FAMOS

FINALISING SURVEYS FOR THE BALTIC MOTORWAYS OF THE SEA

SWEDISH MARITIME ADMINISTRATION

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Miljøministeriet
Geodatastyrelsen

Liik enne vira sto

GFZ
Helmholtz Centre POTSDAM

Bundesamt für Kartographie und Geodäsie

LANTMÄTERIET

DTU

Digital infrastructure:

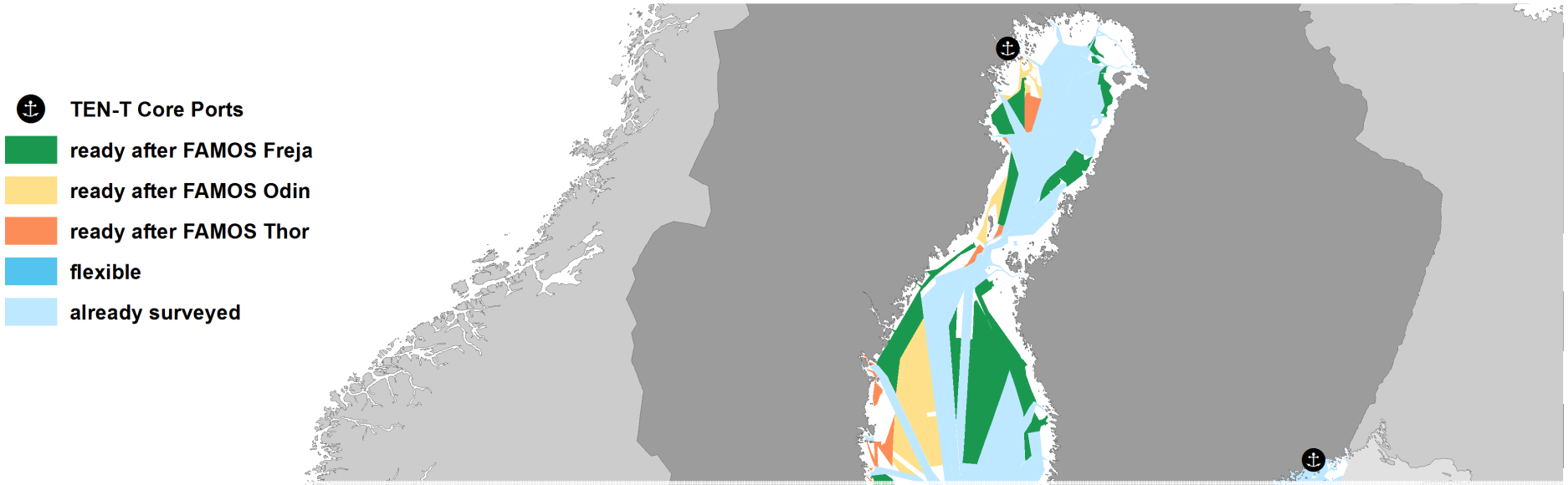
Where am I, and how much water is underneath my ship?

To answer this:

- Sea floor needs to be mapped
- Vessel vertical position should be known
- A reliable zero level must be defined
- All information must be easily available for the navigator

FAMOS:

Activities 1 & 3 (Galileo)
Activity 2
Activity 4



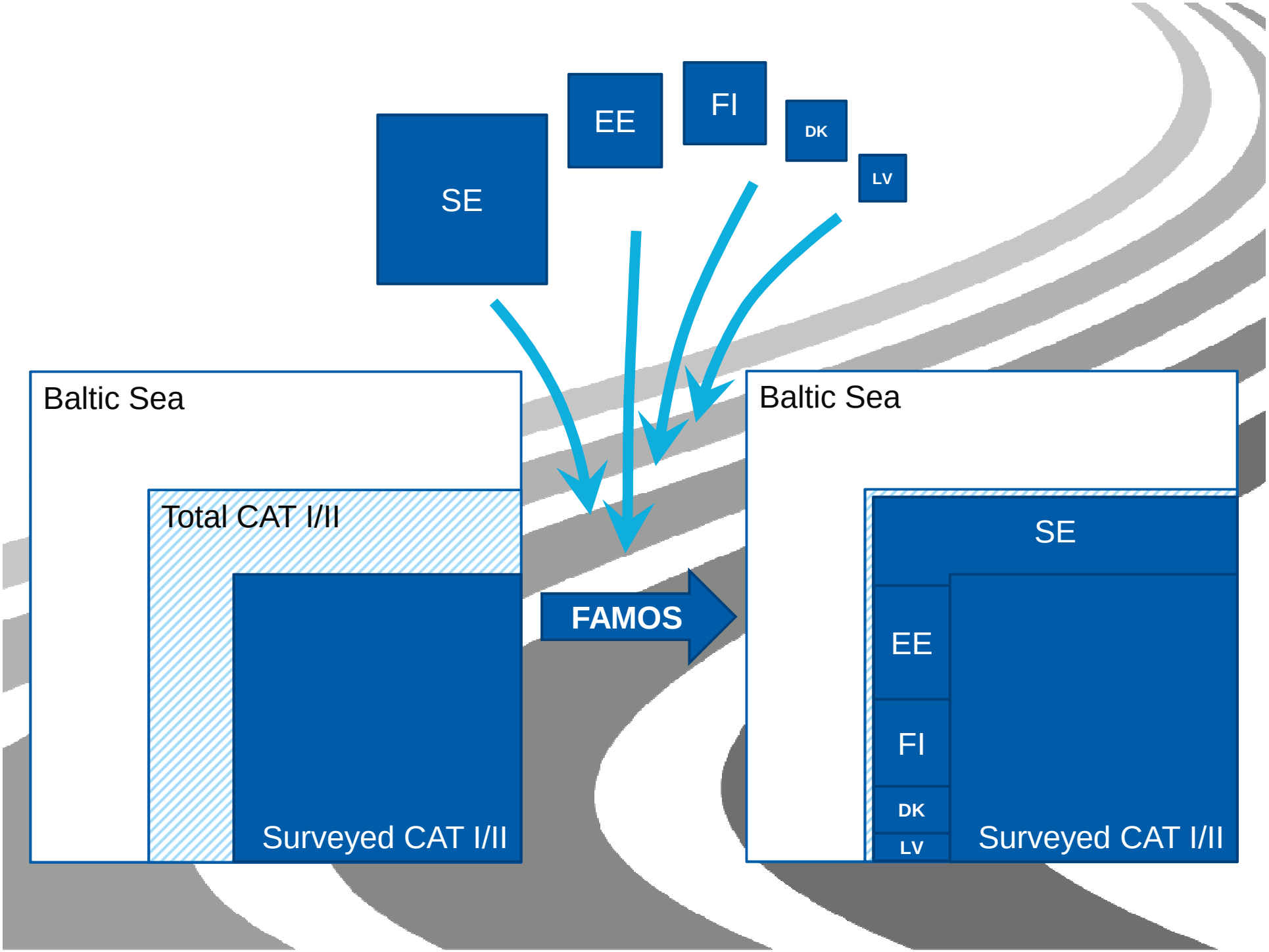
FAMOS *Freja*	FAMOS *Odin*	FAMOS *Thor*
2014-2016	2017-2018	2019-2020

