



Welcome to SmartICE

Carolann Harding
CEO

A graphic consisting of several overlapping geometric shapes in shades of teal, blue, and light green, arranged in a dynamic, abstract pattern.

SMARTICE

Who We Are

- SmartICE is a community-oriented social enterprise offering climate change adaptation tools, designed to incorporate sea-ice monitoring data with local Indigenous knowledge of sea ice conditions, which can contribute to more informed decisions regarding safe land, water, and sea ice use.
- An award-winning social enterprise servicing Canada's north, SmartICE is working with Indigenous youth to locally manufacture and deliver SmartICE's advanced sea-ice environmental monitoring systems.





- INITIAL PILOT SITES
- EXPANSION SITES



VALUES

Inuit-Driven

Inuit communities shape and drive direction.

Benefits Community

Inuit and their communities are the primary beneficiaries.

Innovative

Combining Inuit knowledge and technology.

Youth Focus

Youth have opportunities to learn and work.

Inuit Societal Values

- Caring for the environment (*Avatittinnik Kamatsiarniq*) and community (*Pijitsirniq*)
- Being innovative and resourceful (*Qanuqtuurniq*)

With climate change, sea ice is changing and is less predictable.



The SmartICE corporate video can be found [linked here](#).

Why SmartICE?

- Climate change is transforming environments around the world.
- Nowhere faster than in Canada's North and Indigenous communities.
- Sea ice is decreasing and less predictable, which is increasing travel risk for Indigenous peoples and northern communities.
- Sea ice connects communities and essentially serves as a highway for people to travel the land and hunt for country food.





On 'very thin ice': Warm winter causing problems along Labrador's north coast



Ice will likely be thinner throughout the season: Canadian Ice Service

CBC News · Posted: Jan 22, 2021 6:00 AM NST | Last Updated: January 22, 2021



Climate Change

- The temperatures in the Arctic continue to rise at **three times the global annual average**
- Snow and ice are melting at an increasing rate.
- Arctic annual air temperatures from October 2021 to September 2022 were the sixth warmest dating back to 1900.
- Arctic air temperatures have warmed faster than the global average.
- The Arctic's seven warmest years since 1900 have been the last seven years.

**“Travelling on the sea ice
is essential to maintain our
way of life”**

**Andrew Arreak,
Regional Operations Lead
Pond Inlet**



For SmartICE it starts in the community...

