

# CASE STUDY

## TRAFFIC DATA COLLECTION FOR AN INFRASTRUCTURE REHABILITATION PROJECT IN MONTRÉAL, CANADA

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### **smartmicro Distributor Workshop**

February 2, 2021



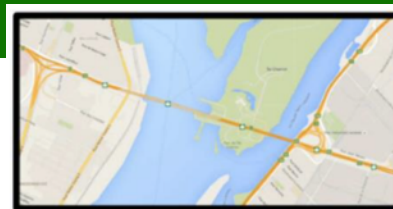
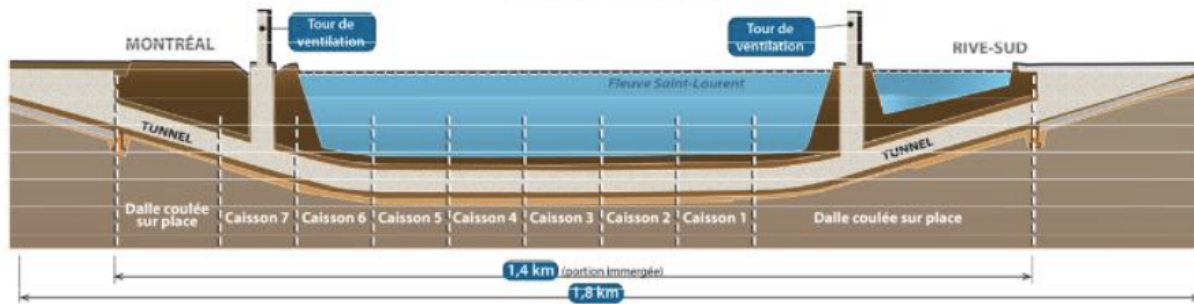
# Road Infrastructure projects and mobility issues

- Major road infrastructure rehabilitation projects are becoming more prevalent
- Impact to people and goods movement can be significant
- Traffic data collection becomes a key component when addressing mobility issues



# Overview

- Rehabilitation of the Louis-Hippolyte-La Fontaine tunnel
- Longest submerged tunnel in Canada built in 1967
- Carries 120,000 vehicles a day
- Major road link to the Island of Montreal and the port
- Project duration: 4 yrs (2021 to 2025)
- Project cost: 850 M US\$ (€726 M)



Renouveau  
La Fontaine

- Pomerleau
- Dodin QC
- Eurovia QC. (Vinci)



# Traffic Data Collection

- Multiple phases

- Phase 1 – Reference situation (temporary traffic data collection)

- Establish baseline traffic measurements
    - Sept – October 2020
    - February – March 2021 (8 weeks) – 26 sites
    - 6 mobile traffic data collection stations

- Phase 2 – Traffic Monitoring

- Measure the impact of roadworks on surrounding traffic
    - April 2021 to March 2024
    - 20 permanent traffic data collection stations



# Traffic Data Collection

## ■ Data

- volume
- speed
- travel time (Bluetooth/Wifi)
- queues (Google Maps)

## ■ Performance requirements

- per vehicle speed: 8 km/hr
- average speed per lane: 5 km/hr
- classification: 80%
- volume:
  - 95% (per direction)
  - 90% (per lane)

