Notes on the
Mini ECDIS Workshop
held on 17 October 2002
at the Holiday Inn Hotel, Hull

1. Welcome Address

John Tumilty, Technical Director of Seafish Authority welcomed everyone to the workshop. He then gave an overview of the role of the Seafish and its interest in this project. The project is funded by the UK Treasury via the Invest to Save Budget under the project name "Electronic Charting for Fishermen". It is a collaborative project being carried out by the Sea Fish Industry Authority, the Maritime & Coastguard Agency and the UK Hydrographic Office. The overall aim is to improve safety of navigation on fishing vessels. As many of the manufacturers of chart plotting systems had assembled here, it was a good opportunity to hear their views so that we could all have a clear and united way forward. John Tumilty then introduced the Chairman of the project, Colin Warwick, who is a fisherman and has a wealth of practical experience using electronic charting systems. As a previous member of the Board of the Sea Fish Industry Authority, he has also been involved in the development of electronic charts for the Kingfisher division at the Seafish Industry Authority.

2. Introduction to Mini-ECDIS

Colin Warwick introduced himself to the delegates as chairman of the meeting and of the Mini-ECDIS Committee. He pointed out that he is a practical fishermen and noted that it was quite unusual for a fishermen to be chairing such a meeting. He described how, nine years ago whilst on a visit to Canada, he first came across electronic charts and how he was very impressed with this early system and how his life as a fisherman was changed forever. From then on he has actively promoted the use of electronic charts in the United Kingdom. He stated that he had two particular dislikes regarding modern electronic chart systems:

1. Fishermen are unable to copy their fishing data from one electronic chart system to another. He knows this is a ploy by manufacturers to protect their niche of the market. He said this compromised safety as well as making life very difficult for fishermen who want to co-operate and share data. Prior to this it was easy to duplicate fishermen's data from one chart to another since the charts (Decca in the UK) were published on paper.

2. The size of the text display on the computer screen is too small and manyfishermen cannot see it. He suggested that there should be a way for the actualtext size to be changed.

He pointed out that the workshop was a rare opportunity for everybody to work together for the safety of the industry and introduced Dr Steve Taylor.

3. Guidelines for Mini-ECDIS: Dr Steve Taylor (Marine IT Advisor - Linden Software Ltd)

Steve Taylor (acting for Seafish) pointed out the reasons, as he saw them, for wanting to create a Mini-ECDIS. He saw these as being, the poor safety record in the fishing industry, and the lack of standards since ECDIS was inappropriate for reasons of size and cost. To be successful Mini-ECDIS should not just be aimed at the fishing vessels but also at workboats and small coastal vessels. He said that we should recognise that not just operation but also day to day navigation regularly used unapproved ECS systems. He indicated that despite the very good efforts of the industry in manufacturing such systems, it was unacceptable to leave such a safety critical process as navigation to an unregulated market. He suggested that any approval mechanisms should apply to integrated systems comprising of both hardware and software and not to separate software products. Also, such systems should use approved vector S57 charts. He than gave a review of the draft guideline document for Mini-ECDIS which had been circulated to all delegates before the meeting.

Discussion

Brian Morris (Euronav) stated that if Mini-ECDIS were to succeed it would have to be an international standard, and that it should therefore allow both S57 Vector and approved raster (ARCS etc) in order to provide increased and world-wide coverage. Steve Taylor replied that, the process of acceptance by MCA could take 2 years down the line anyway, by which time he had been assured by the UKHO that S57 ENC UK coverage would be acceptable. John Pepper confirmed that coverage for SOLAS vessels would be completed by April 2003, and said he would provide further details in his talk today. But Brian Morris said that taken world wide there would still be areas with no S57 coverage for many years to come and that surely there must be the possibility of using ARCS, if S57 were not available. Brian Morris said we must look to create a world-wide benchmark and it would be a pity to exclude ARCS and other approved raster systems. Steve Taylor promised that in the light of these comments, Seafish would reconsider the question of whether Mini-ECDIS should support ARCS and other approved raster charts if S57 were not available.

Ken Gordon (Nautical Surveyor, Hydrography and Meterology, Maritime and Coastguard Agency, MCA) stated that the MCA's view was open on this. MCA are looking to the future and are open to all sensible suggestions.