Dr. Trevor Bell



Community Management Committees

Community Management Committee



Dr. Trevor Bell



Our Solutions

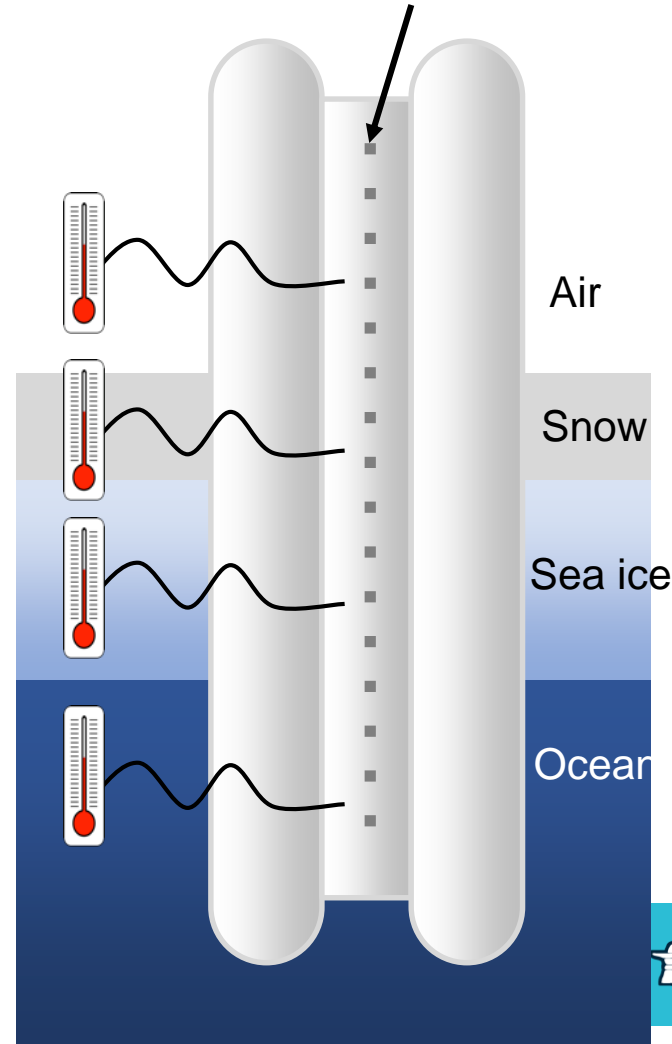


SmartBUOY

sea-ice thickness sensor

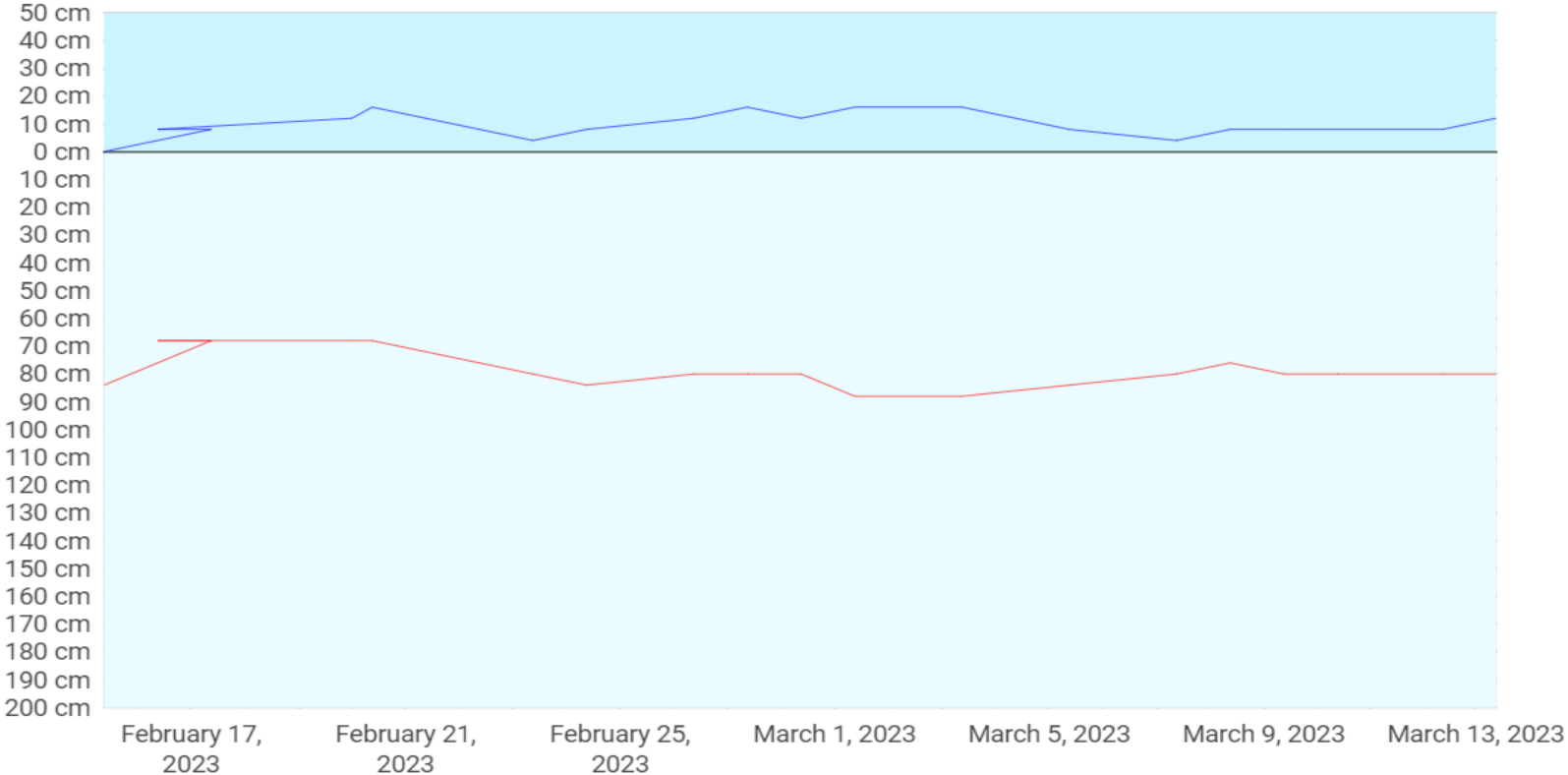


Thermistors



SmartBUOY Data on SIKU

Nain SmartBUOY 2023-2



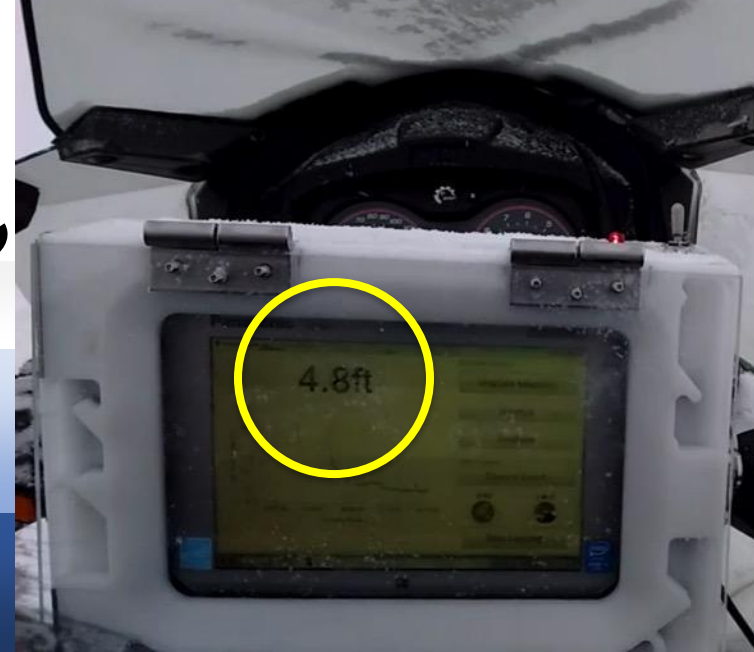
SmartQAMUTIK



Snow

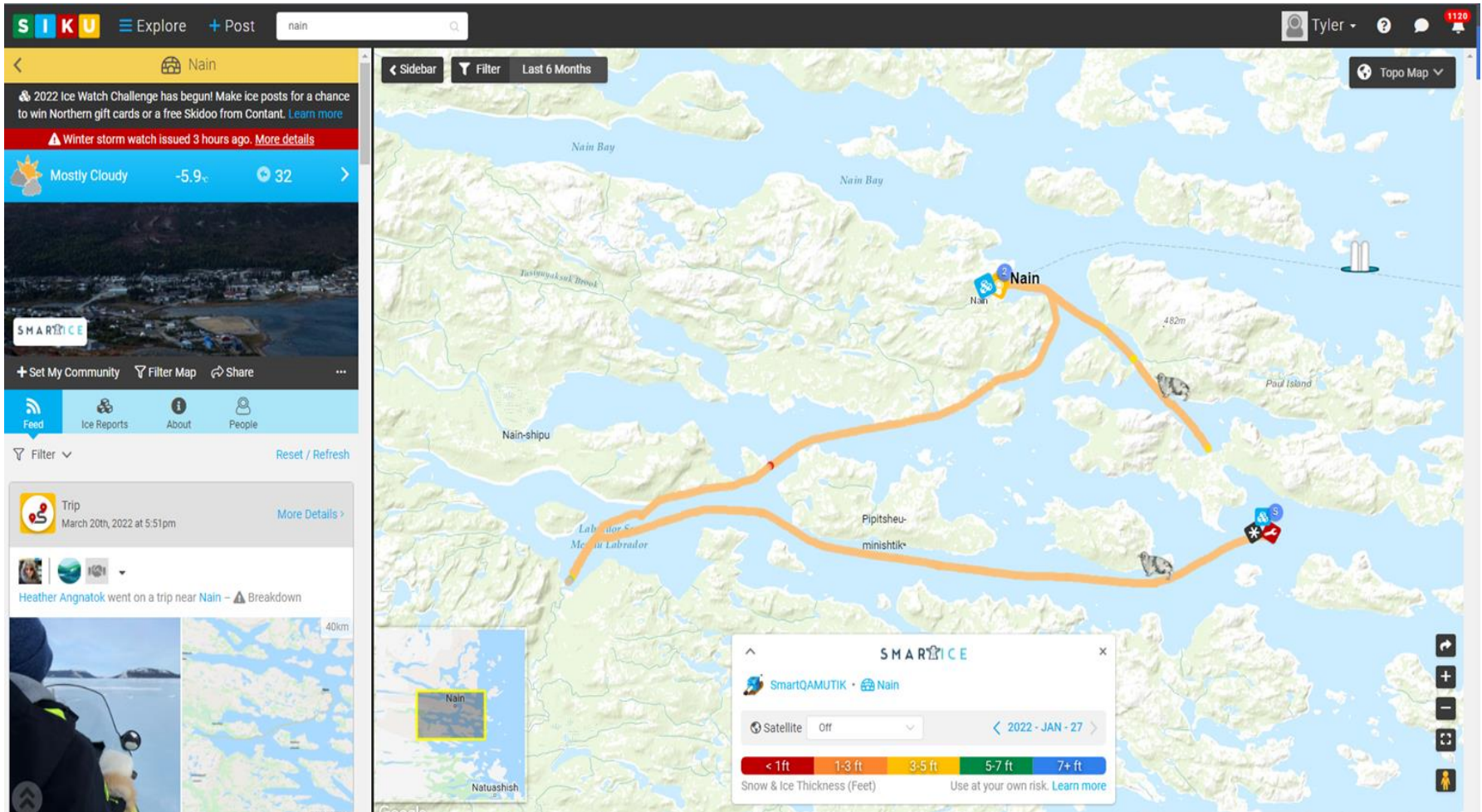
Sea ice

Ocean





SmartQAMUTIK Data on SIKU



Staying Calm and Problem Solving



Andrew Arreak,
