Internet of Things for improved operations in the Arctic
ARC-REACH

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Confidential – powered by ESA Kickstarter
European Space Agency funds projects which combine **proven technology** to make a **real difference in the world** in the next years.

**ARC-Reach**
- approved by ESA for the kickstart
- feasibility and small demonstrator
- April 2018 - October 2018
- 2 main technology partners
  - AntarctiQ: tech expert in extreme environments
  - Sensolus: market leader in low-power sensing (tracking)
WHY monitoring the Arctic region?

unexplored / untouched area
vulnerable ecosystem
leading indicator in climate change

WE OFFER COST-EFFICIENT MONITORING ON SHIPS AND OF THE ENVIRONMENT WITH INTERNET OF THINGS (IOT) TECHNOLOGY

Objective ARC-REACH project
1) feasibility study with stakeholders
2) small scale demonstrator
How does it work?

Local radio stations
- Low-power / long range
- range: +10 km
- only for sensors

Providing a mobile sensor network
## What to measure?

### On Ship
- Smoke/Fire
- Leakage
- Temperature
- Humidity
- Air quality
- Water quality
- Gas leak
- Replenishment

### Equipment monitoring
- Pumps
- Engines
- Tanks
- Pipes (leakage)
- Batteries
- Waste bins
- Bilges

### Science / Environmental monitoring
- Field data
- Local environmental data
- Ice data
- Localisation data
- Movement data
- Etc.

### Device monitoring
- Life vests
- Defibrillators
- Fire extinguishers
- Hatches, doors/gates
- Refrigerators
- Meters

### Container
- Location
- Temperature
- Humidity
- Vibration and shocks
- Tamper evidence
- Gas/smoke

### Off ship
- Man over board
- Life boat monitoring
The technology behind

The old world

- Wiring / infrastructure
- High cost of ownership

The new era – powered by SENSOLUS

- Self-install sensors in less than 1 minute
- Low-power, long-range technology
- +5 yrs battery
- Direct cloud connection through ship operator network
- Proven technology: +5 Million sensors in the field

* Gartner 2017 – Industrial IoT – connected objects
Value proposition

- Reduced cost
- Data in remote areas
- Less dependency satellite connection
- Ship owners: for themselves and customers: additional service
  - Track cargo handling
  - Track cargo transport
  - Track cargo losses
  - Improve security
- Governments & National operators
  - Increase monitoring
  - Additional data: volume & coverage
  - Targeted interventions
  - Limit environmental damage
- Scientific community
  - Increase monitoring
  - Additional data: volume & coverage
Step 1: 2018 - Market analysis & feasibility
- mailing / interview
- expectations of the stakeholders:
  - Ship owners
  - national operators
  - research communities

Step 2: 2018 – Small scale demonstrator
- technical test with a ship operator – 1 week

Step 3: 2019 – Demonstrator on scale
Support ARC-REACH as a stakeholder

- Think global!
- State of the art technology
- Community effort

Cooperate on something that matters to all us!
Get the latest insights on the application of Internet of Things for Arctic operations
Contribute as a stakeholder and share your needs and requirements.