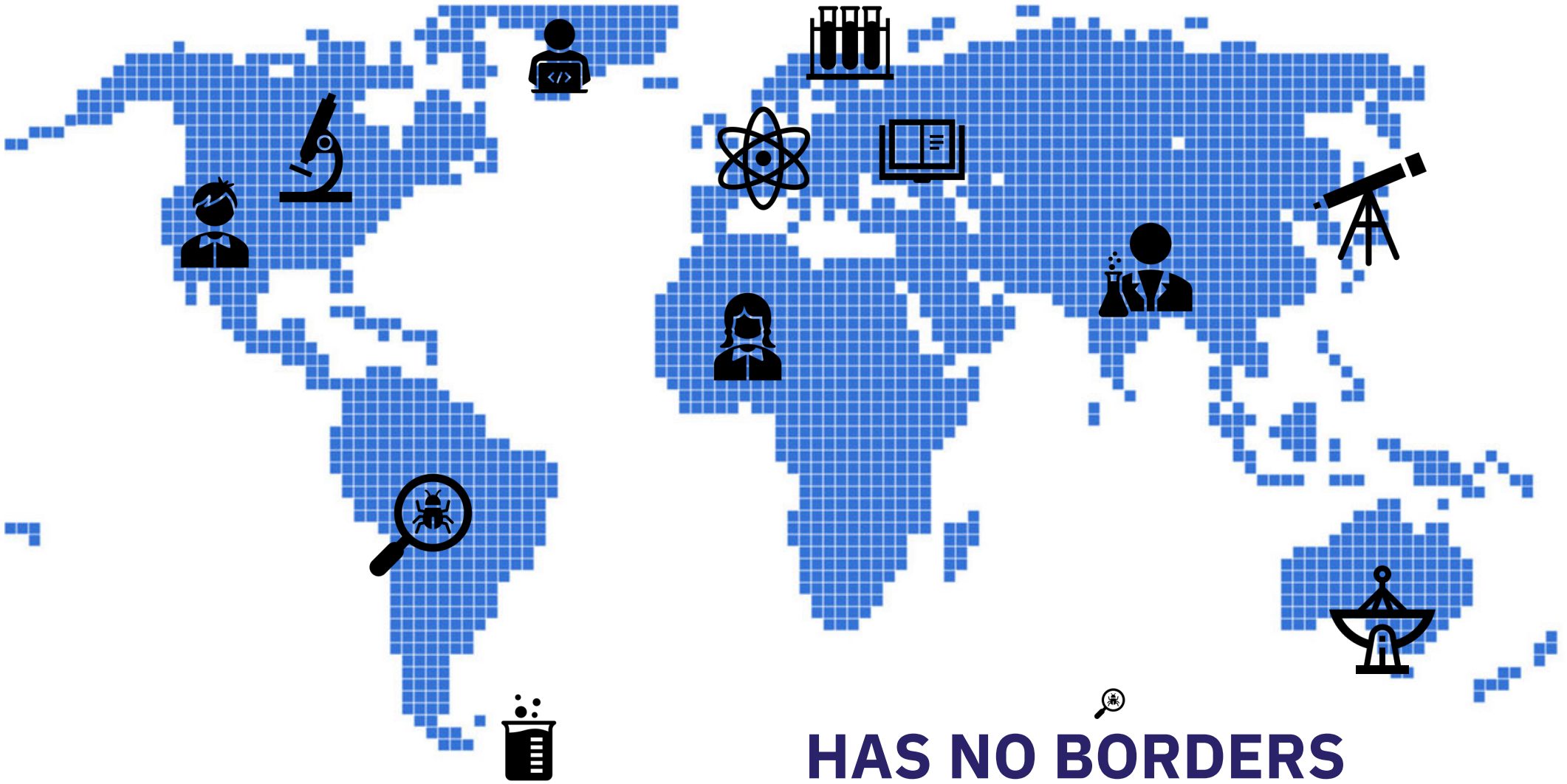
FIBRE CONNECTIVITY

A Nordic perspective and European Collaboration

NORDUnet
Nordic Gateway for Research & Education

Ieva Muraškienė, NORDUnet

RESEARCH AND EDUCATION



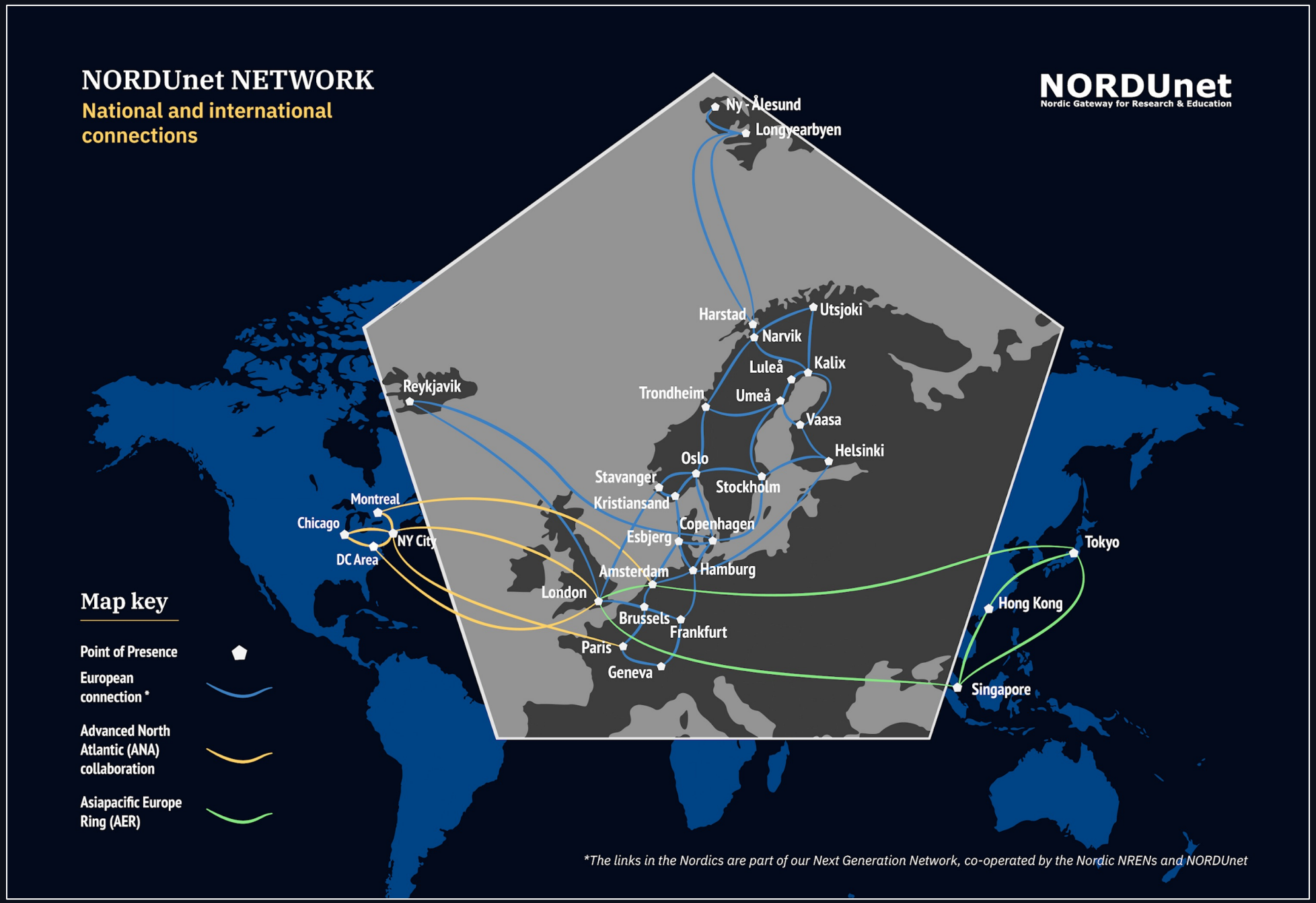
HAS NO BORDERS

ABOUT NORDUNET

NORDUnet NETWORK

National and international connections

NORDUnet
Nordic Gateway for Research & Education



*The links in the Nordics are part of our Next Generation Network, co-operated by the Nordic NRENs and NORDUnet

