UK Hydrographic Office

# Data and the future of navigation & UK Maritime Policy update.

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# We are a trading fund of the MOD

## We operate as a self-funded organisation to fulfil our public task:

- Providing operational support to Defence
- Supporting the Maritime & Coastguard Agency's obligations to the SOLAS treaty
- Ensuring UK hydrographic data is accurate and up-to-date
- Providing expert advice on hydrography and marine geospatial information

Ministry of Defence

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ADMIRALTY Maritime Data Solutions

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# We need to keep adapting to meet the future needs for digital navigation

AVCS ADMIRALTY Vector Chart Service

The most comprehensive Electronic Navigational Chart (ENC) coverage available

AENP ADMIRALTY e-Nautical Publications

Electronic copies of official ADMIRALTY Nautical Publications

ADP ADMIRALTY Digital Publications

Computer-based applications of the UKHO's market-leading, paper-based Nautical Publications

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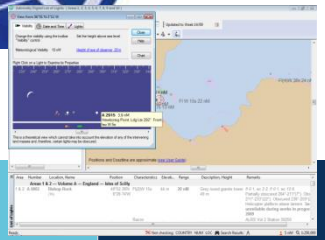
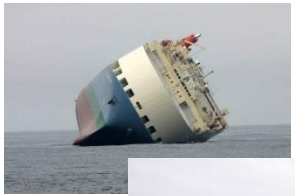
# In summary

We make these…

…for these…

…to help prevent this!



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# But what about MASS?

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# Degrees of autonomy

- **Ship with automated processes and decision support (most likely to be a conventional ship):** seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated.
- **Remotely controlled ship with seafarers onboard:** the ship is controlled and operated from another location, but seafarers are on board (which would include a Periodically Unmanned Ship and a ship with a Periodically Unmanned Bridge).
- **Remotely controlled ship without seafarers on board:** the ship is controlled and operated from another location. There are no seafarers onboard.
- **Fully autonomous ship:** the operating system of the ship is able to make decisions and determine actions by itself.

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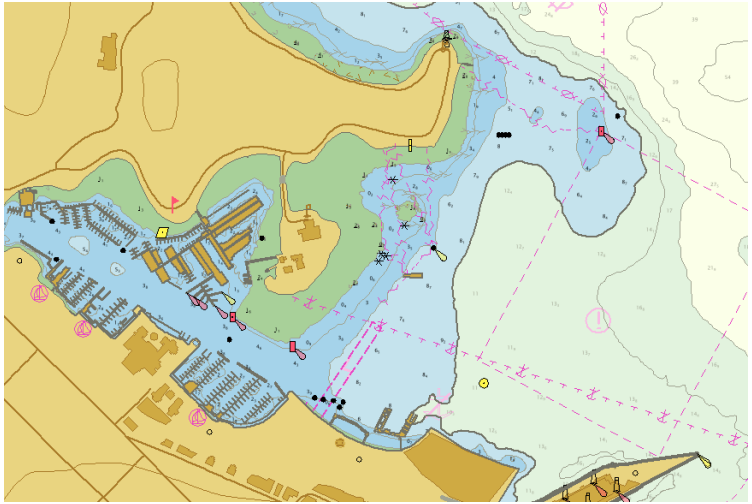
# Focus on platforms

- Spoke to operators  - little thought on navigational data!
- Focus is on sensor technology (sense and avoid)
- Colreg algorithms
- Forward looking sonar
- Where is the need for data?



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# Current Charts not fit for purpose for fully Autonomous Vessel navigation

Charts (ENCs) are still fundamentally designed to be viewed and interpreted by a human being

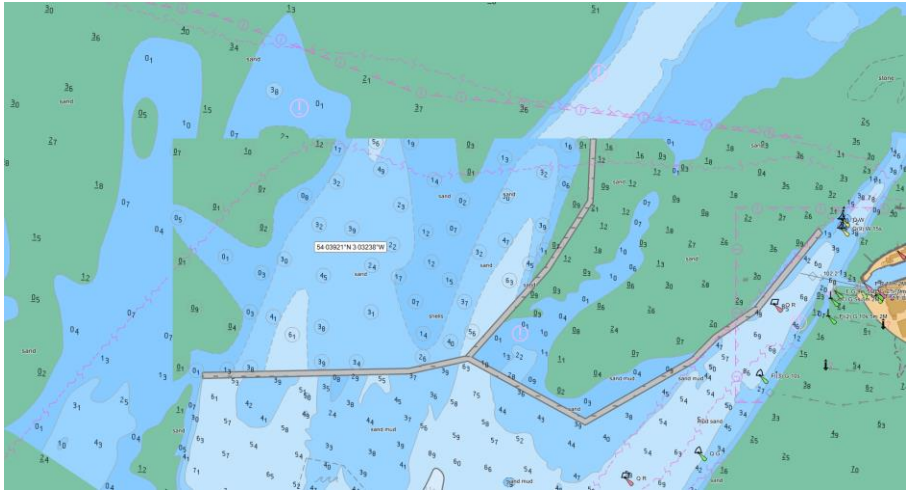
Charts are a subjective cartographic representation of the real world

