

# **ACCSEAS Project**

## **Maritime Safety Information and Notices to Mariners (T&P)**

**Mads Bentzen Billesø**  
**Danish Maritime Authority**

# Solutions developed and tested



No-Go area



Tactical Route Exchange and Route Suggestion



Maritime Safety Information/Notices to Mariners



Vessel Operations Co-ordination Tool



Augmented Reality Heads-up Display



Automated FAL Reporting



Resilient PNT



Dynamic Ship Movement Prediction



Inter-VTS Exchange System

**There are many similarities and few differences between MSI messages and NM T&P. They largely serve the same purpose, with the main differences being down to the speed and methods of promulgation.**

Maritime Safety Information (MSI) is navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages.

Notices to Mariners (NMs) are promulgated in order to keep paper nautical charts and publications, as far as possible, up to date. Temporary and Preliminary NMs (T) and (P) advise mariners of important matters affecting navigational safety, including new hydrographic information (in advance of new editions or chart updates), changes to routing measures and aids to navigation, and other important categories of data. Not all ENC's include T&P information currently.

Chart corrections (Chart updating NM's) are corrections to paper and digital nautical charts which makes it possible for the Mariner to keep the vessel's charts up to date.

# Data – MSI vs. NM

Multiple representations of the same “event”. Different messages, numbers, positions etc...

Same information...

(T). Sweden. The Baltic Sea. Bornholm NW. Bornholmsgat. Cable works.

*Time.* Until beginning February 2013.

*Position.* 1) 55 19,043 N 14 25,816 E.

2) 55 18,772 N 14 25,405 E.

3) 55 18,489 N 14 24,979 E.

*Details.* In the time period stated cable works are carried out in an area one nm around »Cable One« (OVZC), »Thor« (OZPS2), »Vina« (OVJJ2) and »Onkel Sam« (OWEF). The works are carried out at positions 1) - 3). The vessels can be contacted on VHF channel 16. Warp anchors will be marked with yellow globes. Divers are used. Mariners are requested to show consideration and follow the directions from the vessels.

*Chart(s).* 189 (INT 1346), 188.

(JD-Contractor A/S 27 December 2012)

060700 UTC JAN

**SWEDISH NAV WARN 010**

SOUTHERN BALTIC. TSS IN BORNHOLMSGAT.

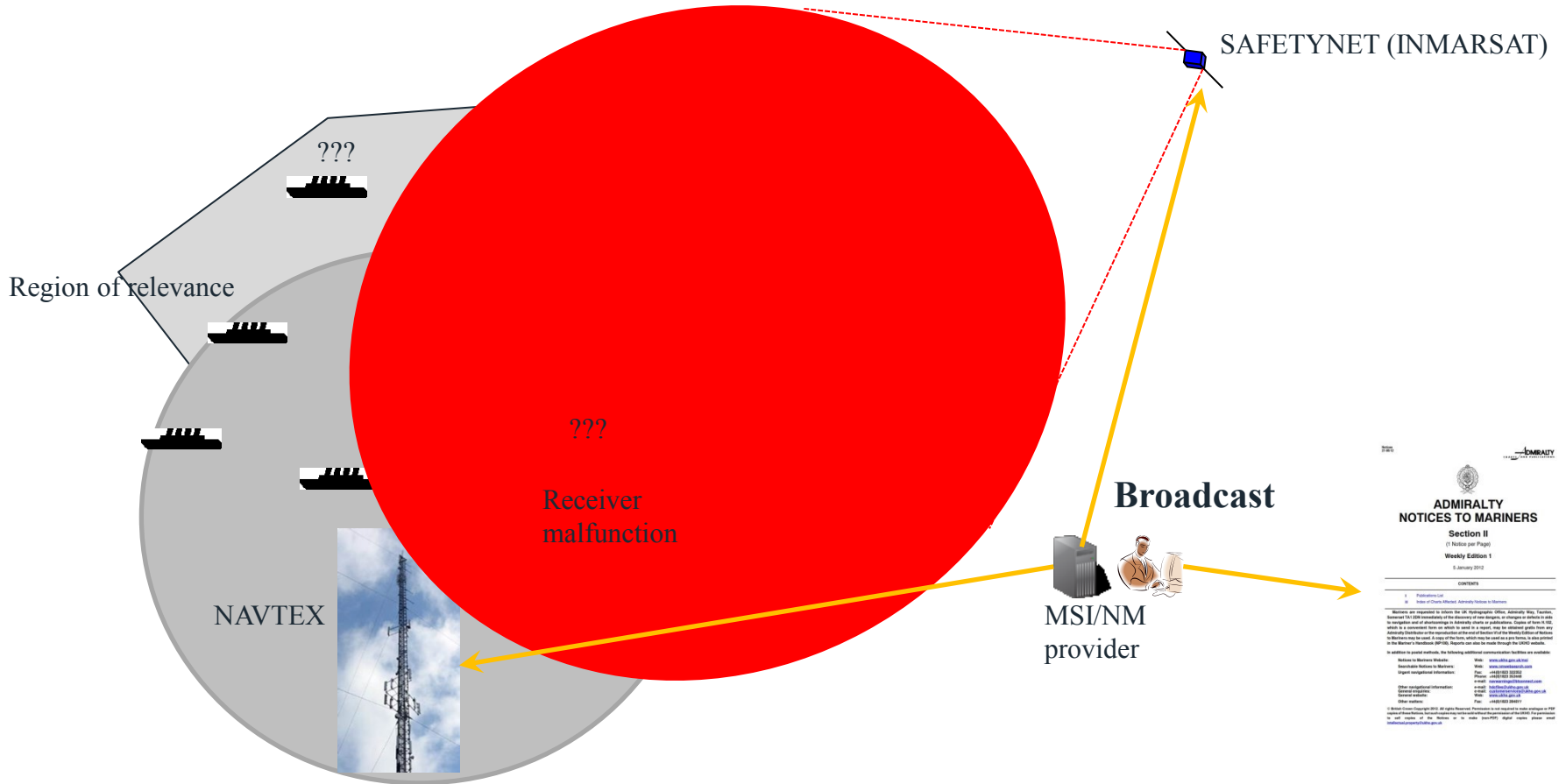
UNDERWATER OPERATIONS IN THE FAIRWAY.

APPROX PSN 55-19N 014-26E

OPERATIONS CONDUCTED BY THE 4 VESSELS 'CABLE ONE/OVZC2' , 'VINA/OVJJ2 AND 'THOR/OZPS2' AND GUARD VESSEL ONKEL SAM. 1.0 NM BERTH REQUESTED.

CANCEL SWEDISH NAV WARN 008.

## MSI/NM promulgation: Current solution



# MSI/NM promulgation: Current result

Notices  
27-4012

  
**ADMIRALTY**  
CHARTS AND PUBLICATIONS



## ADMIRALTY NOTICES TO MARINERS

### Section II

(1 Notice per Page)

#### Weekly Edition 1

5 January 2012

#### CONTENTS

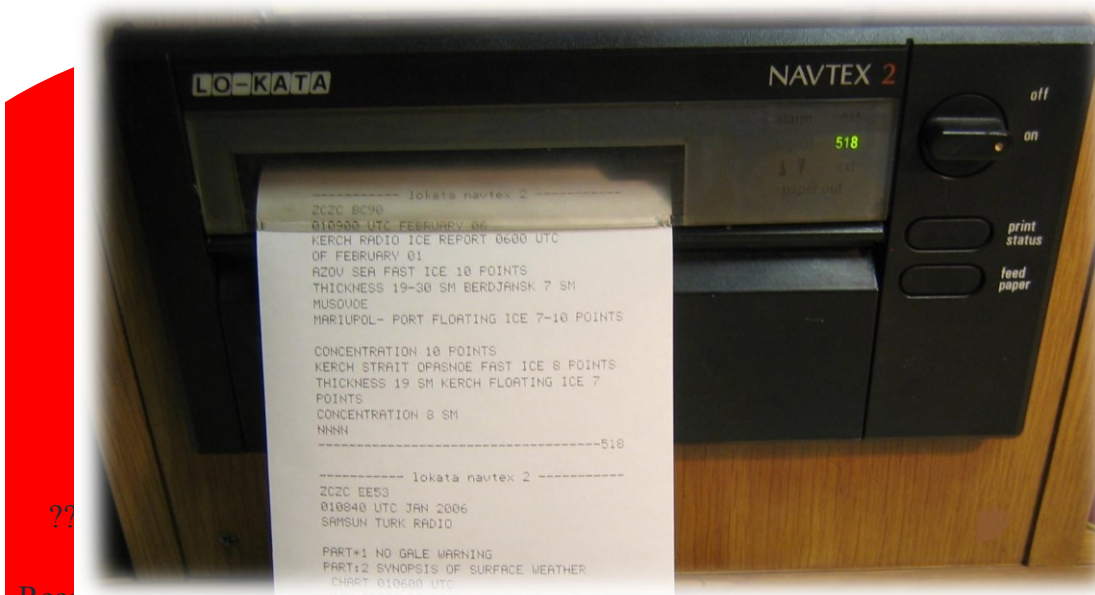
- I Publications List
- II Index of Charts Affected, Admiralty Notices to Mariners

Mariners are requested to inform the UK Hydrographic Office, Admiralty Way, Taunton, Somerset TA1 2DN immediately of the discovery of new dangers, or changes or defects in aids to navigation and of shortcomings in Admiralty charts or publications. Copies of form H.102, which is a convenient form on which to send in a report, may be obtained gratis from any Admiralty Distributor or the reproduction at the end of Section VI of the Weekly Edition of Notices to Mariners may be used. A copy of the form, which may be used as a pro forma, is also printed in the Mariner's Handbook (NP100). Reports can also be made through the UKHO website.

