CSMWG15-6B rev.1

IHO Colours & Symbols Maintenance Working Group (C&SMWG)
15th Meeting, BSH, Rostock, Germany, 2-4 May 2005

OEF - CURSOR PICK / ECDIS FAILURES AT SEA / LOST OWN SHIP

(edited by M. Eaton, 7 Sept. '04)

SUMMARY:

This OEF discussion started 5 April 2004 on the topic of cursor pick. It continued with reflection on the ECDIS market on 6 May (p. 12) and and switched abruptly to reports of ECDIS failure at sea from Gundersrud and Ward on 26 May (p.17).

CURSOR PICK : A badly organised cursor pick report can probably be very frustrating to the mariner, and I think the general conclusion was that more specific guidelines from the C&SWG would be helpful. A small development programme with mariner input would be needed to develop these, with technical work perhaps following the suggestions of Sylvain Duclos (p.8).

ECDIS FAILURES AT SEA: Olaf Gunersrud and Rob Ward described serious ECDIS failures at sea. Ward prescribed improved mariner education as an important step in developing safer ECDIS (which could be difficult with the current down-grading of mariner training due to the globalisation of shipping companies), while Gert Buttgenbach provided technical reasons for the problem. Glen Spaan finally said you are OK so long as you do not follow S-52.
(There is a lot more important commentary on these disturbing ECDIS failures than is given in this summary, in contributions from 26 May onwards.)

LOST OWN SHIP : Glen Spaan also mentioned the long-standing "Lost own-ship" problem. See separate file "(CSMWG15-6C) Lost own-ship.doc" for details on this serious problem.

Abstract of e-mails:

CURSOR PICK

page

3. Gundersrud, 5 April: Is there anything in S52 to specify the priority in which information should be displayed in response to a cursor pick?

5. Eaton, 24 April: quoted the very general guidelines in PresLib 8.8.1.

9. Duclos, 3 May: suggested a software sorting method based on draw priority.

11. Gundersrud, 5 May: concluded that a more detailed guideline would be helpful.

12. Buttgenbach, 5 May: no standard but a guideline published on the OEF.

13. Gundersrud, 6 May: market success is no guarantee of a good ECDIS because the mariner has little or no influence in the selection process.

15. Buttgenbach, 6 May: do not want official standards for the user interface.

16. Eaton, 8 May: comments on contributions to 5 May.

ECDIS FAILURES AT SEA

18. Gundersrud, 26 May: experience in China and Korea shows mariners are confused between ECDIS and ECS, and that some ECDIS do not perform according to the specifications. If a system is "non-ECDIS" or "not using ECS" this should be indicated. Innovative features are fine, but should be on ECS with the conservative, well tested, ECDIS being required for SOLAS shipping.

20. Ward, 27 May: described serious problems encountered on type-approved ECDIS in service, sometimes to the extent of requiring re-booting when underway. Mariner education is urgently needed.

22. Buttgenbach, 29 May: technical comments on why ECDIS crash and what might be done to avoid this.

24. Spaan, 9 July: described reliable service using Transas and OSL ECDIS with ECS as back-up. Does not like the S-52 display (he never did). Mentioned the "Lost own-ship" problem. (See separate file "(CSMWG15-6C) Lost own-ship.doc".)

Mike Eaton 4 Sept. 2004

E - MAILS

Subject: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Mon, 5 Apr 2004 13:55:25 +0900
From: **<Olaf.Gundersrud@dnv.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: <cswg@openecdis.org>
CC: apac@openecdis.org

Is there anything in S-52 that presides over priorities concerning display of information following cursor picking?

Please see attached the word-file for elaboration of the question.