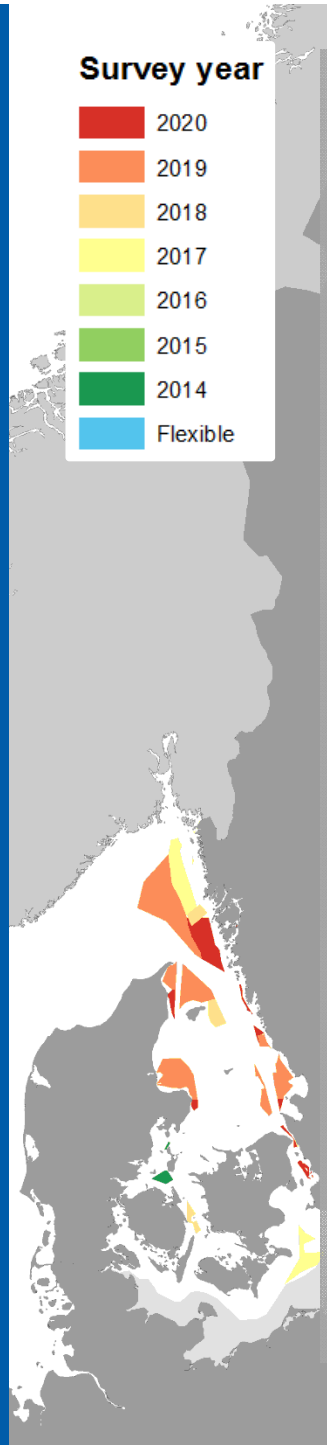
96 000 km² of CAT I & II

10+1 partners, 6+1 countries

Sweden, Estonia, Finland, Denmark, Latvia, Germany, Lithuania

Lead: SMA


SE
EE
FI
DK
LV
Baltic Sea
Total CAT I/II
Surveyed CAT I/II
FAMOS
Baltic Sea
SE
EE
FI
DK
LV
Surveyed CAT I/II

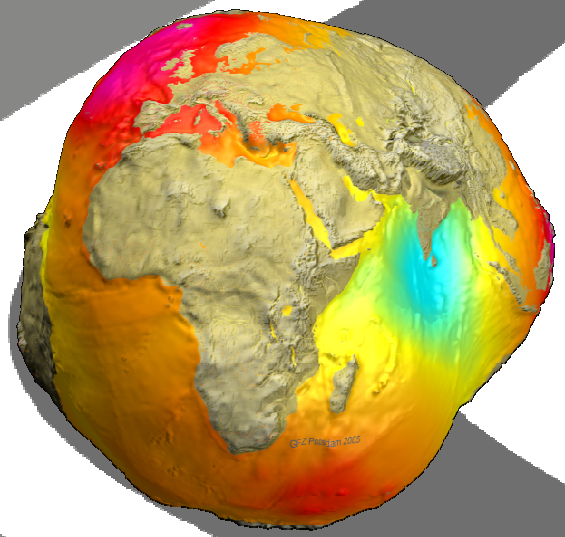


Hydrographic surveys

- 96 000 km^2, 20% of Baltic Sea and 88% of remaining Cat I/II area
- 59 M€, 73% of budget
- Approaching HELCOM Cat I/II goal in Sweden, Finland, Latvia, Estonia and Denmark
- Both own resources and tendered work (27% of area)