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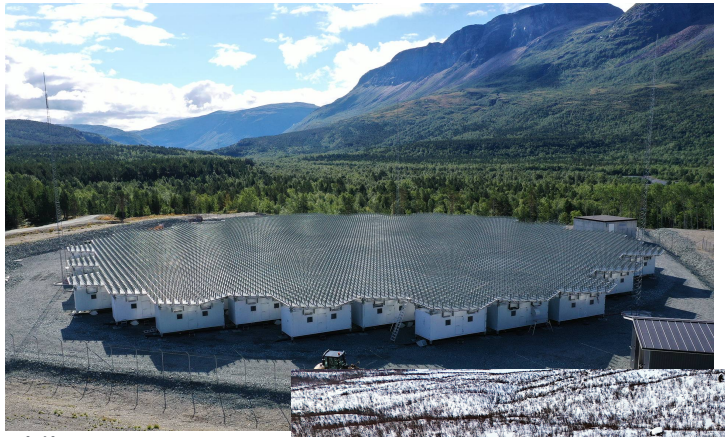
NORDIC COLLABORATION

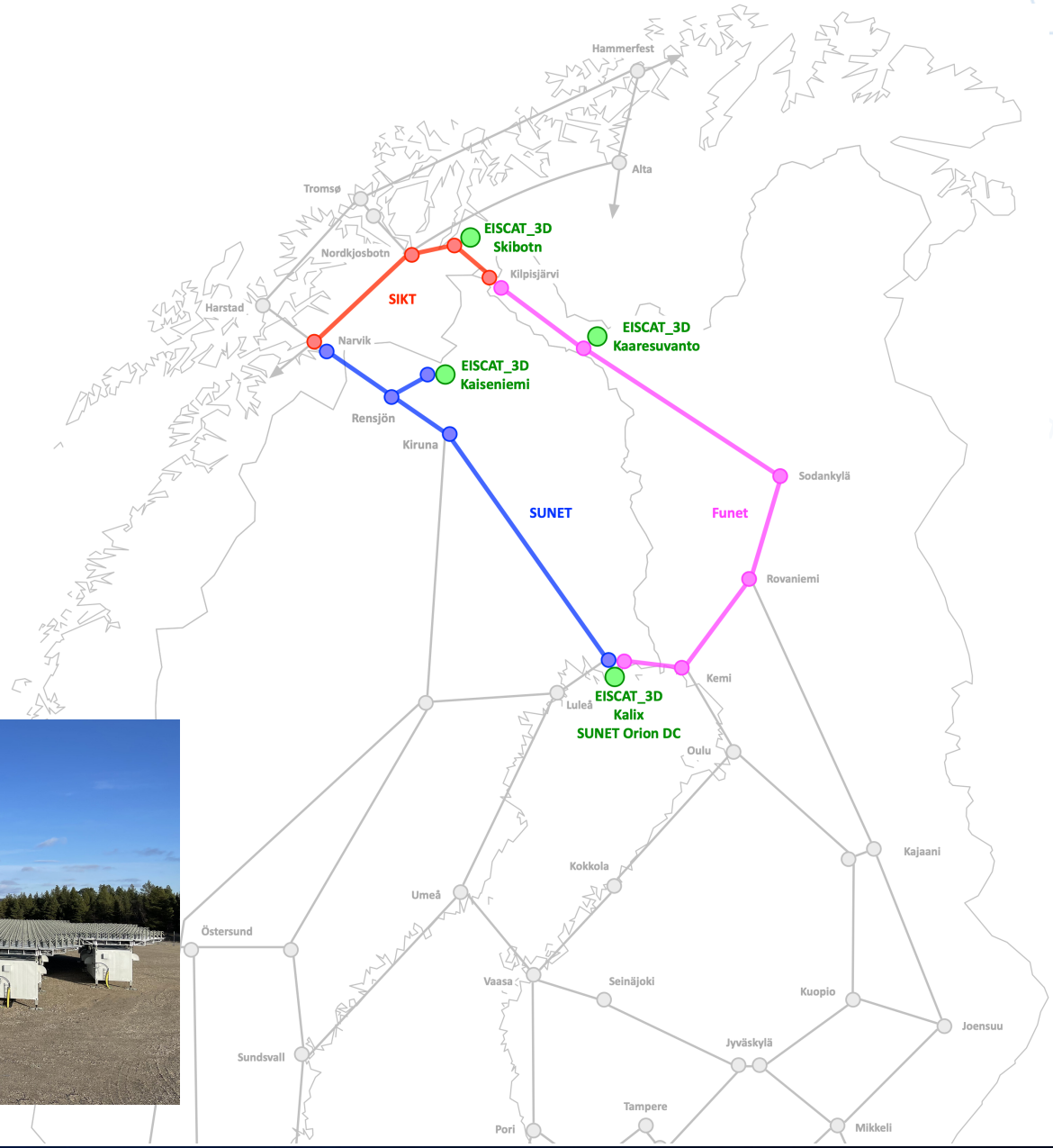
EISCAT_3D



Skibotn, Norway

