/2019 11:22 AM
12	University of Kansas	2/5/2019 10:46 AM
13	Kansas Department of Transportation	2/5/2019 9:44 AM
14	Kansas Insurance Department	2/4/2019 4:20 PM
15	Kansas Traffic Safety Resource Office/DCCCA	2/4/2019 2:26 PM
16	House of Reps	2/4/2019 1:51 PM
17	Roeland Park Police Department	2/4/2019 12:43 PM
18	Kansas Association of Counties	2/4/2019 12:23 PM

Q3 Agency Position:

Answered: 18   Skipped: 0

#	RESPONSES	DATE
1	Deputy General Counsel	2/18/2019 3:30 PM
2	Executive Director	2/14/2019 8:26 AM
3	Response & Recovery Branch Director	2/13/2019 10:28 AM
4	Director of Technology	2/12/2019 1:20 PM
5	Public and Governmental Affairs Captain	2/12/2019 9:59 AM
6	Information Assurance Manager	2/11/2019 3:37 PM
7	principal analyst	2/11/2019 3:23 PM
8	Special Projects Engineer	2/8/2019 5:10 PM
9	Chief Innovation Officer	2/8/2019 11:48 AM
10	Senator	2/6/2019 6:06 PM
11	Assistant Professor - Transportation Engineering	2/5/2019 11:22 AM
12	Assistant Professor	2/5/2019 10:46 AM
13	Acting Chief Counsel	2/5/2019 9:44 AM
14	Director, Property & Casualty Division	2/4/2019 4:20 PM
15	Director of Traffic Safety	2/4/2019 2:26 PM
16	Representative	2/4/2019 1:51 PM
17	Chief of Police	2/4/2019 12:43 PM
18	Interim Executive Director	2/4/2019 12:23 PM

Q5 How well informed is your agency about Automated and Connected Vehicle (AV/CV) technology?

Answered: 18   Skipped: 0
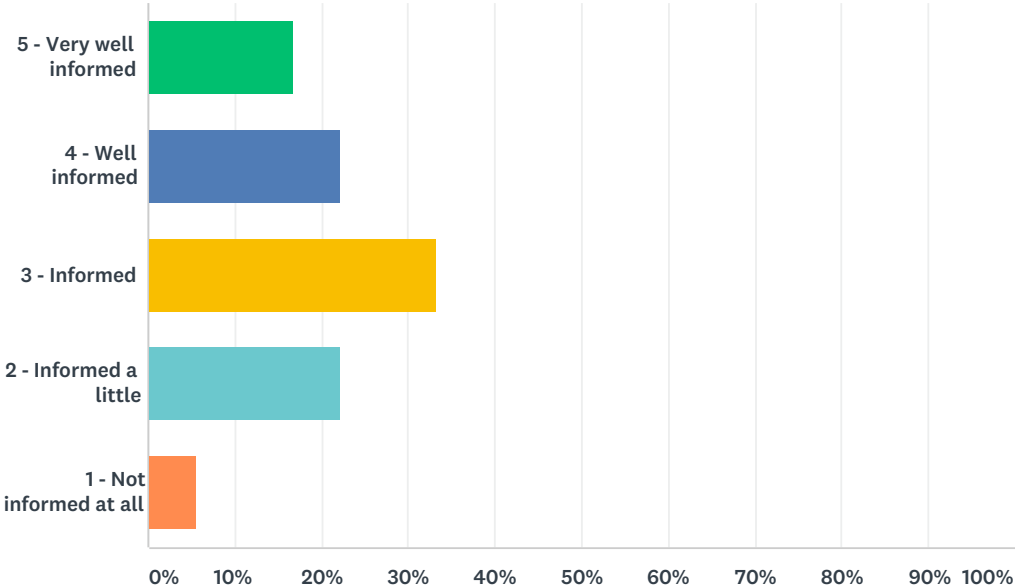
ANSWER CHOICES	RESPONSES	
5 - Very well informed	16.67%	3
4 - Well informed	22.22%	4
3 - Informed	33.33%	6
2 - Informed a little	22.22%	4
1 - Not informed at all	5.56%	1
TOTAL		18

Q6 When will AV/CV implementation and deployment timelines involve/impact your agency?

Answered: 17   Skipped: 1
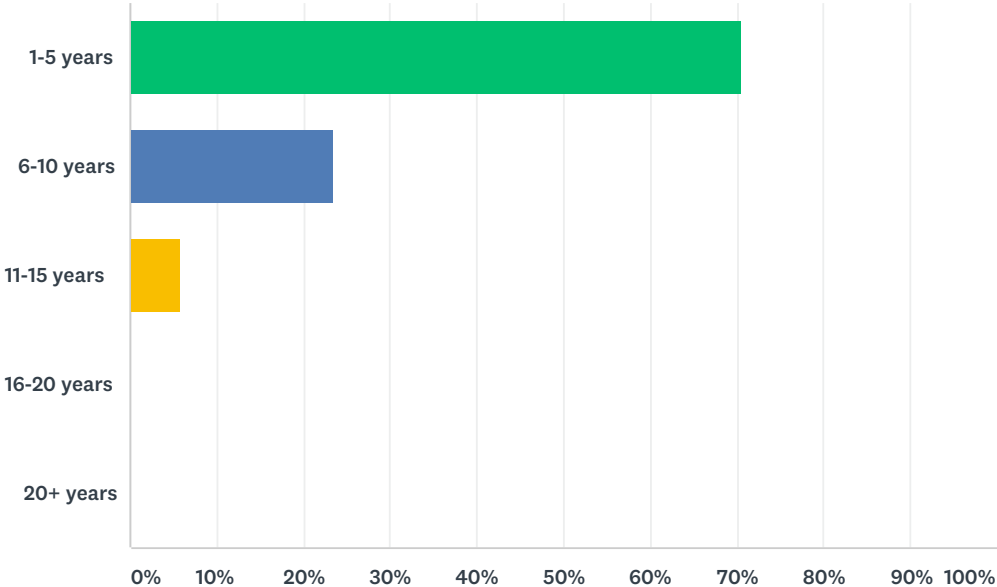
ANSWER CHOICES	RESPONSES	
1-5 years	70.59%	12
6-10 years	23.53%	4
11-15 years	5.88%	1
16-20 years	0.00%	0
20+ years	0.00%	0
TOTAL		17

Q7 How do you envision the rollout of AV/CV in Kansas? Do you see your agency leading the state in various aspects of the technology adoption? Please explain.

Answered: 18 Skipped: 0

#	RESPONSES	DATE
1	The Division will be impacted and need to adjust if AV/CV changes the State's transportation model from vehicle ownership to transportation as a service (TAAC).	2/18/2019 3:30 PM
2	No. We are an advocacy organization.	2/14/2019 8:26 AM
3	I don't have enough knowledge about AV/CV to provide an adequate answer.	2/13/2019 10:28 AM
4	Infrastructure to help support.	2/12/2019 1:20 PM
5	The KHP will continue to work with KDOT and our Federal partners to ensure that our troopers and officers are well informed of any rollout plans.	2/12/2019 9:59 AM
6	Cybersecurity is will be an integral part of AV/CV much like has been discussed with cybersecurity in medical devices and internet of things (IoT).	2/11/2019 3:37 PM
7	will be involved in any statutory changes	2/11/2019 3:23 PM
8	Topeka Metro sees itself implementing several niche applications of micro transit with autonomous vehicles initially. Further down the line there are potential applications to reach more rural locations with smaller ridership and keep costs down via an autonomous shuttle. These developments will pair well with the public acceptance that will also take a while to come about given the ever-developing and new nature of the technologies.	2/8/2019 5:10 PM
9	I see MARC leading the regional collaborative efforts in the Kansas City region while being a resource to the smaller MPOs in Kansas and Missouri on the issue, as well as partners to state and federal agencies as they make policy changes to address AV/CV technologies, not only in transportation but also direct services, public safety and other realms.	2/8/2019 11:48 AM
10	Would need legislation	2/6/2019 6:06 PM
11	Leading the state with AV/CV research and working with the community through outreach	2/5/2019 11:22 AM
12	Yes, as a leading research University, I envision that KU will play a significant role in CV/AV adoption for the state, primarily by testing and evaluating CV/AV technologies, assessing practices, assisting in developing policies, and training the workforce.	2/5/2019 10:46 AM
13	In my opinion KDOT will take lead on the technology. Highway design and traffic control will be critical to the adoption of AV/CV technology.	2/5/2019 9:44 AM
14	The KS Insurance Department will need to be involved in the rollout of this program. The new technology will impact the liability needs of Kansas consumers.	2/4/2019 4:20 PM
15	I see my agency providing resources and education to the citizens of Kansas to assist them with understanding how AV/CV will impact their lives	2/4/2019 2:26 PM
16	Increasing automation of new vehicles and truck platooning. Enabling legislation has to be enacted for truck platooning when safety concerns are satisfied	2/4/2019 1:51 PM
17	unknown at this time	2/4/2019 12:43 PM
18	As we represent counties, we imagine impact will vary substantially for our members, with urban areas seeing the initial volume. I do not imagine KAC will take a lead on this, but rather be more tangential regarding policy, local regulations that might need changed, and so forth.	2/4/2019 12:23 PM

Q8 Do you think AV/CV technology will affect your organization and its strategic goals? Please explain.

Answered: 18   Skipped: 0
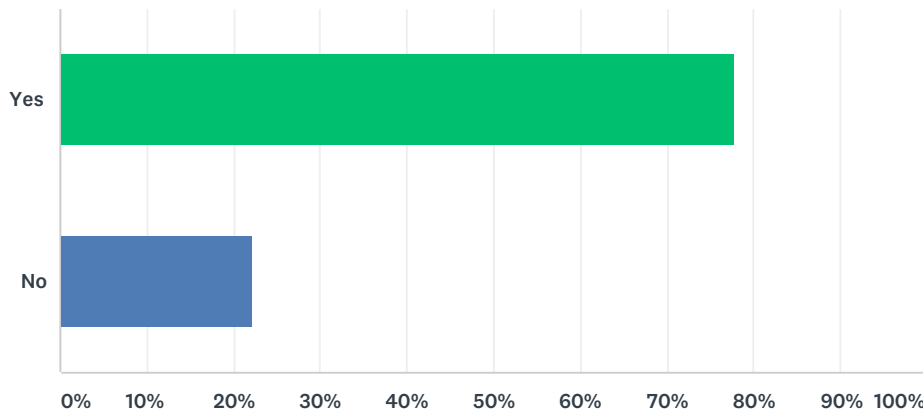
ANSWER CHOICES	RESPONSES	
Yes	77.78%	14
No	22.22%	4
TOTAL		18

#	PLEASE EXPLAIN	DATE
1	If AV/CV technology progresses at its current rate, the Department of Revenue will need modify its strategic goals. AV/CV will trigger reconsideration of vehicle insurance models, ownership models, and also adjust the way the Division of Vehicles would manage its driver's licensing and record keeping processes.	2/18/2019 3:30 PM
2	Could impact transit funding	2/14/2019 8:26 AM
3	We will have to be prepared for AV/CV because they will be on our roadway.	2/12/2019 1:20 PM
4	AV/CV technology will likely present new challenges with traffic crash investigations and in our enforcement efforts.	2/12/2019 9:59 AM
5	If there becomes a state managed network for connected vehicles, any network is susceptible to malicious activity. Connected vehicles or autonomous vehicles will not be an exception. The security of networks or vehicles could possibly become life and death situations.	2/11/2019 3:37 PM
6	We believe AV technology could impact our agency in a positive way, allowing us to add services without the same costs to scale up and launch a new transit product (aka the operator/staffing costs) for what could initially be lower ridership services.	2/8/2019 5:10 PM
7	It will be an element in our long range transportation plan that we will complete next year, as well as a strategic goal/element in other departments in the agency besides transportation.	2/8/2019 11:48 AM
8	We will need to think about how this will change state transportation research priorities for the university and how to collaborate with other researchers the CV/AV arena.	2/5/2019 11:22 AM
9	The AV/CV technology will likely impact several departments at KU, starting from Engineering, to Public Administration, and even Sociology, and Philosophy. There are a lot of discussions on the societal impacts of CAVs so I anticipate that KU strategic goals will eventually be affected by this technology.	2/5/2019 10:46 AM
10	Yes. More resources will have to be put towards AV/CV. AV/CV is coming, Kansas can't put a fence around itself and not allow AV/CV cars on the highways. The highways must be ready for the advancement.	2/5/2019 9:44 AM

11	Yes, as mentioned the introduction of av/cv technology will impact the liability needs of Kansas consumers. Due to the benefits of technology insurers could also see a drop in their exposures, and the need for liability coverage could be significantly reduced. The issue of claims handling will also need to be addressed to determine who will provide the coverage to resolve claims. Several solutions to insurance coverage questions would need to be addressed by lawmakers and it is important for our agency to stay on top of these issues.	2/4/2019 4:20 PM
12	I work educating all ages about traffic safety on Kansas roads. AV/CV will have impact on all ages from transporting children to assisting older Kansans with transportation needs. If we want this technology to succeed we have to educate about the importance of bringing it to the State.	2/4/2019 2:26 PM
13	Affects states economy and development of infrastructure	2/4/2019 1:51 PM
14	Road departments are present in all counties, and the Kansas County Highway Association is an affiliate member of KAC, so in regards to those impacts KAC will likely have positions, but most of our focus areas revolve around local control and funding for mandates. If AV/CV goes into those areas, KAC will likely be impacted.	2/4/2019 12:23 PM

Q9 Are you including AV/CV in your strategic planning or budgeting?

Answered: 17   Skipped: 1
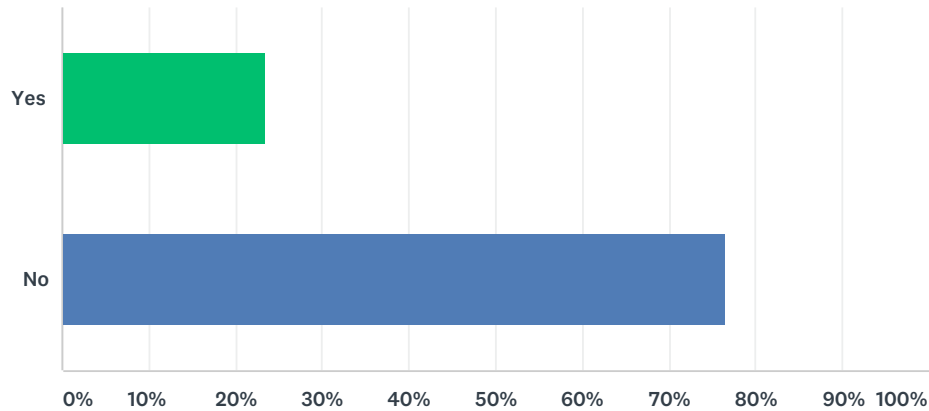
ANSWER CHOICES	RESPONSES	
Yes	23.53%	4
No	76.47%	13
TOTAL		17

#	PLEASE EXPLAIN	DATE
1	To the extent it is a first mile last mile solution.	2/14/2019 8:26 AM
2	Not currently.	2/12/2019 1:20 PM
3	Currently not at the moment.	2/11/2019 3:37 PM
4	Having talked to Mr. Floberg previously about KDOT efforts towards a governor's proclamation to allow some AV pilot projects, Topeka Metro is awaiting the basic regulatory abilities to have certainty that the development of such projects won't have additional, basic barriers that would hinder or stop potential projects without legislative action.	2/8/2019 5:10 PM
5	It is included in our transportation planning and will be addressed in plans related to aging and adult services, public safety and other plans going forward.	2/8/2019 11:48 AM
6	Yes and no. Its part of our research strategy for the next 10 years through new engineering professor hires and national research solicitations.	2/5/2019 11:22 AM
7	Several researchers (including myself) and centers do perform research on this field, and therefore budget for that.	2/5/2019 10:46 AM
8	As far as I know, KDOT has one position dedicated to AV/CV, as well as all other innovative technologies.	2/5/2019 9:44 AM
9	Not that I am aware of.	2/4/2019 4:20 PM
10	As new information is available we bring the information to the public	2/4/2019 2:26 PM
11	No, it might get into the legislative policy process but it is not presently seen as a high priority topic at KAC.	2/4/2019 12:23 PM

Q10 What are potential AV/CV strategies the State needs to consider?

Answered: 15   Skipped: 3

#	RESPONSES	DATE
1	The State needs to adopt a framework for testing AV/CV technology and fostering an environment that will encourage AV/CV industry and education in the State.	2/18/2019 3:30 PM
2	Coordination with other transit modes.	2/14/2019 8:26 AM
3	Safety considerations	2/13/2019 10:28 AM
4	Road conditions and markings; county road operations; how equipment issues will be reported when equipment malfunctions are discovered and appear to be the main cause of an accident; how to enforce state and federal statutes relating to AV/CV, etc.	2/12/2019 9:59 AM
5	Don't fully understand the scope of what AV/CV will bring.	2/11/2019 3:37 PM
6	transit and human mobility options	2/8/2019 5:10 PM
7	Policy updates to enable and allow for technologies to be used at the local level, coordinated strategies that empower local governments rather that restrict their ability to make local decisions on the technology implementation.	2/8/2019 11:48 AM
8	Insurance and safety	2/6/2019 6:06 PM
9	- infrastructure needs - 5G collaboration with telecommunication industry - safety aspects - data security - private auto industry partnerships - geometric design changes - signing and pavement marking standards - local and state laws - research priorities and test-beds - heavy vehicle interactions - updated GIS information - gravel roads - snow conditions	2/5/2019 11:22 AM
10	truck platooning, vehicle-to-infrastructure communications, autonomous shuttles/buses, shared mobility.	2/5/2019 10:46 AM
11	I don't know.	2/5/2019 9:44 AM
12	Roads and insurance laws.	2/4/2019 4:20 PM
13	I think we should take the opportunity to pilot these projects with our guidelines and not wait until we are pushed to implementation. Also we need to keep education at the front so the public know what is happening as the technology is introduced in the state. That education can begin now since we have vehicles with AV technolgy driving our roads	2/4/2019 2:26 PM
14	Enabling legislation for new technology and testing.	2/4/2019 1:51 PM
15	Cost	2/4/2019 12:43 PM

Q11 What AV/CV impacts should the State be considering? Of those, what are the three most important impacts?

Answered: 15   Skipped: 3

#	RESPONSES	DATE
1	1. Promoting alternative transportation strategies to Kansas citizens that can not lawfully obtain Kansas driving authority. Adjusting existing laws to anticipate owner/driver liability for events occurring while AV/CV operates on roads and highways.	2/18/2019 3:30 PM
2	Not sure	2/14/2019 8:26 AM
3	Safety, travel time, infrastructure costs	2/12/2019 1:20 PM
4	Safety, cost and maintenance.	2/12/2019 9:59 AM
5	Cybersecurity of the technology associated with both AV and CV.	2/11/2019 3:37 PM
6	relationship to broadband	2/11/2019 3:23 PM
7	1.minimizing traffic, so not making our shared street infrastructure into a moving parking lot for autonomous vehicles that are out running errands for their ownership, whether that's public or privately owned. In other words, not creating autonomous traffic congestion. 2.safety of users of AV as well as safety of other road users that share the public road space with them. Having certain metrics or tests for identifying performance thresholds to insure the product is acceptable for the public space. 3. Well developed structure to identify ownership and liability for the devices. If the device is owned by it's manufacturer, leased by a 3rd party to another party as the user, who is responsible for it's safe performance? Make sure these traps are run for when that first collision or incident occurs, since no person will be driving.	2/8/2019 5:10 PM
8	1. the ability to address rural transportation needs 2. the impact this could have on access to jobs and healthcare 3. the increased safety potential/decrease in roadway fatalities	2/8/2019 11:48 AM
9	5G network, rural communities, safety, laws, geometric changes to roadways, gravel and low volume roads	2/5/2019 11:22 AM
10	1. possible increase in vehicle-miles traveled and associated cost of congestion. 2. Liability issues. 3. Cybersecurity/hacking of algorithms, especially those related to vehicle-to-infrastructure communications. 4. Infrastructure requirements and optimal algorithms to aleviate congestion. 5. Institutional/policy changes.	2/5/2019 10:46 AM
11	The ability for AV/CV to interact with non-AV/CV. This will go on for decades. Design of the highways and what AV/CV will need in highway design to function effectively.	2/5/2019 9:44 AM
12	1. Roads 2. Testing 3. Insurance Laws	2/4/2019 4:20 PM
13	economic/VMT liability licensing security safer roads	2/4/2019 2:26 PM
14	allowing testing of new technologies. We still aren't sure what future of this technology will look like.	2/4/2019 1:51 PM
15	Cost, timeline, regulations	2/4/2019 12:43 PM

Q12 How are you addressing or planning to address those impacts? Please explain.

