

**TSMAD20 / DIPWG2**  
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Paper for Consideration by TSMAD/DIPWG

Discovery metadata needed for S-101

|                           |   |
|---------------------------|---|
| <i>Submitted by:</i>      | S-101 Work Item   |
| <i>Executive Summary:</i> | This is a discussion paper to determine what is needed for S-101 discovery metadata and for the S-101 catalogue file. |
| <i>Related Documents:</i> | S-101 Draft 0.1   |
| <i>Related Projects:</i>  | S-101   |

### Introduction / Background

This is to verify that S-101 has captured the appropriate level of discovery metadata that will be used in the product specification's catalogue file.

### Analysis/Discussion

At the S-101 Stakeholders forum in March, it was proposed that the following should also be considered for discovery metadata:

- A way to digitally check for the correct Feature Catalogue and Portrayal Catalogue version
- The ability to insert a corrected through field that would inform the mariner and port state control which notice to mariner the ENC was corrected to.

The following table is currently in the S-101 discovery metadata section:

| Name                      | Cardinality | Value   | Type                | Remarks  |
|---------------------------|-------------|---------|---------------------|--|
| DataSetDiscoveryMeta data | -           |         | -                   | -  |
| metadataFileIdentifier    | 1           |         | CharacterString     |  |
| metadataPointOfContact    | 1           |         | CI_ResponsibleParty |  |
| metadataDateStamp         | 1           |         | Date                |  |
| metadataLanguage          | 1           | English | CharacterString     | All data sets conforming to S-101 PS must use English language |
| fileName                  | 1           |         | CharacterString     | Dataset file name  |
| filePath                  |             |         | CharacterString     | Full path from the exchange set root directory                 |

| Name                     | Cardinality | Value       | Type                                  | Remarks   |
|--------------------------|-------------|-------------|---------------------------------------|---|
| abstract                 | 1           |             | CharacterString                       | Short description of the area covered by dataset harbour or port name, between two named locations etc.   |
| dataProtection           | 1           | {1} to {2}  | CharacterString                       | 1. Encrypted<br>2. Unprotected  |
| purpose                  | 1           | {1} to {4}  | CharacterString                       | 1. New<br>2. New Edition<br>3. Update<br>4. Cancellation  |
| specificUsage            | 1           | {1} to {3}  | CharacterString                       | 1. Port Entry<br>2.<br>3.   |
| editionNumber            | 1           |             | CharacterString                       | when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. Edition number remains the same for a re-issue. |
| updateNumber             | 1           |             | CharacterString                       | Update number 0 is assigned to a new data set.  |
| updateApplicationDate    | 0..1        |             | Date                                  |   |
| issueDate                | 1           |             | Date                                  |   |
| productSpecification     | 1           |             | S-100_<br>ProductSpecification        | This must be encoded as S-101   |
| producingAgency          | 1           |             | CI_ResponsibleParty                   |   |
| displayScale             | 1           | {1} to {12} | double                                | Display scale must be one of the 12 predefined scales detailed in Table 1.  |
| horizontalDatum          | 1           |             | CharacterString                       |   |
| verticalDatum            | 1           |             | CharacterString                       |   |
| soundingDatum            | 1           |             | CharacterString                       |   |
| dataType                 | 1           |             | S-100_DataFormat                      |   |
| otherDataTypeDescription | 0..1        |             | CharacterString                       |   |
| boundingBox              | 1           |             | EX_GeographicBoundingBo<br>x          |   |
| boundingPolygon          | 1           |             | EX_BoundingPolygon                    |   |
| comment                  | 0..1        |             | CharacterString                       |   |
| cyclicRedundancyCheck    | 1           |             | CharacterString<br>NonNegativeInteger |   |
| layerId                  | 1..*        |             | Double                                | Identifies the relationship to other layers that are required to view the complete data set.  |

The following table is the content of the catalogue file:

| Name | Cardinality | Value | Type | Remarks |
|------|-------------|-------|------|---------|
|------|-------------|-------|------|---------|

