



ARM7-5.2

# E-NAVIGATION IN DEVELOPING COUNTRIES

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

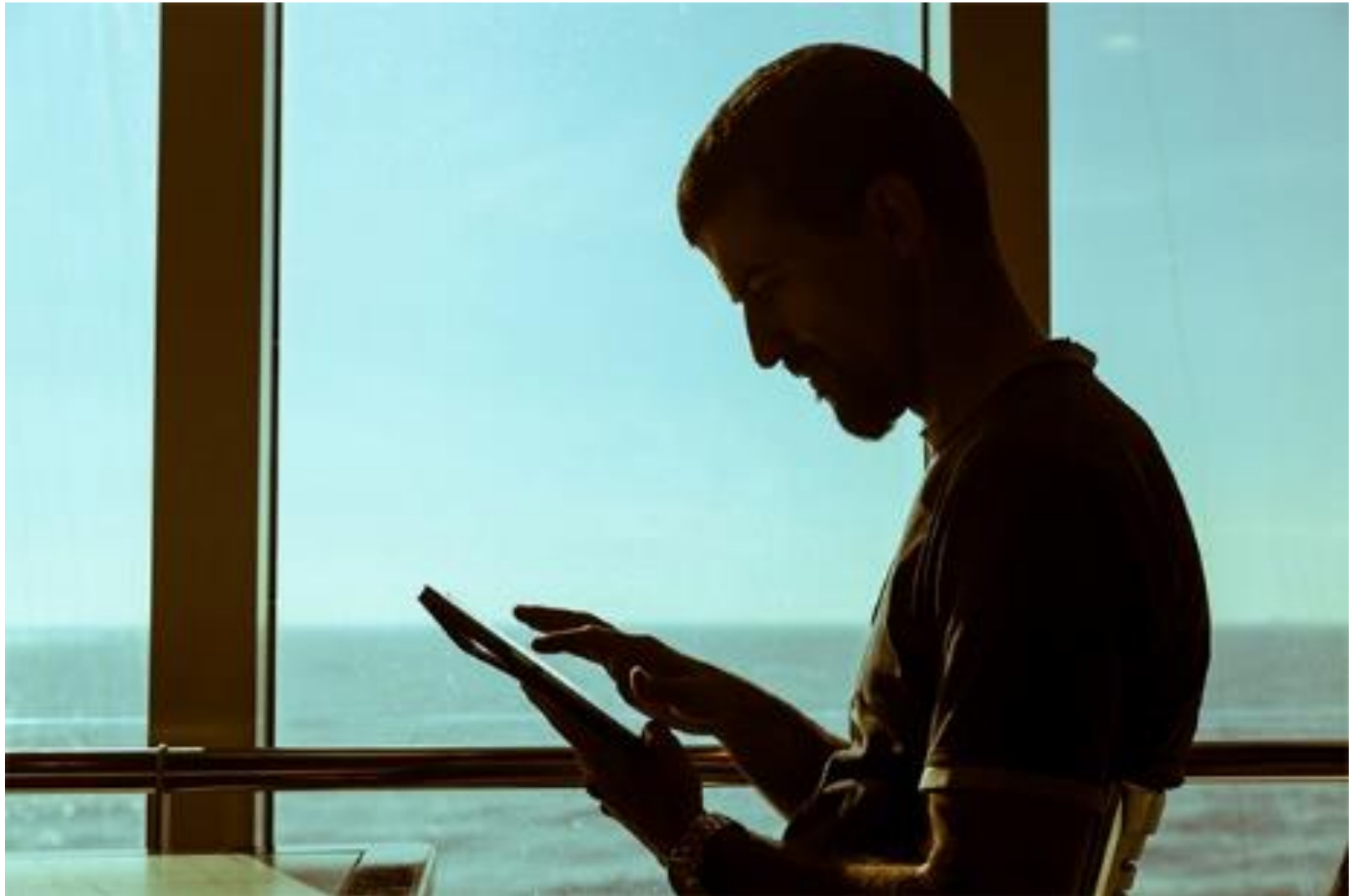


# Connectivity

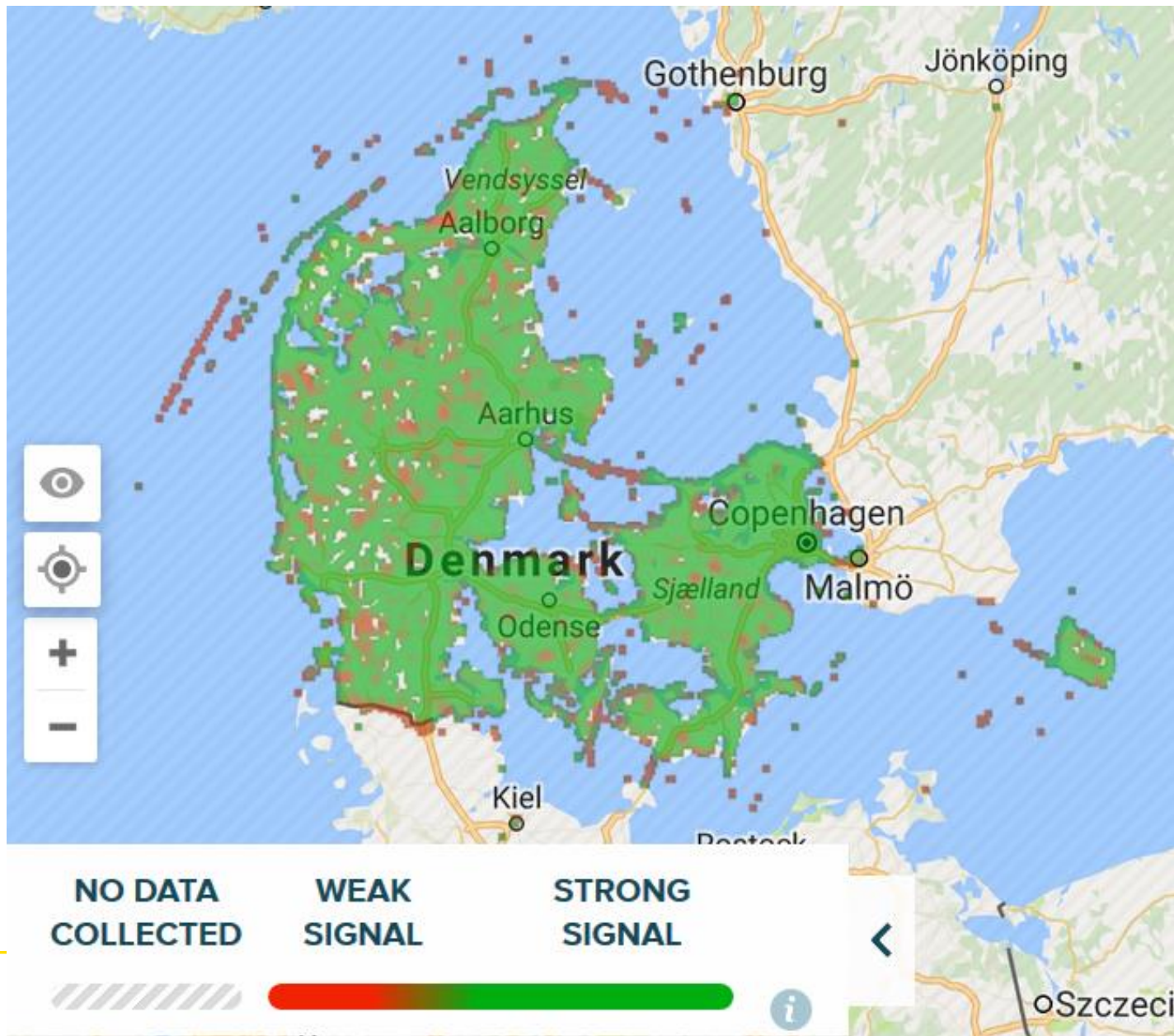
The first and most important step towards e-Navigation

