



## Canada: Opportunities in Canada's Unmanned Aerial Vehicles (UAV) Market

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### Summary

The emergence of Unmanned Aerial Vehicles (UAVs), also known as drones, is a game-changing technology impacting almost every industry imaginable worldwide. The United States, Canada, and a handful of other countries are forging ahead in developing cutting edge products and solutions to meet the growing UAV demand for real-time mapping, crop monitoring, environmental research, and a myriad of other military, commercial, and civil tasks. Canada's rank as the fifth largest aerospace industry in the world puts it in an advantageous position to become an important player in the global UAV industry, which is growing at an exponential rate.<sup>1</sup> In fact, Canada is already proving itself to be in the leading pack of UAV development, testing and usage mainly due to the following factors: Canada's well established aerospace industry is investing in growing its UAV market, prominent UAV research and development centers exist across the country, and Canada has a regulatory advantage over the U.S. and most countries by allowing the use of UAVs for commercial and civil purposes. The Canadian UAV market offers numerous business opportunities for U.S. suppliers and manufacturers of drone products, services, solutions, parts and components.

### The Global & Canadian UAV Market

Demand for UAVs is substantially increasing worldwide due to the fact that these robotic vehicles can be put into flight faster, fly longer hours, fly safer, and in more cost effective ways than manned aircraft. The global UAV market is expected to grow to \$8.3 billion by 2018 and \$114.7 billion by 2023.<sup>2</sup> A market study conducted by the Teal Group further estimates that UAV spending will grow substantially from current worldwide UAV expenditure of \$6.6 billion annually to over \$89 billion within the next ten years. The advent of nanotechnology has allowed for the creation of UAVs the size of insects, rendering endless possibilities for this infant industry.

Not surprising, Canada is emerging as a leader in the UAV marketplace, both as a producer of these technologies and a user of them. As of 2014, Unmanned Systems Canada has identified approximately 50 Canadian aerospace companies that are 100% focused on the development, production and testing of UAVs, and approximately another 300 companies that have some UAV-related activity. In addition, many industries across the country are adopting UAVs in order to improve their operations and increase revenues. In 2013, Transport Canada issued 945 certificates, up from 345 in 2012 and 155 in 2011. Many of these certificates are being issued for "blanket operations" rather than individual operations.<sup>3</sup>

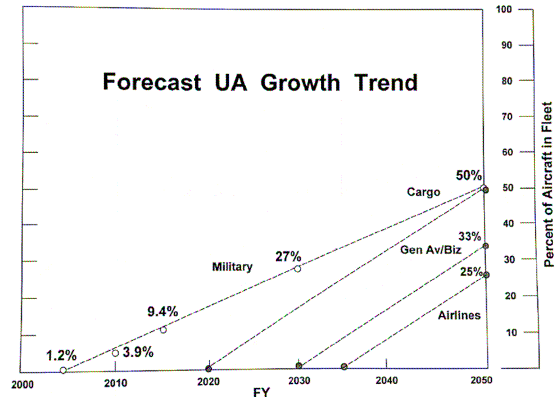
<sup>1</sup> Canadian Technology and the Flight of the Drones: The Globe and Mail, Published April 06, 2014.

<sup>2</sup> Report: 'Unmanned Aerial Vehicle (UAV) Market (2013-2018).

<sup>3</sup> Stewart Baillie, Chairman, Unmanned Systems Canada.

**UAV Markets by Type:**

- HALE (High altitude long endurance)
- MALE (Medium altitude long endurance)
- SUAV (Small unmanned aerial vehicle)
- TUAV (Tactical unmanned aerial vehicle)
- VTOL (Vertical takeoff and landing)
- UCAV (Unmanned combat aerial vehicle)



Source: AUVSI's *Unmanned Systems Industry Report*

**Civil, Commercial, Recreational and Defense UAV Markets in Canada**

The Canadian unmanned systems industry is divided into four main markets: civil, commercial, recreational, and military. Canada's initial demand for UAV was mostly of a military nature mostly due to the country's large landmass engendering needs for surveillance as well as its involvement in Afghanistan, but this has since evolved greatly. Today, police forces have been able to successfully utilize UAVs for aerial forensics in Ontario, a groundbreaking usage that has spurred demand across other provinces. The demand for UAVs in the commercial sector is also growing, with leading UAV usage including crop dusting, mining and pipeline surveying, amongst others.

**The Canadian Civil UAV Market** demand is largely attributed to domestic security, law enforcement, and police surveillance. Other activities include: research, survey and inspection of remote power lines and pipelines, traffic and accident surveillance, emergency and disaster monitoring, cartography and mapping, aerial photography, weather reconnaissance, natural resource monitoring, and fire-fighting monitoring and management.