Kaiseniemi, Sweden

Kaaresuvanto, Finland



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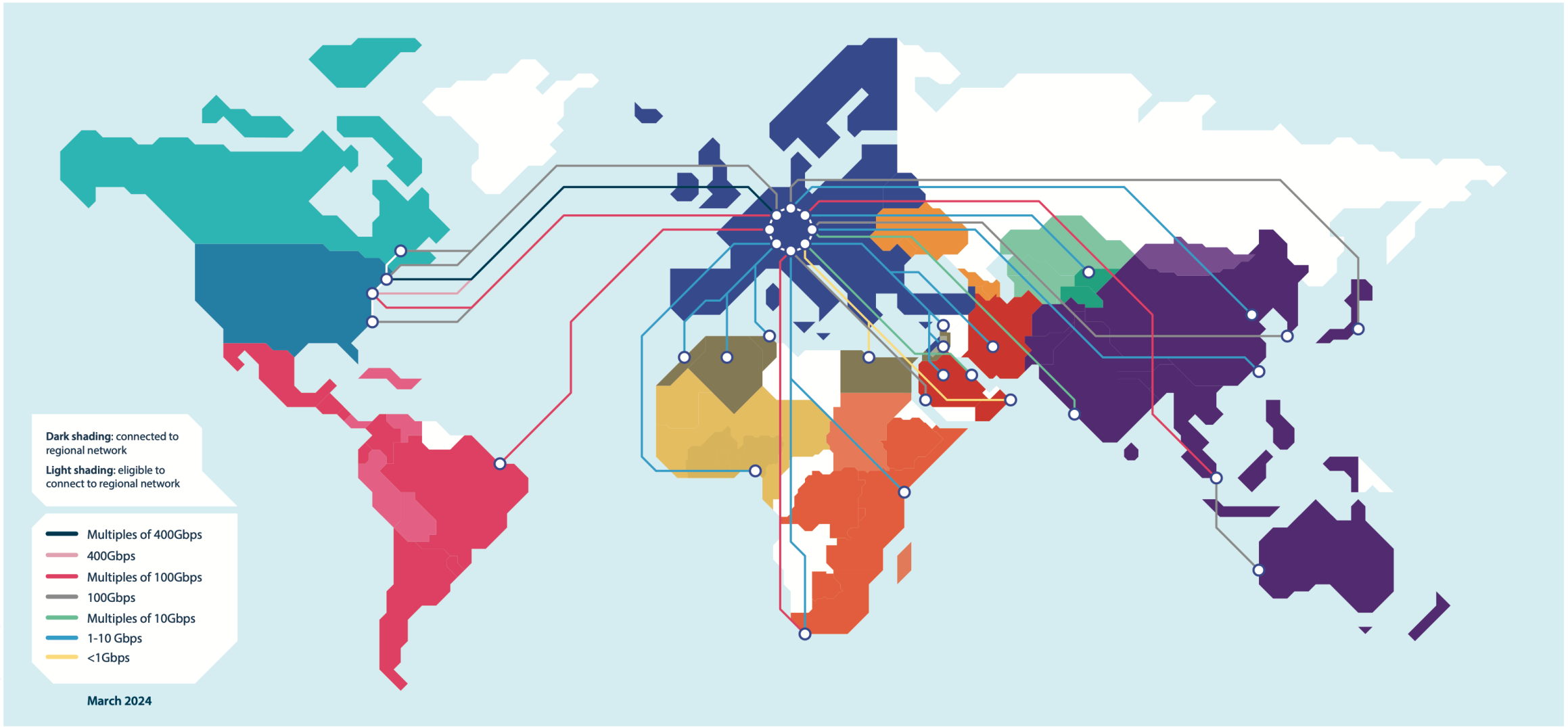
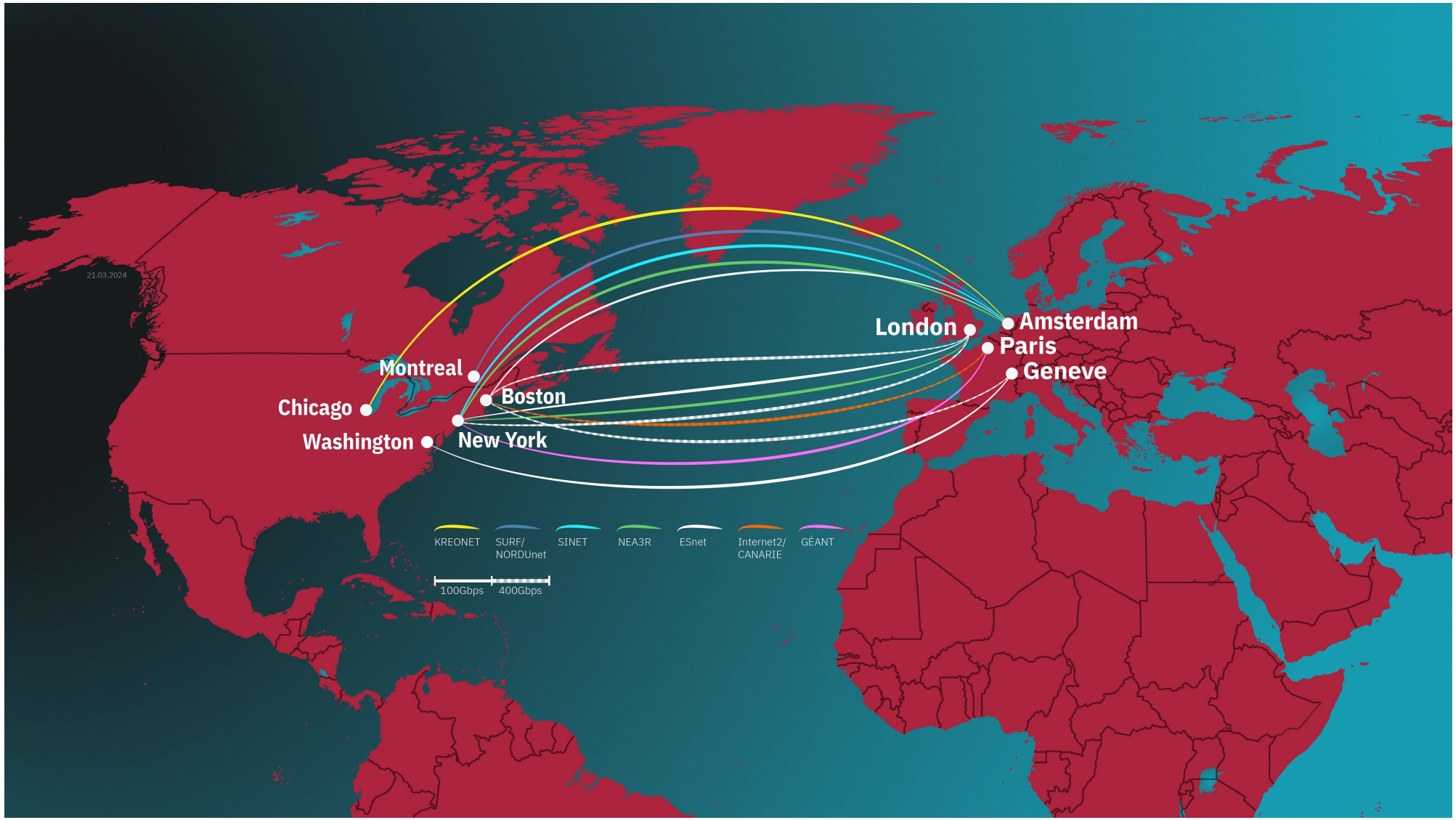
EUROPEAN COLLABORATION

