Case study

Tiny Mile takes a big step in robot automation with Bell and AWS

Making food deliveries with remote-controlled robots instead of cars offers quick, inexpensive and carbon free deliveries – a win-win proposition for customers and the environment. With Bell and AWS, Tiny Mile's rovers get access to the real-time data processing needed to detect and avoid objects, ensuring they make their deliveries safely, efficiently and on time.

Challenge — A better way to make deliveries

When Tiny Mile analyzed food delivery trends in Toronto, the company found that most deliveries were made within 2 km – and a significant number were for just one item, such as a cup of coffee. Sending a driver in a car to make these deliveries is not only slow and expensive, but it also comes with a large carbon footprint. In response, Tiny Mile uses small remote-controlled robots (or rovers) to deliver coffees, sandwiches and other small food orders at one-tenth the cost of more traditional delivery services.

Tiny Mile's rovers are operated remotely, with one operator assigned to each rover. Operators rely exclusively on camera feeds from the rovers to make sense of the environment, read signage and pilot the rovers. Any delay in the video feed increases the chance of a collision, putting both the rovers and pedestrians at risk.

In addition, for Tiny Mile to be able to scale its operations – tapping into new markets across Canada efficiently – they need to make rover operations fully autonomous, adding new rovers without having to hire an operator for each one.

To solve for these challenges, Tiny Mile is working with Bell and AWS to leverage the power of 5G and multi-access edge computing (MEC).

Tiny Mile

Since 2019, Tiny Mile has been using remote-controlled, battery-powered robots to deliver food and other small items around downtown Toronto without emissions. The company's vision is to change the face of delivery across Canada by making deliveries cheaper, faster and more environmentally friendly.

Solution — Faster computing avoids collisions

"Our business model depends on a fast, reliable network," says Ignacio Tartavull, CEO of Tiny Mile. "That's why we've been working with Bell – and why we're excited to take advantage of the Bell Public MEC offering."

Bell Public MEC embeds AWS compute and storage services within Bell 5G networks, providing multi-access edge computing infrastructure for developing, deploying, and scaling ultra-low-latency applications.

With Bell Public MEC, Tiny Mile is able to bring the cloud to the edge of the Bell 5G network and, in turn, much closer to the rovers as they travel throughout downtown Toronto. "Using the Bell Public MEC with AWS wavelength gives us access to ultra-low latency and lightning-fast data processing, ensuring the calculations performed on the live video streams happen in real-time and without the lag that comes with sending the video data back to a centralized server" explains Ignacio.

With these capabilities embedded at the edge of the network, Tiny Mile can take advantage of real-time video analytics that detects obstacles – from stationary telephone poles and mailboxes to pedestrians, animals and fast-moving cyclists – and automatically issue a stop command (without operator intervention) to avoid collisions before they happen.

The rovers being tested are also equipped with ultralight, purpose-built onboarding communications devices so they can maintain constant contact with and take full advantage of the high speed and low latency of the Bell 5G network. This reduces the overall weight of the rovers and optimizes cargo space for deliveries.

Bell Public MEC with AWS Wavelength solves for many of Tiny Mile's most pressing needs. By offloading the workload from the rovers to the cloud services at the edge of Bell's 5G network, the rovers are able to navigate the city streets safely and efficiently.

"The Bell 5G network and the AWS Wavelength Zone are helping us get one step closer to fully autonomous deliveries."
— Ignacio Tartavull, CEO, Tiny Mile

Tiny Mile's Public MEC solution includes:

- AWS Wavelength
- Bell 5G IoT connectivity
- Professional Services to deploy and configure cloud infrastructure

Results — Faster, cheaper, safer deliveries

Tiny Mile is able to reduce latency in its video feeds by an estimated 30%. Combined with the real-time object-detection and collision-avoidance calculations powered by edge computing, the rovers can stop faster than they could before.

This is not only an important step toward greater autonomy, but also a critical safety enhancement: if an operator gets distracted, the robots can still safely avoid a collision.

With cloud closer to their robots, Tiny Mile is changing the game for food delivery – offering businesses faster, cheaper and more environmentaly friendly deliveries – without sacrificing safety.

Why Bell and AWS

- Canada's fastest 5G network for optimal performance[1]
- A global leader in cloud infrastructure and services – bringing compute to the edge of the 5G network[2]
- Industry-leading technologies and end-to-end network, cloud and security expertise

Visit **bell.ca/mec** and **aws.amazon.com/wavelength** for more information on how Bell and AWS can help you deliver cutting-edge 5G experiences with ultra-low latency.

[1]Award based on analysis by Ookla® of Speedtest Intelligence® data median 5G median download speeds for Q1-Q2 2021
[2]Gartner Magic Quadrant for Cloud Infrastructure and Platform Service, 2021.