BAI Communications
Bringing the connection to our world

onair

Issue #15

FEATURE

MAJOR MILESTONE FOR BAI CANADA

With cell connectivity at all 75 Toronto stations

ARTICLES

CONNECTING THE COMMUTERS OF NEW YORK
280 million cellular calls recorded in one year

DARWIN'S GONE DIGITAL
Audio enhanced for listeners with DAB+ network switched on

ICONIC LOCATION FOR BAI UK
With its new London office in the heart of Paddington

BAI Canada takes Toronto subway cell connectivity to the next level

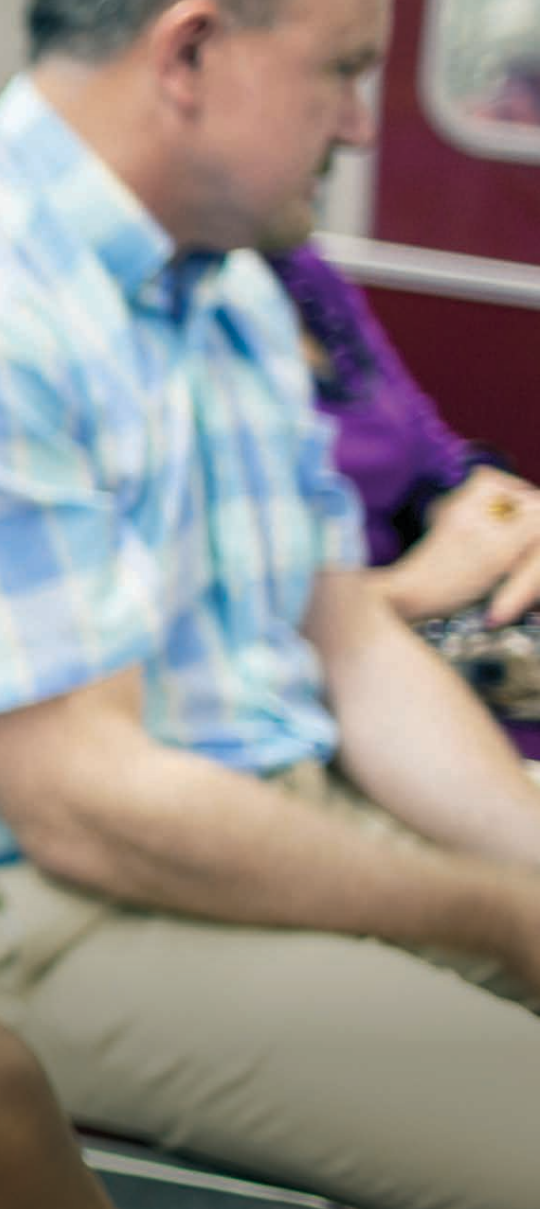
BAI Canada and the Toronto Transit Commission (TTC) achieved a major milestone in December 2017 with the digitisation of Toronto's subway system, further modernising the TTC rider experience with the completion of the installation of cellular connectivity infrastructure.

York Mills, Kipling, Islington and Kennedy stations were the final existing stations necessary for BAI to complete the expansion of cellular connectivity, as well as the six new stations and tunnel segments along the new Toronto-York Spadina Subway extension.

BAI Canada Chief Executive Officer Ken Ranger said: "Freedom Mobile customers are the first to benefit from the full connectivity."

"TTC riders have spoken loudly and clearly that in a world-class city like Toronto, they expect to have quality cellular service wherever they are," Mr Ranger said.

"Whether above ground or on the bustling subway platforms, they want cellular service they can rely on. I'm proud of the work BAI has done to bring its global experience in digital connectivity to build best-in-class infrastructure in Toronto's subway system."



Project facts

- 50,000+ installation hours in 2017
- 50km of fibre optic cabling in 2017
- 75 stations connected to Wi-Fi and cellular networks

> The TTC was committed to enhancing the customer experience for passengers and modernising the entire system.

Freedom Mobile customers can now use their cellular LTE services to talk, text, tweet and post at all 75 TTC subway stations, including the Line 1 extension's six brand new stations and nine kilometres of underground tunnel. This adds to the cellular connectivity already available in the downtown loop of the TTC's Line 1 between Bloor/Yonge station and King station.