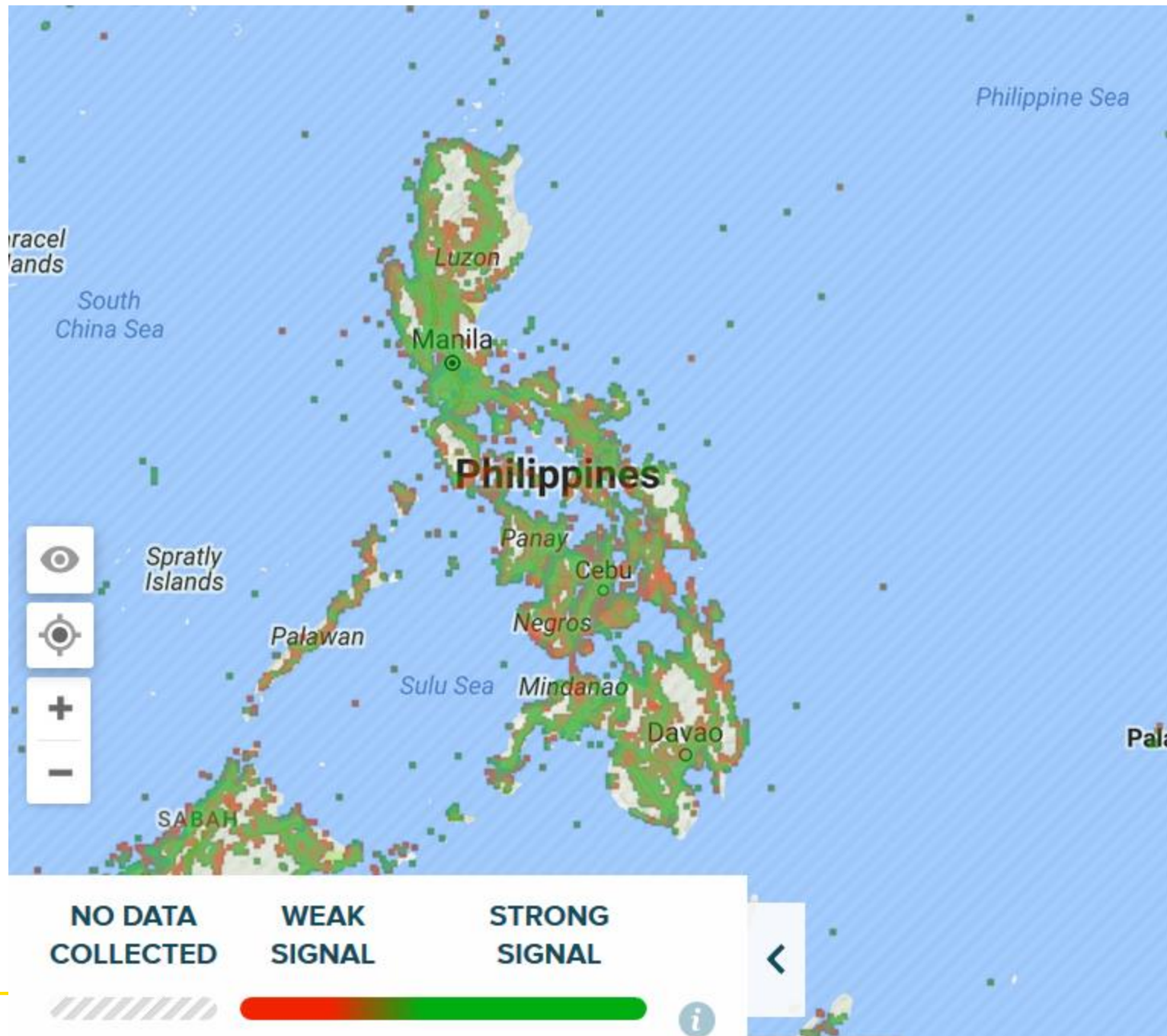


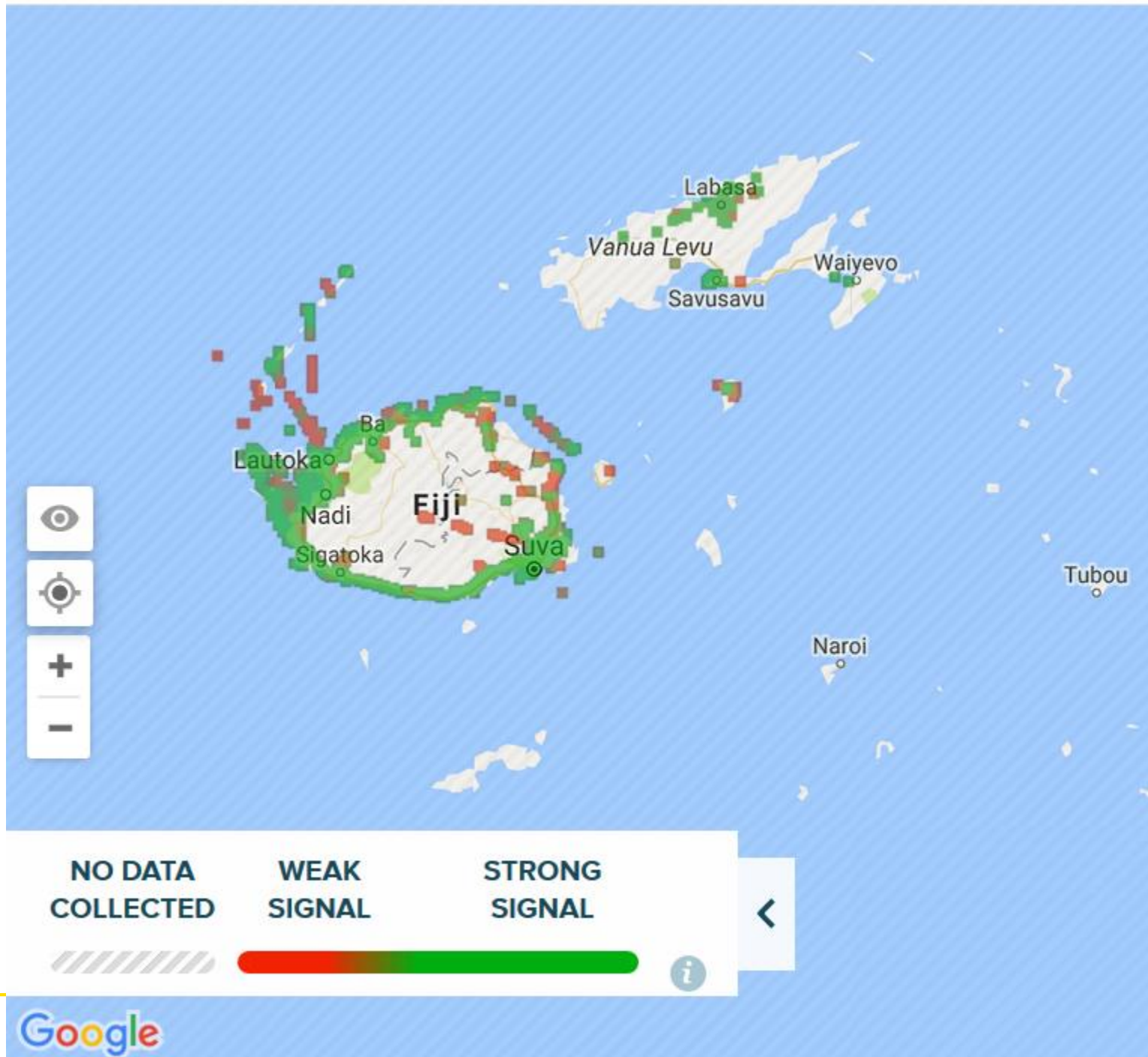
# Connectivity at Sea

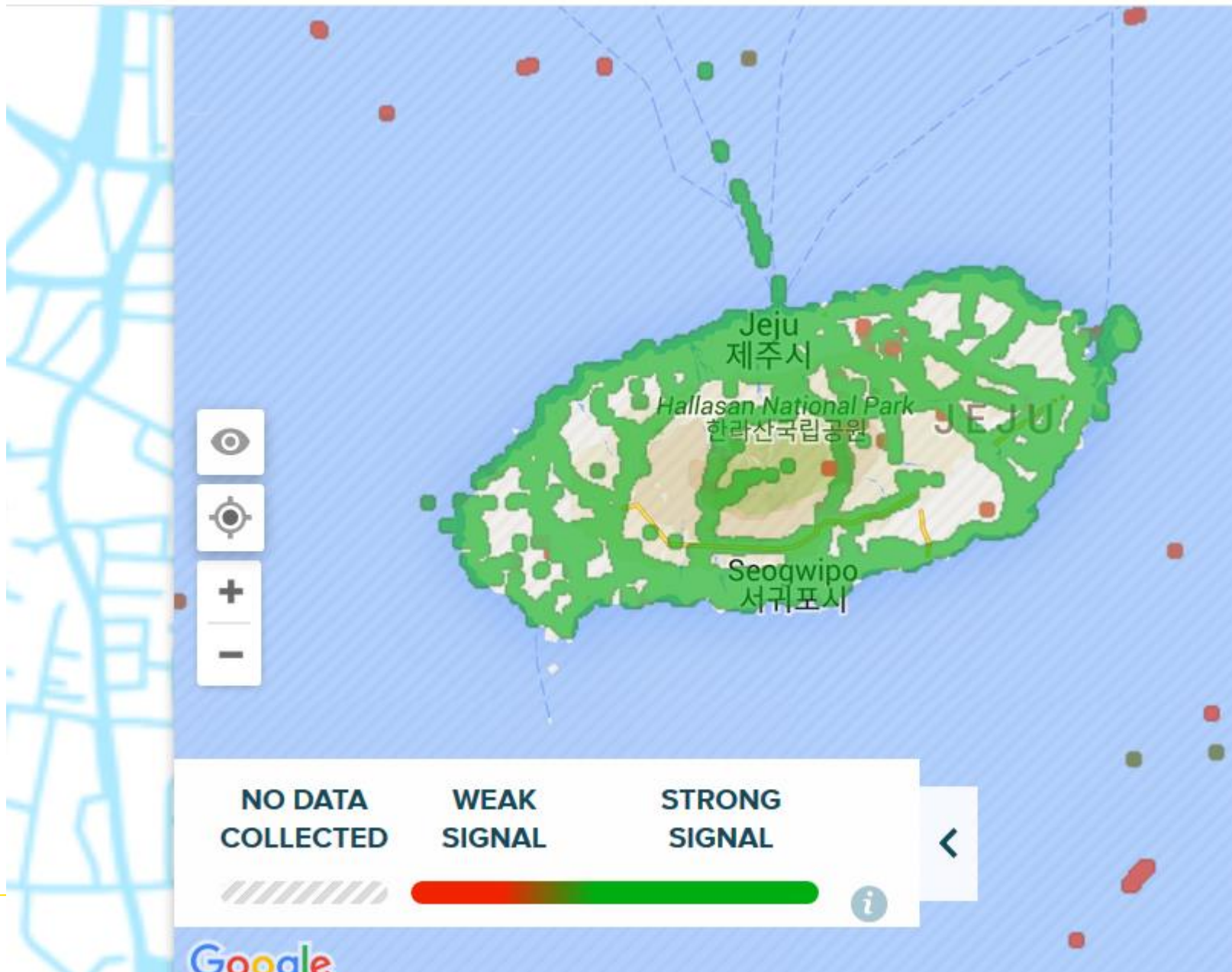


# Cellular Coverage

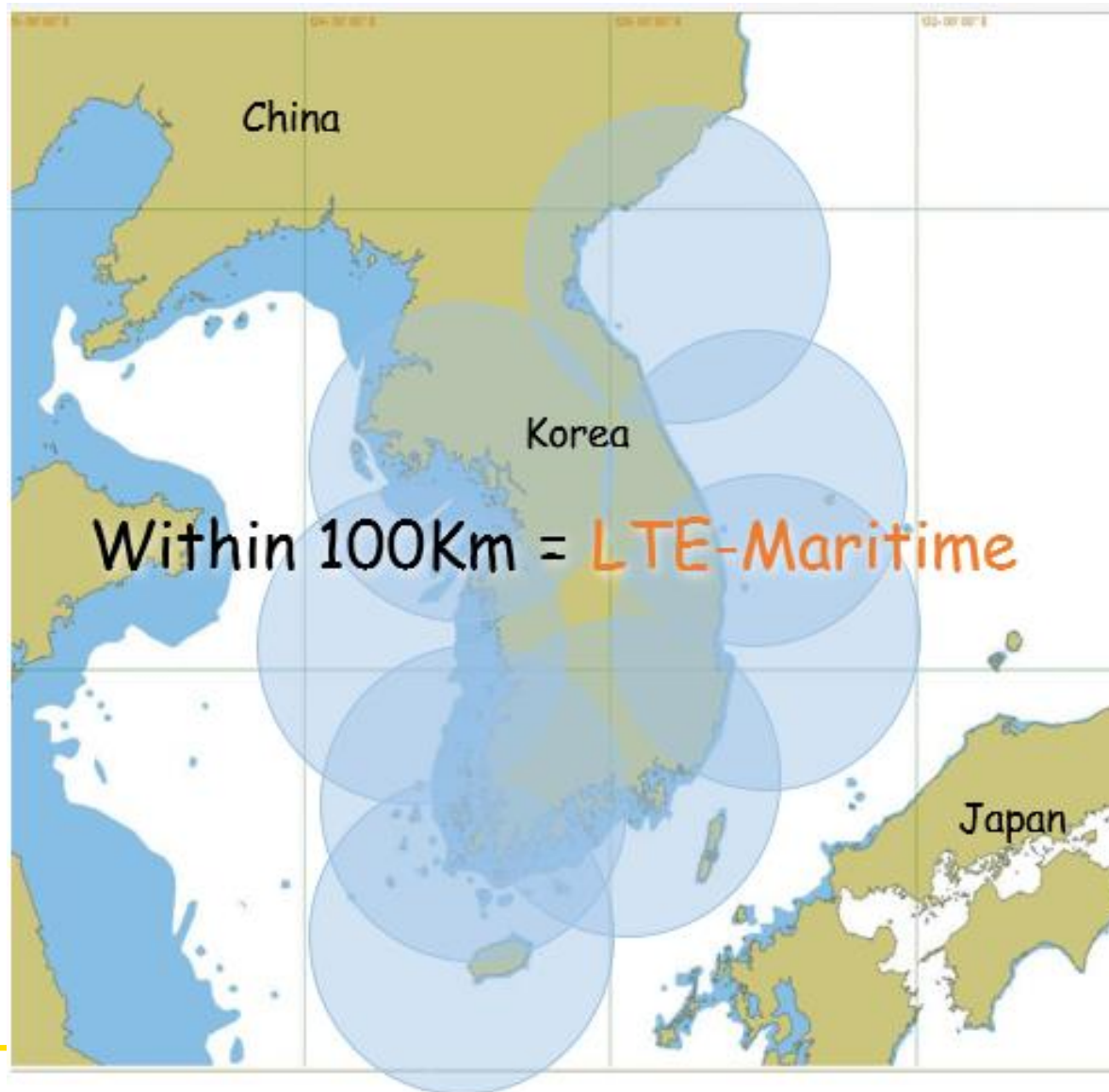




