

Marine Data Collection System System Definition

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Executive summary

This report summarizes research completed on the web-based Maritime Data Collection System demonstration tool that will allow coastal agencies and hydrographic agencies to gather new information, navigation aid status, and event/activity information for use in nautical publications and charts for the North Sea.

The Maritime Data Collection System (MDCS) is a web-based system demonstrator that allows coastal agencies and hydrographic agencies of countries within the BLAST program to gather new information for use in nautical publications and charts for the North Sea. The system also allows the coastal agencies and hydrographic offices to collect updates and corrections to nautical publications and charts published by those organizations. The system will also permit organizations to gather information concerning the status of aids to navigation, events, activities, and conditions that are of interest to maritime traffic.

The system is limited to the North Sea area, specifically the countries of Denmark, Germany, and Norway. The nautical publications loaded into the system are limited to the areas surrounding and the ports of Hirtshals, Stavanger, and Wilhelmshaven. The data for the system is limited to nautical publications and charts.

The MDCS system demonstrates a web-based solution prototype of trans-nationally harmonized maritime data collection, validation, and publishing. It is expected to run in whole or part on Jeppesen web servers and be accessible from the Internet. This system is intended to be a research and demonstration prototype and is not intended for use in navigation purposes.

BLAST is an Interreg IVB North Sea project involving 16 partners from 6 countries, including government organizations, universities and private companies. BLAST will demonstrate improvements in maritime safety, economy, and environmental management that can result from trans-national harmonization of land and sea data. There are 6 Work Packages in all. For more detail on BLAST, please refer to <http://www.blast-project.eu/>. The work described in this document is a part of Work Package 4 of the BLAST project.

1. Preface

1.1. The BLAST (Bringing Land and Sea Together) project

BLAST is an Interreg IVB North Sea project promoting maritime safety in the North Sea region. It involves 16 partners from 6 countries, including government organizations, universities and private companies. The BLAST partners are collaborating to demonstrate the potential for improvements in maritime safety, economy, and environmental management that can result from trans-national harmonization and integration of land and sea data. BLAST is divided into 6 Work Packages and a variety of projects from late 2009 through 2012. The BLAST Website summarizes BLAST and gives detail on its work packages - <http://www.blast-project.eu/>.

1.2. BLAST Work Package 4: Navigating the North Sea

The projects in WP 4, conducted by Jeppesen GmbH and partners, examine the collection, processing, and publishing of nautical information. The Jeppesen projects started with primary research to identify the current state of the art in Denmark, Germany, and Norway. This enabled the partners to identify what works well today and where there trans-nationally harmonized data could make it easier for the North Sea community to maintain a clear, current view of maritime conditions. The second project, Maritime Data Collection System (MDCS) is the focus of this paper.

1.2.1. Project 1: Survey Current State of the Art

The report summarized research into the current state of the art in nautical information management systems in three North Sea ports. The research is related to three projects in BLAST Work Package 4 conducted by Jeppesen GmbH, Mälardalen University, the Hydrographic Offices of Norway, Denmark, and Germany, and the Coastal and Port Authorities in the three subject ports: Hirtshals, DK, Stavanger, NO, and Wilhelmshaven, DE.

1.2.2. Project 2: Maritime Data Collection System Web Demonstrator

The Maritime Data Collection System (MDCS) project demonstrates a web-based solution prototype of trans-nationally harmonized maritime data collection, validation, and publications. MDCS requirements definition started in Phase 1. The MDCS web demo built in Phase 2 and Phase 3 will be released in early 2011.

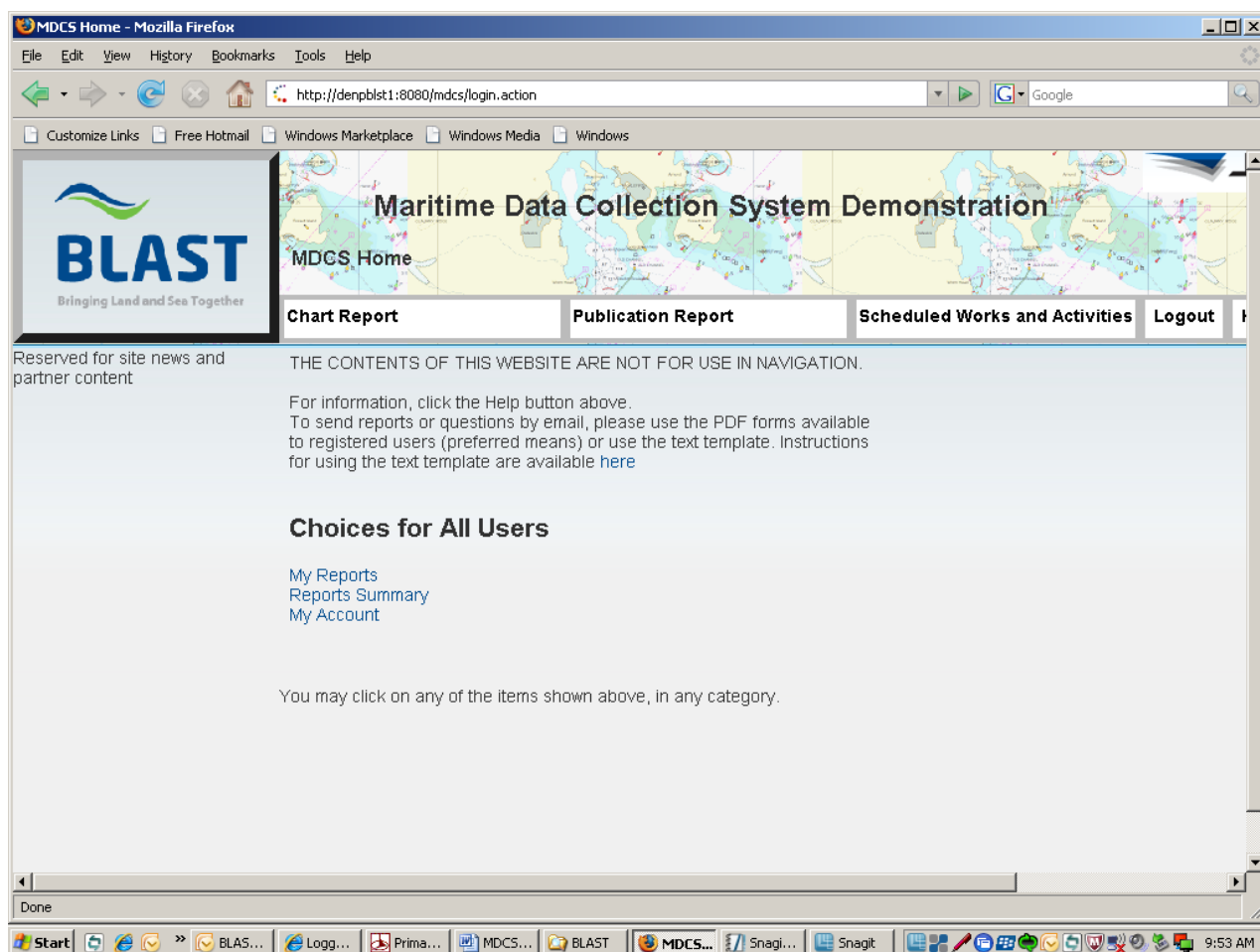
1.2.3. Project 3: Harmonization of Nautical Information

The Harmonization of Nautical Information project will harmonize sections of core nautical information such as Notices to Mariners, Sailing Directions, etc. related to the 3 test ports. These publications are maintained by Hydrographic Offices and Coastal Authorities. North Sea Hydrographic Offices have a central role in the definition of the emerging IHO S-100 standards for nautical publications and charting. This project is a practical test of applying the IHO work. The project started in Phase 3 and will end in Phase 4.