In addition to postal methods, the following additional communication facilities are available:

Notices to Mariners Website:	Web: <a href="http://www.ukho.gov.uk/msi">www.ukho.gov.uk/msi</a>
Searchable Notices to Mariners:	Web: <a href="http://www.nmwebsearch.com">www.nmwebsearch.com</a>
Urgent navigational information:	Fax: +44(0)1823 322352
	Phone: +44(0)1823 353448
	e-mail: <a href="mailto:navwarnings@btconnect.com">navwarnings@btconnect.com</a>
Other navigational information:	e-mail: <a href="mailto:hdcfiles@ukho.gov.uk">hdcfiles@ukho.gov.uk</a>
General enquiries:	e-mail: <a href="mailto:customerservices@ukho.gov.uk">customerservices@ukho.gov.uk</a>
General website:	Web: <a href="http://www.ukho.gov.uk">www.ukho.gov.uk</a>
Other matters:	Fax: +44(0)1823 284077

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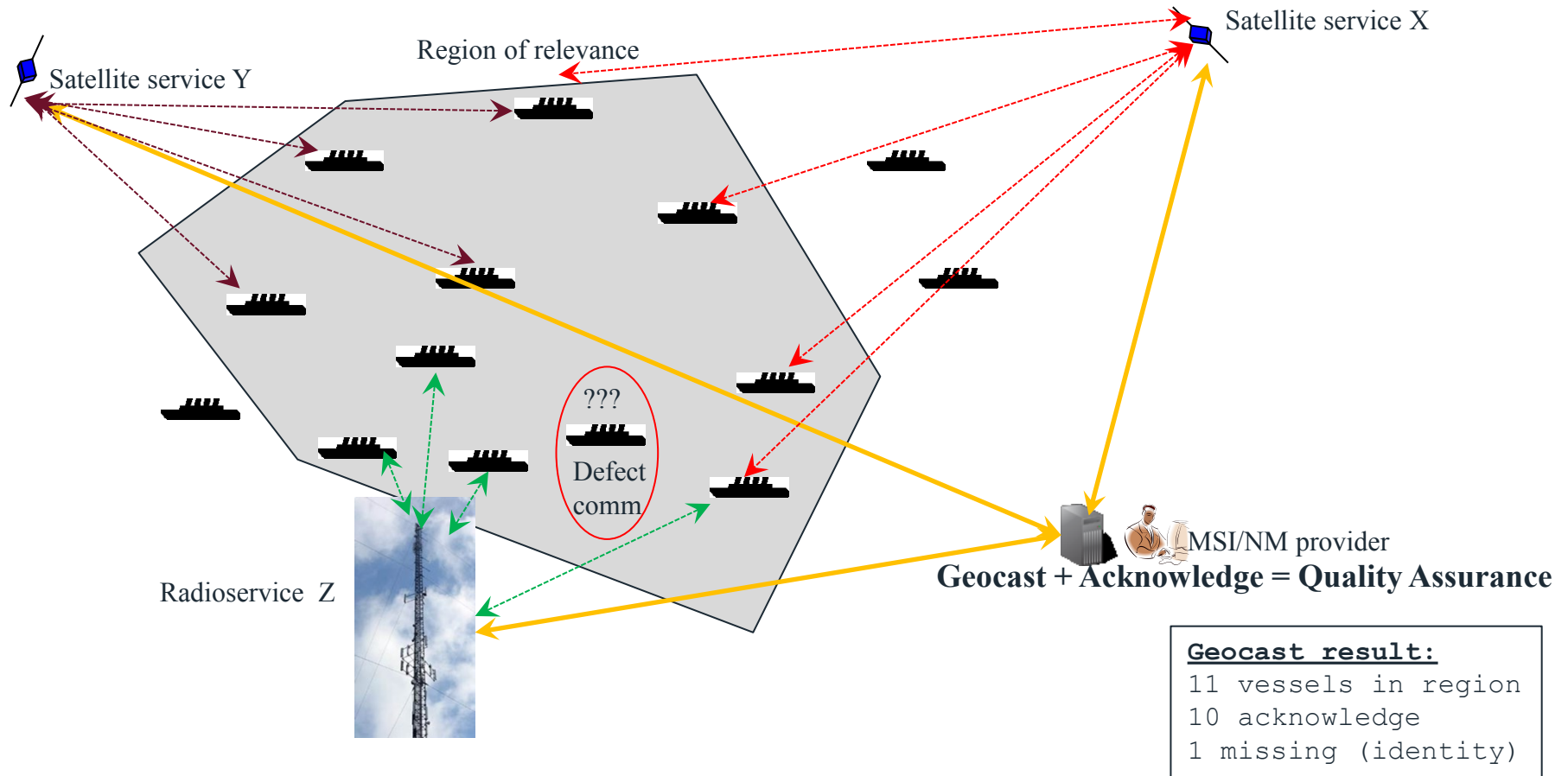
Rec  
manfunction



