



QUANTUM SENSING FOR EARTH AND SPACE

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SBOQuantum

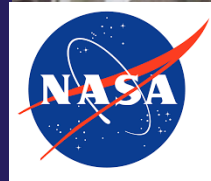
Experts in diamond quantum magnetic sensor technology

4 patents

PROPRIETARY



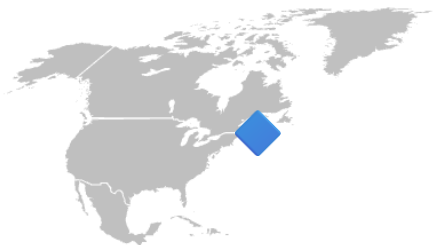
Field proven technology



Qualified

2 | SBO

The team and mindset



Near Montréal, Canada



DNA: Open innovation



Take the tech on the field!

PROPRIETARY

Earth's magnetic field is ubiquitous



Yet underutilized resource

NOW



9x more magnetic maps
Accelerating minerals discoveries

2-3 years



Seeing through walls
Detecting the unseen

4-5 years



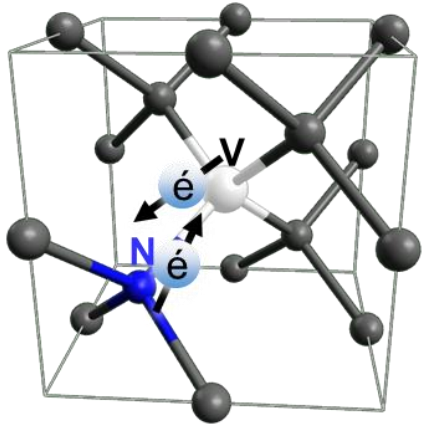
GPS denied/spoofed
2025: World Magnetic Model navigation map

GLENCORE

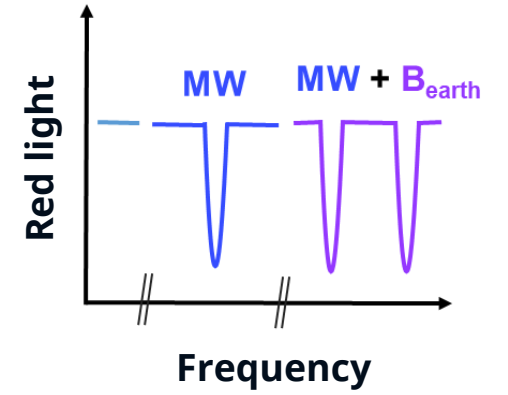
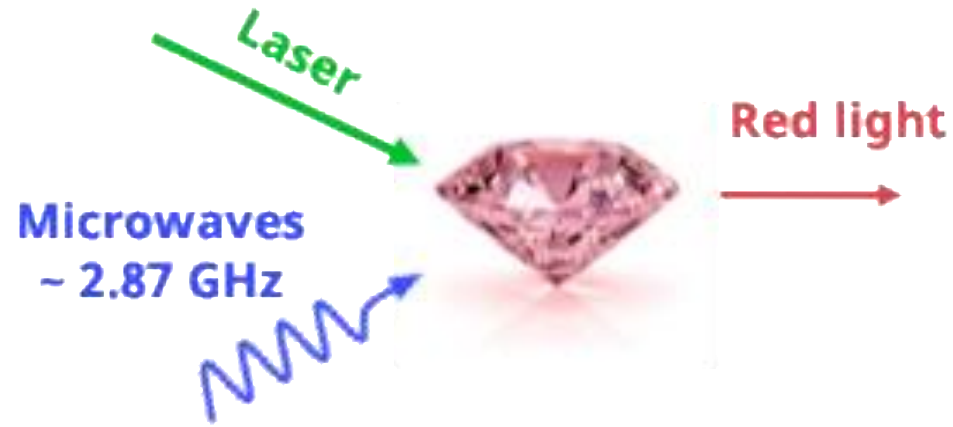


4 defense primes

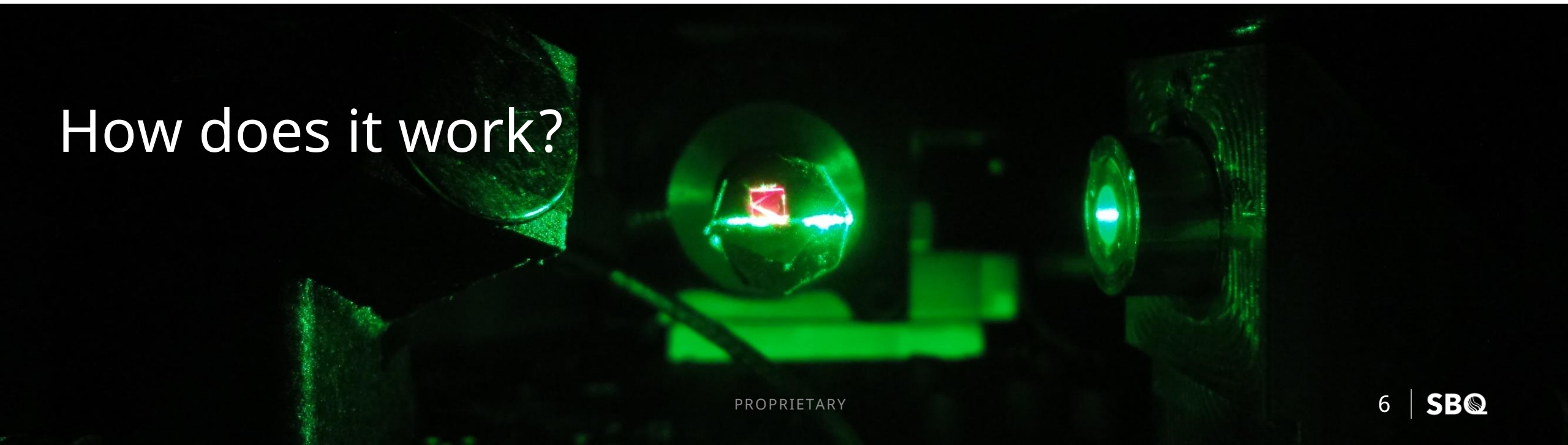




5 B Boron [10.806;10.821]	6 C Carbon [12.0000;12.0116]	7 N Nitrogen [14.0064;14.00728]	8 O Oxygen [15.99903;15.99977]
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How does it work?



