SMARTICE

A leading northern social enterprise focusing on climate change adaption tools, integrating traditional knowledge of ice with technology, maximizing benefits for local communities and individuals, especially youth.

Acknowledgements

The Arctic Inspiration Prize is the largest annual prize in Canada. It inspires, enables, and celebrates the achievements of the people of the North, recognizing diverse teams with innovative projects in the fields of education; health and wellbeing; culture, arts and language; science and traditional knowledge; climate change; and the economy.

Nominator: Clint Davis, Chair and Levi Barnabas, Chair
Nunatsiavut Group of Companies and Qikiqtaaluk Corporation

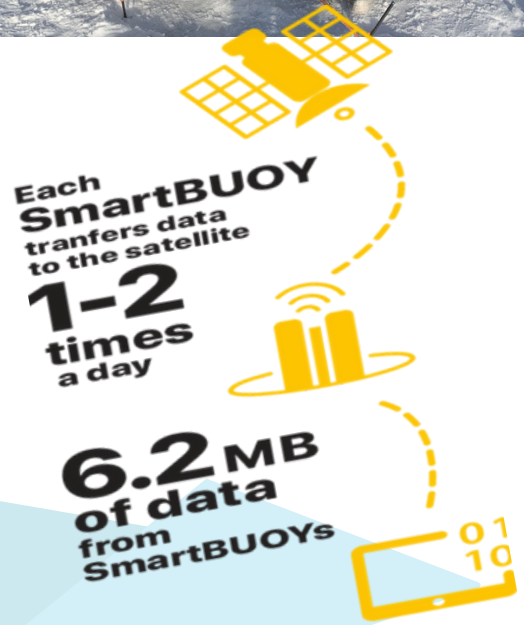
Team: Trevor Bell, Professor, Memorial University (Team Leader), Joey Angnatok, Andrew Arreak, Steven Baillie, Robert Briggs, Thomas Cooper, Shelly Elverum, David Grant, Christian Hass, Mark Kapfer, Tim Keane, Rodd Laing, Sheldon Nimchuk, Dana Parsons, Ayon Shahed, Kristy Sheppard, Natasha Simonee, Eric Solomon, Katherine Wilson, Taylor Young

This report was compiled and created by **Qatalyst Research Group**, with the help of Gwen Healey Akearok, Lauren Nevin, the project team, and AIP.

Social Enterprise

Technology

SmartBUOY



Data and Knowledge

SmartBUOYs are stationary sensors inserted into the ice to measure ice thickness and snow using thermistors (similar to a thermometer). There are 60 thermistors in the SmartBUOY which measure the temperature of the air, snow, ice and water. From those readings, we can create a temperature profile of each section and determine the thickness of the ice.