Answered: 16   Skipped: 2

#	RESPONSES	DATE
1	TBD	2/18/2019 3:30 PM
2	No current plans	2/14/2019 8:26 AM
3	None currently	2/12/2019 1:20 PM
4	Informal discussions continue to take place amongst agency leaders and personnel regarding AV/CV in Kansas. When rollout plans become available, the KHP and other state agencies will have a clearer picture of where AV/CV technology is headed, which will cause our agency to adopt and implement policies and procedures that will help guide agency operations.	2/12/2019 9:59 AM
5	Don't fully understand the scope	2/11/2019 3:37 PM
6	keeping legislators informed on related issues	2/11/2019 3:23 PM
7	1.Transit inherently cuts the number of vehicles potentially on the road. 2.We are dependent on manufacturers to work towards interoperability of software/hardware and standardization. 3. Topeka Metro will define this in its purchase or lease agreements.	2/8/2019 5:10 PM
8	Inclusion in our long range transportation planning and coordination of pilots and data sharing across service sectors.	2/8/2019 11:48 AM
9	Will hold hearings if necessary	2/6/2019 6:06 PM
10	Follow state and national research opportunities, use university capabilities to assist KDOT where needed in this area	2/5/2019 11:22 AM
11	My work is primarily related to understanding how drivers will use CV/AV technology, and how to develop optimum algorithms to reduce congestion.	2/5/2019 10:46 AM
12	I don't know.	2/5/2019 9:44 AM
13	The KS Insurance Department will closely follow this issue with the National Association of Insurance Commissioners and develop plans/goals through this task force.	2/4/2019 4:20 PM
14	We will provide education and resources to bring the why and how to the public	2/4/2019 2:26 PM
15	Consensus building by participating in working groups like this. We need to encourage public to become familiar with the technology as it matures.	2/4/2019 1:51 PM
16	On the Board	2/4/2019 12:43 PM

Q13 How is your organization addressing AV/CV technology? (Check all that apply)

Answered: 14   Skipped: 4
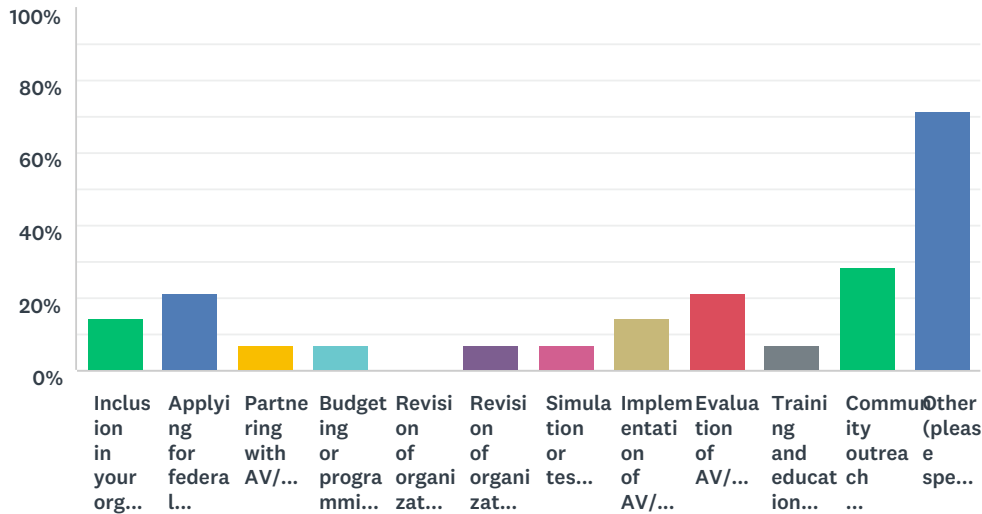
ANSWER CHOICES	RESPONSES	
Inclusion in your organization's planning documents	14.29%	2
Applying for federal funding for AV/CV projects	21.43%	3
Partnering with AV/CV technology solution providers	7.14%	1
Budgeting or programming funds for AV/CV activities	7.14%	1
Revision of organizational policies	0.00%	0
Revision of organizational practices	7.14%	1
Simulation or testing of AV/CV technologies	7.14%	1
Implementation of AV/CV pilot projects	14.29%	2
Evaluation of AV/CV technology solutions	21.43%	3
Training and education of the workforce	7.14%	1
Community outreach and public education	28.57%	4
Other (please specify)	71.43%	10
Total Respondents: 14		

#	OTHER (PLEASE SPECIFY)	DATE
1	It has not been discussed in depth	2/14/2019 8:26 AM
2	Involvement with the Taskforce is our first step	2/12/2019 1:20 PM
3	Participating in meetings with KDOT	2/12/2019 9:59 AM
4	answering policy questions as requested	2/11/2019 3:23 PM
5	Applying for state transit funding for AV/CV projects	2/8/2019 5:10 PM
6	National Science Foundation research to explore various aspects of connected and autonomous vehicles in various departments in engineering	2/5/2019 11:22 AM

7	I don't know.	2/5/2019 9:44 AM
8	National Association of Insurance Commissioners studies	2/4/2019 4:20 PM
9	On the Board	2/4/2019 12:43 PM
10	We may weigh in on policies relating, if needed	2/4/2019 12:23 PM

Q14 Is your agency addressing the following technologies? (Check all that apply)

Answered: 14   Skipped: 4
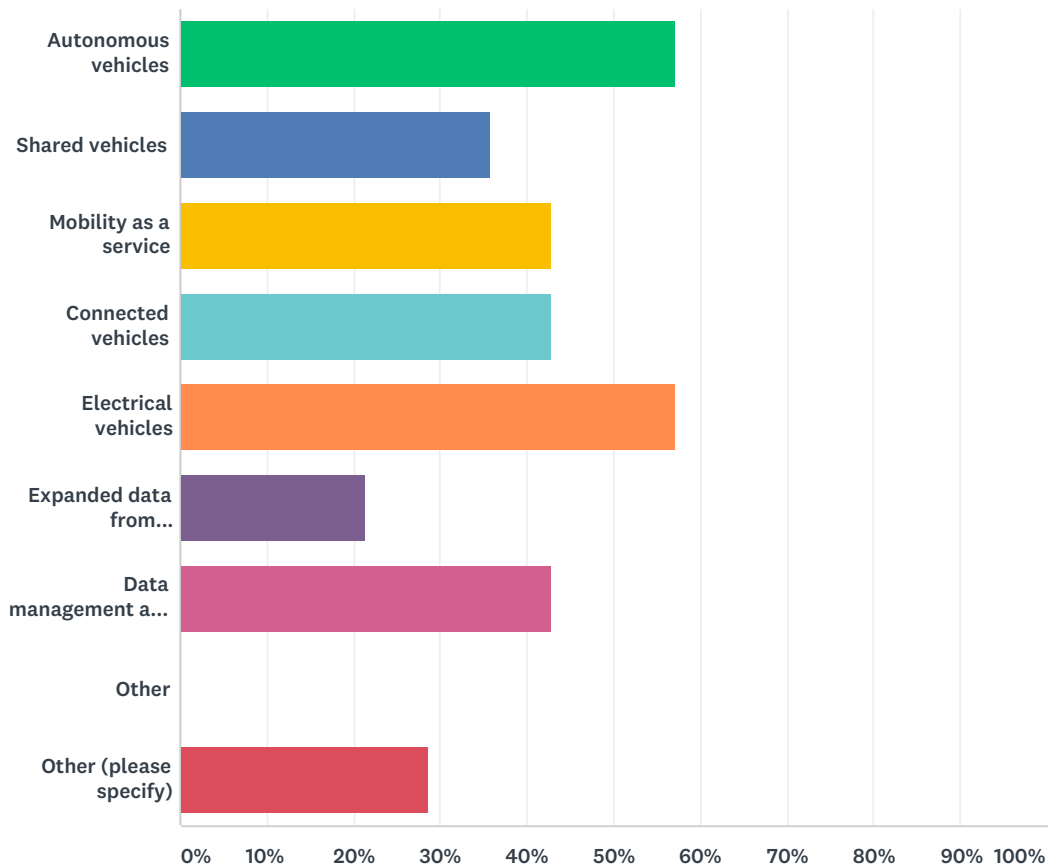
ANSWER CHOICES	RESPONSES	
Autonomous vehicles	57.14%	8
Shared vehicles	35.71%	5
Mobility as a service	42.86%	6
Connected vehicles	42.86%	6
Electrical vehicles	57.14%	8
Expanded data from vehicles/travel patterns	21.43%	3
Data management and security	42.86%	6
Other	0.00%	0
Other (please specify)	28.57%	4
Total Respondents: 14		

#	OTHER (PLEASE SPECIFY)	DATE
1	We consider all forms of transit in funding strategies.	2/14/2019 8:26 AM

2	all to which statutes apply	2/11/2019 3:23 PM
3	not at this time	2/5/2019 11:22 AM
4	KDOT has one position dedicated to looking at innovation. Budget personnel know the impacts to funding with electrical vehicles and possible solutions such as vehicles miles driven, but I know of no concerted effort to address the situation.	2/5/2019 9:44 AM

Q15 Is your senior leadership/management engaged in discussion about AV/CV implementation? If yes, how? What individuals or organizations make up your policy and advisory groups?

Answered: 17   Skipped: 1

#	RESPONSES	DATE
1	No formal advisory group, but the Director of Vehicles is interested in the subject.	2/18/2019 3:30 PM
2	Not really	2/14/2019 8:26 AM
3	No, not prior to this survey.	2/13/2019 10:28 AM
4	No	2/12/2019 1:20 PM
5	Yes, but I personally haven't been included or involved in any of these discussions. The KHP's Public and Governmental Affairs Unit houses the agency's policy and procedures manual. All policies must be approved by the Superintendent before being implemented.	2/12/2019 9:59 AM
6	Not at the moment	2/11/2019 3:37 PM
7	no	2/11/2019 3:23 PM
8	Not significantly until we have insight on the direction the State is taking. But there have been initial discussions of the potential.	2/8/2019 5:10 PM
9	Yes - the Chief Innovation Officer role was created in part to help implement AV/CV initiatives in a more strategic way.	2/8/2019 11:48 AM
10	Na	2/6/2019 6:06 PM
11	n/a	2/5/2019 11:22 AM
12	No	2/5/2019 10:46 AM
13	I know that senior leadership/management is aware of AV/CV implementation. I do not know who makes up the policy and advisory group.	2/5/2019 9:44 AM
14	Our agency recently elected a new Commissioner effective January 15th. The topic of av/cv implementation will be discussed with the new administration for direction.	2/4/2019 4:20 PM
15	Not really.	2/4/2019 1:51 PM
16	Yes / On Advisory Board	2/4/2019 12:43 PM
17	No	2/4/2019 12:23 PM

Q16 What initiatives that focus on AV/CV is your agency involved in? Please describe.

Answered: 16   Skipped: 2

#	RESPONSES	DATE
1	None yet	2/14/2019 8:26 AM
2	None	2/13/2019 10:28 AM
3	Only following what is being done in the industry	2/12/2019 1:20 PM
4	Commercial motor vehicle platooning operations, etc.	2/12/2019 9:59 AM
5	Not at the moment	2/11/2019 3:37 PM
6	broadband task force, other committees as requested	2/11/2019 3:23 PM
7	Primarily keeping an eye on other transit implementations and watching for applicable funding.	2/8/2019 5:10 PM
8	Leading KC region work, involved in AMPO and NARC subcommittees, engaged with TRB work on the issue, etc.	2/8/2019 11:48 AM
9	We are hiring faculty that have a background or interest in pursuing AV/CV research.	2/5/2019 11:22 AM
10	KU researchers are working on the following: - cybersecurity - EV/AV/CV systems - CV user behavior - Smart city implementation	2/5/2019 10:46 AM
11	I dont' know.	2/5/2019 9:44 AM
12	NAIC Committees	2/4/2019 4:20 PM
13	Have worked with the KDOT Task Force	2/4/2019 2:26 PM
14	None	2/4/2019 1:51 PM
15	na	2/4/2019 12:43 PM
16	None	2/4/2019 12:23 PM

Q17 From your agency's perspective, how much impact will AV/CV planning have on the following areas? (range of impacts low/med/high on a scale of 1-5)

Answered: 17   Skipped: 1
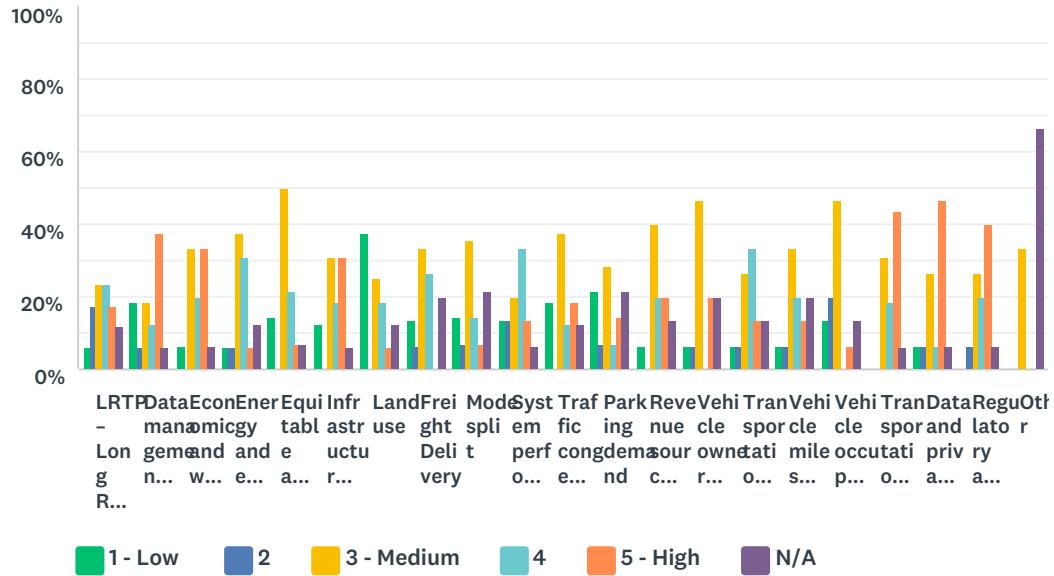
	1 - LOW	2	3 - MEDIUM	4	5 - HIGH	N/A	TOTAL	WEIGHTED AVERAGE
LRTP –Long Range Plan	5.88% 1	17.65% 3	23.53% 4	23.53% 4	17.65% 3	11.76% 2	17	3.33
Data management and cybersecurity	18.75% 3	6.25% 1	18.75% 3	12.50% 2	37.50% 6	6.25% 1	16	3.47
Economic and workforce opportunity	6.67% 1	0.00% 0	33.33% 5	20.00% 3	33.33% 5	6.67% 1	15	3.79
Energy and environment	6.25% 1	6.25% 1	37.50% 6	31.25% 5	6.25% 1	12.50% 2	16	3.29
Equitable access to transportation	14.29% 2	0.00% 0	50.00% 7	21.43% 3	7.14% 1	7.14% 1	14	3.08
Infrastructure planning and investment priorities	12.50% 2	0.00% 0	31.25% 5	18.75% 3	31.25% 5	6.25% 1	16	3.60
Land use	37.50% 6	0.00% 0	25.00% 4	18.75% 3	6.25% 1	12.50% 2	16	2.50
Freight Delivery	13.33% 2	6.67% 1	33.33% 5	26.67% 4	0.00% 0	20.00% 3	15	2.92
Mode split	14.29% 2	7.14% 1	35.71% 5	14.29% 2	7.14% 1	21.43% 3	14	2.91
System performance	13.33% 2	13.33% 2	20.00% 3	33.33% 5	13.33% 2	6.67% 1	15	3.21
Traffic congestion reduction	18.75% 3	0.00% 0	37.50% 6	12.50% 2	18.75% 3	12.50% 2	16	3.14
Parking demand	21.43% 3	7.14% 1	28.57% 4	7.14% 1	14.29% 2	21.43% 3	14	2.82

Revenue sources and needs	6.67% 1	0.00% 0	40.00% 6	20.00% 3	20.00% 3	13.33% 2	15	3.54
Vehicle ownership	6.67% 1	6.67% 1	46.67% 7	0.00% 0	20.00% 3	20.00% 3	15	3.25
Transportation funding models	6.67% 1	6.67% 1	26.67% 4	33.33% 5	13.33% 2	13.33% 2	15	3.46
Vehicle miles traveled	6.67% 1	6.67% 1	33.33% 5	20.00% 3	13.33% 2	20.00% 3	15	3.33
Vehicle occupancy	13.33% 2	20.00% 3	46.67% 7	0.00% 0	6.67% 1	13.33% 2	15	2.62
Transportation safety	0.00% 0	0.00% 0	31.25% 5	18.75% 3	43.75% 7	6.25% 1	16	4.13
Data and privacy concerns	6.67% 1	6.67% 1	26.67% 4	6.67% 1	46.67% 7	6.67% 1	15	3.86
Regulatory and liability issues	0.00% 0	6.67% 1	26.67% 4	20.00% 3	40.00% 6	6.67% 1	15	4.00
Other	0.00% 0	0.00% 0	33.33% 3	0.00% 0	0.00% 0	66.67% 6	9	3.00

Q18 Will your agency have AV/CV education for stakeholders?

Answered: 15   Skipped: 3
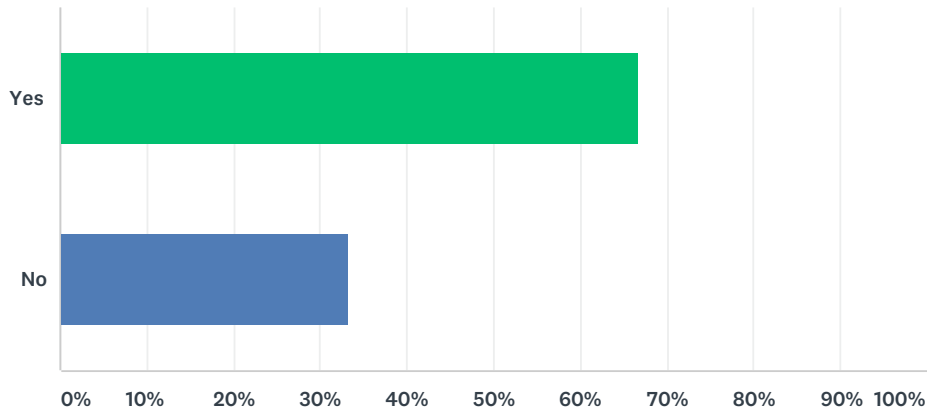
ANSWER CHOICES	RESPONSES	
Yes	66.67%	10
No	33.33%	5
TOTAL		15

#	WHAT TYPE OF EDUCATION?	DATE
1	Perhaps at our annual meeting	2/14/2019 8:26 AM
2	This would be dependent upon the need for training to stakeholders. If needed, training and outreach would be focused around awareness, uses, potential implementation, and other considerations such as safety or privacy concerns.	2/13/2019 10:28 AM
3	Unsure at this time	2/12/2019 1:20 PM
4	Accident investigation and enforcement training will likely occur.	2/12/2019 9:59 AM
5	Do not fully understand the landscape	2/11/2019 3:37 PM
6	Once projects are a potential I foresee a whitepaper if not longer term promotion or at least a video once a project is in the works. I would imagine there would be a public hearing/input element as well with potential projects/applications.	2/8/2019 5:10 PM
7	Outreach for stakeholders including general public, elected officials, planners/engineers and policy decision-makers.	2/8/2019 11:48 AM
8	Hearings	2/6/2019 6:06 PM
9	Its the mission of K-State through its extension services.	2/5/2019 11:22 AM
10	KU does not currently educate stateholders, but could do so in the future, in the form of meetings, seminars, or workshops.	2/5/2019 10:46 AM
11	I don't know.	2/5/2019 9:44 AM
12	Not that I am aware of	2/4/2019 4:20 PM
13	We can develop many forms of education	2/4/2019 2:26 PM

Q19 How will AV/CV technology or planning impact how your agency functions?

Answered: 13   Skipped: 5

#	RESPONSES	DATE
1	It wont	2/14/2019 8:28 AM
2	AV/CV technology may be a resource employed by local emergency management partners.	2/13/2019 10:57 AM
3	Again, it will affect our accident investigation and enforcement efforts.	2/12/2019 10:17 AM
4	It could possibly expand responsibility	2/11/2019 3:53 PM
5	It will add another option in our vehicular tool belt to meet specific needs or niches in location or service needs. Eventually (after the initial system kinks of route are worked out) we will have a very predictable/reliable schedule. This is assuming the environment we utilize the AV in doesn't have a ton of interference from pedestrians/ car traffic to slow down the route. We assume this is where proper planning and routing efforts come in to play as well as coordination with your vehicle vendor.	2/8/2019 6:03 PM
6	It will need to be included/considered in all planning work going forward.	2/8/2019 11:55 AM
7	Will increase its focus on the key areas mentioned previously.	2/5/2019 11:57 AM
8	It's the way of the future for transportation, planning, and computer science research.	2/5/2019 11:28 AM
9	More resources will need to be dedicated to AV/CV technology.	2/5/2019 9:50 AM
10	This technology could have a huge impact on how the Property & Casualty division functions. The division must stay abreast with legislation and will need to understand how this could impact our current workforce.	2/4/2019 4:45 PM
11	It will provide an additional topic of traffic safety to bring to partners, drivers, riders and stakeholders	2/4/2019 2:32 PM
12	Not sure	2/4/2019 1:58 PM
13	Cost is the major factor	2/4/2019 12:46 PM

Q20 What is your biggest challenge when thinking about the AV/CV opportunities?

