|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DCEG | CA | 2.8 | p. 23 | ed | 2nd to last paragraph on p. 23: “Conformance at different scales can achieved by…” Missing the word “be” between “can” and “achieved” | Add the word “be” between“can” and “achieved” to read “…can be achieved…” |  |
| DCEG | CA | 5.1.3 | p. 33 | ed | Reads “S-122” instead of “S-123” | Correct to “S-123” |  |
| DCEG | TC | 5.7 | p. 40 | ed | NavigationalMeteorologicalArea: In DCEG section 5.7, it is misspelled as 'NavigationalMeterorologicalArea'. | Fix the spelling mistake of **NavigationalMeteorologicalArea** in table under 5.7 of DCEG. |  |
| DCEG | SJC | 5.7 | p. 40 | ed | Typo: NavigationalMeterorologicalArea should be NavigationalMeteorologicalArea | Have it corrected. |  |
| DCEG | CA | 6 | p. 50 | ed | Last paragraph, first sentence: “Zone” in “**Indeterminate** Zone” should be in bold | Bold the word “Zone” to read “**Indeterminate Zone**” |  |
| DCEG | CA | 7.1.1 | p. 58 | ed | First paragraph, second sentence: “The Text Placement feature must associated…” Missing the word “be” between “must” and “associated” | Add the word “be” between the “must” and “associated” to read “…must be associated…” |  |
| DCEG | CA  | 9.1 | p.81 | ed | Sentence reads: “The GML format implements and used association classes…” Should be “use**s**” | Replace the word “use**d**” with “use**s**” |  |
| App Schema | CA | 1 | Figure 16p. 12 | ed | Figure is not as legible as previous figures in this document.  | Replace figure with one with more legible text |  |
| App Schema | CA | 1 | Figure 17p. 13 | ed | Figure is missing the numbers related to the permitted values for “transmissionRegularity” | The list should read:continuous = 1 / regular = 2 / on receipt = 3as required = 4 / on request = 5 |  |
| App Schema | CA | 1.2.6 | p. 29 | ed | Under “Constraint,” the text reads “If **Regulations.textContent** is populated, there cannot be … bound to the **Regulations**.. A similar constraint applies to the information types **Recommendations**, **Restrictions**, and **NauticalInformation**.” | Update text to match the section (i.e. change “Regulations” to “NauticalInformation” and change the last sentence accordingly.Remove extra period at the end of the first sentence. |  |
| App Schema | CA | 1.2.8 | p. 31 | ed | Under “Constraint,” the text reads “If **Regulations.textContent** is populated, there cannot be … bound to the **Regulations**.. A similar constraint applies to the information types **Recommendations**, **Restrictions**, and **NauticalInformation**.” | Update text to match the section (i.e. change “Regulations” to “Recommendations” and change the last sentence accordingly.Remove extra period at the end of the first sentence. |  |
| App Schema  | CA | 1.2.9 | p. 31 | ed | Under “Constraint,” the text reads “If **Regulations.textContent** is populated, there cannot be … bound to the **Regulations**.. | Remove extra period at the end of the first sentence. |  |
| App Schema | CA | 1.2.10 | p. 31 | ed | Under “Constraint,” the text reads “If **Regulations.textContent** is populated, there cannot be … bound to the **Regulations**.. A similar constraint applies to the information types **Recommendations**, **Restrictions**, and **NauticalInformation**.” | Update text to match the section (i.e. change “Regulations” to “Restrictions” and change the last sentence accordingly.Remove extra period at the end of the first sentence. |  |
| App Schema  | CA | 1.4.19 | p. 42 | ed | Point 3 under the “Examples” reads “The sequence dayOfWeek=1, dayOfWeek=3, dayOfWeek=5 to indicate Mon-Wed and Thursday is not allowed. Encode the Mon-Wed and Thursday schedules in different instances of this complex attribute.”The mention of “Thursday” should be replaced by “Friday” to be consistent with “dayOfWeek=5.” | Replace the 2 instances of “Thursday” with “Friday” |  |
| App Schema  | CA | 1.4.19 | p. 43 | ed | Point 3 under “Examples” of the “Old remarks” reads “The sequence dayOfWeek=1, dayOfWeek=3, dayOfWeek=5 to indicate Mon-Wed and Thursday is not allowed. Encode the Mon-Wed and Thursday schedules in different instances of this complex attribute.”The mention of “Thursday” should be replaced by “Friday” to be consistent with “dayOfWeek=5.” | Replace the 2 instances of “Thursday” with “Friday” |  |
| App SchemaFC | CA | App Schema 1.5.6FC 3.115 | App Schema p. 47FC p. 48 | ed | The row starting with “streamedData” reads “Streamed data is data that that is constantly…” The second “that” is not necessary. | Remove the second “that” to read “Streamed data is data that is constantly…” |  |
| App Schema  | CA | 1.6.23 | p. 57 | ed | The row starting with “products issued by HO services” reads “information obtained from products issued by Hydro**p**grahic Offices” The word “Hydrographic” is misspelled. | Correct to read “Hydrogra**p**hic” |  |
| App SchemaFC | CA | App Schema 1.6.27FC 3.92 | App Schema p. 59FC p. 36 | ed | The row starting with “gross tonnage” reads “…except certain spaces with are exempted…” Should be “**which**” | Replace the word “with” with “which” so the text reads “…except certain spaces **which** are exempted…” |  |
| App SchemaFC | CA | App Schema 1.6.28FC 3.93 | App Schema p. 60FC p. 37 | ed | The row starting with “ton” reads “… 35 cubic feet (0.9911 m3) of salt water…” The “3” after the m” should be in superscript.  | Superscript the “3” after the “m” to read “… 35 cubic feet (0.9911m**3**) of salt water…” |  |
| App Schema | CA | 2 | Figure 21, 22p. 63 | ed | Figure 21 and 22 are missing the closing bracket to read “reported (not confirmed)” under the list “QUAPOS” | Add the closing bracket to read “reported (not confirmed)” |  |
| App Schema | CA | 2.4.2 | p. 68 | ed | The row starting with “reported (not confirmed” is missing the closing bracket.  | Add the closing bracket to read “reported (not confirmed)” |  |
| App SchemaFC | CA | App Schema 3.2.2FC 3.117 | App Schema p. 70FC p. 48 | ed | Reads “S-122” instead of “S-123” (3 instances) | Correct to all 3 instances to read “S-123” |  |
| FC | CA | 3.10 | p. 7 | ed | For the row starting with “alternate calling,” the letter “e” is missing at the end to read “interferenc**e**” | Add the letter “e” to read “interferenc**e**” |  |
| FC | CA | 3.52 | p. 24 | ed | Reads “S-122” instead of “S-123” | Correct to “S-123” |  |
| FC | CA | 3.78 | p. 31 | ed | For the first row, the letter “t” is missing at the beginning to read “**t**reaty” | Add the letter “t” to read “**t**reaty” |  |
| FC | CA | 3.79 | p. 32 | ed | For the row starting with “historic,” the semi-colon is missing after “history” to read “famous in history**;** of historical interest” to match what is written in the App. Schema 1.6.24. | Add the semi-colon after “history” to read “famous in history**;** of historical interest” |  |
| FC | CA | 3.96 | p. 39 | ed | The row starting with “unsurveyed” reads “survey data **is** does not exist…” Remove the word “is” as it is not necessary. | Remove the word “is” to read “survey data does not exist…” |  |
| FC | CA | 3.111 | p. 45 | ed | The row starting with “natural resources or exploitation” reads “natural resources of exploitation. The words “pertaining to” at the beginning is missing. | Add the words “pertaining to” to read “pertaining to natural resources or exploitation” to match App Schema 1.5.3 |  |
| All | TC | \* | \* | ed | Consistently include both the name and CamelCase code in the sections describing each type. Readers should be able to search by 'Radio Station' or 'RadioStation'. This seems to have beeen done in most cases but there are a few exceptions such as NavigationalMeteorologicalArea.  In DCEG section 5.7, the name is 'NAVAREA/METAREA'. | Review Names and codes for consistency. |  |
| All | TC | \* | \* | ed | Changed case of Information association codes to UpperCamelCase for consistency.  (This should be provided as feedback to NIPWG) | Information types should be UpperCamelCase. XML FC and other docs. |  |
| All | TC | \* | \* | ed | Information type AbstractRxN is missing a role for the information association binding InclusionType to Applicability, assuming to use isApplicableTo. | Fix missing InclusionType for Information type AbstractRxN. XML FC |  |
| App Schema, FC, DCEG | TC | all | all | ed | These 3 documents are essentially describing the data model in different ways, graphical, textual and intended use. The tables in the App Schema, FC and encoding guide are essentially copies with a maintenance burden of keeping them consistent. There is also risk that notes in diagrams, such as constraints may not have been included in the other documents. An encoder needs to jump back and forth between each document to be sure they find all the details. | Consider mashing these documents together. Readers not interested in the diagrams can scroll past but at least the descriptions, notes and details will be in one place. For machine use of UML diagrams a digital file such as EA or XMI allows for interrogation and transformation to system schemas etc. FC is available in XML form which can be used by machine or styled into structured html. | Example:Make sure that more than one **onlineResource** isassociated with more than one instance of **textContent**Comment: Discrepancies should be resolved during the review of the next draft |
