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de Catalunya



SLD/SE SWG meeting

94th OGC Technical Committee
Barcelona Spain
Bocher E. / Ertz O.
12 March 2015

Agenda



- One hour slot at 9:00 (Aula 12)
 - assess the situation
 - conclusions from last exchanges on the list
 - impact on the conceptual model
 - major orientations until Nottingham TC, sept. 2015
- Second one at 11:00 (Aula 10)
 - start immediately the work on these orientations

Two stories are on-going



- The conceptual object model story
- The core and extension story

- Conclusions on the conceptual object model story
 - One encoding-neutral model, many encodings
 - Schema:
<https://portal.opengeospatial.org/wiki/SLDSE1x2swg/SymbologyModel>
 - Summary on twiki: data dictionary tables
 - Details:
<https://docs.google.com/document/d/1xUtwj9Kh5L84emoaU18n4hQ8iLQ5OI2OF52kX1x6fsw>
 - Explicit rendering engine algorithm

The modular breakdown ...



- Each specification conformant to this standard shall consist of the core and some number of requirements classes defined as extensions to that core.
- Each conformance class tests a complete requirements class
- Requirements classes contain all requirements tested by a conformance test case
- Profiles are defined as sets of conformance classes
- There is a defined core
- Extensions are requirements classes ... *each does contain all requirements tested by a conformance test case ... associated to a conformance class*
- Optional requirements are organized as requirements classes
- Requirements classes intersect overlap only by reference
- Conformance class specifies all dependencies
- *Conformance classes are associated to extensions to the core ...*

from OGC 08-131r3 The Specification Model — A Standard for Modular specifications

Conclusions



- Putting every component in a separate conformance class
- Flexibility to define profiles by combination of classes
- Rendering engine algorithm defined with the Rule ext.
- Ability to define MyOwnStyle without Rule, hence with my own rendering engine.
- Definition of Profiles:
 - lowering the implementation bar (low entry level)
 - Simple FeatureTypeStyle = CORE + RULE + FTS + (PS + GRAPHIC) + (LS + PENSTROKE) + (AS + SOLIDFILL) + (TS + POINTLABEL)
 - Simple CoverageStyle = CORE + RULE + CS + RS + SOLIDFILL
 - Simple Full = CORE + RULE + FTS + (PS + GRAPHIC) + (LS + PENSTROKE) + (AS + SOLIDFILL) + (TS + POINTLABEL) + CS + RS

