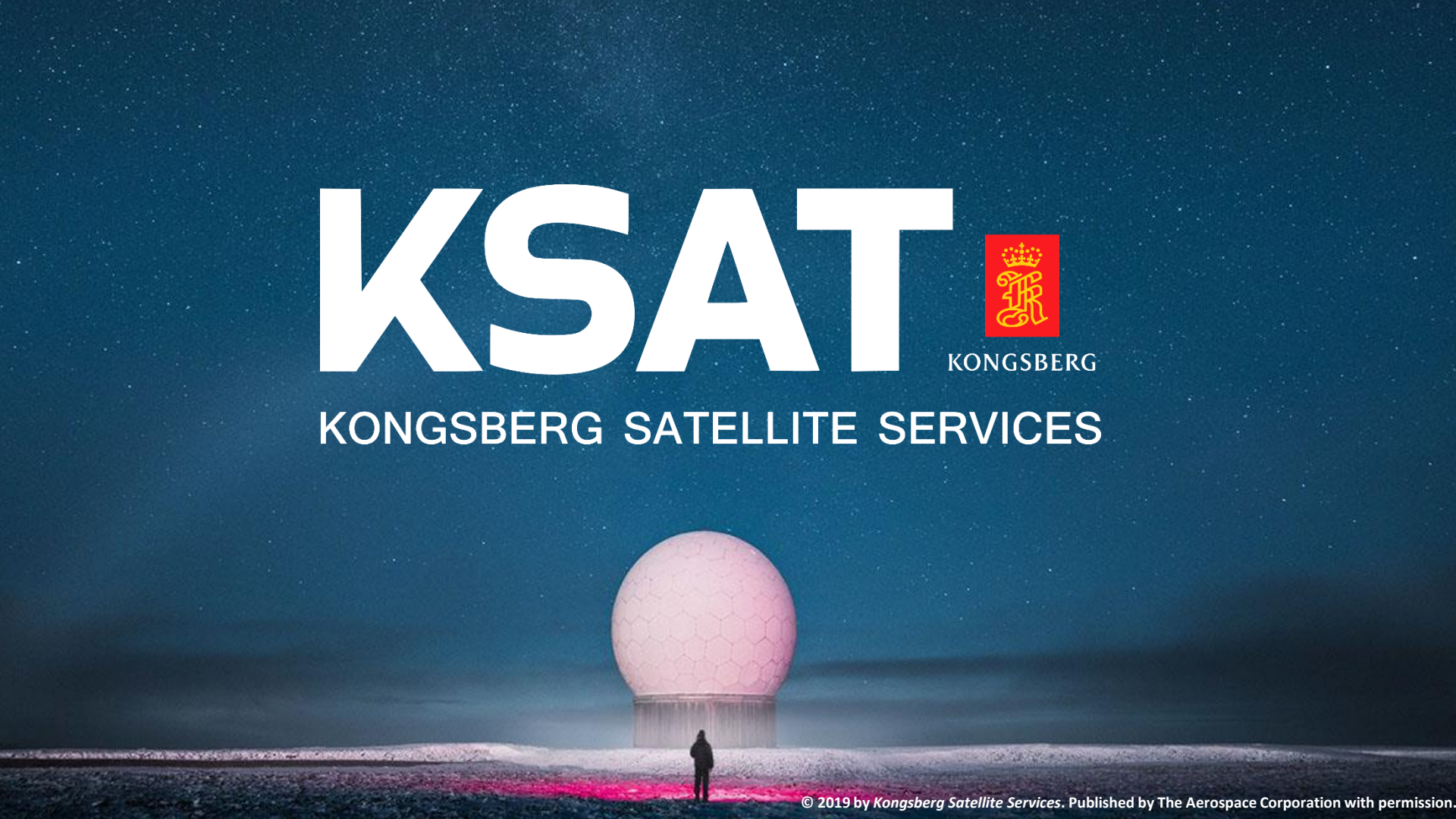


What makes a “SMARTER” ground system?

