

Ny-Ålesund Optic Subsea Cable

ready for the coming new VLBI station in Ny-Ålesund in 2017



UNINETT

Helge Stranden
Project manager, Ny-Ålesund Optic Subsea Cable



UNINETT AS is the parent company of the UNINETT Group, and develops and operates the Norwegian national research and education network. This is a high-capacity computer network interconnecting about 200 Norwegian educational and research institutions and more than 300 000 users, as well as giving them access to international research networks.

The company supplies a range of services connected with the research network, among other things in the fields of identity management, purchasing co-operation, mobility, network management and security. UNINETT carries on innovation and development work in its technical fields and is involved in a wide range of activities internationally.

owned by the Ministry of Education and Research

International work

➤ **NORDUnet**

➤ **Kalmar2**

➤ **TERENA**

➤ **GÉANT3**

➤ **PRACE**



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UNINETT operates and develops the

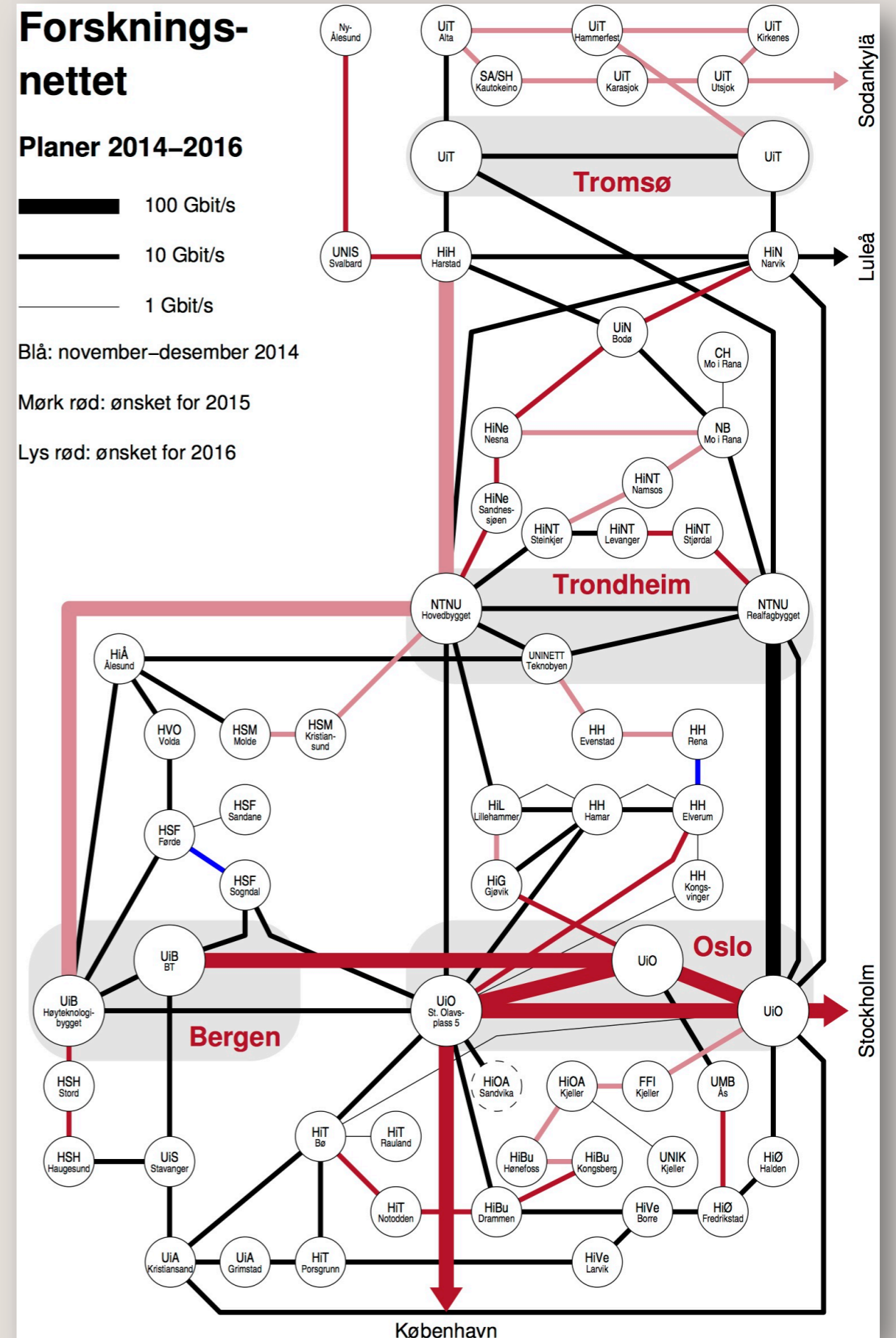
Norwegian national research and education network



Our responsibility also include University and research activities in Svalbard / Ny-Ålesund!



