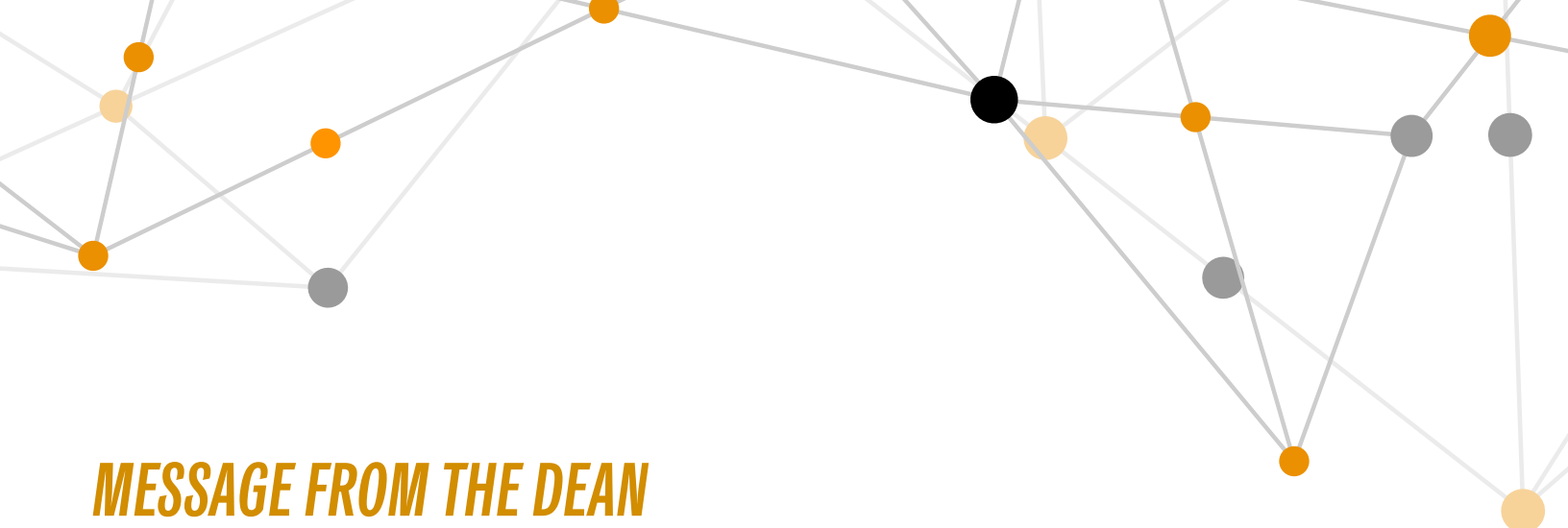


Emera
ideaHUB



STEWARDSHIP REPORT 2019-2020





MESSAGE FROM THE DEAN



As we continue to grow and innovate, it is evident that Faculty of Engineering has an increasingly larger role to play in community and economic impact in Atlantic Canada. The transformational IDEA Project and the Emera ideaHUB have accelerated our ability to come to the stage as a leading university.

We would not be where we are today without Emera's continued leadership, influence, and landmark contributions. Thank you. Through your generosity and ongoing support, we now have a space that not only accommodates our increasing number of engineering students, but also offers a physical space for innovation.

The Emera ideaHUB incubates new technology, new companies, and new and experienced entrepreneurs.

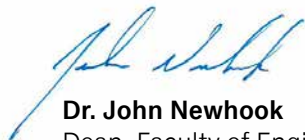
The companies built and grown in the Emera ideaHUB environment have had positive economic impacts for our region. This report will elaborate on the HUB's success seen through the 19 startups who collectively have generated five million dollars of financing, created 20 new jobs, and generated \$750,000 in revenue and paid pilots. Your gift has enabled this success.

The new technology being created and developed in the HUB elevates Atlantic Canada globally. Physical products are particularly difficult to develop, and the HUB is uniquely positioned at Dalhousie to incorporate the core competencies of our leading departments. Fostering an environment of collaboration for researchers in engineering, oceans, medicine, and agriculture, the ideaHUB bridges the gap from research labs to real-world applications.

Training future engineers is a priority for our faculty. The Emera ideaHUB creates a superior level of knowledge and educational experiences for engineers. Students and alumni are experiencing real-world scenarios within the HUB. Transferable competencies, mentorship opportunities, and building a united community is strengthening the skills of our grads which will enhance the industry.