Chair of the Toronto Transit Commission, Josh Colle said: "The TTC was committed to enhancing the customer experience for passengers and modernising the entire system."

"This marks another exciting milestone with the expansion of cellular service across the new Line 1 extension and free Wi-Fi and cell connectivity available at all 75 stations," Mr Colle said.

"We look forward to continuing to partner with BAI and Freedom Mobile to keep our customers connected during their commute."

Freedom Mobile Chief Operating Officer Paul McAleese said: "The new technology would be a huge benefit for Freedom Mobile customers."

"If you are a commuter using the subway, Freedom Mobile is the obvious choice if you value connectivity," Mr McAleese said.

"Our customers are the first to have cellular service at all TTC subway stations to stay connected with friends, families and colleagues throughout their day. With all subway stations now online, we will continue to work with the TTC and BAI Canada to expand our in-tunnel cellular network in 2018 to ensure our customers stay connected while in transit."

BAI has designed the cellular infrastructure system to accommodate any carriers' spectrum and associated power needs.

Every weekday, approximately 180,000 users log-on to the free Wi-Fi service available at the TTC subway stations. It's clear transit users want to be able to connect on their commute. In fact, Leger did a survey* of Torontonians and nine out of 10 expected cell coverage in all parts of the city and three-quarters said that having cell service underground would improve their TTC experience. Increasingly, connectivity is an expectation – not an exception – particularly in cities that are tech leaders like Toronto.

By the end of summer 2018, BAI will have completed the installation of cellular service throughout the tunnels in the downtown core, in addition to the service at all 75 TTC stations. Toronto is rapidly becoming a more connected city, thanks to BAI.

** Leger Mobile Service on the TTC survey, 18 October 2017*

Transit Wireless celebrates 1 year of full MTA system coverage

From December 2016 to December 2017, a year since completion, the popularity of seamless cellular coverage in NYC subway stations and platforms, along with the public access Transit Wireless WiFi™ network has continued to grow.

Throughout 2017, more than 280 million cellular calls originated within the underground subway stations and 120 million Wi-Fi log-ins were made to the public Wi-Fi network. The network also handled countless text messages, app usage and viral video streams — some of the many ways consumers use their smartphones while connected to the network.

Transit Wireless, a majority-owned BAI Communications company, has worked hand-in-hand with the Metropolitan Transportation Authority (MTA) to deliver and support improvements like the ubiquitous Help Points and the expansion of countdown clocks to cover the entire subway system.

MTA Chairman Joseph J. Lhota said: "With hundreds of millions of calls and Wi-Fi log-ins tallied during the course of 2017, our customers have sent a clear message that they want to stay connected during their commute."

"Even more importantly, heightened connectivity has provided us with additional capacity for emergency communications, as well as new digital platforms that help us share information with our customers," Mr Lhota said.

Transit Wireless was created to deliver on the MTA's vision to develop a shared wireless infrastructure within the underground stations of the New York City subway, including connectivity services for AT&T, Sprint, T-Mobile and Verizon Wireless customers.

Since its inception, the cellular and public Wi-Fi network coverage from Transit Wireless has been connecting customers as they make their daily commutes.

Transit Wireless & the MTA

- 280 million cellular calls in 12 months
- 120+ million Wi-Fi log-ins in 12 months
- 282 underground stations 'online'
- 160 miles of fibre
- 22 Subway lines

Transit Wireless financed, designed, constructed, and now operates the cellular and Wi-Fi subway station networks.