| P. Spec | TC | 6.2 | all | ed | The level of detail overlaps with DCEG, FC and Schema documents. Maintenance burden and risk of inconsistencies. Data encoders need to look up descriptions in multiple places when encoding instead focusing on DCEG. | Consider moving much of the textual descriptions in the 6.2 sub sections regarding breakdown and intended use of objects and attributes into the DCEG. |  |
| P. Spec | TC | App D-1 GML | all | ed | Seems to overlap or duplicate the content in the separate GML Data Format document. | The main product spec should include information about encoding choices and patterns but the detailed GML schema definition could be a separate document. |  |
| DCEG,FC | GE |  |  | TE | **Frequency tables and ice information**This information should not be provided in an S‑123 product. It is assumed that vessels intending to navigate in icy conditions are aware of this information. A reference to the relevant International Telecommunication Union (ITU) and World Meteorological Organization (WMO) websites which provide this information seems to be sufficient | **Add** reference to relevant International Telecommunication (ITU) and World Meteorological Organization (WMO) websites using the attribute OnlineResource | Conclusion: Ensure that there is a way to encode where ice information may be obtained or explain how it can be done with the current model (DCEG).  |
| DCEG | GE |  |  | TE | Global services and areas | Assuming a commonly agreed product providing valid global information is available, the DCEG should provide sufficient information on that circumstance (e.g. Inmarsat, MetArea, WetArea, NavArea…) | Conclusion:Wend100 guides producers on cooperation with regions on coverage. This should be somewhere in the DCEG. |
| schemas | rmm vice BSH | All features, information types, and complex attributes |  | te | Consider allowing attributes to be encoded in any order instead of requiring a fixed order. | [RMM: There were technical reasons related to schema validity arising from the W3C XML schema specification for requiring a fixed sequence, which is the norm in XML. Changing this can be considered but there may be technical constraints preventing its implementation.] | Conclusion:Attributes should be in the same order as the feature catalogue. |
| GML Encoding | TC | general |  | te | There is an S-100 WG reviewing S-100 Part 10b GML encoding in order to simplify the encoding patterns and reduce costs, complexity and validation issues that will be faced under the current specification. | Consider changes proposed under S-100WG6-04.3 | Conclusion:Any changes to Part 10b will be applied when S-123 is updated to conform to S-100 Edition 5. |
| Exchange Sets | TC |  |  | te | Exchange Set metadata has been under review and adjustments within S-100. | Review exchange set metadata, consider changes in Edition 4 and in the works for Edition 5. | Conclusion:Any changes to metadata will be applied when S-123 is updated to conform to S-100 Edition 5. |
| PS | SJC | 6.1 | p. 8 | te | Correct and clarify the geometry configuration level. PS p.8 : “…conform to S-100 geometry configuration level 3b (S-100 section 7-5.3.5) S‑123 further constrains level 3a..” S-100 Edition 2.0.0 section 7-5.3.5 is now section 7-4.3.5 in S-100 Ed. 3.0.0 and 4.0.0. S-100 Edition 2.0.0 section 7-5.3.5 indeed refers to Level 3b. However, Level 3b requires strict topology, e.g. surfaces must be mutually exclusive and provide exhaustive cover. It seems not what S-123 intends to use. | 1. Change “level 3b (S-100 section 7-5.3.5)” to “level 3a (S-100 Part 7)”.
2. Better use wording similar to that of S-101 PS:

“The geometry of S-123 dataset is constrained to level 3a which supports 0, 1 and 2 dimensional features (points, curves and surfaces) as defined by S-100 Part 7 – Spatial Schema. S-123 further constrains Level 3a with the following: “ | Proposed changes acceptedMake sure the language does not include the wording “exhaustive cover” and “mutually exclusive” |
| PS | SJC | 6.1 | p. 9 | te | The interpolation of arc by center point and circle by center point curve segments must be circular arcs with center and radius, as described in S-100 §§ 7-4.2.1, 7-4.2.20, and 7-4.2.21. | Need GML examples and DCEG guidance. S‑101 ENC does not use arc by center point and circle by center point curve segments. | Conclusion:If these still do exist, make sure sample data sets of S-123 contain examples of such geometry.Could be part of updating the Prod. Specs to S-100 Edition 5. |
| PS | SJC | 6.1 | p. 9 | te | “The distance between two consecutive control points must not exceed 0.3 mm at a display scale of 1:10000. “ This is incorrect and not consistent with S-123 DCEG section 2.3.2: “The MRS capture density will follow the recommendation of the S-101 (ENC) DCEG, that states curves and surface boundaries should not be encoded at a point density greater than 0.3 mm at permitted display scale.” | “The distance between two consecutive control points must not be less than 0.3 mm at a display scale of 1:10000.” | Proposed change is appropriate.Suggestion: **TG2 Action for HA + JP**: Propose replacing sentence with one recommending keeping the vertex density to a reasonable level in both Prod. Specs and DCEG.Proposal to replace the sentence in the PS with the following (2022.02.14):“Coordinate density can have a significant impact on file size and system performance. A rule of thumb is to limit the coordinate density to 0.3 mm at maximum permitted display scale. For a scaleless product, the producer should keep in mind the expected scale range for typical use and the density of coordinates needed to suit the needs of the product.”\*Note: May need a diagram to explain vertex density at compilation scale (somewhere on the NIPWG site that could be added to the PS). Could be added to S‑97 for longer term. |
| PS,DCEG | SJC | PS 6.2.1DCEG 2.4.9.3 | onlineResource | te | In S-101 and GI Register, onlineResource has only 3 sub-attributes: headline, linkage, nameOfResource.In S-123, onlineResource has the following sub-attributes: linkage, protocol, applicationProfile, nameOfResource, onlineDescription, onlineFunction, protocolRequest.S-123 DCEG simply states that: “References to Internet sources should be encoded using the onlineResource sub-attribute of textContent.”\*In S-123’s FC, examples are given in the definition of the simple attribute ‘protocol’ as “ftp, http get KVP, http POST, etc.” While in the definition of ‘protocol request’ the implied example is the Web Feature Service standard. | Resolve the differences in sub-attributes (S-101 & GI Register vs S-123). In DCEG, elaborate how the sub-attributes of onlineResource are to be used, by adding some examples, so that those additional sub-attributes of onlineResource can be more useful or usefully encoded.  | Conclusion:Should be addressed in S-123 update to conform to S-100 Edition 5\*Task to complete for Edition 1.1 of S-123 |
| PSDCEGApp SchemaFC | TC | PS 6.2.1.1, 6.2.1.3, 6.2.1.6 | **CoastguardStation** | te | **CoastguardStation**In Canada, Coast Guard Stations remotely control and provide the services offered by a set of Radio Stations. Contact information and hours of service are specific to the Coast Guard Station.S-123 does not provide a means to encode the relationships between Radio Station and Coast Guard Station that controls it.For details see section 2.3.2, 2.3.10 in the following document: [Report on creation of Canadian S-123 datasets (2021.08.29)](https://iho.int/uploads/user/Services%20and%20Standards/NIPWG/NIPWG%20VTC%202021/NIPWG_VTC_2021_6-2-1_CCG%20Report%20on%20Feedback%20to%20S-123%20edition%201.0.0.pdf) | Add an association between **CoastguardStation** and **RadioStation** such as manages, managedBy.The contact details and hours or service are defined for the Coast Guard station and not individual Radio Stations.Consider adding an attribute to **RadioStation** to indicate that is it remotely controlled by the associated Coast Guard station. | Conclusion: There should be an association between CoastguardStation and RadioStation. This should also include a hierarchy between CoastguardStation and RadioStation.Suggestion:To consider changing the CoastguardStation from feature type to an information type. Or MRCC becomes an information type and CoastguardStation would be the physical installation, especially if MRCC is not part of a CoastguardStation. |
| DCEG App Schema FC | TC |  | **RadioStation** | te | Most of the details of the services provided by the radio station are encoded in the **RadioServiceArea** features which provide coverage and details about services which are provided by the radio station. The same radio station could offer different service coverage areas due to frequency and power etc.Radio stations can be remotely controlled by a coastguard station.The S-123 specs state that only 4 of the sub attributes of radiocommunications complex attribute are applicable to **RadioStation**.If the communications channel, frequencies etc are populated on the **RadioServiceArea** features associated with a **RadioStation** then it would be redundant to encode channel and frequency on the **RadioStation**. | 1. Implement an association between **RadioStation** and **CoastguardStation**.
