



# E-NAVIGATION IN DEVELOPING COUNTRIES

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**e-Navigation**  
**underway 2017**  
Asia-Pacific



# Connectivity

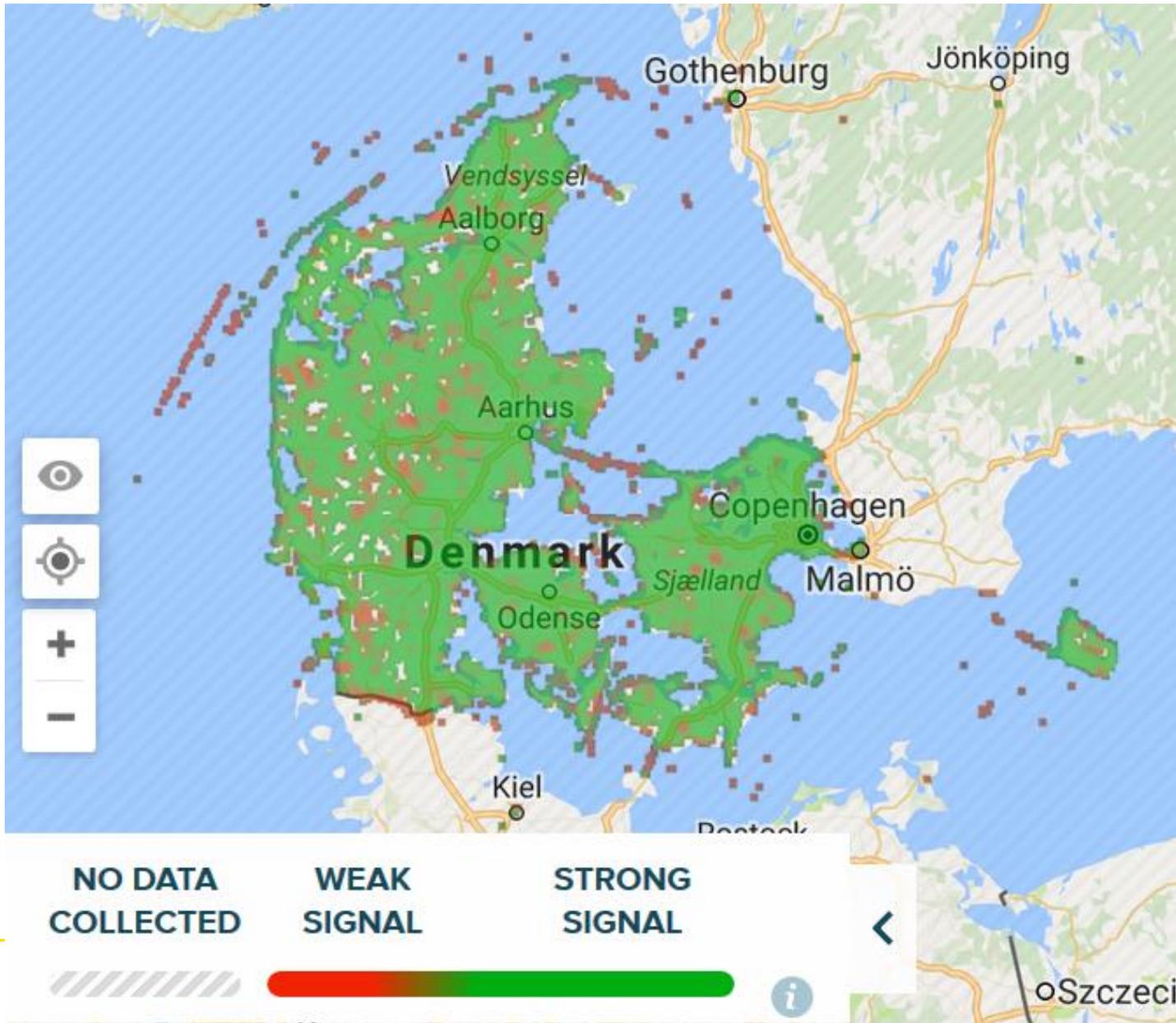
The first and most important step towards e-Navigation