SBQ Diamond Magnetometer



Room temperature



Combines vector and total field



No dead zones or heading errors



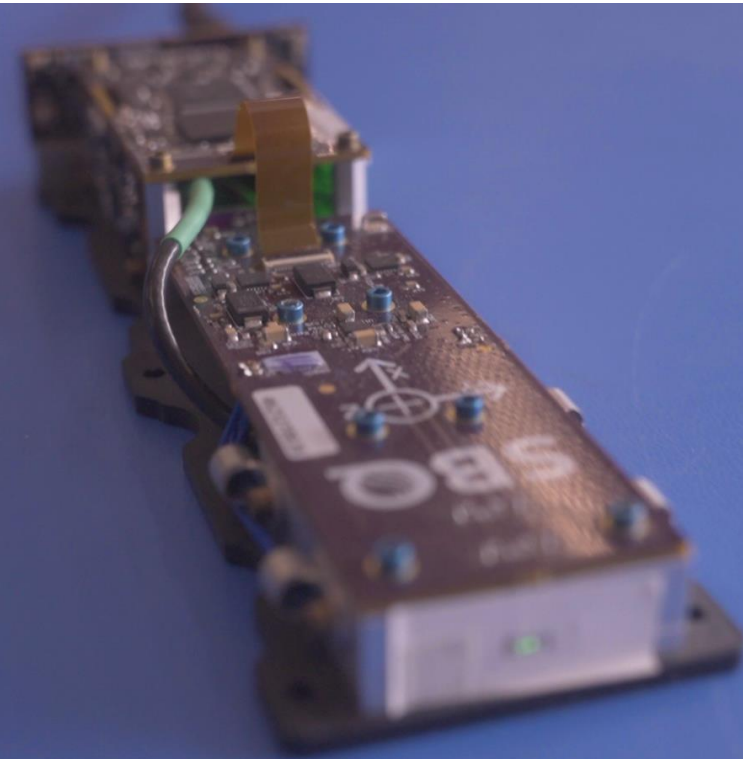
Compact sensor
 μm sensing volume



Quantum properties removes drift
and reduces calibration errors



High dynamic range and tolerance to
gradients



15x5x5cm, 400g, 4W

