



In a remote part of Australia, an unmanned **contraption** with a wing and four propellers hovers 50 metres above the ground. It lowers a package on a line to farmers waiting below. Google, the giant technology company, is testing a new drone delivery service.

Meanwhile in Namibia, Africa, drones are being used to spot wildlife **poachers**. In Bhutan, South Asia, drones deliver medical supplies to remote clinics. In Japan, farmers use them to monitor crops.

Drones are hard at work in Canada, too. In Milton, Ontario, a geographer uses one with a digital camera to survey a gravel pit. A Toronto film company uses drones to shoot

car commercials. In Nova Scotia the RCMP has one with a heat sensor to locate missing hikers. The Vancouver Aquarium is using one to monitor orcas.

Welcome to the world of drones.

### WHAT IS A DRONE?

Drones are also known as unmanned aerial vehicles (UAVs). They come in all shapes and sizes. Pilots control them from the ground with a tablet, smartphone or controller. Many are now armed with GPS and other equipment, so they can just about fly themselves once told where to go. UAVs can gather information or deliver goods in places that are dangerous or hard to get to.

Is there a downside to drones? Some people have concerns in two areas: safety and privacy.

### SAFETY CONCERNS

A drone or two might not pose much hazard in remote areas where there are few people. However, can you imagine hundreds flying over busy city skies?

Currently, anyone in Canada who uses drones for business reasons must apply to Transport Canada for a Special Flight Operation Certificate. **Commercial** operators must show that they can use UAVs safely. Yet any hobbyist can fly a drone for fun, as long as it weighs less than 35 kilograms and the pilot follows basic model aircraft rules.

## DEFINITIONS

**COMMERCIAL:** the pursuit of profit by businesses or individuals

**CONTRAPTION:** a mechanical device; a gadget

**POACHER:** a person who illegally hunts game, fish, etc, on someone else's property



Now, Canadian authorities are considering bringing in new rules. One reason? Not long ago, an Air Canada pilot spotted a drone a few dozen metres from his jet.

“Aircraft are tested for bird strikes on a regular basis,” says Vancouver aviation lawyer Lee Mauro. “But they are not tested for a 70-pound (32-kilogram) carbon-fibre drone flying into the engine or the windscreen.”

In the U.S., the government has banned almost all commercial drone use and has set up test sites in six states. It will do research to see if drones can learn to avoid other aircraft. It will also try to find out if drones can operate safely after losing contact with their operators.

### **DID YOU KNOW?**

One tech company is making a personal, palm-sized drone that follows its owner around, taking videos that can then be streamed to a smartphone.

“Safety [is] our first priority as we move forward with ... unmanned systems in U.S. airspace,” a government agency stated.

### **PRIVACY CONCERNS**

Meanwhile, a Vancouver apartment dweller was recently spooked when he saw a drone hovering just off his 36th floor

patio. It was aiming a camera at him.

“Drones can be so cool, but they create privacy issues,” he said.

Certainly, some people fear that drones will create a society in which every move is tracked and recorded by the authorities.

“We’re going to see more discussion [on the topic],” says Roger Haessel of the Canadian Centre for Unmanned Vehicle Systems. “What are appropriate guidelines on the privacy front?”

### **DELIVERY BY DRONE**

In the U.S., technology giants such as Google and Amazon are pushing the government to allow commercial drone delivery services. Google says drones are cheaper, faster, less wasteful and more environmentally friendly than trucks or planes.

Google may be ahead of the public, which isn’t yet comfortable with the idea of drones buzzing about cities.

“There is the technology piece and then there is the public acceptance piece, and both have to evolve,” says NASA’s principal investigator Dr. Parimal H. Kopardekar. “How do you have [drones] safely land and take off in the presence of a grandma in her garden and kids playing soccer?”

### **MILITARY DRONES**

U.S. military drones fly through the Middle East, South Asia and Africa.

Military UAVs carry sensors and can be armed with missiles. They are unmanned, but not unpiloted. Crew on the ground, near the combat zone, or thousands of kilometres away operate them. They steer the drones, review the images they send back, and act on what they see.

These drones have been used to fire missiles on suspected terrorists in Pakistan. However, these military strikes have also killed civilians.

All the same, most observers agree that drones will transform our economy and lifestyles.

It won’t be long before they will monitor oil pipelines and large-scale farming. Drones will perform damage assessment and spot survivors after a natural disaster. Police will use them for security sweeps at large, crowded events, or for search and rescue.

“It’s mind boggling how quickly this area is growing,” says one specialist. “The applications are endless.” ★



## ON THE LINES

Answer the following in complete sentences:

1. Describe what a **drone** is and explain its purpose.

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2. List at least three examples of where and for what reasons drones have been used.

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3. What are the rules in Canada for commercial drone use?

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4. What are the rules in Canada for recreational drone use?

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5. Describe at least one safety concern concerning drones.

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6. Discuss at least one privacy concern concerning drones.

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7. How are drones used in the military? Explain.

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