1.2.4. Project 4: Digital Mariners Routing Guide Web Demonstrator

The Digital Mariners Routing Guide project aims to demonstrate the potential benefits of using trans-nationally harmonized data in products that can improve maritime efficiency and safety. Thus the North Sea DMRG builds upon what was learned in the prior projects. The 2008 Baltic Sea Digital Mariners'

Routing Guide and existing North Sea Routing Guides will be referenced. This project will start in late 2011 and complete in early 2012.



2. Introduction

2.1. Background

Sailing directions and charts describe the physical appearance of the earth as reference points for position plotting and course setting. It is of course of vital interest that changing properties of the physical environment such as newly constructed or demolished cairns or beacons, drifting buoys and marks as well as missing features like newly discovered reefs are reported and inserted into sailing directions and charts as quickly as possible, before any accident occurs.

The size and time pressure on modern ocean transportation working day and night, all year around, makes huge demands on information management to be detailed and up to date.

Charts and sailing directions are still manually updated based on observation reaching the different hydrographic and coastal administrations from mariners and other reporters. These reports are delivered by radio, telephone or email. But in every country there may be several authorities that have the responsibility of updating nautical publications of different kinds. Often it can be difficult for the mariner to know to whom he should report a detected discrepancy. The activity of Work Package 4 is targeting the issue of discrepancy reporting, aiming at developing a common tool for the whole North Sea. In the State of the Art report the present process of receiving these reports in three North Sea countries, Denmark, Germany and Norway, was described.

The collection of new information and corrections and updates to published information is a crucial need for organizations that are concerned with publishing charts and nautical publications. Many of the reports of updated information are provided by other port authorities, pilots, mariners, and other users of charts and publications. The MDCS system provides several functionalities and features intended to enhance current report collection processes and improve communication between the coastal agencies, hydrographic offices, and reporters of updates and corrections

2.2. Acronyms and Abbreviations

BSH	Bundesamt für Seeschifffahrt und Hydrographie
DaMSA	Danish Maritime Safety Administration (see also FRV)
ENC	Electronic Navigation Chart
FRV	Farvandsvæsenet (see also DaMSA)
IHO	International Hydrographic Organisation
IMO	International Maritime Organisation
KMS	Kort & Matrikelstyrelsen (National Survey and Cadastre)
MDCS	Maritime Data Collection System
NCA	Norwegian Coastal Administration (Kystverket)
NHS	Norwegian Hydrographic Service (Statens Kartverk Sjø)
VTs	Vessel Traffic Service
WSA	Water and Shipping Agency (Wasser- und Schifffahrtsamt)
WSD	Waterway and Shipping Directorate (Wasser- und Schifffahrtsdirektion)
WSV	Wasser- und Schifffahrtsverwaltung des Bundes

2.3. References

- [BLAST1] State of the art report: Nautical information management. BLAST Deliverable D_WP4_1, 2010.
URL: <http://www.blast-project.eu/media.php?file=283>
- [BLAST2] MDCS Software Requirements Specifications, D_WP_2, 2010
- [BLAST3] BLAST MDCS Demo Design
- [IHO00] International Hydrographic Organization. S-57: IHO Transfer Standard for Digital Hydrographic Data, ed. 3.1. November 2000. (latest supplement June 2009)
- [IHO10] International Hydrographic Organization. S-100: Universal Hydrographic Data Model, Edition 1.0.0. International Hydrographic Bureau, Monaco, 2010.
- [LIST] MDCS Issues List
- [TEST1] BLAST Web Test Plan V1.0.

3. Method

The method used in the MDCS Web Development involved:

- System Requirements
 - Jeppesen with the WP 4 partners collaborated to develop system requirements for use in developing the prototype.
 - Workshop was held to review requirements and design.
- Development
 - Jeppesen resources built the prototype per requirements
- Data Collection
 - BLAST WP4 partners provided ENC's and discrepancy reports.
 - Jeppesen provided nautical data.
- Test
 - Two test sessions were conducted with the WP 4 partners. The first test session centered on user interaction. The second session centered on system interaction.
 - Test Plans were distributed
 - Test results were consolidated. All bugs were logged and prioritized. System enhancements were documented.
- Hardware

- Jeppesen procured servers to host the web system and the data
- Security was installed to firewall the BLAST web site
- Meetings and email correspondence were used to communicate.

4. Results

4.1. Overview

Section 4 summarizes the results of the research and development of the web demonstrator. Section 4 presents an overview of the system and defines how it demonstrates a web-based solution prototype of trans-nationally harmonised maritime data collection, validation, and publishing.

4.2. MDCS General Requirements

4.2.1. MDCS Functions and Features

The collection of new information and corrections and updates to published information is a crucial need for organisations that are concerned with publishing charts and nautical publications. Many of the reports of updated information are provided by other port authorities, pilots, mariners, and other users of charts and publications. The MDCS system provides several functionalities and features intended to enhance current report collection processes and improve communication between the coastal agencies, hydrographic offices, and reporters of updates and corrections. Figure 1 shows the general functionalities provided by MDCS. These are:

- A central point of collection of information
- Multiple methods of collection of reports from different sources
- Harmonised collection and processing of reports
- Automatic routing of reports to the appropriate agencies for processing
- Feedback from the processing agencies to the reporters.

All system requirements are documented in the MDCS Software Requirements Specifications document, D_WP4_2, Version 1.1 [BLAST2].

