

# THE I.T. SPECIALIST'S VIEW OF ECDIS

Mitch Ratcliffe said that a computer lets you make more mistakes faster than any invention in human history - with the possible exceptions of handguns and tequila.

There are always teething problems when a well-established manual process is converted to a computer-based process. And what better example of a well-established process than the century-old paper chart and correction system?

Once an IT system is out of the initial implementation stage, it is easy to start over-relying on it and this is usually when big mistakes are made. However, with the right software, the right training and the right attitude, it is also possible to get much more from the IT system than from the manual process it has replaced.

Before mourning the death of the paper chart, let's imagine the following scenario: after taking a vertical angle with a sextant, you select the observed object on the ECDIS, enter the angle and let the ECDIS do the rest: check the height of the object in the ENC database, calculate the height of tide at the time of observation, do a bit of trigonometry and display a circle of position around the object. Combine this with a visual bearing or maybe even with the line of soundings produced by the echo sounder data for the last hour and you can verify your position without radar or GPS. That's definitely not 'video game navigation' anymore, just good seamanship!

Can we learn something useful on the ECDIS if we just analyse it like another IT system?

On the hardware side, the processing unit is low tech by today's standards. Even complex ECDIS operations are no match for the raw power of the latest processors.

However, the user interface is another matter. Compared to the size of paper charts, ECDIS screens are very small. The performance standards state that "the effective size of the chart presentation for route monitoring should be at least 270mm by 270mm". Common paper charts are 980mm x 640mm, so a 'basic' ECDIS system has no more than 12% of the surface of a paper chart. Relying on look ahead/position offset or split screen functions to cram more information on a tiny display is just not good enough.

In my experience, installing dual screens for all PC users in an office is by far the easiest option to boost their productivity at a low cost, so shipowners should buy the biggest screens they can afford and make sure there is room on the bridge to fit the bigger display devices that should become the norm in the future.

The performance of an IT system depends on the quality of the data, in our case the charts data and the sensors data. I have great admiration for the work of the various Hydrographic Offices, but when adapting tried and tested existing procedures to a new system, errors should be expected. Digitising data also has a perverse effect: data from an old black and white chart based on a 150 year old survey that would have immediately convinced the officer of the watch to be particularly cautious will appear with modern ENC ECDIS symbols exactly like data from a survey last year. Of course the CATZOC (CATegory of Zone Of Confidence of data) information is available, but I have seen many cases of perfectly knowledgeable users trusting incorrect reports produced by computers because "the machine never makes mistakes" which is true ... if the data fed to the machine is correct.

Sensors provide the ECDIS with continuous position fixing, heading and speed information. However, because GPS is affected by sunspot activity and jamming, and the receiver(s) can just fail, users should know what happens if the system loses GPS input.

How many officers are happily using GPS as speed input for ARPA calculations without consciously realising that log (water) speed and not ground speed is necessary to determine the correct aspect of other vessels?

If the GPS signal is lost and the ECDIS continues to show a reassuring dot where the ship Dead Reckoning position is calculated, this could be a recipe for disaster if it goes unnoticed despite the alarm. Again, this is a trust problem. If the machine always shows the ship's position correctly, why should you suddenly doubt the machine output?

Finally, in a world where most users do not even consider opening a manual to learn how to work with a program because all Windows software and all iPhone/iPad apps have a similar interface to interact with users, could we at least provide a common standard basic mode across all ECDIS equipments?

This was discussed for ARPA too and the idea is not intended to restrict innovations proposed by the manufacturers. The idea is just to give access to a button that reverts the whole system to a known simplified standard mode - a godsend if you find yourself alone on watch 30 minutes after a crew change at the buoy off Gibraltar on a totally unknown bridge on the assumption that the Captain knows and trusts you... ●



Johan Machtelinckx

I.T. Director

Witherby Publishing Group

“ a computer lets you make more mistakes faster than any invention in human history ”