2. Use the association to **CoastguardStation** to navigate to the **ContactDetails** of the **CoastguardStation** that controls the **RadioStation**.
3. Add an attribute to **RadioStation** to indicate the radio station is unmanned/remote controlled.
4. Use a separate complex attribute such as **radioStationCommunicationDescription** to carry only the attributes intended for **RadioStation** instead of needing special notes and restrictions.
5. Change DCEG to indicate **RadioStation** communication information only needed if not available through associated **RadioServiceArea** features.
 | Points 1, 2 and 3 related to the point abovePoint 4: information should be constrained from the start. Proposed complex attribute could be a sub-attribute \*Come back to this issue when Edition 1.1 is being drafted.Note: May need to have a separation between the physical installation of the RadioStation vs the radio service provided by said RadioStation.The DCEG should explain how things should be used.**TG3 Action for HA:**HA to talk to Jeff about the Registry having a separate complex attribute for the 4 sub-attributes and use the rest as the extended radiocommunications complex attribute as they both already exist in the XML FC. |
| All | SJC |  | RadioStation | te | RadioStation is a point feature with attributes: callSign, categoryOfRadioStation, estimatedRangeOfTransmission,status, orientation,radiocommunications (only 4 of the sub-attributes: categoryOfMaritimeBroadcast, communicationChannel, signalFrequency, transmissionContent) | 1) What’s the use case of ‘orientation’? S-101 RadioStation does not have this attribute.2) S-101 RadioStation is now using frequencyPair instead of signalFrequency.(see also the comment item: radiocommunications).3) Does the list of categoryOfRadioStation imply what this RadioStation feature is meant to model? How about DSC, NDBP, data, AIS AtoN…radio telegraphy (WT) ?NAVDAT (Navigation Data) ? (NAVDAT is to replace NAVTEX)VDES (VHF Data Exchange) ?(see comment regarding radiocommunications below for a preliminary proposal) | 1) In agreement to remove orientation from RadioStation as it is removed from S-101. Suggestion to use the RadioServiceArea instead to create a sector if necessary.2) In agreement to replace signalFrequency with frequencyPair**Future Action Item:**Propose a model (need to look at the comments for radiocommunications first)3) (Waiting to discuss point regarding radiocommunications preliminary proposal further below.) |
| All(DCEG, App Schema,FC) | SJC | DCEG 5.10App Schema 1.6.12FC 3.16, 9.12 | categoryOfRadioStation | te | categoryOfRadioStation is defined as classification of radio services offered by a radio station. GI register’s categoryOfRadioStation adds two codes(19: Radio Telephone Station & 20: AIS Base Station) in addition to S-57’s list of 14 codes (1~14).S-101 allows only 6 codes (5, 10, 11, 14, 19, 20).S-123 allows 11 codes, including Decca(8), Loran-C(9), Omega(12), Syledis(13), facsimile transmission (17).Code 17 facsimile transmission is not listed in GI Register. (as remarked in S-123 FC)Omega and Decca were shut down in 1997 and 2000 respectively (ref. WiKi).  | 1) Reconsider the allowable encoding values.2) Resolve the differences (S-101 & GI Register vs S-123). | 1) To review if this list is still accurate worldwide**TG3 Action item for JP:** To ask UKHO\*Note: If more information is needed, then a NIPWG letter can be sent. 2) Waiting on the result of point 1 before resolving this comment.  |
| DCEGAppSchemaFC | CA | DCEG 5.10App Schema1.6.12FC 3.16, 9.12 | categoryofRadioStation | te | Out of the permitted values, Canada does not use the following:8: Decca – replaced by GPS9: Loran C – discontinued 10: Differential GNSS – DGPS being phased out11: Toran12: Omega – shut down in 199713: Syledis – replaced by GPS14: Chaika (Chayka)This would leave radio direction-finding station (5), facsimile transmission (17), radio telephone station (19) and AIS base station (20). | Propose to review the permitted values list to see whether all these options should remain. | (see above) |
| PSDCEG App Schema FC | TC | PS 6.2.1.1, 10.6DCEG 2.3.1, 2.4.2, 5.2, 5.6, 5.10.1, App Schema 1.1.6 FC 3.14, 9.8 | **Landmark**DCEG p. 34 | te | **Landmark** features are used only if needed to encode a location relevant to **radiocommunications** but for which a radio service or station is not appropriate. The related radio communications information must be encoded using a **RadioStation** and/or **RadioServiceArea**. It seems there would be an implicit association between a **Landmark** and a **RadioStation** based on a shared geometry however it might be useful to allow a feature association to indicate they are not just collocated. | Consider an association between **Landmark** and **RadioStation** or **RadioServiceArea.** | Disregard because Landmark type to be removed (see comment below). |
| All | SJC |  | **Landmark** | te | In S-123, only dish aerial, radio mast, radio tower are allowed. “If the feature can be encoded as a radio station at the same location, a coincident Landmark must not be encoded.”RadioStation is defined as a place equipped to transmit radio waves and it has no mandatory attributes. Therefore, such Landmark would be redundant in S-123. | Remove Landmark type from S-123 data model. | In agreement that the Landmark type should be removed as it does not add any value.\*Note: This may also apply to “Buidling.” |
| App SchemaFC | CA | App Schema 1.6.9FC 3.14 | **categoryofLandmark**App Schema p. 51FC p. 10 | te | Definition of “**mast**” is inconsistent between App Schema and FC. App Schema references S-57 Edition 3.1, and so does S-101 Edition 1.0.0, but S‑57 Edition 3.1’s definition is what is written in the FC and not what is written in the App Schema.  | Correct the definition of “**mast**” in the App Schema to match what is written in the FC. | Disregard because Landmark type to be removed (see comment above). |
| App SchemaFC | CA | App Schema 1.6.9FC 3.14 | **categoryofLandmark**App Schema p. 51FC p. 10 | te | Definition of “**tower**” is inconsistent between App Schema and FC. The definition in the App Schema is consistent with its reference.  | Correct the definition of “**tower**” in the FC to match what is written in the App Schema. | Disregard because Landmark type to be removed (see comment above). |
| PSDCEG App Schema FC | TC | PS 6.2.1.1, 6.2.1.3, 6.2.1.4DCEG 5.9, 5.10, 8.4App Schema 1.4.13FC 4.14, 8.5, 9.11, 9.12 | **radiocommunications** | te | Note CCG RAMN Table 2-22 which describes how the same broadcast is available from multiple **RadioStation** sites which are remote controlled from one coast Guard station which is broadcasting the content.Consider splitting **radioCommunications** attribute into communications details vs broadcast details to better define which attributes are applicable. Model these as information types so that the common information can be encoded/maintained once and shared by all the **RadioServiceArea** features providing the broadcast service and to other features such as **WeatherForecastWarningArea** for which the content is about. That way a location search would find the overlapping service area and be able to list the broadcasts or a search for a broadcast could list the service areas and referenced locations. | 1. Consider splitting **radiocommunications** to separate broadcast details from two way communications.
2. Consider modeling broadcast details as information types to associate with multiple services and regions where the broadcast is available or regions that the broadcasts concern.
