

## Paper for Consideration by TSMAD/DIPWG

## S-101 Scale Independent Content

<i>Submitted by:</i>	S-101 Work Item Leader
<i>Executive Summary:</i>	TSMAD has accepted the concept of Scale Independent and Scale Dependent data for S-101. As a result TSMAD needs to determine the set of features that should be classified for Scale Independent data.
<i>Related Documents:</i>	TSMAD23 4.5.11 SI/SD Impact Review
<i>Related Projects:</i>	Any related projects that may impact upon considerations

**Introduction / Background**

At TSMAD 23 it was agreed to accept the concept of Scale Independent (SI) and Scale Dependent (SD) data into S-101. With this agreed, TSMAD needs to flesh out that section of S-101 so that the concept may be fully tested during the test phase before the final decision is made.

**Analysis/Discussion**Introduction

During the TSMAD 23 discussion there were concerns from many that the original SI/SD proposal mixed concepts with the introduction of flat files, SI files and SD files. As SD files and flat files are essentially the same thing, it is proposed to remove the flat files option and retain only SI files and SD files. Furthermore, the thought is that SI should then be an optional overlay that Producers are encouraged to utilize due to its benefits (see TSMAD23-4.5.11\_SI-SDImpactReview).

Scale Independent Features

One of the key concepts of Scale Independent and Scale Dependent data is that some features would be stored once in a Scale Independent dataset and utilized many times. However, TSMAD has yet to make a final determination as to which features should be considered Scale Independent. One of the early thoughts would be that all features that had a point primitive would be part of the SI dataset, in addition, to those features which do not have a scale attached, such as Recommended Track and Traffic Separation Schemes, would also be good candidates for the SI dataset. Since, one of the arguments for SI datasets was that updating would be easier; this should be one of the determining factors for inclusion. Previous discussions regarding the list have shown that a defined list might be difficult to universally agree upon. Therefore this paper proposes a set of guidelines to assist a Producer in selecting SI features.

See Annex A for guidelines for consideration.

Scale Independent Dataset Naming Convention

Currently S-101 has a single naming convention. Does TSMAD/DIPWG feel that there should be a different naming convention for SI datasets? Only benefit is that it might be understandable for a human that this is an SI file.

Business Rules for SI and SD datasets

The following are the proposed new business rules to be prescribed in S-101 for SI and SD datasets:

## Scale Independent and Scale Dependent Datasets

The following are additional business rules that must be implemented for Scale Independent and Scale dependent data.

Dataset metadata element *layerId* describes the type of dataset (SI or SD). This element is defined in the S-101 discovery metadata.

Scale minimum and scale maximum attributes are optional for SI features. Producers are encouraged to utilize these attributes, as when populated, they indicate the limiting scales at which the feature must be displayed. This can be used to de-clutter the screen at small scales, for example to turn off display of minor lights. Or turn off features that are not relevant at large scale, for example turn off inshore traffic zone on a harbour chart.

## Metadata rules

Scale Independent datasets: Dataset metadata elements maximum display scale and minimum display scale must not be populated.

## Packaging rules

1. There can be zero, one, or more than one scale independent dataset contained within an exchange set.
2. The coverage of any SD dataset in the exchange set must be within the coverage of the scale independent datasets in the same exchange set.

## Data set rules

1. A scale independent cell must only contain the following meta features Data coverage and Navigational system of marks.
2. Scale dependent datasets which is overlapped by a scale independent dataset must not contain any of the features contained in the scale independent dataset.

## Application rules for ECDIS

1. Scale Independent data outside the coverage of available scale dependent datasets must not be part of the display. Coverage means both in the geographical extent and the scale range extent.
2. Applications must verify that all Data coverages of loaded scale dependent datasets are within the same geographic area as the Data coverage for the loaded scale independent dataset.

Questions for TSMAD/DIPWG: Are these rules sufficient for the interim?  
Are there any additional rules that might be needed?

## Action Required of TSMAD/DIPWG

The TSMAD/DIPWG is invited to:

- Discuss which features are most appropriate for SI datasets
- Discuss if there needs to be an SI dataset naming convention.
- Discuss the business rules for SI/SD datasets

## ANNEX A

Guidelines for a data Producer when determining if a feature is a scale independent feature :

1. A feature that is unchanged (geometry, class, attributes and associations) in two or more scale ranges.
2. A feature that is relatively frequently updated.
3. Aggregate features with associated features can also be considered scale independent features.

The table below has examples of what features that generally can be considered scale independent. Also included in the table is two examples of scale independent feature lists.

ACROYNM	NAMES	GEOMETRIC TYPE	UKHO FODB	NOAA Scale Independent Features
BCNCAR	Beacon, cardinal	P	P	P
BCNISD	Beacon, isolated danger	P	P	P
BCNLAT	Beacon, lateral	P	P	P
BCNSAW	Beacon, safe water	P	P	P
BCNSPP	Beacon, special purpose/general	P	P	P
BUISGL	Building single	P, A	P	
BOYCAR	Buoy, cardinal	P	P	P
BOYISD	Buoy, isolated danger	P	P	P
BOYLAT	Buoy, lateral	P	P	P
BOYSAW	Buoy, safe water	P	P	P
BOYSPP	Buoy, special purpose	P	P	P
BOYINB	Buoy, installation	P	P	P
CGUSTA	Coastguard station	P	P	
CHKPNT	Check point	P		
CTRPNT	Control Point	P		
DAYMAR	Day mark	P	P	P
DISMAR	Distance mark	P		
FOGSIG	Fog signal	P	P	P
DWRTCL	Deep water route centreline	L		
DWRTPT	Deep water route part	A		
FORSTC	Fortified structure	P	P	
LNDMRK	Landmark	P	P	
LIGHTS	Light	P	P	P
LITFLT	Light Float	P	P	P
LITVES	Light vessel	P	P	P
MORFAC	Mooring/Warping facility	P	P	
PILPNT	Pile	P		
PILBOP	Pilot boarding place	P		
OBSTRN	Obstruction	P		
OFSPLF	Offshore platform	P	P	

OSPARE	Offshore production area	A		
PILBOP	Pilot boarding place	P, A		
PRCARE	Precautionary area	P, A		
PYLONS	Pylon/bridge support	P	P	
RADRFL	Radar reflector	P		P
RADSTA	Radar station	P	P	P
RTPBCN	Radar transponder beacon	P	P	P
RDOCAL	Radio calling-in point	P	P	
RDOSTA	Radio station	P	P	P
RECTRC	Recommended track	L		
RSCSTA	Rescue station	P	P	
SISTAT	Signal station, traffic	P	P	
SISTAW	Signal station, warning	P	P	
SILTNK	Silo/tank	P	P	
TOPMAR	Top mark	P	P	P
TSELNE	Traffic separation line	L		
TSEZNE	Traffic separation zone	A		
TSSBND	Traffic separation scheme boundary	L		
TSSCRS	Traffic separation scheme crossing	A		
TSSLPT	Traffic separation scheme lane part	A		
TSSRON	Traffic separation scheme roundabout	A		
TWRTPT	Two-way route part	A		
UWTROC	Underwater/awash rock	P		
WRECKS	Wreck	P, A		

Table A.1