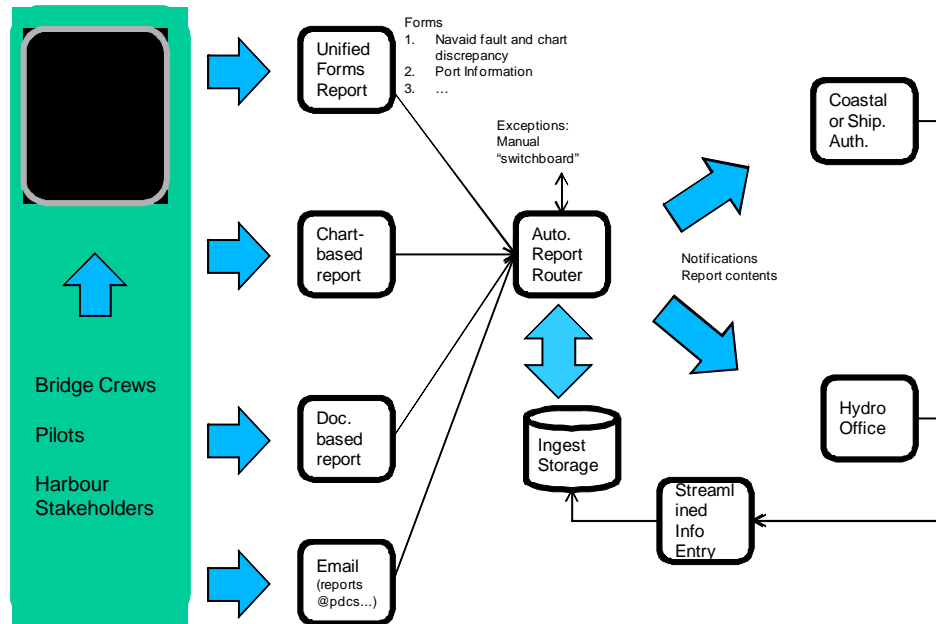


Figure 1. Information flows

4.2.2. General User Characteristics

The main users of the system will be shipboard users of various categories (pilots, and working mariners and leisure boaters), VTS coordinators, port authorities, and coastal authority and hydrographic agency editors and cartographers. On the reporting side, familiarity with procedures and needs for reporting information can be expected to vary since the anticipated reporting group ranges from trained experts such as pilots and VTS coordinators to leisure mariners.

4.2.3. General Constraints

4.2.3.1. Command Requirements

The system must be driven by Web-based user interfaces.

4.2.3.2. Hardware Limitations

For Version 1 a common desktop or laptop computer is expected. Screen sizes and limitations of marine hardware may limit expanded use.

4.2.3.3. Compliance to Specified Standards

Compliance to object and attributes in the catalogues of IHO standards S-57 [IHO00] and S-100 [IHO10] is required for data elements in MDCS where these standards apply.

Compliance to standards for navigation or shipboard systems is NOT required.

4.2.4. Assumptions and Dependencies

Development of the chart interfaces and chart interaction functionalities depends on the availability of portrayal and interaction software libraries from Jeppesen dKart™, Oceanview™, or suitable replacements.

The use of Web Feature Service or Web Map Service functionalities in the chart interface depends on the availability of related software libraries. Development of the MDCS demonstration required use of Jeppesen intellectual property which is protected and remains the property of Jeppesen.

5. MDCS Features

The web interface of the MDCS Demo is available over the internet by HTTP. The system is a web application designed to work with recent versions of major web browsers, specifically Internet Explorer, and Firefox on commonly used desktop or notebook computers. User interfaces conform to good practice for web interfaces navigation and usability.

The address for email reporting can receive Internet email. E-mail processing uses the standard JavaMail package and uses Jeppesen mail services both for sending and reading messages.

The application is designed with Hibernate3, the JBoss Application Server, MS SQL Server, Struts2, OpenLayers (a JavaScript (JS) mapping framework), and the TinyMCE rich-text editor.

Descriptions of the main features of MDCS are described as follows.

5.1. Harmonised Reporting Forms

The system provides forms for filing different types of reports in order to encourage a defined structure to the reported information, encourage completeness of reporting, and make them easier to process by both humans and software. The number of forms is small so as not to burden users with the need to decide which form applies to their situation. The structure of the forms is the same for all countries covered by this system. The forms are available as PDF forms (which can be downloaded by registered users, completed offline, and emailed to the MDCS email address) as well as online web forms which can be completed and submitted while logged into the system. The contents of the PDF and online versions are substantially the same. The forms are shown in **Fejl! Henvisningskilde ikke fundet.** through **Fejl! Henvisningskilde ikke fundet.** below.

Charts Discrepancy Report/inquiry

For safety emergencies or other urgent reports, contact the appropriate office (Rescue, Maritime Assistance, etc.) by radio or telephone. Do not use this form.

Is this a new report or an update to a previous report? New ☐ Update ☐

Confirmation Number (for updates to previous reports; leave blank if unknown)

Observer Information (leave blank if unknown)		Sender Information (leave blank if same as observer)	
Date observed	<input type="text"/>	Date sent	<input type="text"/>
Last Name of observer	<input type="text"/>	Last name	<input type="text"/>
First Name(s)/Initials	<input type="text"/>	First Name(s)/Initials	<input type="text"/>
MDCS User ID	<input type="text"/>	MDCS User ID	<input type="text"/>

Place

Country

Reference Nr.

Charts affected:

Chart Number(s) Date of last update Date of last Notice applied

ENC Number(s) Date of last update

Common discrepancies (Check any applicable boxes and provide details in the **Additional Information** section. If none of the choices applies, leave this section blank).

☐ Unlit light
 ☐ Irregular light
 ☐ Structural damage
 ☐ Add feature
 ☐ Delete feature
☐ Buoy missing
☐ Buoy out of position
☐ Wrong depth
☐ Change feature location

Requested Actions

Is repair or maintenance work needed in response to this information? ☐ Yes ☐ No or unknown

Chart object(s) affected (optional if given in the **Common Discrepancies** section)

☐ Nav aids, Traffic
 ☐ Obstructions, Dangers
☐ Land Features
☐ Sea Features
☐ Services
☐ Other (describe)

Location/Identity (Provide any known location and/or identifying data for the feature affected. Use the Additional Information area for other kinds of location or identifying information).

Light List Number (if applicable): Feature/Object Name (if known):

Location in words (e.g., buoys 11-15, entrance fairway):

Position (latitude/longitude) (decimal degrees) GPS used ☐

Related objects affected (e.g., "both lights of leading system")

Additional Information (Describe the problem in as much detail as you know. If complete details are not available, partial details are acceptable.)

Attachments: File

Photographs File

Tracings

File

Chart clipping File

Document

File

Other (describe)

Email

Print

Reset

Charts reporting form
Jeppesen Marine

1 of 1

Figure 2. Chart reporting form

Publications Discrepancy Report/Inquiry

For safety emergencies or other urgent reports, contact the appropriate office (Rescue, Maritime Assistance, etc.) by radio or telephone. Do not use this form.

Is this a new report or an update to a previous report? New ☐ Update ☐

Confirmation Number (for updates to previous reports; leave blank if unknown)

Observer Information (leave blank if unknown)		Sender Information (leave blank if same as observer)	
Date observed	<input type="text"/>	Date sent	<input type="text"/>
Last Name of observer	<input type="text"/>	Last name	<input type="text"/>
First Name(s)/Initials	<input type="text"/>	First Name(s)/Initials	<input type="text"/>
MDCS User ID	<input type="text"/>	MDCS User ID	<input type="text"/>

Place Country Reference Nr.

Publication affected and location of change (provide all known applicable information)

Title Edition

Last Notice applied (Nr.) or, Date of last notice applied

Volume Part Chapter Web page

Section/sub-section: Number Title

Other Number(s): Page Paragraph Line Other Nr.

Additional Information (Cite page and/or paragraph in the original document and suggest changes. If complete details are not available, partial details are acceptable.)

Attachments: File ☐

Photographs File ☐

Tracings ☐

File ☐

Chart clipping File ☐

Document ☐

File ☐

Other (describe)

Publications reporting form
Jeppesen Marine

1 of 1

Figure 3. Publications reporting form

Form Date: 2010-09-07

Scheduled Works and Activities

For safety emergencies or other urgent reports, contact the appropriate office (Rescue, Maritime Assistance, etc.) by radio or telephone. Do not use this form.