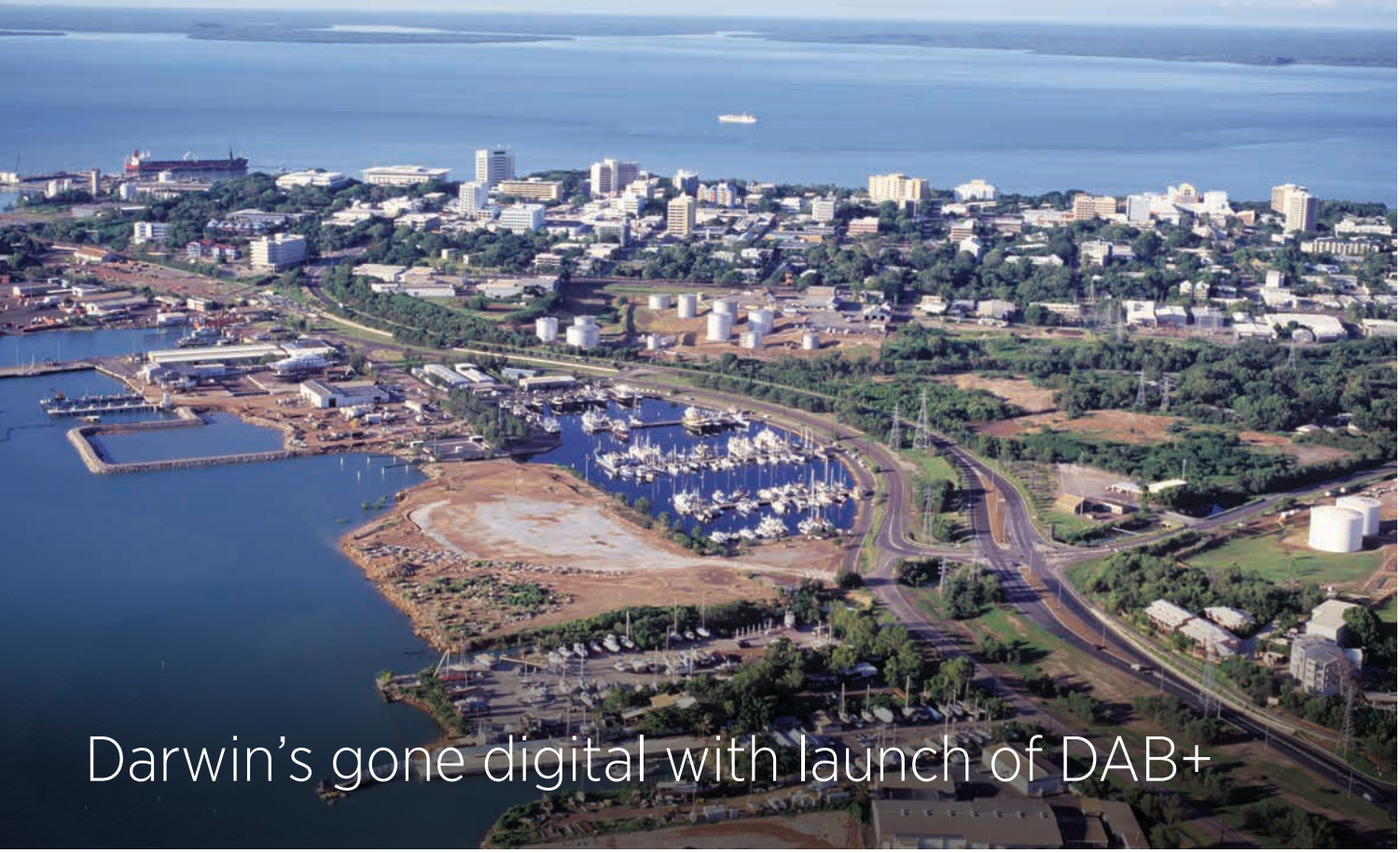
In early March, Transit Wireless was recognised as an honourable mention in the Metropolitan Transportation Authority (MTA)'s Genius Transit Challenge for its proposed solution to implement high-speed Wi-Fi connectivity into the New York City Subway System's train fleet.

The adoption of the network among subway riders has been impressive. It's being put to the test every day by customers streaming videos and music, downloading books and podcasts and passing with flying colours. Connectivity is not simply a perk, it's an expectation.

The Transit Wireless network infrastructure goes way beyond public cellular and Wi-Fi — it is helping to revolutionise how the MTA communicates with riders underground. Whether it's through enhancing public safety communications, or expanding train arrival displays system-wide with Wi-Fi beacon support, Transit Wireless are augmenting the future of transit technological applications.

Like Transit Wireless' other clients, the wireless carriers, have delivered continuously positive feedback.

