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PODCAST for this Poster presentation:
if you do not see the point of showing the "code" (below) or do not understand what technology (minutae) is being discussed there then you will likely find value in listening to the podcast which accompanies this Poster paper. The podcast explains the salient points of the SVG metadata RDF ontology etc code shown here.

TITLE= "SVG Does Multiple Semantic Web Ontologies, Some are Virtual"

Abstract= SVG's Metadata element can supply embedded metadata, in the various flavours of RDF, RDFS, DAML, OWL and other forms like GML, CYC, and SWRL / RuleML. RDF supports external "links" which can be used to "attach" one or more remote ontologies to the actually locally embedded metadata / ontologies. Presentation shows how SVG files can have multiple forms of metadata and simultaneous ontologies, providing more than one dimension of semantic knowledge to SVG visuals. (One example is ontologically bright SVG sprites, another is diagrams with a modicum of self-semantic knowledge. The latter permits SVG searches by meaning rather than appearance.)

When you look at the bar chart picture on paper or on the screen what is arriving at your eyes is electromagnetic energy of various wavelengths, which we "see" as coloured light. What is coming from our eyes are signals representing

coloured dots and patches located variously in our visual field. In the occipital lobe, located in the back of the head, we "see" a bar-chart. The bar-chart is "seen" only once our brain has subconsciously (and rather quickly) pieced together the coloured dots and patches and sends the second order results to consciousness. It is only in our consciousness that we "see" (experience) the bar-chart. It does not actually exist in reality. What we seem to be seeing in life is actually an inference , a proposition set forth via subconscious processes of vision and memory (association) handed to consciousness to display in the Cartesian Theatre of the Mind. How much of what you (seem to) experience in life, such as "seeing" a bar-chart, is actually "seeing" the results of second order, details not available to consciousness, processing? Meta-data and ontologies can be used by computer programs which do inferencing to detect semantic things, like bar-charts, which do not explicitly exist. (What actually exists , in this case, is only some ASCII text which are SVG "objects" like SVG Rectangle and SVG Text. Nowhere, there, is there a "bar-chart", such a thing is a second-order construct (by inferencing).)
[See a bar-chart SVG code below, it also contains RDF metadata which is what a computer program uses to inference with.]

My original metadata section for SVG Specification 1.0 (http://www.w3.org/TR/SVG/metadata.html#Example) contains the SVG Description element with namespace usage, providing metadata information about a barchart. The same example contains the SVG Metadata element which contains RDF based metadata about a barchart. Examples of SVG Description and Title elements occurring in later versions of the SVG Specification seem to use the same barchart information.

Follows is my original metadata section for SVG Spec 1.0 http://www.w3.org/TR/SVG/metadata.html#Example

```
<?xml version="1.0" standalone="yes"?>
<svg width="4in" height="3in" version="1.1"
    xmlns = 'http://www.w3.org/2000/svg'>
    <desc xmlns:myfoo="http://example.org/myfoo">
      <myfoo:title>This is a financial report</myfoo:title>
      <myfoo:descr>The global description uses markup from the
        <myfoo:emph>myfoo</myfoo:emph> namespace.</myfoo:descr>
      <myfoo:scene><myfoo:what>widget $growth</myfoo:what>
      <myfoo:contains>$three $graph-bar</myfoo:contains>
        <myfoo:when>1998 $through 2000</myfoo:when> </myfoo:scene>
   </desc>
```

```
    <metadata>
      <rdf:RDF
          xmlns:rdf = "http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          xmlns:rdfs = "http://www.w3.org/2000/01/rdf-schema#"
          xmlns:dc = "http://purl.org/dc/elements/1.1/" >
        <rdf:Description about="http://example.org/myfoo"
            dc:title="MyFoo Financial Report"
            dc:description="$three $bar $thousands $dollars $from 1998 $through
2000"
            dc:publisher="Example Organization"
            dc:date="2000-04-11"
            dc:format="image/svg+xml"
            dc:language="en" >
          <dc:creator>
            <rdf:Bag>
              <rdf:li>Irving Bird</rdf:li>
              <rdf:li>Mary Lambert</rdf:li>
            </rdf:Bag>
          </dc:creator>
        </rdf:Description>
      </rdf:RDF>
    </metadata>
  </svg>
```

