

Ohio Department of Transportation Research Project Fact Sheet



Achieving Efficiencies within ODOT with the Event Streaming Platform

Researcher(s)	Mallory Crow Ph.D. PE, Paul Avery MSME, & John Fuller GISP
Agency	AECOM
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The Problem

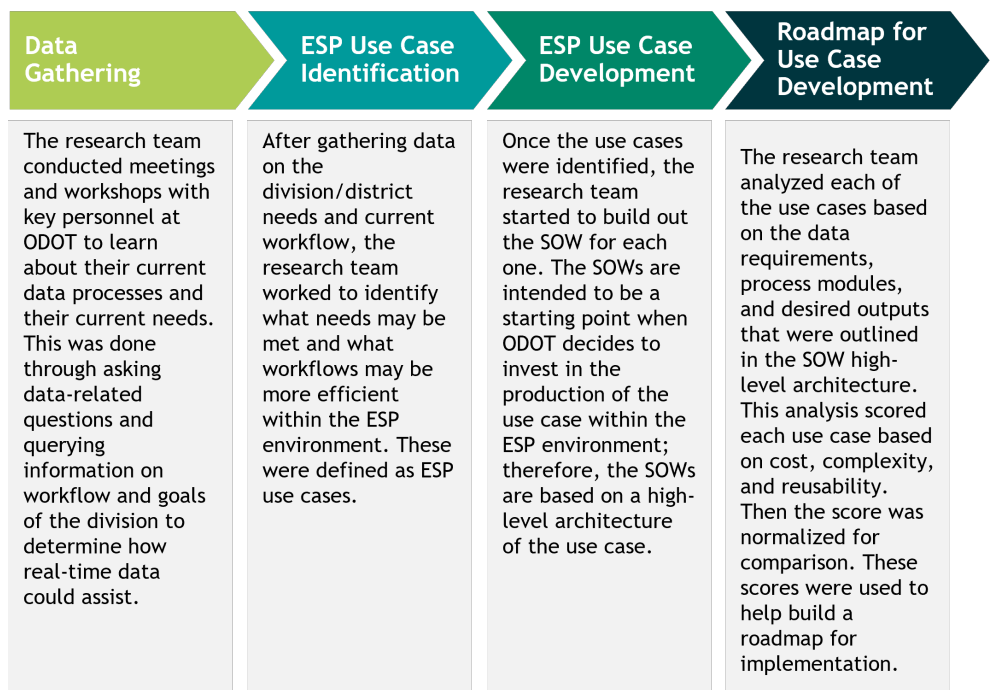
For the Ohio Department of Transportation (ODOT) to efficiently manage their infrastructure; the collection, procurement, and analysis of data are required. Mobility, asset, weather, safety, work zone, workforce diversity, commercial vehicle, financial, purchase orders, and personnel retainment are samples of data that are used at ODOT to manage their services in an equitable manner.

With the size of ODOT’s operations, the data collected can quickly become unmanageable due to the amount available. Furthermore, ODOT continues to find innovative methods for data analytics to provide valuable insights. One way to manage these data and create meaningful insights is through ODOT’s Division of Information Technology’s development of an Event Streaming Platform (ESP), which is expected to assimilate disparate data in both streaming and batch formats to automatically extract insights not currently available to ODOT staff. Additionally, the ESP should help to automate a variety of routine and repetitive tasks, enabling ODOT to realize significant cost savings. ODOT desires to identify and address data gaps, data sharing issues, third-party data requirements, and process inefficiencies to improve the capabilities and usability of the ESP for all ODOT personnel.

The goal of this project is to identify efficiencies across ODOT for the ESP. Future application needs and data automation processes must be defined based on current ODOT personnel activity workflows, repetitive tasks, and activities and integration of cross-process and internal organization collaboration. Use cases and statements of work (SOW) must be developed to support ODOT personnel, other ODOT users, and future technology that can be employed using the ESP

Research Approach

The project was divided into two phases, which allowed the team to verify that the methodology will produce meaningful and useful deliverables for ODOT in Phase One then continued the research further in Phase Two. Phase One collected, developed, and analyzed use cases specifically for the Division of Operations. At the completion of the deliverables for Phase One, the research team expanded the process for use case development into other divisions at ODOT Central Office and two districts, one urban and



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This research was sponsored by the Ohio Department of Transportation and the Federal Highway Administration.