 | 1) Wait until point 2 is resolved before proposing a modelling for this point.2) **TG3 Action for HA + JP:** Proposal to submit a paper to NIPWG (for March 22, 2022) to discuss this point. Should there be only an information type, even for cases it only relates to one feature? Or have 2 ways to do it: inline for single cases and information type to share with multiple features. |
| All | SJC |  | radiocommunications (complex attribute) | te | radiocommunications is used in RadioServiceArea, RadioStation (limited sub-attributes, frequencyPair not included; S-101 RadioStation has frequencyPair), ContactDetails (limited sub-attributes)This complex attribute mixes information elements from different aspects of radiocommunications, and those applicable to different types of equipment or radio services. | Preliminary proposals:Have RadioServiceArea specialized into several feature types, such as RadioTelephonyServiceArea, DSCServiceArea,RadioDataServiceArea,RadioFacsimileServiceAreaRadioTelegraphyServiceArea (for NBDP)NavtexBroadcastAreaAisServiceAreaSome of the sub-attributes of current radiocommunications (complex attribute) may become attributes of specific feature type, while other common ones may be grouped into several complex attribute types, such as radioTransmission, radioApplicationContent, radioAvailabilityTime.radioTransmission may have sub-attributes:classOfEmission, frequencyBand, frequencyPair, communicationChannel, transmissionPowerradioApplicationContent may have sub-attributes:radioUse, perhaps a high level categorization of the application/content ,transmissionContent (for more detailed description), language (of the Application/content)It would be easier for end user and user system to select/filter the information elements according to ship radio stations (equipments) onboard.  |  |
| DCEG App Schema FC | TC |  | **radiocommunications** /broadcasts | te | It seems that broadcasts could be modelled with a dedicated structure. A separate complex attribute tailored specifically for broadcasts.Consider modelling broadcast details as an information type using only the attributes of radiocommunications that related to modelling broadcasts which would allow broadcast details to be shared/linked between **RadioServiceArea**(s) and **NavtexStationArea**(s) and **WeatherForecastWarningArea**(s). | Make a new information type for broadcasts |  |
| DCEG App Schema FC | TC |  | **radiocommunications** /Language of broadcasts | te | Services such as broadcasts can be in different languages.  The **RadioServiceArea** has a **languageInformation** attribute but that seems more for general information about services offered.  It would be useful to have a machine-readable language indication attribute within the **radiocommunications** complex to indicate the language of a service or broadcast.  Separate **radiocommunications** complex instances would be created for services where languages are broadcast/supported on specified channels or frequencies.  Language information can be included as text within the **transmissionContent** attribute but that does not allow machine readability and does not allow indications about languages of other services. A separate language attribute would allow a machine to filter or find **radiocommunications** or broadcasts which are in a language of interest. | Allow multiple languages associated with transmissions and broadcasts. |  |
| DCEG App Schema FC | TC |  | **radiocommunications** /facilities | te | Add guidance to DCEG or perhaps category of facilities to indicate information such as: “Ch24, Ch26, 2142 and 2206: Facilities are available for connecting ships directly to the commercial telephone system on shore.” | Consider guidance or attributes to indicate facilities supported on specific channels |  |
| PSDCEGFC | GE | PS 6.2.1.3DCEG 2.4.10.4, 2.4.12, 8.4App Schema 1.2.5.1, 1.4.13.1, 1.4.15.1, 1.4.19FC 4.12, 4.14, 4.19, 4.21Line 3622, 3114, 3274, 3574 | PS p. 17DCEG p. 15, 16App Schema Fig 5, 6, 10, 12  | te | Attribute “tmIntervalsByDoW”  | Replace “tmIntervalsByDoW “ by “timeIntervalsByDayOfWeek”  |  |
|  |  |  |  |  |  |  |  |
| PSDCEG App Schema FC | TC | PS 6.2.1.3, 6.2.1.5, 6.2.1.6, 6.2.1.9DCEG 5.9, 5.10App Schema 1.1.9FC 9.11, 9.12 | **RadioServiceArea**PS p. 59, 62App Schema Fig 1, 23 | te | **RadioServiceArea** seems to be one of the most commonly encoded features in S-123 in order to provide details of each service content and coverage.  It might be useful to consider breaking this into sub types in order to more distinctly differentiate between types of service such as VHF, MF, AMVER, NAVTEX etc. This would also make it easier to handle portrayal and conversion to formatted documents.Note: DCEG for **RadioServiceArea** identifies that the Service can have an explicit Surface geometry or can be an aggregation of **RadioStation** features.  In the xml FC the permitted Primitive of noGeometry has not been included.  The permitted primitives for **RadioServiceArea** should be as follows:<S100FC:permittedPrimitives>surface</S100FC:permittedPrimitives><S100FC:permittedPrimitives>noGeometry</S100FC:permittedPrimitives> | Consider breaking **RadioServiceArea** into more specialized types.Resolve inconsistency in xml FC for permittedPrimitives. |  |
| All | SJC |  | RadioServiceAreaRadiocommunications… | Ref. info | ITU Radio Regulations (extract, regarding those required to be in the List of Coast Stations and Special Service Stations)**31.13** § 6 Those coast stations assuming a watch-keeping responsibility in the GMDSS shall maintain an automatic DSC watch on frequencies and for periods of time (hours of service) as indicated in the information published in the List of Coast Stations and Special Service Stations (List IV)NBDP (narrow-band direct-printing telegraphy):**52.95** § 44 Frequencies assigned to coast stations for narrow-band direct-printing telegraphy shall be indicated in the List of Coast Stations and Special Service Stations (List IV) This List shall also indicate any other useful information concerning the service performed by each coast station.Digital Selective Calling (DSC):**52.122** § 59 1) [MF DSC]A coast station providing international public correspondence service using DSC techniques within the bands between 415 kHz and 526.5 kHz should, during its hours of service, maintain automatic DSC watch on appropriate national or international calling frequencies. The hours and frequencies shall be indicated in the List of Coast Stations and Special Service Stations (List IV).**52.139** 2) [MF/HF DSC]A coast station providing international public correspondence service using DSC techniques within the bands between 1 606.5 kHz and 4 000 kHz should, during its hours of service, maintain automatic DSC watch on appropriate national or international calling frequencies. The hours and frequencies shall be indicated in the List of Coast Stations and Special Service Stations (List IV).**52.155** 2) [HF DSC]A coast station providing international public correspondence service using DSC techniques within the bands between 4 000 kHz and 27 500 kHz should, during its hours of service, maintain automatic DSC watch on the appropriate digital selective-calling frequencies as indicated in the List of Coast Stations and Special Service Stations (List IV).**52.161** § 72 [VHF DSC]Information concerning watch-keeping by automatic DSC on the frequency 156.525 MHz by coast stations shall be given in the List of Coast Stations and Special Service Stations (List IV)Radio Telephony (RT):**52.180** § 84 The frequencies of transmission (and reception when these frequencies are in pairs as in the case of duplex radiotelephony) assigned to each coast station shall be indicated in the List of Coast Stations and Special Service Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station.**52.200** 4) One of the frequencies which coast stations are required to be able to use is printed in heavy type in the List of Coast Stations and Special Service Stations (List IV) to indicate that it is the normal working frequency of the stations. Supplementary frequencies, if assigned, are shown in ordinary type.**52.218** 2) The normal mode of operation (class of emission) of each coast station is indicated in the List of Coast Stations and Special Service Stations (List IV)**52.223** § 98 The hours of service of coast stations open to public correspondence and the frequency or frequencies on which watch is maintained shall be indicated in the List of Coast Stations and Special Service Stations (List IV)**52.236** 3) Any one of the channels designated in Appendix **18 (maritime VHF)** for public correspondence may be used as a calling channel if an administration so desires. Such use shall be indicated in the List of Coast Stations and Special Service Stations (List IV)**52.242** § 102 1) A coast station open to the international public correspondence service should, during its hours of service, maintain watch on its receiving frequency or frequencies indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)**52.247** § 103 A coast station in the port operations service in an area where 156.8 MHz is being used for distress, urgency or safety shall, during its working hours, keep an additional watch on 156.6 MHz or another port operations frequency indicated in heavy type in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)**52.248** § 104 A coast station in the ship movement service in an area where 156.8 MHz is being used for distress, urgency and safety shall, during its working hours, keep an additional watch on the ship movement frequencies indicated in heavy type in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)Data Transmission:**52.262** Frequencies assigned to coast stations for data transmissions shall be indicated in the List of Coast Stations and Special Service Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station. | As stipulated in Appendix 16 to the ITU RR(Radio Regulations), List IV (List of Coast Stations and Special Service Stations) shall be provided to all ship stations for which a Global Maritime Distress and Safety System (GMDSS) installation is required by international agreement. |  |