- → Scale flexibly
- → Automated, redundant systems
- → GS as a service
- → Economies of scale

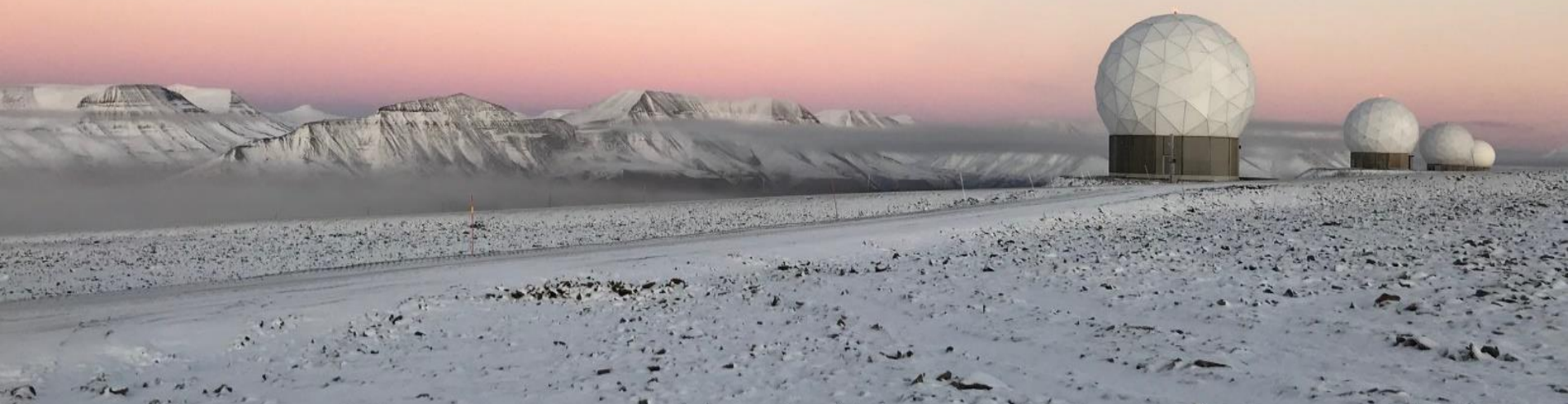
96% of the non-GEO commercial industry

249 commercial non-GEO spacecraft launched in 2017

→ 243 of those spacecraft are on the KSAT network

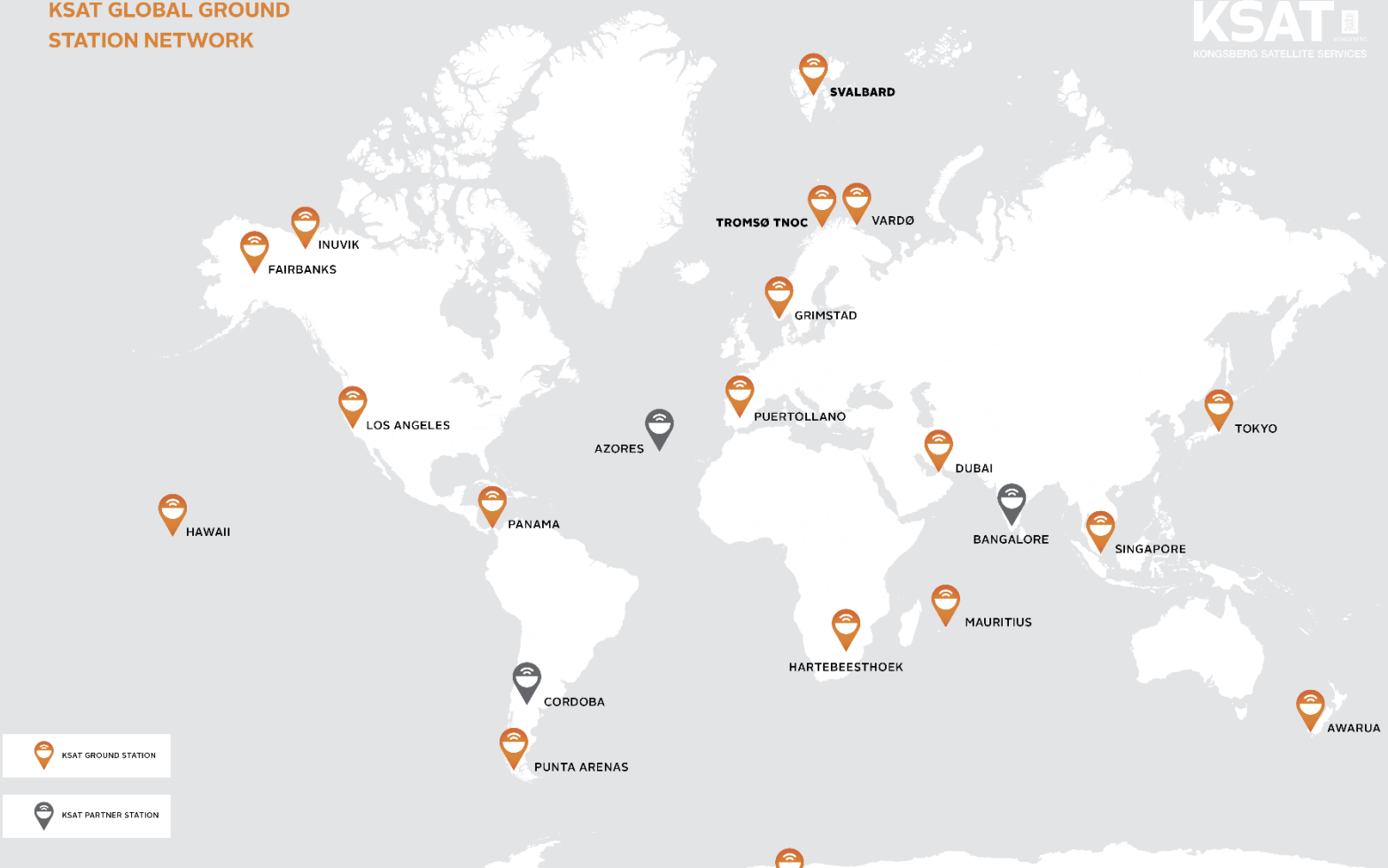
98% of the U.S. non-GEO commercial industry