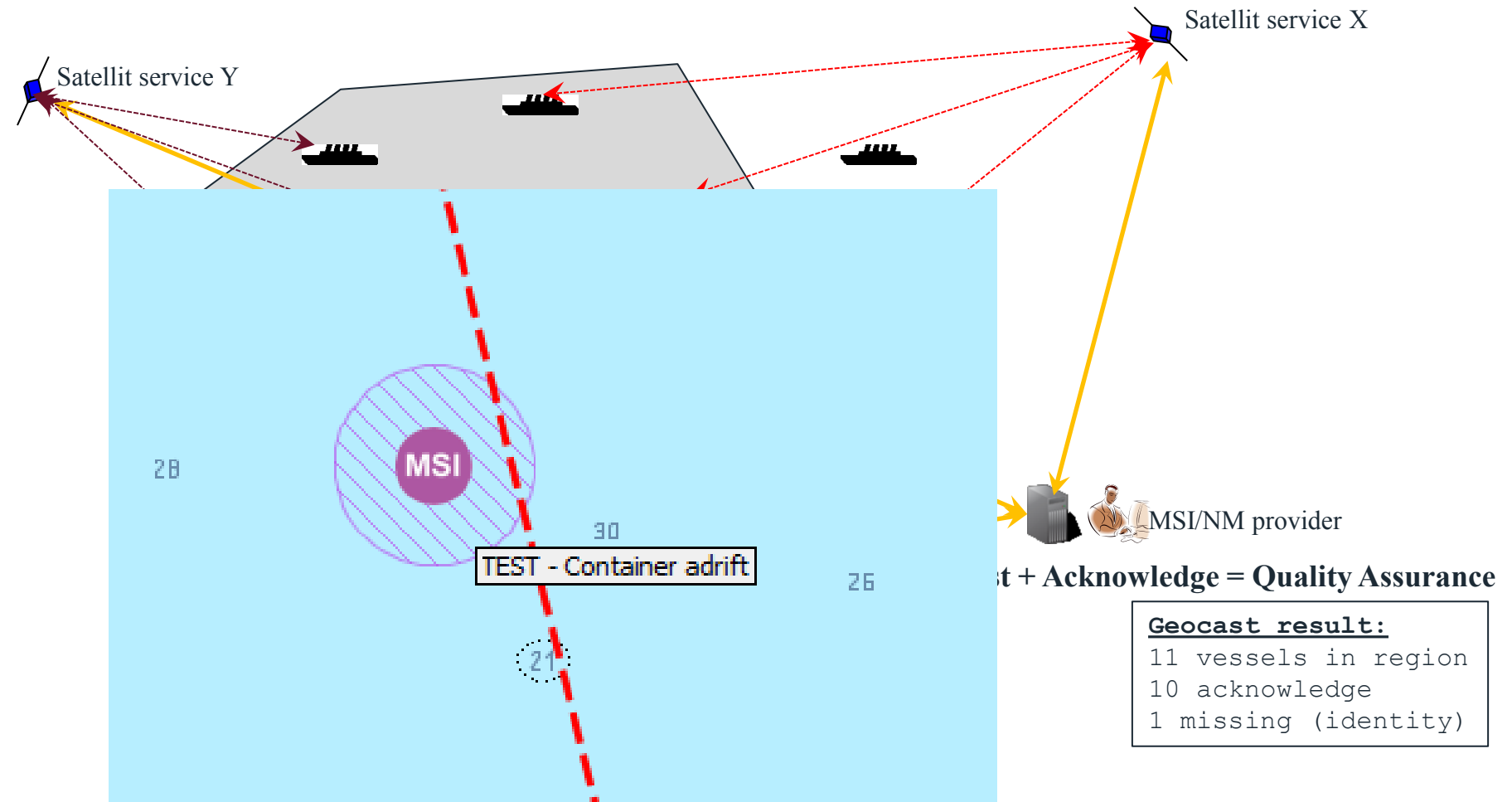
MSI provider

**Broadcast**

## S4: Maritime Cloud – MSI/NM promulgation

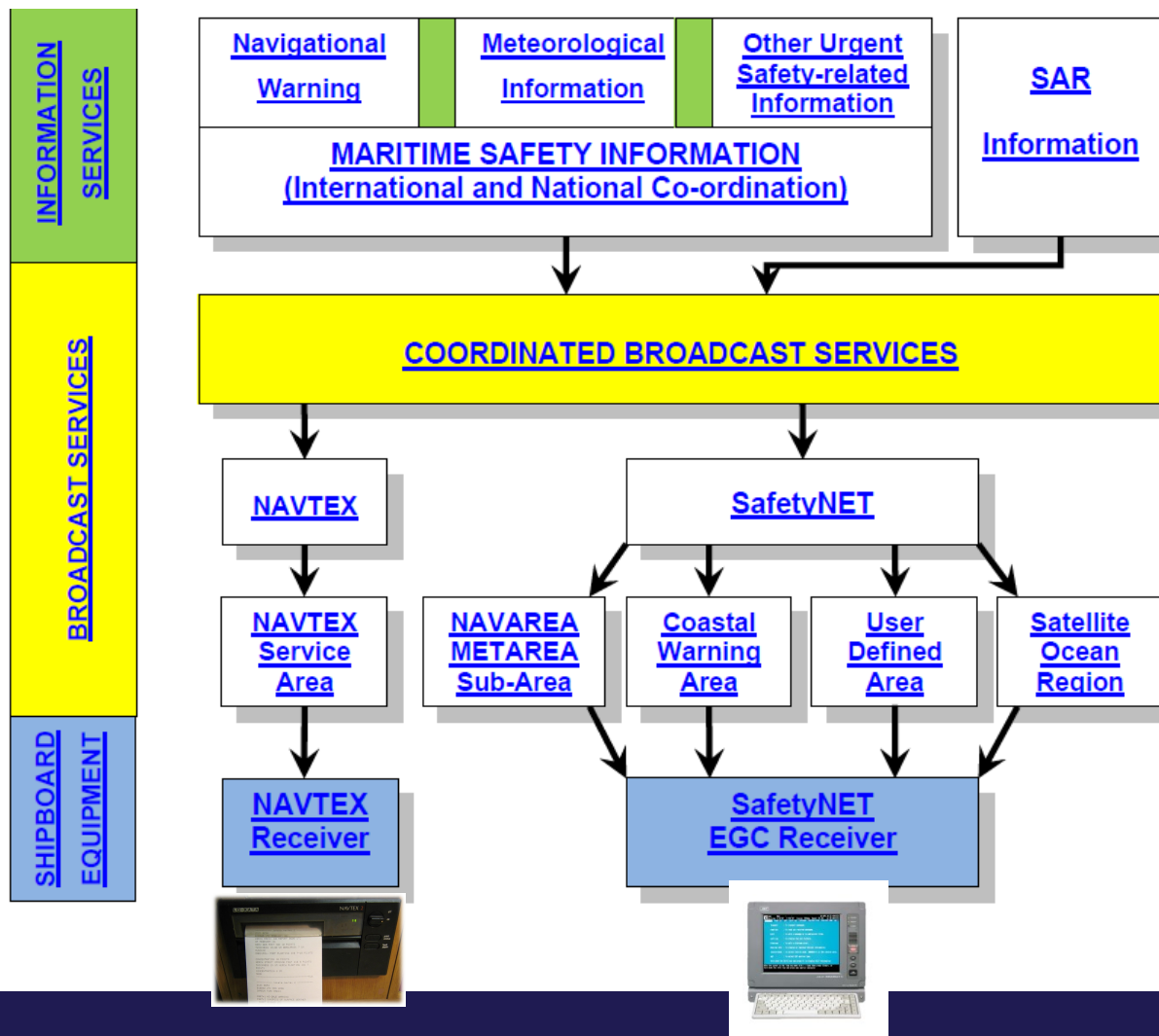


# Maritime Cloud – MSI/NM promulgation

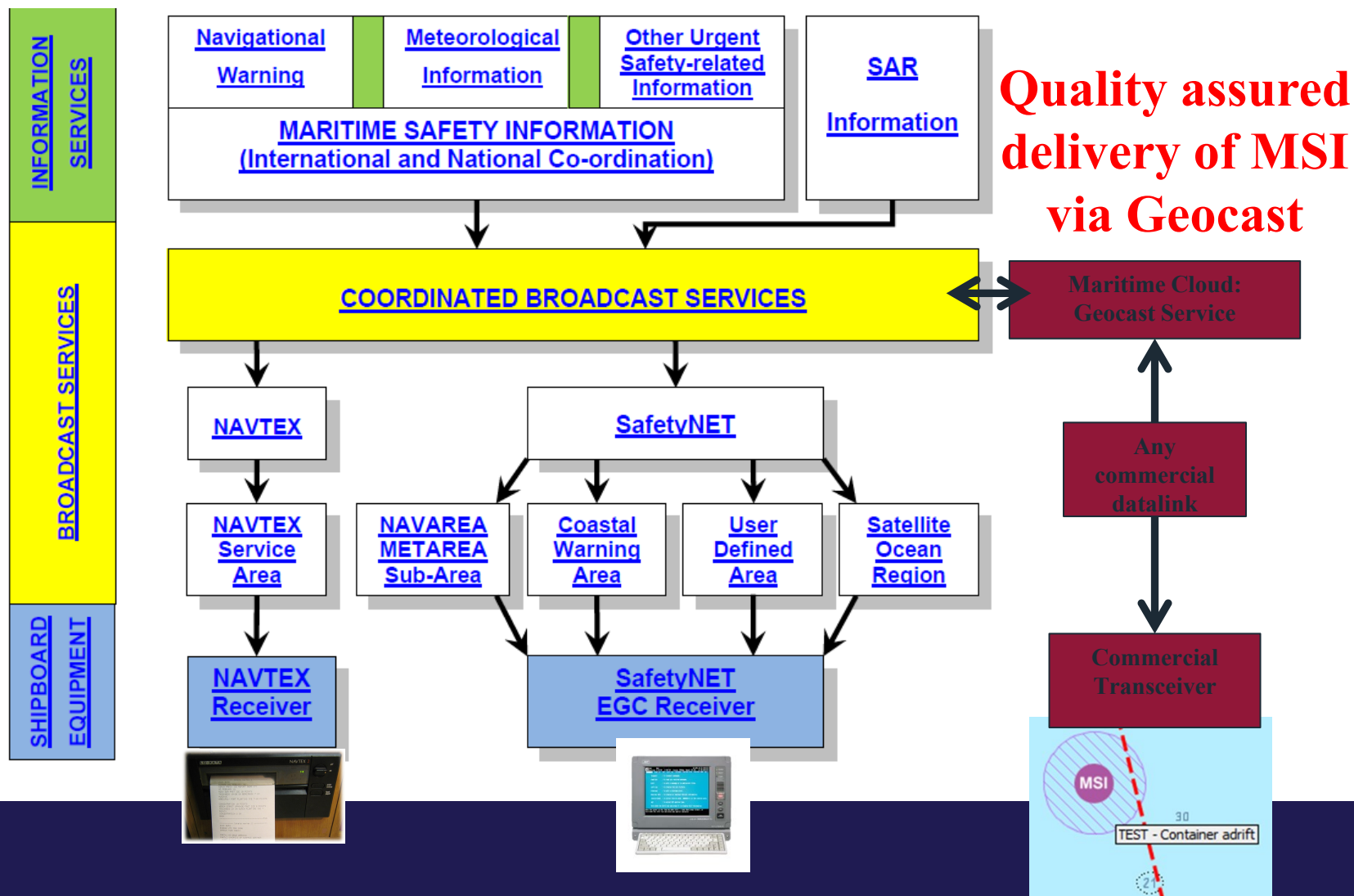




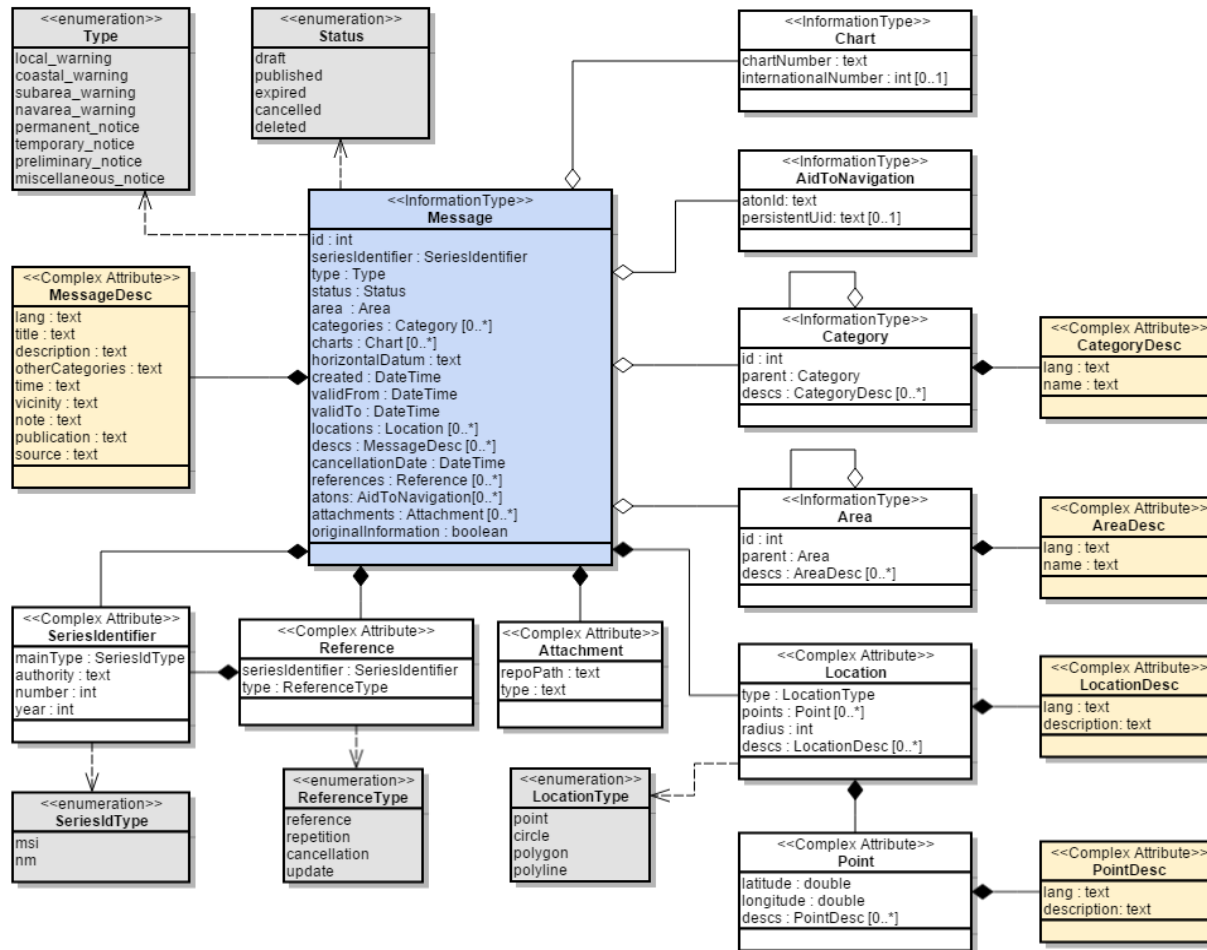
# Current MSI regime



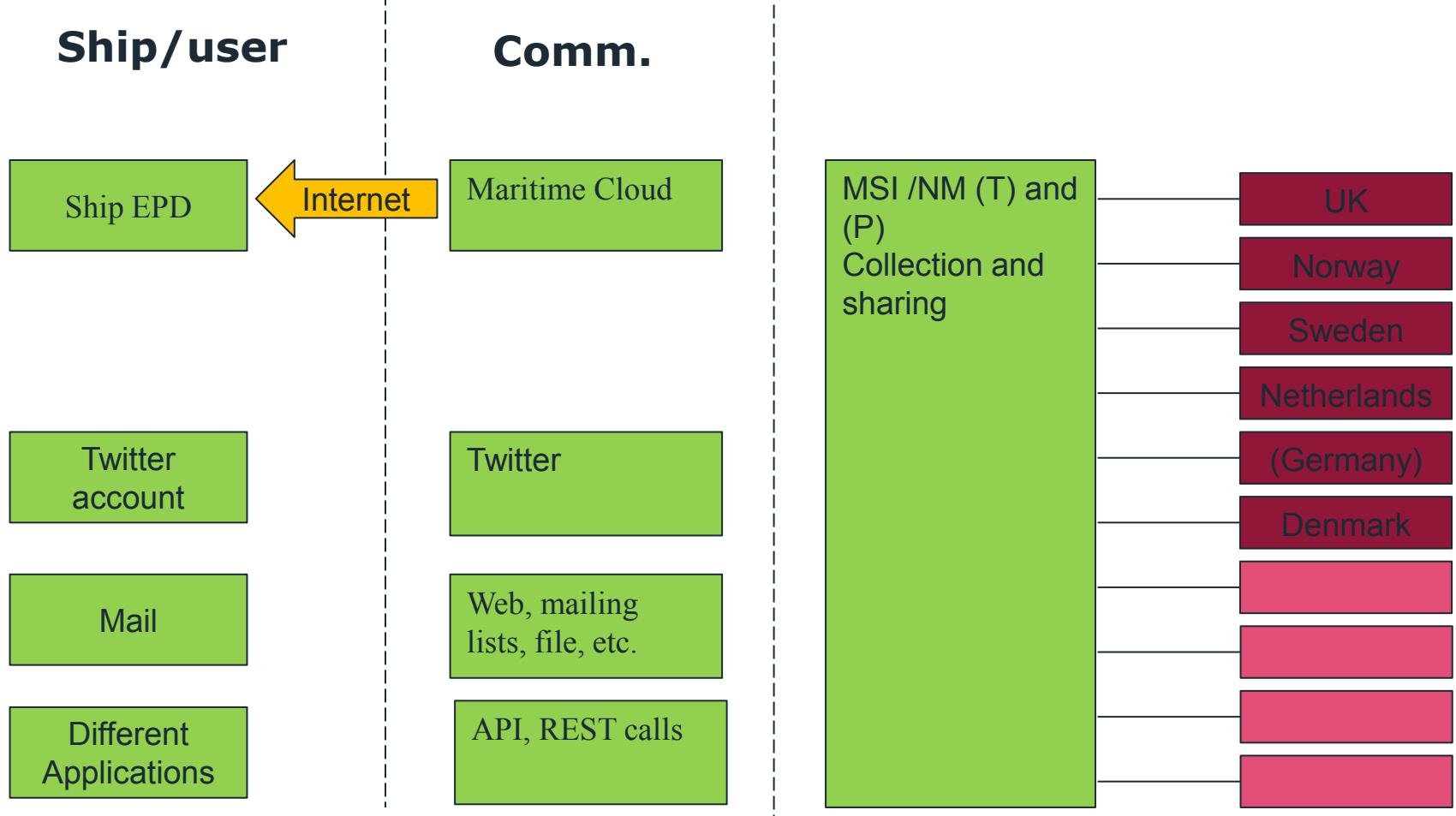
## S4: MSI regime with Maritime Cloud



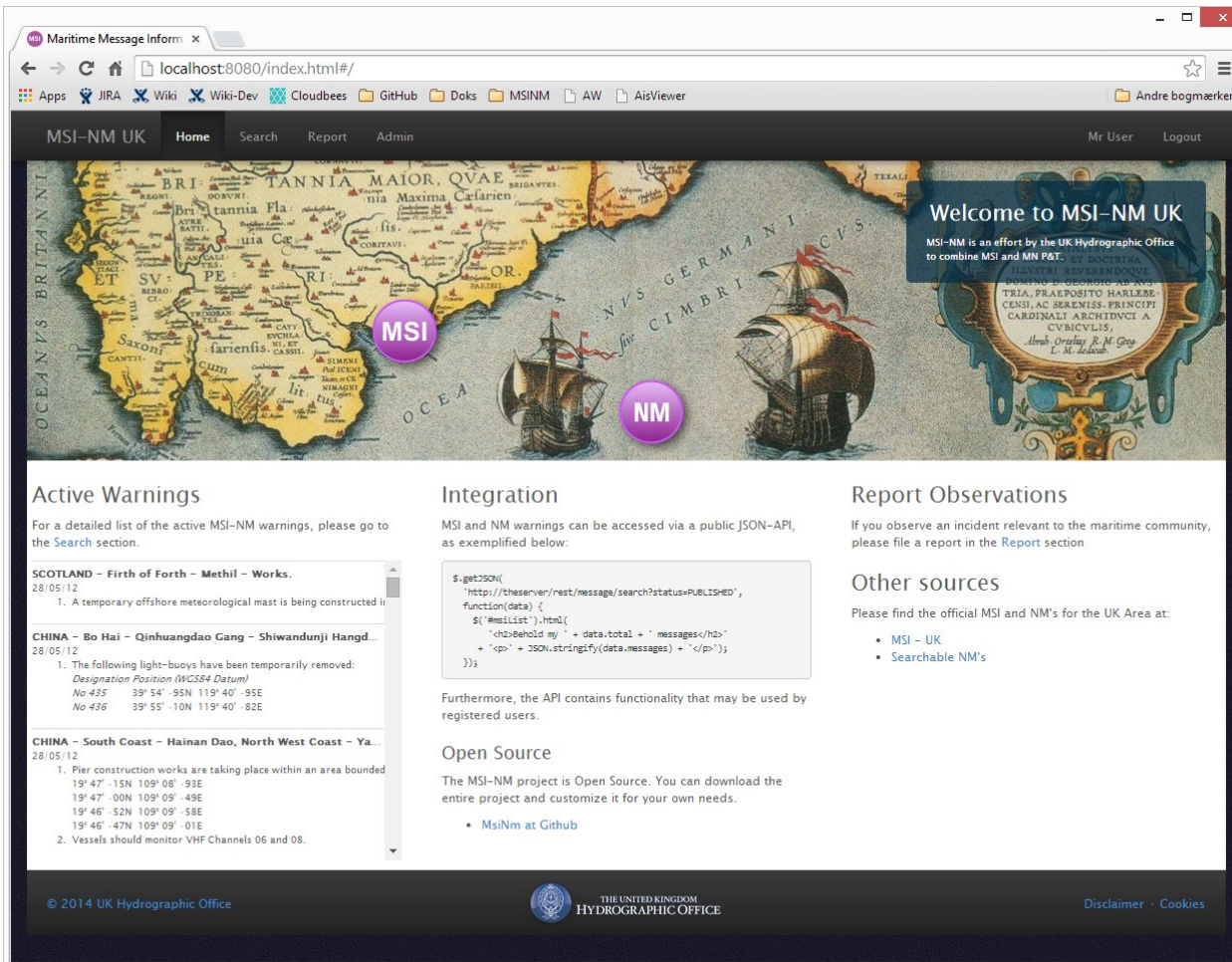
# Draft UML model (S-100)



# How the draft model was tested in the NSR



# MSI/NM (T&P) editor prototype – front page



The screenshot shows the front page of the MSI-NM UK web application. The browser address bar shows 'localhost:8080/index.html/#/'. The page has a dark header with navigation links: Home, Search, Report, Admin, Mr User, and Logout. Below the header is a large banner featuring a historical map of the North Atlantic with two sailing ships. Overlaid on the map are two purple circular buttons labeled 'MSI' and 'NM'. A 'Welcome to MSI-NM UK' message box is on the right, stating it's an effort by the UK Hydrographic Office to combine MSI and NM P&T. The main content area is divided into three columns: 'Active