



Prepare Ships

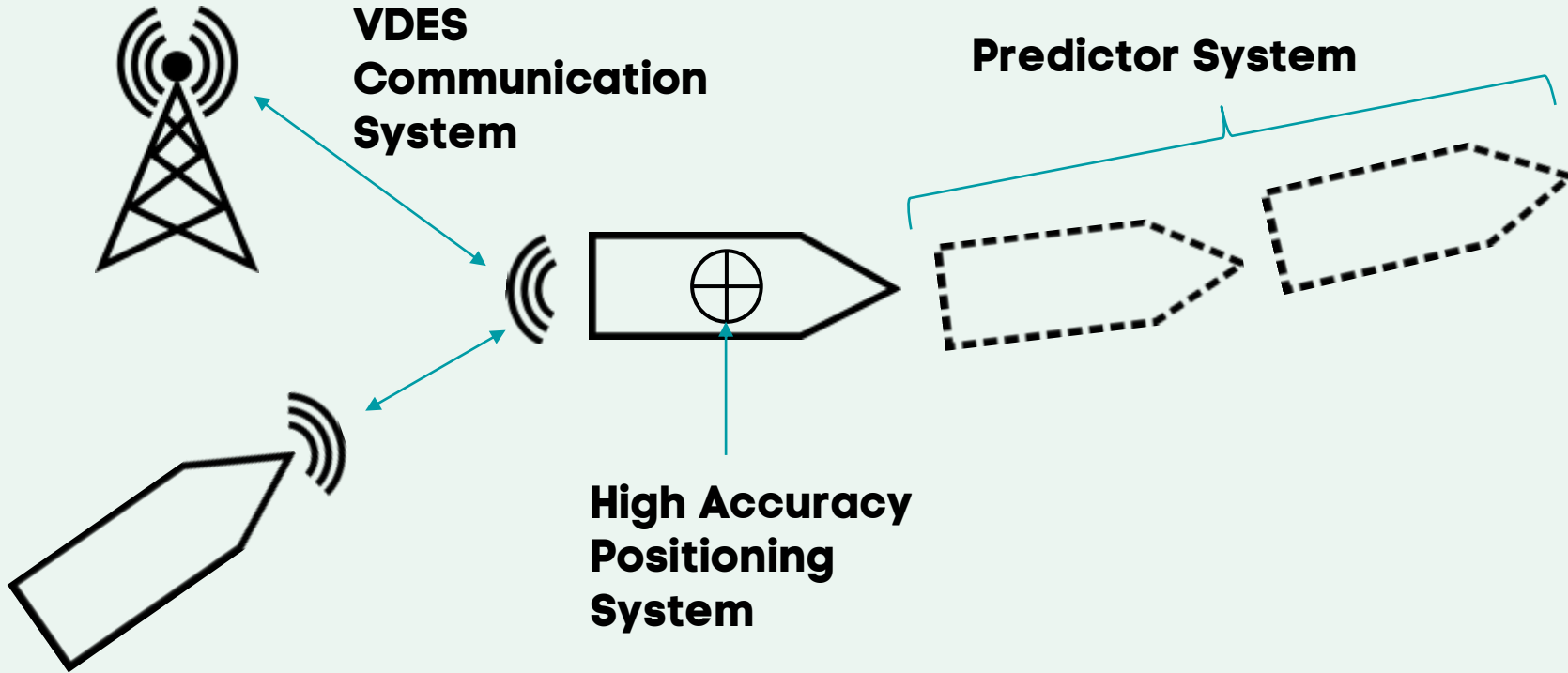


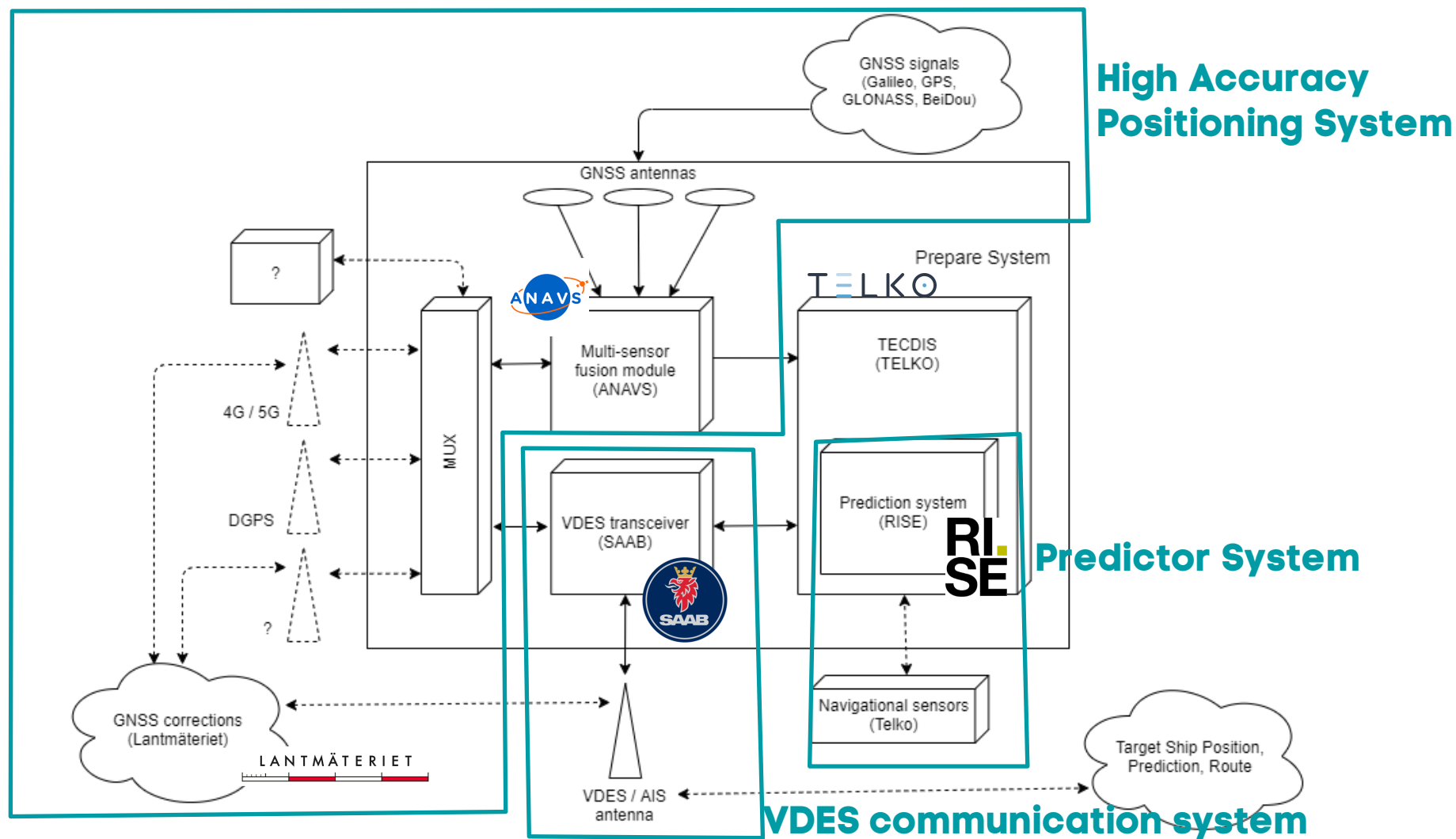
Prepare Ships

Financed by



What is Prepare Ships?





Why a High Accuracy Positioning System?



