

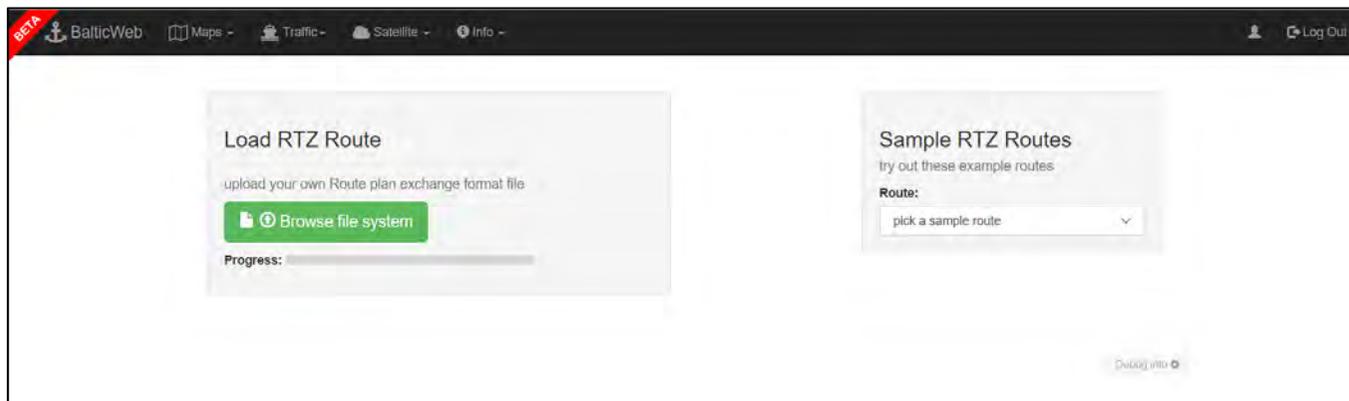
Efficiency

Is the users' perception, cognition or actions challenged in the process?

Route optimization

1) No opportunity to start with an optimized route

The solution requires a user-planned route in order to provide the user with an optimized route. Several test persons would have preferred to start with an optimized route from A to B and with that information make a final and more fine-tuned route.



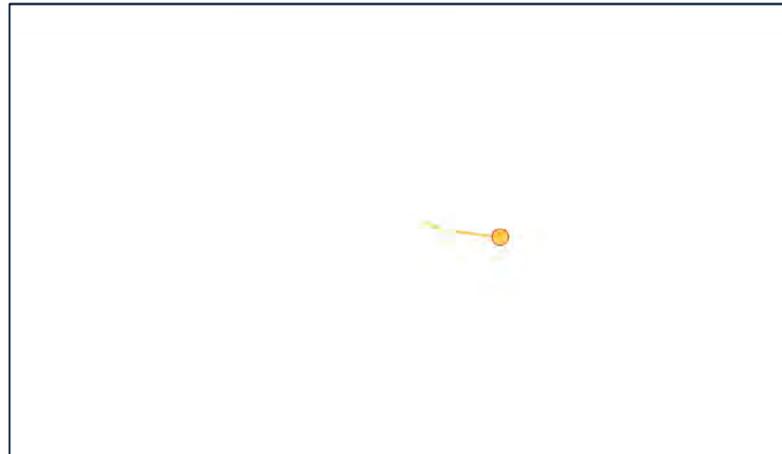
→ The process of route planning will be more effective if the user gets all the information he needs to plan a route in the beginning of the process, so he avoids later corrections and adjustments to his original route. Consider if it should be possible to get an optimized route only by typing in departure and destination (like a GPS). The benefit could be less strain on user resources. However, be aware of the risk of not checking the optimized route for factors such as TSS, recommended routes and local traffic patterns (drift into failure).

Route optimization

2) No possibility to see what the optimization accounts for once the optimization button is pressed

The parameters considered by the optimization algorithms were present in the interface before the user clicks to optimize. But this info was never noticed. When the user presses the button for optimization, the user is no longer able to see what the optimization accounts for, since the information text disappears (i.e., that the optimization considers shorter distance and fuel consumption, but not TSS for example). This information can still be of need after the optimization process, e.g. because the user didn't read the info before pressing the optimization button (8 of 8 participants) or because the user forgot what he read. The text should also be presented in more conspicuous manner. Participants also wanted to know who was the service provider (which affects trust) and if the optimization was done manually by a person or by a computer.

Watch video! →

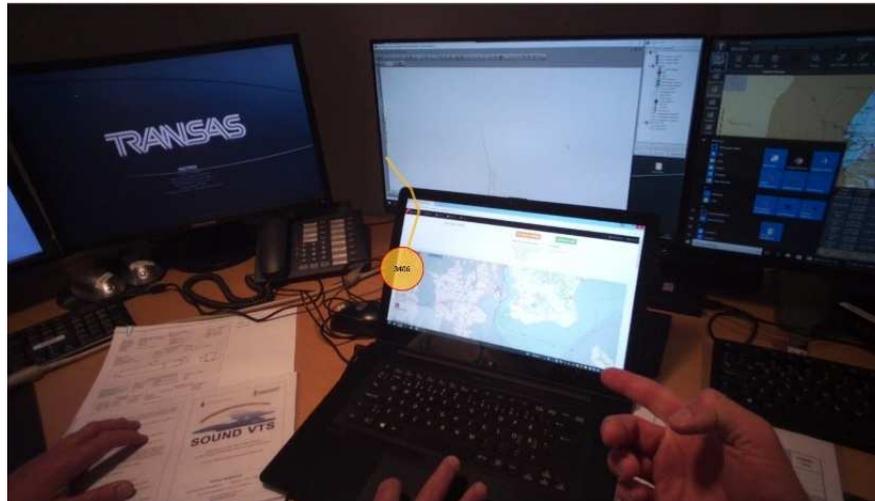


→ Based on eye tracking observations, we highlight that the information text related to the solution is not necessarily read before use – and we suggest to make such information more salient as well as leaving the information text visible to the user so it's possible to see what factors are included in the optimized route.

Route optimization

3) No chance to compare the uploaded (original) and optimized routes in relation to no-go areas and MSI's

Some of the test persons wanted to check both routes in regard to no-go areas and MSIs before making a decision on which route or parts of the routes to follow. However, this is not possible – the user needs to choose one of the two routes first to see this kind of information.

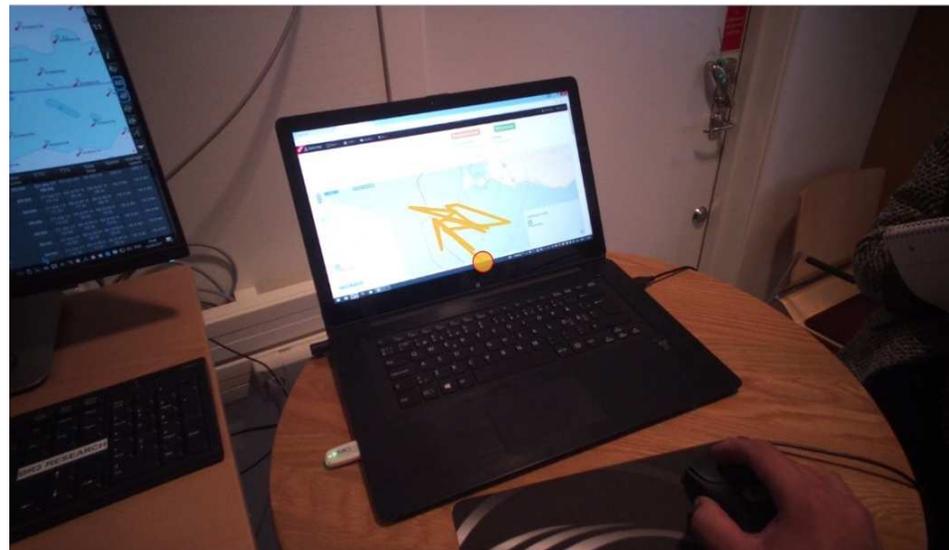


→ We advise that it is made possible to see no-go areas and MSI features when both routes are presented at the same time. In this way the routes can be compared in relation to other factors of relevance to the route planning simultaneously and support more safe decision making.

Route optimization

5) No immediate indication of additional information on the two routes

To get additional information about the optimized route and the navigators' own route e.g. waypoints, distances etc., the user will need to scroll down the page. However, it was not immediately salient to the test persons that this option existed and many even asked for more details about the differences between the two routes.

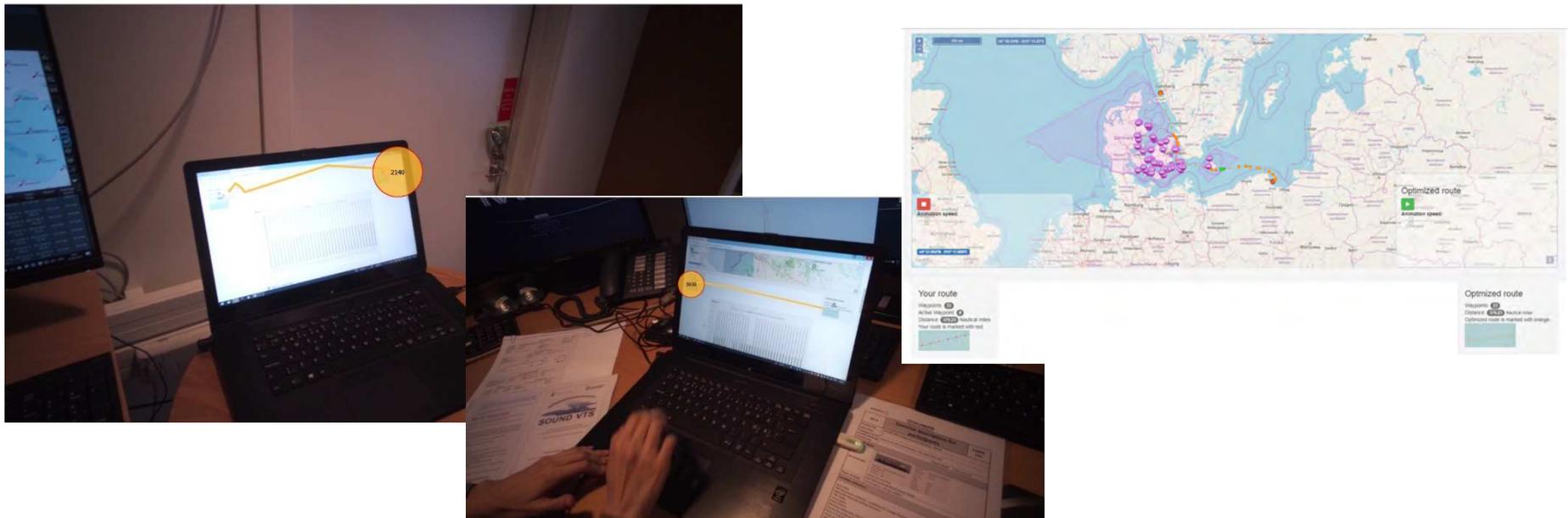


→ We suggest to make it more salient that additional information about the routes exists - instead of only leaving the user with the immediate visual differences (routes on chart). This could e.g. be emphasized by highlighting such option so it appears already without the need to scroll down.

Route optimization

6) Difficulties comparing routes when information is placed apart

When the user wants to check the information related to his own route and the optimized route, he is challenged because this information is not placed next to each other. The test persons needed to switch attention between two information columns – demanding more resources from the working memory. There was also trouble differentiating the red and orange dotted route lines on the chart.



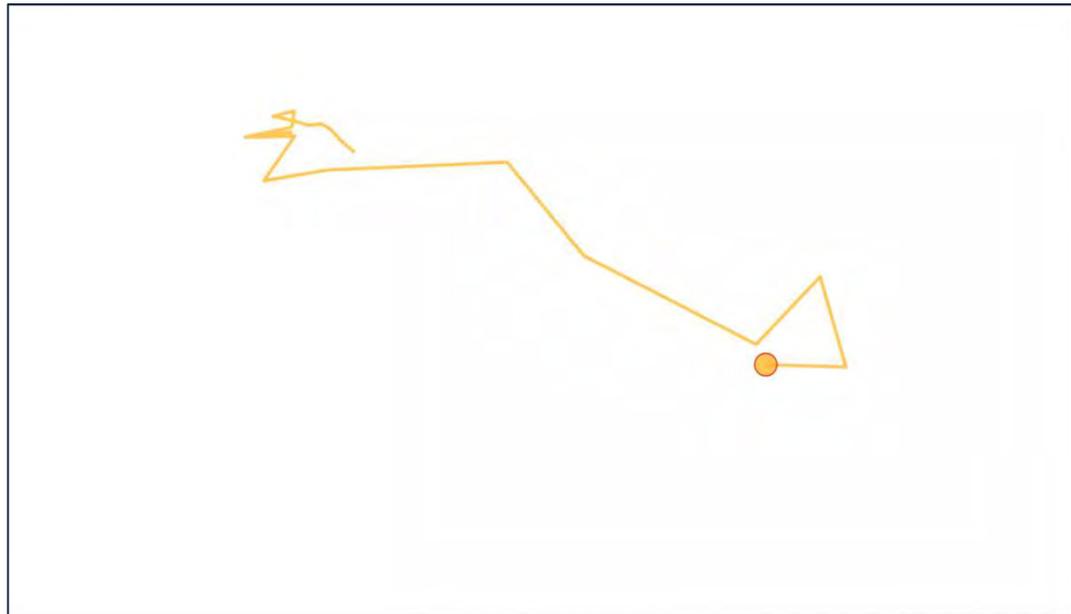
→ We suggest developers to remember that when two sources of information needs to be compared, it is cognitively less demanding if the information is placed in direct relation to each other and that differences must be visually salient.

Route optimization

7) Problems understanding the graph

The test persons had difficulties understanding the graphs related to the route optimization solution.

Watch video! →

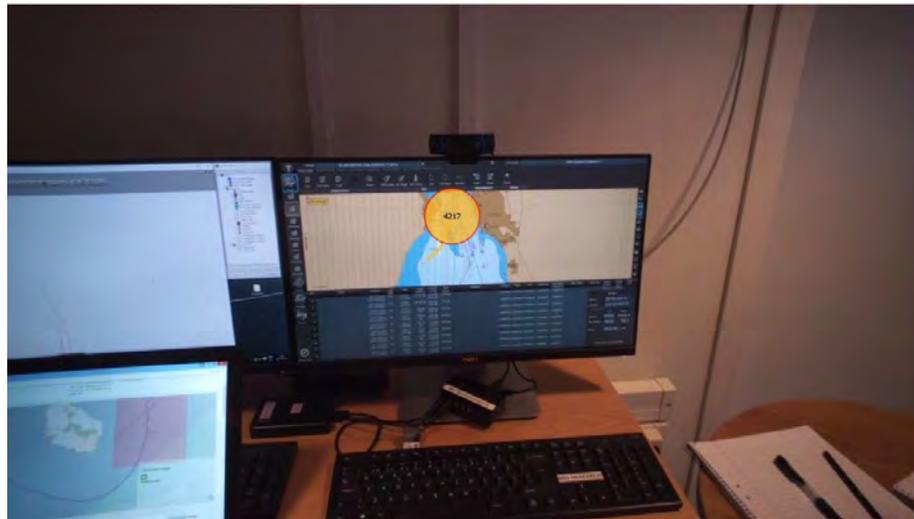


→ Generally, we suggest to test the user's understandings of graphs and figures before integration in the solutions, and furthermore we suggest to always relate these to graphs and figures normally used by the target group. This minimizes the chance of misinterpretations and confusion.

Route optimization

8) Preference to check the two routes in the planner, not in BalticWeb

When the users are presented with the two routes, they generally preferred to transfer it back into the planner in order to explore the differences further. This was mostly due to the fact that they don't have the opportunity to change their route in the BalticWeb interface, nor see MSIs or no-go areas over the two routes simultaneously for comparison.



→ Based on this behavior, we suggest the future relevance of considering: A) integrating the route optimization solution in existing planning systems where the user can make corrections directly in the interface and save time transferring information from one system to another. B) making it possible to correct and make changes to the route in the BalticWeb and save time transferring information.

Route optimization

9) Route optimization service vs. weather routing and other services

9a) When talking about the route optimization service, participants mentioned weather routing. This is an option that weather services provide today. This can include a rough voyage from point A to B, optimized for performance according to a weather prediction.

→ With regards to fuel efficiency, weather-related performance optimization may be of interest to include as an option that the user can turn on or off.

9b) Some companies use similar optimization services. These may consider trim, speed, squat...

→ It could be an idea for this service to include the same parameters so as to help users with decision making with regards to the compromise between fuel efficiency and safety of the vessel.

Satisfaction

Is the user accepting, trusting and is satisfied in the process?

Route optimization

"It's not immediate visible to see the difference info between the optimized and the navigators own route" (difficult to tell the difference between lines)

"It's going in the wrong lane" (at Helsingborg)

"-They don't even use the lane – you should never do like that"

"Doesn't seem to work in close water with TSS"

"The route is short but not useful. When you present a route like this, it has to be more intelligent, e.g. Take traffic schemes into account"

"We compared the routes in the ECDIS because the map was better. In the Baltic map you can't see TSS etc. and then compare"

"Our route is awesome – why change?"

"Considered as a tool, it is not that usable"

"We need to adjust it, or we will use our route"

"I wouldn't go that close to Bornholm – I prefer to use the TSS whenever I can"

"In practice, it's not usable. Maybe it's good to start with and then adjust, but how much time will I save if I need to adjust anyway?"

"Would be interesting to know the algorithm and who is the provider"



VTS REPORTING

VTS reporting

Stakeholder: DMA

Aim: To reduce administrative burdens and improve the exchange of ship-to-shore and shore-to-ship information

Function: Service for automated Vessel Traffic Service (VTS) and Ship Reporting System (SRS) using a proposed standard to be promoted internationally (the user still needs to type in persons onboard and cargo).

Context of use: both planning and navigation phase

The image shows a screenshot of a web-based Vessel Traffic Service (VTS) notification form. The form is titled "Vessel Traffic Service - notification form" and is overlaid on a map of a coastal area. The form contains the following sections:

- SOUNDREP** (dropdown menu)
- Sweden - SOUNDREP - Sound Vessel Traffic Service** (header)
- Call sign: "Sound VTS"** (text)
- VHF ch. North 73** (text)
- VHF ch. South 71** (text)
- Passive channels: VHF 68** (text)
- VHF 79** (text)
- Email: contact@soundvts.org** (text)
- Phone: +46 771 630698** (text)
- View Master's Guide online** (link)
- Estimated Time of Arrival at SOUNDREP** (text)
- ETA at SOUNDREP (UTC) (currently not used)** (text)
- DATE** (input field)
- TIME** (input field)
- Port of destination:** (input field)
- Route** (input field)
- Currently not in use** (text)
- Vessel information** (text)
- Vessel name:** (input field)
- Callsign:** (input field)
- MMSI:** (input field)
- IMO:** (input field)
- Number of people on board:** (input field)
- Present max. draught (m):** (input field)
- Air draught (m):** (input field)
- Defects, deficiencies or limitations?** (input field)
- Cargo information - detailed cargo description** (text)
- Select a cargo type** (dropdown menu)
- Pollution or dangerous cargo lost overboard:** (text)
- Please describe the pollutant and where it was lost. Any additional information may be of great value.** (input field)
- Voyage information** (text)
- Vessel actual position longitude:** (input field)
- deg** (input field)
- min. N** (input field)
- Vessel actual position latitude:** (input field)
- deg** (input field)
- min. E** (input field)
- Use GPS** (checkbox)
- Vessel speed:** (input field)
- True heading:** (input field)
- Send** (button)
- Cancel** (button)

Effectiveness

Is the user capable of producing the desired result and to what extent?

VTS reporting

Is the VTS online reporting solution tested during planning?

Group 1	Group 2	Group 3	Group 4
✓	✓	✓	✓

Does the users succeed in sending the e-mail reporting?

Group 1	Group 2	Group 3	Group 4
✓	✓	✓	✓

VTS reporting

1) Time spent on reporting activities related to the sound (excl. the time spent to identify reporting line) during the planning phase (minutes)

	Group 1	Group 2	Group 3	Group 4	Group 5	Average
Baseline	*	17,23	8,42**	***	27,23	17,38
Intervention	7,16	10,09	10,13	8,25		9,00

2) Time spent on reporting via VHF during navigation (minutes)

	Group 1	Group 2	Group 3	Group 4	Group 5	Average
Baseline	1,26	1,16	1,14	1,19	1,01	1,15
Intervention	0,56	0,28	0,40	0,47		0,43



* Excluded because one officer was from VTS and therefore new what to report – consequently minimal reporting time

** NB: this group used the online reporting for sound VTS

*** Excluded because the participants were not sure if it was mandatory to report in the sound – decides to use VHF and tell about online report, but they never did the online report

VTS reporting

Did the users from the intervention group find the digital manual for SoundRep in BW?

Group 1	Group 2	Group 3	Group 4
÷ (using paper version)	÷ (using paper version)	✓ (but chooses to look for paper because it's difficult to read)	÷ (using paper version)

Efficiency

Is the users' perception, cognition or actions challenged in the process?

VTS reporting

1) Problems in finding the service function

The placing of the function was not immediately intuitive to the test persons since more of them start searching in a different menu and verbally report their problems finding it.

Watch video!