Warnings' with a list of warnings for Scotland, China, and China; 'Integration' with a code snippet for a JSON API; and 'Report Observations' with a link to the Report section. Below these is an 'Other sources' section with links to MSI-UK and Searchable NM's. The footer includes '© 2014 UK Hydrographic Office', the UK Hydrographic Office logo, and links to Disclaimer and Cookies.

Maritime Message Inform x

localhost:8080/index.html/#/

Apps JIRA Wiki Wiki-Dev Cloudbees GitHub Doks MSINM AW AisViewer Andre bogmærker

MSI-NM UK Home Search Report Admin Mr User Logout

Welcome to MSI-NM UK

MSI-NM is an effort by the UK Hydrographic Office to combine MSI and NM P&T.

MSI NM

### Active Warnings

For a detailed list of the active MSI-NM warnings, please go to the [Search](#) section.

**SCOTLAND – Firth of Forth – Methil – Works.**  
28/05/12

1. A temporary offshore meteorological mast is being constructed in

**CHINA – Bo Hai – Qinhuangdao Gang – Shiwandunji Hangd...**  
28/05/12

1. The following light-buoys have been temporarily removed:  
Designation Position (WGS84 Datum)  
No 435 39° 54' -95N 119° 40' -95E  
No 436 39° 55' -10N 119° 40' -82E