$< 1 \text{ nT}/\sqrt{\text{Hz}}$ @ 1Hz vectorial sensitivity
40 Hz bandwidth

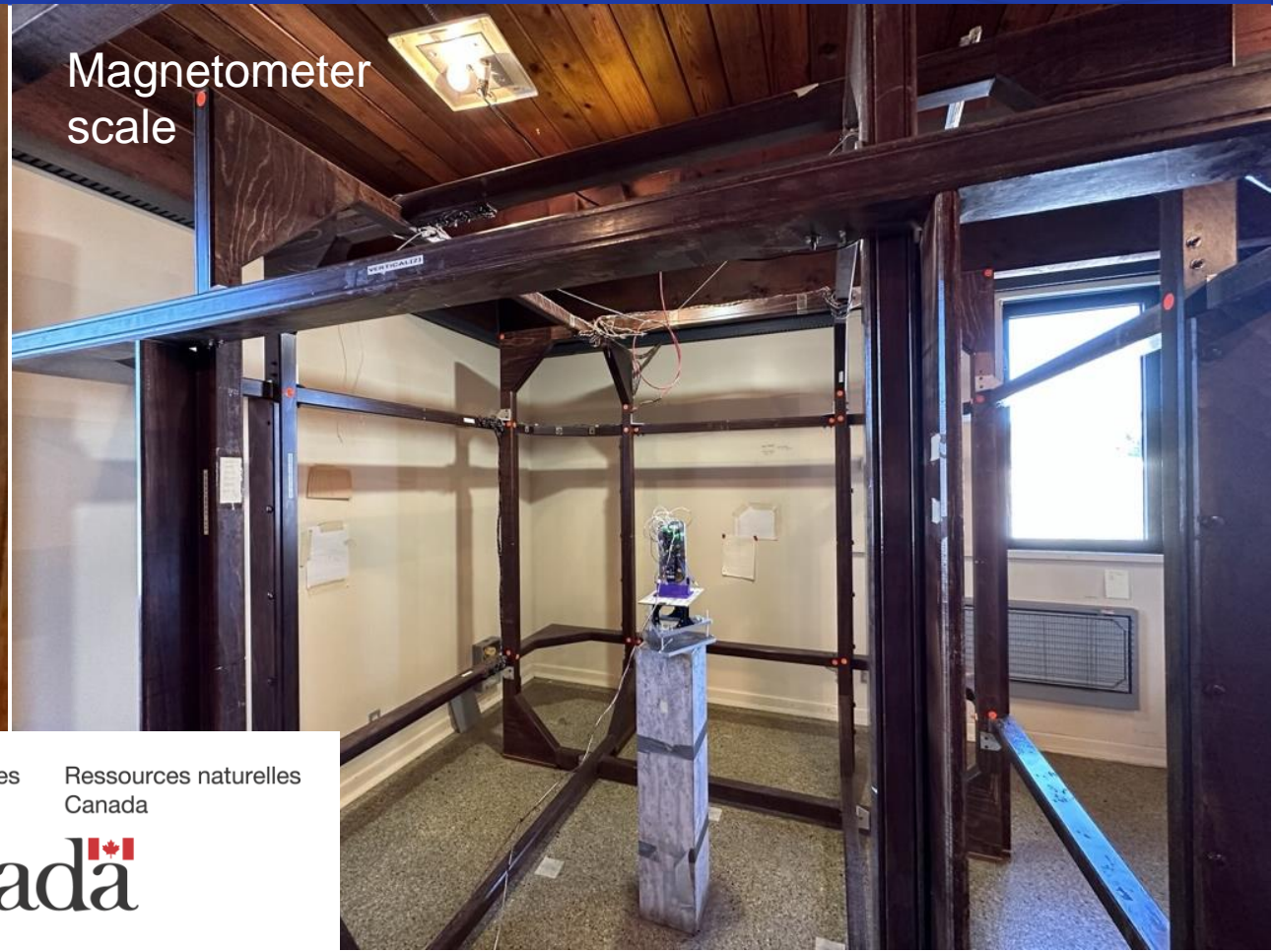
MAKING A VECTOR MAGNETOMETER

Strategic collaborations to build best in class magnetometer

Satellite scale



Magnetometer scale



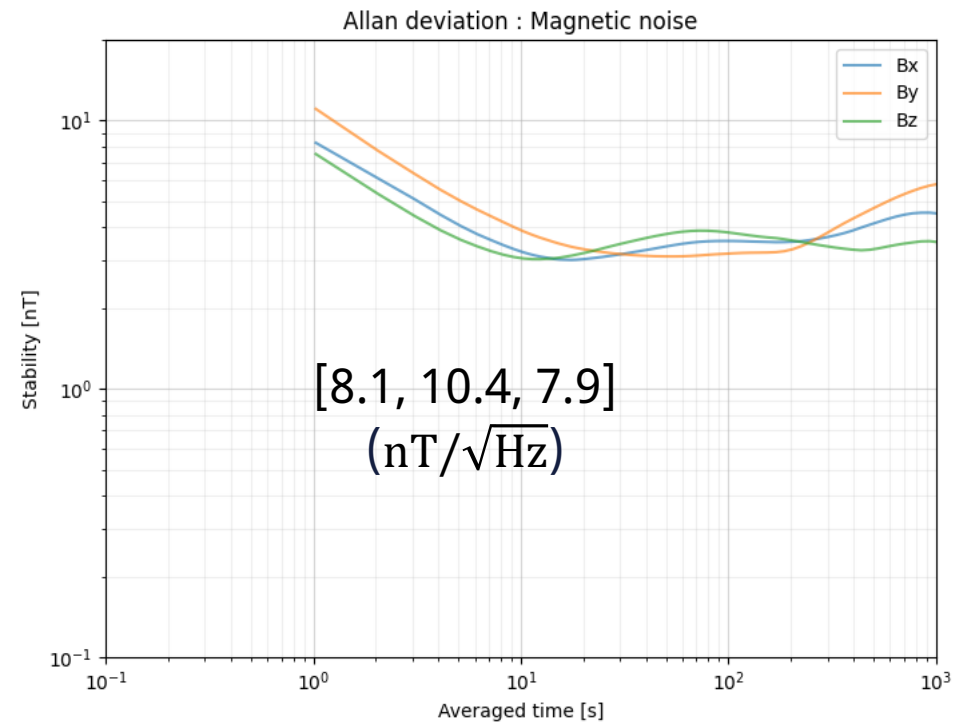
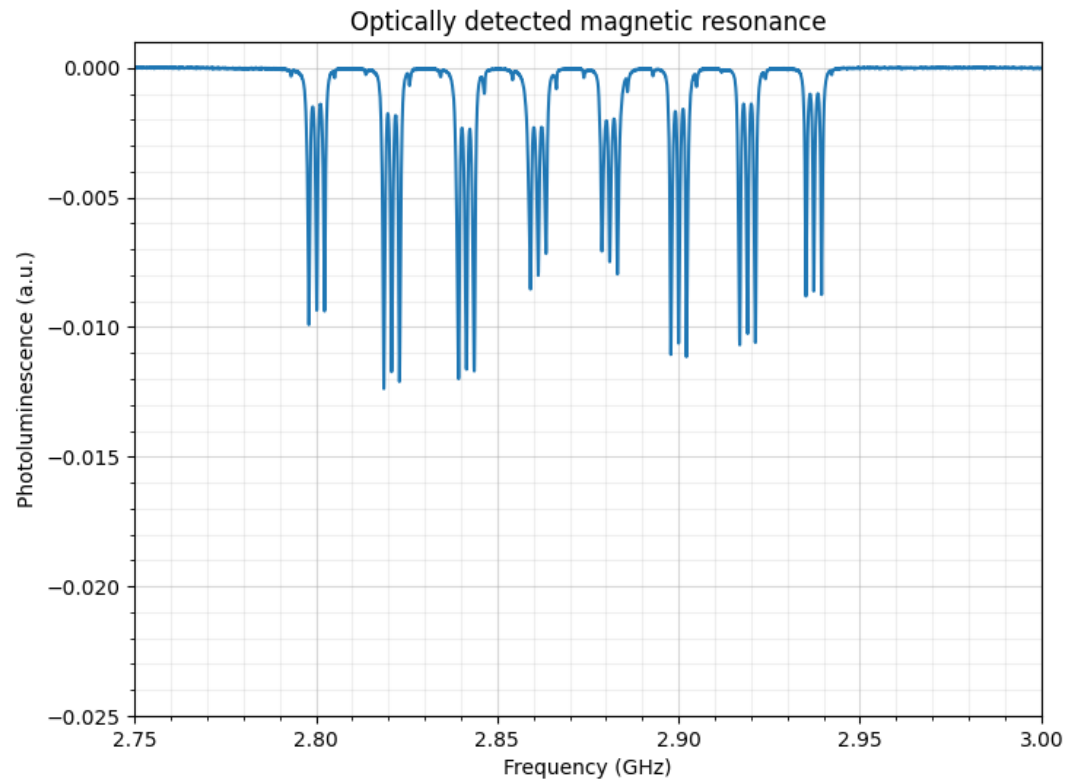
Natural Resources
Canada