| Name                              | Cardinality | Value       | Type                     | Remarks   |
|-----------------------------------|-------------|-------------|--------------------------|---|
| metadataFileIdentifier            | 1           |             | CharacterString          | Should this be changed from a mandatory in S-100 part 3   |
| metadataPointOfContact            | 1           |             | CI_ResponsibleParty      |   |
| metadataDateStamp                 | 1           |             | Date                     |   |
| metadataLanguage                  | 1           | English     | CharacterString          | All data sets conforming to S-101 PS must use English language  |
| fileName                          | 1           |             | CharacterString          |   |
| filePath                          |             |             | CharacterString          |   |
| abstract                          | 1           |             | CharacterString          | E.g. a harbour or port name, between two named locations etc.   |
| purpose                           | 1           | {1} to {3}  | CharacterString          | 1. New, 2. New Edition, 3. Update   |
| specificUsage                     | 1           | {1} to {3}  | CharacterString          | Navigation purpose<br>1. Ocean Passage, 2. Costal, 3. Port Entry  |
| editionNumber                     | 1           |             | CharacterString          | when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. Edition number remains the same for a re-issue. |
| updateNumber                      | 1           |             | CharacterString          | Update number 0 is assigned to a new data set.  |
| updateApplicationDate             | 0..1        |             | Date                     |   |
| issueDate                         | 1           |             | Date                     |   |
| productSpecificationEditionNumber | 1           |             |                          |   |
| editionNumberS-100                | 1           |             |                          |   |
| producingAgency                   | 1           |             | CI_ResponsibleParty      |   |
| displayScale                      | 1           | {1} to {13} | double                   | Display scale must be one of the 13 predefined scales detailed in Clause 3.   |
| horizontalGeodeticDatum           | 1           |             | CharacterString          |   |
| verticalDatum                     | 1           |             | CharacterString          |   |
| soundingDatum                     | 1           |             | CharacterString          |   |
| boundingBox                       | 1           |             | EX_GeographicBoundingBox |   |
| boundingPolygon                   | 1           |             | EX_BoundingPolygon       |   |
| comment                           | 0..1        |             | CharacterString          |   |
| cyclicRedundancyCheck             | 1           |             | NonNegativeInteger       |   |
| layerId                           | 1..*        |             | Double                   | Identifies the relationship to other layers that are required to view the complete data set.  |

For the most part both tables contain the same information, however, there are inconsistencies. The following is a proposed table that combines the information with some additional items for review by TSMAD/DIPWG. Those fields in yellow represent differences between the two tables.

| Name                     | Cardinality | Value   | Type                | Remarks  |
|--------------------------|-------------|---------|---------------------|--|
| dataSetDiscoveryMetadata | -           |         | -                   | -  |
| metadataFileIdentifier   | 1           |         | CharacterString     |  |
| metadataPointOfContact   | 1           |         | CI_ResponsibleParty |  |
| metadataDateStamp        | 1           |         | Date                |  |
| metadataLanguage         | 1           | English | CharacterString     | All data sets conforming to S-101 PS must use English language |

| Name                              | Cardinality | Value       | Type                     | Remarks   |
|-----------------------------------|-------------|-------------|--------------------------|---|
| fileName                          | 1           |             | CharacterString          | Dataset file name   |
| filePath                          |             |             | CharacterString          | Full path from the exchange set root directory  |
| abstract                          | 1           |             | CharacterString          | Short description of the area covered by the dataset. For example, harbor or port name, or area between two named locations.            |
| purpose                           | 1           | {1} to {4}  | CharacterString          | 1. New, 2. New Edition, 3. Update, 4. Cancellation  |
| specificUsage                     | 1           | {1} to {3}  | CharacterString          | Navigation purpose for cataloging.<br><br>1. Ocean Passage, 2. Coastal, 3. Port Entry   |
| editionNumber                     | 1           |             | CharacterString          | When a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. |
| updateNumber                      | 1           |             | CharacterString          | Update number 0 is assigned to a new data set.  |
| updateApplicationDate             | 0..1        |             | Date                     |   |
| issueDate                         | 1           |             | Date                     |   |
| productSpecificationEditionNumber | 1           |             |                          | S-101 product Specification edition number  |
| editionNumberS-100                | 1           |             |                          | Edition of S-100 that the product specification is based on   |
| producingAgency                   | 1           |             | CI_ResponsibleParty      |   |
| dataProtection                    | 1           | {1} to {2}  | CharacterString          | 1. Encrypted<br><br>2. Unprotected  |
| displayScale                      | 1           | {1} to {13} | double                   | Display scale must be one of the 13 predefined in clause 3 – Spatial Resolution.  |
| horizontalGeodeticDatum           | 1           |             | CharacterString          |   |
| verticalDatum                     | 1           |             | CharacterString          |   |
| soundingDatum                     | 1           |             | CharacterString          |   |
| boundingBox                       | 1           |             | EX_GeographicBoundingBox |   |
| boundingPolygon                   | 1           |             | EX_BoundingPolygon       |   |
| comment                           | 0..1        |             | CharacterString          |   |
| cyclicRedundancyCheck             | 1           |             | NonNegativeInteger       |   |
| layerId                           | 1..*        |             | Double                   | Identifies the relationship to other layers that are required to view the complete data set.  |

Proposed Fields to be added:

| Name                     | Cardinality | Value      | Type            | Remarks  |
|--------------------------|-------------|------------|-----------------|--|
| featureCatalogueVersion  | 1           |            | CharacterString | Version of the S-101 Feature Catalog that is in use with this product specification.   |
| potrayalCatalogueVersion | 1           |            | CharacterString | Version of the S-101 Portrayal Catalog that is in use with this product specification  |
| updateCorrection         | 1           |            | CharacterString | Notice to Mariner that the update corrects the ENC through. This would be used for port state control to verify if the ENC is up-to-date to notice to mariner items. |
| compressionFlag          | 1           | {1} to {2} | CharacterString | 1. Yes<br>2. No  |
| algorithmMethod          | 1           |            | CharacterString | ZIP, RAR, etc.   |
| sourceMedia              | 1           |            |                 |  |
| replacedData             | 1           |            |                 | If a data file is cancelled is it replaced by another data file  |
| dataReplacement          |             |            |                 | Cell name  |

## **Conclusions**

Currently, S-101 has two sets of the same information. One is in Clause 12 – Metadata and the other is in Annex A for the Catalogue file. Each of these tables carries the same type of information and should be harmonized and located in one place. In addition, these tables need to be reviewed to ensure that the information is what is needed for both the discovery metadata and the catalogue file.