***Constant validation throughout the project duration***

# Mobile Data Collection Platform



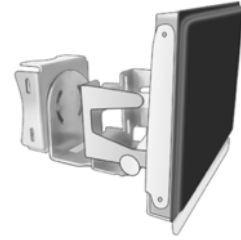
Stinson AIS BT/Wifi



Radarvision Stuttgart M64  
data aggregator



Moxa OnCell G3150A  
Cellular Gateway



smartmicro UMRR-0C  
Type 42

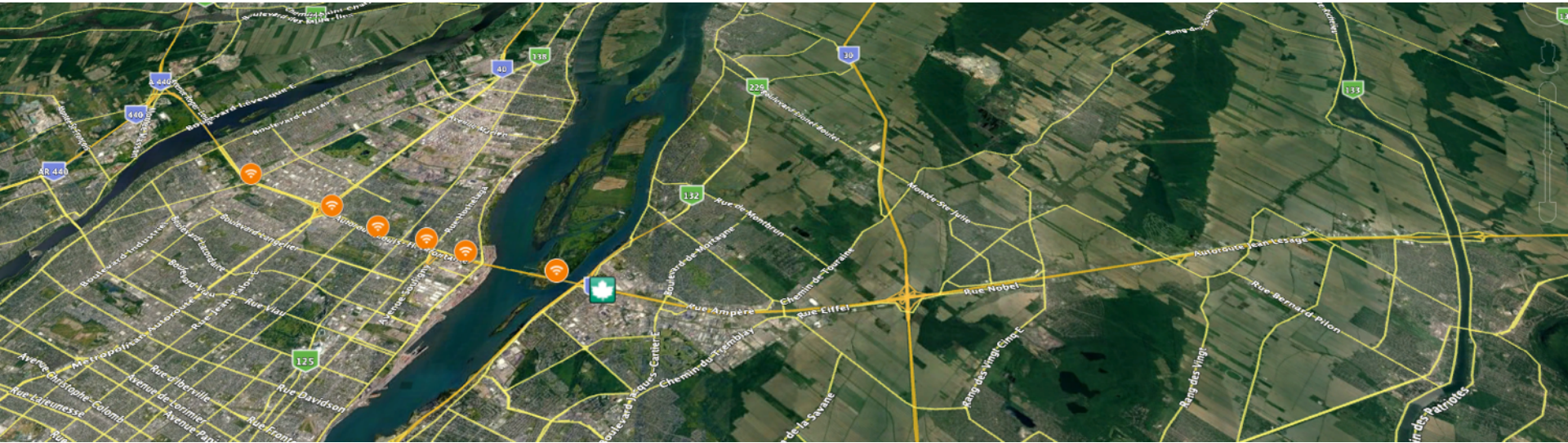


4 x 50 A-hr Relion  
LiFePo4 batteries



Morningstar MPPT  