# Connectivity at Sea



# Cellular Coverage



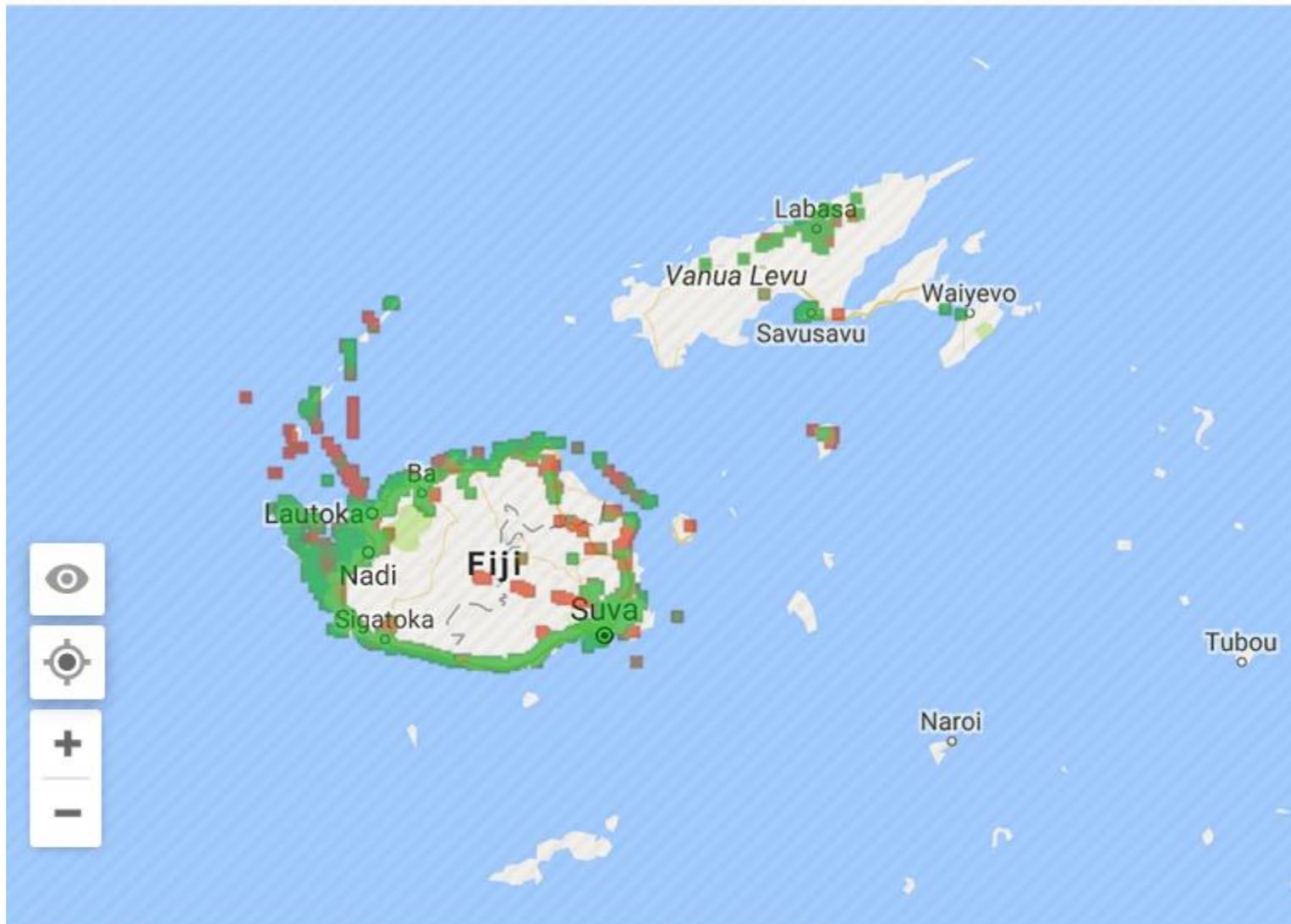


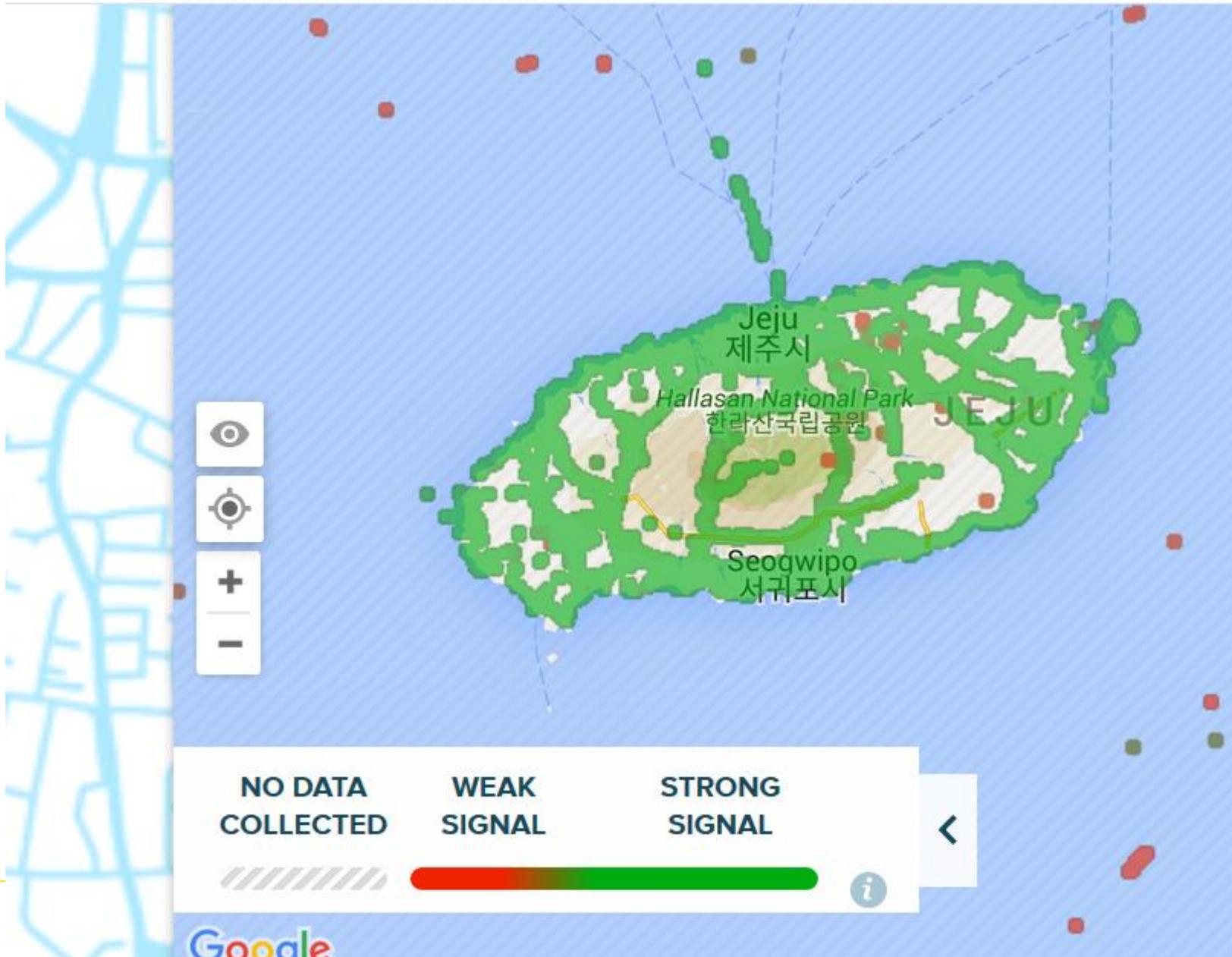
NO DATA  
COLLECTED

WEAK  
SIGNAL

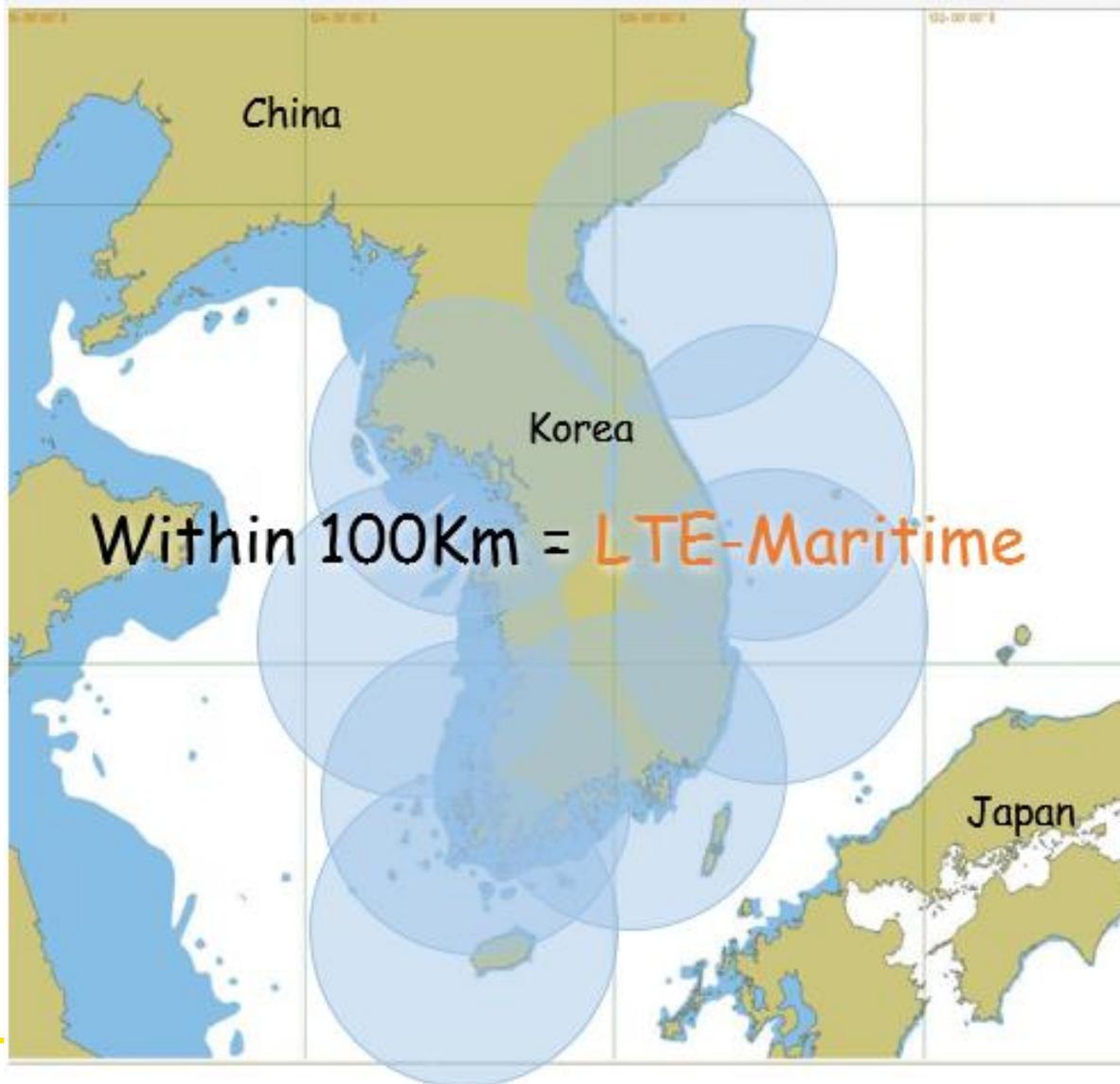
STRONG  
SIGNAL



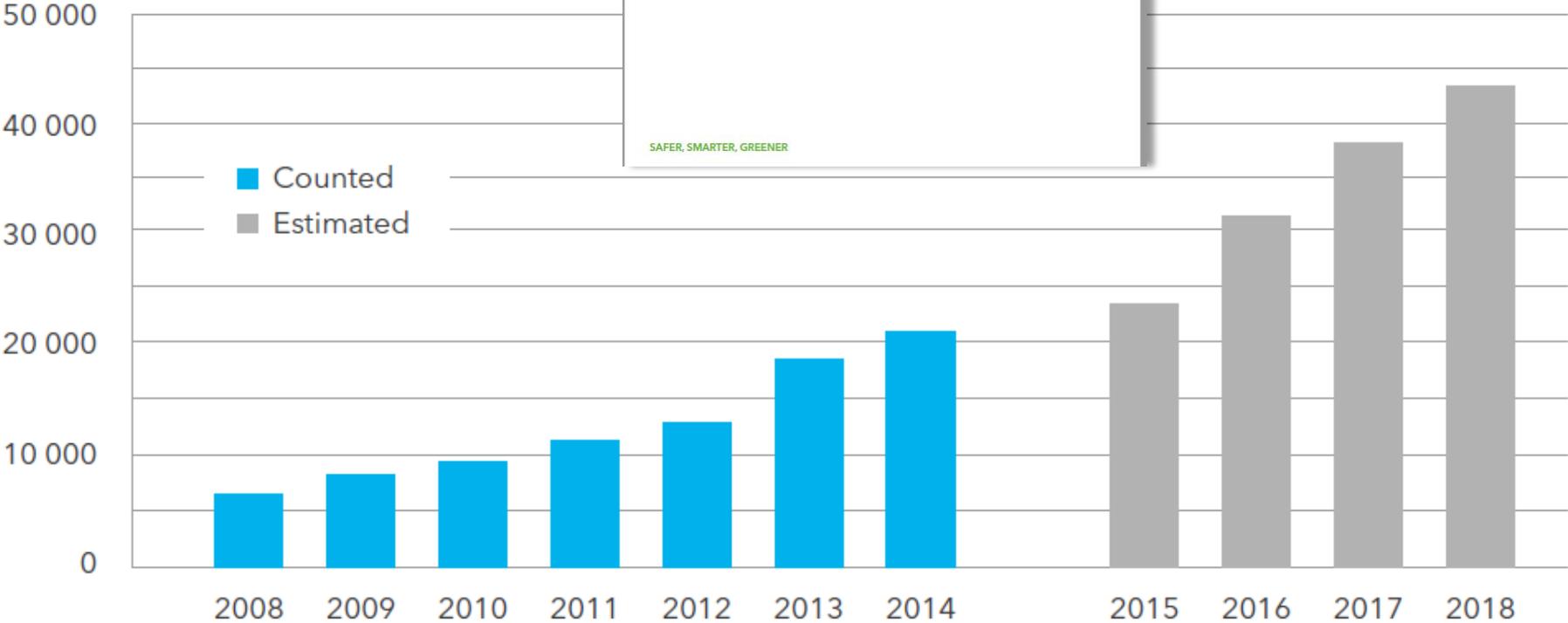




# Very Smart Navigation – LTE based Connectivity