Ever Given gets stuck in the Suez canal

- Stuck for 6 days.
- Approximated cost of 54 billion dollars.
- Caused by "technical and human errors" during a sandstorm.

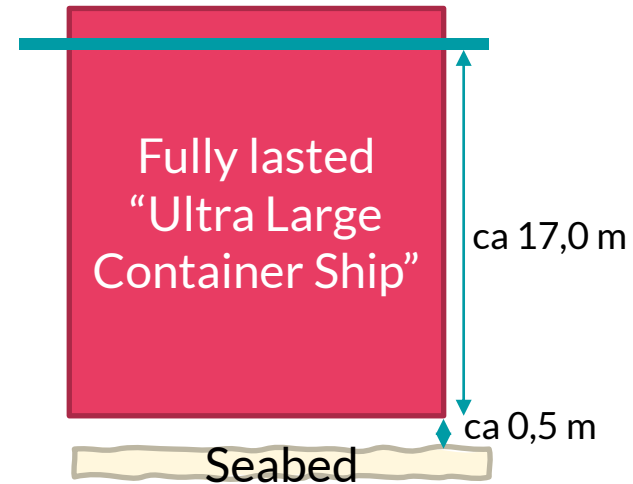
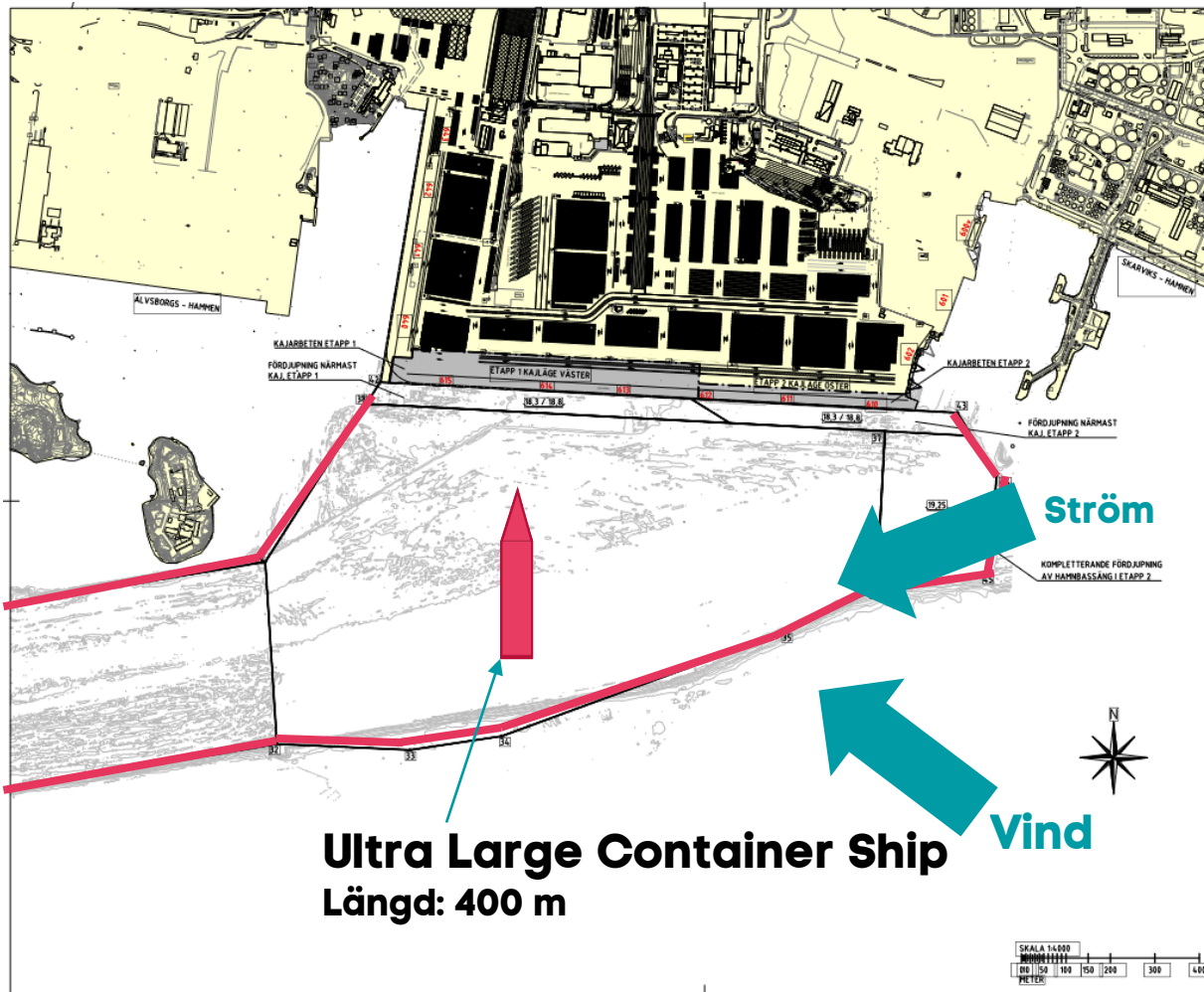
**A stuck ship is expensive
(and embarrassing)**



Widening and deepening of the fairway to the Port of Gothenburg

- Must be done to be able to receive the largest ships.
- Approximated cost of 2.5 billion crowns.
- 13,5 milion cubic meters of soil must be dragged.

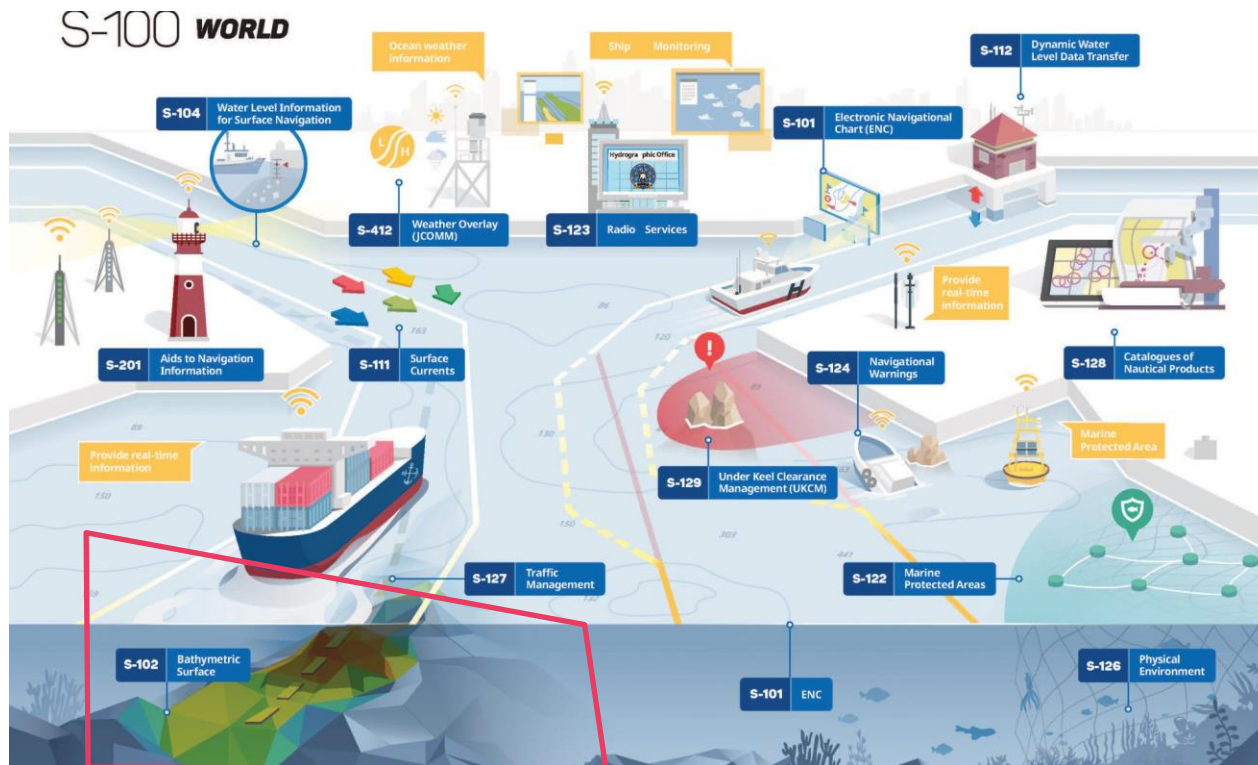
To widen and deepen a fairway is expensive (and cumbersome)



