

2025

Traffic Safety Innovation

Demonstration Project: Connected Mobility Platform

Innovator: Innovative Traffic Solutions (ITS) In Partnership with NoTraffic U.S. Inc.

Product: Mobility OS

Demonstration Period: May 1 – July 31, 2025



Executive Summary

The City of Vaughan is testing leading-edge technology to evaluate how innovative solutions can address real-world mobility and transportation challenges.

Through the Ontario Vehicle Innovation Network (OVIN) Demonstration Zone, Innovative Traffic Solutions (*operating as ITS*), in partnership with NoTraffic U.S. Inc. tested AI-driven traffic analysis technology and NoTraffic's Mobility OS backend software to demonstrate how this type of technology could potentially support data-driven decisions to improve road safety and mobility for traffic engineering.

The OVIN Demonstration Zone is an initiative that is part of Vaughan's Transportation Innovation Program (TIP), which aims to test smart mobility solutions in real-world environments. This demonstration was completed in partnership with **Vaughan's Transportation and Fleet Management Services (Traffic Engineering)** team.

The Innovator

Innovative Traffic Solutions Inc. (ITS) is a leading supplier and integrator of intelligent transportation solutions across Canada.

Since 1999, Innovative Traffic Solutions has been at the forefront of the industry, delivering high-quality products and services to municipalities and contractors nationwide. With a commitment to excellence, Innovative Traffic Solutions leverages deep expertise, innovative thinking, and extensive industry experience to offer comprehensive traffic and safety solutions. They take pride in our reputation for reliability, competitive pricing, and exceptional customer support.

Demonstration Overview

Innovative Traffic Solutions Inc. (*operating as ITS*), in partnership with NoTraffic U.S. Inc., participated in the City of Vaughan's OVIN Demonstration Zone to evaluate the effectiveness of AI-powered traffic detection and analytics technology. The demonstration focused on assessing how Mobility OS (an intelligent transportation system) and its sensor suite could potentially support data-driven decision-making for traffic safety and operations on urban roads for municipalities.

The demonstration was conducted at the intersection of Millway Avenue and Apple Mill Road in the Vaughan Metropolitan Centre (VMC). Four sensor units and one control unit were temporarily installed – one on each approach – to capture multimodal traffic data, including vehicles, cyclists, pedestrians, and transit users. The AI-powered system collected real-time data on turning movements, potential red-light running, and road user classification, which was processed through the Mobility OS backend to generate actionable insights.

The demonstration also captured detailed metrics such as Level of Service (LOS) grades, average and maximum delay times, and potential red-light running events, which provided valuable insights into intersection performance, traffic safety behaviours and signal timing and coordination.

The goal of the project was to determine how this technology could enhance the City's ability to monitor intersection performance, evaluate traffic calming measures, and improve road safety outcomes.

Key Outcomes

The sensors successfully detected and recorded counts of turning movement, potential red light running, as well as types of vehicles and road users at the intersection. The Mobility OS backend system provided detailed reports of the traffic analytics, showed live video feed footage of the intersection, and provided real-time alerts that could be used to inform traffic management strategies.

Key outcomes include:

- Mobility OS monitored traffic activity over a three-month period, capturing data on traffic counts, signal performance, intersection approaches, potential red-light violations, and traffic movements. Daily road users included passenger vehicles, heavy trucks, buses, motorcycles, and pedestrians.
- Analysis showed opportunities to improve signal performance, with over 60% of vehicles arriving on red lights on certain days and 342 potential red-light violations were reported.
- The system successfully identified and classified road users, including turning movements and potential red-light violations – providing accurate data analytics.
- The Mobility OS platform generated detailed reports and insights that could support traffic engineering analysis and future planning.
- Data analytics on the dashboard included: vehicle, pedestrian, and bicycle counts, and additionally analyzes the timing of the traffic signal on their arrival to the intersection.
- The system showcased its readiness to integrate into existing infrastructure and operated reliably throughout the demonstration period.
- The Project Advisory Team provided insights to ITS on existing best practices, operations, and required standards for product improvement
- The demonstration provided the City with insights on how auto AI-powered traffic analytics could be potentially incorporated into operations, and allowed for an understanding of how it affects our best practices

Exclusions

Demonstration projects through the OVIN Demonstration Zone are temporary and limited in scope and duration due to the time constraints of the OVIN Demonstration Zone program. The project evaluated key features of the solution, as determined by the Project Advisory Team.

- **Feature Scope:** Advanced capabilities such as speed tracking, near-miss detection, and signal actuation were not enabled during the demonstration, and therefore not included in the scope of the evaluation.
- **Duration:** The short demonstration was conducted over a limited time, therefore the Project Advisory Committee did not have the opportunity to evaluate long-term performance and seasonal variability.

The demonstration project was constructed as a preliminary evaluation of the effectiveness of this type of technology. Not all features of the Mobility OS platform were enabled, and therefore the whole platform was not evaluated.

Conclusions and Recommendations

The demonstration validated the potential of Mobility OS's AI-based platform to enhance intersection safety and efficiency through real-time analytics.

A longer-term, multi-season deployment is recommended to evaluate sensor reliability in inclement weather and assess maintenance needs.

Innovative Traffic Solutions and NoTraffic were adaptive collaborators in the demonstration project, and provided the Project Advisory Team with exhaustive overviews of the back-end dashboard software to demonstrate its effectiveness. The City found the backend software system easy to use, and the system showcased how it could support traffic engineering decisions and future planning.

A longer-term evaluation is recommended for a more comprehensive assessment of the potential enhancements that advanced features could contribute to the City's broader traffic management systems, and understanding the effectiveness of the technology during inclement weather.

Demonstration Zone Project Profiles: www.vaughanbusiness.ca/demozone/projects