



Raven Project To Develop Small UAS S&A

By Leah McGroggan, Crystal Public Relations, Canada

In January 2008, the Raven Project announced they were awarded 3 million dollars funding from the Canadian Government's Atlantic Canada Opportunities Agency (ACOA) to support Raven II a four year program to investigate and develop Sense and Avoid technology for small (<35kg) UAS. It is widely believed that the initial interest in commercial unmanned aircraft operations will focus on small, long endurance aircraft and it is, this size class that represents the greatest challenge for sense and avoid systems due to their limited space and low payload weights.

Raven II will investigate and develop Sense and Avoid technology and the resulting innovations will be commercialized around an Autonomous Collision Avoidance System (ACAS) for small UAS. The ACAS sensor suite will consist of:

- High-resolution digital EO/IR cameras;
- Transponder integration
- Ultra-Light-weight radar

The program will also further develop target extraction/detection, tracking and collision avoidance solutions that will allow fully autonomous operations at a level of safety equivalent to, or better than, that of manned aviation. Development will be accomplished in a stepped approach that will allow UAS operators to quickly push their operations past the present visual contact restriction to radio line of sight, and by project completion to Beyond Line of Sight operations in non-segregated airspace.

The fast track development will be accomplished through a significant airborne test and evaluation program. The program will utilize the Raven Teams' Aerosonde UAS and a specially modified and equipped manned aircraft to facilitate data collection and safe testing of the collision avoidance functions. Flight testing will be conducted from UAS Test Centres operated by Provincial Aerospace.

The Raven II project team is a collaboration of Memorial University of Newfoundland (MUN), Provincial Aerospace Ltd (PAL), and Defence Research and Development Canada, with input from several other UAS sector organizations including Transport Canada Airworthiness personnel.

MUN's lead scientist for the Raven II project is Dr. Siu O'Young. According to Dr. O'Young, «The private sector, academic, and regulatory partnership is a win-win for Canada's aerospace industry. Our team at MUN has been afforded an opportunity to establish ourselves as innovators, Provincial Aerospace will continue to build on its UAS operations capability while having the regulator involved from the beginning of the program will ensure the data collected will meet their certification requirements».

The funding award builds on the successful Raven I program which developed over-the-horizon data-collection systems for small UAS. These included remotely-operated high-resolution cameras, ship automatic identification



system (AIS) receivers, and testing of synthetic aperture radar (SAR). In turn, the additional expertise gained during the upcoming ACAS development will undoubtedly benefit further developments in both surveillance systems and UAS autonomous control.

The Province of Newfoundland and Labrador is emerging as a major player on the commercial and academic stage, helping to establish the Canadian sector as a leader in research and development and commercial operations. UVS Canada, the national industry association, the federal and provincial governments and the many companies and academic institutions are all contributing to a very active Canadian sector. The Raven Project further adds to the depth of the Canadian contribution to the world UAS sector.

For further information on the Raven Project contact:

Dr. Siu O'Young
RAVEN Project
Principle Investigator
1-709-737.83.45
oyoung@mun.ca

Pip Rudkin
Provincial Aerospace Ltd.
UAV Program Manager
1-709-576.19.39
uav@provair.com