

Alberta Trade and Investment  
Attraction Mission to the  
Association for Unmanned  
Vehicle Systems International  
(AUVSI) Xponential 2018



Denver, Colorado

May 1-3, 2018

# About Alberta

## Fast facts

- Population in 2017: 4.3 million.
- GDP in 2016: \$314.9 billion.
- Area: 681,000 square kilometres – or 255,303 square miles – an area larger than France or Thailand.

## Competitive taxes

- Albertans pay the lowest overall taxes in Canada.
- We have a competitive tax system with low personal and corporate income tax rates, no payroll tax, no provincial sales tax and no health premiums.

## Skilled and productive workforce

- Alberta's labour force consists of more than 2.5 million workers aged 15 and up. Approximately 1.5 million workers are aged 25 and up and have received post-secondary education.
- We have a dedicated workforce. In 2016, full-time workers in Alberta were absent from work for an average 7.5 days compared with 9.5 days for the average Canadian worker.

## Arts and culture

- Five UNESCO World Heritage Sites are located in Alberta: Dinosaur Provincial Park, the Canadian Rocky Mountain Parks, Head-Smashed-In Buffalo Jump, Waterton-Glacier International Peace Park and Wood Buffalo National Park.
- Alberta is also home to a vibrant arts and culture scene, culinary adventures and exciting outdoor experiences.

## Business opportunities

- Opportunities in Alberta exist across all sectors, including petrochemicals, agriculture, forestry, clean technology, tourism, advanced technologies and more.

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Located in Western Canada, the province of Alberta is a dynamic place to live and do business. As a known leader in responsible resource development across all sectors, the province is also showing leadership on the environment and in research and innovation. With a flexible capital market and a highly educated workforce, Alberta offers many opportunities for success.

The province will continue to strengthen and expand relationships with international partners by identifying new areas of collaboration that have potential to create more investment, jobs and revenue.

The Ministry of Economic Development and Trade provides leadership on the Government of Alberta's economic growth and diversification efforts and manages the province's network of international offices. Alberta representatives are available to discuss trade and investment opportunities, share market intelligence and help develop business contacts. Alberta operates offices in:

- Mexico City
- Washington, D.C.
- Tokyo
- Beijing
- Shanghai
- Guangzhou
- Hong Kong
- Seoul
- Taipei
- Singapore
- New Delhi
- London

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# Alberta's Unmanned Vehicle Systems Industry

**The international unmanned vehicle systems (UVS) industry is increasingly looking to Alberta companies for the latest innovations in the industry.**

The province has a number of strengths that contribute to the growth of a specialized network of companies involved in the UVS industry, including:

- a competitive corporate tax structure;
- ideal weather and facilities for testing UVS prototypes; and
- strong connections between government, academia and businesses to share information and standards.

These conditions for growth have led to a number of small clusters of expertise within the province, with specific focus on Unmanned Aerial Systems (UAS) applications regarding platforms, avionics and navigation systems, control systems, global positioning systems, systems integration and wireless communications.

## Investment opportunities

The strategic importance of the UVS sector continues to grow as advances in robotics, artificial intelligence, wireless communications and platform developments have moved the sector not only into mainstream national defence, but also into a wide-ranging host of civilian, commercial, industrial and agricultural applications including: pipeline surveillance, agricultural hyper-spectral imaging, and forestry monitoring.

The UVS industry in Alberta provides opportunities for investment, economic growth, diversification, and a substantive innovation ecosystem enabling the high technology sectors. Alberta's UVS industry is globally competitive, well positioned and strategically networked to take advantage of investment and trade development opportunities in commercial, civilian and industrial sectors.

## Restricted Airspace

The area around the village of Foremost has been designated restricted airspace for UAS. It consists of two CYRs totalling nearly 700 square nautical miles in size. There is a third CYR that overlays the other two and goes up to 18,000 feet above sea level. The area is centered on the Pakowki Lake bed in Southern Alberta, strategically chosen as the location for the establishment of this innovative development and testing centre for UAS technology. Geographically, the region has unique attributes that make it an ideal location for the operation, development and testing of UAS based out of the Foremost Aerodrome.

