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GeoSciML 4 Boreholes

99th OGC Technical Committee – 3D Geoscience borehole ad-hoc meeting

Dublin, Ireland

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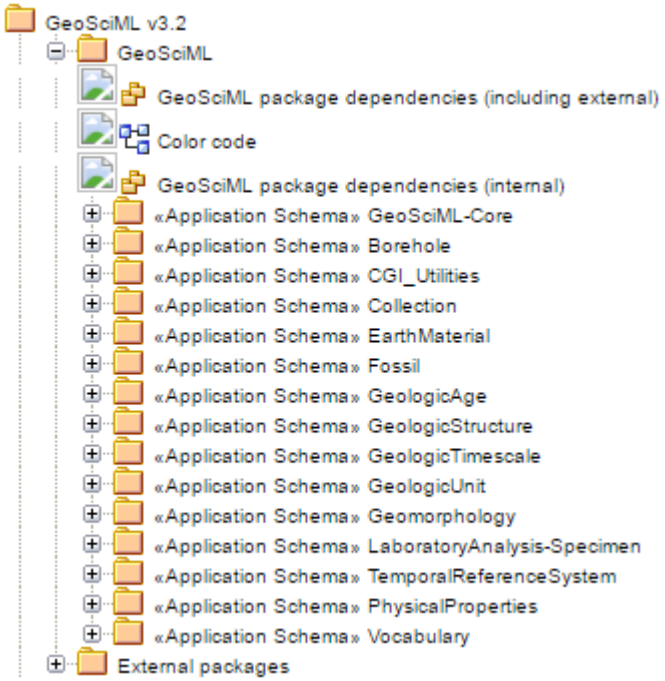
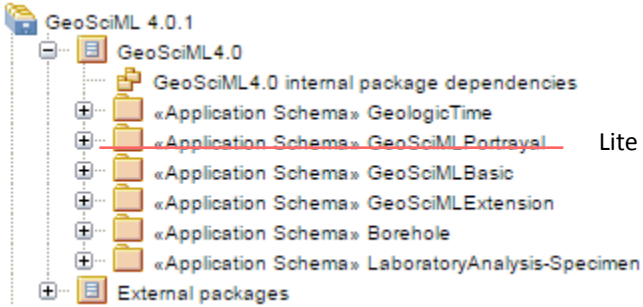
22 June 2016

GeoSciML 4.0

- Essentially the same model, but packaged differently
- All properties are optional, but still nillable
  - 3.2 properties were mandatory/nillable
  - Communities define their own profile (enforced through SCH)
- Properties grouped in Description classes





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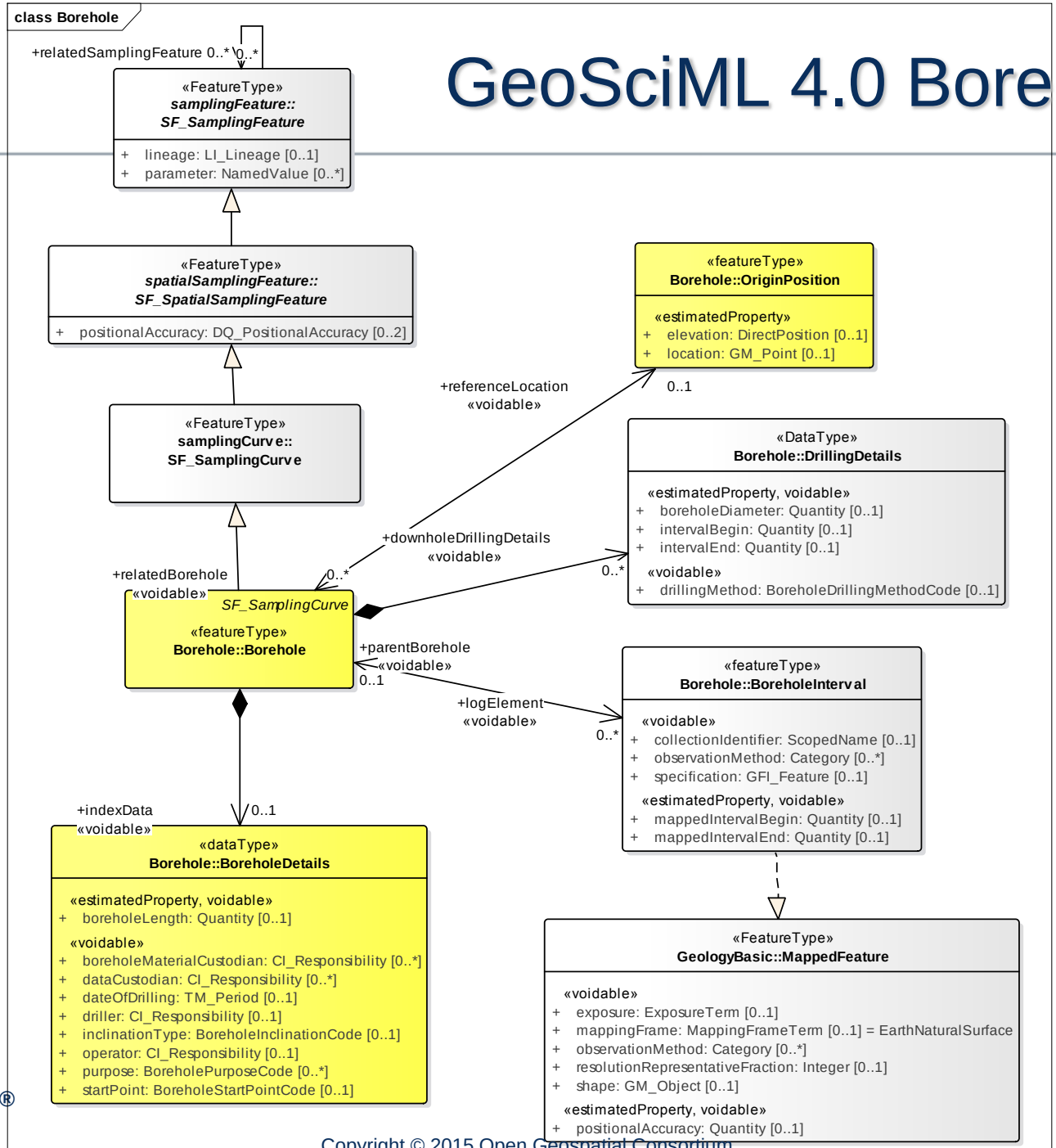
GeoSciML 4.0 Borehole