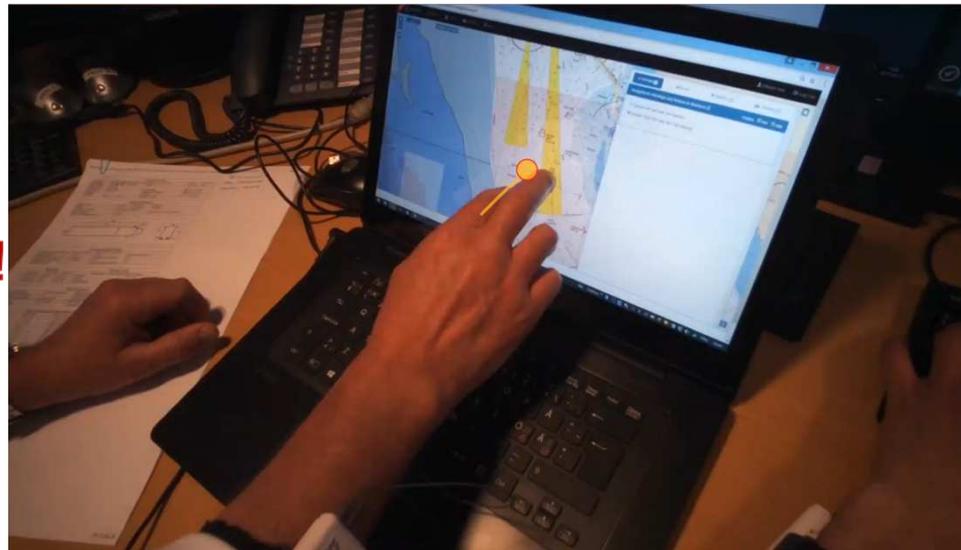
→ We suggest that it is considered how to rename and categorize the menu such that it is more intuitive to the users where to find different solutions.

VTS reporting

2) Reporting lines are not very salient and related informations are not clearly linked

The test persons spent quite some time trying to identify the reporting line for the Sound (entering the Sound, and wondered if there reporting was required when exiting the Sound as well). However, it was not very salient in the planning tool and it did not show clearly in the BalticWeb maps either. Moreover, there was related information (channel numbers etc.) in a digital Sound Traffic manual pdf linked in the interface, but they had difficulties finding this manual when informed about it.

Watch video! →



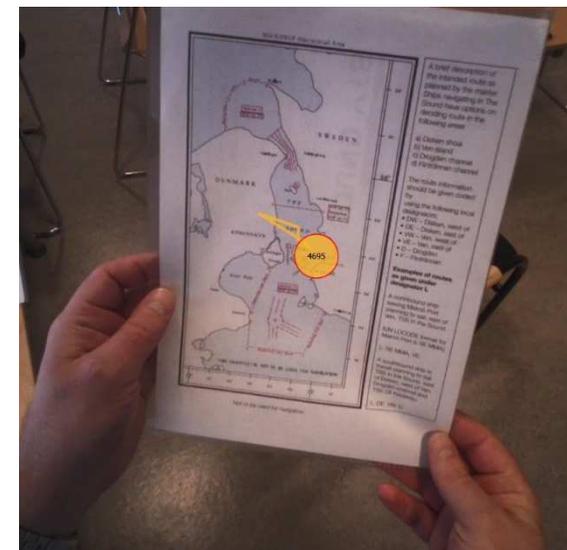
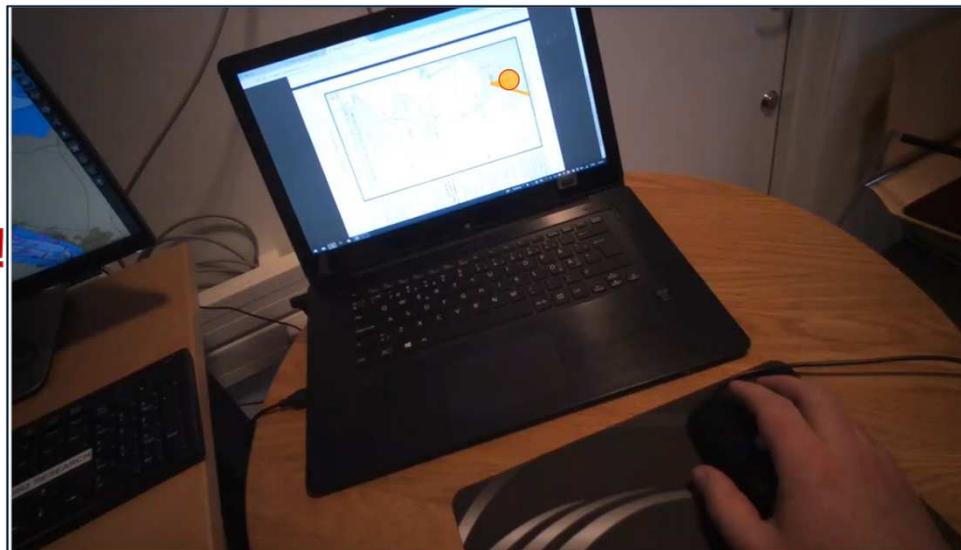
→ We suggest to insert the reporting line in the BalticWeb with the direct link to relevant information such as channel etc. to ease the resources of the user in this operation.

VTS reporting

3) Sound Traffic VTS pdf manual difficult to read

In the cases where the Sound Traffic pdf manual was found and used (on the Baltic Web), the test persons found it difficult to read. The pdf was positioned wrong when opened and needed to be rotated manually, and had small text and map. Some found it easier to grab the printed format and read from there (although even in this case the map wasn't fully informative).

Watch video! →



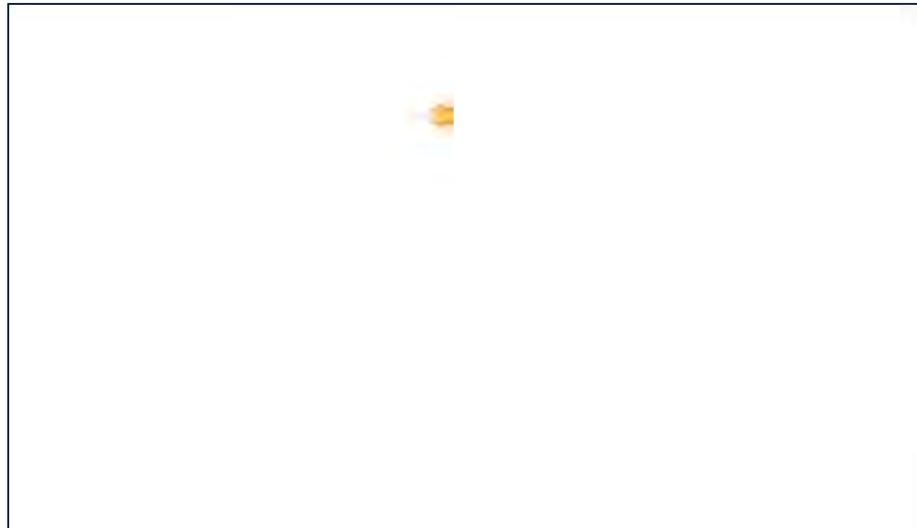
→ When integrating manuals in e-navigation solutions, it is important to make sure that the manuals are rotated in the natural reading direction and that text is readable. Otherwise users will spend unnecessary energy processing information, potentially leading them to dismiss the function. Of course, in this situation the original creators should be addressed.

VTS reporting

4) No rule for entering dates and no useful feedback from system

When entering the date into the online VTS report template, the colored boxes with dates stays red no matter how these are entered – indicating the date has been inserted wrongly. This left the test persons confused, not knowing how to insert the dates. However, it later turned out that participants can actually go on even though the boxes stay red. How is date inserted correctly? The same happened with other boxes. There were no indications on whether the user should insert what and how, and if inserted incorrectly, the box would become red with no further information on the side on how the user is expected to correct the mistake.

Watch video!

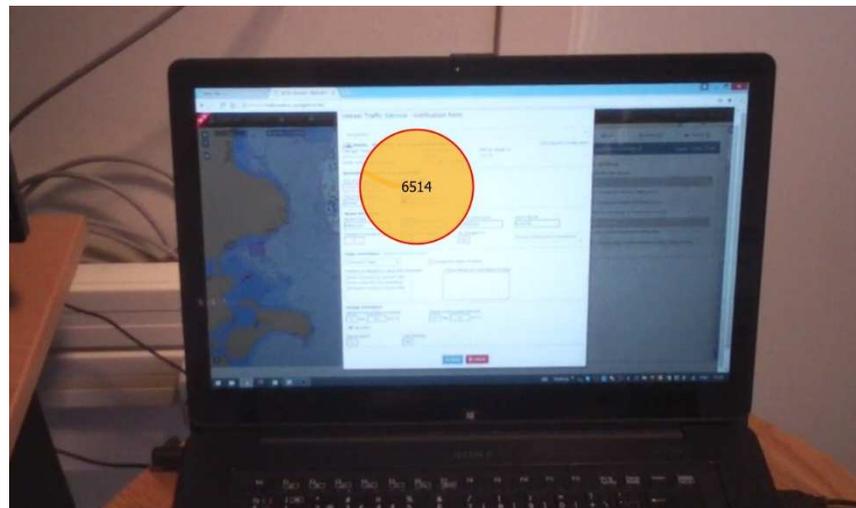


→ In the process of filling in information, we advise to support the user either by adding a calendar function, a help to fill in function or a format for putting in dates (e.g. dd.mm.yy). Also, the system needs to provide the user with proper feedback when date is inserted correctly, e.g. by marking the column green. How to fill things in must be straightforward rather than a trial-and-error activity.

VTS reporting

5) Confusion when filling in the column "route"

The test persons were not sure what to type in this column and they were not provided with any help or format from the system interface. Consequently, most of them tried to type in different things and in this process one participant stated: *"Maybe it would have been easier to just do the VHF"*.



→ To ease digital reporting, the system must provide the user with the desired format of reporting. This can e.g. be done by providing opportunities such as "West of Ven", or by providing a ?-function with information about what to fill in the column, or by showing the possible routes visually on a map.

VTS reporting

6) Could it be possible for some columns to be pre-filled?

Several participants would prefer if general information such as vessel name, call sign, MMSI and IMO could be pre-filled by the system. In that way, they would not have to spend time filling this information in every time reporting is required.

Port of destination: <input type="text"/>	Route <input type="text"/>		
Vessel information			
Vessel name: <input type="text"/>	Callsign: <input type="text"/>	MMSI: <input type="text"/>	IMO <input type="text"/>
Number of people on board <input type="text"/>	Present max. draught (m) <input type="text"/>	Air draught (m) <input type="text"/>	

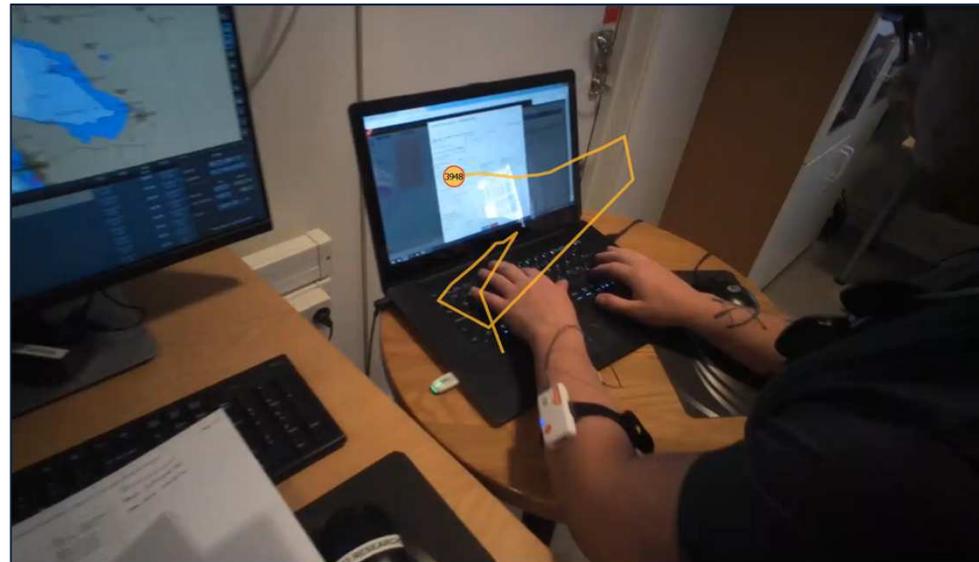
→ If it is possible to automatically prefill these types of information either by using data from the uploaded route or data previously typed in by the user, this would be optimal since it's a way to minimize unnecessary workload.

VTS reporting

7) Air draught – how is this calculated?

There is not necessarily a clear understanding about the calculation of air draft. Some test participants typed in 32 while others typed in 38. The air draft information can in this case have huge consequences for the opening/closing of Danish airport in Copenhagen – and wrong calculations should be avoided.

Watch video! →



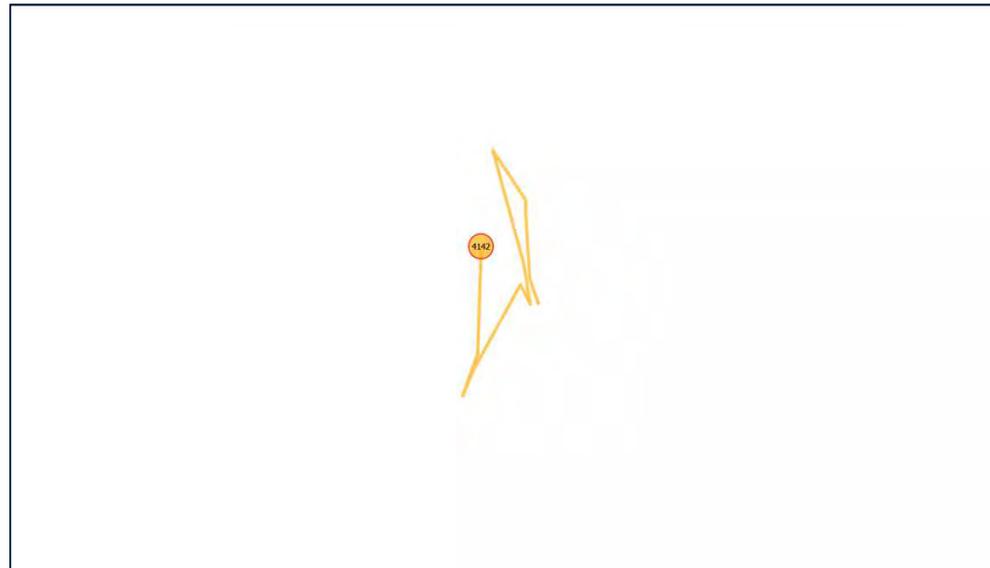
→ We advise to design systems like these in a way that help users to fill in correct information. In this case, e.g. by adding a ?-function with calculation information or an automatic calculation for the value the VTS really wants to know.

VTS reporting

8) Doubt about the column "contact details for information of cargo"

The meaning of this column was not understood by test participants and they did not know what information to enter in the column. They all tried different things without luck to begin with and by chance ended up with either telephone number or email address - any number or e-mail can be used, but what is correct?

Watch video!



→ As mentioned in previous slides, we highlight the importance of indicating what the required format of information is. Or there should be a ?-function emphasizing what to fill in the column.

VTS reporting

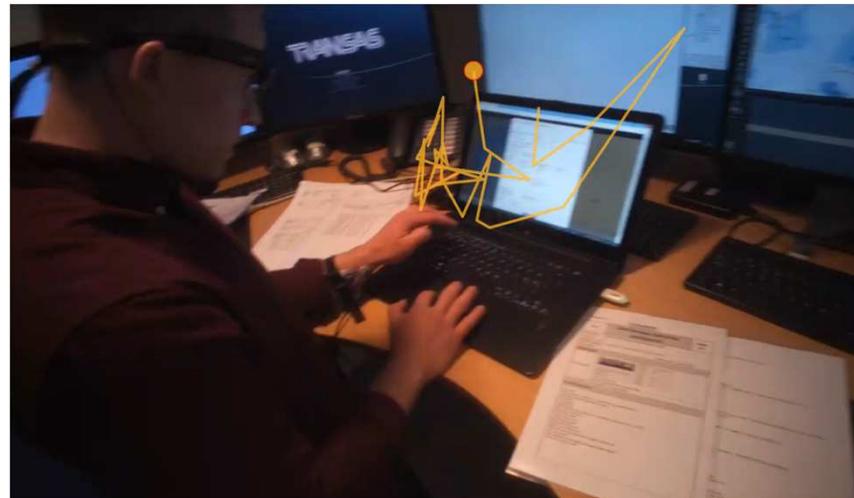
9) Correct format but wrong terms related to voyage information

One test person noticed that the terms latitude and longitude were placed incorrectly in regards to the formats.

Vessel actual position longitude:
 deg. min. N

Vessel actual position latitude:
 deg. min. E

Watch video! →

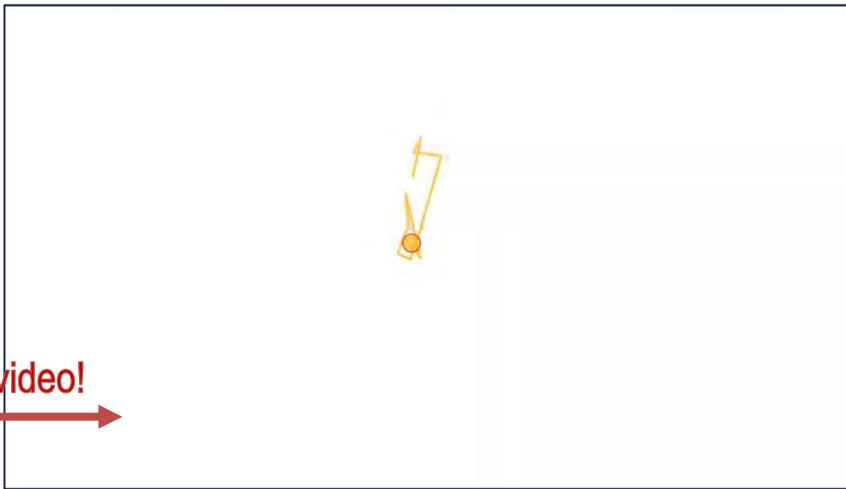


→ We emphasize the importance of having consistency between the terms and formats, as well as the way they are used by the target group. Inconsistencies are a root to confusion and potential mistakes.

VTS reporting

10) What position and speed – and when?

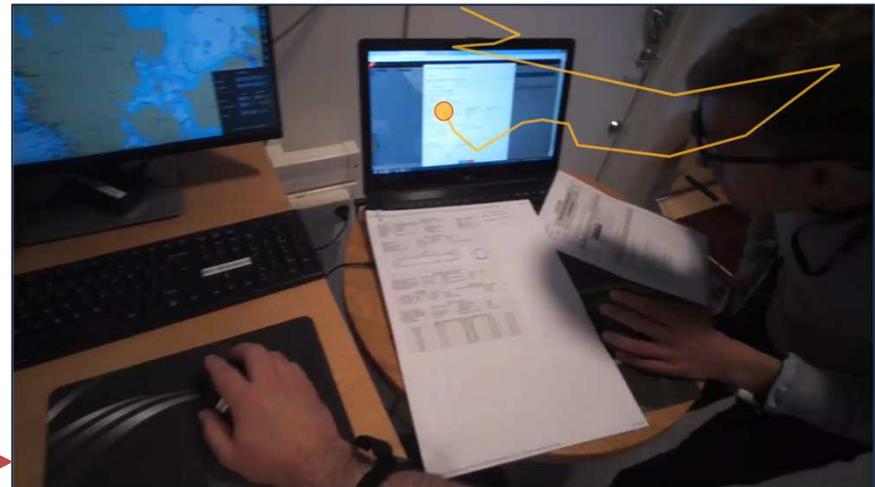
To some test persons it was unclear what position and speed to fill in (their current position and speed when filling in the report? This could be parked in port with speed zero in most cases...Or the position and speed when entering the VTS reporting line?). Moreover, some believed that if it was position and speed when entering VTS line then the online report should be sent around that time – not in advance.



Watch video!



Watch video!



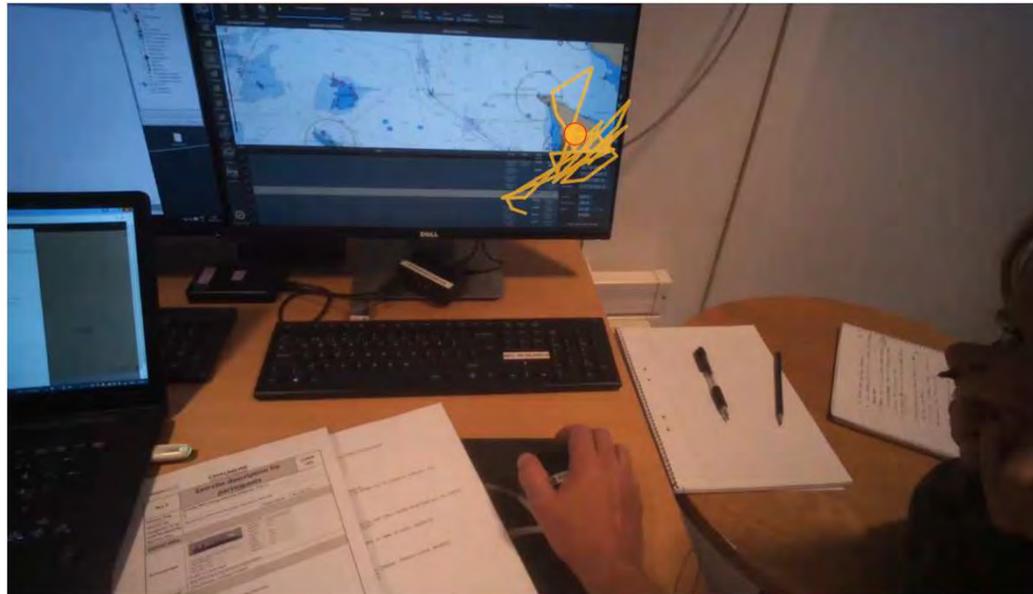
→ As mentioned in previous slides, we highlight the importance of indicating what the required information is. Or there should be a ?-function emphasizing what to fill in the column.

VTS reporting

11) Positions as well as speed can only be entered in whole numbers

Several participants tried to type in numbers with decimals but this was not approved by the system.

Watch video! →



→ If it's natural behavior of users to type in numbers with the related decimals, it's worth considering if it should be an opportunity to do so. Also, if this is made possibility, make sure to choose the format currently used for decimals by the target group, e.g. $\frac{1}{2}$ or $\frac{1}{10}$

VTS reporting

12) "Send" is the only lead out possibility

The test persons would have preferred to have more options in the lead out process of the VTS reporting. They mentioned a save function or save as draft function, so the reporting can be continued at a later stage. They also mentioned a send to own mail function or print function, so they don't necessarily need to take additional notes by hand for the VTS call.