# Satellite links





# Embryonic e-Navigation for all

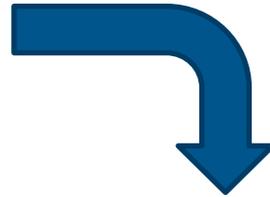
Browser or App based interface



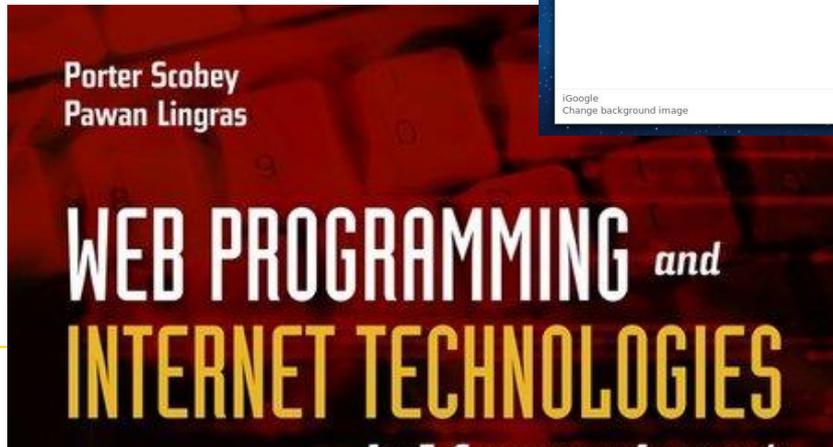
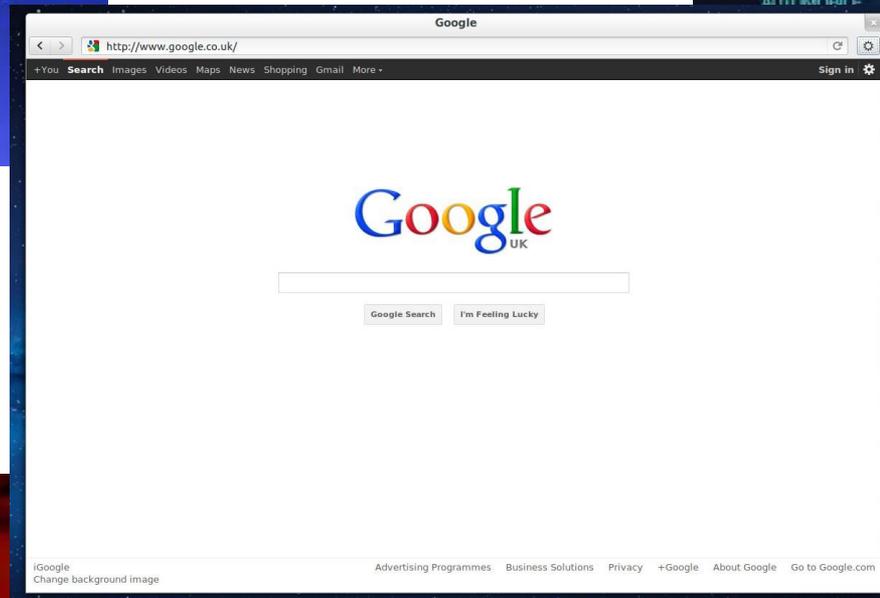
# Consequences of Connectivity



# Introducing e-Navigation



# The Shortcut





ArcticWebGreenland About Vessels Ice Maritime Safety orasila | Log Out