**For more information on the opportunities in Alberta's innovative UVS industry, visit:** [www.albertacanada.com/business/industries/ad-robotics-and-unmanned-vehicle-systems.aspx](http://www.albertacanada.com/business/industries/ad-robotics-and-unmanned-vehicle-systems.aspx)



When you come to Calgary to set up or grow your business, you are becoming part of an amazing energy as powerful as our glorious Rockies. We are a community of highly collaborative entrepreneurs, creators and innovators that has what it takes to make great ideas happen.

With Canada's lowest corporate taxes for small business, a young, highly-educated and skilled population, and a business culture with a can-do-spirit, Calgary is undoubtedly the Canadian capital of entrepreneurialism. More than 20 per cent of post-secondary educated Calgarians specialize in science, technology, engineering and mathematics (STEM) programs.

If you're looking to lead your industry, revolutionize it, or find the expertise specific to Geomatics Information Systems and Unmanned Aerial Systems (UAS) integrative solutions, there's no better place than Calgary.

We are problem-solvers, analysts and specialists who help the front-line of business realize and enable the value of location-based data, geospatial technology and analytical tools.

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Automated Aeronautics has been a pioneer in UAS research and development, advanced UAS training and data acquisition since 2014. We have provided UAS training to more than 200 scholars and practitioners in national and international levels and collaborated to develop custom sUAS solutions for oil and gas, construction and nuclear industries.

Automated Aero's expertise lies in the dynamic combination of management, engineering design and implementation of advanced technological unmanned systems for a variety of industries and academic sectors. Our expert team of engineers, applied intelligence and unmanned system experts, UAS industrial project managers and scientists are ready to tackle even the most complex problems and infuse solutions with unique understandings and advanced approaches. Automated Aero prides itself on providing cutting-edge solutions for our clients, such as the Southern Alberta's Institute of Technology (SAIT), NASA and various industrial clients in oil and gas as well as the construction industry.

We actively participated in various research and development projects with academic and prestigious research institutions across Canada and the United States, including but not limited to, SAIT, the University of Calgary, Royal Roads University and NASA.

Our team of experts have been leaders in data capturing methods, data processing, and integration of industrial data from project site to a number of platforms and software. We provide industrial standards and engineer 3D models and databases of project sites and inspected facilities and develop custom based data compatibility and transformation protocols for processing between different industrial software such as AutoCAD, Pix4D, Revit, Navisworks, ArcGIS and many other industrial applications.

## Business Objectives

Automated Aero has developed proprietary sensor integration systems for sUAS. We are seeking to connect with sensor manufacturers, sUAS manufacturers and sUAS service providers.

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Flight Insight offers risk management that is available in a real-time, web-based format, offering flight tracking and a peace of mind that the level of risk management your organization's requires has been met.

Whether it is simply knowing that your third party or internal UAV operator is properly licensed and insured, or whether a complete, in-person and on-site North American-wide audit is required, Flight Insight helps you ensure industry leading best practices are being implemented in the operators Safety management system and are integrated with your own policies.

## Business objectives

Flight Insight strives to be the world leader in aviation due diligence by providing clients with web-based aviation risk management tools.

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# Foremost UAS Test Range



The Foremost UAS Test Range includes 700 square nautical miles of Class F Restricted airspace up to 18,000 feet ASL for UAS BVLOS research and development, as well as test and evaluation. With more than 300 VFR days per year, long sight lines and an abundance of surface features (oil and gas infrastructure, power distribution lines, a road network and a variety of agricultural crops), the airspace is well suited to BVLOS operations for large and small UAS including small multi-rotor aircraft. Flight operations originate from the airport at the edge of the airspace or from one of several sites within the airspace. The airport has two runways (3000 ft. asphalt and a 4000 ft. turf) and a hangar large enough to accommodate up to MALE sized UAVs. The Foremost UAS Test Range is ideally suited to BVLOS flight operations as well as development of payloads, communications, and sense and avoid technologies.

## Business objectives

The mission of the Foremost UAS Test Range is to promote the sustained profitability of the unmanned systems sector by enabling BVLOS flight operations in a safe, easy to access, feature-rich location at a relatively low cost. We are located a short, three-hour journey by road from the Calgary International Airport.

