TSMAD25 -4.6.2

Paper for Consideration by TSMAD25

Eliminating the RESARE03, RESTRNnn CSP and the RESCSP02 CSP sub-routine

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Executive Summary:	This paper examines different options on how TSMAD can add attributes to Restricted Area to eliminate the RESARE03 CSP and simplify S-101 portryal.
Related Documents:	S-101 DCEG
Related Projects:	S-101

Introduction / Background

1. The Data Classification and Encoding Guide (DCEG) sub group has been developing an improved data model for S-101, addressing limitations of S-57 and expanding it using the new constructs defined in S-100. Although some of the changes should simplify portrayal there are some specific cases where adding attribution to S-101 features could reduce the complexity of portrayal. This paper discusses the justification and practicality of this. It goes on to suggest a number of new attributes to address this in S-101.

2. One of the actions from the joint TSMAD24/DIPWG4 meeting was for DIPWG members to undertake a review of the existing conditional symbology procedures (CSP) in S-52 and see if they can be reduced. One of the review tasks was as follows:

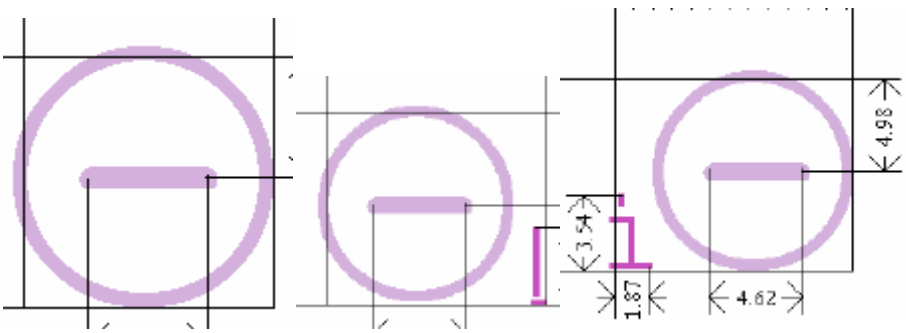
- Any new S-101 feature objects, attributes or attribute values that could enable eliminating or simplifying the CSP.

3. One of the CSPs that were identified for elimination was RESARE03 and RESCSP. As a result of this review there where three different options.

Analysis/Discussion

The RESARE03 CSP analysis the CATREA and RESTRN attributes to determine the appropriate line style and symbology. The following are the symbol choices depending upon the combination of CATREA and RESTRN:

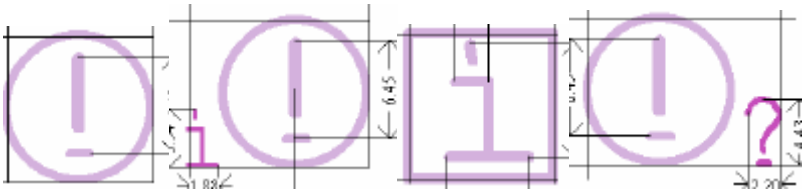
Entry Prohibited:



Fishing Prohibited:

Anchoring Prohibited:

Other:



The RESTRN01 CSP is an entry procedure CSP that calls the RESCSP02 CSP. The bulk of the work is done by the RESCSP02 – which looks features (other than RESARE) that carry the attribute RESTRN and determines the appropriate line style and symbol. This CSP is triggered by any feature that carries the RESTRN attribute, with the exception of RESARE which is covered by the RESARE03 CSP.

During the CSP review process some alternative approaches where discussed regarding on how to eliminate the CSP. One of the approaches does not require any new attributes from TSMAD, while the other three do require TSMAD development on a new attribute. The options are as follows:

Option 1: Convert the RESARE03 and the RESCSP02 into a look-up table

Applicable CSP: RESARE03, RESCSP02 and possibly RESTRN01

Proposal: These CSPs can be converted anrueset for use in S-101 without the need for additional attributes. DIPWG can look to consolidate the symbols to reduce the number of rules that are needed.

