

## Roadmap for the S-100 Implementation Decade (2020 – 2030), Annex 3

### WEND-100 Principles

Version 1.0, December 2021

#### IHO Resolution 1/2021 - Principles of the WEND for S-1XX Products (WEND-100 Principles)

<b>Principles of the WEND for S-1XX Products (WEND-100 Principles)</b>	<b>01/2021</b>	<b>IHO CL 37/2021</b>	
--	----------------	-----------------------	--

### PRINCIPLES OF THE WEND FOR S-1XX PRODUCTS (WEND-100)

#### 1. Introduction

1.1. The purpose of WEND-100 Principles is to ensure a world-wide consistent level of high-quality, updated official nautical and hydrographic S-100 based products (S-1XX products)<sup>1</sup> through integrated<sup>2</sup> dissemination services that support current and future hydrographic carriage requirements of Safety of Life at Sea (SOLAS) Chapter V (SOLAS/V) and other requirements of the International Maritime Organization (IMO), in particular the Performance Standards for Electronic Chart Display and Information Systems (ECDIS). In addition, the same integrated services should be available for mariners not subject to carriage requirement and the provisions of ECDIS, and to all other users supporting maritime activities.

1.2. SOLAS/V regulation 9 requires contracting Governments to “arrange for the collection and compilation of hydrographic data and the publication, dissemination and keeping up to date of all nautical information for safe navigation”. For this purpose, and taking into account the implementation of maritime services in the context of e-navigation, the International Hydrographic Organization (IHO) and partners have developed the S-100 Universal Hydrographic Data Model and S-100 products specifications to be used for digital nautical and hydrographic S-1XX products that can functionally replace their analogue and digital predecessors. The dissemination services encompass reliable, integrated and secure delivery of these S-1XX products (including their updates) to the end-user as part of “publication, dissemination and keeping up to date of all nautical information”.

#### 2. Applicability

2.1. The WEND-100 Principles are aimed at those S-1XX products that are under the purview of the IHO, for instance those to be provided as part of the maritime services in the context of e-Navigation of the IMO e- Navigation Strategy<sup>3</sup> including support to route monitoring and voyage planning. This does not, however, preclude other S-100 based products to align with these principles, for instance those under purview of the WMO.

<sup>1</sup> These official nautical and hydrographic S-100 products will be referred to in these principles by the designation “S-1XX products” or “S-100 based products”

<sup>2</sup> Integrated dissemination services are a variety of end-user services where each service is selling all its ‘nautical and hydrographic S-100 based products’, regardless of source, to the end user within a single service proposition embracing format, data protection scheme and updating mechanism, packaged in discrete exchange sets per S-1XX product.

<sup>3</sup> This specifically concerns:

- a Nautical Chart Service: Service 11 of the MS;
- a Nautical Publication Service: Service 12 of the MS.

2.2. The framework for the WEND-100 principles is provided by this resolution. Subject to the characteristics and maturity<sup>4</sup> of the S-1XX product specifications, a transitional approach is used to apply those WEND-100 principles to S-1XX products.

a) The full extent of the WEND-100 Principles applies to the production and the dissemination of S-101 ENCs. Until the full retirement of the earlier S-57 ENCs, the existing WEND Principles will continue to apply for S-57-ENCs<sup>5</sup> and these WEND-100 Principles will apply for S-101 ENCs<sup>6</sup>.

b) Incrementally the full extent or specific sets of the WEND-100 Principles will apply to the other S-1XX products.

2.3. Complementary 'Guidelines on the implementation of the WEND-100 Principles' will detail further the applicability of WEND-100 Principles for S-1XX products other than S-101 ENC's, and will facilitate the provision of appropriate S-1XX products coverage within a suitable timeframe. As such the 'Guidelines on the implementation of the WEND-100 Principles' are iterative in nature in order to accommodate the transitional approach.

2.4. The 'Guidelines on the implementation of the WEND-100 Principles' are subject to an approval process with proposals by IRCC for consideration by the Council and following decision by the Assembly. This way Members States control the implementation of S-1XX products over time as IMO and other overarching regulations or guidelines evolve<sup>7</sup>.

### **3. S-1XX product availability**

3.1. Member States will strive to ensure that mariners anywhere in the world can obtain up-to-date S-1XX products for all shipping routes and ports around the world.

3.2. Member States will strive to ensure that their S-1XX products are available to end users through integrated, secure and internationally coordinated dissemination services. Additionally, States retain the right to establish complementary S-1XX dissemination arrangements within national jurisdiction and according to national legislation.

3.3. Member States are encouraged to build on the existing RENC structure in order to share common experience, reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability and availability of S-1XX products.

3.4. Dissemination services should ensure that S-1XX products bear the stamp or seal of approval of the issuing authority.

3.5. Member States should ensure the use of the IHO Data Protection Scheme (S-100 Part 15)<sup>8</sup> for distribution to mariners, to secure data integrity, to safeguard national copyright in data, to protect the mariner from falsified products, and to ensure traceability.

3.6. When an encryption or authentication mechanism is employed to protect data, a failure of contractual obligations by the user should not result in a complete termination of the service. This is to assure that the safety of the vessel at sea is not compromised.

---

<sup>4</sup> The intended development of the S-1XX products is referenced in the "Roadmap for the S-100 Implementation Decade"

<sup>5</sup> IHO Resolution 1/1997 as amended- Principles of the Worldwide Electronic Navigational chart Database (WEND) & its Annex (Guidance for establishment of ENC Production boundaries).

<sup>6</sup> Until retirement of their S57 ENCs, Member States S-101 coverage should mirror their S-57 coverage in order to avoid 'cross overlapping'.