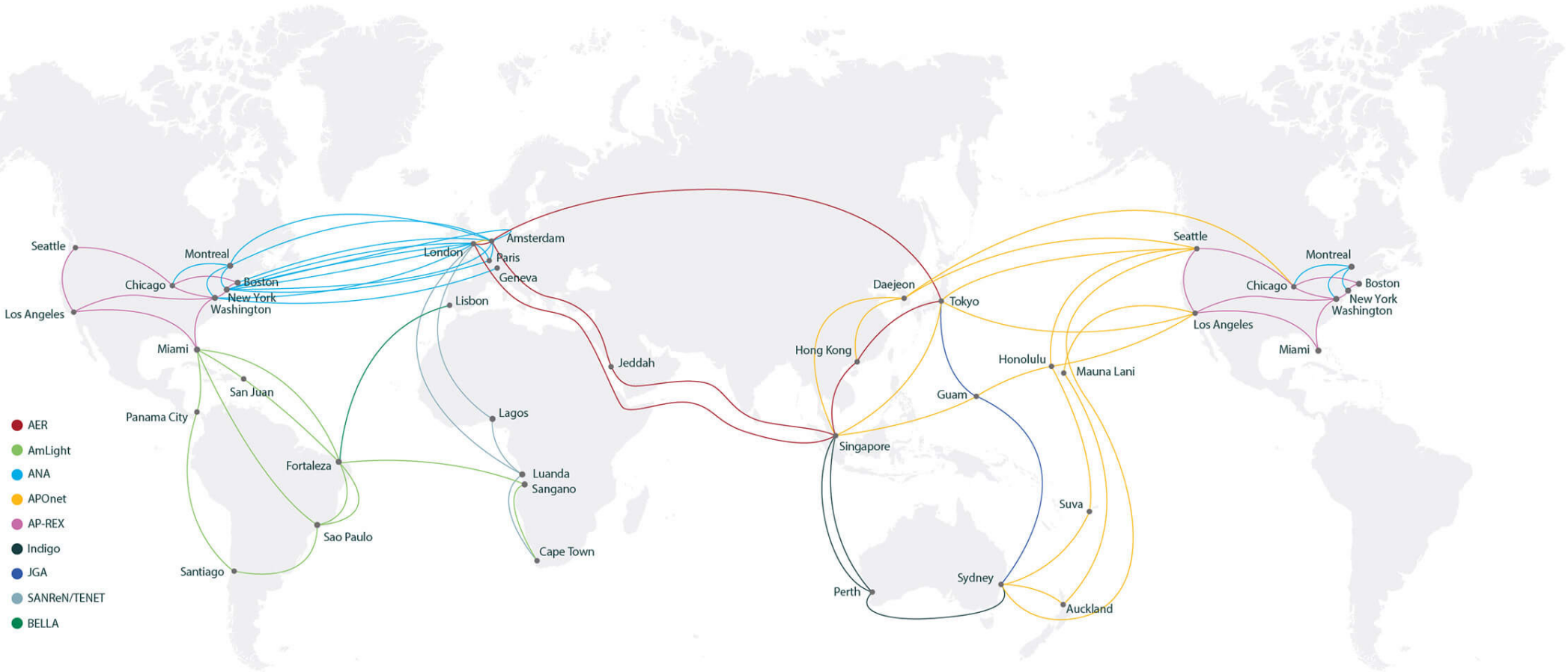
GÉANT NETWORK



ADVANCED NORTH ATLANTIC COLLABORATION

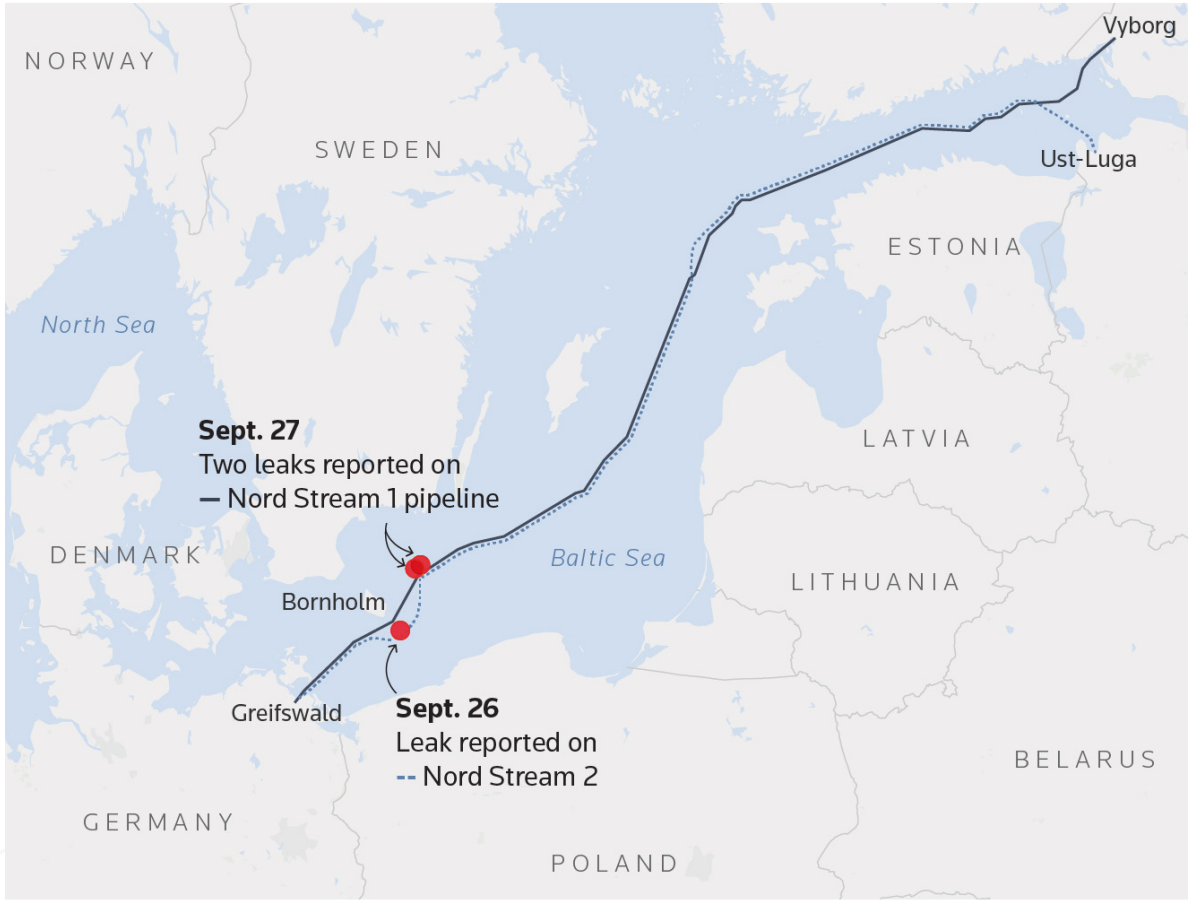


GLOBAL R&E NETWORK



SECURE CONNECTIVITY

Mystery leaks reported from Nord Stream gas pipelines



Sources: European Network of Transmission System Operators for Gas (ENTSOG); Danish and Swedish maritime authorities

Prasanta Kumar Dutta | Reuters, Sept. 27, 2022

Sabotage investigated as one possible Estonia-Sweden cable breakage cause

Damage has been reported to the Balticconnector gas pipeline and to Arelion's EE-S1 and Elisa's undersea data cables. Source: ERR News/ Datawrapper/ TeleGeography

SECURE CONNECTIVITY

CNN BUSINESS Markets Tech Media Calculators Videos

Red Sea cables have been damaged, disrupting internet traffic

By Hanna Ziady, CNN
3 minute read · Updated 11:25 AM EST, Mon March 4, 2024

BBC

Home News Sport Business Innovation Culture Travel Earth Video Live

Crucial Red Sea data cables cut, telecoms firm says

7 days ago
Share

By David Gritten, BBC News

The severed communications cables reportedly ran under the Red Sea from Saudi Arabia to Djibouti

Several undersea communications cables in the Red Sea have been cut, affecting 25% of data traffic flowing between Asia and Europe, a telecoms company and a US official say.

What We Know (And Don't) About Multiple Cable Faults in the Red Sea

INTERNET NETWORK

By Tim Stronge Mar 5, 2024

Share

We recently wrote about how Houthi attacks in the Red Sea are causing headaches for the undersea cable industry.

Since then, the industry has suffered three cable faults in the region.

What do we know?

On Saturday, February 24, three different cables were reported to have suffered faults:

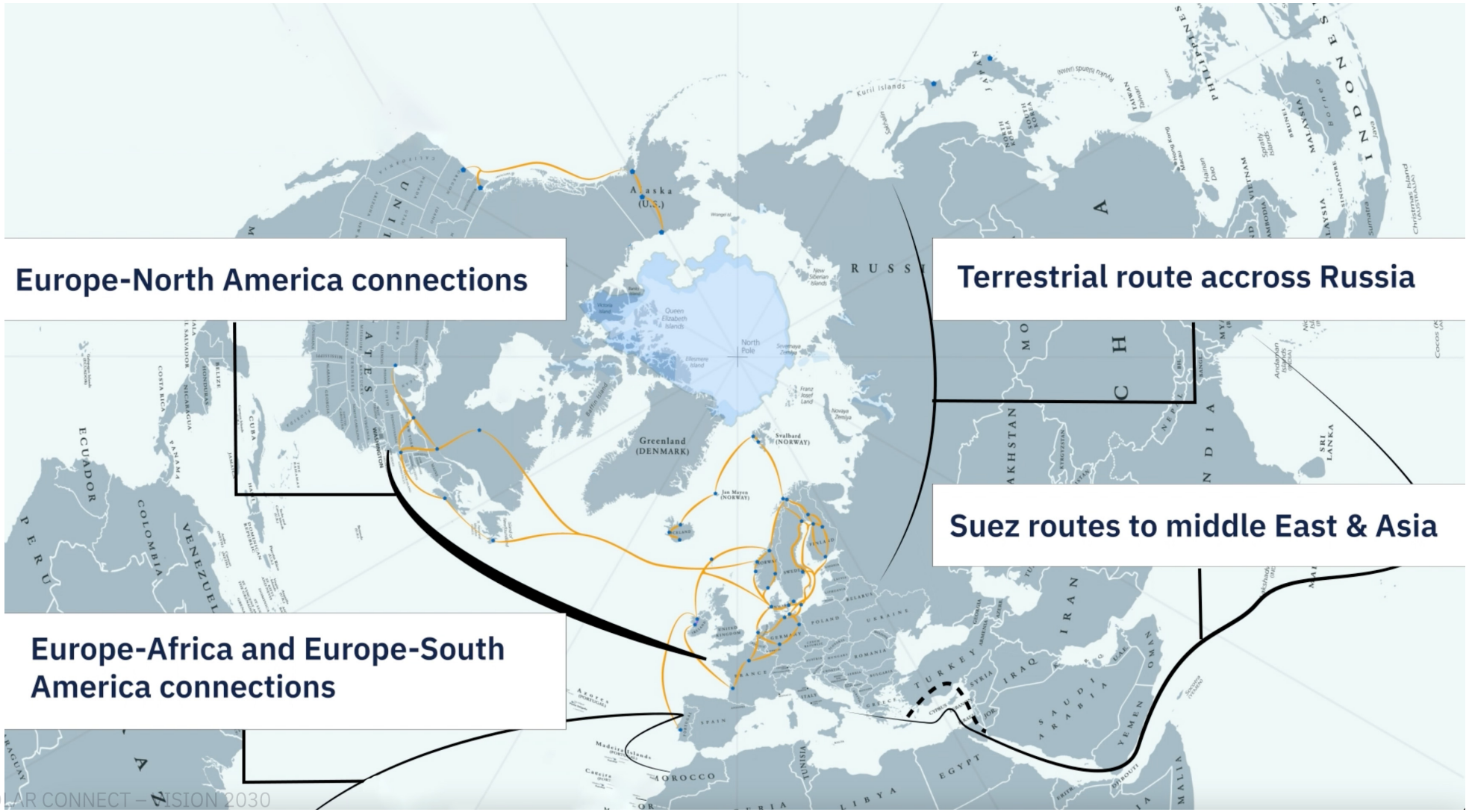
- Asia Africa Europe-1 (AAE-1)
- Europe India Gateway (EIG)
- SEACOM/Tata TGN-Eurasia

These international systems connect far-apart states like South Africa, the United Kingdom, and China.

STABLE AND SECURE CONNECTIVITY NEEDS REDUNDANCY

- Multiple connections provide redundancy and resilience.
- Geographical redundancy is key.
- Geopolitical situation plays an important role.

CONNECTIVITY TODAY



90% OF DIRECT EUROPE – ASIA TRAFFIC TRAVERSES A VERY NARROW AREA

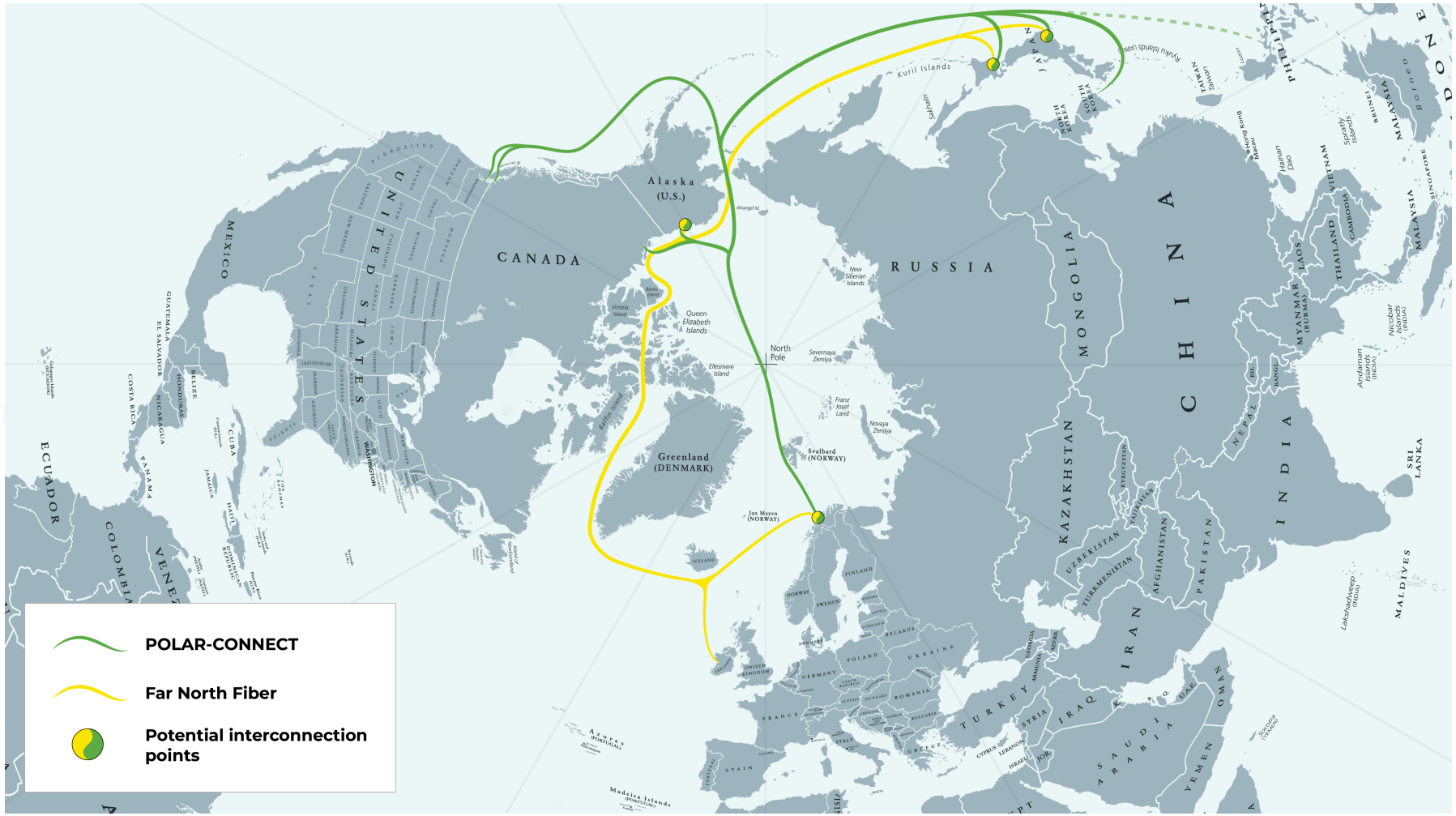
Submarine Cable Map
The Submarine Cable Map is a free and regularly updated resource from TeleGeography.

