

Real-Time Transit Information

Leading the way towards an enhanced transit experience

Presentation to
**Urban and Regional Information Systems Association
(URISA)**

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Welcome to TransLink

TransLink Quick Facts

- **General**

- 7000+ staff (including ~3,600 bus operators)
- 1.2M transit trips per day
- Capital Assets: \$4.43B
- Revenues: \$1.31B
- Expenses: \$1.36B
- Fare recovery ratio: 48.7%
- Scheduled Service Hours: 6.31M
- Service KM: 150.66M
- Boarded Passengers: 355M
- Growth in Revenue Passengers: 6.6%

- **Bus Services**

- ~1,500 conventional/trolley buses
- ~3,600 bus operators
- 220 routes servicing ~8800 bus stops
- ~ 20,600 bus trips per day
- 764.7K+ bus passengers per day
- ~ 830K bus boardings per day
- 21.3K+ ferry passengers per day

- **Rail Services**

- 298 SkyTrain cars
- 47 SkyTrain stations
- 68.7 km of track
- 404.6K+ SkyTrain passengers per day
- 8 WCE stations
- 9.5K+ WCE passengers per day

- **Roads & Bridges**

- Responsible for 2,100+ km of Major Road Network
- Responsible for Golden Ears, Pattullo, Knight Street, and Westham Island Bridges

- **Cycling**

- ~1,400km of bikeways



**~ \$2B invested in mobile assets
(bus fleet)**

Sometimes Things Don't Go as Planned...

- Have you ever waited at a bus stop and the bus didn't come when it was supposed to come?
- Have you ever waited at a bus stop and the bus that was supposed to come didn't come at all?
- Have you ever felt like being left "standing in the rain" with no information about what is really going on?

What the customer really wants to know

TransLink's Real Time Transit Information project addresses the *problem of uncertainty* by answering the following questions for our customers to enhance their transit experience:

- **Where is my bus right now?**
- **When is my bus expected to depart from my stop?**
- **Will my bus indeed come to my stop or is it canceled?**
- **If I missed my bus: When will the next bus show up at my stop?**

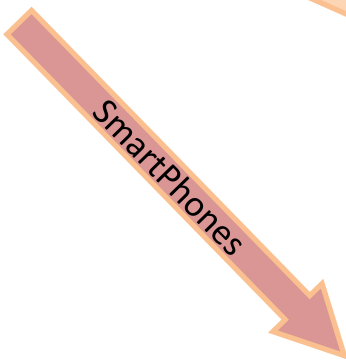
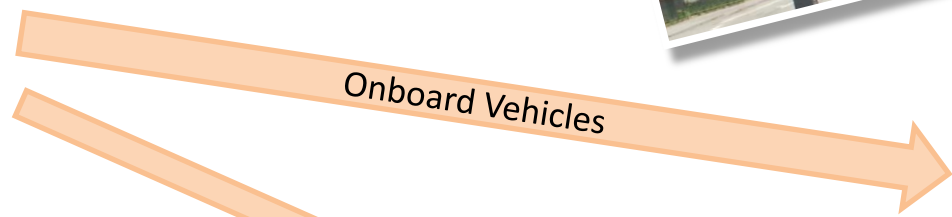
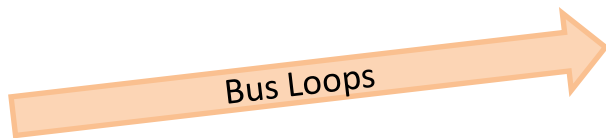
Customer Commitment



Focus on what
customers want
and need, **NOT** on
technology.

Introducing Real Time Transit Information

Real Time
Transit
Information

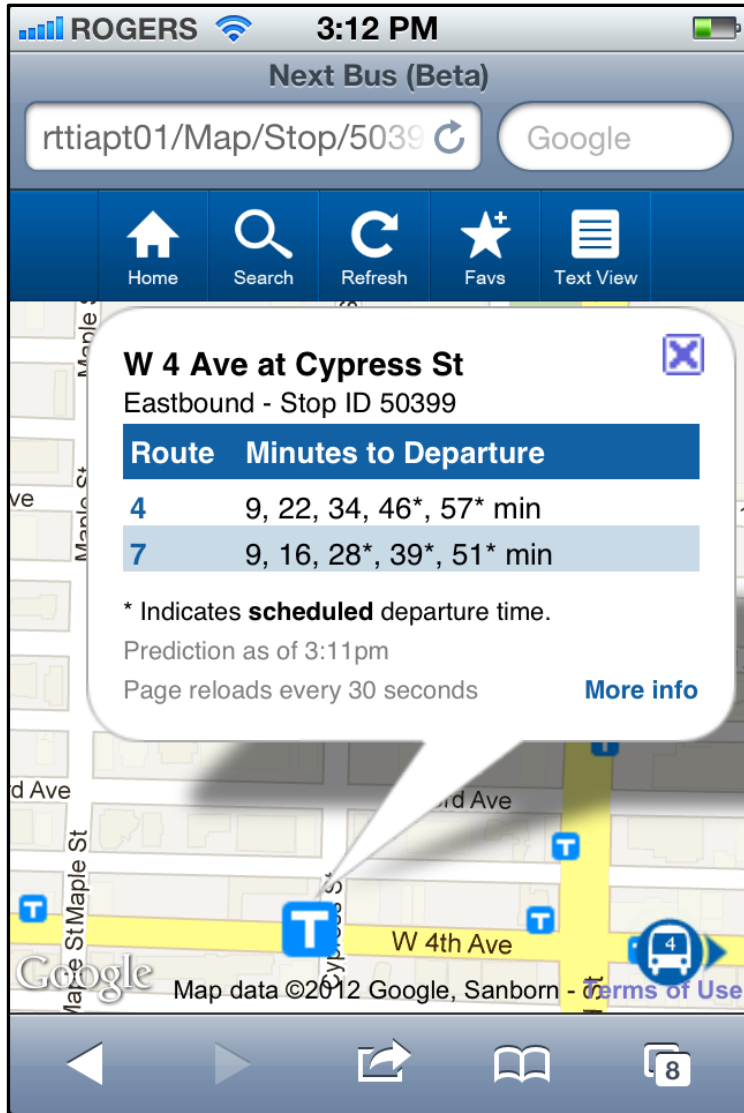


Project Purpose and Primary Goal

Project Purpose and Primary Goal

- To establish the foundation on which a wide range of real-time transit information is dispensed to our customers and internal stakeholders through primarily mobile web products.
- To provide an enhanced transit experience and improved engagement to our customers through real-time data rather than schedule based data.

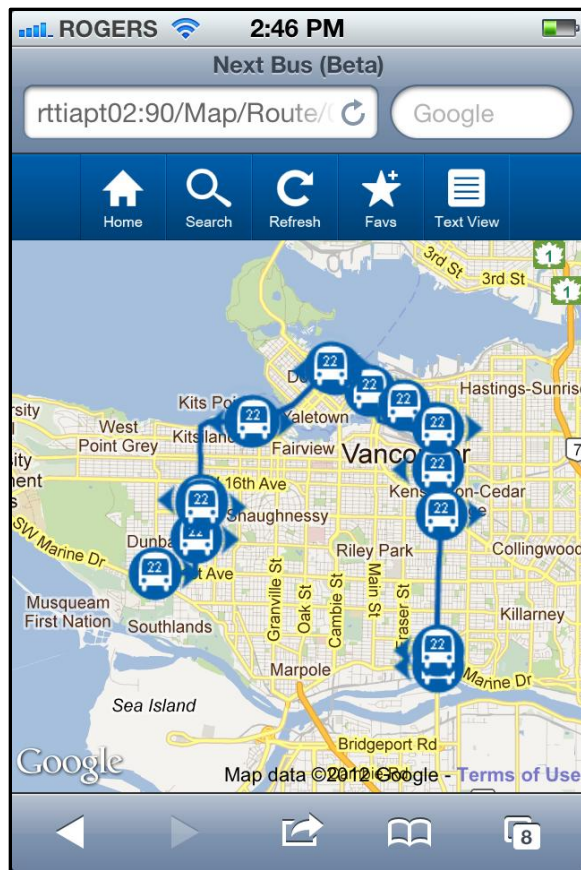
Project Summary and Key Messages



Real-Time Next Bus

- In-house agile software development project
- **BETA** 0.1 launched on September 6, 2011, 9 subsequent BETA releases leading to v1.0 launched on April 15, 2012
- Collaborated with other Transit Agencies
- Open Source Data approach
- Complex technology
- Emphasis on data quality & process changes
- Map View (“Where is my bus right now?”) and Text View (“When is my bus ~~scheduled~~ expected in real time at my stop?”).