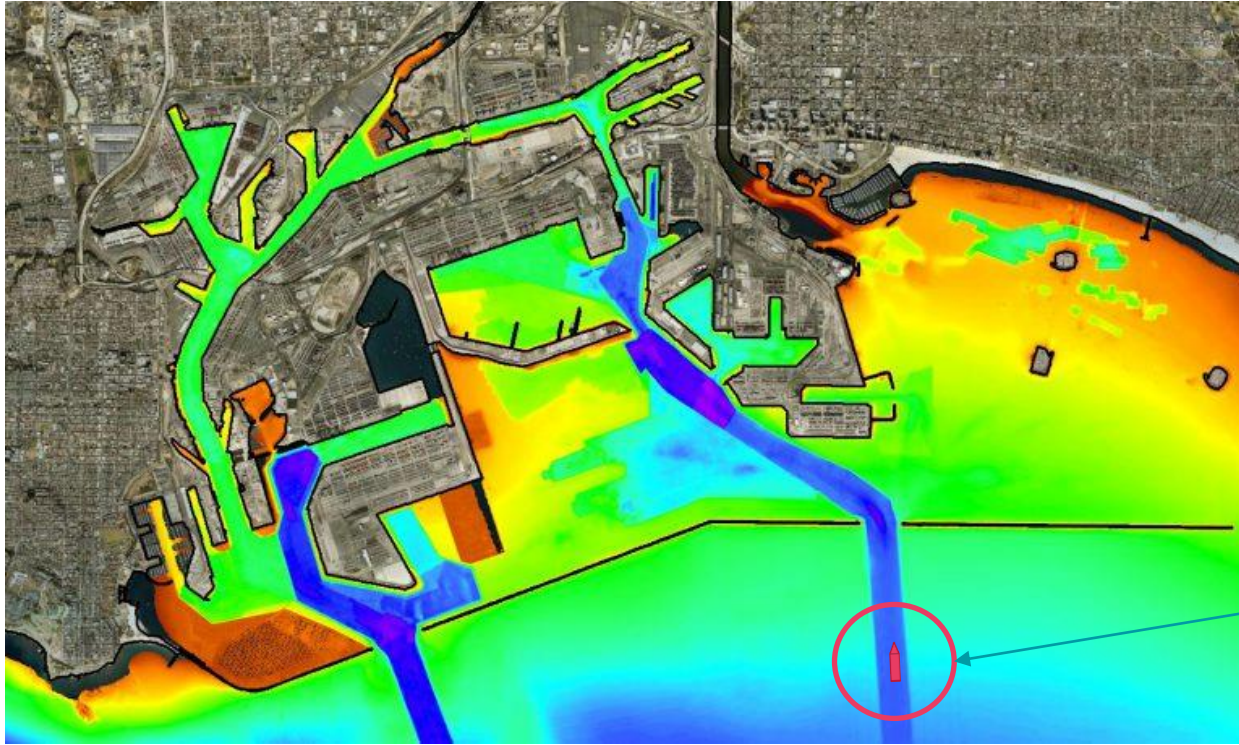
Despite of the
changes there wont
be a "lot of space"
for manoeuvring