Answered: 14   Skipped: 4

#	RESPONSES	DATE
1	Not sure	2/14/2019 8:28 AM
2	If AV/CV technologies could replace human interaction to complete tasks such as on-ground damage assessments for example; safety concerns; liability concerns; and privacy concerns.	2/13/2019 10:57 AM
3	Knowing timeline that will affect us.	2/12/2019 1:25 PM
4	Policy updates and training of personnel.	2/12/2019 10:17 AM
5	The complexity is still unknown	2/11/2019 3:53 PM
6	Logistics of commissioning (routing, charging infrastructure, location)	2/8/2019 6:03 PM
7	Uncertainty around adoption of specific technologies, differing ability to participate based on political will or jurisdiction size in the region.	2/8/2019 11:55 AM
8	It requires substantial coordination between various stakeholders across different fields.	2/5/2019 11:57 AM
9	state infrastructure for data collection and analysis, safety aspects, and working with the telecommunication industry	2/5/2019 11:28 AM
10	Combining AV/CV with non-AV/CV in the motoring public.	2/5/2019 9:50 AM
11	Determining how these changes in technology will impact the insurance industry.	2/4/2019 4:45 PM
12	Right now knowing what is out there in the state and what direction the State is going --along with how that direction will impact Kansans	2/4/2019 2:32 PM
13	Not knowing how it will be implemented	2/4/2019 1:58 PM
14	Implementation	2/4/2019 12:46 PM

Q21 In thinking about your AV/CV challenges, what key policy, legislative or legal solutions do you think are most needed?

Answered: 14   Skipped: 4

#	RESPONSES	DATE
1	Probably liability	2/14/2019 8:28 AM
2	Solutions that focus on use, any specialized licensure/training for operability, safety concerns, and privacy concerns.	2/13/2019 10:57 AM
3	Will need to regulate technology to make sure it is ready for implementation.	2/12/2019 1:25 PM
4	Laws regulating the use and operation of AV/CVs in Kansas. Policies that reflect new statutes and procedures.	2/12/2019 10:17 AM
5	Who will be responsible for securing connected vehicle networks.	2/11/2019 3:53 PM
6	Legal ability to operate within open traffic. Liability of operator/owner of vehicles. Need for different vehicle taxation based on vehicles operating significantly more based on lack of human driver.	2/8/2019 6:03 PM
7	Specific resolutions/ordinances/legislation that not only legalize testing on public roadways in a safe and reasonable manner but encourage it and enable staff to make decisions at the local level on implementation.	2/8/2019 11:55 AM
8	- Liability/insurance issues in cases of incidents. - Proper legislation for testing, and operating AV/CVs on public roads. - Encourage research and development	2/5/2019 11:57 AM
9	very specific laws to help law enforcement and reassure the public that the state is on-board and active with AV/CV	2/5/2019 11:28 AM
10	I don't know about most - but a court of the legislative body will need to determine who is responsible for the functioning of an AV/CV vehicle.	2/5/2019 9:50 AM
11	Liability issues	2/4/2019 4:45 PM
12	to allow pilot projects in the State so we can learn and adapt our State to the needs of this new technology	2/4/2019 2:32 PM
13	Allowing testing of truck platooning and being open to proposals for testing by industry.	2/4/2019 1:58 PM
14	Regulatory laws	2/4/2019 12:46 PM

Q22 In thinking about your AV/CV challenges, what will be your greatest challenge from a technical perspective?

Answered: 11   Skipped: 7

#	RESPONSES	DATE
1	Not applicable	2/14/2019 8:28 AM
2	Accident investigative technology.	2/12/2019 10:17 AM
3	Understanding the full scope of connectivity	2/11/2019 3:53 PM
4	Maintaining programming and keeping technology operational throughout its useful life given the bleeding edge nature of the technology. Strong vendor support will help aid in this process.	2/8/2019 6:03 PM
5	Creating higher levels of comfort with moving forward on specific technologies when it is uncertain at this time what direction the OEMs and other national brands will go.	2/8/2019 11:55 AM
6	identifying which aspects of AV/CV actually work as intended.	2/5/2019 11:57 AM
7	gravel roads and snow...is our state network ready - have auto manufacturers visited this state for testing?	2/5/2019 11:28 AM
8	Having cars operate correctly in blizzards, snow events, construction, etc.	2/5/2019 9:50 AM
9	Determining how testing will impact insurance	2/4/2019 4:45 PM
10	None	2/4/2019 1:58 PM
11	Cost	2/4/2019 12:46 PM

Q23 In thinking about your AV/CV challenges, what will be your greatest challenge from an operational perspective?

Answered: 12   Skipped: 6

#	RESPONSES	DATE
1	Not applicable	2/14/2019 8:28 AM
2	How will AV/CV technologies be used, safety concerns, and privacy concerns.	2/13/2019 10:57 AM
3	Accident investigations and enforcement. How much control does the driver actually have over the vehicle.	2/12/2019 10:17 AM
4	Understanding the full scope of connectivity	2/11/2019 3:53 PM
5	Evaluating route metrics given the dramatic potential difference in service hours. Also determining what those service hours should be will a challenge, given that no other vehicle/driver combo is currently run or could be run as extensively (long) without significant cost increases.	2/8/2019 6:03 PM
6	Understanding the impact on VMT, parking, and land use decision making going forward.	2/8/2019 11:55 AM
7	Ensuring that the AV/CV technology provides benefits the users and the state.	2/5/2019 11:57 AM
8	fleet mix and operational aspects, especially in urban areas	2/5/2019 11:28 AM
9	I don't know.	2/5/2019 9:50 AM
10	Physical damage coverage	2/4/2019 4:45 PM
11	Public acceptance	2/4/2019 1:58 PM
12	Cost	2/4/2019 12:46 PM

Q24 How will successful AV/CV programs be measured in the State? Name 3-5 performance measures.

Answered: 13   Skipped: 5

#	RESPONSES	DATE
1	Dont k ow	2/14/2019 8:28 AM
2	Mitigation of safety risks through a reduction of driver fatigue. Address liability issues that may impact development and use. Encourage shared land use.	2/13/2019 10:57 AM
3	safety mobility reliability	2/12/2019 1:25 PM
4	Accident and computer data.	2/12/2019 10:17 AM
5	Unknown at this time	2/11/2019 3:53 PM
6	Enhanced (added) trips or vehicles per day on roads leading to these currently unserved locations/ districts areas. This in combination with increases in ridership, showing pent demand. You need both metrics to verify use of the service, not just the same vehicle running the route 10 times a day.	2/8/2019 6:03 PM
7	1. level of awareness, 2. public comfort, 3. data sharing programs/agreements between local governments and other government entities	2/8/2019 11:55 AM
8	This highly depends on the adopted programs. Some performance measures include: - Technology adoption or market penetration - Reduction of congestion and emissions - Mobility and accessibility improvements - User acceptance ratings - Revenues for the State - Number of AV/CV related businesses	2/5/2019 11:57 AM
9	- fleet mix - changes in crash numbers and severity - public acceptance - successful implementation of state laws / codes for AV/CV	2/5/2019 11:28 AM
10	1. number of accidents. 2. number of persons utilizing AV/CV 3. the ability of a vehicle to be truly autonomous	2/5/2019 9:50 AM
11	1. Testing 2. Roads	2/4/2019 4:45 PM
12	Staying in step with National perception by the public. Not lagging other states in enabling legislation.	2/4/2019 1:58 PM
13	Cost, timeline, laws	2/4/2019 12:46 PM

Q25 What other agencies will your agency most closely work with in early AV/CV planning, operations and deployments?

Answered: 16   Skipped: 2

#	RESPONSES	DATE
1	Kansas Department of Transportation; Kansas Insurance Commissioner, Kansas Highway Patrol, League of Municipalities.	2/18/2019 3:33 PM
2	Unknown	2/14/2019 8:28 AM
3	KDOT, KHP	2/13/2019 10:57 AM
4	DOT	2/12/2019 1:25 PM
5	KDOT	2/12/2019 10:17 AM
6	KDOT	2/11/2019 3:53 PM
7	City of Topeka and Shawnee County Public Works and Planning offices, social service agencies and potential employer partners who want to see service for their employees to their facilities.	2/8/2019 6:03 PM
8	local governments, state agencies in various capacities (DOR, insurance, public safety, health and human services), federal agencies (funding, pilots, regulations)	2/8/2019 11:55 AM
9	With the State and private companies that offer AV/CV related products and services	2/5/2019 11:57 AM
10	- KDOT - NSF - TRB - UTCs - MPOs	2/5/2019 11:28 AM
11	Commerce	2/5/2019 9:50 AM
12	Department of Transportation	2/4/2019 4:45 PM
13	Kansas Department of Transportation	2/4/2019 2:32 PM
14	KDOT	2/4/2019 1:58 PM
15	na	2/4/2019 12:46 PM
16	Kansas County Highway Association and Kansas Department of Transportation	2/4/2019 12:24 PM

Q26 How can partnering with state and federal agencies lead to success?

Answered: 13   Skipped: 5

#	RESPONSES	DATE
1	Coordination is always good	2/14/2019 8:28 AM
2	Integrated collaboration, information sharing, and identification of solutions to overcome issue/concerns whether real or perceived.	2/13/2019 10:57 AM
3	Partnering and communication will be key.	2/12/2019 10:17 AM
4	Lessons learned from others experiences whether successful or unsuccessful.	2/11/2019 3:53 PM
5	Support in policy and education efforts to municipalities with Kansas based research papers, videos, white papers etc. would be very beneficial.	2/8/2019 6:03 PM
6	Each level of government has specific goals and desired outcomes. By working at all levels, we are more likely to achieve the desired outcomes instead of working in silos without coordinating on efforts.	2/8/2019 11:55 AM
7	State and federal agencies can help by: - identifying the priorities of the users, and - allowing the testing, implementation, and evaluation of AV/CV strategies	2/5/2019 11:57 AM
8	research can provide recommendations for changes in roadway geometry, policy, and providing critical data to the feds on effectiveness	2/5/2019 11:28 AM
9	There will need to be some type of uniformity among the states. Partnering with state and federal agencies may lead to some uniformity of laws, regulations, design standards.	2/5/2019 9:50 AM
10	Determining ownership,guidelines, begin determining risk and pricing with actuarial models, collaborate effectively with automakers & governments at multiple levels	2/4/2019 4:45 PM
11	All must be a part or success will break down	2/4/2019 2:32 PM
12	Low regulatory burden that protects public safety. Grant funding from Feds.	2/4/2019 1:58 PM
13	Better informed	2/4/2019 12:46 PM

Q27 What are Kansas' strengths or opportunities when it comes to AV/CV?

Answered: 13   Skipped: 5

#	RESPONSES	DATE
1	Flat land. Receptive government(s). Strict monetary limits on Tort liability by manufacturer or AV/CM operator. Conservative juries.	2/18/2019 3:33 PM
2	Not sure	2/14/2019 8:28 AM
3	Kansas has been involved and one of the states at the forefront for the implement of unmanned aerial systems that would have come with similar issues that would need to be address for AV/CV technologies.	2/13/2019 10:57 AM
4	Strong working relationships already established. Open country and long stretches of straight highways, etc.	2/12/2019 10:17 AM
5	space; relatively smooth, well-marked state highways	2/11/2019 3:28 PM
6	Openness of rural roads that will help with computer visibility.	2/8/2019 6:03 PM
7	Rural pilots and needs, turnpike potential for freight/logistics testing, strong agricultural interest that has experience with autonomous technology already in the field.	2/8/2019 11:55 AM
8	The KC metro area offers a great place and many options for AV/CV opportunities to happen. AVs in rural areas might be another promising opportunity for Kansas.	2/5/2019 11:57 AM
9	Great highway conditions, KTA, extensive fiber network	2/5/2019 11:28 AM
10	The ability to test vehicles in areas that are not congested. The ability to test vehicles in all types of weather.	2/5/2019 9:50 AM
11	1. Ability to develop safer streets 2. Impact of the city infrastructure 3. Elimination of driver error, increased safey on roads 4. Reduction in traffic congestion 5. Increase in human productivity by eliminating commute time & allowing other tasks to be completed 6. Benefits for elderly and disabled 7. Reduction in the number of law enforcement officers needed	2/4/2019 4:45 PM
12	Weather (4 seasons), set as a center for trade as witnessed by investment at Gardner Transload center.	2/4/2019 1:58 PM
13	Trend-setter	2/4/2019 12:46 PM

Q28 What are Kansas' threats or weaknesses when it comes to AV/CV?

Answered: 14   Skipped: 4

#	RESPONSES	DATE
1	Bad weather - snow and sleet.	2/18/2019 3:33 PM
2	Not sure	2/14/2019 8:28 AM
3	Overcoming covens regarding use, operability, liability, safety, and privacy concerns of AV/CV technologies.	2/13/2019 10:57 AM
4	Weather, wildlife, etc.	2/12/2019 10:17 AM
5	challenges because decision-makers may not understand how transportation overall is changing, away from an emphasis on driving and personal vehicles	2/11/2019 3:28 PM
6	Avoidance of new technologies and large spans of rural and uninhabited stretches for more localized AV. This would however be great for AV semi traffic.	2/8/2019 6:03 PM
7	Lack of coordinated tech sector interest, no strong technology research university presence.	2/8/2019 11:55 AM
8	Changing the culture and becoming more open to adopting new technologies	2/5/2019 11:57 AM
9	acceptance, gravel roads, changing weather conditions, will the rural public even accept the idea of CV/AV?	2/5/2019 11:28 AM
10	Kansas tends to be conservative and not move forward with technology at a pace set by other states.	2/5/2019 9:50 AM
11	1. Roads currently not equipped for testing & changes in the road system that would need to be adjusted for driverless vehicles 2. Reduction in jobs (trucks, taxis) 3. Privacy/security concerns 4. Weather related concerns	2/4/2019 4:45 PM
12	Agencies working working together	2/4/2019 2:32 PM
13	Unwillingness of public to embrace new technologies.	2/4/2019 1:58 PM
14	Participation	2/4/2019 12:46 PM

Q29 Is there anything else you would like to share about how your agency is addressing AV/CV technology?

Answered: 9   Skipped: 9

#	RESPONSES	DATE
1	No	2/14/2019 8:28 AM
2	No.	2/13/2019 10:57 AM
3	Not at this time.	2/12/2019 10:17 AM
4	We would enjoy the opportunity to take part in the Stakeholder process as a transit operator and KS agency considering AV.	2/8/2019 6:03 PM
5	Regional and bi-state coordination will be particularly important in the heartland to keep freight and logistics operations moving.	2/8/2019 11:55 AM
6	Kansas seems behind in this area, we as a state and university need to get onboard quickly.	2/5/2019 11:28 AM
7	No.	2/5/2019 9:50 AM
8	N/A	2/4/2019 4:45 PM
9	na	2/4/2019 12:46 PM

Q2 Company/Industry

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	State Farm/Insurance	2/8/2019 2:09 PM
2	AAA Kansas	2/4/2019 11:45 AM
3	Kansas Motor Carriers Association	2/4/2019 11:12 AM

Q4 When do you think AV/CV technology will have a significant impact on Kansas?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	The Insurance Institute for Highway Safety (IIHS) estimates that it may take 30 years from the time fully automated and connected vehicles are introduced to hit market saturation. In the meantime, our roads will include a range of SAE levels, requiring State Farm and others to continue to adapt to the needs of customers while focusing on the future.	2/8/2019 2:09 PM
2	Soon. Possibly within the next year or two, with platooned trucks and AV testing	2/4/2019 11:45 AM
3	Now. Connected Vehicles are at the forefront of the trucking industry with an immediate need to test platooning. Semi autonomous vehicles will come in the near future.	2/4/2019 11:12 AM

Q5 What current or future regulations might influence AV/CV advancement for your industry?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	Key issues for State Farm and insurers in the public policy discussion relate to our ability to assess risks presented by our customers, to price that risk appropriately, and to handle claims that result from crashes. To that end, State Farm is focused on the following principles as it examines current and future regulation. - Safety is paramount. - Insurer data access is critical. - Federal government should set performance and safety standards. - States and local governments should determine registration, licensing, and operating of automated vehicles within their jurisdictions. - States should continue to regulate insurance requirements. - Existing liability principles should apply. - Data and privacy laws should adapt to address AV/CV.	2/8/2019 2:09 PM
2	Insurance coverage, road safety regulations, traffic laws	2/4/2019 11:45 AM
3	The trucking industry needs an immediate change in the "following to close" statute to allow for platooning. Infrastructure will have to be addressed to accommodate fully autonomous vehicles.	2/4/2019 11:12 AM

Q6 What do you anticipate the impact to be on the state? (traffic congestion, economic, environmental, other)

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	According to the National Highway Safety Administration (NHTSA), over 90 percent of car crashes are attributable in some part to driver error. AV/CV may eliminate a large number of these crashes, thus potentially benefitting everyone. However, will AV/CV may reduce or eliminate some risks, new risks are likely to emerge.	2/8/2019 2:09 PM
2	Initially, technology viability,traffic laws and safety will be the big concerns. Later, economic development and interconnectivity with regional and national AV networks will be important.	2/4/2019 11:45 AM
3	Platooning will reduce congestion, provide for safety enhancements and reduce our industries carbon footprint.	2/4/2019 11:12 AM

Q7 What area is your industry focused?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	Insurance.	2/8/2019 2:09 PM
2	Traffic safety, motorist safety, insurance, travel	2/4/2019 11:45 AM
3	Trucking	2/4/2019 11:12 AM

Q8 Which of the five options below is your organization addressing with AV/CV technology? (select all that apply)

Answered: 3   Skipped: 0
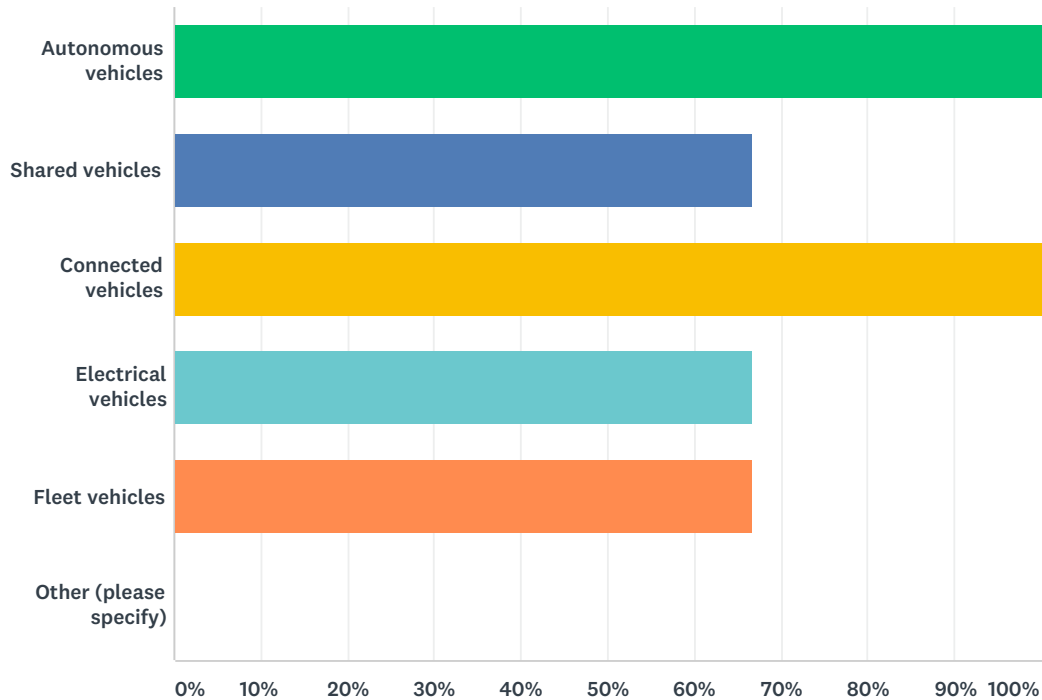
ANSWER CHOICES	RESPONSES	
Autonomous vehicles	100.00%	3
Shared vehicles	66.67%	2
Connected vehicles	100.00%	3
Electrical vehicles	66.67%	2
Fleet vehicles	66.67%	2
Other (please specify)	0.00%	0
Total Respondents: 3		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q9 What are potential AV/CV strategies the State needs to consider?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	One strategy the State may consider is how to address data access. Data access is a key issue for the insurance industry and other stakeholders. Data access is (1) essential to developing proper pricing and underwriting of vehicles, (2) critical for liability determinations, and (3) from the general public's perspective, important in determining the safety and reliability of the technology. Insurers should have access to AV/CV data, including crash data, that is timely, complete, and useful. It is important to note that access to this data does not infringe on the proprietary nature of that data and the access is relevant to specific issues of, for example, underwriting and liability, as opposed to the wholesale collection of all data associated with a vehicle.	2/8/2019 2:09 PM
2	Input and collaboration with all pertinent industries that may be impacted; learning from other states who are further advanced in their AV/CV activity; crucial for safety and interaction with current transportation systems to be considered and comprehensively tested	2/4/2019 11:45 AM
3	Both Platooning, all electric vehicle and finally fully autonomous vehicles.	2/4/2019 11:12 AM

Q10 What AV/CV impacts should the State be considering?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	The State should consider the impacts of AV/CV on all relevant stakeholders. The insurance industry is a key stakeholder in this debate.	2/8/2019 2:09 PM
2	Technology viability/interconnectivity; safety; effectiveness of technology on rural/gravel roads; personal security/privacy of technology	2/4/2019 11:45 AM
3	Kansas should move immediately to test platooning	2/4/2019 11:12 AM