With our student population now over 2,600 students, we are continuing to enhance and strengthen our teaching and research on Sexton Campus. Emera's commitment to student excellence has always played a powerful role in improving student success and providing our Faculty with the resources to enrich their experiences on campus. For that, we are immeasurably grateful for your generosity and support.

Sincerely,

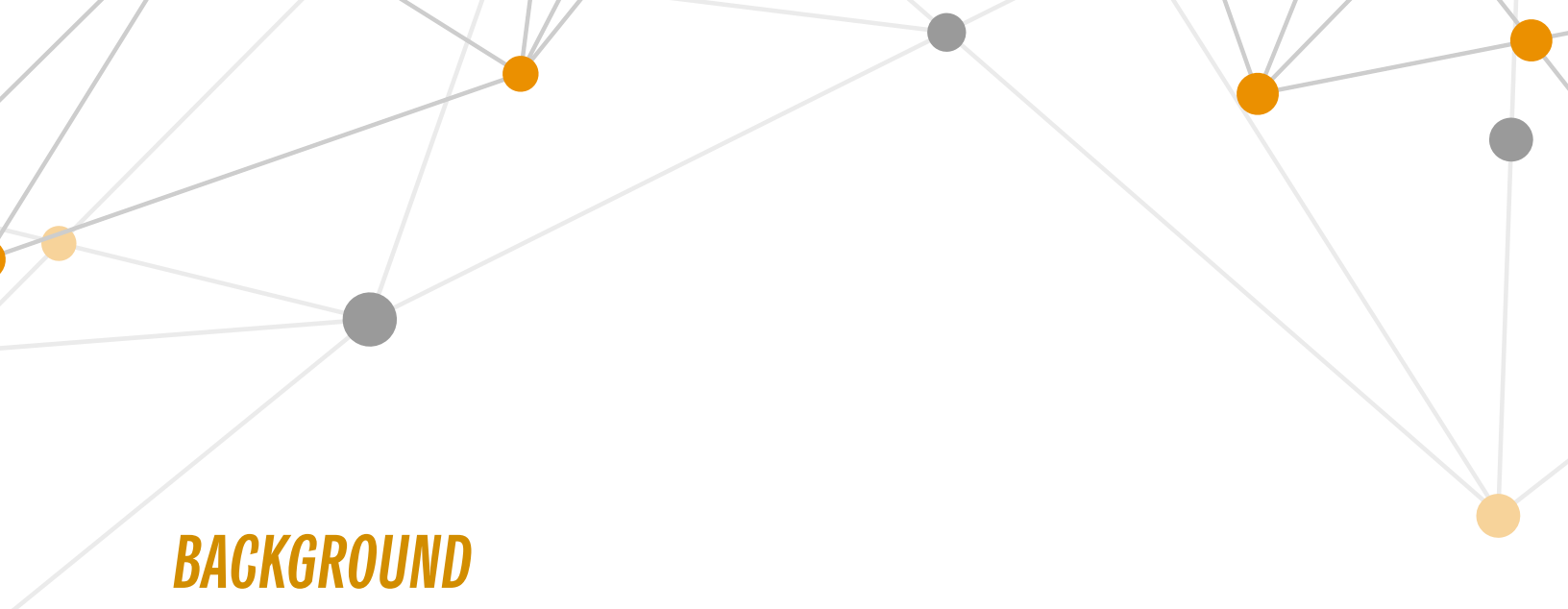


Dr. John Newhook
Dean, Faculty of Engineering



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BACKGROUND

The ONE Nova Scotia Coalition Collaborative Action Plan drafted in 2014 by Ray Ivany presented a series of action points, including recommending “Nova Scotia Universities as Innovation Hubs”. The plan was to place universities at the centre of innovation “ecosystems”, a network of individuals and groups that conduct and support innovative activity through applied research, product development, and products.

With a strong record of supporting initiatives that make communities stronger, Emera embraced the challenge posed by the ONE NS report to support a shared commitment between the private sector, post-secondary institutions, and government to provide expert programming and guidance, top-of-the-line gear, industry engagement, and modern workspaces to innovators that might otherwise struggle to access such supports on their own.

In 2016, with a generous leadership gift of \$10 million over 10 years, Emera collaborated with Dalhousie University for the IDEA Project. The IDEA Project was the largest capital investment in the Sexton Campus since the 1970s: totaling a \$64-million investment

to construct new buildings, revitalize existing infrastructure, and provide our students and faculty with the classrooms, labs, workshops, and meeting spaces they need to collaborate and innovate, to champion a future-focused education and incubator program, the Emera ideaHUB.

