

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations - IAF EARTH OBSERVATION SYMPOSIUM (IP)

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PROJECT APES – ACCESSIBLE PLATFORM FROM EARTH TO SPACE: DEVELOPMENT OF
SOLAR POWERED HIGH ALTITUDE UNMANNED AERIAL VEHICLE FOR EARTH
OBSERVATION

Abstract

With the advancement of satellite technology, utilization of remote sensing in various earth observation applications has been an essential part to manage larger areas with higher efficiency and accuracy. The main key source of data acquisition heavily depends on Satellite observations. Satellite operations, though playing vital role in Earth observations, are having limited accessibility for the users. Also, satellite revisit periods are very large and the industry has to be dependent on multiple sources, including constellations of satellite(s), to obtain real time data. This results in to extremely costly operations. Incorporating integration of emerging technologies such as Artificial Intelligence (AI), Deep Learning (DL) and Internet of Things (IoT) applications in the UAV can answer many questions of present requirement as a single point solution to earth observation industry at much affordable rate.

The Space Advisory Board of Canada highlighted the need for affordable access to precise data for the Northern communities. Utilization of the UAV technologies for providing EO data, for the Northern communities, will support the backbone of empowering the communities in remote areas with efficient capacity building. In order to address the user needs of remote sensing with greater adaptability and affordability, BRASS Inc has launched Project APES to design and develop a High-Altitude Solar Powered Unmanned Aerial Vehicle for collecting data for Earth Observation purpose, by complementing the trend of leveraging Commercial-off-the-shelf technology. The UAV will carry up to 15 kgs of payload, including SAR and Optical sensors for EO, to achieve the objectives and satisfy mission requirements. This innovative technology is designed to perform mission requirements using AI and DL technology for collecting data and transmitting it to the ground station. It provides constant connectivity using hybrid propulsion system and mobile ground control station for data acquisition in extreme weather condition.

Project APES will provide energy and cost-efficient Earth Observation data solution which can be customized to the mission requirement in remote areas. The product will provide data to the Earth observation industry, by making it accessible for all, especially by providing accessibility and connectivity to the communities in the remote areas of Canada, along with encouraging Canadians to develop STEM skills for the jobs of tomorrow. The data obtained from the Project APES will be useful in Environment, Agriculture, Fisheries, Marine, Mineral and Land (Geology), Communication, Security, Defence, Oil and Gas, Search and Rescue, Health and Medicine (Telemedicine), RD... etc. Sectors in Canada and abroad.