# TRAFFIC JAM

**TORONTO**   **EVERGREEN CITYWORKS**

# Traffic Jam workshop September 15 2015
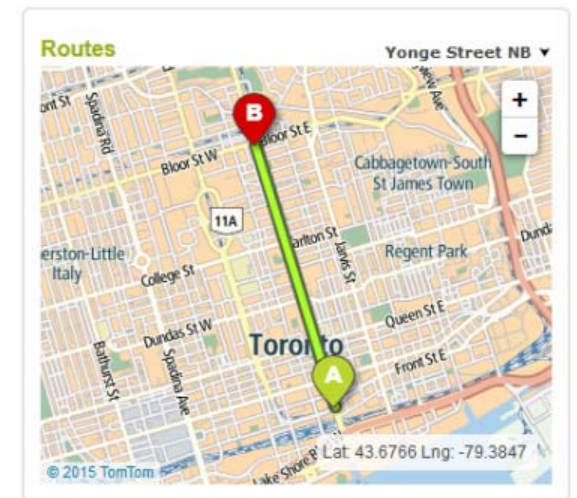
**TomTom**

# INTRO TO TOMTOM

# A HISTORY OF INNOVATION

**TOMTOM**
Founded

Fully focused on car navigation

TomTom Telematics formed

Automotive business formed

First Automotive product launched

TomTom Traffic launched in the US

Launch of Cardio GPS Sports Watches

**1991    1996    2001    2004    2005    2006    2007    2008    2009    2010    2011    2013    2014**

First navigation software launched

First PND launched

IPO on NYSE Euronext Amsterdam

TomTom Traffic formed

Acquisition of Tele Atlas

Tele Atlas MAPS

TomTom Traffic expands across Europe

Launch of new TomTom GPS Sports Watches

Launch of the Bandit Action Cam

**TOMTOM**

# TOMTOM CONNECTED NAVIGATION SYSTEM IN NUMBERS

**20 YEARS** of software development

**127** countries supported by our software

**300** globally accepted patents

**80 MILLION** users of our software

**300 BILLION** kilometers driven by our users

**10 TRILLION** speed measurements collected

TomTom

# OUR BUSINESS TODAY



## Consumer

PND global leader
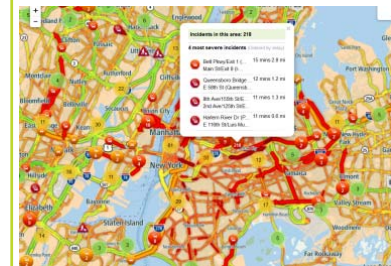Sports Watches
Action cameras
B2B off the shelf devices

## Automotive

Maps, traffic & software
components to car
manufacturers BMW,
VW…

## Telematics

Fleet management &
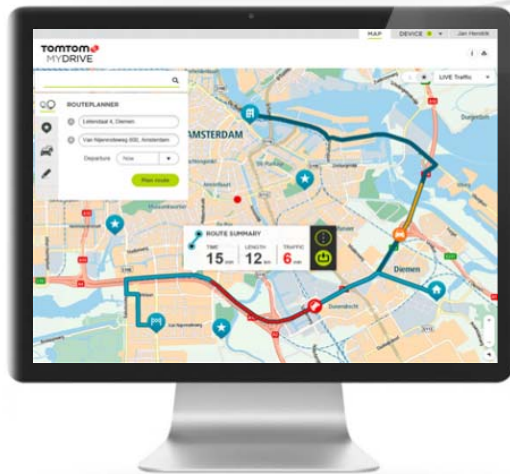vehicle telematics for
increased efficiencies

## Government&
Business

Traffic Management,
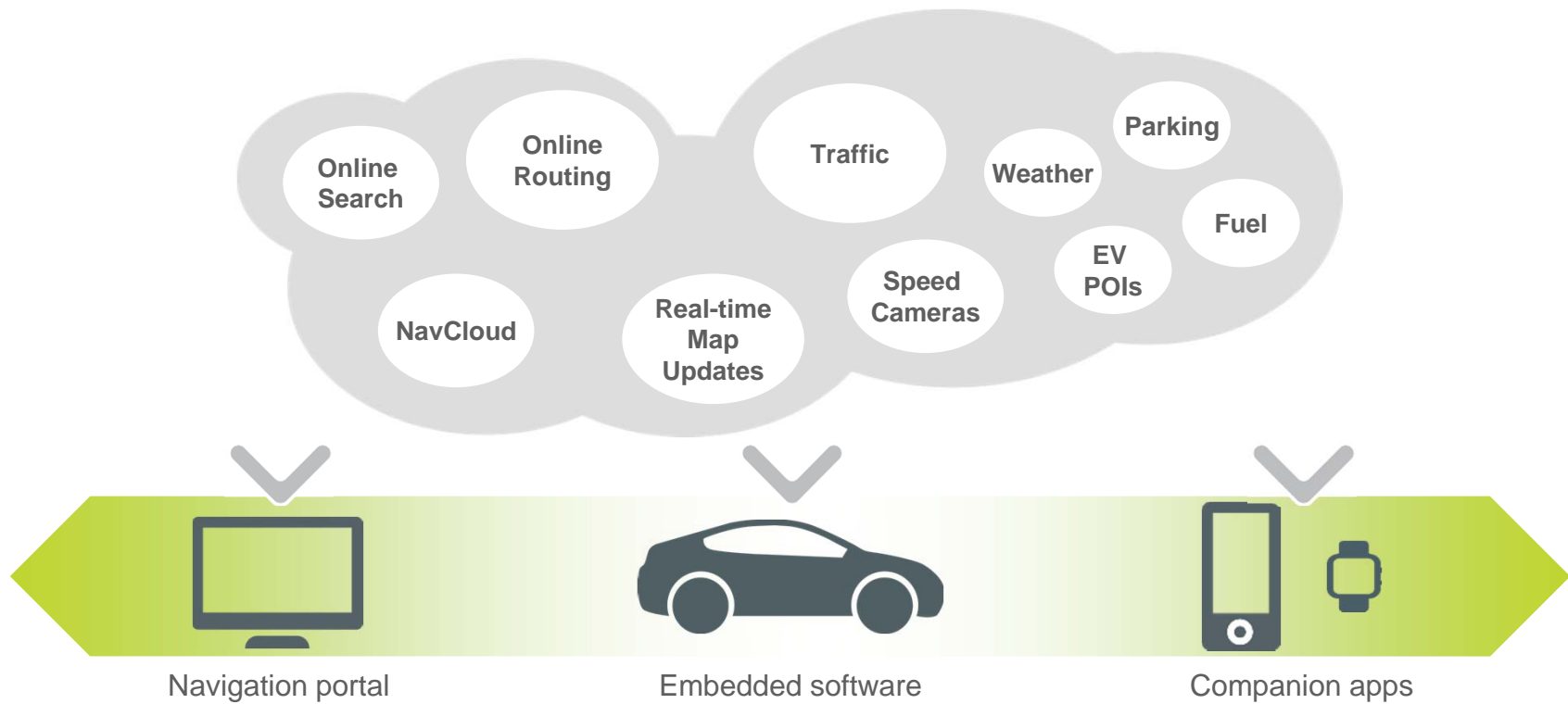Planning, Models, Policy
Development