**CHINA – South Coast – Hainan Dao, North West Coast – Ya...**  
28/05/12

1. Pier construction works are taking place within an area bounded  
19° 47' -15N 109° 08' -95E  
19° 47' -00N 109° 09' -49E  
19° 46' -52N 109° 09' -58E  
19° 46' -47N 109° 09' -01E
2. Vessels should monitor VHF Channels 06 and 08.

### Integration

MSI and NM warnings can be accessed via a public JSON-API, as exemplified below:

```
$$.getJSON(  
  http://theserver/rest/message/search?status=PUBLISHED",  
  function(data) {  
    $('msiList').html(  
      "ch2behold my " + data.total + " messages</h2>  
      + "cp" + $.JSON.stringify(data.messages) + "</p>");  
  });
```

Furthermore, the API contains functionality that may be used by registered users.

### Open Source

The MSI-NM project is Open Source. You can download the entire project and customize it for your own needs.

- [MsiNm at Github](#)

### Report Observations

If you observe an incident relevant to the maritime community, please file a report in the [Report](#) section

### Other sources

Please find the official MSI and NM's for the UK Area at:

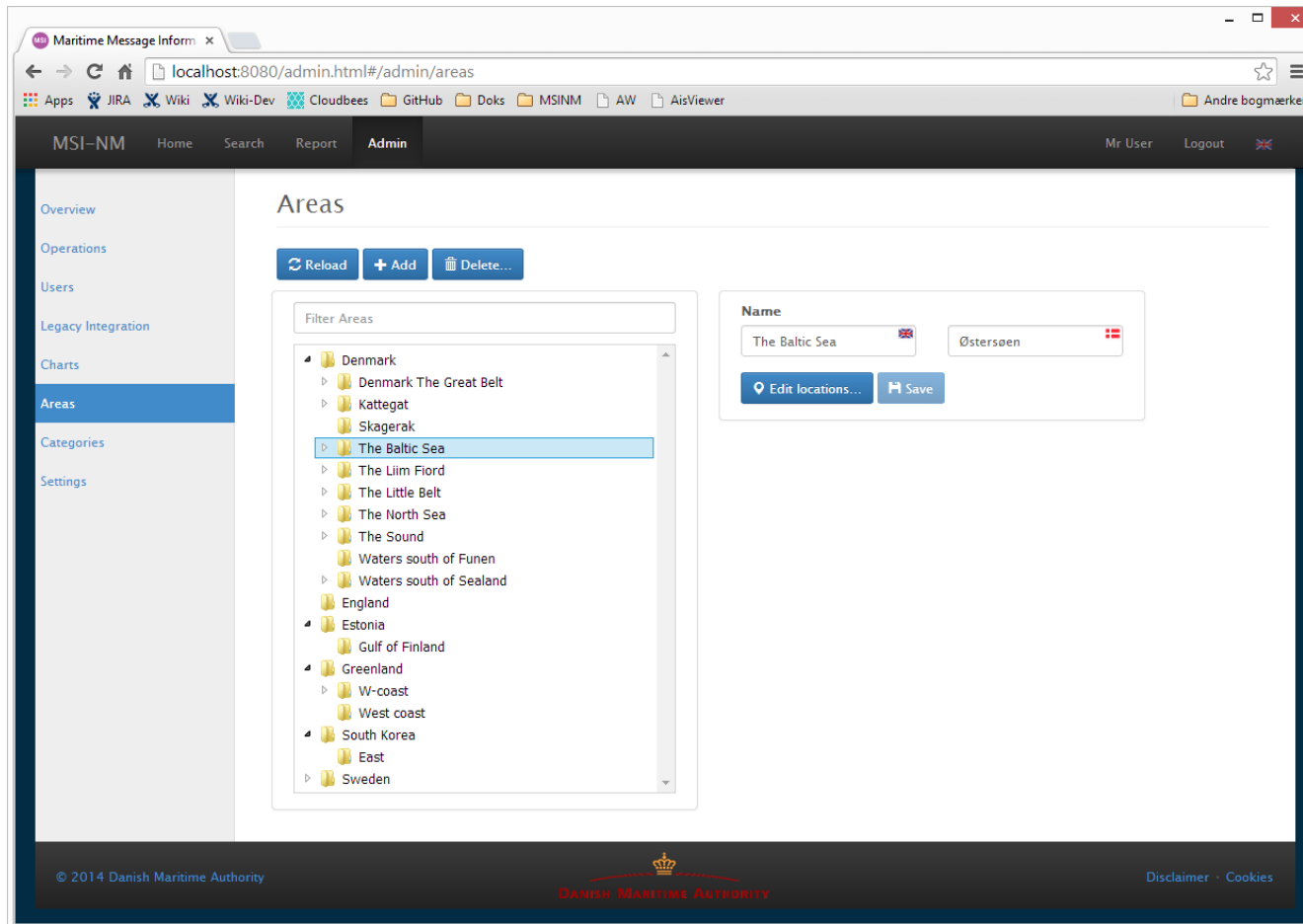
- [MSI – UK](#)
- [Searchable NM's](#)