(some item extracts from)
http://sweet.jpl.nasa.gov/ontology/material_thing.owl

```
<owl:Class rdf:ID="Equipment">
<rdfs:subClassOf rdf:resource="#Infrastructure"/>
</owl:Class>
<owl:Class rdf:ID="Instrument">
<rdfs:subClassOf rdf:resource="#Equipment"/>
</owl:Class>
<owl:Class rdf:ID="Facility">
<rdfs:subClassOf rdf:resource="#Infrastructure"/>
</owl:Class>
<owl:Class rdf:ID="Structure">
<rdfs:subClassOf rdf:resource="#Facility"/>
</owl:Class>
<owl:Class rdf:ID="Building">
<rdfs:subClassOf rdf:resource="#Structure"/>
```

```
</owl:Class>
<owl:Class rdf:ID="Computer">
<rdfs:subClassOf rdf:resource="#Equipment"/>
</owl:Class>
<owl:Class rdf:ID="Barn">
<rdfs:subClassOf rdf:resource="#Building"/>
</owl:Class>
<owl:Class rdf:ID="School">
<rdfs:subClassOf rdf:resource="#Building"/>
</owl:Class>
<owl:Class rdf:ID="House">
<rdfs:subClassOf rdf:resource="#Building"/>
</owl:Class>
<owl:Class rdf:ID="GasStation">
<rdfs:subClassOf rdf:resource="#Building"/>
</owl:Class>
```

Geospatial maps, for example, may have one or more Topic Maps which contain pointers into them, provide navigation etc for the maps just as though the information was actually present in the map data sets.

Semantic Web for Earth and Environmental Terminology (SWEET)
There are 15 different ontologies in SWEET: http://sweet.jpl.nasa.gov/ontology/
Earth Realm, Physical Phenomena, Physical Process, Physical Property, Sun Realm, Biosphere, Data, Data Center, Human Activity, Material Thing, Numerics, Sensor, Space, Time, Units.

space.owl.xml

```
<owl:Class rdf:ID="Downward">
<owl:equivalentClass rdf:resource="#Down"/>
</owl:Class>
<owl:Class rdf:ID="Base">
<owl:equivalentClass rdf:resource="#Bottom"/>
</owl:Class>
<owl:Class rdf:ID="Bottom">
<rdfs:subClassOf>
<owl:Restriction>
<owl:onProperty rdf:resource="#hasDirection"/>
<owl:allValuesFrom rdf:resource="#Down"/>
</owl:Restriction>
```

</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="http://sweet.jpl.nasa.gov/ontology/numerics.owl#Maximum"/>
</owl:Class>

Following is an extract from my procedural knowledge based geospatial system. It uses co-ordinate and geometric information from SVG “pictures” and from GML files. Ontologies are declarative and my system (example below) is based on performing logical tests, or procedures, upon data from geospatial data sets and from SVG data sets. The ontology item:

<rdf:Property ID="IsNear">
<rdfs:comment>has a degree of nearness (by value).
g1(x)</rdfs:comment>
<rdfs:range.rdf:resource="#www.open-meta.com/2001/
IsNear" />
<rdfs:domain rdf:resource="#SvgEntity" />
</rdf:Property>

the procedure used to perform the test, in this case distance of separation of two points is “near” by some measure:

IsNear = g1 = 1 - (1/2 + 1/PI*arctan((sqrt((x2-x1)^2+(y2-
y1)^2))-k(1)/k(2)))

Rather than being (effectively) binary like most ontology terms, the procedurally based ontology is active and may have qualitative values for its terms. What I have called the procedurally based ontology is recognized as a fuzzy ontology, which is talked about also in "The Application of Fuzzy Ontology in Design Management", ZHOU Liang et al., 2006 International Conference on Artificial Intelligence, paper ICA5034 .