Continuity of service is critical to their customers, and the transition from the above ground network to the Transit Wireless one below is seamless. This ensures that whatever the customer is doing – downloading a podcast, snapchatting, or calling a loved one – carries on without interruption.



Darwin's gone digital with launch of DAB+

Darwin listeners now have access to the exciting new world of digital radio, thanks to Broadcast Australia's expansion of the DAB+ network.

Broadcast Australia, a BAI Communications company, undertook the project on behalf of the national broadcasters, ABC and SBS.

The technology offers a wide range of benefits to listeners including enhanced audio quality for existing programs, an increased variety of radio stations and live text.

Broadcast Australia Chief Technology Officer Stephen Farrugia said: "DAB+ bridges the gap between broadcast and digital technology to efficiently provide high quality audio to the audience without impacting their data downloads."

The design incorporates a single shared multiplex model which combines digital signals from the National Broadcasters into one signal at the transmitter site.

This design was implemented for the national broadcasters for the first time for the launch of DAB+ Canberra. There has been significant technical and operational knowledge gained from Canberra and we have seen these improvements in the rollout of DAB+ in Darwin.

"The team worked tirelessly to get the services up and running in time for Christmas and we are proud to offer these new and enhanced National Broadcaster DAB+ programmes to the top end of Australia," Mr Farrugia said.

In 2009, DAB+ was launched across five Australian capital cities – Sydney, Melbourne, Brisbane, Adelaide and Perth.

Today, DAB+ covers 65 per cent of the Australian population, with more than 3.8 million listeners tuning in each week — a figure set to grow with services being switched on in Canberra and Darwin.

Broadcast Australia will continue the rollout of DAB+ digital radio on behalf of the Australian national broadcasters in Hobart this year.

> DAB+ efficiently provides high quality audio to the audience without impacting their data downloads.

Broadcast Australia recognised globally for its antenna testing methodology

Broadcast Australia engineer Stephen Heazlewood's research recognised as best in class in the National Association of Broadcasters (NAB) Engineering Handbook.

Broadcast Australia, a BAI Communications company, has been recognised at a global level for its understanding of the testing and analysis methodology used for its TV transmission and antenna system testing.

Recognising this innovative and proven method, Heazlewood was invited to contribute to the leading industry publication, the National Association of Broadcasters (NAB) Engineering Handbook. This definitive resource for broadcast engineers is published every 10 years in the United States, Heazlewood had the honour of being the only Australian invited to co-author a chapter for the 11th edition of the Handbook.

Heazlewood's chapter TV Transmission Line and Antenna System Measurements, explains the tried and tested methodology, and introduces the extra analysis methods Broadcast Australia has implemented to ensure its broadcast transmission systems run as efficiently as possible, with minimal distortions.

Because of this practice, Broadcast Australia is able to proactively determine an issue before one arises on operational channels or before it critically fails, ensuring its customers, like ABC and SBS, are not disrupted.

By improving the efficiency of the antenna, the most critical element in delivering the broadcasting service, the new process minimises the risk of transmission failures resulting in increased broadcast reliability.

"This methodology is an example of the type of innovation encouraged and supported within Broadcast Australia. We saw an opportunity to iterate and improve our existing technology and practices and I'm really pleased this has been highlighted in the NAB Handbook, as we strongly feel it should be adopted as the industry standard," Heazlewood said.

"We've been able to drive a lot of positive change for our customers in Australia because we're able to understand in a more objective way the health of the antenna system which leads to less disruption, especially critical disruption. Based off the success we've had with this methodology we are now looking at other areas where we can apply this best-practice testing technique."

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BAI Communications UK opens new Paddington office

In February 2018, the BAI Communications UK team moved into their new offices in the heart of Paddington, the location of one Europe's most iconic railway stations.

Paddington has a rich rail heritage, with the main station opening in 1838 as the terminus for Isambard Kingdom Brunel's Great Western Railway. Running some of the earliest steam trains, the main station was also the destination of Queen Victoria's first rail journey in 1842.