Is this a new report or an update to a previous report? ☐ New ☐ Update

Confirmation Number (for updates to previous reports; leave blank if unknown) _____

Contractor or Organiser Information (leave blank if unknown)		Sender Information (leave blank if same as organiser)	
Date of report		Date sent	
Name of contact		Name of contact	
MDCS User ID		MDCS User ID	

Place _____ Country _____ Reference Nr. _____

Dates Start Date: _____ End Date: _____

Details: Please provide information about the works or activities. Complete only one of items I - V below. Enter descriptions or additional information in the *Additional information* area. Attach copies of blueprints, plans, or other materials from which detailed information may be obtained.

I. Construction/demolition:

Type of work (to select more than one, hold the CTRL key while making selections)	Brief description of work:
<input type="checkbox"/> Wharves, piers, berths <input type="checkbox"/> Shoreline: Mole, seawall, etc. <input type="checkbox"/> Cargo facility (cranes, etc.) <input type="checkbox"/> Leisure craft facility (marinas, ...) 	

General position (provide precise extents in attachment or Additional Information section)

1. _____	2. _____
3. _____	4. _____
5. _____	6. _____
7. _____	8. _____

If coordinates are not known, describe location in words _____

If the project consists of multiple phases, provide titles, brief descriptions and planned start and end dates for the phases. Show the extents of the phases in the attachments or describe them in the Additional Information area. If the project consists of more than 3 phases, use the Additional Information area.

	Title	Description	Start	End
1				
2				
3				

II. Dredging/Fairway maintenance:

Fairway or channel name (if any) _____ Position: _____

Location (e.g., buoys 11/12 to 19/20) _____

III. Regatta, holiday closure, etc.

Brief description of event (regatta, etc.) _____

1. _____	2. _____
3. _____	4. _____
5. _____	6. _____
7. _____	8. _____

Figure 4. Events/activities reporting form (page 1)

Form Date: 2010-09-07



If coordinates are not known, describe location in words

IV. Navigation aid planned outage

Type of aid Name
 Identifying number Type of identifier
 Position
 Reason for outage

V. Other planned event

Brief description (provide details in Additional Information area):
 Position:
 If coordinates are not known, describe location in words

Requested Actions

Is repair or maintenance work needed? ☐ No ☐ Yes (describe below)
☐ Nav aids, Traffic ☐ Obstructions, Dangers ☐ Land Features ☐ Sea Features
☐ Services ☐ Other (describe)

Location/identity: (Provide any known location and/or identifying data for the feature affected. Use the Additional Information area for other kinds of location or identifying information).

Light List Number (if applicable): Feature/Object Name (if known):

Location in words (e.g., buoys 11-15, entrance fairway):

Position (latitude/longitude) GPS used ☐

Related objects affected (e.g., "both lights of leading system")

Additional information: (Enter any information you wish to provide which is not mentioned elsewhere on this form)

Attachments:

File Photographs File Tracings
 File Chart clipping File Document
 File Blueprint
 File Other (describe)

Email

Print

Reset

Scheduled Activities

2 of 2

Jeppesen

Figure 5. Events/activities reporting form (page 2)

5.2. Acceptance of email Reports

Reports by email are accepted by the system. Processing such reports requires they are in a pre-defined format, which is a simplified version of the chart and publication forms. The template for plain text email reports is shown in the figure below. Reports not adhering to the format will be reviewed by an agency user who manually enters a corresponding report into the system in the proper format.

INSTRUCTIONS
 Open this file in your email program, add your information, and email to mdcs@jeppesen.com. Do not delete unused lines or change anything to the left of a ":". The text in () explains what information is required and how it should be typed.

Sender MDCS ID (required; "None" if not registered): None
 Sender Country - DE, DK, NO (required):
 Place reporting on (required; e.g., Stavanger):
 Chart [] or Publication [] (required, put an X in only one box)
 Number or title (required):
 Producing country code - DE, DK, NO (required):

(If writing about a chart, either coordinates or location in words is required)
 Location in words (e.g., between buoys 11-15, entrance fairway) :
 Latitude (e.g., 55 55.555 N) :
 Longitude (e.g., 005 55.555 E) :

(If writing about a nautical publication, at least one of the items below is required.)
 Volume :
 Part :
 Chapter :
 Page :
 Paragraph :
 Line :
 Web page :
 Section number :
 Section title :

DETAILS (required):
 [Replace this text with your question or a description of the problem.
 Please limit to about 100 words. If you need more space please add a Word, PDF, or TXT attachment.]

ATTACHMENTS (optional):
 Describe attachments in brief (e.g., photograph of harbour entrance):

END

Figure 6. Template for text reports

5.3. Access Control

Access to system features and data must be controlled to allow users access to only the information they have reported, or to the data they are allowed to access. Coastal agency or hydrographic users must be allowed access to all the information needed to perform their tasks. Administrative and system configuration functions require access privileges other users do not need. Private information about users must not be revealed to other users in general, but needs to be available to the agencies processing the reports. Information from unauthenticated users must be accepted.

5.4. Chart Catalogue Search

Chart catalogue search permits a user to identify specific locations and chart objects the user intends to prepare a report with. The geographic mode chart catalogue search allows the user to identify objects by

using a graphical depiction of coastlines and available ENC's. The text mode chart catalogue search allows the user to identify objects by using text-based listings of ENC's. Chart catalogue search also allows the user to enter a location in latitude/longitude coordinates and view the available charts at that location. Figure 7 shows the chart catalogue search screen with a list of charts for text mode search on the left and the graphical geographic locator to the right of the list.



Figure 7. Chart search screen with list of charts and graphic geographic locator

5.5. Visual User Interface for Reporting on Charted Information

The system provides a visual user interface for reporting about information charted in ENC's. This interface displays a graphical view of the specific chart selected by a user in the text or geographic locator mentioned earlier. It allows the user to highlight only selected classes of geographic features using a selection menu (on the left of the screen). Coordinates can be specified using the mouse on the graphic display in this screen. The user may type in a report or question into the box provided below the graphic display or pick a specific geographic feature to report on (or both). This screen offers the option to proceed to the online chart reporting form (where further details can be provided and attachments can be uploaded) or submit a short question or report directly from this screen.