Solar Controller

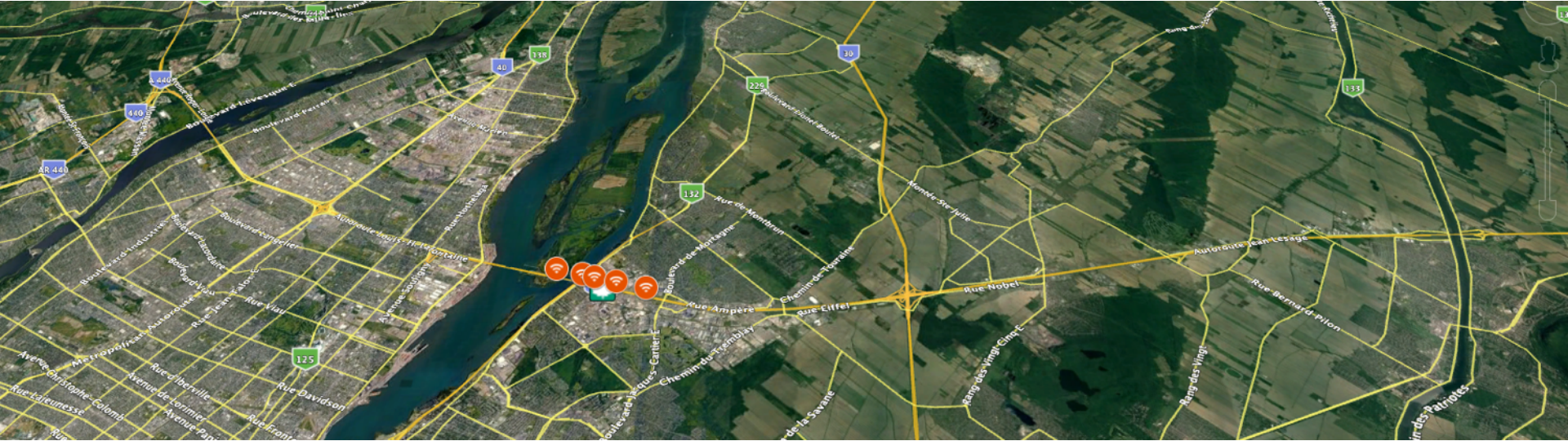
# Reference Situation



# Week 1

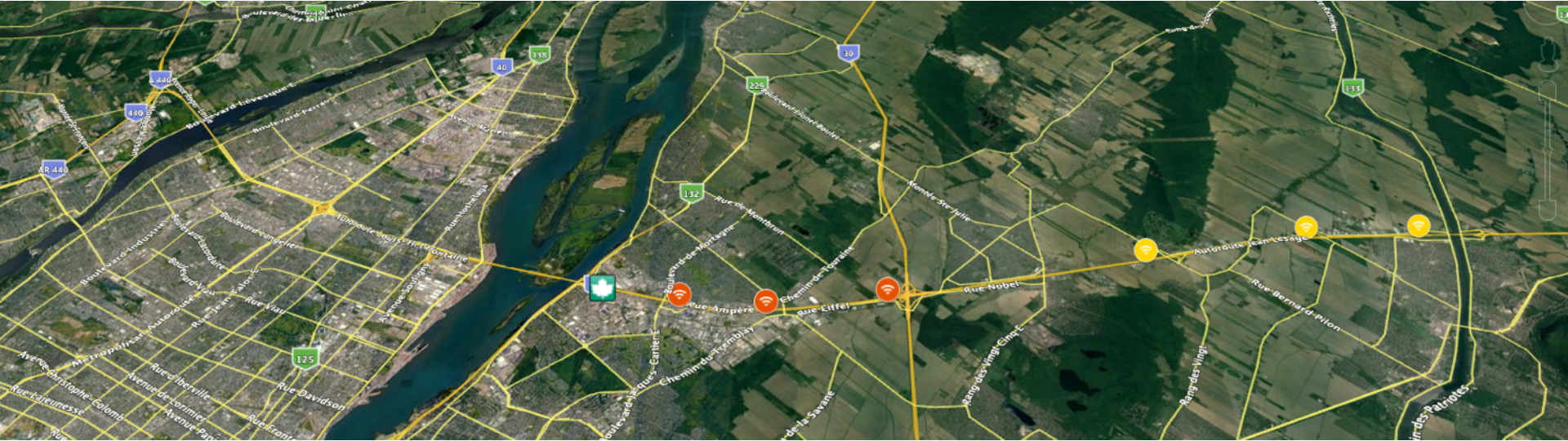


# Reference Situation



Week 2

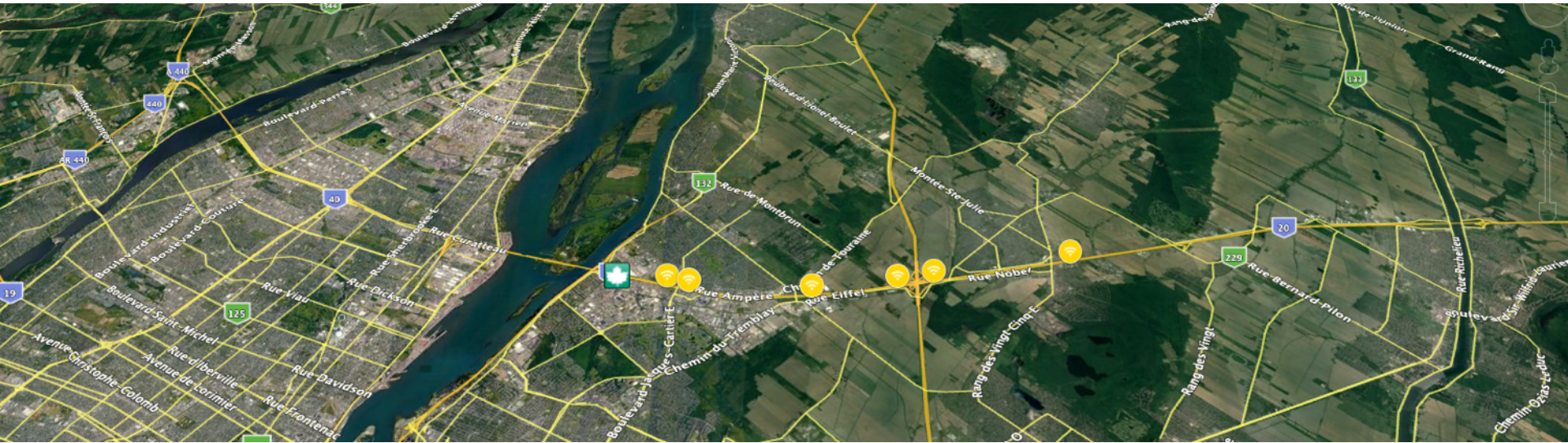
# Reference Situation



Week 3

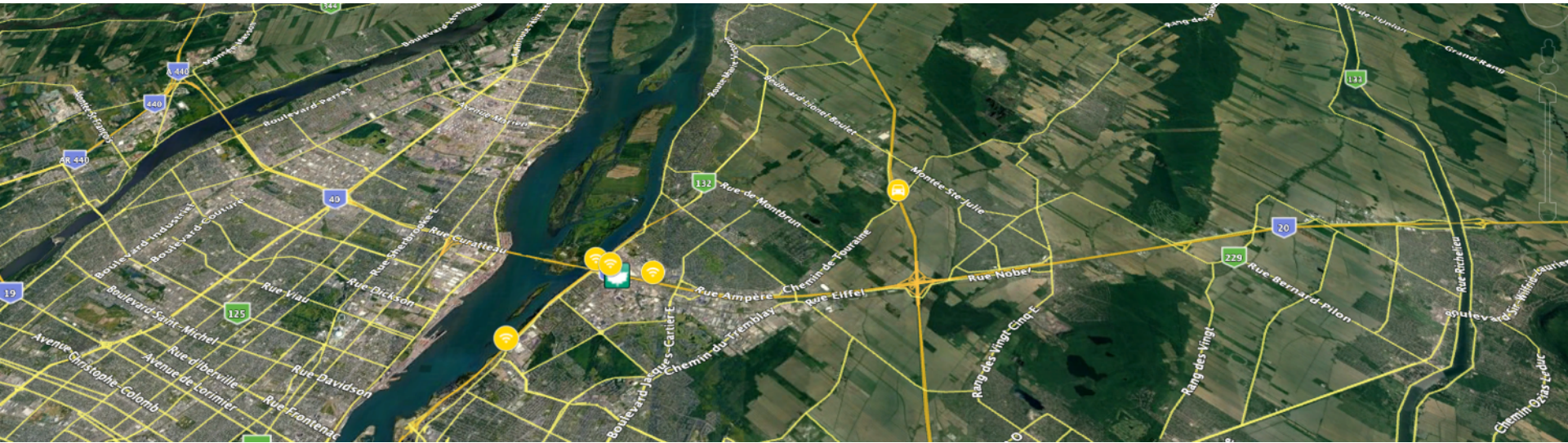


# Reference Situation



Week 4

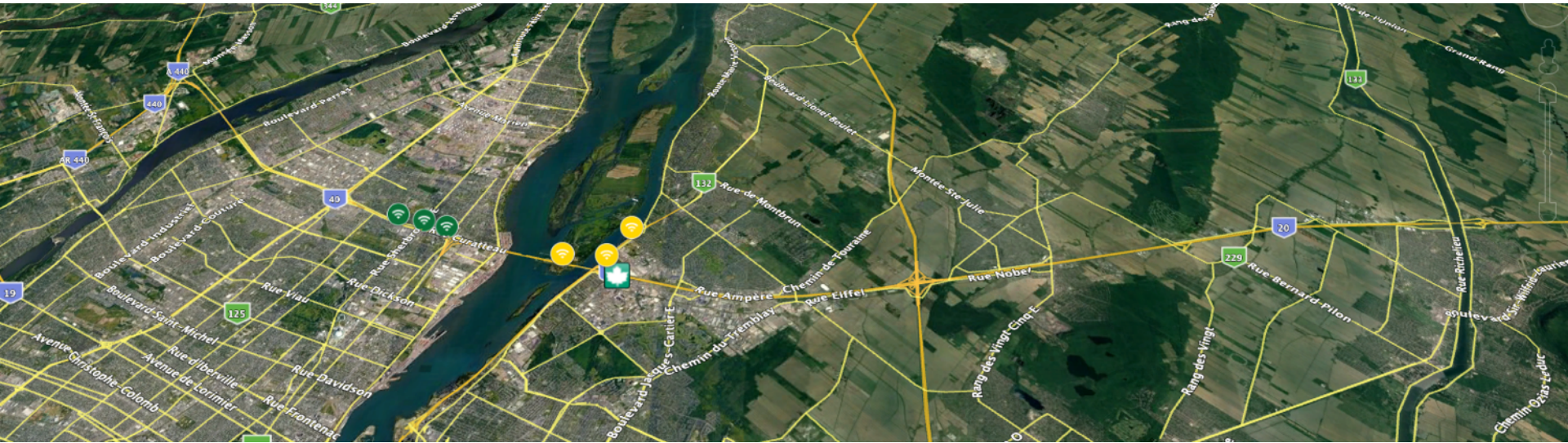