Charts suffer from data inconsistencies

Charts suffer from horizontal inconsistencies

A lot of contextual information is captured in text notes (SDs, PAGs, text notes etc)

S-57 (ENC data standard) is not extensible



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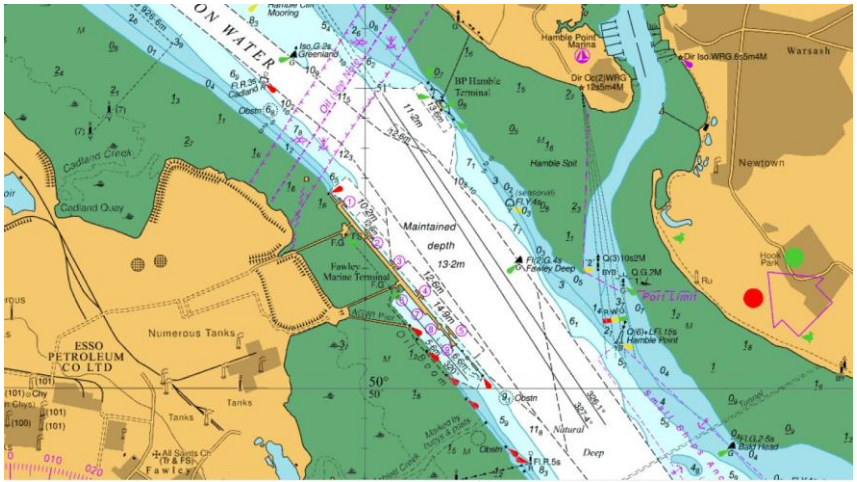
# Current charting




**10. Speed Regulations:** ~~Consistent with safe navigation,~~ vessels drawing 6·0m or over must not exceed a speed over the ground of 7 kn when approaching or passing the Fawley Marine Terminal, or the BP Hamble Terminal. Other vessels should not pass the terminal at excessive speed. Vessels passing the Fawley Marine Terminal and the BP Hamble Terminal should not navigate closer than 130 m from the face of the jetties ~~in order to protect vessels alongside, to guard against the interaction between vessels and to prevent the risk of naked lights within these areas~~. There is a speed limit of 6 kn in the area north of a line joining Hythe Pier (50°52′·49N 1°23′·60W) and Weston Shelf Light Buoy, 3 cables NE.

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# Current charting

APPENDIX I

*Speed Limits in Certain Areas*

**10.**(1) Except as provided for in paragraph (2) below no vessel shall exceed a speed of 10 knots through the water north of 50° 20′.0 North (the latitude of Plymouth Breakwater) or any waters of the Dockyard Port within 400 metres of the shore, save with a licence in writing signed by the Queen's Harbour Master.

(2) Vessel;s under 15 metres in length overall may exceed the speed limit specified in paragraph (1) above in the following areas:

(a) Such waters of the Dockyard Port that are outside 400 metres from the shore and in the access lane for water skiers and jet-skiers which is bounded to the east by the line joining Fisher's Nose to the western extremity of Mount Batten Breakwater, and bounded to the west by the line joining the western extremity of the Royal Plymouth Corinthian Yacht Club to the West Mallard Buoy;

(b) water skiing Areas shown on current Admiralty charts;

(c) Such other areas of the Dockyard Port as the Queen's Harbour Master shall from time to time determine and publish as a local Notices to Mariners.

(3) No vessel within the Dockyard Port shall exceed a speed of 8 knots through the water to the east of a line drawn from Fishers Nose to the western end of Mount Batten Breakwater, save with a licence in writing signed by the Queen's Harbour Master and where authorised in accordance with paragraph (2) (b) above.