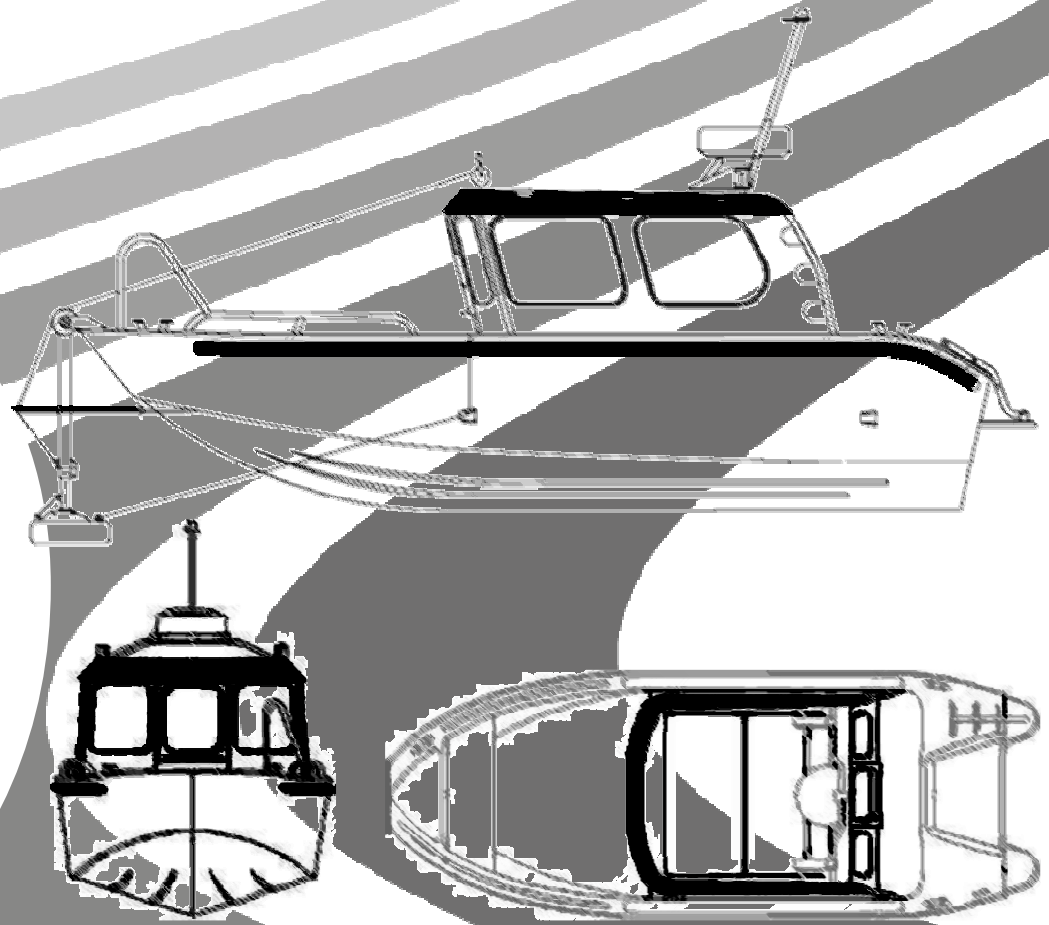
Harmonising vertical datum

- Motivation: Contribute to future satellite navigation in full 3D
- Goal: Better define zero by measuring the shape of the earth
- Idea: Use survey vessels for marine gravity measurements, which would be much more expensive on their own
- Aligned with BSHC CDWG



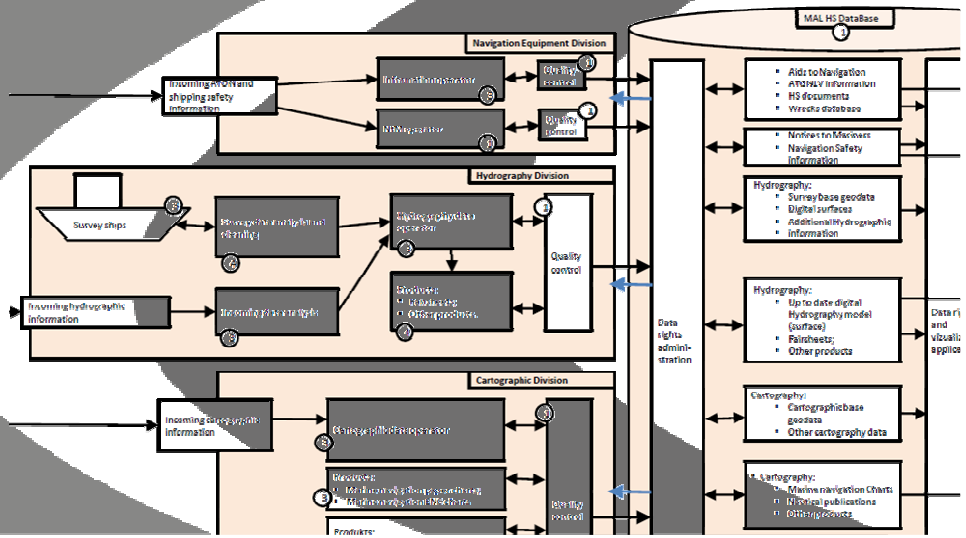
Surveying infrastructure

- New survey boats in Latvia and Estonia
- Upgrades for echo sounders and navigation equipment



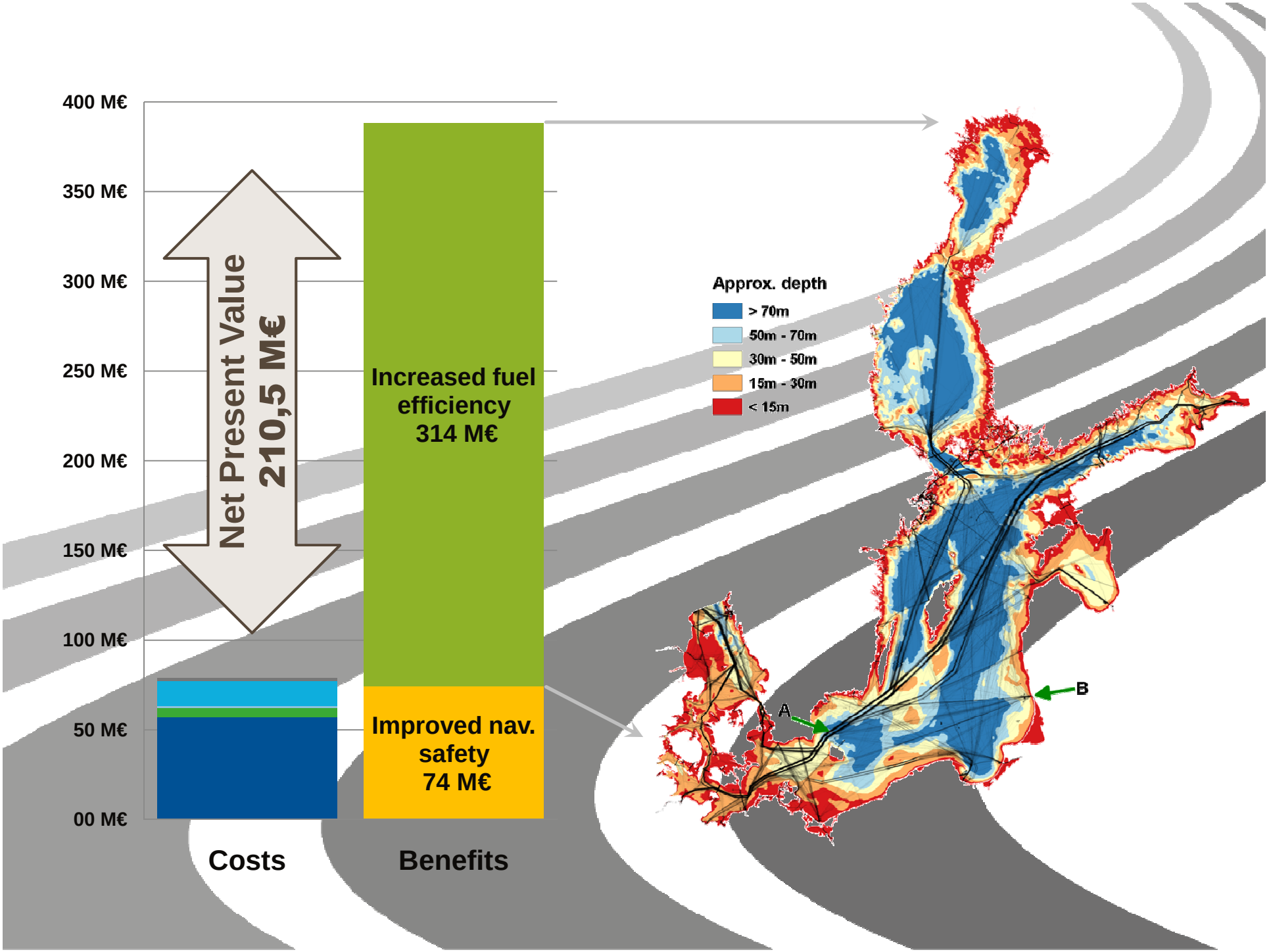
Data workflow improvements from sounding to bridge

