Eyes in the Sky: The Age of the Drones (UAVs)

- Opportunities related to drone use
- Applications in the public sector
- Key considerations for drone use

Image Source: Economic Times

JOINT COUNCIL'S EXECUTIVE MONTHLY REPORT
Developed by the Research Committee
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1. Introduction

The term "drone" usually refers to an unpiloted aircraft. It is also known as "Unmanned Aerial Vehicles" (UAVs)". According to TechAgent.ca, "drones are essentially flying robots that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in conjunction with onboard sensors and GPS".[1]

Drones are no longer exclusively used in the military. In fact, the drone industry is one of the fastest growing industries in the world.[2] Due to rapid advancements in the safety, intelligence, and user-friendliness of modern-day drones, public and private sectors are adopting drone technology into their operations more than ever to increase organizational efficiency, cut down on expenses, and keep workers safe.[2] Drones are also increasingly becoming available to Canadian citizens. In Canada, safety guidelines and regulatory requirements are provided through Transport Canada.[3]

The Drone Industry in Canada

Canada is facing a critical juncture in the development of its drone industry. According to the Ontario Society of Professional Engineers, drone services could benefit industries and contribute over $600 billion to the national GDP.[4] Canada has several strengths that can be leveraged to make it a hub for drone expertise. These strengths include: world class academic research, a well-structured regulatory framework, and significant support and funding mechanisms for Research & Development. To ensure the benefits of this emerging technology is realized, Canada must adopt a forward-thinking approach to drone related policy in order to support this growing industry.

What Is Covered In This Executive Report?

This report includes the following:
- Introduction
- The opportunities of drone use
- The rise of drones in the public sector
- Key considerations for drone use in the public sector
- Drone use during COVID-19

1. Drone (UAV)
2. A Study on Utilization of Drone for Public Sector by Analysis of Drone Industry
3. Transport Canada
4. Growing the Drone Industry in Ontario

2. The Opportunities of Drone Use

Drones vary in size, form, and speed. They are also able to perform a wide range of impressive tasks. Today's drones are highly advanced and user-friendly. This allows operators to use the craft with ease. With a drone in the air, operators can collect precise and accurate data that can revolutionize the way a variety of operations are run.[5]

5, 9, 10. Drone Use in the Government Sector
6. Improved Productivity, Efficiency and Cost Savings Following Implementation of Drone Technology in the Surveying Industry
7. Drones Connect to Cloud Computing to Analyze Data from the Sky
8. Could drone deliveries help us reduce our carbon footprint?

Potential Benefits of Drone Technology

- Reduces the expense of traditional aerial inspections (via helicopter and plane), and employee time on the ground[6]

Cost Savings

- The ability to capture a significant amount of data in real time to support decision making[7]

Reliable Data Source

- Battery powered rather than fuel. This makes it more environmentally friendly and reduces carbon footprint[8]

Emission Reduction

- Optimizes resources and saves time by taking advantage of aerial technology to improve traditional operations[9]

Enhanced Efficiency

- Helps mitigate risk to workers during critical operations (i.e. identifying hidden hazards before sending in crews)[10]

Improved Safety

3. The Rise of Drones in the Public Sector

Public sector organizations worldwide are beginning to take advantage of this rapidly advancing technology and its ability to tackle old problems in new ways. Across all levels of government, the potential uses for drones are limitless. From performing regular safety inspections on infrastructure (such as roads, bridges and power lines), to carrying out potentially life-saving public safety missions. The right drone can make a huge difference in optimizing operations across a huge scope of different government sectors.

11. Agricultural Drones: How Drones Are Revolutionizing Agriculture and How to Break into this Booming Market
12. Why and how to use drones in construction and infrastructure
13. Drone Package Delivery Market to Hit USD 7,388.2 Million by 2027
14. Why drones are the future of search and rescue

Examples of Drone Applications in the Public Sector

Agriculture

Drones help optimize agriculture operations, increase crop production, and monitor crop growth. They also increase overall efficiency by spraying pesticides or nutrients faster than traditional methods.[11] These drones are also able to prevent disease by inspecting crops for potential diseases and threats. Sensors and digital imaging capabilities provide a complete picture of the fields on a regular basis.

Construction and Infrastructure

Drones are key to addressing inefficiencies in this industry. In 2018, this sector had a 239% increase in the adoption of drone technology.[12] Some benefits of using drones include the ability to obtain accurate and comprehensive data, fast and on-demand image acquisition, reduced time-intensive data collection in the field and associated labor costs, remote access to current status of the site, and improved safety.

Package Delivery

The coronavirus has forced people to social distance, which has made the delivery of essential supplies difficult, particularly in remote areas. In response, the use of drones has risen to support government efforts to provide aid to distressed areas. According to Globe Newswire, Drone Delivery Canada plans to deploy its multi-rotor drone (Sparrow) to provide COVID-19 cargo to the Beausoleil First Nation Community in Ontario.[13]

Emergency Rescue

In the emergency response sector, drones have the ability to view hard to see areas and keep workers safe. They help police record and analyze crime scenes. They can also assist search and rescue teams by identifying victims in the wilderness. Within minutes, a drone can scan a fire to help firefighters extinguish flames faster and safer.[14] In addition to collecting precise and detailed data, drones can cut down on expenses and speed up efforts.

