FALL Innovative Tech 2024 Awardees

KDOT
IKE
THE EISENHOWER LEGACY
TRANSPORTATION PROGRAM

NEMAHA COUNTY

LEAVENWORTH COUNTY

JOHNSON COUNTY

TOPEKA

EDGERTON

SALINA

KEARNY COUNTY

FORD COUNTY

HALSTEAD

PARK CITY

MAIZE

SEDGWICK COUNTY

WICHITA

ANDOVER

PITTSBURG
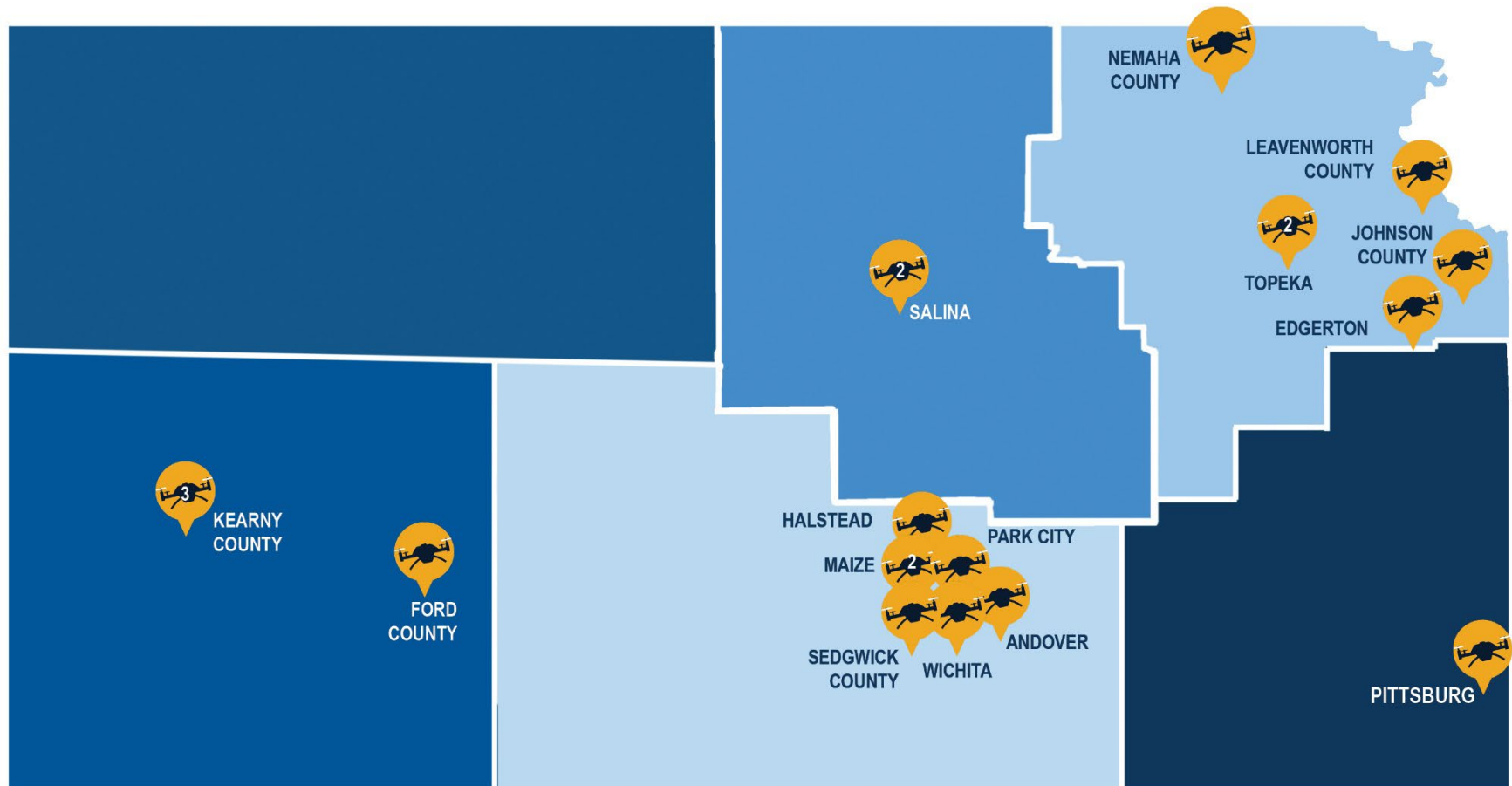
Project Name	Applicant Organization	County	KDOT funds
Advanced UAS Flight Operations and Simulation Center Phase II	Kansas State University - Salina	Saline	$ 1,000,000.00
Advanced Aviation and Engineering Research Operations	Salina Regional Airport	Saline	$ 870,000.00
Autonomous Agricultural Vehicle Pilot	Kelly Hills Unmanned Systems	Nemaha	$ 688,609.00
Blocked Railroad Crossing Alert System Pilot	ByStep LLC and Island Radar Co.	Crawford	$ 450,000.00
Roadside Radio Units and Emergency Preemption Pilot	City of Andover	Butler	$ 320,000.00
Traffic Signal Modernization and Coordination	City of Dodge City	Ford	$ 220,000.00
Improving Multi-Modal Safety in Wichita with Advanced AI	City of Wichita and Vivacity Labs	Sedgwick	$ 187,500.00
Traffic Signal Safety Upgrades	Sedgwick County	Sedgwick	$ 150,000.00
Radar Detection Traffic Signals	City of Maize	Sedgwick	$ 150,000.00
Gardner Pavement Assessment and Management	City of Gardner	Johnson	$ 90,000.00
AI Street Inventory and Assessment	City of Halstead	Harvey	$ 75,750.00
Madison and Monroe Corridor Radar Traffic Detection	City of Topeka	Shawnee	$ 75,000.00
VIN Inspection Program Modernization	Kansas Highway Patrol	Shawnee	$ 60,000.00
Maize Local Street Assessment Using AI	City of Maize	Sedgwick	$ 59,950.00
Transportation Network Evaluation Using AI	City of Park City	Sedgwick	$ 49,125.00
Automated Pavement Condition Index and Asset Management	City of Edgerton	Johnson	$ 25,000.00
2000W Laser Cleaning Machine	Leavenworth County	Leavenworth	$ 15,000.00
Vibratory Roller for Asphalt Patching	Kearny County	Kearny	$ 12,636.00
Airport Debris Removal Broom	Kearny County Airport	Kearny	$ 8,025.00
Mow and Maintenance Skid Steer Attachment	City of Lakin	Kearny	$ 5,000.00
	Total:		$ 4,511,595.00

