

## Paper for Consideration by the S-100WG

### Schema use in Presentation Library XML and XSD files

<b>Submitted by:</b>	SevenCs GmbH – Holger Bothien
<b>Executive Summary:</b>	Observation on the use of namespaces in several XSD and XML files used for portrayal.
<b>Related document(s):</b>	Schema files in folder S100PC

#### Introduction / Background

During the implementation of S-100 portrayal it was detected that many schemas are not specifying a namespace. Namespaces allows to detect the schema used for an XML file. If no namespace is used the selection of a schema might be difficult and ambiguous. Schema validation is an essential technology to ensure that an XML conforms to the standard. It allows to check such files when they are created, and it makes the reading software much simpler and less error prone.

#### Analysis/Discussion

##### The Schemas

It turns out that some schemas used for portrayal do not define a namespace. This makes it difficult for the parsing application to choose the correct schema file for the schema validation. This will become more difficult when different versions of the schema files exist due to the release of new standard editions. The application must hard code this and uses heuristics for finding the right schema file. This is a source of errors and can easily avoided by assigning a namespace to each schema file.

The following tables gives an overview of the schema files and if namespaces are defined.

Schema file *.xsd	Namespace	TargetNamespace	Remarks
S100AlertCatalog	none	none	Includes S100PortrayalCatalog which has no namespace as well.
S100AreaFill	none	none	
S100BaseModel	http://www.iho.int/S100BaseModel/5.0	http://www.iho.int/S100BaseModel/5.0	
S100ColorProfile	none	none	
S100LineStyle.xsd	none	none	
S100Pixmap	none	none	
S100PortrayalCatalog	none	none	Hugh portion of uncommented code found in the schema file.
S100Presentation	http://www.iho.int/S100Presentation/5.0	http://www.iho.int/S100Presentation/5.0	
S100SVG		http://www.w3.org/2000/svg	There is an error in the schemaLocation attribute on import of <a href="http://www.w3.org/XML/1998/namespace">http://www.w3.org/XML/1998/namespace</a> (see below)
S100SVG1		http://www.iho.int/SVGMetadata/5.0	
S100SymbolDefinition	http://www.iho.int/S100SymbolDefinition/5.0	http://www.iho.int/S100SymbolDefinition/5.0	

#### Conclusions

All schema files that not defining a target namespace should be amended to do so.

Please note that in the following proposals the namespaces are still using the 5.0 extension. This must be changed when the proposals are going to be implemented to whatever is appropriate.

### Alert catalogue

Currently the schema uses no namespace and sharing this with the portrayal catalogue schema.

There are two options:

1. Both schemas should share the same namespace.
2. Both schemas should use different namespaces.

### Same namespace

Assuming the namespace for the portrayal catalogue is

<http://www.iho.int/S100PortrayalCatalog/5.0> then the root element of the schema should read:

```
<xs:schema
  xmlns="http://www.iho.int/S100PortrayalCatalog/5.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:s100CSL="http://www.iho.int/s100/csl/5.0"
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"
  targetNamespace="http://www.iho.int/S100PortrayalCatalog/5.0"
  version="5.0.0-20220705">
```

The remaining file will be unchanged

### Different namespaces

Assuming again the namespace for the portrayal catalogue is

<http://www.iho.int/S100PortrayalCatalog/5.0> and the namespace for the alert catalogue is

<http://www.iho.int/S100AlertCatalog/5.0> then the following changes have to be applied

```
<xs:schema
  xmlns="http://www.iho.int/S100AlertCatalog/5.0"
  xmlns:pc="http://www.iho.int/S100PortrayalCatalog/5.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:s100CSL="http://www.iho.int/s100/csl/5.0"
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"
  targetNamespace="http://www.iho.int/S100AlertCatalog/5.0"
  version="5.0.0-20220705">
```

The <include> element for the portrayal schema must be replaced by an <import> element:

```
<xs:import
  namespace=http://www.iho.int/S100PortrayalCatalog/5.0
  schemaLocation="S100PortrayalCatalog.xsd"/>
```

The last amendment is to qualify the types from the portrayal schema.

```
<xs:extension base="pc:CatalogItem">
```

There are three occurrences in the schema file.

The author clearly prefers the second option. It makes it much easier to identify the schema for validation. The changes in the alert catalogue are minimal.

```
<al:alertCatalog xmlns:al="http://www.iho.int/S100AlertCatalog/5.0" version="0.1">
  <messages>
  ...
</al:alertCatalog>
```

## Area Fill

A namespace and a target namespace should be added to the schema file *S100AreaFill.xsd*.

```
<xs:schema
  xmlns="http://www.iho.int/S100AreaFill/5.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"
  targetNamespace="http://www.iho.int/S100AreaFill/5.0"
  version="5.0.0-20220705">
```