- Renewal and improvement of chart production systems
- Improvement of data collection systems
- Data harmonisation and improved data exchange internationally
- Fairway modeling



Connecting Europe Facility - Transport

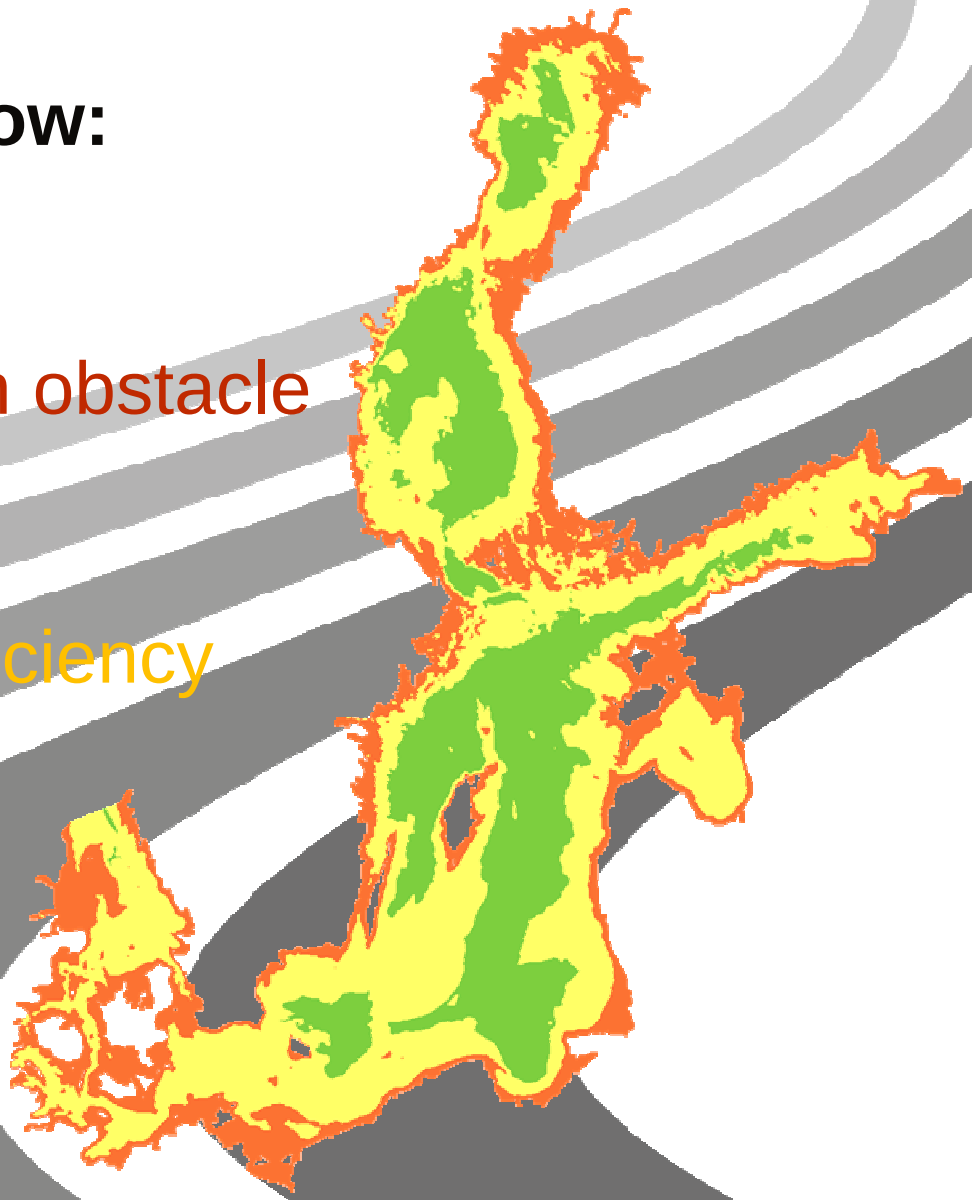
- EU transport infrastructure programme
- Former TEN-T programme
- Total volume 2014-2020: € 26.25 billion (including Cohesion Fund)
- 2014 call for multiannual Motorways of the Sea projects (250+100 M€)
- More calls expected 2015 and 2016


400 M€
350 M€
300 M€
250 M€
200 M€
150 M€
100 M€
50 M€
00 M€
Net Present Value
210,5 M€
Increased fuel efficiency
314 M€
Improved nav. safety
74 M€
Costs
Benefits
Approx. depth
> 70m
50m - 70m
30m - 50m
15m - 30m
< 15m
A
B