### Your Vessel - ORASILA

**AIS Information** [view all](#)

MMSI	220443000
Call Sign	OYDK2
Country	Denmark
Destination	KAPISILLIT
Nav Status	Under way using engine
ETA	2013-11-14T18:00:16

**ArcticWeb Reporting**

Vessel Information	OK	<a href="#">edit</a>
Schedule	ACTIVE	<a href="#">edit</a>
Greenpos Reporting	OK	<a href="#">edit</a>

**Additional Information**

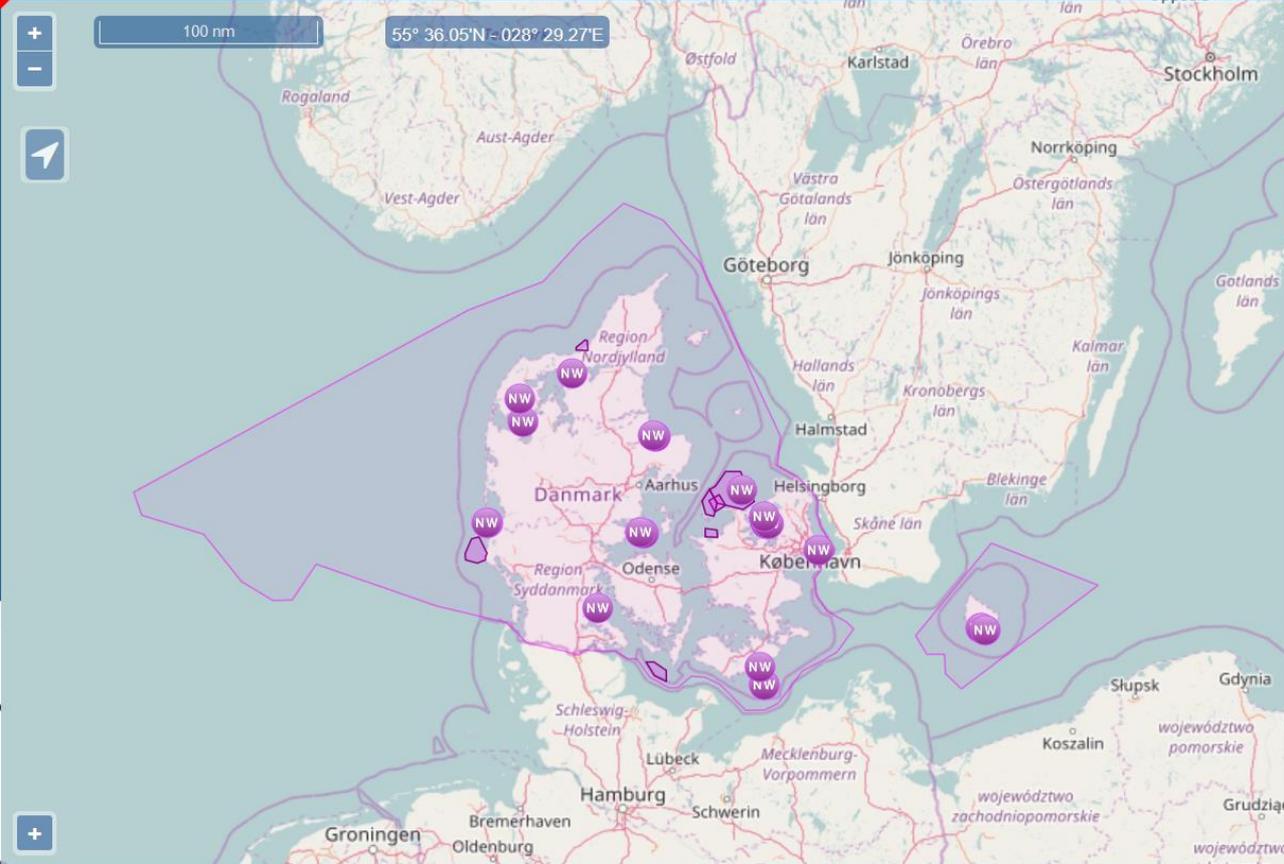
Historical Track	AVAILABLE	<a href="#">view</a>
Nearest Vessels	AVAILABLE	<a href="#">view</a>
3-6-9 hour distance circle based on SOG	NOT AVAILABLE	
METOC on Route	AVAILABLE	<a href="#">view</a>