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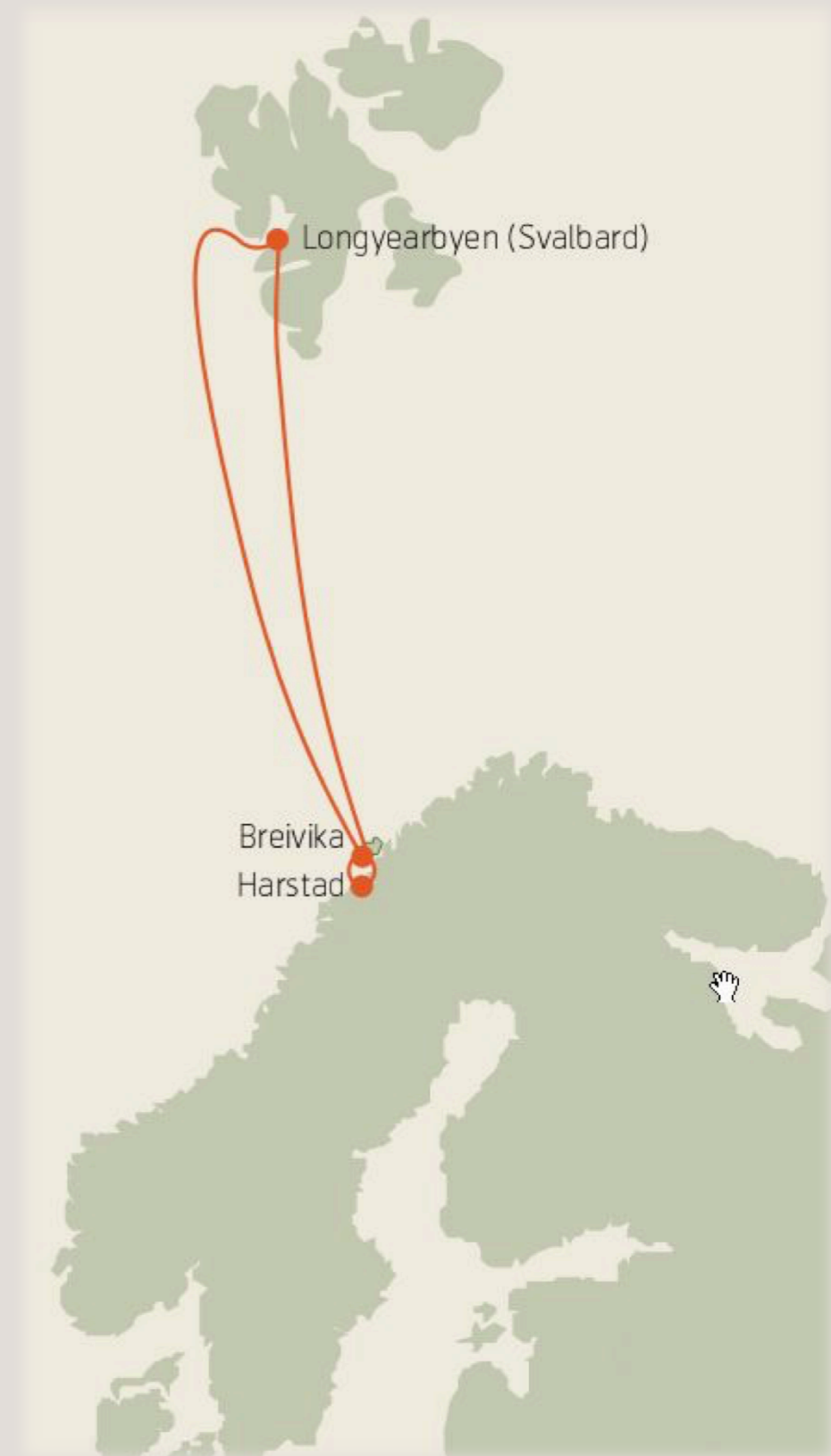


2004:

2x 8 fibre optic subsea cable established between mainland and Svalbard / Longyearbyen

2010:

UNINETT, owned by Ministry of Education and Research, asked by our owners to start a project to install optic subsea cable from Longyearbyen to Ny-Ålesund