This state-of-the-art incubator space provides students and start-ups with mentorship and support to bring ideas for their technology-based products to the market. Emera’s investment inspires and supports young people to pursue careers in science, technology, and engineering, fostering the next generation of innovators, leaders, and entrepreneurs.



WE BUILD TECHNOLOGY COMPANIES

The Emera ideaHUB is home to a community of students, faculty members and companies who are focused on developing & building innovative physical products.

- Founded on a shared commitment between the private sector, post-secondary education, and government to grow the NS economy.
- Supporting innovators to stimulate business start-ups and growth-orientated enterprises.
- Supporting applied science and product commercialization is a fundamental priority for Dalhousie and the innovation ecosystem.
- Focused on innovative technology-based products to interest international markets and help improve global competitiveness.
- Forward thinking approach to community and industry partnerships that fosters excellence in education and training and promotes entrepreneurship and skills development.
- The four elements, (**BEGIN, BUILD, BRIDGE, GROW**), are fundamental to the HUB's core goals and programming.

BEGIN

Inspiring the next generation of innovators.

Supporting multidisciplinary teams of entrepreneurial youth & inventors developing and building physical products.

BUILD

Top-of-the-line programs, shops, tools, and workspaces.

Helping students, faculty, start-ups and established businesses to design and build prototypes and learn design thinking & agile engineering skills.

BRIDGE

Collaborative, open environment.

Connected to national & international networks.
Help bridge the gap from lab to market and accelerate the growth of physical product companies.

GROW

Programs and competitions to drive innovation.
Partnerships both inside and outside the university to help companies quickly scale.
Engaging key leaders across Atlantic Canada to create impact.

EMERA IDEAHUB: FILLING A **GAP** IN THE ECOSYSTEM

Product development is one of the biggest challenges faced by companies today. It is particularly challenging for technology-based companies where development is costly, time intensive, and generally more complex than other fields, resulting in many innovations failing to move beyond early-stage. This break-point is often referred to as the innovation valley of death.

The Emera ideaHUB contributes to the economic impact of the region by developing the pipeline of physical product start-ups, providing opportunities for business development, population retention and growth. The HUB combines state-of-the-art spaces and programs to empower innovators to create and build the next generation of world-class technology companies making physical products rooted in deep science.

The Emera ideaHUB is a focal point for connecting entrepreneurs with the rich resources of the university and with other key actors in the Atlantic innovation ecosystem.

CORE GOALS AND PROGRAMMING

The goals of the Emera ideaHUB align with the broader vision and mission of Innovation & Entrepreneurship at Dalhousie, as well as the visionary goals of the OneNovaScotia Coalition. The primary goals are under four fundamental categories and key activities are undertaken to achieve these goals, with metrics to measure success. Our core programs fall into four stages:

Young Innovators Program is where you **BEGIN:**

Inspiring the next generation of innovators. Supporting multidisciplinary teams of entrepreneurial youth and inventors developing and building physical products. Additional BEGIN activities include the Idea Speaker Series and Student Workshops.

Design2Build Program helps you **BUILD:** Top-of-the-line programs, shops, tools and workspaces. Helping students, faculty, startups and established businesses to design and build prototypes and learn design thinking and agile engineering skills. This program is enhanced by our Specialized Facilities.

Our signature Bridge Residency Program is your **BRIDGE to market:**

Collaborative, open environment. Connected to national and international networks. Helping to bridge the gap from lab to market and accelerate the growth of physical product companies. Participants have unique access to Volta Gear.

Our Partnership Network will help you **GROW and **scale** your new business:** Programs and competitions to drive innovation. Partnerships both inside and outside the university to help companies quickly scale. Engaging key leaders across Atlantic Canada to create impact. Your success is backed by the wisdom of our industry leading Advisory Council and past participants through our Founders Pledge.

2019-2020: HIGHLIGHTS OF YEAR ONE IMPACT

The Emera ideaHUB (HUB) is a focal point for connecting entrepreneurs with the rich resources of the university and with other key actors in the Atlantic innovation ecosystem. The HUB officially opened our doors in April 2019 and celebrated one year of operation on March 31, 2020.

In year one, 19 ventures were supported by HUB programming bringing breakthrough innovations out of the lab and contributing to the economic growth of our region.