Project Title	Applicant Name	County	KDOT Funds	Total Project Cost
Advanced UAS Flight Operations and Simulation Center Phase II	**Kansas State University - Salina**	**Saline**	$ 1,000,000.00	$ 1,333,334.00
Procurement of an Advanced Air Mobility cargo aircraft with integrated detect and avoid capability plus long-range command and control. This project will enable cargo delivery of articles such as medical supplies to rural hospitals. We are also aspiring to purchase and develop a simulator capability of an Advanced Air Mobility passenger aircraft manufactured by Beta Technologies.				
Advanced Aviation and Engineering Research Operations	**Salina Regional Airport**	**Saline**	$ 870,000.00	$ 1,087,500.00

The Advanced Aviation & Engineering Research Operations (AAERO) project is a strategic initiative aimed at revolutionizing Uncrewed Aircraft Systems (UAS) and Advanced Air Mobility (AAM) operations at Salina Regional Airport (SLN) and the adjoining airspace. One of the key drivers of this project is the upcoming flight testing by AAM Original Equipment Manufacturer (OEM) Textron eAviation, set to commence in December 2025 at SLN. To meet Textron eAviation's requirements for their full-scale electric vertical take-off and landing (eVTOL) aircraft and other potential AAM operators, Project AAERO will focus on developing and validating critical infrastructure and technologies essential for AAM flight operations. This includes the implementation of advanced surveillance systems, detect and avoid (DAA) capabilities, and the creation of a dedicated vertiport to support eVTOL aircraft. The project's emphasis on seamless UAS and AAM integration within SLN's Class D airspace and the National Airspace System (NAS) is vital to ensure the success of Textron eAviation's testing program and future AAM industry advancements.