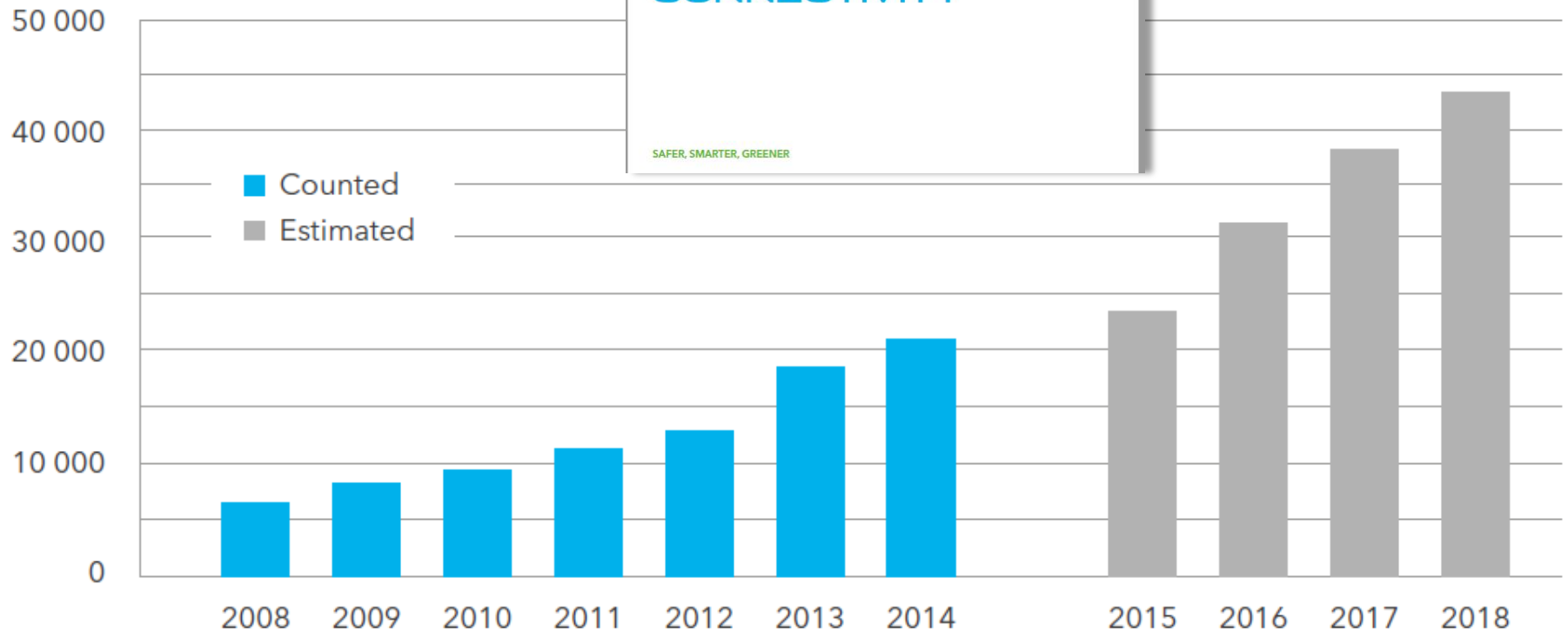




# Very Smart Navigation – LTE based Connectivity



# Satellite links





# Embryonic e-Navigation for all

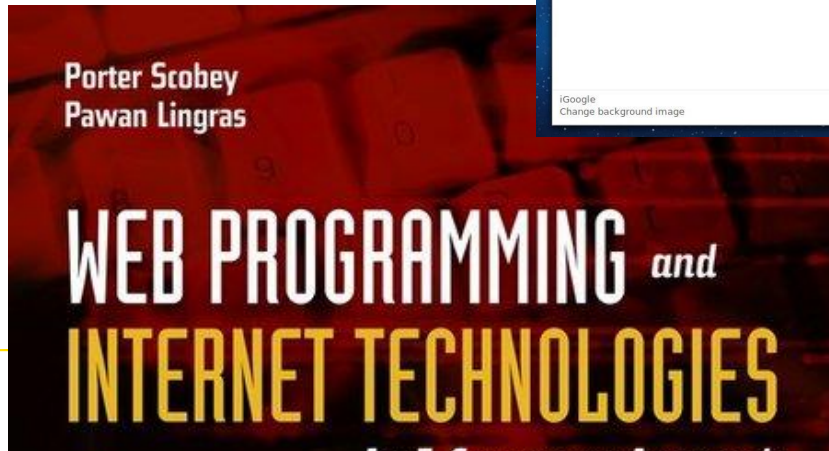