John Pepper (UKHO) stated that the time span for the eCF project was 3 years and this included a pilot study of hardware and software. Simulator testing was also allowed for in the program in early 2004.

Captain Poel (Chartworx - Board Member), asked if we were aware that there is a river-ECDIS standard and suggested that any variants on ECDIS standards, such as the proposed Mini-ECDIS standard, should be compatible with this river-ECDIS as far as possible to avoid confusion.

Ken Gordon (MCA) advised that if a vessel fishes under a British flag then it is under UK regulations.

Tim Lovegrove (Chartwork) stated that the ECDIS standard was now over ten years old and it was far too prescriptive, and that since then technology has moved on. There was a need for a new standard in which identified problems should be dealt with by focusing on function rather than having a focus on providing specific solutions, as in the previous ECDIS standard.

John Davis (Kelvin Hughes) agreed, and suggested that, in a similar way to International Collision Regulations, the emphasis should be on a functional requirements rather than on dictating a specific solution.

4. "Electronic Charts for Fishing Vessels - The View of the MCA". Ken Gordon (Nautical Surveyor, Hydrography and Meterology, Maritime and Coastguard Agency, MCA)

Ken Gordon highlighted the following points:

- Any system should be fit for purpose.
- Cost. It should be priced so as to enable the fishermen to buy it.
- The equipment should be manufactured to a recognised industry standard which should cover :-
    - The power supply
    - The monitor
    - The computer including hard drive
    - The software as outlined in the working document / specification.
    MCA did not however favour the use of cheap inexpensive computer equipment which does not meet the recognised industry standard.
- Backup would be by
    - Paper Charts suitably kept up to date
    - Another complete approved system
    - Any other acceptable solution.
- The Installation should comply with Reg 17.
- Certification should be self-certified or by another body.
- A Marine Guidance note would be produced by MCA covering the above requirements.

Discussion
Tim Lovegrove (Chartwork) asked if there would be a separate specification for back up systems. Ken Gordon (MCA) replied that backup systems would be permitted provided they are fit for purpose.

Colin Warwick (Chairman) stated that many fishing vessels have two plotters (one as back-up) in any event in case one of the systems crashes.

Tim Lovegrove (Chartwork) stated that however reliable all systems can crash.

Ken Gordon (MCA) gave an example of a fishing vessel in the Dover Straits where the UK/France coastguard found that the electronic system down and there were no paper charts onboard.

David Croft (Transas) raised the question of approval and said that the actual cost of approval was not too prohibitive. But there were special requirements for fishing because of the operational and navigational requirement. He drew a parallel between the Navy and Fishing Vessels in this regard. He mentioned a product which provides a navy vessel with two screens one for navigation (approved) and one for operation. He said perhaps this would be a way to proceed with Mini-ECDIS. In any event, it must be made attractive to fishermen or they will not buy into it.

Colin Warwick (Chair) agreed and said fishermen will only buy the latest technology if it helps them to catch fish. In fact, they will often adapt other equipment in order to catch fish.

5. UKHO S57 Vector Charts John Pepper (Commercial Development Manager, United Kingdom Hydrographic Office UKHO)
John Pepper gave a presentation on behalf of the UKHO in which he described how S57 Vector charts differ from raster charts, and their advantages. He briefly described the S57 object model using some examples of buoyage, of particular interest to manufacturers was the table below, showing the UKHO programme of development of S57 vector charts by Spring 2003.

ENC Capture programme
United Kingdom

	Planned	Complete
Overview	5	5
General	41	26
Coastal	75	58
Approach	66	47
Harbour	79	70
Berthing	0	0
TOTALS	**266**	**206**

Discussion
David Croft (Transas) asked what was the current cost of an ENC in S57 vector format. Andrea Treat advised that it was £25 to £30.

Brian Morris (Euronav) stated that ENC cells from Norway are cheaper than those in the UK. Fishermen watch the pennies and the prices would have to be in line with paper charts (i.e. £17 for a paper chart).

Kjell Birkevold (Statens Kartverk SJØ) stated that Norway had indeed reduced their prices of ENC charts by 70%.