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Since 2014, IN•FLIGHT Data has provided outsourced UAS flight and data services in agriculture, land management mapping, and aerial reconnaissance to large agribusiness, energy and emergency management organizations in Canada.

We are also a Transport Canada-registered Education Provider, in addition to providing technical and business leadership in UAS Program Management development and sustainment.

- We fly over 40,000 acres of agricultural land per year, producing information that growers have come to depend on to reduce costs for their operations.
- We continue to work very successfully with several Canadian public safety and regulatory organizations to advance the use of UAV to support emergency incidents and help ensure life-safety.
- We have certification to fly BVLOS on-range and are working with Transport Canada to fly BVLOS off-range for a very large group of partnered organizations.
- We are partnered with Bow Valley College to deliver world-class UAV training on regional campuses across Alberta.

Please come see us at the Alberta Pavilion for more about the innovation we've been up to!

## Business objectives

- Analyze familiar crops, agricultural equipment, land and important assets in completely new ways.
- Save money on your organization's operations by reducing costs, and doing work faster.
- Shorten emergency response times, make critical safety decisions with better intelligence, save lives faster.
- Make your information world better with better data from IN•FLIGHT Data.

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## Global UAV Technologies/ Pioneer Aerial Surveys



Global UAV Technologies is a leading solution provider in the Unmanned Aerial Vehicle (UAV) sector. Through its wholly owned subsidiaries, Pioneer Aerial Surveys Ltd., High Eye Aerial Imaging Inc., NOVAerial Robotics Inc. and UAV Regulatory Services Ltd., Global UAV Technologies is one of the only vertically integrated publicly listed UAV companies in Canada.

Global UAV Technologies' flagship geophysical surveying company, Pioneer Aerial Surveys Ltd., was the first company in Canada to provide geophysical surveying utilizing unmanned aircraft. Now, with operations based in Calgary, Alberta, Pioneer provides geophysical surveying work for exploration companies around the world, including Chile, Argentina and the United States.

### Business objectives

Global UAV Technologies and Pioneer Aerial Surveys is looking to expand its services to companies and governments around the globe and establish long term business relationships to further economic growth.

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MultirotorHeli is a Western Canada-based Unmanned Aerial Vehicle (UAV)/drone store located in Calgary, Alberta. We specialize in multirotors and drones. UAV/multirotors and autopilot controllers are the latest trend in remote controlled aircrafts.

Here at MultirotorHeli, we are committed to providing the best solutions and support to our clients, including training and setup of autopilot controllers. We have expertise in setting up first person view (FPV) systems with state-of-the-art products from DJI Innovation, ImmersionRC and Fat Shark. We are also an authorized reseller in Canada of ImmersionRC and Fat Shark products.

MultirotorHeli is an authorized Tier 1 dealer for DJI Innovation products in Canada. We are also the only authorized DJI repair facility of drones in Canada with our full drone repair facility located at 115 – 20 Westpark Link SW in Calgary.

We keep an inventory in Alberta and provide free shipping across Canada. We also ship to the USA with very reasonable shipping charges.

MultirotorHeli sells and repairs products such as the DJI Mavic, DJI Phantom 3, DJI Phantom 4, DJI Inspire 1, DJI Inspire 2, S1000+, S900, A2 Controllers, Naza-M Controllers, etc.

Customers can walk into our showroom location during business hours, no appointment necessary!

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Applied Research and Innovation Services (ARIS) at SAIT brings industry partners together with researchers, faculty and students to develop novel technologies for commercialization. One of Canada's top applied-research colleges, SAIT has 35,000 square feet of specialized research labs and facilities, and a full-time research staff, solely dedicated to providing the services organizations need to take their products from concept to prototype.

The Centre for Innovation and Research into Unmanned Systems (CIRUS) is the newest research group within ARIS and is devoted to all things unmanned, with a specific focus on Unmanned Aerial Vehicles (UAVs). We partner with private sector organizations who are looking to develop innovative products and services, and can often obtain research funding from both government and private sectors to support such partnerships. If your company is interested in pursuing innovative research collaborations within Canada, we would be happy to talk about how we can help you.

