



# Swedish Polar Research Secretariat

Promotes the conditions for and coordinates Swedish research and development in the polar regions

Katarina Gårdfeldt, Professor, Director General

International Round Table "Politics, economics and security of the modern Arctic", Moscow, Russia, 25th November 2021



**SWEDISH POLAR  
RESEARCH SECRETARIAT**  
POLARFORSKNINGSSEKRETARIATET



## The Secretariat's mission

- » Promote and coordinate Swedish polar research
- » Follow and plan research and development
- » Organise and lead research expeditions
- » Create favourable conditions for polar research without fieldwork
- » International negotiations and partnerships
- » Represent Sweden in polar matters
- » Issues permits according to the Swedish Antarctic Ordinance (2006:1111)

# Infrastructure

---

The research platforms are continuously developed and adapted to meet the needs of scientists



Abisko Scientific  
Research Station



Wasa and Svea  
in Antarctica



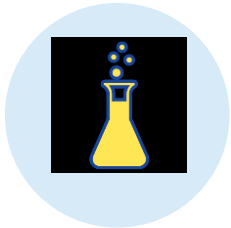
The icebreaker Oden

# Icebreaker Oden

- » One of the world's most powerful icebreakers
- » Four engines, 24,500 hp
- » Versatile scientific equipment; research containers, scientific laboratories, deep ocean winches
- » Researchers are able to use the vessel based on their needs
- » Has been used for marine geology, oceanography, ecological research and atmospheric research in the Arctic and Antarctica
- » Owned by the Swedish Maritime Administration, expeditions are organised by us



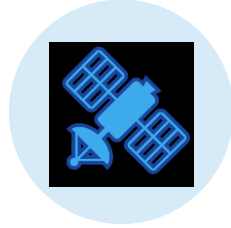
# Partnerships



The Research Council



Swedish Maritime Administration



Swedish National Space Agency



Swedish Meteorological and Hydrological Institute



Swedish Agency for Marine and Water Management



Geological Survey of Sweden



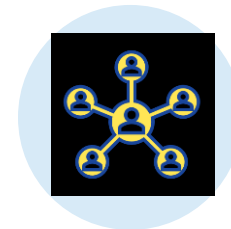
Universities: nationally and internationally



EU



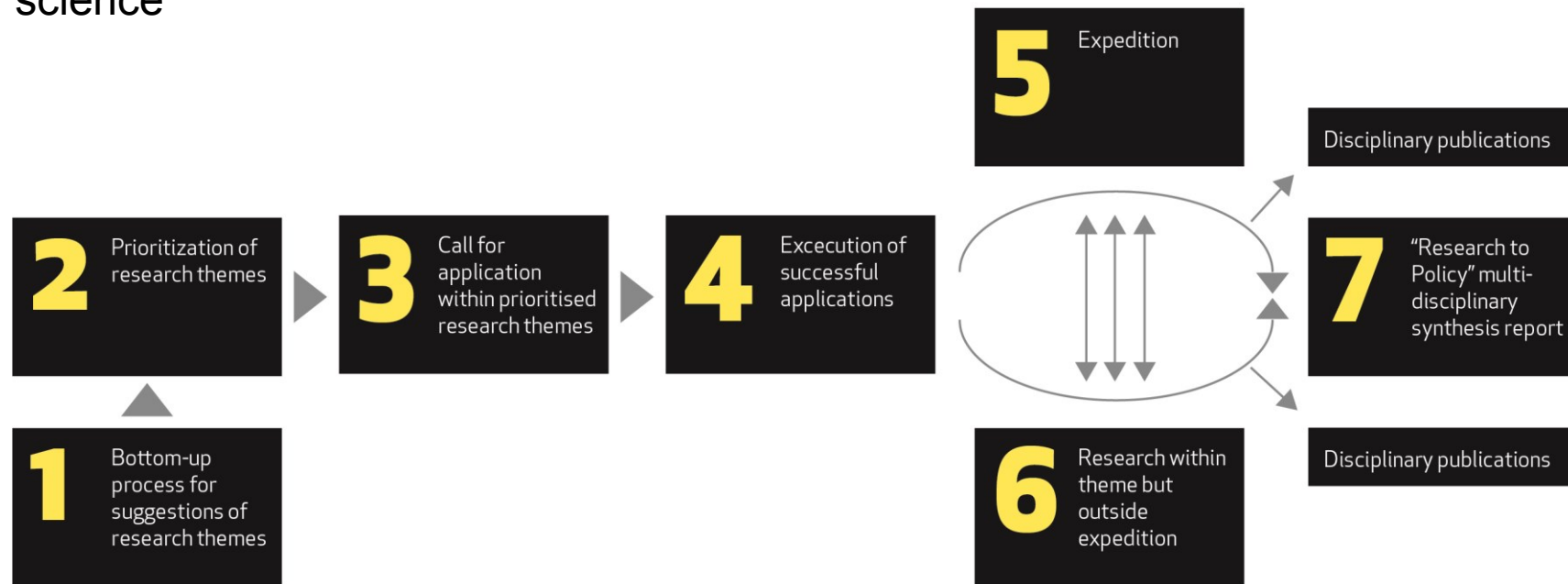
National and international organisations