The Baltic Sea is shallow:

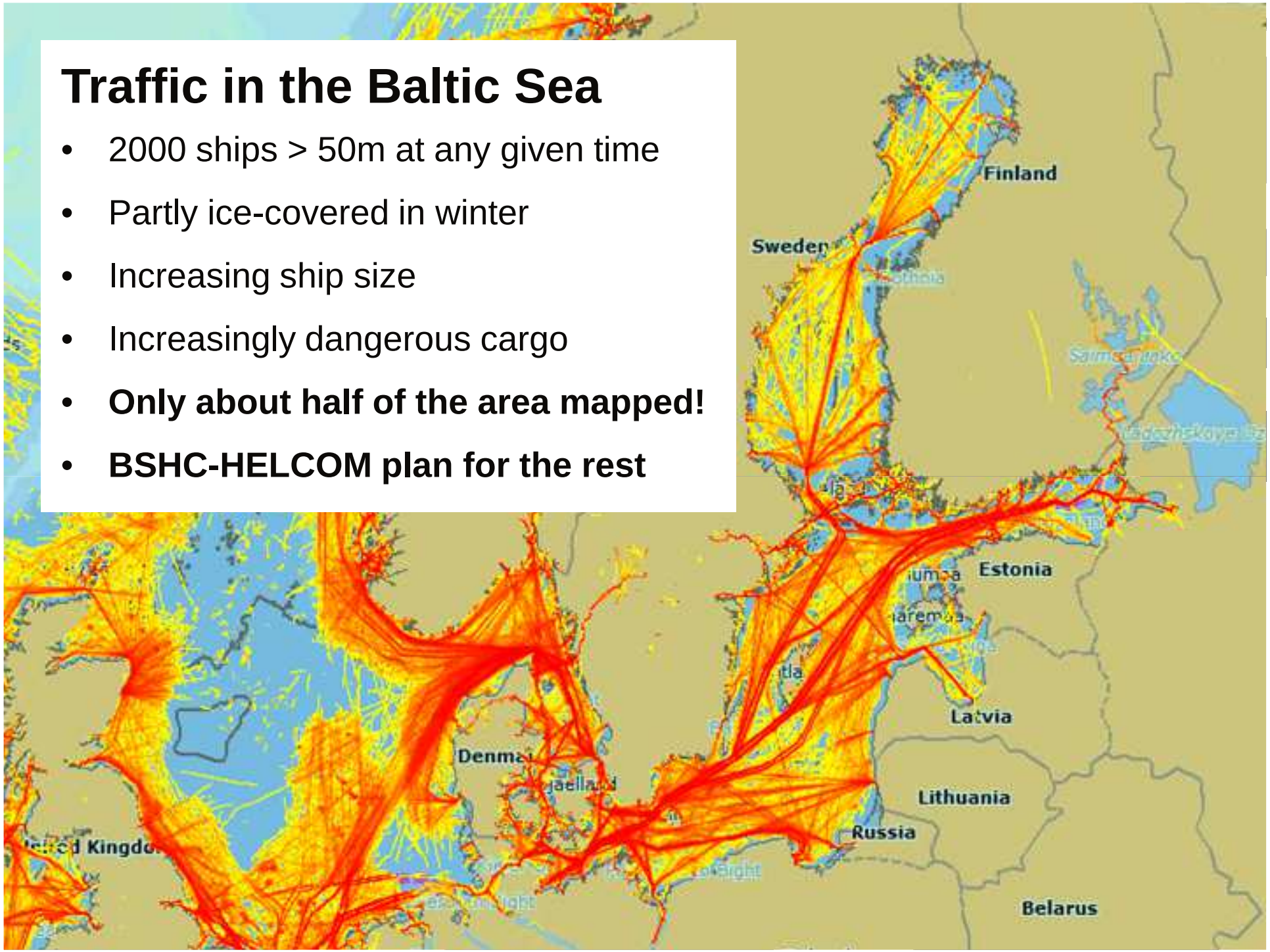
20% potential navigation obstacle

70% relevant for fuel efficiency



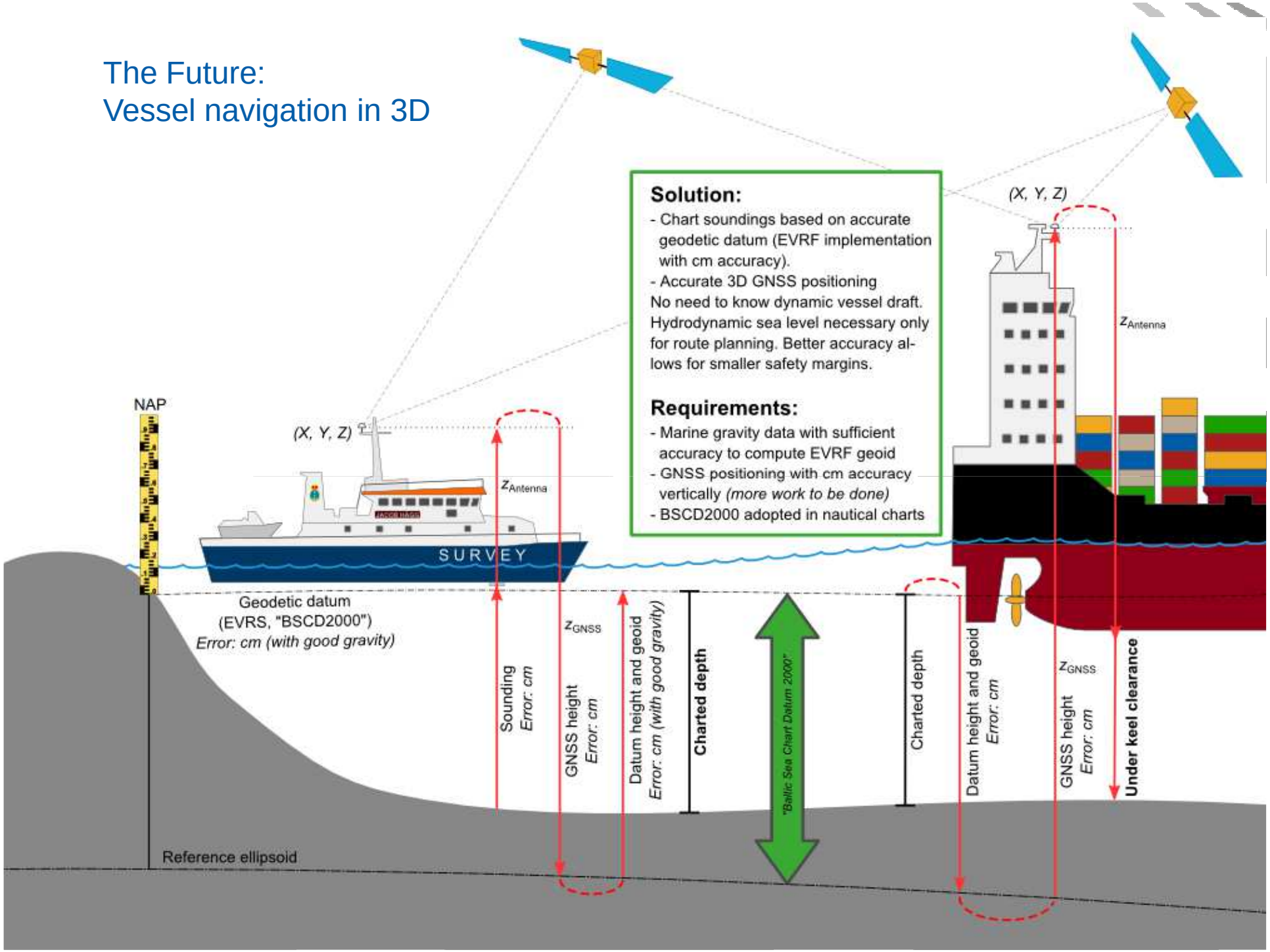
Traffic in the Baltic Sea