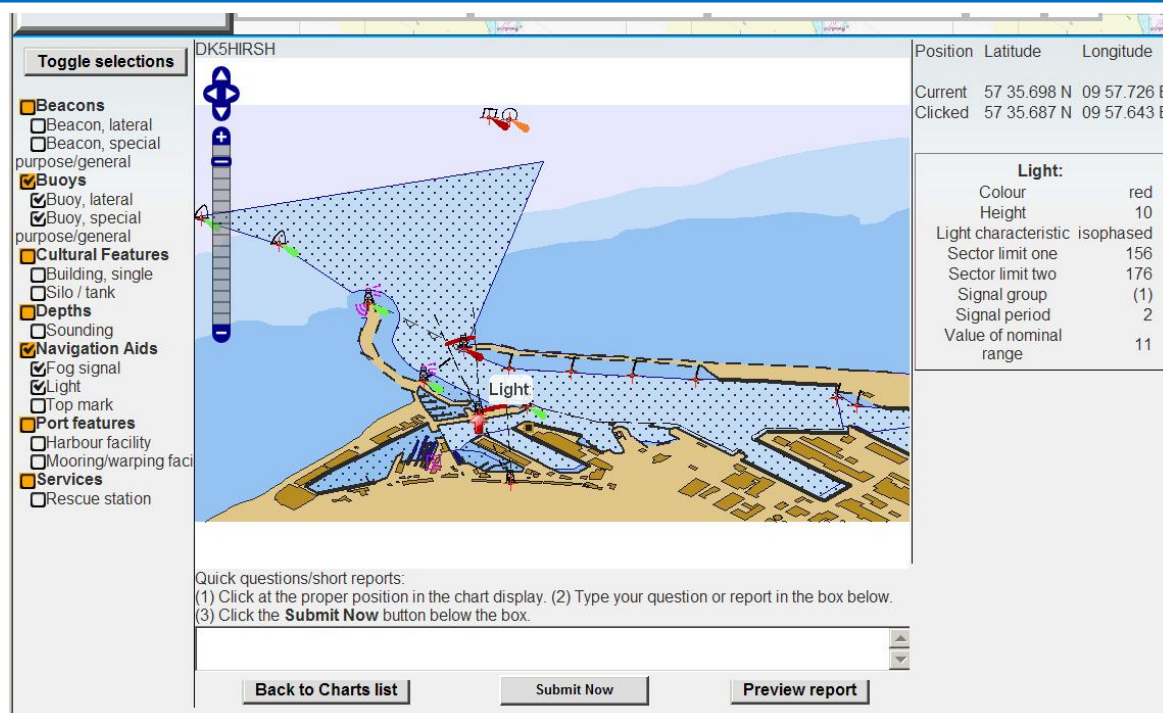


Figure 8. Interface for reporting on charted information

5.6. Nautical Publications Catalogue Search

Publications catalogue search permits a user to identify specific locations and nautical publications about which the user intends to prepare a report. The geographic mode search allows the user to do this using a graphical depiction of coastlines and available publications. The text mode search allows the user to do these using text-based listings of publications. The layout and functioning is similar to the chart catalogue search described earlier

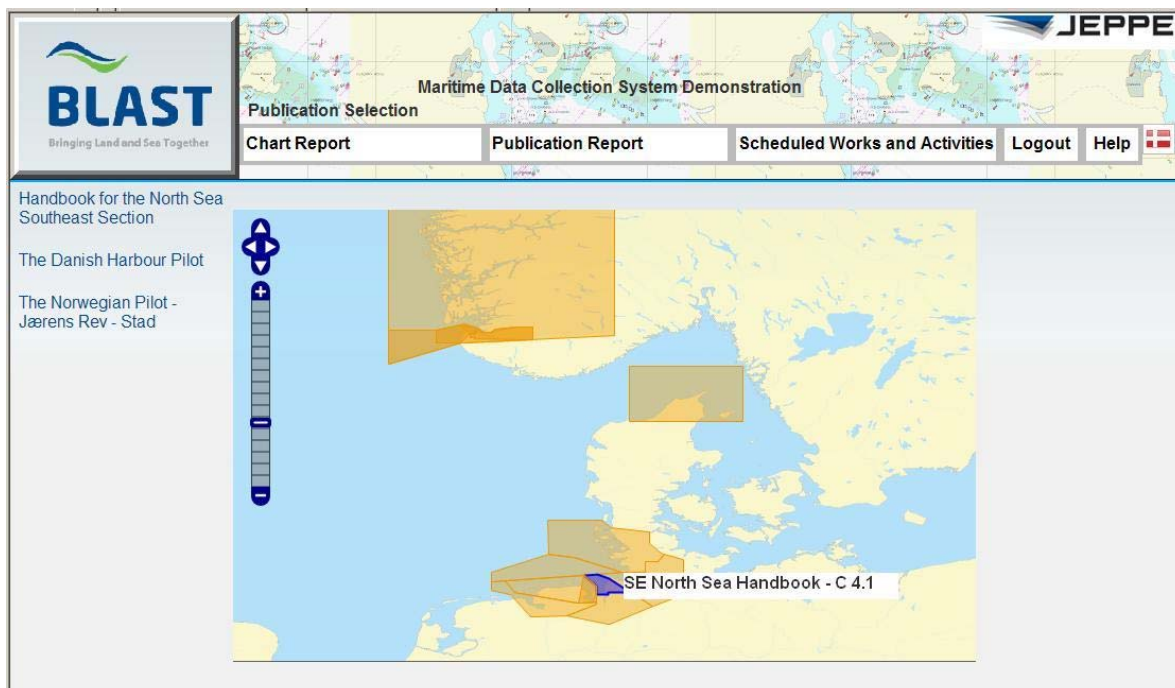
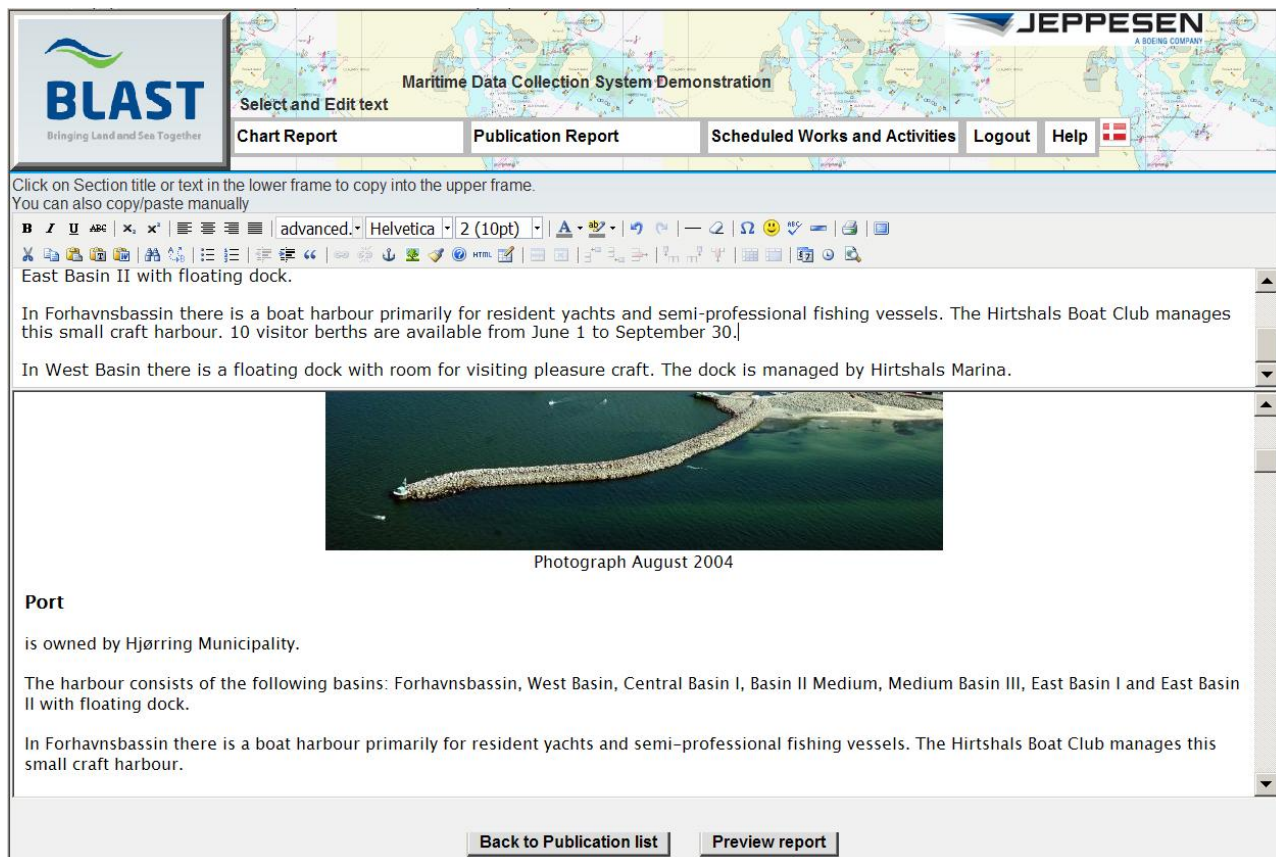