## Business objectives

Our aim is to forge connections with individuals and organizations who are potential research partners. Though our focus is primarily on Western Canada, we are interested in meeting with potential collaborators from across the world, and from both the public and private sectors.

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# Special Projects Inc.



Special Projects Inc (SPI) is a provider of specialized technical services and inertial systems for navigation and platform stabilization.

Hardware and software:

- RTK GNSS/INS/AHRS hardware integration
- Low latency kHz AHRS camera stabilization
- Airborne fixed, roto-wing and drone wide FOV multi-camera payloads
- Real-time digital image acquisition and processing
- Rapid image registration and sparse overlap mosaic
- Route planning and mapping
- Marine vehicle automation
- Multi-beam sonar heave systems

We are a Canadian re-seller for Drone America. For more information, visit [www.droneamerica.com](http://www.droneamerica.com).

## Business objectives

- Advanced drone and drone payload systems sales.
- Drone manufacturers, electrical utilities, pipeline companies, aerial inspection service companies.

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# Terra Excel Constructor Corporation (TECC)



Authorized DJI Dealer for Canada, Terra Excel Constructor Corporation is constructing a best-value customer experience with innovative technology, reliable knowledge and product leadership.

Capture your world like never before with Mavic, Spark, Phantom, Goggles, Osmo!

- Unlock your drone's potential
- Professional aerial and ground imaging
- Drone solutions for a new generation of work

Privately owned and operated from the Edmonton, Alberta region.

## Business objectives

Terra Excel Constructor Corporation specializes in enterprise solutions for the industrial, construction and agricultural sectors as well as sales for all DJI's drone, camera and component products. Whether you are planning to use drones in-house, or looking for a drone flight service, TECC can offer a solution that fits your needs.

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4Front Robotics is an Unmanned Vehicle Systems (UVS) company specializing in the development and deployment of autonomous aerial (UAV) vehicles for civil applications. 4Front Robotics provides GPS data solutions to real-life complex problems in challenging environments. At the moment, the company focuses on highly maneuverable autonomous aerial vehicles for helicopter impenetrable environments capable of performing missions in GPS denied highly complex/confined environments/spaces such as mines, collapsed buildings, under tree canopies and urban canyons.

Our Navig8 UAV is a fully scalable twin shrouded-propeller VTOL UAV for operation in highly confined, structured or unstructured environments, at low altitudes or in close proximity to infrastructure. Navig8 is capable of performing highly stable maneuvers in 3D spaces that no other aircraft can execute, such as pitched hover. As a result, this UAV can be deployed from prepared or un-prepared (e.g., sloped or rough) terrain, thereby having the capability of landing and taking off from highly sloped surfaces (40 degrees or steeper depending on the terrain characteristics).

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# Alberta Unmanned Systems Companies

AERIUM Analytics (AERIUM) – a joint venture between Remedy Energy Services Inc. and the Lornel Group – is a UAS-as-a-Service (UaaS) provider focused on solving the needs of our clients and integrating our solutions into their daily operations.

Spanning a multitude of industries including airport operations, oil and gas, agriculture, forestry, mining and renewable energies, AERIUM offers data acquisition, processing and analysis, and storage capabilities. Based out of Calgary, Alberta, AERIUM acquires your project data in a safe, efficient and innovative manner as compared to conventional methods.

AERIUM leverages our vast industry experience and creates an alignment with our clients that builds value from exploiting UAV technology. At AERIUM, we understand the need for safe and predictable results for our clients.

AERIUM's services include wildlife management, using our unique Robird® (robotic falcon) technology, aerial mapping and infrastructure inspections.

Let AERIUM's unique and dynamic offering of services and integration of new technologies create customized solutions for any project you may have.

## Business objectives

Our goal is to have B2B meetings with numerous potential clients in the industries of wildlife management, oil and gas, and agriculture and forestry. These organizations would include:

- international airports
- local UAV regulators
- oil and gas exploration companies
- midstream pipelines companies
- LNG and heavy oil companies

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## Aerostar Drone Solutions Inc.



Aerostar Drone Solutions Inc., is the leading commercial UAV company providing critical inspections for the oil and gas industry.