(4) No vessel within the Dockyard Port shall exceed a speed of 4 knots through the water in the approaches to Sutton Harbour north of a line drawn due east from Fishers Nose save with a licence in writing signed by the Queen's Harbour Master.

(5) No vessel shall exceed a speed of 4 knots through the water in designated Bathing Areas shown on current Admiralty charts.

(6) No vessel shall exceed a speed of 4 knots through the water in designated Diving Areas shown on current Admiralty charts.

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# DfT T-TRIG Funding

- Joint bid £30k T-TRIG funding to scope out the problem and recommend potential navigational product of the future
- Output will be a report and presentation to DfT
- Aim  to raise awareness of issue
- Lead to more funding to prototype our recommendations with industry

Department for Transport

L3 HARRIS

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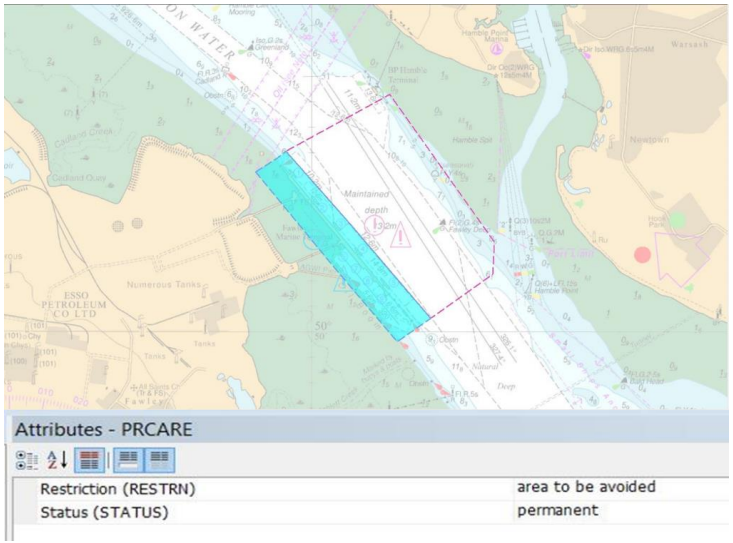
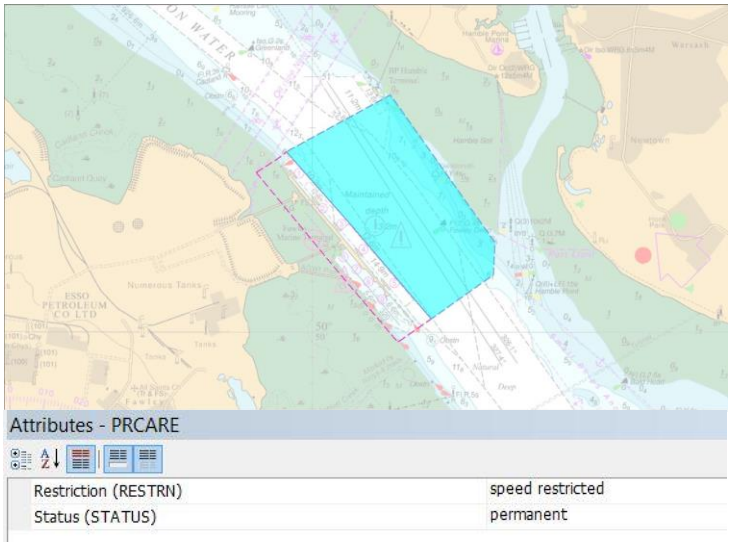
# The future of navigation