**Search Vessels**

**Selected Vessel - ORATANK**

**Legends**

669 vessels loaded.



**NW-NM** 25

No-Go Satellite Vessels 0

### Navigational Warnings and Notices to Mariners

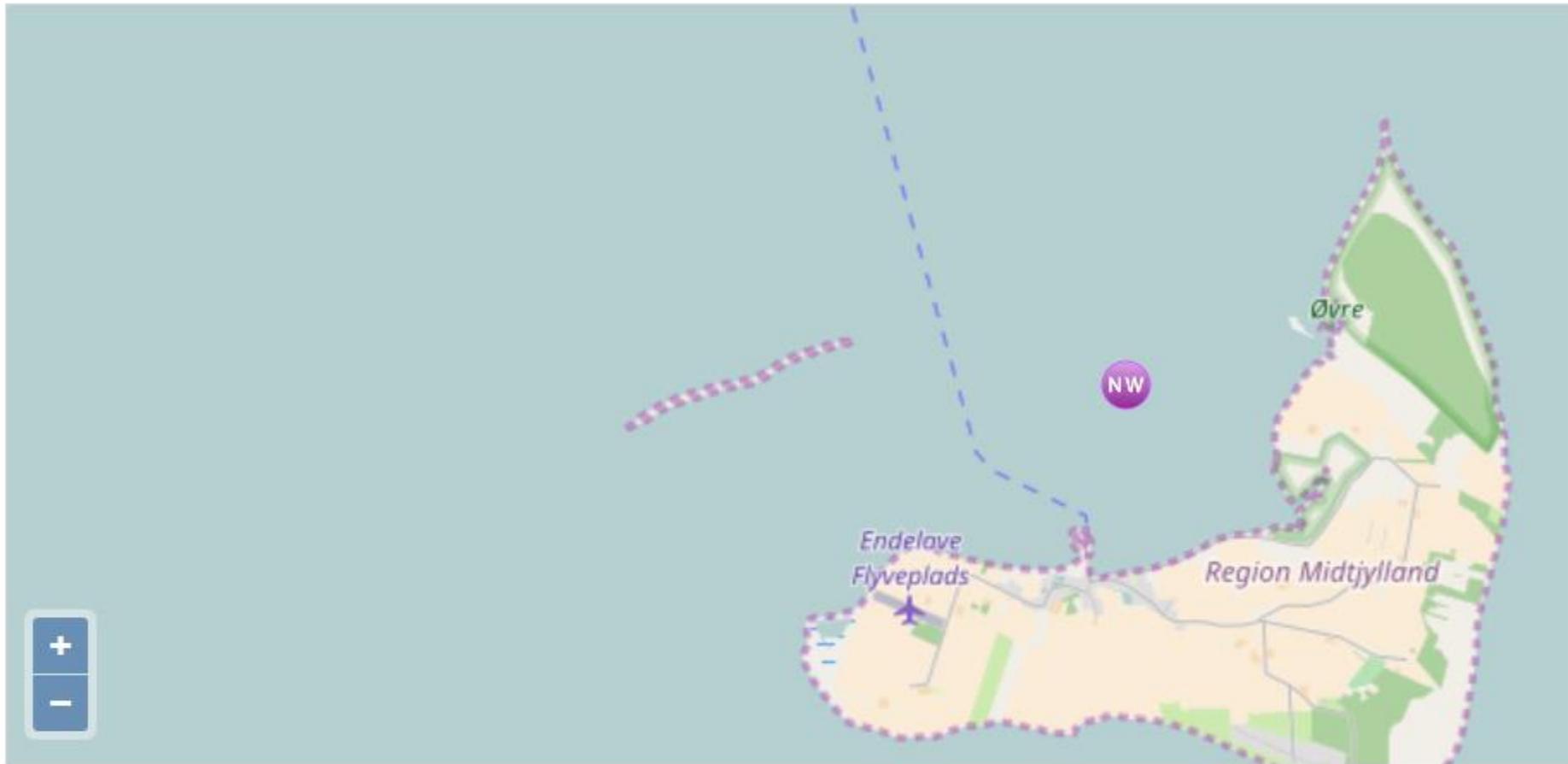
- Danish NW and NM T&P Service
- Danish TEST NW and NM T&P Service

Denmark

- NW** Denmark. DR Tekst-TV. DR Tekst-TV ophører.