<<Are there any guidelines in S52.doc>>

Best Regards

Olaf Gundersrud

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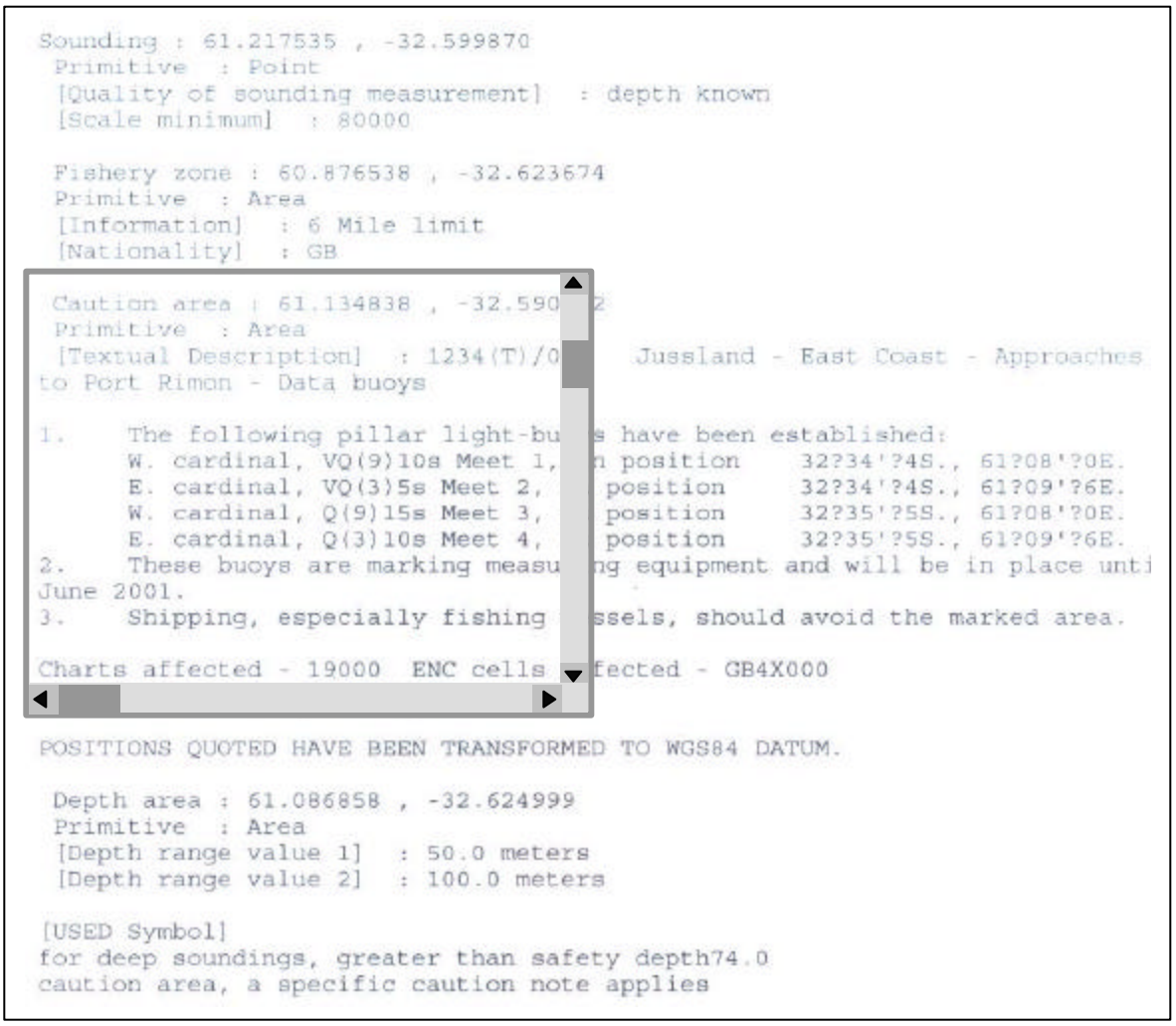

Are there any guidelines in S-52, or elsewhere, concerning cursor picking objects and how the information linked to the objects shall be presented?

At a given geographical point, in addition to the information linked to the object being picked, there may be a range of linked information being of a more general nature.

Example:
In the TDS Ed.2.0 cell GB4X0000, a CTYARE51 having a text file is located in position 32°35′00″S 61°08′30″E.
All the available text linked to this same geographical position does not fit into the window used to exhibit text (see Fig.1 above). Accordingly it is necessary to scroll the window both vertically and horizontally to read the text related to the ⓘ (CTYARE51).

When cursor picking a symbol like ⓘ, I would expect the information linked to this symbol to be displayed in forefront and any other information associated with the same position to give way.
In above example it would call for the caution information linked to ⓘ to be displayed first (i.e. on top) and the other information to follow below, i.e. the sounding and area (fishing zone).
Then again is there anything in S-52 that presides over priorities concerning display of information following cursor picking and/or is the above example a perfectly legitimate solution?

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Subject: Re: [CSWG] cursor picking symbols - priorities concerning display Of information
Date: Sat, 24 Apr 2004 11:32:54 -0300
From: **Mike Eaton <mike.eaton@ns.sympatico.ca>**
To: "CSWG (Members only)" <cswg@openecdis.org>,
Olaf Gundersrud <Olaf.Gundersrud@dnv.com>
CC: apac@openecdis.org
References: 1

Olaf, colleagues,

My e-mail of 13 April on this topic responded to Olaf Gundersrud's second issue "PRIORITIES CONCERNING DISPLAY OF INFORMATION". This e-mail responds to his first issue "CURSOR PICKING SYMBOLS"

As you will see from the attached section 8.8.1 of the PresLib ed.3.3, S-52 App.2 does not have much to say about cursor-picking. We had no experience ourselves, and so for a first effort we only specified, in PresLib section 8.8.1.2, a minimum requirement to quote the "Meaning" of the symbol clicked on (the meaning is given in section15 of the new PresLib edition 3.3.) Apart from that we made some suggestions on how to organise what may not be a simple operation.