IHO's Universal Hydrographic Data Model

A geospatial data standard



Precision navigation



High
precision
positioning

**S-102 Bathymetry surface
(raster data)**

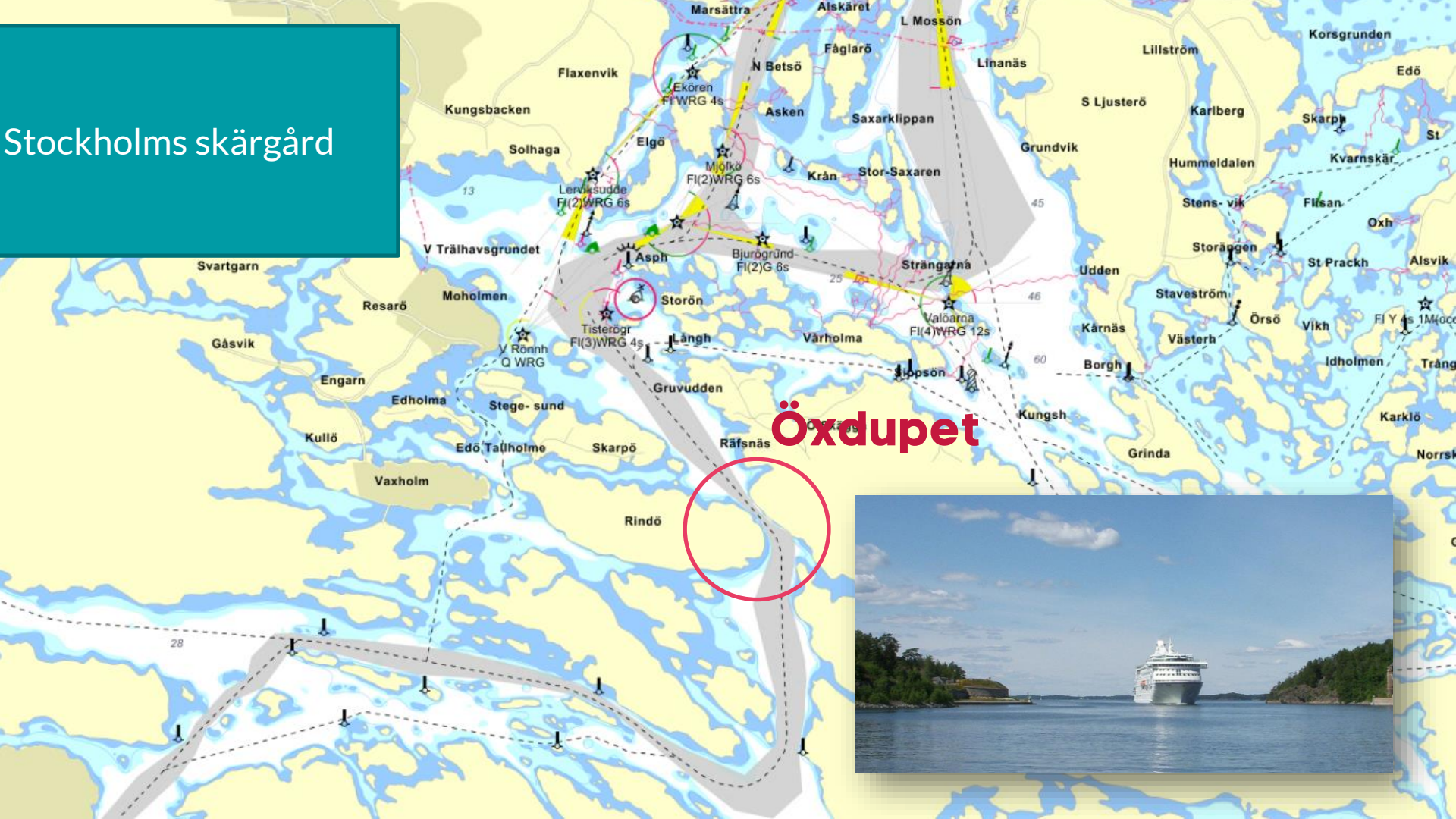
Conclusion

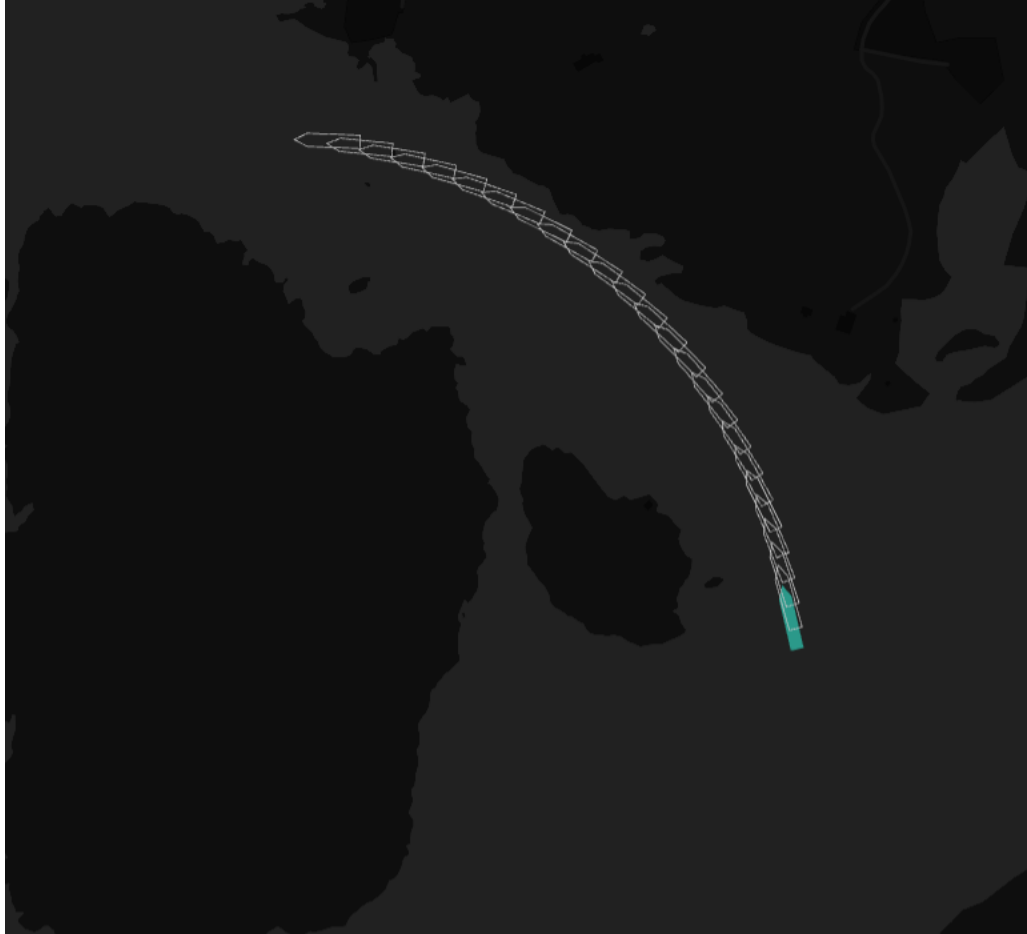
High precision positioning and bathymetry raster data support safe and effective navigation

Safe distances can be precisely determined enabling maximum use of the resources within the safety boundaries.

Why a Predictor System?

Stockholms skärgård





Conclusion

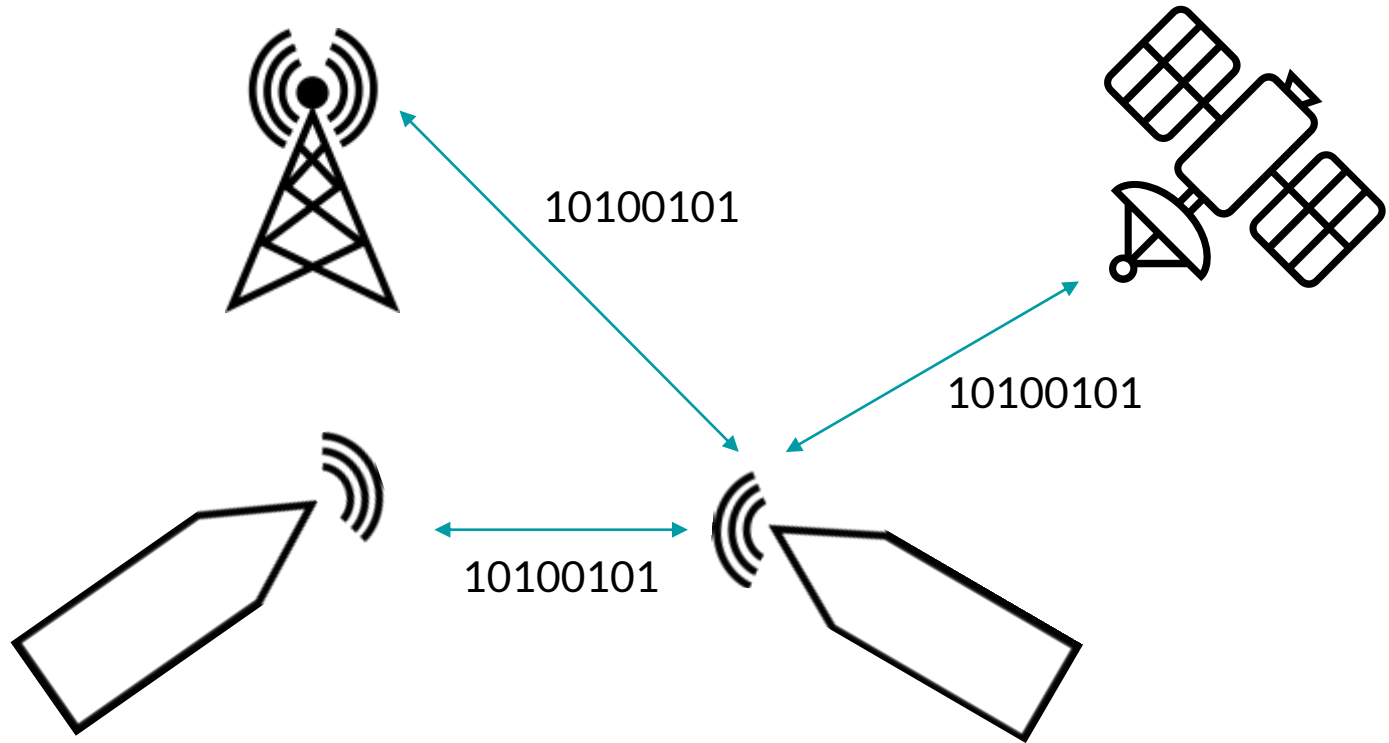
High precision positioning and a predictor system support safe navigation

Future position predictions are based on the precise current position.