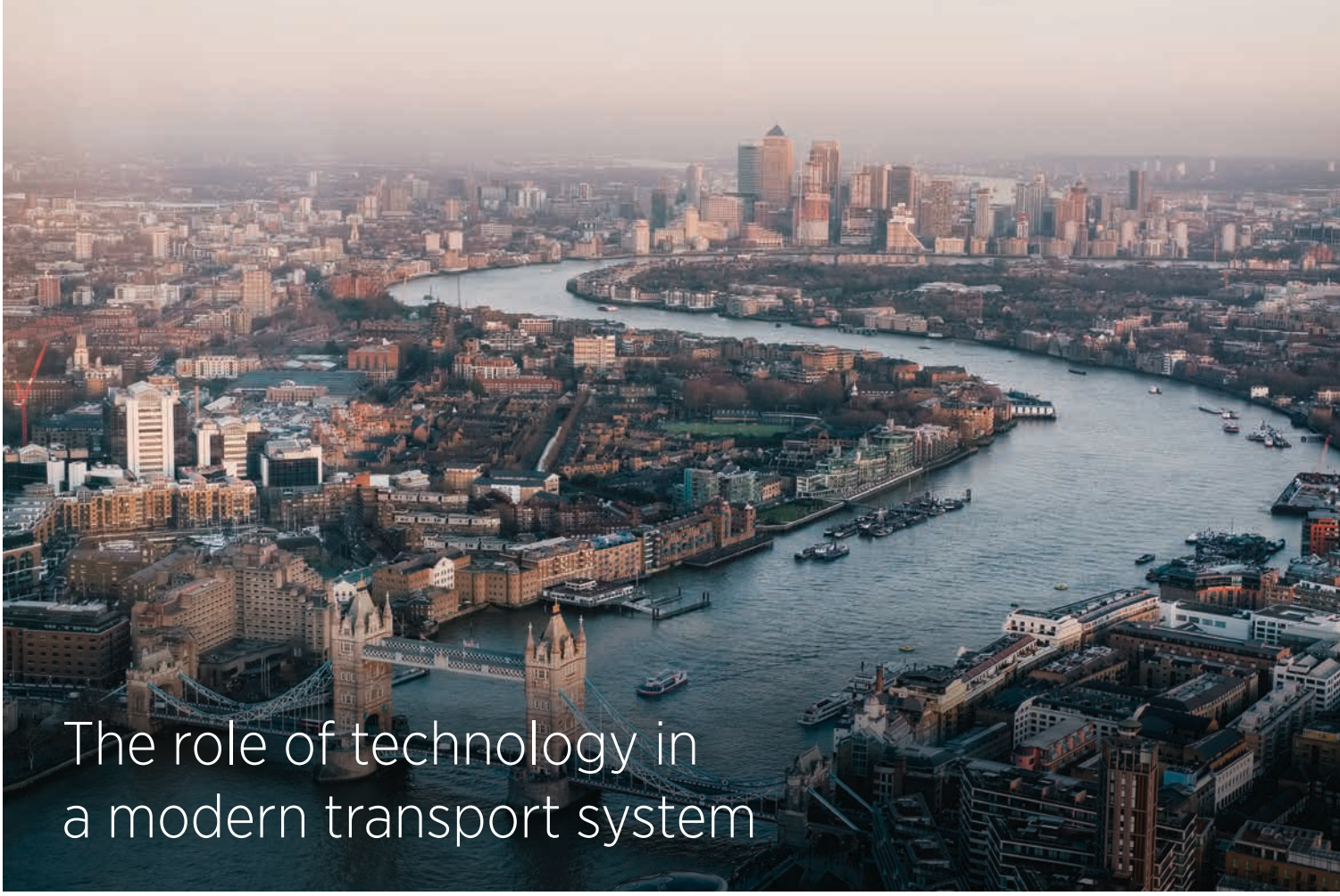
Today, the station is one of the UK's busiest, having benefited from a £65 million refurbishment in 1998 and further £45 million investment from 2009 to 2011.

The station is again being transformed as part of the huge Crossrail project, running east-west across London. The new station, Elizabeth Line, is set to open at the end of 2018.

There's no better place for the growing team of 13 people, to be. It will put the UK office at the heart of the UK's rail hub, as well as provide easy access to potential customers and stakeholders.

