

DRAFT - Metadata Object Model



**ION GNSS SDR
METADATA WORKING GROUP**

SEPTEMBER 14, 2014

Overview



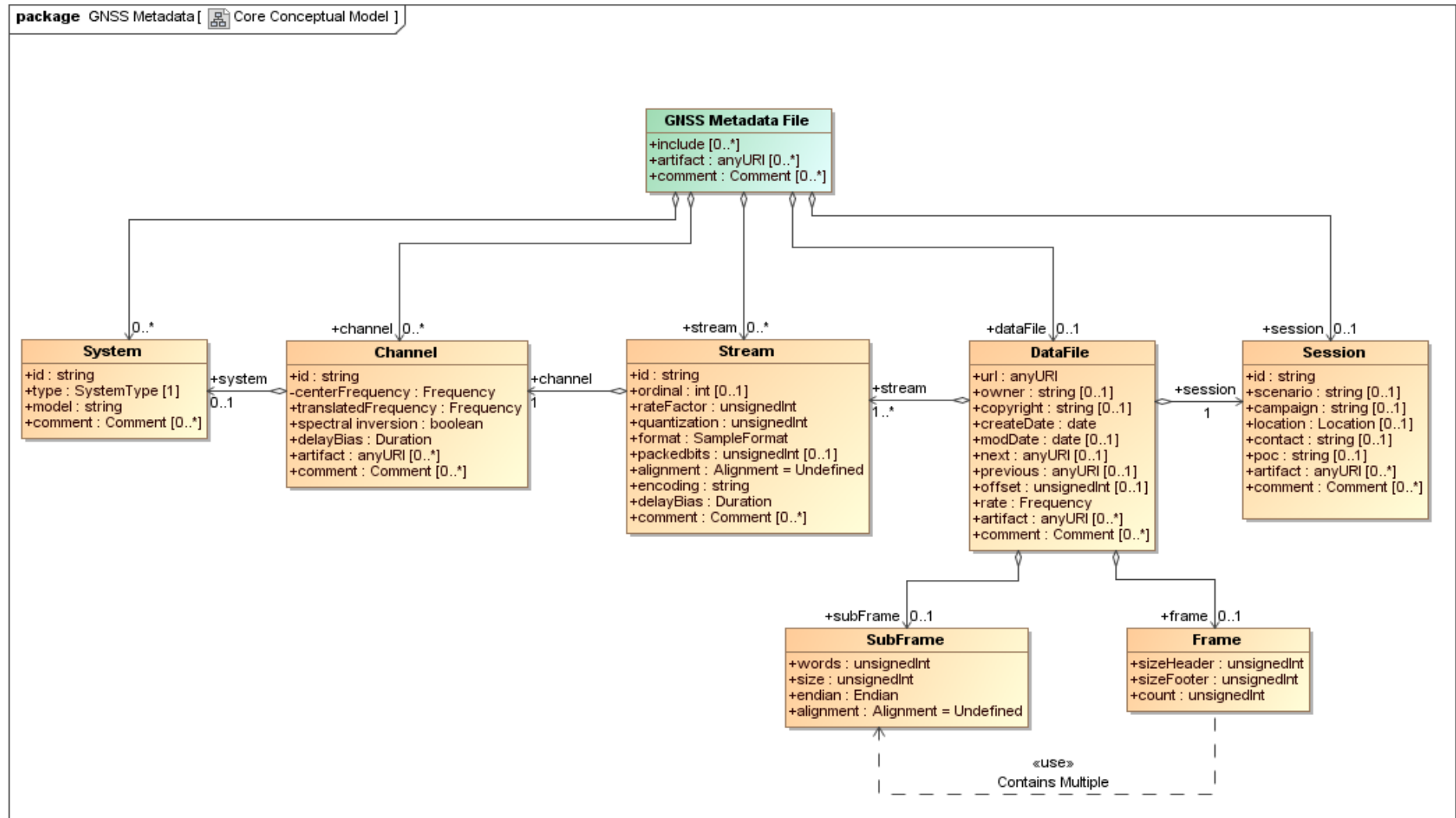
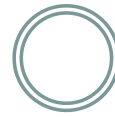
- Normalized object model of metadata schema based upon meeting results from Sept 10, 2014 at ION GNSS+
- UML Model shows the principal object types and relationships.
- Generated schema from object model for specification testing.
- Created temporary github for all artifacts.
 - <https://github.com/mbmathews/metadata/blob/master/schema/DraftGnssMetadata.xsd>
 - Need to move this to an ION owned GIT.