SECURED **\$5M** IN FINANCING

CREATED **20** NET NEW JOBS

GENERATED **\$750K** IN REVENUE

OUR STARTUP COMPANIES

In year one we supported 19 startups developing innovative physical products and provides them with the resources needed to successfully build their prototypes and minimum viable products.

Click the logo for details on each company.

5-Carbon



DEPROLABS



MARECOMMS
Maritime Environment Communication Systems

Novalte



PROSARIS™

(acoubit does not yet have an active website and 5-Carbon has now merged with Dartmouth Ocean Technologies)

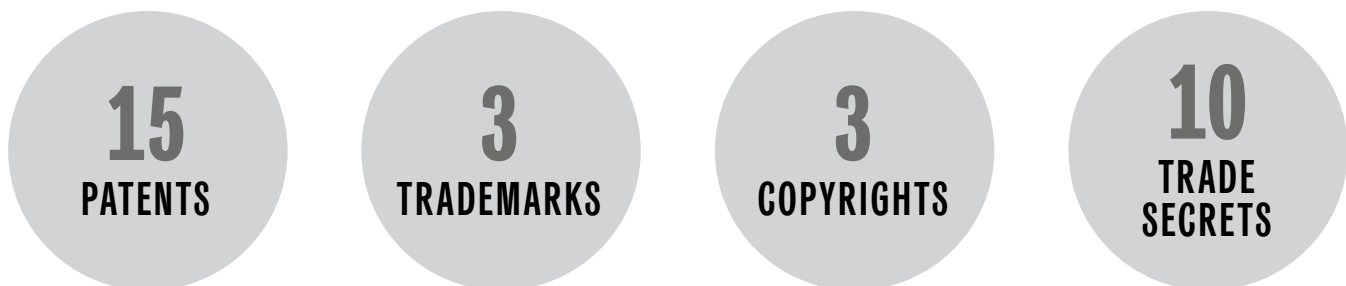
ECONOMIC IMPACT

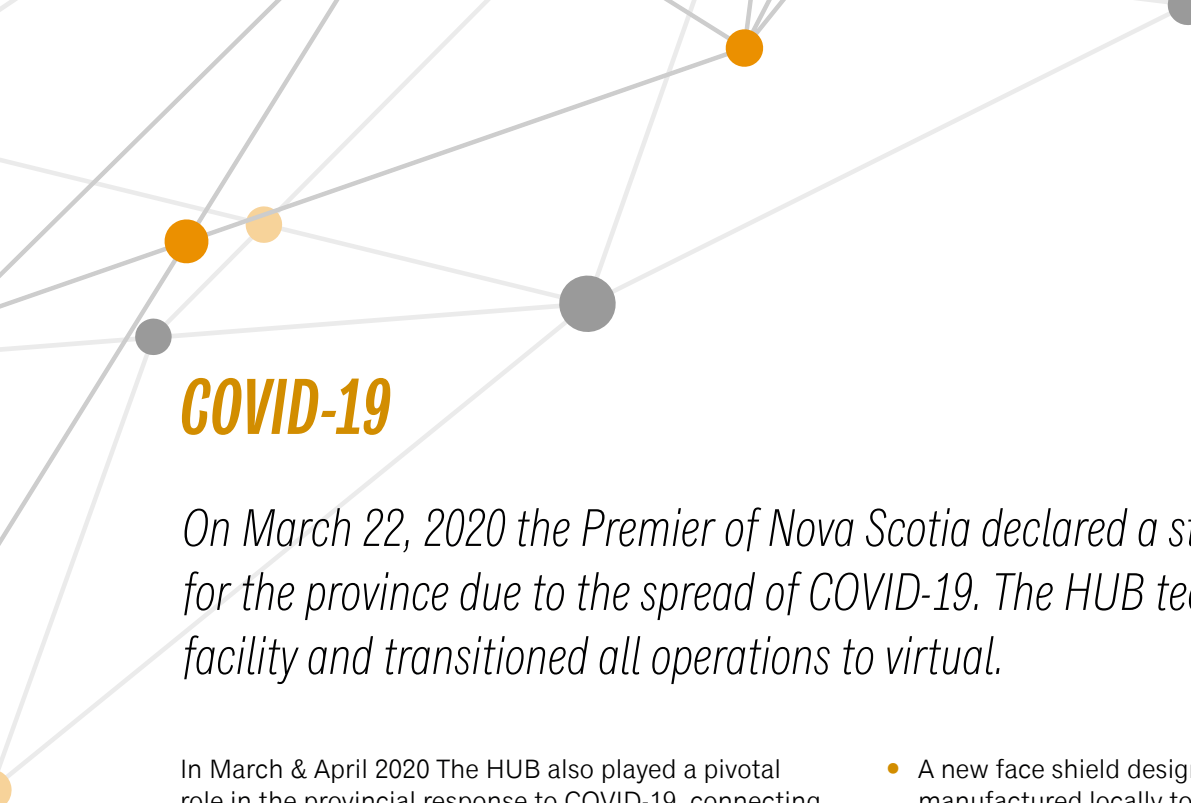


- When a startup joins the HUB program, they are typically comprised of 1-2 founders and 2-4 total team members counting founders.
- When a startup graduates from our program, they are typically 6 team members. Almost every team doubles in size. After graduating they continue to grow, and within 6 months of graduation the typical team size is 8-12 (this is due to the financing they secure just before or just after graduating).
- In year one this resulted in the net creation of 20 new jobs in the Nova Scotia economy.

INTELLECTUAL PROPERTY

- [Technology Readiness Levels \(TRL\)](#) are a measurement system used to assess the maturity level of a particular technology. There are nine technology readiness levels: TRL 1 is the lowest and TRL 9 is the highest.
- Startups joining our program typically have a **TRL between 3-4 (proof of concept and lab validated)**.
- When they complete our program startups typically have a **TRL of 5-6 (MVP and prototype validated in the field)**.
- The 19 startups, supported in year 1 across all our HUB programming, have developed:





COVID-19

On March 22, 2020 the Premier of Nova Scotia declared a state of emergency for the province due to the spread of COVID-19. The HUB team closed the facility and transitioned all operations to virtual.

In March & April 2020 The HUB also played a pivotal role in the provincial response to COVID-19, connecting industry, government, and academic labs across Dalhousie and Atlantic Canada to drive solutions for immediate needs. Through the Emera ideaHUB, Dalhousie is playing a key role in the provincial response to COVID-19 as a leader on the NS Emergency Innovation Team (EIT) and the “Skunkworks” provincial team. These teams are small strategic groups led by NSHA, Dal, ACOA, NSBI and industry leaders to coordinate and create innovative solutions based on real-time needs from healthcare and industry. These solutions ensure critical PPE and equipment needs are met for our region throughout the pandemic. We are committed to helping find solutions and playing our part in addressing this public health crisis.