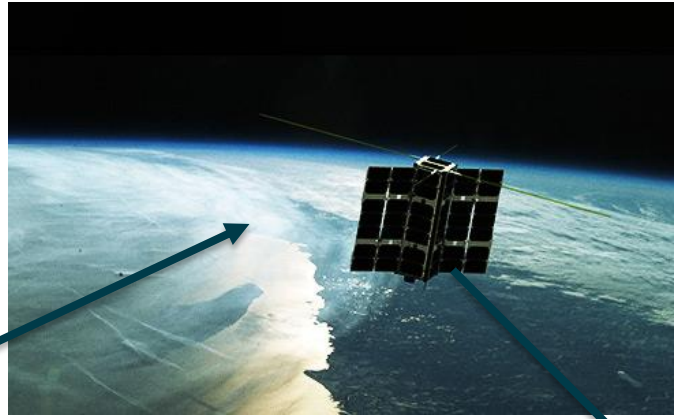
- **Hardware:** Antennas ranging from 2.4m to 15m
- **RF:** Frequencies: S, X, C, L, Ka, Ku-bands & UHF*
- **Software:** Integrated network – Ground stations as a cloud service
- **Regulatory:** Licensing & spectrum management



KSAT GLOBAL GROUND STATION NETWORK

KSAT
KONGSBERG SATELLITE SERVICES





X

Y

Z

Minimize latency =

X (AOS)

+ Y (Ground availability)

+ Z (Backhaul)