# Reference Situation



Week 5

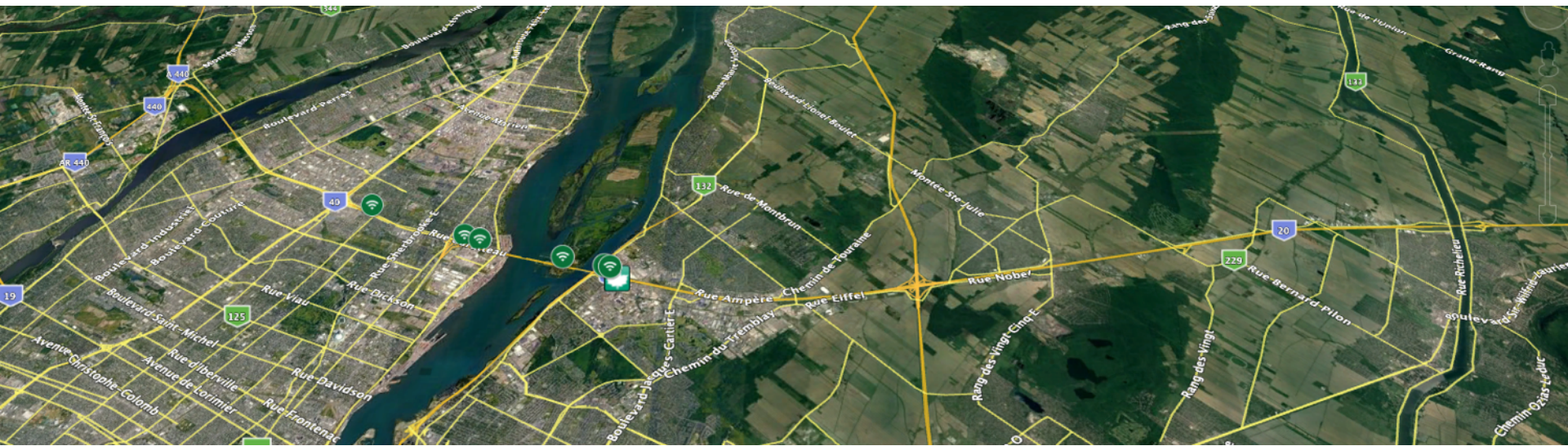


# Reference Situation



## Week 6

# Reference Situation



Week 8

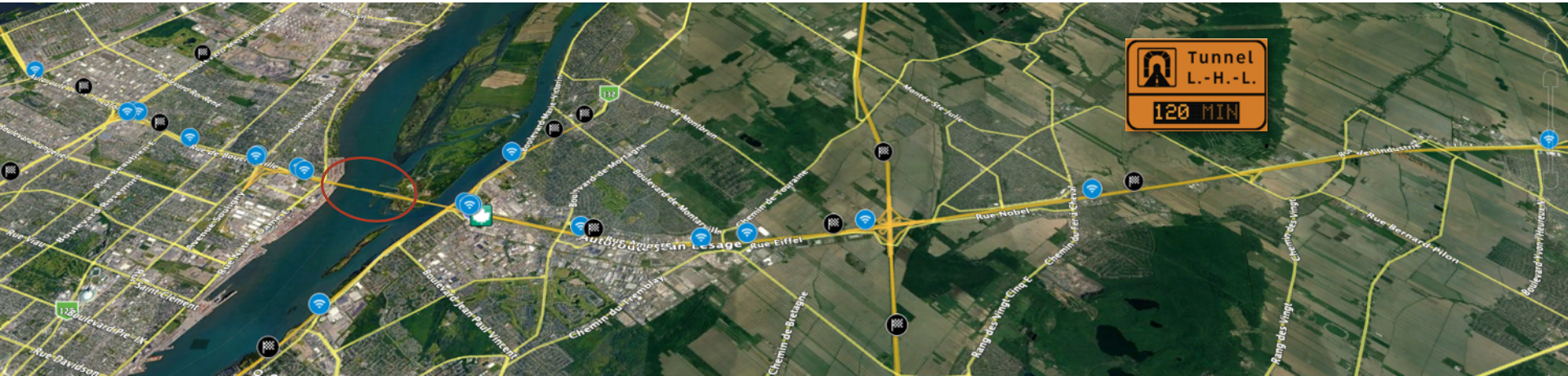


# Traffic Monitoring (3 yrs)

- 20 stations along highway corridor
- 31 km coverage end to end
- Permanent sites (lamp poles, signage gantries, etc.)
- Travel time displayed on 13 VMS provided by MI8



TRUGRD



# Data collection and information dissemination

- Project requirement
- Key component in overall solution
- Web service linking all field devices
- Serves as the portal collecting data and disseminating information to stakeholders and travellers (travel time).
- Dashboard:
  - Visualise traffic situation in real-time
  - Monitor equipment health