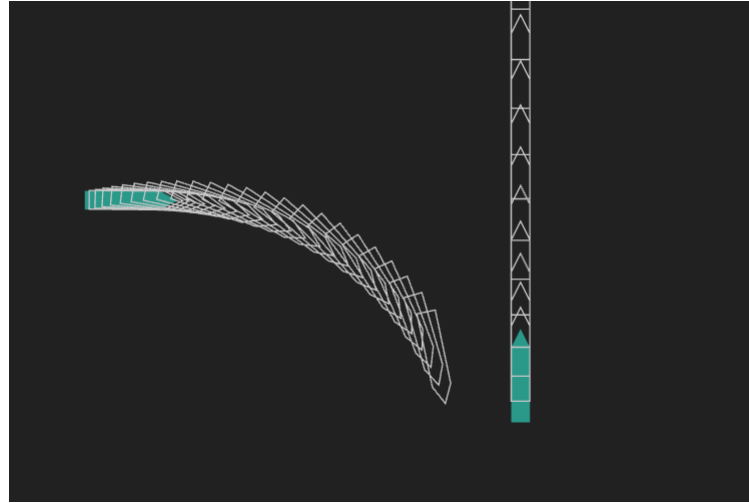
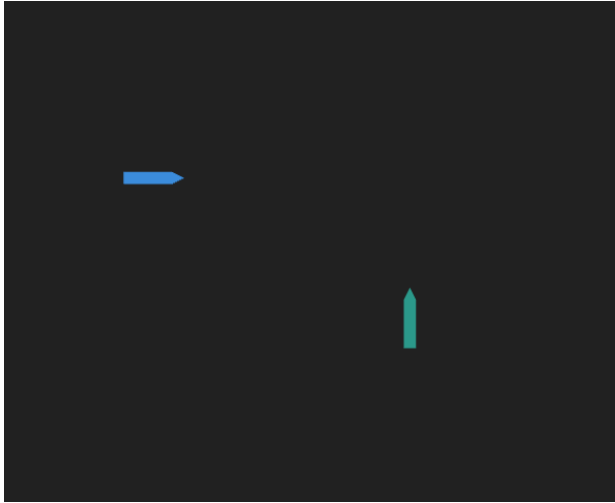
Future position predictions aids manoeuvring.

Why a VDES Communication System?