Q11 Name a few priorities that your industry might need state and federal agencies to focus on to achieve success in the AV/CV environment?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	As there is a continued focus on allowing manufacturers, suppliers, and tech companies to innovate in the AV/CV environment, there needs to be an examination of how insurers will also be able to innovate in relation to product and coverage development for these new technologies. As laws expand and are amended to allow for testing and implementation of these technologies, it will be appropriate to determine how insurers can appropriately match price to risk and develop new products. For example, how will insurers be able to match price to risk when there is limited data to use to underwrite these technologies. Also, considering the traditional way of reviewing and approving insurance coverages and rates, will insurers be able to sync up their new products with the pace of development of AV/CV. It may be worth exploring the need to allow for the insurance industry to better adapt to the future state of AV/CV.	2/8/2019 2:09 PM
2	Education of public and various driver/operator audiences; traffic and driver safety; impact on insurance coverage/liabilities, etc.	2/4/2019 11:45 AM
3	Embrace technology. Move quickly to make it available to the general public. Work with the federal government to secure an uniform platform.	2/4/2019 11:12 AM

Q12 How can partnering with state and federal agencies lead to success?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	The pace of innovation is in some cases faster than the ability for states and federal agencies to regulate. Accordingly, states and federal agencies should continue to work together and with other stakeholders to develop creative and practical solutions to help insure that safe AV/CV technology is developed.	2/8/2019 2:09 PM
2	Collaboration with all involved stakeholders will ensure that all angles are considered and accounted for to create an AV/CV environment that works for all	2/4/2019 11:53 AM
3	Trucking and public agencies must work together to implement technology or be left behind.	2/4/2019 11:20 AM

Q13 How will the economy of Kansas benefit from investment in AV/CV technology?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	State Farm supports technology that leads to safer outcomes and believes that there are opportunities to develop new products and coverages for AV/CV technology. Accordingly, this will run to the benefit of State Farm customers in Kansas.	2/8/2019 2:09 PM
2	Interstate roadway connectivity and commerce; possibly development/deployment of AV/CV technologies	2/4/2019 11:53 AM
3	This currently is a shortage of qualified drivers to move our freight. Anything we can do to speed freight movement will improve the quality of life for all Kansans.	2/4/2019 11:20 AM

Q14 How important do you think public education is for AV/CV technology and what role will your industry play in that education?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	State Farm supports robust AV/CV public education. Research indicates the more people are aware of how AV/CV technology works the more comfortable they are with the benefits of the technology. State Farm has supported research by the Governors Highway Safety Association on automated vehicles in order to help educate the public and lawmakers. In addition, State Farm has a unique public-private relationship with the University of Michigan, called MCity, providing early access to the latest AV/CV data, in order to better inform our work on these issues. State Farm also partners with Stanford University's Center for Automotive Research and also has its own Vehicle Research Facility. These educational resources will help better inform our policyholders as the technology continues to evolve.	2/8/2019 2:09 PM
2	Crucial. AAA is the nation's leading advocate for motorists, and this is one of the most important roles AAA has taken and will take in this arena, with our members and the motoring public overall.	2/4/2019 11:53 AM
3	It's very important so the general public is not frightened to share the road with connected/autonomous vehicles.	2/4/2019 11:20 AM

Q15 What is your biggest challenge when thinking about the AV/CV opportunities?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	The pace of technology is in some cases faster than the ability for states to legislate and regulate. One challenge for the insurance industry is adapting to these changes in technology against an insurance regulatory framework that might need to evolve as well.	2/8/2019 2:09 PM
2	Technology viability and interaction with current transportation systems	2/4/2019 11:53 AM
3	People that will not accept change	2/4/2019 11:20 AM

Q16 What is your highest priority when thinking about AV/CV opportunities?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	State Farm's mission is to help people manage the risks of everyday life and recover from the unexpected. To that end, State Farm supports technology advancements that improve safety for the benefit of our customers. Over our 95 year history, State Farm has supported innovations such seatbelts, airbags, and child seats. To the degree AV/CV can improve safety, we are supportive of the technology.	2/8/2019 2:09 PM
2	A clear and comprehensive framework and plan for success	2/4/2019 11:53 AM
3	Platooning	2/4/2019 11:20 AM

Q17 What are Kansas' strengths or opportunities when it comes to AV/CV?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	One opportunity, which is partially addressed through this survey, is allowing for stakeholders to make sure their concerns are raised.	2/8/2019 2:09 PM
2	Technology, especially with large universities (KU, KSU, WSU). Major interstate highway corridors and junctions - I-70, I-35, etc.	2/4/2019 11:53 AM
3	We have fairly wide open and straight interstate highways that platooning will fit well in.	2/4/2019 11:20 AM

Q18 What are Kansas' threats or weaknesses when it comes to AV/CV?

Answered: 3   Skipped: 0

#	RESPONSES	DATE
1	As Kansas is not at the epicenter of auto and tech development, it is essential Kansas continue to draw expertise from all relevant stakeholders on these issues.	2/8/2019 2:09 PM
2	Amount of rural roadway mileage. A public that is currently uninformed about, and perhaps unwelcoming, of AV technology	2/4/2019 11:53 AM
3	Complacentry	2/4/2019 11:20 AM

Q19 Do you have any additional information you would like to provide?

Answered: 2   Skipped: 1

#	RESPONSES	DATE
1	State Farm supports technology advancements that improve safety for the benefit of our customers, and is a key stakeholder in the development of automated vehicle technologies. We look forward to continue to help influence the safe development of these technologies and look forward to continued opportunities to help shape this debate. Please let us know if you have additional questions as we continue to work on these issues together. Thank you again for the opportunity to provide this input.	2/8/2019 2:09 PM
2	We have resources from those that know and understand the complexities of connected and autonomous vehicles.	2/4/2019 11:20 AM

Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX C:
Task Force Meeting #1
Presentation and
Meeting Summary

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KS AV Vision Plan Development Meeting No. 1 Summary
February 21, 2019
9:00 AM – 12:00 PM

In-Person Attendees: Mike Floberg (KDOT), Kip Strauss (HNTB), Jim Barbaresso (HNTB), Robyn Arthur (HNTB), Erin Flanigan (Cambridge Systematics), Lauren Reiman (HNTB), Tony Reinhart (Ford), Aaron Deacon (KC Digital Drive), Amanda Graor (MARC), Bruce Meisch (KTA), Tony Venturella (KID), Shawn Steward (AAA), Norraine Wingfiled (KTSRO), Heather Droge (KID), Shannon Francis (KS House), Ted Smith (KDOR), Emily Brown (KDOT), Gelen Savage (KDOT), Alexandra Kondyli (KU)

On-Line Attendees: Michael DeMent (HNTB), Greg Krueger (HNTB), Chuck Miller (HNTB)

Attachments: Stakeholder Meeting No. 1 PowerPoint

WELCOME AND INTRODUCTIONS (Mike Floberg)

Mike Floberg kicked off the meeting by discussing the scope of the project and purpose in continuing work by the AV Task Force. The scope of the project is a statewide assessment, not narrowly focused on only KDOT. Introductions were facilitated, meeting attendees are shown above.

KANSAS AV PLAN APPROACH (Kip Strauss)

Kip Strauss, HNTB Project Manager, provided an overview of team members' background and experience with similar projects across the nation. The team expressed excitement about their ability to assist the State of Kansas in preparing and planning for the CAV transition. Key topics that will be discussed as part of the project include: system needs, industry timeline, partnerships, regulation, funding, politics, and generally how to prepare for future system impacts and opportunities. It was also noted that education, redundancy, and preparations for pilots and testing should also be included in the project. The project schedule (including dates for future Task Force meetings) is shown below. The final Task Force meeting (No. 5) will be an on-line meeting only.

PROJECT SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL
Project Kick-Off	⬤						
Meeting #1 - Current State of AV/CV & Vision		⬤ 2/21					
Stakeholder Interviews			▬▬▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			⬤ 3/28				
Meeting #3 - System Needs				⬤ 4/25			
Meeting #4 - Vision Plan Elements					⬤ 5/23		
Meeting #5 - Draft Plan						⬤ 6/27	
Kansas AV Vision Plan Final Document							⬤

The project deliverable is a statewide, high-level vision document (5-10 page) that includes blueprints (one-two pages) for identified state agencies. The blueprints will be developed as agency action plans that stakeholders can bring back to respective agencies to rally support for the statewide plan.

STATE OF THE PRACTICE (Erin Flanigan)

Erin Flanigan, Cambridge Systematics, provided an overview of similar efforts taking place across the United States. An overview of each plan or program was provided along with program sponsors, involved parties, and identified vision and goals. States presented include: Iowa, Michigan, Pennsylvania, Colorado, Wyoming, Maryland, Virginia, California, Florida, and Tennessee. Task force members identified compelling components of vision statements and goals that may be relevant to Kansas. The items noted by Task Force members below were used later in developing the Kansas statewide vision statement.

- *Safety is a priority*
- *A practical vision seams realistic (rather than being too aspirational)*
- *Reliability is key*
- *Need to focus on both connected and automated vehicles (CAV)*
- *Kansas wants to stay in the game, but doesn't need (or want) to lead the cause and be on the bleeding edge*
- *Key benefit will be to eliminate duplication and save public dollars across agencies and departments*

- *Need to think about how to educate the public and develop a competent and related core workforce*
- *Security is different from safety and important; fragile networks today can easily be taken down*
- *Freight is a major asset and key component to the Kansas system*
- *Sustainability of the system*
- *Position as guiding integration*
- *Partnerships are important*
- *Quality of life*
- *Ability to evolve*

ELECTRONIC SURVEY RESULTS (Robyn Arthur)

Task Force participants responded to a survey prior to the meeting. Robyn Arthur summarized the responses provided. Survey results will be used to inform agency blueprints, identify key topics of concern and interest, and used to prepare for more in-depth stakeholder interviews. Takeaways and key results from the survey are included below.

- Most respondents felt informed on the topic and most feel that CAV implementation will begin impacting agencies quickly (within the next five years).

- Agencies are preparing by including CAV technology in planning documents, applying for federal funding, evaluating potential technology solutions, and participating in discussions within agencies and among partners. However, while agencies are thinking about, and discussing the CAV transition, funding directed towards CAV initiatives is lacking.

- Challenges identified include regulations, enforcement, policies and legislation, security, liability, coordination and implementation. State strengths and opportunities identified include strong working relationships, geography and highway network, Kansas City Metropolitan initiatives, and favorable conditions for testing.

- Respondents felt that CAV areas of impact will include transportation safety, regulatory and liability issues, broadband access (particularly in rural areas), economic and workforce opportunities, data management, cost and budget impacts, maintenance, and security and privacy concerns.

- Survey respondents noted that the industry must allow innovation, public education, and embrace technology to achieve success in the CAV environment.

FORD VISION (Tony Reinhart)

Tony Reinhart from Ford Motor Company provided a perspective from an automotive original equipment manufacturer (OEM). The industry is going through the biggest change in 100+ years and he views the transition as an evolution rather than revolution. Tony discussed the various levels of automation (0 - No Automation, 1 - Driver Assistance, 2 - Partial Automation, 3 - Conditional Automation, 4- High Automation and 5 Full Automation) and noted that Level 3 is here and OEMs are quickly progressing towards Level 4 automation. A large effort in progressing towards higher levels of automation is mapping which often requires third party assistance. Tony noted clear striping and signage is one thing states can do to help prepare for higher levels of automation. He expects that Level 5 automation is the phase that will dramatically change the way people live and move.

Ford hopes that Federal oversight will help push the industry towards a consistent technology and regulation. Travel does not start and stop within state borders and as such, regulations need to flow across state lines. Ford and other private partners in the industry are eager to work with the public sector to find solutions that accommodate all needs.

CHALLENGES AND OPPORTUNITIES (Jim Barbaresso)

Jim Barbaresso, HNTB, discussed how the CAV transition and electrification movement is already disrupting today's transportation networks and public services. Jim discussed several existing pilots across the United States, primarily focusing on public transportation pilots. Jim identified several impacts to infrastructure including design criteria changes, elimination of signage needs, etc. Technologies will also likely impact travel characteristics such as commuter patterns, lengths, or even the ability for people to live permanently in "nomadization" in mobile vehicles, on the road, with no needed home-based.

Jim also noted that people typically tend to think about impacts on urban and metropolitan areas, but this transition will also greatly affect rural environments. Particularly in Kansas, sufficient consideration and thought needs to be given to rural communities. Mobility in rural communities, particularly for aging populations, is just as important as mobility within our urban centers. Technologies should feed existing needs and goals and projects should be solution-focused rather than simply implementation for implementation's sake.

KANSAS STRENGTHS & OPPORTUNITIES (Kip Strauss)

Kip Strauss led a discussion on existing strengths of the state. Strengths identified by the Task Force include:

- *Gradient of rural, suburban, and urban communities*
- *Strong infrastructure network (highways and roads) with several statewide connections including I-70 and KTA infrastructure*
- *Existing discussions regarding statewide broadband and existing fiber network*
- *Significant greenspace and heavy agriculture presence*
- *High freight movement*
- *Aviation history*
- *Defense and military bases*
- *KDOT has identified a point-person (Mike Floberg)*

VISIONING EXERCISE (Erin Flanigan/Robyn Arthur)

The project team led the Task Force in a visioning exercise that began with a headline exercise. Many of the headlines developed by Task Force members touched on safety and crash benefits/reductions from CAVs, improved efficiencies in the transportation network, and overall benefit for the state and region. In working with the task force, a preliminary vision statement was developed in partnership with the project team. It reads:

> *To support an evolving, collaborative, partnering environment of creative and practical AV solutions for a safe, reliable, and integrated transportation network.*

It was important to the group that the plan be inclusive of rural and urban communities, mobility restricted populations, and equity considerations. Members also noted that education and outreach will be important to consumer acceptance and the path towards a safer transportation environment. As such, education should be addressed in the plan.

Discussion on the vision highlighted uncertainty regarding the focus and scope of the plan. This included questions such as:

- Should the plan be regional in focus and look to partnership outside the state?

- Should the plan's focus be broader than just the roadway network, and if so, how much emphasis should be put on the transportation network?

The project team will refine a draft state vision statement for Task Force members to review and provide feedback.

NEXT STEPS (Kip Strauss)

- The project team will revise a draft of the state vision statement and begin drafting goals for the Task Force to review.

- The project team will send out a meeting summary from Meeting #1.

- Robyn Arthur will begin contacting key stakeholders for stakeholder interviews.

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Statewide Autonomous Vehicle Vision Plan Task Force Meeting #1

February 21, 2019

AGENDA

- 👤 Welcome & Introductions
- 📅 Kansas AV Plan Approach
- 🖥 State of the Practice
- 📊 AV Electronic Survey
- ⭐ Challenges and Opportunities
- 💡 Kansas Visioning Exercise
- 📅 Next Steps

PROJECT TEAM

WHO WE ARE

Industry Leaders in AV/CV and ITS

Extensive Kansas Expertise

Emerging Mobility Industry Council

We will help the Task Force develop the AV vision for Kansas

AV/CV Planning & Policy Development
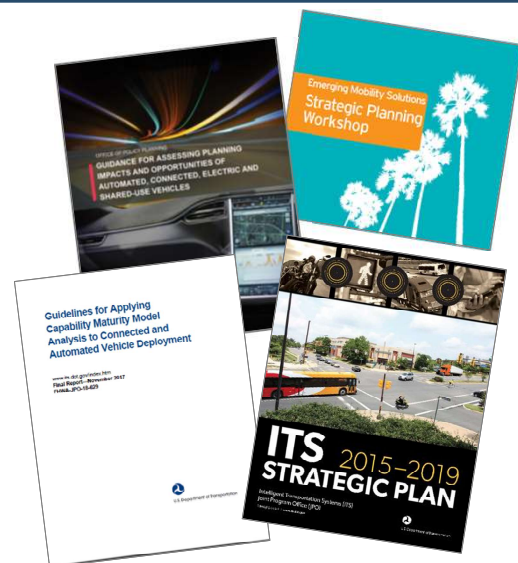
PLAN & APPROACH

PROJECT OVERVIEW

- Governor developed new AV focus and department in 2017
- KDOT is leading the development of the vision plan for the State to prepare for this future
- Safety, mobility and economic opportunities
- Vision Plan will come from the Task Force
- Task Force discussion topics:

  - Vision and goals
  - Current state of AV/CV
  - Partnership opportunities
  - Legislative and regulatory barriers
  - Funding requirements and opportunities
  - Social, economic and political factors
  - System needs

  - Industry timelines
  - Stakeholders
  - Possible investments
  - Being prepared for the future
  - Draft Executive Order and Legislative Bills

SCHEDULE

	JAN	FEB	MAR	APR	MAY	JUN	JUL
PROJECT SCHEDULE							
Project Kick-Off	⭕						
Meeting #1 - Current State of AV/CV & Vision		⭕ 2/21					
Stakeholder Interviews			▬▬▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			⭕ 3/28				
Meeting #3 - System Needs				⭕ 4/25			
Meeting #4 - Vision Plan Elements					⭕ 5/23		
Meeting #5 - Draft Plan						⭕ 6/27	
Kansas AV Vision Plan Final Document							⭕

PROJECT ROADMAP

Task Force Charge:

- Dream big!
- Identify real needs for the future without regard to funding or other constraints

Statewide Autonomous Vehicle Vision Plan

February 2020
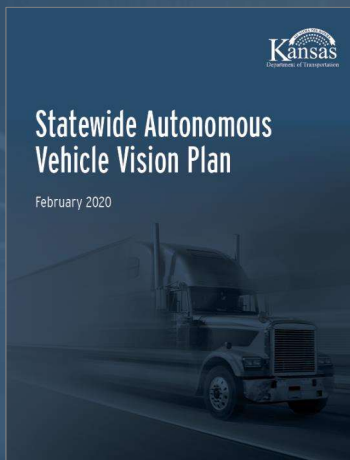
Autonomous Vehicle Vision Blueprint
KANSAS DEPARTMENT OF COMMERCE

STATE OF
THE PRACTICE

STATE OF THE PRACTICE

10 Case Studies

- Iowa
- Michigan
- Pennsylvania
- Colorado (RoadX)
- Wyoming (US DOT CV Pilot)
- Maryland
- California
- Virginia
- Florida
- Tennessee

IOWA *Iowa DOT AV Vision Document (2017)*

Part of an AV Technologies Project with Iowa State University and the University of Iowa

Iowa DOT AV Vision Document

Vision:

To deliver a safe, reliable, and efficient transportation system by developing an AV-ready driving environment

Goals:

- Build new capabilities that will assist people to drive more effectively and move freight more efficiently than today
- Facilitate highly automated driving as it becomes available
- Make Iowa a leader in offering an AV-ready driving environment

Iowa DOT AV Technologies Project, Vision Document Final, March 2017, https://iowadot.gov/pdf_files/IowaVisionDocument.pdf

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IOWA *Iowa DOT AV Vision Document (2017)*

Part of an AV Technologies Project with Iowa State University and the University of Iowa

Plan Team:
- Iowa DOT
- Iowa State University
- University of Iowa
- HERE

The plan discusses the need for future collaboration with:
- Infrastructure owner/operators
- Telecommunications companies
- Original Equipment Manufacturer (OEMs) (Ford, GM, etc.)
- Data aggregators (HERE, INRIX, and Google)

Iowa DOT AV Technologies Project, Vision Document Final, March 2017, https://iowadot.gov/pdf_files/IowaVisionDocument.pdf

Michigan DOT CAV Program, Strategic Plan

Vision:

The Michigan Department of Transportation will be recognized as a progressive and innovative leader, driving national efforts to explore and implement emerging mobility technologies

Mission:

The Michigan Department of Transportation will work to ensure Michigan remains the national leader in the evolution of CAV technologies, to deliver enhanced transportation safety and reliability, providing economic benefit and improved quality of life

MICHIGAN *Michigan DOT CAV Program, Strategic Plan (2017)*

Michigan DOT CAV Program, Strategic Plan (2017), https://www.michigan.gov/documents/mdot/MDOT_CAV_Strategic_Plan_FINAL_623811_7.pdf

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MICHIGAN *Michigan DOT CAV Program, Strategic Plan (2017)*

Plan led by MDOT

The plan calls for outreach, including outreach to/partnerships with:
- U.S. DOT
- Other Michigan agencies
    - Specifically:
        - Michigan State Police
        - Michigan Economic Development Corporation
        - Michigan Department of Technology, Management, and Budget (DTMB)
- Peer state DOTs
- Regional/local transportation agencies
- Industry partners
- Michigan academic partners

Michigan DOT CAV Program, Strategic Plan (2017), https://www.michigan.gov/documents/mdot/MDOT_CAV_Strategic_Plan_FINAL_623811_7.pdf

MICHIGAN *Michigan DOT CAV Program, Strategic Plan (2017)*

The plan also documents pre-existing partnerships, including those with:

- Planet M partners
- Mcity (University of Michigan) partners
- American Center for Mobility
- Michigan universities and community colleges
- Smart Belt Coalition (Michigan, Ohio, Pennsylvania)
- Ontario Ministry of Transportation

Michigan DOT CAV Program, Strategic Plan (2017), https://www.michigan.gov/documents/mdot/MDOT_CAV_Strategic_Plan_FINAL_623811_7.pdf

PENNSYLVANIA

Pennsylvania Joint Statewide CAV Strategic Plan

Led by the Pennsylvania DOT in collaboration with external partners

Pennsylvania Joint Statewide CAV Strategic Plan

Vision:

Safe integration of CAV technologies within Pennsylvania's transportation system

Mission:

Proactively contribute resources to support a safe and sustainable transportation system through adoption of CAV technologies across Pennsylvania
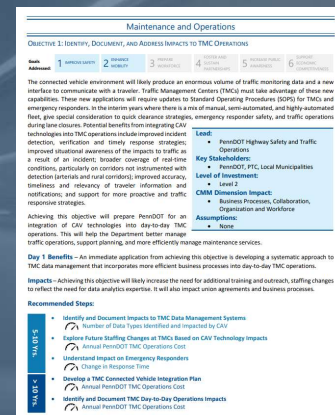
Pennsylvania DOT CAV Initiatives, website with both documents:
https://www.penndot.gov/ProjectAndPrograms/ResearchandTesting/Autonomous%20_Vehicles/Pages/CAV-Initiatives.aspx

PENNSYLVANIA
Pennsylvania Joint Statewide CAV Strategic Plan
Led by the Pennsylvania DOT in collaboration with external partners

This plan was sponsored by PennDOT and FHWA

20 interviews were conducted as part of the plan, including those with the following agencies:

- PennDOT (select offices in addition to senior staff)
- Pennsylvania Turnpike Commission
- Pennsylvania Department of Community and Economic Development
- Pennsylvania State Police
- Insurance Federation of Pennsylvania
- Delaware Valley Regional Planning Commission
- Southwestern Pennsylvania Planning Commission
- Harrisburg Area Transportation Study
- City of Philadelphia

Pennsylvania DOT CAV Initiatives, website with both documents:
https://www.penndot.gov/ProjectAndPrograms/ResearchandTesting/Autonomous%20_Vehicles/Pages/CAV-Initiatives.aspx

PENNSYLVANIA
Pennsylvania Joint Statewide CAV Strategic Plan
Led by the Pennsylvania DOT in collaboration with external partners

Pennsylvania has an AV Policy Task Force that include membership from PennDOT in addition to academic experts, other Pennsylvania agencies, industry leaders, and constituent representative groups.

