

## LOOKNorth/Unmanned Systems Canada Approve Funding for RPAS BVLOS Projects

*LOOKNorth and Unmanned Systems Canada collaborating to advance national RPAS BVLOS cluster*

LOOKNorth and Unmanned Systems Canada are working together to support a national cluster of industry and academic partners in advancing the Remotely Piloted Aircraft Systems (RPAS, sometimes referred to as UAV or drone) industry in Canada. The partnership aims to accelerate commercialization of RPAS Beyond Visual Line of Sight (BVLOS) operations and the regulatory environment.

Activities undertaken to date include a study for Transport Canada highlighting the significant annual sales forecasts due to the impact of BVLOS on Canadian small to medium enterprises, a series of workshops to advance a national strategy for enabling BVLOS, the development of a national testbed system to support BVLOS trials and risk assessments, and the support of 28 projects valued at \$10M through an investment of \$2.4M by LOOKNorth. These projects support Canada’s resource sector (mining, oil and gas, forestry, infrastructure and urban applications, marine monitoring, Arctic applications development, and advancing a national testbed with an initial focus on risk assessment models that support both industry and regulatory requirements.

“LOOKNorth is extremely pleased to partner with Unmanned Systems Canada in advancing RPAS BVLOS operations in Canada. Based on the extensive industry surveys we’ve executed together, the potential economic impacts to this sector in Canada are forecast to be in the order of \$500M annually and create upwards to a 1,000 new jobs. The projects that have been approved to date have strong commercial potential and help to validate the potential economic impacts to Canada of advancing RPAS BVLOS. This is the partnership’s key motivation as we announce future calls for high-impact projects,” said Paul Adlakha, Managing Director of LOOKNorth.

USC and LOOKNorth have been supporting the development of a national BVLOS cluster in Canada. A primary objective of the cluster is to create a common national testbed system available to RPAS developers, service providers, end-users and regulators. A critical piece of the testbed system is a risk model being implemented by Periculum Labs of Ottawa ON, to validate the safety case for integration of Beyond Visual Line of Sight (BVLOS) capabilities into the national airspace. Flight and test data collected through operational flight trials is an integral part of an evidence-based risk model: a tool used in the development of BVLOS flight regulations.

“We are delighted with the progress we have made with LOOKNorth in advancing the RPAS industry’s capabilities in Canada, and the projects that we have been able to support financially to-date and going forward,” said Unmanned Systems Canada Chairman Mark Aruja.

Project results will support the development of the BVLOS regulatory environment in Canada.

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**Project Descriptions**

Projects approved for early 2019 implementation:

[Highway RPAS / Aerial Highway monitoring using RPAS \(Sky Pilot Unmanned Aerial Solutions\)](#)

Sky Pilot will validate BVLOS operations and automated data analytics based on artificial intelligence as a means of surveillance and risk evaluation. The specific applications involve highway infrastructure, slope stability, search and rescue, wildlife monitoring and biodiversity mapping.

Aerial imagery collected through a variety of RPAS-deployed sensors monitor and detect change along highway routes, including rubbish dumping or pollutant spills as well as early detection of invasive species and animal migration near highway routes.

The service promotes improved safety and emergency response times by getting current situational awareness into the hands of first responders. The ability to detect, assess and notify the public of road hazards in real time decreases risk and potential impact of accidents.

[RTM Services for Arctic BVLOS Flight Trials \(AirMarket Inc.\)](#)

The project validates BVLOS flight operations in Arctic conditions using RPAS traffic management (RTM) services. Critical RTM functions including fleet and pilot management, flight authorization, flight tracking, and flight separation monitoring will be evaluated. The work will be conducted in Nunavut with the support of the Canadian Coast Guard Search and Rescue group and Nunavut emergency management officials.

The trial results are expected to be improved capability and capacity for environmental monitoring over extended distances, which help in establishing regulatory parameters for BVLOS operations in the Arctic and validating BVLOS operations in a real-world Arctic environment.

[The HiDRON \(Stratodynamics Aviation Inc.\)](#)

Stratodynamics provides high-altitude Earth observation platforms and services. In addition to operating their platforms, their services include instrument integration, campaign coordination and data collection. The HiDRON UAS platform is a unique balloon-launched unmanned glider that collects in-situ stratospheric data. In collaboration with project partners and global researchers, Stratodynamics will outfit the HiDRON with a greenhouse gas (GHG) measurement system. The proposed technology is expected to improve data collection methods for vertical GHG profiles and for the calibration of ground and satellite-based remote sensing measurements. Information about the vertical distribution of GHGs in the atmosphere is crucial to advance our understanding of, and ability to forecast, the impacts of GHG emissions

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Currently, atmospheric measurement systems are launched to high altitudes by sounding balloons. During descent by parachute, the instruments tend to drift many kilometres away from the launch location, and there is significant risk that the instrument and data will be lost.

With the HiDRON platform the measurement system descends in a controlled flight path back to the launch site or a pre-determined landing area. The flight plan is monitored by an operator at a portable ground station and can be modified in real time using radio telemetry with a range of 100 km. The HiDRON has successfully completed flights from an altitude of 25 km (82,000 ft.), demonstrating its BVLOS capabilities.

### UAV-based Geomagnetic Surveys under BVLOS Conditions (Helios UAV)

Helios UAV provides drone-based data acquisition services for mining. The overall objective of the project is to demonstrate the technical requirements to ensure safe and successful BVLOS operations in the context of magnetometric geophysical surveying.

Geomagnetic data can be collected through a UAV-based system with reduced cost and safety risk compared with conventional methods, as well as less need for ground support in environmentally sensitive areas. The trial will demonstrate safe BVLOS operations using proper traffic management and detect-and-avoid systems.

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