Based on needs identified by EIT and Skunkworks, the HUB led interdisciplinary teams across Dalhousie ([Link to story](#)) to provide solutions for our region, including:

- A new face shield design which is now being manufactured locally to meet health care needs.
- New mask designs to address supply shortages.
- Material testing to assess new local manufacturers and evaluate supply chain materials.
- Essential sterilization services for urgently needed swabs used in COVID testing.
- UV sterilization processes to enable PPE re-use, including deploying existing technology as well as validating new technologies and processes.
- Intubation canopy concept design which has led to local manufacturing of a solution that will be deployed in ORs asap.
- Process improvements for supply chain, warehousing, and distribution within NSHA and across the province.

VISION FOR GROWTH

KEY PERFORMANCE INDICATORS	2019-2020 Metrics (Actuals)	2025 Goals (5-year Cumulative)
1. Increase innovation and entrepreneurship education, including courses, co-ops and experiential learning		
a) Number of Capstone projects sponsored	5	25
b) Number of co-ops with HUB companies	6	50
2. Grow student, faculty, and recent graduate participation in programs to explore and experience ideation, I&E, including starting a new business or social enterprise		
a) Number of Young Innovators	10	75
b) Young Innovators participating in other I&E programs	5	50
c) Young Innovators starting their own companies	3	25
3. Support skills development and innovation & entrepreneurship		
a) Number of HUB led events and workshops	20	100
b) Number of events and workshops endorsed by the HUB	100	500
4. Contribute to the economic impact of the region		
a) Total number of ventures participating in HUB programming (BRIDGE, BUILD, Young Innovators)	19	100
b) Financing secured by current and recent alumni ventures (investment, loans, & non-dilutive)	\$5M	\$75M
c) Revenue and paid pilots generated by current and recent alumni ventures	\$750k	\$25M
d) Value of R&D partnerships with Dalhousie.	\$750k	\$2.5M
e) Significant mentorships or partner relationships formed	30	100
f) New ventures' survival rates after one year (the number of ventures that are still active or have been acquired after one year)	14	75
g) Number of jobs created in current and recent alumni ventures	20	250
h) Number of residents and recent alumni ventures accepted into later stage incubators and accelerators	8	50
5. Intellectual Property		
a) Patents	15	75
b) Trademarks	3	15
c) Copyrights	3	15
d) Trade secrets	10	50