Is it time to think about more specific guidelines?

Mike Eaton.

8.8.1 Cursor Pick

8.8.1.1 Introduction

The ability to cursor-pick on an object for the additional information that lies behind the symbol is an important part of ECDIS capability. However, an unprocessed cursor pick, which does discriminate or interpret and merely dumps on the interface panel all the information available at that point on the display, will normally result in pages of unsorted and barely intelligible attribute information. This section suggests ways of making the information more useful.

8.8.1.2 Interpretation

A plain language explanation of each symbol is included in the Symbol Library and in the Presentation Library section 15. This gives the mariner quick and understandable information which is not always obvious from the object class and attribute information. The manufacturer should always provide these explanations to the mariner in response to a cursor pick on the symbol.

Attribute values provided in addition to the above explanation should be connected to their meaning, and the definitions should also be available.

8.8.1.3 Sorting

Unsorted cursor-pick results would be useless for route monitoring, when the mariner needs the information immediately. It would be little use even for route planning, as even then the mariner does not have time to scan through multiple lines of attributes (RECDAT, SCAMIN) that are not relevant to him, perhaps belonging to navigationally insignificant object classes (TESARE, SPRING).

Effective cursor-pick sorting will take much thought and experience. Only initial considerations are given below:

8.8.1.3.1 (Details of the above)

Directed cursor enquiry: e.g., The mariner specifies he only wants information on depths and dangers (INT1 II and IK); or aids (IQ); or only chart corrections.

8.8.1.3.2 (Details of the above)

Sorting by significance: A general cursor enquiry could be sorted;

(a) by importance of the object class, perhaps using the IMO category,
(b) by the significance of the attribute, the most significant attributes being those used in the look-up table for symbolizing plus:

INFORM	QUAPOS	SURSTA
TXTDSC	QUASOU	
POSACC		
SOUACC	(list not complete)	

8.8.1.3.3 (Details of the above)

Sorting by level of detail: The first line might be the symbol description; followed by object and attribute information; with definitions, etc., by further request.

8.8.1.4 Spatial and meta-objects, collection objects

Cursor enquiry should extend to the spatial object, which carries accuracy attributes QUAPOS and POSACC. It should include collection objects which carry the OBJNAM of traffic separation systems, navigation lines (NAVLNE, RECTRC, DWRTCL, etc.). It should include meta-objects, for example, attribute HORDAT, which identifies the local datum to be used to enter IHB S-60 for the datum shift parameters needed to convert chart information in the local horizontal datum, to the WGS 84 used in the ENC, for example to enter local chart corrections.

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Subject: [CSWG] RE: cursor picking symbols - priorities concerning display of information
Date: Tue, 20 Apr 2004 17:07:42 +0900
From: **<Olaf.Gundersrud@dnv.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: <Olaf.Gundersrud@dnv.com>, <cswg@openecdis.org>
CC: Hans.Ramsvik@dnv.com, apac@openecdis.org, Jens.Riksheim@dnv.com

Dear Sirs,

Thanks for the response to my previous question which I find very constructive and also helpful to me at this point in time. The forum was invited to reply to a 2nd question at the same time but the attachment (MS WORD-file) may not have been accepted. Anyway I received a cryptic message saying something about the attachment not being accepted, so I try again and this time attaching an Acrobat-file hoping this is more
compatible.

The question:

Is there anything in S-52 (or 57) that governs how to display information related to an object following cursor picking of that object?

Please see attached PDF-file for elaboration of this question/problem.

<<Are there any guidelines in S52.pdf>>

Best Regards

Olaf Gundersrud

Principal Nautical Surveyor

Det Norske Veritas, Approval Center for East Asia

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Re: [apac] Re: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Mon, 3 May 2004 09:10:57 -0700 (PDT)
From: s duclos <sylvain_duclos@yahoo.com>
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: apac@openecdis.org, "CSWG \(Members only\)" <cswg@openecdis.org>, Olaf Gundersrud <Olaf.Gundersrud@dnv.com>, mike.eaton@ns.sympatico.ca
CC: apac@openecdis.org

Mike,

I think I found a nice way to solve the cursor picking problem and I feel that its worth a good look.

Its vendor neutral but I will use SGI (Silicon Graphic) OpenGL graphic language to illustrate the solution. SGI had to solve similar problem for their high end computer used for scientific visualisation.