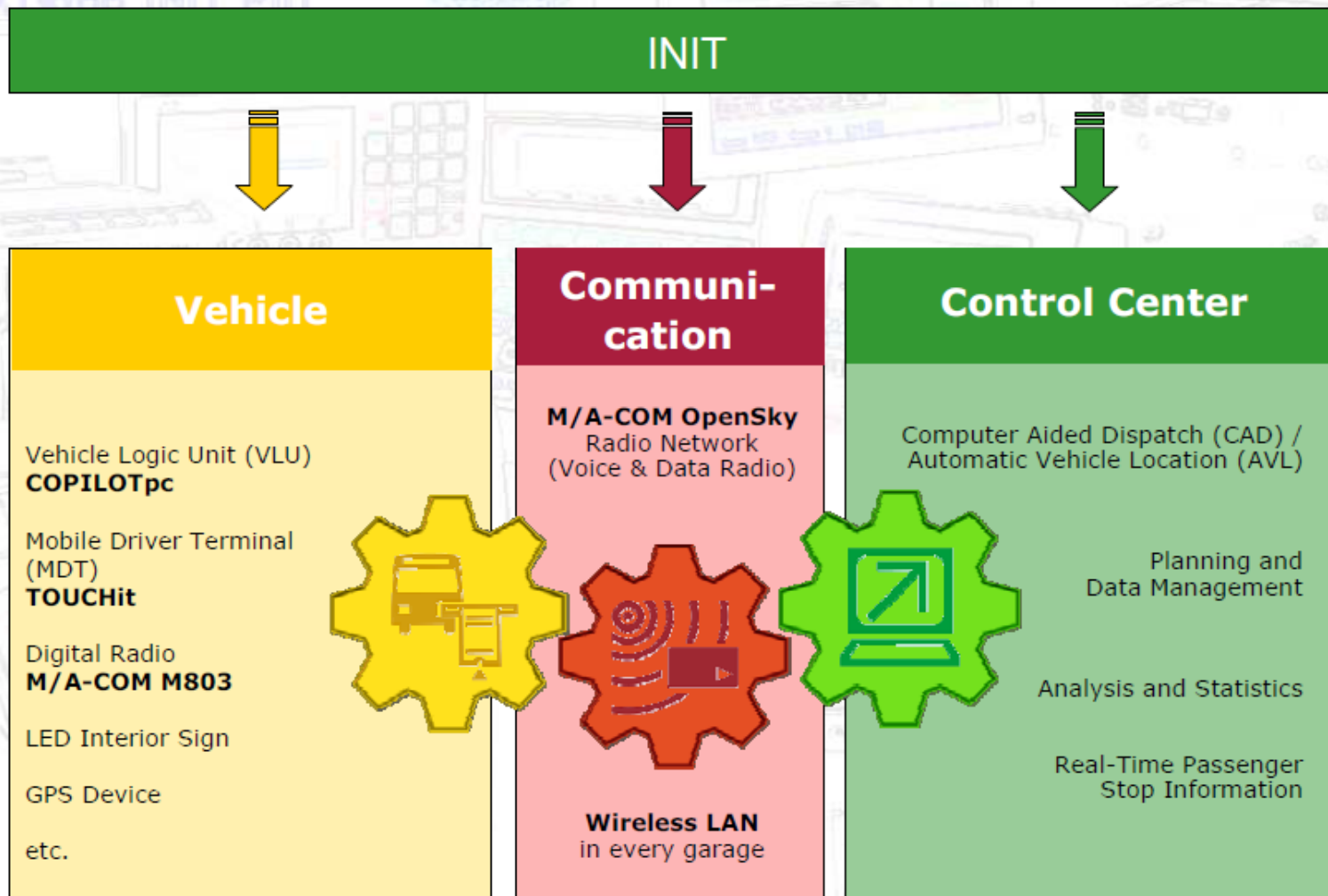
Real-Time Bus Locations - Overview



- **WHERE** is my bus (in real time)
- Every time a bus departs a stop or passes a stop a location update is sent to the central system and reflected on Next Bus map in real-time. Average ~ 30 seconds.
- Urban vs. Sub-Urban corridors (distance between stops) impacts location update frequency.
- Technology components: On-board equipment (PC, GPS antenna, displays, etc.), radio network, satellite, CAD/AVL, SIRI interfaces