Pennsylvania DOT CAV Initiatives, website with both documents:
https://www.penndot.gov/ProjectAndPrograms/ResearchandTesting/Autonomous%20_Vehicles/Pages/CAV-Initiatives.aspx

COLORADO *Colorado DOT RoadX Program*

RoadX is led by CDOT, but actively encourages partnerships.

The RoadX webpage states that "RoadX cannot be CDOT working along […] We are tapping public- and private-industry innovators to help guide the integration of technology into Colorado's transportation system."

The RoadX website also has a dedicated "Partner with Us" webpage that outlines what RoadX is looking for and has a form that interested parties can use to submit their ideas.

Colorado DOT RoadX Program homepage: https://www.codot.gov/programs/roadx/programs/roadx

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COLORADO *Colorado DOT RoadX Program*

- Program to apply new technologies and innovation to solve current challenges
- RoadX connects to both CAV and Transportation Systems Management and Operations (TSMO)
- No official/public Road X plan with vision/mission statement, but RoadX does have a "Road X Vision Video" that gives a longer overview:
    - https://www.codot.gov/programs/roadx/roadx-videos
- RoadX Action Areas: Commuting, Sustainability, Transport (freight), Safety and Connection (data, communications infrastructure and technology)

Colorado DOT RoadX Program homepage: https://www.codot.gov/programs/roadx/programs/roadx

COLORADO *Continued*

"RoadX will use *21st century technology and ingenuity* to solve our current infrastructure challenges. *Bold thinking and bold actions drive progress.* That means smarter roadways with more informed drivers and, *eventually, self-driving cars* that can communicate with the roads on which they travel."

"*RoadX cannot be CDOT working alone*; we have neither the manpower nor all the solutions (yet). What we have is the vision and the drive to *build partnerships to deliver innovative solutions*. We are tapping public- and private-industry innovators and advisors to help guide the integration of technology into Colorado's transportation system."

Colorado DOT RoadX Program homepage: https://www.codot.gov/programs/roadx/programs/roadx

WYOMING *Wyoming Connected Vehicle Pilot*

- Wyoming DOT, US DOT, and partners; sponsored by the US DOT
- Focus on I-80 corridor, freight travel, road weather management, work zones, and connected vehicle technology including:
    - Connected roadside units using Dedicated Short Range Communications (DSRC)
    - Fleet vehicles instrumented with DSRC-connected onboard units
    - Traveler information

Wyoming Connected Vehicle Pilot

"In the Connected Vehicle Pilot (CVP), WYDOT will use vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and infrastructure-to-vehicle (I2V) connectivity to improve monitoring and reporting of road conditions to vehicles on I-80. "

Wyoming CV Pilot webpage: https://wydotcvp.wyoroad.info/

WYOMING *Wyoming Connected Vehicle Pilot*

Sponsored by the U.S. DOT, led by the Wyoming DOT and U.S. DOT

The Wyoming CV Pilot is supported by a number of team members, including:

- Wyoming DOT
- U.S. DOT
- Wyoming Transportation Safety Coalition
- Wyoming Trucking Association
- UPS
- Sirius XM
- Laramie County/Cheyenne Emergency Management Agency
- University of Wyoming
- Private-sector companies/consulting firms

Wyoming CV Pilot webpage: https://wydotcvp.wyoroad.info/

MARYLAND
Maryland DOT CAV Strategic Plan (expected 2019)

- This plan's scope is the entire Maryland DOT
- It is associated with a Maryland CAV Strategic Vision for the entire State government and this document (a one-pager) contains the vision statement, see below

Maryland CAV Strategic Vision

Draft vision from a 2018 public presentation[1]:

Maryland's Vision for Connected and Automated Vehicles (CAV) is to uphold and enhance a Safe, Efficient, and Equitable transportation future by delivering collaborative and leading-edge CAV solutions. Maryland is open for business and eager to realize the life-saving and economic benefits of CAV technology, while ensuring safety for all. We are embracing CAV technology and innovation through continuing collaboration with partners interested in researching, testing, and implementing CAVs in Maryland

1. Maryland CAV Working Group website, August 13 2018 meeting, MDOT CAV Vision presentation, http://www.mva.maryland.gov/safety/MarylandCAV/index.htm

MARYLAND
Maryland DOT CAV Strategic Plan (expected 2019)

This plan is led by the Maryland Transportation Secretary's Office and covers the entirety of the Maryland DOT which spans six administrations:

- State Highway Administration (SHA)
- Maryland Transit Administration (MTA)
- Maryland Transportation Authority (MDTA)
- Motor Vehicle Administration (MVA)
- Maryland Aviation Administration (MAA)
- Maryland Port Administration (MPA)

The plan development included in-depth interviews with all six MDOT administrations in addition to an internal MDOT workshop (also open to all six administrations).

1. Maryland CAV Working Group website, August 13 2018 meeting, MDOT CAV Vision presentation, http://www.mva.maryland.gov/safety/MarylandCAV/index.htm

MARYLAND *Continued*
Maryland DOT State Highway Administration (SHA)
CAV Strategic Action Plan (2017)

Maryland DOT SHA CAV Strategic Action Plan

SHA Vision for CAV:

Embrace technology and next generation mobility trends to provide safe & reliable travel for people and goods within Maryland

SHA Goals for CAV:

1. Make Maryland an attractive partner for CAV development, testing, and production; Maryland is "open for business"
2. Begin deploying CAV technology to gain experience through pilots, engage in national efforts
3. Establish foundational systems to support future CAV deployment
4. Enable CAV benefits for customers—identify ways to add value for customers
5. Look for opportunities to leverage CAV technologies to support existing goals

Maryland DOT SHA CAV Strategic Action Plan, 2017,
https://chart.maryland.gov//downloads/readingroom/StrategicPlanning/MDOT%20SHA%20CAV%20Strategic%20Action%20Plan%20-%20FINAL%20-%20Dec%202017.pdf

MARYLAND
Maryland DOT SHA CAV Strategic Plan (expected 2019)

This plan was led by the MDOT State Highway Administration, with a primary focus on internal MDOT SHA areas.

The plan does document the need for collaboration with the following partners as the plan is implemented and advanced:

- Other MDOT administrations
- Other Maryland state government agencies
- Maryland Chamber of Commerce
- Maryland Economic Development Commission
- Local chambers of commerce
- County and municipal governments

- Metropolitan Planning Organizations (MPOs)
- Law enforcement
- Maryland academic institutions
- Private automotive industry
- Private technology and communications companies
- Consulting firms

1. Maryland CAV Working Group website, August 13 2018 meeting, MDOT CAV Vision presentation, http://www.mva.maryland.gov/safety/MarylandCAV/index.htm

VIRGINIA
Virginia Automated 20xx Strategic Plan (2017)

Developed by the Office of Intermodal Planning and Development, within the Office of the Secretary of Transportation

Vision:

Virginia is open for business, making the investments, partnerships, and policy decisions necessary to advance automated technologies and improve safety, mobility, and accessibility for all who travel in the Commonwealth

COMMONWEALTH of VIRGINIA
Office of the
SECRETARY of TRANSPORTATION

Virginia Automated 20xx Strategic Plan

Ronique Day, Assistant Secretary
Offices of Secretary of Transportation
April 19, 2017

VIRGINIA
Virginia CAV Strategic Plan (2017)

Developed by the Office of Intermodal Planning and Development, within the Office of the Secretary of Transportation.
This plan was developed under guidance from:
An internal working group (largely State of Virginia agency representatives)

- Virginia Office of the Secretary of Transportation
- VDOT
- Virginia DMV
- State Police
- Motor Vehicle Dealer Board
- Virginia Department of Rail and Public Transportation
- Virginia Information Technology Agency
- Virginia Department of Education

An external working group (MPOs, local transit agencies, Planning District Commissions)

Virginia DOT CAV Program Plan (2017), http://www.virginiadot.org/programs/resources/cav/Release_Final_VDOT_CAV_Program_Plan_Fall_2017.pdf

VIRGINIA
Virginia DOT CAV Program Plan (2017)

Developed by the Virginia DOT

Vision:

VDOT's vision for CAV is to capitalize on the safety and operational benefits of CAV technologies to meet its goals and objectives. VDOT also has the vision to position Virginia as the most attractive state for industry to deploy, test, operate, and evolve CAV products and services

CAV Program Goal Areas:

- Reduce crashes and fatalities on Virginia roadways by improving safety measures
- Improve mobility to reduce delay, increase system reliability, and provide more efficient use of infrastructure
- Reduce infrastructure investments through efficiencies enabled by CAV
- Enhance traveler information

Virginia DOT CAV Program Plan (2017), http://www.virginiadot.org/programs/resources/cav/Release_Final_VDOT_CAV_Program_Plan_Fall_2017.pdf

VIRGINIA
Virginia DOT CAV Program Plan (2017)

Developed by the Virginia DOT (one of multiple administrations under the Secretary of Transportation).

The plan is primarily guided by the Virginia DOT, but documents related efforts within the State of Virginia and the need for outreach to the following stakeholders:

- Virginia Secretary of Transportation's Office
  - AV 20XX Working Group (See 7A, above)
- Virginia Information Technologies Agency
- Virginia Department of Motor Vehicles
- Virginia Department of Rail & Public Transportation
- Virginia State Police
- Commerce Department
  - Labor and Industry
  - Economic Development Partnership

- Governor's Office
  - Unmanned Systems Commission
- Road User Advocates (e.g. Virginia Trucking Association and AAA)
- Federal agencies (U.S. DOT, FHWA, NHTSA)
- Peer state DOTs
- Standards Development Organizations (SAE, IEEE, ASTM)
- Auto manufacturers & Cybersecurity industry
- Corridor coalitions

Virginia DOT CAV Program Plan (2017), http://www.virginiadot.org/programs/resources/cav/Release_Final_VDOT_CAV_Program_Plan_Fall_2017.pdf

CALIFORNIA *Workgroup*

Workgroup: California has a Multi-Agency Workgroup on Automated Vehicles
- Led by the Governor's Office of Planning and Research
- Includes representation from the California DOT (Caltrans)
- Mission of the Workgroup is largely focused on environmental and equity issues (see below)

California Multi-Agency Workgroup on AVs

Mission:

Recognizing that AVs have tremendous potential to improve transportation and our communities, the Multi-Agency Working Group works to ensure that connected and AV transformation accelerates in California with clear environmental benefits and attention to equity issues. This includes consideration of the effects of AVs on GHG and criteria pollutant emissions, land use patterns, VMT, health, economic development, and equitable access."

CALIFORNIA *Continued*

Directive: The Governor of California, on behalf of the California Multi-Agency Workgroup on AV, released a series of Key Principles in November 2018 to all state agencies to guide the development of policies related to AV.

Key Principles for AV in California

- Maximize deployment of shared-use vehicles.
- Maximize ride-sharing by encouraging pooling and prioritizing pooled vehicles' mobility.
- Maximize deployment of AVs as low-emissions vehicles in the near term and zero-emissions in the long term.
- Promote use of vehicles that are "right-sized" (sufficiently sized for purpose but not oversized).
- Deploy AVs as part of a multimodal system.
- Complement AV deployment with robust policies facilitating compact infill development.
- Prioritize people rather than vehicles, promote complete and livable streets.
- Equity: Improve affordable access to destinations and goods through AV deployment.

CALIFORNIA *Continued*

Program: California Multi-Agency Workgroup on AV Deployment

The California Multi-Agency Workgroup on AV Deployment is comprised of staff representatives from a range of California state agencies:

- Caltrans
- California Environmental Protection Agency
- California State Transportation Agency (contains Caltrans, DMV, Highway Patrol, etc.)
- California Air Resources Board
- California Department of Public Health
- California Energy Commission
- California Department of General Resources
- Department of Motor Vehicles
- California Go-Biz
- Governor's Office of Planning and Research
- Strategic Growth Council
- California Public Utilities Commission

FLORIDA
Florida DOT TSM&O Strategic Plan (2017)

Vision:

To increase the delivery rate of fatality-free and congestion-free transportation systems

Pensacola

DISTRICT 3

Tallahassee

Jacksonville

DISTRICT 2

Gainesville

Daytona

DISTRICT 5

Orlando

DISTRICT 7

Tampa

DISTRICT 1

DISTRICT 4

Ft. Lauderdale

DISTRICT 6

Miami

PROJECTS/INITIATIVES

PLANNING
University of Florida (UF) Accelerated Innovation Deployment (AID) Demonstration **1**
Implementing Solutions from Transportation Research and Evaluation of Emerging Technologies (i-STREET) **2**
Gainesville Signal Phase and Timing (SPaT) Trapezium **3**
Central Florida Autonomous Vehicle (AV) Proving Ground **4**
Driver Assistive Trucking Platooning (DATP) Pilot **5**

DESIGN/IMPLEMENTATION
I-75 Florida's Regional Advanced Mobility Elements (FRAME) Gainesville **1**
I-75 Florida's Regional Advanced Mobility Elements (FRAME) Ocala **2**
Gainesville Autobus **3**
Florida's Turnpike Enterprise (FTE) SunTrax **4**
Tampa Hillsborough Expressway Authority (THEA) Connected Vehicle Pilot **5**
City of Orlando Greenway/Pedestrian Safety **6**
SR 434 Connected Vehicle Deployment **7**
Downtown Tampa Autonnous Transit **8**
Orlando Smart Community 2017 ATCMTD **9**

OPERATIONAL
US 90 SPaT Tallahassee **1**
Osceola County Connected Vehicle Signals **2**

TENNESSEE
Tennessee DOT Emerging Mobility Solution Plan (2018)
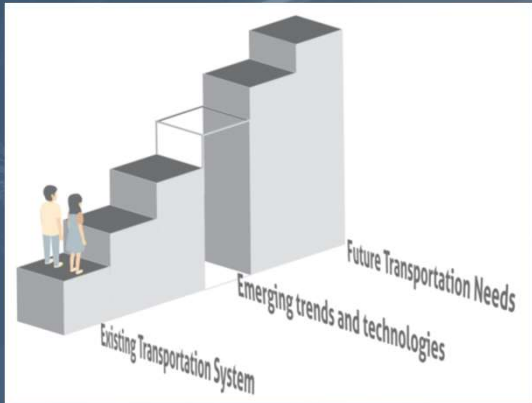
- Policy Paper
- User Needs Focus

Vision:

To serve the public by providing the best multi-modal transportation system in the nation

Steps in the Planning Process:

- Assess current systems
- Assess current state of CAV
- Assess emerging mobility trends
- Obtain stakeholder input
- Identify future needs

Existing Transportation System

Emerging trends and technologies

Future Transportation Needs

SURVEY RESULTS

SURVEY RESULTS

18 State Agencies
- Law Enforcement
- Information Security
- Universities
- Traffic Safety Resource Office
- Legislative
- Insurance Department
- Transit/Public Transit Association
- MPO
- Association of Counties
- KTA
- KDOT
- Revenue Department
- Emergency Management

3 Industry Partner Responses
- Insurance
- AAA
- Motor Carriers

SURVEY RESULTS

How well informed is your agency about Automated and Connected Vehicle (AV/CV) technology?
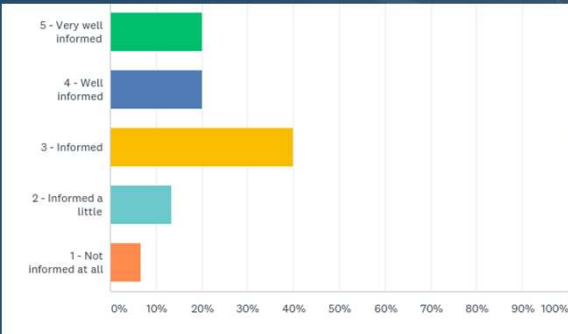
When will AV/CV implementation and deployment timelines involve/impact your agency?
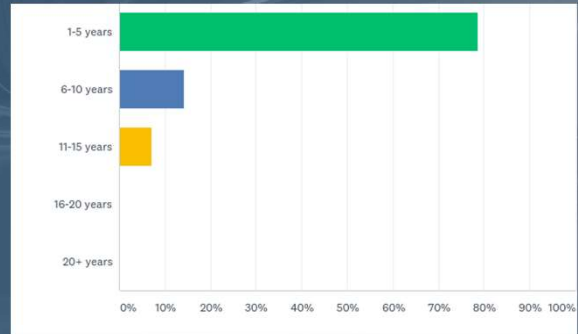
SURVEY RESULTS

How is your organization addressing AV/CV technology?

- Including in planning documents
- Applying for federal funding
- Evaluating AV/CV technology solutions
- Participating in discussions/answering questions

SURVEY RESULTS

Do you think AV/CV technology will affect your organization and its strategic goals?
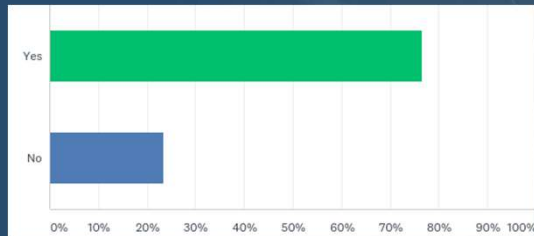
Are you including AV/CV in your strategic planning or budgeting?
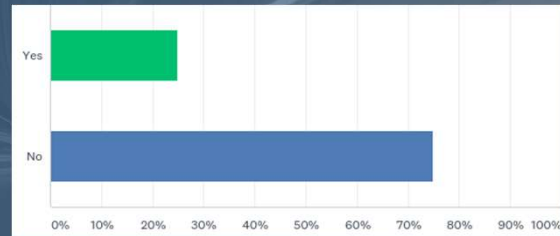
SURVEY RESULTS

Is your agency addressing the following technologies?

21
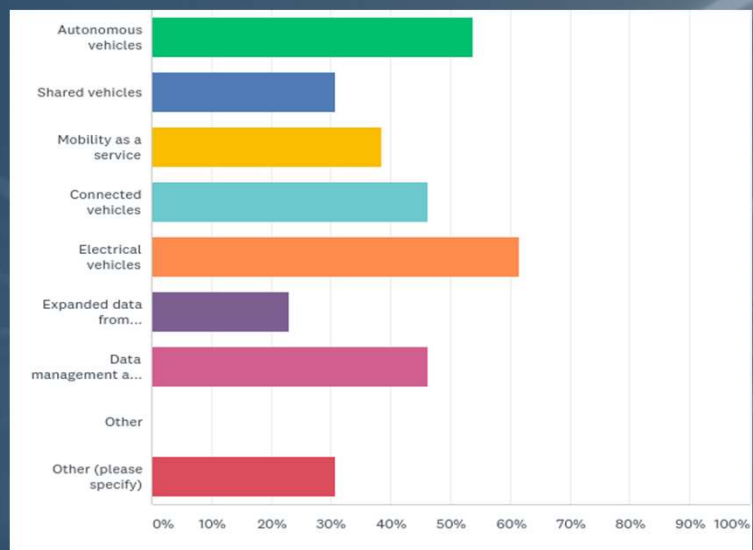
SURVEY RESULTS

Biggest concerns and challenges:

- Laws and regulations (enforcement)
- Policy and legislation
- Cybersecurity and who is responsible for connectivity and security
- Liability and insurance
- Coordination and implementation

SURVEY RESULTS

Biggest strengths and opportunities:

- Strong working relationships
- Space, openness, location and good highways
- KC Metro offers many options for AV/CV
- Good testing ground potential — weather and space

SURVEY RESULTS

What are potential strategies the State needs to consider?