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**Radiolink
2x155 Mbit**

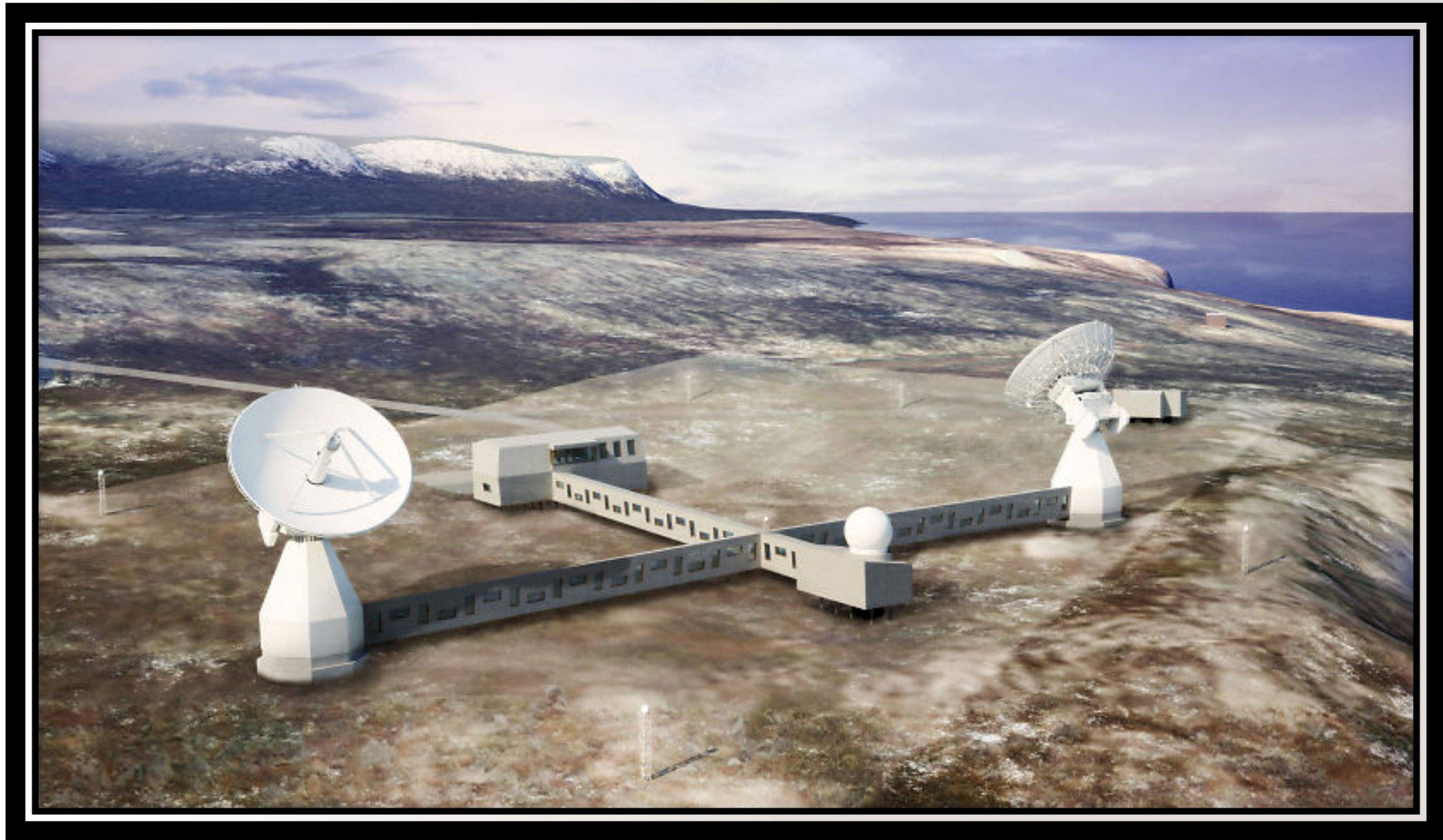


**optic subsea cables
(2x 260 km)**



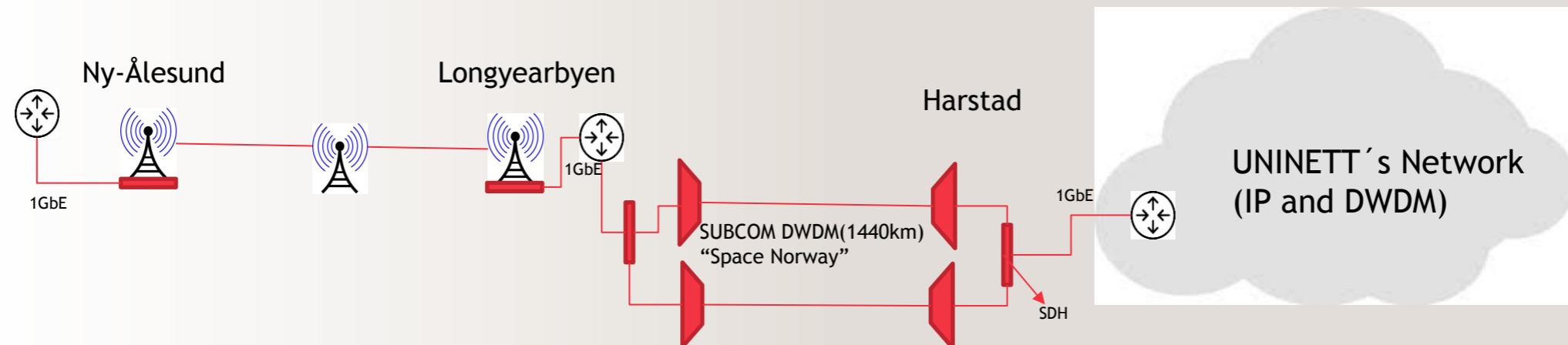
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As you know... new VLBI station in Ny-Ålesund 2017

