Supporting Collaborative Research in Aerospace

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Advisors, Business Development

April 25th , 2023

PURPOSE

Mitacs **empowers** Canadian innovation through partnerships that deliver solutions to our most pressing problems. We drive economic growth, productivity, and meaningful change to improve quality of life for all Canadians.

MISSION

Mitacs is a **catalyzing force** in the Canadian innovation ecosystem. We will build a world-class, diverse community of innovators through our collaborative model, attracting and deploying top talent to industry, and matching need with expertise to create ambitious solutions to real-world challenges.

VISION

Canadian innovation will create change that **transforms** the world.

Mitacs Has the Experience

Mitacs is a national, independent, not-for-profit organization that fosters growth and innovation.

117+
post-secondary partners in Canada

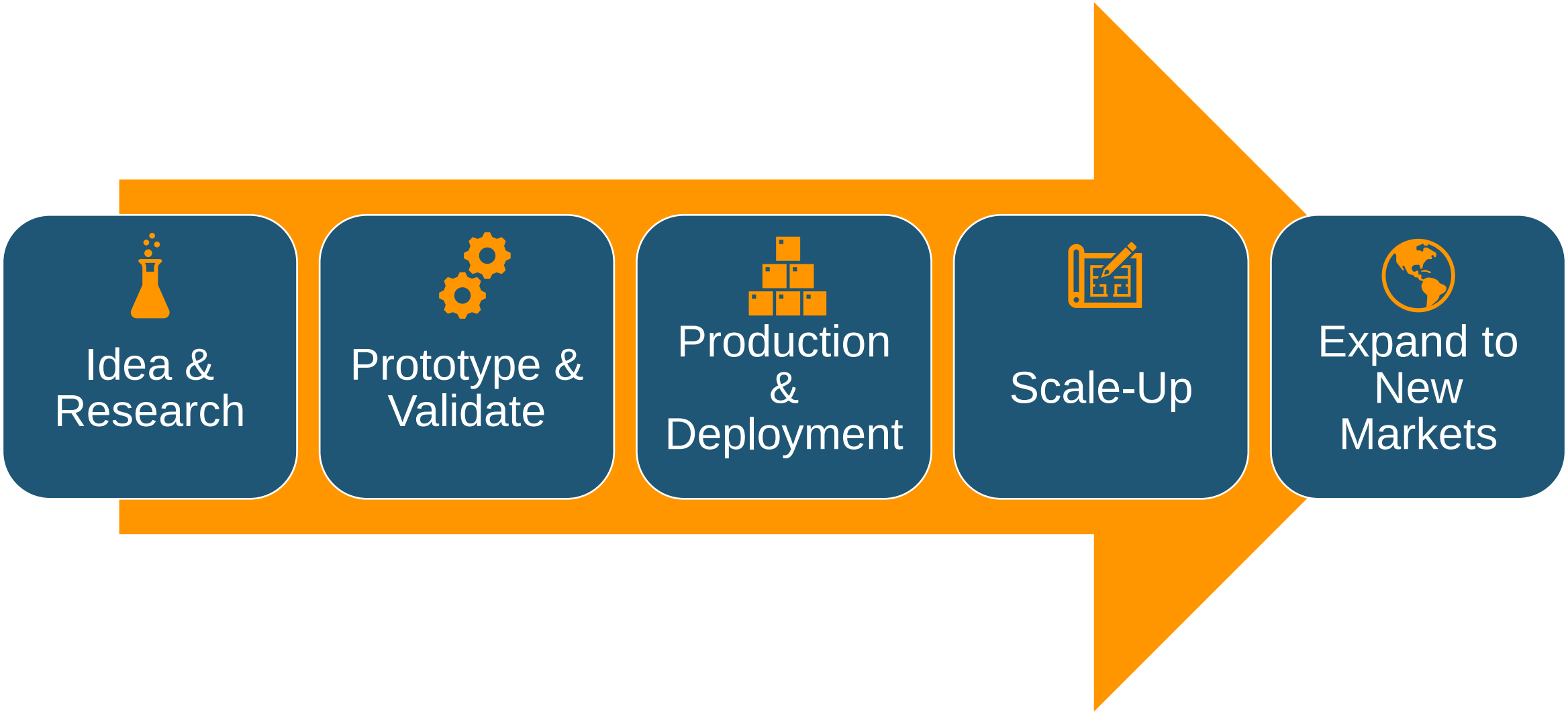
23 years in operation

7,000+
company partners

50,000+
research projects

400+ staff, **30+** offices, **4** regional hubs:
Vancouver | Toronto | Montréal | Ottawa