VDES: Vessel Data Exchange System via *Marine mobile VHF*

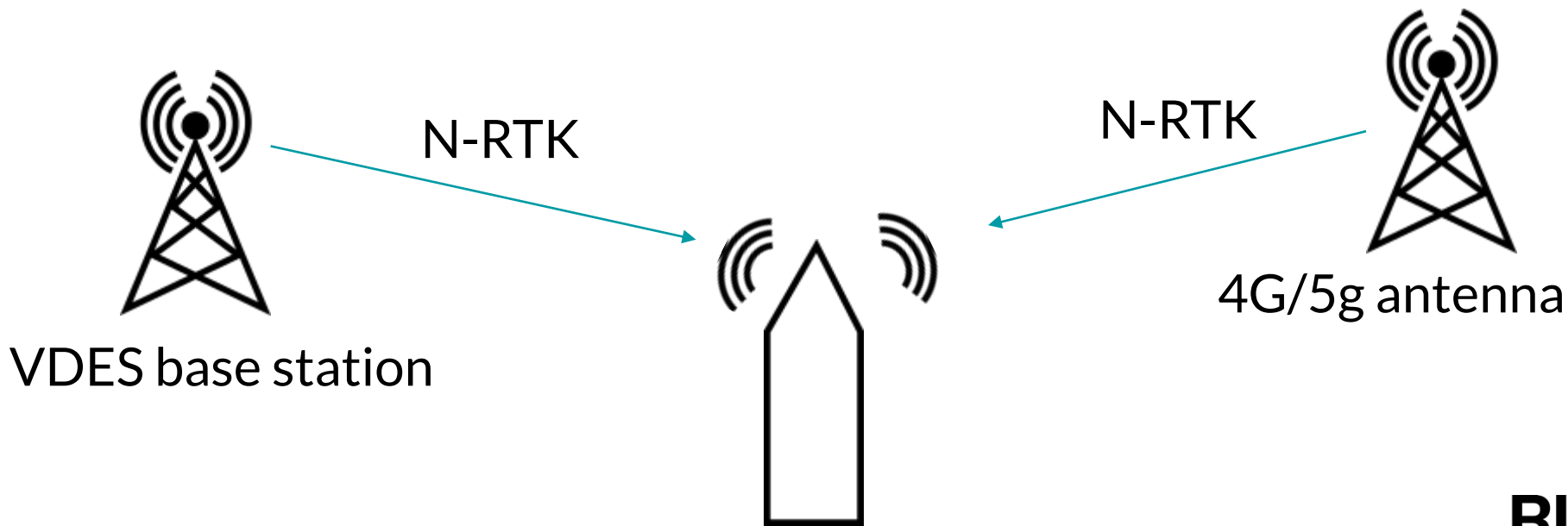


1:a reason:
Share *the predictions* with other ships via VDES



2: reason

Send *Network RTK corrections* to a ship



Deeper dive into the High accuracy positioning system

High Accuracy Positioning System

Developed by 

Tested by  and 

High Accuracy Positioning System

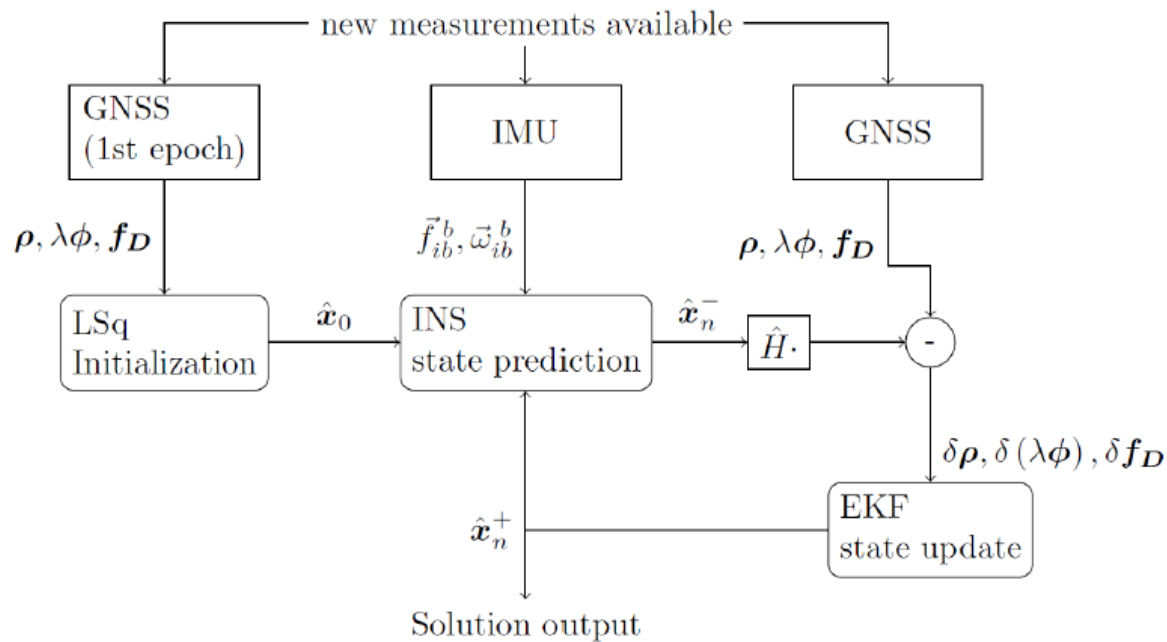
Developed by 

Tested by  and 

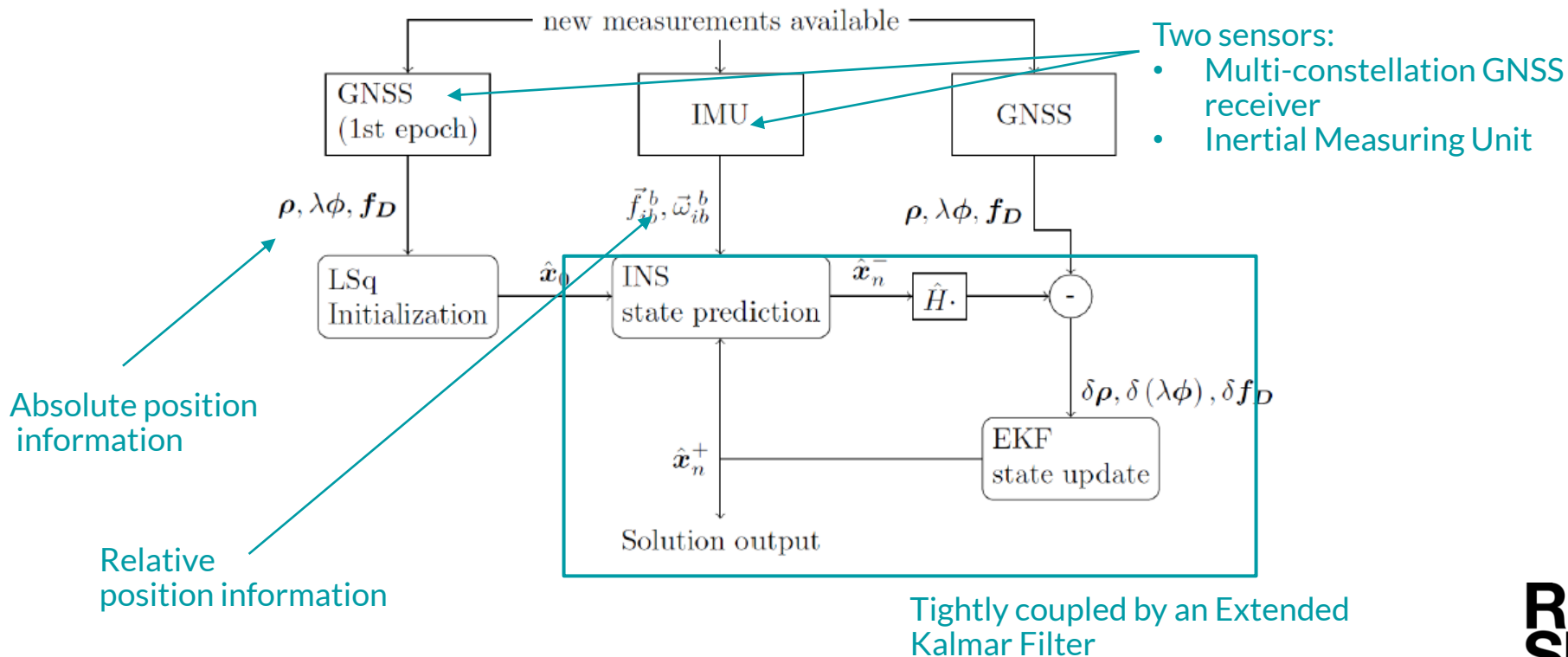
High Accuracy Positioning System

A precise and resilient position and attitude determination system, that uses a **tightly coupled Multi-Sensor** RTK positioning in coastal areas close to reference stations and a tightly coupled Multi-Sensor PPP in areas that are more far away from reference stations.