"We want to be in the kind of location that's right for our high-performing team, one that supports our customer-centric approach. Furthermore, London gives us a base from which we can expand our European presence," said Billy D'Arcy, Chief Executive Officer, BAI Communications UK.

The newly-built offices provide the business with space to grow as they work to win major UK projects. The investment in the new offices also underlines BAI's long-term commitment to the UK and its confidence in being able to win substantial business in the coming years.



The role of technology in a modern transport system

On February 21 2018, BAI Communications was delighted to sponsor a round table discussion hosted by Reform, the UK policy think tank.

Together, with a range of industry, government and stakeholder organisations the room discussed the role of technology in a modern transport system. No mean feat, given the scale of the subject. However, judging by the interest of participants, technology still has vast untapped potential which the UK transport sector needs to grasp.

In the words of Billy D'Arcy, Chief Executive Officer, BAI Communications UK, "I am passionate about innovation; it is at the heart of BAI's business".

"But one of my conclusions from the event is the opposite of what you might expect. In order to capture the benefits of a modern transport system, we shouldn't start with technology at all," Mr D'Arcy said.

"In fact, we need to start at the other end, by thinking about the needs of the passenger, and then work out how to meet them with the technological advances available to us."

While there was broad agreement about this simple point, there was also recognition that it is not easy to do, no major technology or infrastructure project can be delivered in a bubble. If the UK wants to become a world leader in transport technology, whether this is for driverless cars, new train technologies or beyond, collaboration between partners is essential.

As a company which specialises in putting mobile communications networks onto transport systems, BAI believes the UK could become a world leader in this industry. However, it will require working with partners pulling in the same direction. Which is why the business has been talking to transport operators, government, passenger organisations, mobile network operators, transport authorities and beyond. It is a long list, but if BAI are to deliver a communications network which meets the expectations of passengers, each will play a vital role.

If the UK wants to become a world leader in transport technology, collaboration between partners is essential.

Technology will play a critical role in creating a modern transport system in the UK, as will collaboration within the industry and finding new and better ways of working in partnership. Great progress has already been made. But by focusing on passenger needs, ensuring the expertise and skills are in place to continue to innovate and by working in partnership across the industry, the UK now has a fantastic opportunity to develop a world leading modern transport system.

Making the Toronto subway safer

Safety-related issues are being tackled in new and innovative ways by the Toronto Transit Commission (TTC) through its SafeTTC app, which is supported over BAI Canada's network.

The free app is available for Apple and Android-powered devices and offers users the ability to report numerous non-emergency activities such as harassment, safety concerns and suspicious activities.

In the event of an emergency requiring immediate police, fire or medical assistance, the TTC advises customers to use the familiar yellow emergency alarm, call 911 or alert a uniformed TTC employee.

SafeTTC is an intuitive and easy-to-use platform. With it, users can discreetly file a report using text, photos or videos.