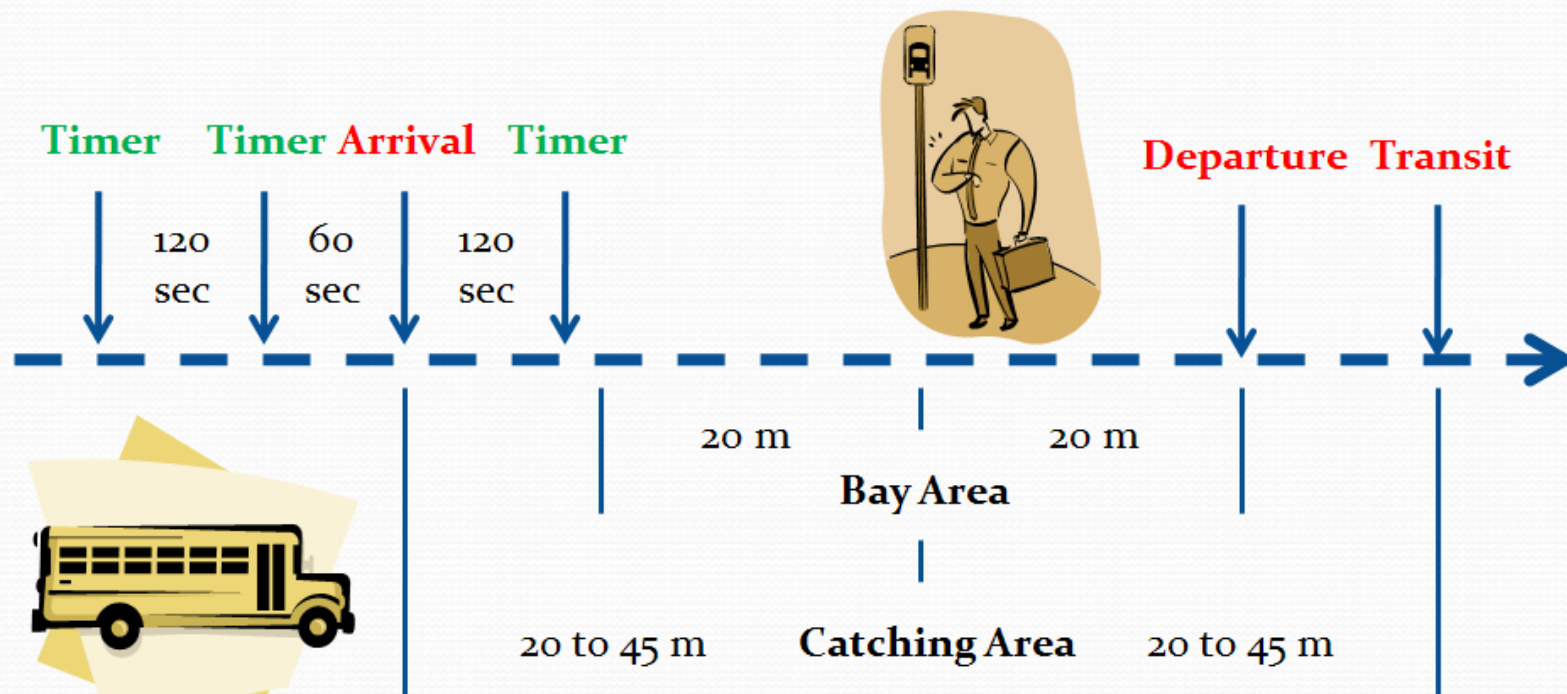
How it works - Overview

Real-Time Bus Locations - How it works



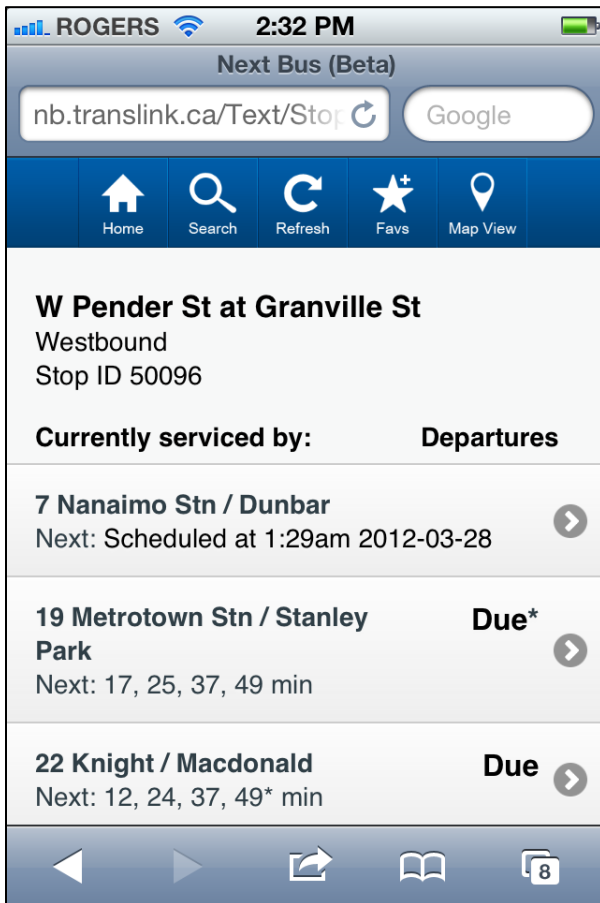
Real-Time Bus Locations - How it works

Vehicle Location Detection



- **Arrival** = Bus stops and opens the door inside the catching area or inside the bay area.
- **Departure** = Bay area is left after an arrival was detected.
- **Transit** = Catching area after the bay area left without arrival detection.
- **Timer** = Time interval for sending GPS location messages to central system

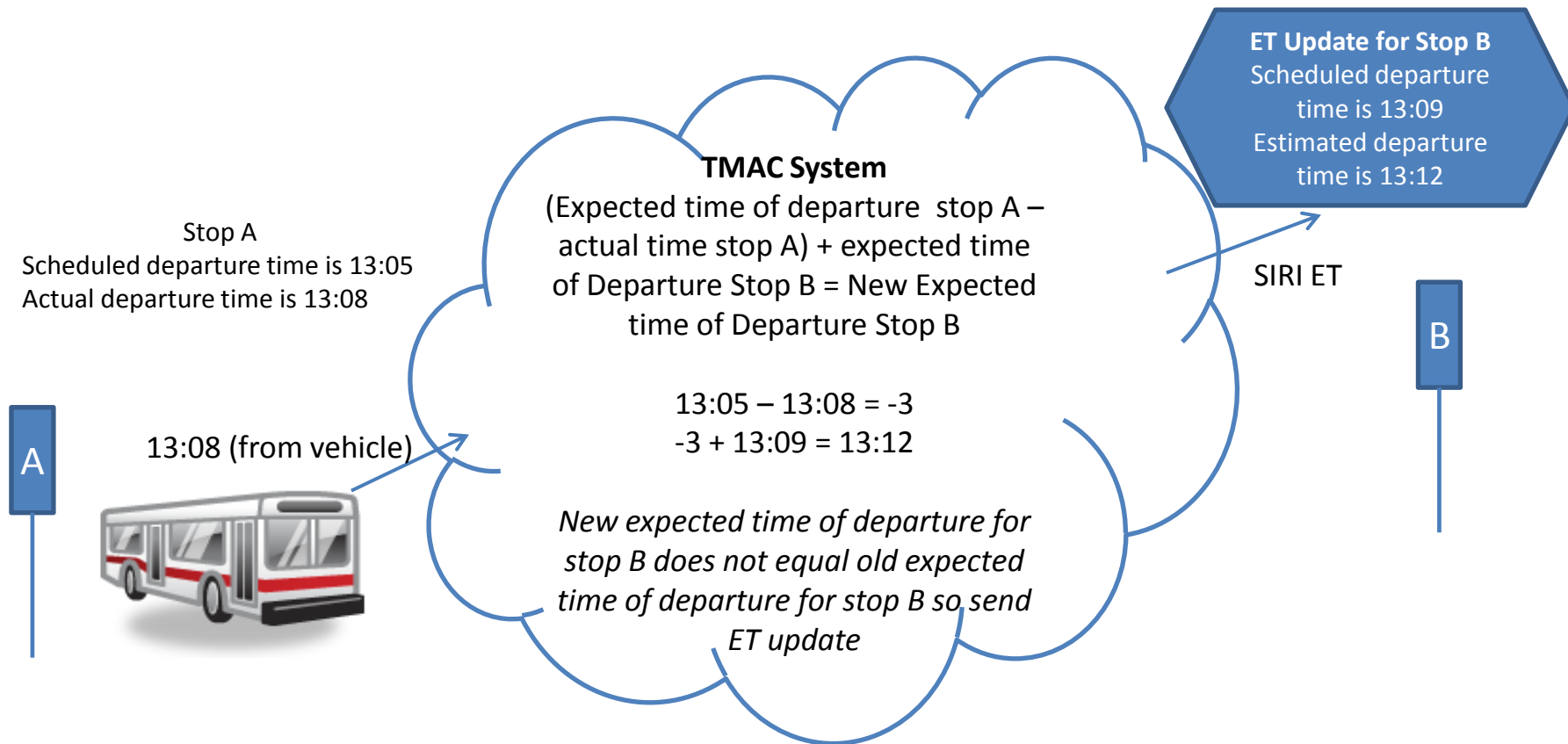
Predicted Bus Departures- Overview



- **When** is my bus predicted to depart for a given stop, based on it's most current location.
- Replaces scheduled departure times.
- Predictive accuracy depends on vehicle location update frequency.
- Scheduled vs. Predictive vs. Actual Departure times

Bus Departure Predictions – How it works

- When a bus that is operating a trip *deviates* from the previously estimated (or planned) departure time for a given stop, a message with a new estimated departure time is generated for that stop.
- These messages currently are generated most frequently after departing a stop.



