S-101 Lua PC validation

Republic of Korea (**KHOA)**

1. Compare the FC used in the S-101 Lua PC with the official FC in the registry

2. Inconsistency between the FC and Lua (Enumeration)

FC

```
<S100FC:S100_FC_FeatureType isAbstract="false">
  <S100FC:name>Beacon Cardinal</S100FC:name>
  <S100FC:definition>A cardinal beacon is used in conjunction with
  <S100FC:code>BeaconCardinal</S100FC:code>
  <S100FC:remarks>A beacon is a prominent specially constructed obj
  <S100FC:alias>BCNCAR</S100FC:alias>
  <S100FC:attributeBinding sequential="false">
    <S100FC:multiplicity>
      <S100Base:lower>1</S100Base:lower>
      <S100Base:upper xsi:nil="false" infinite="false">1</S100Base:u
    </S100FC:multiplicity>
    <S100FC:permittedValues>
      <S100FC:value>1</S100FC:value>
      <S100FC:value>2</S100FC:value>
      <S100FC:value>3</S100FC:value>
      <S100FC:value>5</S100FC:value>
      <S100FC:value>6</S100FC:value>
      <S100FC:value>7</S100FC:value>
    </S100FC:permittedValues>
    <S100FC:attribute ref="beaconShape"/>
```

```
<S100FC:S100_FC_SimpleAttributes>
  <S100FC:S100_FC_SimpleAttribute>
    <S100FC:name>Beacon shape</S100FC:name>
    <S100FC:definition>The shape a beacon exhibits</S100FC:definition>
    <S100FC:code>beaconShape</S100FC:code>
    <S100FC:alias>BCNSHP</S100FC:alias>
    <S100FC:valueType>enumeration</S100FC:valueType>
    <S100FC:listedValues>
      <S100FC:listedValue>
        <S100FC:label>Stake, Pole, Perch, Post</S100FC:label>
        <S100FC:definition>An elongated wood or metal pole, driven into the ground
        <S100FC:code>1</S100FC:code>
      </S100FC:listedValue>
      <S100FC:listedValue>
        <S100FC:label>Withy</S100FC:label>
        <S100FC:definition>A tree without roots stuck or spoiled into the bottom of
        <S100FC:code>2</S100FC:code>
      </S100FC:listedValue>
      <S100FC:listedValue>
        <S100FC:label>Beacon Tower</S100FC:label>
        <S100FC:definition>A solid structure of the order of 10 metres in height us
        <S100FC:code>3</S100FC:code>
      </S100FC:listedValue>
      <S100FC:listedValue>
        <S100FC:label>pile beacon</S100FC:label>
        <S100FC:definition>a long heavy timber(s) or section(s) of steel, wood, con
        <S100FC:code>5</S100FC:code>
      </S100FC:listedValue>
      <S100FC:listedValue>
        <S100FC:label>cairn</S100FC:label>
        <S100FC:definition>a mound of stones, usually conical or pyramidal, raised
        <S100FC:code>6</S100FC:code>
      </S100FC:listedValue>
      <S100FC:listedValue>
        <S100FC:label>buoyant beacon</S100FC:label>
        <S100FC:definition>a tall spar-like beacon fitted with a permanently submer
        <S100FC:code>7</S100FC:code>
      </S100FC:listedValue>
    </S100FC:listedValues>
```

Lua

```
    TOPMAR01(feature, featurePortrayal, contextParameters, false)
  elseif feature.beaconShape == 4 then
    if contextParameters.RadarOverlay then
      featurePortrayal:AddInstructions('ViewingGroup:27020;DrawingPrior
    else
      featurePortrayal:AddInstructions('ViewingGroup:27020;DrawingPrior
    end
    featurePortrayal:AddInstructions('PointInstruction:BCNLTC01')
    if feature.featureName[1] and feature.featureName[1].name then
      featurePortrayal:AddInstructions('LocalOffset:-3.51,7.02;TextAlig
    end
    TOPMAR01(feature, featurePortrayal, contextParameters, false)
```