David Croft (Transas) stated that there must be an incentive for fishermen to fit this new system on board their vessels and at the moment there isn't one. It is difficult to sell charts to fishermen anyway, to his knowledge most Transas / Fishmaster systems have only 1-3 charts installed per system.

John Pepper (UKHO) stated that the ENC specification is likely to be different in the future. S57 Edition 4 may be different and it may support the use of ancillary data layers. He also indicated that UKHO had considered using "Value Added Data" as the incentive for take up. Putting an extra layer of data into an ENC could add value and hence make the product more attractive.

David Croft (Transas) replied that in the private sector there is lots of added value information available anyway, i.e. nets, ground discrimination, tides, sea temperature and wave height predictions, are all readily available.

John Pepper (UKHO) replied that added value data could be integrated into the ENC rather being added at the system level by the manufacturer and that this would be an advantage.

Francis West asked about updating charts every year and how must will it cost.

Andrea Treat (Kelvin Hughes) suggested current costs are running at around £25-30 cell and £5-6 correction cost.

John Pepper (UKHO) suggested that the update service should be made transparent to the user and that this would help take up.

David Croft (Transas) stated that correction services have indeed been offered in Scotland for Transas charts and yet the service has simply not been taken up.

Brian Morris (Euronav) said that the driver is safety and the block is cost. We should look at American model for charting which is free. We should all put pressure on the Government for navigational charts to be free. Fishing is already under pressure and if we want to make it safer then such information should be made available free of charge.

John Pepper (UKHO) said he would raise the matter with Government but was sceptical of the outcome.

Francis West (Ormston Technology) pointed out that the industry was not looking for something for nothing since effectively the charts have been paid for once already anyway through taxes.

Jaap Dekker (TRAX) asked what is the intrinsic difference, if any, between a C-Map chart and a chart from an HO.

Chris Drinkwater (UKHO) indicated that the difference was in the regulatory framework. A chart from the UKHO satisfies a vessel's chart carriage requirements. One from a commercial company does not".

Ken Gordon (MCA): The life of equipment on fishing vessel is 5-10 years. So in the fullness of time the obsolete equipment would be replaced with equipment which meets the proposed Mini-ECDIS specification.

Pat Caniffe (Sea Information Systems) said that if fishermen know that mini ECDIS is on the way it could result in stagnant sales for 2 years. Further delay would slow down sales even more. The driver to success is cost and ease of use of a chart system.

Steve Taylor (for Seafish) suggested that we should decide how best to meet our objectives. We can encourage cheap and cheerful systems which meet the spec, or alternatively encourage complex systems perhaps with added value data, or two screens as had been suggested earlier.

Chris Drinkwater: (UKHO) No, it is up to the manufacturers to decide what can be best promoted and how many screens to have. Its is not the job of the specification people to encourage any particular solution, they should just specify the requirements.

Tim Lovegrove: (Chartwork) Innovation is the manufacturers business. Screens do not cost a fortune anyway.

David Croft (Transas) preferred the concept of plotters on two screens. He also said the cost of computer screens was coming down all the time. Anyway, the far-eastern computer gear is now inexpensive and very reliable. In fact it is so cheap that entire backup systems (hardware / monitor) can be kept on board in a cupboard in case they are needed.

Tim Lovegrove (Chartwork) Fishermen can go to PC World to get their equipment e.g. they could use a laptop - it is actually fit for purpose.

Malcolm Tindley (Sperry Marine) No. It is important that hardware equipment standards e.g. '945 are met. For example, commercially available flat screens have been tested which interfere with VHF band Channel 16 and therefore could impair ship radio communications. Insisting on the IEC60945 standard gives a much more robust product.

Colin Warwick (Chairman) stated that the added value layers that are required are: tide, temperature and contour. Fishermen need this as it governs success

when out at sea. His wish list is to have this data freely available and for user data to be compatible between plotters of different manufacture.

Paul Sumpner (C-MAP). But important data, such as safety or obstructions, should already be on the ENC chart.

David Croft: (Transas) To have a compatible formats for charts is not an easy thing because of ownership. But a compatible format for user data is fine.

Brian Morris: (Euronav) We could use S57 format for user data format.