KSAT LITE

KSAT Lite launched in 2015

→ **Hundreds of spacecraft are now on the network**

→ **22 sites available – more being built**

→ **Over 16,000 passes/mo on KSAT Lite in 2019**

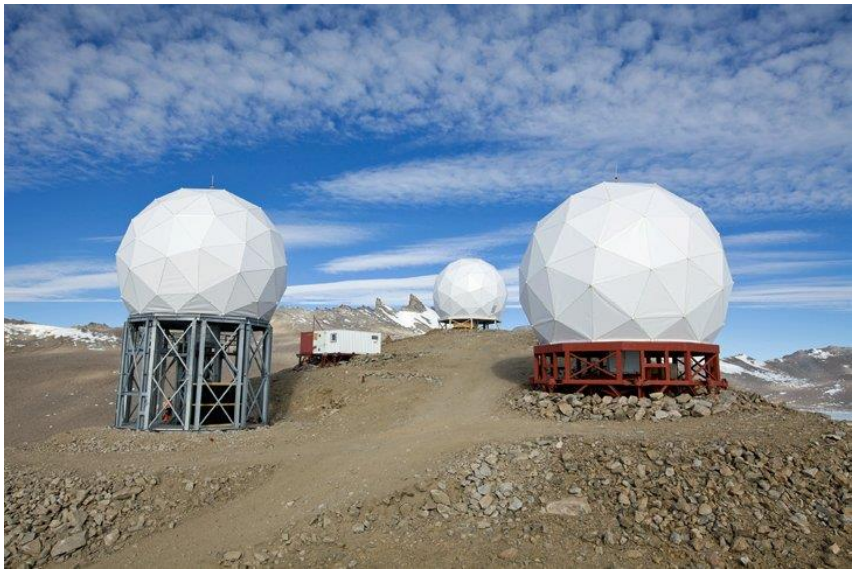
FIVE YEARS of

GSaaS dedicated for SmallSats

KSAT LITE

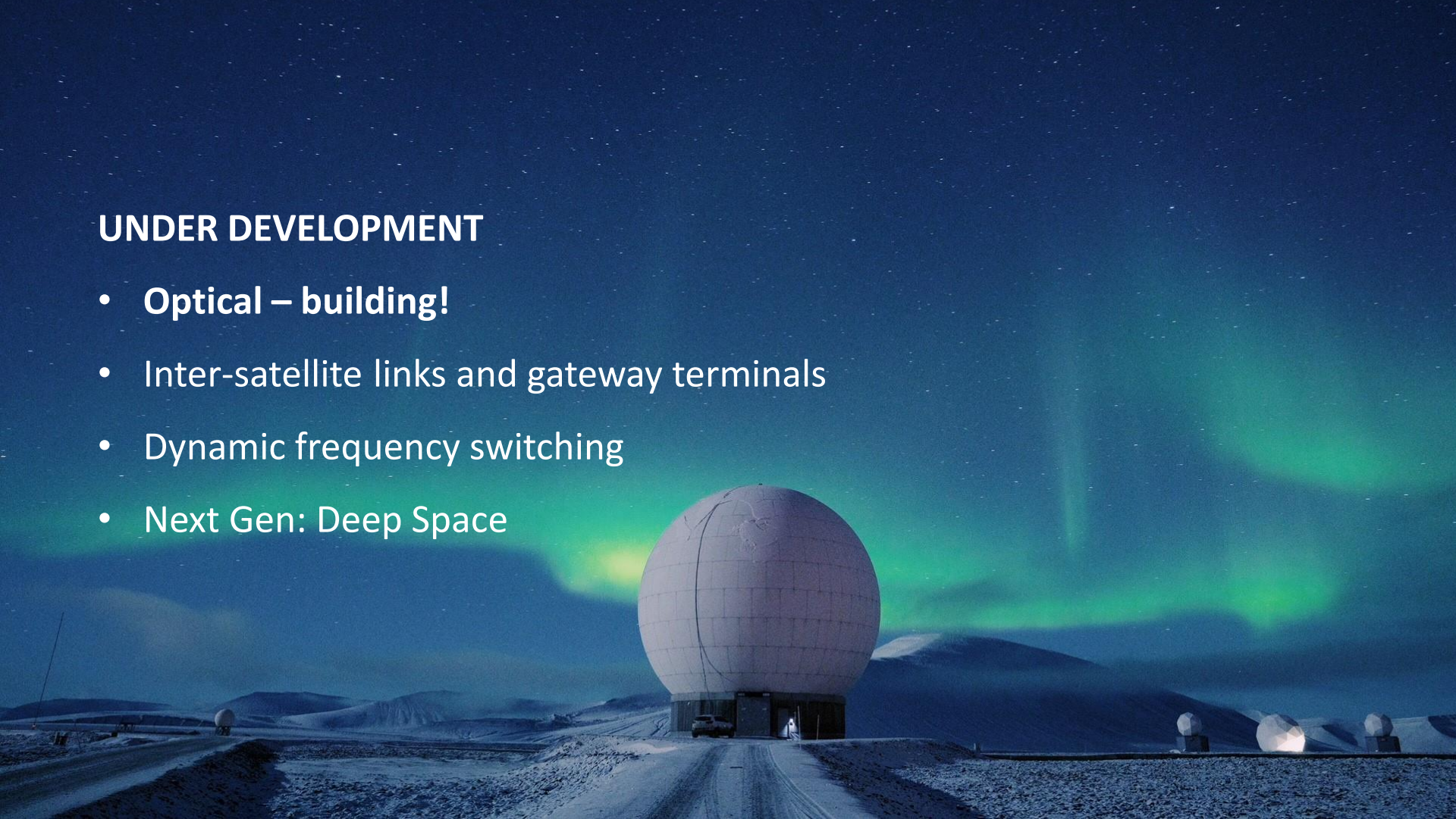
Ground Station as a Service:

- Standardized **global** network
  - Antenna
  - Backend
  - Customer interfaces
- Automated operations
- Flexible M2M scheduling
- Redundancy through multiple antennas
- Scalable support as constellation grows
- +20 years of operational excellence!