Browser or App based interface

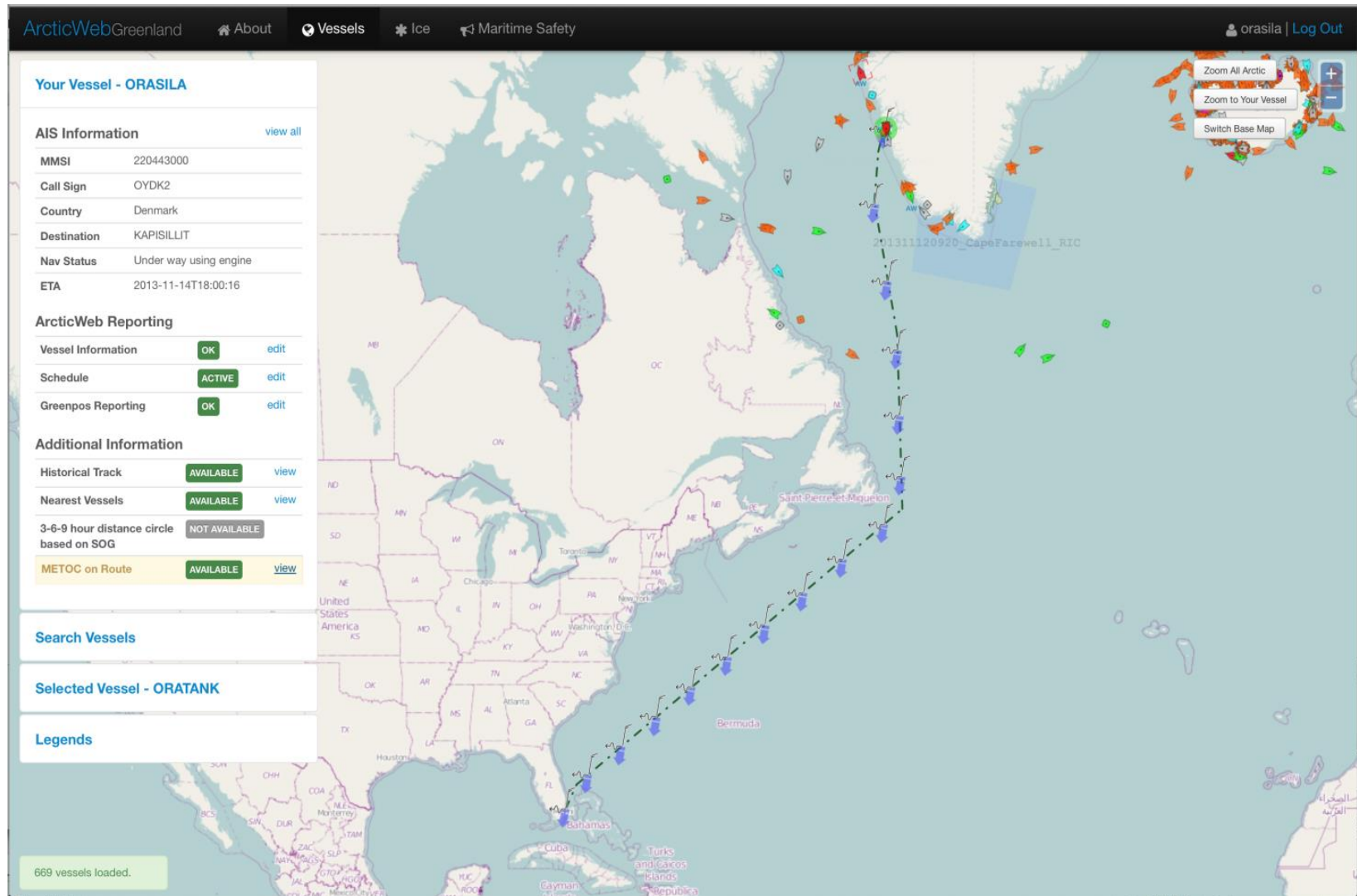
# Consequences of Connectivity



# Introducing e-Navigation









<https://balticweb.e-navigation.net>

smart navigation lte

BETA