Figure 9. Publication search screen with list of publications on the left and graphical geographic locator to its right

5.7. User Interface for Reporting on Publication Information

The user interface for reporting on nautical publications allows users to display the content of the included nautical publications, and enter updates and corrections to content specified by the user.



The screenshot shows a web interface for the 'Maritime Data Collection System Demonstration'. At the top, there is a map of the North Sea region. Below the map, a navigation bar contains links: 'Select and Edit text', 'Chart Report', 'Publication Report', 'Scheduled Works and Activities', 'Logout', and 'Help'. The 'Publication Report' link is active. The main content area has a text editor with a toolbar. The text in the editor reads: 'East Basin II with floating dock. In Forhavnsbassin there is a boat harbour primarily for resident yachts and semi-professional fishing vessels. The Hirtshals Boat Club manages this small craft harbour. 10 visitor berths are available from June 1 to September 30. In West Basin there is a floating dock with room for visiting pleasure craft. The dock is managed by Hirtshals Marina.' Below the text is a photograph of a long, narrow floating dock in a body of water, with the caption 'Photograph August 2004'. At the bottom of the form, there are two buttons: 'Back to Publication list' and 'Preview report'.

Figure 10. Interface for reporting on publication

5.8. Interface for Planned Event Information

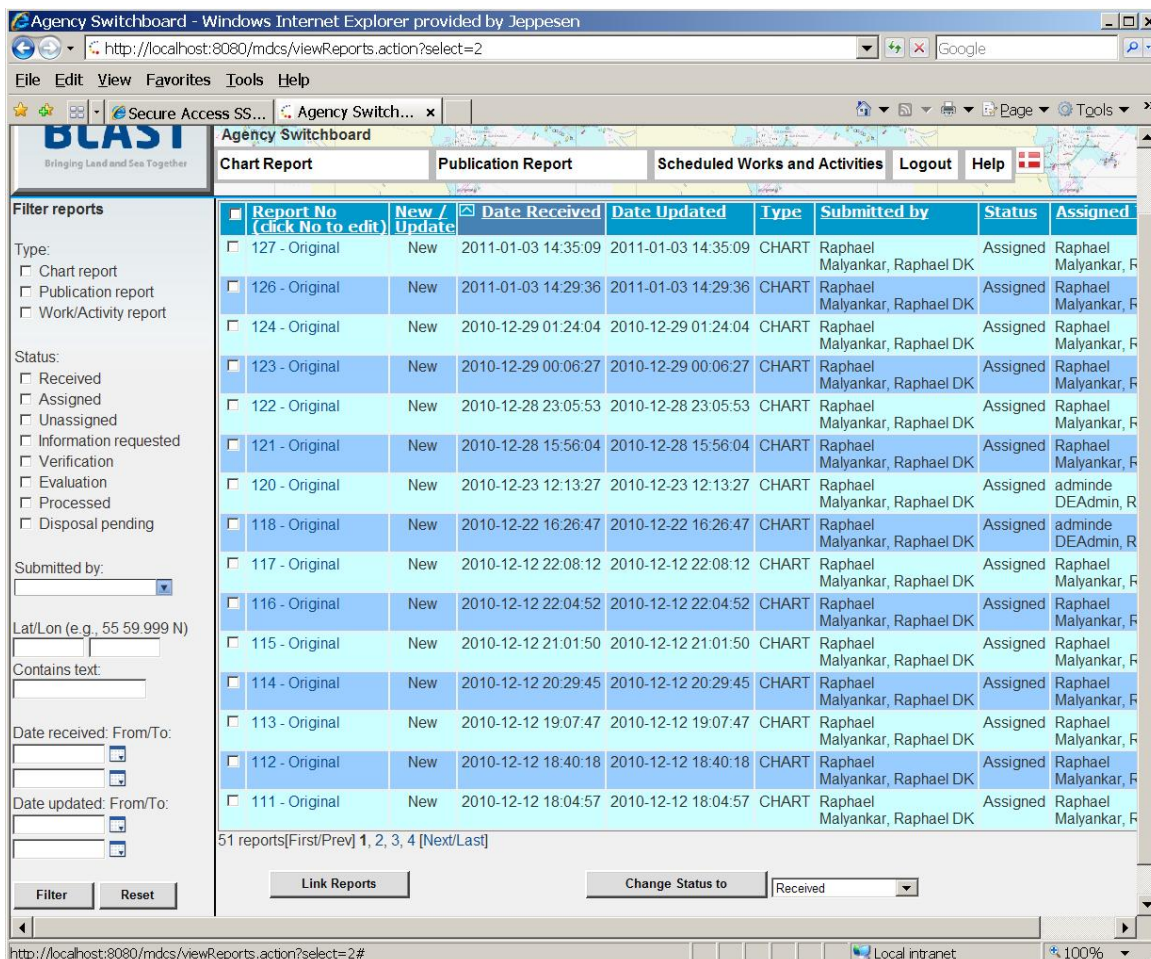
The planned event information interface is intended to allow ports and coastal authorities to submit information about the location, extent, and planned duration of construction, dredging, facility closures, regattas, and similar events which may be of interest for navigation. This interface allows the submission of attachments which may contain more information in various forms, which may be needed by the recipient to develop the notices, warnings, updates, corrections, etc., which they issue in response to the report. Examples of such attachments are blueprints of construction plans, diagrams, chart clippings, etc. The planned event interface is entirely form-based though it too offers web and PDF versions of the forms (ref. **Fejl! Henvisningskilde ikke fundet.**).

5.9. Routing of Reports

The system notifies agency users about new reports and updates (follow-ups) based on the type of report, the reported location, status and metadata associated with the report and its follow-ups. Notification is determined by decision rules which can be configured. Reports which cannot be automatically routed are manually routed by a switchboard administrator.

5.10. Agency Switchboard

The “switchboard” provides an overview of cases currently in the system. Administrators use this interface to exercise oversight and supervision of MDCS functions, update the status of reports, and assign or reassign reports.



