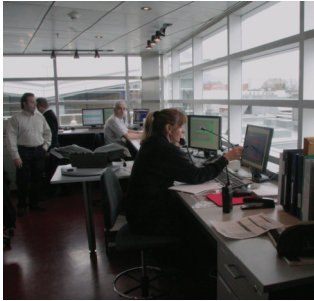




Montreal transit authority AMT relies on Motorola RFID technology to help increase customer satisfaction and expand use of public transit



With RFID, terminal managers have a real-time window into bus arrival and departure times. Armed with this information, managers can easily take proactive measures when needed to ensure bus service stays on schedule.

Organization overview: Agence métropolitaine de transport (AMT)

The Agence métropolitaine de transport (AMT) is a government agency for metropolitan transportation accountable to the Québec Minister of Transport. Its territory covers 83 municipalities in the metropolitan region of Montreal. AMT's mission is to expand public transit services in order to improve the efficiency of individual travel in the metropolitan Montréal area. To do so, AMT operates 5 commuter train lines, 2 metropolitan express buses, 15 terminals, 84 km of reserved lanes and 60 park-and-ride lots. The AMT is also planning, coordinating, integrating and promoting public transit services in close collaboration with its partners.

The challenge: Expanding bus ridership through improved services

Over the past decade, the greater Montreal area has transformed, bringing new issues and challenges to the region's transit system. The area's economy and population are expanding, and one result is a significant growth in travel to and from the metro area. Increased use of public transit can help reduce bridge and road congestion among other benefits, and AMT is charged with encouraging the public to use buses rather than private vehicles.

Already, many daily commuters and other users of the transit system arrive via subway at Montreal's bus terminals. However, in the region's harsh winters, waiting outdoors for a bus can be an ordeal, and buses are sometimes delayed. To address the negative perception of an uncomfortable commute and to promote bus usage, AMT considered innovative new approaches to transportation management.

The solution: Eminencia and Solotech combine forces with Motorola's RFID technology

AMT chose Solotech International, a Canadian company with extensive experience in multimedia design and integration, to help with the user interaction component of the project. A plan was developed to give customers real-time information on large digital display screens mounted in the bus terminals.

The customer screens display information about bus arrival and departure times and the appropriate docks. This data is also presented to terminal managers who monitor and control the bus traffic. To gather the information, an infrared solution combined with mass detection capability (for the detection of buses) was considered but the technology was lacking in functionality

"The RFID system based on Motorola technology is a very effective and affordable solution for providing vital real-time information about bus departures and arrivals to our customers and to the terminal managers who control the bus routes."

- Claude Carette,
Vice President, Metropolitan
Operations, AMT

Customer profile



Agence métropolitaine de transport

Organization

Agence métropolitaine de transport (AMT)

Location

Montreal, Quebec, Canada

Industry

Urban public transit network

Motorola Products

Motorola XR Series ultra-high-frequency (UHF) RFID Readers; Motorola AN200 General Purpose Indoor/Outdoor RFID Antennas; Motorola RFID Cargo Tags; Motorola CB3000 Wireless Bridge Adaptors; and Motorola AP-5131 Wireless Access Points

Application

An RFID system comprised of RFID-tagged buses and RFID-enabled bus depots, provides increased transit visibility to customers and AMT officials. Bus riders can wait in terminals, sheltered from frigid winter temperatures, viewing accurate, real-time information about arrival times and dock locations on large digital display screens. Transit terminal managers now have real-time bus dispositions and know precisely when buses arrive and leave. Using this information, managers improve customer service by keeping riders informed and increase operational efficiencies and capacity through increased visibility.

Motorola Partner

Eminencia (logistics consulting and RFID technologies) and Solotech International (digital displays and technology integration)

Benefits

- Supporting AMT's critical mission to increase the usage of the transit system
- Providing real-time information to bus riders
- Making bus travel more convenient and comfortable for bus riders even in inclement weather
- Increasing the bus visibility to terminal managers
- Enabling detailed cumulative reports to improve management of routes and personnel

and accuracy. Instead, a UHF, RFID-based solution consisting of RFID readers throughout the terminals and RFID tags on buses to detect the bus location throughout the terminal met AMT's needs for cost efficiency, environmental performance and real-time accuracy.

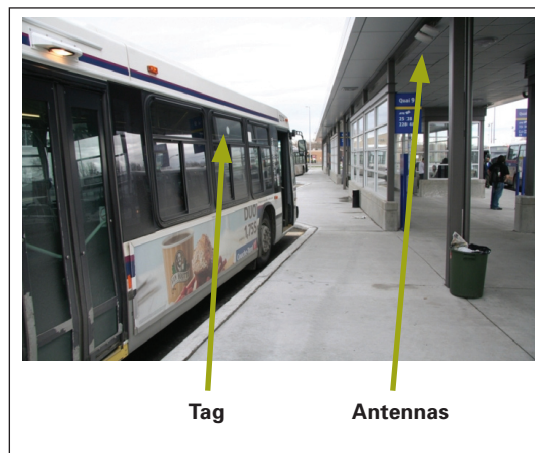
Solotech and the RFID technology specialists from Eminencia worked together to design the integrated system for AMT using Motorola RFID technology.