It will start with an infrastructure assessment to evaluate existing and planned launch and recovery sites, including heliports, hospitals, airports, future vertiports, power grids, and cargo distribution centers. The assessment will identify essential links between current and future transportation modes and the needs of emerging Vertical Take-Off and Landing (VTOL) aircraft. Additionally, the project will assess promising locations and support services for AAM operations, inventorying and evaluating options for ground-based DAA systems, communications equipment, and procedural requirements specific to operations in Class D airspace at SLN. The objective of Project AAERO is to establish a blueprint for safe, efficient, and routine operations of UAS and AAM at the Salina Regional Airport and in the National Airspace System (NAS).

Project Scope: The AAERO project encompasses two key areas of focus:
1.   Infrastructure Development and Technology Integration: Project AAERO will focus on developing and implementing key infrastructure and advanced technologies to support the integration of Uncrewed Aircraft Systems (UAS) and Advanced Air Mobility (AAM) operations. Central to this effort is the establishment of a ground-based Detect and Avoid (DAA) system, which will enable Beyond Visual Line of Sight (BVLOS) operations.
2.   Data Collection and Comprehensive Implementation Report: AAERO will gather and analyze critical information to produce a comprehensive implementation report, complete with robust performance metrics. This report will guide decision-making on full-scale integration efforts and provide valuable insights and best practices that can benefit the aviation industry at large.

Autonomous Agricultural Vehicle Pilot	Kelly Hills Unmanned Systems	Nemaha	$ 688,609.00	$ 918,145.00
Build a simple test bed to develop strategies around autonomous tractor transportation. With Nemaha County's help, shut down a one mile stretch of road at given times for SwarmFarm to use as an opportunity to test and prove that their robot could safely cross a road under various circumstances such as gravel and dirt roads.					
Blocked Railroad Crossing Alert System Pilot	ByStep LLC and Island Radar Co.	Crawford	$ 450,000.00	$ 600,000.00
The project is intended to be a proof-of-concept system to predict when - and for how long - railroad crossings will be blocked by trains. Implementation of such as system enables a number of safety, energy, climate, and travel efficiency benefits such as: a. Information to EMS Dispatch organizations to avoid blocked crossing delays. b. Proactive blockage alerts and route optimization guidance delivered to mobile device apps and dynamic DMS (Signage). c. Reduction of vehicles queued at crossings, which statistically reduces the likelihood of train/auto accidents. d. Lighted train-on-approach signs augmenting passive crossbucks at rural crossings. e. Crossing proximity and train-on-approach information delivered into automotive ITS systems via DRSC, 5G, and BLE signaling. The project also includes a follow-on study of the performance, accuracy, and effectivity of providing the motoring public with advance information of blocked crossings events. This project is currently engaged with two different railroads and has a backup location in Johnson County should the Crawford County location not work.					
Roadside Radio Units and Emergency Preemption Pilot	City of Andover	Butler	$ 320,000.00	$ 425,000.00
The Andover Road RSU project would install Roadside Unit (RSU) radios along Andover Road from Central to Harry Street (6 signals/locations). The signals will be connected using fiber being completed with another project, and in the future would be connected to the City's central server. The project will include looking at RSU for Signal Phase and Timing (SPaT) broadcast as well as emergency pre-emption to help response times of emergency vehicles from the station north of Central to South of US-54.					
Traffic Signal Modernization and Coordination	City of Dodge City	Ford	$ 220,000.00	$ 320,000.00
Upgrade traffic signals on US-50 with radar detection systems. Current signals were installed 20-30 years ago and do not have this technology. Two signals on Comanche Street will also be upgraded with GPS clocks and signal coordination as they serve schools that cause backups.					
Improving Multi-Modal Safety in Wichita with Advanced AI	City of Wichita and Vivacity Labs	Sedgwick	$ 187,500.00	$ 250,000.00
Wichita is planning significant downtown development, including a new multi-modal transit center, biomedical campus and nursing school. The City of Wichita proposes working with Vivacity Labs dba Viva, who provides Computer Vision traffic sensors combined with real time data insights using AI analysis, to help authorities efficiently and effectively improve road safety in the area. The project will include:					

-Viva procuring and providing network level road safety data for the broader Wichita area
-Viva shipping, installing and configuring 50 proprietary road safety sensors at the top 50 most dangerous hot spots. The sensors will be owned by the State, giving KDOT the opportunity to use the sensors on other active travel and road safety projects throughout the state.
-A one year license to the Viva dashboard which includes access to real-time data from the sensors
-Monthly Data Analysis Deep dive sessions and reports from Viva's Road Safety team
- install computer vision sensors, with air quality monitors, which would be a first in the United States. A combined offering makes it possible to obtain highly accurate, anonymous and detailed 24/7 traffic data that can be corroborated with air quality data for more comprehensive and valuable datasets for clean air initiatives.