Mitacs Supports all Stages of R&D and Commercialization



Mitacs & Canadian Aerospace

Canadian Aerospace & Mitacs

- **Talent Attraction and Pipeline Creation**
  - Through our internships, we have provided work-integrated-learning opportunities to close to **900 researchers** since 2017.

Canadian Aerospace & Mitacs

- **Exports & FDI**
  - Research projects often lead to new commercial products or services
  - Domestic and international
- **R&D**
  - In 2022, over $ 10 M of total Mitacs grants awarded in aerospace
- **Major players:**
  - Bombardier, CAE, Pratt & Whitney, Airbus Canada are all **current and regular users** of Mitacs programs.

Canadian Aerospace & Mitacs

- SME’s are overrepresented in use of Mitacs programs
- Supply chain in Aerospace

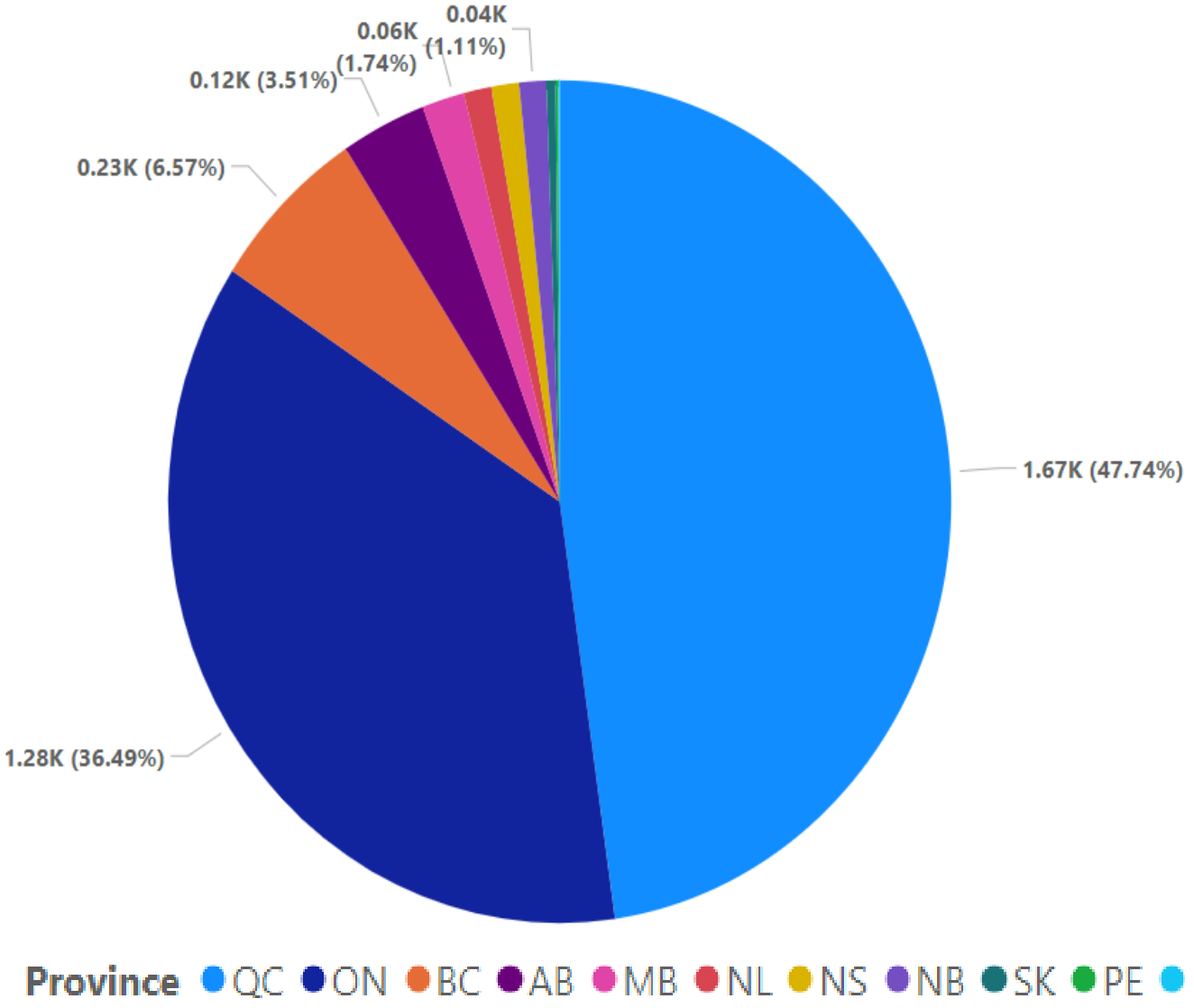
Mitacs Aerospace Projects

Canadian Aerospace Projects through Mitacs

