

**Purpose of this document:**

To provide IC-ENC with the structure to support the WENDWG10 discussions.

IC-ENC Steering Committee has had the opportunity to review IC-ENC’s proposed positions (see CL2020/03), and the comments received have been included where appropriate.

IC-ENC GM and Chair can now speak from a position of knowledge of the opinion of the IC-ENC Steering Committee.

**Colour Key:**

Black and **Red** text: original document

Green text: IC-ENC’s position following Steering Committee review

Where no comment is made, this indicates general support for the content.

**Paper for Consideration by WENDWG  
Development of WENS Principles**

<b>Submitted by:</b>	WENDWG Chair
<b>Executive Summary:</b>	Re-introduction of the WENS Principles with the aim to reach initial consensus at WENDWG-10, and then prepare submission for endorsement at IRCC-12 (June) then C-4 (October), not excluding a possible introduction at A-2 (April) as part of the report on the S-100 Implementation Strategy.
<b>Related Documents:</b>	WENDWG9-05A, IRCC11-07D2, IRCC11-07D3, C3-04.2A and C-3 Summary Report.
<b>Related Projects:</b>	S-100 Implementation Roadmap (C3-03.6A Rev1)

**Introduction / Background**

1. During the WENDWG-9, the need to upgrade the WEND Principles was discussed, shifting it from a pure ENC focus to one that represents a more comprehensive suite of S-100 based services in support of Council actions C2/30 and C2/31. A drafting group to collect comments regarding the WENS (*Worldwide Electronic Navigation Services*) Principles was authorized under action WENDWG9/22 and was charged with submitting a progress report to IRCC-11. Progress reports were presented to both IRCC-11 and Council-3 (C-3). In general, both bodies agreed that the proposed course of action was correct and that the transition to “WENS” principles is needed. The Council agreed that the proposed timeline (ANNEX 1), aiming for endorsement by Council-4, was acceptable.
2. During C-3, it was also agreed that it was more appropriate to keep the current WEND Principles and their Guidelines for Implementation in M-3 as they are, for the time being at least until the “sunset” of S-57 ENC production. In other words, and noting the “WENS” acronym and title still needs to be discussed and approved at the WENDWG level, the WENS Principles are more than an update of the WEND Principles and are not intended to supersede the WEND Principles for now (C-3 Summary Report, Section 4.2 *Worldwide Electronic Navigation Services (WENS)*, refers).

**Analysis/Discussion**

3. The WENS Principles Drafting Group Coordinator received comments from six Member States, five of which volunteered to be members of the Group. Comments regarding the WENS direction were generally positive, but there were some notes of caution regarding scope and timing.

4. ANNEX 2 of this document presents an edited version of the principles according to initial comments with notes for discussion included.

IC-ENC position: introduce a definitions section for key terms in this document, noting:

- Clarity will be important during the development of the WENS. For example, does the term “service” include both the production of SIXX datasets and the distribution of them, does it include the whole distribution chain, for example.

### **Conclusions**

5. WENDWG-10 aims to gain basic consensus regarding the draft WENS principles, including the consideration of endorsing agreed upon data principles such as those being developed as part of the UN-GGIM Integrated Geospatial Information Framework’s Strategic Pathway 4, Section 4.5 on Data included in ANNEX 3 of this proposal.

IC-ENC position: supported.

### **Recommendations**

In the context of the S-100 Implementation Strategy:

6. Recommend that Member States and RENCs (which play a key role today in data qualification, encryption and have set up a harmonized distribution process) come to the WENDWG-10 prepared to edit and make decisions regarding the WENS Principles.

Note: It is because of this task that IC-ENC has canvassed the views of the Steering Committee on this paper.

7. Recommend that Member States consider the fact that “WENS” stands for Worldwide Electronic Navigation Services and whether the name should be reconsidered as well as the attached priorities in the WENS Principles.

### **Justification and Impacts**

8. The IHO is on the cusp of realizing the implementation of numerous S-100 based services over the upcoming decade and beyond. It needs to develop recommendations for the distribution, boundaries, and governance of these new services as it did regarding ENC’s. The WENDWG has a strong history of providing this guidance and is well suited to expand its mandate to become the WENSWG or renamed body.