**The Canadian Commercial UAV Market** is expected to dwarf civil and military UAV usage within the next years as companies in multiple sectors are looking for ways in which UAVs can help them generate more revenues and operate more effectively. Recently, some Canadian companies are already reporting 100% growth in commercial UAV sales in the last few years. Currently, the two largest UAV commercial applications are in agriculture and oil and gas. Additional industries using UAVs include mining, advertising, filming, forestry, and supporting cargo transport, with countless other visionaries developing ideas on how their business can profit from this emerging technology.

**Oil and Gas**

- Canadian oil sands company Cenovus Energy has built a fleet of UAVs to map sites in northern Alberta and plans to expand its drone fleet to cover more sites.<sup>4</sup>

**Agriculture**

<sup>4</sup> <http://business.financialpost.com/2014/06/14/from-toy-shelves-to-the-oil-sands-drones-are-catching-on-in-canada/>.

- UAVs are used to scout crops, detect nutrient deficiencies, assess flood or drought damage, monitor wildlife, crop spraying, and spot-spray chemical and micronutrients.

**The Canadian Recreational UAV Market** is filled with smaller or miniature toy versions of larger UAVs used by industry and government. These are largely used by the general public to snap photos and videos, and are already being sold in large Canadian electronics stores.

**The Canadian Military UAV Market** is probably the most mature of the four. The Canadian military uses UAVs to support Canada's military in its intelligence, surveillance and reconnaissance (ISR) efforts, in its coastal patrolling, mapping, and in its military operations undertaken at air, sea and land. The Canadian Department of National Defense is looking to integrate UAVs to support its worldwide missions; these systems are not meant to be used in isolation, but are to be integrated as part of a complete military solution. Canada's increased focus on arctic surveillance also creates a need for UAV technology to monitor the polar areas and to manage activities including high capacity satellite communication, weather forecasting, pollution detection, climate and environmental research, navigation, ice condition monitoring, amongst others.

## **Canada's Aerospace Hubs & UAV Hubs**

Key aerospace industry hubs in Canada include Montreal, Toronto, Winnipeg, and Alberta. Montreal is the largest aerospace hub in the country, producing over fifty-percent of the country's national aerospace output; in 2013 its market size was approximately \$12 billion. Firms include Bombardier Aerospace, Bell Helicopter Textron, Pratt & Whitney, and CAE. Montreal is also the headquarters for several international organizations such as the International Air Transport Association (IATA), the International Business Aviation Council (IBAC) and the Organization of International Civil Aviation (ICAO). The province of Quebec is home to the Alma Drone Center of Excellence, as well as the International Consortium of Aeronautical Test Sites (ICATS). Toronto is the second largest aerospace hub with additional firms such as L-3 Electronic Systems, Magellan and Northstar Aerospace. Winnipeg is home to the largest aerospace center in Western Canada, led by world-renowned firms, Boeing Technology Canada, Standard Aero, and Magellan Aerospace Limited. The provinces of Quebec and Ontario account for approximately 80% of Canada's aerospace market.

Medicine Hat, Alberta is at the heart of Canada's UVS industry; with over 50% of Canadian Unmanned Vehicle Systems (UVS) companies are located in this province, it is also home to the Canadian Centre for Unmanned Vehicle Systems (CCUVS) as well as the Department of Research and Defense Canada. Important UVS companies in Alberta include Amtech Aeronautical Ltd., Meggitt Training Systems Canada, CDL Systems, Synergy Technologies, Novatel, and Zanthic Technologies. Additional UAV emerging hubs in addition to Alberta, Quebec and Ontario include Newfoundland and Labrador, whose provincial government is actively funding the research and development of UAV technologies, as well as Saskatchewan.

## **Canada's UAV Regulatory Framework**

In Canada [regulations already exist](#) that allow companies to develop, test, sell and operate select UAVs. Section 101.01 of [Transport Canada's Canadian Aviation Regulations \(CARs\)](#) determines an "unmanned air vehicle" as a power driven aircraft, other than a model aircraft, that is operated without a flight crew member on board. In order to be able to fly these UAVs, operators of unmanned aerial vehicles that weigh more than 35 kilograms, or

are being used for non-recreational purposes, are required to obtain a special flight operations certificate (SFOC) from [Transport Canada](#). A UAV under 2 lbs does not need an SFOC.<sup>5</sup> These definitions are general enough that allow UAVs equipped with high-tech apparatus to service a broad range of needs. Moreover, under current Canadian law anyone can fly a UAV for recreational purposes as long as their weight is less than 35 kg, and they are flown under 122 meters and within line of sight.