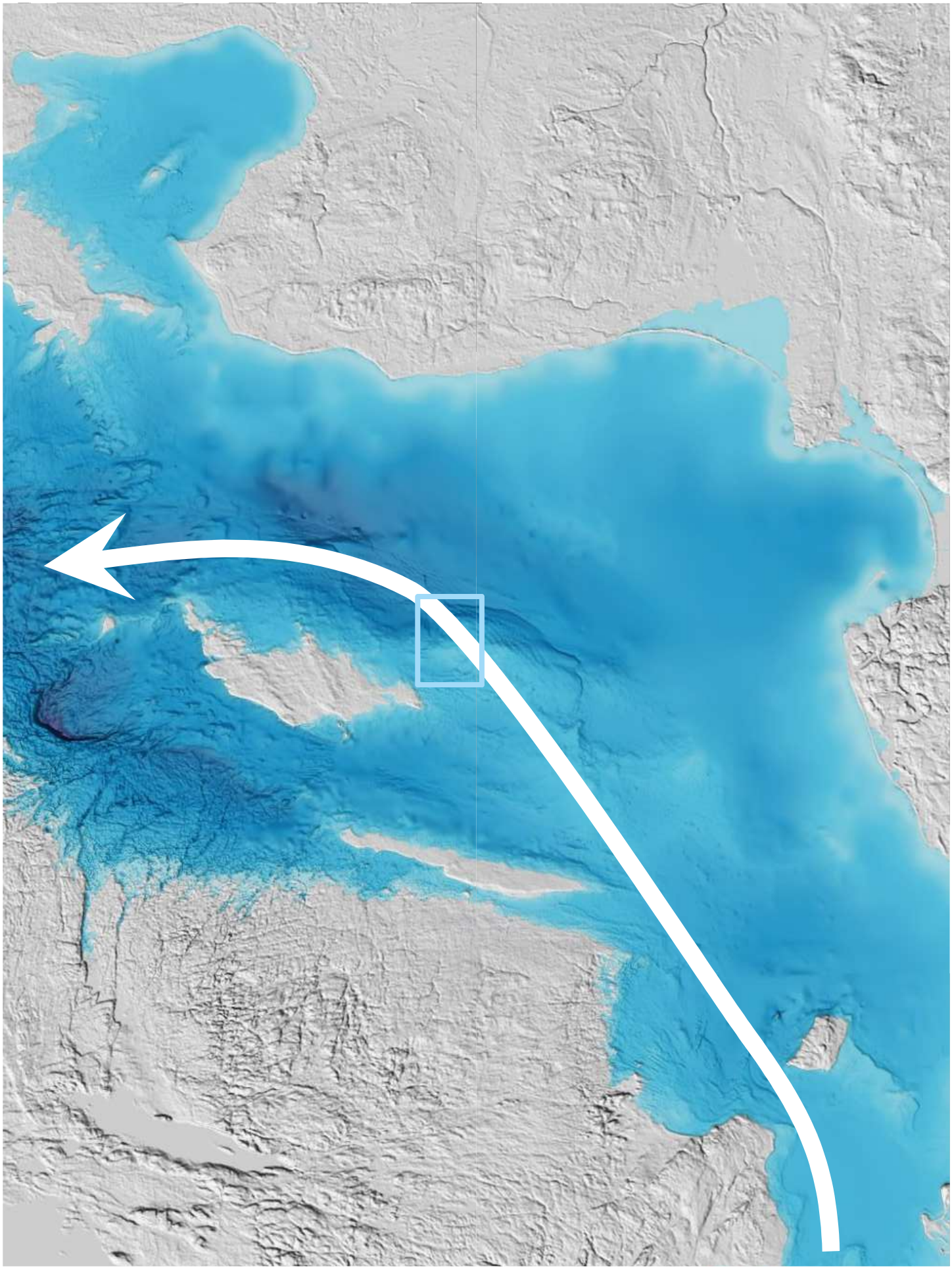
- 2000 ships > 50m at any given time
- Partly ice-covered in winter
- Increasing ship size
- Increasingly dangerous cargo
- **Only about half of the area mapped!**
- **BSHC-HELCOM plan for the rest**