| All | SJC |  | RadioServiceAreaRadiocommunications… | Ref. info | ITU publication description:LIST IV - LIST OF COAST STATIONS AND SPECIAL SERVICE STATIONSList IV contains important information for the mariner in relation to radiocommunications, including the GMDSS (Global Maritime Distress and Safety System). Detailed information such as the frequencies for transmitting and receiving, in addition to geographical coordinates, is provided for maritime coast radio stations, including those assuming watch-keeping using digital selective calling (DSC) techniques and radiotelephony. List IV also supplies details of additional services such as medical advice, navigational and meteorological warnings, MSI (Maritime Safety Information), AIS (Automatic Identification System), meteorological bulletins and radio time signals, along with the hours of service and operational frequencies, information on port stations, pilot stations, coast Earth stations, VTS stations, contact information of RCC (Rescue Coordination Centers), SAR agencies, Navarea coordinators and AtoNs (AIS Aids to Navigation). | Service types in the ITU web list of Coast Stations CP : Public correspondence serviceDSC-WATCH : Watch-keeping using digital selective calling techniquesMED-ADVICE : Transmitting medical adviceRCC(s) : Rescue coordination centres (MRCC, RCC, MRSC, JRCC)SAR AGENCY : Addresses and contact informationNAVINFO : Transmitting to ships navigational and meteorological warnings and urgent information (MSI) by means of narrow-band direct-printing techniquesMETEO : Meteorological bulletinsNOTICE-NAV : Transmitting notices to navigatorsUTC : Radio time signalsVTS : VTS stationsPILOT : Pilot stationsPORTINFO : Port stationsCES : Coast earth stationsCES-CP : Systems in the maritime mobile satellite service that provide a public correspondence serviceNAVAREA : Navarea coordinatorsAIS : Automatic identification System |  |
| PSDCEGApp SchemaFC | GE | PS 6.2.1.5DCEG 2.4.10.4App Schema 1.2.11.1, 1.4.15, 1.4.17.1FC 4.12, 8.8 | PS Fig 10App Schema Fig 5, 6, 10, 12 | te | Attribute “scheduleByDoW” | Replace by “scheduleByDayOfWeek” |  |
| PSDCEGApp SchemaFC | GE | PS 6.2.1.8DCEG 2.5.5.3, 8.2, 8.7, 8.8, 8.9, 8.10, 8.11, 9.2App Schema 1.2.2.3, 1.2.3.3, 1.3.1, 1.6.20FC 3.54, 6.6, 8.2, 8.3 | PS p. 24, 25, 26DCEG p. 73, 74, 75, 76, 77, 78, 82App SchemaFig 8, FC p. 75, 76 | te | Information Association “InclusionType” | Replace by “inclusionType” |  |
| PSDCEGApp SchemaFC | GE | PS 6.2.1.8DCEG 5.1, 5.1.3, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 6.1, 6.2, 6.3, 6.4, 8.7, 9.1 App Schema 1.1.1.3, 1.2.3.3, 1.6.20FC 3.54, 6.8, 8.3, 9.1  | PS p. 24, 25, 26, 33DCEG Fig 3, p. 34, 37, 38, 39, 45, 47, 50, 52, 53, 73, 74App Schema Fig 8 | te | Information Association “PermissionType” | Replace by “permissionType” |  |
| PSDCEG App Schema FC | TC | PS 6.2.1.9DCEG 6, 6.1, 6.2, 6.3, 6.4App Schema 4.1.3.3, 4.1.4FC 9.2, 9.7 | **IndeterminateZone**App SchemaFig 23  | te | Fuzzy Areas, RadioServiceAreaAggregate and **IndeterminateZone**During encoding some confusion was encountered regarding the encoding specifics. For example should an **IndeterminateZone** be encoded underneath a **RadioServiceArea?** | Improve DCEG encoding guidance related to core features and indeterminate zones with worked examples. |  |
| All | SJC | PS 7.3DCEG 5.10.1 | Values of frequencies and the uom | te | PS 7.3 (Units of Measure) states that “Radio frequency is given in hertz”.DCEG 5.10.1 states that ”the attribute signal frequency must be quoted in Hertz, e.g. a signal frequency of 950 MHz must be encoded as 950000000.”In FC: both sub-attributes of frequency pair (frequencyShoreStationTransmits & frequencyShoreStationReceives) have ‘kHz’ as the uom, defined as “Kilohertz to 1 decimal place converted to an integer.” Examples given in the remarks: “4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628”.DCEG only says those two sub-attributes are of the type ‘I’. If they are of Integer type, then there should not be leading zeros.In S-123 sample dataset, all frequency values are given in Hz. | Resolve the inconsistencies. p.s. S-101 has the same issue: For frequency values in the frequency pair, the unit is Hz in DCEG, while in FC uom symbol ‘kHz’ is used and defined as 0.1kHz.In ENC, the attribute signalFrequency is also used in describing the Fog Signal. Therefore S-101 need to use the unit Hz.For radio frequencies, the unit kHz would be better. However, using the symbol ‘kHz’ for the unit which is actually 0.1kHz and only mentioning that as notes in the schema and FC could easily lead to errors in both encoding and application use. The S-123 sample dataset is one example.  |  |
| All | SJC | PS 8.1DCEG 2.3.2 | spatial reference system | te | See papers NIPWG8-49.3 and S-100WG6-04.3B for details.PS says in 8.1, “ The coordinate reference system used for this product specification is World Geodetic System 1984 (WGS 84) which is defined by the European Petroleum Survey Group (EPSG) code 4326, (or similar - North American Datum 1983 / Canadian Spatial Reference System).”DCEG only says in 2.3.2 Capture density guideline, “ Each curve segment is defined as a loxodromic line on WGS84, or as an arc or circle” | Include a clear and precise guidance on how to coordinate reference system (“spatial reference system”) in GML dataset, based on S-100 Part 10b-9.8 Coordinate Reference System, revised.For S-123 datasets, the geodetic coordinate reference system shall be specified by using the srsName and srsDimension attributes for individual geometry elements, and identified using the URI convention for SRS specified by OGC, which is “http://www.opengis.net/def/crs/EPSG/0/4326” |  |
| PSDCEG | CA | 11.22.4.9.4 | Dataset sizeDCEG Table 2.8 | te | PS says in 11.2 “MRS datasets shall not exceed 20MB.” DCEG 2.4.9.4, Table 2-8, says “… 10 MB is the maximum allowable size of an MRS dataset” | PS should be corrected to read “10MB.” |  |
| P. Spec | TC | 11.6 | all | te | Dataset naming convention is unconventional making a situation requiring custom development for specific products.Having a consistent naming convention across S‑100 products allows for a common implementation and improves machine readability and useability. | Recommend aligning dataset naming convention with S-97 section 5.2.21 and other product specs. Ideally this would be defined and enforced at the S-100 level.  |  |
| P. Spec | TC | 11.8 | all | te | Section 11.8 of the product spec shows a catalogue xml file name unique to S-123 as 'CATALOG.123.XML'.Since the preparation of this spec efforts have been made to allow a single exchange set to hold multiple products. It is also simpler for production, testing and end user systems if consistent patterns are used. | Adopt S-100 CATALOG.XML |  |
| P. Spec | TC | 14.2 | all | te | In the S-123 product spec section 14.2 Dataset Metadata Table 14-1 Vertical datum and Sounding datum are defined as mandatory but set to Nil.This was necessary as the spec was based on S‑100 Edition 3 where these were identified as mandatory attributes. This has since been changed to optional in S-100 Edition 4 so an updated S-123 spec could simply leave out these unneeded properties. | Drop unneeded properties for Vertical datum and Sounding datum. |  |
| DCEG | SJC | 2.4.1 | Table 2-2 | te | Description of attribute type Time :“Character encoding of a time is a string that follows the local timeExample: 183059 or 183059+0100 or 183059Z”Such description and examples seems not useful enough as an encoding guide. | Use the same description/examples as in S-101 DCEG and S-100:“Time is preferably expressed as Universal Time Coordinated (UTC).Example: 183059ZTime may be expressed as a Local Time with a given offset to UTC.Example: 183059+0100Time may be expressed as a Local Time without a specified offset to UTC.Example: 183059The complete representation of the time of 27 minutes and 46 seconds past 15 hours locally in Geneva (in winter one hour ahead of UTC), and in New York (in winter five hours behind UTC), together with the indication of the difference between the time scale of local time and UTC, are used below as examples.Geneva: 152746+0100New York: 152746-0500 “ |  |
| DCEG | SJC | 2.4.10.4 | timeReference | te | In DCEG, “timeReference = 2 (LT)” appears in multiple places in the examples (referring to Local Time) given in section 2.4.10.4 Schedules.In DCEG 8.5, App Schema 1.6.25, FC 3.84, code 2 is UTC, LT is code 1.timeReference is not found in the GI register. | Resolve the inconsistencies in DCEG 2.4.10.4 (correct “timeReference = 2 (LT)” to “1 (LT)”).Add timeReference to the [GI register](https://registry.iho.int/document/list.do?product_ID=S-123) |  |