Ressources naturelles
Canada

Canada

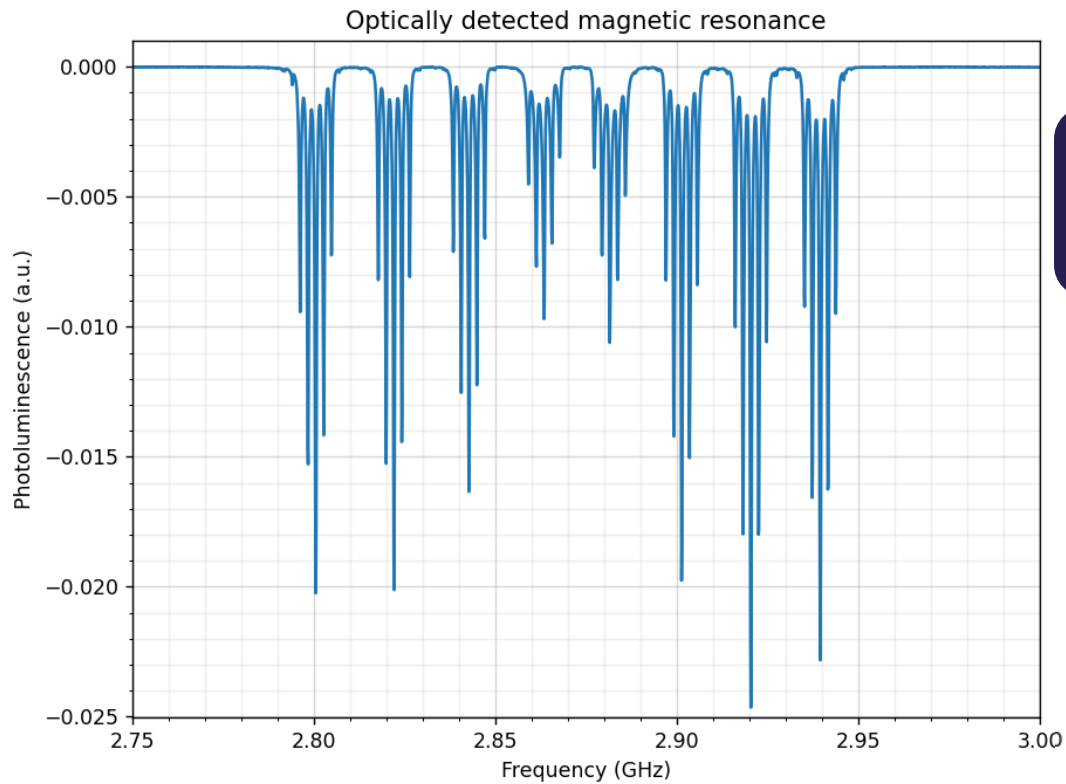
Refining the SBQDM performance

SBQDM v01

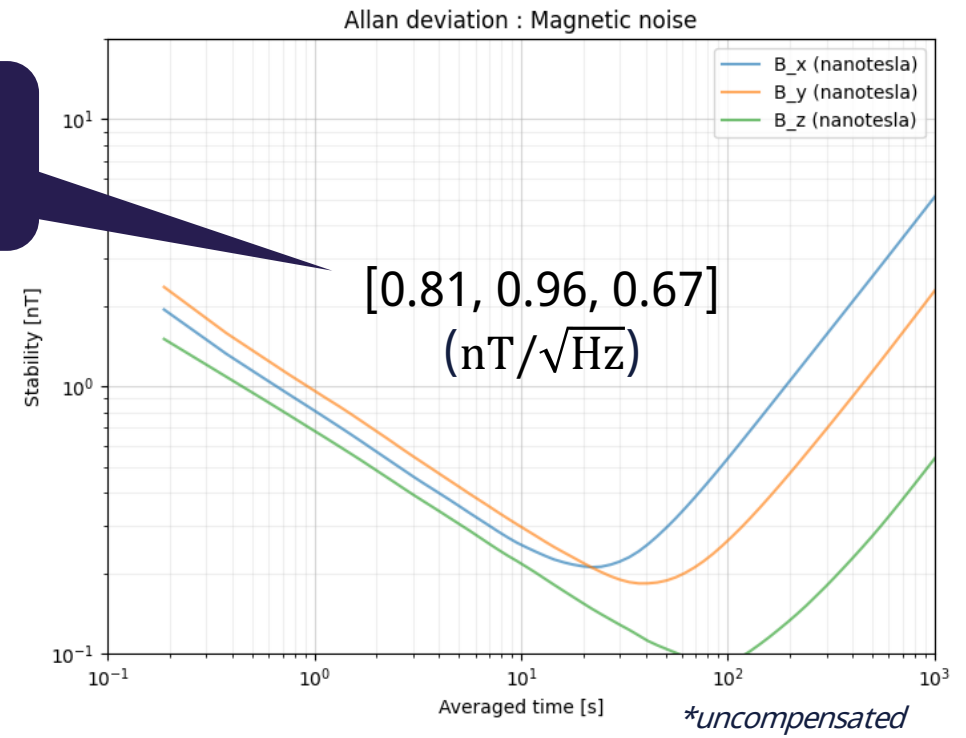


Refining the SBQDM performance

SBQDM v02: nuclear spin pumping

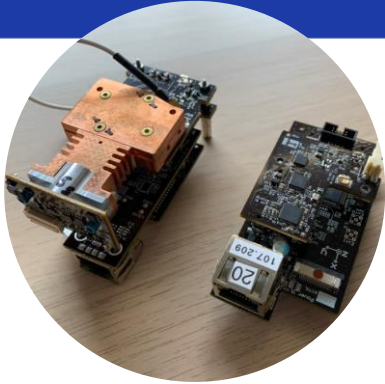


10x
better



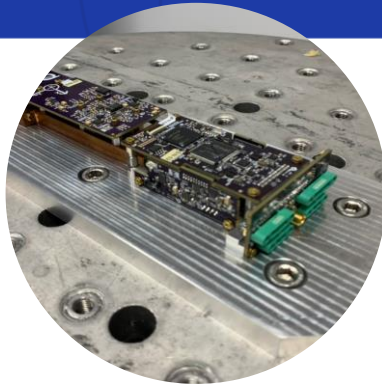
Agility is key to our progress

2021



Qmag

2022



SBQDM v01

2023



SBQDM v02

2024



SBQDM Delta



Sensitivity
(nT/ $\sqrt{\text{Hz}}$)

