Ottawa
Automated Shuttle Trial
Area X.O operated by Invest Ottawa
Key Partners

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Public and Private Testing Facilities
Ottawa LSAS Testing and Trials

https://www.youtube.com/watch?v=Y0ehHwgpiNU
LSAS Testing and Trials
EasyMile Shuttle

EasyMile
- EasyMile manufactures the Gen 2 EZ10 and will be responsible for:
  - Insurance, compliance, and regulatory filings
  - Safety assessment of the route and safety management plan for testing
  - Making go-/no-go decisions and providing associated rationale at key points during staged testing
  - Working with first responders to ensure they are equipped with relevant information to respond to a collision or other incident safely
  - Supporting track and on-road pilot testing with engineers on site for the duration of testing
  - Operating and maintaining the LSAS throughout the project with a shuttle operator and shuttle ambassador on-board at all times during on-road pilot testing

Key Features of Gen 2 EasyMile EZ10
- 15 Seat Electric Automated Shuttle (x 2)

- 40 km/h top speed, but on-road pilot test speeds will be 15km/h

- Capable of SAE Level 5 automation, but can also be driven manually with controller

- Shuttle builds on technology from the Gen 1 EZ10, the first iteration of this current shuttle

EasyMile EZ10 Specifications
- Length: 4050mm, Width: 1892mm, Height: 2871mm
- SAE Level 5 Automation
- Occupants: 15
- Accessibility: Wheelchair ramp equipped
- Battery: 30.72kWh
- Range: 16 hours
- Uses advanced LIDAR tech
The project was executed in four phases;

Phase 1: Project preparation including permits, approvals, insurance and stakeholder workshop

Phase 2: Technical Orientation to Automated Shuttle Operation

Phase 3: Closed-track testing at AreaX.O to evaluate safe interactions with other road users

Phase 4: On-road trial without passengers, then with passengers (Proposed Location: Tunney’s Pasture)
Phase 1:
Project preparation
Planning

Task 1: Detailed route analysis and draft track and on-road test plans including draft safety management plan and safety assessment of the test vehicle

Task 2: Delivery of LSAS and on-road pilot approvals and documentation (Schedule 7, Ontario license, Ontario AV Program registration, insurance)

Task 3: Stakeholder workshop to present test plan, safety management plan, and safety assessment
August 2019: Ottawa Autonomous Shuttle Trial

Stop 1: Brookstreet Hotel

Stop 2: The Marshes Golf Club

Grade ~ 8 – 10%
Route Selection

- 1500m loop around Tunney’s Pasture, a federal government campus on crown land (shown in yellow).
- Four planned stops with access to LRT station and key buildings in the area.
- Travelling at 15km/h, each stop taking approximately 20 seconds, the LSAS will make 9 loops per hour.
- The site has optimal qualities for LSAS testing:
  - Low motor vehicle speed limits.
  - Connection to public transit and several highly frequented destinations.
  - Possibilities for a variety of low speed interactions with other road users, and proximity to secure overnight storage with electric charging.
Task 2: Delivery of LSAS and on-road pilot approvals and documentation
(Schedule 7, Ontario license, Ontario AV Program registration, insurance)
Task 3: Stakeholder workshop to present test plan, safety management plan, and safety assessment

- Safety Assessment Report
- Closed Test Track Test Plan
- Stakeholder Feedback – Go/No Go
Phase 2:
Technical Orientation to Automated Shuttle Operation
Technical Orientation and Workshops

Task 1: Technical Hands-on Workshop
- Key stakeholders and Emergency Responders

Task 2: Finalize AreaX.O Test Plan
Phase 3: Closed-track Testing at Area X.O
Task 1: Setup site and equipment for LSAS testing at Ottawa L5

Task 2: Track testing (ISO 22737/Euro NCAP and additional test scenarios specific to Tunney’s Pasture route) to evaluate:
- safe interactions with vulnerable road users
- navigation capabilities in terms of lateral deviations from the mapped path
- loss of battery power and minimal risk maneuvers
- reaction to a non-responsive shuttle operator during driver take-over transition

Task 3: Report on shuttle track test performance

Task 4: Project leadership meeting to present results and go/no-go decision with rationale from EasyMile

Task 5: Final on-road pilot test plan and safety management plan
Key Assets Used for Testing and Trial
Phase 4: On-Road Public Trial
On-Road Trial
Tunney’s Pasture (Nov 2 – 13)

Task 1: Execute the on-road pilot testing (no passengers), including meetings to discuss go-/no-go decisions as per the test plan, and weekly data summary reports.

Tasks 2 and 3: Draft and final reports of on-road testing, including results and analysis and incorporating stakeholder feedback in the final report.

Task 4: Wrap-up including decommissioning the EasyMileEZ10 shuttles and organizing a project meeting close-out with key stakeholders.
COVID Implications

• COVID-19 mitigation strategy that adheres to Ottawa Public Health recommendations
  • Physical distancing
  • PPE
  • Disinfecting between trips
  • Reservation software
  • Contact tracing

• Metro and “bubble ride” shuttle

• RideShark – OttawaRideMatch.com allowed us to pre-scheduled trips, manage time between rides and enabled contact tracing
Lessons Learned
For More Information

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Other Links

If you are considering a LSAS trial Transport Canada has a number of reports to inform the development of their testing and deployment policies and regulations.

- [Canadian Jurisdictional Guidelines for the Safe Testing and Deployment of Highly Automated Vehicles](#)
- [Testing Highly Automated Vehicles in Canada](#)