IC-ENC position: To **support** the evolution of the WENDWG to the WENSWG, noting:

- It is an established IHO WG, considered to be comparatively effective in meeting its aims and objectives under S57 WEND.
- Retaining WENDWG’s remit to remain just ENC’s would presumably mean another (or several) IHO WGs etc would need to be established to support the S100 era, which is undesirable as it inefficient and increases complexity.
- “Principles” may be more appropriate term than “recommendations”

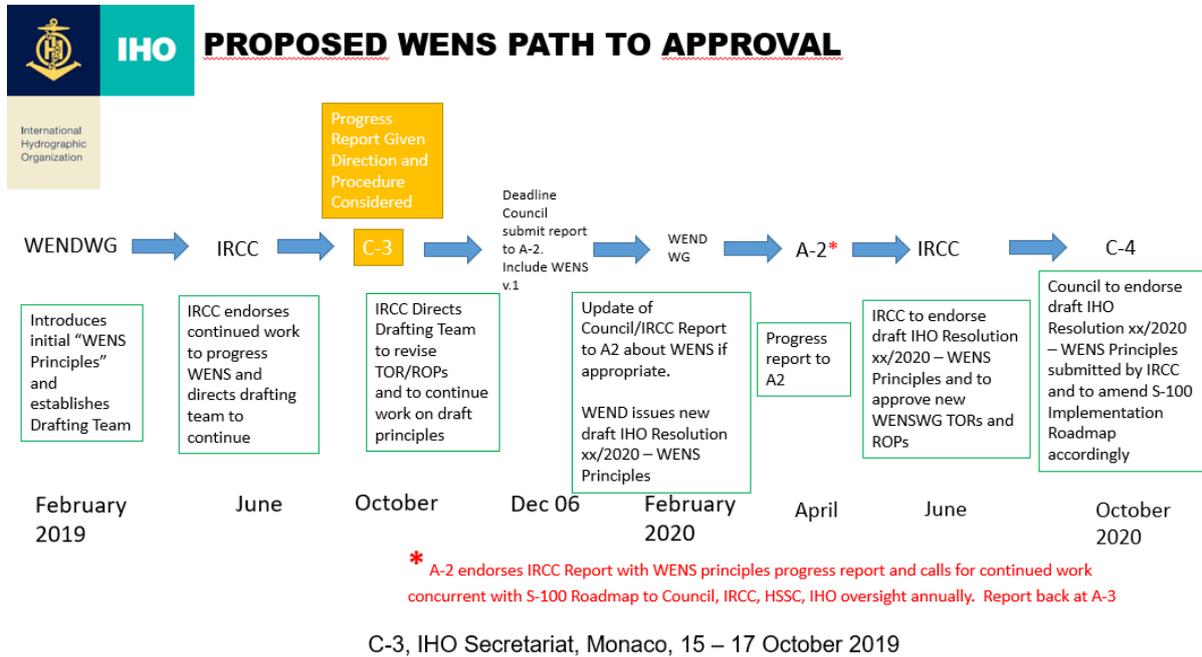
### **Action Required of the WENDWG**

9. The WENDWG is invited to:
  - a. note the work that has been done developing the WENS Principles
  - b. prepare to discuss and edit the Principles with the aim of reaching WENDWG consensus, noting that these Principles should become a key component of the S-100 Implementation Strategy
  - c. consider the impact of this development on the name and TORs of the WENDWG
  - d. anticipate the possible impacts and consequences of the implementation of the WENS Principles (if and when endorsed and approved) on the RENCs capabilities, governance and activities and provide subsequent recommendations

IC-ENC position: **Reiterate** to WENDWG that, for IC-ENC, these “subsequent recommendations” will be to the IC-ENC Steering Committee. via the General Manager

- e. consider taking advantage of other global initiatives (such as the UN-GGIM) with the addition of relevant (IHO specific) thematic considerations regarding navigation services

**ANNEX 1**



IC-ENC position: This is considered an ambitious timeline, more so in light of the Coronavirus impact. WENDWG10 may wish to discuss and produce a revised timeline. WENDWG may wish to consider the timeline of the IMO regulatory changes as part of an updated WENS timeline.