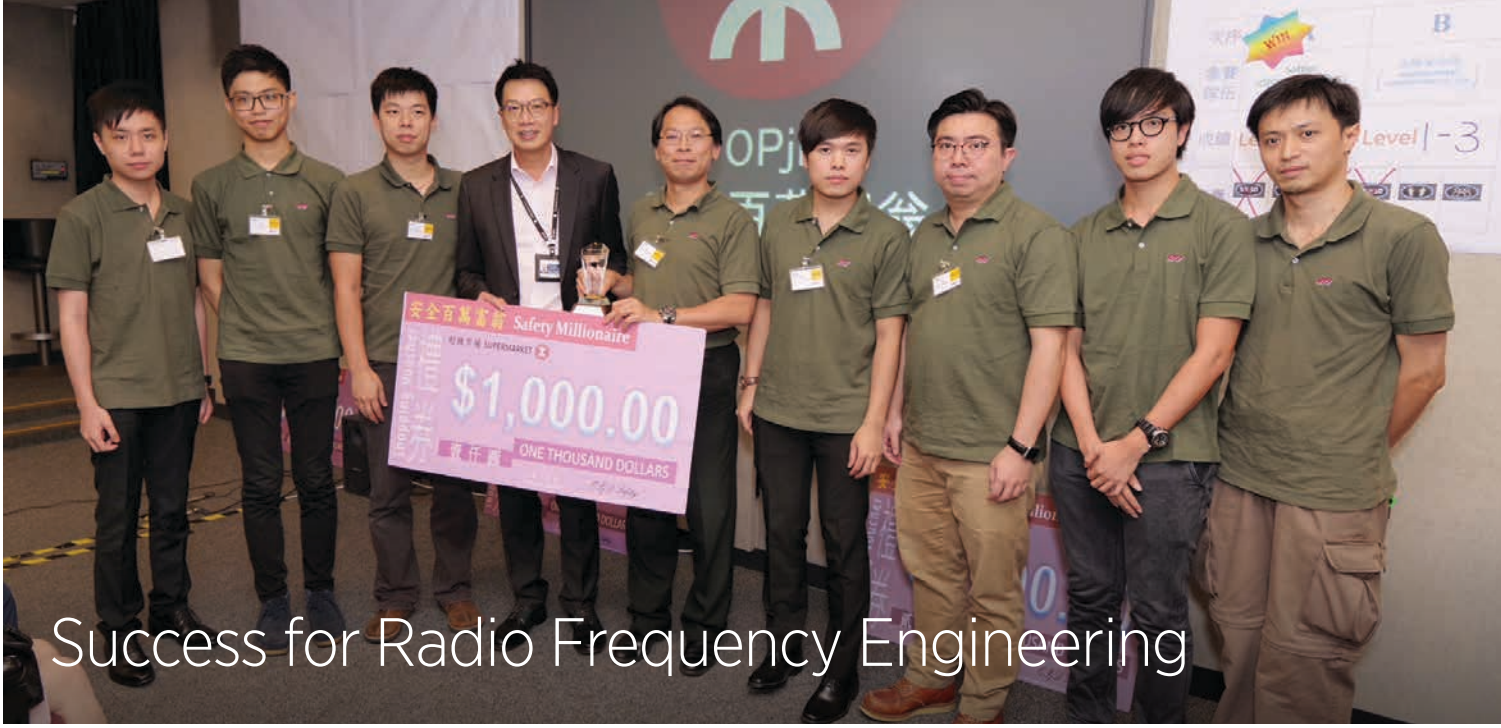
When reporting an issue, customers can select from easy drop-down menus for vehicle type (bus, streetcar or subway), route numbers, and station locations, and report categories to assist Transit Control in assessing the situation. It also allows for real-time communication with TTC staff when connected to a network.

Reports are sent directly to a dedicated terminal in the TTC's Transit Control Centre, where staff will respond based on the nature of the incident being reported, including dispatching Transit Enforcement Officers or calling police. Transit Control can also communicate with the person filing the report via a chat function.

The app is designed with the subway in mind. If a report is sent in an area without internet connectivity, it will be stored and sent automatically as soon as the user is connected again.

And thanks to the BAI network, all stations are Wi-Fi enabled.

The free SafeTTC app offers users the ability to report non-emergency activities such as harassment, safety concerns and suspicious activities.



Success for Radio Frequency Engineering

BAI Communications company, Radio Frequency Engineering (RFE) has won 'The Most Devoted Team' award, part of Hong Kong's MTR Corporation Ltd's *Safety Millionaire Campaign*.

While participating in the *Safety Millionaire Campaign*, RFE also competed in the *Heat Competition for Contractor Teams of Safety Millionaire 2017* and successfully secured third place in the competition. Based on the popular game show *Who Wants To Be A Millionaire?* Contestant teams were quizzed on questions relating to safety legislation and general knowledge.

Over the past two decades, RFE has designed, built and maintained the communications systems the Hong Kong MTR – one of the world's busiest rapid transit railway systems, serving 1.6 billion passengers per year.

Further demonstrating RFE's superior quality of work in the project, the team were awarded the Gold Quality Award in 2015 and Bronze Quality Award in 2013 and 2016 by the MTR Projects Division.