<sup>7</sup> One of these being the UN-GGIM principles on an Integrated Geospatial Information Framework (IGIF) and how these apply to safe navigation and other use cases.

<sup>8</sup> Where alternative solutions are more appropriate for certain use cases not related to carriage requirements of SOLAS chapter V, they should deliver at least the same level of protection as S-100 Part 15.

3.7. Noting that accessibility of S-1XX products is also valuable as part of a national or regional Marine Spatial Data Infrastructure (MSDI), the dissemination of these products may be coordinated through the same mechanisms as those established to meet the WEND-100 dissemination services.

#### **4. Rights and Responsibilities**

4.1. SOLAS/V, Regulation 9, requires contracting Governments to ensure that “all nautical information” is available in a suitable manner in order to satisfy the needs of safe navigation. With IMO mandatory carriage requirement for ECDIS, there is a consequential requirement to ensure that S-1XX products, as defined by the IHO, are available in a form suitable for use in ECDIS, in current form and as subsequently updated.

4.2. It is expected that Members States will have mature arrangements in place for the issue of S-1XX products and their subsequent updating for waters of national jurisdiction in order to support current and future IMO requirements.

4.3. To meet these IMO (coverage) requirements, Member States will strive to either:

- a) provide the necessary S-1XX product coverage or;
- b) agree with other States<sup>9</sup> to provide the necessary coverage on their behalf.

4.4. Member States responsible for producing S-1XX products are also responsible for the validation of content, conformance to standards and consistency. Member States are encouraged to consider using the existing RENC structure to assist.

4.5. Member States should recognize their potential exposure to legal liability within these arrangements.

4.6. Member State responsible for producing an S-1XX product are also responsible for providing metadata that is consistent with IHO standards and practices.

4.7. Within the framework and timelines of the WWNWS Members States should disseminate in the form of Marine Safety Information, the new information they use to update the S-1XX products for which they are responsible<sup>10</sup>.

4.8. In producing and disseminating S-1XX products, Member States are to take due account of the rights of the owners of source data and previously issued products, honouring any use restrictions or copyrights.

#### **5. Coordination of S-1XX products and dissemination services**

5.1. A Member State is normally the S-1XX products producing country for waters within its national jurisdiction.

5.2. When the limits of waters of national jurisdiction have not been established, or when it is more convenient to establish boundaries other than waters of national jurisdiction, countries<sup>11</sup> may define the boundaries for production of S-1XX products within a bi/multilateral technical arrangement. These limits would be for convenience only and shall not be construed as having any significance or status regarding political or other jurisdictional boundaries.

---

<sup>9</sup> In line with SOLAS/V Regulation 2.

<sup>10</sup> In line with SOLAS/V Regulation 4.

<sup>11</sup> These could be Members States and non-Member States.

5.3. In waters of national jurisdiction for which there are no provisions in place for production or dissemination of S-1XX products, the coastal Member State may designate these functions to another provider State. S-1XX products produced and/or disseminated under such arrangements should be offered for transfer to the coastal Member State in the event that the coastal Member State subsequently develops the capacity for these functions. Such transfer should respect the rights of Member States and providing State (see also paragraph 4.3 and 4.8).

5.4. In order to ensure unambiguous safety of navigation, concurrent (“overlapping”) S-1XX products should be avoided, particularly where official, nationally provided products are available<sup>12</sup>. A unique producing authority should exist in any given area for each S-1XX product when used together with (future) ECDIS<sup>13</sup>, though the same unique authority need not provide all S-1XX products.

5.5. Member States will address coverage of S-1XX products on a regional basis through Regional Hydrographic Commissions (RHCs), and the WENDWG will monitor the overall coverage on a global basis, reporting to IRCC<sup>14</sup>.

5.6. The applicable RHC may facilitate arrangements for production and dissemination of S-1XX products. RHCs should engage with data owners, product and service providers, and other stakeholders as appropriate to ensure that a coordinated and cohesive regional approach is considered<sup>15</sup>. Also, the existing RENC structure may facilitate co-operation between individual Member States and support RHC’s to achieve appropriate S-1XX product coverage.

## **6. Maintenance and Improvement of Product and Dissemination Services**

6.1. Member States are encouraged to work together on data capture, data quality, and data management. To the extent possible, data should be widely shared to support continual updates and improvements of S-1XX products.

6.2. Technically and economically effective solutions for updating S-1XX products are to be established conforming to the relevant IHO and IMO publications. The updating of the various S-1XX products should adopt current dissemination technology and be at least as frequent as previous dissemination mechanisms.

## **7. Quality Management**

7.1. S-1XX product producers and/or dissemination service providers should consider a documented Quality Management System to ensure high quality of work. When implemented, this should be certified by a relevant body as conforming to a suitable recognized standard, typically this will be ISO 9001.

## **8. Mutual Assistance and Training**

8.1. Member States are requested to participate in S-1XX capacity building efforts developed nationally, regionally, and through the IHO, by providing subject matter experts, venues, training materials, and open- source applications. Member States are encouraged to coordinate these capacity building activities within the framework of the IHO Capacity Building Sub-Committee (CBSC). The S-1XX producing Member States are also encouraged to collaborate on production support activities/capacity building via the existing RENC structure.

---

<sup>12</sup> The mechanism of IHO resolution 1/2018 on the elimination of overlapping ENC data in areas of demonstrable risk to the safety of navigation can be extended to resolve conflicting S-1XX data products.

<sup>13</sup> The IMO determines how ‘nautical and hydrographic S-100 based products’ will be adopted as part of the ECDIS product specification, including the guidelines on voyage planning.

<sup>14</sup> Level of success of coverage is determined by Strategic and Work plan performance indicators.

<sup>15</sup> In line with article 15 of IHO resolution 2/1997 as amended on the Establishment of RHCs.