OUTLINE

• York Region Quick Facts
• Project Background
• Bluetooth Applications in York Region
• Next Steps
QUICK FACTS

- Area - 1776 km$^2$
- Population
  - 2016 – 1.1 million
  - 2041 – 1.8 million
- ~4,200 lane kilometers of Regional roads
  - ~40% Urban
  - ~60% Rural
- ~890 traffic control signals
PROJECT BACKGROUND
BLUETOOTH COVERAGE

- June 2018: 270 Sensors
  - 600+ directional segments
  - 900+ km coverage

- 2019 - ~400 Sensors
  - 900+ directional segments
  - 1300+ km coverage
BLUETOOTH DEPLOYMENT

• Bluetooth sensors are installed inside the traffic cabinets
  • At all major signalized intersections
  • At selected midblock signalized intersections

• Data is encrypted in the field before transmitting to central software for processing
BLUETOOTH FIELD EQUIPMENT

CELLULAR MODEM

CAT5e PATCH CABLE

DUAL MODE ANTENNA

BLUETOOTH DONGLE

BLUETOOTH CARD RACK
TRAFFIC CONTROLLER CABINET INSTALLATION

BLUETOOTH CARD RACK

CELLULAR MODEM

DUAL MODE ANTENNA
BLUETOOTH APPLICATIONS IN YORK REGION
BLUETOOTH APPLICATIONS IN YORK REGION

- Signal Corridor Reviews
  - 16th Ave, Bayview Ave, etc.

- Traffic Impact Analysis
  - Aurora Left-Turn Restriction Pilot
  - Parallel routes for construction zone
  - Snow Plow operations

- Congestion mapping
  - Real-time and Historical

- Performance Measures
  - Region, Municipality and Corridors

- Travel Time in Work Zones
16TH AVENUE TRAFFIC SIGNAL CORRIDOR REVIEW

- Leslie Street to Warden Avenue - length 4.2 km
- Before-and-After Analysis
10/13/2016 Eastbound Travel Time Comparison
Leslie St. to Warden Ave.

- Travel runs conducted by Region staff
- Bluetooth Average
- Bluetooth Maximum
- Bluetooth Minimum
DETAILED STATISTICS FOR ANALYSIS

16<sup>th</sup> Avenue Traffic Signal Coordination Improvements (Most congested segment)

**Average Travel Time Report**

16th Ave Westbound from Woodbine Ave to 404NB offramp (7:00 AM-7:30 AM)

**Detailed Statistics**

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<th>Statistics</th>
<th>Before</th>
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AVERAGE TRAVEL TIME AND DISTRIBUTION

BEFORE
Oct 18-20, 2016
7:00-7:30am

52.2% travelling less than 2 minutes

AFTER
Nov 1-3, 2016
7:00 -7:30am

87% travelling less than 2 minutes
PARALLEL ROUTE TRAVEL TIME COMPARISONS

Bathurst Street vs. Bayview Avenue

Compare
• Travel times
• Travel time reliability
• Seasonal variance
TRAVEL TIME COMPARISON: AM PEAK

Bayview Avenue was generally faster, especially in the SB direction during AM peak.
REAL-TIME DELAY DASHBOARDS
Traffic signals in four-way red-red flash mode.
HISTORICAL CONGESTION MAP
TRAVEL TIMES AND SNOW PLOW OPERATIONS

Highway 7 – from Bayview Avenue to Leslie Street

Monday December 4, 2017 5-6PM
Weather Conditions: Clear/No Snow
Snow Accumulation on Ground: NONE
Plow Status: N/A
Average Speed During Hour: 23.7 KPH

Monday December 11, 2017 5-6PM
Weather Conditions: Snow
Snow Accumulation on Ground: HIGH
Plow Status: N/A
Average Speed During Hour: 13.3 KPH

Tuesday December 12, 2017 5-6PM
Weather Conditions: Clear/No Snow
Snow Accumulation on Ground: LOW
Plow Status: Clear
Average Speed During Hour: 25.7 KPH

Salt applied after snow has been cleared

Typical PM peak traffic

Traffic flow returns to typical PM peak travel speeds

Heavy snow event Traffic moving slowly
NEXT STEPS
NEXT STEPS

• Further data integration
• Open Data
• Snow plow operations
• Transit
• Travel Time Dissemination
• Performance Measures
• MTO Travel Time Studies
THANK YOU

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