| DCEGApp SchemaFC | GE | DCEG 4.4, 8.12, 8.13App Schema 2.1.4.1, 2.2.1.1, 2.2.2.2, 2.3.1FC 4.8, 8.12, 9.17 | App Schema Fig 19, 20, 22 | te | Attribute “horizontalPositionalUncertainty”The question of horizontalPositionUncertainty vs. horizontalPositionalUncertainty should be investigated because the DQWG data quality model has the latter (a complex attribute) while the registry has the former (a simple attribute).Last I heard, DQWG were planning to discuss the differences between the DQWG quality model and S-101 with the S-101 team. | Replace by ”horizontalPositionUncertainty”(DCEG 6.2.1) |  |
| DCEGFC | TC | 5.19.1 | **textContent** | te | Feature Type Abstract base class.Inconsistency between DCEG xml FC.DCEG section 5.1 shows textContent 0,\* but FC is 0,1 | Suggest 0,\* for textContent in FC 9.1 |  |
| All | SJC | DCEG 2.3.1, 2.4.2, 2.8, 5.2, 5.3.1, 5.6.1, 5.10.1App Schema 1.1.2FC 9.3,  | **Building** | te | In S-123, only building of ‘function’ communication (29), radio (31), microwave (34), control (39), sea rescue control (44) are allowed.Such Building seems redundant in S-123. | Remove Building type from S-123 data model. |  |
| FC | GE | 9.3 | **Building** | te | Feature Type “BUISGL” | Replace by “building” | Should “(BUISGL)” be removed from DCEG 5.2? |
| All(DCEG App Schema FC) | SJC | DCEG 5.3App Schema 1.1.5, 1.2.4.3FC 9.6 | **InmarsatOceanRegionArea**App Schema Fig 11 |  | There are currently 4 InmarsatOceanRegionArea, namely the Atlantic Ocean Region East (AOR-E), Atlantic Ocean Region West (AOR-W), Pacific Ocean Region (POR), Indian Ocean Region (IOR) covered by Inmarsat-C.Taiwan is covered by both IOR and POR. Depending on the location and local environment, sometimes the receiver has to switch between IOR and POR satellites. | All Inmarsat ocean region areas cross national boundaries. Will there be an IHO level dataset to encode InmarsatOceanRegionArea?For the end users, perhaps it is useful enough to encode the Inmarsat ocean region as an attribute to other feature types (or a sub-attribute of a complex attribute) describing the services provided via particular Inmarsat satellites. Need use cases. There might be transmission services or application services provided by Coast Earth Stations (CES) or via Land Earth Stations (LES) and certain Inmarsat satellites that would like to be encoded.  |  |
| DCEG App Schema FC | TC | DCEG 5.3App Schema 1.1.5, 1.2.4.3FC 9.6 | **InmarsatOceanRegionArea**App Schema Fig 11 | te | Seems to overlap with **GMDSSArea** A3 zones. There doesn’t seem to be much attribution or description about what these areas are providing. | Define distinction or merge/remove unnecessary feature types. |  |
| DCEG | GE | 5.3.1 |  | TE | German VTS Centres provide Marine Assistance Service (MAS), too. (Information Service, Traffic Information Service, Navigational Assistance Service). Encoding Rescue Services and Maritime Assistance Services information in product specifications is not necessary.  | The S-123 DCEG should contain statements describing that the provision of MAS and Rescue Service information is not needed as own data model entities and that therefore, the data models don’t contain appropriate elements.Add sentence: Encoding Rescue Services and Maritime Assistance Services information is not necessary. |  |
| DCEG App Schema FC  | TC | DCEG 5.4, 5.10App Schema 1.1.4, 1.1.4.3, 1.1.10.3, 1.2.4.3FC 9.5, 9.12  | **GMDSSArea**App Schema Fig 1, 11 | te | **GMDSSArea** is defined as having a Surface geometry that can be associated to one or more **RadioStation** features. The association uses the role **serviceArea**. However, it is the **RadioServiceArea** features that define the service areas and a **RadioStation** can support multiple types of services and service areas. | It seems logical that a GMDSSArea feature would be better associated **with** **RadioServiceArea** or **RadioServiceAreaAggregate** features withrole **serviceArea****GMDSSArea** surface geom not needed when the actual coverage is defined by a collection/aggregation of associated **RadioServiceArea** features. |  |
| All | SJC |  | **GMDSSArea** |  | GMDSSArea has only one attribute categoryOfGMDSSArea (Area A1, A2, A3, A4) . Sea areas A1~A4 are mutually exclusive and are where specific equipment requirements apply.GMDSSArea should be sea areas declared by the authority. For example, Australia's maritime area (search and rescue region, and Navarea X) has been declared GMDSS Sea Area A3, that is for distress and safety purposes, the area will be supported by both satellite and HF terrestrial radio services. The United States has no Sea Area A2 service (their 2MHz infrastructure have been closed), therefore A3 equipment requirements apply beyond A1. Even Sea Area A1 is not just about the ‘radio coverage’ of VHF stations.A MF band RadioStation or RadioServiceArea would be covering both GMDSS area A1 and A2. | Provide clear description and guidance in the DCEG.Consider not to associate GMDSSArea with RadioStation (or even RadioServiceArea).GMDSS Sea Area A3 is to be redefined, since Iridium Satellite System has been accepted into GMDSS. |  |
| DCEG App Schema FC | TC | DCEG 5.8, 5.10, 8.3App Schema 1.2.4.3, 1.1.8, 1.1.10.3FC 9.10, 9.12  | **NavtexStationArea**DCEG p. 48App SchemaFig 1, 11 | te | The **NavtexStationArea** appears to be an administration area within which NAVTEX coverages are defined by way of **RadioServiceArea** features.The  **NavtexStationArea**  does not carry the **radiocommunications** complex attribute which seems to be the only place where broadcast details can be provided so it would appear that the region would need to be overlapped  using a **RadioServiceArea** having radiocommunications with a **categoryOfRadioMethods**=6(NAVTEX) and details about times and content of the broadcasts.If broadcasts were modelled an information type then it could also be associated with the **NavtexSationArea** and the **RadioServiceArea**. In Canada there are NAVTEX where the **txIdentChar** is different for English or French yet the **txIdentChar** has a multiplicity of 1. This means the **NavtexStationArea** would need to be duplicated where two language codes are used. | * Consider and association between **NavtexStationArea** and **RadioServiceArea**.
* Allow a **NavtexStationArea** to have multiple **txIdentChar** attributes or make a complex that pairs language and **txIdentChar**
 |  |
| All | SJC |  | NavtexStationAreaNAVTEX | te | NavtexStationArea is defined in S-123 as “the geographic areas in which radio stations are responsible for broadcast navigation and weather warnings.”There are different types of NAVTEX service:INTERNATIONAL NAVTEX = 518 kHz (in English)NATIONAL NAVTEX = 490 kHz (in national language). However, Peru seems to be using two languages in the same 518kHz NAVTEX.Broadcast content of NAVTEX include two type of services: (1) NOTICE-NAV - Transmitting notices to navigators (2) METEO - Meteorological bulletins (service naming: ref. ITU List IV- List of coast stations and special service stations)txIdenChar (B1 character of NAVTEX) implies the available time slots for the station to broadcast (each station may schedule the slots for those two content types). One station may have multiple transmitters sharing the time slots allocated to that station.Both NavtexStationArea and RadioServiceArea have attribute txIdentChar. Only RadioServiceArea has attributes to encode the language, broadcast content, timesOfTransmission. [RadioServiceArea has also categoryOfRadioMethods=6(NAVTEX)].NAVTEX is being replaced by NAVDAT and there are already some experimental broadcast stations of NAVDAT. | International NAVTEX services (NAVTEX manual): The two basic areas which must be defined when establishing a NAVTEX station are the NAVTEX coverage area and the NAVTEX service area. Each station will provide all the information for a particular NAVTEX service area. The boundaries of the NAVTEX service area must be wholly contained within the coverage area, and must not overlap with adjacent NAVTEX service areas.B1 transmitter identification characters (time schedules); B2 Subject indicator characterProposal 1:If NavtexStationArea is referring to the above mentioned NAVTEX service area, then 1. DCEG should provide more detailed description and guidance accordingly.
2. include NavtexStationArea into the sample dataset.
3. NAVAREA and country it belongs to should also be added as attributes.
4. associate ContactDetails of the national coordinator.

Proposal 2:Instead of using RadioServiceArea, add a new feature NavtexBroadcastArea to model the radio coverage and characteristics of the radiocommunication/broadcast specific to NAVTEX, both international and national ones.Several NavtexBroadcastArea features may be associated with a NavtexStationArea. |  |
| DCEGApp SchemaFC | China MSA | DCEG 5.9, 5.10App Schema 1.6.10FC 3.15, 4.14, 4.15 | **categoryOfMaritimeBroadcast** | te | Sub-attribute “categoryOfMaritimeBroadcast”  | Suggest to add “ tides and water flow forecast” in the Permitted Values |  |
| DCEG App Schema FC | TC | DCEG 5.9, 5.10App Schema 1.6.10FC 3.15, 4.14, 4.15 | radiocommunications /**categoryOfMaritimeBroadcast** | te | Some additional enumerations could be useful.  * Wave height forecast - used in Canada and likely other areas where waves can be a problem (not a tsunami)
* Notices to Fish Harvesters
* ODAS Weather Buoys?
* Ice hazard bulletin
* Ice boundary information
* Ice forecasts (there is 3 - ice report - but that might not be the same; there is 18 - icing warning - but that is for vessel icing hazard not an ice forecast)
* Iceberg Bulletin
* Water level readings
* Weather watches
* Marine weather statements?
* Technical marine synopsis?
