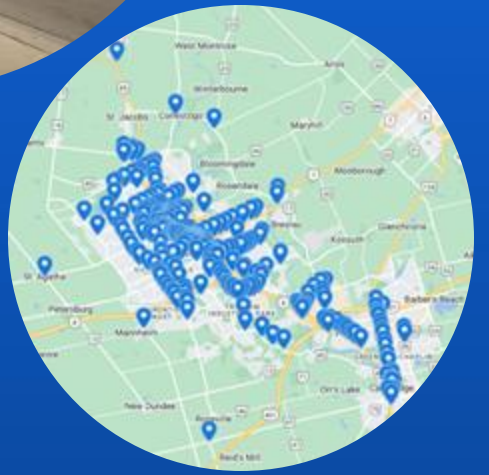
MIOVISION

Advancing Sustainable Traffic Solutions with Miovision

Presented by: Kyle Othmer and Egerton Heath.

Region of Waterloo



OVIN | OSMRF

Agenda

1. Introduction
2. Developement and readiness
3. Feasibility Study and Funding Approval
4. A Model for Future Expansion
5. Contact Infromation and Conclusion

Introduction

An Overview of Miovision and Our Partnership with the **Region of Waterloo**

Who is Miovision

Miovision, a local Transportation Technology Company in the Waterloo Region secured the Region of Waterloo's Advanced Transportation Management System (ATMS) Contract on June 1st, 2021. Known globally as a leader in traffic data, Miovision's platform assists the Region of Waterloo's Transportation Staff in monitoring, managing, and optimizing vehicle, pedestrian, and bicycle signalized networks, aiding cities in planning and managing mobility.

Miovision Global Deployment Network

- **7,800+** Detection and count locations
- **350+** Adaptive Control Locations
- **2000 +** Performance Management Locations
- **11000+** portable Data Collection Scouts
- **95000+** Pre-emption locations
- **500,000** Pedestrian Vehicle Conflicts Captured
- **1.2 Million** Left turn Conflict Events Captured

30+ Billion
vehicles count

23+ millions
Hours analyzed

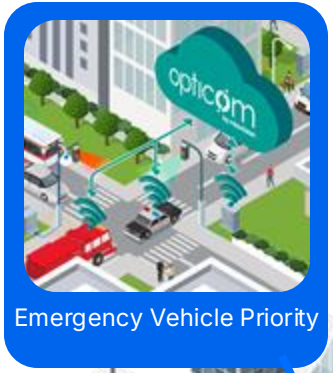
1.5+ billion
Pedestrians counted

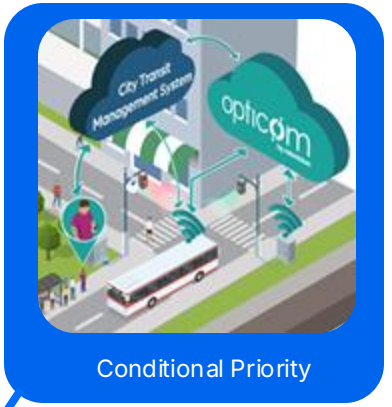
68 Countries
Utilizing Miovision solutions

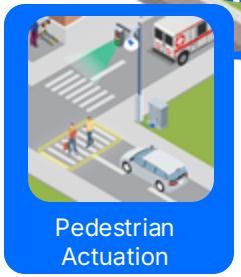
Region of Waterloo Partnership

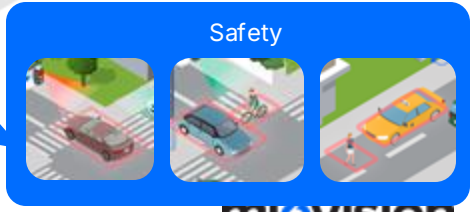
- → Miovision Employs 175 people from the Region of Waterloo
- → Sustainable Waterloo Region (SWR) Approved Member
- → UofW Innovative Partnership
- → Miovision Customer since 2014