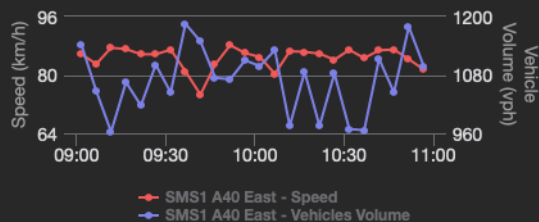


Powered by  
**TRANSNOMIS**

2020-07-29 10:58:16

mi8innovation.com

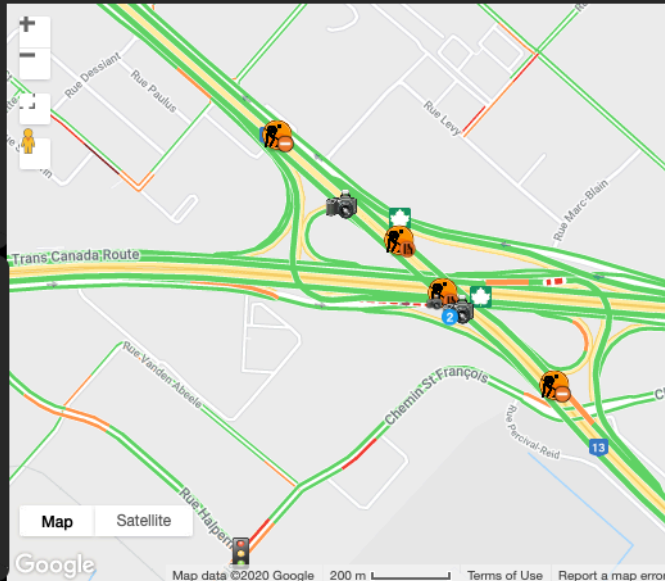
Vitesse et volume - dir Est



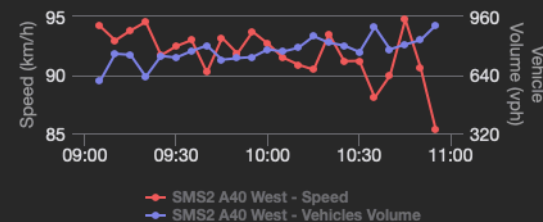
Temps de parcours - dir Est



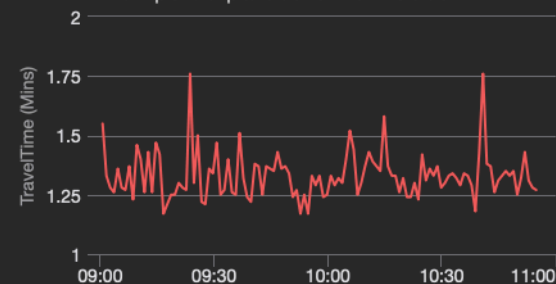
MI8 - A40 A13 Demo



Vitesse et volume - dir Ouest



Temps de parcours - dir Ouest



Demo MI-8 A40/A13 2020-07-29 10:56:15



29/07/2020 10:57



29/07/2020 10:56



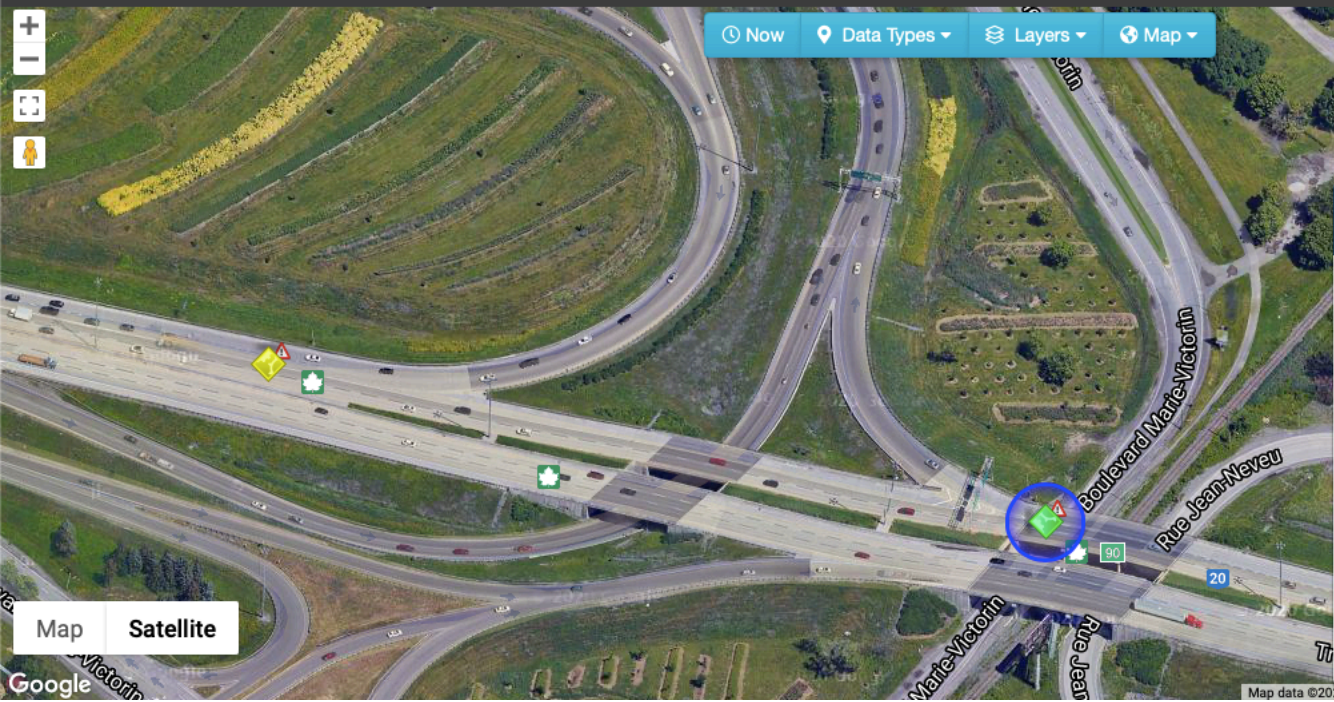
29/07/2020 10:57











Map Satellite

Google

[Now](#)
[Data Types ▾](#)
[Layers ▾](#)
[Map ▾](#)

**A200 - S90**

Autoroute Jean-Lesage Off to Route 132 and Autoroute Jean-Lesage

**Data Layer** MI8-RLF R17-R21  
**ID** A200 - S90  
**Local Traffic Direction** East  
**Updated** 2020-10-09 09:42  
**Volume** 948 Vph (1212|732|900)  
**Occupancy** 15.5833333333333 % (21.25|7.85|17.65)  
**Speed** 71.3 km/h (79.43|83.96|56.62)

[More Information](#)