Changes to proposed schema

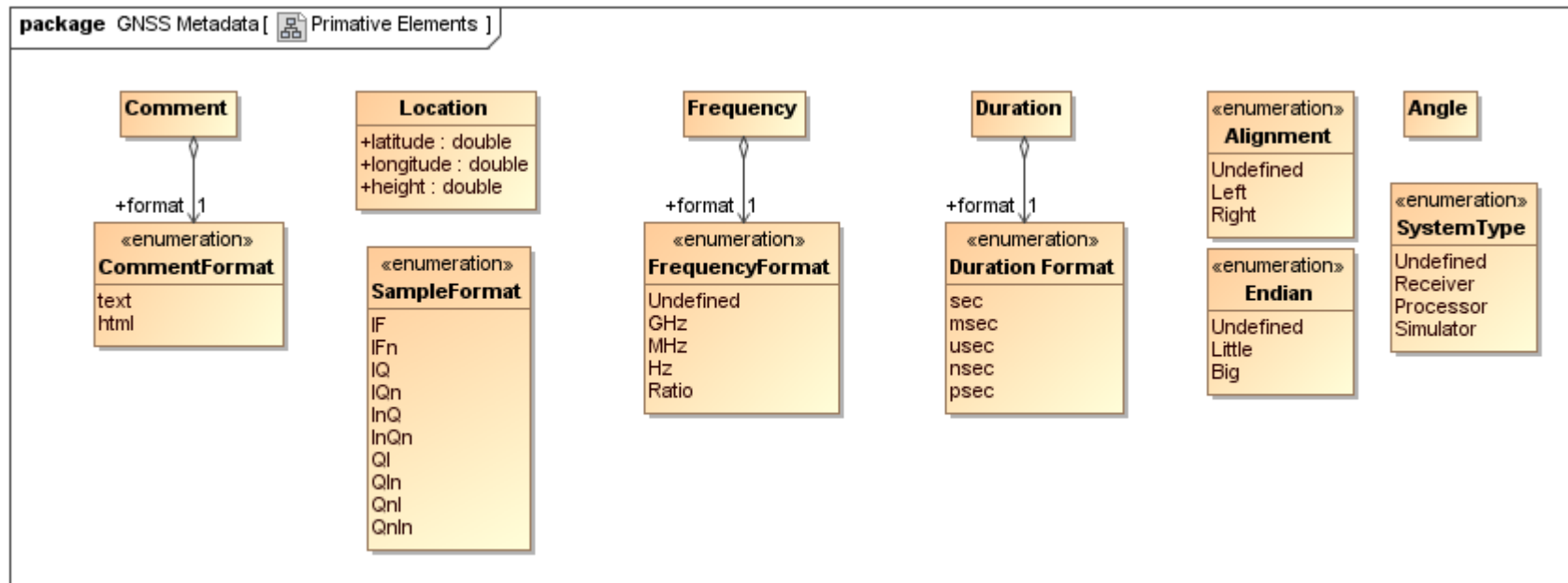
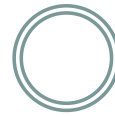


- Datafile Element (new) – captures specification for a single datafile
- Namespace changes
 - **Lump** – eliminated since contained within definition of datafile. The number of streams included and stream ordinal attribute specified in the datafile element defines the lump (aka sample word).
 - **Chunk** – changed to subframe
 - **Band** – changed to channel for generalization in support of intermediate file output. Metadata description can also be used for intermediate output as well.
 - Various element attribute names expanded to make their meaning more obvious for reader legibility. Goal for xml is legibility and readability.
- Schema Changes
 - Metadata files can include other metadata files allowing referencing of standard elements (e.g. channels, streams, system, etc.)
 - References to previously defined elements is done by specifying the id. Plan is for referenced elements to be copied into the linked element.
 - Inclusion (using the **include** element) of multiple files with references via 'id' field make it possible to support all complex multi-file configurations as well as a simplified single-file versions