Coverage issues



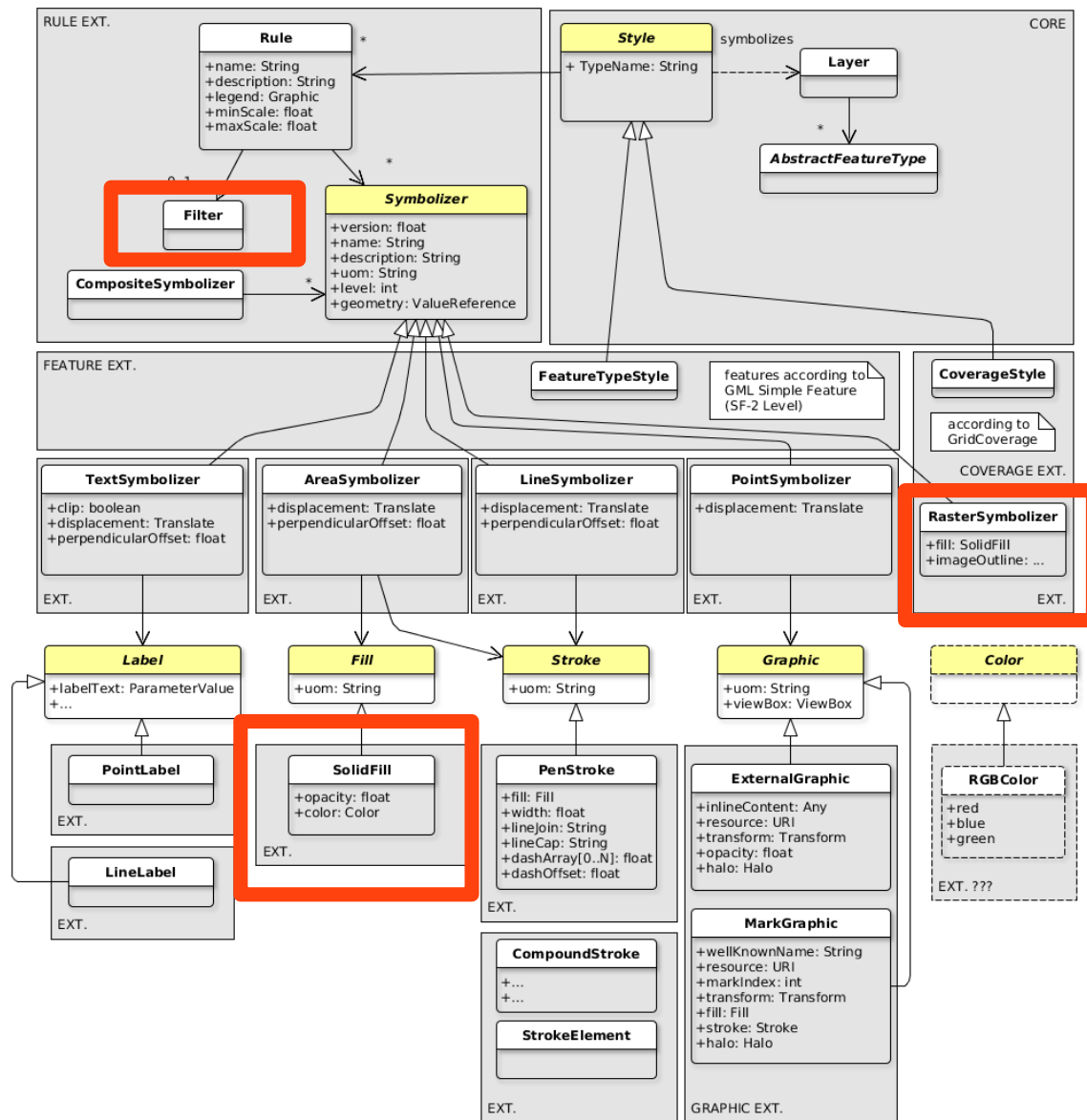
Data type input

Symbology Encoding 1.1.0 says

« The RasterSymbolizer describes how to render raster/matrix-coverage data (e.g., satellite photos, DEMs) »

=> SE designed for the **GridCoverage** data model (ISO 19123: CV_DiscreteGridPointCoverage).

Coverage issues



Coverage issues



Conceptually

SE 1.1.0

- CoverageStyle
- Rule
- RasterSymbolizer
- ColorMap
- Color1
- Color2
- Color N



Next SE

- CoverageStyle
- Rule
- Filter
- RasterSymbolizer
- SolidFill
- Color1
- Rule
- Filter
- RasterSymbolizer
- SolidFill
- Color2
- Rule
- Filter
- RasterSymbolizer
- SolidFill
- Color N

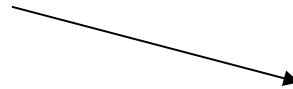
Coverage issues



Remember

RasterSymbolizer defines a set of elements :

- Geometry
- Opacity
- ChannelSelection
- OverlapBehavior
- ColorMap
- ContrastEnhancement
- ShadedRelief
- ImageOutline



Rule, Filter, SolidFill

Coverage issues



OverlapBehavior

SE 1.1.0 : “ The OverlapBehavior element tells a system how to behave when multiple raster images in a layer overlap each other, for example with satellite-image scenes. ”

```
<xsd:enumeration value="LATEST_ON_TOP"/>  
<xsd:enumeration value="EARLIEST_ON_TOP"/>  
<xsd:enumeration value="AVERAGE"/>  
<xsd:enumeration value="RANDOM"/>
```

Is GridCoverage able to support time informations ?

According Peter's YES (15/01/2015).

The conceptual symbology model can refer to OGC 09-146r2 (GML Application Schema - Coverages) to manipulate the temporal dimension, using axisLabels.

Coverage issues



ShadedRelief (Hillshade)

... needs calculations for slope and aspect to determine the final hillshade value
- moving 3 x 3 window visits each cell in the input raster, and for each cell in the center of the window, an aspect and slope value is calculated using an algorithm that incorporates the values of the cell's eight neighbors.
for each cell in the output raster.

Ok we understand the definition but

Is it rather in the scope of another and surrounding spec like your WCPS ?

AspectRelief, SlopeRelief, GridDirection

Coverage issues



ChannelSelection

SE 1.1.0 “The ChannelSelection element specifies the false-color channel selection for a multi-spectral raster source (such as a multi-band satellite-imagery source).”

must be renamed by CompositeRGB.

...take as input 3 tuple values and match them into a RGB color.

ContrastEnhancement

SE 1.1.0 “The ContrastEnhancement element defines contrast enhancement for a channel of a false-color image or for a color image.”

...take as input a color and replace it into a new distribution of values .

Coverage issues



Geometry

Need some input about this element.

Does geometry make sense for a GridCoverage ?

Coverage issues



ImageOutline

SE 1.1.0 “The ImageOutline element specifies that individual source rasters in a multi-raster set (such as a set of satellite-image scenes) should be outlined with either a LineSymbolizer or PolygonSymbolizer.”

Could you use only an AreaSymbolizer.

Orientations: what's next?