Examples of SVG files containing embedded ontological and metadata content

<?xml-stylesheet type="text/xsl" href="anim02.xsl"?>
<svg width="16cm" height="14cm" viewBox="0 0 255 201">
<**metadata** xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:rdfs="http://www.w3.org/TR/. ..-schema#"
xmlns:dxsvg="http://www.open-meta.com/dxschema/">

<rdf:Description about="#**arrowstreamer**">
<dxsvg:Ingress resource="#**funnel**"/>
</rdf:Description>
<rdf:Description about="#**arrowstreamer**">
<dxsvg:Inside resource="#**funnel**" />
</rdf:Description>
<rdf:Description about="#**funnel**">
<dxsvg:Containz resource="#**arrowstreamer**"/>
</rdf:Description>
<rdf:Description about="#**arrowstreamer**">
<opencyc:above-Generally resource="#**funnel**" />
</rdf:Description>
</**metadata**>
<desc>Copyright 2006 David Dodds Example anim02 – demonstrate deBono diagram SVG animation with Lakoff spatial metaphor</desc>
<rect x="1" y="1" width="253" height="199"
fill="black" stroke="blue" stroke-width="7" />
<text id="uplabel" **x="230" y="20"** style="font-family: Verdana; font-size:12.333; fill:blue">UP</text>
<text id="downlabel" x="200" y="180" style="font-family: Verdana; font-size:12.333; fill:blue">DOWN</text>
<g id="leftfunnelside">
<path d="M 99 180 L 99 57"
style="fill:none; stroke:green; stroke-width:10"/> </g>
<g id="rightfunnelside">
<path d="M 153 57 L 153 180 " style="fill:none; stroke:green; stroke-width:10"/> </g>
<rect id="arrowstreamer" x="110" width="3" height="20" >
<**animate** attributeName="y" attributeType="XML"
begin="0s" dur="5s" fill="freeze" from="50" to="170" />
<animate attributeName="height" attributeType="XML"
begin="0s" dur="5s" fill="freeze" from="20" to="143" />
<animateColor attributeName="fill" attributeType="CSS"
from="rgb(0,0,255)" to="rgb(110,0,0)"
begin="0s" dur="5s" fill="freeze" /> </rect>
</svg>

```
<?xml version="1.0" standalone="yes" ?>
<svg xmlns = 'http://www.w3.org/2000/svg'>
<metadata xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
        xmlns:rdfs="http://www.w3.org/TR/. ..-schema#"
        xmlns:dxsvg="http://www.open-meta.com/dxschema/" >
  <rdf:Description about="#text1">
    <dxsvg:Below resource="#xbaseline"/>
  </rdf:Description>
  <rdf:Description about="#text1">
    <dxsvg:IsNear resource="#xbaseline" />
  </rdf:Description>
  <rdf:Description about="#text2">
    <dxsvg:Below resource="#text1"/>
  </rdf:Description>
  <rdf:Description about="#text2">
    <dxsvg:IsNear resource="#text1" />
  </rdf:Description>
  <rdf:Description about="#endlineleft">
    <dxsvg:AtRight resource="#line1"/>
  </rdf:Description>
  <rdf:Description about="#endlineleft">
    <dxsvg:IsNear resource="#line1" />
```

```
  </rdf:Description>
  <rdf:Description about="#endlineright">
    <dxsvg:AtLeft resource="#bar13"/>
  </rdf:Description>
  <rdf:Description about="#endlineright">
    <dxsvg:IsNear resource="#bar13" />
  </rdf:Description>
  <rdf:Description about="#line1">
    <dxsvg:AtRight resource="#line2" />
  </rdf:Description>
  <rdf:Description about="#line2">
    <dxsvg:AtRight resource="#line3" />
  </rdf:Description>
  <rdf:Description about="#line3">
    <dxsvg:AtRight resource="#line4" />
  </rdf:Description>
  <rdf:Description about="#line4">
    <dxsvg:AtRight resource="#line5" />
  </rdf:Description>
  <rdf:Description about="#line5">
    <dxsvg:AtRight resource="#line6" />
  </rdf:Description>
  <rdf:Description about="#line6">
    <dxsvg:AtRight resource="#line7" />
  </rdf:Description>
  <rdf:Description about="#line7">
    <dxsvg:AtRight resource="#line8" />
  </rdf:Description>
  <rdf:Description about="#line8">
    <dxsvg:AtRight resource="#line9" />
  </rdf:Description>
  <rdf:Description about="#line9">
    <dxsvg:AtRight resource="#line10" />
  </rdf:Description>
  <rdf:Description about="#line10">
    <dxsvg:AtRight resource="#line11" />
  </rdf:Description>
  <rdf:Description about="#line11">
    <dxsvg:AtRight resource="#line12" />
  </rdf:Description>
</metadata>
<rect x="37" y="190" width="280" height="1" style="stroke:black; stroke-width:1" />
<text id="text3" x="317" y="194"
   style="font-family:Verdana; font-size:12.333; fill:indigo">
18
</text>