**4,200** employees in **56** offices across **37** countries worldwide

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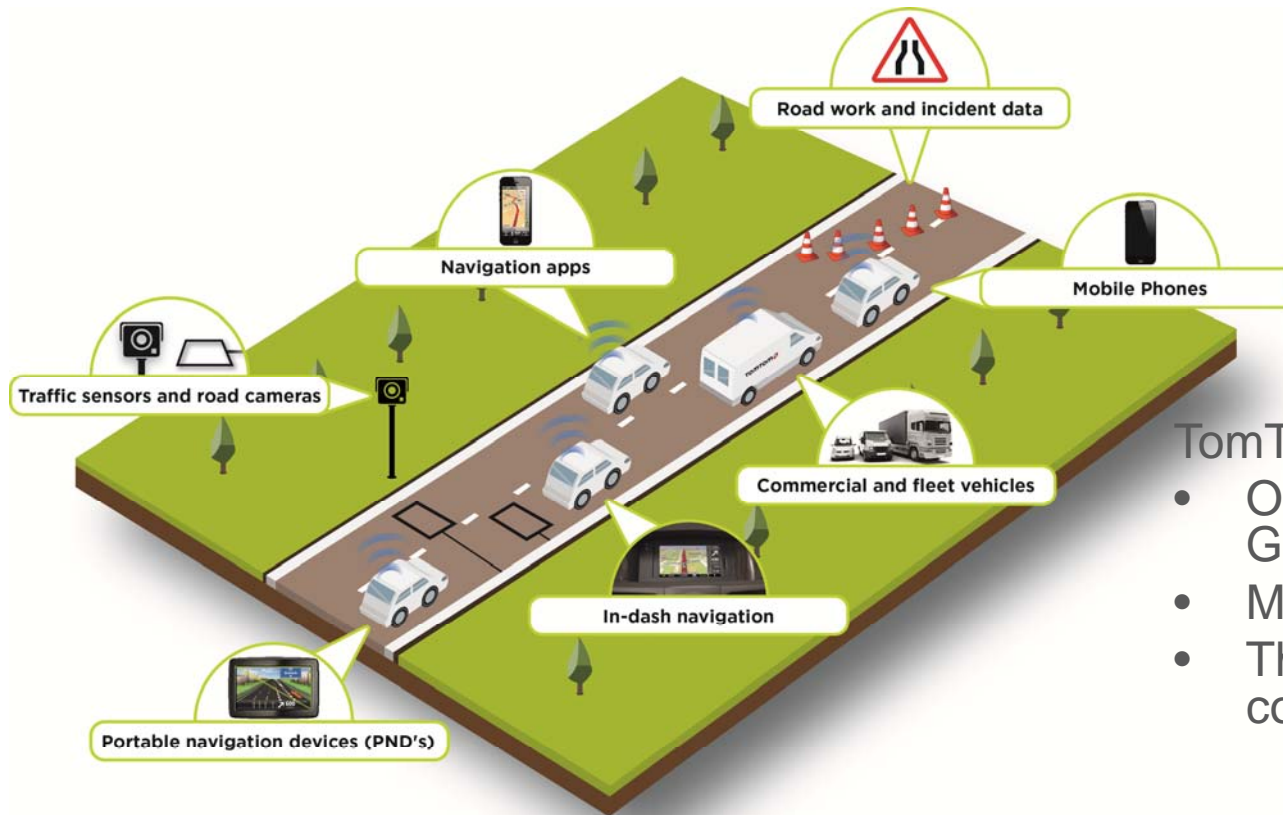# TOMTOM CONNECTED NAVIGATION SYSTEM

Delivering best-in-class navigation experience via easy to use, modular,
on-board and off-board navigation components

# CONNECTED SERVICES POWER THE SEAMLESS EXPERIENCE

Online Search

Online Routing

Traffic

Weather

Parking

Fuel

NavCloud

Real-time Map Updates

Speed Cameras

EV POIs

Navigation portal

Embedded software

Companion apps

TomTom

# TomTom Traffic – innovation in traffic information



Road work and incident data

Navigation apps

Mobile Phones

Traffic sensors and road cameras

Commercial and fleet vehicles

In-dash navigation

Portable navigation devices (PND's)

TomTom Traffic generated from

- Over 400 million connected GPS devices
- Millions of government loops
- Thousands of journalists collecting incident data