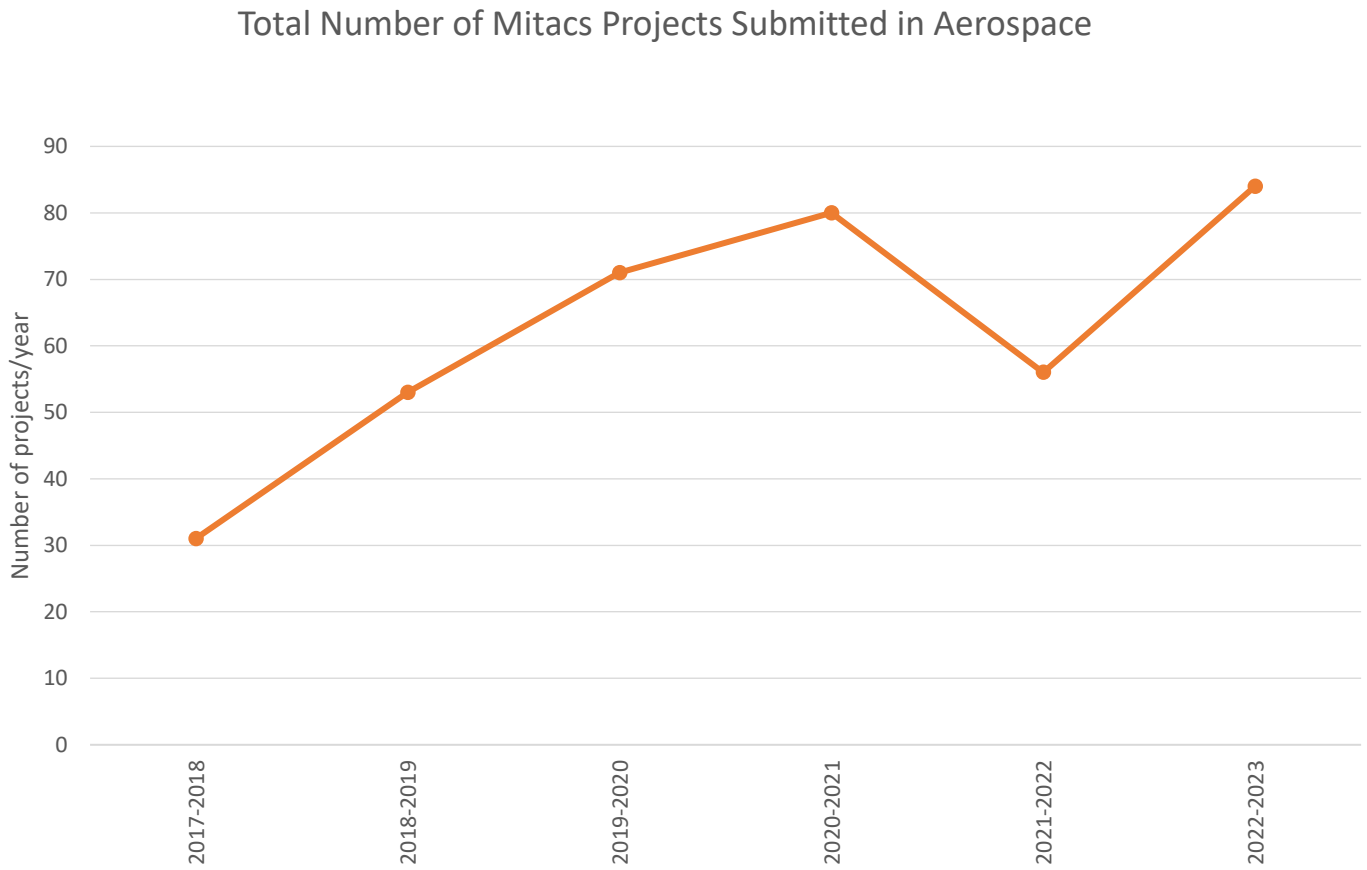
- **Material science:**
  - Alloys
  - Composites
  - Polymers
  - Additive manufacturing
  - Non destructive testing
- **Modeling:**
  - CFD
  - Wind tunneling
  - Virtual flight simulations
- **Manufacturing:**
  - Machinability
  - Forging
  - Productivity improvement
  - Welding
  - Maintenance
- **Artificial Intelligence:**
  - Predictive maintenance
  - Route optimization
  - Supply chain optimization
- **Drones/UAVs**
- **Propulsion systems:**
  - Motors
  - Turbine
  - Electric motors
  - Fuels & hybrid systems
- **Network & Cybersecurity:**
  - Avionics & control systems
  - Cybersecurity
  - Data acquisition
  - IoT
  - Attack detection
  - 5G
- **Training & safety:**
  - Pilot training
  - Biometry
  - Virtual reality environments
  - Safety improvement
  - Wearable
  - Crisis management