Despite these temporary regulatory advantages, many are pressuring the Canadian government to allow commercial UAVs to fly beyond the operator's visual line of sight, thereby opening a whole new realm of possibilities for the use of UAVs commercially. Transport Canada is closely watching developments south of the border on the integration of UAVs into national airspace in order to create the next generation of aviation regulations. The United States and Canada are committed under the [Regulatory Cooperation Council](#) to develop harmonized standards for the integration of UAVs into North American airspace.

## Best Prospects

Overall, whether a U.S. company is looking to sell a full UAV solution or related services, or UAV components and systems, Canada is a very dynamic and growing market offering many opportunities. Canada is known for its expertise in UAV avionics, navigation systems, control systems, global positioning systems, systems integration and wireless communications. Therefore, U.S. companies that have products or services that can support these activities are likely to find good business development opportunities. Moreover, U.S. companies with products and services that are complimentary to these areas of expertise would also do well, as they can potentially fill a void in the market.

In addition, the Canadian military is particularly interested in acquiring technology that provides electro-optical and infrared (EO/IR) sensors, miniaturized synthetic aperture radars (SAR), collision avoidance systems, navigation and surveillance systems, satellite communication systems, information systems for tracking, payload delivery, tactical data links, persistent surveillance technology, command and controls systems (including ground control stations), and rapid intelligence-led data systems by unmanned aerial vehicles.

## Canada's Key UAV Test Centers & Industry Associations

### [Unmanned Systems Canada](#) (Ottawa, Ontario)

Unmanned Systems Canada is a Canadian-registered non-profit association representing the interest of the UVS community in Canada. It promotes and facilitates the growth of the Canadian unmanned vehicle systems community through education, advocacy, and exchange of ideas and technologies.

<https://www.unmannedsystems.ca/>

### [UAS Centre of Excellence \(CED\)](#) (Alma, Quebec)

The Unmanned Aerial System Centre of Excellence's mission is to engage in activities that will develop the UAV industry nationally and internationally. Its main areas of focus are: maintenance and operations, ground/flight testing, training, manufacturing, and research & development. The centre counts numerous active members in academia, industry and government, as well as an important network of international partners. The CED is also a co-founder, and home to, the International Consortium of Aeronautical Test Sites (ICATS).

<http://www.cedalma.com/en/>

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<sup>5</sup> Stewart Baillie, Chairman, Unmanned Systems Canada.

**[International Consortium of Aeronautical Test Sites \(ICATS\)](#)** (Alma, Quebec)

The International Consortium of Aeronautical Test Sites (ICATS) includes representatives from UAV test and service centers around the world. The members of this consortium include: the UAS Centre of Excellence (CED)(Alma, Quebec, Canada), the Oklahoma State University - University Multispectral Laboratories (Oklahoma, USA), the National Aeronautical Centre (Wales, United Kingdom), the Centre d'Essais et de Services sur les Systemes Autonomes (CESA)(Bordeaux, France), and the CATUAV Tech Center (CTC)(Barcelona, Spain). ICATS aims to support and guide the industry in the development, operations, and certification of UAS. ICATS also focusses on cross-borders harmonization of training and licensing, as well as airspace management and regulations. The test sites aim to engage with private, academic, and public sector partners and experts globally.

<http://icatetsites.org/>

**[Canadian Centre for Unmanned Vehicle Systems \(CCUVS\)](#)** (Medicine Hat, Alberta)

Located in Medicine Hat, Alberta, the CCUVS is a national change agent promoting the sustained, profitable growth of the Canadian Unmanned Systems sector, focusing on civil and commercial applications. Governed by a national board of directors drawn from industry, government, and academia, their mission is to reach across Canada to promote and bring focus to research, development, and commercialization of UVS technology.

<http://www.ccuvs.com/>

## **Key UAV Companies in Canada**

For your business intelligence, and to aid you in identifying potential business clients and partners in Canada, please find below a brief overview of select UAV companies in Canada. A full listing of all known UAV companies in Canada can be found in the following websites:

[www.aero-canada.ca](http://www.aero-canada.ca)

[https://www.ic.gc.ca/eic/site/ad-ad.nsf/eng/h\\_ad03840.html](https://www.ic.gc.ca/eic/site/ad-ad.nsf/eng/h_ad03840.html)

### **Aeryon Labs**

Based in Waterloo, Ontario, Aeryon Labs' small unmanned aerial systems are aerial imaging and intelligence platforms. Both with compact design and Vertical Take-Off and Landing capabilities, the Scout™ is an off-the-shelf product for commercial and public safety operations, and the SkyRanger™ is tailored to land and maritime government and military specs. These UAVs' capabilities to compile 3D data with minimal peripheral equipment or human proximity allows them to aid in oil spill cleanup, mining operations, wildlife monitoring, the observation of electrical towers, and various police missions.