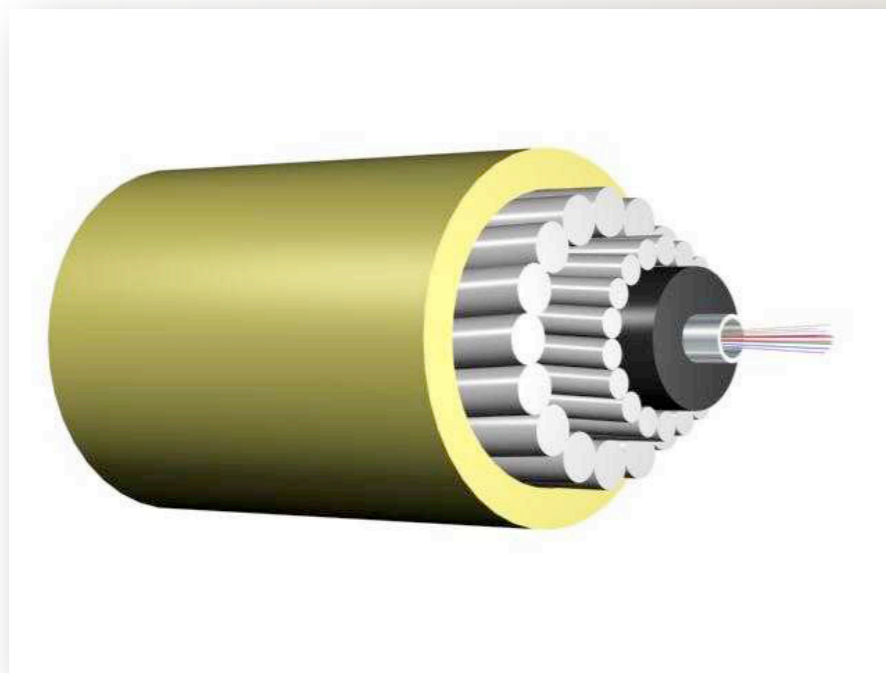


Svalbard: Network history and deployment plan in 2014-2015

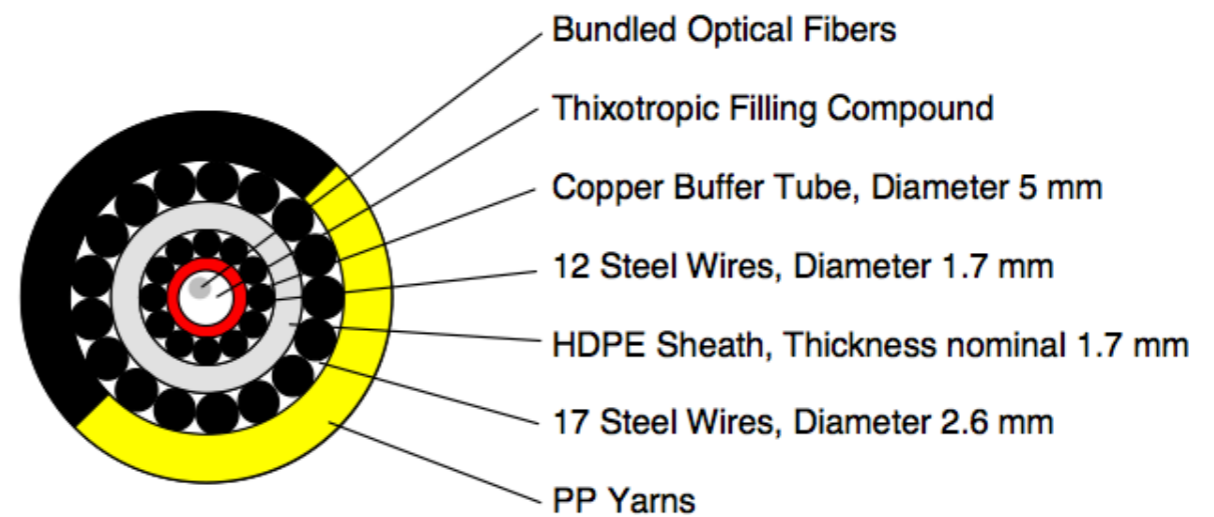
- Pre 2004; Satellite link to Svalbard; ~ 50 Mbps, mostly for NASA and NOAA. Only a limited number of ISDN connections for the rest of us.
- 2004: Two cables laid from Longyearbyen to the mainland
- Pre 2005: 64 kbps satellite link to Ny-Ålesund used by NMA and AWI, the rest of Ny-Ålesund shared an IP-over-ISDN connection via a 2Mbps radiolink covering both POTS, Broadcasting etc.
- 2005: 2+0 STM-1 radiolink with approx. 140 Mbit/s UNINETT connection, the rest for TV and POTS
- 2006: Successful eVLBI trials. Fully operational in production soon afterwards.
- 2016/17: NMA preplanning of a new VLBI station able to produce 2x10 Gbit/s per node



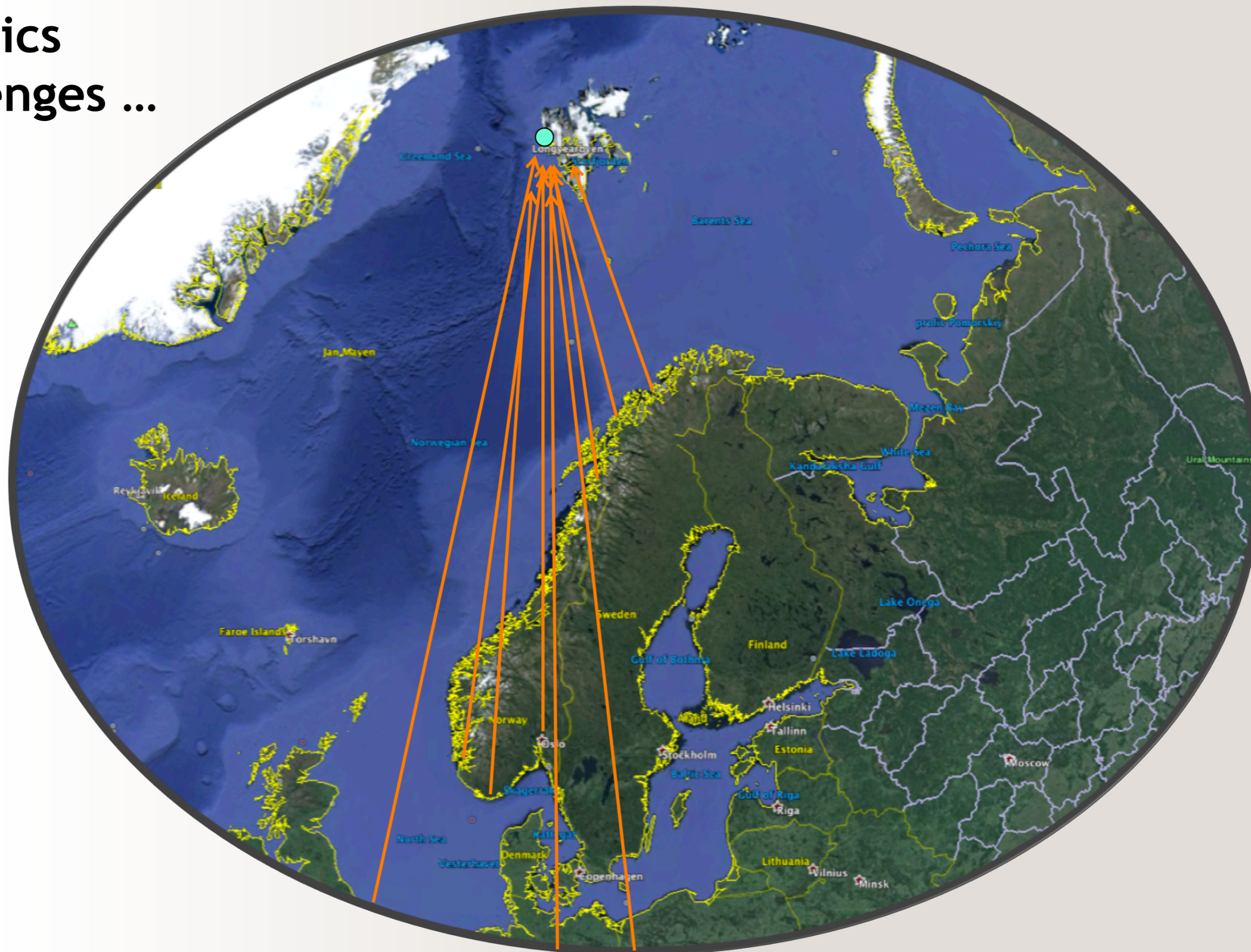
Nexans 24 fibre single-mode (ITU-T G.652.D)