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HYDROGRAPHIC OFFICE

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# MSI/NM (T&P) editor prototype – admin/setup page



The screenshot displays a web application interface for the Danish Maritime Authority. The browser address bar shows the URL `localhost:8080/admin.html#/admin/areas`. The application has a dark header with the title "MSI-NM" and navigation links: Home, Search, Report, and Admin. The user is logged in as "Mr User" with a "Logout" link. A left sidebar contains a menu with items: Overview, Operations, Users, Legacy Integration, Charts, Areas (highlighted), Categories, and Settings. The main content area is titled "Areas" and includes buttons for "Reload", "Add", and "Delete...". Below these is a "Filter Areas" search bar and a list of areas with expandable icons. The list includes: Denmark (expanded), Denmark The Great Belt, Kattegat, Skagerrak, The Baltic Sea (selected), The Lim Fjord, The Little Belt, The North Sea, The Sound, Waters south of Funen, Waters south of Sealand, England, Estonia (expanded), Gulf of Finland, Greenland (expanded), W-coast, West coast, South Korea (expanded), East, and Sweden. To the right of the list is a form for editing an area, with the title "Name". It contains two input fields: "The Baltic Sea" with a Danish flag icon and "Østersøen" with a Danish flag icon. Below the fields are buttons for "Edit locations..." and "Save". The footer of the application shows the copyright "© 2014 Danish Maritime Authority" and a "Disclaimer · Cookies" link.

Maritime Message Inform x

localhost:8080/admin.html#/admin/areas

Apps JIRA Wiki Wiki-Dev Cloudbees GitHub Doks MSINM AW AisViewer Andre bogmærker

MSI-NM Home Search Report Admin Mr User Logout

Overview  
Operations  
Users  
Legacy Integration  
Charts  
Areas  
Categories  
Settings

Areas

Reload Add Delete...

Filter Areas

- Denmark
  - Denmark The Great Belt
  - Kattegat
  - Skagerrak
  - The Baltic Sea
  - The Lim Fjord
  - The Little Belt
  - The North Sea
  - The Sound
  - Waters south of Funen
  - Waters south of Sealand
- England
- Estonia
  - Gulf of Finland
- Greenland
  - W-coast
  - West coast
- South Korea
  - East
- Sweden

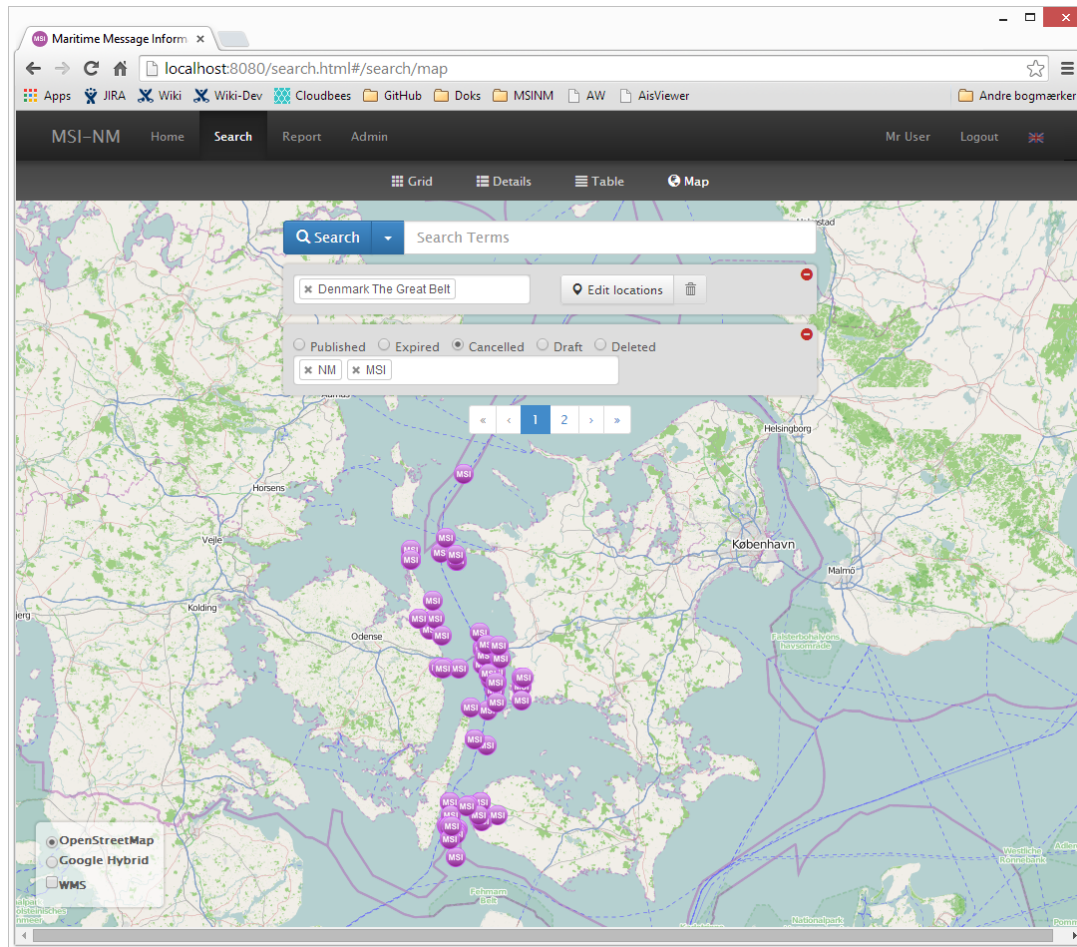
Name

The Baltic Sea Østersøen

Edit locations... Save

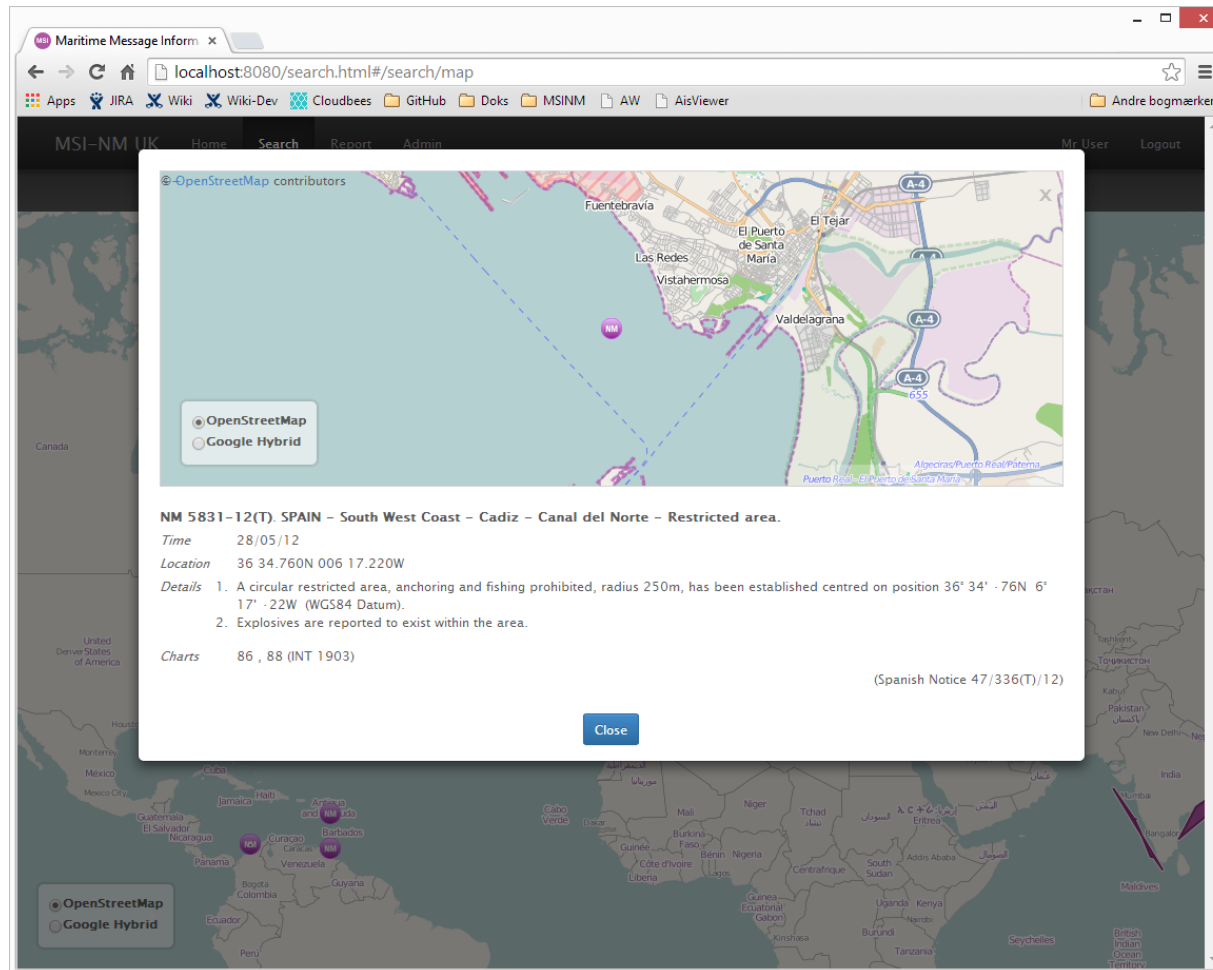
© 2014 Danish Maritime Authority Danish Maritime Authority Disclaimer · Cookies