Global networks of researchers

# Polar Research Process

– invitation to an innovative, multi-disciplinary, global coordination of polar science



## Questions and answers regarding the Polar Research Process

### What is the Polar Research Process?

The Polar Research Process (PRP) is a regular recurring process within the Swedish Polar Research Secretariat's (SPRS) [support at the programme level](#). The purpose of the support at the programme level is for SPRS to be able to plan and offer participation in larger and more complex field operations, based on the interests of the Swedish research community.

The PRP means that field operations are tied to large-scale research themes that are developed by researchers together and in collaboration with the SPRS.

# Statistics from the open call 2020

**7** Large transdisciplinary/multidisciplinary Themes. Main applicants from Swedish universities in collaboration with international partners.

**115** applicants, 102 unique

**29** international departments

**9** different countries represented: Denmark, Finland, Italy, Netherlands, Norway, Russia, Great Britain, US and Sweden

---

Polar  
Research  
Process:  
Open for  
partners!

## Tentative timetable for IB Oden 2021 – 2024

Year	Expedition	Geographical area	Partners	Acronym
2021	Synoptic Arctic Survey	Arctic Ocean	SPRS, ARICE	SAS 2021
2022	Arctic Ocean Paleoceanography	Lomonosov Ridge	SPRS, ECORD	ArcOP 2022
2023	Atmospheric rivers and the onset of sea-ice melt	Arctic Ocean	SPRS, open to partners	ARTofMELT, Polar Research Process
2023	Eurasian-Arctic shelf-basin interactions of climate-cryosphere-carbon-contaminants	Eurasian Arctic Arktis och transpolära driften	SPRS, open to partners	EURASIAN ARCTIC C4, Polar Research Process
2024	North Greenland Earth-Ocean-Ecosystem Observatory	Northern Greenland	SPRS, open to partners	GEOEO, Polar Research Process

## Upcoming calls

- [ARTofMELT – expedition to the Arctic Ocean in 2023](#)
- [EURASIAN ARCTIC C4 – Expedition along Eurasian-Arctic slopes and the Transpolar Drift in 2023](#)
- [GEOEO – expedition to north of Greenland in 2024](#)





## Synoptic Arctic Survey 2021

August-September 2021, the Swedish Polar Research Secretariat conducted the Synoptic Arctic Survey (SAS) expedition in the Arctic Ocean with the Swedish icebreaker Oden.