Cross Section

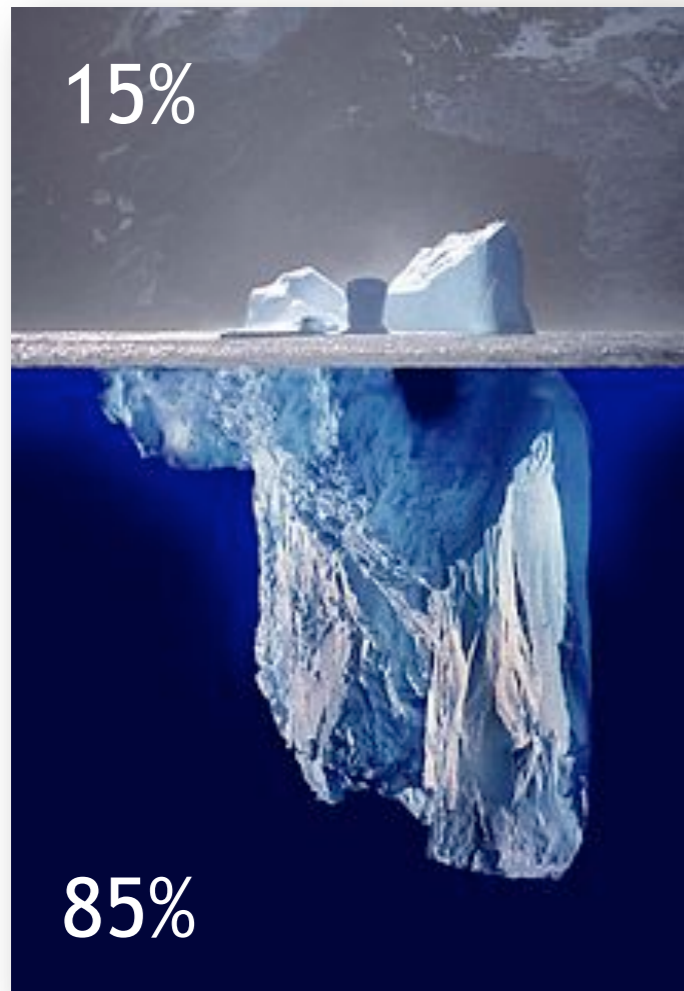


Logistics challenges ...