Map data ©2020 Imagery ©2020, Maxar Technologies | 20 m | Terms of Use | Report a map error



## VDS Reports

**Detectors :** A200 - S92

**Date Range :** 2020-09-24 00:00:00 - 2020-09-30 23:59:59

**Time Interval :** 1 Hour

**Total Count:**142666

**85 Percentile Speed:**104.31

**Peak Hour Factor (PHF):**0.876

[Filter](#)
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**Detectors**

A200 - S92

Click to search...

**Combine Detectors Vehicle Count**



**Vehicle Count Time Interval**

1 Hour

**Time Range**

2020-09-24 00:00:00 - 2020-09-30 23:59:59

**Report Type**

Vehicle Count Graph By Speed

Speed Percentile

Vehicle Length

Vehicle Count Table

Vehicle Count Graph By Time

Click to search...

**Lanes**

All lanes

**Vehicle Count Columns To Show**

Vehicle Count

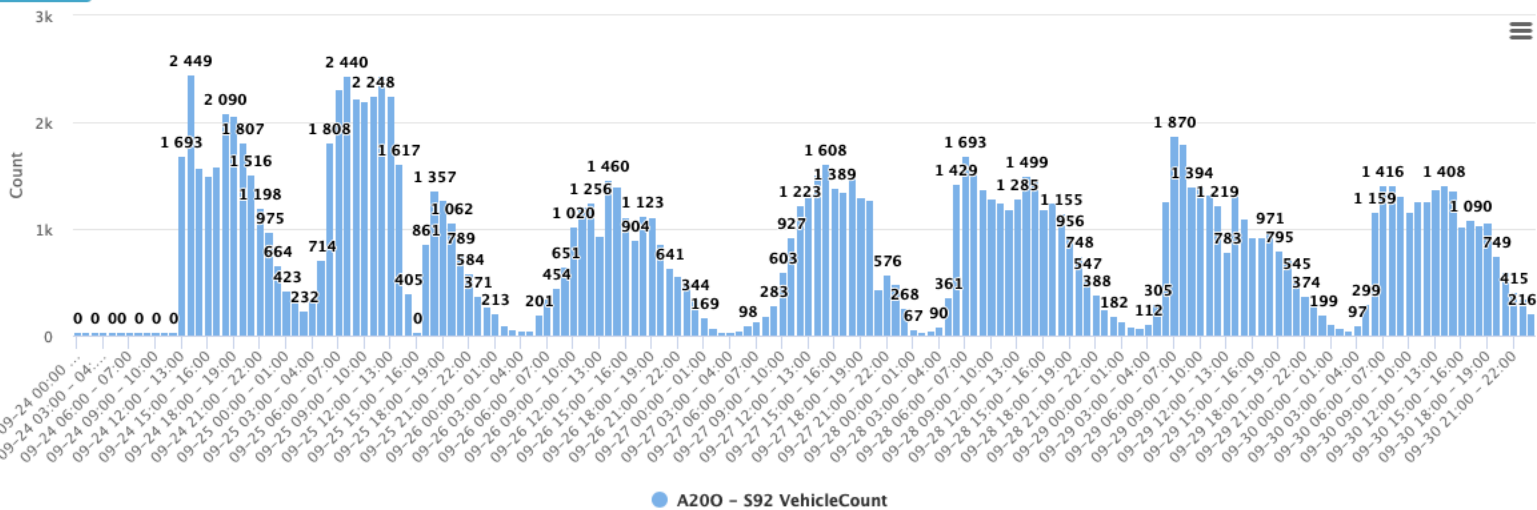
Click to search...

