

Overview

Why is the use of smart bus technology important?

Smart bus technology is critical to building an effective and efficient transit system. The technology supports improved customer service and service delivery through the provision of “real time” service information, on board announcement and display of next stops, traffic signal priority, automatic passenger counts, interactive voice response and web based travel information.

How does the technology support LTC's – Long Term Growth Strategy?

Two of the key elements of the smart bus technology are the communication of real time information to customers and potential customers and providing the mechanism for interfacing with traffic signals to give buses priority. The latter is particularly critical on the proposed “bus rapid transit corridors”. The features of the system support the building of a more convenient and competitive system.

What other jurisdictions employ the same or similar technology?

This type of technology is employed in numerous cities around the world. In a North American context cities such as Chicago, Atlanta, Kansas City, Boston, Detroit, San Antonio, just to name a few, employ this type of technology. From a Canadian perspective municipalities employing a similar or the same technology include York Region, Kitchener-Waterloo, Calgary, Laval, Halifax and Vancouver.

How reliable is the proposed technology i.e. impact of buildings trees, clouds?

The Global Positioning System (commonly referred to a GPS) technology is very reliable and generally impacted only by very large buildings and tunnels which are not of significant concern in the London context. Further, should the GPS signal become temporarily disrupted, the system also employs odometer readings as back up to determine vehicle location.

How does the new system compare to the existing system in terms of technology?

The new system relies on GPS technology while the existing system used infrared “sign post” technology. The sign post technology is accurate at the point of detection; afterward the system is completely dependant upon the accuracy of the odometer. While GPS is marginally less accurate at point of reception it is overall more accurate. Further the vehicle can be located both on and off route with GPS functionality. The new system is accurate to within three metres. The old system is accurate at beacon locations, and less accurate as buses travel along the road. Generally, the old system accuracy is within 250 – 300 metres.

How does the new system compare to the existing system in terms of features?

The old system provided vehicle location, radio communications, “look back” information and real time information to Dispatchers and Customer Service staff monitoring the service. The new system provides more accurate location information, radio communications, and real time information to Dispatchers, Customer Service staff, Inspectors and the public through on-street information signs, interactive voice response and web based travel information. Further, the system provides additional features such as passenger counters and automatic on-board stop annunciations (both verbal and visual). In addition the system provides for a series of administrative and system management reports dealing with such issues as driver and vehicle assignment, and request for coordinated transfers.

When are the various features of the system to be operational?

The base system will be fully operational by the fall of 2008 with additional features such as the web based information and interactive voice telephone information being operational by April 2009. The base system includes next stop annunciation and display, real time next bus information at terminal locations, upgraded radio system, automatic passenger counters and traffic signal priority functionality. The extent to which certain of the features are employed "in service", e.g. traffic signal priority, will be dependant upon the direction taken by Municipal Council with respect to London Transit's Long Term Growth Strategy, including related program implementation.

What does the system cost and who is paying?

The cost of the new system is budgeted to cost \$6.5 million and is fully funded by the Provincial and Federal governments. The \$6.5 million includes program assessment, development of system requirements and bid selection process.

What are the expected areas of payback?

The system has demonstrated paybacks in the areas of :

- better management of on street service which means better service to the customer
- accurate passenger counts which will permit timely information for service decisions and changes
- use of transit signal priority to improve system efficiency
- accurate real time service information for the customers on bus, at major terminal locations and on the web site and via telephone

The system supports the development and delivery of both an effective and efficient transit system operating as a key component of a sustainable transportation system. Such a system provides demonstrated economic, environmental and community access benefits to the entire community.

How will the system assist with "supervision of on road services"?

Supervision of on-road services will be enhanced through accurate and real time information in order to make 'on the fly' and proactive service decisions which will result in better service to customers.

What information does the system provide to support 'transit planning/development'?

The system will provide a significant amount of information such as schedule adherence and passenger count information as input to routing and schedule planning changes for the system.

What "safety/security" features does the system have? Are they similar to those of the existing system?

There are a number of safety and security features which are similar to the features of the existing system. The most important feature is the two-way radio communication. Also, the more accurate vehicle location feature will permit more accurate emergency response, as may be required.

What on-board information is provided to the operator in terms of service performance?

In addition to two-way radio communication between the operator and Dispatch, information regarding schedule deviation, canned messages regarding detours and other service information as appropriate can be sent from Dispatch.

How accurate are the passenger counters?

The passenger counters are accurate plus or minus 5% over 700 passengers. This level of accuracy will be sufficient for service level and amenity decisions.

Will all buses have passenger counters?

Twenty five (25) buses will be outfitted with passenger counters and those buses will be rotated through the system based upon information needs. The passenger count information provided will be greater than that currently received through one-day on board counts which have historically been undertaken for each route on average every three years.