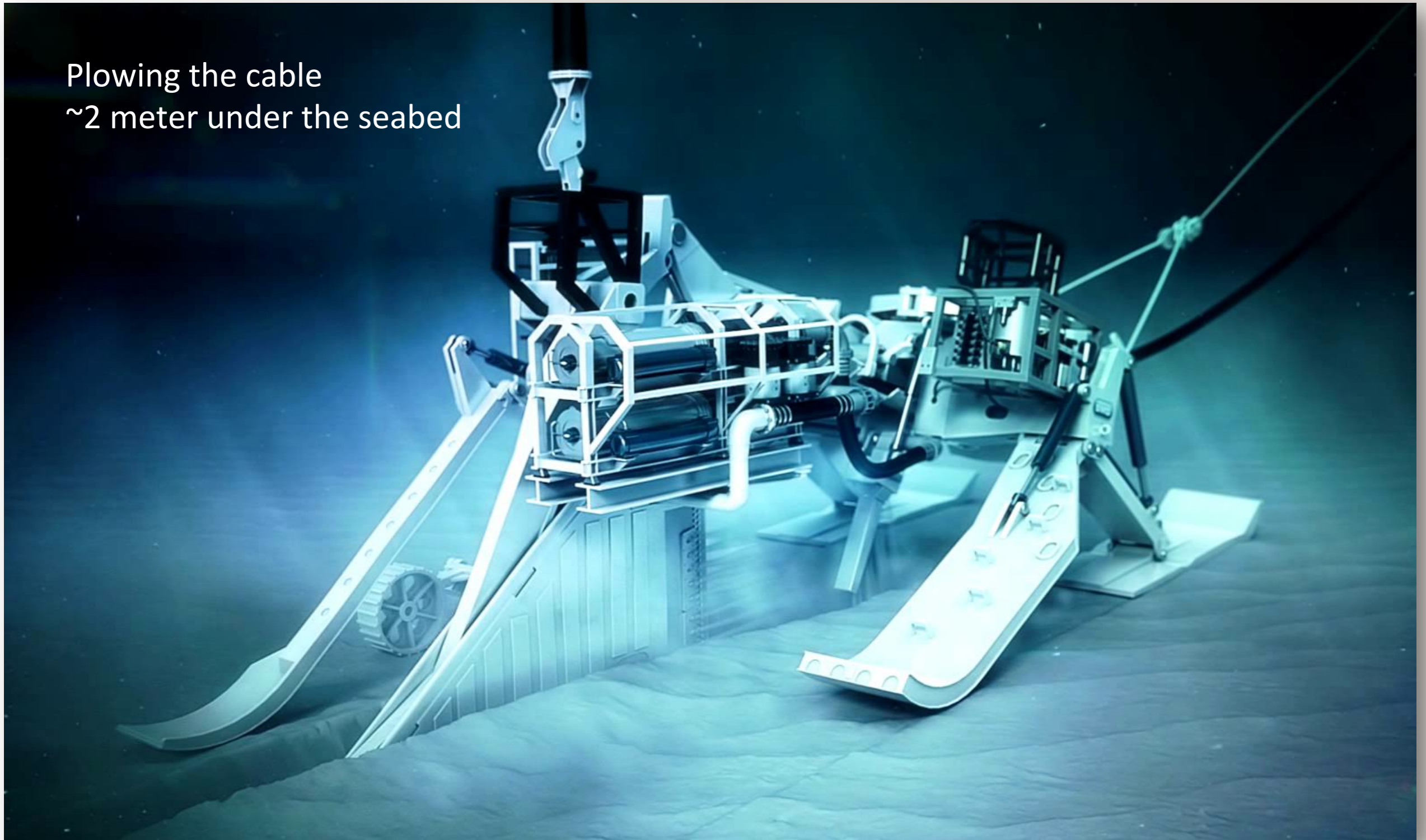


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Ice challenges ...



Plowing the cable
~2 meter under the seabed

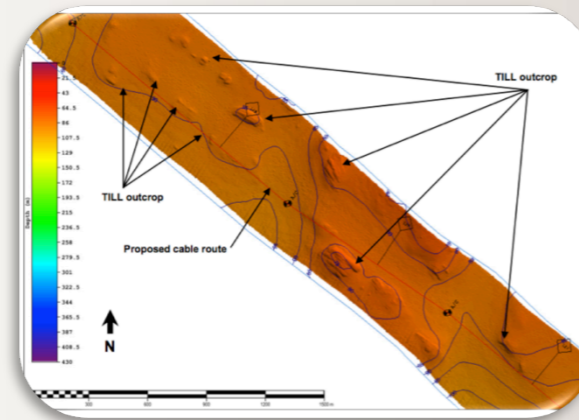


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Main activities in the project