→ Based on observations and statements, we strongly suggest that the system is designed to contain additional functions such as save, receive e-mail and print.

Satisfaction

Is the user accepting, trusting and is satisfied in the process?

VTS reporting



MSIs

Notices to mariners + navigational warnings

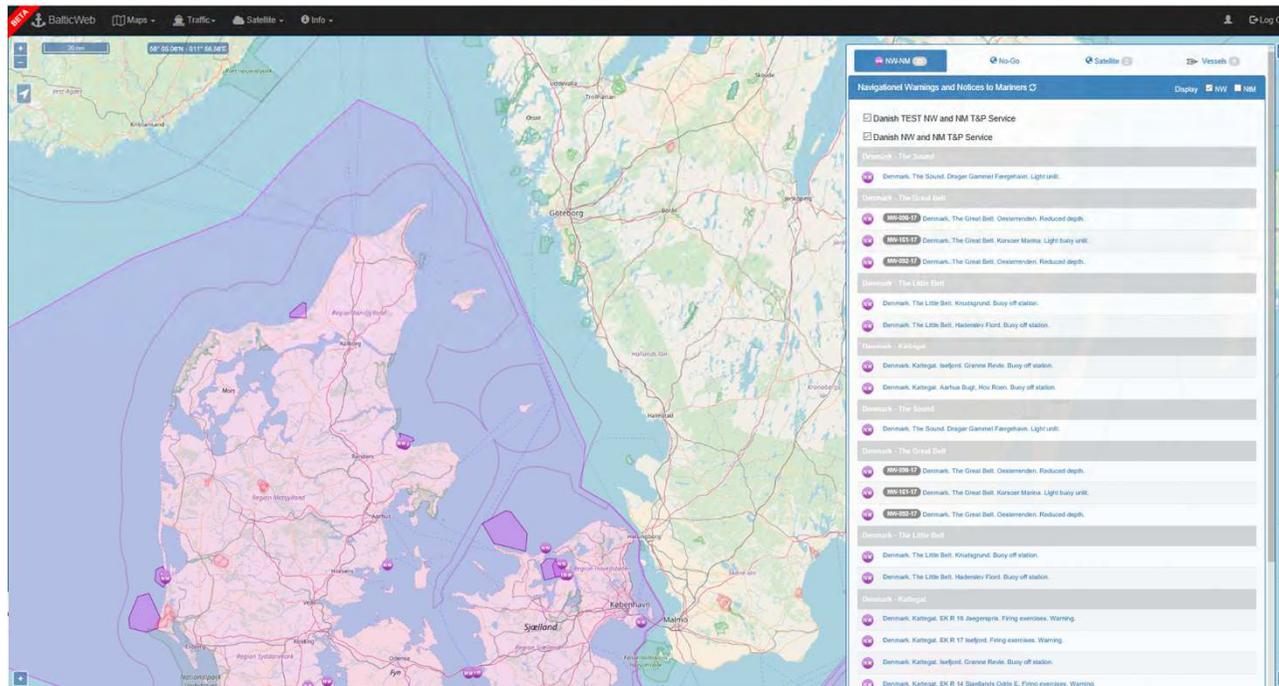
MSIs

Stakeholder: DMA

Aim: To reduce administrative burdens and improve the exchange of ship-to-shore and shore-to-ship information

Function: Service for automated Vessel Traffic Service (VTS) and Ship Reporting System (SRS) using a proposed standard to be promoted internationally

Context of use: planning and navigation phase



Effectiveness

Is the user capable of producing the desired result and to what extent?

MSIs

Did the users identify the "test" MSI targets during planning?

Intervention	Cable work
Group 1	÷ Identifies this MSI on the ECDIS during the navigation part
Group 2	✓
Group 3	✓
Group 4	(✓) Only noticed by one navigator who fails to forward communication. He said he saw it on the naviplanner, which was not possible since it was not there! Based on eye tracking observations, we can see that he actually saw it on BW. The MSI was noticed accidentally by the other participant just before navigation. He didn't think it would affect them since they had chosen to pass east of Ven anyways and cable laying was west of Ven.
Baseline	Cable work
Group 1	✓
Group 2	(✓) The cable work is noticed but the position is not interpreted correctly. The officer confuses his knowledge about caple work near Helsingør with this MSI.
Group 3	÷
Group 4	✓
Group 5	✓

MSIs

Did the users identify the "test" MSI targets during navigation?

Intervention	Light buoy missing	Floating container
Group 1	✓ NB: not using BW	✓ NB: not using BW
Group 2	÷ Didn't look it up because they confused it with another MSI about an unlit buoy	✓ NB: not using BW
Group 3	✓ NB: not using BW but use it to double check	✓ NB: not using BW but use it to double check
Group 4	(✓) They don't find the position immediately on ECDIS and decides to leave it because it's considered of less relevance (thought the coordinates on paper were wrong). Later found the position on ECDIS	✓ NB: not using BW but use it to double check
Baseline	Light buoy missing	Floating container
Group 1	✓	✓
Group 2	✓	✓
Group 3	✓	(✓) Not found immediately but parked until less stressed situation
Group 4	✓	(✓) Not found immediately but parked until less stressed situation
Group 5	✓	✓

MSIs

Planning

- The results indicate that the use of BW does not necessarily make the users better at identifying relevant MSIs
- The results show that there is risk of overlooking an MSI in the BW at this point (group 1). Mainly due to the inconsistency in symbols.
- The results also show that MSI information is not necessarily communicated between officers (group 4), and thereby no clear indication that BW enhances situational awareness.

Navigation

- The results indicate that the officers did not see an immediate benefit of using the BW for identifying MSIs – they preferred to use the ECDIS
- The results show that some of the officers later went to the BW to double check their identified position (however, some mentioned this was more to please the project study than to actually do a double check).
- The study also shows there is a risk that new MSIs are confused with prior knowledge and the consequence is flawed situational awareness. This was illustrated both with and without BW.

Overall, the current way to identify MSIs, received on paper/audio, in ECDIS is challenging.

- Two groups asks for repetition, indicating the difficulties in holding the given information in the working memory while others hurry to write down coordinates – memory strain.
- Generally the participants had difficulties in identifying the position and several used a considerable amount of time to do this – attention and cognitive strain.
- From the eye tracking recordings it is shown that the participants are continuously interrupted by other tasks while trying to identify the MSIs, requiring them to shift attention between tasks and resume to the task at hand – attention and cognitive strain
- From a human factors perspective there is clearly a potential in trying to support this process.

Efficiency

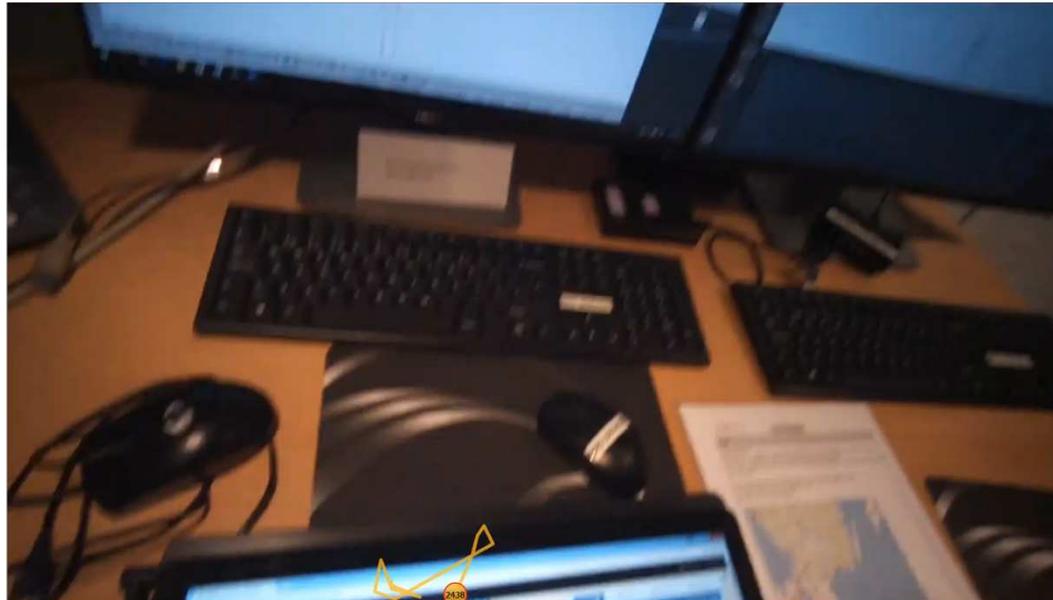
Is the users' perception, cognition or actions challenged in the process?

MSIs

1) Not easy to press the NW/NM symbol on the chart (when using touch screen option)

Generally, the test persons had difficulties pressing the NW dot on the chart, and they needed to zoom in close to be able to press the NW. Using the mouse made this easier in comparison.

Watch video! →



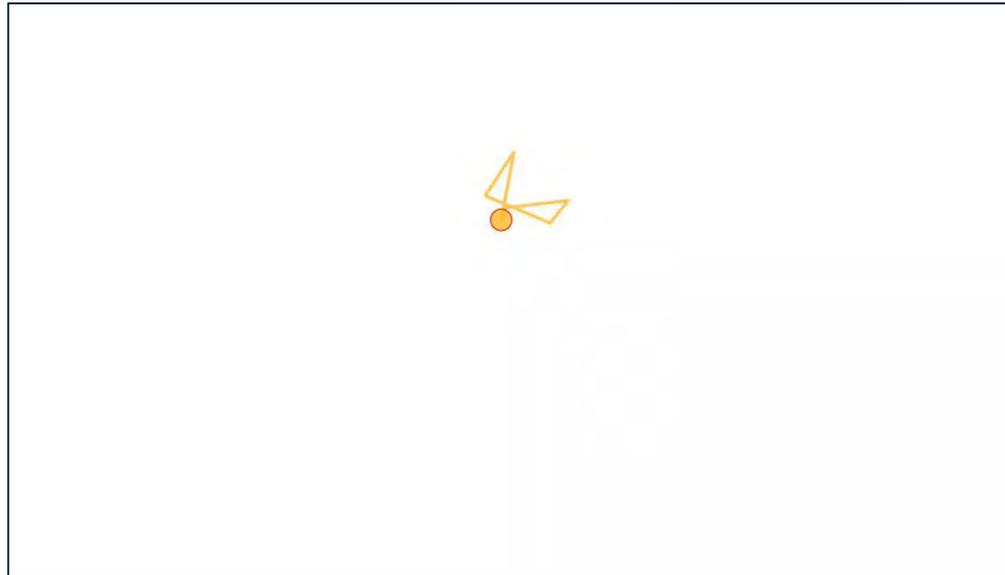
→ When the user needs to zoom in close to be able to press the NW, the overview disappears and to resume this overview, he will need to move out again – an unnecessary process of zooming in and out, especially if there is several NW on the route. We advise making such functions easier accessible.

MSIs

2) The connection between NW/NM symbols and text box on the right is not salient

Several test persons made comments about the visual connection between NW dots and the text box. They had difficulties identifying which dot was related to the text on the side and would have preferred a more salient connection.

Watch video!

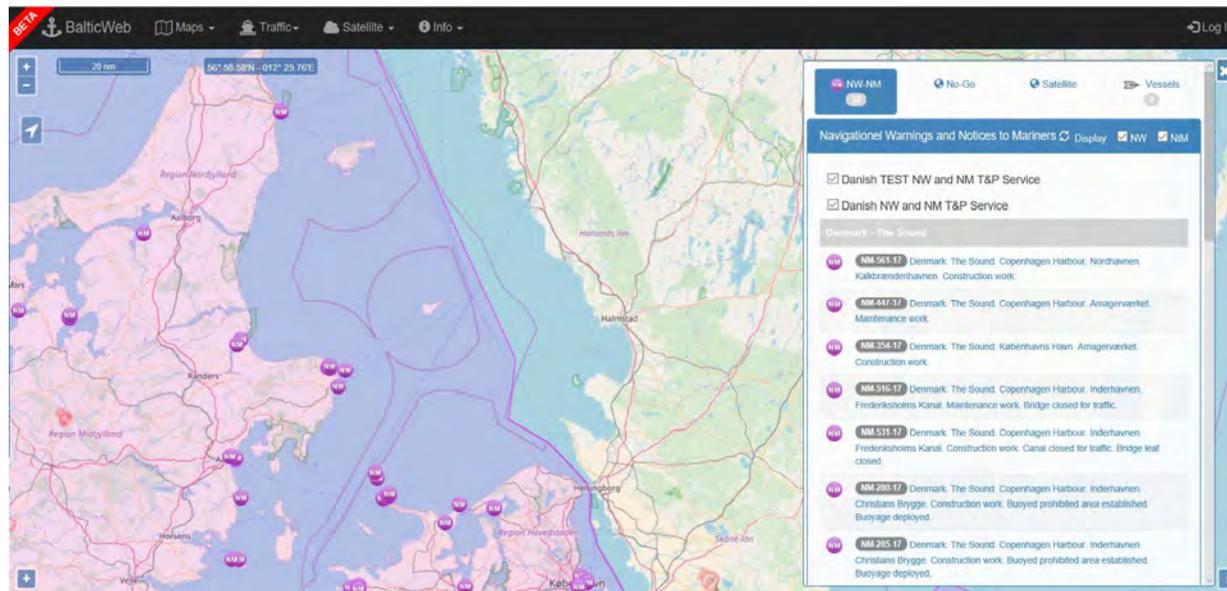


→ When the user is provided with both a visual indication on map and a text box lists, it's optimal to create a link between identical information, e.g. when pressing NW dot, the related text gets highlighted in the list. Otherwise it can be considered, if both information sources should be available at the same time, or if it should be up to the user to chose if he wants visual indication on map or list.

MSIs

3) Differentiation between old/new, seen/unseen MSI symbols

Several test persons emphasized that they would like a feature highlighting/differentiating between new and old navigational warnings and/or between seen and unseen navigational warnings.



→ From a human factors perspective this could help the user navigate in more and less relevant information (e.g. work with visual blinks, sounds or the like). However, remember to test that such features do not increase the risk of overlooking or forgetting continuously relevant information related to older or already seen navigational warning. Or if such features create information overload.

MSIs

4) Color differentiation between NW and NM

Some test persons would prefer that the tool differentiated between navigational warning and notices to mariners, e.g. by color. To them there was a meaningful difference between NW and NM.



→ NW and NM is visually difficult to differentiate, especially when presented in the same color on a digital screen. The user will definitely be supported in the visual differentiation if the color is changed between them. Another idea could be to change the shape, e.g. one being symbolized by a triangle.

MSIs

5) Saliency of cable work

"It was not easy to know it was a navigational warning when it was shown as a line". From the visual format of the MSI's, the users only expected these to be represented as dots or squared areas in purple.



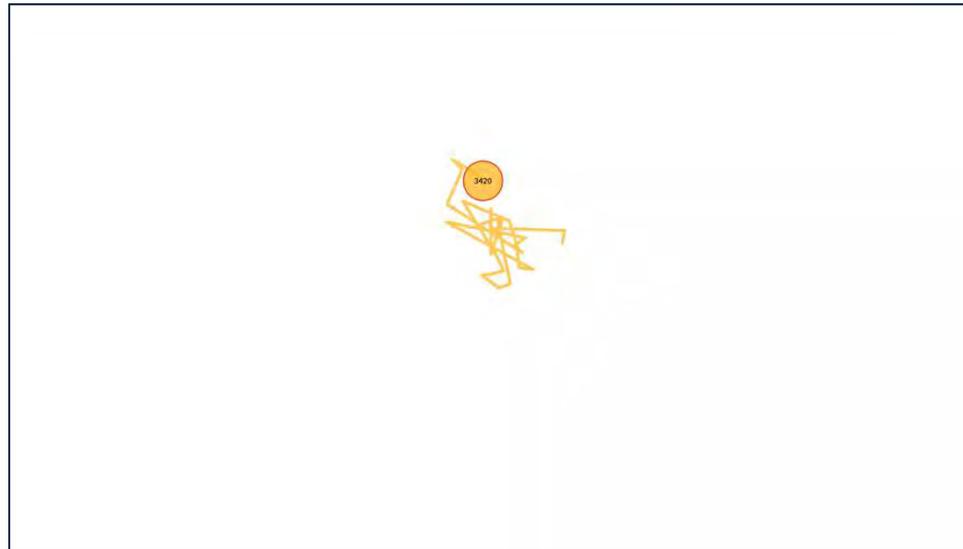
→ When designing tools that supports relevant information search and decision making it is very important to continuously apply the same rules. If navigational warnings are represented by a dot or a squared area, these must be used continuously and not in rare cases change forms. It can potentially lead to unawareness of highly important information.

MSIs

6) When are MSIs updated

The test participants pointed out that they did not find any time stamp showing when the list of MSIs was last updated. Also, they had to refresh the page to get the last updated MSIs.

Watch video!

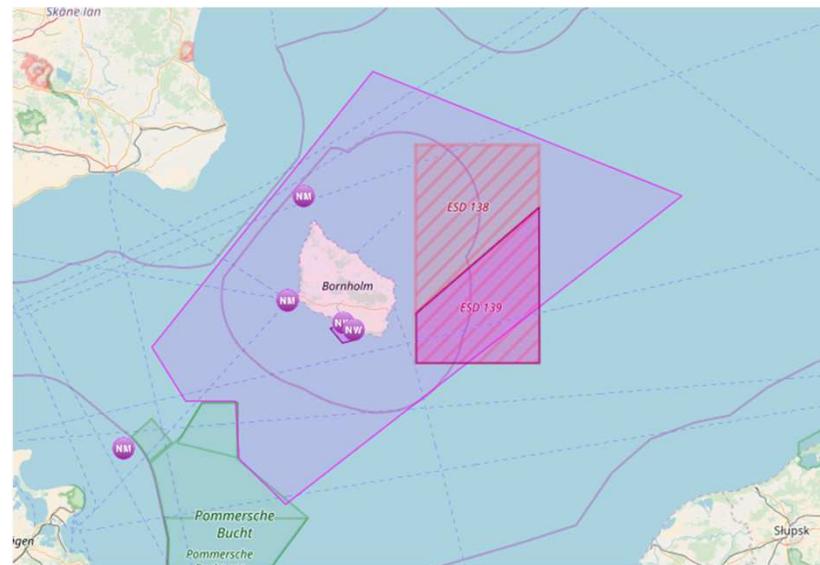


→ For users to trust they have the latest relevant information for decision making, they need feedback regarding updates – “is the decisions based on information received 12 hours ago or 2 minutes ago”. Even though the purpose of BalticWeb is to have real time information available, it’s more comforting for the user to be presented with last updated time, and also they should not have to make the extra action to update the page in order to get latest information – this should ideally update automatically.

MSIs

7) Not all NWs are possible to check

The test persons experienced that not all NWs could be checked/opened, e.g. the red area around Bornholm was not allowed to be opened for information.

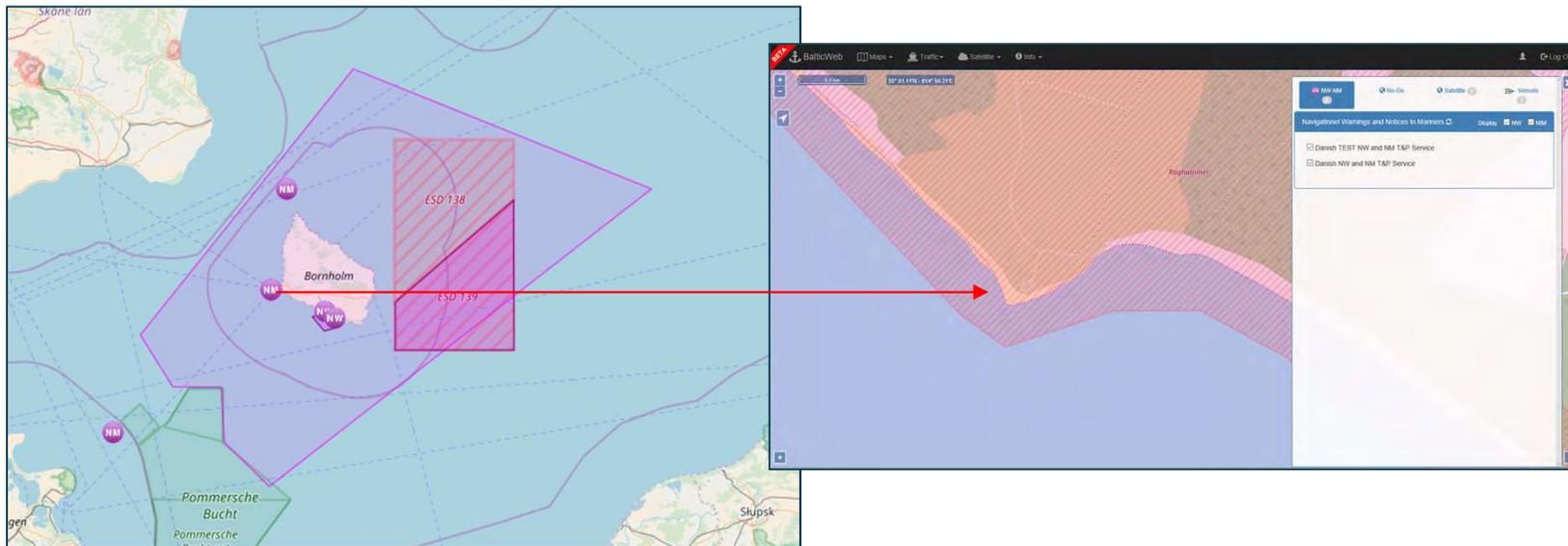


→ We are aware, the Baltic is tested early in the process. However, we need to highlight the importance of having data available to the user, if this is indicated in the interface features. Providing the user with the impression that something needs to be checked but leaving them without the opportunity to do so can contribute to frustration and distrust.