Be Open With Our Data

- Engage our customers and the development community
- They can address unique/niche markets that TransLink can't/shouldn't - for free
- Other uses we can't even envision now.
- TransLink retains the 'official' version
- **Real-Time Open Data API** launched in early Nov. 2012
 - Go to: <http://developer.translink.ca/>
- Real-Time Google Transit Feed (**GTFS**) expected in Q1, 2013
 - Predictive data, no location data



Real-Time Transit Information

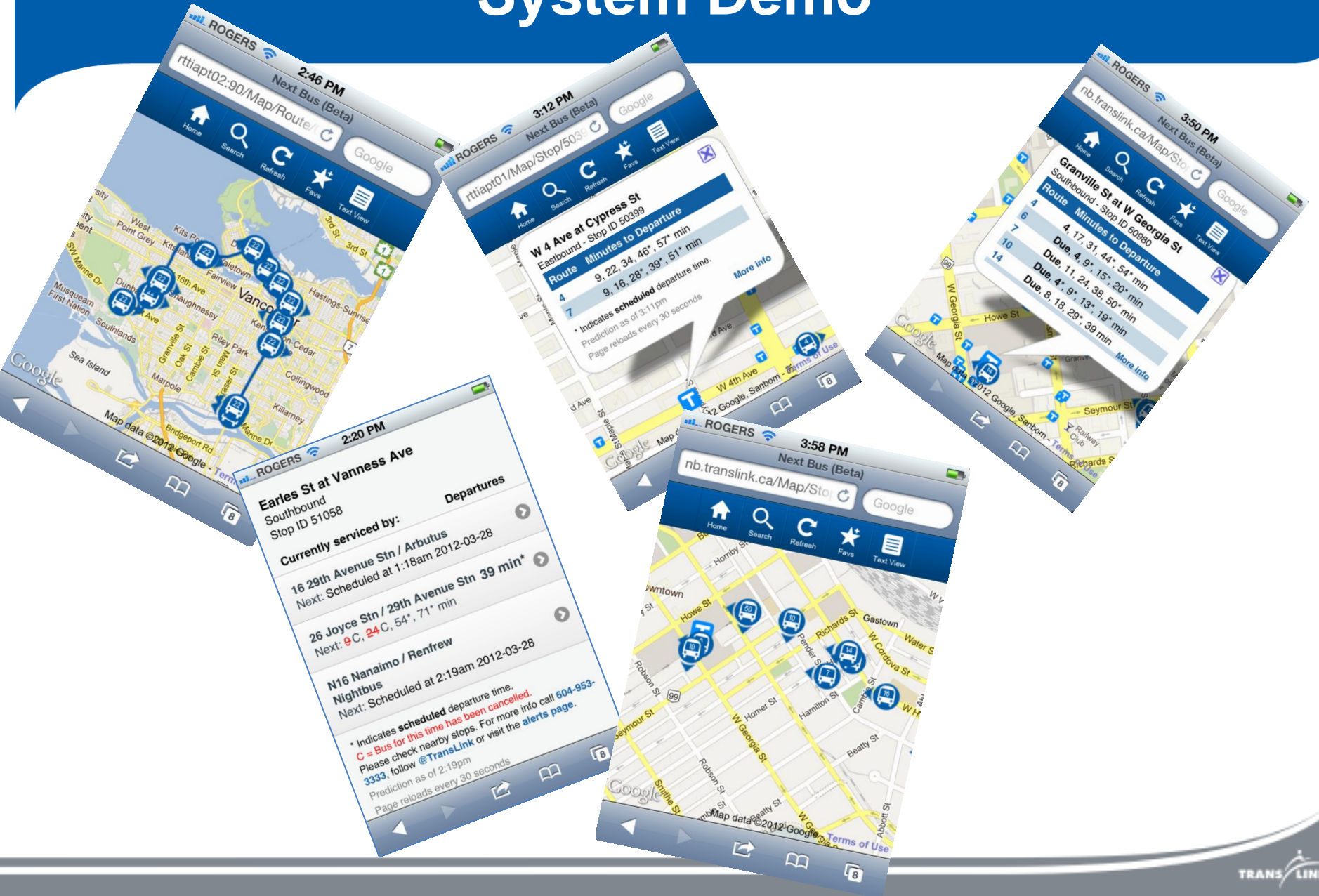
Leading the way towards an enhanced transit experience