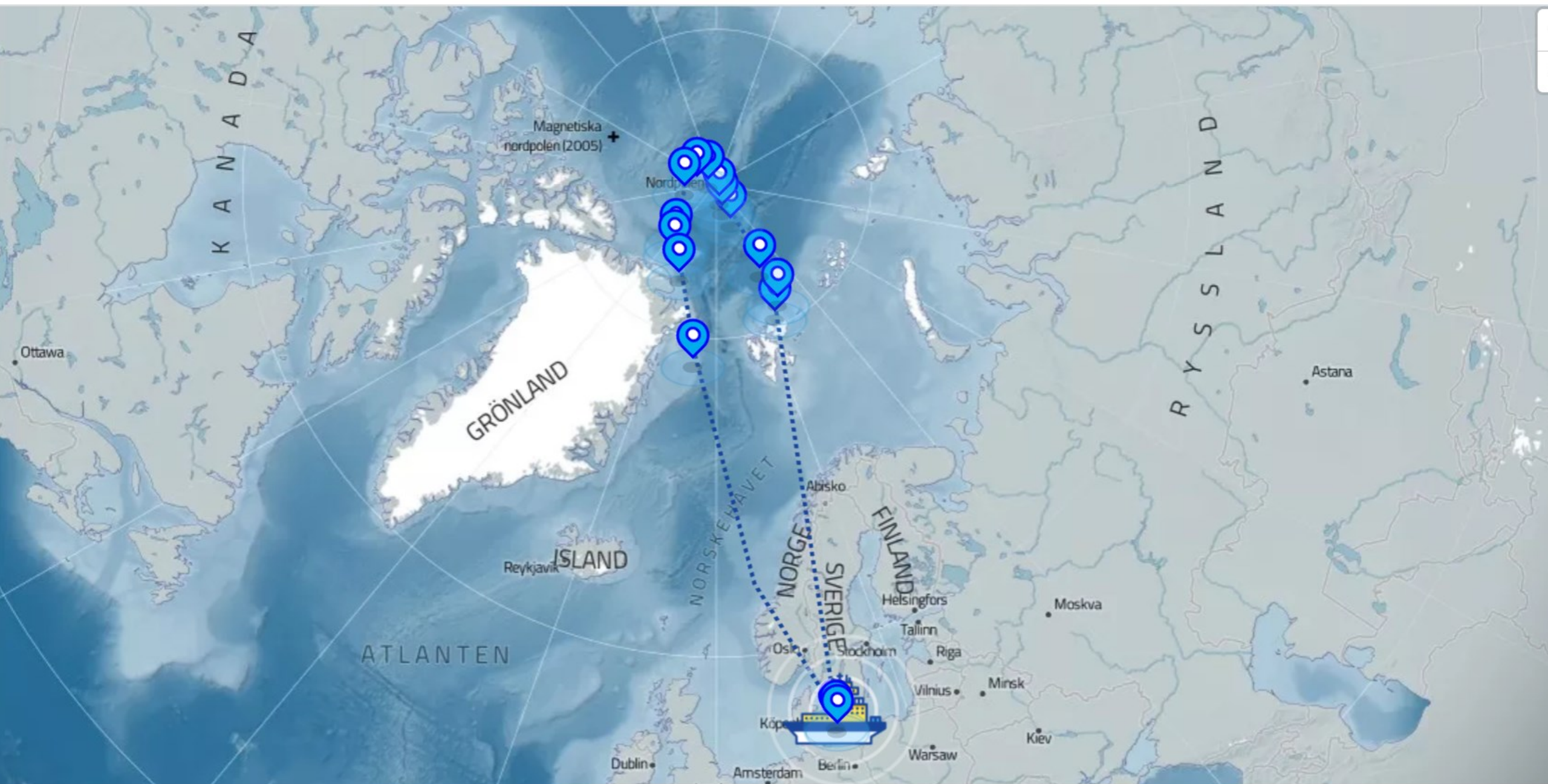
The expedition was part of an international expedition where Oden is one of twelve research vessels that will map the Arctic Ocean in 2020, 2021 and 2022.

**The expedition is organized around three major research areas**

- Physical drivers of importance to the ecosystem and carbon cycle
- The ecosystem response
- The carbon cycle and ocean acidification



Isbrytaren Oden under en expedition till Petermannglaciären 2015. Foto: Ida Kinner.



# Synoptic Arctic Survey 2021

---

Scope of Work

Version 2021-06-21

<b>7.</b>	<b>Work Packages.....</b>	<b>42</b>
7.1	WP1: Mesopelagic fish (EFICA) .....	42
7.2	WP2: Microbial metabolism (MIME) .....	47
7.3	WP3: Microbial interactions (ProMis) .....	51
7.4	WP4: Polar viruses (VIRUS).....	54
7.5	WP5: Arctic prokaryotes (ASAP) .....	57
7.6	WP6: Picophytoplankton (PICO) .....	62
7.7	WP7: Phytoplankton and ice algae (PHYTO).....	67
7.8	WP8: Zooplankton (ZOO) .....	70
7.9	WP9: Planktonic foraminifera (FORAM) .....	73
7.10	Carbon and tracer chemistry (CATCHEM).....	80
7.11	WP11: Ventilation and anthropogenic carbon (VACAO) .....	86
7.12	WP12: Trace gases cycling (TRACE).....	90
7.13	WP13: Trace gas biogeochemistry (TGB).....	98
7.14	WP14: Midwater acoustics (MWA).....	100
7.15	WP15: Deep water hydrography (WAOW) .....	103
7.16	WP16: Arctic climate across scales (ACAS) .....	105
7.17	WP17: Teachers Program (TEACH).....	112
7.18	Opportunistic sampling.....	114



# IB Oden at the North Pole 16 august 2021 kl 20.46 UTC



2021-12-01







Polarforskningssekretariatet  
2021-12-01



# Arctic Ocean Paleoceanography, ArcOP 2022

» **The European Consortium for Ocean Research Drilling (ECORD), the Swedish Polar Research Secretariat (SPRS) and Arctic Marine Solutions (AMS) will jointly conduct an expedition of the International Ocean Discovery Program (IODP), focused on the Arctic Ocean - a key location in global climate change.**

An international team of scientists, led by the Co-chief Scientists Prof. Ruediger Stein (MARUM – Center for Marine Environmental Sciences at the University of Bremen, Germany) and Prof. Kristen St. John (Dept. of Geology and Environmental Science, James Madison University, USA), will collect about 900 m of sediment cores at two sites along the Lomonosov Ridge.