THANK YOU EMERA

*Emera's transformative gift ensures opportunities for economic development in our region and new skills development for our future engineers. **Thank you.***

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SUCCESS STORIES

[DALIDEAHUB.CA/HUB-NEWS](https://dalideahub.ca/hub-news)

BRIDGE RESIDENCY PROGRAM SUCCESS STORY – CASE EXAMPLE: GRAPHITE INNOVATION & TECHNOLOGIES

- GIT was among the first companies accepted to the HUB program.
- At the time of joining the HUB the GIT team was 2 employees and 2 founders. During their time at the HUB GIT grew their team to 6.
- GIT worked closely with research labs in Electrical, Civil and Materials engineering and the Department of Chemistry to support their technology development. The HUB helped support R&D collaborations, navigate funding opportunities, and putting agreements in place. The value of those R&D collaborations is \$125,000.
- GIT was an active participant in the BRIDGE residency program as well as the BUILD program.
- During their time in the HUB GIT signed strategic investors in their first funding round, raising \$475,000.
- The GIT team coated a total of 6 vessels as proof-of-concept testing for the application process and to validate their formulation. Their TRL when graduating was a 6.
- While at the HUB, GIT developed their second technology and kept it trade secret.
- GIT officially graduated in November 2019. As alumni GIT remains active at the HUB:
 - Co-founders Mo & Marciel continue to participate in HUB events,
 - the GIT team frequently uses our network and the HUB team for ongoing advice and connections, and
 - employ a Mitacs student who has shared space at the HUB while working for GIT and undertaking his Masters studies in materials Engineering with Academic Supervisor & HUB Academic Director Dr. Clifton Johnston.

Where are they now?

- GIT is standing on their own renting space at the Innovacorp Bays facility.
- GIT recently signed a [\\$2.4 million contract](#) with Transport Canada, and a [\\$4.6 million contract](#) with Lollyds Register to investigate their technology's improvement on underwater noise and GHG emissions.
- At the time of this report GIT has 12 employees and has plans to hire 3 more.
- GIT has been [approved for leveraged support from Mitacs and OFI](#) that will fund 4 PhD students to complete their degrees while working on applied research projects with the company.
- GIT filed their second patent in summer 2020. Their first patent has gone to national phase.



GIT is developing novel graphene solutions. Flagship product GrapheneCoat protects marine infrastructure from corrosion and biofouling, as well as improving stiffness, strength, and surface hardness.

SUCCESS STORIES

SHINETURBINE.COM

DESIGN 2 BUILD SUCCESS STORY – CASE EXAMPLE: AUREA TECHNOLOGIES

Aurea Technologies, has developed Shine, a smart, portable, mini wind turbine that creates and stores energy for USB devices for the multi-day off-grid market, including backpackers and the military.

Initially focused on the large backpacker / hiker markets in North America and Europe, the Canadian military expressed interest for their infantry soldiers. However, development for these markets takes significant resources. The Emera ideaHUB was a natural way to gain access to the facilities and resources necessary to build the physical prototypes.

Aurea Technologies was one of seven companies accepted into the 8-10 week BUILD program pilot which was run in March 2019. Along with the resources and equipment necessary to build prototypes and develop their product, building connections with other participants and ideaHUB partners proved invaluable.

Aurea has connected with a local engineering firm for manufacturing the product and, with hundreds of pre-orders, plans to soon be launching the Shine Turbine.



Young Innovators

[DALIDEAHUB.CA/YOUNG-INNOVATORS](https://dalideahub.ca/young-innovators)

Started in December 2019 as a response to eager students looking to get engaged with the HUB, the Young Innovators Program is designed to support young entrepreneurs with a deep desire to explore the potential of an idea or ideas for the basis of a potential startup. The program gives these youth the opportunity to access co-working space and resources alongside our resident companies. By accessing resources alongside real startups these youth gain experience and exposure that would never have been possible before.

In 2019-2020 the HUB supported 10 youth participants in the Young Innovators program. Participants came from various programs of study at Dalhousie, with some undergrads, Masters and PhD level participants spanning multiple Faculties. In year 1 the program also supported 3 companies led by Young Innovators:

5-CARBON
(SINCE MERGED WITH
[DARTMOUTH OCEAN TECHNOLOGIES](#))


acoubit.