Introducing Real-Time Next Bus

M.TransLink.ca



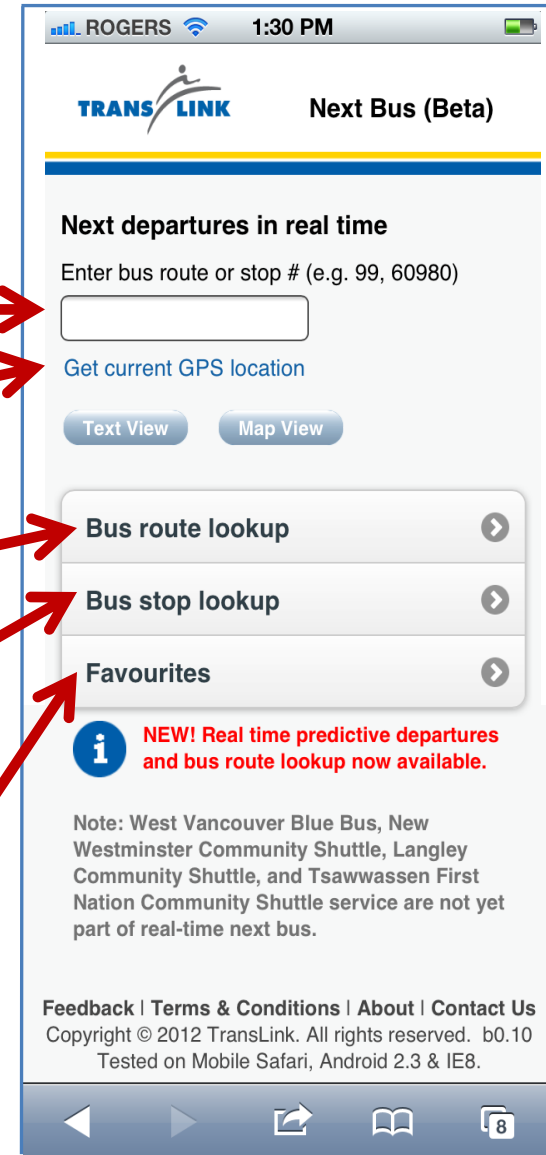
System Demo



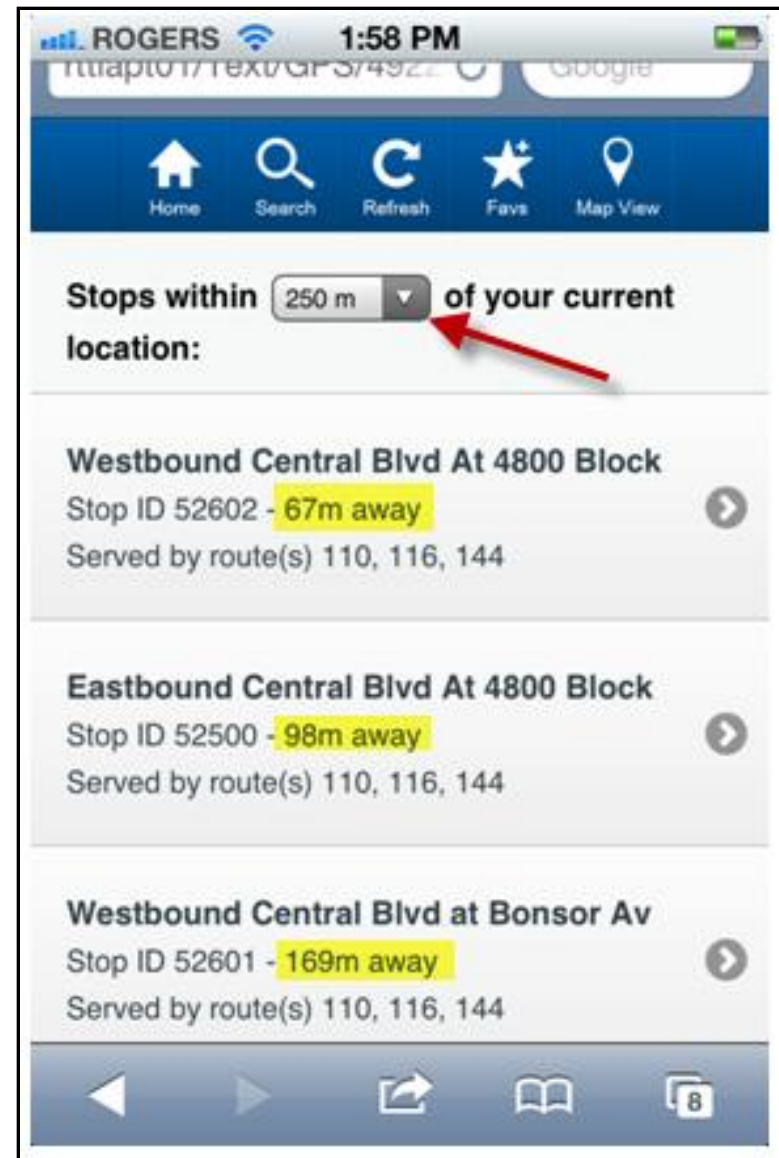
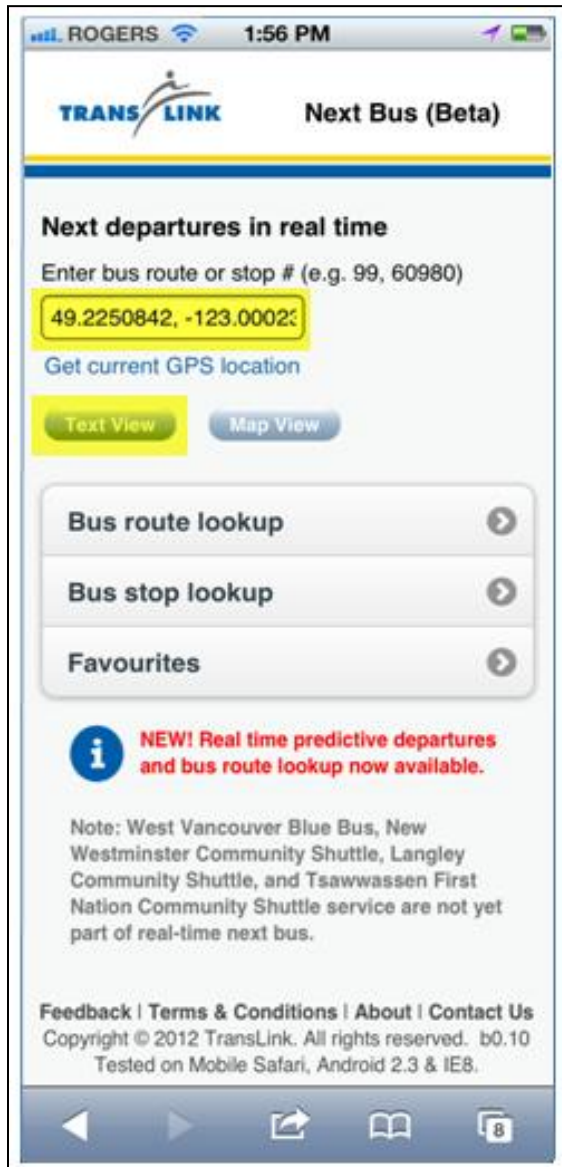
nb.translink.ca Home Screen

Various ways to Search Real-time Bus

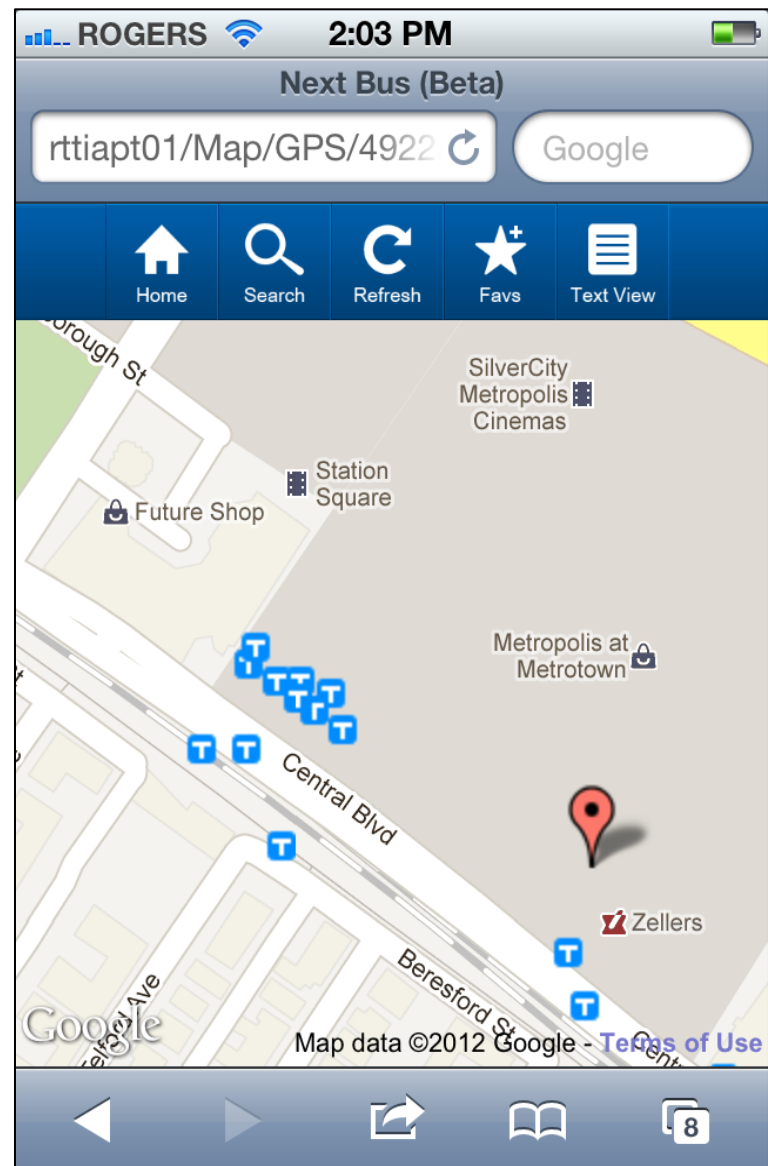
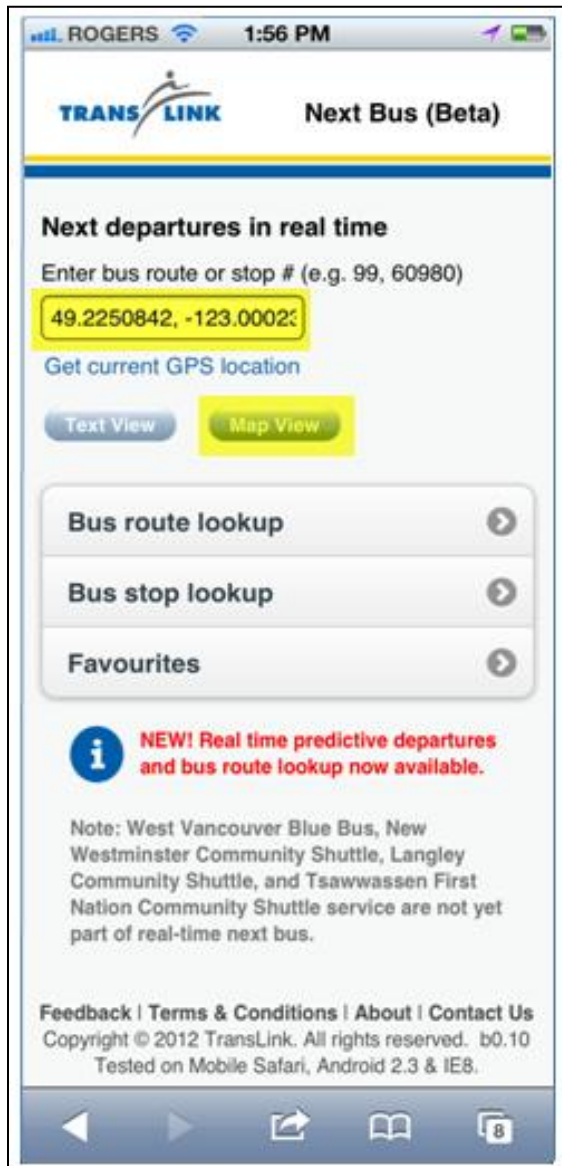
- Stop Number or Route Number (free text)
- User's current GPS location
- Bus route lookup (Route – Direction – Stop – Trip)
- Bus stop lookup (Address or Landmark Search via Trip Planner integration)
- Favourites (Stop, Route, Trip)