OpenGL drive the graphic hardware in rendering mode (the so called graphic engine pipe-line)

but can also it can be put in selection mode. In that mode no pixel fragment is send to the monitor but instead they are return to the main program.

So the trick is to render a few pixel at the cursor and collect the pixel that would have been drawn in rendering mode. These pixel are in fact a stack of "S52 object" ordered in Z. The object at the top of the stack is in fact the object the user is looking at.

Note that the stack order corespond to the S52 order where the top is layer 9 and the bottom is layer 0.

Also the stack is made of object as selected by the marine not all S57 object from the SENC.

In an S57 centric view the problem is solved via a geospatial query to the ECDIS data base.

In this S52 centric view we are querying what is actualy displayed on the monitor.
Sound more intuitive for the mariner. I guess HO would prefer S57 centric though.

Well that is the theory I will try to implement it with my viewer.

Best regards,

Sylvain Duclos.

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Wed, 5 May 2004 16:35:02 +0900
From: **<Olaf.Gundersrud@dnv.com>**
To: <mike.eaton@ns.sympatico.ca>, <cswg@openecdis.org>
CC: <apac@openecdis.org>

Mike,

Thanks for your input which again was most helpful to solve a situation and I recognize once again several creative solutions coming out of this forum, particularly Sylvain Duclos idea. This will undoubtedly lead to an improvement of the ECDIS (standards).

Since S-52 currently says nothing about cursor-picking the only legal basis for a Notified Body to pursue this subject is established by IMO Res.A.817(19) 1.6 and 10.2. The two requirements are open for various subjective interpretations, hence a potential quandary to organisations involved, and it will therefore be beneficial having S-52 setting a standard for sorting of information subsequent to cursor-picking on objects.

To facilitate compliance with IMO Res.A.817(19) we will from today recommend our client's ECDIS to meet the terms of PresLib Ed.3.3/8.8.1 as currently proposed.

If the current discussion in the OpenECDIS forum leads to a more detailed description of Cursor Pick in the PresLib to standardise the resulting "information presentation" further I consider this to be advantageous for the user.

Best Regards
Olaf Gundersrud

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Wed, 5 May 2004 13:34:29 +0200
From: **"Gert B. Büttgenbach" <bue@sevencs.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: "'CSWG (Members only)'" <cswg@openecdis.org>

Olaf, Mike, et all,

More standardization is the last we need for ECDIS. Creativity in this field of technology has already been trampled to death by over-standardization.

What I welcome is a discussion on how to best present object information on cursor-inquiry. Some guideline as a result of such a discussion should be enough to start some competition on who implements the best ECDIS user interface. The guideline can be published on the OEF.

Regards

Gert B. Büttgenbach

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Thu, 6 May 2004 18:04:55 +0900
From: **<Olaf.Gundersrud@dnv.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: <cswg@openecdis.org>

Gert, colleagues,

Although I'll somewhat agree to elements of the ECDIS-standards being reckoned as over-standardization I disagree that it is a good solution to take the contrary approach, that is to say leaving other ECDIS functions to be non-regulated having fait in the "market" eventually deciding on the better solution.

There are several essentials speaking against the "shipping market" being a good quality regulator.

In the shipping market the ultimate users, being the OOW and other navigators, are rarely the decision makers when the ECDIS is purchased. Currently we have a shipbuilding boom. Around 20% of the vessels now on order are pure financial speculations and many of the investors have no intention of operating the ship, but will sell it "as a contract", "during construction "or "upon delivery". If this approach fails the owner will offer the vessel for a "bare boat charter" since he/she does not possess an organisation that can operate the ship. The owner is only interested in getting a contract as cheap as possible and selling it as profitable as possible speculating in rising ship prices and fully booked shipyards. For these ships there are no feedback loops from the users to the purchasers. The cheapest ECDIS available win the contract.

Another 20% of the vessels are built to minimum standards, meaning the owner do not have any preferences except the lowest prize. The most inexpensive ECDIS come first in many of these contracts as well.

What is most characteristic about the "cheapest ECDIS" is actually the lack of creativity put into it. Typically the manufacturer has not made use of very many resources in developing the ECDIS (e.g. he didn't buy the PL because it is too expensive).

As a certification body, when confronted with such equipment, we really appreciate standards that are able to ensure a minimum of user friendliness.

Lack of standardisation today may very well become a disaster tomorrow, because one thing that is certain is that lack of standards creates a diverse of systems. Diverse systems consist of good solutions and bad solutions. A good standard should check out the bad ones and let the good ones pass. No standards let it all pass.