## Fast facts

-  August to September 2022
-  Arctic Ocean, The Lomonosov Ridge
-  Drilling vessel: Dina Polaris (Norway)
-  Icebreakers: Oden (Sweden) and Viktor Chernomyrdin (Russia)
-  Co-Chief Scientists: Rüdiger Stein and Kristen St. John

**Press release: Expedition will reveal how the climate has changed over 50 million years**



In 2022, the European Consortium for Ocean Research Drilling (ECORD), the Swedish Polar Research Secretariat (SPRS) and Arctic Marine Solutions (AMS) will jointly conduct an expedition of the International Ocean Discovery Program (IODP), focused on the Arctic Ocean – a key location in global climate change.



2023, April – June

## The North-Atlantic sector of the ice-covered Arctic Ocean

Open for  
international  
partners!

- » **Scientific theme:** Atmospheric rivers and the onset of sea-ice melt (ARTofMELT)
  - » Atmospheric sciences: meteorology, atmospheric chemistry, aerosols and aerosol/cloud inter-action and air pollution transport
  - » Physics and chemistry of snow, as melt starts
  - » Sea-ice physics; ice response to a changing surface energy budget
  - » Upper-ocean mixing and heat transfer, from the ice and downward
  - » Marine chemistry, biology and biogeochemistry
  - » Coupled vertical fluxes of energy, momentum, gases and matter between all of the above
-

2023, July – September

## Eurasian Arctic; Kara Sea & Lomonosov Ridge

- » **Scientific Theme:** the functioning and response of the Ocean and Cryosphere systems and their linkages to large-scale biogeochemical cycles under present and historical changes to the climate.
- » Shelf-Basin dispersal and biogeochemical fate of CH<sub>4</sub> and other GHG
- » Shelf-Basin dispersal and biogeochemical fate of organic matter released to the shelf system from thawing permafrost
- » Shelf-Basin dispersal of severe shelf-observed Ocean Acidification
- » Contaminant transport to and distribution in the Arctic Ocean
- » Methane release from collapsing slope hydrates
- » Massive C/N/GHG remobilization during earlier warming and sea-level rise
- » Atlantification and effects on high-Arctic sea ice

Open for  
international  
partners!



## 2024, July – September; North of Greenland

- » **Theme of the expedition: The North Greenland Marine Cryosphere in a Changing Climate**
  - » Unravelling the Late Glacial to Holocene history and dynamics of the North Greenland Ice Sheet
  - » Investigating the interaction between ecosystem community composition, anthropogenic dynamics and climate fluctuations
  - » Quantifying ecosystem production and nutrient state in changing marine ecosystems north of Greenland
  - » Mapping of the remote ocean frontiers (<20% of the seafloor in the Arctic Ocean has been directly mapped)
  - » Mapping the presence of gas hydrates in marine sediments and gas in water column and atmosphere
  - » Numerical modelling of the ice-ocean-atmosphere-geodynamic system
- 

Open for  
international  
partners!

# Suggestion by a Swedish governmental investigation on research infrastructure: A new swedish climate neutral heavy research icebreaker with capacity for year round research

”Krantz-Investigation”

» *“To secure access to polar research vessels, the inquiry proposes that Sweden build its own polar research vessel to replace the current polar research vessel Oden. A new construction would mean a considerable increase in ambition for Swedish polar research, the investigator states, and proposes that the investment be financed from the state budget.”(Public 2021-08-11)*



DN DEBATT

## *DN Debatt. "Utveckla politiska styrningen av forskningens infrastrukturer"*



UPPDATERAD 2021-08-12 PUBLICERAD 2021-08-10



På sikt kommer det nuvarande polarforskningsfartyget Oden att behöva tas ur bruk. Min bedömning är att Sverige då bör satsa på ett nytt fartyg för att inte sänka ambitionerna i polarforskningen, skriver Tobias Krantz. Foto: Roger Lundsten/TT

**DN DEBATT 11/8.**

**Tobias Krantz, regeringsutredare: Inrätta en ny myndighet för forskningsinfrastruktur av särskilt nationellt intresse.**

International  
coordination  
is a great  
idea!