**WORLDWIDE ELECTRONIC NAVIGATION SERVICES (WENS) PRINCIPLES**

**Note**

- \*There has been a request to re-name the WENS.
- \*There has been a request to keep the name WENS.

(WEND WG working draft version, 28 August 2019)

The purpose of WENS is to ensure that high-quality, updated official hydrographic services are available to mariners worldwide. These services support hydrographic carriage requirements of Safety of Life at Sea (SOLAS) Chapter V (SOLAS/V), and the requirements of the International Maritime Organization (IMO) Performance Standards for Electronic Chart Display and Information Systems (ECDIS). In addition, these same coordinated services must be available to support mariners not subject to the provisions of ECDIS and should help to facilitate the transition from a paper to digital environment.

**IC-ENC position – General support, noting:**

- The timeline for S10X products to achieve regulatory compliance is unclear to IC-ENC (e.g for S101 ENC’s to achieve parity with S57 ENC’s)... however it is a reasonable assumption that this will be achieved over the next decade and so S100-era coordination amongst stakeholders is required, and the WENS is a suitable vehicle to structure that coordination. WENS Principles should also clearly describe the coordination required during any “dual fuel” ECDIS period. WENDWG should consider the requirement of the WENS Principles will be maintained in line with the development of relevant IMO regulations
- The aim that coordinated services to mariners not using ECDIS points to possible expansions of the new IC-ENC non-ECDIS service (2020 WP ref 8) and 2020 WP ref 15 is to develop the IC-ENC S100-era licensing model to consider ECDIS navigation, non-ECDIS navigation, shore based navigation support, non-navigation users.
- Consider referencing IMO e-nav Maritime Service Portfolio (MSP)
- Some comments have been made regarding the scope of the WENS Principles – if it is to be more than just navigation users, then this introductory section may need to expand beyond references to SOLAS Chapter 5.

**Applicability**

SOLAS/V, requires signatory States to provide hydrographic services to enhance safety of life at sea. The International Hydrographic Organization (IHO) and partners have developed standards for digital hydrographic services that can functionally replace their analog predecessors. The principles below apply to these digital hydrographic services intended to meet a nation’s obligations under SOLAS and include high priority specifications referenced in the IHO Roadmap for S-100 Implementation:

S-101 <i>Electronic Navigational Chart</i>	S-122 <i>Marine Protected Areas</i>	S-126 <i>Marine Physical Environment</i>
S-102 <i>Bathymetric Surface</i>	S-123 <i>Marine Radio Services</i>	S-127 <i>Marine Traffic Management</i>
S-104 <i>Water Level Information for Surface Navigation</i>	S-124 <i>Navigation Warnings</i>	S-128 <i>Catalogue of Nautical Products</i>
S-111 <i>Surface Currents</i>	S-125 <i>Marine Navigational Services</i>	S-129 <i>Under Keel Clearance Management</i>

**NOTES:**

- \*These do not include specifications beyond S1xx. For example Weather Warnings, Inland ENC, Aids to Navigation, or Sea Ice. Removed S-121 per IRCC guidance.
- \*Reduced redundant introductory text.

\*In reference to IRCC comment regarding “mandatory” carriage, note that “mandatory” in this case refers to ECDIS and says that we are obligated to provide services that are compatible with ECDIS, not that the new services are “mandatory” at this time.

IC-ENC proposed position: **General support**, noting:

- The list of S10X product specifications under WENS may increase or decrease as experience grows
- It is may necessary for WENDWG to consider the user categories that may be served under the WENS coordination (e.g. (navigational and non-navigational users) and acknowledge these may have different requirements/responsibilities (e.g. update frequency)

## 1. Service Provision

1.1. Member States will strive to ensure that mariners anywhere in the world can obtain up-to-date services for all shipping routes and ports around the world.

1.2. Member States are encouraged to distribute their services through compatible and coordinated network distribution systems to reduce distribution complexity and risk, and to ensure the greatest possible standardization, consistency, reliability and availability of services.

### NOTES

\*Should distribution of these services all be the responsibility of the RENCs? The provision intentionally does not specify a means of distribution in this version, just that services be compatible and coordinated.

\*\*“Cost” has been removed and a draft (new provision) has been suggested as 1.2a.