Colin Warwick: (Chair) There is a need for compatibility. We would wish to pass obstructions to anyone because its a safety issue. But tows we would only pass on to our close colleagues.

Paul Sumpner (C-Map) Then there are three levels 1. Keep to yourself. 2. Safety level. 3. Publication level e.g. Seafish

Steve Taylor (for Seafish): The third (publication) level should be updated via the ENC, i.e. Kingfisher at Seafish send the data to the ENC manufacturer. Then the safety information would go out on ENC updates rather than being distributed separately as at present. But there would still be a need for the other two levels to be distributed locally between fishermen.

Pat Canniffe (Sea Information Systems) SIS Microplot - can anyway produce in data tows and fasteners in ASCII.

Tim Lovegrove: (Chartwork) It may be in ASCII but not a common ASCII. What is most important is that we have a common format.

Colin Warwick: (Chair) The fishing industry would openly embrace the capability of user data transfer with respect to safety. In fact, Kingfisher Charts at Seafish collated obstructions over the years and fed them back to the industry via the Kingfisher Series of paper charts. So we could have a system in place which could help in the free transfer of information. And all are agreed that a common format for obstructions and user data is desirable. Such a standard would certainly make sense.

John Pepper: (UKHO) As data provider we are working on a National Hydrographic Database. The UKHO has a wealth of useful information relating to wrecks/obstructions, also tides and depths and surveys.

Steve Taylor: (for Seafish) What would be the time scale for UKHO to produce this data as an ENC layer. John Pepper agreed to look at this time scale and report back to the eCF project, particularly with respect to tides.

Colin Warwick (Chair) reported a general observation over the past 10 years there is now more tide and enquired whether this observation fitted with the latest UKHO tidal data.

David Croft (Transas). Had we considered adding other functional requirements to the specification, such as black box recording with playback in case of accident, AIS, or a dead man's handle etc. Stability software could also be added.

Colin Warwick: (Chair) It is the younger fishermen who appreciate such added facilities. But on the other hand, they are also more likely to fiddle with the computer. For example, manufacturers must make sure that games cannot be added on after. When working in the wheelhouse concentration must be on the vessel, not looking at games . The safety of the crew is in their hands.

Jaap Dekker: (TRAX) The main accidents that occur in Holland are (a) crew falling asleep and (b) the vessel being on autopilot while the crew are making the coffee. It has nothing to do with the system but the fishermen themselves.

Pat Caniffe: (SIS) We could have a regulation that the system cannot be used for anything other than what it is intended for.

Colin Warwick: (Chair) All vessels will have a black box on board in the future.

David Croft: (Transas) Manufacturers should be considering the use of ECDIS as an information provider in order to make the system more attractive.

Ken Gordon (MCA) There is pressure by the Americans to fit AIS by 2008 to fishing vessels. So they know where fishing boats are.

Paul Sumper (C-Map) The trouble with adding more facilities such as AIS, is that you could get information overload on the chart display. What is required is the most important information needed for navigation.

Pat Caniffe (SIS). There is also the problem of adding extra software to a machine, it can compromise a system's integrity.

Colin Warwick: (Chair). The user can always decide to divert back to the main chart and remove the clutter - he does not lose anything.

The Chair called for a break for Lunch.

6. Afternoon Discussion

Chaired by Colin Warwick

The chairman stated that following the morning discussions a series of questions had been prepared by the eCF team so that they could have guidance on some of the specific issues raised but not answered in the morning sessions. He said we could then revert to the original agenda.

John Tumilty: We need a consensus of views from you the manufacturers.

Q1 Should this project develop a modified ECDIS specification or develop a new system of guidelines?

Pat Canniffe (SIS) indicated that he had looked at the guidelines and thought they were over the top and he would prefer any specification to be based upon ECDIS. He said we should talk to fishermen.

Chris Drinkwater: A Mini-ECDIS specification could be based upon the ECDIS Performance Standards as required, but with references to specific solutions deleted.

Colin Warwick: We are considering setting up a user group but we need to be clear beforehand of what is proposed before setting one up.

Steve Taylor (for Seafish): We also need to know what kind of document we should hand over to MCA, i.e. what kind of specifications / guidelines MCA feel they can approve.

Pat Canniffe (SIS) MCA should be regarded as another user in this process.