Comment:
We note a high concentration of projects originating in Quebec, followed closely by Ontario.

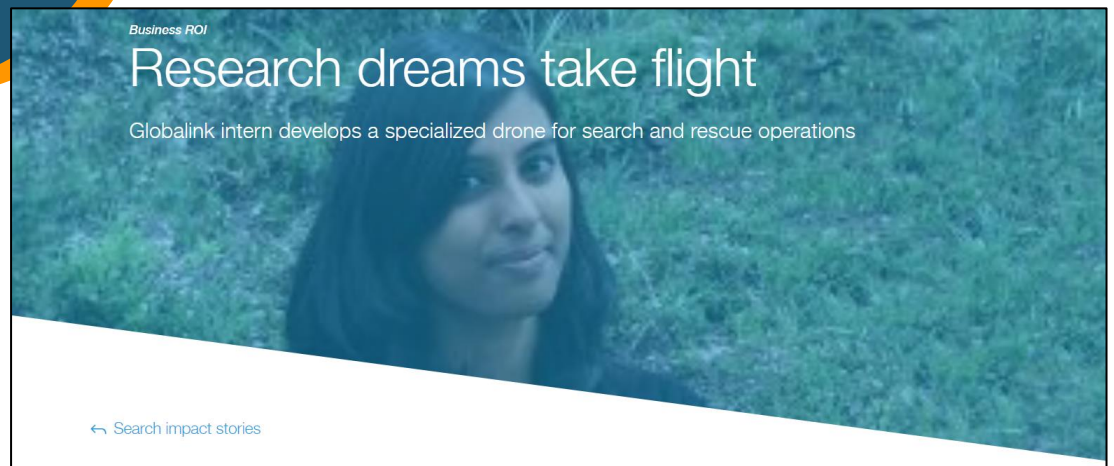
Both and Quebec and Ontario represent 84 % of all aerospace-related projects.



Aerospace Projects at Mitacs (Ontario)



Mitacs Success Stories in Aerospace



Business ROI

Research dreams take flight

Globalink intern develops a specialized drone for search and rescue operations

↩ Search impact stories

July 2014

Having grown up watching father fly planes in the Indian Air Force, it's no surprise that Adyasha Dash dreams of developing the next generation of military air planes and unmanned aerial vehicle (drone) technology. Her studies at the National Institute of Technology, Trichy gave her the foundation she needed for her research to take flight this summer at the University of Calgary with Dr. Alex Ramirez-Serrano through Mitacs Globalink Research Internships.