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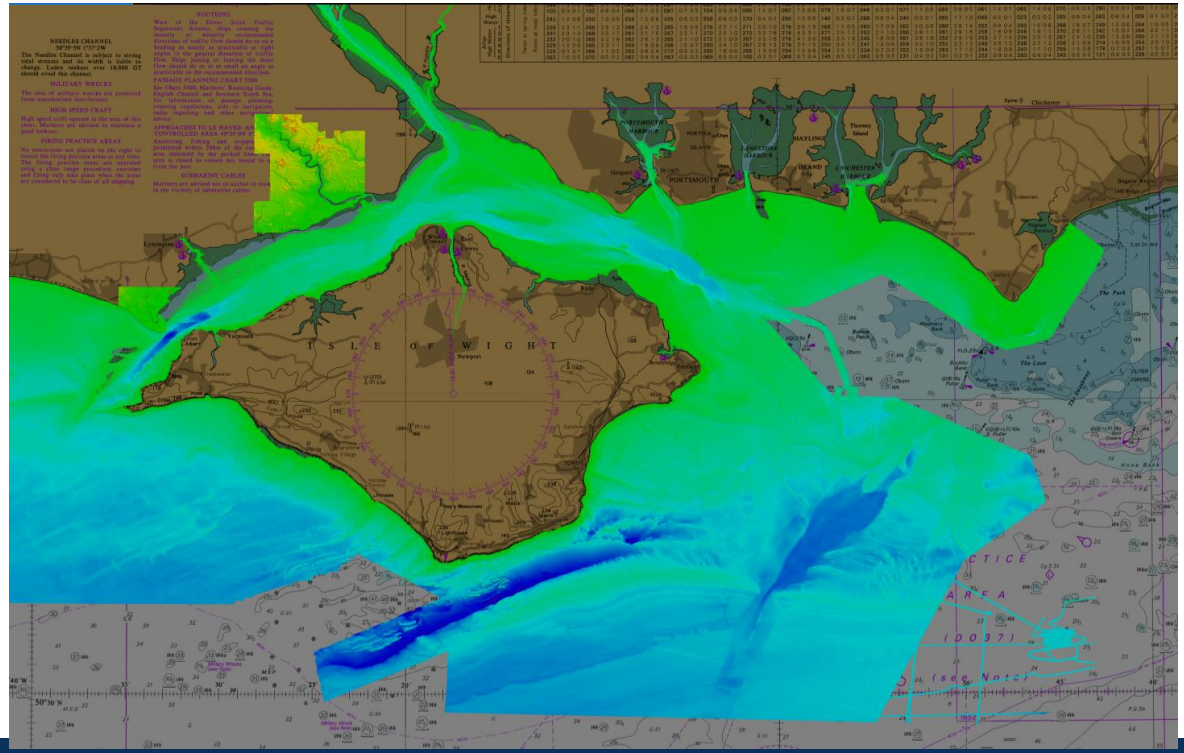
# The future of navigation



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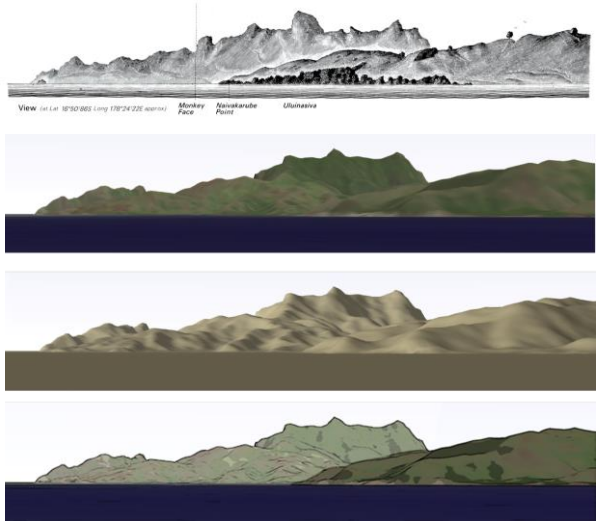
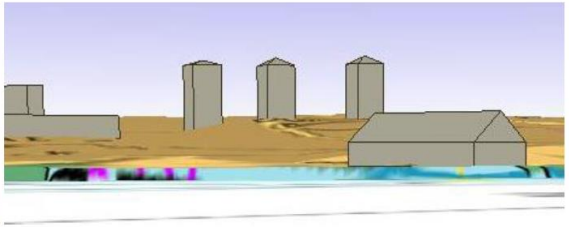
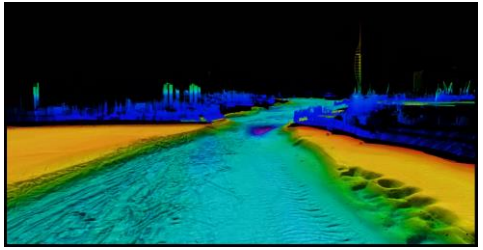
# The future of navigation





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# Maritime Autonomy Regulation Lab (MARLab)