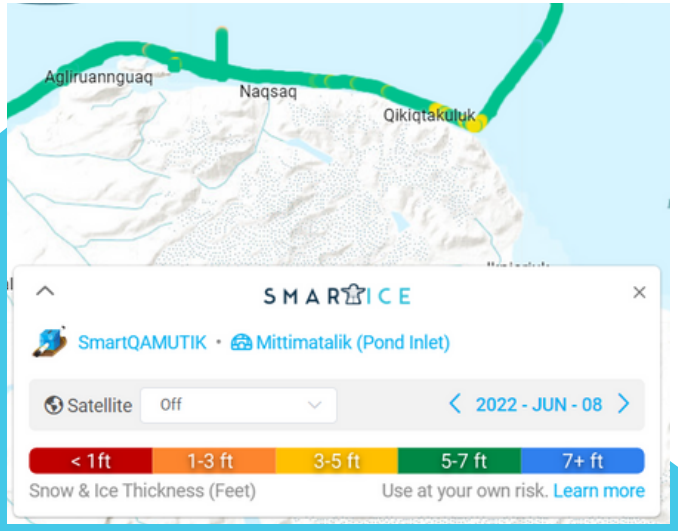
Accessing SmartICE Data via SIKU app

Image from https://siku.org/about

Social Enterprise

Technology

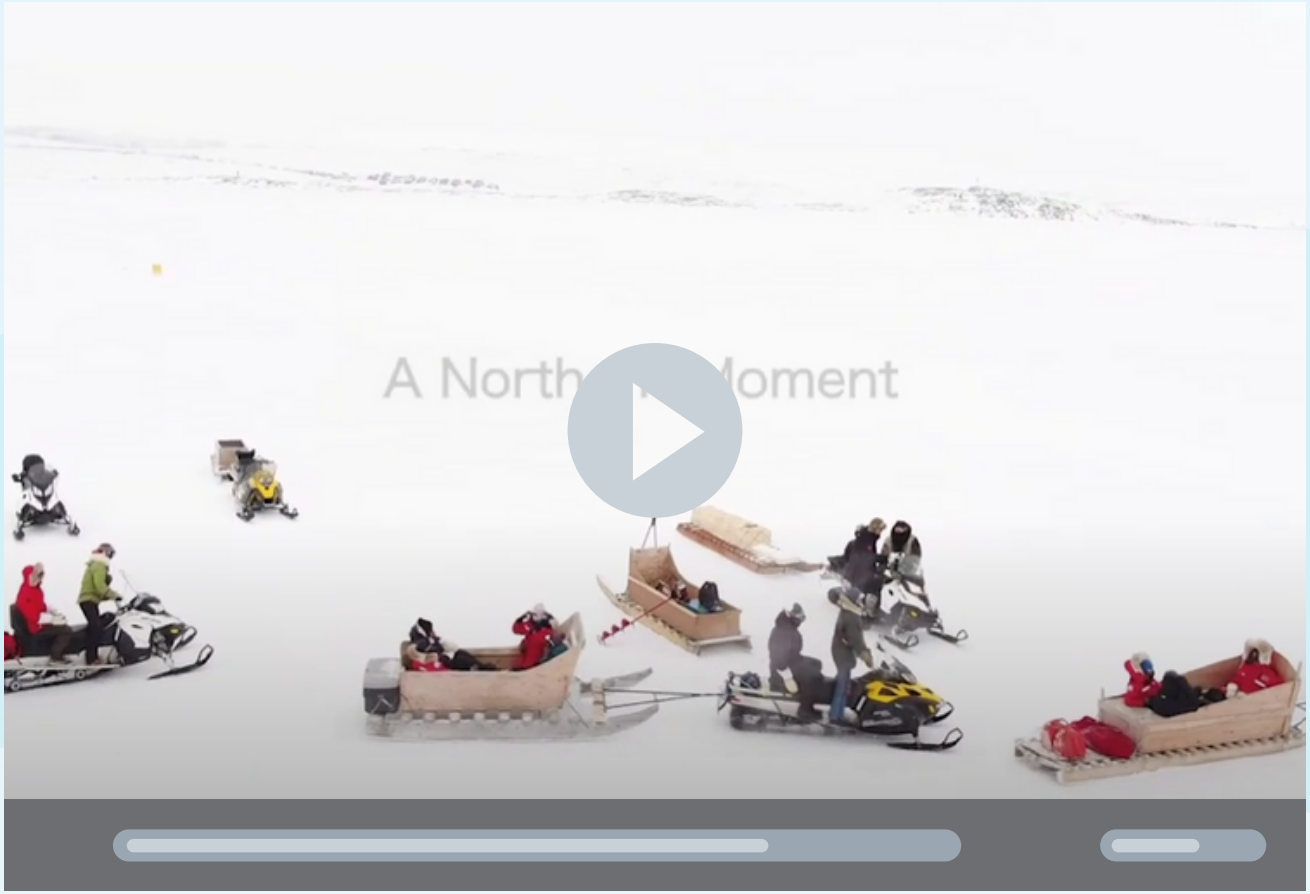
SmartQAMUTIK



Data and Knowledge

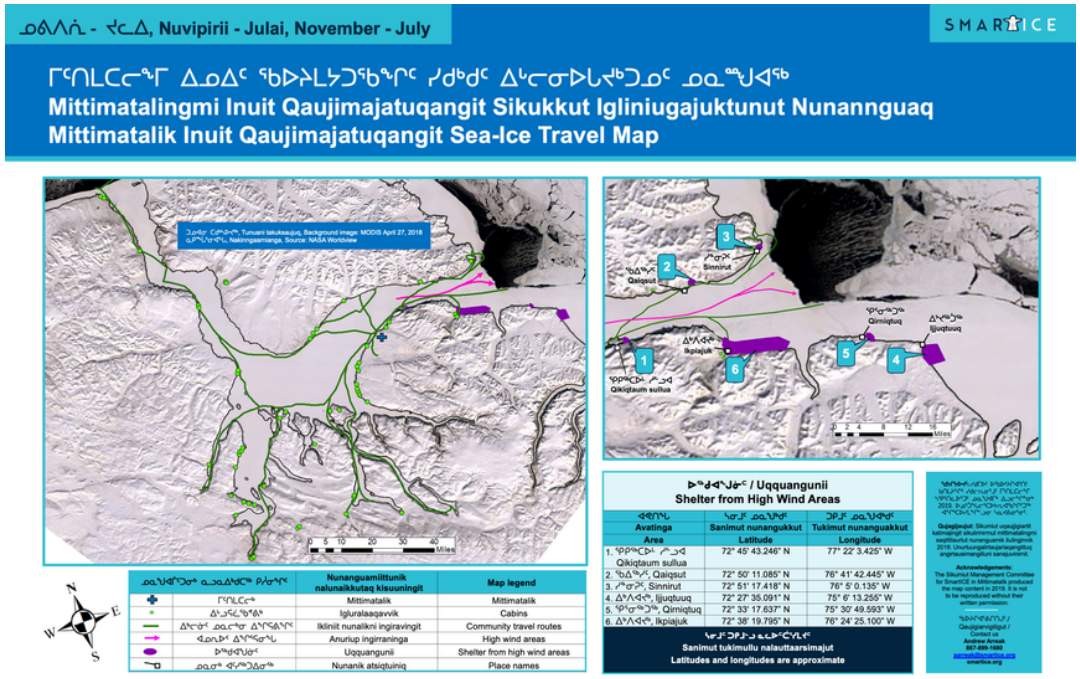
The SmartQAMUTIK provides valuable information about sea ice conditions along community trails. The SmartQAMUTIK is towed behind a snowmobile and provides real-time ice and snow thickness measurements to the operator. This equipment uses a sensor called an EM31 to measure the thickness of the ice and snow based on the salinity (saltiness) of the sea water. It transmits electromagnetic signals through the snow and ice that induce electrical currents in the conductive salt water and return to the sensor producing an instantaneous ice and snow thickness measurement. This measurement is from the top of the snow to the bottom of the ice. SmartQAMUTIK trips are completed at least once per week and data is made available to the community on SIKU.org.