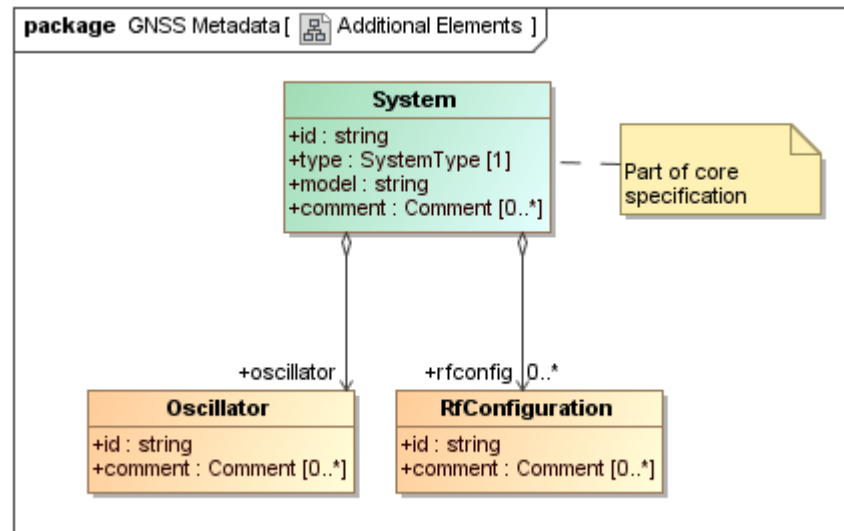
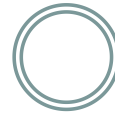
Core Conceptual Model



□ Primitive Elements



□ Additional Elements

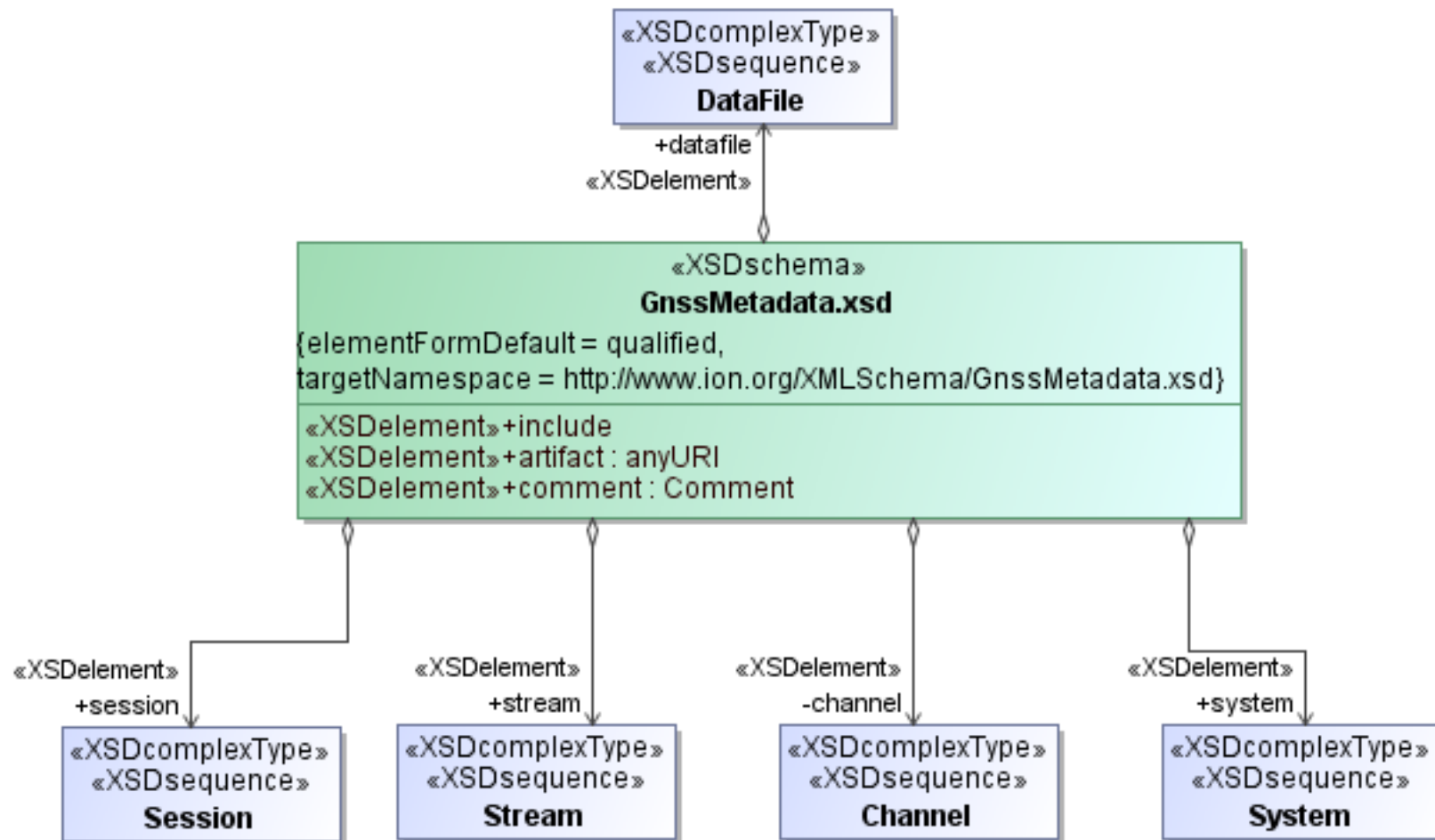
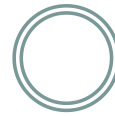