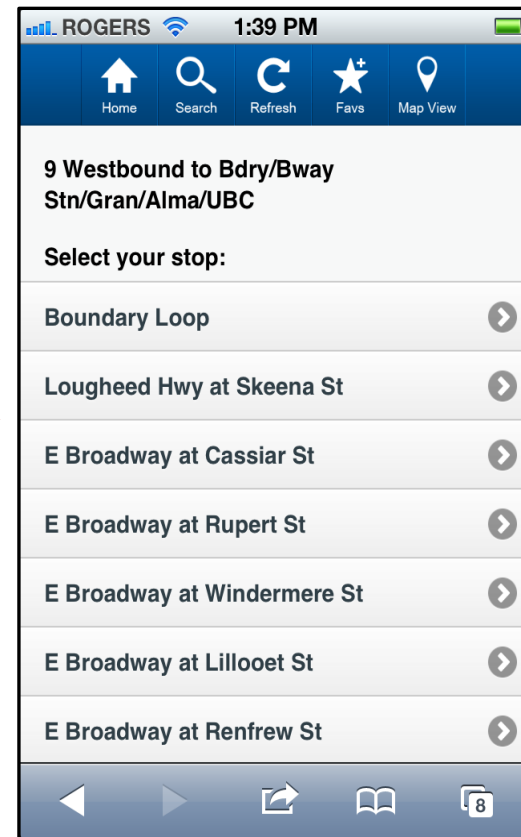
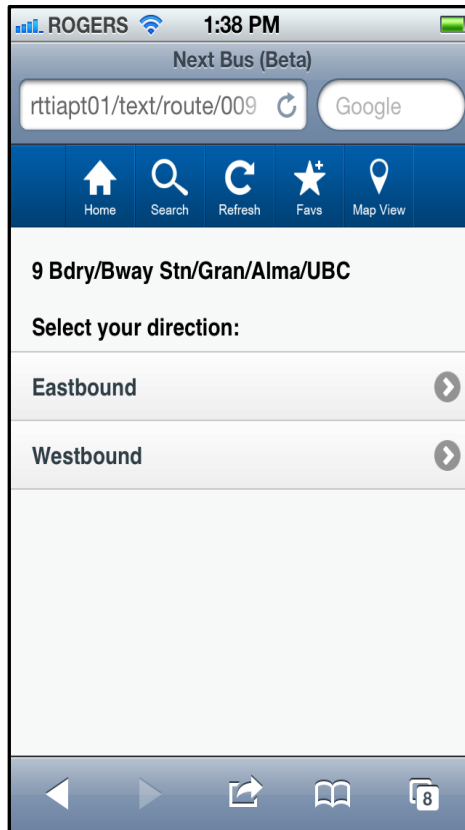
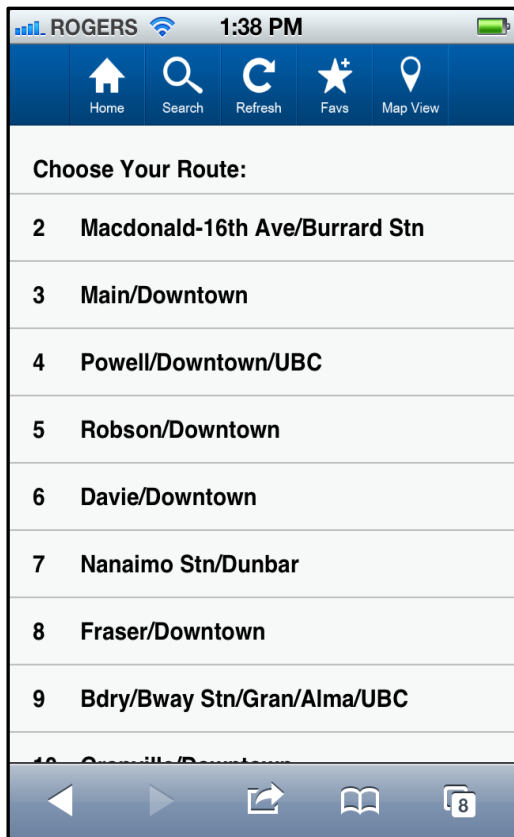
GPS Search – Text View



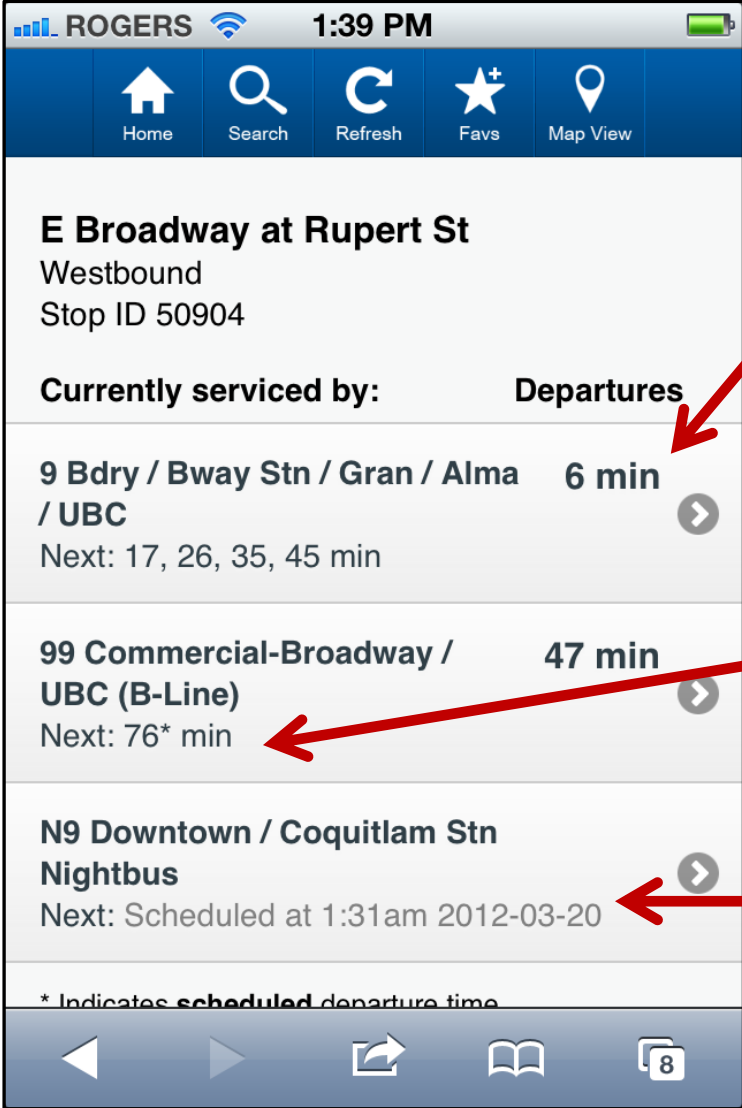
GPS Search – Map View



Route – Direction – Stop Trip Lookup: Text View (Predicted Departure Times)



Route – Direction – Stop Trip Lookup: Text View (Predicted Departure Times – cont.)