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# TomTom Traffic Portfolio

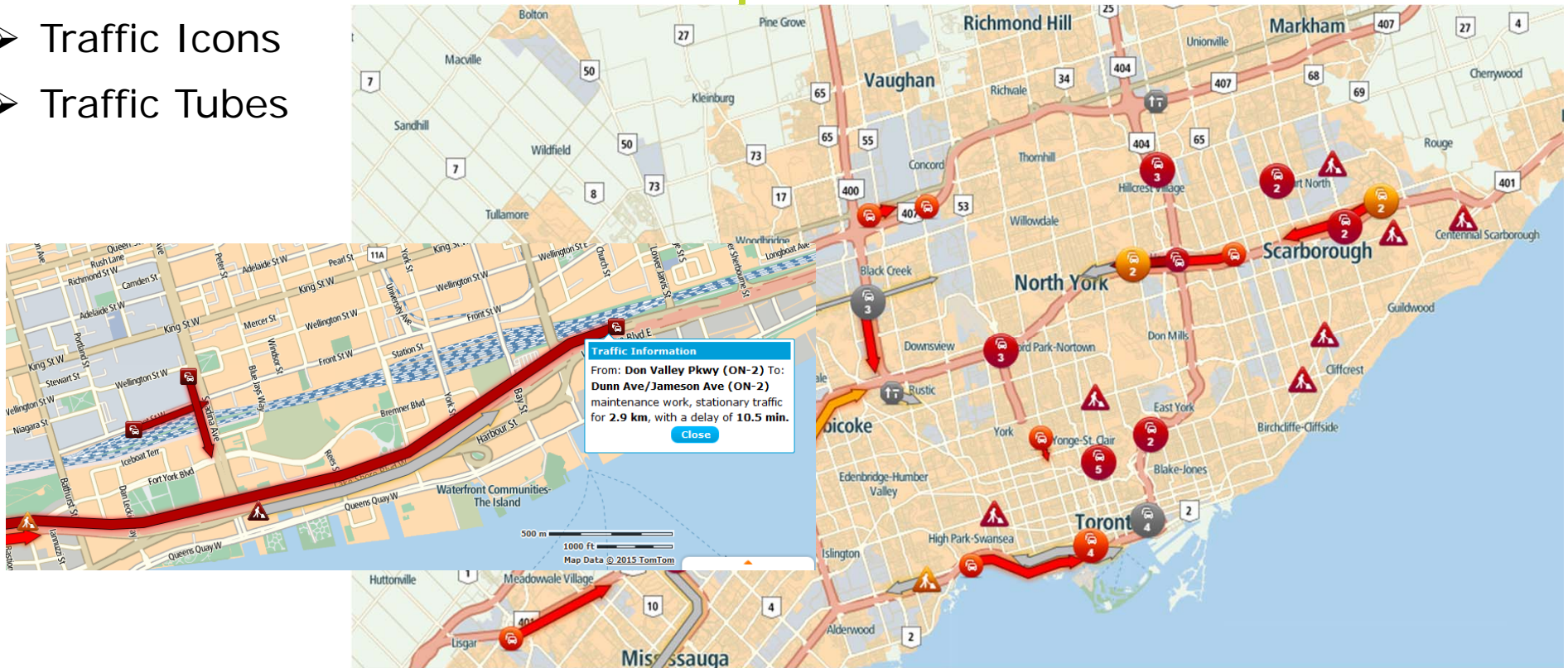| HISTORICAL TRAFFIC | | | REAL TIME TRAFFIC | | |
|---|---|---|---|---|---|
| Speed Profiles | Custom Area Analysis | Custom Travel Times | TomTom Traffic | TomTom Traffic Flow | TomTom Route Times |
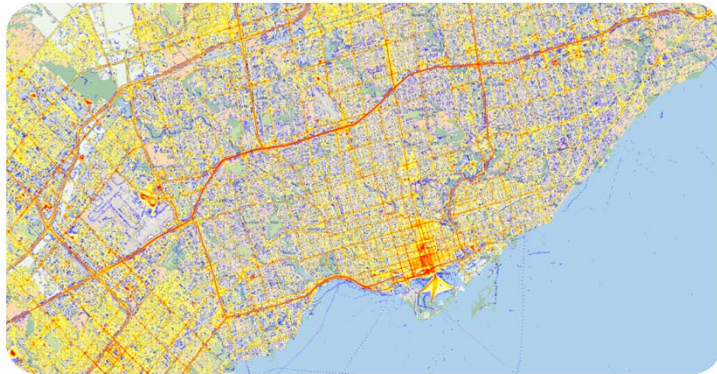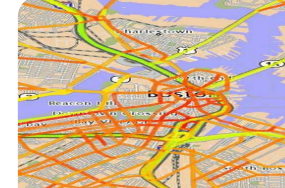
TRAFFIC STATS
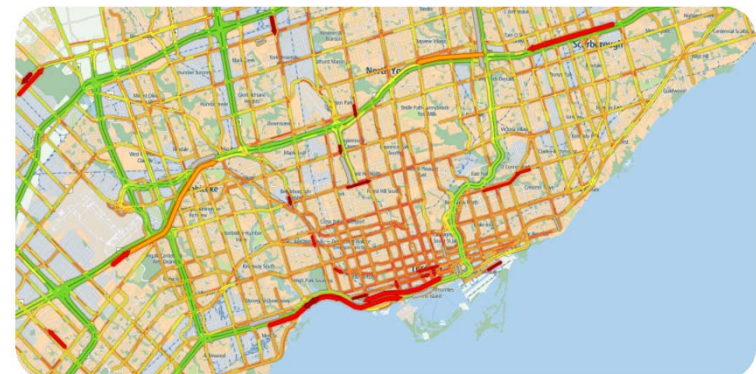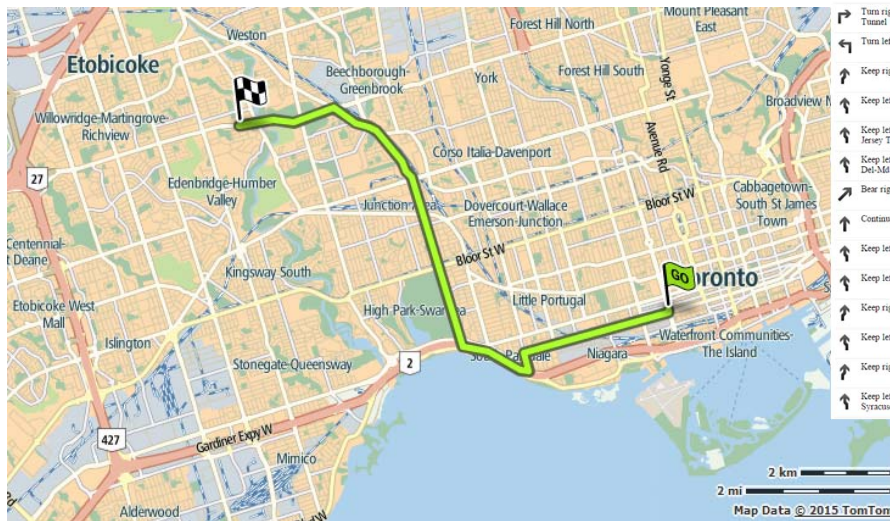
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# DEMO