Denmark - The Baltic Sea

- NW** Denmark. The Baltic Sea. EK D 371 Marstal Bugt. Firing exercises. Warning.
- NW** **NW-085-17** Denmark. The Baltic Sea. Roedsand Rende. Light buoy missing.
- NW** **NW-089-17** Denmark. The Baltic Sea. Roedsand Rende. Light buoy off station.
- NW** Denmark. The Baltic Sea. EK D 396 Hullebaek. Firing exercises. Warning.

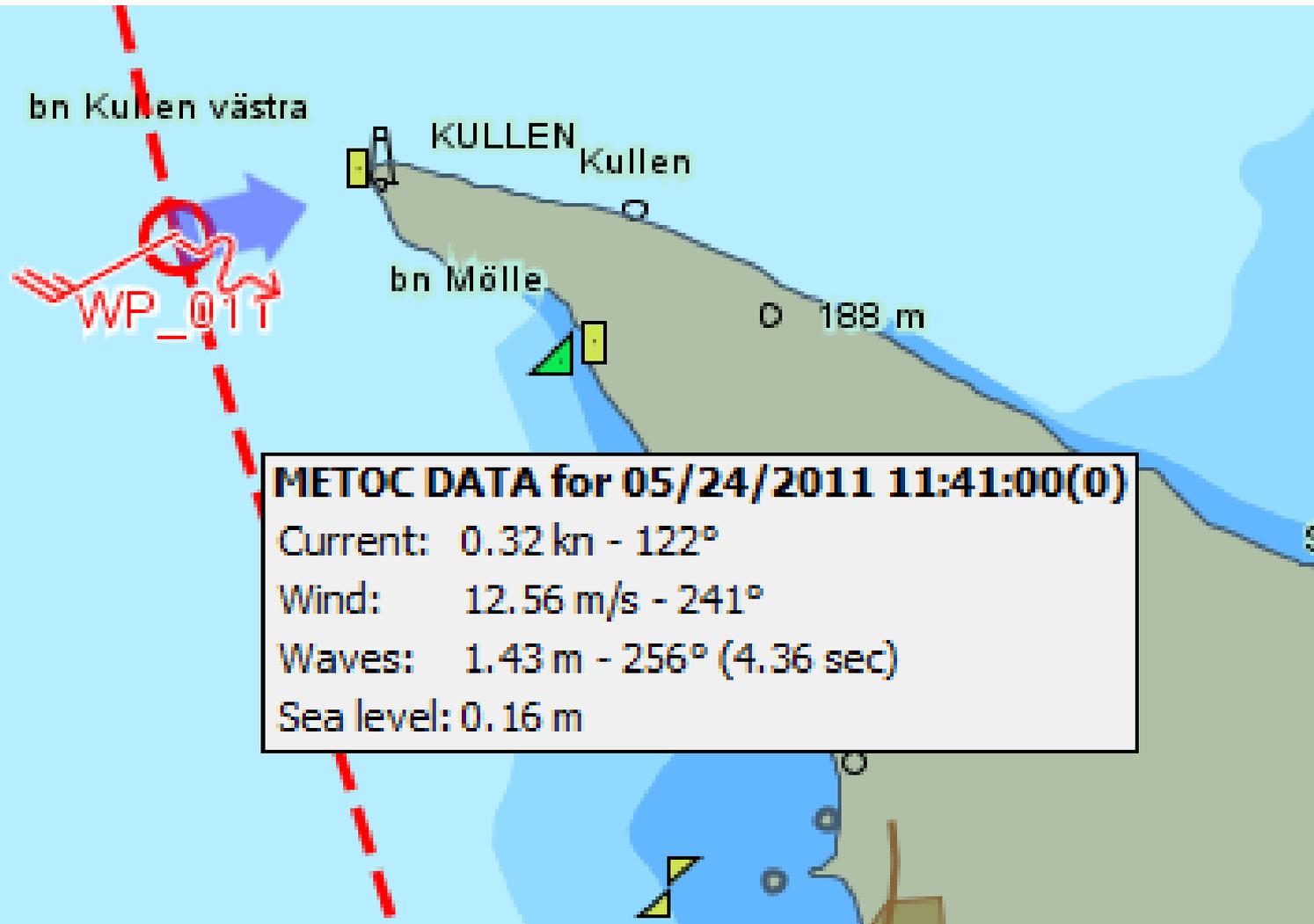


## Denmark. Kattegat. Endelave N. Buoy off station.

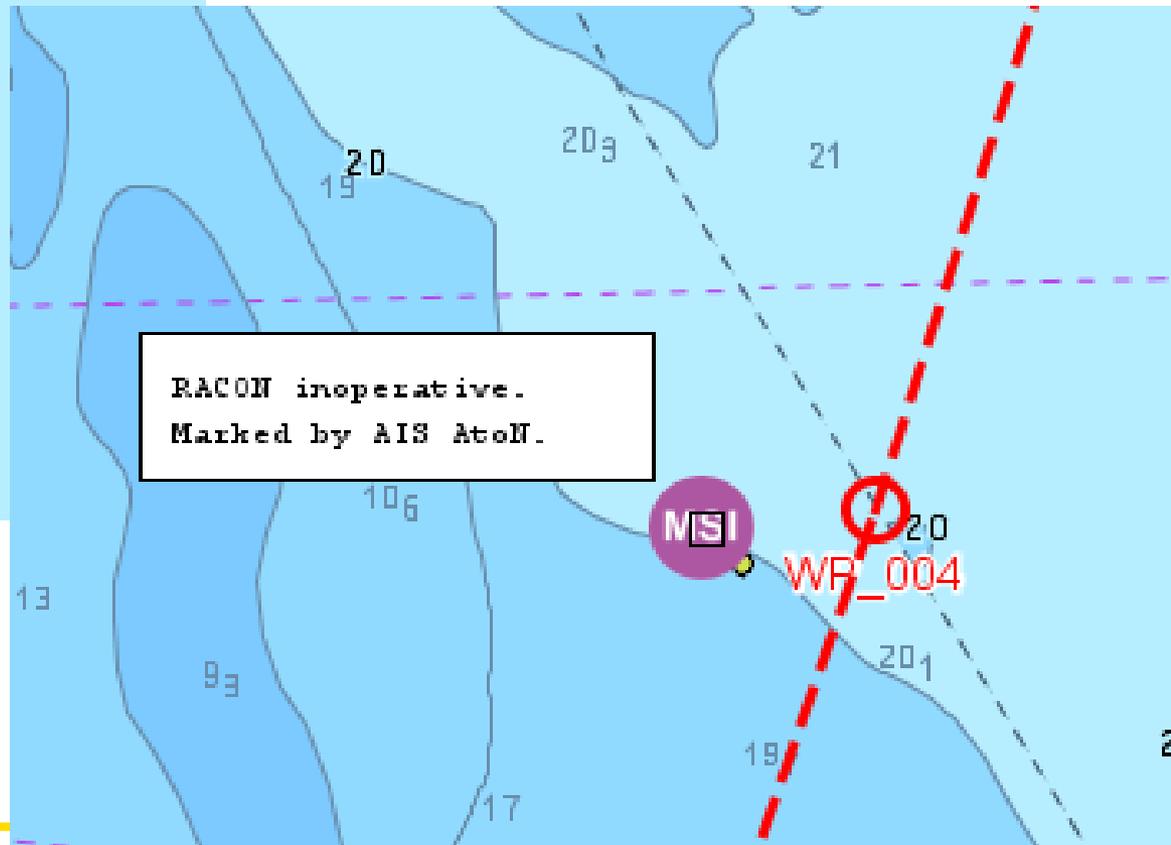
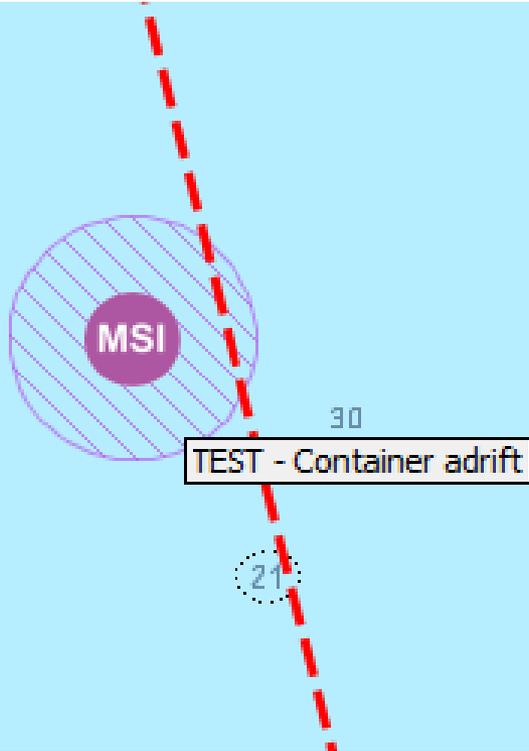
details

**Buoy off station**

The special buoy in pos. 55 46,4 N - 010 16,7 E is off station.



# Baltic Web



# Which e-Navigation Services?



Shore to Ship

- **Maritime Safety Information**
- **Virtual Aids to Navigation**

Ship to Ship, ship to shore

- **Virtual AIS Positioning service**
- **Messaging service Ship to Ship**

Connectivity is key

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# Embryonic e-Navigation Roadmap



- **Arctic Web**
- **Baltic Web**
  
- **Africa Web is being contemplated**
- **Asia Pacific Web**
  
- **World-Wide Maritime Web ☺**

All based on the same simple concept  
Open Source

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