Polar Connect
Vision 2030

Polar Connect

Far North Fiber

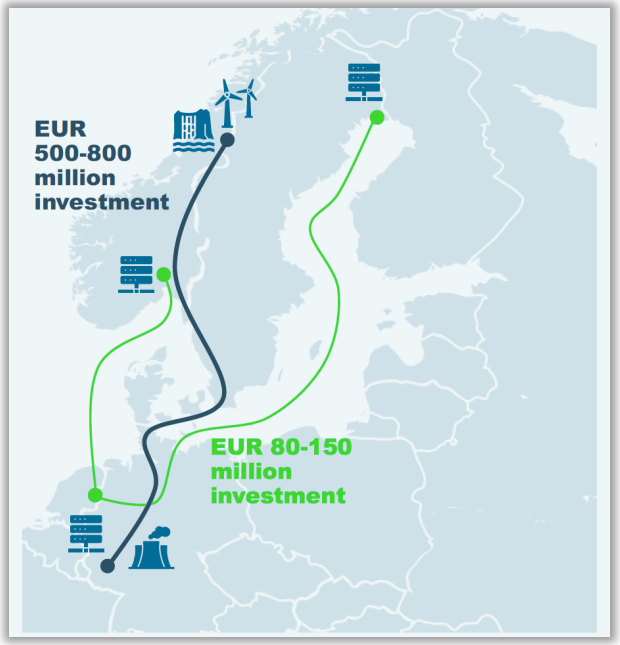
ARCTIC CONNECTIVITY



- Complementary to existing Suez Area connections
- Northern European fast track to North America - Asia
- Strengthens and supports digital sovereignty of the involved regions
- Geopolitical considerations

GREEN INDUSTRY IN THE FAR NORTH

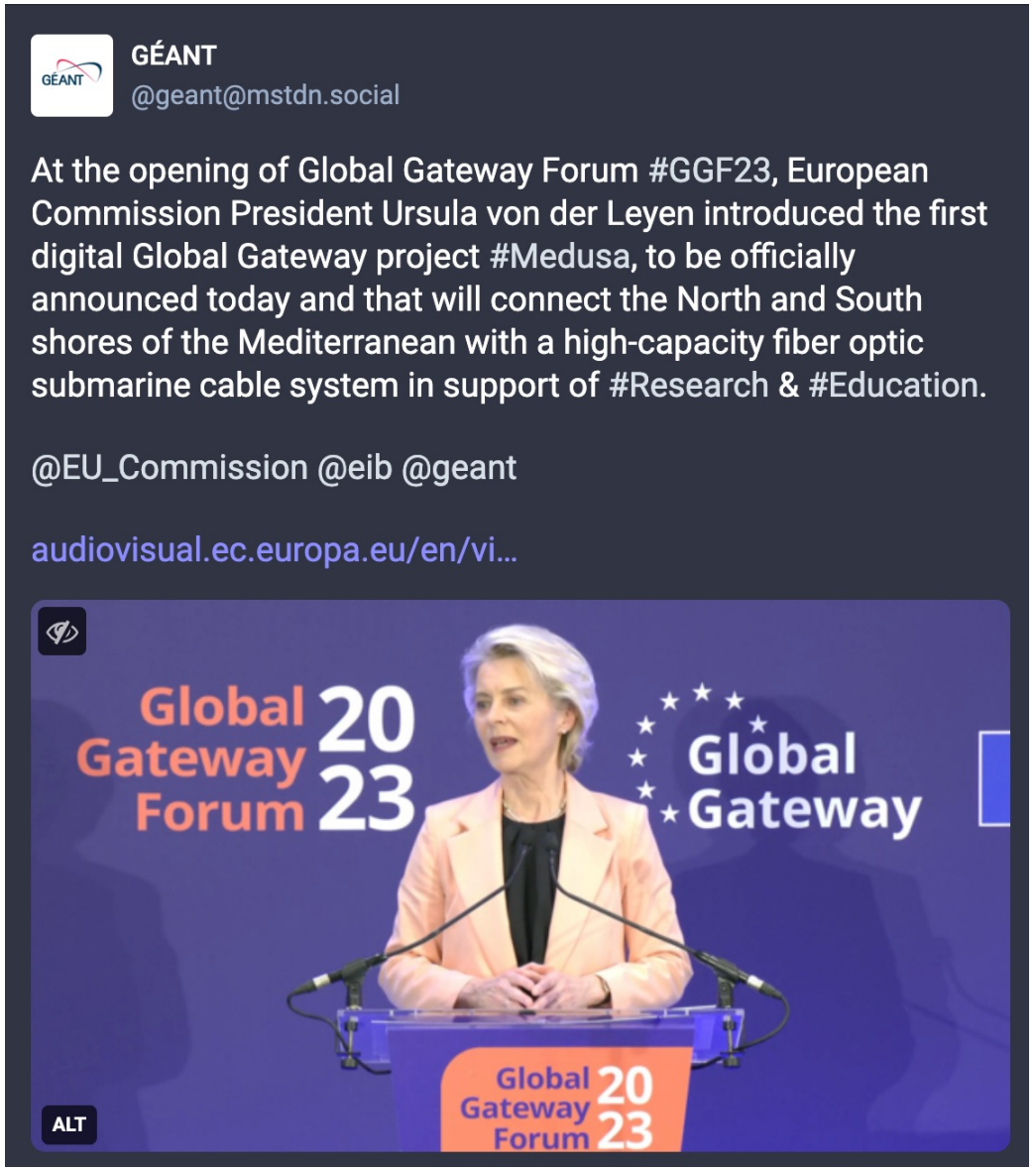
LOCAL EXCESS ENERGY – DUE TO LACK OF POWER INFRASTRUCTURE



MORE EFFICIENT AND CHEAPER TO MOVE DATA THAN ENERGY

FREE COOLING AND REUSE OF EXCESSIVE HEAT

HIGH RELEVANCE FOR THE EU



21-EU-DIG-NORTHEN EU GATEWAYS PROJECT

Produce a high–level plan for new submarine and terrestrial cable systems inter-connecting EU member states, overseas territories and third countries with whom the EU has strong ties and interests.