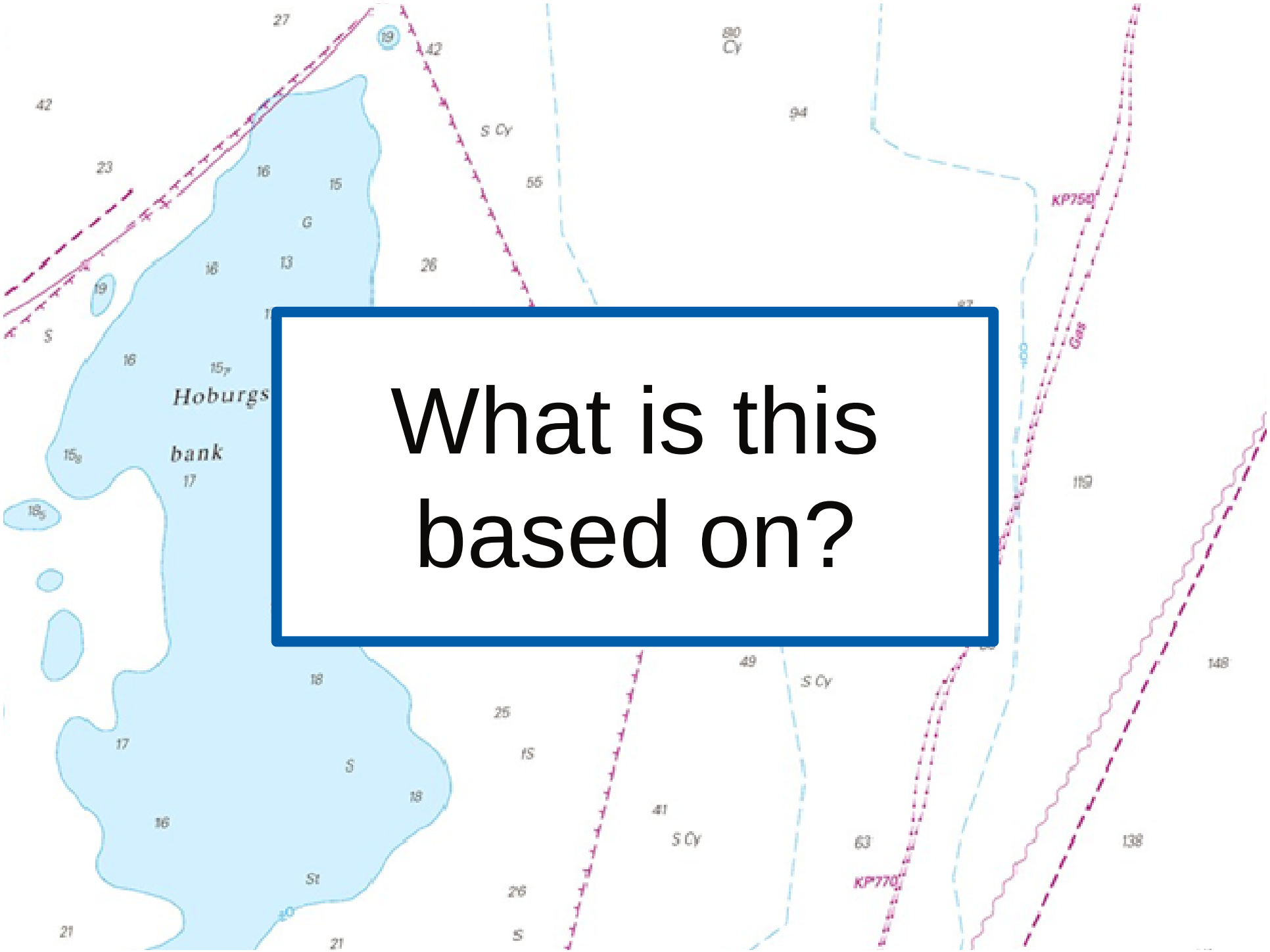


But why?