# OUR TOOLING FOR TRAFFICJAM

# API

# Rendering Real-Time TomTom Traffic

- ➢ Map Tiles
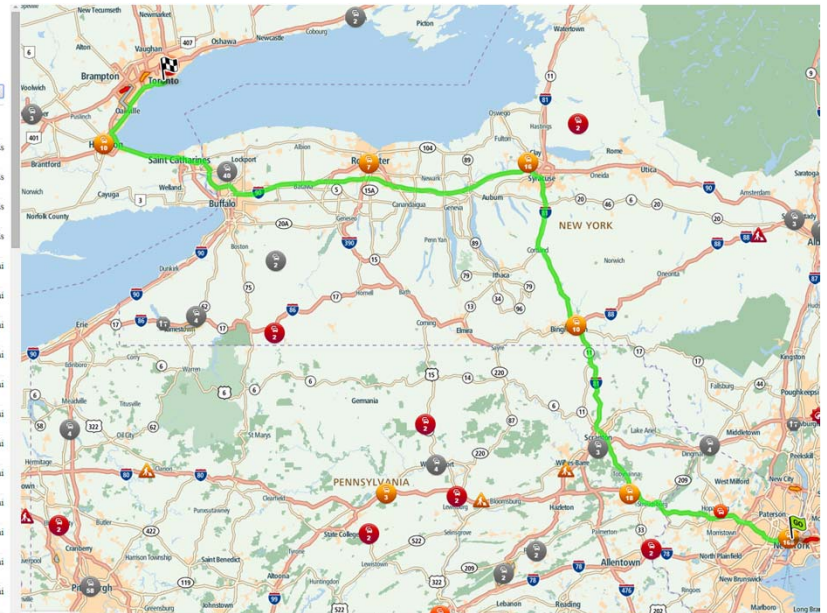- ➢ Traffic Icons
- ➢ Traffic Tubes

# TomTom Dynamic Routing

- ➢ Dynamic Routing
- ➢ Turn-by-turn directions

# Test the API yourself



http://developer.tomtom.com/

Register

Request MapKit access

Download MapKit JavaScript SDK

# JavaScript SDK

A zip package contains everything needed to get started with the TomTom JavaScript SDK.

The TomTom JavaScript SDK allows web developers to build web based mapping applications using TomTom's powerful suite of API functions which include mapping, routing, geocoding and traffic.

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# Examples

Map Tile API example:
http://api.tomtom.com/lbs/map/3/basic/1/15/9156/11960.png?key=toronto_trafficjam

# Examples

Traffic tile API example:
http://api.tomtom.com/lbs/map/3/traffic/s3/15/9156/11960.png?key=toronto_trafficjam
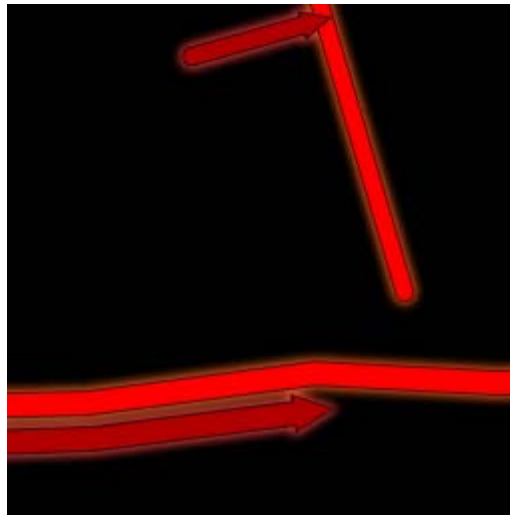


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# Examples

Traffic flow tiles API example
http://api.tomtom.com/lbs/map/3/flow/absolute/15/9156/11960.png?key=toronto_trafficjam