[41, 21, 26]

[8.1, 10.4, 7.9]

[0.81, 0.96, 0.67]

[0.3, 0.3, 0.3]

Accuracy (nT)

> 1000

~50

6

1

Element

Electronics
integration

Optimized optics and
magnetics

Electronics
optimization and
nuclear pumping

Electronics
optimization
ML optimization

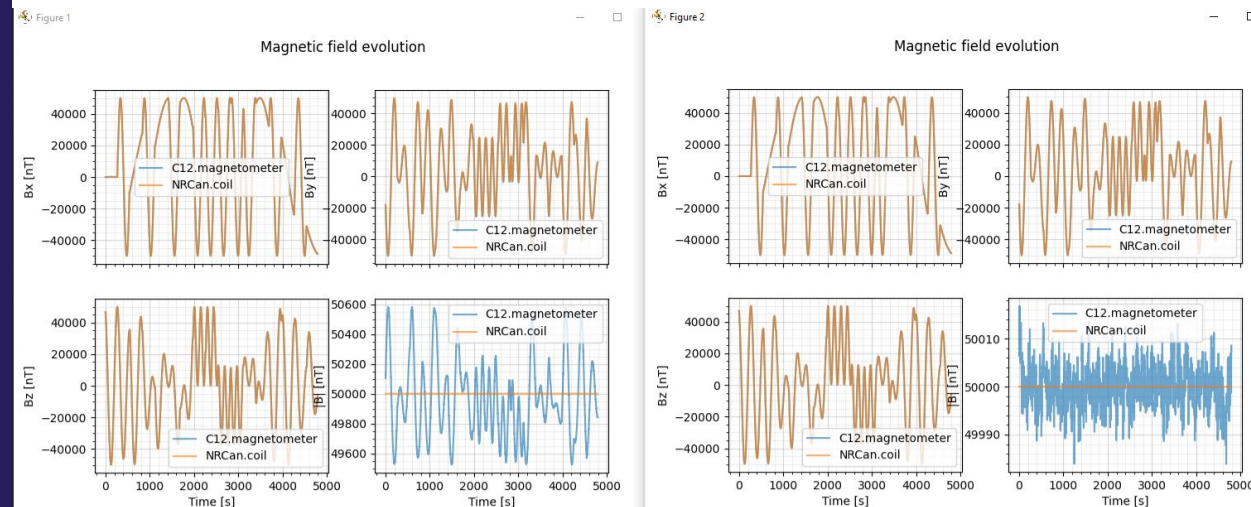
Spin calibration:

< 1% non linearity

< 0.007° non orthogonality

Before calibration

After calibration

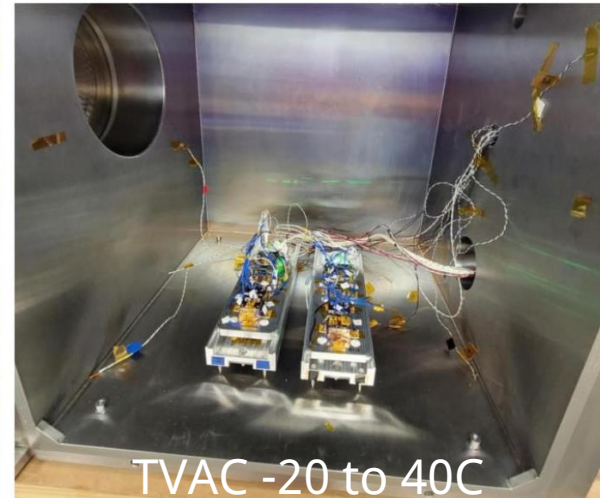


Calibration results:

```
SensorUniqueId(device_id='C12', sensor_id='magnetometer')
Calibration parameters (referenced at 20°C):
  offset: ['5.970e+01', '-5.232e+02', '-7.607e+01']
  scale: ['1.000e+00', '9.990e-01', '1.000e+00']
  orthogonality: ['1.167e-04', '5.622e-04', '-4.694e-06']
  orientation_offset: ['5.330e-04', '-2.235e-03', '3.042e-04']
```

Space readiness testing (funded by Canadian Space Agency)

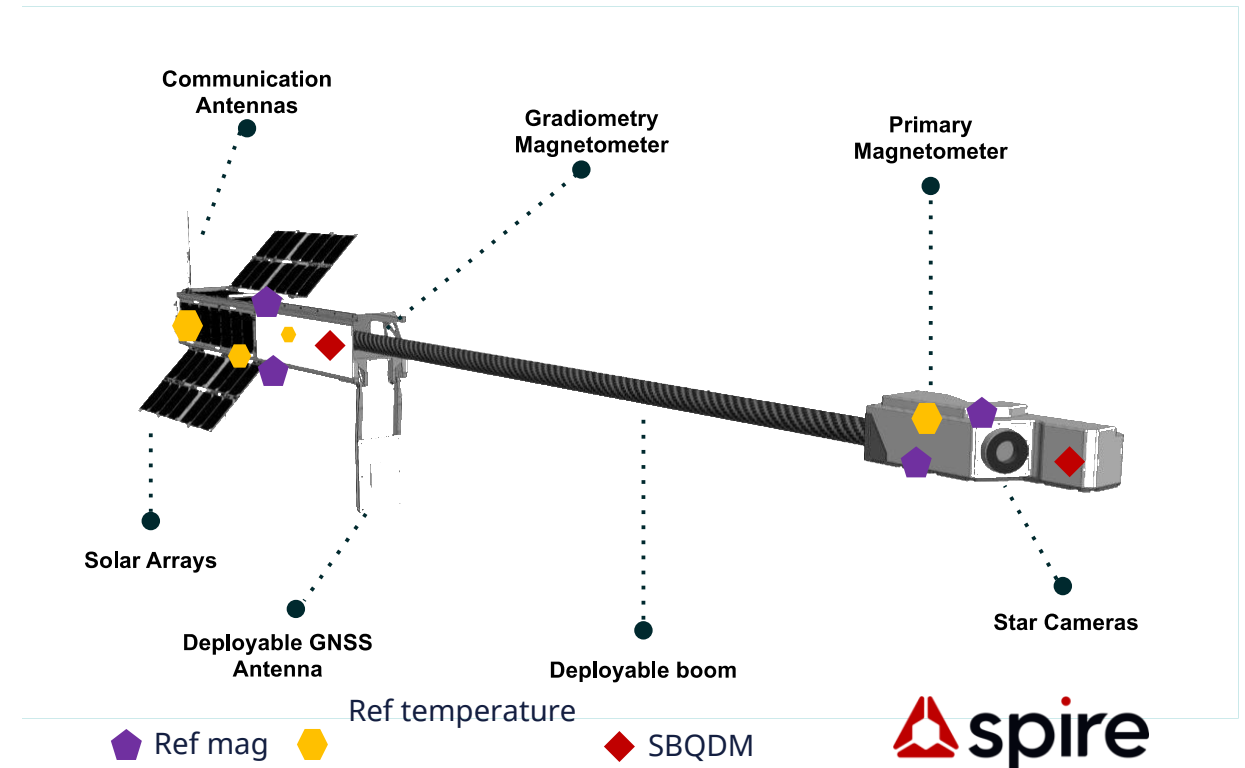
Successfully survived!