BalticWeb

Maps

Traffic

Satellite

Info

+

-

100 nm

55° 36.05'N - 028° 29.27'E

+

NW

NW-NM

25

No-Go

Satellite

Vessels

0

Navigationel Warnings and Notices to Mariners

☒ NW
 ☐ NM

☒ 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

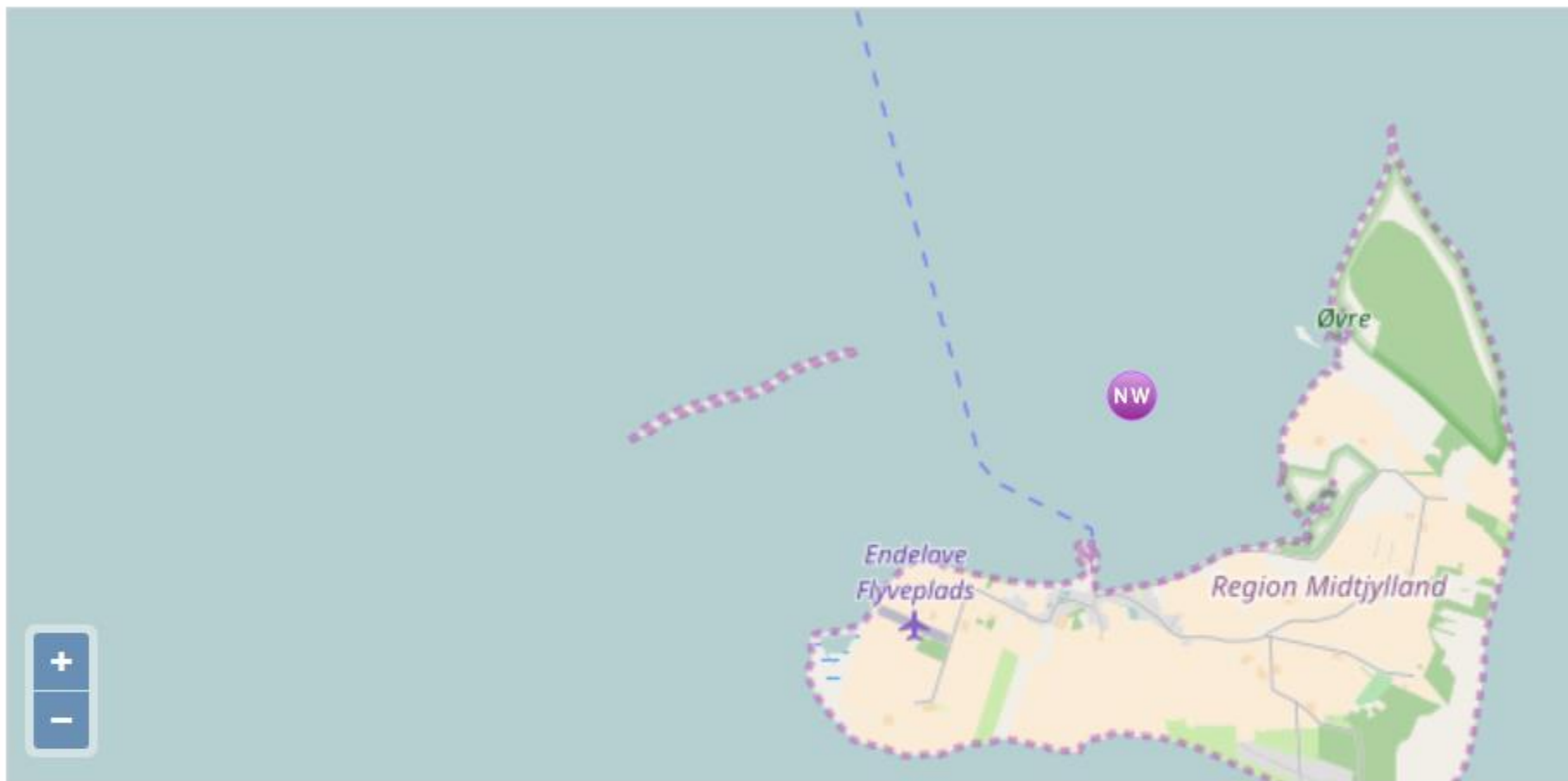
NW-085-17 Denmark. The Baltic Sea. Roedsand Rende. Light buoy missing.

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.