Pros: TSMAD doesn't have to do anything

Cons: As this solution is applicable to both RESARE and features that carry RESTRN creates around 14 pages of Look-up tables for each feature. Multiply this by 20+ features and it would result in which results in 1000's of additional instructions. Although technically feasible, maintenance would become difficult.

Option 2: Add a new sub-routine function called "LT" into the model of the drawing engine

Applicable CSP: RESCSP02 and possibly RESTRN01

Proposal: This solution uses a new function for sub rules to reduce the need to repeat LUT entries for objects which carry RESTRN. Utilizing a new function fits in with the XSLT template approach and an "LT" would just be a template call. This solution uses a set of generic LUT entries called by other LUT entries, this enables entries which are the same for many features to be rationalized.

Example:

Main look up entries;

"ACHARE","","SY(ACHARE51);LC(ACHARE51);LT(RESTRN01)","3","S","STANDARD","26220"
"DMPGRD","","SY(INFARE51);LC(CTYARE51);LT(RESTRN01)","3","S","STANDARD","26240"

Sub look up tables apply to multiple features and add symbols where they match to the display instruction above. They use an identifier referenced in the main look up table LT function in this case RESTRN01 similar to the current CSPs.

RESTRN01

“”,”RESTRN7RESTRN1”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN2”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN3”,” SY(ENTRES61);’’
“”,”RESTRN7RESTRN4”, ’SY(ENTRES61);”
“”,”RESTRN7RESTRN5”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN6”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN13”,”SY(ENTRES61);‘’
“”,”RESTRN7RESTRN16”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN17”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN23”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN24”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN25”,”SY(ENTRES61);’’
“”,”RESTRN7RESTRN26”,”SY(ENTRES61)”’
“”,”RESTRN7RESTRN27”,”SY(ENTRES61)”’

Pros: TSMAD doesn’t have to do anything, would eliminate the addition of new LUT entries as this new function called “LT” can be added to existing LUT entries

Cons: There could be a problem because the portrayal of RESARE is based on multiple attributes and thus this approach does not resolve the RESARE03 CSP.

Option 3: Add new portrayal support attribute together with function called “LT”

Applicable CSP: RESCSP02 and possibly RESTRN01

Proposal: Option 3 takes Option 2 and adds a new enumeration attribute to all features which carry RESTRN. This attribute could be called Restriction Type (RESTYP). Multiplicity would be 0,*. This attribute reflects the groupings within the current CSPs and their combinations through the continuations. There would be a fixed mapping from the values of RESTRN and CATREA to the RESTYP values as laid out below. The attribute would be ‘invisible’ as with those proposed to simplify portrayal of Lights (TR Proposal).

Example:

RESTYP

1 Prohibitions RESTRN = 7,8,14
2 Anchoring RESTRN = 1,2
3 Seabed RESTRN = 3,4,5,6,24
4 Surface activities RESTRN = 13,16,17,23,25,26,27
5 Development activities RESTRN = 9,10,11,12,15,18,19,20,21,22

Main look up entries;

“ACHARE","RESTRN","SY(ACHARE51);LC(ACHARE51);LT(RESTRN01)","3","S","STANDARD","26220"
"DMPGRD","RESTRN","SY(INFARE51);LC(CTYARE51);LT(RESTRN01)","3","S","STANDARD","26240"

The following modified sub look up table would replace all the proposed sub look up table entries in Solution A.

RESTRN01

“”,”RESTYP1RESTYP2”,”SY(ENTRES61);’’
“”,”RESTYP1RESTYP3”,”SY(ENTRES61);’’
“”,”RESTYP1RESTYP4”,”SY(ENTRES61);’’
“”,”RESTYP1RESTYP5”,”SY(ENTRES71);’’
“”,”RESTYP1”,”SY(ENTRES51);’’

“”,”RESTYP2RESTYP3”,”SY(ACHRES61);’’
“”,”RESTYP2RESTYP4”,”SY(ACHRES61);’’
“”,”RESTYP2RESTYP5”,”SY(ACHRES71);’’
“”,”RESTYP2”,”SY(ACHRES51);’’

“”,”RESTYP3RESTYP4”,”SY(FSHRES61);’’
“”,”RESTYP3RESTYP5”,”SY(FSHRES61);’’
“”,”RESTYP3”,”SY(FSHRES51);’’

“”,”RESTYP4RESTYP5”,”SY(CTYARE71);’’
“”,”RESTYP4”,”SY(CTYARE51);’’

“”,”RESTYP5”,”SY(INFARE51);’’

“”,””,”SY(RSRDEF51);’’

This is the complete listing although main LUT entries would be required for all features which carry RESTRN.