<http://www.aeryon.com/>

### **Boeing Canada**

Boeing Canada is headquartered in Winnipeg, Manitoba. In 2009, the Canadian government awarded Boeing a contract to the Insitu Group, a Boeing subsidiary, for the ScanEagle™ SUAV in support of the Canadian Forces' intelligence, surveillance and reconnaissance (ISR) operations in Afghanistan. In the same year, Boeing announced additional contracts to Canadian companies as part of a government requirement for small UAV services.

<http://www.boeing.com/boeing/>

### **CAE**

Headquartered in Montreal, Quebec, CAE is a global leader in modeling, simulation, and training for civil aviation and defense. CAE has developed an integrated UAS mission training system capable of representing any UAS platform or sensor suite, and runs the Operational Training Systems Provider (OTSP) program for the Canadian Forces. In 2011, CAE and GA-ASI signed an agreement to offer the Predator B UAS to meet Canada's

Intelligence, Surveillance, Target Acquisition, and Reconnaissance needs. They have recently extended this partnership to pursue international opportunities.  
<http://www.cae.com/>

### **Lockheed Martin CDL Systems**

Lockheed Martin CDL Systems is a Calgary, Alberta and Huntsville, Alabama-based engineering company which specializes in developing control station software for unmanned vehicle systems. They create open-systems designs at low cost and develop commercial off-the-shelf software products, which have been integrated into many platforms, namely the Vehicle Control Station (VCS), and the mobile Ground Control Station (mGCS).  
<http://www.lockheedmartin.com/us/products/cdl-systems.html>

### **Draganfly Innovations Inc.**

Based in Saskatoon, Saskatchewan, Draganfly Innovations Inc. manufactures unmanned aerial vehicles, including radio controlled helicopters, airplanes, and airships. Draganfly's products are known for being compact and for providing high quality aerial photos and video. Common applications of the technology include aerial photography, public safety, industrial inspection, and education.  
<http://www.draganfly.com/>

### **General Dynamics Canada**

With offices across Canada, General Dynamics Canada offers next-generation information, surveillance and reconnaissance (ISR) solutions that provide data processing and management for fixed- and rotary-wing aircraft, and unmanned aerial vehicles (UAVs). They also provide underwater ISR solutions. They were recently awarded a contract by Northrop Grumman for key communications network technology for the NATO Alliance Ground Surveillance (AGS) program. Under this contract, it will provide the software to control the AGS Communications Ground Control System (CGCS), which will manage radio and satellite communications between Global Hawk UAVs and the main operating base.  
<http://www.qdcanada.com/>

### **ING Robotic Aviation**

Based in Ottawa, Ontario, ING Robotic Aviation provides commercial services and airborne sensing solutions, and is at the forefront of the movement towards unmanned aviation. Their available Unmanned Aircraft Vehicles include the Serenity, a fixed wing vehicle, and their rotorcraft, Responder and Higin X1. They focus in the areas of infrastructure inspections, aerial surveying, environmental monitoring, agriculture surveying, and training. ING assists the Canadian Special forces as well as local law, fire, and emergency teams in intelligence collection and other operations.  
<http://ingrobotic.com/>

### **InnUVative Systems**

Based in Ottawa, Ontario, InnUVative Systems provides engineering consulting and software development services to the unmanned vehicle industry. Their Command, Control, Communications, Coordination and Execution (4CE) Control Station allows companies to make their systems STANAG-4586 and JAUS compliant. In addition to software support, they also offer UAV training for engineers, program managers, and system operators.  
<http://www.innuvativesystems.com/>

### **L-3 MAS**

Headquartered in Mirabel, Quebec, L-3 MAS is one of Canada's leaders in maintaining, managing, and modernizing aircraft fleets. L-3 MAS has over 40 years of UAV experience

and is a pioneer in the field of UAVs in Canada and NATO. Their vast experience includes deploying the CL-327 throughout Canada, in Europe, in Australia, in the United States and on ships. L-3 MAS has also had contracts with other aerospace companies, such as Boeing.  
<http://www.mas.l-3com.com/home.asp>

### **Meggitt Training Systems, Inc. Canada**

Headquartered in Orleans, Ontario, Meggitt Training Systems is the leading supplier of integrated live fire and simulation weapons for armed services and security forces. They serve the military and law enforcement agencies, and offer shooting range solutions for both commercial and federal training purposes.