Solving the longstanding challenge of noise

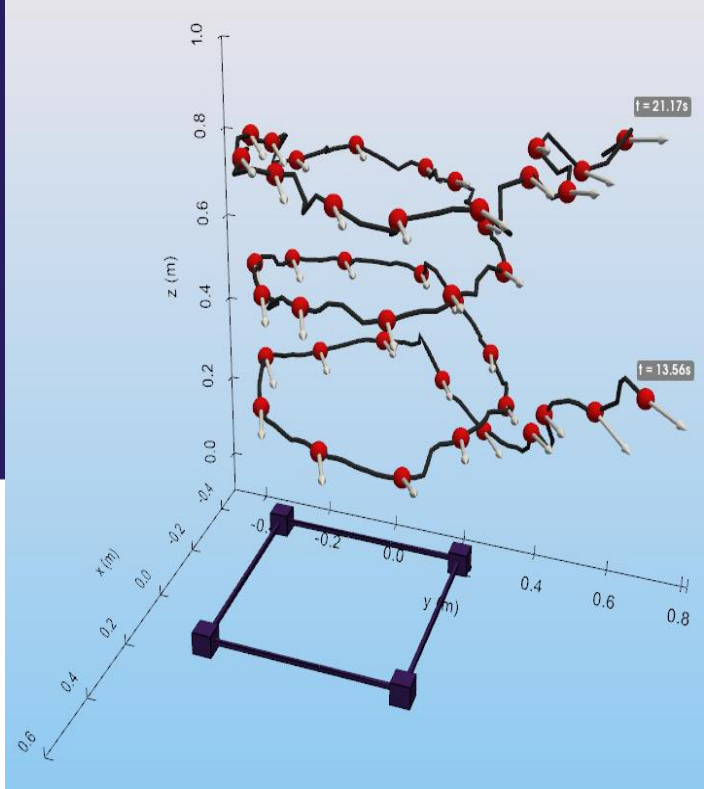
M MAGQUEST

- ML compensation algorithms with network of sensors
- Successful POC with satellite, extendable to drone/robot/submarine
- Quantum as local, trustable measurement

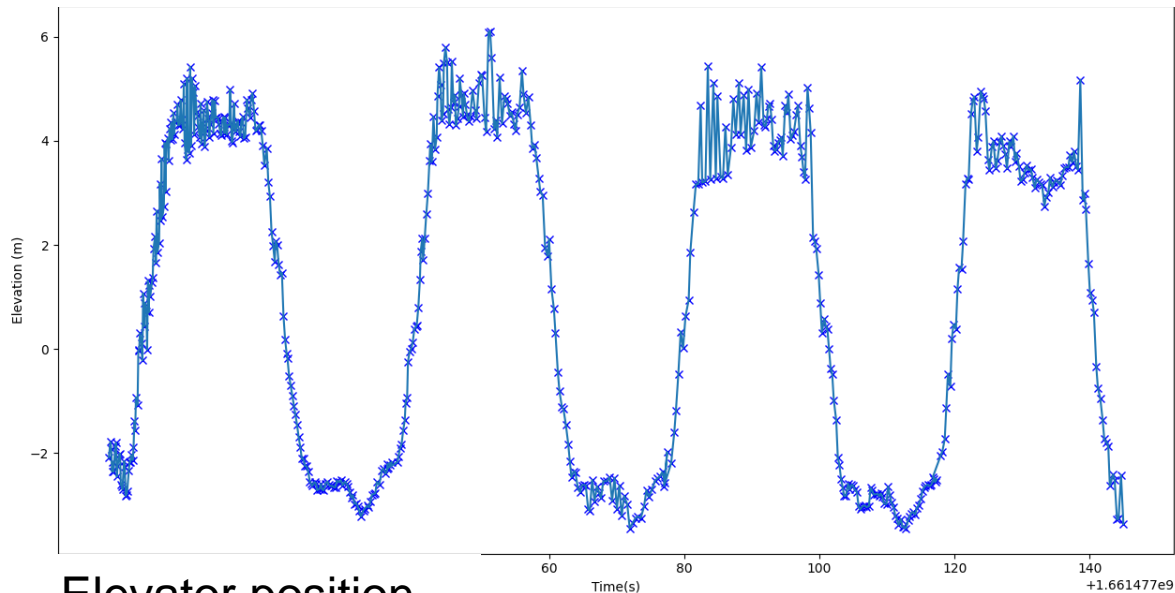


Field deployment

Magnetic Intelligence



- See in obscured, degraded, beyond walls
- Tracking position, size, orientation in **realtime**
- Move from detection to **classification**