<rect x="333" y="96" width="1" height="104" style="stroke:black; stroke-width:1" />
<rect x="37" y="96" width="1" height="104" style="stroke:black; stroke-width:1" />
<rect id="line1" x="40" y="160" width="20" height="40" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line2" x="60" y="140" width="20" height="60" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="line3" x="80" y="111" width="20" height="89" style="stroke:red; fill:red; stroke-width:0" />
<rect id="line4" x="100" y="130" width="20" height="70" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="line5" x="120" y="173" width="20" height="27" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line6" x="140" y="191" width="20" height="09" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line7" x="160" y="140" width="20" height="60" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="line8" x="180" y="167" width="20" height="33" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line9" x="200" y="175" width="20" height="25" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line10" x="220" y="129" width="20" height="71" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="line11" x="240" y="150" width="20" height="50" style="stroke:green; fill:green; stroke-width:0" />
<rect id="line12" x="260" y="139" width="20" height="61" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="line13" x="280" y="125" width="20" height="75" style="stroke:yellow; fill:yellow; stroke-width:0" />
<text id="text1" x="37" y="210"
   style="font-family:Verdana; font-size:12.333; fill:black">
87  88  89  90  91  92  93  94  95  96  97  98  99
```

```
</text>
<text id="text2" x="37" y="230"
  style="font-family:Verdana; font-size:12.333; fill:brown">
Mean High Ratings August 1999
</text>
</svg>

(updated version)
<?xml version="1.0" standalone="yes"?>
 <svg width="4in" height="3in" version="1.1"
    xmlns = 'http://www.w3.org/2000/svg'>
    <desc xmlns:myfoo="http://example.org/myfoo">
      <myfoo:title>This is a financial report</myfoo:title>
      <myfoo:descr>The global description uses markup from the
        <myfoo:emph>myfoo</myfoo:emph> namespace.</myfoo:descr>
      <myfoo:scene><myfoo:what>widget growth</myfoo:what>
      <myfoo:contains>three graph-bar</myfoo:contains>
        <myfoo:when>1998 through 2000</myfoo:when>
        <myfoo:data>100 250 319</myfoo:data></myfoo:scene>
    </desc>
    <metadata>
      <rdf:RDF
          xmlns:rdf = "http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          xmlns:rdfs = "http://www.w3.org/2000/01/rdf-schema#"
          xmlns:dc = "http://purl.org/dc/elements/1.1/" >
        <rdf:Description about="http://example.org/myfoo"
            dc:title="MyFoo Financial Report"
            dc:description="three bar thousands dollars from 1998 through 2000 dataurl http://example.org/myfoodata"
            dc:publisher="Example Organization"
            dc:date="2000-04-11"
            dc:format="image/svg+xml"
            dc:language="en" >
          <dc:creator>
            <rdf:Bag>
              <rdf:li>Irving Bird</rdf:li>
              <rdf:li>Mary Lambert</rdf:li>
            </rdf:Bag>
          </dc:creator>
        </rdf:Description>
      </rdf:RDF>
    </metadata>
<rect id="bar1" x="50" y="155" width="20" height="40" style="stroke:green; fill:red; stroke-width:0" />
<rect id="bar2" x="95" y="135" width="20" height="60" style="stroke:yellow; fill:yellow; stroke-width:0" />
<rect id="bar3" x="140" y="106" width="20" height="89" style="stroke:red; fill:green; stroke-width:0" />
<text id="text1" x="37" y="210"
  style="font-family:Verdana; font-size:12.333; fill:black">
1998 1999 2000
</text>
<text id="text2" x="37" y="230"
  style="font-family:Verdana; font-size:12.333; fill:green">
$100 $250 $319 (thousands dollars)
</text>
<text id="text3" x="37" y="265"
  style="font-family:Verdana; font-size:12.333; fill:brown">
MyFoo Financial Report  widget growth
</text>
<text id="text4" x="37" y="285"
  style="font-family:Verdana; font-size:12.333; fill:brown">
Example Organization  2000-04-11
</text>
<text id="text5" x="180" y="175"
  style="font-family:Verdana; font-size:12.333; fill:blue">
thousands dollars
```