MSIs

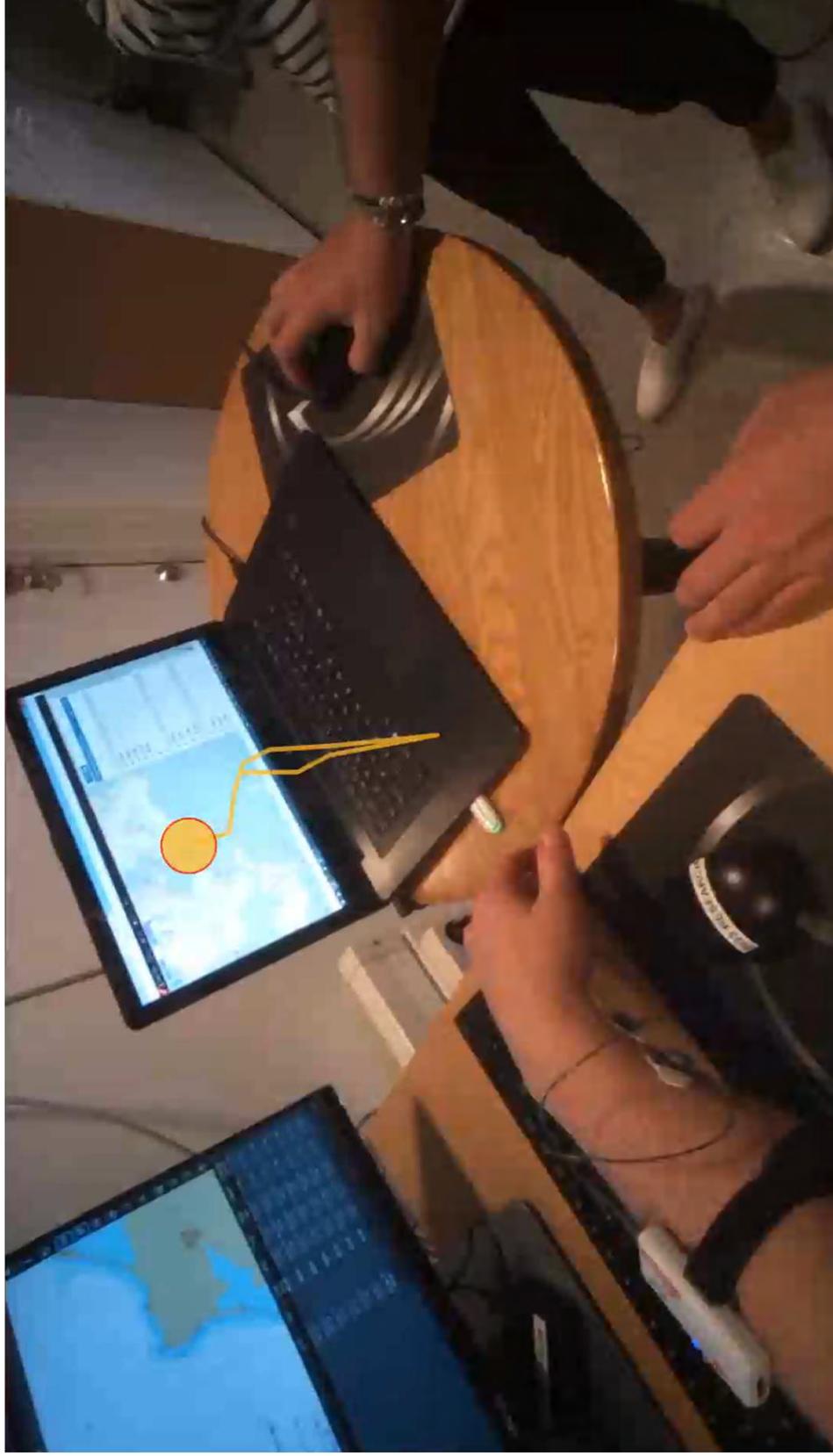
8) When zooming in, some NW/NM symbols disappear

When test persons zoomed in on a NW it had a tendency to disappear – sometimes because the system was too slow to update, and sometimes it just disappeared for good. The consequence was that the test participants sometimes concluded that there was no NW and went on with their task.



→ The risk of not becoming aware of an MSI increases if they disappear during zooming – and we strongly advise that future development test the visibility and saliency of MSIs at different zoom levels.

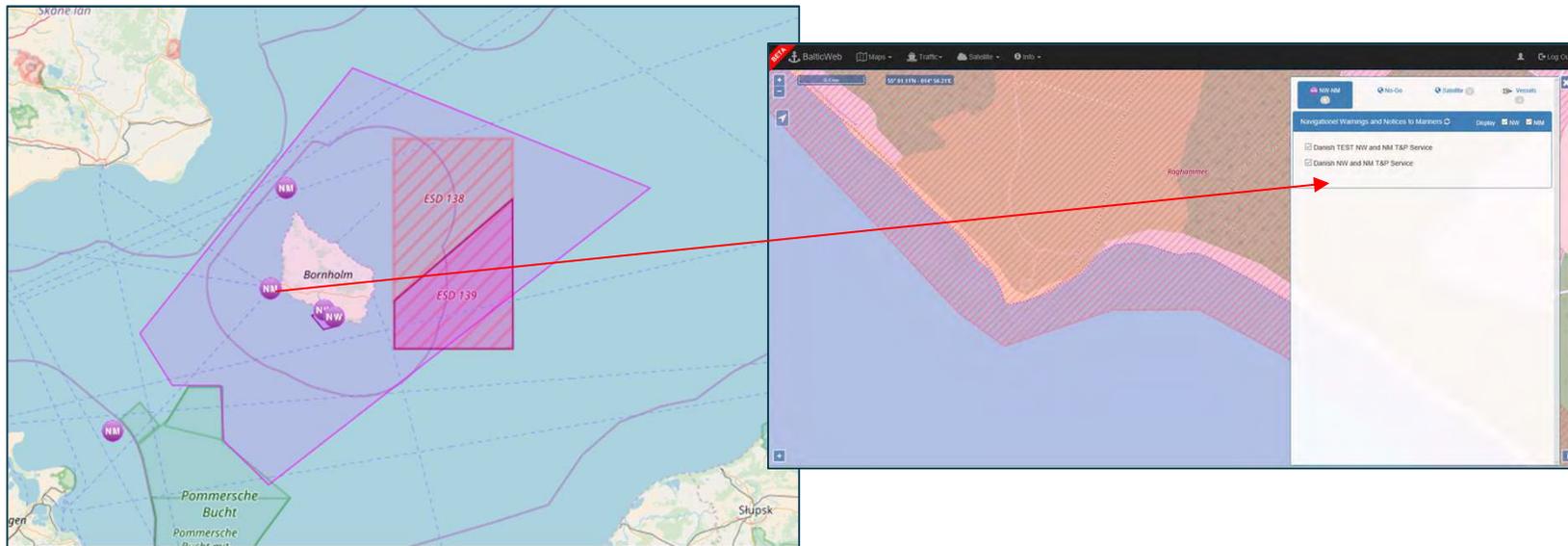
Watch video! 



MSIs

9) MSI side list updates

When test persons zoomed in and out and moved the chart around, MSI symbols and side list would be affected. This means that the number of MSIs seen on the chart and in the side list depend on screen size and zoom level. This is tricky because the user might not be aware that he/she needs to zoom in or out to get more or fewer MSIs and therefore might just assume that there aren't any for a specific location. The user might also not be aware that he/she needs to move the chart up and down to see different MSIs on the side list. Although it was liked that the side list doesn't show all MSIs that may not be relevant for a specific voyage or part of the voyage, not knowing how to operate this list may make the user miss out on relevant information.



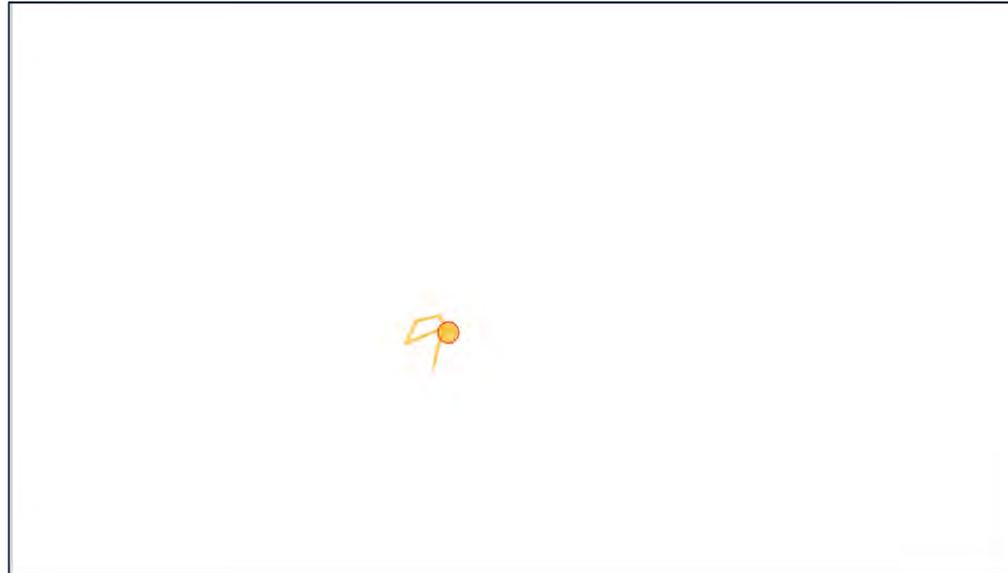
→ Rethinking the side list and leaving only the MSI symbols on the chart that users can click on to get more info may be a solution to consider.

MSIs

10) Transferring MSIs to route

Test persons generally transferred the MSIs of importance from the BalticWeb into their route planner. They preferred to have this information available on that screen. This can be done in a variety of different ways (e.g. adding note to waypoint) and it takes some steps to do this integration.

Watch video!

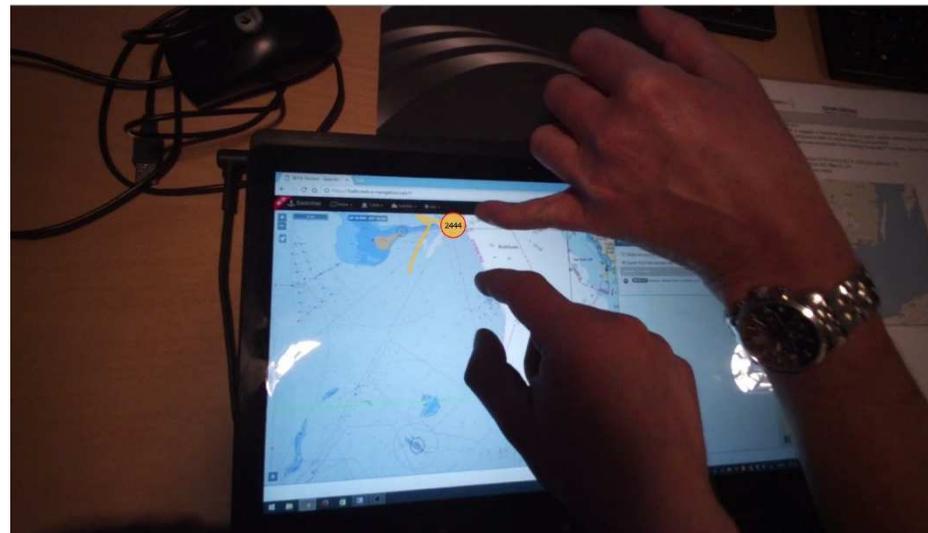


→ Based on this behavior, we suggest the future relevance of considering integration of the MSI solution in existing systems where the user prefers to see them and thereby saves time transferring information from one system to another. In some systems this opportunity is exactly already available but unknown to some users.

MSIs

11) Shared situational awareness

Some groups shared the awareness about MSIs by using the BalticWeb together during planning. However, it was also observed that some groups did not use the Baltic to share MSI knowledge in this phase. Also, during navigation there was no shared use of the Baltic to check MSIs.



→ The potential of shared situational awareness regarding MSI's is not obvious to the users at this stage. This might be a topic to address in training and communication about the practical use of the tool.

Satisfaction

*Is the user accepting, trusting and is satisfied in the process?
(subjective experiences and statements)*

MSI's

"It's nice to see them on a map. It takes longer to see them on paper and put them into chart (about 15-30 minutes)"

"Easy overview of what is relevant for me"

"Will it also be available for pilot reporting in the future?"

"It's good that you can see visually what is important to your route"

"It's not memory dependent, so less resources to find position"

Trust: "You don't really know if you get all of them". "I didn't really trust that we got all the information or all warnings from all VTS" (reason for dobbelt checking with paper)

"Good illustration of navigational warnings"

NO-GO AREAS

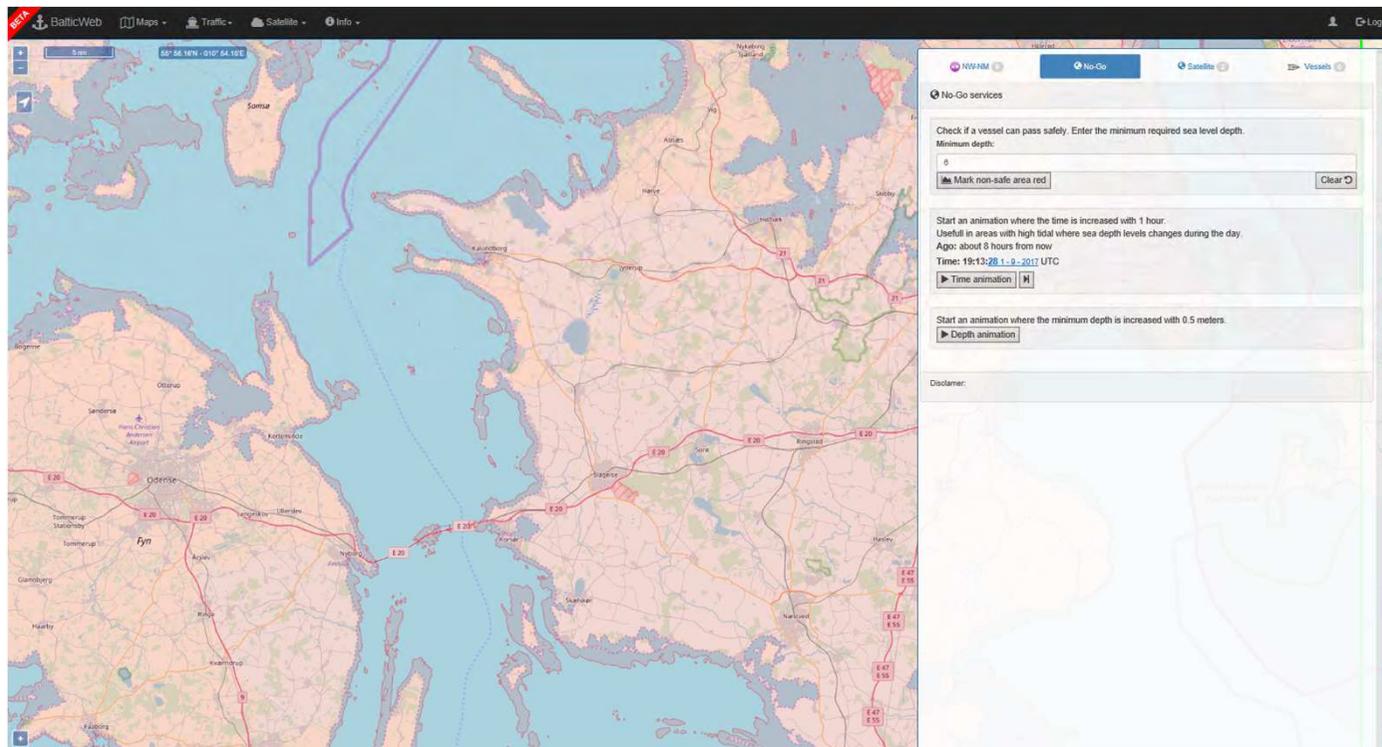
No-go areas

Stakeholder: DMA

Aim: To improve safety and efficiency

Function: Service allowing for the merger of a variety of data, such as draft, bathymetry and tidal levels, into simpler information indicating where a vessel can operate safely (more dynamic displayed than ECDIS)

Context of use: primary the planning phase



Effectiveness

Is the user capable of producing the desired result and to what extent?

No-go areas

➤ Is the solution tested during planning?

Group 1	Group 2	Group 3	Group 4
✓	÷	÷	÷

➤ Is the solution used for navigational planning?

Group 1	Group 2	Group 3	Group 4
(✓) Navigator stating that route looks safe	÷	÷	÷

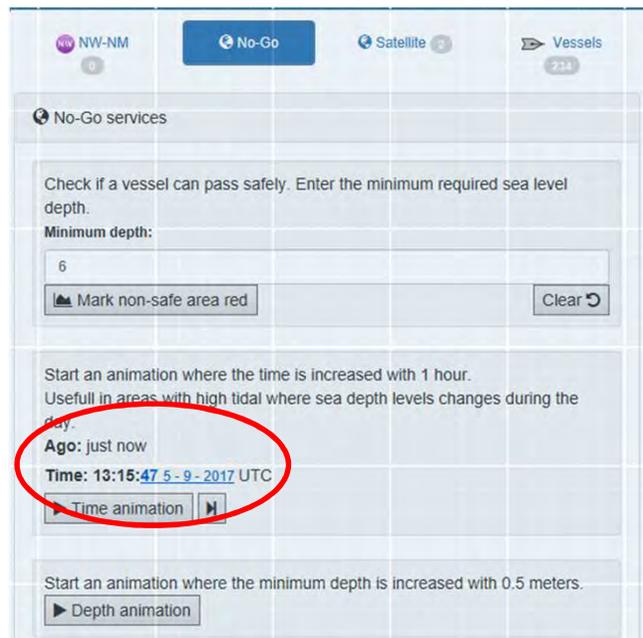
Efficiency

Is the users' perception, cognition or actions challenged in the process?

No-go areas

1) Possibility of changing date and time

Test participants asked for the possibility of changing date and time because they argued that sometimes route planning would be done a couple of days before the actual navigation.

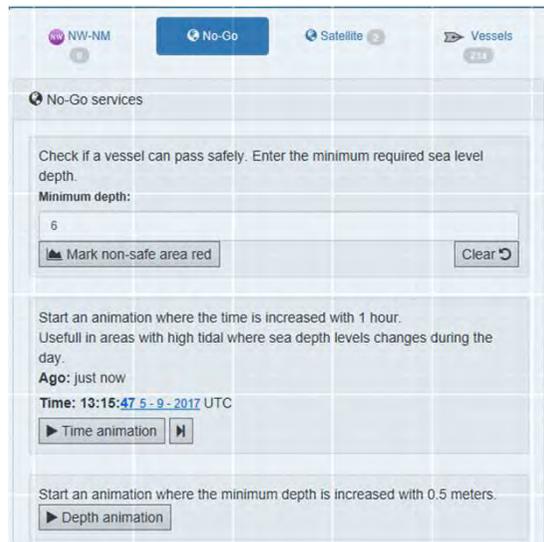


→ Adapting the solution to the actual work processes of the navigators is preferable – and future development could consider potential possibilities regarding this preference.

No-go areas

2) Updates related to no-go areas

The test persons highlighted that it would be a nice feature if the solution could provide them with updates on no-go areas. E.g. if the navigator is planning the route three days ahead, then the no-go areas might have changed since then – in such situation it is preferred to see if no-go areas change from when route was planned to current situation.

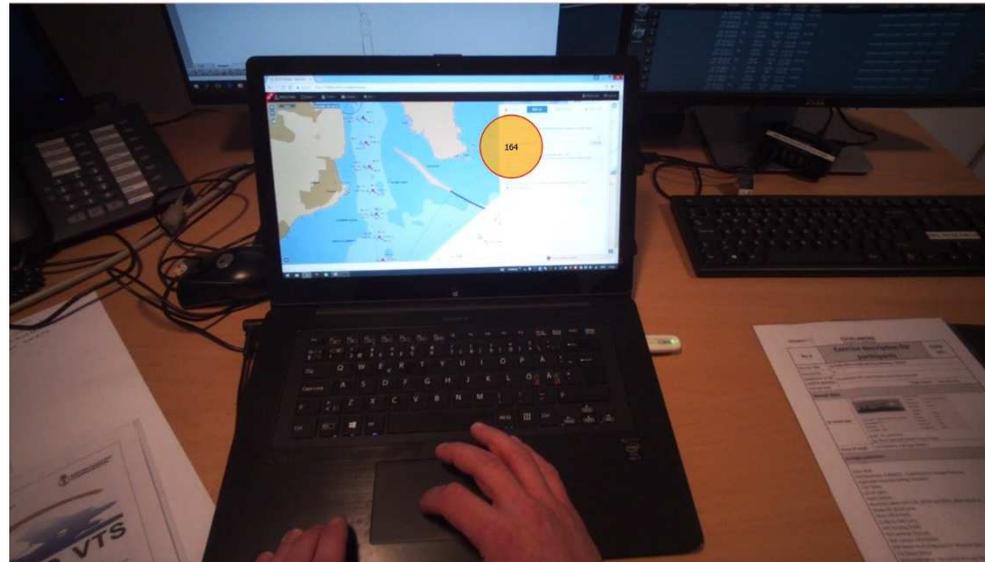


→ Again: adapting the solution to the actual work processes of the navigators is preferable and if they can be provided with automatic updates they will be more likely to make decisions on updated data. Future development could consider potential possibilities regarding this preference.

No-go areas

3) Bugs in the solution

The test participants experienced a few bugs when using this solution. E.g. problems when entering 8 in minimum depth – and also especially problems when the navigators wanted to have a look at the no-go areas related to Helsingborg, Drogden and Flint (important areas in the test case)

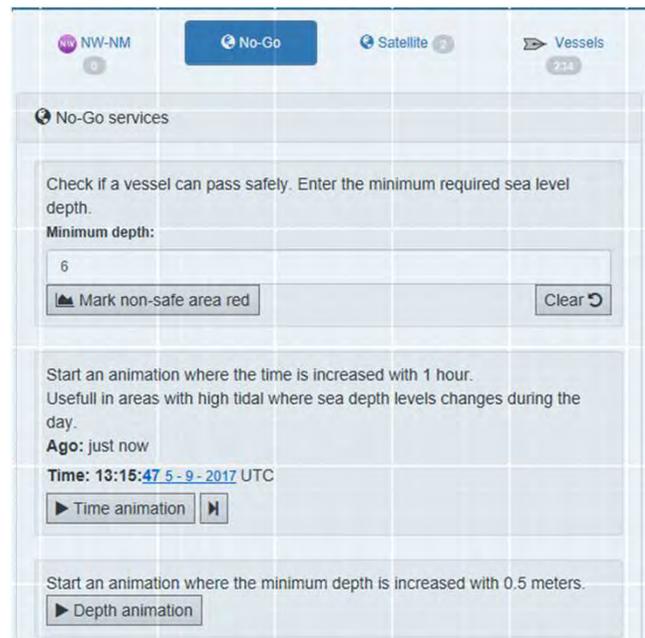


→ The underlying algorithms must be correct before putting the solution into practical use, otherwise the trustworthiness of the solution will be perceived as non-existing. In some places the no-go area line even crossed land.