Regional Operations Lead, Qikiqtaaluk Region
Pond Inlet, Nunavut

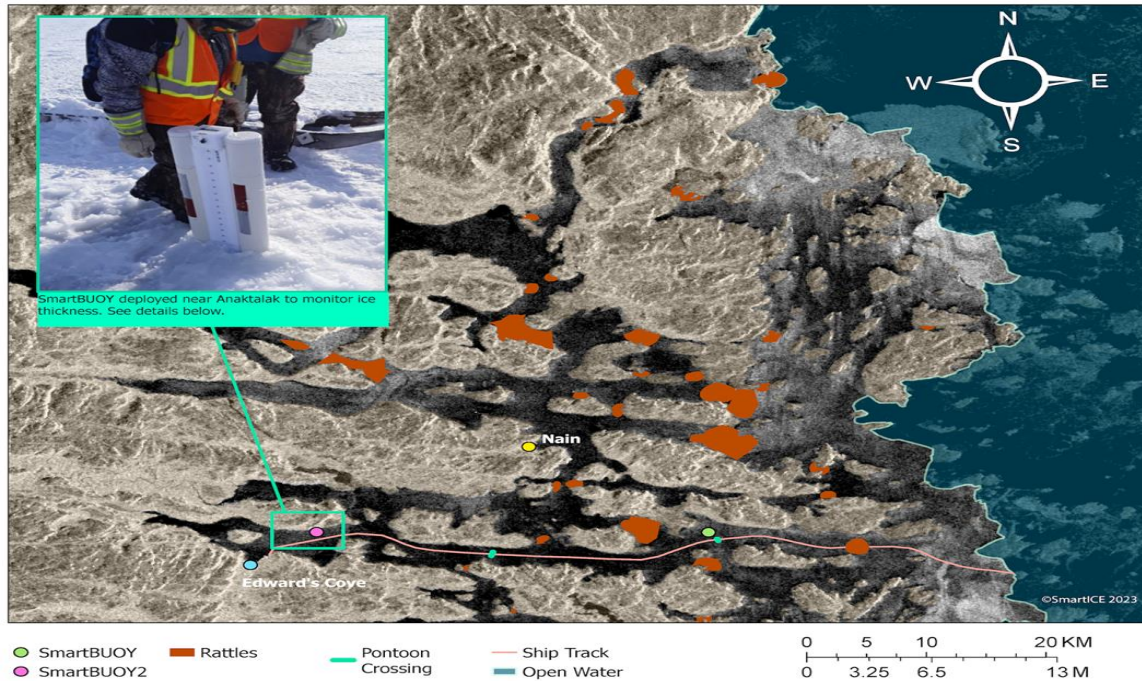
SMARICE

SMARICE

Satellite Imagery – Weekly Maps

S M A R I C E

February 8, 2023 Ice Conditions around Nain



To find the SmartBUOY ice thickness information, go to SIKU.org. Go to the [Nain Community Page](#) and click on [S M A R !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\) I C E](#), then select Nain SmartBUOY 2.

This map indicates sea ice conditions around Nain on February 08, 2023. Rattles shown in red, may or may not freeze over during this time so take extreme caution when travelling in these areas. The pink line is the ship track. Everything in blue is open water. This map is meant to act as a guide and not a safety map. Please exercise care when travelling on the sea ice. If unsure of ice thickness, check manually with your harpoon or axe and always carry an emergency communication device. Be aware of the ice conditions when travelling and don't travel alone.

Cartographer: Shawna Dicker.