DEPRO**LABS**

APPENDIX B

The goal is to grow the impact of the Young Innovators program with a cumulative goal of 75 Young Innovators supported by 2025.

Although pursuing their own startups is one measure of success, Young Innovators also acquire the entrepreneurial and problem-solving skills that make them better engineers and future employees. Elzbieta Wawer completed the Young Innovators program in 2020 while completing her BEng at Dalhousie in Mechanical Engineering. She completed her first co-op internship with a HUB resident company and went on to her second co-op with Nova Scotia Power. She has taken her skills learned in the program forward and is now an Engineer in Training (EIT) with Nova Scotia Power Inc and maintains her connections to the HUB with plans to help mentor the next generation of Young Innovators.

Elzbieta Wawer, BEng '20 interviews Chris Huskison, former CEO Emera, at the [1st Emera ideaHUB IDEA Speaker Series in November 2019](#)

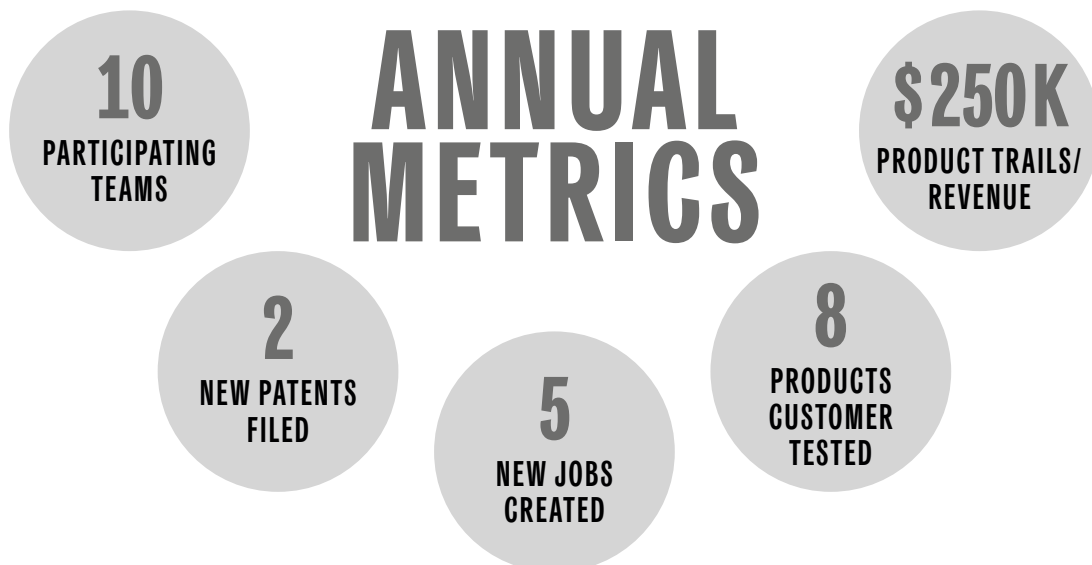


Design ² | BUILD

Build. Better Products. Faster.

[DALIDEAHUB.CA/BUILD](https://dalideahub.ca/build)

The Design2Build (BUILD) Program helps deep technology-based teams and companies design and build innovative products faster. The program helps these teams to design, build, rapid prototype, and prepare for scaled production. The emphasis is on smart and agile design so that time and resources are not wasted – The objective is to get products in the hands of customers faster.



APPENDIX D

BRIDGE | Residency Program

Build your prototype. Advance your startup. Bridge the gap.

[DALIDEAHUB.CA/BRIDGE](https://dalideahub.ca/bridge)

The BRIDGE Residency Program is the flagship program for the HUB. It is the start-up company residency program and incubation space at the HUB which helps innovators launch physical product-based companies and transition to a stage where they can stand on their own. The BRIDGE is unique in the Atlantic innovation ecosystem and is one of only a handful of hardware accelerators across Canada.

Access to the BRIDGE enables startups to sustain themselves for up to one year while they complete the steps necessary to “de-risk” their technology. BRIDGE residents receive access to mentorship, expert advice, and engineering as well as technical support so they can transform into a startup ready to stand on their own or work with incubators and accelerators in the larger startup ecosystem. BRIDGE companies access workspaces, infrastructure, and expertise needed to develop and build products to get in the hands of their customers faster than ever before.

The BRIDGE had a successful first year, supporting 16 start-ups as residents.

In year one (April 1, 2019 – March 31, 2020) **16 companies were incubated, 6 involved diverse founders, and 20 new jobs were created.** Another goal of the IdeaHUB is economic impact.