# MSI/NM (T&P) editor prototype – overview



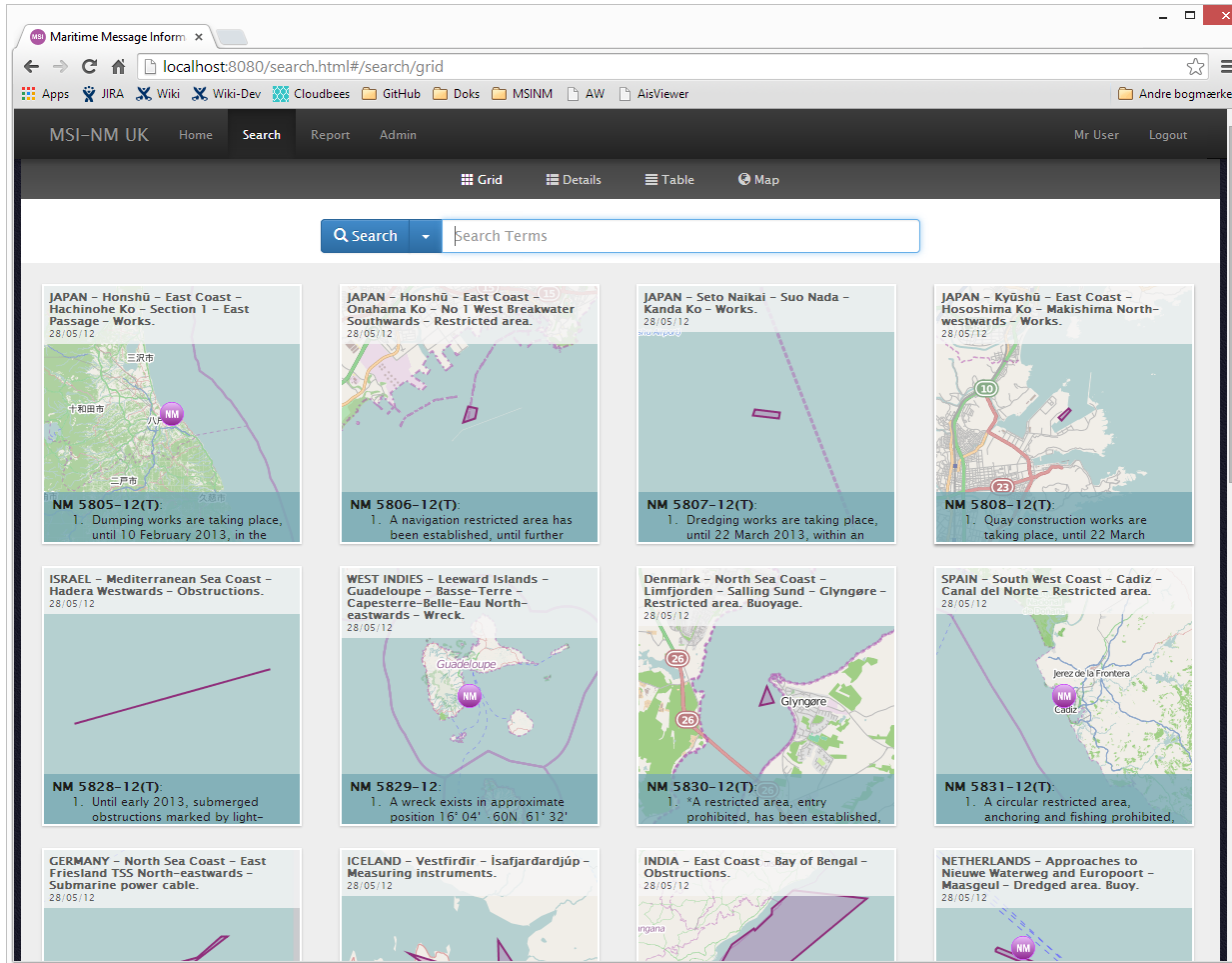


# MSI/NM (T&P) editor prototype – details





# MSI/NM (T&P) editor prototype – search in grid



The screenshot displays a web application interface for the Maritime Safety Information (MSI) and Navigational Message (NM) editor. The browser address bar shows the URL `localhost:8080/search.html#/search/grid`. The application has a dark navigation bar with tabs for **MSI-NM UK**, **Home**, **Search** (active), **Report**, and **Admin**. On the right of the navigation bar, there are links for **Mr User** and **Logout**. Below the navigation bar, there are icons for **Grid** (selected), **Details**, **Table**, and **Map**. A search bar is located below these icons, with a magnifying glass icon and the text "Search Terms".

The main content area displays a grid of 12 search results, each showing a map snippet and a summary of the message:

- JAPAN – Honshū – East Coast – Hachinohe Ko – Section 1 – East Passage – Works.**  
28/05/12  
**NM 5805-12(T):**  
1. Dumping works are taking place, until 10 February 2013, in the
- JAPAN – Honshū – East Coast – Onahama Ko – No 1 West Breakwater Southwards – Restricted area.**  
28/05/12  
**NM 5806-12(T):**  
1. A navigation restricted area has been established, until further
- JAPAN – Seto Naikai – Suo Nada – Kanda Ko – Works.**  
28/05/12  
**NM 5807-12(T):**  
1. Dredging works are taking place, until 22 March 2013, within an
- JAPAN – Kyūshū – East Coast – Hososhima Ko – Makishima North-westwards – Works.**  
28/05/12  
**NM 5808-12(T):**  
1. Quay construction works are taking place, until 22 March
- ISRAEL – Mediterranean Sea Coast – Hadera Westwards – Obstructions.**  
28/05/12  
**NM 5828-12(T):**  
1. Until early 2013, submerged obstructions marked by light-
- WEST INDIES – Leeward Islands – Guadeloupe – Basse-Terre – Capesterre-Belle-Eau North-eastwards – Wreck.**  
28/05/12  
**NM 5829-12:**  
1. A wreck exists in approximate position 16° 04' - 60N 61° 32'
- Denmark – North Sea Coast – Limfjorden – Salling Sund – Glyngøre – Restricted area. Buoyage.**  
28/05/12  
**NM 5830-12(T):**  
1. \*A restricted area, entry prohibited, has been established,
- SPAIN – South West Coast – Cadiz – Canal del Norte – Restricted area.**  
28/05/12  
**NM 5831-12(T):**  
1. A circular restricted area, anchoring and fishing prohibited,
- GERMANY – North Sea Coast – East Friesland TSS North-eastwards – Submarine power cable.**  
28/05/12
- ICELAND – Vestfirðir – Ísafjardardjúp – Measuring instruments.**  
28/05/12
- INDIA – East Coast – Bay of Bengal – Obstructions.**  
28/05/12
- NETHERLANDS – Approaches to Nieuwe Waterweg and Europoort – Maasgeul – Dredged area. Buoy.**  
28/05/12