IC-ENC position: **General support**, noting:

- Standardised and consistent services is an appropriate goal (requirement of end users)
- IC-ENC RENC/VAR model is supported by the majority of ENC producing HOs – whereby commercially focused organisations (IC-ENC VARS – Value Added Resellers) are appointed to the distribution chain to develop the end user services, this promotes innovation via competition, and services designed for end user groups by those closest to them (many Member States are not positioned/set up to do this)
- Re NOTE 1: No, Member State participation in the RENC system should remain optional (RENC services should attract Member State into the RENC system, not be mandated part of the process), visibility of this can be maintained via the WENDWG.
- Para 1.2. is ambiguous on the use of the word services. Potential rewording: “Member States are encouraged to supply their S-1XX data/products through a network of compatible and coordinated services to reduce distribution complexity and risk, and to ensure the greatest possible standardization, consistency, reliability and availability of their S1XX data/products”.

1.2a Member States should strive to ensure that services are not cost prohibitive, prioritizing safety above profit.

IC-ENC position: 1.2a considered unnecessary

1.3. Source and authority of services should be preserved in the metadata and remain available to the end user.

1.4. Member States should use the IHO Data Protection Scheme (S-100 Part 15) based for distribution to end users, to ensure data integrity, to safeguard national copyright in data, to protect the mariner from falsified products, and to ensure traceability. When an encryption 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

IC-ENC position: **Support**, noting:

- IC-ENC members support the current ENC encryption standard (S63), however this is applied at VAR level (not HO, or RENC). S100 Part 15 retains the option for VARs to do the encryption function, but adds the ability for HOs and RENCs to ‘sign’ the data, which is an improvement to monitoring/tracking the integrity of data.
- S100 Part 15 may not be optimal for non-ECDIS mariners (noting the reference to this group in the first paragraph), it is important that the encryption approach is right for different user groups.

1.5. Noting that the content of many of these services are also valuable as part of a national or regional Marine Spatial Data Infrastructure (MSDI), the coordination and dissemination of these services may be coordinated through the same mechanisms as the services intended for maritime navigation.

## 2. Rights and Responsibilities

2.1. SOLAS/V, Regulation 9, requires Contracting Governments to ensure that hydrographic products and services are available in a suitable manner in order to satisfy the needs of safe navigation. With mandatory carriage of ECDIS, there is a consequential requirement to ensure that such services, as agreed by IMO, are available in a form suitable for use in ECDIS, in current form and as subsequently updated.

2.2. To meet their national obligations under SOLAS, Member States may either:

- a) Provide the necessary services, covering waters bounded by the seaward limit of their Exclusive Economic Zone, or
- b) Agree with other States to provide the necessary service coverage on their behalf.

All States retain the right to provide the services within national jurisdictions and according to national legislation. However, Member States should strive to ensure that comprehensive service coverage is available in all areas regardless of producer.

### Notes

- \*This may be too complex to include here at this stage.
- \*Jurisdictions should be defined.
- \*Strengthened coverage statement.
- \*Added national legislation statement in accordance with IRCC guidance.

IC-ENC position – **Support**, noting,

- IC-ENC currently supports a range of ENC production scenarios (e.g. HO A produces in HO B waters under HO A code, HO A produces in HO B waters under HO B code, seamless cancellation and replacements, etc.)
- It is achievable for IC-ENC technical and commercial policies to evolve to cater for a range of production scenarios in the S100 era.
- A range of production scenarios for S10X products is likely to be needed noting the time taken to achieve a credible global series of ENCs.
- Could consider to change the word ‘provide’ to organise / establish – would make it clearer that the Member State does not need to operate the service themselves, but make sure its is in place from the users.
- WENSWG should agree ‘coverage success metrics’ from the outset noting the trouble to define ‘global coverage’ of ENCs – e.g. no definitive top ports list for example. The assumption is that these metrics will be important for the (eventual) IMO regulation changes

2.3. Member States should recognize their potential exposure to legal liability for the quality of their hydrographic services.

### Notes

\*MS should strive to ensure that the safety benefits of services outweigh the risks associated with service liability.

IC-ENC member comment: Remove note. Even if the benefits do not outweigh the risks, a MS still has the obligation to produce nautical products and services.