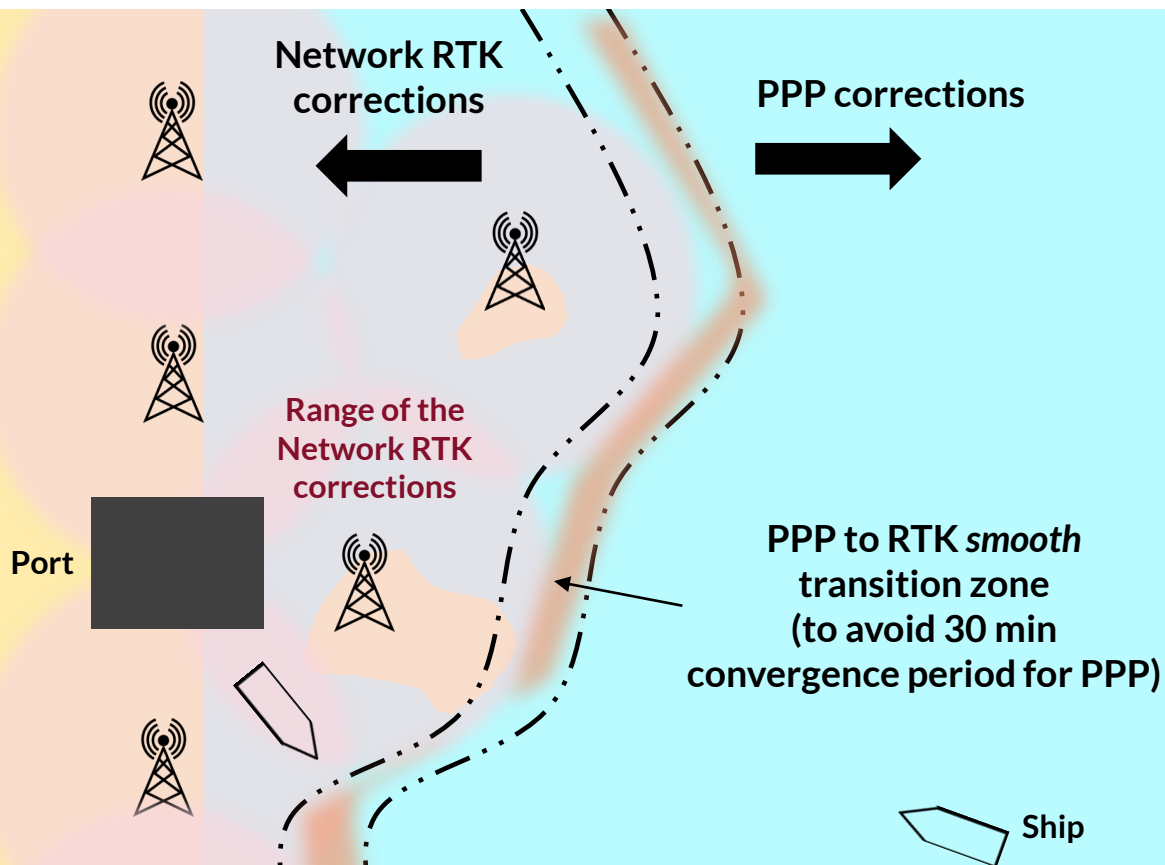
Tightly coupled and multi-sensor

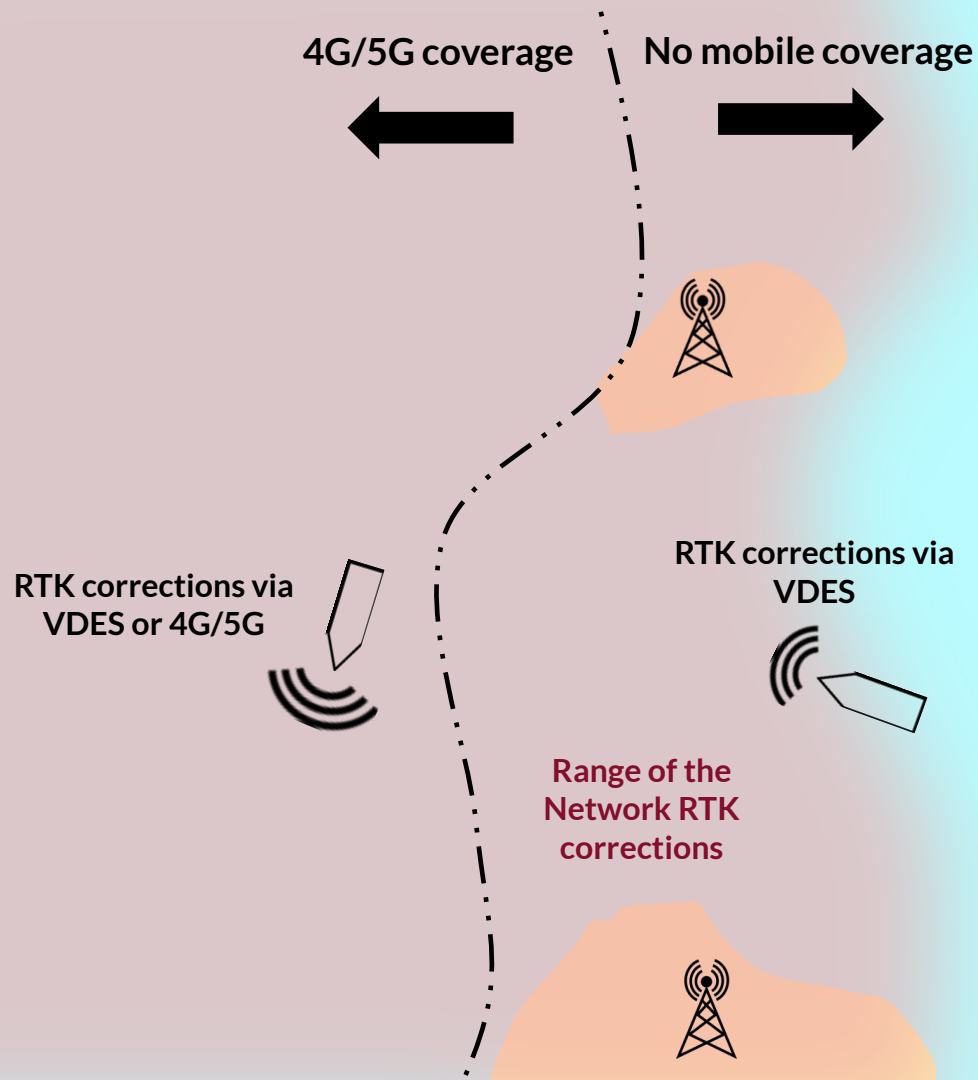


Tightly coupled and multi-sensor



RTK and PPP positioning





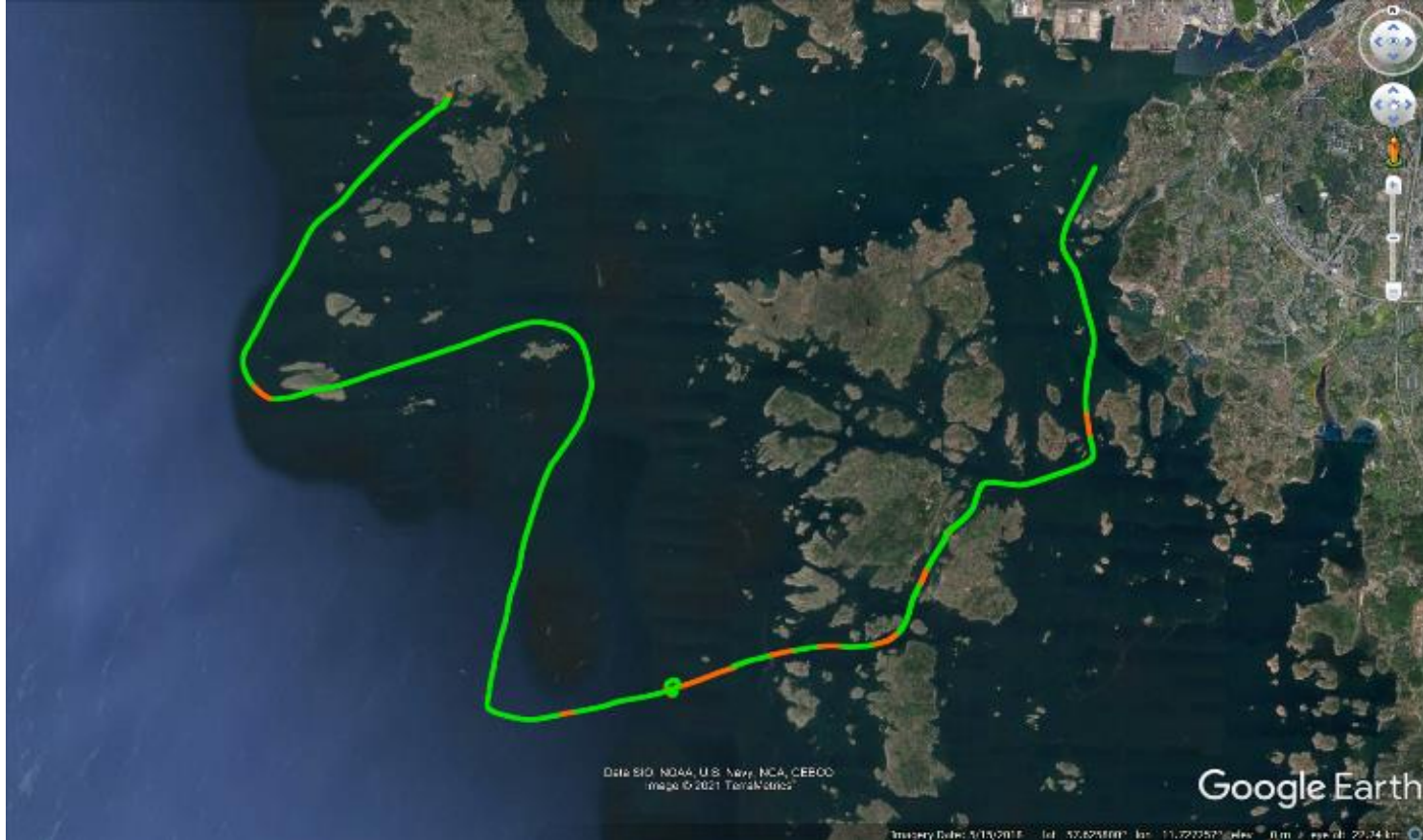
Reference stations i Göteborgs skärgården