According to Pierre Malboeuf, President and Principal Partner at Eminencia, "We recommended Motorola RFID technology for this project because of its performance and accuracy. AMT required outdoor locationing, so we tested the performance of available technologies and compared the results in terms of performance, distance and weather. The Motorola RFID readers, antennas, and tags produced excellent results," noted Malboeuf.

Motorola RFID technology addressed several critical project challenges. "As buses enter the terminal, the system must handle distances up to 14 meters. Buses pass in front of the readers quite rapidly, at about 65 km per hour and more. With a few adjustments to the RFID antenna and software, the system delivered very good accuracy," noted Malboeuf.

"Most of the system is wired, but at the terminal exits and entrances, there was no connectivity, so that aspect had to be wireless. The Motorola CB3000 Wireless Bridge Adaptor and Motorola AP-5131 Wireless Access Points provide a cost-effective way to address this," said Malboeuf.

In the frigid winters of Quebec, weather was a major factor in the choice and installation of the technology. "To withstand temperatures to minus 40 degrees, the readers are enclosed in NEMA [National Electrical Manufacturer's Association] boxes. No other vendor would guarantee its exposed antennas for these conditions — only Motorola confirmed that their RFID antennas would perform in this environment," Malboeuf said.



As the buses approach and leave the terminal, the Motorola RFID XR Series Reader automatically interrogates the tag on the bus and sends the information to terminal managers, eliminating the need to check with multiple people to determine bus status. Terminal managers now have more time to tend to the critical task of keeping city buses running on time — critical to improving service and ridership to help reduce congested roads in the growing metropolitan area.

The system is currently operational at the Cartier and Montmorency bus terminals in Laval. There are Motorola RFID Cargo Tags affixed to 380 buses, and each terminal has an RFID network consisting of Motorola XR Series RFID Readers, Motorola AN200 General Purpose Indoor/Outdoor RFID Antennas, and a wireless network consisting of Motorola AP-5131 Wireless Access Points and a Motorola CB3000 Wireless Bridge Adaptor.

The benefits: Excellent customer service and enhanced route management

“For AMT, customer service is extremely important, and with the help of Motorola, Eminencia, and Solotech, AMT is providing a new level of service to its customers. For example, bus riders can wait in the comfort of the terminal until the bus arrives rather than standing outside,” said Malboeuf.

While keeping customers informed, the system is also providing vital information to the terminal managers. Terminal managers in the terminal control towers do not have a direct view of the buses at the docks, so they could not provide proactive services in the past. Now, instead of checking with multiple people to see if a bus is on time, terminal managers have real-time information about bus arrivals, and if needed, they can quickly put another bus into service to maintain schedules.

“With the real-time information provided by the RFID system, we can provide exceptional customer service by controlling bus traffic effectively and notifying the passengers of bus dock locations and arrival times,” said Carette.

For AMT, the RFID solution benefits include:

- Supporting AMT’s critical mission to increase the usage of the transit system
- Providing real-time information to bus riders, enabling them to wait indoors in terminal buildings in inclement weather
- Making bus travel more convenient and comfortable for bus riders
- Increasing the bus visibility in the depot for terminal managers

- Providing real-time information to terminal managers to enhance decision making
- Enabling detailed cumulative reports for terminal managers to improve management of routes and personnel

Looking ahead, AMT plans to build on its RFID-based infrastructure. One future initiative is GPS integration. AMT is also investigating the potential for bus fast lanes: with RFID-enabled transit buses, it is possible to interact with traffic signals at intersections for priority transit and reduced travel time.

Additional resources

To find out how you can leverage RFID to improve the efficiency of your business operations, visit www.motorola.com/rfid or access our global contact directory at www.symbol.com/contact

About our partners



financial, material, and human resources. For more than 15 years, Eminencia has worked closely with teams at North American companies of all sizes to design and implement innovative solutions to enhance supply chain efficiency for overall strategic advantage. With a specialty in RFID technology, Eminencia combines best-practice vision with a practical approach based on tangible results for its clients.

Solotech International is an industry leader in sound, lighting, video and new media. Founded in 1977 and based in Montreal, Quebec, Solotech offers an extensive product line and turnkey solutions for the integration of multimedia presentation systems for the show business industry, recording studios, and businesses with strategic media requirements. Solotech’s team of industry professionals, consultants, engineers, and technicians have experience in large studios, on the great stages of the world, and with numerous noteworthy international projects.