# MSI/NM (T&P) editor prototype – search list/pdf

Maritime Message Inform

[←](#)
[→](#)
[↺](#)
[🏠](#)

localhost:8080/search.html#/search/details

Apps

JIRA

Wiki

Wiki-Dev

Cloudbees

GitHub

Doks

MSINM

AW

AisViewer

Andre bogmærker

MSI-NM UK

Home

Search

Report

Admin

Mr User

Logout

Grid

Details

Table

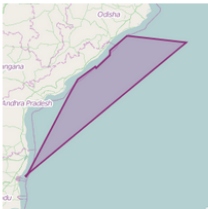
Map

Q Search

Search Terms

INDIA

Edit locations



**NM 5873-12(T). INDIA – East Coast – Bay of Bengal – Obstructions.**

*Former EIS.* 3237 2012 (cancelled)

*Time* 28/05/12

*Location*

12 01.830N 080 08.070E

12 00.960N 080 12.280E

16 27.100N 082 36.520E

17 08.170N 082 59.590E

17 49.040N 083 58.880E

17 44.600N 084 00.990E

18 23.840N 084 45.690E

18 38.760N 084 47.290E

19 24.730N 085 41.620E

19 22.860N 085 47.230E

19 03.800N 088 55.950E

*Details*

1. Underwater Acoustic Doppler Current Profiler (ADCP) moorings have been deployed in the following positions:

<i>Mooring</i>	<i>Position</i>	<i>Depth of ADCP (m)</i>	<i>Largest scale Chart(s)</i>
BOPS-3	12° 01' - 83N 80° 08' - 07E	90	2069
* BOPD-3	12° 00' - 96N 80° 12' - 28E	348	2069
* BOKD-3	16° 27' - 10N 82° 36' - 52E	362	318
* BSVS-2	17° 08' - 17N 82° 59' - 59E	91	319
* BOVS-3	17° 49' - 04N 83° 58' - 88E	102	319
* BOVD-2	17° 44' - 60N 84° 00' - 99E	182	319
* NRB	18° 23' - 84N 84° 45' - 69E	395	320
* BSGS-2	18° 38' - 76N 84° 47' - 29E	92	320
* BOGS-4	19° 24' - 73N 85° 41' - 62E	175	320, 321
* BOGD-4	19° 22' - 86N 85° 47' - 23E	213	320, 321
* BNBD-4	19° 03' - 80N 88° 55' - 95E	332	829


\* Indicates new or revised entry.  
(All positions are referred to WGS84 Datum)

2. All vessels are to maintain a safe distance from these moorings and exercise caution in the vicinity.

3. Former Notice 3237(T)/12 is cancelled.

*Charts* 318 (INT 7405), 319 (INT 7408), 320 (INT 7413), 321 (INT 7416), 827, 828, 829, 2069

(Indian Notice 22/259(T)/12)

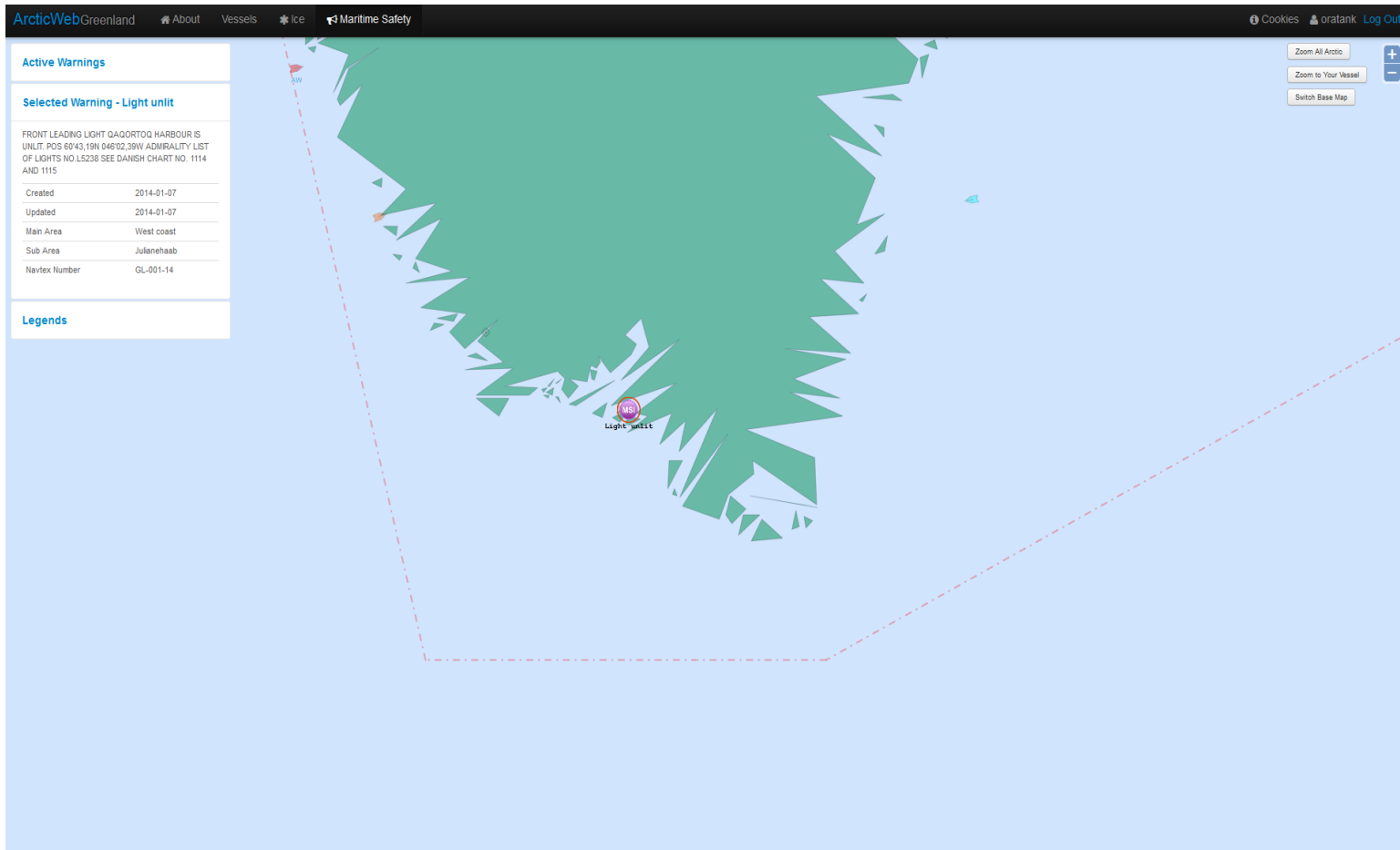


**NM 5878-12(T). INDIA – West Coast – Diu Head to Gulf of Mannar – Obstructions.**

*Former EIS.* 3238 2012 (cancelled)

*Time* 28/05/12

# Operational use – example ArcticWeb



The screenshot displays the ArcticWeb interface, which includes a map of Greenland and a sidebar with active warnings. The map shows the coastline of Greenland in green, with a red dashed line indicating a specific area of interest. A red circle with the text "Light unit" is visible on the map, corresponding to the selected warning in the sidebar.

**Active Warnings**

**Selected Warning - Light unit**

FRONT LEADING LIGHT QAGORTQ HARBOUR IS UNLIT. POS 60°43,19N 046°02,39W ADMIRALTY LIST OF LIGHTS NO. L5238 SEE DANISH CHART NO. 1114 AND 1115

Created	2014-01-07
Updated	2014-01-07
Main Area	West coast
Sub Area	Julianehaab
Navtex Number	GL-001-14

**Legends**

Zoom All Arctic  
Zoom to Your Vessel  
Switch Base Map

# Opinions

**Positive feedback from users (Mariners) and coordinators (National Coordinators and Hydrographic Offices).**

**Two main concerns on the combined model:**

- **History – not how information is organized or handled today**
- **Organization – information handled in different organizations**

# Our hopes

- **GMDSS Review,**  
include e-Navigation and thoughts on the possibilities in the near future.
- **IHO S-100**  
really appreciate the huge efforts from the IHO S-124 CG developing the standard, DMA are happy to participate.  
We hope that the work will result in a new S-124 standard (and not "just" S-53+71).

## Future

- **Participate in working groups and give input to relevant bodies; IHO, IALA, others**
- **Participation in S-100 work; IHO, IALA, others**
- **Develop MSI/NM editor and model further (include WMO/weather warning part of MSI), editor is considered for operational use in Denmark.**
- **MSI and NM will continue being a key part of the development of e-navigation.**
- **Results will be used in future projects; EfficienSea2 (2015-2018).**



One of the targets of EfficienSea 2.0 is to;  
*Identify, develop, test and, where possible, standardise and implement **e-navigation solutions** that will reduce the risk of accidents, especially in dense waterways, as well as increase the efficiency of the transport chain.*  
MSI and NM (T&P) is one of the solutions.



Reports and  
demonstration videos  
available on:  
<http://www.accseas.eu/>

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Maritime Technology and  
e-Navigation  
[mcb@dma.dk](mailto:mcb@dma.dk)