Esri, NASA, NGA, USGS, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, NRCAN, Parks Canada

Travel Safety – Traditional Knowledge

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

- Gaujigiaqatutit Silanniarutit**
Check the Weather Forecast
And ask experienced hunters about recent conditions and their trust Qaujigiaqatutit.
- Inuutlutit Aulqaatit angillutit**
Never Travel Alone
You never see them there.
- Pirrlungnartu Qangatuinnaq**
Accidents Happen
Always take a first aid kit, even if you're only planning to go for a few hours.
- Saputisimajunnarlutit**
Protection
Only if it's the best idea to protect yourself. You don't want to be backstabbed a bear with nothing but your bare hands.
- Naqekkanirritut Naqtuunniamartunik**
Extra Supplies
Pack more food, water and fuel than you expect to use. And always clean up after yourself; don't leave garbage lying around.
- Igaak**
Shades
On a sunny day, always wear sunglasses out on the ice so you don't become snow blind.
- Pitumirtillugu**
Lunar Tides
Be aware of the moon phase; they could make or break you. The full moon creates a bit of water everywhere, more low tides and less and stronger ocean currents. Rough ice may get rougher, and tides may get wider and deeper water areas may get larger.
- Tusaumajutiqarpaklutit**
Keep in Touch
Always have a way to communicate when out on the ice. Bring a radio, satellite phone, and SPOT device.
- Uquunasugunnarlutit**
Stay warm
Pack items, stove, fuel, candles, matches, lighter, and sleeping bag to keep warm.
- Qaujimalutit Namimangaarpit**
Know Where You Are
Always take a compass, map and GPS. Share your travel routes with family and friends.
- Urkkaa**
Shelter
The weather can change; travel delays happen. Carry a tent for protection from the outside elements. Check the shelter's ropes and add the cord to the sides of the tent before you go.
- Annuraagikaniarpaklutit**
Extra Clothing
Always take a second set of gear out with you. What are you going to wear if you accidentally get wet?

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Illustrations by James Hui, Mitimook.

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

- Gaujigianginnarlugu**
Check the sea ice strength regularly with your harpoon.
1. Test it. If it doesn't go through it's not safe.
2. Slide it. If it doesn't go through it's safe to walk on.
3. Slide it. If it doesn't go through it's safe for snowmobile travel.
- Aajuraq**
Leads
When leads do not reflect it's a sign that the ice is thin. If you're out of leads, you may fall in with the wrong step.
- Qaujimalutit Naukkut Ikaariangarmaat**
Know Where to Cross
High ledges along leads can be difficult and dangerous to cross. Look for meltwater streams flowing from the ice for areas to cross. The stream will have melted the ice creating a channel that is lower and safer area to cross.
- Clouds Over Sea**
Dark clouds, fog, and rain from over-cast water are a good indicator that the ice edge is close. Clouds are also a warning to become careful at the ice edge, as it's more prone to break up.
- Immattiliqittuq**
Flooded Ice
Melt ponds start to get bigger later in the spring when meltwater floods the ice. Don't drink the water; it's too salty.
- Siginimut Qitilinga**
Reflections
Be careful when you see the sun reflected on the ice. Sky reflected on the melt ponds may blind you from a potential danger.
- Piligiarniq**
Ice Bridges
Pieces of ice between water leads begin, and end are called ice bridges. They are safe places to cross other leads get too wide. Check their locations with others in the community.
- Qaujigiariugu Ikaarianginnimut**
Check Before You Cross
Crossing of flooded ice may create one side of a lead to be higher than the other, creating an ice ledge. Pick a crossing spot where the ice and water are more level.
- Puktaita**
Melt Ponds
Ponds of freshwater from melting snow begin to form on the sea ice at the end of spring. This water can freeze to drink but wear your rubber boots to keep your feet dry.
- Kilaajuk**
Drainage Holes
Pay attention to drainage holes and white spots in the footcave; they can swallow you whole.
- Salaraq**
Rotten Ice
Spring leads are rotten when the flooded ice thaws, leaving rotten ice. Be careful, as the ice is about to break up.

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Illustrations by James Hui, Mitimook.



Northern Production Centre

Nain, Nunatsiavut

SMARTICE



We are a WISE

- SmartICE is a Work Integrated Social Enterprise (WISE)
- In May 2019, SmartICE opened the Northern Production Centre (NPC) in Nain, Nunatsiavut where local indigenous youth participate in the unique SmartICE **Employment Readiness and Technology Development Program.**
- This project delivers training to youth, especially those “not in education, employment or training” (NEET), aims to reduce barriers for education and employment and also focuses on individual well-being.



SmartICE Employment Readiness and
Technology Development Program

SMARTICE

First Graduating Youth Cohort



- Technical training
- Translatable employment skills
- Certifications, workplace training
- Social and emotional learning
- Traditional activities
- Safe and supportive environment
- Build confidence

SMARTICE



2023 Operator Training



Maximizing Social Impact



Smart MOVES Report Cards



Nakummek

Thank you

S M A R  I C E