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Program Preview: Drones as Dual-use Technologies

With Justin Perry and Dr. Eric Saczuk

Polytechnics are playing a growing role in developing drones as dual-use technologies for interdisciplinary applications, such as wildfire response and environmental stewardship.

Ahead of the [2026 Polytechnic Showcase](#), Polytechnics Canada connected with the British Columbia Institute of Technology (BCIT) to discuss their session, *From Detection to Containment: Drones in Modern Wildfire Response*, highlighting the expanding role of Remotely Piloted Aircraft Systems (RPAS).

Dr. Eric Saczuk, Director, BCIT RPAS Hub, and Justin Perry, Instructor, Forest & Natural Areas Management, recently shared how BCIT is responding to Canada's environmental challenges.

Polytechnics Canada: Your session illustrates how polytechnics are able to combine technologies like drones and AI to deliver practical solutions in areas such as wildfire management. How did this project come about?

Eric Saczuk: My first introduction to the project was through two of our close industry partners, InDro Robotics and SkyScout AI. I was the Chief Pilot on several feasibility studies conducted in the Okanagan in 2024 and 2025. These studies

focused on the potential for using thermal drones to detect small fires and direct a larger fire-suppression drone to the coordinates to extinguish them. The study then evolved into assessing the practicality of using the fire-suppression drone to create fire breaks and perimeters around high-value assets such as wineries, orchards and critical infrastructure.

Justin Perry: For me, my involvement began by working on the wildfire frontlines in BC with drone technology. I was the Chief Pilot, responsible for managing and overseeing drone mapping crews. Since then, I've studied, taught and applied holistic methods such as two-eyed seeing to manage wildfire.

Through this partnership, we've been able to offer hands-on training sessions to our students and work on reserve land to ameliorate fire risk.

PC: The theme of this year's conference is all about partnerships. Can you share what partnerships are involved in this project and how they have evolved?

ES: On the industry side, we have partnered with InDro Robotics and SkyScout AI for this project. Academically, Justin Perry (BCIT) and Dr. Michal Aibin (BCIT and Northeastern University) have also contributed significantly to the project.

JP: We've also partnered with people in the BC Wildfire Service. In the last two years, we've travelled to the interior of BC to do a joint training session with crew members in the Merritt fire zone. Through this partnership, we've been able to offer hands-on training sessions to our students and work on reserve land to ameliorate fire risk.

PC: Your work includes collaborations with First Nations communities. Tell me about how RPAS technology is being used in Indigenous communities and the benefits this project stands to have long-term.

ES: We have been incredibly privileged to have connected with 17 First Nations communities. We initially collaborated through the British Columbia Salmon Restoration and Innovation Fund and a Mitacs-funded project led by the Pacific Salmon Foundation.

That project used thermal drones to detect and map cold water refugia along 20+ rivers throughout BC. These connections created the opportunity to provide thermal drone equipment and in-person training to build operational capacity that could be then used for a variety of applications, including wildfire detection and mitigation.

JP: Precisely. First Nations communities are disproportionately affected by wildfire. Disastrous wildfire seasons have spurred First Nations to seek remedies for ameliorating this issue.

Building capacity within the community is a priority for many First Nations. By combining technology and cultural understanding, First Nations are trying to create safe and resilient communities. At the same time, climate change is both a short- and long-term issue that, if managed proactively, would reduce damage and costs while improving public safety.

PC: Are there other applications for RPAS technology that BCIT is exploring or wants to explore?

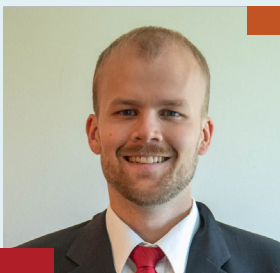
ES: BCIT is actively exploring a wide range of RPAS applications, including characterization of turbulence affecting drones in dense urban environments, general visual inspection of aircraft and pre- and post-prescribed burn monitoring of vegetation. We are also exploring morphological and vegetation health mapping of the Tranquille River, detection and mapping of invasive species and thermal assessment of building envelope performance.

JP: I'd like to explore applying controlled burning methods through RPAS technology. At the same time, anything to do with wildfire, drones or improving climate resilience is exciting!



Image provided by the British Columbia Institute of Technology

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