2. Inconsistency between the FC and Lua (complex attribute name)

FC

```
</S100FC:S100_FC_ComplexAttribute>
<S100FC:S100_FC_ComplexAttribute>
    <S100FC:name>Sector Characteristics</S100FC:name>
    <S100FC:definition>The complex attribute describes the charac
    <S100FC:code>sectorCharacteristics</S100FC:code>
    <S100FC:subAttributeBinding sequential="false">
        <S100FC:multiplicity>
            <S100Base:lower>1</S100Base:lower>
            <S100Base:upper xsi:nil="false" infinite="false">1</S100B
        </S100FC:multiplicity>
        <S100FC:permittedValues>
            <S100FC:value>1</S100FC:value>
            <S100FC:value>2</S100FC:value>
            <S100FC:value>3</S100FC:value>
            <S100FC:value>4</S100FC:value>
            <S100FC:value>5</S100FC:value>
            <S100FC:value>6</S100FC:value>
            <S100FC:value>7</S100FC:value>
            <S100FC:value>8</S100FC:value>
            <S100FC:value>11</S100FC:value>
            <S100FC:value>12</S100FC:value>
            <S100FC:value>13</S100FC:value>
            <S100FC:value>14</S100FC:value>
            <S100FC:value>15</S100FC:value>
            <S100FC:value>16</S100FC:value>
            <S100FC:value>17</S100FC:value>
            <S100FC:value>18</S100FC:value>
            <S100FC:value>19</S100FC:value>
            <S100FC:value>25</S100FC:value>
            <S100FC:value>26</S100FC:value>
            <S100FC:value>27</S100FC:value>
            <S100FC:value>28</S100FC:value>
            <S100FC:value>29</S100FC:value>
        </S100FC:permittedValues>
        <S100FC:attribute ref="lightCharacteristic"/>
```

Lua

```
and sectorCharacteristic.lightCharacteristic ~= 12
```

- Primitive : Point, Curve in the FC
- But, Surface in the Lua

FC

```
</S100FC:S100_FC_FeatureType>
<S100FC:S100_FC_FeatureType isAbstract="false">
  <S100FC:name>Recommended track</S100FC:name>
  <S100FC:definition>A track recommended to all or only certain vessels.</S100FC:defini
  <S100FC:code>RecommendedTrack</S100FC:code>
  <S100FC:remarks>Recommended tracks include all channels recommended for hydrographic
  <S100FC:alias>RECTRC</S100FC:alias>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">...</S100FC:attributeBinding>
  <S100FC:featureUseType>geographic</S100FC:featureUseType>
  <S100FC:featureBinding roleType="aggregation">...</S100FC:featureBinding>
  <S100FC:featureBinding roleType="aggregation">...</S100FC:featureBinding>
  <S100FC:permittedPrimitives>curve</S100FC:permittedPrimitives>
```

Lua

```lua
1  -- Converter Version: 0.99
2  -- Feature Catalogue Version: 1.0.0 (2019/4/9)
3
4  -- Recommended track main entry point.
5  function RecommendedTrack(feature, featurePortrayal, contextParameters)
6      if feature.PrimitiveType == PrimitiveType.Curve then
2      elseif feature.PrimitiveType == PrimitiveType.Surface and contextParameters.PlainBoun
3          if feature.orientationValue and feature.categoryOfRecommendedTrack == 1 and featu
4              featurePortrayal:AddInstructions('ViewingGroup:25020;DrawingPriority:6;Displa
5              featurePortrayal:AddInstructions('Rotation:GeographicCRS,' .. tostring(featur
6              featurePortrayal:AddInstructions('PointInstruction:RECTRC58')
7              featurePortrayal:AddInstructions('LocalOffset:14.04,0;TextAlignVertical:Cente
8              featurePortrayal:SimpleLineStyle('dash',0.32,'CHGRD')
9              featurePortrayal:AddInstructions('LineInstruction:_simple_')
0          elseif feature.orientationValue and feature.categoryOfRecommendedTrack == 1 and f
1              featurePortrayal:AddInstructions('ViewingGroup:25020;DrawingPriority:6;Displa
2              featurePortrayal:AddInstructions('Rotation:GeographicCRS,'    tostring(featur
```

3. Inconsistency between Lua and the portrayal register

- For instance: "testPCB" is not in the Portrayal register

```
Beacon Cardinal main entry point.
nction BeaconCardinal(feature, featurePortrayal, contextParameters)
    if feature.PrimitiveType == PrimitiveType.Point and contextParameters.SimplifiedPoints then
        if feature.categoryOfCardinalMark == 4 then
            if contextParameters.RadarOverlay then
                featurePortrayal:AddInstructions('ViewingGroup:27020;DrawingPriority:8;DisplayPlane:OverRADAR')
            else
                featurePortrayal:AddInstructions('ViewingGroup:27020;DrawingPriority:8;DisplayPlane:UnderRADAR')
            end
            featurePortrayal:AddInstructions('PointInstruction:BCNCAR04')
```

No	Name	Definition	Item Type	Status
1	underRadar	Content displayed underneath Radar image	displayPlane	Valid
2	overRadar	Content displayed on top of Radar image	displayPlane	Valid
3	underRadar	Content displayed underneath Radar image	displayPlane	Valid
4	overRadar	Content displayed on top of Radar image	displayPlane	Valid