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# HISTORICAL TRAFFIC DATA

# KML with congestion bottleneck locations

Bottleneck locations based on
actual GPS measurements from
TomTom's historical traffic database
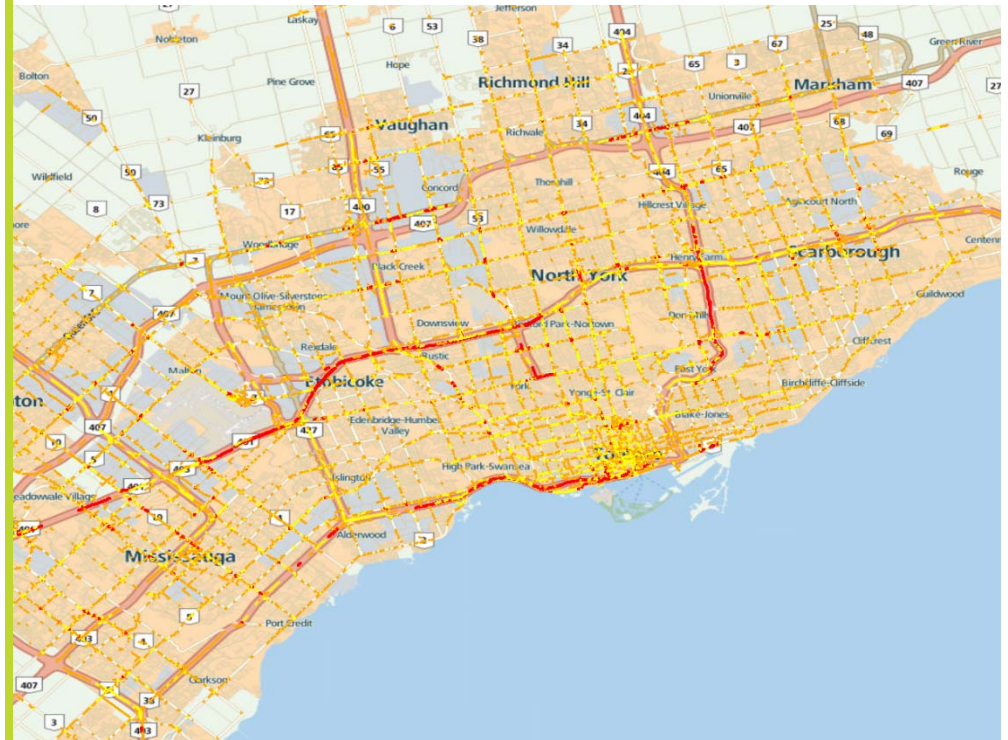
# KML with congestion bottleneck locations

Bottleneck location
actual GPS measu...
TomTom's historica...

```
1203947 <Placemark>
1203948   <name>2169082935470407740</name>
1203949   <styleUrl>#ttStyle3</styleUrl>
1203950   <description>delay/meter:120 congLevel:52% hits:3455 v=54.2</description>
1203951   <LineString>
1203952     <coordinates>
1203953   -79.512476,43.835567
1203954   -79.513256,43.835417
1203955     </coordinates>
1203956   </LineString></Placemark>
1203957 <Placemark>
1203958   <name>2169364273010524222</name>
1203959   <styleUrl>#ttStyle0</styleUrl>
1203960   <description>delay/meter:10 congLevel:57% hits:195 v=39.7</description>
1203961   <LineString>
1203962     <coordinates>
1203963   -79.343833,43.731817
1203964   -79.345653,43.732197
1203965     </coordinates>
1203966   </LineString></Placemark>
1203967 <Placemark>
1203968   <name>2169364410444450485</name>
1203969   <styleUrl>#ttStyle0</styleUrl>
1203970   <description>delay/meter:10 congLevel:13% hits:1195 v=53.9</description>
1203971   <LineString>
1203972     <coordinates>
1203973   -79.391425,43.879917
1203974   -79.391375,43.879727
1203975     </coordinates>
1203976   </LineString></Placemark>
```

TomTom
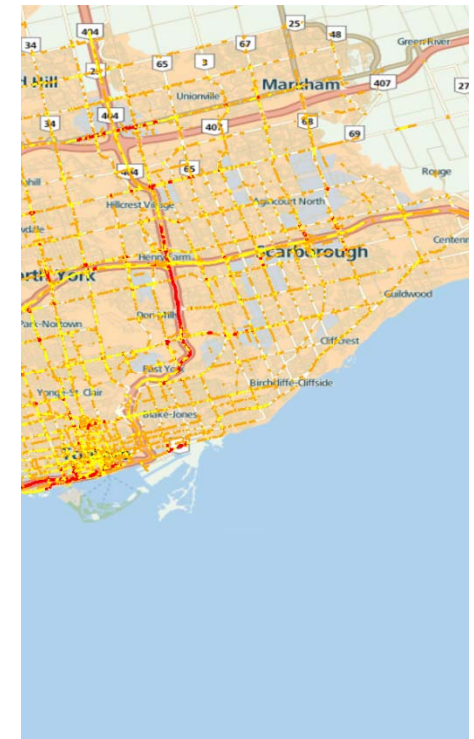
# Traffic Jams in Toronto on 2015-09-08 (first day of school)