Maritime & Coastguard Agency



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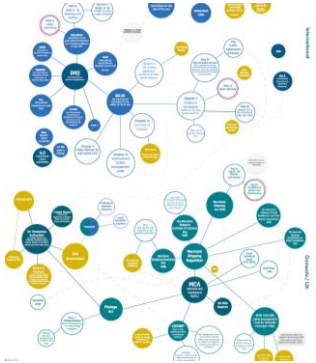
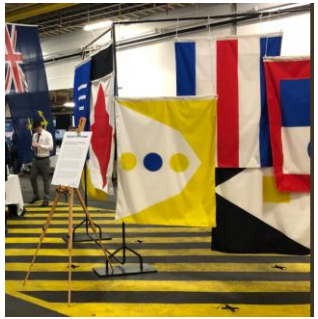
# Maritime Autonomy Regulation Lab (MARLab)

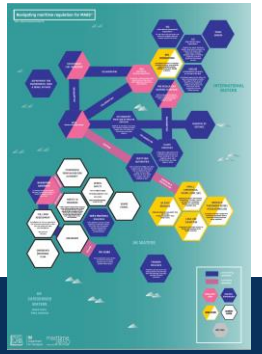
Maritime & Coastguard Agency

Maritime Autonomy Regulation Lab (MARLab)

- Identify barriers and challenges
- Explore how the MCA could regulate MASS in UK waters
- Explore use of data to support industry development





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# MARLab: Data

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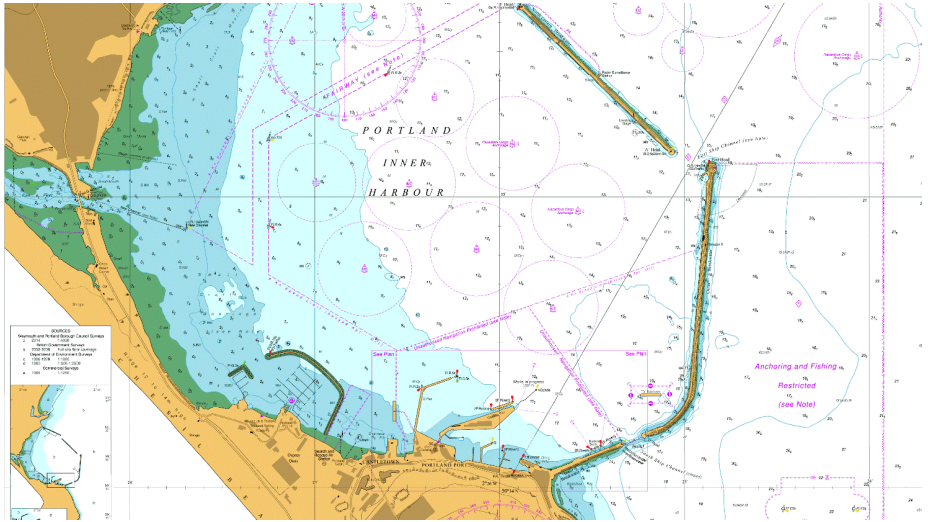
Maritime Autonomy Regulation Lab (MARLab)

- Identify data requirements
- Explore use of Government data to support MASS
- Evaluate uses of data and implications for regulation



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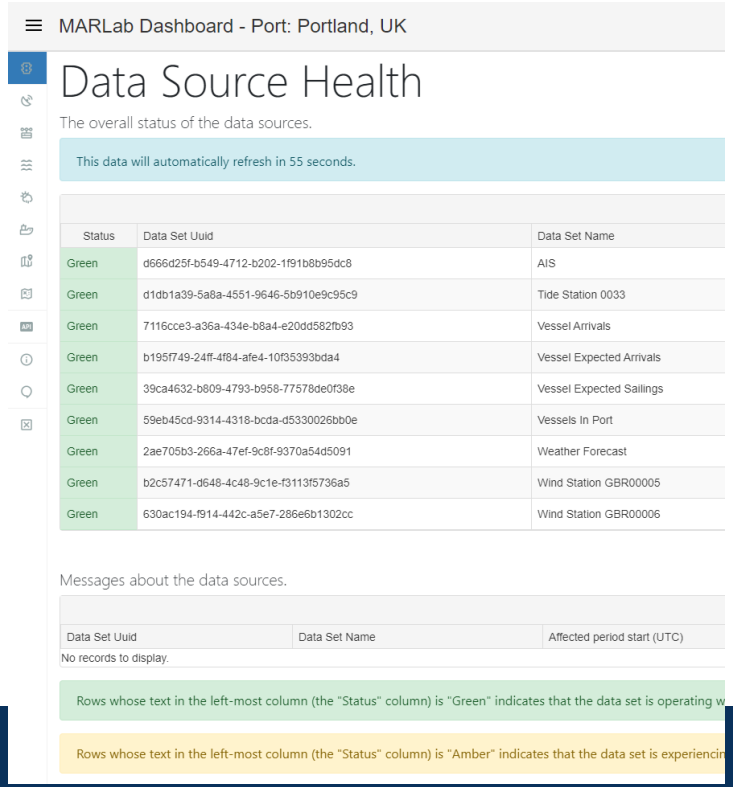
# MARLab Portal