Mitacs Success Stories in Aerospace

Business ROI

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"I was deciding between two graduate programs: one included an internship, the other didn't. But my future supervisor informed me that it was still possible through Mitacs Accelerate. That sealed the deal for me: with Mitacs in the picture, I would be able to do exactly what I wanted—stay in Toronto, do research in computational aerodynamics at the University of Toronto's Institute for Aerospace Studies under the supervision of Dr. David W. Zingg, and finish my program with an internship."

Nimeesha eventually undertook an internship with Bombardier Aerospace's Advanced Aerodynamics department in Montreal. Her expertise and dedication left a positive impression on her supervisors, who knew she would be an asset to the company.

"Upon completion of my internship, I was offered a permanent position in the department. Accelerate enabled me to get my foot in the door and prove myself. I packed up and moved to Montreal to start my new job, which has since given me several more opportunities on a variety of projects. I've since moved onto Aircraft Performance in the Flight Sciences department."

Mitacs Success Stories in Aerospace

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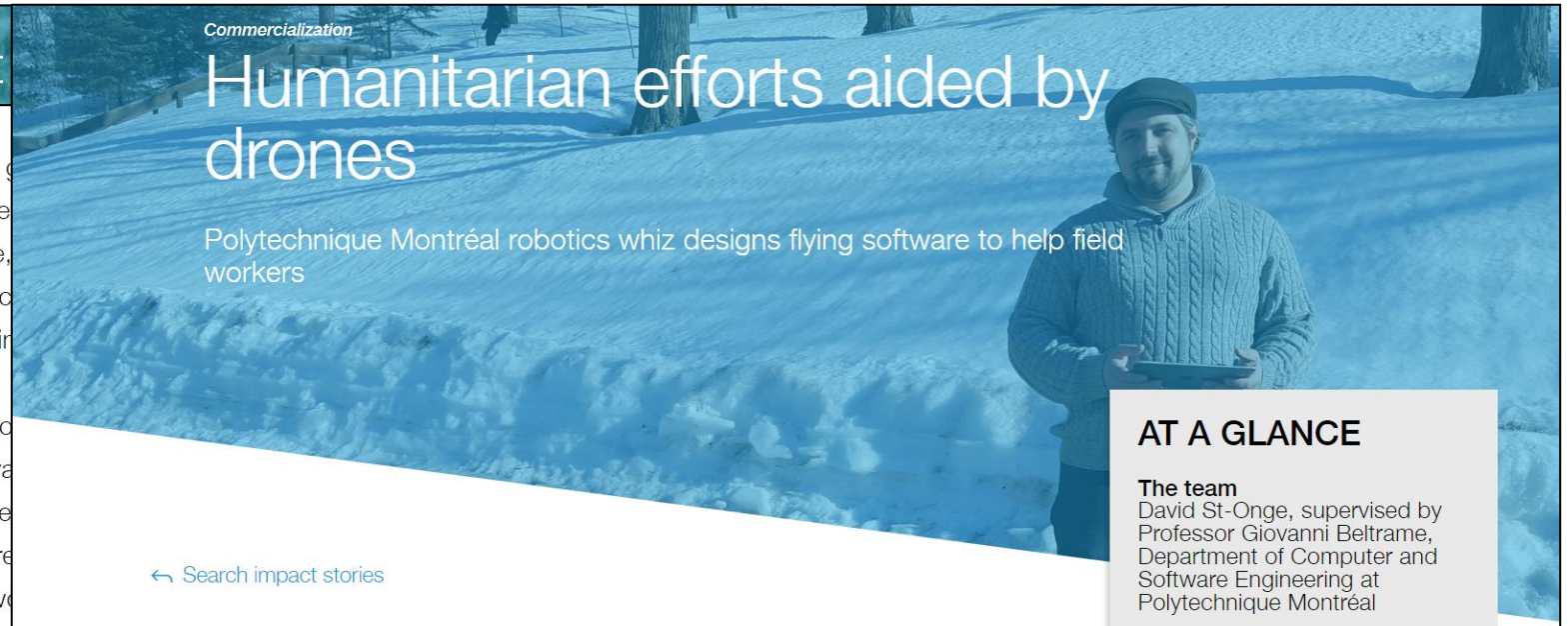
Commercialization

Humanitarian efforts aided by drones

Polytechnique Montréal robotics whiz designs flying software to help field workers



Search impact stories

March 2017

David St-Onge has a passion for robotics. Currently a postdoc at Polytechnique Montréal, David has spent more than 10 years researching robotics for both academic and commercial projects — and now he's seeing his passion come to life.