Traffic Signal Safety Upgrades	Sedgwick County	Sedgwick	$ 150,000.00	$ 200,000.00

Modernize four high-risk urban intersections between Wichita and Derby, Kansas, including a critical area near McConnell AFB that experiences frequent accidents.   The intersections Rock Road and Arnold, Rock Road and 47th, Oliver and 47th, and Oliver and MacArthur. Purchase integrated suite of advanced traffic signal products featuring artificial intelligence that will provide real-time performance data, alerts, and comprehensive reporting on traffic signal operations. The AI-driven system will intelligently detect and differentiate between various road users—including emergency responders, pedestrians, cyclists, vehicles, transit vehicles, and heavy trucks—allowing it to capture data on turning movements and provide analytics to optimize signal operation thereby reducing emissions & congestion while improving safety via signal preemption for EMS and Fire.

Radar Detection Traffic Signals	City of Maize	Sedgwick	$ 150,000.00	$ 200,000.00

The project will consist of replacing the existing traffic signals with a radar detection signals at 53rd & Maize, 45th and Maize, 45th and 119th, and 53rd and 119th. The current traffic signals are fitted with camera detection, which were first generation of traffic detection system. They do not function well in bright sunlight, fog, or dense rain, which happens frequently. In addition, they are limited in their traffic detection capabilities. These intersections are the busiest in the community, serving Maize High School, Maize Middle School, and three elementary schools.

Gardner Pavement Assessment and Management	City of Gardner	Johnson	$ 90,000.00	$ 120,000.00

The City of Gardner seeks to implement an innovative pavement management program to enhance the efficiency and accuracy of its street asset process. The primary objectives include:
• Use AI-based survey analysis tools to assess roadway conditions and generate an objective Pavement Condition Index (PCI) score. Survey may include all infrastructure assets within the city right-of-way including sidewalks, curb, etc.
• Transition from spreadsheet-based data collection to a dynamic, automated platform that analyzes data, prioritizes repairs, and supports capital improvement planning.
• Optimize available funding to maximize roadway maintenance efficiency ensuring the greatest increase in PCI scores for the least cost.

AI Street Inventory and Assessment	City of Halstead	Harvey	$ 75,750.00	$ 101,250.00

Pavement Condition Assessment and Inventory for Halstead and Sedgwick. The inventory will be developed using GPS units and pavement condition information will be collected utilizing a GoPro camera mounted on a vehicle driving at speed in both communities. This video will be sent to be analyzed using a calibrated algorithm to determine the condition rating of the streets based on the PASER (1-10) system. Inventories of street signs will also be gathered in this process for both communities and Sedgwick plans to also inventory pavement markings. Halstead is seeking to also inventory their storm water system (e.g., inlets, culverts, and pipes) which impacts the long-term maintenance needs of streets in terms of appropriate drainage or avoiding issues such as ponding through proper maintenance and repair. This storm water inventory would also be developed using a GPS unit. Both Halstead and Sedgwick plan to have GIS layers created for their developed inventories, an interactive dashboard created for their respective community with the developed data and multi-year maintenance plans based on the gathered information and PASER evaluation of the streets.

Madison and Monroe Corridor Radar Traffic Detection	**City of Topeka**	**Shawnee**	**$ 75,000.00**	**$ 100,000.00**

Upgrade old/outdated vehicle video detection systems at five intersections on Madison and Monroe corridors in the City of Topeka. Current video detection system has been used for an estimated 12-15 years that is being maintained as best as possible with salvaged parts. The new system would be radar technology that is not affected by weather, sun blindness, or camera lenses becoming dirty. Thus, reducing maintenance while increasing reliability of vehicle detection.