We are pioneering the use of UAVs to perform a variety of inspections, which dramatically reduces the risk to personnel and provides a significant reduction in costs for our customers. We have a National Special Flight Operations Certificate (SFOC) for both day and night operations. In addition, we have a comprehensive Health and Safety Program, which allowed us to achieve a three-year Certificate of Recognition (COR) from the Alberta government.

Services we offer include:

- flare stack inspections;
- confined space UAV inspections for tanks, pressure vessels, etc.;
- pipeline ROW inspections;
- lease mapping and 3D point cloud generation;
- Corrosion Under Insulation Surveys (CUI);
- offshore platform inspections; and
- other customer requester inspections.

We bring more than 50 years of combined experience in the oil and gas industry, and use our customized reports to deliver precise and actionable results.

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# Black Bird Aerial Inspections



At Black Bird we do aerial photography, facility inspections and area mapping. This data collection capability – combined with our partner company, Mayor Industries – provides NDT, inspection services and field-engineering capability that allows our clients to support reliability and safety.

## Business objectives

Our business objective at this conference would be to network with other like-minded organizations to strengthen and add value to our client offerings, and inform and educate prospective clients on what we have to offer to provide value and enhanced safety when working in proximity to hazardous environments.

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Canadian UAVS Inc. (CUAVS) is a division of Mountain View Helicopters (est. 1995) and an integrated solutions provider of both manned and unmanned aerial vehicles (UAV). CUAVS provides low-cost surveillance, monitoring, training and reporting for commodity-based operations, utilities, forestry and real estate through UAVs. Canadian UAVs is the first and only mixed-aviation portfolio on the market and is dedicated to providing Transport Canada-certified, military-grade UAV solutions to its customers.

Headquartered in Calgary, AB, Canadian UAVs has grown while maintaining the highest degree of aviation safety in the industry. Canadian UAVs was vindicated in its operating structure by being the first and, to date, only UAV service provider audited and approved by Chevron Canada. In March 2017, Canadian UAVs became the first Canadian service provider to complete a beyond visual line-of-sight oil and gas inspection.

Canadian UAVs has a competitive advantage through preferred partnerships with Lockheed Martin CDL Systems. By operating the Transport Canada compliant Lockheed Martin Indago 2, Canadian UAVs is continually dedicated to offering military grade UAV solutions with the utmost level of safety and compliance.

With strict adherence to aviation best practices, Canadian UAVs also offers unparalleled third-party training and maintenance solutions. With UAV training and maintenance becoming a critical factor in commercial operations, Canadian UAVs offers multiple solutions to ensure the safe integration of UAVs into the national airspace. In-class and online options are available.

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Canadian Unmanned Inc. (CUI) is Canada’s most experienced Unmanned Air Vehicle (UAV) training provider that evolved from the Canadian Centre for Unmanned Vehicle Systems (CCUVS) and remains “Canada’s First Choice” in small UAV ground school training. CUI was the first UAV training school in Canada to provide national training services since 2009.

Sterling Cripps, founder and chief instructor for CUI has successfully trained more than 1,800 UAV students and pilots, representing more than 350 businesses, both large and small, in the commercial sector over the past 7 years. He continues to work closely with police departments and law enforcement agencies having trained more than 250 uniformed personnel in this field representing more than 20 different departments.

CUI maintains a close working relationship with Transport Canada and NAV CANADA to ensure civil and commercial UAV operators are up to date on regulations and are fully aware of the responsibilities as legitimate airspace users while operating drones. Sterling is Canada’s leading expert in the provision of small UAV ground school training and for the operation of complex Direct Target Drones.

Canadian Unmanned offers a Transport Canada (TP15263) compliant two-and-a-half-day ground school for civil and commercial operators, covering the following topics:

- basic UAS “101”;
- Canadian Air Law and Regulations (CARs);
- Aerodynamics;
- aviation charts and Canada Flight Supplement (CFS);
- aviation weather;
- Special Flight Operating Certificates (SFOC);
- most current rules and regulations pertaining to drone flights in Canada; and
- Communications: Industry Canada Restricted Operator License ROC (A).

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Copperstone Technologies specializes in developing amphibious robotic systems for very challenging environments. Our amphibious robots facilitate the environmental monitoring and reclamation of previously inaccessible terrains.