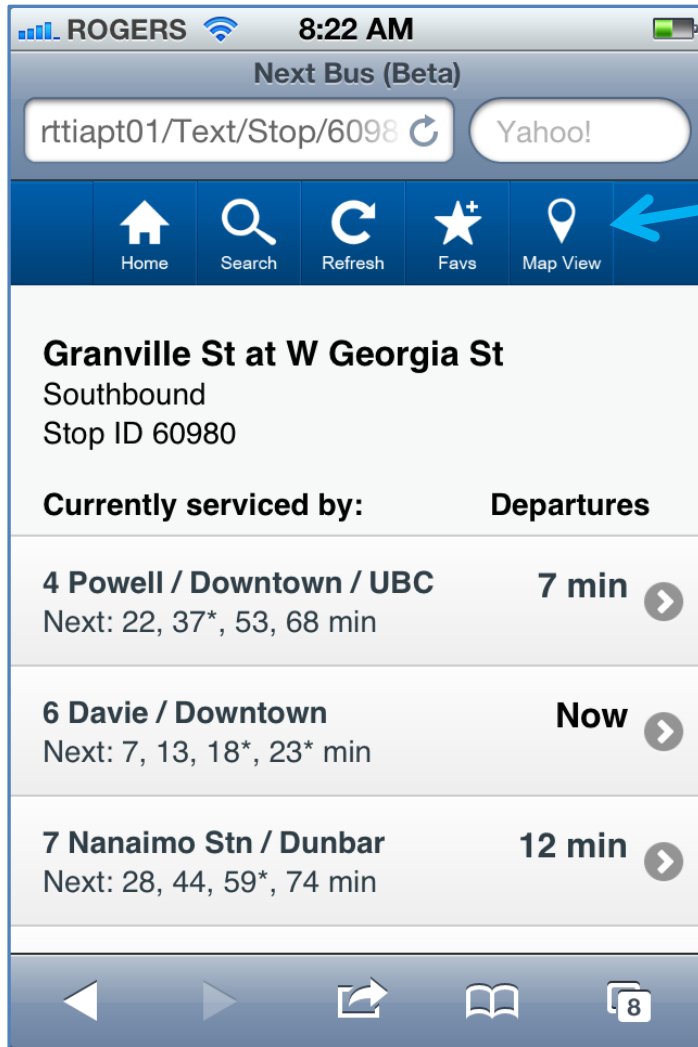


Countdown to predicted departure time for searched route and stop.

Scheduled departure time (no prediction available yet).

Scheduled departure time & date (Nightbus)

Route – Direction – Stop Trip Lookup: Switch to Map View for Real-time bus locations



User now switches from Text View to Map View.

Next bus for route 4 is predicted to depart stop 60980 in 7 min.

“Now”- next bus for route 6 is predicted to depart from the stop in less than 2 minutes.

Real-Time Bus Location on Map

ROGERS 8:26 AM

Next Bus (Beta)

rttiapt01/Map/Stop/6098 Yahoo!

Home Search Refresh Favs Text View

Granville St at W Georgia St
Southbound - Stop ID 60980

Route	Minutes to Departure
4	Now, 19, 33, 49*, 64 min
6	3, 8, 15, 19*, 24* min
7	5, 22, 40*, 55*, 70 min
10	Now, 8, 13, 18, 23* min
14	8, 15, 26, 36, 48* min

More info

Map data ©2012 Google, Sanborn

This screenshot shows a mobile application interface for a bus stop. The top status bar displays the carrier 'ROGERS' and the time '8:26 AM'. The app title is 'Next Bus (Beta)'. A search bar contains the URL 'rttiapt01/Map/Stop/6098' and the search engine 'Yahoo!'. Below the search bar is a navigation bar with icons for Home, Search, Refresh, Favs, and Text View. The main content is a white information card for the stop 'Granville St at W Georgia St', Southbound, with Stop ID 60980. The card features a table with columns 'Route' and 'Minutes to Departure'. The routes listed are 4, 6, 7, 10, and 14, with their respective departure times. A 'More info' link is at the bottom right of the card. The background is a Google Map showing the stop location. The bottom of the screen shows the iOS home indicator bar with a back arrow, a home button, and a dock with an '8' icon.



ROGERS 3:58 PM

Next Bus (Beta)

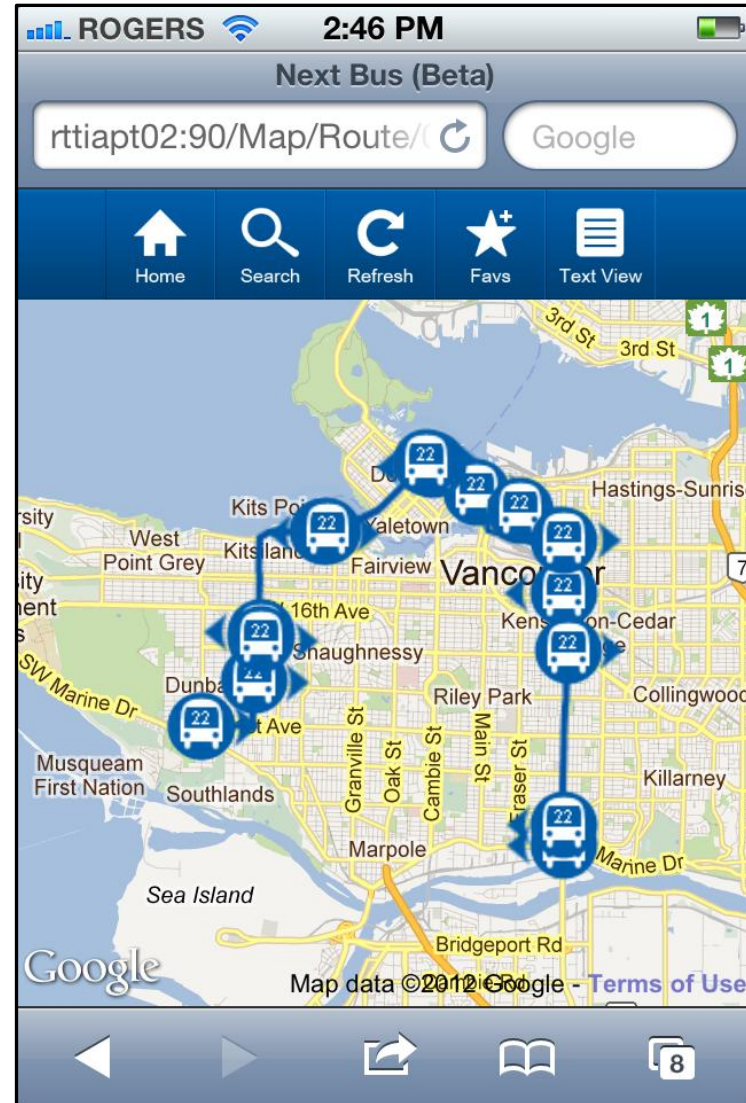
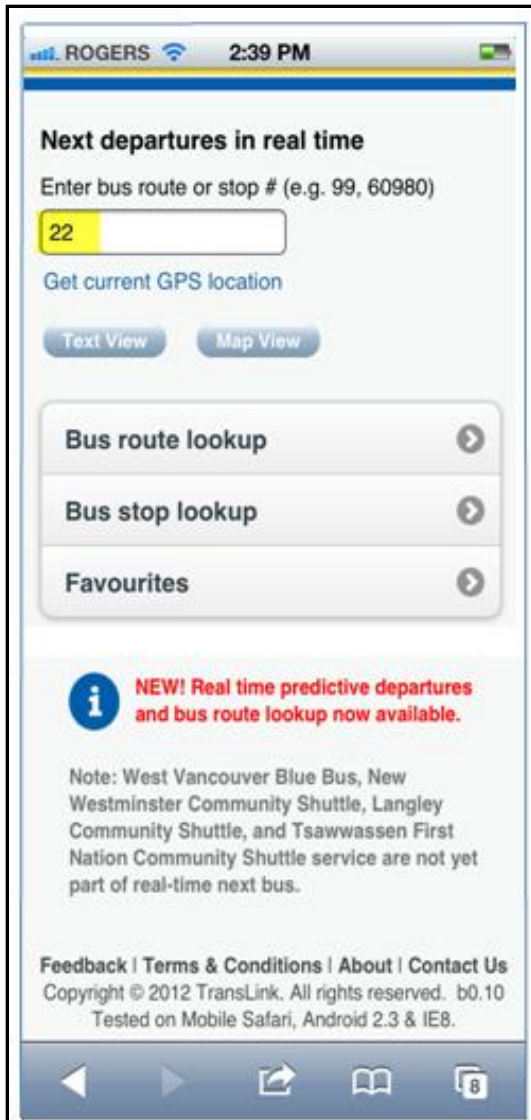
nb.translink.ca/Map/Stop Google