No-go areas

3) Updating slowly when animated

When the animation button is pressed, the system needs a great amount of time to start the animation process. Some test persons get confused and ask if they need to press the button again.

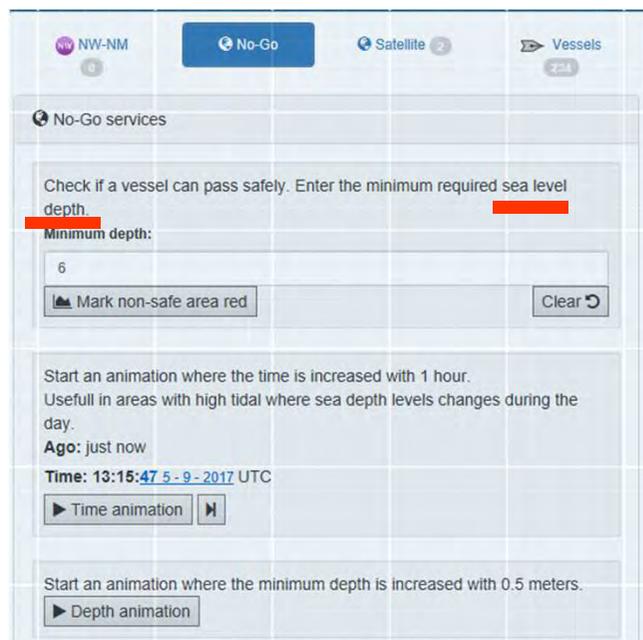


→ We suggest future development to generally focus on upgrading the systems processing speed. Users are use to fast technology and expect new digital solutions to function fast and efficiently.

No-go areas

4) Interpreting the name “no-go areas”

No-go areas is already an expression utilized in the maritime domain. But the interpretations of what this expression means differed! Hence, one should be careful and very specific when creating a service that is named “no-go areas”. No-go areas can be compared to MSI areas to avoid, shallow waters, safety depths or safety contours.



→ If this no-go service refers to sea level depth, then the nomenclature should be clearer in this direction, and maybe even the same as what is already used in the ECDIS.

Satisfaction

*Is the user accepting, trusting and is satisfied in the process?
(subjective experiences and statements)*

No-go Areas

Is the user accepting, trusting and is satisfied in the process?

"This tool is actually usefull in one place, as I see it, and that is Key Light House"

"Nice feature with animation but not relevant in the Sound"

"It's a good function but more in e.g. some German areas or Drogden/Flint area"

"Usefull for quick check but I would still dobbelt check in ECDIS"

"Just as easy to do that in the ECDIS"

"Was nor really a tool we would use. If we wanted that function we would use ECDIS"

"It acts a bit like safety contour. The no-go naming could be reconsidered since it looks more like a safety contour function, e.g. naming it unsafe/safe waters"

Additional general input from the Users

Inputs

- Internet is required which could be problematic since some navigators experience problems with internet connections at least once every week
- Reliability of the BW system:
 - “Is it going to be approved in some way?” (The users generally felt a need to be critical about where information comes from – being able to defend once back)
 - “Not approved is a limitation to use it as a decision making tool – it can only be a help”
- Chart: seems as if when choosing a chart and want to choose another one, then it is still marked blue in the fold down menu
- Combination of Danish and Swedish charts wasn't working well. Information was missing or was on top of each other
- Visibility: Fonts are too small. If bigger, it would be easier to manage from a distance. Higher resolutions and bigger letters. Also, coordinates are not very easy to see (see slide 84)
- Speed: “It updates too slow”. “Not updating fast enough” (see slide 85)

Generally difficult to see coordinates

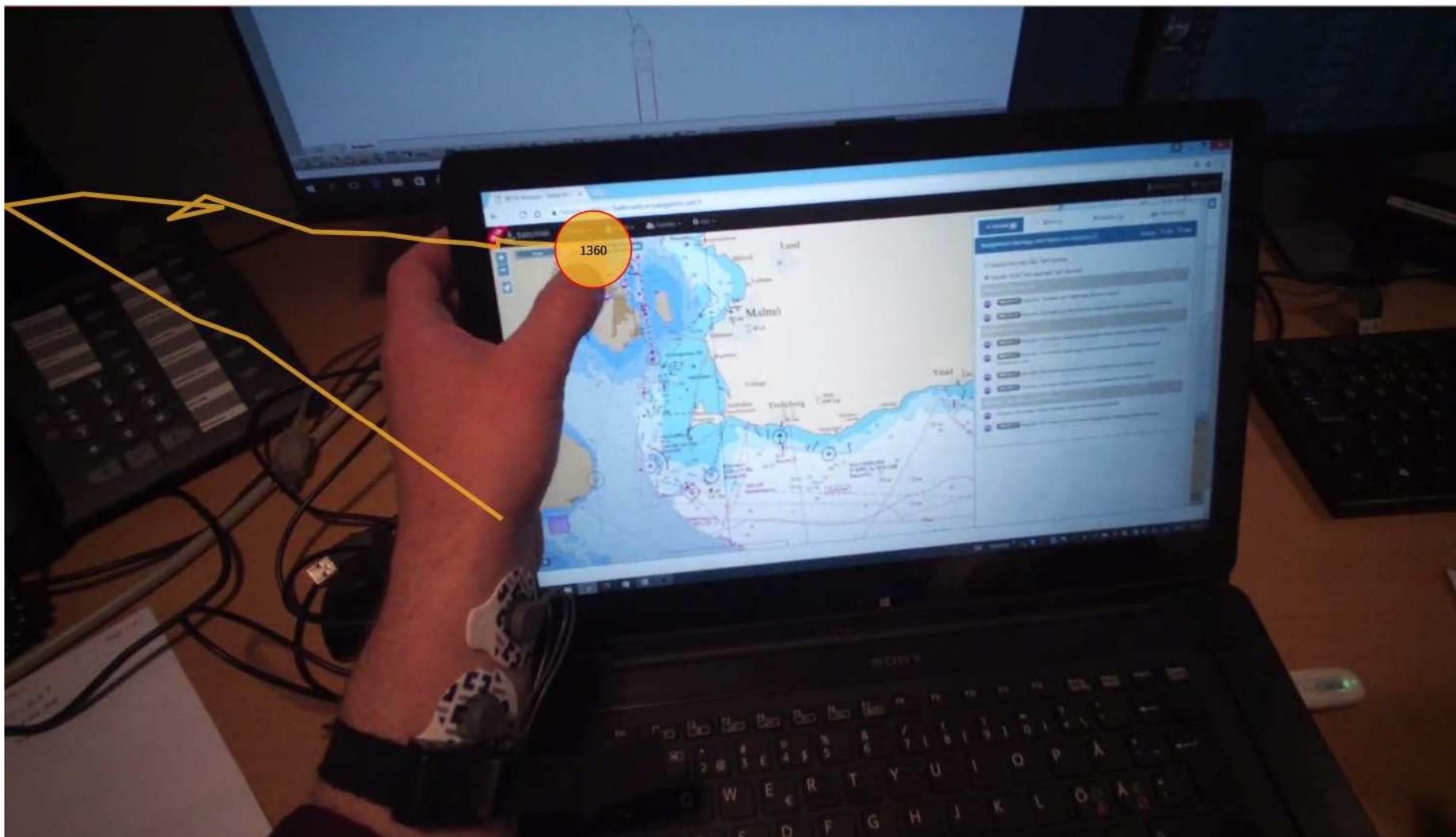
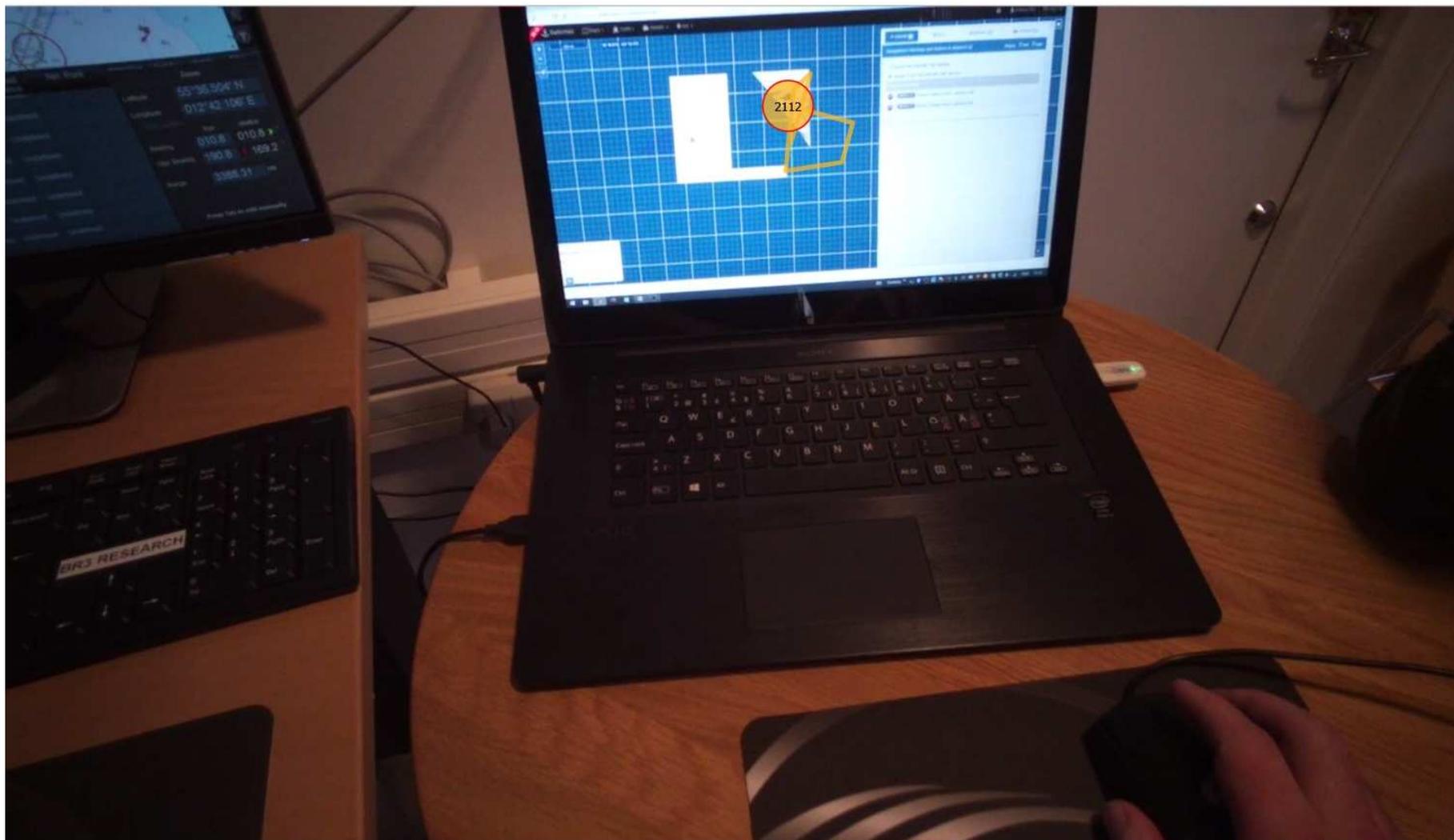


Chart updates very slow



Inputs

- The users liked the ability to look further ahead with BW than what is possible with using ECDIS, however not all info was available on the BW
- Some mentioned that it would be nice if it was possible to see land contour at the same time as satellite picture
- Some were questioning what thunder charts are presenting
- Maybe it's an idea to have all the AIS info on one image instead of having to click for more details
- Some functionalities should open new tabs, because they make the participants lose previous information such as the no-go areas, original/optimized voyage comparison, etc. This means they have to restart tasks and re-upload their voyage etc.
- When the BalticWeb is idle for a while and logs off automatically, the users will not only need to log in again but also be obliged to upload their voyage again. It was observed several times, that when refreshing pages, the uploaded route disappeared

Inputs

- Planning vs. navigation tool:
 - “In my mind, I was trying to make a use for it during navigation”
 - “For a planning stage, it’s all right”
 - “It’s more a planning tool”
 - “When you need to start checking things for your route, it would be great to get the information from one place”
 - “NW are probably the only service relevant during navigation. The focus is on the ECDIS. It’s like with books – they are mostly used during planning, not navigation”
 - “Don’t want it in front of me. I want the things I need, and I didn’t feel I needed this”
 - “It’s more a planning tool and it’s better for longer routes – on short routes it is not necessary. It is more overload on the bridge”
 - There is nothing we do not have on the radar

The average time spent pr. group on BW during **planning** (minutes)

Group 1	Group 2	Group 3	Group 4
36,13	31,54	36,01	24,43

The average time spent pr. group on BW during **navigation** (minutes)

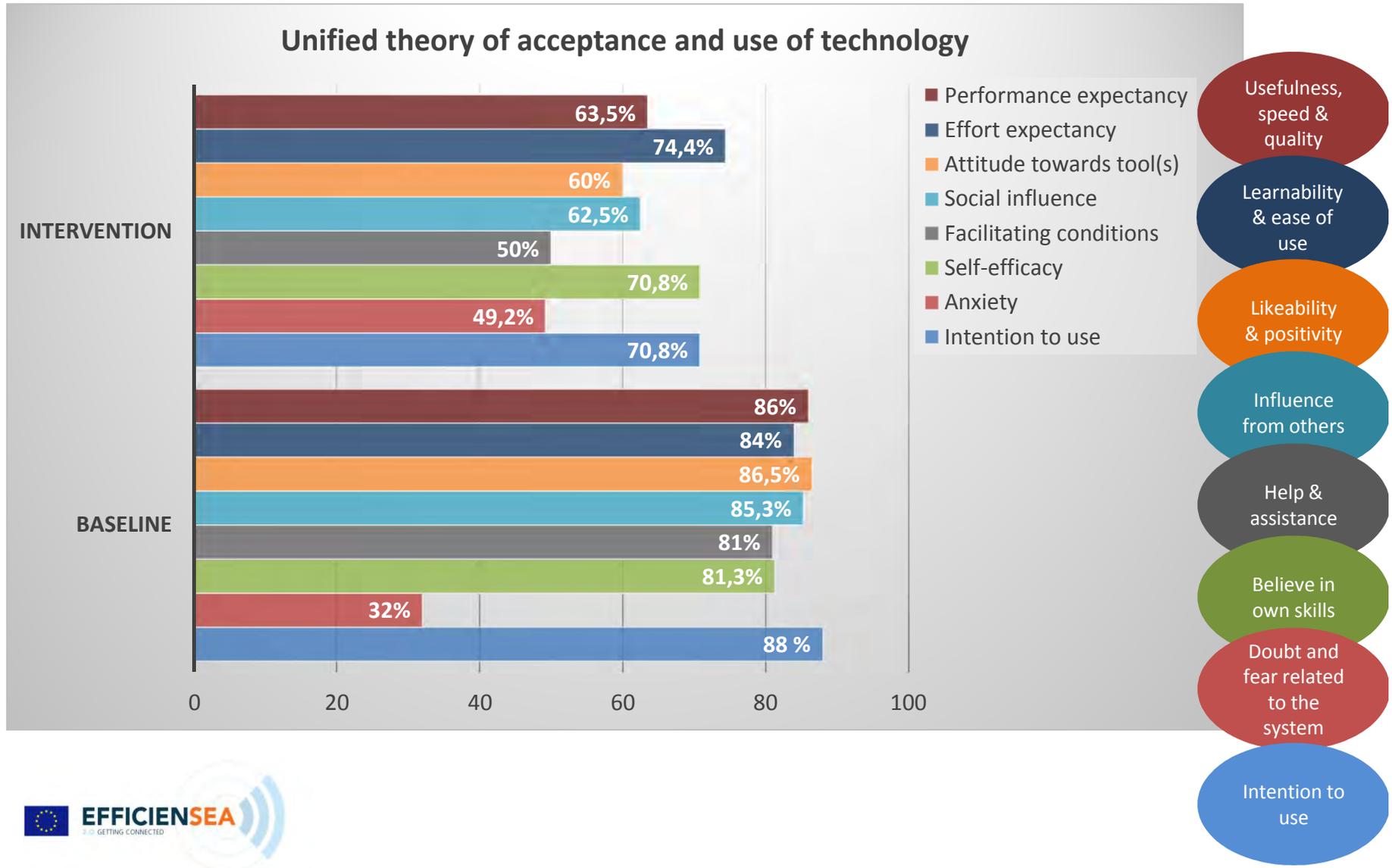
Group 1	Group 2	Group 3	Group 4
5,22	2,49	2,19	1,04

Inputs

- Placement of screen:
 - “As much into the ECDIS as possible”
 - “Back desk because there is space for it”
 - “Should be functions that would be able to click off/on if inserted as an overlay in ECDIS”

Insert statistics about how much time was spent looking at different screens ...

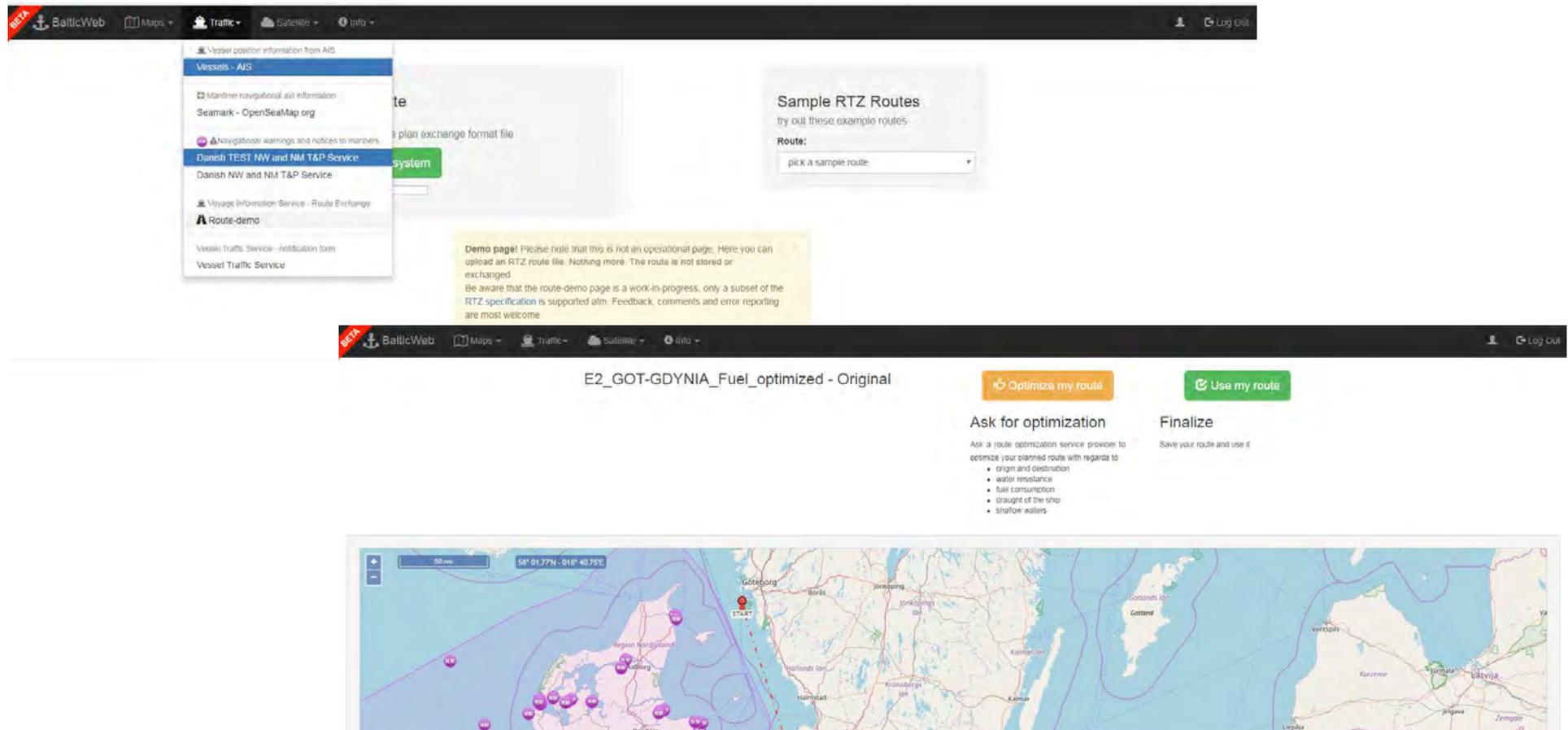
Overall UTAUT



Additional input from the Human Factors Researchers

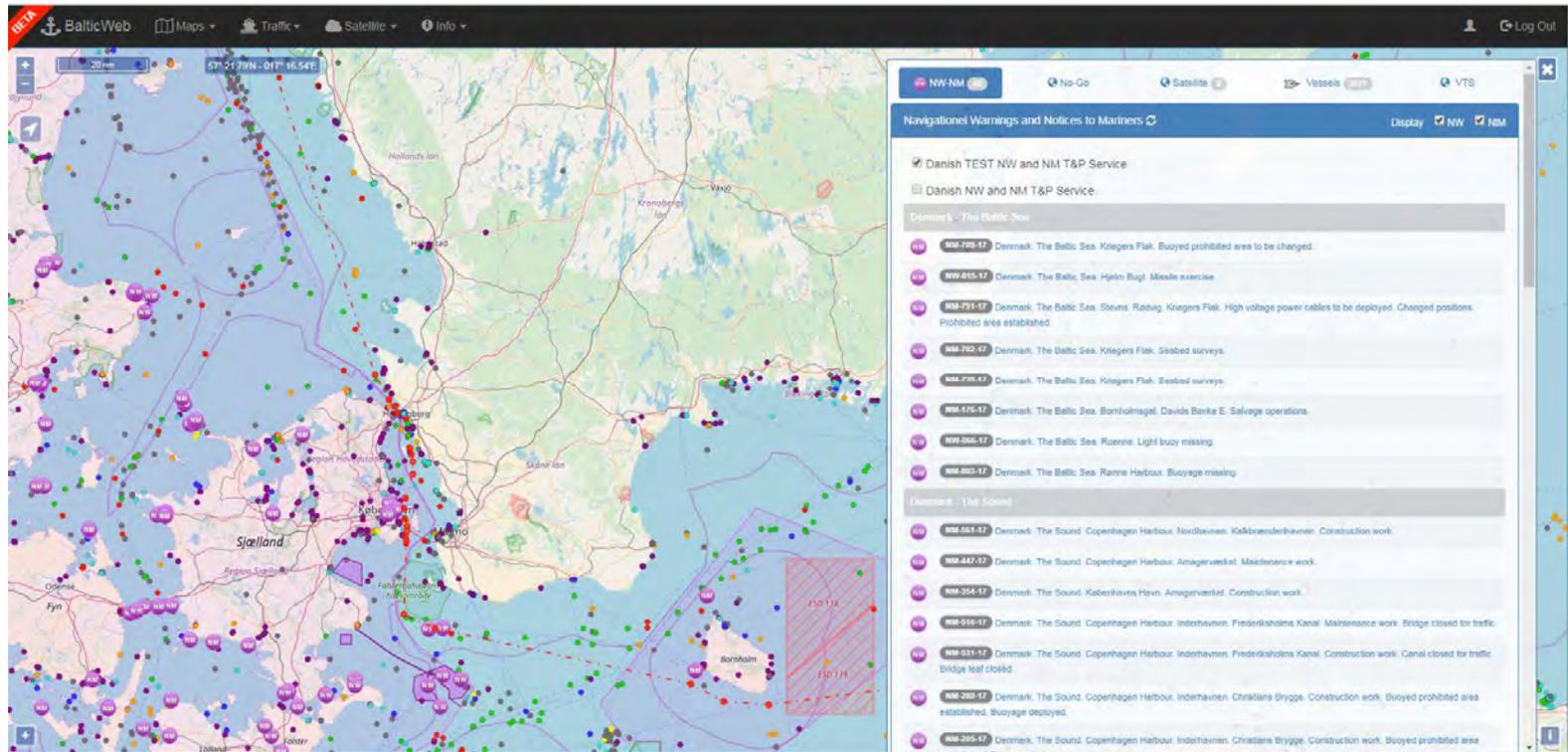
Route Demo function

- The function of uploading a route “Route Demo”, once clicked on, offers the option of optimizing the route or maintaining the original one. This makes sense if the optimization requires an initial route. But if the optimization in the future requires only point A to B, then these functions might want to be presented in the menu separately. Also, the name “Route Demo” is not obvious.