Jams, roadworks, lane closures, road closures for every minute on 2015-09-08



TOMTOM

# Traffic Jams in Toronto on 2015-09-08 (first day of school)

Markham ON

Vaughan ON

Ajax ON

Jan
roa
20

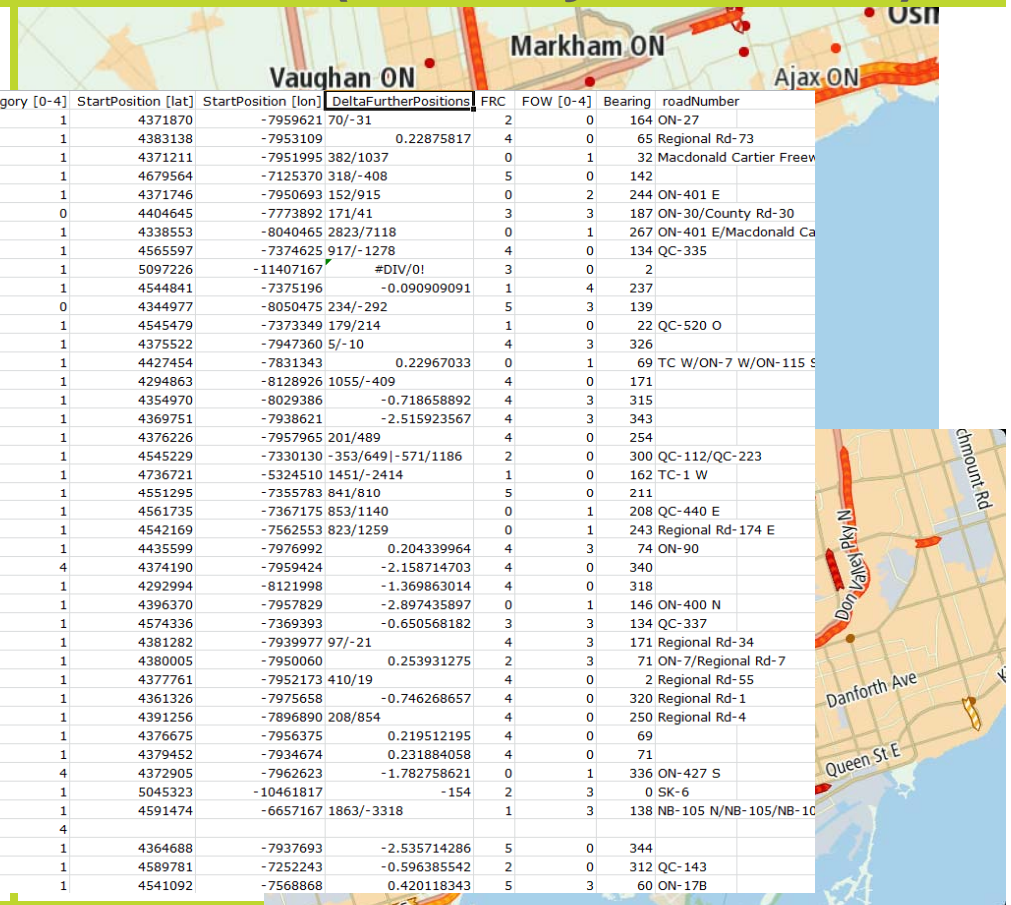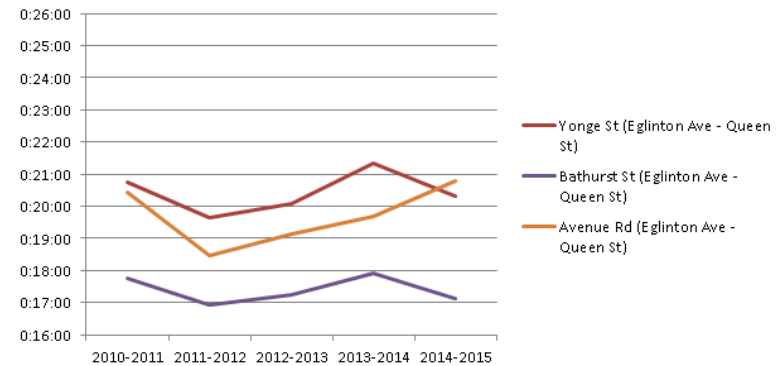| Time [ISO8601] | Delay [s] | Speed [kph] | UsualSpeed [kph] | Freeflow [kph] | Length [m] | EventCode [Datex1] | Category [0-4] | StartPosition [lat] | StartPosition [lon] | DeltaFurtherPositions | FRC | FOW [0-4] | Bearing | roadNumber |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-09-08T21:00:00Z | 312 | 12 | 31 | 64 | 1283 | LS2 | 1 | 4371870 | -7959621 | 70/-31 | 2 | 0 | 164 | ON-27 |
| | 224 | 2 | 23 | 44 | 131 | LS1 | 1 | 4383138 | -7953109 | 0.22875817 | 4 | 0 | 65 | Regional Rd-73 |
| | 104 | 57 | 72 | 100 | 3846 | LS3 | 1 | 4371211 | -7951995 | 382/1037 | 0 | 1 | 32 | Macdonald Cartier Freew |
| | 311 | 5 | 22 | 38 | 498 | LS1 | 1 | 4679564 | -7125370 | 318/-408 | 5 | 0 | 142 | |
| | 90 | 23 | 47 | 92 | 768 | LS2 | 1 | 4371746 | -7950693 | 152/915 | 0 | 2 | 244 | ON-401 E |
| | | | 50 | 54 | 194 | RCD | 0 | 4404645 | -7773892 | 171/41 | 3 | 3 | 187 | ON-30/County Rd-30 |
| | 457 | 35 | 91 | 100 | 6854 | LS3 | 1 | 4338553 | -8040465 | 2823/7118 | 0 | 1 | 267 | ON-401 E/Macdonald Ca |
| | 315 | 13 | 33 | 64 | 1428 | LS2 | 1 | 4565597 | -7374625 | 917/-1278 | 4 | 0 | 134 | QC-335 |
| | 215 | 10 | 38 | 50 | 745 | LS2 | 1 | 5097226 | -11407167 | #DIV/0! | 3 | 0 | 2 | |
| | 217 | 11 | 40 | 43 | 890 | LS2 | 1 | 4544841 | -7375196 | -0.090909091 | 1 | 4 | 237 | |
| | | | 37 | 43 | 353 | RCD | 0 | 4344977 | -8050475 | 234/-292 | 5 | 3 | 139 | |
| | 295 | 10 | 30 | 54 | 1009 | LS2 | 1 | 4545479 | -7373349 | 179/214 | 1 | 0 | 22 | QC-520 O |
| | 167 | 10 | 47 | 58 | 560 | LS1 | 1 | 4375522 | -7947360 | 5/-10 | 4 | 3 | 326 | |
| | 222 | 27 | 104 | 100 | 2289 | LS2 | 1 | 4427454 | -7831343 | 0.22967033 | 0 | 1 | 69 | TC W/ON-7 W/ON-115 S |
| | 238 | 14 | 41 | 56 | 1234 | LS2 | 1 | 4294863 | -8128926 | 1055/-409 | 4 | 0 | 171 | |
| | 145 | 14 | 41 | 51 | 781 | LS2 | 1 | 4354970 | -8029386 | -0.718658892 | 4 | 3 | 315 | |
| | 149 | 9 | 46 | 49 | 458 | LS2 | 1 | 4369751 | -7938621 | -2.515923567 | 4 | 3 | 343 | |
| | 205 | 7 | 22 | 48 | 466 | LS1 | 1 | 4376226 | -7957965 | 201/489 | 4 | 0 | 254 | |
| | 184 | 13 | 49 | 64 | 835 | LS2 | 1 | 4545229 | -7330130 | -353/649|-571/1186 | 2 | 0 | 300 | QC-112/QC-223 |
| | 1106 | 8 | 105 | 100 | 2673 | LS1 | 1 | 4736721 | -5324510 | 1451/-2414 | 1 | 0 | 162 | TC-1 W |
| | 406 | 8 | 26 | 40 | 1132 | LS2 | 1 | 4551295 | -7355783 | 841/810 | 5 | 0 | 211 | |
| | 151 | 24 | 73 | 100 | 1331 | LS2 | 1 | 4561735 | -7367175 | 853/1140 | 0 | 1 | 208 | QC-440 E |
| | 291 | 40 | 69 | 100 | 5400 | LS3 | 1 | 4542169 | -7562553 | 823/1259 | 0 | 1 | 243 | Regional Rd-174 E |
| | 140 | 11 | 69 | 74 | 503 | LS1 | 1 | 4435599 | -7976992 | 0.204339964 | 4 | 3 | 74 | ON-90 |
| | | | 45 | 50 | 5206 | RWK | 4 | 4374190 | -7959424 | -2.158714703 | 4 | 0 | 340 | |
| | 197 | 8 | 36 | 56 | 511 | LS1 | 1 | 4292994 | -8121998 | -1.369863014 | 4 | 0 | 318 | |
| | 325 | 48 | 105 | 100 | 8375 | LS3 | 1 | 4396370 | -7957829 | -2.897435897 | 0 | 1 | 146 | ON-400 N |
| | 220 | 13 | 25 | 70 | 1009 | LS2 | 1 | 4574336 | -7369393 | -0.650568182 | 3 | 3 | 134 | QC-337 |
| | 240 | 7 | 23 | 59 | 530 | LS1 | 1 | 4381282 | -7939977 | 97/-21 | 4 | 3 | 171 | Regional Rd-34 |
| | 274 | 15 | 46 | 67 | 1468 | LS2 | 1 | 4380005 | -7950060 | 0.253931275 | 2 | 3 | 71 | ON-7/Regional Rd-7 |
| | 228 | 3 | 30 | 50 | 202 | LS1 | 1 | 4377761 | -7952173 | 410/19 | 4 | 0 | 2 | Regional Rd-55 |
| | 126 | 18 | 42 | 55 | 936 | LS2 | 1 | 4361326 | -7975658 | -0.746268657 | 4 | 0 | 320 | Regional Rd-1 |
| | 174 | 12 | 28 | 60 | 726 | LS2 | 1 | 4391256 | -7896890 | 208/854 | 4 | 0 | 250 | Regional Rd-4 |
| | 277 | 9 | 36 | 55 | 829 | LS1 | 1 | 4376675 | -7956375 | 0.219512195 | 4 | 0 | 69 | |
| | 172 | 8 | 25 | 44 | 467 | LS2 | 1 | 4379452 | -7934674 | 0.231884058 | 4 | 0 | 71 | |
| | | | 101 | 99 | 1861 | RWK | 4 | 4372905 | -7962623 | -1.782758621 | 0 | 1 | 336 | ON-427 S |
| | 264 | 9 | 31 | 40 | 856 | LS2 | 1 | 5045323 | -10461817 | -154 | 2 | 3 | 0 | SK-6 |
| | 304 | 27 | 81 | 79 | 3459 | LS3 | 1 | 4591474 | -6657167 | 1863/-3318 | 1 | 3 | 138 | NB-105 N/NB-105/NB-10 |
| | | | 32 | 32 | 208 | RWK | 4 | | | | | | | | |
| | 205 | 5 | 20 | 31 | 340 | LS1 | 1 | 4364688 | -7937693 | -2.535714286 | 5 | 0 | 344 | |
| | 145 | 7 | 28 | 42 | 340 | LS1 | 1 | 4589781 | -7252243 | -0.596385542 | 2 | 0 | 312 | QC-143 |
| | 121 | 7 | 21 | 30 | 310 | LS2 | 1 | 4541092 | -7568868 | 0.420118343 | 5 | 3 | 60 | ON-17B |