Mike Dunstall (PC Maritime Limited) What about river boat users.

Roger Shutlz: (Simrad) It can be similar to ECDIS, but without prescribing the display and allowing a user interface for the fishermen.

Kjell Birkvold: (Statens Kartverk SJØ) We should amend the ECDIS specification. We should allow SENC distribution available in 2003.

Paul Sumpner: (C-Map). It is OK to base Mini-ECDIS on the ECDIS Specification. Then we should look to things developed since ECDIS was produced e.g. AIS. We should give consideration to the European River-ECDIS and not work in isolation. A manufacturer cannot justify developing equipment to standards for the UK only. Must be of relevance to other parts of the world.

David Croft: (Transas) A standard based on ECDIS would be OK. But it should not restrict it or we will kill the market.

Odin Sletton: (Simrad) Yes start with ECDIS. There is a big gap down to the canoe (one man fishing vessel). How do we expect them to fit everything on a 6" screen.

Francis West: (Ormston Technology Limited). We should use a modified ECDIS specification.

Patrick Sauvin (Sodena). I agree but we should be more flexible on hardware.

Tim Lovegrove (Chartwork). We need to consider the presentation library for ECDIS, personally I find the ECDIS presentation is nothing like as clear as say, the Transas presentation. Should we allow for the presentation to be made clearer by varying symbol colour and shape.

John Davis: (Kelvin Hughes) Symbology on radar are not like the symbology for chart features. They can be switched off.

Chris Drinkwater: (UKHO) There is a conference (IEC Tech Group 80) which will be dealing with the avoidance of confusion in symbology to be held in London on 13/14 November at Inmarsat in conjunction with Nautical Institute. We should have a representative there. Steve Taylor replied that he will investigate and will attend if
necessary.

Ken Gordon (MCA). MCA will consider allowing whatever recommendations are made for such systems, but the charts themselves must be ENC's. For MCA as Administrators - its got to be S57 only.

Steve Taylor. (For SEAFISH) Just to be clear on this, what if a system supports other charts, can manufacturers self-certify it as you envisage it?

Ken Gordon: When the project comes to fruition we are prepared to consider the dual-fuel argument i.e. Vector and Raster, but it should still be ENC's only. That's not a matter for discussion.

David Croft. (Transas) But surely the rules for Mini-ECDIS should be just the same as for an ECDIS. When a user is operating the Transas ECDIS (as with others) he can switch to charts which are not ENC's. He knows it is no longer an ECDIS and, as long as the non-ENC charts are being used, he knows it does not satisfy any regulations that go along with that. Manufacturers will not produce a system which is specific to the UK, and which cannot do this.

Under the suggestion of Paul Sumpner (C-Map) to the Chair we then proceeded to consider point 4 of the original agenda as a related issue i.e.

ENC's Compatibility and SENC Distribution Format

Steve Taylor (for Seafish) asked whether the use (as dictated in practice by the requirements for maintaining a small file size) of a SENC as a distribution format would require any specific references within any proposed specification.

Chris Drinkwater: Whether a user receives ENC in S57 or SENC format does not matter, provided the information is the same. If this condition is met whether the S57 is converted by a distributor or in a user's systems does not matter. Mini-ECDIS should follow ECDIS on this and refer to the appropriate IHO amending documents.

Peter Stewart (SIMRAD): Will C-Map and Transas be able to act as distributors for S57.

Chris Drinkwater / John Pepper: Yes, in principal.

Q2. Should there be an additional reliability test when Value Added data is loaded?

Steve Taylor (for Seafish) explained. As a system becomes more complex there is an increased risk that the loading and processing of extra data could adversely affect the whole system. It has the potential to cause a system crash. Do we need to issue additional guidance to manufacturers on this, perhaps some form of special quality assurance process?

Tim Lovegrove: (Chartwork) When a manufacturer puts an extra feature in - it is up to the manufacturers how they implement it.

All were agreed that it is up to the manufacturers to deal with this issue providing the whole system passes the certification process.

Q3 Should the approval be only of an integrated system whose operating system access is locked out to the user?

Steve Taylor (for Seafish). This point relates to the issue raised in the morning session. Should a specification rule out the running of other software on a system? Or should it leave it to the discretion of the manufacturers or even the user?