paperworks



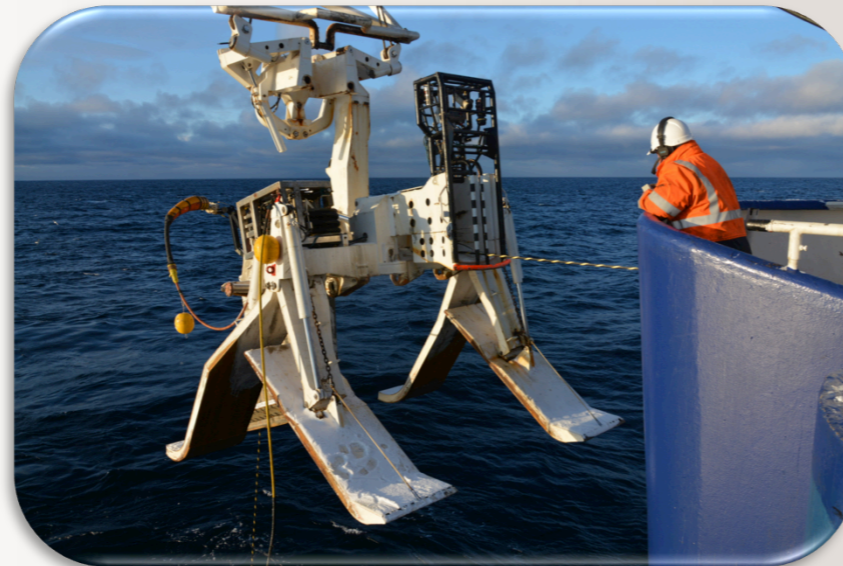
seabed survey



horizontal directional drilling



landings preparation



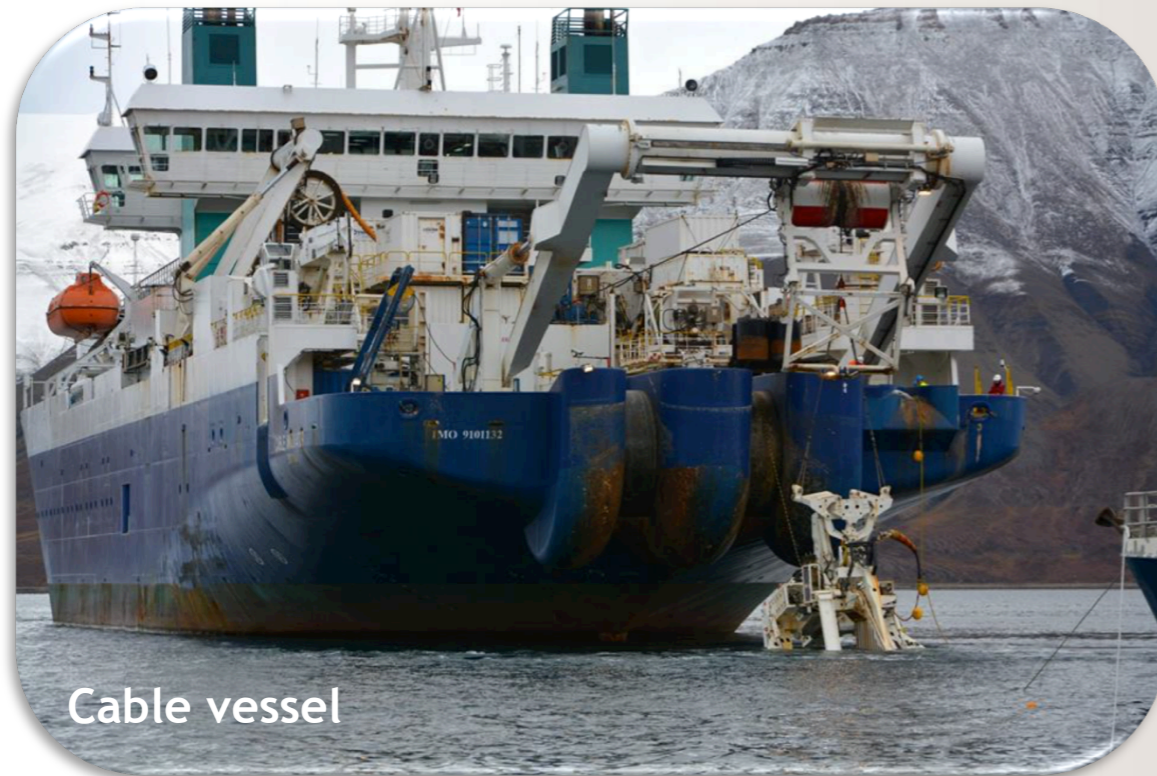
cable laying



ROV



Main vessels in the project



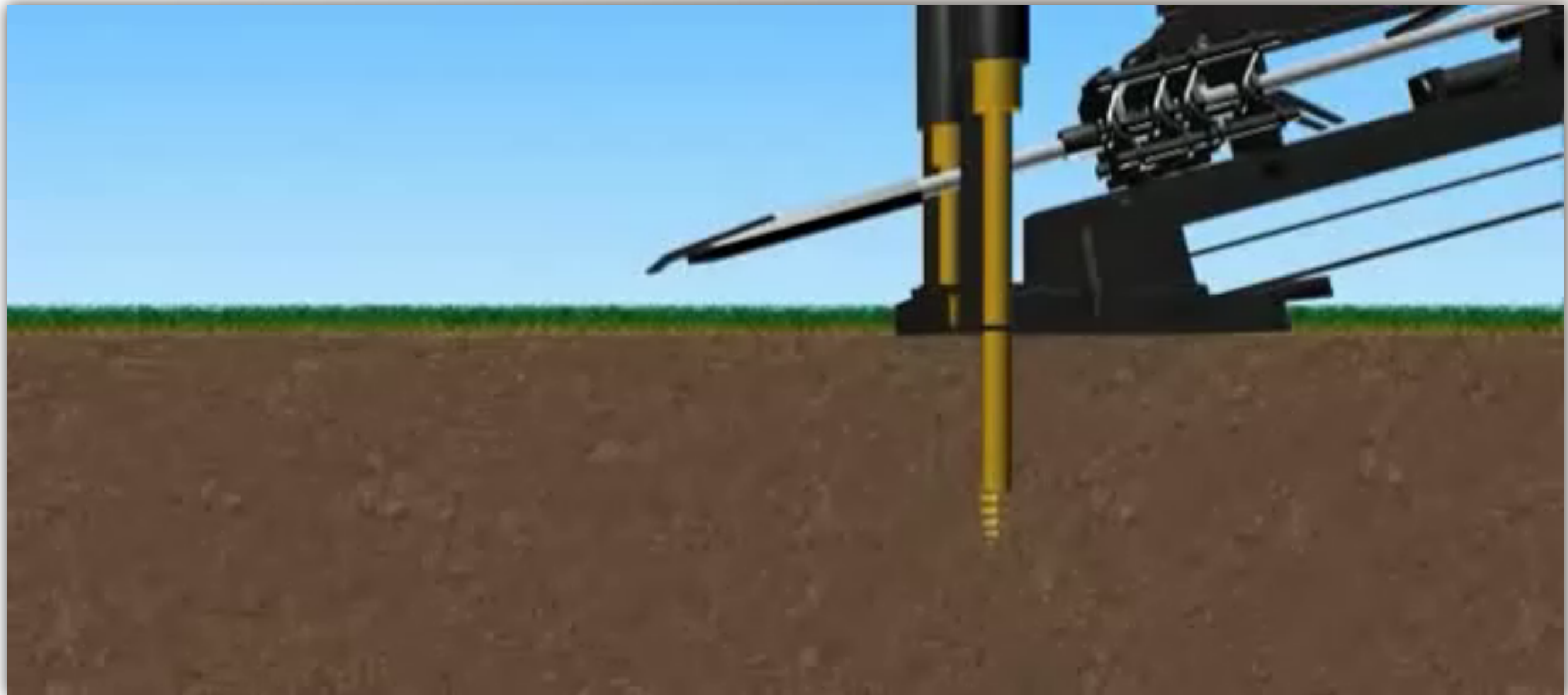
HDD supply vessel on its way to Svalbard ...