Then an area fill xml file will look like:

```
<?xml version="1.0" encoding="UTF-8"?>
<?S100lineage source="S52Preslib4.0" format="S100Ed2" version="0.1"
creationDate="2015-03-03"?>
<?S100Meta name="AIRARE02" exposition="pattern of symbols for an airport area"?>
<ar:symbolFill xmlns:ar="http://www.iho.int/S100AreaFill/5.0">
  <areaCRS>GlobalGeometry</areaCRS>
  <symbol reference="AIRARE02P"/>
  <v1>
    <x>38.24</x>
    <y>0.0</y>
  </v1>
  <v2>
    <x>18.24</x>
    <y>38.04</y>
  </v2>
</ar:symbolFill>
```

## Colour Profile

A namespace and a target namespace should be added to the schema file *S100ColorProfile.xsd*.

```
<xs:schema
  xmlns="http://www.iho.int/S100ColorProfile/5.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.iho.int/S100ColorProfile/5.0"
  version="5.0.0-20220705">
```

The XML file needs to be amended as follows:

## Schema use in Presentation Library XML and XSD files

```
<co:colorProfile xmlns:co="http://www.iho.int/S100ColorProfile/5.0">  
...  
</co:colorProfile>
```

### Line Styles

Very similar to Area Fills the proposed changes for the *S100LineStyle.xsd* are:

```
<xs:schema  
  xmlns="http://www.iho.int/S100LineStyle/5.0"  
  xmlns:xs="http://www.w3.org/2001/XMLSchema"  
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"  
  targetNamespace="http://www.iho.int/S100LineStyle/5.0"  
  version="5.0.0-20220705">
```

And a line style XML file must be amended as follows.

```
<?xml version="1.0" encoding="ISO-8859-1"?>  
  
<?S100lineage source="S52Preslib4.0" format="S100Ed2" version="0.1"  
creationDate="2015-03-13"?>  
<?S100Meta name="ACHRES51" exposition="boundary of an area where anchoring is  
prohibited or restricted"?>  
<ls:lineStyle xmlns:ls="http://www.iho.int/S100LineStyle/5.0">  
...  
</ls:lineStyle>
```

### Pixmaps

Again, the file *S100Pixmap.xsd* needs to be amended by a namespace and a target namespace.

```
<xs:schema xmlns="http://www.iho.int/S100Pixmap/5.0"  
  xmlns:xs="http://www.w3.org/2001/XMLSchema"  
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"  
  targetNamespace="http://www.iho.int/S100Pixmap/5.0"  
  version="5.0.0-20220705">
```

And a pixmap file would look like:

```

<?xml version="1.0" encoding="UTF-8"?>
<pi:pixmap xmlns:pi="http://www.iho.int/S100Pixmap/5.0">
  <description>Pixmap for a pixmap pattern fill for an area which is not
  sufficiently described to be symbolized, or for which no symbol exists in the
  symbol library.</description>
  <width>8</width>
  <height>16</height>
  <colorMap>
    <color id="0" transparency="1.0">#000000</color>
    <color id="A">CHMGD</color>
  </colorMap>
  <background>0</background>
  <pixel x="2" y="0">A</pixel>
  <pixel x="3" y="0">A</pixel>
  <pixel x="4" y="0">A</pixel>
  <pixel x="5" y="0">A</pixel>
  <pixel x="1" y="1">A</pixel>
  <pixel x="6" y="1">A</pixel>
  <pixel x="0" y="2">A</pixel>
  <pixel x="7" y="2">A</pixel>
  <pixel x="0" y="3">A</pixel>
  <pixel x="7" y="3">A</pixel>
  <pixel x="7" y="4">A</pixel>
  <pixel x="7" y="5">A</pixel>
  <pixel x="6" y="6">A</pixel>
  <pixel x="5" y="7">A</pixel>
  <pixel x="4" y="8">A</pixel>
  <pixel x="3" y="9">A</pixel>
  <pixel x="3" y="10">A</pixel>
  <pixel x="3" y="11">A</pixel>
  <pixel x="3" y="14">A</pixel>
  <pixel x="3" y="15">A</pixel>
</pi:pixmap>

```

## Portrayal catalogue

The last schema that does not specify a namespace is the schema for the portrayal catalogue S100PortrayalCatalog.xsd. It should be amended as follows:

```

xs:schema xmlns="http://www.iho.int/S100PortrayalCatalog/5.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:s100Symbol="http://www.iho.int/S100SymbolDefinition/5.0"
  xmlns:s100CSL="http://www.iho.int/s100/csl/5.0"
  targetNamespace="http://www.iho.int/S100PortrayalCatalog/5.0"
  version="5.0.0-20220705">

```

The portrayal catalogue needs to be amended as follows:

```

<pc:portrayalCatalog
  xmlns:pc="http://www.iho.int/S100PortrayalCatalog/5.0"
  productId="S-101"
  version="1.1.5_beta2">
  ...
</pc:portrayalCatalog>

```

### Recommendations

To improve the maintainability and therefore make the standard future proof we recommend adding the namespaces to the schemas as described above.

### Action Required by the S-100WG

The S-100WG is invited to:

- a. Note this paper
- b. Discuss the paper
- c. Endorse the paper
- d. Apply the proposed changes.