AT A GLANCE

The team
David St-Onge, supervised by Professor Giovanni Beltrame, Department of Computer and Software Engineering at Polytechnique Montréal

The challenge
Flying drones for humanitarian efforts

The solution
Creating new software for user-friendly piloting

Mitacs Success Stories in Aerospace

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Commercialization

Humanitarian efforts aided by drones

Search impact stories

April 2018

By Catherine Winters

The summer of 2017 brought unprecedented wildfires to BC's Cariboo region. Hundreds of ground and aerial firefighters were brought in to battle the blazes. For firefighters in the air, wildfires create unpredictable flying conditions that can test their skill and put them at greater risk of accidents.

AT A GLANCE

The team
Conair Aviation and Latitude Technologies in partnership with University of British Columbia's Okanagan campus and Camosun College

The challenge
Extreme forest fires create dangerous flying conditions that challenge a pilot's physical and mental stamina

The solution
Understand physical constraints placed on the pilots and their maximum capabilities

The outcome
An in-flight system that monitors pilot's physical condition

What's next
Use pilot data to inform changes to the Canadian Aviation Regulations for aerial firefighters

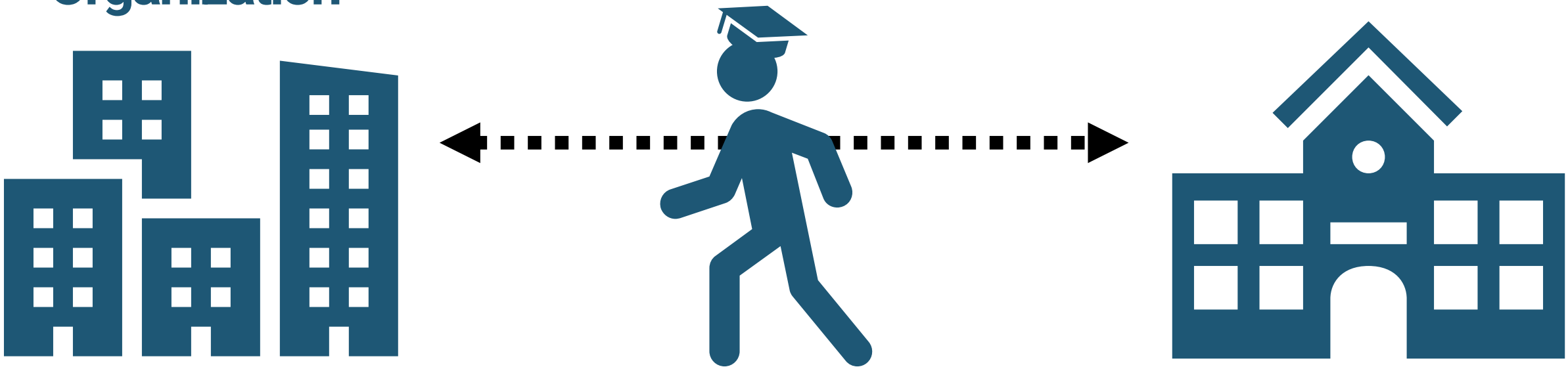
How Mitacs Funding Works

Requirements for a Mitacs Project

Partner Organization

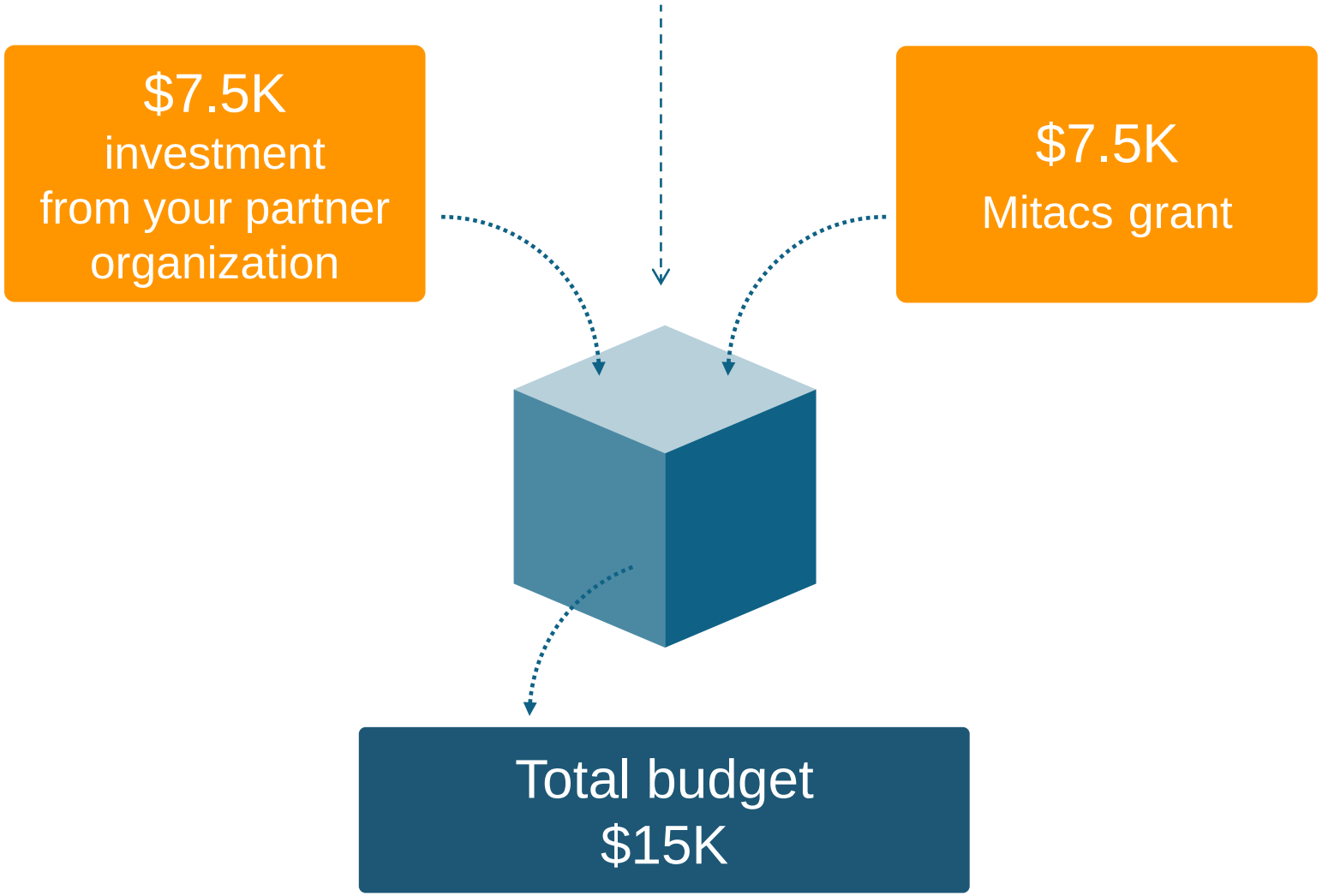
Intern

Academia



How?

This represents one (1) unit = 4-6 month block



Mitacs adapts to your pace and needs

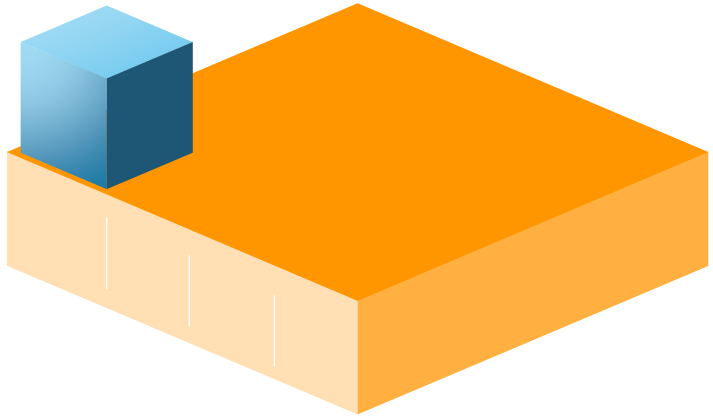
Start small...