Up-to-date Go, Slow, No-Go colour-coded travel zones. Designations are based on numerous data points, on-the-ground reports, and traditional knowledge.



Click the image above to watch the GCIndigenous video *A Northern Moment: Minister Vandal visits SmartICE's Northern Production Centre*.

Increased Travel Safety



Inuit Qaujimajatuqangit Ice Safety Mapping

SmartICE team members Katherine Wilson and Andrew Arreak have co-designed three maps with our Inuit management committee in Mittimatalik (Pond Inlet)—self-named Sikumiut— that illustrate important ice travel safety information based on Inuit Qaujimajatuqangit.

To view this map and others, visit
https://smartice.org/ice-safety/

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Qaujimajariaqartut aularniaruvit sikukkuurniaruvit.
What to know as you travel on the sea ice.

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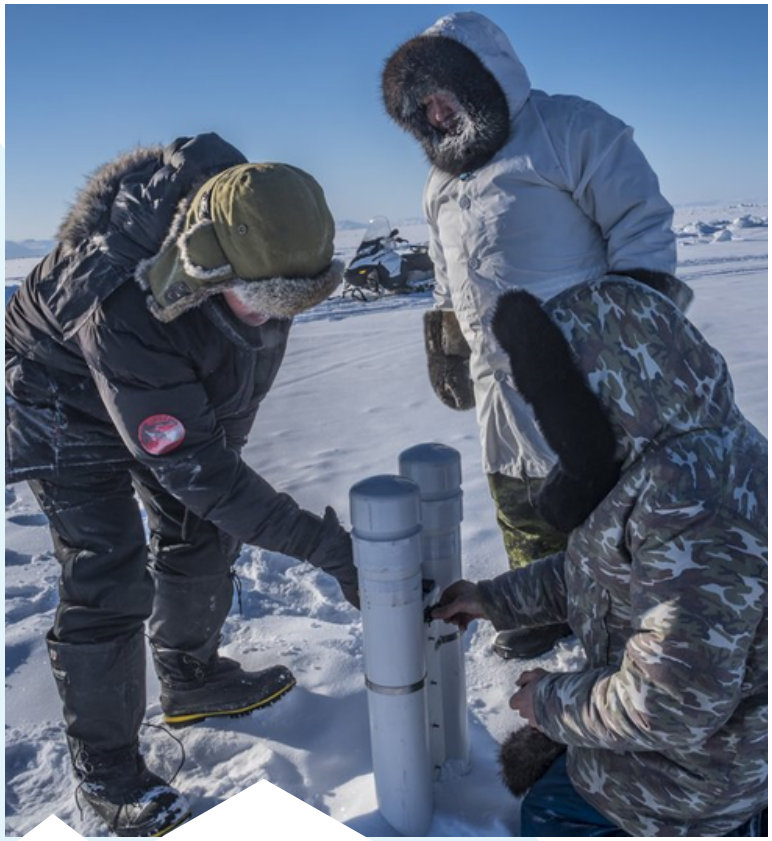
Pivagiijarsimaviit ingiraniarlutit sikukkuut?
Are you prepared to travel on the sea ice?