Agency Switchboard - Windows Internet Explorer provided by Jeppesen

http://localhost:8080/mdcs/viewReports.action?select=2

File Edit View Favorites Tools Help

Secure Access SS... Agency Switch... x

BLAST Bringing Land and Sea Together

Agency Switchboard

Chart Report Publication Report Scheduled Works and Activities Logout Help

Filter reports

Type:

- ☐ Chart report
- ☐ Publication report
- ☐ Work/Activity report

Status:

- ☐ Received
- ☐ Assigned
- ☐ Unassigned
- ☐ Information requested
- ☐ Verification
- ☐ Evaluation
- ☐ Processed
- ☐ Disposal pending

Submitted by:

Lat/Lon (e.g., 55 59 999 N)

Contains text:

Date received: From/To:

Date updated: From/To:

51 reports[First/Prev] 1, 2, 3, 4 [Next/Last]

Report No (click No to edit)	New / Update	Date Received	Date Updated	Type	Submitted by	Status	Assigned
127 - Original	New	2011-01-03 14:35:09	2011-01-03 14:35:09	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
126 - Original	New	2011-01-03 14:29:36	2011-01-03 14:29:36	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
124 - Original	New	2010-12-29 01:24:04	2010-12-29 01:24:04	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
123 - Original	New	2010-12-29 00:06:27	2010-12-29 00:06:27	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
122 - Original	New	2010-12-28 23:05:53	2010-12-28 23:05:53	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
121 - Original	New	2010-12-28 15:56:04	2010-12-28 15:56:04	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
120 - Original	New	2010-12-23 12:13:27	2010-12-23 12:13:27	CHART	Raphael Malyankar, Raphael DK	Assigned	adminde DEAdmin, R
118 - Original	New	2010-12-22 16:26:47	2010-12-22 16:26:47	CHART	Raphael Malyankar, Raphael DK	Assigned	adminde DEAdmin, R
117 - Original	New	2010-12-12 22:08:12	2010-12-12 22:08:12	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
116 - Original	New	2010-12-12 22:04:52	2010-12-12 22:04:52	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
115 - Original	New	2010-12-12 21:01:50	2010-12-12 21:01:50	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
114 - Original	New	2010-12-12 20:29:45	2010-12-12 20:29:45	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
113 - Original	New	2010-12-12 19:07:47	2010-12-12 19:07:47	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
112 - Original	New	2010-12-12 18:40:18	2010-12-12 18:40:18	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F
111 - Original	New	2010-12-12 18:04:57	2010-12-12 18:04:57	CHART	Raphael Malyankar, Raphael DK	Assigned	Raphael Malyankar, F

Filter Reset

Link Reports

Change Status to: Received

http://localhost:8080/mdcs/viewReports.action?select=2#

Local intranet 100%

Figure 11. Agency switchboard

5.11. Processing and Follow-ups to Reports

Reports are processed by agency users by taking the action required by agency policy. Examples of actions include sending out a repair boat or preparing a Notice to Mariners. Agency users are expected to update MDCS on actions taken on a report and additional information that may become available. Users may submit new information for a report they have filed, or information pertaining to an existing report may be submitted by a different registered or public user. MDCS provides functionality that permits all users to submit additional information, and allows agency users and administrators to manage information and provide status updates.

5.12. Report Viewing

The report viewer functionality presents in one place all the related parts of a report and updates and subsequent reports associated with it. Access to reports is controlled by the user's location and privileges. Users are also afforded the opportunity to add information by means of a path to one of the information input interfaces.

5.13. Security Requirements

Security measures are applied to mitigate potential problems with abuse of public access to the system. The MDCS system allows only registered users to submit reports using the web interface. Email reporting will be protected against abuse by using Jeppesen's enterprise email systems for the receipt of emails.

6. Development

6.1. MDCS Code

The MDCS Demo is a web application designed with Hibernate3 (part of JBoss Application Server (AS)), MS SQL Server, Struts2 and OpenLayers JavaScript (JS) mapping framework to run in JBoss AS 5.x. Additional components are JQuery JS library, TinyMCE JS rich-text editor, DisplayTag JS library.

E-mail notifications use standard JavaMail package and uses Jeppesen mail server both for sending and reading messages.

Details of the code base can be found in the document, BLAST MDCS Demo Design [BLAST3].

7. Testing

7.1.1. Test Strategy

Testing was planned to be conducted in two stages. The first stage addressed function and performance. The second stage tested the system. A third stage was added to test areas that were not ready for testing in the first two stages. In each stage the user was assigned test cases. The user reviewed the requirements that the test must prove. The test case contained the requirements and test tasks to complete the test.

Each test case that a user tested allowed for the user to input the results of each test. Users could document whether the expected outcome was achieved or if it was not. If the outcome was different than the expected, the outcome that did occur was documented. Documentation could be a screen shot and/or a written statement.

Testing started on a scheduled date. All testing completed by the scheduled end date and test result documentation would be completed.

7.1.1.1. Testing Types

The MDCS used the following testing types: function, user interface, performance profiling, load, stress, volume, security and access control, and configuration. Details on the types can be found in the BLAST Web Test Plan V1.0 [TEST1].

7.1.1.2. Stage One Test

Stage One testing addressed function and performance. A test plan was created and sent to all volunteer testers from the WP 4 partners. The plan was reviewed with all the testers before the start of the testing. State One testing started on 3 November, 2011 and finished on 5 November, 2011.

7.1.1.2.1. Partner Testers

The following people from the WP 4 partners were testers.

- Hartmut Berndt BSH
- Jens Schröder-Fürstenberg BSH
- Karin Vaksdal NHS
- Odd Aage Føre NHS
- Olav Haugen NHS
- Rolf Karnatz BSH
- Torstein Ådland NHS

7.1.1.2.2. Test Cases

Stage One had 12 test cases.

- TC System Features 4_1 Harmonized Reporting Forms
- TC System Features 4_3 Access Control
- TC System Features 4_4 Chart Catalogue Search
- TC System Features 4_5 Visual UI Reporting
- TC System Features 4_6 Nautical Publications Catalogue
- TC System Features 4_7 User interface for report pubs
- TC System Features 4_9 Interface for planned event
- TC System Features 4_14 Review Reporting
- TC System Features 4_16 User Home Page
- TC Online User and Help 6_0
- TC Performance Req. 7_0
- TC Quality Attributes 8_3 Usability

7.1.1.2.3. Test Results

Stage One test results were compiled and documented on 10 November 2010. In the 12 test cases given to the testers there were 160 steps. Each step had to pass or fail. In Stage One 23 steps failed and 137 passed. Failed steps were reviewed to determine if they were defects, user error or test case issue. The testers also documented a number of suggestions for modifications and enhancements.

• TC System Features 4_1 Harmonized Reporting Forms	33 steps	10 failed
• TC System Features 4_3 Access Control	20 steps	8 failed
• TC System Features 4_4 Chart Catalogue Search	23 steps	1 failed
• TC System Features 4_5 Visual UI Reporting	4 steps	1 failed
• TC System Features 4_6 Nautical Publications Catalogue	15 steps	1 failed
• TC System Features 4_7 User interface for report pubs	9 steps	0 failed
• TC System Features 4_9 Interface for planned event	15 steps	2 failed
• TC System Features 4_14 Review Reporting	34 steps	0 failed
• TC System Features 4_16 User Home Page	2 steps	0 failed
• TC Online User and Help 6_0	30 steps	0 failed
• TC Performance Req. 7_0	2 steps	0 failed
• TC Quality Attributes 8_3 Usability	3 steps	0 failed

Failed steps that were determined to be defects were logged and prioritised for updating.