Danforth Ave

Queen St E

Don Valley Pkwy N

chmount Rd

TomTom

# TomTom Travel Times

Already prepared:

Travel Times on key routes



**Morning peak travel times (southbound)**

- Yonge St (Eglinton Ave - Queen St)
- Bathurst St (Eglinton Ave - Queen St)
- Avenue Rd (Eglinton Ave - Queen St)

**Evening peak travel times (northbound)**

- Yonge St (Queen St - Eglinton Ave)
- Bathurst St (Queen St - Eglinton Ave)
- Avenue Rd (Queen St - Eglinton Ave)
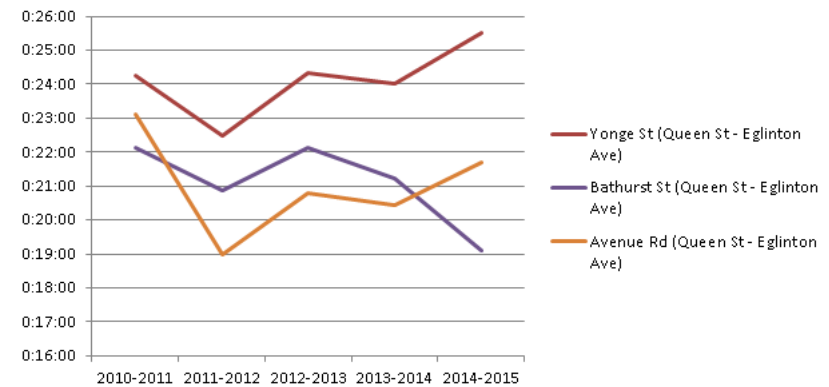
TomTom

# TomTom Travel Times

Input

Access to the webportal:

Define your own query

Example:

Yonge street

2014-09-01 through 2015-08-31

Night (free flow), morning peak and evening peak

Define:

Routes

Dates

Time sets

# TomTom Travel Times

Output

Example CSV output:
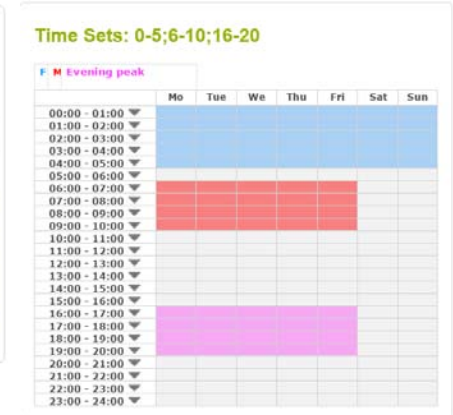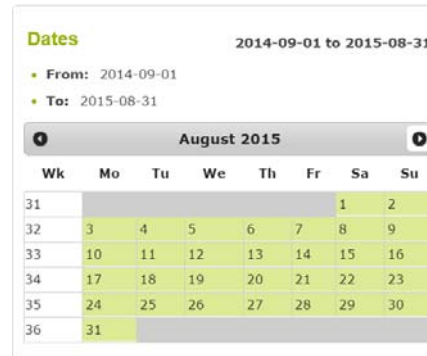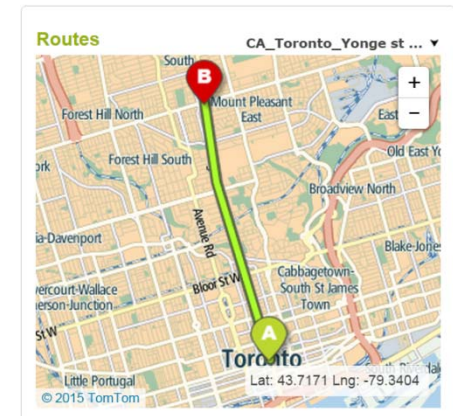
4 routes

3 time sets

2014-09-01 through 2015-08-31

| Date Ranges | | | | | | |
|---|---|---|---|---|---|---|
| 2014-09-01 to 2015-08-31 | | Calendar period. From | 2014-09-01 | | | |
| | | Calendar period. To | 2015-08-31 | | | |
| | | Days excluded | none | | | |
| | | | | | | |
| **Time Sets** | | | | | | |
| | | | Tue 06:00-10:00 | Wed 06:00-10:00 | Thu 06:00-10:00 | Fri 0_ 10:0_ |
| **Morning peak** | | Mon 06:00-10:00 | | | | |
| | | | Tue 11:00-15:00 | Wed 11:00-15:00 | Thu 11:00-15:00 | Fri 1_ 15:0_ |
| **Midday** | | Mon 11:00-15:00 | | | | |
| | | | Tue 16:00-20:00 | Wed 16:00-20:00 | Thu 16:00-20:00 | Fri 1_ 20:0_ |
| **Evening peak** | | Mon 16:00-20:00 | | | | |
| | | | | | | |
| **Route** | **Date Range** | **Time Set** | **Covered Rot** | **Sample size** | **Aver** | |
| Toronto Yonge St (Wilson Ave - Eglinton Ave) sb | 2014-09-01 to 2015-08-31 | Morning peak | 4 201.94 | 815.04 | 00:1_ | |
| Toronto Yonge St (Wilson Ave - Eglinton Ave) sb | 2014-09-01 to 2015-08-31 | Midday | 4 201.94 | 898.92 | 00:1_ | |
| Toronto Yonge St (Wilson Ave - Eglinton Ave) sb | 2014-09-01 to 2015-08-31 | Evening peak | 4 201.94 | 742.92 | 00:1_ | |
| Toronto Yonge St (Eglinton Ave - Wilson Ave) nb | 2014-09-01 to 2015-08-31 | Morning peak | 4 204.06 | 499.82 | 00:0_ | |
| Toronto Yonge St (Eglinton Ave - Wilson Ave) nb | 2014-09-01 to 2015-08-31 | Midday | 4 204.06 | 824.17 | 00:1_ | |
| Toronto Yonge St (Eglinton Ave - Wilson Ave) nb | 2014-09-01 to 2015-08-31 | Evening peak | 4 204.06 | 849.16 | 00:1_ | |
| Toronto Yonge St (Queen St - Eglinton Ave) nb | 2014-09-01 to 2015-08-31 | Morning peak | 6 220.45 | 360.79 | 00:1_ | |
| Toronto Yonge St (Queen St - Eglinton Ave) nb | 2014-09-01 to 2015-08-31 | Midday | 6 220.45 | 645.53 | 00:2_ | |
| Toronto Yonge St (Queen St - Eglinton Ave) nb | 2014-09-01 to 2015-08-31 | Evening peak | 6 220.45 | 598.33 | 00:2_ | |
| Toronto Yonge St (Eglinton Ave - Queen St) sb | 2014-09-01 to 2015-08-31 | Morning peak | 6 246.14 | 473.36 | 00:1_ | |
| Toronto Yonge St (Eglinton Ave - Queen St) sb | 2014-09-01 to 2015-08-31 | Midday | 6 246.14 | 644.90 | 00:2_ | |
| Toronto Yonge St (Eglinton Ave - Queen St) sb | 2014-09-01 to 2015-08-31 | Evening peak | 6 246.14 | 523.39 | 00:2_ | |

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# TomTom Travel Times

## Output

Example KML output:

4 routes

3 time sets

2014-09-01 through 2015-08-31



**TomTom**

# OUR TEAM MEMBERS PRESENT AT THE TRAFFICJAM EVENT

# Our Team Members



Mark Dykstra

Account manager

Business relations

Mateusz Szczepanczyk

Android and iOS developer

API support





Edwin Kools

Traffic Expert

Solution architect

Historical data support

TOMTOM

# THANK YOU