**Speed Bin Size**

1

# Vehicle Count

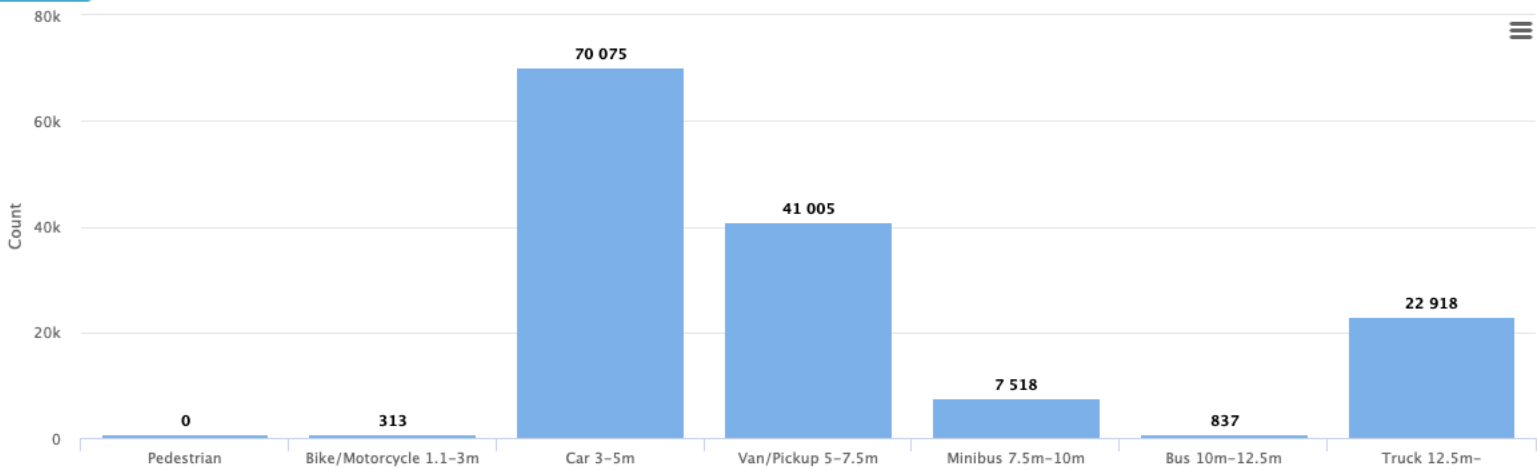
Download Graph Raw Data



Time Interval	A200 - S92 VehicleCount
09-24 00:00 - 01:00	0
09-24 01:00 - 02:00	0
09-24 02:00 - 03:00	0
09-24 03:00 - 04:00	0
09-24 04:00 - 05:00	0
09-24 05:00 - 06:00	0
09-24 06:00 - 07:00	0
09-24 07:00 - 08:00	0
09-24 08:00 - 09:00	0
09-24 09:00 - 10:00	0
09-24 10:00 - 11:00	0
09-24 11:00 - 12:00	0
09-24 12:00 - 13:00	1693
09-24 13:00 - 14:00	2449
09-24 14:00 - 15:00	1580
09-24 15:00 - 16:00	1502
09-24 16:00 - 17:00	1582
09-24 17:00 - 18:00	2090
09-24 18:00 - 19:00	2058
09-24 19:00 - 20:00	1807
09-24 20:00 - 21:00	1516

# Vehicle Classification

Download Graph Raw Data



● Vehicle Count Start at 2020-09-24 00:00

# Conclusion

- Project status
  - Slight delay for 2<sup>nd</sup> Reference Situation deployment (Pandemic)
  - Additional sites added since RFP issue
- Future considerations
  - Integration of **TRUGRD** Stream and **TRUGRD** Hybrid



# Merci!

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