Outside the terminal, Motorola’s XR Series RFID readers are installed outside the terminal in NEMA enclosures to ensure reliable operation in sub-zero temperatures — a critical requirement for the Quebec-based transit system.

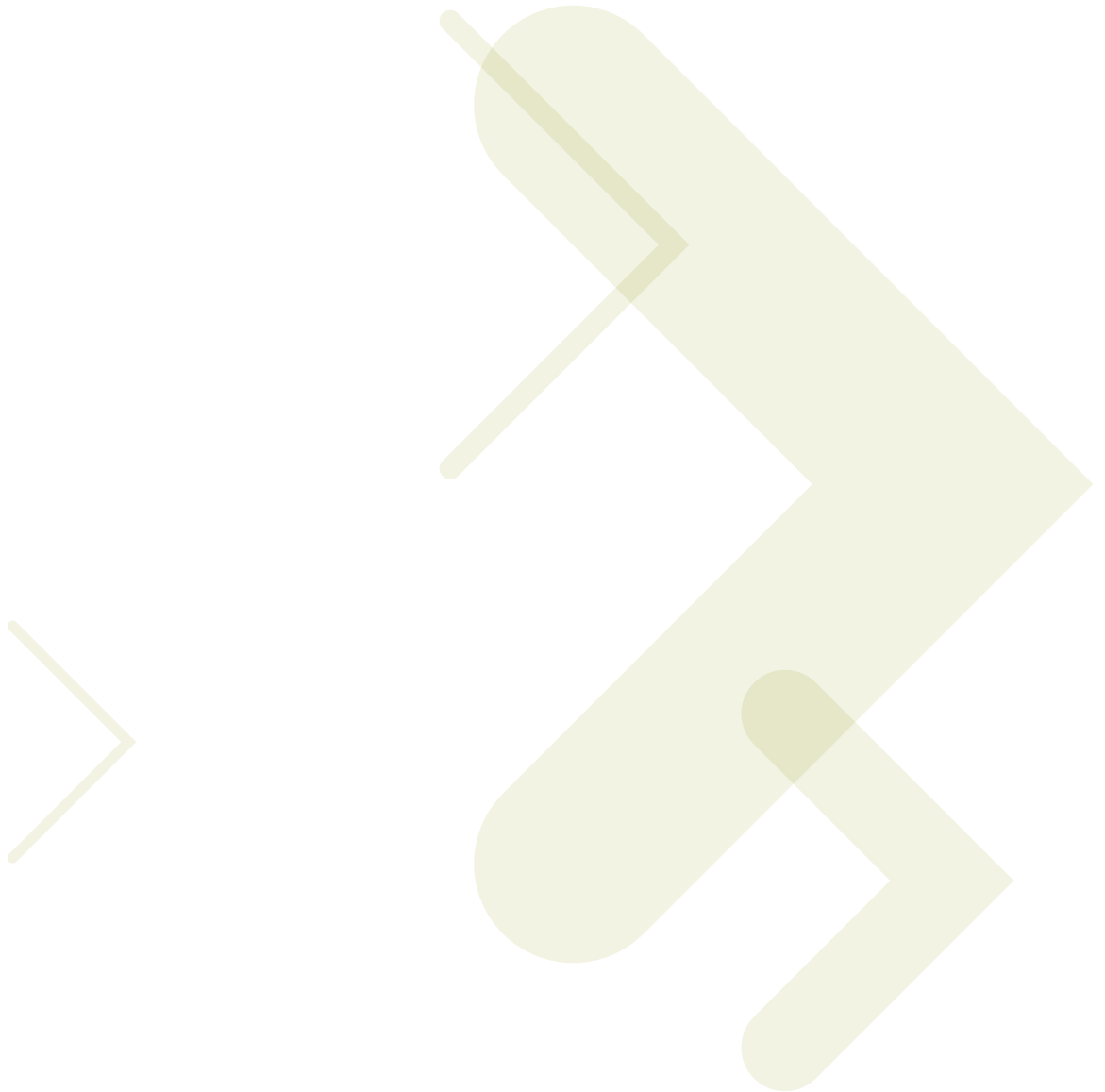
Ligne	Départ	Quai
228	11:14	9
73	11:16	3
74	11:19	3
63	11:19	7
58	11:22	10
43	11:24	5
25	11:24	9
31	11:30	4
27	11:43	5
Cit. Laurentides 24	15:15	12

11:09

RFID also enables AMT to deliver a new level of service — since customers can monitor real-time arrival and departure times, they can wait in the comfort of the terminal until their bus arrives, rather than outside in cold or inclement weather.



Affixed to 380 city buses, Motorola’s all-weather RFID Cargo Tags provide the rugged design required to ensure reliable performance in spite of 24-hour-a-day exposure to some of the toughest environmental conditions — from extreme temperatures, dust, rain, snow, ice and sunlight to oils and chemicals.



MOTOROLA

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CASE STUDY: AMT