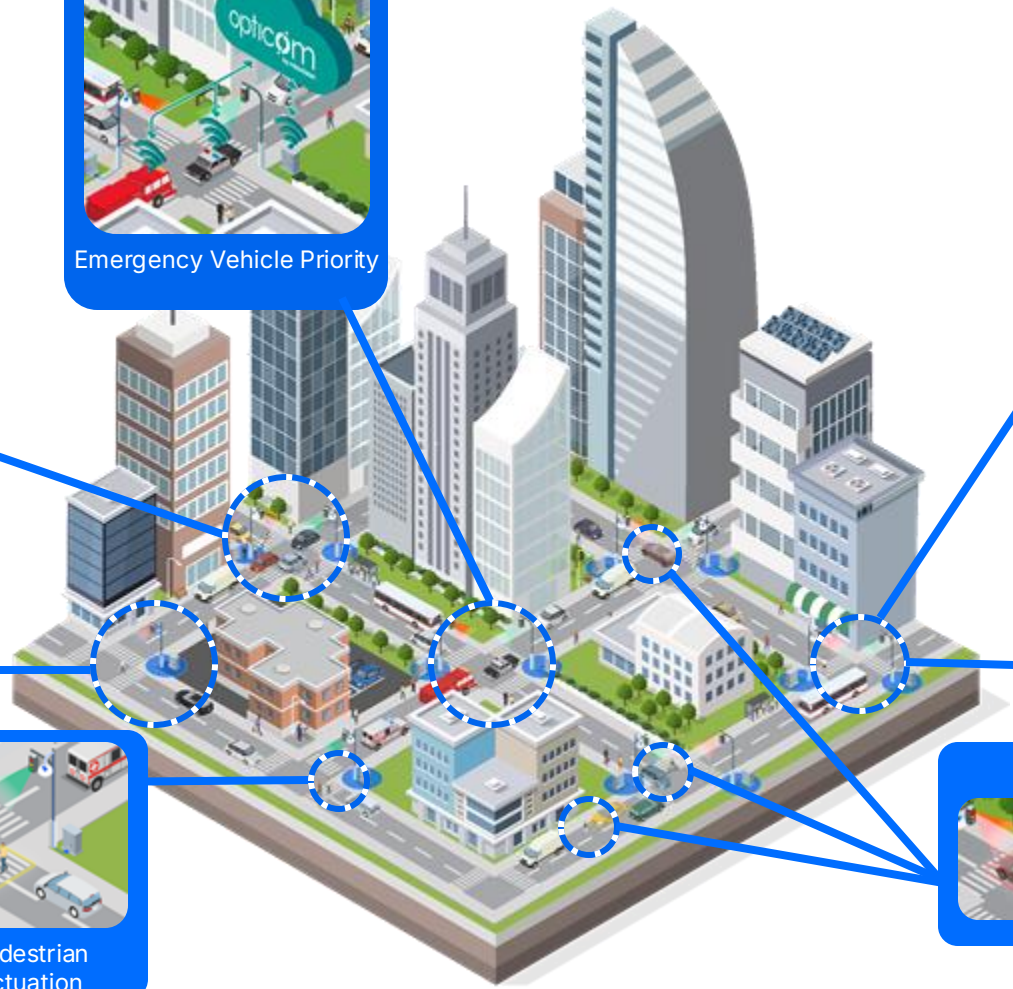
Miovision Urban Mobility Platform ATMS











miovision

Partnership with the Region of Waterloo (55%) Network.

Benefits 2022 - 2023

- 30% Saving in Resolution Time
  Traffic Maintenance - as a result —-->
- 30% More Time For Citizen Complaints and Corridor Improvements Traffic Management

Region of Waterloo Insights 2023

35.9 Million Pedestrians

3.9 Million Bikes in Network in 2023

72,500 tons of CO_2 Emissions produced by delay and congestion in the network per year

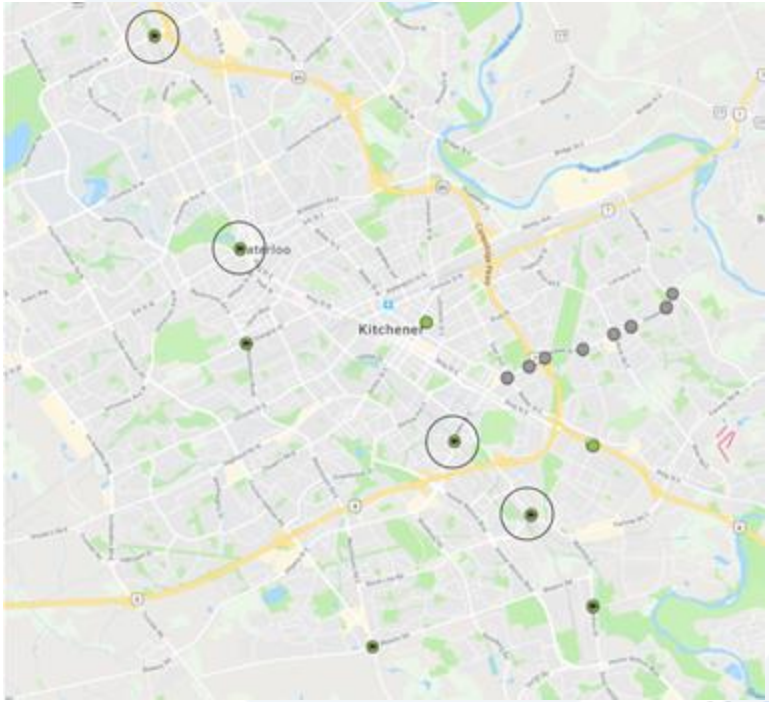
60 Hours of Vehicle Delay experienced by Average Road User