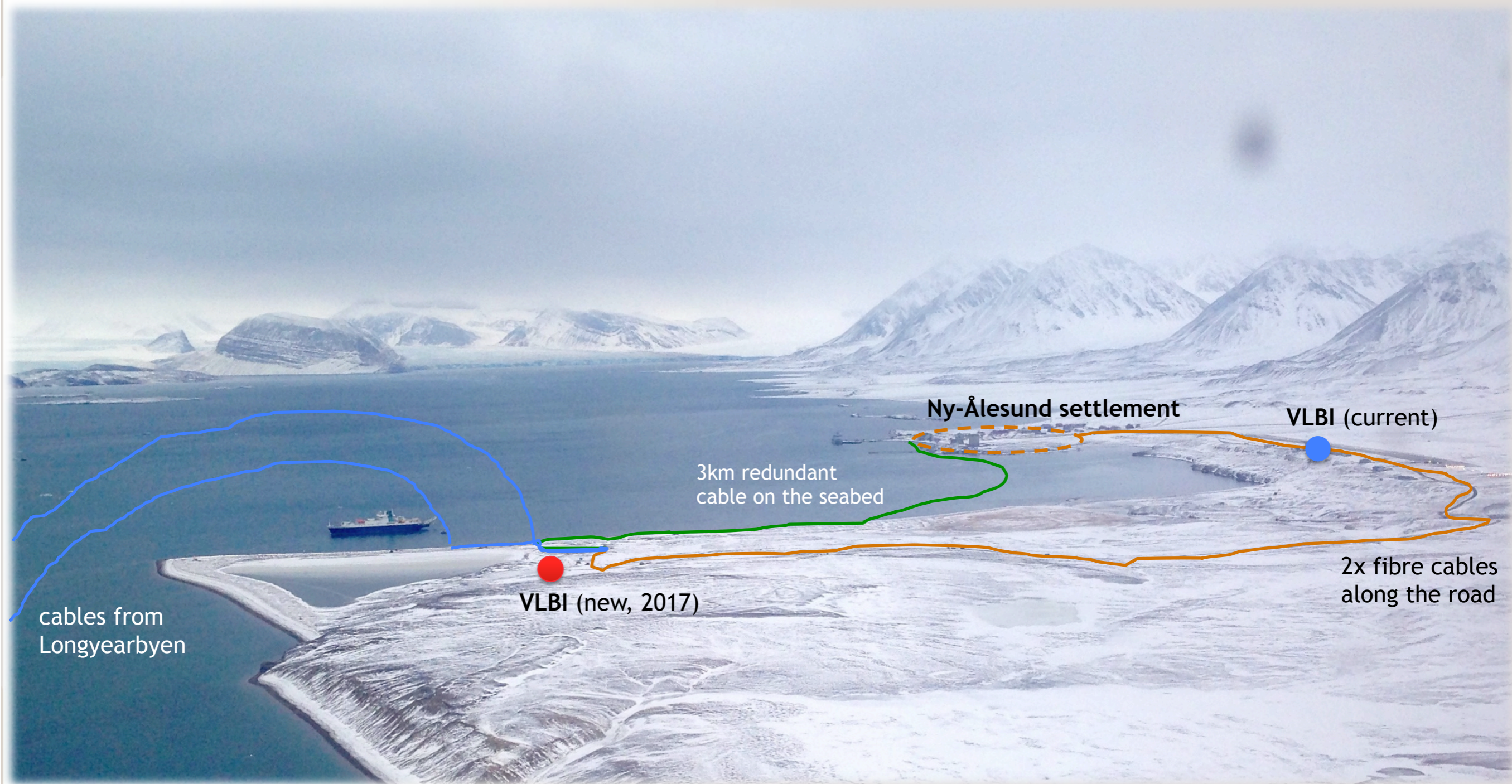
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Horizontal Directional Drilling (HDD)



Ny-Ålesund and Brandalpynten





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600 cans back
from sea ...



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Subsea cable enter the duct on 20m depth



TOW FORCE
Ft: 14
Cb: 6

TO HEIGHT
13
111

TRUCK ANGLE
0

LAYER DEPTH
Plough: 1.6
Disc: 0.0

SYSTEM PRESS
33

STAB HEIGHT
Front: 227
Rear: 228

DEPR. HEIGHT
22

SHARE PITCH
0

ROLL
0

PLOUGH SPEED (km/h)
0.0

TRAVEL (km)
0.000

LAY (km)
0.033

KP (km)
0.601

STEERING ANGLE (deg)
0

ENTRY ANGLE (deg)
11

SHARE PITCH
0

ROLL
0

PLOUGH SPEED (km/h)
0.0

TRAVEL (km)
0.000

LAY (km)
0.033

KP (km)
0.601

SYSTEM ALARMS

Depressor Down Proc. 96 (00)

1 of 1 (Total Alarms = 1)

Received: 5000000

BURIAL DEPTH (cm)
167

TOW FORCE (kN)
14

Time: 0 to 10

SYSTEM DATA

Jet: 0.00 deg

Jetter: 95.0 deg

Oil Volume: 50.0 %

Depressor Pressure: 1100.7 bar

Compass: 90.0 deg

Water Temperature: 25.2 deg

Driver Angle: 0.0 deg

Driver Latch 1 Proc: 95.0 %

Driver Latch 2 Proc: 95.0 %

Vehicle Pitch: -0.2 deg

CH08

TOPCONPro







12 NM

OFF

HDG 344.6 °

GYRO

SPD ▲ 0.50 kt BT

GPS 1

TRACKPILOT

OFF

CHL

SET

PD

NEXT

GPS 1

REF RADAR

POS

LAT 78:16.862 N

COG 344.2 °

LON 011:16.619 E

SOG 0.50 kt

ADJUST

188.2 m

GS

VIDEO OFF

SYNTH OFF

OFF CENT

CENTER

050

ACQ TGT

060



DEPTH





nice weather



not so nice weather ...



winch with 1000m of wire





The **UNINETT** team

Helge Stranden
(project manager)

Frode Storvik

Kurosh Bozorgebrahimi

Grete Duna



offloading spare cables
(2x 5km over to drums)



30 meter long blue whale close to our vessel



Celebration after "well done" work

Grete Duna



Helge Stranden