Pros: It is clear that because this solution rationalises the LUT entries to those which have the same end result this is a more efficient approach which results in fewer overall LUT entries

Cons: However as with other proposals e.g. Lights it requires production systems to populate new ‘invisible’ attributes. This solution could also work for RESARE objects however more LUT entries would be required to cater for the different line styles

Option 4: Add new portrayal support attribute in such a way that the export filter of the production system will explicitly define which symbol is used

Applicable CSP: RESARE03, RESCSP02 and possibly RESTRN01

Proposal: New attribute “Portrayal_of_Resare”
Type of the attribute is enumerated list. Obviously we need one value per exit point in the current CSP RESAREnn.

Attribute: Portrayal_of_Resare
Acronym: PORREA
Attribute type: L
Expected input:

ID Meaning	Notes
1 : default	Default exit with symbol RSRDEF51
2 : information	Exit with symbol INFARE51
3: entry restriction A	Exit with symbol ENTRES51
4: entry restriction B	Exit with symbol ENTRES61
5: entry restriction C	Exit with symbol ENTRES71
6: anchorage restriction A	Exit with symbol ACHRES51
7: anchorage restriction B	Exit with symbol ACHRES61
8: anchorage restriction C	Exit with symbol ACHRES71
9: fishing restriction A	Exit with symbol FSHRES51
10: fishing restriction B	Exit with symbol FSHRES61
11: fishing restriction C	Exit with symbol FSHRES71

12: caution A	Exit with symbol CTYARE51
13: caution B	Exit with symbol CTYARE71

New attribute "Portrayal_of_Restrn"
Type of the attribute is enumerated list. Obviously we need one value per exit point in the current CSP RESTRNnn and sub-routine CSP RESCSPnn.

Attribute: Portrayal_of_Restrn
Acronym: PORRST
Attribute type: L
Expected input:

ID Meaning	Notes
1 : default	Default exit with no symbol
2 : information	Exit with symbol INFARE51
3 : unknown	Exit with symbol RSRDEF51
4: entry restriction A	Exit with symbol ENTRES51
5: entry restriction B	Exit with symbol ENTRES61
6: entry restriction C	Exit with symbol ENTRES71
7: anchorage restriction A	Exit with symbol ACHRES51
8: anchorage restriction B	Exit with symbol ACHRES61
9: anchorage restriction C	Exit with symbol ACHRES71
10: fishing restriction A	Exit with symbol FSHRES51
11: fishing restriction B	Exit with symbol FSHRES61
12: fishing restriction C	Exit with symbol FSHRES71
13: caution A	Exit with symbol CTYARE51
14: caution B	Exit with symbol CTYARE71

Pros: Handles both the RESARE02 and the RESTRNnn and sub-routing CSP RESCSPnn, generic solution

Cons: However as with other proposals e.g. Lights it requires production systems to populate new 'invisible' attributes

Recommendations

One of the goals of S-101 is to simplify the portrayal mechanism and reduce the number of CSPs. This paper provides four options that should be considered to identify the optimum solution. While option 1 requires no TSMAD involvement, the added complexity of adding 1000's of LUT type entries into the portrayal catalogue makes for a complex solution. Therefore TSMAD, should seriously discuss and consider options 3, and 4, as they provide more elegant solutions.

Action Required of TSMAD
The TSMAD is invited to:

a. consider the proposed options for adding new attributes to the feature catalogue to eliminate the need for the RESARE02 and RESTRNnn CSPs.
b. once TSMAD has considered the appropriate way forward to have a sub-working group full-form the proposal for the feature catalogue and the DCEG (if required).