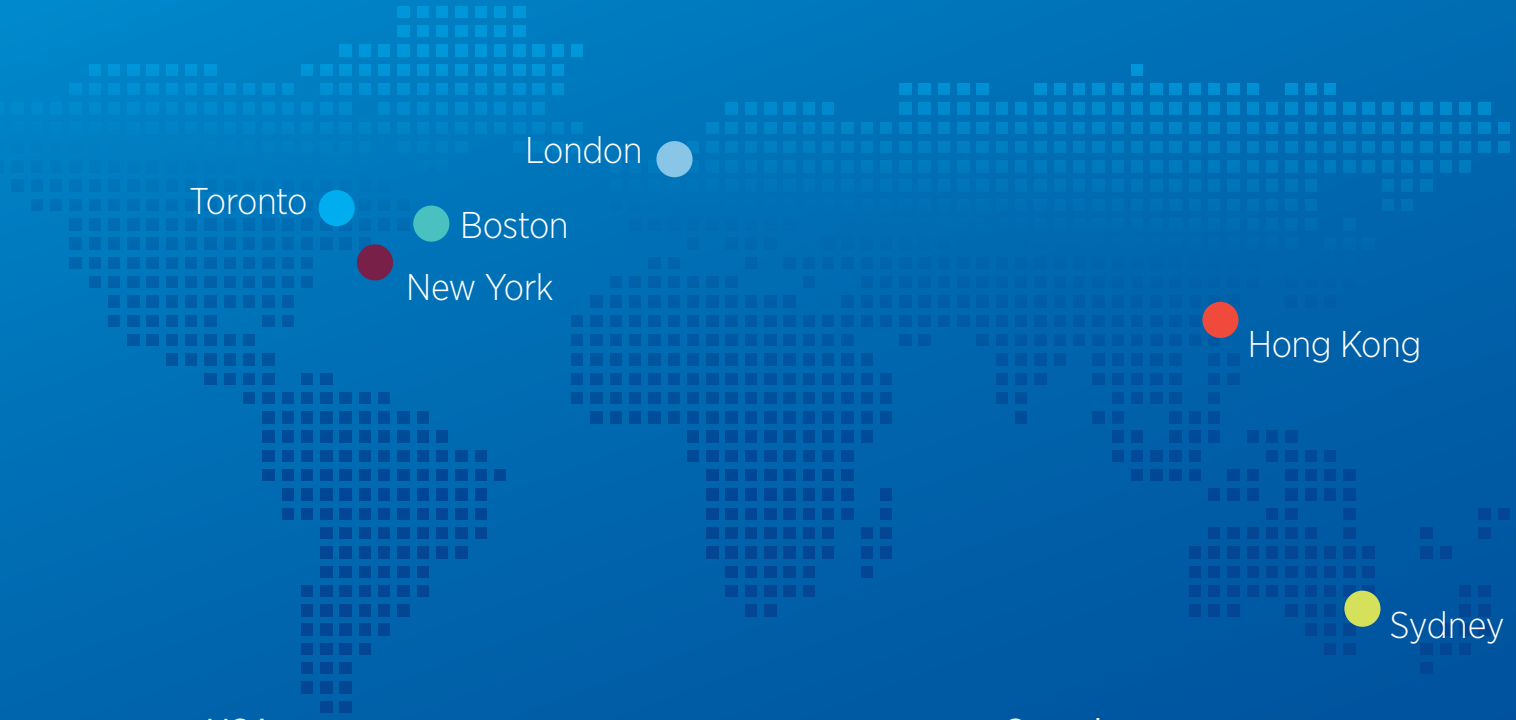
Transit Wireless Director named in Top 40 under 40

Nathan Cornish, former Director of RF Engineering at Transit Wireless, a majority-owned BAI Communications company, has made Mass Transit Magazine's 2017 'Top 40 Under 40' list – placing him up there with the sector's top leaders and innovators under the age of 40.

Mass Transit's 'Top 40 Under 40' list recognises individuals for their contributions, and acknowledges those who have shown a capacity for innovation, demonstrated leadership and shown a commitment to making an impact in transit.

Mr Cornish, 36, began his career at BAI Communications in 2005 as a Project Engineer at Broadcast Australia. Since then, Nathan has worked in a number of key managerial roles with Transit Wireless in New York City, where he managed the development of innovative products and solutions to support Transit Wireless' customers' needs now and into the future.

Having returned to Australia at the end of 2017, Mr Cornish has taken up a new role as Director of Product Development: Transit for BAI Communications.



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