Development of the WEND100 Principles – Contribution to WENDWG11 discussion

Submitted by:	IC-ENC General Manager
Executive Summary:	This paper provides WENDWG11 with a short summary of:
	• IC-ENC's agreed Work Plan, in particular regarding new S1XX services
	• IC-ENC's "further informal input" as RENC subject matter experts to the analysis/contribution to WENDWG11 agenda items.
Related Documents:	Papers discussed under item WENDWG11-04
Related Projects:	N/A

Introduction / Background

1. This paper is a late entry into the WENDWG11 material, aimed at supporting the discussion at the VTC meeting. A written format was thought best, noting the challenges of the shortened agenda and online meeting environment.

2. It provides:
   a. A short overview of IC-ENC's intentions as a RENC in the S100 era, this are based on the 2021-23 Work Plan as endorsed by the IC-ENC Steering Committee, and
   b. Further informal input as RENC subject matter experts, in response to the WENDWG discussion papers i.e. these views are not being described as representative of the IC-ENC membership; they have not been presented to them for consideration.

Analysis/Discussion

IC-ENC's intentions as a RENC in the S100 era

3. The IC-ENC Steering Committee has endorsed a three year Work Plan and associated budget to develop new RENC services to support the S100 era.

4. It is based on engagement with the IC-ENC Members over 2020, specifically with respect to the S-100 Options Paper in July-September, the Technical Conference 05 in October, and the SC Online Sessions in November. This engagement has confirmed the desire to establish IC-ENC as an organisation which processes S-100 data and supports the IC-ENC Members in the S-100 era.

5. The Work Plan:

   a. Maintains IC-ENC's core service(s) outputs regarding S-57 ENCs (support to HOs, validation, distribution and revenue management).

   b. Develops and improves our core infrastructure and international team to improve speed, resilience and new services to members and VARs.

   c. Maintains and develops our governance and finance regimes and highlights the international collaboration with other bodies/groups/RENCs.

   d. Shows how IC-ENC will be develop "centrally", in other words as core activity, available for all IC-ENC members, and funded by utilising the existing operating surplus and retaining the fixed fee at $0.50.

e. Describes the following S1XX service developments:

S-1XX Service	Description
S-101 ENC	Establish an end to end S-101 service, data ingest, QA, and data output.
S-57/S-101 Conversion Support	Support to help Members with efficient and effective ENC conversion.
S-102 Bathymetric Surface	Establish an end to end S-102 service, data ingest, QA, and data output.
S-104 Water Level	Establish an end to end S-104 service, data ingest, assess, and data output.
S-111 Surface Currents	Establish an end to end S-111 service, data ingest, assess, and data output.
S-122 Marine Protected Areas	Establish an end to end S-122 service, data ingest, QA, and data output.
S-1XX Data Harmonisation	Develop Data Harmonisation service, to ensure the suite of S1XX Products work together to support safe and efficient navigation.

Further informal input as RENC subject matter experts, in response to some of the subjects raised in the WENDWG11 discussion papers

ENC scheming & the potential for overlapping S1XX data

6. There are established guidelines and best practice advice for chart scheming available, and these should be developed/enhanced for the S100 era. Some HOs have already defined their own policies on this; for example, in preparation for new S1XX products, some ENC Producers are considering/in the process of moving to a grid-based scheme.

7. Each Producer will decide its scheme based on national considerations, however, co-operating with 'neighbours' and agreeing ENC schemes at a regional level is advantageous. That said, WENDWG may wish to discuss whether or not any regional scheme can be mandatory, noting each Issuing Authority retains autonomy for its products. The concept of 'regional approval' of ENC schemes is complicated further by each RHC operating under its own set of terms.

8. The lack of current method for mandating regional schemes for S57 production means that IC-ENC has much experience of identifying, assessing and monitoring overlapping ENCs. It is a well-rehearsed discussion at WENDWG that overlapping data is either the result of a technical issue (which has a high likelihood of, in time, resolution) or due to a geo-political situation. Geo-political challenges are the reason that a number of overlapping S-57 ENCs have remained in place for many years, despite various WENDWG / IHO initiatives to attempt to resolve them.