Development and Readiness

Development and Readiness

Piloting Miovision at 4 Key LRT Intersections: 2019

- Aim was to understand impacts of **LRT** operations on vehicle traffic, pedestrians, delay, operations vehicle interactions etc
- **Locations:**
  - Blockline and Courtland
  - **Mill and Ottawa**
  - Erb and Caroline
  - **Northfield and Waterloo Spur**



Our Journey with The Region of Waterloo

Improving the safety and efficiency of traffic networks using advanced analytics and AI.

Ottawa and Mill Street

Problem: Potentially dangerous interactions of the Right turning vehicles with the train

Data Driven Solution: Adding a NB pre-empt (PRE 6) and having the LRVs only proceed when the blankout signs are activated.

Results: Considerable reduction in these occurrences (70%)

Our Journey with The Region of Waterloo

Improving the safety and efficiency of traffic networks using advanced analytics and AI.

Northfield Dr. W and Waterloo Spur

Problem: Non-compliant pedestrians along the main crosswalk causing dangerous interactions.

Data Driven Solution : Data showed 50% of the pedestrian non-compliance occur during a preemption phase causing short unnecessary red durations. RoW used video and data to understand why!

Results: The faulty signal from the preemption was fixed eliminating the unsafe situation.

miovision

Feasibility Study and Funding Approval

Feasibility Study and Funding Approval

Focusing on Green House Gas Recutions through (FCM)

- Due to budget constraints, the Region developed a feasibility study focused on reducing the carbon footprint and greenhouse gas emissions.
- The study demonstrated the potential benefits of Miovision’s solutions in achieving sustainability goals.
- Federation of Canadian Municipalities (FCM) approved the loan/grant, recognizing the project’s alignment with national sustainability objectives.

Feasibility Study and Funding Approval

Funding Appraoch ATMS Functional Specification Build Out.

- Scaling from successful PIlots to Phase One Deployment (274 intersections)
- Suppotring from Engineering Consultant CIMA +
- Holding Miovision accountable for completion, meeting cadence, support, building the partnership and team through iteration and consistency.

A Model for Future Expansion Phase Two.

Improve decision-making in Planning and Development with continuous monitoring of pedestrian, bicycle, vehicle, and truck patterns.

Mobility Reports and Trends	Activities and Outcomes 55% of Network	Potential Activities and Outcomes with 100% network Coverage
 	- Intersection Movement Counts for all Modes - Intersection Multi Modal Trend Analysis - Project based Ped and Bike facility monitoring - Intersection Crosswalk Average Crossing Time Monitoring for Vulnerable Users - 35.9 Million Pedestrians Counted in 2023 - 3.9 Million Bikes counted in 2023	- Cost Savings with Signalized Count Program in house (no need for data collection staff time) - Network based Continuous Trend Analysis on Ped and Bike Initiatives that promote healthy community - Monitoring of All Movements of Goods - Pedestrian and Bike data around all LRT Facilities further developing roads for all.

Optimize mobility and enhance safety through an integrated signal performance monitoring application

Signal **Performance** and Optimization	**Activities and Outcomes 55% of Network**	**Potential Activities and Outcomes with 100% network Coverage**
	- Increase in Corridor and Intersection Optimizations through Data Driven Decisions - Reduced Response Time and Improved Outcomes from Citizen Complaints - 30% Additional Citizen Complaints and Corridors Analyzed - Operational auditability and Data validation	- Reduce Network delay and improve Travel Time in commuter routes - Monitor Signal Compliance with Red Light Running Data to prioritize further safety strategy development - Operational severity allowing for effort prioritization - 72,500 tons of CO2 Emissions produced by delay and congestion in the network per year - Focus on Pedestrian Safety and Vission Zero. Across the Network.