* Extended marine forecasts
 | Enhance **categoryOfMaritimeBroadcast** to model more types of broadcasts |  |
| All | SJC |  | **categoryOfMaritimeBroadcast** (sub-attribute of radiocommunications) | te | categoryOfMaritimeBroadcast is defined in S-123 as the classification of maritime broadcast based on the nature of information conveyed.The 19 listed values of this sub-attribute mostly consist of the subjects indicated by the B2 character of NAVTEX (NAVTEX manual, 2018), the 4 types of navigational warnings (MSI manual, 2016), plus differentiation in warnings of gale/storm/tropical depressions. Such categorization seems not systematic, might result in a very long list and limit the usefulness. According to MSI manual (IHO S-53): 1. Defined in SOLAS IV/2, MSI means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships. 2. MSI broadcast methods include NAVTEX, SafetyNET, HF NBDP, and others. 3. There are 4 types of navigational warnings: NAVAREA warnings, sub-area warnings, coastal warnings and local warnings. | At least some of the names need to be updated or revised, e.g. “GNSS messages regarding PRN status” vs “SATNAV message”.Does the “AIS information” means “AIS service messages (non-navigational aid)”, i.e. NAVTEX B2=’G’ ?See also the comment item: radiocommunications. |  |
| DCEG App Schema FC | TC | DCEG 5.9, 5.10, 8.4App Schema 1.4.13FC 4.14 | **radiocommunications** /date range | te | Note in the above figures how one broadcast is served by multiple Radio Stations and Radio Service Areas. Also note that some of the content is periodic.There is **fixedDateRange** for the **RadioServiceArea**. This means that a new copy of **RadioServiceArea** would be needed when there is a **radioCommunications** that has a unique date range. Should have **fixedDateRange** within **radioCommunications**. | Consider date range to **radiocommunications** for cases where some portion, channels, content is only available during a period. |  |
| DCEG App Schema FC | TC |  | **radiocommunications** /emission code | te | There are frequencies which include coded values related to class of emissions such as ‘J3E’ or ‘F1B’.See <https://en.wikipedia.org/wiki/Types_of_radio_emissions>There does not seem to be an attribute to encode this information in the S-123 radio communications.frequencyShoreStationReceives and frequencyShoreStationTransmits are integer types. | Consider new attribute for emission code. |  |
| DCEG App Schema FC | TC |  | **radiocommunications /frequencyPair** | te | Note in the snippet in Figure 9 Table from RAMN having frequencies with emission codes.The channel numbers correspond to specific frequency pairs. This can be achieved manually by constructing the same number of channel numbers as frequency pairs. Leaving some channel numbers blank. However, it has to be intentionally achieved and systems may not expect or interpret the correlation as intended. It would be better to add channel number to the frequency pair complex to allow this encoding to be more explicit. | Consider adding channel number as optional attribute within **frequencyPair**. |  |
| DCEGApp SchemaFC | GE | DCEG 5.9, 8.4 (twice)App Schema 1.4.6.1FC 4.6 Lines 2896-2914 | DCEG p. 44, 66, 67 | te | frequencyPair 🡪contact instructions missing | Add “contactInstructions” as indicated on the Wiki site <http://wp12183585.server-he.de/npubwiki/wiki/index.php/FRQPAR> | Which “Frequency pair” should be kept in DCEG 8.4? |
| All (DCEG, App Schema,  | SJC | DCEG 5.9App Schema 1.4.13.1 FC 3.104, 4.14 | selective call numberApp Schema Fig 10  |  | selectiveCallNumber, a sub-attribute of radiocommunications, referring to the 4-digit Selective Call numbers (SELCAL) for NBDP stations. | selectiveCallNumber as an attribute of the RadioTelexServiceArea type (see the comment item radiocommunications).  |  |
| All(DCEG, App. Schema,FC) | rmm vice BSH | DCEG 5.9App.Schema 1.4.20FC 4.22 | timeOfObservation.observationTimeApp Schema Fig 10 | te | observationTime cannot be repeated in timeOfObservation, The S-123 1.0.0 model assumes that one broadcast will describe observations made at one time. You can repeat radioCommunications instead. This would probably involve too much unnecessary repetition of other attributes, | Change multiplicity of timeOfObservation.observationTime to allow multiple values. |  |
| DCEG | GE | 5.9 |  | te | transmissionRegularity values missing | Add the 5 values currently stored in FC1 : continuous2 : regular3 : on receipt4 : as required5 : on request |  |
| DCEG | GE | 5.9.1 |  | TE | National Radio Service are provided outside off EEZ | Provision of information in an additional sub-paragraph 5.9.1.2 to be consideredAdd at 5.9.1. or alternatively add 5.9.1.2:National Radio Service are provided outside off EEZOverlapping of information to be accepted but the user needs to be informed and to decide which source to be used. |  |
| DCEG App Schema FC | TC | DCEG 5.10, 8.4App Schema 1.1.3.1, 1.2.5.1, 1.4.13.1FC 3.23, 4.14, 4.15, 8.5, 9.4 | **radiocommunications /communicationsChannel**App Schema Fig 5, 6, 10 | te | In the current FC **communicationsChannel** is a text type. Why would it not be a number or integer field. | Consider changing communicationsChannel to a number field to avoid spurious characters |  |
| All | SJC | CARIS’s comment | communicationsChannel |  | communicationsChannel is currently defined as of text type.In ITU-RR Appendix 18: “Table of transmitting frequencies in the VHF maritime mobile band”, channel designators include AIS1, AIS2, ASM1, ASM2. | communicationsChannel should remain text type. |  |
| All | TC | \* | **NavigationalMeteorologicalArea** | te | Consistently include both the name and CamelCase code in the sections describing each type. Readers should be able to search by 'Radio Station' or 'RadioStation'. This seems to have beeen done in most cases but there are a few exceptions such as NavigationalMeteorologicalArea.  In DCEG section 5.7, the name is 'NAVAREA/METAREA'. | Review Names and codes for consistency such as:* Adjust DCEG section 5.7 NavigationalMeteorologicalArea.
 |  |
| All | SJC |  | **NavigationalMeteorologicalArea** | te | NavigationalMeteorologicalArea refers to NAVAREA/METAREA, and has no attribute other than inherited ones. DCEG says that :“The roman number of NAV/METAREA is to be coded by using the feature name attribute” and ” The coordinator should be encoded as an associated Authority.”According to MSI manual (IHO S-53),NAVAREAs are delimited for coordinating and promulgating navigational warnings under the World-Wide Navigational Warning Service (WWNWS).METAREAs for coordinating and promulgating marine meteorological warnings and forecasts within the GMDSS.NAVAREA and METAREA all use roman numeral for identification. NAVAREA coordinator and METAREA coordinator are usually not the same authority. | Rename NavigationalMeteorologicalArea as NavAreaMetArea to be more intuitive, and less confusing with the WeatherForecastWarningArea.Add an attribute idNavAreaMetArea to encode the identifier of a particular area which consists of the term METAREA (or NAVAREA) and a roman numeral (e.g. NAVAREA XI or METAREA XI); or categorize into NAVAREA and METAREA first.NAVAREA/METAREA are broadcast via Inmarsat SafetyNet/EGC. It seems not useful to associate NAVAREA/METAREA with RadioStation or RadioServiceArea. More and more NAVAREA coordinators also provide NAVAREA Navigational Warnings on the web (https://iho.int/navigation-warnings-on-the-web). Consider adding an attribute onlineResource directly to NavAreaMetArea.The extents of NavAreaMetArea features are mostly crossing national boundaries. Will there be an IHO level dataset? |  |
| DCEG App Schema FC | TC | DCEG 5.10, 8.3 App Schema 1.1.7, 1.1.10.3, 1.2.4.3FC 9.9, 9.12 | **NavigationalMeteorologicalArea**DCEG p. 48, 65App schema Fig 1, 11 | te | These have optional associations with **RadioStation** features but it might make more sense to associate with **RadioServiceAreas** (and Broadcasts, if they were an information type) which are providing nav and weather warnings.  The remark under DCEG 5.7 indicates: NAVTEX transmitting station identification characters are allocated within the same areas. Perhaps is makes sense to have a formal association between NavigationalMeteorologicalArea and NavtexStationArea.Examples such as RAMN 4.3.3.1 indicate a need to provide contact details or a link to perhaps a Coastguard station.“Comments concerning the reception of NAVAREA XVII and XVIII broadcasts, especially above 75°N, would be appreciated and should be sent to: NAVAREA XVII and XVIIIPrescott MCTS Centre …” | * Consider associating **NavigationalMeteorologicalArea** with **RadioServiceArea** or **RadioServiceAreaAggregate** features.
* Consider association between **NavigationalMeteorologicalArea** and **NavtexStationArea**.
* Consider adding possible association between **NavigationalMeteorologicalArea** and **ContactDetails** or **CoastguardStation**
 |  |
| DCEG App Schema FC | TC | DCEG 5.10, 5.11, 6.3, 8.3App Schema 1.1.10.3, 1.1.11, 1.2.4.3, 4.1.1.3FC 9.12, 9.13, 9.14 | **WeatherForecastWarningArea**App Schema Fig 1, 11 | te | Currently the **WeatherForecastWarningArea** includes a relationship to the **RadioStation** but it should include a relationship to the **RadioServiceArea** which is providing the information (since a **RadioStation** can offer multiple service areas which provide info about neighbouring regions). | * Allow an association between **WeatherForecastWarningArea** and **RadioServiceArea.**
 |  |
| DCEG App Schema FC | TC | DCEG 5.10, 5.11, 6.3, 8.3App Schema 1.1.10.3, 1.1.11, 1.2.4.3, 4.1.1.3FC 9.12, 9.13, 9.14 | **WeatherForecastWarningArea**App Schema Fig 1, 11 | te | The text of the service area may list the number identifiers of the weather area such as "Weather forecast and wave height forecast for marine forecast areas 215, 217 and 219." But it would be better if there was a more direct link between the broadcast service and the areas it provides information about. The only place to put these numeric identifiers on the **WeatherForecastWarningArea** is the **featureName**. Perhaps a separate field for identifier would be useful. | * Improve the model to allow unique identifiers (such as numeric or coded strings) instead of **featureName**.