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one rural, to ensure research is considering the diverse demographic within Ohio. The figure above is an outline of the tasks completed to meet the project goals.

Findings

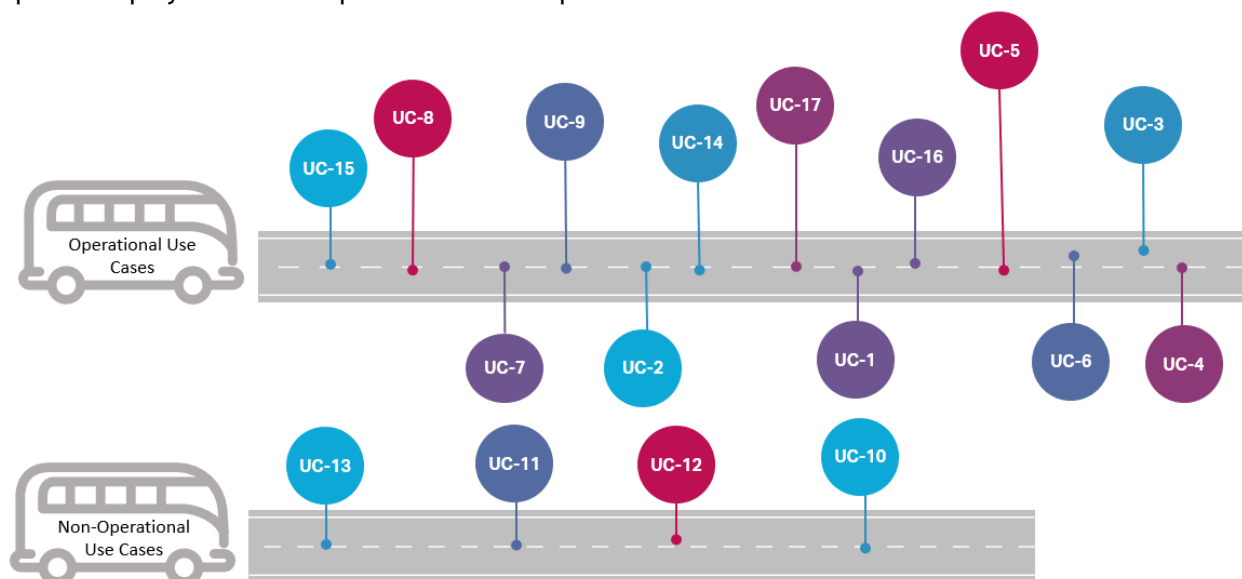
This research resulted in the identification of 17 use cases across ODOT divisions and departments.

UC-1: Traffic prediction and proactive management	UC-10: Monitoring the Non-Contract Procurement Limit (\$50K List)**
UC-2: Crash prediction and proactive mitigation*	UC-11: Streamline Purchase Order Creation**
UC-3: Incident detection and response initiation*	UC-12: Identifying and Creating Service Awards
UC-4: Roadway maintenance needs detection and dispatch	UC-13: Use Census and Workforce Survey Data to Increase Workforce Diversity
UC-5: Static asset maintenance need detection and dispatch	UC-14: Coordinate and Disseminate Heavy Haul Permits Information
UC-6: Snow/ice treatment determination	UC-15: Automating Process of Selecting Detour Needs
UC-7: Identifying and Examining Parallel Work Zones	UC-16: Correlate Asset Management and Life-cycle Planning (Planning Phase)
UC-8: Managing Work Zones	UC-17: Automated Roadway Asset Repair Cost Estimation Due to Crashes
UC-9: Predicting, Detecting, and Tracking Flooding For Serviceability/Maintenance	

*Occurring now as part of Smart Grant Award; **Occurring now as part of finance activities

Recommendations

This research used a scoring method based on reusability and relative cost for the data and modules needed for each use case. These scores were then normalized across the use cases to determine the optimal deployment roadmap. See the roadmap below.



Note: UC-1 through UC-6 are Phase 1; UC-7 through UC-17 are Phase 2

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