Subsequent to cursor-pick on an object, merely taking all information found in the database being connected to the co-ordinates and dump it on the screen is a bad solution anyway you look upon it. Merely leaving this quandary to be solved by competition alone entails for hundreds of ships knowingly being equipped with in inferior machine and the users, who don't have any real possibility to decide on another one, will be forced to use it. Speaking of human errors, in shipping and other operational environments, standardisation and safety goes hand-in-hand.

Having said that I agree that the standards should refrain from detailed specifications of technologically dependent solutions and merely set up the functional requirements, possibly with guidelines to support it. When the user picks on an object it is very conceivable that he/she wants information related to that particular object. Accordingly the database should support, and the ECDIS should engage, some "brainpower" to handle all the information available in the database in order to increase the likelihood that the user attains what he/she is looking for. How the requirement is to be accomplished by the computer, and how the relevant information text is to be presented on the screen is another issue which may be left to the manufacturer.

Best Regards
Olaf Gundersrud

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Thu, 6 May 2004 13:16:16 +0200
From: "Gert B. Büttgenbach" <bue@sevencs.com>
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: "'CSWG (Members only)'" <cswg@openecdis.org>

Olaf,

The cheapest ECDIS around are often the most advanced because they share a good deal of functionality with ECS. Type approval authorities however tend to dislike innovative features that evolve from ECS because they do not fit to the requirements in IEC61174.

I agree with you that the user/ mariner is seldom heared when it comes to ECDIS design. Ship builders are mainly interested in the wheelmark and the price as selection criteria, not better functionality. Type approval delivers wheelmarks, not necessarily good design, and here lies the danger. Nowadays, ECDIS manufacturers design their systems to survive type approval, and they are right because they are punished for the slightest deviation from what is said in IEC61174. So they implement what was decided upon in meetings, and what was marshalled into the standards. This is good business for consultants in the first place.

I have fifteen years experience in ECDIS standardization, and I can tell you that no ECDIS feature that has been designed at the green table in London or Monaco survives the scrutiny by the user. We need to accept that IMO/ IHO were a good platform to provide the basic underlying database design, but not an appropriate forum to design ECDIS user interfaces. Even vague requirements that were set up at IMO level for the functionality of ECDIS such as "additional information shall not obstruct official chart information" are counter productive when it comes to designing a creative way of displaying information hidden in the database.

To draft even only functional requirements for cursor picking/ inquiries therefore does not appeal to me as it will almost certainly limit creativity that can help the mariner. The only helpful requirement that I can think of would read something like "Information presented to the mariner upon cursor inquiry must be clearly legible, understandable and easy to handle so that the decision making process is in fact helped and not hampered." Even this wording for a requirement is far from perfect because it suggests that the only correct way for a database inquiry is by cursor which is - if we are not careful - excluding other ways to do it. A good standard is a minimum standard that does not limit creativity. To design a minimum standard is an art which takes a lifetime to master.

Regards

Gert B. Büttgenbach

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Re: [CSWG] cursor picking symbols - priorities concerning Display of information
Date: Sat, 08 May 2004 08:42:43 -0300
From: **Mike Eaton <mike.eaton@ns.sympatico.ca>**
To: "CSWG (Members only)" <cswg@openecdis.org>,
Olaf Gundersrud <Olaf.Gundersrud@dnv.com>,
Gert Buettgenbach <bue@sevencs.com>,
Sylvain Duclos <sylvain_duclos@yahoo.com>
References: 1

Colleagues,

More on cursor picking.

SYLVAIN: Your 'SGI' method sounds promising as a starting point, although I see a couple of complications:

1) Display priority may well be the most significant criterion for ordering the objects at the query point, but it is not the only one. There are a number of other criteria listed in PresLib section 8.8.1 which the mariner might prefer in some circumstances.

2) You say " Also the stack is made of objects as selected by the mariner (and) not all S57 objects from the SENC." In fact one of the uses for a cursor enquiry may sometimes be to check for SENC objects which are not on the display but may be significant - a caution area with a relevant 'inform' for example. So there may be occasions when all objects would be required.

Having said this, I admit that may be over-optimistic in my ideas of what is possible. It is certainly better to have sorting by display priority than no sorting at all, and it will be interesting to see what results you get.

GERT: I agree with your implication that ECDIS will only survive if it is flexible enough to adopt new ideas, particularly successful developments from ECS. That has always been the way I hope IHO Colours & Symbols will work out. But given the situation over cursor picking that Olaf Describes it seems to me that we need right now something more specific than the vague outline of possibilities given in PresLib 8.8.1. Lets hope there can be a compromise between too much detail and the one-line description of you latest e-mail.