- Infrastructure needs--road conditions, markings, equipment
- Transit and human mobility options
- Policy updates to allow for technologies at local levels
- Truck platooning, vehicle to vehicle communications
- Insurance and safety rules/laws
- Pilots

SURVEY RESULTS

What areas will AV/CV have the biggest impact?

- Transportation safety
- Regulatory and liability issues
- Relationship to broadband in rural areas
- Economic and workforce opportunities
- Data management, security and privacy concerns

SURVEY RESULTS

Three most important impacts?

- Safety and security
- Cost
- Maintenance — impacts to infrastructure roads and broadband

How to address impacts?

- Legislation and policy
- Insurance
- Testing/pilots

SURVEY RESULTS

What other initiatives are you involved in?

- Commercial vehicle platooning
- Broadband task forces
- Transit implementation and funding opportunities
- Research and development options

SURVEY RESULTS

How will AV/CV technology impact how your agency functions?

- Accident investigation and enforcement efforts
- Expand our responsibility – security
- Change resource needs

SURVEY RESULTS

What key policy, legislative or legal solutions are most needed?

- Legislation for testing
- Enforcement laws
- Laws regulating use and operations
- Liability and insurance policies

SURVEY RESULTS

How will success be measured?
- Reduction in crashes and enhanced data
- Level of awareness and public comfort
- Adopted programs
- Implementation of state laws in line with national perception

Who will your agency work most closely?
- KDOT
- Cities and counties/local governments
- Private companies that offer AV/CV related products/services

SURVEY RESULTS – Industry

Which of the five options below is your organization addressing with AV/CV technology?
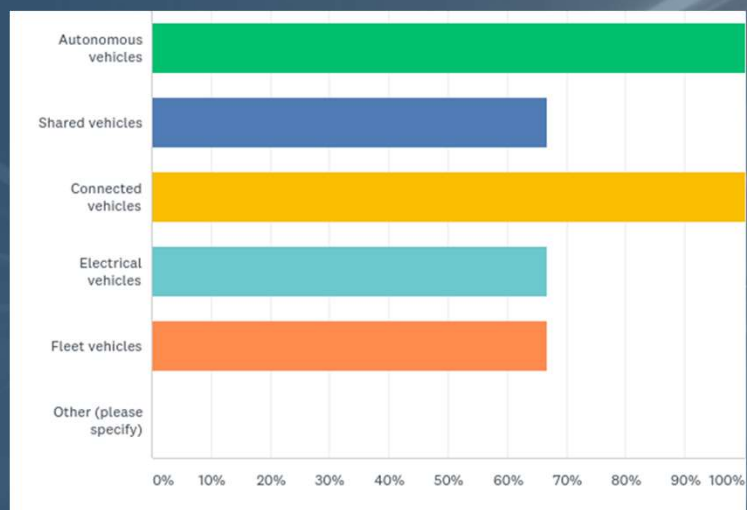
SURVEY RESULTS – Industry

What does industry need to achieve success in the AV/CV environment?

- Allow companies to innovate
- Public education for operator audiences
- Embrace technology — work at federal levels to secure uniform platforms

"Pace of innovation in some cases is faster than the ability for state and federal agencies to regulate. Work together to develop creative and practical solutions to help ensure that safe AV/CV tech is developed."

SURVEY RESULTS – Industry

How will the Kansas economy benefit from AV/CV technology?

- Shortage of qualified truck drivers to move our freight
- Leads to safer outcomes

CHALLENGES & OPPORTUNITIES

We're on the cusp of a transformation in transportation, driven by advances in vehicle Automation, Connectivity, Electrification and Sharing. The changes will be disruptive to the current operations environment, requiring bold thinking among public agencies.

AUTOMATED VEHICLES

Source: General Motors

- Updated USDOT Policy (3.0) released October 4, 2018
  - Reinforces need for consistency among states
  - Upcoming rulemaking on exemptions to vehicle safety standards
  - Reaffirms self-certification approach
  - Manual of Uniform Traffic Control Devices (MUTCD) update
  - Eliminates USDOT proving ground designations
  - Focus on freight automation
  - Focus on safety – preservation of 5.9GHz
- SELF DRIVE Act passed by the House
- Senate version (AV START Act) still in limbo
- Industry leading the way
- Dynamic mobility ecosystem

CONNECTED VEHICLES

Source: US DOT

- Notice of Proposed Rulemaking on December 12, 2016
- Final rule on Vehicle to Vehicle (V2V)
  - Rulemaking on hold
  - Spectrum challenge
  - Privacy and security challenges
  - Progress on 5G Machine to Machine (M2M) and Cellular Vehicle to Everything (C-V2X) solutions
- Auto industry response
- Government stimulus for Vehicle to Infrastructure (V2I)
  - Connected Vehicle Pilot Program
  - Smart City Challenge
  - Signal Phase and Timing (SPaT) Challenge

ELECTRIC VEHICLES

- Renewed emphasis on zero-emission driving
- Infrastructure – a constraining factor
  - Range anxiety and charging stations
  - Grid modernization
  - Wireless induction

MOBILITY AS A SERVICE

- Tailored mobility services on demand
- Multi-modal door to door connectivity
- Common payment system

DISRUPTION
POSES CHALLENGES

TECHNICAL CHALLENGES

- Interoperability and standards
- Implementation and support of specific applications & technologies
- Data management
- Data privacy
- Communications and network management
- Security management
- Local network security
- Technical obsolescence

INSTITUTIONAL CHALLENGES

- **Funding.** Shortfalls impact the operational capabilities.
- **Education & workforce considerations.** Lack of staff with necessary technical skills.
- **Business case.** Lack of benefit and cost information to support investment decisions.
- **New partnerships and business models.** Public and private.
- **Data ownership.** How to access it, who owns it, how to support it?
- **Liability.** What's the risk and how does it get allocated?
- **Forces outside their control.** Changing technologies and political climate leave public agencies feeling uncertain.

OPERATIONAL CHALLENGES

- **Education & workforce considerations.** New skills needed in data analytics, IT, application support, software and new algorithms
- **Data management.** Big data from connected vehicles will challenge operational staff – a blessing in disguise
- **Keeping up with advances.** The operations environment will continue to evolve at a rapid pace
- **Giving up control.** Greater automation of transportation management functions, greater empowerment of travelers, and impacts of connected automation

**DISRUPTION
CREATES OPPORTUNITY**

AUTOMATED VEHICLE BUSINESS
CASES

- Urban applications – ride-hailing and fleets of shared use vehicles

- Intermodal facilities – first and last mile opportunities

- Residential, CBD and campus circulation

- Highway maintenance operations

- Truck automation and platooning

- Package and food delivery

Ride-Hailing Services

- Introduction in geofenced areas of cities
- Entertainment and sports venues
- Transit stations, mobility hubs and airports
- Impacts:
  - Curb management needs
  - Reduced parking requirements – more productive use of real estate
  - Parking structure design considerations
  - Repurpose parking for automated vehicle staging, queuing and charging
  - Buy rides, not cars – garaging and residential home design considerations
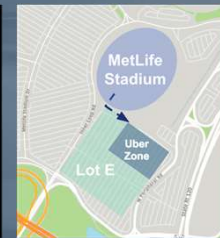
First and Last Mile Services

- Deliver residents / workers to and from mobility hub or transit stop
- Remote parking shuttles
  - Residential communities
  - Resorts / beaches / parks
  - Airports and event venues
  - Commercial / business parks
- Impacts:
  - Remote parking facilities
  - Reduced congestion in sensitive areas
  - Concessions and Transit Oriented Development (TOD) around mobility hubs
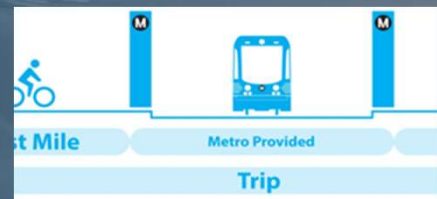
Circulators

- Campus, Airport and CBD Circulation
- Planned Community Circulators
- Examples:
  - University of Michigan
  - Jacksonville Ultimate Urban Circulator
  - Columbus, OH
  - Treasure Island, San Francisco
- Impacts:
  - Reduced congestion
  - Walkable communities

Automated Goods Movement

- Intermodal connectivity at ports and airports
- Assembly and distribution centers
- Long-haul trucking efficiencies
- Local delivery
  - Land vehicles
  - Unmanned aerial vehicles
- Impacts:
  - More efficient inventory handling = reduced space needs
  - Docking solutions and building design
  - Dedicated lanes for truck platoons on highways

TRANSITIONING ON OUR HIGHWAYS

- Managed lanes in a new context
- Should we separate automated vehicles from others to generate the most benefits?
- At what penetration rate should we dedicate a lane?
- Incrementally increase the number of special lanes as the fleet turns over?

VEHICLE-TO-INFRASTRUCTURE HUB FRAMEWORK

Infrastructure Data & Display Systems

Vehicle-to-Infrastructure (V2I) Hub Platform

Local interface system supporting collection, integration and dissemination of data between infrastructure and vehicles

Vehicle & Nomadic Device Application Platforms

Edge Computing Solution –
- Optimize network resources and data management
- Low latency

Traffic Management Entity

DISRUPTION WILL TRANSFORM OUR **FUTURE**

INFRASTRUCTURE IMPACTS

- MUTCD changes

- Design criteria changes – Operational Design Domaine (ODD) for Automated Driving Systems (ADS)

- If cars don't crash
  - Traffic signalization impacts
  - Signage
  - Seamless travel between roads and modes

Source: University of Texas

WHAT LIES AHEAD?

- Vehicle automation may solve a lot of problems
- Greater accessibility to opportunities
- More mobility choices
- Harmonized traffic flow
- Greater traffic safety

WHAT LIES AHEAD?

- On the other hand…
- Vehicle automation may promote longer commutes
  - Work, sleep, eat on your ride
- Impacts:
  - Urban sprawl
  - Large lot developments and rural transformation
  - Property value decreases in urban core
  - Decentralization of housing and jobs to exurban areas
  - Additional strain on infrastructure
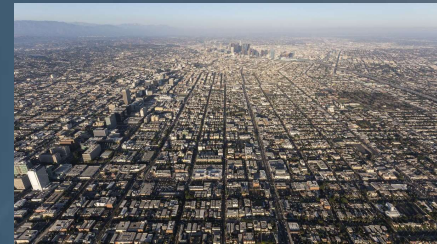
WHAT LIES AHEAD?

"Nomadization"
- Untethered to place
- Work, sleep, eat and <u>live</u> in your automated vehicle
- Highways as homesteads
- Strip cities / "sprawl on steroids"

WHAT LIES AHEAD?

- This is just the beginning…
- Future of mobility
  - Flying cars
  - Hyperloop networks
- What impacts will they bring?
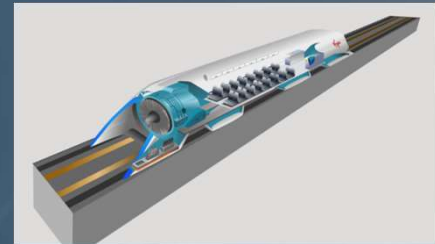
GAME CHANGER

- Automated Vehicles Will Change our Lives
  - Collaboration is required
  - Impacts on operations, urban form and land use, transportation system design, intermodal coordination, parking, green space
- Future Can't be Left to Chance

KS VISIONING

KANSAS STRENGTHS

- Developed the KDOT Division of Innovative Technologies
- Kansas AV Stakeholder Group
- Existing fiber network
- Agriculture
- Defense / Military bases
- Good transportation system
- Turnpike
- Freight
- Rural & Urban areas
- Aviation

KANSAS VISION

The Kansas Vision for Connected and Automated Vehicles (CAV) is to…

"In this position, I'm going to help lead the agency and the state into the future – working to bring in innovative technologies that relate to transportation as well as management and data. We're also looking at ways to bring businesses and upstarts of new technology to expand the systems in Kansas."

- Mike Floberg 10-31-17 KDOT Press Release

HEADLINE EXERCISE

DRAFT VISION

"To promote <explore> and advance <policies, technological solutions, xxx> on <for> Kansas roadways <residents> and provide a clear safety, mobility, and efficiencies direction for an autonomous future"

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Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX D:
Task Force Meeting #2 Presentation and Meeting Summary

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AV STATE TASK FORCE
KS AV VISION PLAN

KS AV Vision Plan Development Meeting No. 2 Summary
March 28, 2019
9:00 AM – 12:00 PM

In-Person Attendees: Mike Floberg (KDOT), John Morris (KACP), Alex Wiebel (KTSRO), Tony Venturella (KID), Andy Dean (KHP), Shawn Steward (AAA Kansas), Bruce Meisch (KTA), Kerry Wefald (KDA), Ted Smith (KDOR), Jeff Maxon (OITS), Tom Whitaker (KMCA), Emily Brown (KDOT), Heather Lane (KDOT), Gelene Savage (KDOT), Brian McClendon, Andy Fry (Topeka Metro), Amanda Graor (MARC), Shannon Francis (KS House), Vishal Kummetha (KU), Norraine Wingfield (KTSRO), Heather Droge (KID), Aledandra Kondyli (KU), Kip Strauss (HNTB), Michael DeMent (HNTB), Lauren Reiman (HNTB), and Aaron Deacon (KC Digital Drive),

On-Line Attendees: Greg Krueger (HNTB), Chuck Miller (HNTB), Erin Flanigan (Cambridge Systematics)

Attachments: Task Force Meeting No. 2 PowerPoint

WELCOME AND INTRODUCTIONS (Mike Floberg)

Mike Floberg kicked off the meeting by recapping the scope of the project and purpose in continuing work by the Task Force. The scope of the project is a statewide assessment, not narrowly focused on KDOT. Introductions were facilitated, and meeting attendees are shown above.

KANSAS AV PLAN APPROACH (Kip Strauss)

Kip Strauss provided an overview of the previous Task Force meeting which focused on the current state of Connected and Autonomous Vehicles (CAV) in Kansas and across the US, as well as, identified the vision for the state related to CAV. Kip reminded the Task Force that the project deliverable is a statewide, high-level vision document (5-10 page) that includes blueprints (one-two pages) for identified state agencies. The blueprints will be developed as agency action plans for task force members to take back to respective agencies to provide state agency direction for the statewide plan. A blueprint will also be included for KDOT, in addition to the more detailed KDOT planning phase that will follow this task order.

AV/CV UPDATES (Michael DeMent/Mike Floberg)

Mike Floberg provided an update on KDOT and other community current CAV and technology activities including roadside units, upgrading the fiber network, fiber to K-10 from Lawrence, queue backup warning on west leg of I-10, Wichita AV Pilot, and Kansas City AV pilot(s). There is a Kansas planning bill that includes CAV discussion and is currently being worked on. The language suggests that pilot projects would be permitted within the state and may open doors for further work in the arena.

Michael Dement provided an update and summary of the history and momentum of AV-related legislation in the US. Over the last five years in the US, there has been a large focus on developing task forces, similar to the current effort in Kansas. Steering committees and task forces are used to stimulate ideas, prepare state agencies and act as ready-formed bodies to react to opportunities and efforts brought forward from

third parties. Second in popularity by states is an emphasis on truck platooning. Other areas of focus include definition and regulation, funding, liability assignment, local pre-emption, research development, taxation and pilot testing.

In 2019, at least 23 states have introduced 70 bills related to the topic and to date, the focus this year has been testing, operations, data privacy and appropriate uses. Moving forward, the US Senate has said they will pick up the bill "AV START".

CASE STUDY: MICHIGAN DOT EXPERIENCE (Kirk Steudle)

Kirk Steudle, former Director of Michigan DOT, provided a perspective from Michigan and a summary of lessons learned. A few notes and lessons learned include the following:

- Need to clearly understand what state law allows and it does not allow.
- It is okay to copy from other state bills and legislation rather than starting from scratch.
- This is a slow process and legislative updates are not guaranteed; it cannot be assumed that whatever is put into law can be modified in later years.
- Be cautious, but still bold.
- Be careful about technical specifications and instead reference guides and bodies of legislative standards to minimize risk that of becoming outdated.
- Set boundaries for the playing field and assign responsibilities.
- Do not let the perfect legislation be the enemy; get it close as the last two to five percent may not be worth the additional three years.
- Ensure language is neutral.
- Be careful about hype and do not believe everything you read.
- Be careful about data and referencing data, define it to help alleviate concern.

OVERVIEW OF FINAL DELIVERABLE (Kip Strauss)

Kip Strauss provided an overview of the final report outline and agencies that would be included in the final deliverable in the form of "blueprints." The Task Force determined that while KDOT will have a more in-depth action plan, they will also be included in the list of agencies with a blueprint. Other agencies include:

- Department of Revenue
- Division of Motor Vehicles
- Department of Commerce
- Insurance Department
- Turnpike Authority
- Information Technology Services

- Department of Agriculture
- Emergency Management
- Traffic safety Resource Office
- Highway Patrol
- Adjutant General
- Attorney General

When drafting the report and showing future references to this effort, a new cover image will replace the truck image shown to-date.

OTHER PERSPECTIVES ON AV ACCESS & ENGAGEMENT (Aaron Deacon)

Aaron Deacon provided a narrative of lessons from recent experience with a large private company (Google) and their effort to bring a known technology to market with a new business plan (Google Fiber). Lessons learned from this experience in Kansas City include:

- There will inevitably be unintended consequences for both public and private parties. There should be a framework to brainstorm and prepare for potential consequences in advance.
- Education is critical for real public engagement.
- Vendors and private parties may not bring all the information, and if they do, they may not bring the information you want.
- Solutions need to be user-focused.
- Both innovation and inclusion should be considered in combination with each other.

FACILITATED BREAKOUTS (Aaron Deacon)

Facilitated breakouts were used to further develop agency-specific blueprints and engage Task Force members in thinking about specific challenges and opportunities for each agency. Task Force members were organized into four groups and brainstormed agency clients and customers, benefits and risks for users and clients, benefits and risks internal to the agency, and policy, regulation and legislation recommendations related to each agency.

VISIONING EXERCISE (Erin Flanigan)

Two draft vision statements were sent to Task Force members following the first Task Force meeting. Both draft visions were further discussed and refined into a single draft vision statement that the Task Force supported during the meeting:

> ***Kansas AV Vision***
>
> *To support an evolving and partnering environment of innovative and practical Connected and Autonomous Vehicle solutions for a safe, reliable, and integrated transportation network.*

The draft vision statement will be revisited at the next Task Force meeting in addition to goals drafted by the consultant group and Mike Floberg.

NEXT STEPS (Kip Strauss)

- The project team will refine a draft of the statewide vision statement and goals for the Task Force to review prior to Meeting #3.
- The project team will send out a meeting summary from Meeting #2.
- The consultant team will continue conducting key stakeholder interviews.
- Meeting #3 will build on the identified challenges and opportunities and facilitate more input on the necessary system needs/resources to best take advantage of potential opportunities and address challenges.

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Kansas
Department of Transportation

Statewide Autonomous Vehicle Vision Plan Task Force Meeting #2

March 28, 2019

HNTB   CAMBRIDGE SYSTEMATICS   KC DIGITAL DRIVE

AGENDA

- Meeting Purpose & Goals
- AV Updates: Project, Kansas, U.S.
- Case Study: Michigan Lessons Learned
- AV Access and Engagement
- Facilitated Breakouts
- Kansas Vision Plan Update
- Action Plan Review and Next Steps

PROJECT UPDATE

	JAN	FEB	MAR	APR	MAY	JUN	JUL
PROJECT SCHEDULE							
Project Kick-Off	⬤						
Meeting #1 - Current State of AV/CV & Vision		⬤ 2/21					
Stakeholder Interviews			▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			⬤ 3/28				
Meeting #3 - System Needs				⬤ 4/25			
Meeting #4 - Vision Plan Elements					⬤ 5/23		
Meeting #5 - Draft Plan						⬤ 6/27	
Kansas AV Vision Plan Final Document							⬤

AV/CV Updates

KANSAS AV/CV PROJECTS

KDOT Activities
- Looking into an IoT project. This would include 2 roadside units and 2 KDOT vehicles. The pilot route is not decided yet but will be close to Topeka.
- Upgrading our Fiber Optic Network from an ONS to a DWDM system. Hope to be installing in February.
- Talking with the City of Lawrence to install fiber optics to get to K-10.
- Working on a Queue backup warning system along the west leg of K-10. This system would start with temporary equipment and will install permanent equipment with a project tied to the Wakarusa signal.

Wichita Activities
- Moving forward with a pilot project for autonomous shuttles along Douglas. They hope to be able to use 5G as the communication platform and they hope to have it deployed this year.
- Discussions related to a connected signal system corridor to test new technology.

Kansas City Activities
- Discussions about an autonomous shuttle around Johnson County Community College. They hope to have it operational this year too.