We offer amphibious systems specifically built to be easily integrated into industrial operations and give operators immediate feedback on the state and composition of soft deposits. With a wide range of payload capabilities, our robots can be customized to meet any need.

Example of applications include:

- remote ground monitoring campaigns;
- mine tailings monitoring;
- cone penetrometer testing;
- field vane shear testing;
- soil and water sample collection;
- thin ice and water operations; and
- marsh, wetlands, and slough monitoring.

We provide a range of monitoring services with our robotic systems, in addition to consulting services in field robotics and embedded systems. Please contact us for more information.

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ITRES, established in 1979, is an Alberta-based airborne hyperspectral remote sensing imager manufacturer and worldwide mapping survey provider.

ITRES imagers are designed for hyperspectral and thermal imaging of manmade and natural areas. Our LiDAR-ready systems cover all major spectral regions:

- Hyperspectral Visible Near Infrared Airborne Spectrographic Imager (CASI);
- Shortwave Airborne Spectrographic Imager (SASI);
- Mid Wave Airborne Spectrographic Imager (MASI);
- Long Wave Airborne Spectrographic Imager (TASI); and
- Midwave Airborne Broadband Imager (TABI).

ITRES produces a line of microSystems – the microCASI-1920 (VNIR), the microSASI-384 (SWIR) and microTABI-640 – all are designed for lab/UAV or standard aerial use. Functionalities include realtime radiometric correction, as well as on-the-fly image analysis using preloaded or custom parameters.

Supporting products include multiple sensor operation (data fusion), remote operation capability, client located calibration supports and in-flight processing including geo-correction for broadband thermal (TABI-1800) acquisitions in support of SAR activities.

ITRES also offers worldwide operational support in acquiring hyperpsectral and thermal data, with full project management capability.

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# Lockheed Martin CDL Systems



We are a software engineering firm specializing in the development of software for operating and optimizing unmanned vehicle systems. Once a small technology start-up, we have grown into a 60 employee operation with offices in Calgary, Alberta and Huntsville, Alabama.

We have developed standards-based and commercial off-the-shelf software products that have been integrated by our customers into ground control systems for more than 30 unmanned vehicle platforms. We have been instrumental in supporting the ground control systems for the international target-drone community, the U.S. Army, the U.K. MOD, the Canadian Army and various defense contractors, governments and commercial operators around the world. Our software has seen more than 1.5 million hours of operational use.

Our emerging technology is called Hydra Fusion Tools, a software product that can create real-life models from UAV video and immerse them into a 3D world. This software is available commercially and pairs well with our Indago quadrotor UAV, which is also sold out of our Calgary office.

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# Measurement Science Inc.



Based in Calgary, Alberta, Measurement Sciences Inc. (MSI) is a geomatics engineering firm providing high precision industrial measurement, alignment, deformation monitoring, Bathymetric surveys, engineering surveys, pipeline integrity and Unmanned Aerial Vehicles-based (UAV) photogrammetry and LiDAR services.

MSI uses the latest techniques, equipment and software in conducting its operations. Equipment used in data acquisition includes GNSS, geodetic grade single beam and multibeam echo sounders, UAVs, lightweight LiDAR, high-resolution cameras and laser/optical tooling devices. Processing, reduction, analysis and presentation are performed using commercial and proprietary software and techniques.

Active in the UAV market since 2012, MSI is operated by professional engineers and surveyors supported by remote sensing and geomatics engineering technologists. Recently expanding into UAV based high-density LiDAR collection, MSI can provide the highest resolution geospatial information available.

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With more than 20 years of experience, Microhard is a well-established, highly respected manufacturer of wireless communication and networking solutions associated with all types of Unmanned Vehicle Systems (UAVs, UGVs and USVs) for video, telemetry and real-time, mission-critical communication systems.

## Featured Products

The Pico Digital Data Link (pDDL) provides a fast and secure communication link with simultaneous Ethernet and Serial based data communication. The miniature, lightweight and robust design allows the pDDL to be an ideal candidate for size sensitive applications needing high quality wireless video and telemetry communications.

The DDL Amplifier is a 10W linear amplifier, designed for operation with the pDDL Digital Data Link. The DDL Amplifier offers a compact, rugged design, featuring high speed automatic Tx/Rx switching.