4.   Key Considerations for Drone Use In The Public Sector

Drones continue to increase in popularity in government, commercial, and recreational settings. However, its use has raised important questions and concerns. Some key areas for consideration are highlighted below.

Privacy considerations:	**Regulatory requirements:**	**Data Consideration:**	**Drones Replacing Humans in the Workplace:**

Privacy considerations:

According to Forbes, a recent study that examined public opinion regarding drone usage suggested that privacy was a top issue for citizens.[15] For example, many participants had specific concerns regarding police-issued drones and data collected while patrolling residential areas. Fear of being video-taped was the most common reason for concerns. According to another study conducted by Pew Research Center, 54% of the public believe drones should not be allowed to fly near people's homes.[16]

Regulatory requirements:

Emerging technologies can only go so far if rules and regulations remain fixed. As drone use continue to increase and drive new business and service models, governments must shift towards adaptive regulation. According to Deloitte, adaptive regulation gives governments greater flexibility to rapidly "create, modify, and enforce regulations".[17] This enables government to keep pace with changing circumstances and technologies and still safeguard citizens.

Data Consideration:

Drones collect geospatial (or geographic) data, imagery, videos, and binaries. Similar to big data, the challenges of drone data include analysis, curation, search, sharing, storage, transfer, visualization, and information privacy.[18] In order for the data to become useful information, it requires image recognition analysis and considerable transformation and data parsing. This cannot effectively be done by automation (i.e. artificial intelligence). Image and video analysis is more effectively done by teams of specialists.

Drones Replacing Humans in the Workplace:

The use of drones shows that this new technology will transform the way humans do their jobs, rather than completely replace them. This is because drones have limitations and require human control and operation to realize its benefits.[19] Potential areas where drones could replace human workers include: package delivery (drones could offer much cheaper, efficient and faster ways to deliver packages), transportation vehicles (drones could replace pilots), and construction.

15.   Eyes In The Sky: The Public Has Privacy Concerns About Drones
16.   Addressing Privacy and Safety Concerns About Drones
17.   Advancing Drone Technology Innovation in Government
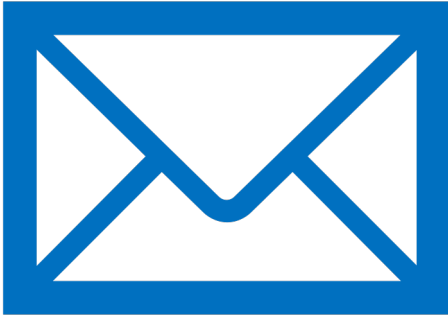18.   Drones Pose A Unique Big Data Challenge For Business Users
19.   Will drone take away jobs?

5.   Drone Use During COVID-19

The COVID-19 pandemic demonstrates how governments worldwide reacted quickly to enact new measures in light of changing circumstances. Citizens are forced to social distance to reduce the spread of the coronavirus. In response to the outbreak, drones are being used in different ways across governments. For example, Spain, China, Kuwait, and the United Arab Emirates, use drones to surveillance citizens. These drones are equipped with loudspeakers and tell roaming citizens to go back in their homes. In other countries, agricultural drones spray disinfectant on public areas. Drones also transport medical and quarantine supplies to reduce people's exposure to each other and reduce delivery time.

For Further Reading

- Regulation of Drones: Canada
- Why Robots Will Not Take Over Human Jobs
- Drones and aerial surveillance: Considerations for legislatures
- Privacy nightmare? FAA's drone tracking rules have big consequences
- Drone Delivery: What New FAA Rules Mean for Amazon, UPS

Other Noteworthy Articles:

5 Technology Trends to Watch in the Public Sector

3 lessons for reshaping digital customer experiences in 2021

2021: The Year Customer Service Embraces Empathy

The Pandemic May Be the Catalyst for the Digital Government We All Want

How can governments retain and grow citizen trust?

Research Repository
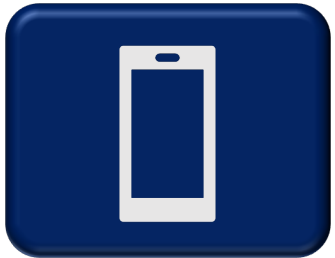Access the Citizen First Research Repository here.

Recent entries on the research repository:

Joint Councils Executive Monthly Report November 2020:
The report presents a concise snapshot of the Digital Government Index: 2019 Results

Trends in the Daily Newsletter

A number of articles highlighted Canada's shift toward digital identity solutions. According to IT World Canada, Digital ID needs to be as easy as Uber. Ontario is the latest to announce its digital identity initiative. Other jurisdictions include British Columbia, Alberta, and the Government of Canada.

The pandemic caused a sudden spike in demand for public cloud services. Cloud adoption will continue to accelerate to support the remote workforce. In a post-pandemic world, IT World Canada highlights seven key workloads organizations should prioritize moving to the cloud now.

The pandemic demonstrates why investing in collecting, standardizing and sharing data across all levels of government is an urgent priority. Governing highlights four valuable outcomes that can be realized by sharing data among agencies and levels of government.

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