Home Search Refresh Favs Text View

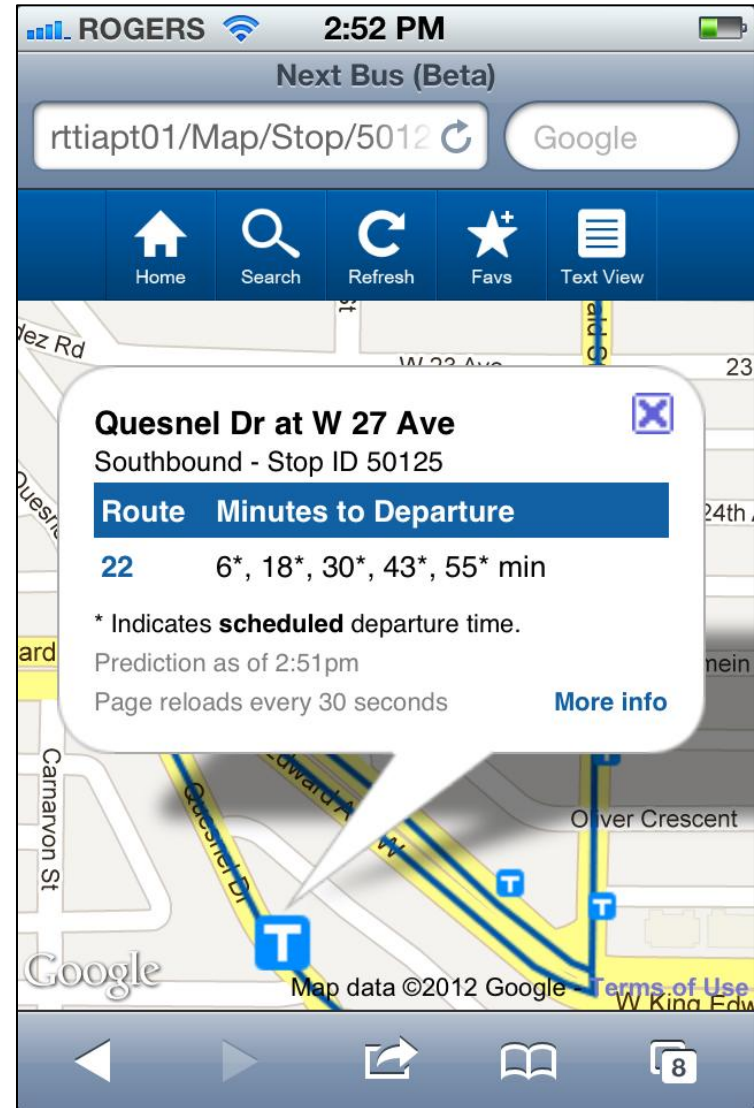
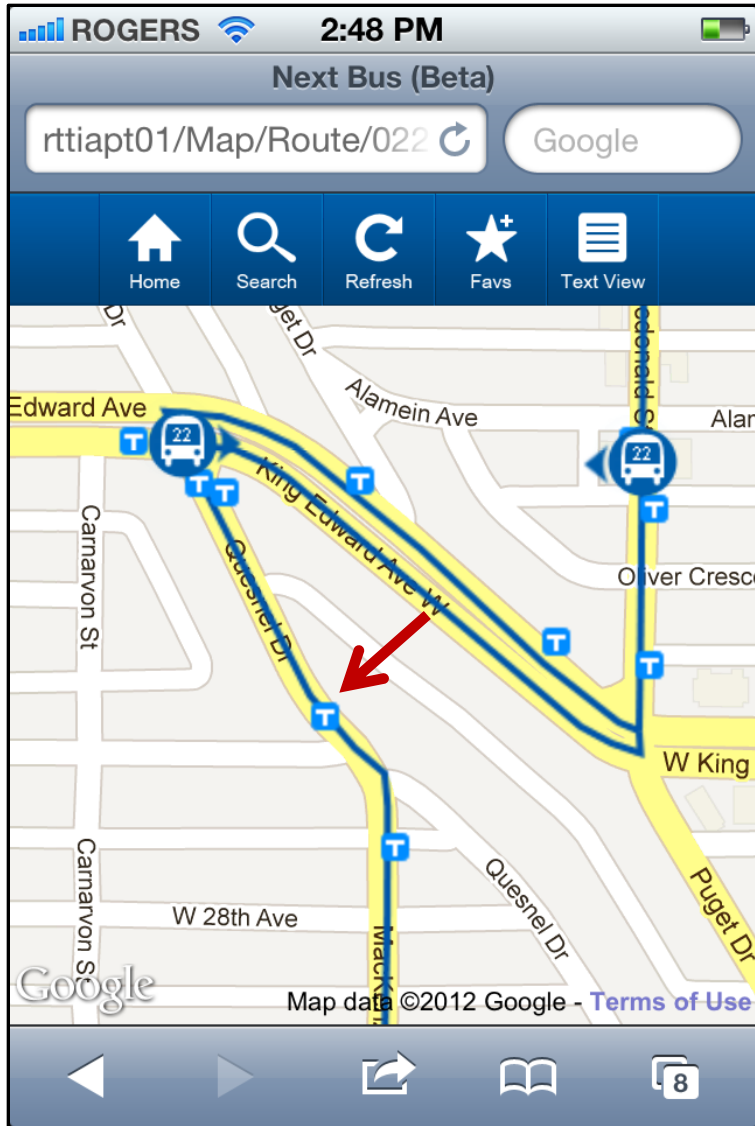
Map data ©2012 Google

This screenshot shows the same mobile application interface but in a map view. The top status bar displays the carrier 'ROGERS' and the time '3:58 PM'. The app title is 'Next Bus (Beta)'. A search bar contains the URL 'nb.translink.ca/Map/Stop' and the search engine 'Google'. Below the search bar is a navigation bar with icons for Home, Search, Refresh, Favs, and Text View. The main content is a Google Map showing the stop location. Several blue bus location pins are overlaid on the map, each with a bus icon and a route number (e.g., 10, 50, 14, 7, 16). The bottom of the screen shows the iOS home indicator bar with a back arrow, a home button, and a dock with an '8' icon.

Route Search – Map View



Route Search – Map View – Zoom In



Trip Cancellations

ROGERS 2:20 PM

Earles St at Vanness Ave
Southbound
Stop ID 51058

Currently serviced by: **Departures**

16 29th Avenue Stn / Arbutus >
Next: Scheduled at 1:18am 2012-03-28

26 Joyce Stn / 29th Avenue Stn 39 min* >
Next: 9C, 24C, 54*, 71* min

N16 Nanaimo / Renfrew >
Nightbus
Next: Scheduled at 2:19am 2012-03-28

* Indicates **scheduled** departure time.
C = Bus for this time has been cancelled.
Please check nearby stops. For more info call **604-953-3333**, follow **@TransLink** or visit the **alerts page**.
Prediction as of 2:19pm
Page reloads every 30 seconds

Navigation icons: back, forward, refresh, home, app drawer

- ❖ Re-routes, Detours, Diversions
- ❖ Cancelled stops
- ❖ Cancelled routes
- ❖ Launch Alerts data (future release)

Thank You !

Next time you take
a bus, visit
nb.translink.ca