SMARTICE FOUNDATION

A not-for-profit organization dedicated to the advancement of education in climate change adaptation, technology, and employment readiness



FOCUS ON TRAINING

- Internship/co-ops
- Northern Production Centre in Nain provides technical training for youth combined with core social-emotional learning (49 youth trained - 4 cohorts)
- Over 100 operators and technicians of SmartICE technology have been trained in Indigenous communities since 2019

Graduates of the fourth cohort of SmartICE's Employment Readiness and Technology Development Program at the Northern Production Centre in Nain, Nunatsaivut (missing from photo: Snowden Pijogge), 2021

Youth Skill Building

Technical Skills	Land-based Skills	Language Skills	Leadership Skills	Safety
Youth are trained to assemble technology and community members are trained how to operate technology e.g. SmartQAMUTIK and SmartBOUY.	Work takes place out on the land and sea ice - know how to navigate and survive on the land.	SmartICE team supported the development of a book of Inuktitut terms for different types of Ice formation. This book was published and distributed to every household in Pond Inlet.	Communication, social-emotional learning, decision-making.	First Aid, occupational health and safety, problem-solving, troubleshooting.

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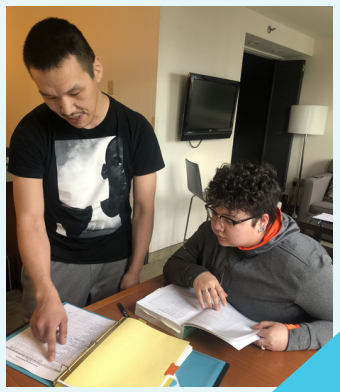
Inuktitut sea-ice terms documented by Elders + Youth



Building Climate Resiliency While Preserving Local Culture and Lifestyle

"The mandate is to take the technology, use the technology to augment the traditional knowledge that's there, and to honor the traditional knowledge...that's something that is embedded in everything that we do."

Carolann Harding, CEO

Preserve Local Cultures and Lifestyle	Build Climate Change Resiliency Across the North
• Preserving Sikumiut sea ice terminology • Increased sea-ice travel safety encourages community members to go back to the ice for fishing/hunting and other cultural activities	• Communities are able to make informed decision about ice conditions • Operating in over 30 communities across Inuit Nunangat • Partnered with 50 elders and community members involved in community management committees

Increased Economic and Social-Emotional Wellbeing

"When I go out there and monitor the ice, I feel a sense of calm. I feel at ease cause I'm away from the technology, well cell phone service and stuff like that. But being out on the ice is therapeutic for our operators."

Andrew Arreak
Operations Regional Lead, Qikiqtani North

Social Emotional Wellbeing

- Holistic, culturally contextualized training
- Empowering youth and communities to gather and map data, and share knowledge

Increase Economic Wellbeing

- 23 full-time, 7 part-time staff
- Up to 75 seasonal operators during the ice season
- 80+ youth employed
- 17,400+ hours of employment
- Building skills for the ocean sector economy

The AIP $400,000 prize was crucial in transforming SmartICE from a non-profit organization into a social enterprise, able to expand its programming to over 30 communities. SmartICE has since raised over $15 million since the AIP prize award in 2016.

2016 — 2017 — 2019 — 2020 — 2020 — 2021 — 2021 — 2021 — 2022