* Consider modeling broadcasts as information types to be shared between multiple **RadioServiceArea** features and associated to the forecast areas the broadcasts are about. This would support queries from a location to associated broadcasts and vice versa.
 |  |
| DCEG App Schema FC | TC | DCEG 5.10, 5.11, 6.3, 8.3App Schema 1.1.10.3, 1.1.11, 1.2.4.3, 4.1.1.3FC 9.12, 9.13, 9.14 | **WeatherForecastWarningArea**App Schema Fig 1, 11 | te | Some categories of forecast and warning areas in RAMN that don’t seem to have a match with **categoryOfFrcstAndWarningArea** enumerations. Such as ‘Inland Waters’, ‘Commercial Shipping Waters’ and ‘Major Inland Waters’. | * Consider whether additional **categoryOfFrcstAndWarningArea** enumeration values are warranted**.**
 |  |
| All | SJC |  | WeatherForecastWarningArea  | te | WeatherForecastWarningArea is defined as an area for which weather forecasts and warnings are provided for specified periods. It has attributes categoryOfFrcstAndWarningArea (WMO, national high seas, national coastal, national inshore, national local, ice) and nationality.It seems to be referring to the content instead of the radio transmission. The content can be transmitted via (covered by) various types of radio transmission services.Delimitations of such areas would usually not correspond to radio coverage of RadioStation or RadioServiceArea. A RadioStation, e.g. AIS base station, may broadcast content of a WeatherForecastWarningArea outside its own radio coverage.It would be useful to encode/associate the available radio transmission services to access the content of a specific WeatherForecastWarningArea. | Consider remodelling. Provide clear description and guidance in the DCEG.In the case of providing weather forecasts/warnings or marine meteorological information service by using AIS ASM (Application SpecificMessage) on AIS1 and AIS2 channels, it would be useful to also include the message types (message formats) information. (see also the comment item: radiocommunications for the preliminary proposals) |  |
| FC | China MSA | 9 |  | te | Clause “Feature Types “ | Suggest to add “ Tides and water flow forecast area” in this clause as 9.14.  | Should this be added in DCEG as 5.12 and App Schema as 1.1.12? |
| DCEG App Schema FC | TC | DCEG 6.2App Schema 4.2.1 FC 3.50, 9.7 | **informationConfidence**App SchemaFig 23  | te | In DCEG section 6.2.1.2 Statistical confidence describes the enumerations 'Virtually certain; 'High likelihood', 'Medium likelihood' and 'Low likelihood' and how the percentages are mapped to these enumerations.  These enumerations are repeated again in section 6.2.1.3 but without the percentage distinctions. The attribute for these enumerations is called **informationConfidence**. In the **informationConfidence** definition of the Feature Catalogue the percentage distinctions is not included.  It is the FC definitions/remarks that are most likely to be presented to the user during digitizing/editing of the content.  | Resolve inconsistencies and improve description of **informationConfidence** attribute. |  |
| FC | GE |  |  | te | Information Type “InformationType” | Replace by “informationType” | DCEG 8.3 and FC 8.6 should be corrected to “InformationType” then |
| DCEGFC | GE | DCEG 8.4FC 4.2 |  | te | Attribute “contactAddress” | Replace “country” by “country name |  |
| DCEG App Schema FC | TC | DCEG 8.4App Schema 1.2.5FC 8.5 | **ContactDetails/language** | te | It is useful and necessary to be able to offer information such as contact details and instructions in different languages. | Add language indicator to **ContactDetails** to allow managing and finding the details in the language of choice. |  |
| DCEG App Schema FC | TC | DCEG 8.4App Schema 1.4.2FC 3.34, 4.2 | **ContactDetails/ deliveryPoint** | te | There are multiple **deliveryPoint** entries needed to encode the full contact details but no mechanism/property to distinguish them from one another. The order can be defined but there is no machine readable way to isolate a contact label from a post office box or street address.  | Add an optional label or category to delivery point |  |
| All(DCEG,App SchemaFC) | SJC | DCEG 8.4 p.66App Schema 1.2.5.1FC 3.57 | MMSI codeApp Schema Fig 5, 6 | te | 1. mMSICode is defined as of type integer in S‑123 FC and DCEG. It should be a 9-digit code of type text. (as shown in S-101 FC and GI Register).
2. Only ContactDetails has attribute mMSICode. ContactDetails is an Information type defined as “information on how to reach a person or organisation.” For S-123 MRS, encoding mMSIcode directly as an attribute of applicable features would be more useful.
 | 1. Change the type to text. For coast radio stations and AIS base stations, the first two digits would normally be 00, therefore mMSI code has to be of type text, not integer.
2. Add mMSIcode attribute to applicable features. (see the comment item: radiocommunications)
 |  |
| DCEG App Schema FC | TC | DCEG 8.5App Schema 1.2.11FC 5.24, 8.8 | **ServiceHours** | te | Entries in the publication have text such as ‘Hours: H24’. The entire **ServiceHours** information type seems pretty daunting to handle when all you need is to say it is 24 hour service. Perhaps there could be a Boolean for 24 hour service to make it easier to work with. Maybe the Boolean could be carried on features like Coast Guard Station, Radio Station and Radio Service Area so as not to require the creation/link to a service hours information type. | * Consider simplifying service hours to support common situations such as 24 hour service.
* Consider if **scheduleByDoW** needs to be mandatory
 |  |
| DCEG App Schema FC | TC | App Schema 1.4.12FC 4.13 | **Periodic Date Range, Fixed Date Range -**Attribute order | te | This is a complex attribute with sub attributes for date start and date end. However, in the current Feature Catalogue the order of the sub attributes is **dateEnd**, **dateStart**. The default order in which the attributes are listed in the GUI for data view/entry and in the GML is the order which is defined in the FC. It is confusing for users because the natural flow would be from start to end. It will cause data entry errors where the end date gets entered as the start date and vice versa. Additional validations could be useful but a simple improvement would be to change the order of the sub attributes to be more in line with the logic order of the data. | Reorder the sub attributes of **periodicDateRange**, **fixedDateRange** and **surveyDateRange** to be **dateStart**, **dateEnd**. |  |
| DCEG App Schema FC | TC | App Schema 1.4.12FC 4.13 | **Periodic Date Range, Fixed Date Range** – Fuzzy dates | te |  | Add an attribute to date range to indicate the range is approximate. |  |
| DCEG App Schema FC | TC | App Schema 1.4.12FC 4.13 | **Periodic Date Range, Fixed Date Range** – Season name | te | Although there are usually calendar dates for when Spring or Summer starts it is more about the conditions which can vary from year to year based on when snow/ice forms or melts.In this case it is more about the information being applicable to current conditions, Ice reports if there is any ice.Consider allowing a Season name rather than an explicit date range. Winter, Spring, Summer, Autumn.Also, there are sometimes warnings or information that is relative to other ‘seasons’ such as ‘Lobster fishing season’ or ‘tsunami’ season. | Consider an optional attribute for a ‘season’ name rather than a date range. |  |
| App Schema | CA | 1.4.9 | p. 38 | te | App Schema 1.4.9 refers to a complex atrribute named “noticeTime,” but it does not appear in other documents. | Remove section 1.4.9 from the App Schema if not referenced elsewhere in the S-123 documentation. |  |
| App SchemaFC | GE | App Schema 1.4.19.1Line 1838FC 3.86 |  | te | Attribute “Time of day start” needs no Alpha Code | Delete “TIMSTA”  |  |
| FC | CA | 3.313.42  | p. 18p. 21 | te | **3.31 Date fixed** and **3.42 Fixed Date** appear to be duplicates of one another. 3.31 Date fixed appears to be the one used in the App Schema and the FC.  | Remove **3.42 Fixed Date** from the FC.Change “Fixed Date” to “Date fixed” in DCEG 8.6 (p. 70) to match App Schema 1.2.7.1 and FC 8.7. Change “fixedDate” to “dateFixed” in DCEG 2.4.10.4 (p. 16) and 8.6.1 (p. 70). |  |
| FC | CA | 3.333.109 | p. 18p. 43  | te | **3.33 Date variable** and **3.109 Variable Date** appear to be duplicates of one anoher.3.33 Date variable appears to be the one used in the App Schema and the FC. | Remove **3.109 Variable Date** from the FC.Change “Variable Date” to “Date variable” in DCEG 8.6 (p. 70) to match App Schema 1.2.7.1 and FC 8.7.Change “variableDate” to “dateVariable” in DCEG 2.4.10.4 (p. 16) and 8.6.1 (3 instances) (p. 70). |  |
|  |  |  |  |  |  |  |  |