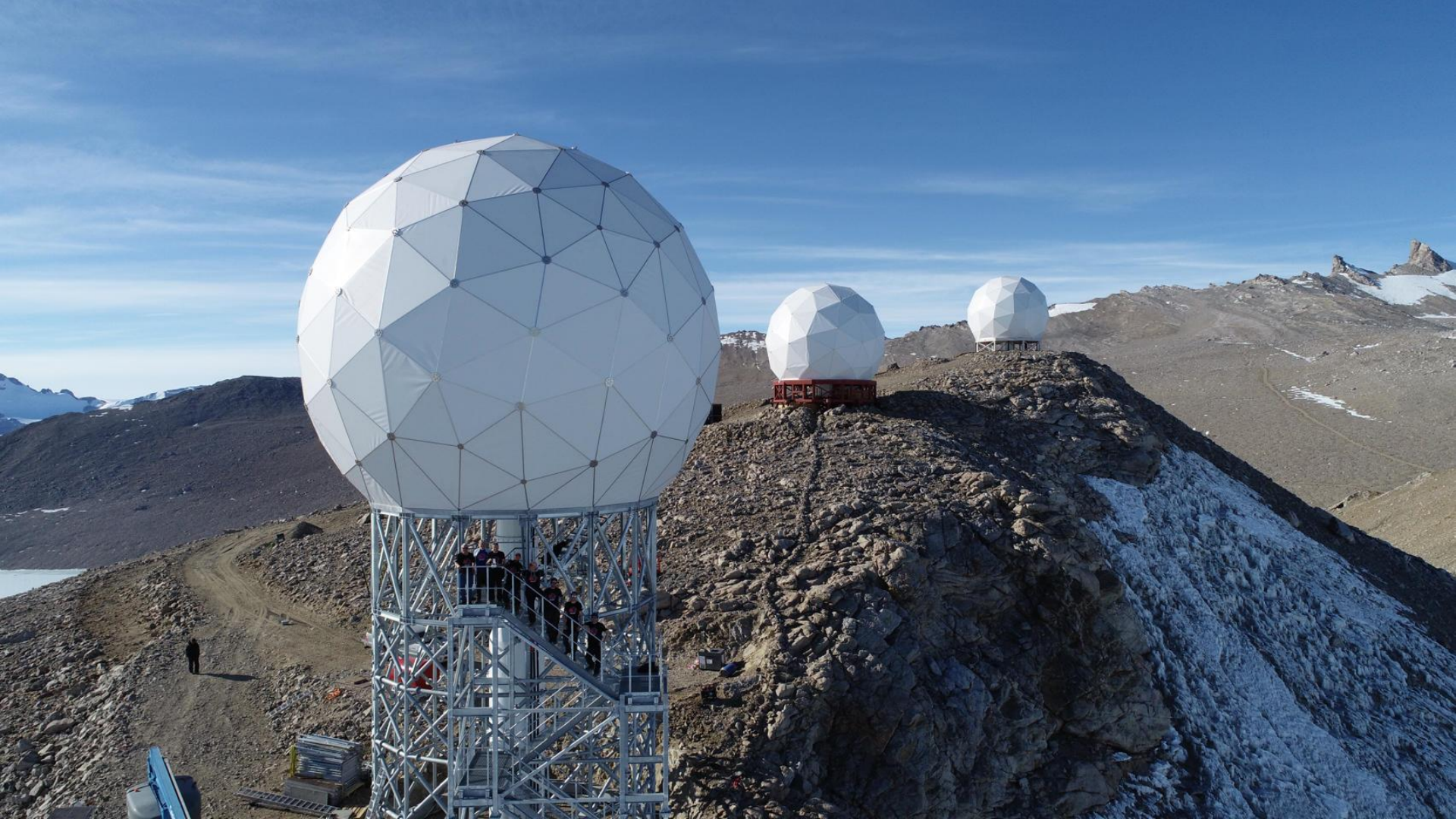
The “SMARTER” system is one that provides:

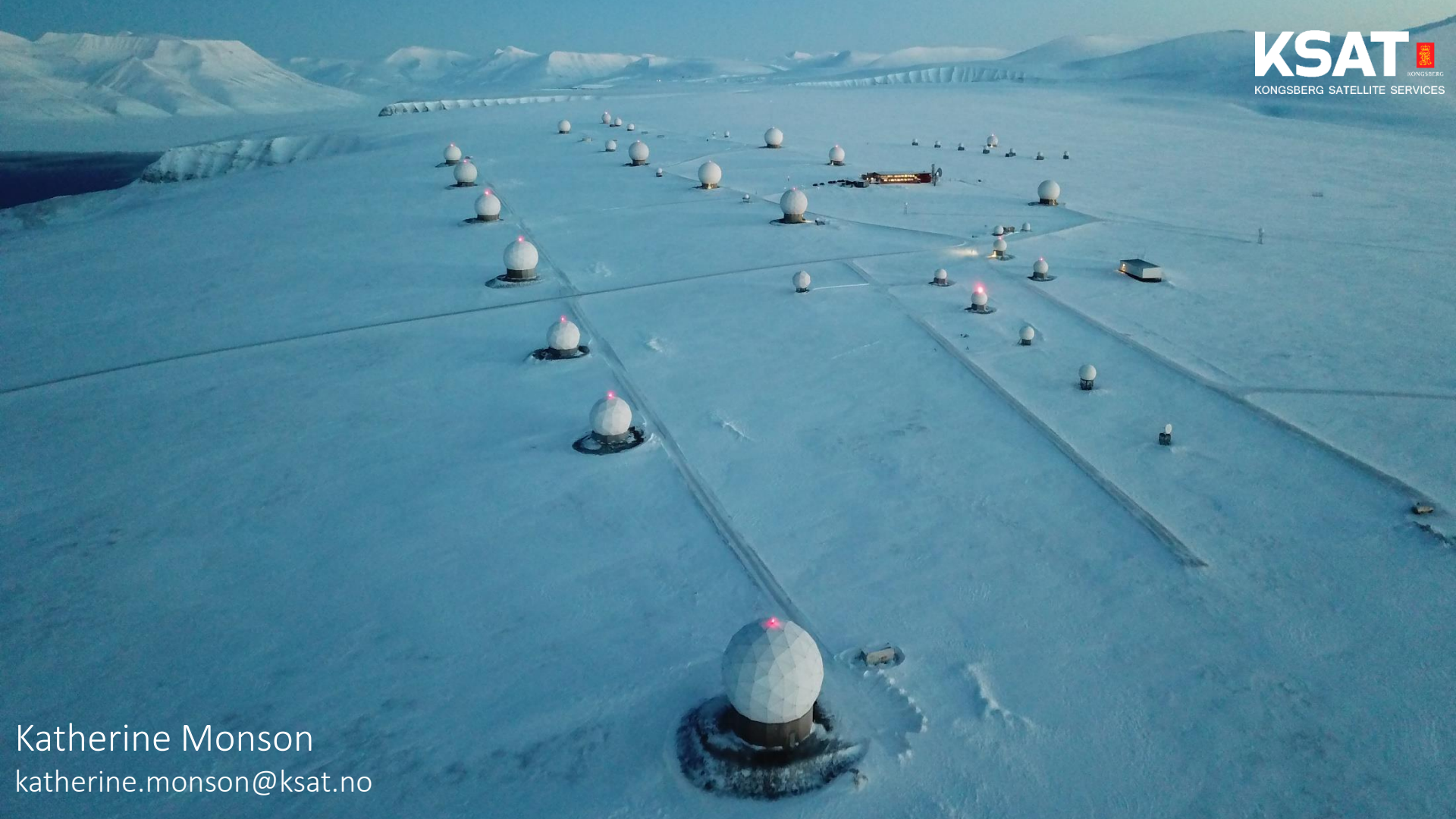
- **Guaranteed support** for mission needs – don’t let the spacecraft be expensive metal, get data when needed
- Wide range of antenna capabilities – having an issue, hop up to a larger antennas to find the spacecraft
- Ka-band/Optical – more data, more fun, (more money for the company)
- Active LEOP support
- Active support for mission design and operations – expertise enables owners to focus on the data
- Global sites available now – no timeline delays, and minimize latency
- Interoperable with every major cloud infrastructure – support for whichever data storage and processing solution works best for the mission



UNDER DEVELOPMENT

- **Optical – building!**
- Inter-satellite links and gateway terminals
- Dynamic frequency switching
- Next Gen: Deep Space





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