Brian Morris: (Euronav) This could be based on instructions to end users and left at that.

Paul Sumpner: (C-Map) You could guide and train a user not to use the software for games, or it could be made a part of the specification to makes it safer.

Colin Warwick. (Chair) We do need to prevent people form playing games etc when they should be navigating.

Steve Taylor (for Seafish) Yes, but the problem is actually worse than that. Because if a machine is used at some other time, e.g. for doing their accounts at the weekend, there is a finite risk that the system will be compromised by this activity and will become unreliable when it is later used for navigating. The two (i.e. navigating and accounts/games) do not even have to be simultaneous.

David Croft (Transas). That's right, this is a high level requirement. So it should be exactly as with ECDIS, i.e. the user cannot use the machine for anything else, at anytime. It should be closed and completely locked. And yes, this would probably preclude the use of laptop computers. Also we should look at whether it should have a security system to prevent unauthorised access or control the level of access.

Chris Drinkwater (UKHO): It should be the same rules which comply as used on aeroplanes.

Tim Lovegrove. Then it should be kept totally separate from other instrumentation.

Q 4. Should it be possible to allow manual updating of ENCs?

John Davies (Kelvin Hughes). Yes. In fact, all updates of ENC's are additions rather than replacements to the original ENC, whether automatic or manual. For manual there should be a requirement to enable a manual update process - allowing the user to add for example Inmarsat IHO data from the notice to mariners. It should be implemented as a separate layer on top.

Q 5. What are the Backup Systems Required?

Brian Morris: (Euronav) Do we need to define how long it would be before the batteries run out for example.

Tim Lovegrove: (Chartwork) No surely not. Backup systems like everything else need to be generically defined.

Brian Morris: (Euronav) This is not just a power issue but also a navigation issue. Is a back up GPS required on the installation for example.

Steve Taylor: (for Seafish) Yes we do need guidance on this. Should backup cover backup Mini-ECDIS, backup satellite navigation receivers and also backup power systems.

Ken Gordon: (MCA) Will check out regs (radio) to see if its relevant, and also to see if the radio backup power system could provide power for navigation.

The Chair then suggested moving to point 5 of the original Agenda

Approval Mechanisms

All were generally agreed that a self-certification process would be very acceptable and is a step forward, and preferred this option to an external approval process which could be costly and time consuming.

David Croft: (Transas) Suggested that as some manufacturers already have products carrying ECDIS approval, special account could be taken of manufacturers who have been through this external process.

Ken Gordon: (MCA) Self-Certification is new to MCA in general. Can anyone steer us in the right direction for suitable procedures.

Chris Drinkwater: (UKHO) You could contact the US Coastguard, about the use of US self-certification procedures within the US. They already have self certification procedures for manufacturers.

Peter Stewart: (SIMRAD) requested via the Chair that the group consider point 2 of the original agenda.

Specification of Function & User Interface

Peter Stewart: (SIMRAD) said Simrad manufacture systems with an embedded screen and keyboard - this does not comply with the proposed mini-ECDIS guidelines. The guidelines should allow such embedded systems for Mini-ECDIS.

Steve Taylor: (for Seafish) Yes, we accept that the draft guidelines contained assumptions regarding hardware. In the light of the discussion regarding re-drafting the specification to follows ECDIS more closely, this may supersede your point. But in any event we would ensure that embedded systems were not disadvantaged by any specification which we produce.

Peter Stewart: (SIMRAD). This was someone else I think We should also tie down the GPS more tightly than at present. Currently they can be set up using the wrong datum, which can go unnoticed and be dangerous.

David Croft: (Transas) Transas can offer the use of Transas built simulator facilities throughout the UK inc. NE College for testing any hardware which may be developed.

Summary

Colin Warwick stated that he would take onboard what had been said and that a review of the mini ECDIS workshop would be sent out. He said that more work was clearly needed on a Mini-ECDIS specification and that the feeling of the meeting was that it should more closely follow the ECDIS spec. He also saw a need for a Manufacturer & User One Day Workshop at a later date. (Venue to be decided). Cost was also one of the items flagged up. We should review the specification and circulate it to members.

Meeting closed at 15.15