- Validate these conclusions (at least on the principles)
 - so as to complete the conceptual model according to pending issues/CRs
- List of issues/CRs
 - <https://docs.google.com/spreadsheets/d/1LXUc6A7-lw0O3VkcvmRJ6gL0gHn1D7yFnI3lzLzoXfs>
- Definition of Color without restricting to sRGB only
 - like CR09-016 suggests to unconstrain uom with px only
- Symbolizer/Level to control several rendering passes (i8)
 - e.g. nice connected roads; remove the ambiguity p11 of SE (“... subtle differences in the appearance ...”)
- ParameterValue / ValueReference (i7)
 - Simple Features SF Level 0-1-2 (related to implementation bar)
 - “The requirement is to access properties of a feature instance of feature type B while rendering a feature instance of feature type A where both feature instances are related by an **explicit association** or implicitly by a **geometric relationship**”
 - Geometry/Attribute with cardinality > 1 issues from CR10-142
 - Set of minimum functions (math, string, format, ...) → see next slide

Borrow Expression concept from FE?

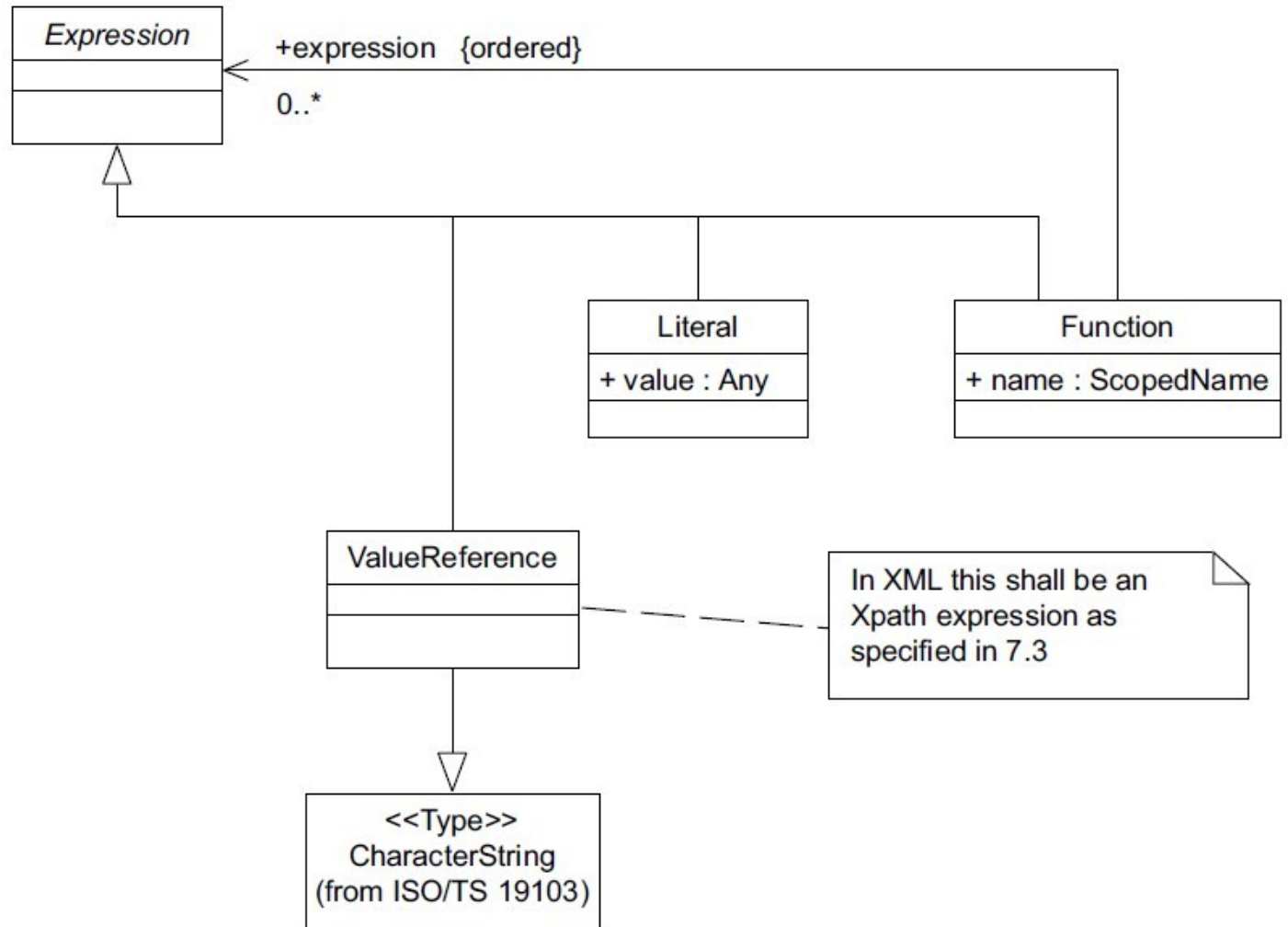


Figure 4 — Expression