AV Legislation Update

STATE OF THE STATES AV LEGISLATION

Legislation status since 2012:
- **Considered legislation - 41 states and the District of Columbia**
- **Passed legislation – 30 states**
- **No legislation passed - 19 states**
- **Executive orders – 22 states* (NLR)**
- **Legislation status since 2012:**

States with Autonomous Vehicles
Enacted Legislation and Executive Orders

Legend
Enacted Legislation
Executive Order
Both
None
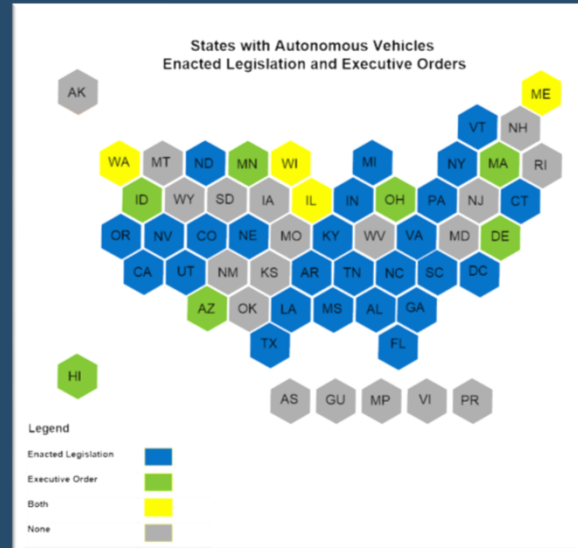
LEGISLATORS PAY INCREASING ATTENTION

1. **2018 – 15 states considered or enacted AV bills***
2. **2017 – 33 states**
3. **2016 – 20 states**
4. **2015 – 16 states**
5. **2014 – 12 states**
6. **2013 – 9 states and D.C.**
7. **2012 – 6 six states Washington and Wisconsin**

COMMON LEGISLATIVE FOCUS

1. Definition and regulation
2. Funding
3. Liability assignment
4. Local pre-emption
5. Platooning
6. Research center
7. Study group/task force creation
8. Taxation
9. Testing, demonstrations and pilots

2019 LEGISLATIVE OVERVIEW

1. 23 states/70 bills
2. Most frequent topics
   a. Testing
   b. Operation on public roads
   c. Privacy of data collected
   d. Environmental impacts
   e. Implementing task force recommendations

LOOKING AHEAD LEGISLATIVELY

1. **Congress to try again with "AV START"**
   American Vision for Safer Transportation Through Advancement of Revolutionary Technologies
2. **USDOT refocuses on "acting as a convener and facilitator"**
3. **State leaders continue actively legislating (Calif., Fla., Mich., Nev., Tenn. and Ut.)**
4. **Legislative progress can be slow**
   a. **More bills fail than pass**
   b. **Two or three tries seems the norm**
   c. **Action often follows task force/study group guidance**

Case Study: Michigan

Kirk Steudle

Access & Engagement

AV ACCESS & ENGAGEMENT

1. Overview
2. Other perspectives on AV access & engagement
3. Facilitated breakouts

KS AV Vision Plan

STATEWIDE VISION PLAN

Cover
Acknowledgements
1. Introduction
2. Current State of Connected and Autonomous Vehicle and Emerging Mobility Trends
3. Kansas' AV/CV Vision
4. State Agency Blueprints
5. Next Steps
Appendix

Statewide Autonomous Vehicle Vision Plan
July 2019
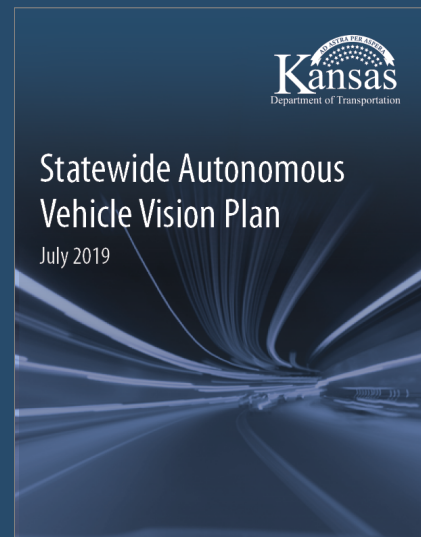
STATE AGENCY BLUEPRINTS

1. Department of Revenue
2. Division of Motor Vehicles
3. Department of Commerce
4. Insurance Department
5. Turnpike Authority
6. State IT Security - Office of Information Technology Services
7. Department of Agriculture
8. Division of Emergency Management
9. Traffic Safety Resource Office
10. Highway Patrol
11. Adjutant General's Department
12. Attorney General

(Note: Other state agencies will be addressed in the follow-up report.)

STATE AGENCY BLUEPRINTS

- Kansas Vision Statement
- AV/CV Opportunities
- AV/CV Challenges
- Strategies
- Cost and Funding Opportunities
- Performance Measures
- Partnership Opportunities
- Resources (Technical and Operational needs)
- Actions (existing and future)
- Educational Audiences and opportunities
- Workforce Development Opportunities
- Time Frame
- Key Contacts

Other Perspectives

NEW TECH INFRASTRUCTURE LESSONS LEARNED

Google Fiber in KC
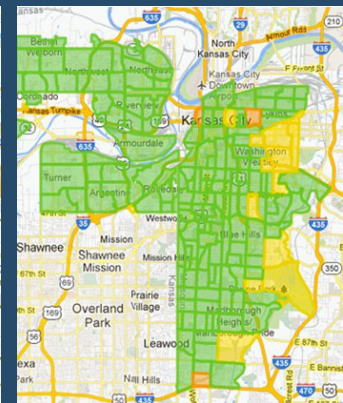*Paint the Town Green*

- Unintended consequences – or revelations
- Education critical for real engagement
- Consider innovation and inclusion at the same time
- User outcomes are a challenge the tech will not solve
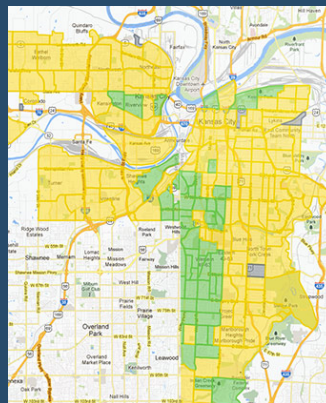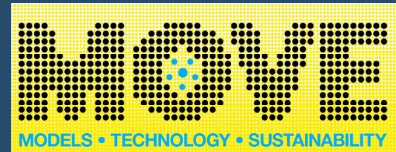
First Day

Last Day

OTHER LOCAL APPLICATIONS

- KCMO Smart City
  - Pilot on Main with Phase II plan for Prospect

- Electric scooters
  - Interim operating agreement, policy and revenue, "pre-policy" legal scholarship

- Zona Rosa AV pilot
  - Small scale, private streets, closed loop, driver on board

AV IN A BROADER CONTEXT

MOVE
MODELS • TECHNOLOGY • SUSTAINABILITY

- Three projects with Kansas ties
  - Avis Mobility Lab, Integrated Roadways, Navya/Keolis

- Flying cars

- Key themes
  - Autonomous and connected
  - Mobility-as-a-service / what is the business model
  - Customer engagement and acceptance
  - Lots of hype and utopian optimism
  - Unexpected impact on systems and design

A successful Internet economy is 90% sociology and 10% technology

…our policy, legislative, and regulatory response must be user- and outcome-driven

Facilitated Breakouts

★ BREAKOUT PURPOSE

"**Identify policies, regulations and/or legislation each agency needs to help it and its customers succeed during significant AV testing and deployment in Kansas.**"

★ BREAKOUT PROCESS

1. **Divide into groups.**
2. **Answer worksheet questions for each of up to four agencies.**
3. **Share and discuss worksheet answers as time permits.**
4. **Regroup with the rest of the task force when finished.**
5. **Facilitators report back on themes and insights from each group.**

★ BREAKOUT WORKING SCHEDULE

FOR EACH AGENCY ….	TIME
AGENCY MISSION	Facilitator
KEY CUSTOMERS	2 minutes (1+1)
CUSTOMER AV-RELATED BENEFITS & RISKS	5 minutes (3+2)
AGENCY AV-RELATED BENEFITS & RISKS	5 minutes (3+2)
TOP NEEDS (policies, regulations, legislation)	3 minutes

KS AV Visioning

DRAFT VISION 1

Vision: Aspirational description of what the Kansas Autonomous Vehicle Task Force would like to achieve or accomplish:

To support an evolving, collaborative, partnering environment of innovative and practical Autonomous Vehicle solutions for a safe, reliable, and integrated transportation network.

DRAFT VISION 2

Vision: Aspirational description of what the Kansas Autonomous Vehicle Task Force would like to achieve or accomplish:

To promote connected and integrated autonomous vehicle infrastructure and services that will enhance the safety and reliability of travel for all Kansans through the application of evolving and innovative technologies throughout our state and neighboring states.

DRAFT SUPPORTING GOALS

- Safe & Efficient Freight
  - To support freight specific AV infrastructure and policy so that goods movement in the state is safe and efficient for the freight and agriculture industry.
- Incident Management
  - To provide an AV environment that further enhances traveler information for weather conditions and incidents on Kansas roadways for all travelers.
  - To provide an AV environment that promotes safety for travelers and first responders on Kansas roadways.

DRAFT SUPPORTING GOALS (cont'd)

- Data Collection & Analysis
  - To develop data collection, storage, and analysis programs that support a strong AV environment in a secure and proactive manner.
- Implement Pilots
  - To develop and participate in Kansas AV pilot (and regional partner's) projects by 2021 so that benefits and lessons learned can be capture and advance an AV future.

DRAFT SUPPORTING GOALS (cont'd)

- Partner with Private Sector
  - To promote private sector partnerships in Kansas AV pilot projects by 2021 so that the AV industry advances in Kansas.
  - To promote partnering opportunities to expand academic and business ventures that advance emerging technology solutions for an autonomous vehicle future.
- Training
  - To train and provide workforce advancement that aligns with future AV applications and needs of the Kansas transportation network.

DRAFT SUPPORTING GOALS (cont'd)

- Promote Traveler Education of AV
  - To develop educational and outreach materials for early implementer agencies and those that adopt AV solutions.
  - To inform Kansas residents about the AV future for the state through public information pieces (newspaper articles) and other available information means (websites and tweets).
  - To ensure equitable access and engagement to the autonomous vehicle future.

KS AV Next Steps

Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX E:
Task Force Meeting #3 Presentation and Meeting Summary

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KS AV Vision Plan Development Meeting No. 3 Summary
April 25, 2019
9:00 AM – 12:00 PM

In-Person Attendees: Mike Floberg (KDOT), Don Lee (KDOR), Mike Peterson (Senate), Bruce Meisch (KTA), Andy Dean (KHP), Raja (Cisco), Joel Keller (Cisco), Chardae Caine (LKM), Heather Droge (KID), Tony Venturella (KID), Alex Wiebel (KTSRO), Ron Achelpohl (MARC), Gelene Savage (KDOT), Emily Brown (KDOT), Jill Shelley (Legislative Research), Ted Smith (KDOR), Brian McClendon, Tom Whitaker (KMCA), Kerry Wefald (KDA), Shawn Steward (AAA Kansas), Kip Strauss (HNTB), Chuck Miller (HNBT), and Lauren Reiman (HNTB)

On-Line Attendees: Greg Krueger (HNTB), Michael DeMent (HNTB), Shannon Francis (KS House), Michelle Maggiore (Cisco), Erin Flanigan (Cambridge Systematics)

Attachments: Task Force Meeting No. 3 PowerPoint

WELCOME AND INTRODUCTIONS (Mike Floberg)

Mike Floberg kicked off the meeting and facilitated introductions. Meeting attendees are shown above.

APPROACH, MEETING PURPOSE & PREVIOUS RECAP (Kip Strauss)

Kip Strauss provided an overview of the previous Task Force meeting which focused on a review Connected and Autonomous Vehicles (CAV) legislation. The meeting also served to refine the statewide vision and Task Force members participated in breakout groups focused on agency and user benefits and challenges ahead. Kip presented a summary of the previous meeting's breakout groups and it was noted that "neighboring states" should be added to the list of Key Agency Clients/Customers.

Kip reminded the group that the scope of the project is a statewide assessment, not narrowly focused on KDOT and reviewed the final project deliverable, a statewide, high-level vision document (5-10 pages) that includes blueprints (one-two pages) for identified state agencies.

AV/CV GOALS FINALIZATION (Erin Flanigan)

Erin Flanigan reviewed the previously draft statewide vision as shown below. Some Task Force members thought the vision is too long and tries to be too inclusive. There were several suggestions to shorten and improve the vision. The consultant team will review comments and refine the vision statement.

> ### *Statewide CAV Vision*
>
> *To support an evolving and partnering environment of innovative and practical Connected and Autonomous Vehicle solutions for a safe, reliable, and integrated transportation network. – March 28th, 2019*

Erin led the Task Force in reviewing the draft goals. Several suggestions and comments were made on specific goals. Generally, the goals encompass the Task Force's vision, however, a more specific economic development category will be added.

The vision statement and goals will be revised and sent out to the Task Force prior to the fourth Task Force meeting in May.

RESOURCE EXAMPLE: CISCO PERSPECTIVE OF CAV IN 2019 (Michelle Maggiore)

Michelle Maggiore leads the global business development for Smart and Connected Communities at Cisco. She discussed Cisco's perspective on emerging technologies and provided a brief overview of where they see the market is heading. Michelle noted that is important to fully understand passenger data availability, passenger needs, and agency needs in order to develop need-based solutions. Michelle's presentation laid the groundwork for the Task Force in thinking about their system and agency needs.

CAV NEEDS REVIEW (Chuck Miller)

Chuck Miller summarized the needs identified in the second Task Force meeting and led attendees through each category to identify any gaps. Needs were organized into ten categories (data, network, infrastructure, agency coordination structure, funding, partnership, policy/legislation/regulation, agency workforce, public workforce, and public education and outreach).

Several additions were provided by the Task Force including those noted below. It was also determined that the "Partnerships" category would be revised to "Public-Private Partnerships."

- Data ownership (data)
- Network expansion (network)
- Communication protocols (data/network)
- Preparedness for open records requests and freedom of information (policy/legislation/regulation)
- Staff education (agency workforce)
- Workforce retraining (public workforce)
- Public awareness (public education and outreach)

The Task Force clarified that legislation must come first (before regulation). Regulation(s) only come after authority is given and regulation(s) cannot be in conflict with any other regulation.

NEXT STEPS (Kip Strauss)

- The project team will refine the statewide vision statement and goals for the Task Force to review prior to Meeting #4.
- The project team will send out a meeting summary from Meeting #3.
- The consultant team will continue conducting key stakeholder interviews.
- The consultant team has begun drafting agency-specific blueprints and will coordinate with Mike Floberg on the outline and preliminary draft of the statewide vision plan.

Kansas
Department of Transportation

Statewide Autonomous and Connected Vehicle Vision Plan
Task Force Meeting #3

April 25, 2019

HNTB   CAMBRIDGE SYSTEMATICS   DIGITALDRIVE

AGENDA

- Welcome and Introductions
- Meeting Purpose & Goals
- AV/CV Vision & Goals
- Cisco Presentation
- Review AV/CV Needs
- Facilitated Breakout – Needs
- Next Steps

MEETING PURPOSE AND GOALS

	JAN	FEB	MAR	APR	MAY	JUN	JUL
PROJECT SCHEDULE							
Project Kick-Off	◯						
Meeting #1 - Current State of AV/CV & Vision		◯ 2/21					
Stakeholder Interviews			▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			◯ 3/28				
Meeting #3 - System Needs				◯ 4/25			
Meeting #4 - Vision Plan Elements					◯ 5/23		
Meeting #5 - Draft Plan						◯ 6/27	
Kansas AV Vision Plan Final Document							◯

MEETING PURPOSE AND GOALS

Task Force Meeting No. 2 Summary

- Current Kansas statewide CAV and technology projects

- AV-related legislation in US

- Kirk Steudle, former Director of Michigan DOT, lessons learned

- Statewide AV/CV Vision + Blueprints overview

- Other perspectives on AV access and engagement

- State agency challenges and opportunities breakout sessions

- Visioning and study goals

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

1. Key Agency Clients or Customers

2. Customer Benefits/Risks

3. Agency Benefits/Risks

4. Policy/Regulation/Legislation Needs

5. Policy/Regulation/Legislation Recommendations

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

1. Key Agency Clients or Customers

- Natural disasters/wars
- Local communities and city leaders
- Homeland security/emergency/law enforcement
- Citizens (rights, opinions, must approve regulations, privacy, etc.)
- Businesses and vehicle fleets
- Transportation system, trucks
- Insurance companies
- Technology providers
- etc.

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

2A. Customer Benefits

- Disaster response
- Deliver without human risk
- Mobile meetings
- Fewer lawsuits involving user error
- Higher productivity
- Lower transportation costs / road repair
- Reduced crashes
- Improved mobility
- etc.

2 B. Customer Risks

- Adapt to national disasters?
- Learning curve
- Cyber security
- AV Costs
- Litigation / liability
- Workforce displacement/change in economy
- Aging population / disabilities
- Uncertainty of the future
- etc.

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

3A. Agency Benefits

- Faster more coordinated response
- Personal safety (first responders)
- Fewer crashes
- Need for educated new employees
- Reduced car ownership
- Increased access to retail, jobs, & healthcare
- Increased commodity flows
- Leadership
- etc.

3B. Agency Risks

- System failure / Cyber attacks
- Increased consumer issues
- Depopulation of rural areas
- Inequity of the benefits
- Negative changes to land use & zoning
- Loss of revenue
- Problems caused by technology
- Magnitude of data management
- etc.

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

4. Policy/Regulation/Legislation Needs

	Policy	Regulation	Legislation
Agency 1	2	3	1
Agency 2	3	2	1
Agency 3	1	1	1
Agency 4	3	2	1
Agency 5	3	2	1
Agency 6	1	2	2
Agency 7	3	2	1
Agency 8	1	2	3
Agency 9	3	2	1
Agency 10	3	2	1

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

5A. Recommended Policies

- Keep emergency workers at the center of deployment
- Account for human involvement for first responders
- Align with federal and state outreach
- Support local zoning changes to accommodate a shared economy
- Commerce and the traveling public
- Access to vehicle black box
- Education and training of uniformed personnel
- Information sharing
- Customer ID
- etc.

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

5B. Recommended Regulations

- Compliance can be regulated through agency
- No laws restricting AV use in certain districts
- Enforcement of laws and regulation
- Limited liability
- Hacking
- Protocols that do not intrude on privacy rights
- Need to change traffic control laws
- Rules of operation
- etc.

MEETING PURPOSE AND GOALS

Policy/Legislative/Regulation Breakout Summary from Meeting No. 2

5C. Recommended Legislation

- Protect emergency personnel from liability
- Emergency responders would operate on own secure network
- Statutes that define "person" in rules of road will have to be changed
- Clarify consumer rights
- Taxation of AV's
- Definition of liability
- Cyber security
- Guidelines for accident investigation
- Allow for testing and deployment
- Accountability

KS AV/CV VISION AND GOALS

- Kansas AV/CV Vision (March 28, 2019)

  To support an evolving and partnering environment of innovative and practical Connected and Autonomous Vehicle solutions for a safe, reliable, and integrated transportation network.

- Study Goals Discussion

KS AV/CV VISION AND GOALS

Safe & Efficient Freight
- To support freight specific AV operational environment, resources, and policy so that goods movement in the state is safe and efficient for industry.

Reduce Fatalities
- To provide an AV environment that further enhances traveler information for weather conditions and incidents on Kansas roadways for all travelers.
- To provide an AV environment that promotes safety for travelers and first responders on Kansas roadways.

KS AV/CV VISION AND GOALS

Data Collection & Analysis
- To advance existing and emerging technologies for data collection, storage, and analysis that support a strong AV environment in a secure and proactive manner.

Implement Pilots
- To develop and participate in Kansas AV pilot (and regional partner's) projects by 2021 so that benefits and lessons learned can be capture and advance an AV future.

KS AV/CV VISION AND GOALS

Partner with Private Sector
- To promote private sector partnerships in Kansas AV pilot projects by 2021 so that the AV industry advances in Kansas.
- To promote partnering opportunities to expand academic and business ventures that advance emerging technology solutions for an autonomous vehicle future.

Training
- To train and provide workforce advancement that aligns with future AV applications and needs of the Kansas transportation network.

KS AV/CV VISION AND GOALS

<u>Promote Traveler Education of AV</u>
- To develop educational and outreach materials for implementing agencies that adopt AV solutions.
- To inform Kansas residents about the AV future for the state through public information pieces (newspaper articles) and other available information means (websites and tweets).
- To ensure equitable access and engagement to the autonomous vehicle future.