No	Name	Definition	Item Type	Status	Date Accepted
1	Priority 27	Mariners VRM & EBL, own ship	displayPriority	Valid	-
2	Priority 24	hazards (bridge, safety, Gate contour, overhead cables) Lights, Beacons, Buoys	displayPriority	Valid	-
3	Priority 21	Coastguard, Coastline, Buoy Special Purpose, Signal	displayPriority	Valid	-
4	Priority 18	traffic areas, distinctive features	displayPriority	Valid	-
5	Priority 15	restricted area, Anchorage, berthing, Contours	displayPriority	Valid	-
6	Priority 12	Basic features, Routing, information, Caution	displayPriority	Valid	-
7	Priority 9	superimposed areas - Anchorage, Berth, Built-up, Cable, Caution, Dam, Dumping, Ferry Route, Fence, Fishing, Ice, Pipeline, Rapids, Seabed, Sloping ground, Vegetation, Waterfall	displayPriority	Valid	-
8	Priority 6	superimposed areas - base feature Rivers, lakes, canals, admin, tidal, airfield	displayPriority	Valid	-
9	Priority 3	S-57 group 1 filled areas	displayPriority	Valid	-
10	Priority 0	background, no data filled area pattern	displayPriority	Valid	-
11	Priority 27	Mariners VRM & EBL, own ship	displayPriority	Valid	-
12	Priority 24	hazards (bridge, safety, Gate contour, overhead cables) Lights, Beacons, Buoys	displayPriority	Valid	-
13	Priority 21	Coastguard, Coastline, Buoy Special Purpose, Signal	displayPriority	Valid	-
14	Priority 18	traffic areas, distinctive features	displayPriority	Valid	-
15	Priority 15	restricted area, Anchorage, berthing, Contours	displayPriority	Valid	-
16	Priority 12	Basic features, Routing, information, Caution	displayPriority	Valid	-
17	Priority 9	superimposed areas - Anchorage, Berth, Built-up, Cable, Caution, Dam, Dumping, Ferry Route, Fence, Fishing, Ice, Pipeline, Rapids, Seabed, Sloping ground, Vegetation, Waterfall	displayPriority	Valid	-
18	Priority 6	superimposed areas - base feature Rivers, lakes, canals, admin, tidal, airfield	displayPriority	Valid	-
19	Priority 3	S-57 group 1 filled areas	displayPriority	Valid	-
20	Priority 0	background, no data filled area pattern	displayPriority	Valid	-

- Different DisplayPlane and DrawingPriotiry between Lua and Portrayal DB

- ## Draft validation outputs

[1] [AdministrationArea]

========== SUCCESS ==========

[Success] [FeatureName] [AdministrationArea] [Description : The value is exist in the FC.]
[Success] [Rule : 1] [Primitive : Surface] [Description : The FC does satisfy the value.]
[Success] [Rule : 2] [AddInstructions : ViewingGroup : 36050] [Description : The value is exist in the DB.]
[Success] [Rule : 2] [SimpleLineStyle : Style : dash] [Description : The value is exist in the DB.]
[Success] [Rule : 2] [SimpleLineStyle : Colour : CHGRF] [Description : The value is exist in the DB.]
[Success] [Rule : 2] [AddInstructions : LineInstruction : LineStyle : _simple_] [Use a template.]
[Success] [Rule : 2] [Primitive : Surface] [Description : The FC does satisfy the value.]
[Success] [Rule : 3] [AddInstructions : ViewingGroup : 36050] [Description : The value is exist in the DB.]
[Success] [Rule : 3] [AddInstructions : LineInstruction : LineStyle : ADMARE01] [Description : The value is exist in the DB.]

========== WARRING ==========

[Warring] [Rule : 2] [AddInstructions : DrawingPriority : 2] [Description : The value is no exist in the DB.]
[Warring] [Rule : 2] [AddInstructions : DisplayPlane : UnderRADAR] [Description : The value is similar.]
[Warring] [Rule : 3] [AddInstructions : DrawingPriority : 2] [Description : The value is no exist in the DB.]
[Warring] [Rule : 3] [AddInstructions : DisplayPlane : UnderRADAR] [Description : The value is similar.]

========== ERROR ==========

[Error] [Rule : 3] [SimpleAttribute : beaconShape : 4] [Description : The value is no exist in the FC.]

[2] [BeaconIsolatedDanger]

Action required of S-100WG5

- Note this paper
- Take an action item to validate the S-101 Lua PC