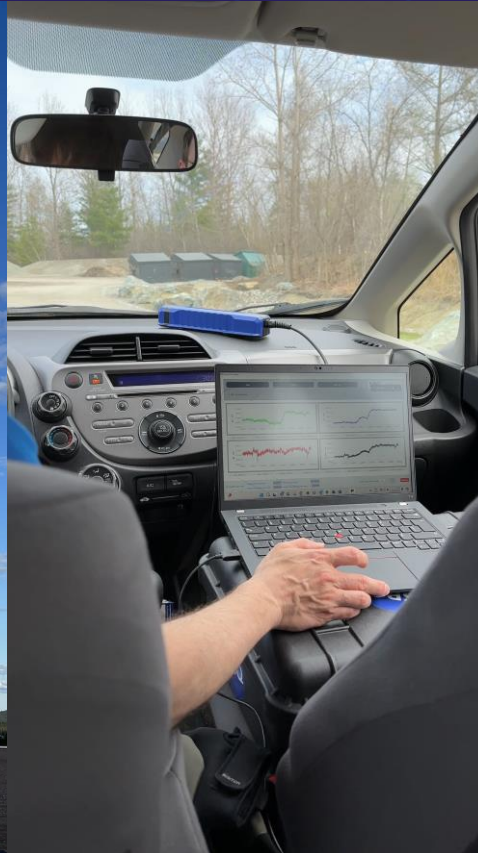
Deploying the diamond vector magnetometer