- On average a startup joining our BRIDGE residency program has \$100,000 of runway primarily funded by non-dilutive sources.
- On average startups completing both our BRIDGE & BUILD programs have secured \$1,000,000 of runway, most with pre-seed financing and/or repayable contributions from the government.
- **That is 10x growth in financing while in our program.**
- Within 3 months of completing our program 85% of startups have secured paid-pilots or revenue from initial product sales.
- The prototyping they complete while in the HUB validates their product design, secures the initial customer traction and data needed to move to the next level. By validating their MVP in the field and with pilot customers these startups can attract the investment needed to stand on their own.

**We anticipate revenues will increase over time. The start-ups we support are very early stage and may take 5-10 years to get their products to market.

APPENDIX E

GROW

GROW PARTNERSHIP NETWORKS

The Emera ideaHUB contributes to the economic impact of the region by developing the pipeline of physical product start-ups, providing opportunities for business development, population retention and growth. The HUB is a focal point for connecting entrepreneurs with the rich resources of the university and with other key actors in the Atlantic innovation ecosystem.

Through strategic partnerships and a strong network, the Emera ideaHUB maintains connections with engineers, innovators, angel investors, venture capitalists, successful entrepreneurs and business mentors. The Emera ideaHUB successfully engaged an incredible network of industry partners, alumni and advisors in our first year. Office hours from key partners are offered weekly, and special workshops delivered with or by partners are accessible to HUB participants. We work together to support Atlantic Startup companies so that we can massively accelerate growth and ensure products get to market faster.



APPENDIX E

VOLTA GEAR



Volta GEAR is a program partnership leveraging the resources and expertise of the Emera ideaHUB at Dalhousie University and Volta. Volta Gear collaboratively uses the networks at the HUB and Volta to develop content specific to physical product-based start-ups who are based out of both incubators. Year one supported a variety of participant successes.

FOUNDERS PLEDGE

THE DALHOUSIE PLEDGE PROGRAM FOUNDERS PLEDGE

The Dalhousie Founder's Pledge is a way for our innovators and start-ups to pay it forward and support the next generation of entrepreneurs at Dalhousie University. Their commitment to gifts of time and future financial support will help support excellence in education and increase the odds of success for future entrepreneurs. As entrepreneurial philanthropists, we are proud to report that 6 Founders pledged their support in our first year.

IDEA SPEAKER SERIES



The IDEA Speaker Series showcases innovation leaders in the Nova Scotia community, exposing students, alumni, startups, and ecosystem partners to opportunities for growth in their careers and the tools and inspiration to drive a culture of innovation in Atlantic Canada. Through stories of personal growth, hardship and success, speakers aim to encourage Atlantic Canadians to embrace their creative minds.

We launched our Idea Speaker Series in year one with a star lineup of featured speakers including Chris Huskilson, Pat Ryan and Dale Robertson. An audience of over 400 students, innovators and community leaders joined us for this launch and feed back was very positive. The second IDEA Speaker Series was held in March 2020 featuring Veronica Merryfield and Giovanna Celli. The event was held just as COVID was flaring up in the US, so in-person attendance at our second event was about 200. With the onset of COVID we planned our 2020-2021 Speaker Series as virtual sessions with YouTube recordings that can be viewed online anytime.

dalideahub.ca/idea-speaker-series

STUDENT WORKSHOPS

Engineering students participated with student clubs and teams and were actively engaged with 5 specially designed workshops and seminars. Guest lectures focusing on IP and Commercialization were offered by the HUB as part of the Dal Engineering Capstone class which is offered to every final year undergraduate engineering student. Joint sessions have also been delivered in conjunction with Patent Lawyers from various firms as well as various technical and business experts (i.e.. Barrington Consulting & Dashboard Marketing). In addition, there were 10 IP seminars and 20 Volta GEAR and partner seminars offered.

The Faculty of Engineering has a faculty lead for diversity & inclusion and the HUB is a key partner in student and stakeholder engagement and event opportunities. Students participated in 5 EDI workshops.

The HUB has also partnered with SuperNova to help provide exposure to school aged innovators and inspire the next generation to explore and build through 3 Hackathon Events/Challenges. The HUB was a partner in the Atlantic Aquahacking Challenge and NASA Space Challenge which engage students of all ages and backgrounds across Atlantic Canada.

Margaret Palmeter, Director
ideahub@dal.ca | dalideahub.ca