Lotsbåten 729

**GNSS
antennas**

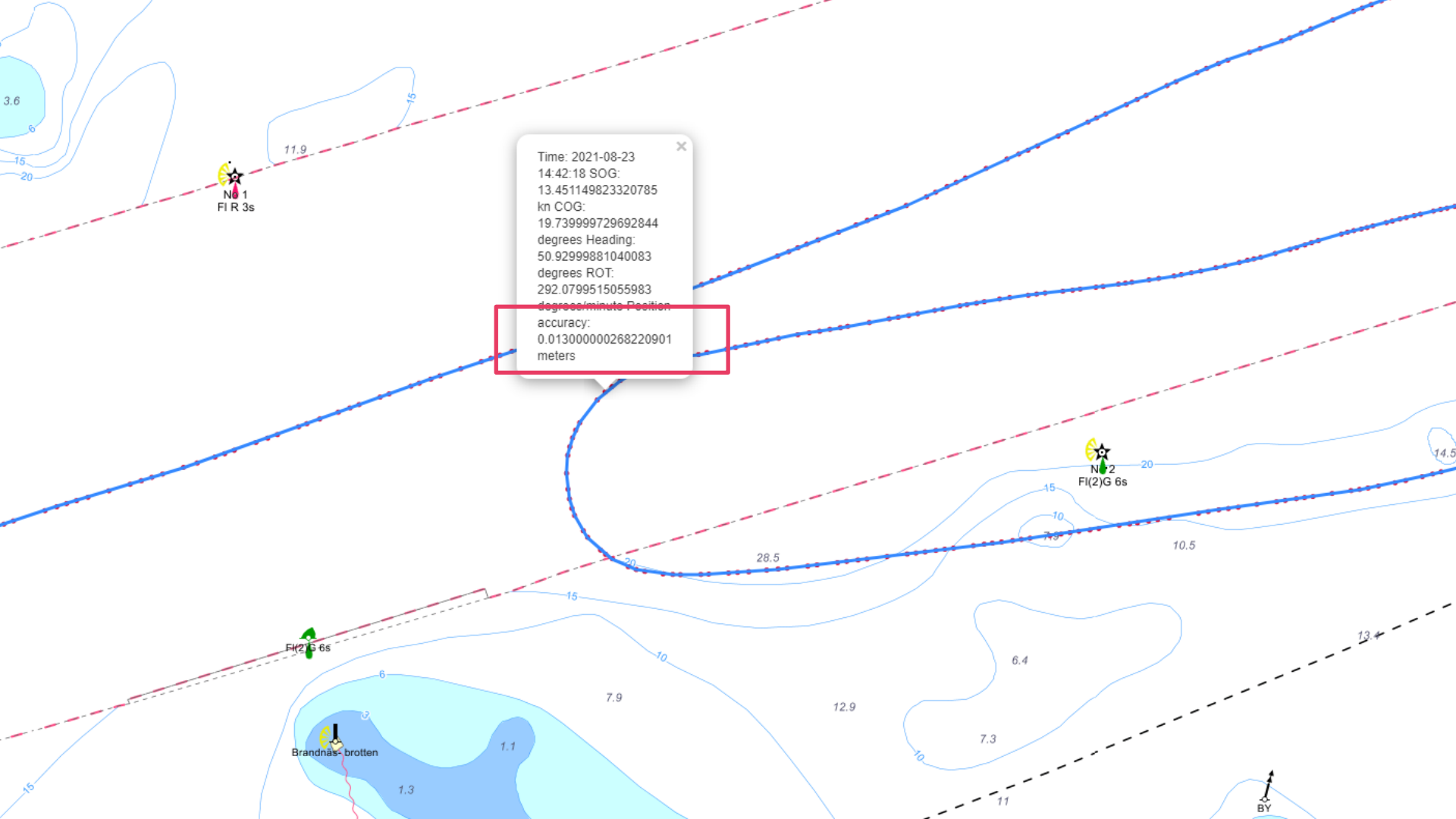




Float RTK (decimeter level accuracy)
Fixed RTK (centimeter level accuracy)

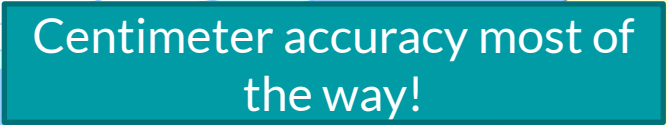
Princess yacht My@Sea

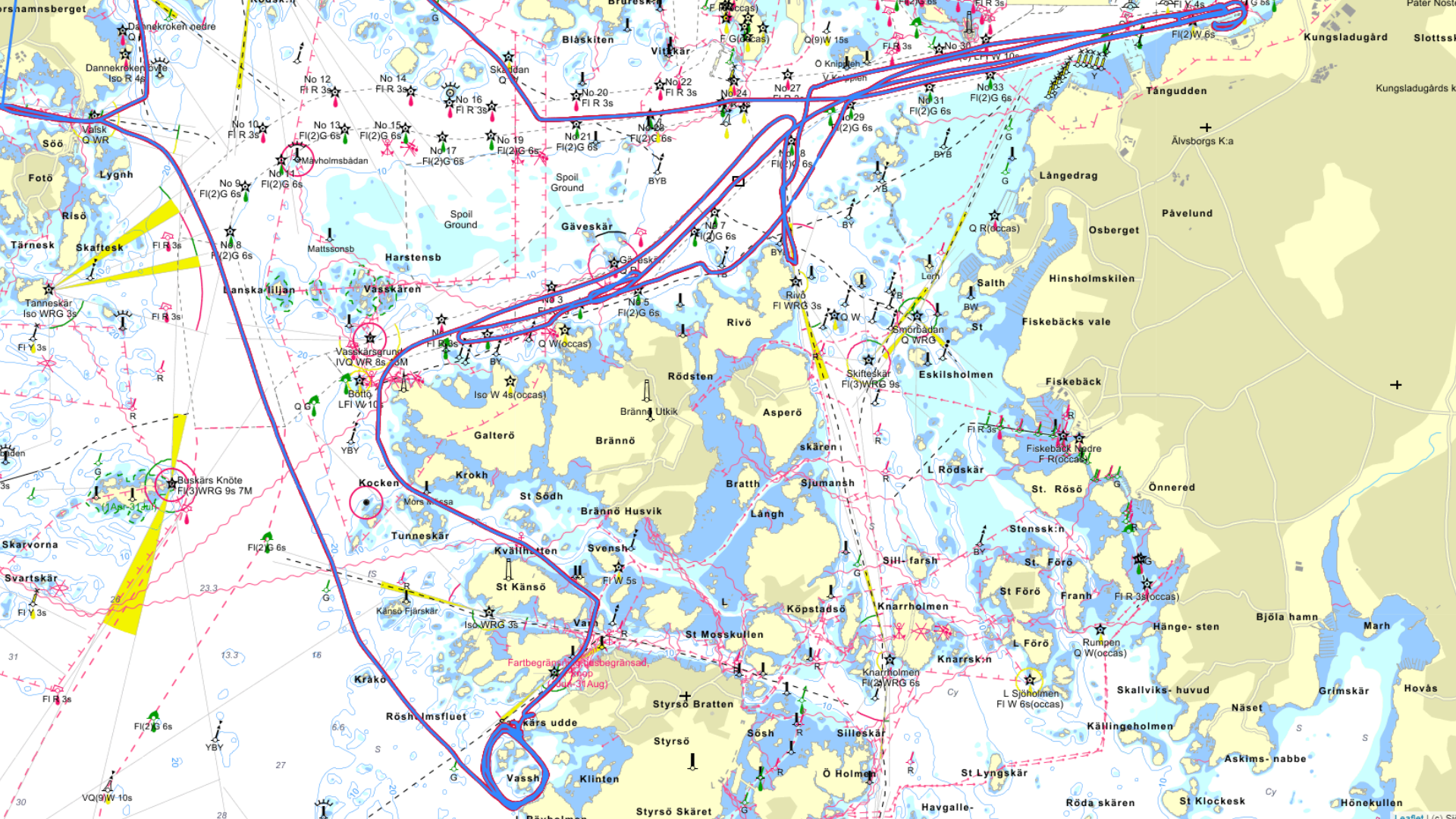




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degrees ROT:
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degrees/minute Position
accuracy:
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meters





Tack!
Frågor?