Project Startup Report

Submitted to Project Oversight on 02/21/2025

GENERAL INFORMATION

Project Name: Automated Vehicle Location (AVL)

Agency Name: Department of Transportation

Project Sponsor: Wayde Swenson

Project Manager: Leila Thompson

PROJECT DESCRIPTION

The Automated Vehicle Location (AVL) project will deliver a Software as a Service (SaaS) AVL solution to provide real-time tracking, data management, and monitoring of the North Dakota Department of Transportation's (NDDOT) snowplow fleet. The project will automate business processes and deliver core requirements to serve as the sustainable foundation for snowplow fleet management. The project is estimated to complete by June 04, 2026.

The AVL system will benefit NDDOT by monitoring snowplow operations and status. An AVL system will collect data from several sources, including the spreader controllers, manual data entries, and other onboard equipment on the snowplows. The data will allow NDDOT to analyze and improve operations. The project will improve citizen experience by leading to more seamless boundaries and a safer driving experience across the state.

NDDOT has contracted with Samsara to provide the AVL solution.

BUSINESS NEEDS AND PROBLEMS

1. Snowplow operators making uninformed application rate decisions causes inefficient use of materials and possibly too high or too low application rates
2. Snowplow operators are not able to receive current and accurate weather forecasts and Maintenance Decision Support System (MDSS) maintenance recommendations while in the snowplow
3. MDSS is not as accurate as it could be, as not all snowplows have AVL systems sending in local information
4. NDDOT does not have knowledge of specific snowplow location and time at that location to address public complaints and emergency response
5. It is less efficient for NDDOT to make decisions about snow and ice control operations without view of the road conditions and knowledge of the individual snowplow functions
6. Fleet maintenance records are a manual process causing delays in maintenance scheduling

PROJECT BASELINES

Project Start Date	Baseline End Date	Baseline Budget	Funding Source
9/27/2023	6/4/2026	$1,916,361.07	General Funds (Appropriated)

OBJECTIVES

	Business Objective	Measurement Description
1	1. Seamless boundaries across the state 2. Automate the manual process of snow and ice control operations.	1. AVL data will show which roads have been plowed and when a. NDDOT will analyze reports from various districts during the same winter storm b. Measurement will be performed during the winter season following installation 2. AVL data will show material type, usage, and application rate is consistent across district and section boundaries a. NDDOT will analyze reports from various districts during the same winter storm b. Measurement will be performed during the winter season following installation
2	1. Snowplow operators are able to make more informed decisions on snow and ice control operations.	1. Snowplow operators are able to determine start and end times for a storm based on current road weather forecasts while in the snowplow a. NDDOT will obtain initial feedback from snowplow operators as to if they use the forecasting information from MDSS via their AVL systems during the winter season following installation. b. After the initial measurement, NDDOT will determine appropriate follow up intervals for feedback. 2. Snowplow operators are able to determine material type and application rate using MDSS maintenance recommendations while in the snowplow. a. NDDOT will obtain initial feedback from snowplow operators as to if they use the recommendations from MDSS via their AVL systems during the winter season following installation. After the initial measurement, NDDOT will determine appropriate follow up intervals for feedback.
3	1. Improved accuracy of the MDSS weather forecasts and maintenance recommendations.	1. Increased density of mobile environmental sensor stations. 2. Increased MDSS route to cover the entire state highway network.
4	1. NDDOT will have the ability to view snowplow locations at a certain time.	1. NDDOT staff will have access to web-based software or the client version at the time of deployment that shows locations of the snowplows with AVL systems installed throughout the state.
5	1. District managers are able to remotely guide and direct snowplow operators towards efficiency and consistency. 2. District managers will have support in making decisions to issue travel advisories and warnings.	1. A selected district manager will view MDSS recommendations via the software and verify with the AVL information from the snowplow that the recommendation was followed, during the winter season following the installation. 2. At the time of deployment, a selected district manager is able to view photographs of road conditions captured from the windshield of the snowplow.

	Business Objective	Measurement Description
6	1. Automated CANbus data collections on snowplow maintenance.	1. A selected district shop will run a vehicle maintenance report at the time of deployment.

KEY CONSTRAINTS AND/OR RISKS

- Deliverables 1, 2,3,4,5 must be completed and approved before deliverable 6 (hardware purchase invoice) can be submitted.
- Cost, schedule, scope, and quality are often in conflict during projects. The sponsor elected to prioritize these constraints as:
    - Quality
    - Schedule
    - Scope
    - Cost