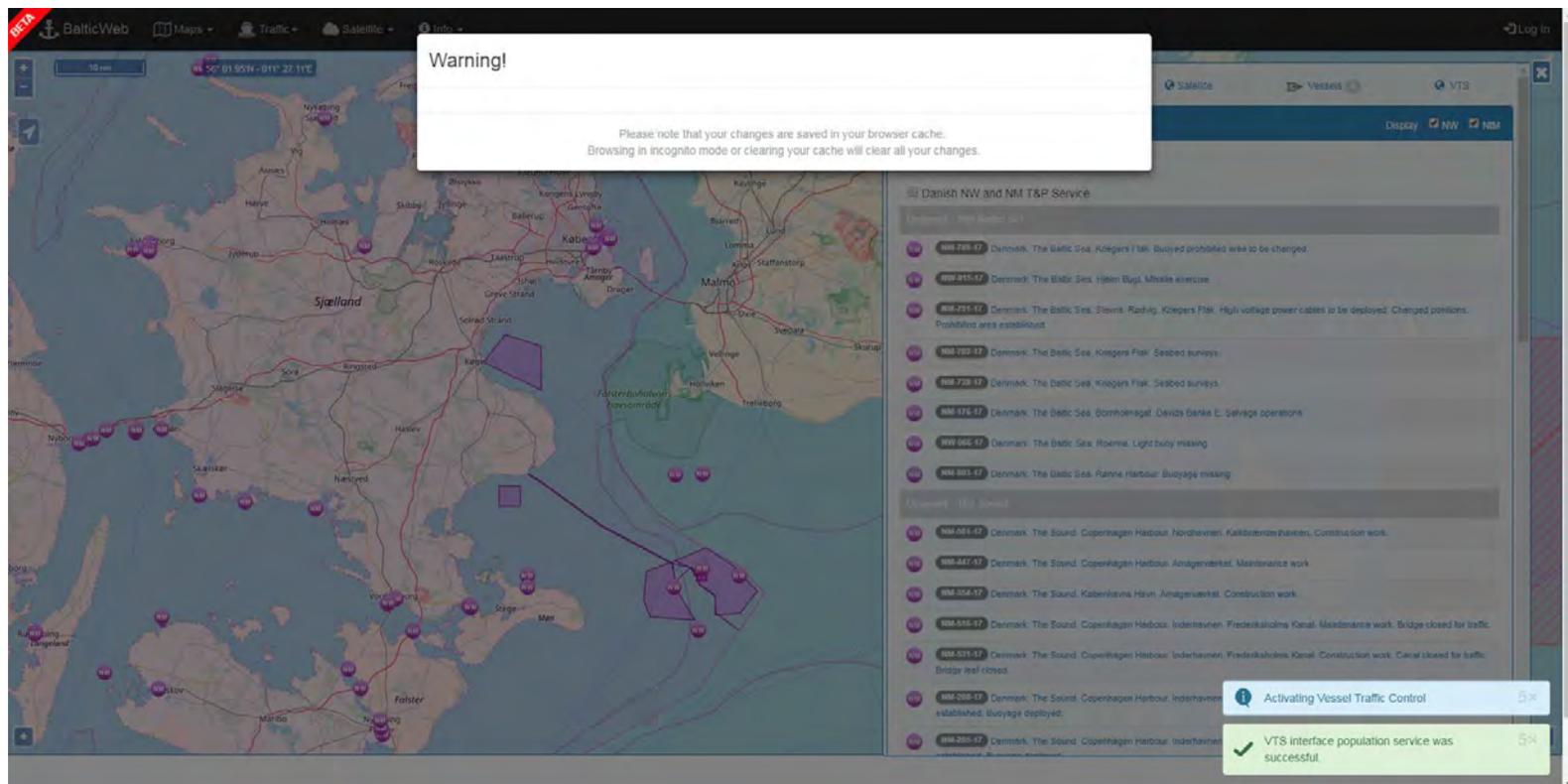
Top menu and right-side menu

- MSIs and no-go areas appear only on the right-side menu. Satellite, Vessels and VTS are repeated on the right side and on the top menu. This is inconsistent, and takes space from the chart view.



Warning window

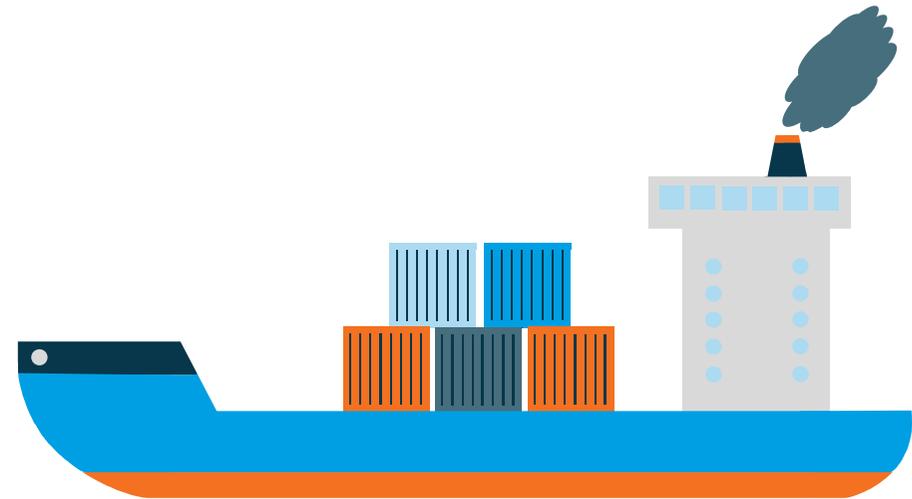
- Once this warning pop-up appeared (because the VTS reporting was not available temporarily), one needed to refresh the page for the warning to disappear.



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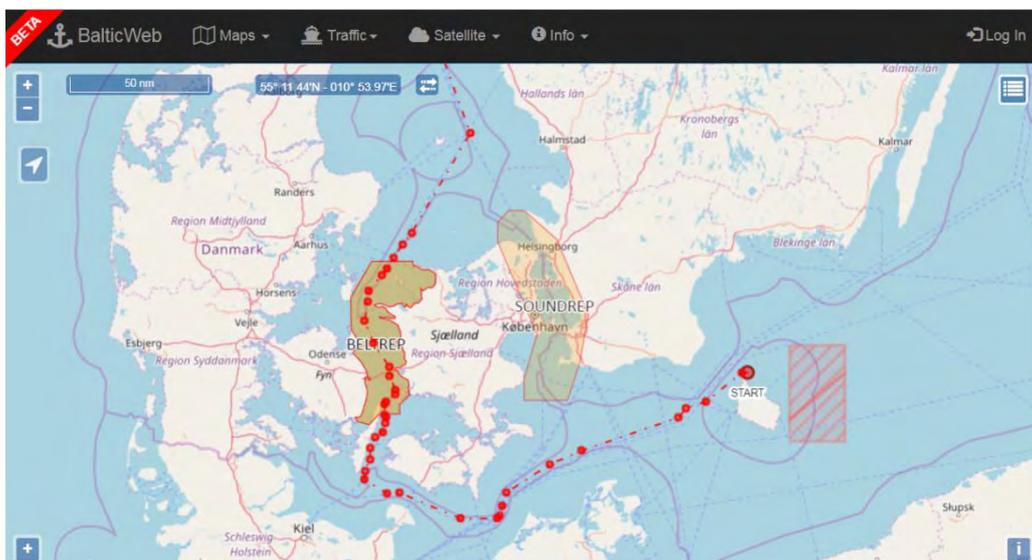


This project has received funding from The European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no. 636329



BalticWeb

UI improvements of the VTS/SRS interface following results from the simulator study
v.1.1



Report on improvements of features in the BalticWeb Vessel Traffic Service (VTS) reporting and Ship Reporting Service (SRS) interface based on results obtained within the simulator studies.

The department of E-Navigation at the Danish Maritime Authority
UX and design support: Ann Lemming (alj@dma.dk)
Code changes and design: Roland Beeres (rob@dma.dk)
Supervision: Henrik Skovmark (hsk@dma.dk)

Review: Jeanette Juul Jakobsen – Force Technology

Written by Roland Beeres – 11/12/2017

Background:

The BalticWeb interface was given a User Acceptance Test (UAT) in April 2017 in a collaboration of Chalmers University of Technology and FORCE Technology of Denmark, in Göteborg. The report written by Jeanette J. Jakobsen and Nicole A. Costa, was presented in full at FORCE Technologies in Lyngby, Nov. 3rd, 2017.

This report covers only the improvements made to the VTS/SRS interface, not to the BalticWeb interface as whole.

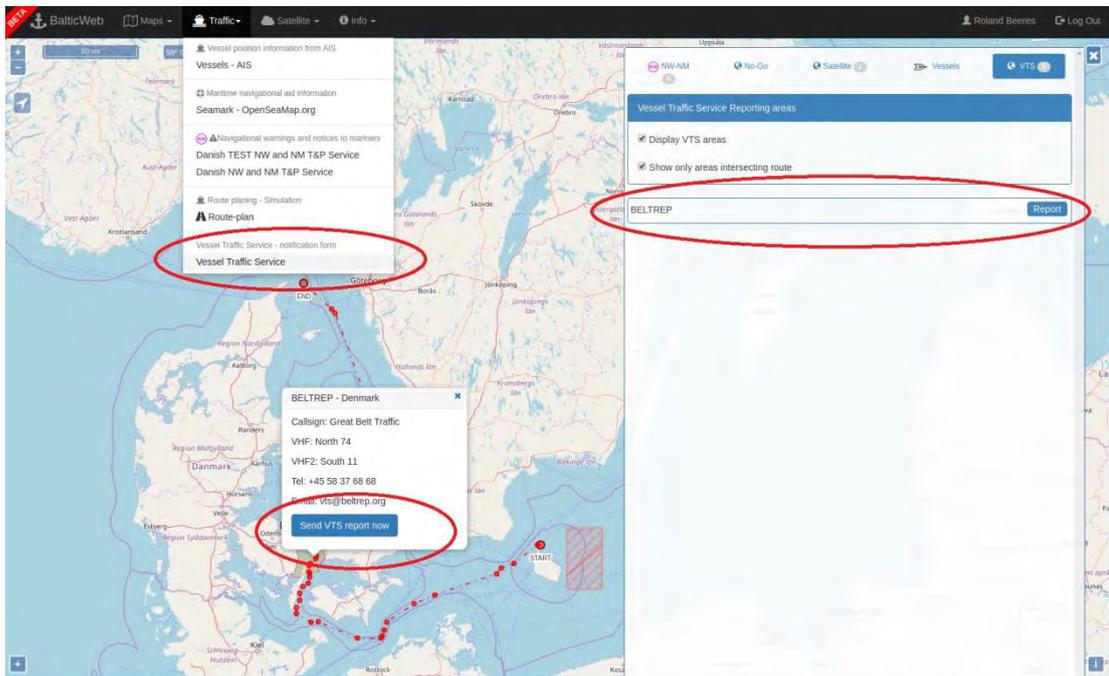
The following list of remarks have been evaluated and translated into active improvements of the VTS user interface (VTS/SRS UI), where appropriate:

1. Problems finding the service function.
2. Reporting lines are not very salient and related information are not clearly linked.
3. Sound Traffic VTS pdf manual difficult to read.
4. No rule for entering Dates and no useful feedback from system.
5. **Confusion when filling column "route".**
6. Could it be possible for some columns to be pre-filled.
7. Air Draft – how is this calculated.
8. **Doubt about the column "contact details for information of cargo".**
9. Correct format but wrong terms related to voyage information.
10. What position and speed – and when.
11. Positions as well as speeds can only be entered in whole numbers.
12. **"Send" is the only lead out possibility.**

Each point is represented in this document. Some items and requirements may have been altered or removed since the UAT, and some additions are likely to be in place as well. All pertinent items in the screenshots have been encircled to clearly highlight textual references.

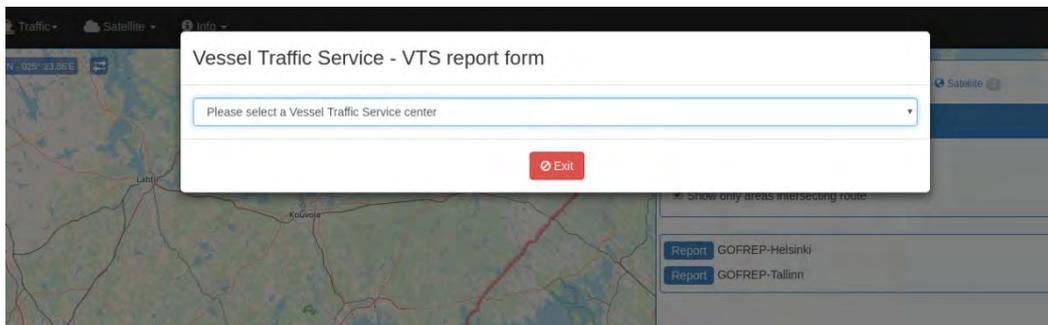
1: "Problems finding the service function".

This issue has been alleviated by adding two intuitive methods of opening the VTS report form. The first method, which also relates to issue #2, was done by adding a visual rendering of all available VTS areas with their respective names directly on the main map. Clicking or tapping on any VTS area opens a dialog box which contains basic information of that VTS center and a button which directly opens the VTS report form. Clicking or tapping anywhere outside the area will remove the dialog box. The second method is a list of VTS centers in the right-side menu, which displays all available VTS centers on the map, including a filter option (checkbox) to only display VTS centers relevant to the users as intersected by the loaded route. Next to the name of each relevant VTS center is a button which directly opens the VTS report form for that center.



The three options encircled above are access points to open the VTS report form.

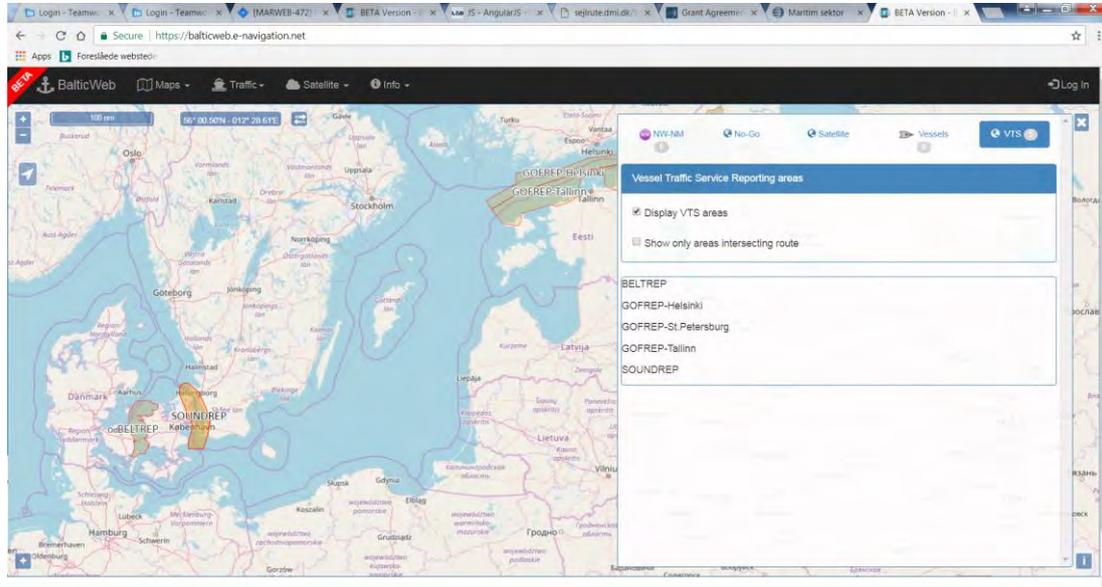
In the image below: Accessing the VTS report form from the top-menu adds the additional option to select any VTS center. This feature is in place because the user would at this point not yet have specified which VTS center to send the report to.



Any blue button will directly open the VTS report form specific for a VTS center determined by context, and will not display the VTS selection drop-down.

2: Reporting lines are not very salient and related information are not clearly linked.

A visual representation of all VTS reporting areas has been added to the BalticWeb interface. The coverage of the reporting areas are now clearly visible.



In the image above, the right-side menu now has a **"VTS" option, which sports an option (checkbox) to add a layer on the map which displays all VTS reporting lines on the map.** Control of the map is not inhibited by this feature and CPU resources used are negligible so the map still responds well.

Below: when a user holds the mouse over the area or taps the area on a touch enabled device, the area highlights **as seen for the "SOUNDREP" area.** During zoom, the colored area becomes increasingly transparent to minimize the effect of discoloration of details. The orange color was specifically selected to harmonize with other services such as the Underwater Keel Clearance and the Notice/Warnings to Mariners.

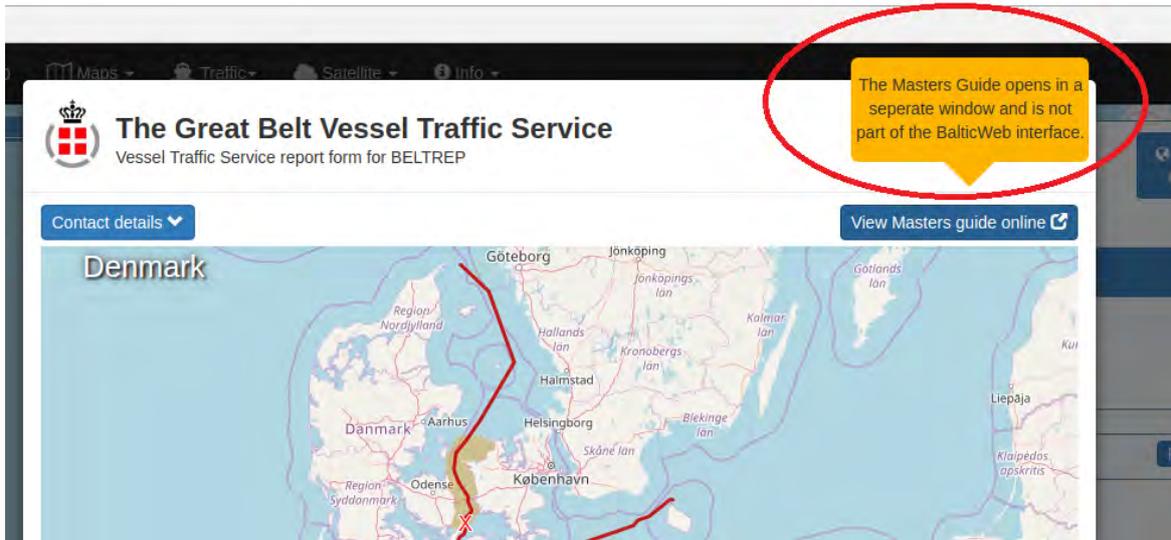


Please note that local route designations and sea traffic lanes are currently not part of the BalticWeb project. A future version of BalticWeb can support local navigation and traffic schemas.

3: Sound Traffic VTS pdf manual difficult to read

The "Masters Guide" offered by most VTS centers do not follow a guideline for design nor description flow, nor are they part of the BalticWeb project. The Masters Guide is a common tool offered by VTS centers around the world and is usually written and maintained by the individual VTS centers as they see fit.