<http://www.meggitttrainingsystems.com/>

### **MMIST: Mist Mobility Integrated Systems Technology**

Based in Ottawa, Ontario, Mist Mobility Integrated Systems Technology Inc. develops, produces and supports aerial delivery systems. Their products are the CQ-10A SnowGoose™ UAV, a cargo-delivering platform which can be ground or air launched, the Sherpa™ Provider and Sherpa™ Ranger GPS-Guided Parafold Pad Systems, Launch-PADS™ Multi-Mission Manager for planning mission scenarios, and Low Cost Aerial Delivery Systems.

<http://www.mmist.ca/>

### **Novatel**

NovAtel Inc., headquartered in Calgary, Alberta, offers integrated global satellite positioning solutions. Notable are its GNSS navigational receivers, such as Novatel CORRECT™, and other equipment which they provide to national Satellite-Based Augmentation Systems and GNS ground reference stations. Their ScanEagle Global Positioning Systems are used by the U.S. and Canadian Armies through their partnership with Boeing.

<http://www.novatel.com/>

### **Precision Hawk**

Precision Hawk is a company based in Thornhill, Ontario that designs drone-based data collection and analysis tools. It is known for its *Lancaster* UAV model, which is a hand-launched fixed-wing unmanned aircraft that flies pre-programmed flight plans, enduring 45 minutes up to speeds of 40 km/hour. Also notable is its PrecisionMapper cloud-based application that facilitates easy sharing of aerial images.

<http://precisionhawk.com/>

### **Raven Industries**

Raven Industries is headquartered in Sioux Falls, South Dakota, with an office in Stockholm, Saskatchewan. The company has three business segments: applied technology, engineered films, and aerostar. Aerostar is engaged in research on high altitude airships, and has to date launched two unmanned airships flying within the range of 60,000-70,000 feet. Aerostar technology has been used by the U.S. Department of Defense, NASA, and Google.

<http://ravenaerostar.com/> <http://ravenind.com/>

### **Textron Systems Canada**

Textron Systems Canada is part of the multi-industry company, Textron Inc. Textron has more than 25 years of experience in designing, producing, testing, and supporting unmanned systems. Their foremost unmanned aircraft system (UAS) is the RQ-7B Shadow® Tactical UAS in use by the U.S. Army and Marine Corps. In 2013, Textron Inc. signed agreements to acquire Mechtronix, Inc., a Quebec-based company known for its training solutions as well as flight simulators. They have multiple facilities across Canada, and are headquartered in Ottawa, Ontario.

<http://www.textronsystems.com/company-overview/textron-systems-canada>

## Upcoming Aerospace Trade Shows

Participating in Canadian aerospace trade shows is usually an excellent opportunity for U.S. firms to grow their networks and fully capture business development opportunities. Please find below a listing of upcoming events:

### **Aeromart Montreal**

Montreal QC, March 31-April 2, 2015

<http://www.bciaerospace.com/montreal/en>

### **Aero 2015 Conference**

Montreal QC, April 21-23, 2015

<http://www.casi.ca/aero>

### **Canadian Business Aviation Convention**

St-Hubert, Quebec, June 16-18 2015

<http://www.cbaaconvention.com/>

### **Canadian Aviation Expo**

Venue TBA, Summer 2015

[www.canadianaviationexpo.com](http://www.canadianaviationexpo.com)

### **Aerospace, Defence & Security Expo**

Abbotsford BC, August 6-August 7, 2015

<http://www.adse.ca>

### **Air Transport Association of Canada Convention & Trade Show**

Montreal QC, November 2-4, 2015

<http://www.atac.ca/web/en/events/agm-and-tradeshow.html>

### **Canadian Aerospace Summit**

Ottawa ON, Fall 2015

<http://aerospacesummit.ca/en/>

For a regularly updated listing of U.S. Commercial Service-supported aerospace events in Canada, please see: [http://export.gov/Canada/eventsforu.s.companies/eg\\_ca\\_029302.asp](http://export.gov/Canada/eventsforu.s.companies/eg_ca_029302.asp)

## For More Information

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**Comments and Suggestions:** We welcome your comments and suggestions regarding this market research. You can e-mail us your comments/suggestions to:



[Customer.Care@trade.gov](mailto:Customer.Care@trade.gov). Please include the name of the applicable market research in your e-mail. We greatly appreciate your feedback.

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