7.1.1.3. Stage Two Test

Stage Two testing addressed systems. A test plan was created and sent to all volunteer testers from the WP 4 partners. The plan was reviewed with all the testers before the start of the testing. Stage Two testing started on 6 December 2010 and finished on 13 December 2010.

7.1.1.3.1. Partner Testers

The following people from the WP 4 partners were testers.

• Hartmut Berndt	BSH
• Jens Schröder-Fürstenberg	BSH
• Karin Vaksdal	NHS
• Odd Aage Føre	NHS
• Olav Haugen	NHS
• Rolf Karnatz	BSH
• Torstein Ådland	NHS

7.1.1.3.2. Test Cases

Stage Two had eight test cases.

- TC System Features 4_2 Acceptance of Email Reports
- TC System Features 4_3 Access Control*
- TC System Features 4_11 Routing of reports
- TC System Features 4_12 Agency Switchboard
- TC System Features 4_13 Processing and follow-ups to reports
- TC System Features 4_15 Configuration settings and user state
- TC Security Requirements 5_0
- TC Other Requirements – Time Out

*Not all requirements were tested in Stage One, Stage Two completed all testing

7.1.1.3.3. Test Results

Stage Two test results were compiled and documented on 20 December 2010. In the eight test cases given to the testers there were 118 steps. Each step had to pass or fail. In Stage Two 19 steps failed and 99 passed. Failed steps were reviewed to determine if they were defects, user error or test case issue. The testers also documented a number of suggestions for modifications and enhancements.

• TC System Features 4_2 Acceptance of Email Reports	11 Steps	3 Failed
• TC System Features 4_3 Access Control	25 Steps	8 Failed
• TC System Features 4_11 Routing of reports	50 Steps	7 Failed
• TC System Features 4_12 Agency Switchboard	6 Steps	1 Failed
• TC System Features 4_13 Processing and follow-ups to reports	16 Steps	0 Failed
• TC System Features 4_15 Configuration settings and user state	6 Steps	0 Failed
• TC Security Requirements 5_0	1 Step	0 Failed
• TC Other Requirements – Time Out	5 Steps	0 Failed

Failed steps that were determined to be defects were logged and prioritised for updating.

7.1.1.4. Additional Test

An additional test was added to re-test emailed reports and chart graphics. Emailed reports needed to be re-tested as the failures in the two stage testing were severe. Chart graphics in MDCS were minimal and with the enhancements made by Jeppesen additional testing was required. Two test cases from Stage One and Stage Two were re-sent to the testers. An overview of the testing was given to the volunteer testers from the WP 4 partners. Additional testing started on 23 February 2011 and finished on 25 February 2011.

7.1.1.4.1. Partner Testers

The following people from the WP 4 partners were testers.

- Hartmut Berndt BSH
- Jens Schröder-Fürstenberg BSH
- Karin Vaksdal NHS
- Odd Aage Føre NHS
- Olav Haugen NHS
- Rolf Karnatz BSH
- Torstein Ådland NHS

7.1.1.4.2. Test Cases

Additional testing had two test cases.

- TC System Features 4_2 Acceptance of Email Reports
- TC System Features 4_14 Review Reporting

7.1.1.4.3. Test Results

Additional test results were compiled and documented on 1 March 2011. In the two test cases given to the testers there were 45 steps. Each step had to pass or fail. In Additional Testing 1 step failed and 30 passed. The failed step was due to different behaviour on different platform/browser combinations. The testers also documented a number of suggestions for modifications and enhancements.

- TC System Features 4_2 Acceptance of Email Reports
- TC System Features 4_5 Visual User Interface for Reporting on Charted Information

Failed steps that were determined to be defects were logged and prioritised for updating.

8. Enhancement, Modifications, and Defects

8.1. Overview

The development and testing of the MDCS has generated requests for enhancements and modifications along with defects. These requests and defects have been documented to ensure they are available for future use if the prototype is made into a product. The MDCS Issues List [LIST] shows all entries, categories, resolution, comments and who reported each entry.

Enhancements are:

- Addition of a bearing and distance method for indicating locations.

- Ability to mark up areas on the chart graphical UI.
- Minor enhancements to the user interface, e.g., less information for logging in,
- Develop an easier means of indicating follow-ups to previous reports.
- A way for users to create and use templates (partial information which could be used to create new reports).
- Interfaces for information exchange with workflow management software already in use at the coastal authorities and hydrographic offices.
- Various changes to the reporting forms, ranging from field formats to indicating required information.
- Simplification of the original batch upload spreadsheet
- Enhancements to the batch upload worksheet to allow addition of photographs, images, etc.
- Additional information displayed for soundings.
- Additional information displayed for indicating feature associations and aggregations.

9. Conclusion

9.1. Summary

There is considerable variation in the processes involved in collecting maritime information among the three states. MDCS is an attempt to introduce a harmonised trans-national means of collection of information into this process and provide a channel for improved feedback from the processing agencies to the reporting users.

9.2. Progress towards goals of BLAST WP4

At the beginning of the project, our research indicated that there was general satisfaction with the functioning of the current systems among the agencies, but room for improvements was mentioned, in particular:

- Trans-national harmonisation of forms used to collect information
- Simplification of reporting processes and more user-friendliness in software
- Ability to mark-up charts and publications online when reporting changes and defects
- Improved method of collecting detail on planned activities (construction, dredging, etc.)
- Enabling administrators to monitor information flow.

9.3. Vision for the future

9.3.1. Keeping nautical information current in the digital age

It is in the interest of the users (mariners) as well as publishers of maritime information (coastal the various uses to which they are put, and that the process of turning reports from observers into validated information be as smooth and efficient as possible. BLAST MDCS demonstrates the following features as steps to this goal:

Single-window, harmonised reporting: The concept of single-window reporting is already being applied in different government interactions with commerce and the public. The MDCS project in BLAST will apply the single-window concept on a trans-national basis to the problem of gathering the information needed to keep charts and nautical publication up to date.

Encouragement of reporting: Mariners are conscientious about reporting information which affects safety, and coastal agencies and hydrographic offices encourage the reporting of safety-related information. Nevertheless, some non-safety information such as plans for construction in ports may either not be reported at all or not reported in a timely manner. MDCS makes it easier for publishers to request and for sources to supply the different kinds of information that publishers would like to receive.

Facilitation of reporting in appropriate formats: The publishers sometimes have requirements for information content, metadata, and data quality that may not be known to potential reporters and which may not even be obvious. MDCS use of standard interfaces and harmonised reporting forms encourages compliance with the requirements and completeness of information.

More and quicker feedback on the status and disposition of reports: Providing feedback to reporters on the status and disposition of reports fills a stated need of some reporters. Publishers also have policies about acknowledging reports. MDCS makes it possible for reports to be tracked by the persons filing them and for publishers to make the status and disposition of reports available to reporters, and communicate with them concerning any follow-up queries.

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