XML Schema Model

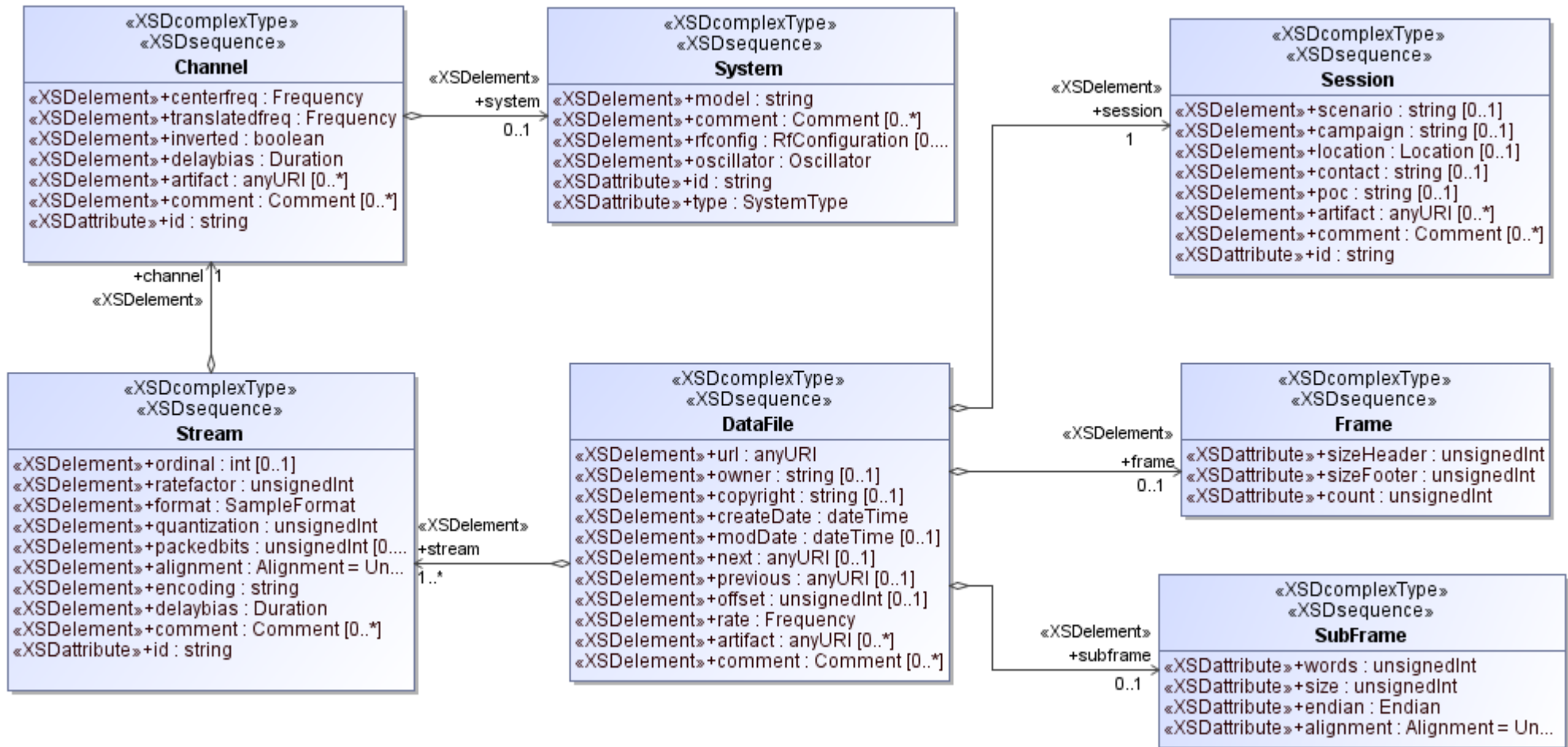
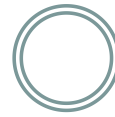