Establishing a unified formulation of the Masters Guide is unfortunately not part of the scope of this project. To alleviate the possibility of misinterpreting the Masters Guide as being part of the BalticWeb interface, the link has been converted to a button, with a mouseover (popover) box describing this, as seen in the image below.



Popovers are used only on buttons.

Additionally to the popover, a help text has been implemented to deliver short descriptions to the user. The help text is encircled in the screenshot below. Help text is attached only to question mark icons and are displayed by hover or tap. Clicking or tapping or moving the mouse anywhere outside the help text icon closes the help text.



Not all items in the form will have a help text, since they should be as self-explanatory as possible, and the persons interacting with the form are expected to have a minimal understanding of what a VTS/SRS report is and what the common terminology is.

4: No rule for entering dates and no useful feedback from system.

A date picker has been added to ease the process of inserting the estimated time of arrival (ETA) at the VTS area.

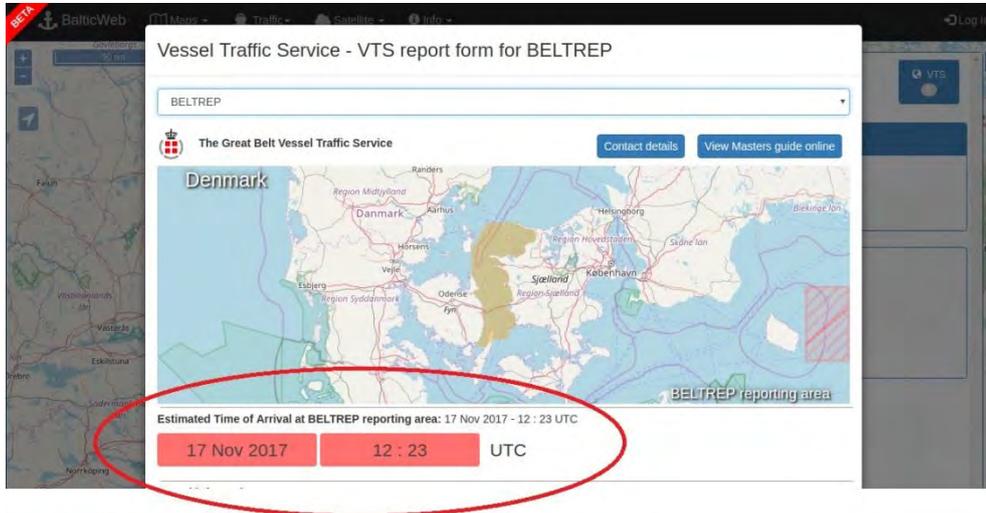
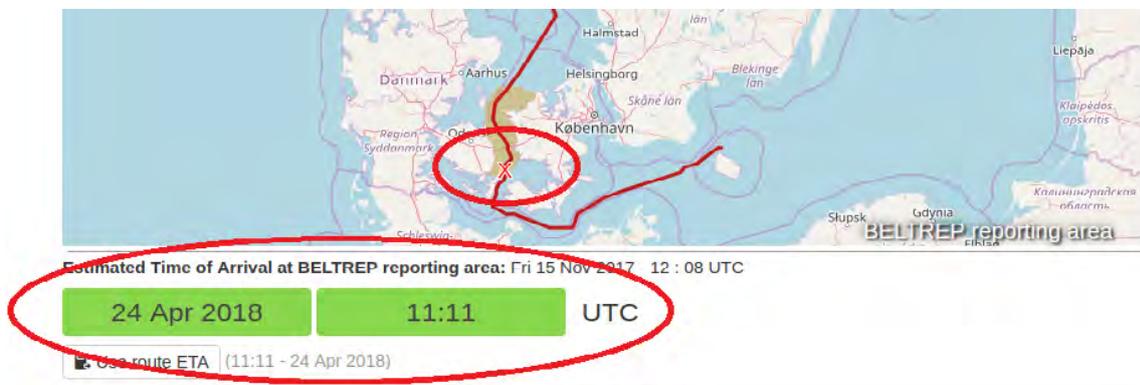


Image above: The default date picker as seen when opening the VTS report form. It is colored red because the date is invalid. (A valid date must always be future projected)

Image below: Default date picker when a route has been loaded, colored green because the date is valid. Note that the "X" on the map displays the sampling point of the ETA on the route, which is the ETA of the last waypoint of the route before the VTS area begins.



The ETA specified in the route file (RTZ) is read-only, so any changes to the VTS report form does not affect the RTZ file.

Image below, left side: Date picker, displaying the current date of the local system.



Image above, right side: time up/down changes the time.

picker. Clicking the arrows

4: ..no useful feedback from the system – addendum.

It is a continuous task to simplify the process and enhance the usability of the VTS/SRS interface. Some enhancements have been added already, such as fields accepting both commas and period as decimal separator, and other logical limits such as the draught of any vessel cannot use this reporting interface if they lie deeper than 99 meters. Outliers such as an unusually deep draught or remarkably long vessels, etc., would require direct contact with the VTS/SRS center.

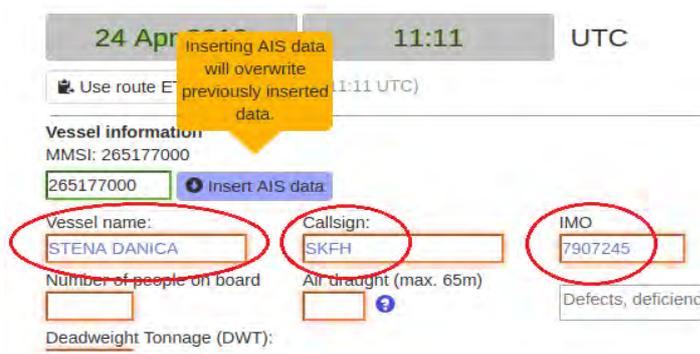
Other limits such as the IMO number field can only contain numbers and other validation on special fields such as email, telephone number and similarly highly specific inputs.

5: Confusion when filling column “route”

The route selection/specification has been removed while undergoing revision. The new route reporting option is expected to be added by end Jan. 2017.

6: Could it be possible for some columns to be pre-filled.

When logged in on the MCP, users may have access to AIS information. Through AIS, some fields may be pre-filled. In the image below, encircled in red, the placeholder of inputs is populated by AIS data. Clicking the blue button “Insert AIS data” will promote the placeholder text to become the field text. The orange popover is a fair warning to the user.



7: Air Draft – how is this calculated.

This specific question has been forwarded to bridge operators for clarification. Once a simplified answer is compiled, it will be added either as a link to a new document or as a help text.

8: Doubt about the column “contact details for information of cargo”.

More fields have been added as per requirements of VTS/SRS: Name, telephone, email, and an open ended text area. All fields but the open ended text area are validated when entering data so that the user is guided safely through the process. The open ended text area has no requirements for validation.

9: Correct format but wrong terms related to “voyage information”

Voyage information has been changed to be a visual summary of data simplified for the user. There is no longer an option needing interaction.

10: What position and speed - and when.

This information is now extracted from the loaded RTZ, further automating the process of filling out the report schema. Should there be no RTZ loaded, this information is too variable to be determined manually and it will not be possible to enter the value because the fields other than the ETA are simply not displayed.

11: Positions as well as speeds can only be entered in whole numbers

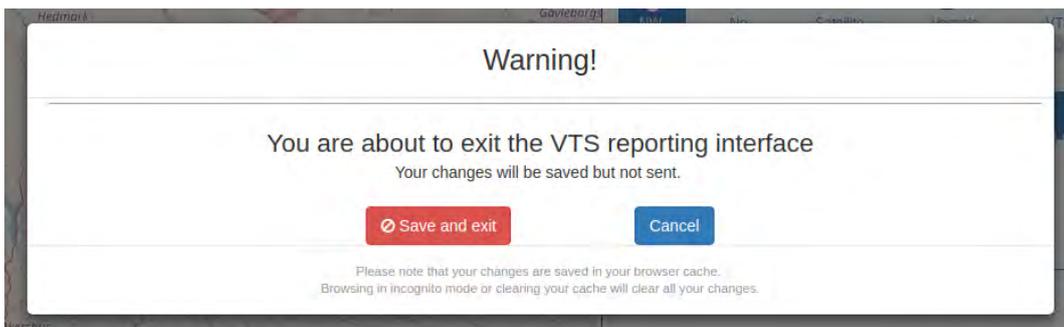
These fields have been removed.

12: “Send” is the only lead out possibility

An option to “Save and Exit” has been added.



Additionally, the user will be prompted at exit to minimize accidentally exiting the form prematurely.



With these changes we hope to deliver a better experience to the user.

The BalticWeb VTS/SRS report schema may prove to be a powerful tool which can be used as it is, at smaller VTS/SRS centers which currently rely solely on VHF and telefax to communicate with.

We hope to run the VTS/SRS interface through a second UAT, in the expectation of promoting the BalticWeb VTS/SRS interface to be employed in a live field test or possibly enter a review which can determine the value and maturity of the interface as a valid live test candidate.



ArcticWeb design & interaction review

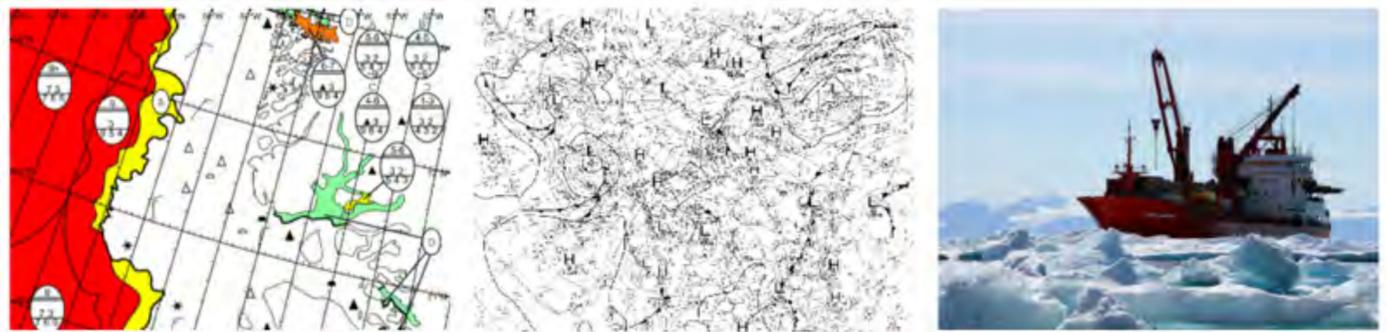


Background: ArcticWeb

ArcticWeb is a joint effort to improve maritime safety in the Arctic region. ArcticWeb serves as a single point of access to safety related information, provides streamlined reporting and allows for voluntary coordinated voyage through sharing of positions and planned routes. Ships in the area and their organizations may login or request access to ArcticWeb via the buttons below.



ARCTICWEB



Ice Charts
The Danish Meteorological Institute, Greenland Ice Service, collects information regarding ice conditions in the waters around Greenland and distributes this information to ships primarily as ice charts and reports.
• [DMI Ice Service](#)

Weather
Warnings and forecasts are broadcasted by KNR (Greenland Radio) and Greenland coast radio stations. For schedules, frequencies and areas see "Admiralty List of Radio Signals".
• [Sea Areas Forecast](#)

Safety of Navigation - Greenland
A safety package containing regulations and information about special Greenland conditions is available to ships embarking on voyages in Greenland waters. The documents are available from the links below



Design & interaction review: **Introduction**

The design- and interaction review is an expert based analysis that utilize background knowledge of human behavior and psychological processes (e.g. sensory, cognitive) to asses the usability of a tool - in this case the ArcticWeb.

The analysis identifies potential issues and provides suggestions for improvements.

The analysis is limited by the inability to asses the severity of the identified issues.



Design and interaction review

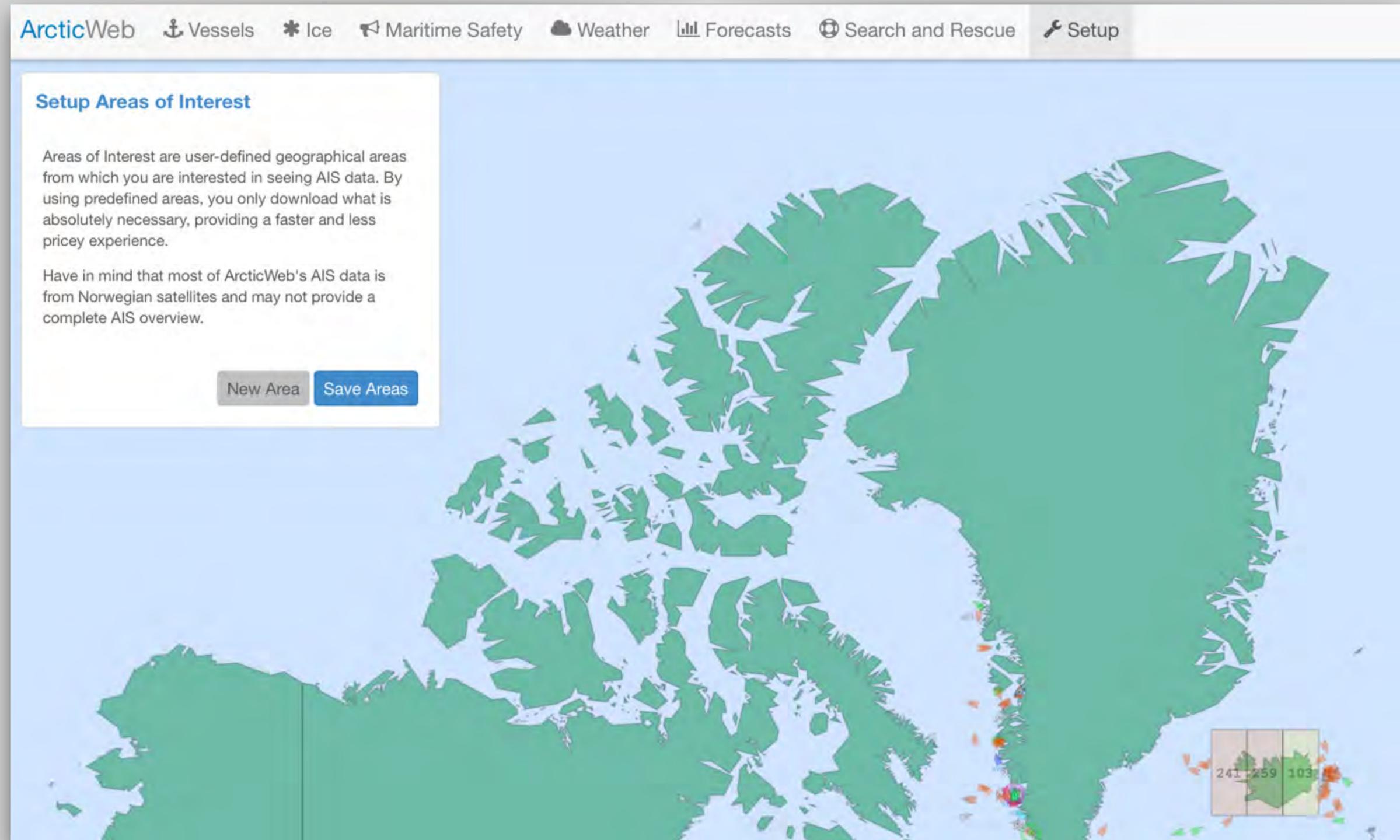


Feedforward: Show live example

From text alone it can be difficult to evaluate the functionality such as "Area of interest".

A useful option can often be to directly demonstrate an example of what a feature such as "Area of interest" entails.

Rich explanations that utilize the actual functionality of the service to directly demonstrate functionality unburdens the intellectual load on users and provides a more intuitive understanding of the functionality.



The screenshot shows the ArcticWeb interface. At the top, there is a navigation bar with the following items: ArcticWeb, Vessels, Ice, Maritime Safety, Weather, Forecasts, Search and Rescue, and Setup. Below the navigation bar, there is a panel titled "Setup Areas of Interest". The panel contains the following text:

Areas of Interest are user-defined geographical areas from which you are interested in seeing AIS data. By using predefined areas, you only download what is absolutely necessary, providing a faster and less pricey experience.

Have in mind that most of ArcticWeb's AIS data is from Norwegian satellites and may not provide a complete AIS overview.

At the bottom of the panel, there are two buttons: "New Area" and "Save Areas".

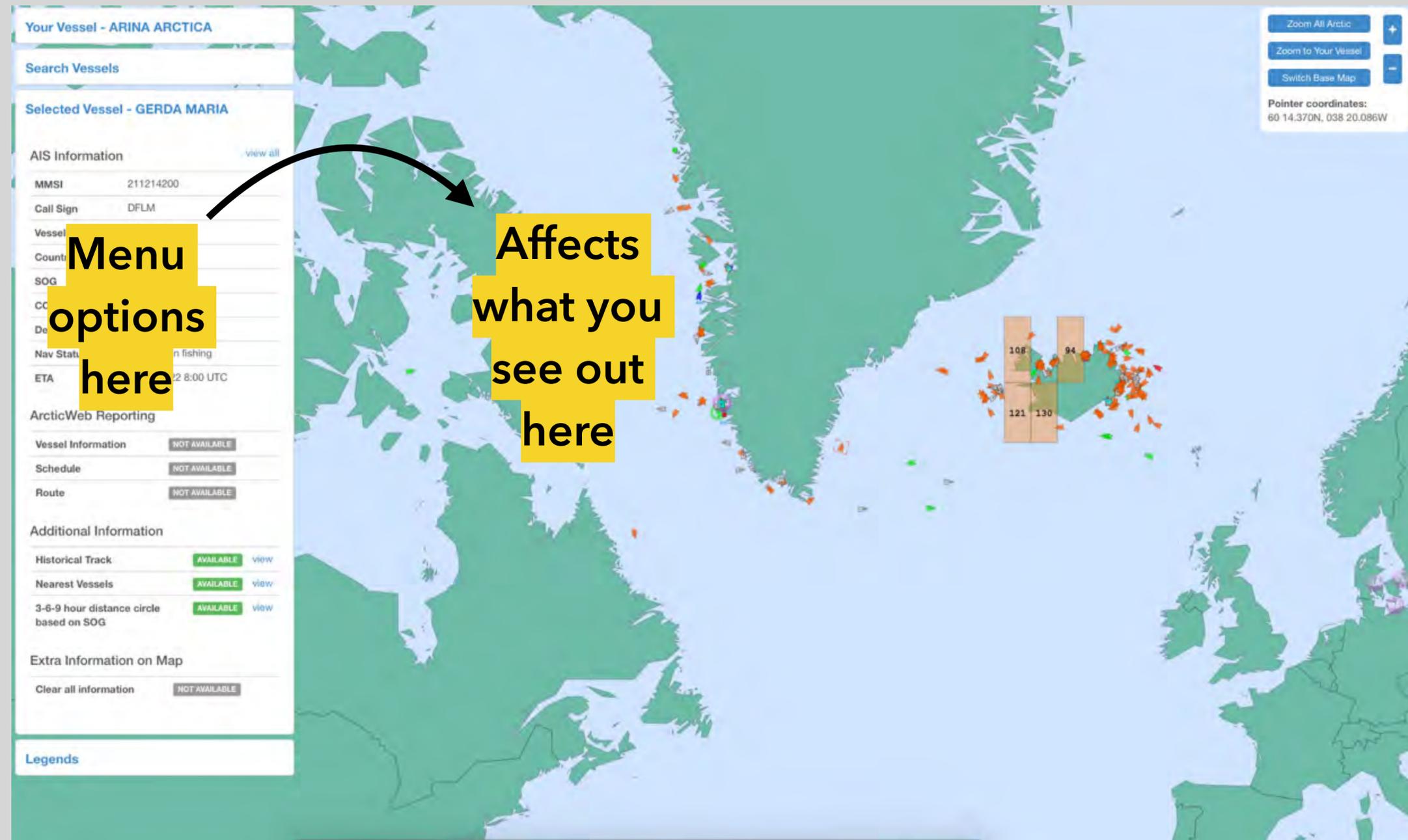
The background of the screenshot is a map of the Arctic region, showing the landmasses in green and the surrounding waters in light blue. There are several small, colorful icons scattered across the map, representing vessels. In the bottom right corner of the map, there is a small inset box with the numbers 241, 259, and 103.

Direct and indirect manipulation

ArcticWeb utilize a mixture of direct and indirect interaction. The map can be manipulated directly dragged to change focus and double clicked to zoom in. the same can be achieved in the top right hand menu.

All other functions, however, are indirect accessed by menus and submenus. Given that most information relate and functionality related to map information a more direct interaction should be considered.

Direct manipulation where functionality can be accessed directly on the overview map reduces the challenge for the user of having to “map” between the menu and the overview map – the user has to mentally “glue” to parts of the graphical user interfaces together. It is therefore suggested to provide more direct interaction *in addition* to the menu options in the menu overlay.



Map update latency

Working with a computer hooked up to a fast land internet connection ArcticWeb still suffers from lag and delays when commands are issues.

These are likely to also be experienced on computers on vessel at sea.

The graphical engine that runs ArcticWeb should therefore have a local graphical feedback solution that clearly and immediately provides feedback to the user when the map is manipulated.

In other maps services this is achieved by showing a map grid that is either zoomed in upon or away from as the user manipulates the map. Graphical content is then updated when the data becomes available.

This provides a smoother user interexeroence and avoids multiple commands being issues due to the perception that the system is not responding.



Improved visualization of active vessels

Selected vessels can be difficult to identify.

A traditional tracking line would help

The screenshot displays a web interface for vessel tracking in the Arctic. On the left, a sidebar provides detailed information for a selected vessel, 'GERDA MARIA'. The map on the right shows the Arctic region with numerous vessel icons. A red box on the map highlights a specific vessel, which is linked to the sidebar data. The sidebar includes sections for AIS Information, ArcticWeb Reporting, and Additional Information. Map controls on the right allow for zooming and switching maps, with a pointer coordinates display showing 60 14.370N, 038 20.086W.