Maritime & Coastguard Agency

Maritime Autonomy Regulation Lab (MARLab)

SOLIS MARINE CONSULTANTS

MariTrace




- Weather Forecast
- Tide
- Chart
- Wind
- Ship Movements
- AIS
- Navigation Advisories

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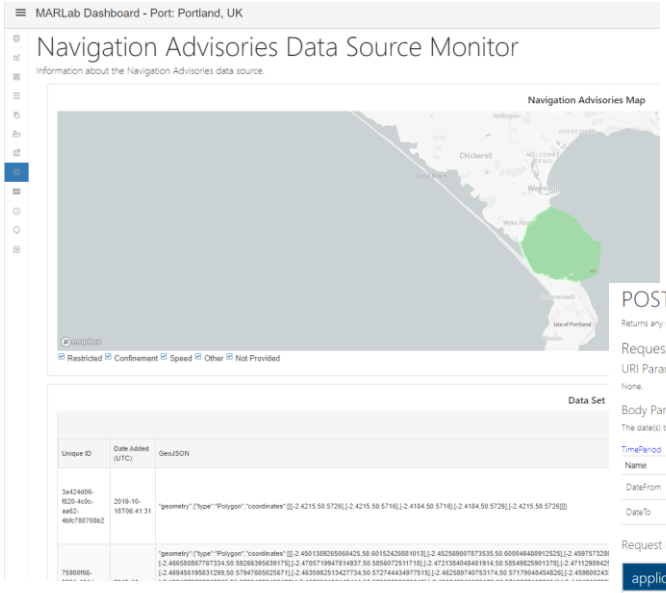
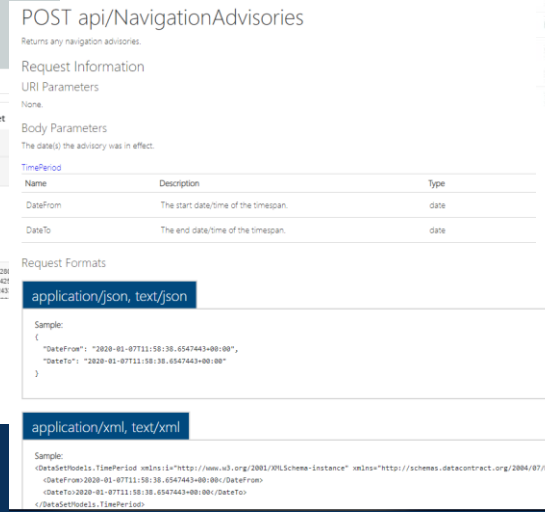
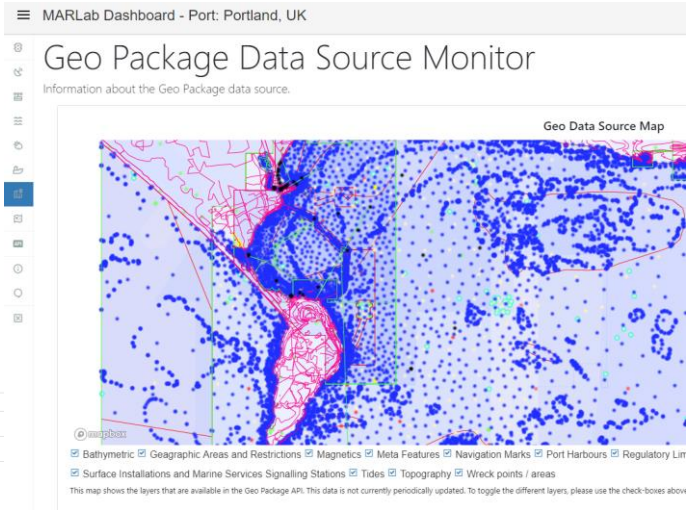
# MARLab Portal

Maritime & Coastguard Agency

Maritime Autonomy Regulation Lab (MARLab)



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# Over to you….

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Maritime Autonomy Regulation Lab (MARLab)

What are the current data problems and gaps for MASS?

What do you see as the future data needs for MASS?