Case study

Drone Delivery Canada is one step closer to autonomous drones with Bell and AWS

As demand grows for commercial-use drones and more of them take to Canadian skies, flying them safely and cost-effectively becomes increasingly important. Through a partnership with Bell and AWS, Drone Delivery Canada ("DDC") is testing additional autonomy to increase safety measures surrounding autonomous takeoffs and landings as a critical step toward a future where drones can fly without any operator involvement.

Challenge — Automating cost effective and safe drones

Autonomous drones have the potential to revolutionize package delivery and other routine commercial tasks. But before that can happen, the drones and their supporting software platforms must be able to make intelligent decisions in real time and without human input to avoid safety occurrences.

The path to fully autonomous flights begins with successfully enabling automated takeoffs and landings. This means that a drone needs to be certain that there is no interference and safety risk in the immediate vicinity; such as a person in the DroneSpot™ or a plane flying overhead. Right now, that check is performed manually by a drone operator. DDC's goal is to use ultra-low latency real-time video recognition and analytics capabilities to enable their technology platform to assess the situation and make its own decision about whether or not it's safe to take off or land.

To achieve that, the company requires nearly instantaneous video analytics and calculations – capabilities that require the speed and ultra-low latency of a 5G network and multi-access edge computing (MEC).

DRONE DELIVERY CANADA.COM™

Founded in 2014, Drone Delivery Canada provides drone-based logistics support for government, commercial and industrial applications. The ISO 9001-certified company is constantly innovating and working toward cost-effective autonomous drone services.

Solution — Real-time video analysis at the edge

DDC, Bell and AWS are collaborating on a project focused on drone take-offs and landings using enhanced video recognition capabilities.

"As our Operations Control Centre ("OCC") operators prepare for take-off or landing, video cameras will scan the DroneSpot™ and stream the video footage to a visual recognition software. This will analyze the surroundings and send a 'Go' or 'No Go' command to DDC's propriety Flyte software platform," explains Paul Di Benedetto, Engineering Strategist at DDC. "These signals are compared with the operator's decision, testing the system's effectiveness at identifying hazards and making decisions accordingly."

The project is powered by Bell Public MEC with AWS Wavelength, which embeds AWS cloud computing and services into Bell's 5G network for faster video processing. "If video data has to be sent to a centralized server to be analyzed, that adds latency – vital seconds that can mean the difference between safe take-off and safety occurrence," says Di Benedetto.

Bell's Public MEC with AWS Wavelength solves these issues by offloading the workload from the drone to the cloud services at the edge of Bell's 5G network, leveraging the power of compute in the cloud. The drones being tested are also equipped with ultra-light, purpose-built onboard 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.

"By using enhanced video recognition capabilities powered by Bell Public MEC with AWS Wavelength, we're making drone-based deliveries and logistics faster, safer and more cost-effective."
— Steve Magirias, CEO, Drone Delivery Canada

Drone Delivery Canada's Public MEC solution includes:

- AWS Wavelength to support ultra-low latency applications
- Bell 5G IoT connectivity
- Professional Services to help define your cloud journey

Results — The future of drones is autonomous

Drone Delivery Canada has been able to increase drone precision in navigating and landing, thanks to the enhanced spatial recognition and decision-making capabilities made possible by the real-time video analytics facilitated by Bell Public MEC with AWS Wavelength. Improved safety and efficiency is a critical proof-of-concept milestone that represents a major step toward fully autonomous drone flight, which will help Drone Delivery Canada move into new markets.

The next few years will see even greater innovation in drone technology, including many additional projects between Drone Delivery Canada, Bell and AWS. All three are committed to meeting the challenges and delivering safe drone-based logistics wherever they're needed.

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.