COORDINATING VISION 2030

ARCTIC ROUTE OPTIONS

SENSING CABLE TECHNOLOGIES

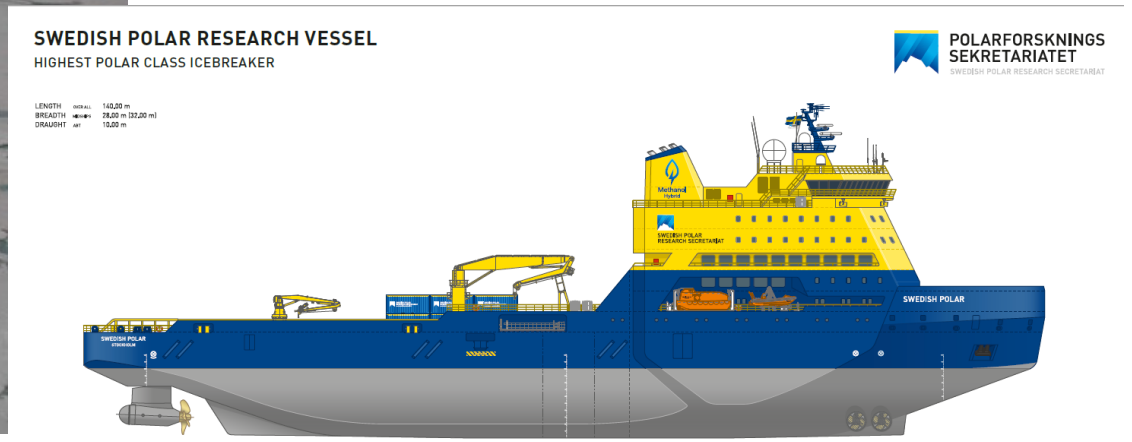
CSC

SUNET

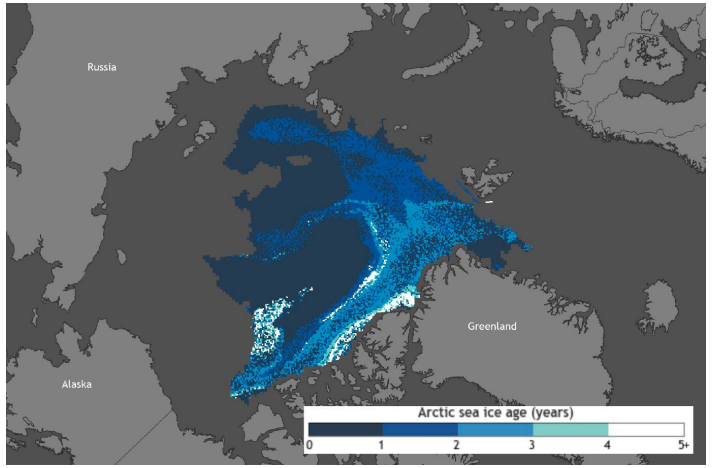
DeiC

Co-funded by the European Union

FEASIBILITY STUDY OF THE ARCTIC ROUTE

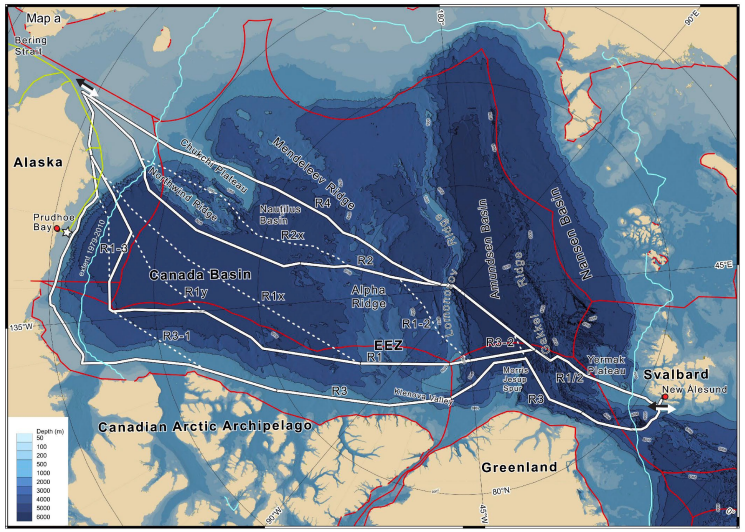


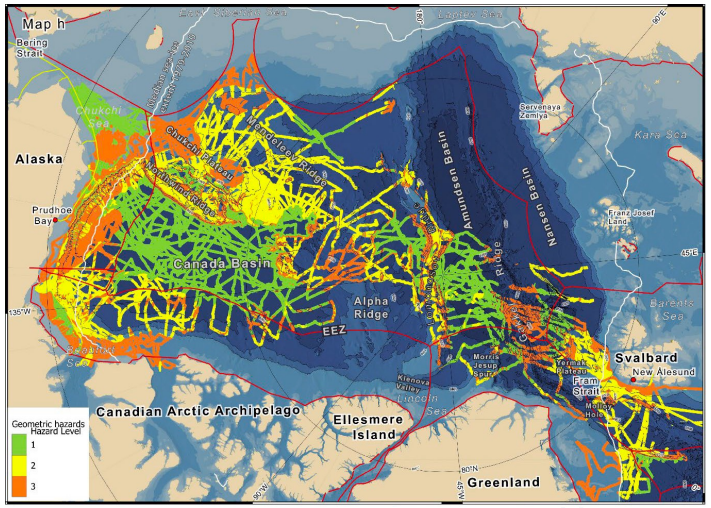
POTENTIAL ROUTES FOR THE CABLE-LAYING PROJECT



Sea ice – The lighter, the older, the thicker
-> The more challenging.

Explored routes
-> 2nd from to top seems best





Sea floor topography – Higher the number, the rougher, the more unstable.
-> The higher the risks.

SWEDISH POLAR RESEARCH SECRETARIAT
POLARFORSKNINGSSEKRETARIATET

Stockholm University

Co-funded by the European Union

SMART SENSOR FOR ENVIRONMETAL SCIENCE AND WEATHER FORECASTING

Today

Polar-tech CTD

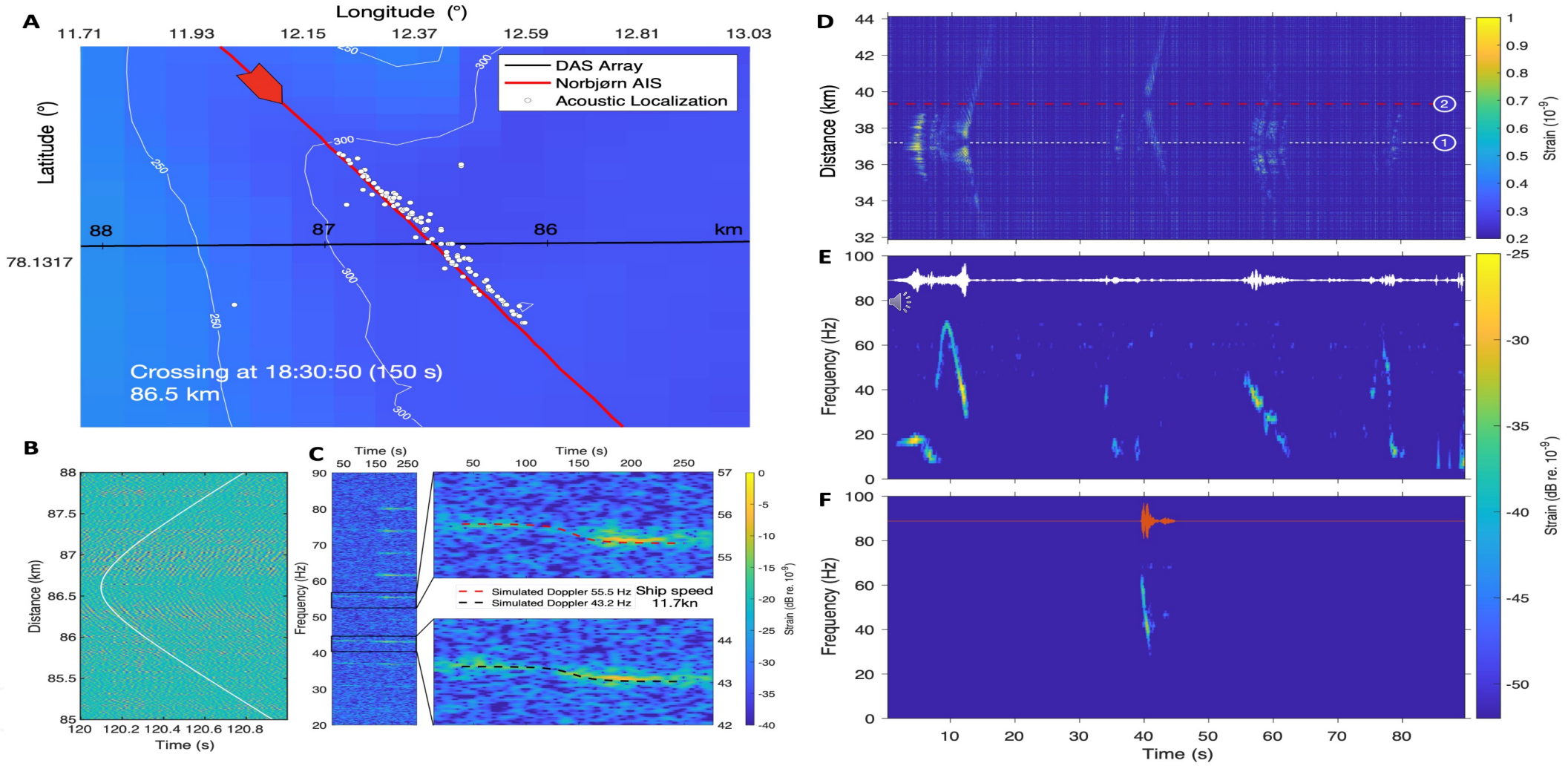
ARGO floats

Future

SMART cable sensor

- **Climate** – sea level change and ocean energy content
- **Oceanography** – Sea bottom temperature and currents
- **Seismology** – Earthquakes and underwater volcanoes and tsunamis
- **Biology** – Tracking large mammals and also being able to listen to them
- **Positioning** – Using the cable to support timing and location for Autonomous systems
- **Security** – With SMART cables you can enable awareness if someone is close to the cable