Your Vessel - ARINA ARCTICA	
Search Vessels	
Selected Vessel - GERDA MARIA	
AIS Information view all	
MMSI	211214200
Call Sign	DFLM
Vessel Type	FISHING
Country	DE
SOG	2.7
COG	13.6
Destination	BREMERHAVEN
Nav Status	Engaged in fishing
ETA	2015-12-22 8:00 UTC
ArcticWeb Reporting	
Vessel Information	NOT AVAILABLE
Schedule	NOT AVAILABLE
Route	NOT AVAILABLE
Additional Information	
Historical Track	AVAILABLE view
Nearest Vessels	AVAILABLE view
3-6-9 hour distance circle based on SOG	AVAILABLE view
Extra Information on Map	
Clear all information	NOT AVAILABLE
Legends	

Improved visualization and vessel options

Clicking a vessel gives me options to see the related historical track data alongside distance information to other vessel.

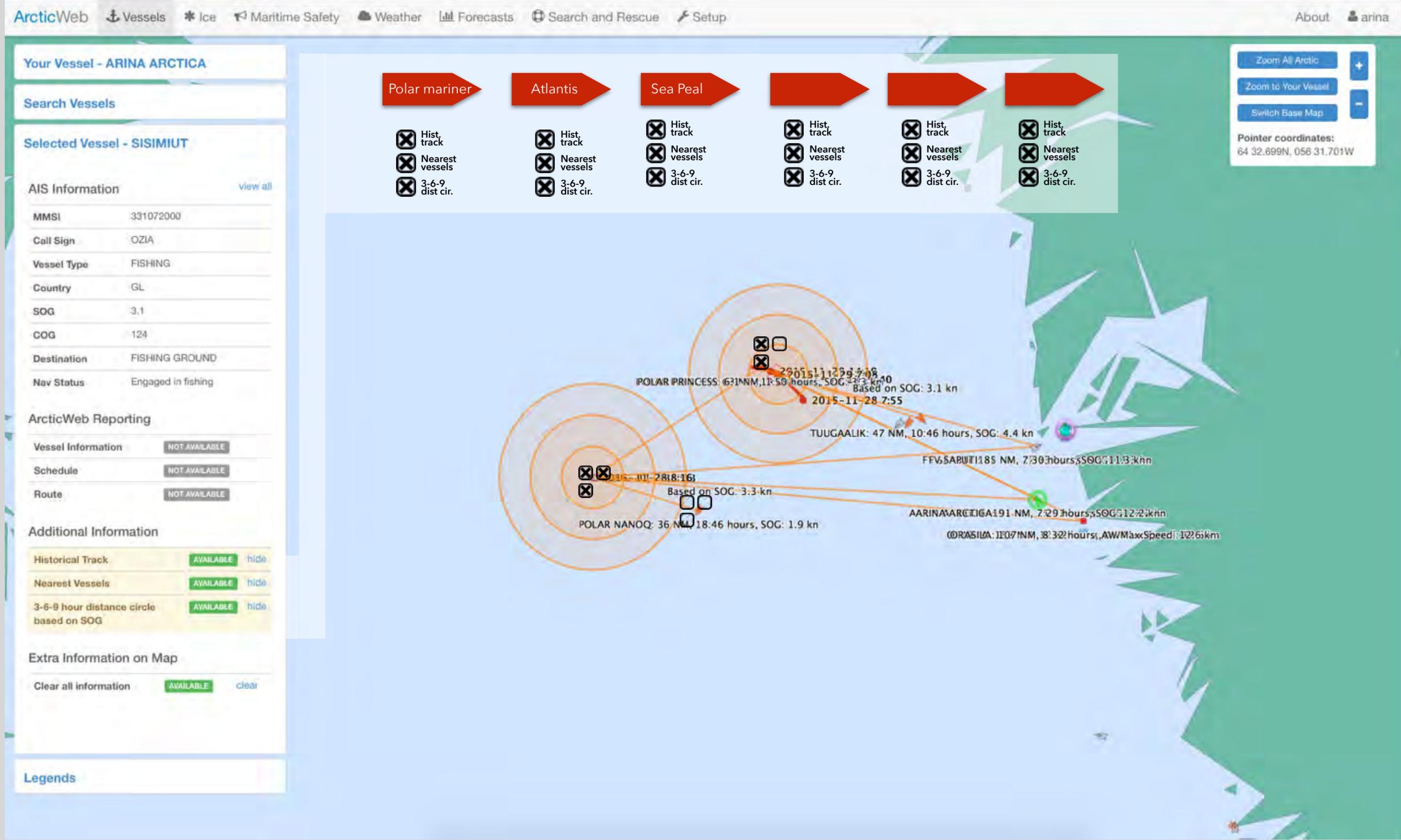
These information are activated for each ship by clicking on the ship and choosing "view" in the left hand menu.

If another vessel is chosen these data stay visible for the previous ship. This is a good and relevant feature.

However, in an investigator activity it becomes difficult to click on each ship to access the view/hide option.

Instead that information should be able to be clicked on/off directly on the vessels.

Given that the screen may easily become crowded a sub menu with "ships in selection" or "near chosen vessel" could be activated to quickly select and deselect relevant information.



Situation overview and awareness

Search for a vessels brings up real time suggestions – very good.

When a vessel is selected from the search menu the current map selection is instantly replaced with a zoom up map with the selected vessel.

From this map selection you cannot establish where you are – you lose situation overview.

In order to preserve / provide situation overview, a suggestion could be to show results as a text preview and large map overview.

A zoom function (similar to how search results are found on Google earth) supports situation overview and presence.

The screenshot displays the ArcticWeb interface. At the top, there is a navigation bar with links for Vessels, Ice, Maritime Safety, Weather, Forecasts, Search and Rescue, and Setup. The main content area is divided into several sections:

- Your Vessel - ARINA ARCTICA**: A section for the current vessel.
- Search Vessels**: A search input field containing "anna" and a list of results: ANNA MARIA, ANNA, ANNA, and "3 vessels match".
- Selected Vessel - MARIE MARTEK**: A section for the selected vessel, with a timestamp of "2015-11-28 14:10".
- Legends**: A section for map legends.

The main map area shows a zoomed-in view of the Arctic region. A red dashed box highlights a specific area on the map. A red arrow points from the search results to this area. The map also shows several vessels with their names and status:

- TUUGAALIK: 47 NM, 10:46 hours, SOG: 4.4 kn
- FV SAPUTI: 85 NM, 7:30 hours, SOG: 11.3 kn
- ARINA ARCTICA: 91 NM, 7:29 hours, SOG: 12.2 kn
- ORASILA: 107 NM, 8:32 hours, AW Max Speed: 12.6 kn

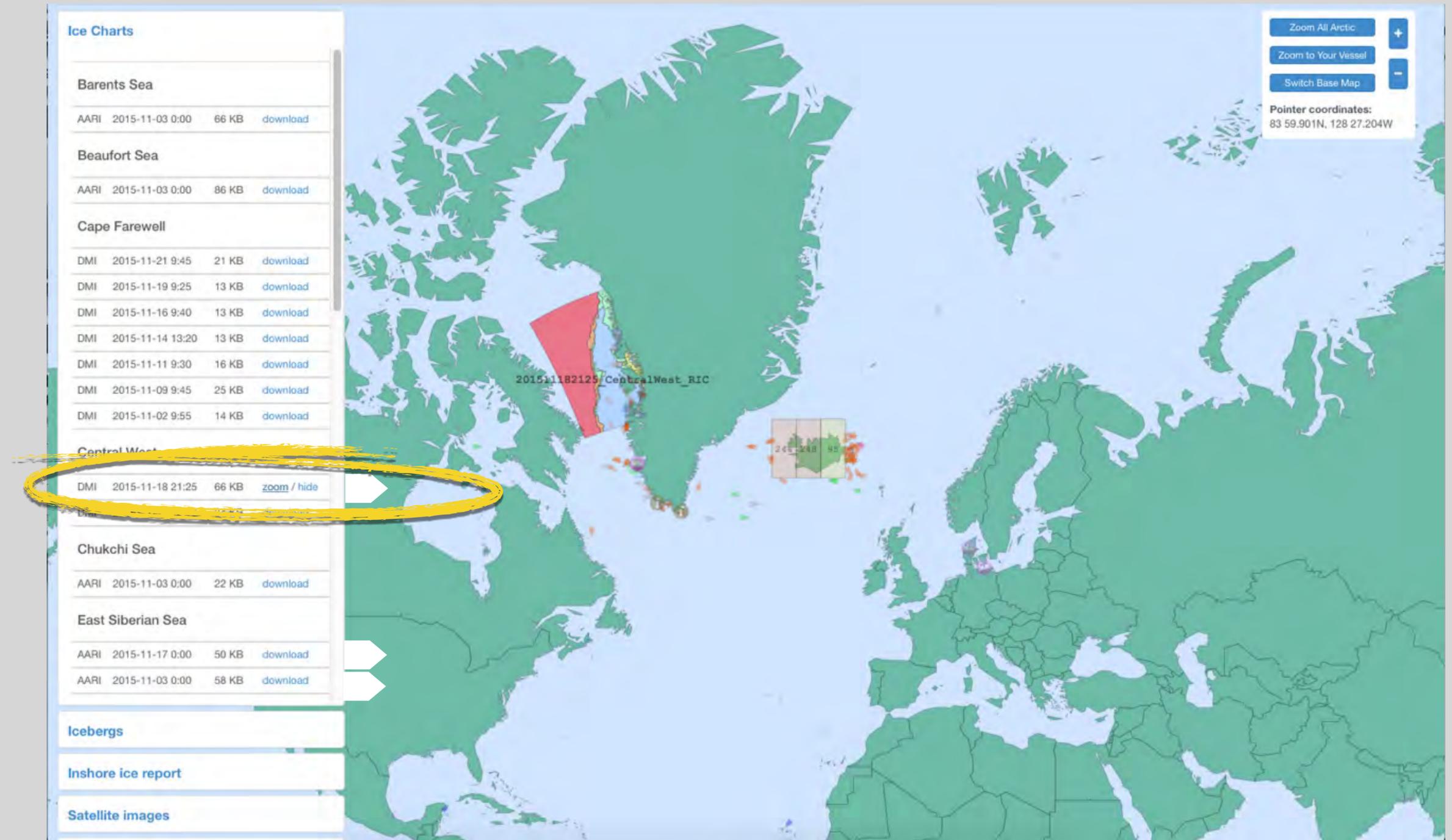
On the right side of the map, there is a control panel with buttons for "Zoom All Arctic", "Zoom to Your Vessel", and "Switch Base Map". Below these buttons, the "Pointer coordinates" are displayed as 63 55.834N, 050 29.244W.

Feedback on menu selections

The feedback for which selection I have made in the menu are too subtle.

Adding an object to selected charts that can be seen using the "squint for eyes" technique should be the goal.

:: Here a white arrow has been added that clearly stands out in the list.



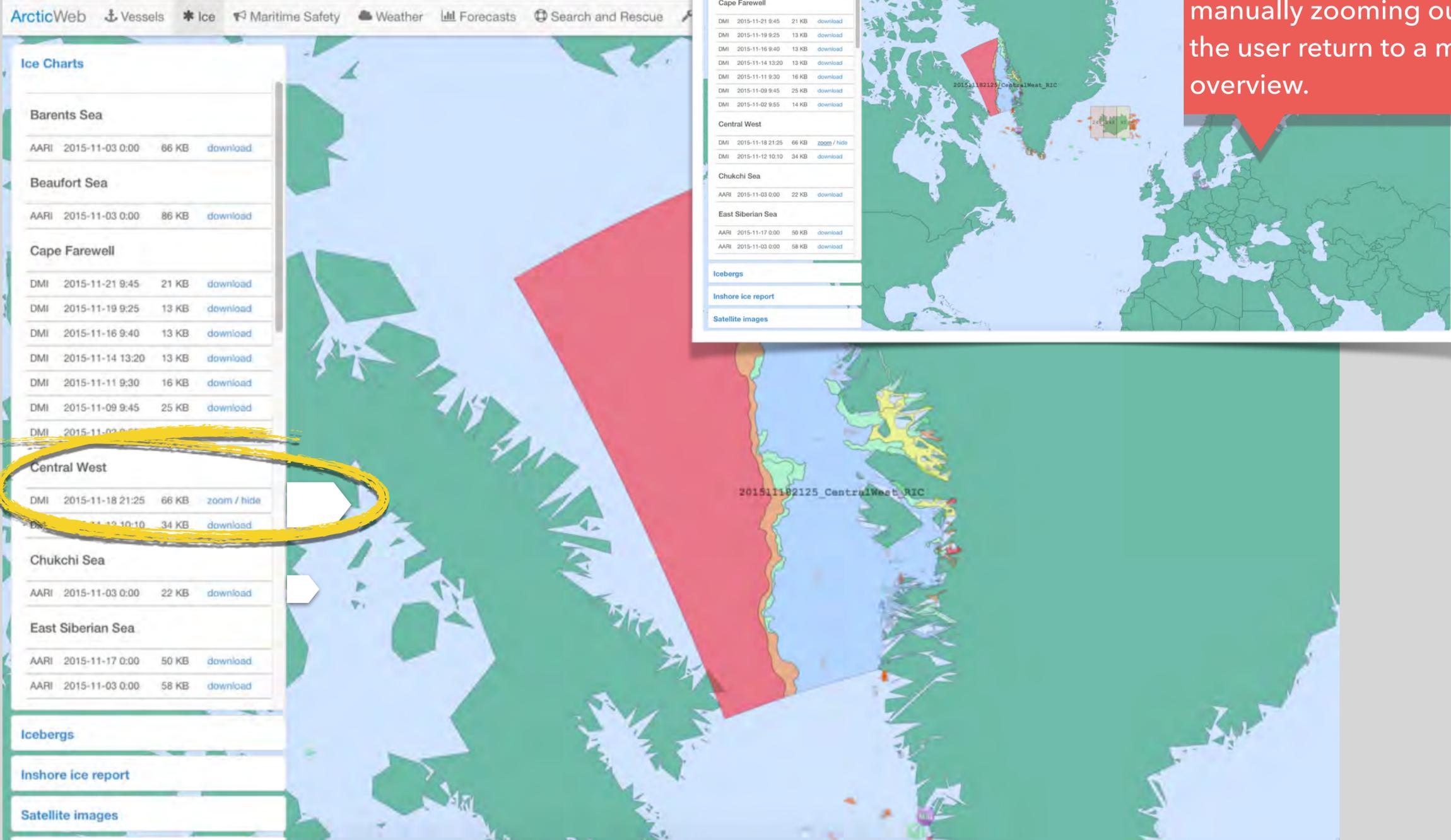
Navigation: "back" button

Once zoomed into a map selection that map section can be hidden again - but there is no way to return to the previously "unzoomed" map stage.

It seems, in general, that most functions in ArcticWeb have been designed for a unidirectional interaction flow where the user moves towards a goal through a sequence of selections and navigations.

However, users often explorer and develop the task on the go. This leads to a more dynamic exploratory and less unidirectional interaction flow.

ArcticWeb should support this.



Situation overview and awareness

An overlay option of the different map download areas would help identify which maps from the list are relevant to downloaded directly related to the map.

A list only option can be difficult to orient in.

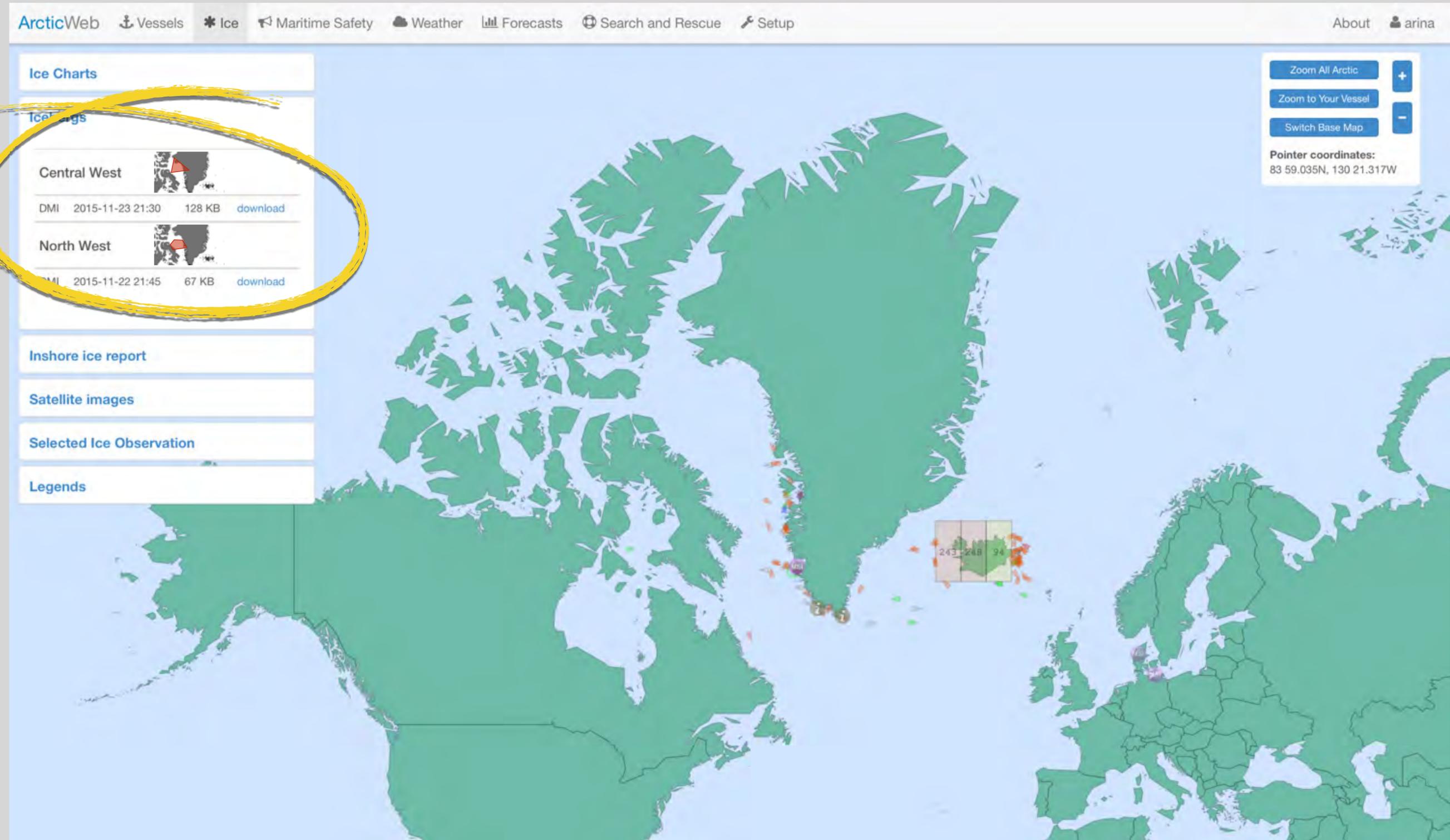
The screenshot shows a web interface for Arctic navigation. On the left is a sidebar with a list of 'Ice Charts' categorized by sea region. The main area is a satellite map of the Arctic region with a grid overlay. A red polygon highlights a specific area on the map, and a tooltip shows its coordinates: 201511182125/CentralWest_RIC. A 'Map grid overlay' control with a close button is positioned above the map. In the top right corner, there are navigation buttons: 'Zoom All Arctic', 'Zoom to Your Vessel', and 'Switch Base Map', along with a 'Pointer coordinates' box showing 83 59.901N, 128 27.204W.

Sea Region	Chart ID	Date	Size	Action
Barents Sea	AARI	2015-11-03 0:00	66 KB	download
	AARI	2015-11-03 0:00	86 KB	download
Cape Farewell	DMI	2015-11-21 9:45	21 KB	download
	DMI	2015-11-19 9:25	13 KB	download
	DMI	2015-11-16 9:40	13 KB	download
	DMI	2015-11-14 13:20	13 KB	download
	DMI	2015-11-11 9:30	16 KB	download
	DMI	2015-11-09 9:45	25 KB	download
Central West	DMI	2015-11-18 21:25	66 KB	zoom / hide
	DMI	2015-11-12 10:10	34 KB	download
Chukchi Sea	AARI	2015-11-03 0:00	22 KB	download
East Siberian Sea	AARI	2015-11-17 0:00	50 KB	download
	AARI	2015-11-03 0:00	58 KB	download

Situation overview and awareness

To assist the selection of relevant map downloads (and show/hide) an option could be to provide small map icon representations in the menu.

A skilled seafarer can probably quickly identify the different map areas by their names alone. However, it may be useful anyhow and assist in easy and intuitive navigation and selection.





design**p**sykologi

e-navigation kører allerede i Arktis – ArcticWeb

23-05-2014 10:26

Arktis er det havområde, som de danske søfartsmyndigheder har størst fokus på, derfor er e-navigation allerede sat i søen i det arktiske område i en version, der kører separat over internettet - og altså ikke er tilsluttet ECDIS eller andet udstyr om bord.

Af Lise Mortensen Høy | Søfartens Ledere

Der er foreløbig tilsluttet 20 skibe/lodser og et antal landbrugere. Blandt andet er Arktisk Kommando, Kystradioen, Redningstjenesten og DMI blandt deltagerne.

Skibsførerne i de deltagende skibe fører logbog over deres brug af systemet - og udviklerne ser det som den hidtil største test af e-navigation, samtidig med, at det allerede i år forøger sejlads-sikkerheden i Arktis.

[Læs også: IMO passerer milepæl for bedre sikkerhed i Arktis](#)

Mange oplysninger samlet

Skibene kan hente iskort, vejrmedinger og varsler fra DMI/Istjenesten samt navigationsadvarsler.

De deltagende skibe kan desuden lægge informationer ind i systemet, herunder rednings-kapacitet, om der er helipad om bord, skibets maks. fart, planlagt rute og schedule mv.

Informationerne deles med andre skibe i området for forbedring af sejlads-sikkerheden. Skibene kan ligeledes rapportere til Greenpos og Kystkontrol via ArcticWeb.

Hjælp til risikoberegning

Søfartsstyrelsen arbejder på, at isprognoser, vejrkort og overisningsvarsler - sammen med andre relevante oplysninger bliver samlet til den risikoberegning, som formentlig vil blive krævet, at skibene udfører i fremtiden.