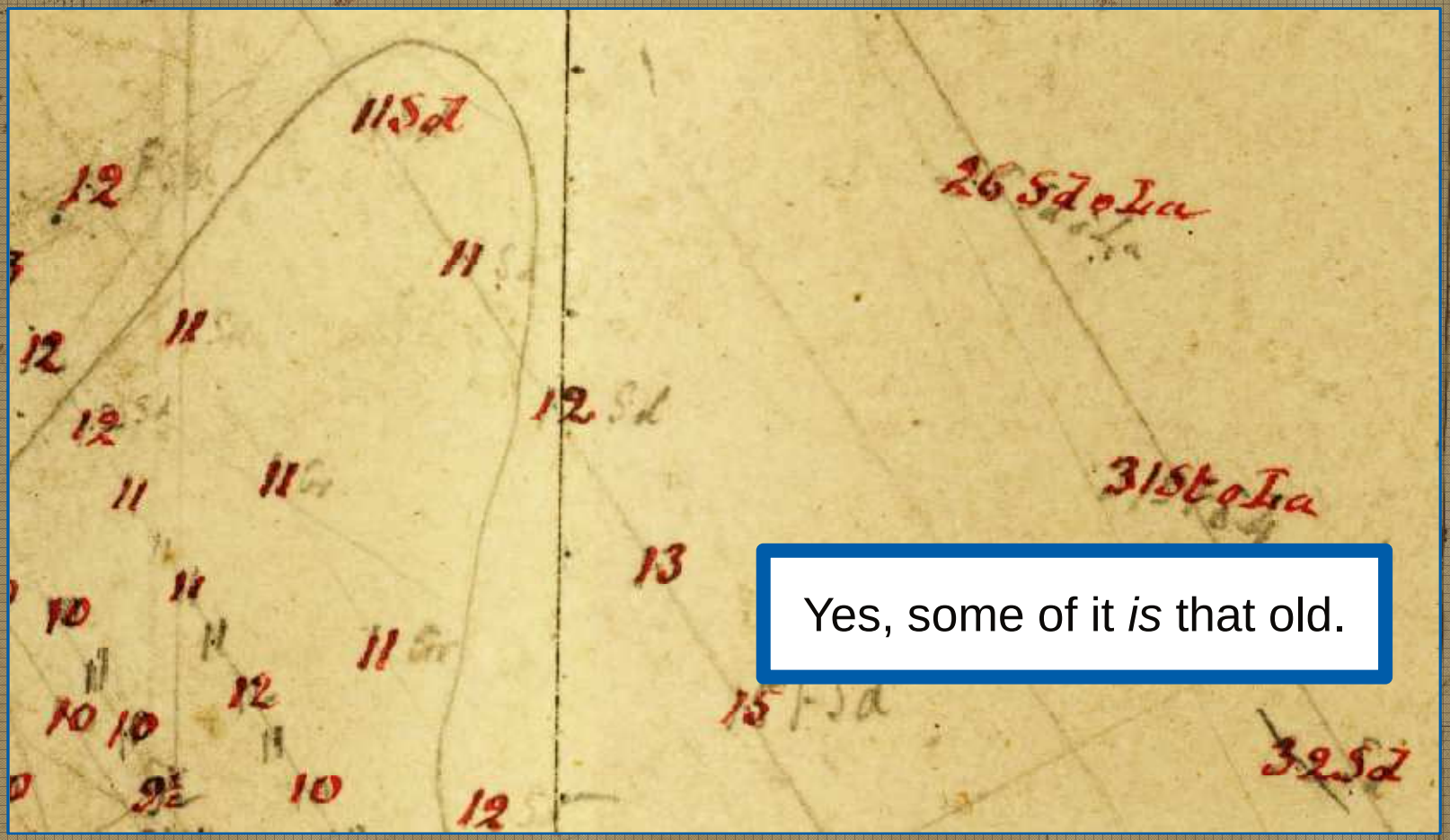
The Future:
Vessel navigation in 3D



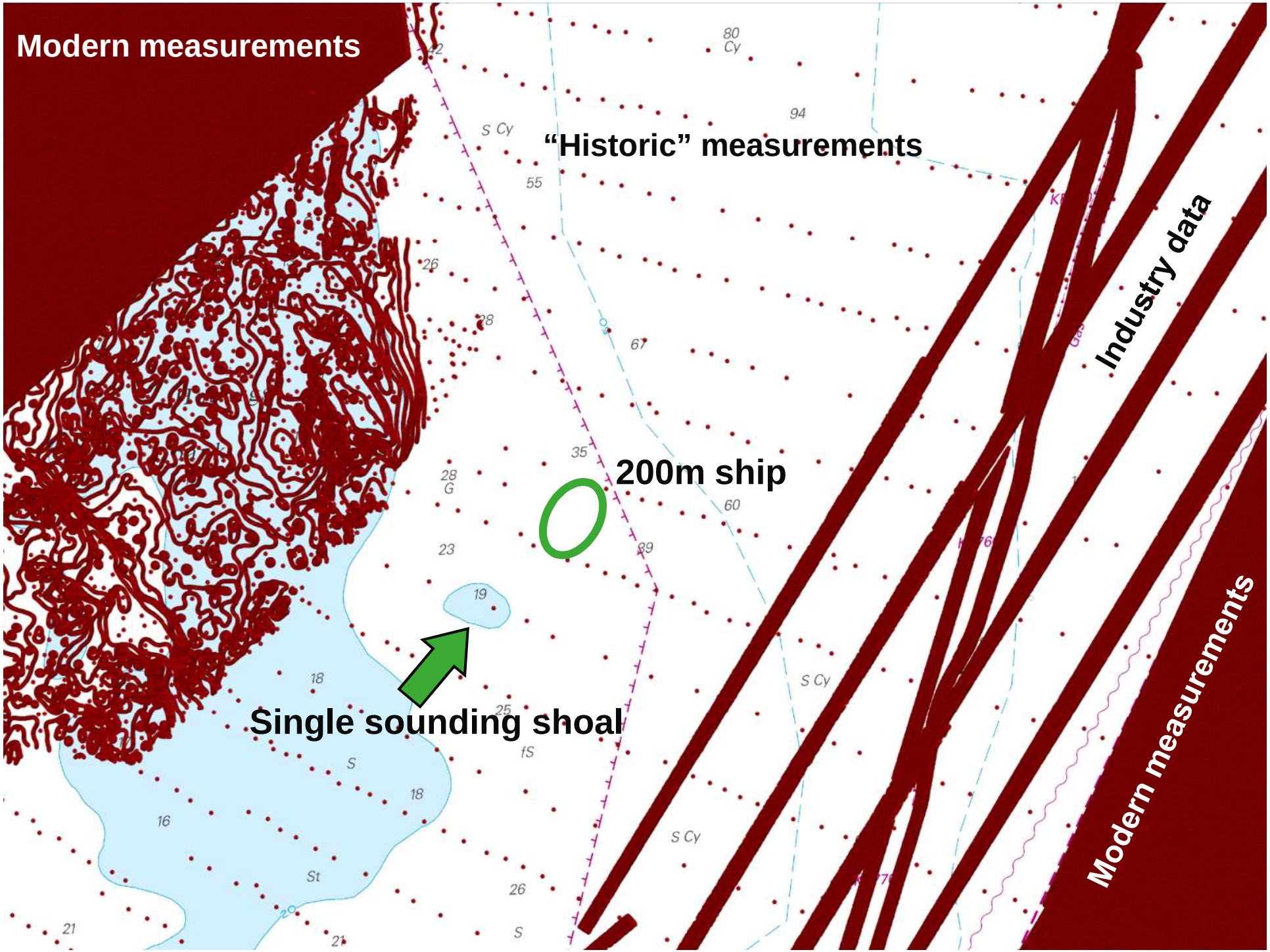




What is this based on?



Yes, some of it *is* that old.


Modern measurements
"Historic" measurements
Industry data
200m ship
Single sounding shoal
Modern measurements

How it often looks today

- Safety of navigation: < ca. 15m
- Fuel efficiency of marine transports: < ca. 70m

- Marine spatial planning
- Environmental concerns
- Science
- …