In order to give the ECDIS manufacturer freedom in implementation PresLib 1.1 says:

" The symbols of the Presentation Library should be replicated in size and shape, using any convenient format. The colour tables should be reproduced within the tolerances given in C&S Specifications, section 5.2.3. THE REMAINING ITEMS MAY BE IMPLEMENTED IN ANY CONVENIENT FORM WHICH PRODUCES THE SAME RESULTS AS THE PRESENTATION LIBRARY."

You may not like the restriction implied by "THE SAME RESULTS" but I think we cannot have it both ways; if we want to be able to reject ill-conceived (and perhaps dangerous) solutions for displaying a cursor-pick we may have to accept that restriction.

OLAF: Your description of how the ECDIS may be chosen for new construction is clearly reality, but is certainly not encouraging. It is easy to understand your problem that you have no convincing specification of what should be available at a cursor pick so that you can, if necessary, reject a poor solution.

The procedure which you and Gert (in his first e-mail) favour, with individual differences, seems to me sensible: develop a guideline with more structure and details than the vague 'wish-list' in Preslib 8.8.1. This should include input from ECDIS-experienced mariners. It might include examples of sample responses in specific cases and suggestions of methods such as that being looked at by Sylvain.

Mike Eaton.

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Wed, 26 May 2004 17:12:15 +0900
From: **<Olaf.Gundersrud@dnv.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: <cswg@openecdis.org>

Gert,

I'm just back from a 14 day tour in China/Korea including 10 days seatrial/testing of nearly finalised ship. The vessel is equipped with an ECDIS/ECS, as almost all newbuildings are these days, and the assessment of this ECDIS leads me to the conclusion that my previous email was not accurate. That is to say; I have to modify my statement about leaving it to the manufacturer to decide how text is to be presented on the screen.

During the performance check done on board, I could tell from the chart legend that the chart displayed was not an ENC but merely a vector chart from a private European company. In such case I would expect the warning "No official data available. Refer to paper chart" to be clearly displayed on the screen, but it was not. Since the ECDIS/ECS is claimed to be type

approved by an EU NB I did find that peculiar.

Bearing in mind a recent grounding in southern Norway where a competent navigator survives the casualty (the vessel capsized and killed 18 crew members), - the following day the newspapers blame the ECS installed for not showing an accurate and up to date chart. Apparently the ECS installed was mistaken for being an ECDIS by the navigators in charge of the piloting.

Considering again the ECDIS/ECS on the Chinese newbuilding the Captain to be (after delivery) assumed the machine installed to be an ECDIS as well regardless of the origin of the chart database because it was type approved.

After some searching on the ECDIS/ECS menu I was able to find the IEC61174-warning on the alarm list. By cursor picking the alarm button and opening an alarm list the warning "No official data available. Refer to paper chart" is shown on the list together with other system alarms/warnings. (I was able to convince the Captain that it would be a good idea to make use of adequate paper charts or buy ENCs after this finding).

The alarming issue in this case is the fact that the ECDIS does not clearly indicate its status to the users at all times (is it an ECDIS or an ECS?). The IEC61174 does not say that the warning shall be displayed at all times and accordingly the ECDIS (manufacturer) does not display it continually. The warning is only shown on the display when the non-ENC is first loaded and subsequently it may only be found in the alarm list together with other alarms and warnings. Prior to the above mentioned seatrial the warning was probably displayed to the manufacturers commissioning engineer when he first loaded the chart, and during the following 10 days voyage from Shanghai to Okinawa and back (including a lot of pigtails) the ECS was easily mistaken for an ECDIS.

Since it is of utmost importance for the navigators, and that definitely includes pilots, to recognize if this decision support tool is an ECDIS or merely an ECS, I personally believe this information should be continuously and prominently displayed whenever the screen shows nothing but non-enc data.

Conclusively I have to say that the current standardisation is not satisfactory on the subject of how vital information should be presented by the ECDIS.

My experience with type approval bodies are of course completely different from yours since I find innovative features to be irresistible. I remember first time I saw the embryo of an ECDIS, I believe it was at the Shipowners Association in Oslo in 1988, and it was a very innovative machine that was presented to us at the time (the two prototypes were owned by a newspaper, later by the company Robertson AS and finally used in the SEATRANS-project). I imagine that it was clear to all participants this was the future and the following debate was merely about the obstacles preventing its legality as a sea chart with the aim of removing such obstacles.

If the "innovative feature" "does the job" in a better way it will eventually be approved. The ECDIS itself is an example of this happening. Another recent example is Plath's fibre optic compass which BSH type approved as a being "gyro compass" although it is not a gyro compass. Accordingly I think you are too negative on this issue.

The non-regulated ECS market, which now involves most the entire transportation sector apart from SOLAS-ships, and also large parts of the recreation sector both at sea and ashore is huge compared to the market for the ECDIS. Thus I will assert that being conservative with respect to ECDIS does not hamper the evolution of ECS.