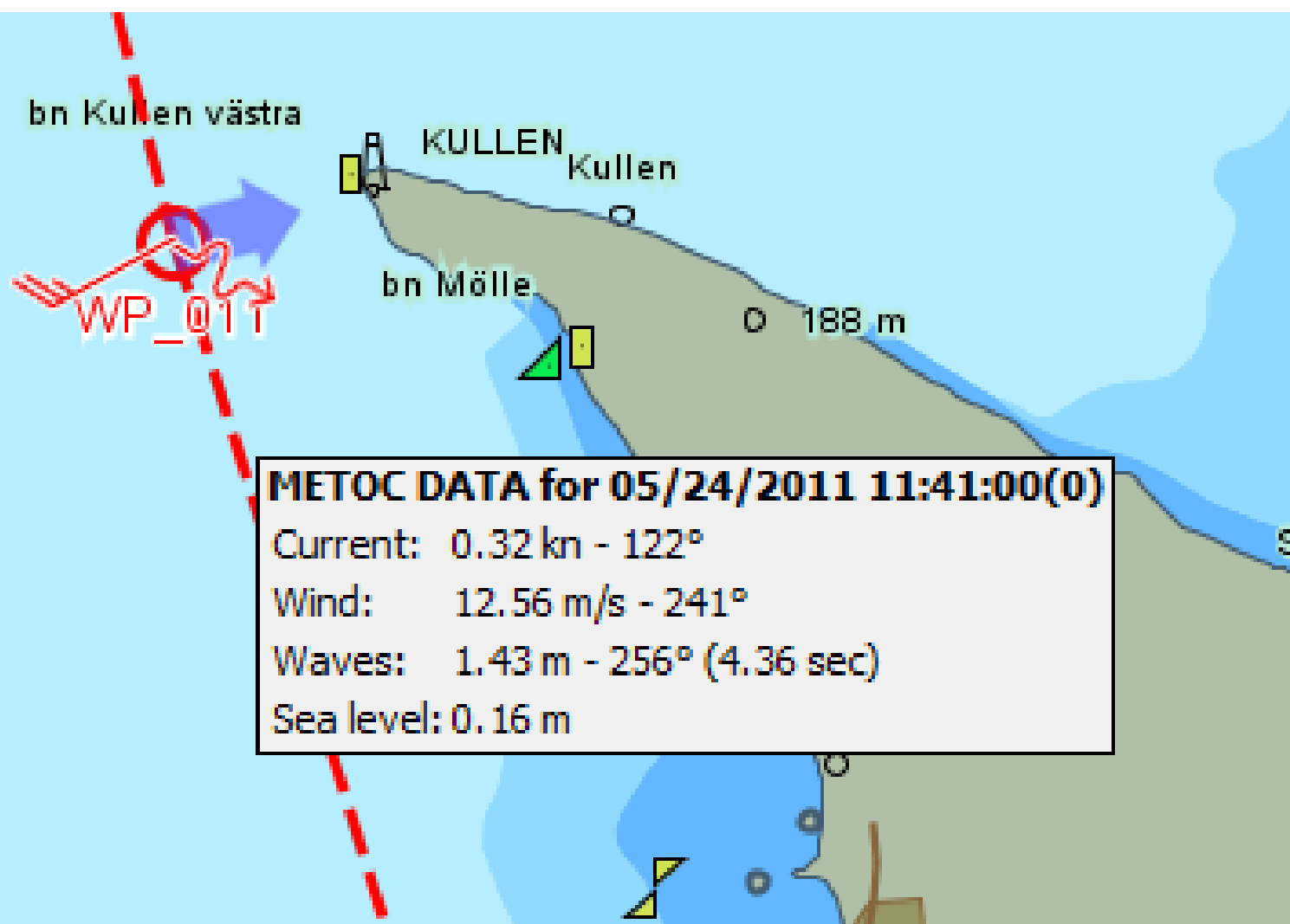


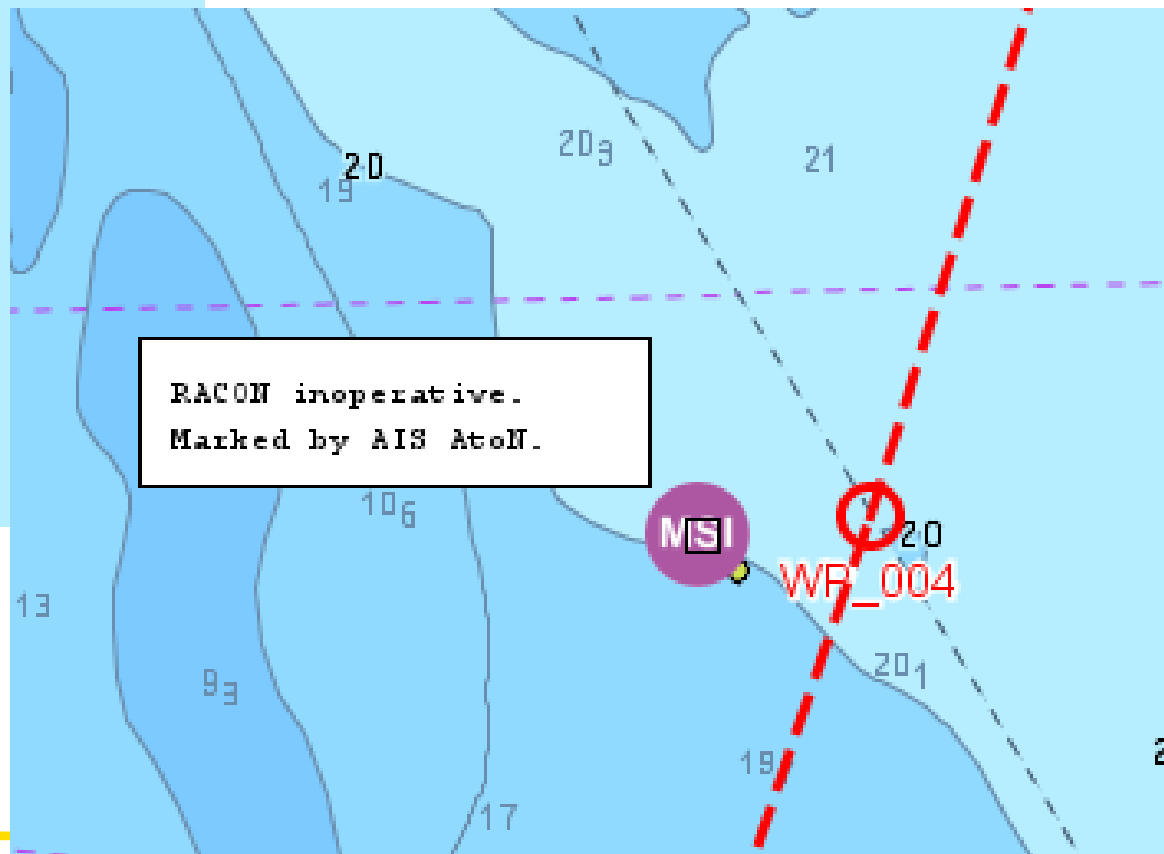
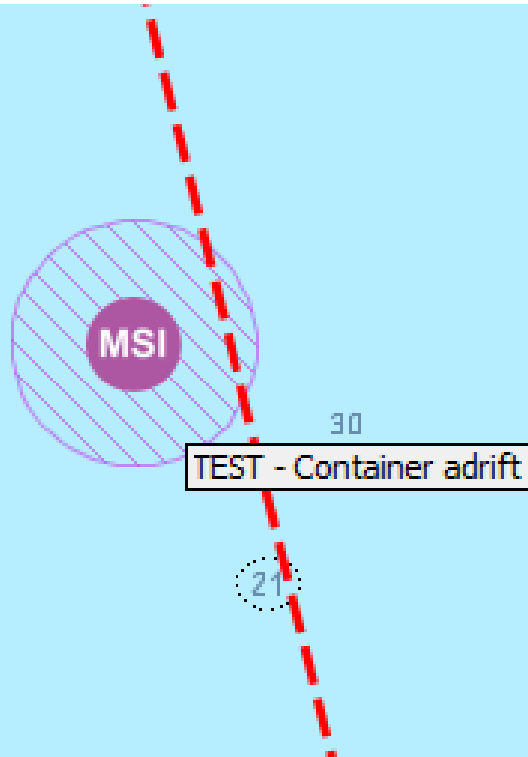
## Denmark. Kattegat. Endelave N. Buoy off station.

details

**Buoy off station**

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





# 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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