- Following figures show the fully specified XML schema.
- Generated schema is available at
 - <https://raw.githubusercontent.com/mbmathews/metadata/master/schema/DraftGnssMetadata.xsd>
- To test the schema and create templates
 - <http://xsd2xml.com>
- To validate metadata xml using the schema
 - <http://www.freeformatter.com/xml-validator-xsd.html>

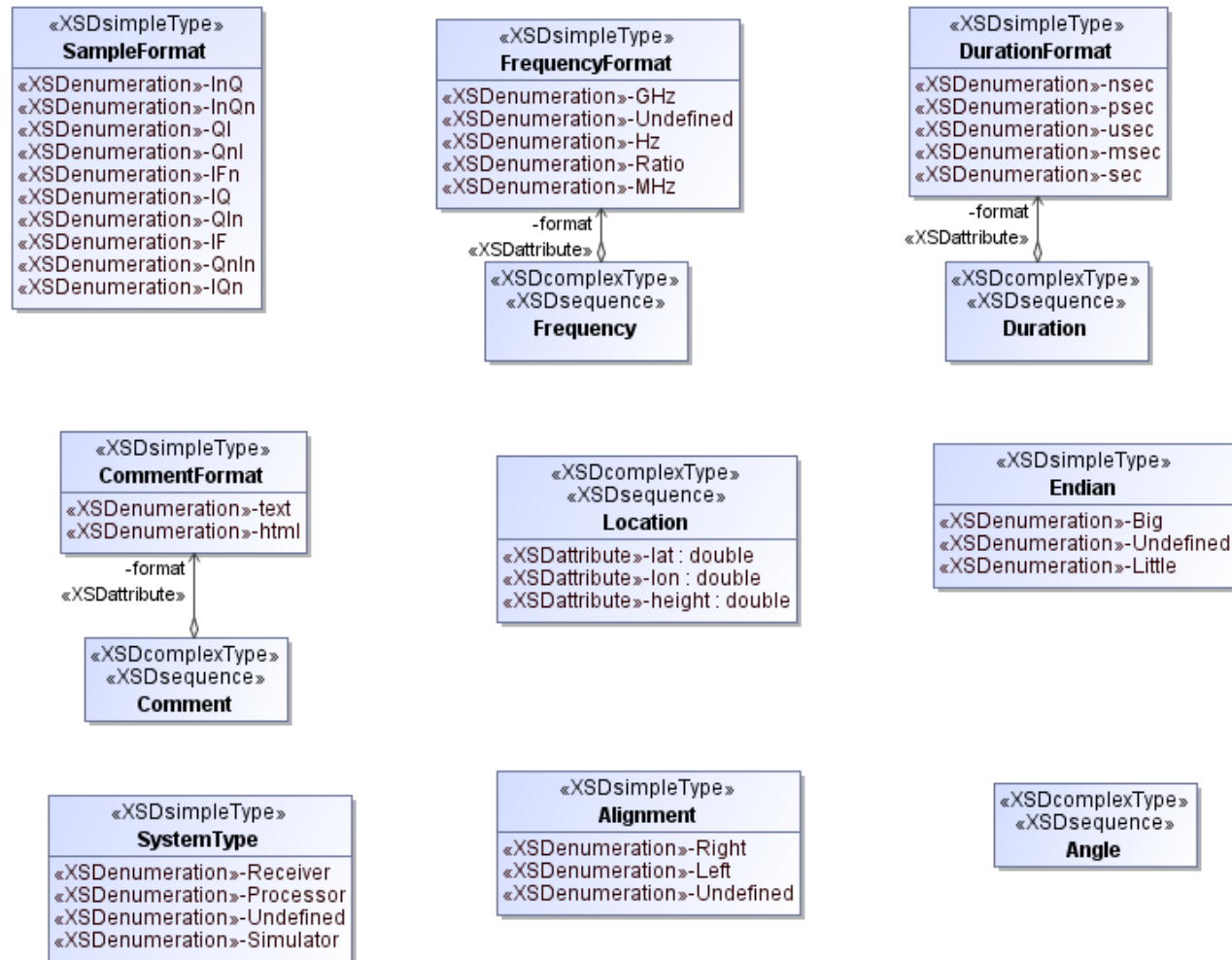
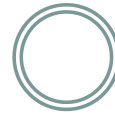
□ Top-Level Schema



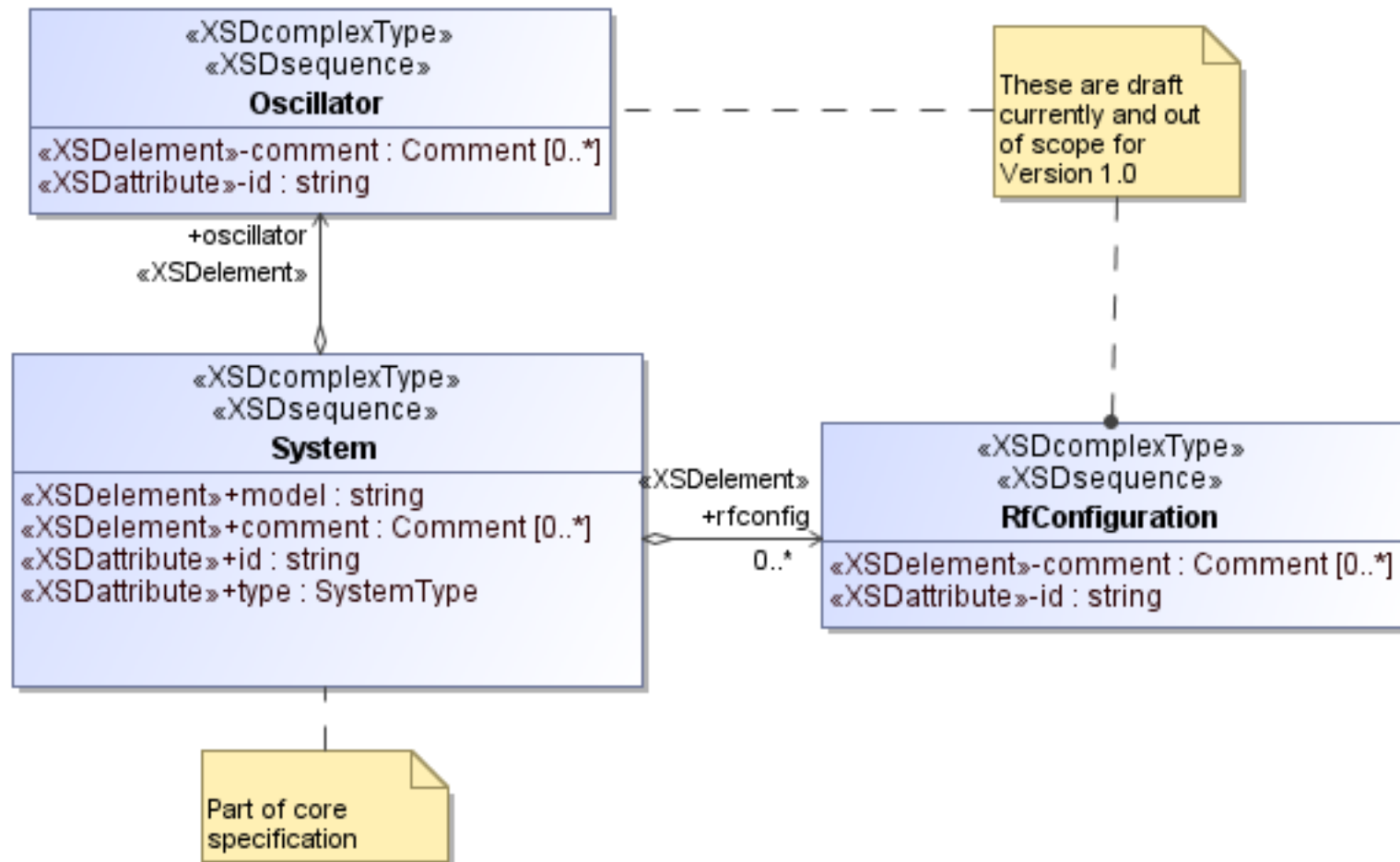
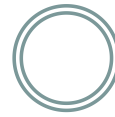
Core Elements



