Paper for Consideration by TSMAD28

What is needed for full machine readability

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Executive Summary:	This is a discussion paper about what is needed for full machine readability. This information is intended for a study if the S-100 already includes support for all detected elements. Based on this study initiated by this paper we can judge if the S-100 is able to fulfil the given promises.
Related Documents:	N/A.
Related Projects:	Development of S-100, Development of S-101, Development of S-10X product specifications

Introduction / Background

1. The writer has promoted by spoken comments in many IHO meetings the promised "in S-100 there is no need for software upgrade" slogan.

2. The writer has been asked to put these spoken comments in an official input paper so that the issue could be addresses.

Analysis/Discussion

3. What does "no need for sw upgrade mean" ? For us manufacturers it means two use cases:

3.1 There is no need for sw upgrade when the end user start to use a new S-10X product layer and

3.2 There is no need for sw upgrade when the end user keeps his system up-to-date with an S-10X product layer which has already been in use in his system.

4. The promise: No need for sw upgrade when the end user begins to use new S-10X product layer. In practise this means that the end user can register new S-10X product layers in his ECDIS. This registration should then establish everything needed in an ECDIS to receive, to display and to provide intended functionality for the end user. In practise the registration happens by the ECDIS reading machine readable file(s).

5. Following things should be defined by this registration

5.1 Objects and attributes associated with this S-10X product layer

5.2 Display rules of object(s)/attribute(s) combinations including drawing order (priority, masking of shared edges, etc.) within this S-10X product layer

5.3 Available, if any, end user selectors to control drawing of object(s)/attribute(s) combinations. Good examples from history is "viewing group layers" and "independent mariner selections" available in S-52.

5.4 Available, if any, functionality based on object(s)/attribute(s) combinations. Good examples from history are "detection of safety contour", "detection of navigational hazards" and "detection of areas for which special condition exist".

5.5 Available, if any, functionality or drawing order relative to other S-10X product layers. Good example of drawing order from history is over/under radar flag in old S-52 to specify which parts of ENC charts (in future S-101 product layer) were over or under the Radar echo overlay. Good example of functionality is S-102 bathymetric layer or AML charts including skin of the earth objects (both examples can be used to replace depth information of the ENC charts).

5.6 Available, if any, functionality or drawing based on received external data. Good example is functionality based on tidal data – either predictions or real-time measurements.

6. One may argue that items 5.3, 5.4, 5.5 and 5.6 are only for S-101 ENC charts but that is not true. The AML and S-102 bathymetric layer are both good examples what kind of requirements may arrive from S-10X product layers.

7. Next issue within registration is how and from where the end user can learn about possible new S-10X product layers available for registration for his ECDIS. I have heard people taking about Discovery lists, Maritime Service Portfolios, etc. For time being and from the main message of this paper point of view the detail of original source of machine readable file(s) for the registration could be ignored today. From this paper point of view we can

assume that the machine readable files for registration are available for reading by ECDIS in a media which is supported by the ECDIS (for example DVD, USB memory stick, LAN connection to network drive, etc.).

8. After the initial registration the detailed specifications of an S-10X product layer may change. In such case it is assumed that a new registration should be performed (i.e. it is assumed that this is like new edition and not like incremental update). It is also assumed that a need for this re-registration will happen quite seldom compared to update of the data itself (based on history for example the HSSC meeting has approved only once per year a new edition or supplement). Anyhow usability of the ECDIS requires that there is a technical method to detect the need for re-registration of an S-10X product layer. Then the ECDIS can after the detection ask permission from the end user to perform the re-registration.

9. Some items listed above could be already nearly defined (for example 5.1) or could be under progress to be defined (for example 5.2). But some items have just been discussed as spoken without drafted clear technical solutions.

Conclusions
10. The work for S-100 is off course not yet completed. This paper acts as a reminder of the work ahead.

11. The target of this paper is not to be a show stopper. We can also think that the next edition of S-100 includes a subset of the items needed and that there will be a timetabled next next edition to address the remaining. Important is that all items of the this paper have a solution before IHO announce that the S-100 is now fully tested and ready to play the big role as enabler of the e-Navigation.

Recommendations
12. The issues detected by this paper should be studied and, if needed, appropriate drafting processes should be initiated.

Justification and Impacts
13. We have all seen how difficult it is within IMO to overrule "grandfather" principle for already installed equipment. We can all share the view that the S-100 is an ultimate solution to improve the situation by creating platforms which can be compatible with S-10X layer never heard by the sw developers when the ECDIS was originally designed and manufactured.

14. The promise will not be true in reality, if we fail to provide just one of the machine readable components of the registration. Just one missing detail will cause the need to hardcode the non-machine readable details in the sw and therefore each new S-10X layer or an update to existing S-10X layer will fail to meet the promise "in S-100 there is no need for software upgrade".

15. The failure to meet the promise will increase the voice of the IMO member state choir which is singing that ECDIS has been not mature enough for being mandatory carriage requirement. A replacement of a blue box by a green box does not help, if the change is only in the colour of the box, but not in the content.

Action Required of TSMAD and/or DIPWG
The TDMAD and/or DIPWG are invited to:

   a)   note the issues presented in this paper

   b)   note that next next editions may be needed before the S-100 concept is ready to serve the purpose

   c)   agree establishing of a study how each issue in this paper is addressed by S-100