</text>
</svg>

(from CYC ontology)
<rdf:Property rdf:ID="above-Directly">
<rdfs:label xml:lang="en">above - directly</rdfs:label>
<rdfs:comment>(#$above-Directly ABOVE BELOW) means either that (1) the volumetric center of ABOVE is directly above some point of BELOW, if ABOVE is smaller than BELOW; or that (2) some point of ABOVE is directly above the volumetric center of BELOW, if ABOVE is larger than, or equal in size to, BELOW.</rdfs:comment>
<guid>bd58fbde-9c29-11b1-9dad-c379636f7270</guid>
<rdfs:subPropertyOf rdf:resource="#above-Generally"/>
<rdfs:domain rdf:resource="#SpatialThing-Localized"/>
<rdfs:range rdf:resource="#SpatialThing-Localized"/>
</rdf:Property>

(from author's procedural ontology)
<rdf:Property ID="Above">
<rdfs:comment>centroid of OBJY1 is anywhere above the centroid of OBJY2. Above means a y-axis value for OBJY1 which is less than the y-axis for OBJY2. (2D) </rdfs:comment>
<rdfs:range rdf:resource="#SvgEntity" />
<rdfs:domain rdf:resource="#SvgEntity" />
</rdf:Property>

```
public real Above( int y1, int y2 )
    {
      if (y1 < y2 )      //2D Above
      {
        /* Far( ) = 1 – IsNear( ) */
        return 1 - ( IsNear(y2-y1) );
      }
      else
      {
        return 0;
      }
}
```

The school district GML data set is used in conjunction with some ontologies to demonstrate (SVG) graphics which know what they mean, adding the availability of semantic queries to those of regular geo-spatial information processing.

Listing F.2.2.2 schools.xml xsi:schemaLocation="http://www.opengis.net/examples schools.xsd"

school district(s), from GML dataset.
Each has a stringname and has a named geographical region as a location indicator or a collection of points (coordinates) in some spatial reference system. Since they are spatially disjoint they have locations in "direction" (like north, south, northwest, etc) relative to / from each other. Regions have an area magnitude aka size. They have "content" (generally) such as grass , dirt, water, trees, buildings, animals / people, roads, in various degrees at various sub-regions or #$Place's. Therefore school district 5 may be 'north' of school district 7 and part of a school district's #$boundary may be #$Water (of type #$Ocean, for example.) Maybe these two districts are contained in a super-region called 'Pacific NorthWest'. Pacific is a reference to the ocean which partly borders this super-region. NorthWest is a direction (away) from a central point or origin (aka '1030' on the clock face)

Examples of CYC ontology knowledge fragments:

#$bordersOn borders on

(#$bordersOn REGION1 REGION2) means that the #$GeographicalRegions REGION1 and REGION2 are physically adjacent to each

other and do not overlap, i.e. there is a border between them. Examples: (#$bordersOn #$CentralUSATimeZone #$MountainUSATimeZone), (#$bordersOn (#$TerritoryFn #$Nepal) (#$TerritoryFn #$Tibet).
guid: bd58e17a-9c29-11b1-9dad-c379636f7270
direct instance of: #$SymmetricBinaryPredicate #$IrreflexiveBinaryPredicate #$InterExistingObjectPredicate #$SpatialPredicate
direct specialization of: #$onSamePlanetSurfaceAs #$adjacentTo #$touchesDirectly-Apartanomic