SENSING WHALES, STORMS, SHIPS AND EARTHQUAKES - ARCTIC FIBRE-OPTIC CABLE



Slide thanks to prof. Martin Landrø, NTNU

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WORKSHOP
SCIENCE OPPORTUNITIES ON POLAR CONNECT

Stockholm University

UNIVERSITY OF GOTHENBURG

UPPSALA UNIVERSITET

02/05 2024

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NEXT STEPS

22-EU-DIG-NPF NORTH POLE FIBER PROJECT

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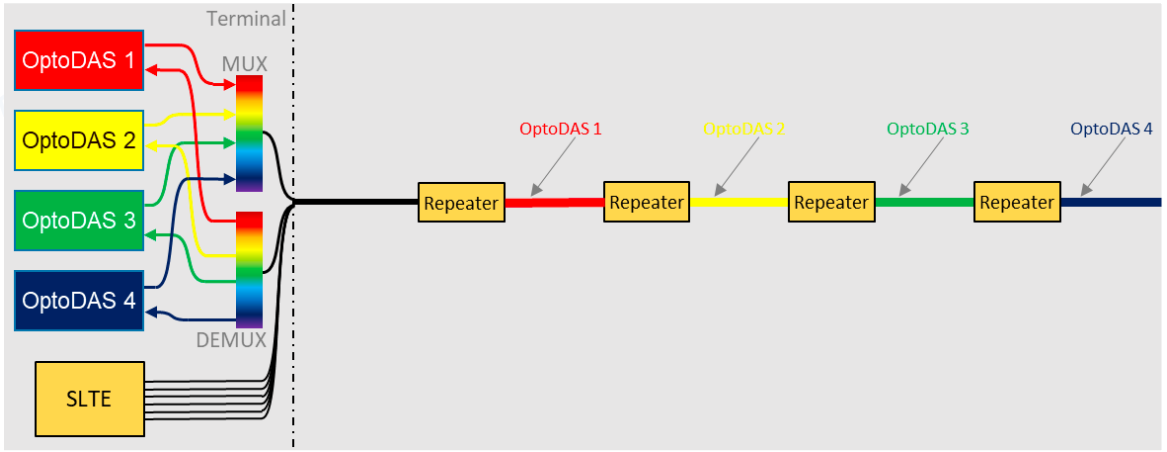
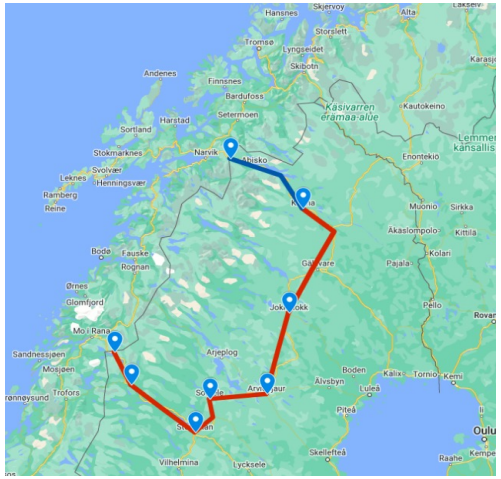
SWEDISH POLAR
RESEARCH SECRETARIAT
POLARFORSKNINGSSEKRETARIATET

SUNET





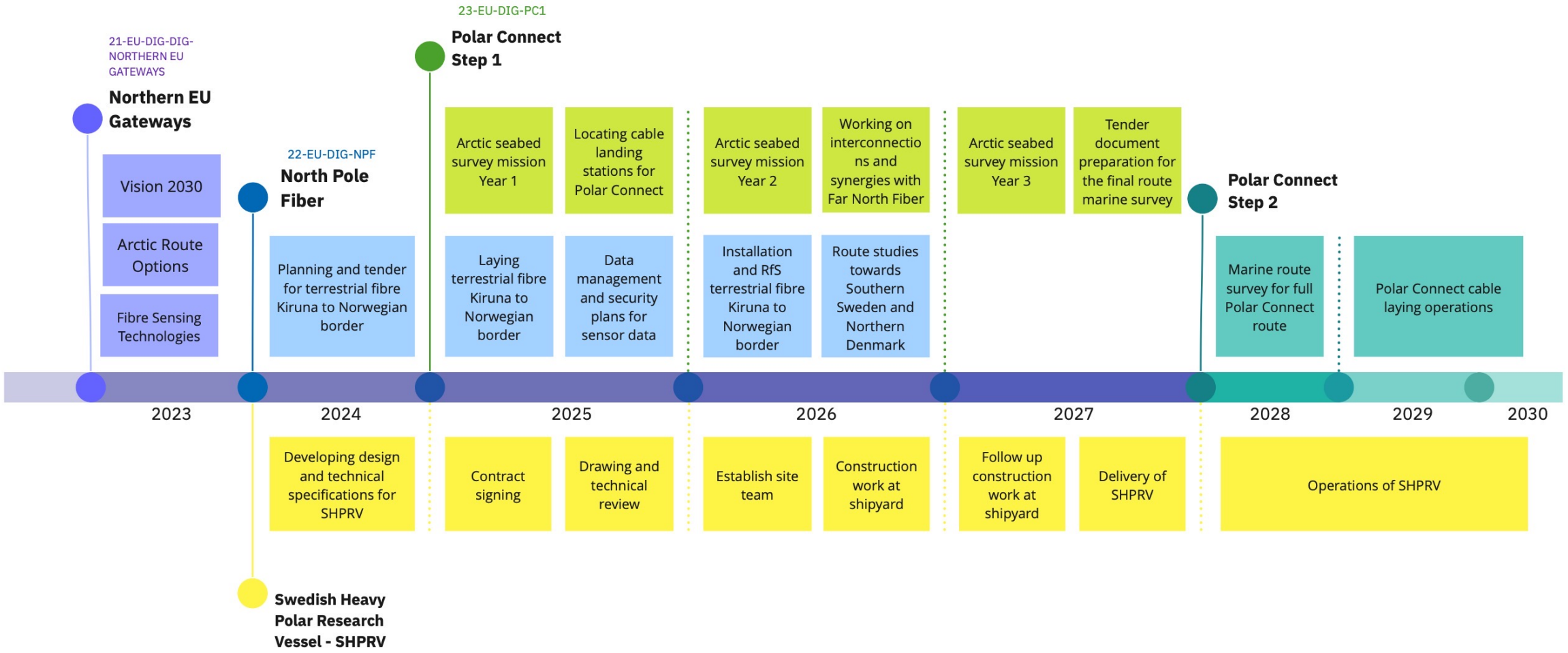
Co-funded by
the European Union

THE NEW POLAR RESEARCH VESSEL

- Optimized for research
- Year-round use, thus available for research in both poles during all seasons of the year
- Climate-neutral operation
- Powerful propulsion and high ice class (PC2+) enable ice breaking in difficult ice conditions
- Modular design, can be adapted for different tasks, including cable repair
- Adapted for transport and various operations in open water (DP-2)

SWEDISH POLAR
RESEARCH SECRETARIAT
POLARFORSKNINGSSEKRETARIATET

WHEN CAN WE GO?



VISION 2030 FOR ARCTIC CONNECTIVITY

Vision 2030 White Paper

NORDUnet
Nordic Gateway for Research & Education

THANK YOU FOR YOUR ATTENTION

For more information

info@polarconnect.net