>From a consequence-point-of-view the SOLAS-market should be conservative and leave the Bill Gates philosophy "that the market is doing the testing" to other areas where the price of a failure

is less and where the buyer and user are the same so that the "market loop" is actually working. A really good innovative idea will eventually be implemented by the IMO compliant ECDIS as well.

Best Regards
Olaf Gundersrud
Principal Nautical Surveyor
Det Norske Veritas, Approval Center for East Asia

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RE: [CSWG] cursor picking symbols - priorities concerning Display of information
Date: Thu, 27 May 2004 12:42:21 +1000
From: **"Robert Ward" <robert.ward@hydro.gov.au>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: <cswg@openecdis.org>
CC: Mike Barritt <mike.barritt@ukho.gov.uk>, Ole Berg <olb@kms.dk>, Lee Alexander <lee.alexander@unh.edu>
References: 1

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Colleagues,

Chris Roberts passed your discussion to me for information. I cannot resist replying.

Frankly, I am not surprised at the situation that has been described. In fact I'm more surprised that it has taken so long for others to speak out about some of the equipment out there. I have personally come across and operated two different manufacturers' type approved ECDIS which in my opinion were not fit for purpose, yet had somehow satisfied the IEC61174 testing criteria and/or the testing authorities' regime.

In one case the ECDIS could not even load the IHO test data set via conventional means - yet it was IEC 61174 certified. Also, on this same machine, if an update was applied while in voyage monitoring mode, then a blue screen of death was the result. On rebooting, ALL charts were lost!

On another type approved ECDIS, the system was prone to freeze, eventually resulting in a request to reboot, prior to the fateful blue screen of death. Unfortunately, all keyboard controls were rendered inoperable and the only way to reboot was via a hard reboot. This could only be done by unlocking the cabinet (after searching for the key) and switching the mains power off.

In both cases, if such a thing happens in a busy shipping channel then all hell would break loose. Perhaps it already has. I have no reason to doubt that examples of these system are still out there at sea somewhere and are being used. Unless, of course, they have already been thrown over the side by the dissatisfied crew! This I think is unlikely, because as ECDIS is not a mandatory carriage requirement the crew have probably not received any training in ECDIS and therefore think that this is normal! (also see more below about training).

On the question of identifying non authorised data, I do not favour enforcing yet more presentation rules to notify the mariner that the data is not endorsed. And in any case, how many ECDIS manufacturers will retrofit the changes? Answer, none. Whatever extra rules we put in place for unofficial data, those with a mind to avoid them will find a way. In my opinion,

there is a much more fundamental issue here, and it is EDUCATION. I think that maritime administrations need to make a far more concerted effort to ensure that mariners are properly educated to understand the limitations of ALL chart data - whether it is paper charts or electronic charts. My own experience (confirmed by many others) is that mariners require urgent education in appreciating the underlying quality of all chart data. At present - and this seems to have been the case even before the advent of electronic charts, mariners have absolutely no idea of what to look for in a chart or how to assess its inherent limitations. Why were we so surprised that mariners know nothing about datums? This is another manifestation of the same lack of a proper education (as opposed to training) in the use of charts. Why is this? It is because there are no syllabus requirements to teach about chart data quality or the use of chart data. All effort goes into training how to plot fixes, set courses, et cetera. It was so in my early days, and it still seems to be so today.

And finally, and also in my opinion, such lack of proper education about charts is not primarily an IHO matter (other than to alert the IMO); it is actually an STCW matter.

By coincidence, I am at present attending the Canadian Hydrographic Conference where this very issue of mariners' abilities to assess chart quality has been highlighted today.

=REW=

Robert Ward
Captain, RAN
Director, Hydrographic Operations & Capability - RAN HM Force Element Group

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RE: [CSWG] cursor picking symbols - priorities concerning display of information
Date: Sat, 29 May 2004 22:33:06 +0200
From: **"Gert B. Büttgenbach" <bue@sevencs.com>**
Reply-To: "CSWG \(Members only\)" <cswg@openecdis.org>
To: "'CSWG (Members only)'" <cswg@openecdis.org>
CC: "'Mike Barritt'" <mike.barritt@ukho.gov.uk>, "'Ole Berg'" <olb@kms.dk>, "'Lee Alexander'" <lee.alexander@unh.edu>

Olaf, Robert,

You probably sense how much I enjoy this conversation; to run my company doesn't leave me a lot of time but - like Robert - I cannot resist :-

Rob, your observations about ECDIS crashing at sea are not new to me - unfortunately it is normality. It starts with the choice of the operating system - most ECDIS nowadays run on a desktop operating system that most of us use in our offices, and that we shut down every late afternoon. No wonder that inspector of shipping companies buy an ECDIS based on the same operating system - after all it seldom crashes from nine to five, isn't it? Did you know that a single graphics driver of a few kilobytes of code can drag down an operating system because it was hammered together in a hurry to satisfy ever-hungry video-gamers, and such pieces of hack are often the standard drivers installed in ECDIS? We made that experience numerous times when customers complained about memory leaks that made their systems freeze after a couple of hours. But when you suggest to ECDIS manufacturers that they should implement the slow but safe graphic drivers, they cannot do it because their customers wouldn't wait for two more seconds before charts appear.