#$SpatialPredicate spatial relations

A specialization of #$CotemporalPredicate. Each instance of #$SpatialPredicate is a spatial relation that can (only) hold between one or more #$SpatialThings, and is used to state something about its/their spatial location(s), position(s), or orientation(s). Note that when a #$SpatialPredicate has a #$Group as one of its arguments, a certain spatial relationship is ususally being asserted to hold of all or most of the members of that group; but there are exceptions (e.g. #$in-Among) for which this is not the case.
guid: bd58bc17-9c29-11b1-9dad-c379636f7270
direct instance of: #$PredicateCategory #$AtemporalNecessarilyEssentialCollectionType
direct specialization of: #$CotemporalPredicate
direct generalization of: #$ConnectionPredicate

<?xml version="1.0" standalone="yes" ?>
<svg xmlns = 'http://www.w3.org/2000/svg' id="metadata-GML-2006" width="450" height="450" >
<title id="test-title">metadata-GML-2006</title>
<desc id="test-desc">Verify that the SVG viewer handles
the presence of (GML) metadata and associated elements.</desc>
<metadata xmlns="http://www.opengis.net/examples" xmlns:gml="http://www.opengis.net/gml"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.opengis.net/examples schools.xsd"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" >
<State>
<gml:description>
Educational institutions with student populations exceeding 500.
</gml:description>
<gml:name>School districts in the North Region.</gml:name>
<gml:boundedBy>
<gml:Box srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>0,0</gml:coordinates>
<gml:coordinates>50,50</gml:coordinates>
</gml:Box>
</gml:boundedBy>
<gml:featureMember>
<SchoolDistrict>
<gml:name>District 28</gml:name>
<gml:boundedBy>
<gml:Box srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>0,0</gml:coordinates>
<gml:coordinates>50,40</gml:coordinates>
</gml:Box>
</gml:boundedBy>
<schoolMember>
<School>
<gml:name>Alpha</gml:name>
<address>100 Cypress Ave.</address>
<gml:location>
<gml:Point srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>20.0,5.0</gml:coordinates>
</gml:Point>
</gml:location>
</School>
</schoolMember>
<schoolMember>
<School>
<gml:name>Beta</gml:name>
<address>1673 Balsam St.</address>
<gml:location>

<gml:Point srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>40.0,5.0</gml:coordinates>
</gml:Point>
</gml:location>
</School>
</schoolMember>
<gml:extentOf>
<gml:Polygon srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:outerBoundaryIs>
<gml:LinearRing>
<gml:coordinates>0,0</gml:coordinates>
<gml:coordinates>50,0</gml:coordinates>
<gml:coordinates>50,40</gml:coordinates>
<gml:coordinates>0,0</gml:coordinates>
</gml:LinearRing>
</gml:outerBoundaryIs>
</gml:Polygon>
</gml:extentOf>
</SchoolDistrict>
</gml:featureMember>
<gml:featureMember>
<SchoolDistrict>
<gml:name>District 32</gml:name>
<gml:boundedBy>
<gml:Box srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>0,0</gml:coordinates>
<gml:coordinates>30,50</gml:coordinates>
</gml:Box>
</gml:boundedBy>
<schoolMember>
<School>
<gml:name>Gamma</gml:name>
<address>651 Sequoia Ave.</address>
<gml:location>
<gml:Point srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>5.0,20.0</gml:coordinates>
</gml:Point>
</gml:location>
</School>
</schoolMember>
<schoolMember>
<College>
<gml:name>Delta</gml:name>
<address>260 University Blvd.</address>
<gml:pointProperty>
<gml:Point srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:coordinates>5.0,40.0</gml:coordinates>
</gml:Point>
</gml:pointProperty>
</College>
</schoolMember>
<schoolMember xlink:type="simple" xlink:title="Epsilon High School" xlink:href="http:www.state.gov/schools/cgibin/
wfs?schoolID=hs736" gml:remoteSchema="schools.xsd#xpointer(//complexType[@name='SchoolType'])"/>
<gml:extentOf>
<gml:Polygon srsName="http://www.opengis.net/gml/srs/epsg.xml#4326">
<gml:outerBoundaryIs>
<gml:LinearRing>
<gml:coordinates>0,0</gml:coordinates>
<gml:coordinates>40,50</gml:coordinates>
<gml:coordinates>50,50</gml:coordinates>
<gml:coordinates>0,0</gml:coordinates>
</gml:LinearRing>
</gml:outerBoundaryIs>
</gml:Polygon>