1 researcher

1 professor

1 four-month project

1 partner company



Mitacs adapts to your pace and needs

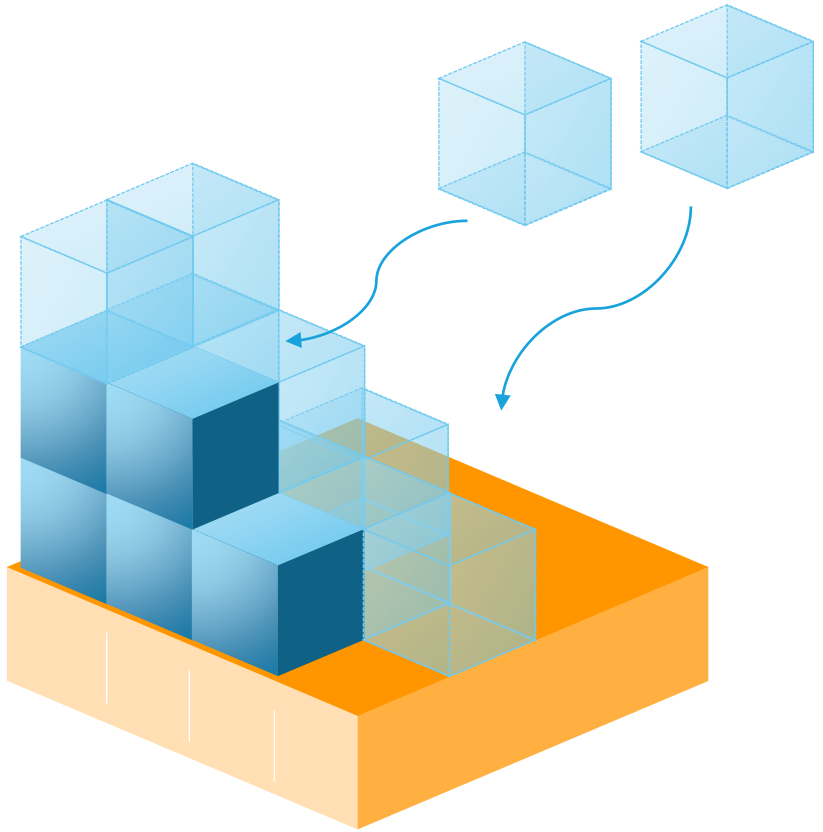
Add as many 4-6 month modules as you need

Multi-month or multi-year modules

Add multiple partner organizations & many researchers

Tackle more complex projects

Achieve long term goals



Points to Take Home

Small or Large Scale Projects ($10K to multi-million $)

Quick & Simple Peer Reviewed Application

Non-competitive (high success rate)

National Business Development Network

ECOSYSTEM EXPERTISE

Embedded into Canada's academia and industry

NETWORK MATCHMAKING

Nationally positioned to introduce R&D stakeholders

INNOVATION SOLUTIONS

Design R&D roadmaps & identify solutions for business objectives

TRUSTED ADVISORS

Committed to clients throughout their innovation roadmap

How can we work together?

The Reverse Pitch

- If you want to develop a product, or even commercialize it, come to us with a 10 minute pitch (does not need to be polished)-we are just interested in your idea.
    - We will bring academic researchers who will listen to your pitch, and if they have the expertise you need then Mitacs/DAIR can arrange for you both to have a meeting to talk about a potential project.
- **The goal**: to match SMEs (or start-ups) to the right academic expertise to solve a particular problem.
- **When:** Sometime in June (date: TBD). This will most likely be virtual, and between each SME and the academic researcher panel.
- If you are interested then please let Samantha Glover know.

Thanks to our funding partners.

Thank you, Questions?