My company offers its ECDIS core library across UNIX and Windows, and because we scrutinize it in both environments, it is as stable as can be. However, it therefore doesn't offer fancy features like super fast drawing graphics, it is just safe. Not sexy enough, I am afraid.

Type approval authorities, I am sorry to say Olaf, don't really check for stability - at least that's my experience. How can they when there is only a single test data set, and opportunities for sea tests are rare?

If type approval authorities would scrutinize ECDIS where it really makes sense, i.e. on stability and not on whether a pick report is formatted according to the latest green-table specs, ECDIS manufacturers would be happy to use proven software components; this would mean they had to put hardware on stock to which stable operating systems fit, and they could justify higher prices - which is something they desperately need anyway. I bet most manufacturers welcome more strict stability tests because as it stands today ECDIS is potentially a nightmare when it comes to product liability. Which leads to me to another point of our discussion.

The reason why warnings on non-official data sets are burried inside menus is so simple that it is embarassing: If the warnings would be shown prominantly at all times, ECDIS would commercially no longer be viable; after all, no shipping company wants to know that they have wasted their money because there are not enough official ENCs, and inofficial ENCs they are not allowed to use for navigation. So, what you expect from an ECDIS manufacturer - to do the IHO and DNV/BSH etc. a favour and write all over its products - DO NOT USE/ SWITCH OFF AT ALL TIMES - ? The naivity of IMO and IHO that stems from a lack of understanding that all goods are financed from value adding and trade, and that resulted in an idealistic IEC61174 standard still stuns me.

Education should play a more significant role, I agree with Robert. However, I thought the idea once was that ENCs are all on a single datum, that ENCs would be seamless, and ECDIS would be a stable system? Who is responsible for the fact that ENCs do not match at the borders or datums are unknown, and that ECDIS systems crash because competition spirals down prices in the absence of properly designed reasonable standards?

I hereby invite IHO members to work with our sister company ChartWorld for only one week, and to try to sell official ENCs to a reluctant customer base. I invite DNV/ BSH to work with my software team for one week, and to try to satisfy hords of bureaucrats and desparate customers. At the end of the week, I will be happy to tell you whether you are able to make your living in such an environment.

Discussions about display priorities while cursor picking symbols are as useless as can be in the situation in that ECDIS is today. We have to correct the foundations first before we can return to ironing out the details.

Gert B. Büttgenbach

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From: cswg-bounces@openecdis.org [mailto:cswg-bounces@openecdis.org] On Behalf Of **Spaan, Glenn**
Sent: Friday, July 09, 2004 4:44 PM
To: 'CSWG (Members only)'
Subject: RE: [CSWG] cursor picking symbols - prioritiesconcerningdisplayofinformation

Gentleman,

I have purchased 7 IMO Type approved TRANSAS over past two years with systems running 24 hours a day 10-11 months turned on with a PC platform, and also use a P.C. computer as a back up system and we have been replacing the monitors as they wear out with a NEC flat screen monitor. which has a display that is as good as the official type approved version

We presently have 36 ships operating with a PC operating platform.

Using official S57 charts with the TRANSAS display.

I have another 6 vessels that also use an OSL ECS as a backup with OSL colour display.

No major breakdowns, ships that sail winter months without buoys, have two systems onboard usually an ECDIS and an ECS so if one ever failed they have a separate backup, which is always on.

We also annually inspect and clean maintain equipment, No real problems, except we do not currently use the official S52 display. The Mariners we tested will not use the official display, due to lack of clarity, cluttered view, lost ship icon, etc,etc.

Our Mariners have been using ECS/ECDIS since 1995 and they prefer the TRANSAS colour display due to obvious reasons of better clarity, and cleaner sharper displays.

We have done countless trials in past several years with Official VS.. Non-Official.

There is no way we will change to the official version without a major change to the current way the official S52 is displayed. Our mariners are well educated concerning offical and un-offical and know what they are using is the best available data and information at this time.

Regards,

Glenn Spaan
Technical Manager - Fleet Maintenance
gspaan@seawaymarinetransport.com