Please come to booth 2025 and speak with Jeff Catherwood to learn more about our innovative products.

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GNSS and inertial positioning, attitude determination, correction services, post-processing software.

NovAtel® is the world's leading provider of precise Positioning, Navigation and Timing (PNT) technology to the unmanned industry. Our OEM GNSS receivers can utilize RTK, PPP, SBAS or DGPS corrections, providing customers with centimetre, decimetre or metre-level positioning – whatever their application requires.

In addition to high-precision GNSS receivers, NovAtel supplies antennas, augmented systems and post-processing software for ground, marine and airborne unmanned applications. We meet requirements for military and commercial applications including our OEM625S™ SAASM RTK receiver, GAJT® anti-jam antennas and SPAN® GNSS + INS for 3D position, attitude and velocity.

Our products have been developed for efficient and rapid integration. With NovAtel GNSS technology inside many of the world's most advanced unmanned system applications, we offer the experience and support to ensure your application's success.

Case studies on NovAtel's technology in action can be found at [www.novatel.com/unmanned](http://www.novatel.com/unmanned).

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Panvion is an Alberta-based geomatics and airborne sensor company focusing exclusively on designing and manufacturing one-of-a-kind airborne sensors that provide wide-area coverage while maintaining high-resolution and geo-location accuracies for the remote sensing.

Panvion's sensors can be used also in geophysical surveys, photogrammetry and the creation of Dense Stereo Models, in classification – such as tree species – and in corridor mapping for pipelines, powerline and highways. Airborne platform can range from medium sized helicopters, UAV to high-altitude manned aircraft. Panvion's design covers spectral bands from the ultraviolet, near-and thermal infrared, visible, using multi-spectral and hyperspectral systems. Cloud Point creation from the sensors rival LIDAR in density and productivity and is one of the main challenges the sensors solve.

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Based in Medicine Hat, Alberta, Canada and Ashford, Kent, United Kingdom, QinetiQ Target Systems provides world-leading unmanned aerial, marine and ground targets, scoring systems, payloads and special mission vehicles for weapon simulation and training programs.

For more than 40 years, QinetiQ Target Systems and its antecedents has manufactured more than 10,000 unmanned vehicles, in service in more than 40 countries, including 15 NATO customers.

### Products and services

QinetiQ Target Systems offers a wide variety of unique and highly advanced training products and services based on unmanned aerial, ground and surface vehicle targets. Our solutions are specifically tailored to our customers' training, test and evaluation objectives and are designed to achieve the required balance of cost and threat fidelity. We have a long history producing world-leading target command and control systems, scoring equipment and instrumentation to augment targets. We are recognized by the global defence industry for UAV surveillance support services, with a highly successful track record on a variety of major unmanned vehicle programs.

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The University of Calgary is one of Canada's top comprehensive research universities. Located in the city of Calgary, energy capital of Canada, the University of Calgary has a history of aerospace research and a group of active aerospace researchers across the faculties in engineering and science. Academics specializing in control algorithms for UAV, navigation and integrated sensor systems, high-speed aerodynamics and propulsion, fabrication and test of novel UAV designs, computational fluid dynamics and fluid-structure interaction, regularly collaborate with organizations such as NASA, AFOSR, DLR, Pratt and Whitney, Lockheed Martin and others.

The university has unique experimental facilities to conduct cutting-edge research and is in close access to large UAV test ranges, the Foremost Canadian Centre for Unmanned Vehicle Systems (CCUVS) and Defence Research and Development Canada (DRDC) in Suffield. In addition to that, the University of Calgary has excellent government leveraging of research funding to support collaboration with industries.

## Business objectives

Establish new collaborations with industrial, academic and governmental organizations in aerospace-related areas, including unmanned vehicles and space technologies.

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Ventus provides information for managing land and land-based assets, Ventus is the geomatics and geospatial experts that provide clients with the richest geospatial data in the most efficient, effective, and safest manner. We are: geographers, surveyors, remote sensors, gis professionals, and lidar and photogrammetry experts. We use UAVs as our preferred choice of a sensor platform. We specialize in the data collection, management, and interpretation.

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