## **Recommendations**

The following is recommended:

1. Combine the content of both tables and place in Clause 12 – metadata. This will make maintenance easier
2. Review the proposed combined table to ensure that what is currently documented is correct.
3. Review and approve the proposed additions to the discovery metadata.
4. Propose additional fields for other types of metadata.

Mapping of S-101 Metadata to S-100 Metadata:

| Name                            | Path   | Obligation  |
|---------------------------------|--|---|
| Metadata file identifier        | MD_Metadata.fileIdentifier   | <b>M</b>  |
| Metadata language               | MD_Metadata.language   | <b>C</b> (documented if not defined by the encoding process)                              |
| Metadata character set          | MD_Metadata.characterSet   | <b>C</b> (documented if ISO 10646-1, is not used and not defined by the encoding process) |
| Metadata file parent identifier | MD_Metadata.parentIdentifier   | <b>C</b> (documented if the hierarchy of a higher level exists)                           |
| Metadata hierarchy level        | MD_Metadata.hierarchyLevel   | <b>O</b> (assumed to be 'dataset' if MD_Metadata.hierarchyLevel is omitted)               |
| Metadata hierarchy level name   | MD_Metadata.hierarchyLevelName   | <b>O</b> (assumed to be 'dataset' if MD_Metadata.hierarchyLevelName is omitted)           |
| Metadata point of contact       | MD_Metadata.contact > CI_ResponsibleParty  | <b>M</b>  |
| Metadata standard name          | MD_Metadata.metadataStandardName   | <b>O</b>  |
| Metadata standard version       | MD_Metadata.metadataStandardVersion  | <b>O</b>  |
| Metadata date stamp             | MD_Metadata.dateStamp  | <b>M</b>  |
| Dataset title                   | MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.title  | <b>M</b>  |
| Dataset reference date          | MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date.date > MD_DataIdentification.citation > CI_Citation.date > CI_Date.date | <b>M</b>  |

|  |   |   |
|--|---|---|
| Abstract describing the dataset  | MD_Metadata.identificationInfo ><br>MD_DataIdentification.abstract  | <b>M</b>  |
| Dataset point of contact   | MD_Metadata.contact > CI_ResponsibleParty   | <b>O</b>  |
| Dataset spatial representation type  | MD_Metadata.identificationInfo ><br>MD_DataIdentification.spatialRepresentationType   | <b>O</b>  |
| Dataset spatial resolution   | MD_Metadata.identificationInfo ><br>MD_DataIdentification.spatialResolution ><br>MD_Resolution.distance or<br>MD_Resolution.equivalentScale | <b>O</b>  |
| Dataset language   | MD_Metadata.identificationInfo ><br>MD_DataIdentification.language  | <b>M</b>  |
| Dataset character set  | MD_Metadata.identificationInfo ><br>MD_DataIdentification.characterSet  | <b>C</b> ( <i>documented if ISO 10646-1 is not used</i> ) |
| Dataset topic category   | MD_Metadata.identificationInfo ><br>MD_DataIdentification.topicCategory   | <b>M</b>  |
| Geographic location of the dataset (by four coordinates or by description) | MD_Metadata.identificationInfo ><br>MD_DataIdentification.extent > EX_Extent ><br>EX_GeographicBoundingBox or<br>EX_GeographicDescription   | <b>C</b>  |
| Temporal extent information for the dataset                                | MD_Metadata.identificationInfo ><br>MD_DataIdentification.extent ><br>EX_Extent.temporalElement   | <b>O</b>  |
| Vertical extent information for the dataset                                | MD_Metadata.identificationInfo ><br>MD_DataIdentification.extent ><br>EX_Extent.verticalElement > EX_VerticalExtent                         | <b>O</b>  |
| Lineage  | MD_Metadata.dataQualityInfo ><br>DQ_DataQuality.lineage > LI_Lineage  | <b>O</b>  |
| Reference system   | MD_Metadata.referenceSystemInfo ><br>MD_ReferenceSystem.referenceSystemIdentifier ><br>RS_Identifier  | <b>O</b>  |

|                     |  |                       |
|---------------------|--|-----------------------|
| Distribution Format | MD_Metadata.distributionInfo > MD_Distribution > MD_Format   | <input type="radio"/> |
| On-line resource    | MD_Metadata.distributionInfo > MD_Distribution > MD_DigitalTransferOption.onLine > CI_OnlineResource | <input type="radio"/> |