Other Facts and Figures

<i>Number of Buses</i>	190
<i>Number of Routes</i>	35 plus 4 community bus routes
<i>Number of Stops</i>	in excess of 2,500 (45% near side, 35% far side, 20% mid block)
<i>Number of Passengers</i>	73,000 plus passengers per day 19.3 million per year

On Board Customer Information

Will the “on-board information” be for every stop?

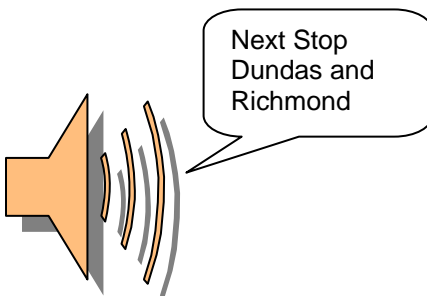
Every stop will be will announced audibly and displayed visually on board every bus. This will require stops to be identified either by name or number.

Where will the visual display be located?

The visual next stop sign will be located near the front of the bus on a standard length bus and both at the front and in the middle of articulated buses.

How loud will the on-board annunciators be and is it controllable by the operator?

The on-board announcements will be broadcast through speakers on the buses. The volume is controllable by the operator only to a minimum level which is set as part of the system parameters. The volume of the announcement is automatically adjusted based upon the ambient noise on the bus.



Wayside Customer Information

How many wayside information signs will there be and where will they be located?

There will be eight wayside signs (each with up to 8 lines of information). It is anticipated that the signs will be located at the four major regional malls, UWO, Fanshawe College and in the downtown area.

Will the information be scheduled time or actual time?

The signs will display real time information except if the next bus(es) are not anticipated for arrival until after an established time (e.g. beyond 30 minutes). In those instances scheduled time will be displayed and then real time displayed as the bus moves to within the set threshold.

How will the information be displayed at the wayside information signs?

The signs will display route number, name and next bus arrival time. They will also display current time, and allow for special messaging, as may be appropriate.

How frequently is the information updated?

Vehicle locations are updated constantly, with updates to wayside signs occurring once every 60 seconds.

Webwatch and Interactive Voice Response (IVR)



Is the real time service information available on the LTC website?

Yes, the information on the website and IVR will be based upon real time information for next bus(s). Information will be updated every minute. You will also be able to access future day/trip stop information to assist with trip planning based upon scheduled information.

When I call customer service will they have access to the information?

Yes, customer service staff will have access to real time information in responding to telephone inquiries regarding information.



real time

schedule

When I access the IVR, what information will be provided?

Information through the IVR system will provide next bus information by identifying stop name/number or landmark. The system utilizes voice recognition technology and will provide a list of stops if required.



When I call for information for next bus at my stop, how will it know where I am?

The system is capable of voice recognition of stop name, number, address, or significant landmark.

Traffic Signal Priority for Transit

How will transit signal priority interface with the new traffic signal system?

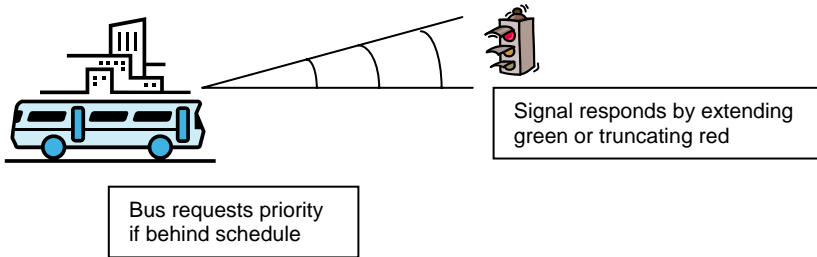
The City's new traffic signal system has the capability to interface with the transit system (buses). Through established protocol, a discriminator and the opticom transmitter provides the means for buses and traffic lights to interface.

What has been the experience in terms of the impact on traffic flow?

Experience in other systems where transit signal priority has been introduced have shown only minor temporary impact on signal timing progression. The regular timed progression is usually restored within 1 or 2 signal phases.

Who sets thresholds (protocol) to activate the transit system priority?

The thresholds are set through discussion between the transit system and the municipality.



Will the link apply to every signalized location?

While the potential exists that every signalized intersection could be activated the system will be implemented in a priority manner on the corridors identified as part of the Long Term Growth Strategy and other areas of significant delay to transit. The selected locations will be part of the discussion with the City of London.

Does the driver have control of the timing of the traffic signal?

No, the activation of the signal is done automatically by the bus and is dependant upon established thresholds (protocols) e.g. if bus is more than 3 minutes late the system will delay a red or extend a green to permit the bus to travel through the intersection.