KANSAS AV/CV

Cisco Presentation
Michelle Maggiore

REVIEW AV/CV NEEDS

1. Data
2. Network
3. Infrastructure
4. Agency Coordination Structure
5. Funding
6. Partnerships
7. Legislation/Regulation
8. Workforce – Agency
9. Workforce – Public
10. Public Education and Outreach

REVIEW AV/CV NEEDS

1. Data

1.1. Data exchange standards
1.2. Data management and security
1.3. Data privacy policy
1.4. Data quality standards and verification
1.5. Processes to manage large amounts of data and translate the data to useful information
1.6. The "right" data to base decisions on and to help assess performance
1.7 Interoperability

REVIEW AV/CV NEEDS

2. Network

- 2.1. A secure network
- 2.2. A separate network

REVIEW AV/CV NEEDS

3. Infrastructure

- 3.1. Physical and virtual (software and data) infrastructure
- 3.2. Services and infrastructure improvements to foster partnerships with the AV/CV private sector
- 3.3. Roadway conditions and markings that can support automated driving systems
- 3.4. Infrastructure at the city, county, regional and statewide levels
- 3.5. Pilot projects to learn about the technology and determine what is needed to support its deployment

REVIEW AV/CV NEEDS

4. Agency Organizational Structure

- 4.1. Enhanced internal agency structures
- 4.2. Enhanced senior leadership engagement
- 4.3. Build on current strong relationships between agencies

REVIEW AV/CV NEEDS

5. Funding

- 5.1. Funding to foster partnerships with AV/CV private sector
- 5.2. Assess revenue generation opportunities and impacts from AV/CV deployments
- 5.3. Funding for purchase and maintenance of new equipment
- 5.4 Pursue Federal grant opportunities

REVIEW AV/CV NEEDS

6. Partnerships

    6.1.   Partner with universities and community colleges for research and pilot projects

    6.2.   Leverage public-private partnerships to support proof of concept testing, pilot projects, deployment and operations

    6.3.   Develop partnerships with military installations for testing and pilot projects

REVIEW AV/CV NEEDS

7. Policy/Legislation/Regulation

    7.1.   Regulations defining the driver and who is responsible for an operating vehicle

    7.2.   Driver examination changes

    7.3.   Regulations clarifying who owns data

    7.4.   Certification of vehicle safety to allow operation on roadways

    7.5.   Regulations addressing liability concerns

    7.6.   Regulations clarifying the type of procurement allowed for AV/CV related technology

REVIEW AV/CV NEEDS

7. Policy/Legislation/Regulation (Continued)

7.6. Regulations clarifying the type of procurement allowed for AV/CV related technology

7.7. Clarify the boundary between federal and state responsibility/Federal and state law consistency

7.8. Regulations allowing for testing

7.9. Regulations allowing access to vehicle "black boxes"

7.10. Modified vehicle insurance model

7.11. Regulations requiring reporting of equipment issues

REVIEW AV/CV NEEDS

8. Workforce - Agency

8.1. Additional agency staff

8.2. Staff with new expertise

8.3. Staff training and retraining

8.4. Staff retention policies for those with in-demand technology maintenance skills

REVIEW AV/CV NEEDS

9. Workforce - Public

- 9.1. Mitigate workforce impacts caused by job elimination
- 9.2. Foster the reduction in stress on workforce
- 9.3. Support STEM education to support future workforce
- 9.4. Support university and community college curriculum to address educational needs for a changing workforce

REVIEW AV/CV NEEDS

10. Public Education and Outreach

- 10.1. Educated political leadership and public about the importance of bringing AV/CV to the State
- 10.2. Public acceptance

FACILITIATED BREAKOUTS

BREAKOUT PURPOSE

Discuss AV/CV needs and identify associated strategies and resources applicable to each agency to support testing and deployment in Kansas.

⭐ BREAKOUT PROCESS

1. Divide into groups.
2. Each group should discuss the set of needs.
3. Each agency or organization should complete the worksheet for their agency or organization.
   - Note if need is related to you agency/organization
   - Note strategies or resources required
4. Share and discuss worksheet answers with the Task Force.

⭐ BREAKOUT WORKING SCHEDULE

FOR EACH DISCUSSION SET….	TIME
Small Group Discussion	12 minutes
Complete Agency Worksheets – Individually	5 minutes
Full Task Force Discussion	8 minutes

★ AV/CV NEEDS

Discussion Set One
1. Data
2. Network
3. Infrastructure

Discussion Set Two
4. Agency Coordination Structure
5. Funding
6. Partnerships

Discussion Set Three
7. Policy/Legislation/Regulation

Discussion Set Four
8. Workforce – Agency
9. Workforce – Public
10. Public Education and Outreach

★ BREAKOUT PROCESS

Kansas System Needs Assessment
Task Force Questionnaire

Agency/Organization: _____

Need: <u>1.1.   Data exchange standards</u>

Directly related to your agency (Yes or No): _____

List strategies and resources required to address the need:

1. _____

2. _____

3. _____

4. _____

5. _____

KS AV/CV NEXT STEPS

SCHEDULE

	JAN	FEB	MAR	APR	MAY	JUN	JUL
PROJECT SCHEDULE							
Project Kick-Off	●						
Meeting #1 - Current State of AV/CV & Vision		● 2/21					
Stakeholder Interviews			▬▬▬▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			● 3/28				
Meeting #3 - System Needs				● 4/25			
Meeting #4 - Vision Plan Elements					● 5/23		
Meeting #5 - Draft Plan						● 6/27	
Kansas AV Vision Plan Final Document							●

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Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX F:
Task Force Meeting #4 Presentation and Meeting Summary

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KS CAV Vision Plan Development Meeting No. 4 Summary
May 23, 2019
9:00 AM – 12:00 PM

In-Person Attendees: Mike Floberg (KDOT), Aaron Klassen (KLRD), Brian McClendon, Sarah Lawson (Virgin Hyperloop One), Andy Dean (KHP), Nick Parrot (KTA), Shawn Steward (AAA Kansas), Emily Brown (KDOT), Kerry Wefald (KDA), Heather Lane (KDOT), Amanda Greor (MARC), Matt Stormer (KDOT), Jeff Maxon (OTIS), Andy Fry (Topeka Metro), Stanley Adams (KDoC), Chardae Caine (LKM), Jim Barbaresso (HNTB), Kip Strauss (HNTB) and Lauren Reiman (HNTB)

On-Line Attendees: Heather Droge (KID), Don Lee (KDOR), Chang Lu (KDoC), Scott Weigel (City of Wichita), Robyn Arthur (HNB)

Attachments: Task Force Meeting No. 4 PowerPoint

WELCOME AND INTRODUCTIONS (Mike Floberg)

Mike Floberg kicked off the meeting and facilitated introductions. Meeting attendees are shown above.

APPROACH, MEETING PURPOSE & PREVIOUS RECAP (Kip Strauss)

Kip Strauss provided an overview of the previous Task Force meeting which focused on developing and brainstorming system needs for the various state agencies. Need categories discussed included data, network, infrastructure, organizational structure, funding, partnerships, policy and legislation, regulation, agency workforce, public workforce, education and outreach and public awareness and acceptance. Additionally, in third Task Force meeting, attendees heard from Cisco about their perspective of the future of connected and autonomous vehicles (CAV).

Kip reminded the group that the scope of the project is a statewide assessment, not narrowly focused on KDOT and reviewed the final project deliverable, a statewide, high-level vision document (5-10 pages) that includes blueprints (one-two pages) for identified state agencies.

HYPERLOOP ONE (Sarah Lawson)

Sarah Lawson presented on Virgin Hyperloop One's goals, objectives, and how they see this future mode changing the way people will move in the Midwest. Sarah provided an overview of hyperloop technology which is intended to be on-demand, direct, autonomous, more energy efficient than air travel and 100% electric. In a hyperloop network, all pods will be autonomous and in a closed hyperloop network, risks of interaction with non-autonomous objects or pedestrians, etc. are eliminated. Land acquisition is high cost of new infrastructure and Virgin plans to build within right-of-way (ROW) along existing transportation facilities (I-70). Projects planned by Virgin Hyperloop in the US include Missouri (from Kansas City to St. Louis), Colorado (from Denver to the airport), Midwest (connecting Chicago, Columbus, and Pittsburgh),

and Texas (connecting Dallas-Fort-Worth to Laredo). An international project in India has also made substantial progress and is intended to operate between Mumbai and Pune.

AUTONOMOUS DRIVING (Brian McClendon)

Brian McClendon provided an overview of how autonomous cars work, and how the autonomous driving functions operate in real-time.

- Self-driving cars are all about collecting data, training, learning, and mapping. Data collection is done through imagery (2K/4K), LIDAR (10hz), RADAR, infrasonic, wheel rotors, GPS, and more. LIDAR is helpful in detecting objects at distance and objects at night.

- Mapping is often the first task as cars must be told exactly what to do and where turn bays precisely begin and end. The biggest challenge with mapping is vehicle location (necessary to be within 10 cm) and GPS is not reliable enough. Imagery and LIDAR data collected helps to build a localization map.

- Perception is the largest hurdle that computers now face with self-driving cars. Computers must be able to differentiate between different types of objects which is done through continual training and machine learning with human assistance. This process is done through segmentation, collection and labeling (including hand labeling, assisted labeling, and automatic labeling).

- Prediction and planning come after computers mostly recognize most all objects. This is done by developing uncertainty "circles" around objects based on previous machine learning. Vehicles/computers then develop the best route and this process of continual assessment and planning continues every millisecond as new data comes in.

Challenges today include data storage and privacy, sensor range, adequate testing and partial capabilities.

KANSAS SWOT ANALYSIS (Jim Barbaresso)

A major component of the statewide CAV vision plan is to address identified challenges and opportunities. Jim Barbaresso lead the Task Force in a discussion on statewide challenges and opportunities as noted below. The challenges and opportunities identified were developed from survey responses, previous Task Force meetings, and individual stakeholder interviews.

Additional challenges identified by Task Force members:

- Rural road conditions (unmarked gravel roads, etc.).

- Lack of technology state-wide (two-thirds of households statewide have access to broadband).

- Question of ownership (particularly data) is still a big unknown, and therefore a challenge/hurdle.

- Better real time data and nonfictions of damaged infrastructure in need of repair.

Additional strengths identified by Task Force members (and modifications):

- Wireless communications may seem like a strength (with openness and air space), however, rural areas may not have wireless communications under strengths.

Additional weaknesses identified by Task Force members (and modifications):

- While it does seem like Kansas has a lot of rural and gravel roads, as a total percent of population and people effected, Kansas may not be any worse off than other states.

- Ability to continually maintain infrastructure with weather, infrastructure deterioration and how we'll keep up with new infrastructure needs real-time.

- Weather conditions (snow) may be easier to overcome than initially perceived.

Additional opportunities identified by Task Force members:

- VMT mileage fees may also be an opportunity (while still a challenge), particularly from a marketing perspective as the public may feel like they'd then change to only paying what they use rather than subsidizing the trucking system.

- Increase utilization of agriculture equipment.

Additional threats identified by Task Force members:

- Legislative inaction.

It was noted that when developing the CAV plan and identifying challenges and weaknesses, it is easy to put all transportation challenges into the plan. However, the plan is specifically framed for CAV, and the team should ensure that all items are directly related back real differences with a CAV future.

POTENTIAL INITIATIVES AND PROJECTS (Jim Barbaresso)

Mike reviewed potential initiatives and projects with the Task Force for initial feedback. The initiatives and projects will be presented in the Draft Vision Plan to be submitted in June. Discussion focused on the bold need areas since these are expected to be initial initiatives and project recommendation areas.

1. **Data Initiatives**
2. Network Initiatives
3. Infrastructure Initiatives
4. **Agency/Organization Initiatives**
5. Funding Initiatives
6. **Partnership Initiatives**
7. **Policy/Legislation/Regulation Initiatives:**
8. Workforce – Agency Initiatives
9. Workforce – Public Initiatives
10. **Public Education and Outreach Initiatives**

SCHEDULE AND NEXT STEPS (Kip Strauss)

Kip summarized the meeting discussion and presented a schedule to submit the draft reports and complete the Phase 1 study.

Submittal Date	Action
June 13th	Consultant team to submit draft to Mike for review
June 20th	Consultant team to submit draft to Task force for review
June 27th	WebEx conference to discuss Task Force draft comments
July 25th	Consultant to submit final report

Kansas
Department of Transportation

Statewide Autonomous and Connected Vehicle Vision Plan
Task Force Meeting #4

May 23, 2019

HNTB   CAMBRIDGE SYSTEMATICS   KC DIGITALDRIVE

AGENDA

- Welcome and Introductions
- Meeting Purpose & Goals
- Meeting No. 3 Recap
- Hyperloop Presentation – Sarah Lawson
- How do AV's Read the Road – Brian McClendon
- Kansas SWOT Analysis
- Potential Initiatives & Projects

MEETING PURPOSE AND GOALS

PROJECT SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL
Project Kick-Off	O						
Meeting #1 - Current State of AV/CV & Vision		O 2/21					
Stakeholder Interviews			████████████				
Meeting #2 - Partnerships, Legislation, and Regulation			O 3/28				
Meeting #3 - System Needs				O 4/25			
Meeting #4 - Vision Plan Elements					O 5/23		
Meeting #5 - Draft Plan						O 6/27	
Kansas AV Vision Plan Final Document							O

TASK FORCE MEETING NO. 3

Meeting Summary

a. Approach, Meeting Purpose & previous recap

b. AV/CV Goals Finalization

c. Resource Example: Cisco Perspective of CAV in 2019

d. CAV Needs Review

e. Next Steps

TASK FORCE MEETING NO. 3

Needs Summary

1. Data
2. Network
3. Infrastructure
4. Agency Organizational Structure
5. Funding
6. Partnerships
7. Policy/Legislation/Regulation
8. Workforce - Agency
9. Workforce - Public
10. Public Education and Outreach
11. Public awareness and acceptance

Confirmation of Needs

Kansas Challenges

- **General**
  - Addressing rural transportation needs
  - Providing equitable access for jobs, healthcare, etc.
  - Public acceptance
  - Understanding the impacts on VMT
  - Understanding the impacts on land use
  - Obtaining lessons learned from other areas
  - Uniformity across state lines
  - Understanding risks
  - Information sharing, education and communication
  - Rural road conditions

Kansas Challenges (Continued)

- **Technical**
  - Data security
  - Cybersecurity
  - Data collection and management
  - Developing performance measures for the state
  - Geometric design changes
  - Defining infrastructure needs and design criteria to support CAVs (only 2/3 of residents have access to technology)
  - Uncertainty about technologies
    - Timeframe for implementation
    - What technologies will be winners and losers
    - V2X solutions
  - VMT or Mileage Based User Charges to supplement or replace fuel tax
  - Lower population base of Kansas

Kansas Challenges (Continued)

- **Institutional**
  - Costs and funding
  - Legislative and policy solutions
  - Partnerships with the auto and tech industries
  - Coordination with other modes of travel and transit
  - Ownership and business models
  - Federal guidance uncertainties
  - Consensus building
  - Coordination of stakeholders
  - VMT or Mileage Based User Charges to supplement or replace fuel tax
  - Engagement of senior leadership at state agencies
  - Uncertainty about implementation models
  - Implementation readiness
  - Who owns the data

Kansas Challenges (Continued)

- **Operational**
  - o Operation and maintenance of solutions
  - o Addressing snow covered roads/weather events
  - o Addressing construction events/work zones
  - o Addressing wildlife concerns
  - o Enforcement and accident investigations
  - o Training of personnel
  - o Mixed traffic considerations (AV and non-AV) for safe operation
  - o Need for truck transfer facilities within the system.

Kansas Strengths

- Gradient of rural, suburban, and urban communities
- Strong infrastructure network (highways and roads) with several statewide connections including I-70 and KTA infrastructure
- Existing discussions regarding statewide broadband and existing fiber network
- Significant greenspace and heavy agriculture presence
- High freight movement and "center for trade"
- Aviation history (UAS capabilities)
- Defense and military bases
- KDOT has identified a point-person (Mike Floberg)
- Task Force established ("strong working relationships")
- All weather environment for testing
- Openness/air space for wireless communications

Kansas Weaknesses

- Legislative hurdles
  - Enabling legislation
  - Insurance regulations and legislation
  - Liability
- Lack of engagement by leadership at most state agencies (exceptions are KDOT and KHP)
- 75% of state agencies are not considering CAV in their budgeting or planning
- Lack of tech sector interest
- Conservative nature of Kansans and acceptance of technology
- Cost and feasibility of addressing rural transportation needs and use cases
- Gravel roads
- Snow covered roads (radar can see road conditions)
- Uncertainties about technologies
- Implementation readiness
- Lack of communication network in rural area
- Ability to maintain the roads (i.e. potholes)

Kansas Opportunities

- Partnerships
- Education of public / outreach
- Training (KHP accident investigation and enforcement)
- Leverage researchers at state universities
- Collaboration with the communications industry
- Pavement markings and signage
- Applications for grant funding
- VMT mileage based charges (similar to a utility) – marketing opportunity
- Increase agriculture equipment and usage

Kansas Threats

- Malicious activity
- Data security
- Liability
- Loss of local control
- Mandates on local governments
- Creating AV congestion (deadheading and empty vehicles)
- Impacts of electric vehicles on fuel tax revenues
- Reduction in jobs
- Legislative inaction

Potential Initiatives & Projects

1. **Data Initiatives**
2. Network Initiatives
3. Infrastructure Initiatives
4. **Agency/Organization Initiatives**
5. Funding Initiatives
6. **Partnership Initiatives**
7. **Policy/Legislation/Regulation Initiatives:**
8. Workforce – Agency Initiatives
9. Workforce – Public Initiatives
10. **Public Education and Outreach Initiatives**

SCHEDULE

PROJECT SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL
Project Kick-Off	●						
Meeting #1 - Current State of AV/CV & Vision		● 2/21					
Stakeholder Interviews			▬▬▬▬				
Meeting #2 - Partnerships, Legislation, and Regulation			● 3/28				
Meeting #3 - System Needs				● 4/25			
Meeting #4 - Vision Plan Elements					● 5/23		
Meeting #5 - Draft Plan						● 6/27	
Kansas AV Vision Plan Final Document							●

SCHEDULE

Submittal Date	Action
June 13th	Consultant team to submit draft to Mike for review
June 20th	Consultant team to submit draft to Task force for review
June 27th	WebEx conference to discuss Task Force draft comments
July 25th	Consultant to submit final report

Kansas Connected and Autonomous Vehicle Vision Plan

APPENDIX G:
State Needs Assessment

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Through an online survey, meeting discussions and one-on-one interviews, an initial list of system and other needs was compiled to support AV/CVs. At a stakeholder meeting the needs were discussed to determine if the proposed needs are real and what needs are missing. The following list of needs is the result of the review and discussion of needs at the stakeholder meeting.

1. **Data**
   1.1. Data exchange standards
   1.2. Data management and security
   1.3. Data privacy policy
   1.4. Data quality standards and verification
   1.5. Processes to manage large amounts of data and translate the data to useful information
   1.6. The "right" data to base decisions on and to help assess performance
   1.7. Interoperability
   1.8. Data ownership

2. **Network**
   2.1. A secure network
   2.2. A separate network
   2.3. Network expansion

3. **Infrastructure**
   3.1. Physical and virtual (software and data) infrastructure
   3.2. Services and infrastructure improvements to foster partnerships with the AV/CV private sector
   3.3. Roadway conditions and markings that can support automated driving systems
   3.4. Infrastructure at the city, county, regional and statewide levels
   3.5. Pilot projects to learn about the technology and determine what is needed to support its deployment
   3.6. Communication protocols for road change activities (construction, emergency services, etc.)

4. **Agency Organizational Structure**
   4.1. Enhanced internal agency structures
   4.2. Enhanced senior leadership engagement
   4.3. Build on current strong relationships between agencies

5. **Funding**
   5.1. Funding to foster partnerships with AV/CV private sector
   5.2. Assess revenue generation opportunities and impacts from AV/CV deployments
   5.3. Funding for purchase and maintenance of new equipment
   5.4. Pursue Federal grant opportunities

6. **Partnerships**
   6.1. Partner with universities and community colleges for research and pilot projects
   6.2. Leverage public-private partnerships to support proof of concept testing, pilot projects, deployment and operations
   6.3. Develop partnerships with military installations for testing and pilot projects

7. **Policy/Legislation/Regulation**
   7.1. Regulations defining the driver and who is responsible for an operating vehicle
   7.2. Driver examination changes
   7.3. Regulations clarifying who owns data
   7.4. Certification of vehicle safety to allow operation on roadways
   7.5. Regulations addressing liability concerns
   7.6. Regulations clarifying the type of procurement allowed for AV/CV related technology
   7.7. Clarify the boundary between federal, state and municipal responsibility/Federal and state law consistency
   7.8. Regulations allowing for testing
   7.9. Regulations allowing access to vehicle "black boxes"
   7.10. Modified vehicle insurance model
   7.11. Regulations requiring reporting of equipment issues
   7.12. Preparedness to address open records requests and freedom of information

8. **Workforce - Agency**
   8.1. Additional agency staff
   8.2. Staff with new expertise
   8.3. Staff training and retraining
   8.4. Staff retention policies for those with in-demand technology maintenance skills
   8.5. Staff education

9. **Workforce - Public**
   9.1. Mitigate workforce impacts caused by job elimination (re-training workforce)
   9.2. Foster the reduction in stress on workforce
   9.3. Support STEM education to support future workforce
   9.4. Support university and community college curriculum to address educational needs for a changing workforce

10. **Public Education and Outreach**
    10.1. Educated political leadership and public about the importance of bringing AV/CV to the State
    10.2. Public awareness and acceptance