VIN Inspection Program Modernization	**Kansas Highway Patrol**	**Shawnee**	**$ 60,000.00**	**$ 80,000.00**

The Kansas Highway Patrol (KHP) seeks funding to support modernization for the agency's Vehicle Identification Number (VIN) Inspection Program. Inspections are currently conducted by KHP staff and over 150 designated local law enforcement agencies using a legacy system often involving paper forms. Over 150,000 inspections are conducted annually, which requires reconciling hundreds inspection carbon copy forms submitted by designees. This project would create standardized digital inspections forms that could be universally adjusted as needed to capture evolving data and metrics, which allows for comprehensive trend analysis concerning auto theft. These forms will feed into a central database to secure the data and reduce errors. Tablets will be purchased to allow expedient car side inspections. VINs will be verified through state and national databases, such as the National Crime Information Center index. This digital platform would be utilized at over 100 VIN inspection locations across the State.

Local Streets Assessment Using AI	**City of Maize**	**Sedgwick**	**$ 59,950.00**	**$ 83,000.00**

Project to implement a system that will set a baseline of the condition of its local transportation network – streets, traffic signs, and pavement markings (like lane markings or turning lanes). The City currently does not use any method to evaluate street (or sign or pavement marking) condition, nor has an inventory of signs or pavement makings. This is basic information that is needed for the city to responsibly maintain its investment. The project will consist of inventorying and assessing the condition of the city's transportation network (streets, pavement markings, and signs) using advanced technology methods. Inventory and information will collected via a GoPro camera mounted in a vehicle driving at speed. The video collected by the GoPro will be run through a calibrated algorithm to determine the condition of the street and an algorithm to determine the presence/condition/category of sign and pavement marking.

Transportation Network Evaluation Using AI	**City of Park City**	**Sedgwick**	**$ 49,125.00**	**$ 65,500.00**

Project will inventory and assess the condition of the city's transportation network using advanced technology methods. For streets and signs, inventory and information will be collected via a GoPro camera mounted on a vehicle driving at speed. The video collected by the GoPro will be run though a calibrated algorithm to determine the condition of the street and an algorithm to determine the presence/condition/category of sign. For sidewalks, the inventory will be collected using a GPS unit (and associated mobile tablet) by a trained professional, and the condition will be assessed by a trained engineer. Deliverables include GIS layers of the street inventory and condition, signs inventory and condition, sidewalk inventory and condition, and a GIS Dashboard with interactive queries, a map display, and a quantity estimator.

| **Automated Pavement Condition Index and Asset Management** | **City of Edgerton** | **Johnson** | $ | 25,000.00 | $ | 34,000.00 |

Edgerton is interested in leveraging new Pavement Condition Indexing technology to automate road assessments using vehicle-mounted hardware, artificial intelligence and machine learning to provide more accurate, safer, and less labor-intensive inspection of our road system. Once the data is processed an interactive mapping platform as well as data in multiple formats will be provided to the city and their consultant. The consultant would then prepare a 10 year pavement asset management plan.

| **2000W Laser Cleaning Machine** | **Leavenworth County** | **Leavenworth** | $ | 15,000.00 | $ | 20,000.00 |

Purchase a 2000W Laser Cleaning Machine to clean rust, paint, or any corrosion off any solid surface. The Public Works Department will use this machine to clean sander/salt spreader parts without removing them and breaking down the equipment for sand blasting. This machine will allow any part to be cleaned as if it were sandblasted without removing it from the equipment. This will greatly improve efficiency and maintenance. This level of maintenance is not currently performed and will allow a higher level of service and extend the life of our equipment.

| **Vibratory Roller for Asphalt Patching** | **Kearny County** | **Kearny** | $ | 12,636.00 | $ | 16,848.00 |

Purchase a vibratory roller attachment for a skid steer so asphalt patching can be more productive and result in a much better finished product. As of now Kearny County has no way of vibratory packing the patches and this attachment would help result in more durable and safer patching being completed.

| **Airport Debris Removal Broom** | **Kearny County Airport** | **Kearny** | $ | 8,025.00 | $ | 10,700.00 |

Purchase a Worksaver 7' Poly/Wire Broom tractor attachment. This will be used to sweep the runway, apron, and taxiways of foreign object debris. A broom attachment will ensure safety for medical evacuation flight operations and emergency medical service personnel. This will also assist with snow removal on the runway.

| **Mow and Maintenance Skid Steer Attachment** | **City of Lakin** | **Kearny** | $ | 5,000.00 | $ | 7,000.00 |

Purchase Skid steer mower attachment to allow maintenance of sidewalks, roadways, and public spaces to ensure safe travel for drivers and pedestrians.