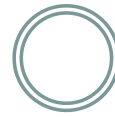
□ Primitive Types



□ Additional Types



Sample XML Template (Single File)



```
<?xml version="1.0" encoding="utf-8"?>
<datafile>
  <url>sdrdata.bin</url>
  <owner>str1234</owner>
  <copyright>str1234</copyright>
  <stream id="str1234">
    <ordinal>123</ordinal>
    <ratefactor>123</ratefactor>
    <format>InQ</format>
    <quantization>123</quantization>
    <packedbits>123</packedbits>
    <alignment>Right</alignment>
    <encoding>str1234</encoding>
    <channel id="str1234">
      <centerfreq format="GHz" />
      <translatedfreq format="GHz" />
      <inverted>true</inverted>
      <delaybias format="nsec" />
      <artifact>http://www.xsd2xml.com</artifact>
      <comment format="text" />
      <system id="str1234" type="Receiver">
        <model>str1234</model>
        <comment format="text" />
        <rfconfig id="str1234">
          <comment format="text" />
        </rfconfig>
        <oscillator id="str1234">
          <comment format="text" />
        </oscillator>
      </system>
    </channel>
```

```
<delaybias format="nsec" />
  <comment format="text" />
</stream>
<session id="str1234">
  <scenario>str1234</scenario>
  <campaign>str1234</campaign>
  <location lat="3.1415926535" lon="3.1415926535" height="3.1415926535" />
  <contact>str1234</contact>
  <poc>str1234</poc>
  <artifact>http://www.xsd2xml.com</artifact>
  <comment format="text" />
</session>
<createDate>2012-12-13T12:12:12</createDate>
<modDate>2012-12-13T12:12:12</modDate>
<next>http://www.xsd2xml.com</next>
<previous>http://www.xsd2xml.com</previous>
<offset>123</offset>
<rate format="GHz" />
<subframe words="123" size="123" endian="Big" alignment="Right" />
<frame sizeHeader="123" sizeFooter="123" count="123" />
<artifact>http://www.xsd2xml.com</artifact>
<comment format="text" />
</datafile>
```