2.4. The nation responsible for originating the data is also responsible for providing metadata on source, methods of collection, and data quality. Metadata should be consistent with IHO standards and practices.

#### Notes

\*Last line added to help ensure consistency with approach to metadata.

2.5. National entities are responsible for advising the issuing Hydrographic Office (HO) of available information and for advising the NAVAREA coordinator of Marine Safety Information in a timely manner.

2.6. In producing services, Member States are to take due account of the rights of the owners of source data and previously issued products, honoring any use restrictions or copyrights.

### 3. Coordination of Services

3.1. Redundant services should be avoided, particularly where official, nationally provided services are available. A single producing authority should exist in any given area for each service, though the same authority need not provide all services.

#### Notes

\*Need to recognize the possibility that some services might be better with competition, weather for example. However, the principles should help to ensure that services be designed and distributed with the intent of minimizing the number of systems and distribution mechanisms required to use them aboard ships.

3.2. When the limits of waters of national jurisdiction have not been established, or it is more convenient to establish boundaries other than established national boundaries, producing countries may define the boundaries for hydrographic service provision within a bilateral (or 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.

#### Notes

\*We have not been able to realize this with regard to ENC, so maybe it needs stronger language. Could add something like, "Services will not be released when significant overlaps exist."

IC-ENC position on 3.1 and 3.2: **Support with caveats**, noting:

- It is a valid ambition to have agreed production (technical) boundaries/agreed areas of responsibility, and for the large portion of the globe this is achieved. This should be maintained in the S100 era.
- It is not for IHO / WENSWG / RENC to prevent a Member State issuing a navigation product/service (if such a function is required, presumably it must reside at the IMO).
- To avoid user problems in the areas of the world where two or more of the same S10X product exist. There needs to be an appropriate IHO mechanism for processing such cases, e.g. reference IHO Resolution 1/2018, and then a corresponding process with IC-ENC to facilitate.
- Consideration could be given to opportunities to develop the relevant standards (S10X, hardware type approval process etc) in such a way as to recognize the potential for new cases of 'overlapping' S1XX data/services,
- The word 'redundant' needs clarification.

3.3. In international waters, the applicable regional hydrographic commission may coordinate limits of services. In areas of national jurisdiction for which there is no agreed hydrographic service provider nation, the coastal State may designate the service provider nation. Services produced under such arrangements should be offered for transfer to the coastal State in the event that the coastal State subsequently develops the capacity to maintain the services. Such transfer should respect the rights of the coastal State and the commercial rights of the producer nation.

#### Notes

\*May need to expand the roles of the RHCs. Each RHC should have a Service Coordination Committee. Much of the WENS data currently sits outside RHC remits.

IC-ENC position: Recommend separate this section into two:

3.3 - "In international waters, the applicable regional hydrographic commission may coordinate limits of services"

3.4 - "In areas of national jurisdiction for which there is no agreed hydrographic service provider nation, the coastal State may designate the service provider nation. Services produced under such arrangements should be offered for transfer to the coastal State in the event that the coastal State subsequently develops the capacity to maintain the services. Such transfer should respect the rights of the coastal State and the commercial rights of the producer nation"

Note: Rights of a producer nation may also be intellectual, rather than commercial.

IC-ENC position on (new) 3.3: **Urge caution**, noting:

The new IHO resolution 2/1997 on RHC's already addresses this issue (Art 15): "...As new marine geospatial products and services are developed within the S-100 Universal Hydrographic Data Model, RHCs should engage with data owners, product and service providers, and other stakeholders as appropriate to ensure a coordinated and cohesive regional approach is considered."

- We should be cautious of being too prescriptive on how RHC's are going to implement this article. The assumption is that some are able to achieve a "Service Co-ordination Committee", but others might opt for another solution. There is the established role of the "Chart Coordinator" in many RHCs.
- The WENDWG is made up of representatives of RHCs who should be able to advise on this.

IC-ENC position on (new) 3.4: **Support**.

#### 4. Maintenance and Improvement of Services

4.1. Member States are encouraged to work together on data capture and data management. To the extent possible, data should be widely shared to support continual updates and improvements of hydrographic services.

4.2. Technically and economically effective solutions for updating services are to be established conforming to the relevant IHO standards. The updating of services should be at least as frequent as that provided by the nation for previous analog services.