9. The WEND100 Principles, as currently drafted, rightly strive to prevent overlapping S1XX data. However, as long as they remain "Guidelines" and "Principles" (i.e. "should", not "must")…which is understood to be the case under the IHO construct… WENDWG may wish to consider discussing how best to proceed in the event that the WEND100 Principles do not completely prevent overlapping S1XX data being created.

10. If the WENDWG concludes that overlapping S1XX data is a potential scenario in the future, acknowledging/acting on this now, i.e. at this early point in the S100 Implementation Decade, will allow a basis for solutions to develop *that minimize/eliminate the impact of the overlapping S1XX cases on safe navigation*; for example, policy decisions with the S-98

Interoperability Standard, the future S100 ECDIS Performance Standard, the service designs of RENCs and those in the distribution chain, and so on.

Application of WEND100 Principles to various S1XX Products

11. It is already agreed that the full WEND100 Principles will apply to S-101 ENCs (but note the discussion above regarding overlapping products).

12. IC-ENC recognizes the need for various **S1XX Products to work together in harmony** with each other as a suite of products that support navigation. Indeed, this is the rationale behind the intention to establish the IC-ENC S100 Data Harmony service. There are various IHO technical groups where this can (and is) being considered in detail.

13. The following further observations are made ahead of WENDWG11:

14. The WEND100 Principles are primarily designed to consider future regulated navigation (i.e "ECDIS100"), however they have begun to acknowledge that there are other future user groups of these products too. Considering other users is a good thing of course, but with it comes the need to account for their interests.

15. The S-1XX Product Specifications are themselves deliberately "broad" in their nature, and it is also recognized that one of the purposes of moving to S-1XX Products is so that this data can support a range of user groups in the future.

16. We must be cautious about proposing WEND100 Principles which may, in time, restrict the advantage that S1XX Products can give to a range of users. In particular, these restrictions may be felt in the areas of the Principles regarding single S1XX Products in any one geographical area/scale. Notwithstanding the comments above about the ability of the WEND100 Principles to prevent overlapping S1XX data being created (the geopolitical challenges), there are some possible scenarios where it's conceivable that "overlapping" S-1XX Products could be advantageous. To illustrate with a few examples:

    a. S-111; Small-scale products describing ocean currents for efficient navigation - different models will produce different results that may suit different user groups better. Choice is often recognized as a good thing; can/should the WEND100 Principles support choice for the end user?

    b. S-102; different grid resolutions/different depth fidelity may be preferred/required by different user groups – e.g. small leisure craft, "ECDIS100" vessels, future autonomous vessels. These could all have different Product needs (there has been insufficient research conducted so far to confirm or challenge this); one response is to suggest that the "best" product should, by default, be suitable to all users, but with "best" comes additional aspects to consider such as data size, update regimes/processes etc.

17. The WENDWG may wish to discuss how best to balance the desire for the WEND100 Principles to develop at the pace required under the IHO S100 Roadmap, whilst at the same time allow the Principles to iterate as required as all stakeholders' knowledge & experience grows.

18. There *may* be a risk with the way the WEND100 Principles are evolving at the moment which means we are developing a system that would prohibit valuable options in the future. It may be better to "keep our options open" at this early stage in the S100 Roadmap (rather than have

to "undo" early policy decisions at a later date, with the additional time/complexity that this would bring).

19. It's conceivable that our collective S100 experiences will drive the need for WEND100 Principles to iterate at potentially a faster pace that the existing IHO governance processes support (the WEND100 Principles are a key IHO document, so, presumably, endorsement will be required by Assembly).

Conclusions
20. N/A

Recommendations
21. N/A

Justification and Impacts
22. N/A

Action Required of the WENDWG
23. The WENDWG is invited to:
   a. note this information paper as a contribution to the WENDWG11 discussion on the development of the WEND100 Principles.