</gml:extentOf>
</SchoolDistrict>
</gml:featureMember>
<studentPopulation>392620</studentPopulation>
</State>
<rdf:RDF
<owl:Ontology rdf:about="">
<owl:Class rdf:ID="schoolMember">
<rdfs:subClassOf rdf:resource="#SchoolDistrict"/>
<owl:Class rdf:ID="School">
<rdfs:subClassOf rdf:resource="#schoolMember"/>
<owl:Class rdf:ID="College">
<rdfs:subClassOf rdf:resource="#schoolMember"/>
<rdf:Property rdf:ID="above-Directly">
<rdfs:label xml:lang="en">above - directly</rdfs:label>
<rdfs:comment>(#$above-Directly ABOVE BELOW) means either that (1) the volumetric center of ABOVE is directly above some point of BELOW, if ABOVE is smaller than BELOW; or that (2) some point of ABOVE is directly above the volumetric center of BELOW, if ABOVE is larger than, or equal in size to, BELOW.</rdfs:comment>
<guid>bd58fbde-9c29-11b1-9dad-c379636f7270</guid>
<rdfs:subPropertyOf rdf:resource="#above-Generally"/>
<rdfs:domain rdf:resource="#SpatialThing-Localized"/>
<rdfs:range rdf:resource="#SpatialThing-Localized"/>
</rdf:Property>
</rdf:RDF>
</metadata>
<rect id="box1" x="0" y="0" width="50" height="50" style="stroke:green; fill:none; stroke-width:1" />
<title> School districts in the North Region. </title>
 <desc> Educational institutions with student populations exceeding 500. </desc>
<rect id="box2" x="0" y="0" width="50" height="40" style="stroke:blue; fill:none; stroke-width:1" />
<title>District 28</title>
<rect id="box3" x="0" y="0" width="30" height="50" style="stroke:brown; fill:none; stroke-width:1" />
and a bunch more SVG statements which draw the boxes, points and other geometric figures described in the GML metadata above and place the associated text near by.
  </svg>

Extract from W3C RDF(S) Specification

2.3.4. rdfs:seeAlso

The property rdfs:seeAlso specifies a resource that might provide additional information about the subject resource. This property may be specialized using rdfs:subPropertyOf to more precisely indicate the nature of the information the object resource has about the subject resource. The object and the subject resources are constrained only to be instances of the class rdfs:Resource.

2.3.5. rdfs:isDefinedBy

The property rdfs:isDefinedBy is a subproperty of rdfs:seeAlso, and indicates the resource defining the subject resource. As with rdf:seeAlso, this property can be applied to any instance of rdfs:Resource and may have as its value any rdfs:Resource.

The most common anticipated usage is to identify an RDF schema, given a name for one of the properties or classes defined by that schema. Although XML namespace declarations will typically provide the URI where RDF vocabulary resources are defined, there are cases where additional information is required.

For example, constructs such as <rdfs:subPropertyOf rdf:resource="http://purl.org/dc/elements/1.0/Creator"/>
do not indicate the URI of the schema that includes the vocabulary item Creator (i.e., http://purl.org/dc/elements/1.0/).

In such cases, the rdfs:isDefinedBy property can be used to explicitly represent that information. This approach will also work when the URIs of the namespace and its components have no obvious relationship, as would be the case if they were identified using schemes such as GUIDs or MD-5 hashes.

GOOGLE “David Dodds xml svg” to locate and read my other papers in this area.

(It is likely that there will be an extension of the content of this poster paper late in August 2006. It will replace the original poster paper available for downloading from open-meta.com at conference time.)