IC-ENC position: **Support**, but note that some new S10X product specifications may require a much swifter updating/distribution system than currently in place for ENCs

#### 5. Standards and Quality Management

5.1. Service providers and distributors should employ a documented Quality Management System to help ensure high quality of hydrographic services. When implemented, this should be certified by a relevant body as conforming to a suitable recognized standard; typically this will be ISO 9001:2015.

#### Note

\*Strengthened statement by putting onus on service providers and distributors, not WENS Principles.

IC-ENC position: **Clarify**, “Service Providers” in this paragraph are not the same as the producing Member States. It has been confirmed that not all IC-ENC member HOs are ISO9001:2015 accredited, nor obliged to be. The aim for WENS services to be underpinned by appropriate quality management practices at each step of the chain is **supported**.

As a minor editorial, suggest removing reference to “2015” in terms of ISO 9001 (the latest year of the ISO standard will change over time – new versions are issued periodically).

5.2. Services provided shall be in conformance with all approved relevant IHO, IMO and World Meteorological Organization (WMO) standards, when they are available.

Note

\*Added WMO in accordance with IRCC guidance.

## **6. Mutual Assistance and Training**

6.1. Member States’ HOs are requested to participate in 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 capacity building activities with the IHO Capacity Building Sub-Committee (CBSC). The goal of this capacity building is to increase the availability of high-quality hydrographic services globally.

Note

\*Added reference to the IHO CB Sub-Committee.

IC-ENC position; Support and Clarify, noting:

- Encouraging support and capacity building etc is appropriate, but can this paragraph be more targeted to WENS, at the moment it is very generic.

## ANNEX 3

## DRAFT GGIM Integrated Geospatial Information Framework's Strategic Pathway 4, Section 4.5

There are specific principles and elements for managing geospatial information to promote consistent data governance, management, discovery, sharing and reuse so that data organizations may meet their obligations to government and the user community. These principles also need to be embedded into acts, policies, and directives for update/compliance and integration into business practices. The guiding principles for data are:

- **Governance:** High quality authoritative datasets are delivered through designated data governance roles and responsibilities. Data governance roles are mandated for each dataset to ensure responsibility for the integrity and quality of data.
- **Consistent Identification:** A common data dictionary, vocabulary, ontology and persistent identifiers are applied to the identification of data to enhance accessibility, manage effective use of data, and avoid duplicated collection or purchase.
- **Quality Management:** Quality management processes are used to manage the currency, completeness, accuracy and consistency of data for a specified purpose.
- **Metadata:** Appropriate metadata is applied according to standards and used to accurately define and describe geospatial data, including content, geographic extent, purpose, characteristics, currency and provenance etc., together with contact details for further information.
- **Standards:** Appropriate standards are adopted and enforced throughout the data lifecycle to enhance integration and interoperability of individual and disparate data sets.
- **Accessibility:** Easy, efficient and equitable access to spatial data through common geospatial platforms where technology, data formats, organizational arrangements, licensing, location, costs and conditions do not inhibit its use.
- **Reusable Formats:** Data is in a form suitable for further value-adding by internal and external users.
- **Authoritative:** Data is managed responsibly by the designated data custodian to eliminate the proliferation of duplicate data sets. The notion is to collect once and use many times.
- **Timeliness:** Data is managed according to priority, and where required, is maintained as close to real-time as possible.
- **Provenance:** The origin and quality of data is readily accessible to the user via metadata so that they can determine if it is 'Fit for Purpose'
- **Integrity:** The interrelationships between data themes collected by multiple agencies are managed with topological integrity.

- **Demand Driven:** Data acquisition and maintenance is aligned to user needs and requirements to achieve optimal resource allocation.
- **Efficiency:** Geospatial data products are differentiated as close as possible to the user to create more opportunities for reuse along the supply chain.
- **Security:** Data are held with adequate provision for long-term care including disaster recovery and backup procedures, are disposed or archived in accordance with government regulations, and considering technological advancements.
- **Respected Rights:** Confidentiality, privacy, intellectual property rights and the security of sensitive information are preserved, and the sharing of Indigenous knowledge is contingent upon consent of the knowledge holders in alignment with UNDRIP principles.