Minimize maintenance costs by Remotely prioritize and manage network sustainability.

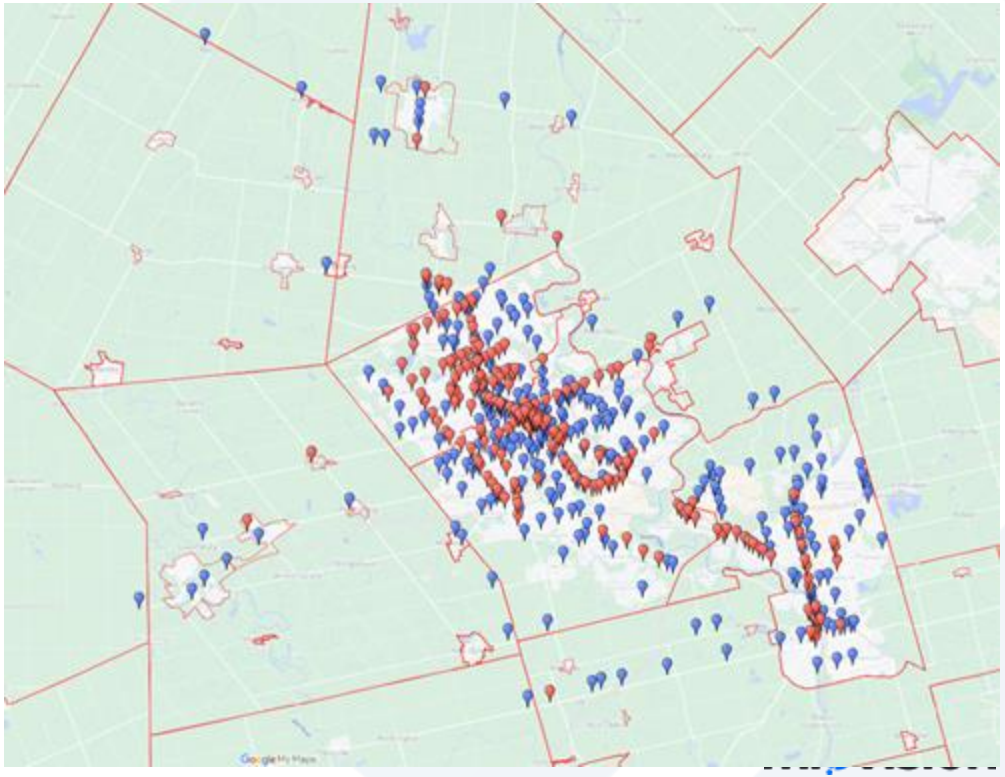
Remote Diagnostics and Intersection Monitoring	Activities and Outcomes 55% of Network	Potential Activities and Outcomes with 100% network Coverage
	- Proactive real time maintenance alerting - Reducing on site visits with Remote Diagnostics - Reduced unnecessary onsite visits by 30% at existing 274 locations	- Maintenance Trends and Reporting allow for accurate budget and forecasts - Alerting grades allow for Prioritization of onsite visits to ensure an efficient road network for all - Properly functioning Signals for all LRT locations will ensure a consistent and predictable transit network

Maximize Impact by deploying for 100% network Coverage

- Complete Network View
- Support all municipalities and townships
- Develop Vision Zero Strategies
- Develop further towards and integrated Region of Waterloo

Phase 1 - Deployed (274 Intersections)

Phase 2 - Awarded (263 Intersections)



Conclusion: A Model for Future Expansion

Results

- Completion of Phase 2 deployments, ensuring full coverage across the region's network.
- Seamless integration of emerging, cutting-edge technologies as they become available.
- Directly addressing the region’s priority needs while shaping system functionality from a user perspective.

Where we are going next: https://www.linkedin.com/company/miovision-technologies/posts/?feedView=all

Network Scanning

- Intersection safety scores visible at a network level
- Which intersections are the most unsafe?

Intersection Heatmap

- Where at the intersection are near-misses occurring most often?

Safety Insights

- Automatically identified patterns and trends that call attention to unsafe situations

Countermeasure Suggestions

- A tool to help identify which countermeasures might be effective

Crash Detection

- Detecting collision events at the intersection