Plane



Weather balloon



Car



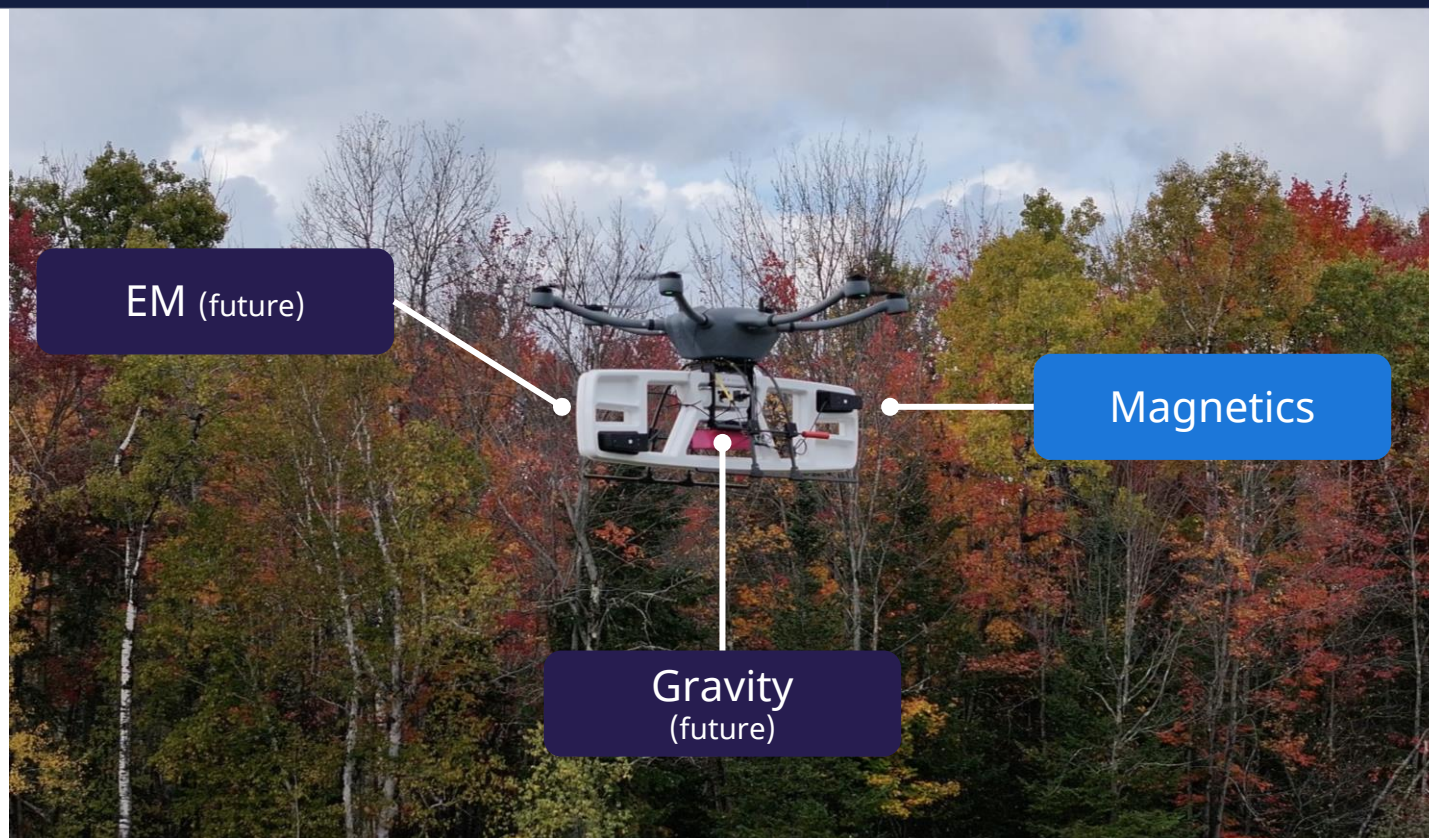
Snowmobile/drone



Looking ahead

Unmatched geophysics data accuracy and speed

To accelerate minerals discoveries



Fee per km
+
On demand upsell insights

We scan
We get a % of your property

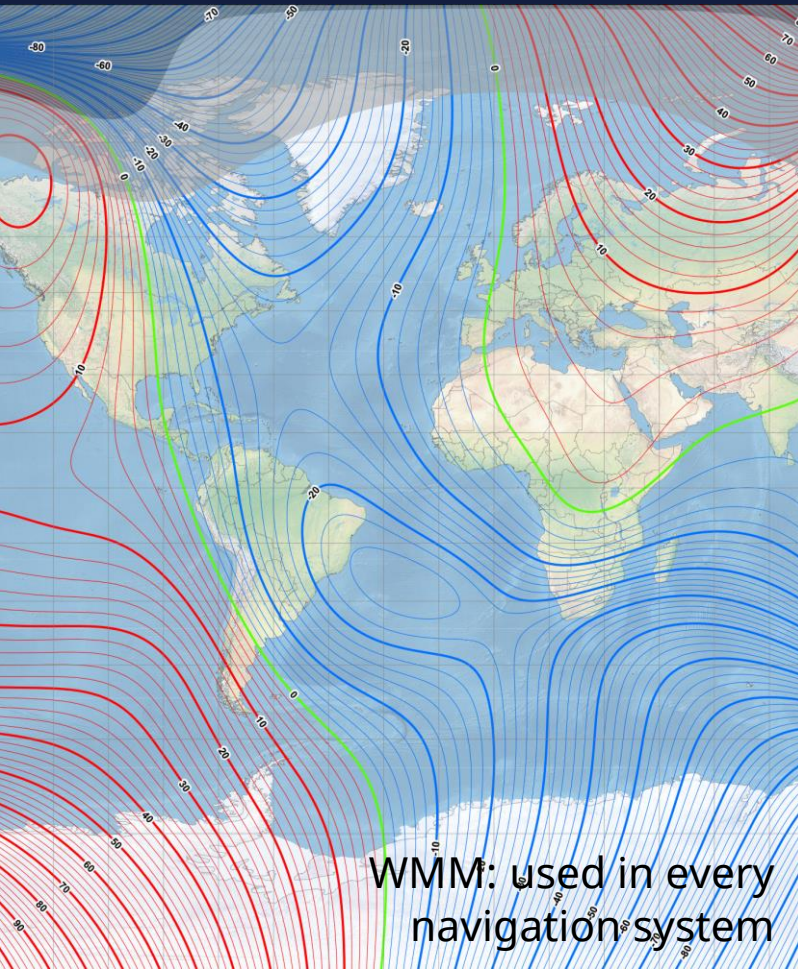


Minerals



NGA/NASA's MagQuest Challenge:

Refining the World Magnetic Model – Launch Sept 2025



1 nT accuracy

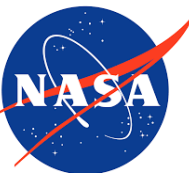
< 1 nT/√Hz sensitivity

Custom ML based magnetic cancellation algorithms



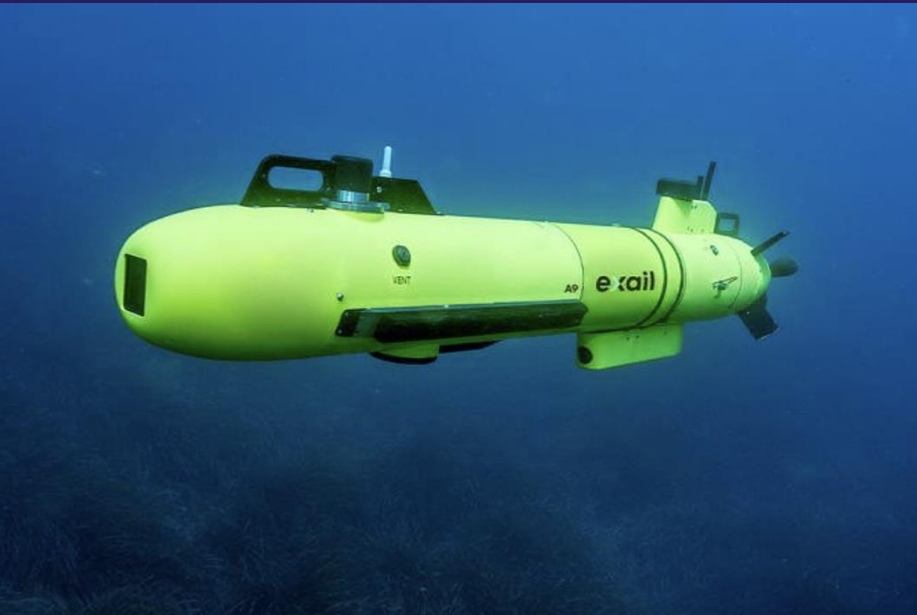
April 2023: independent evaluation

Final evaluation May 2024



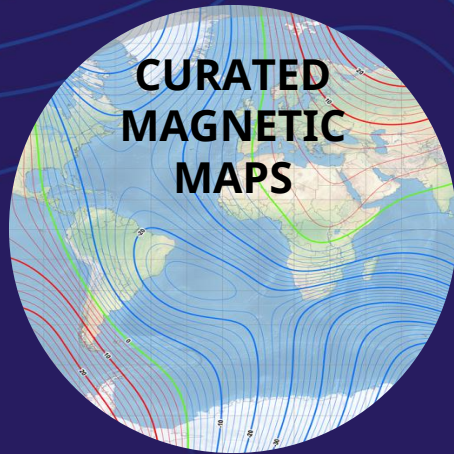
Navigation

A critical vulnerability of autonomous platforms



Navigation

SBQuantum in unique position



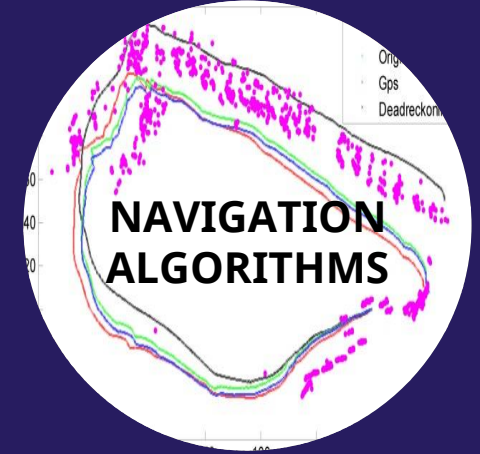
Ready to deploy and
scalable space
capabilities



Worldleading Canadian
expertise in
magnetometry



Proven and tested on
satellite platform



Strong network of
aerospace companies
Looking for partners

Looking for

- 1 Diamond magnetometer alpha adopters
- 2 Pilot opportunities

Live demo during break!



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