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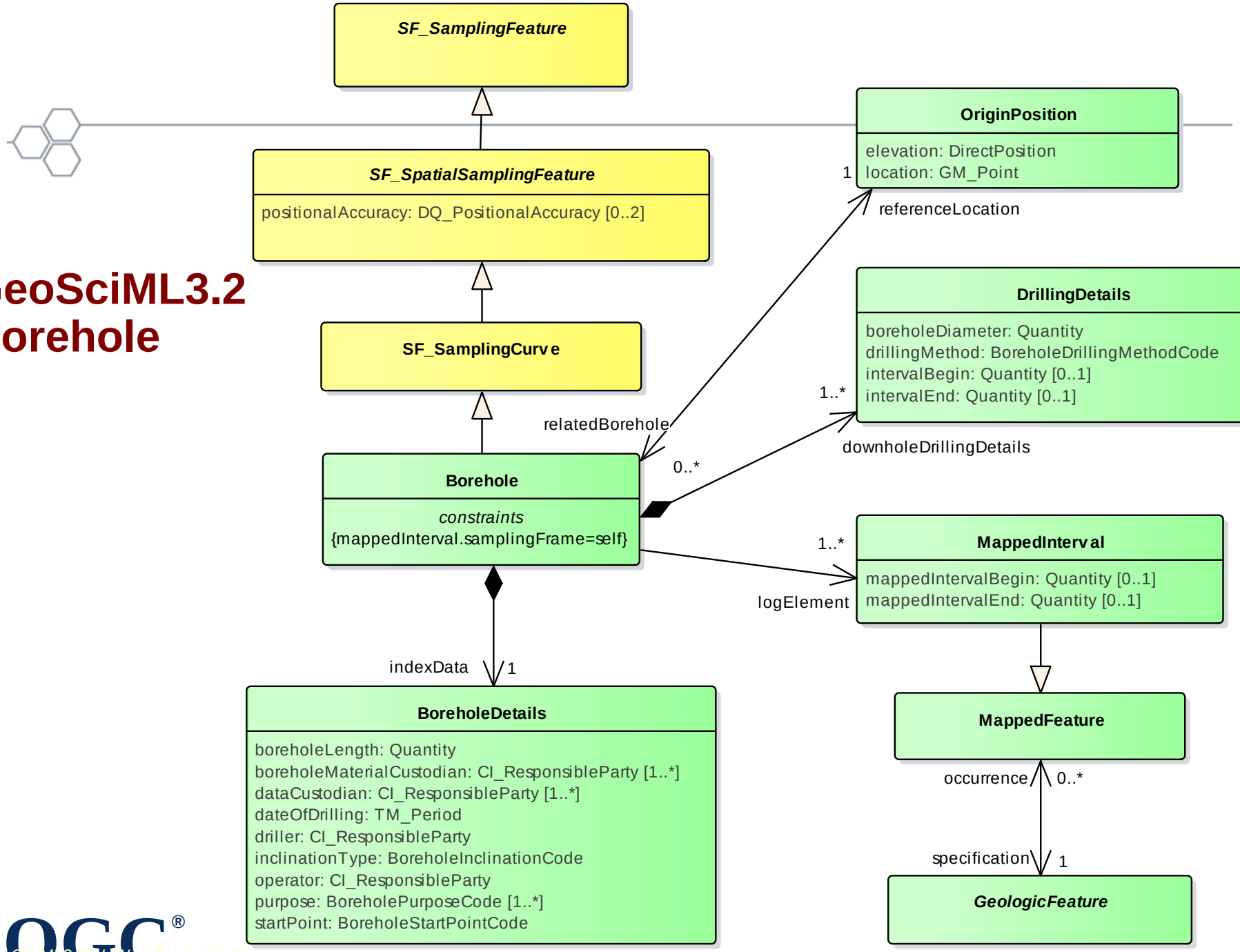
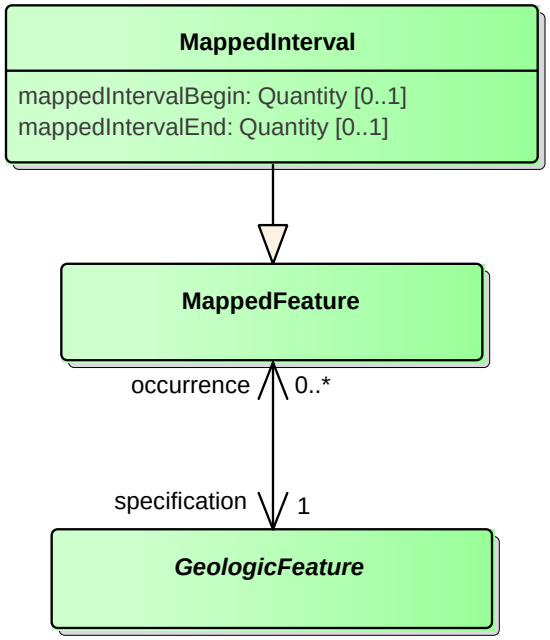
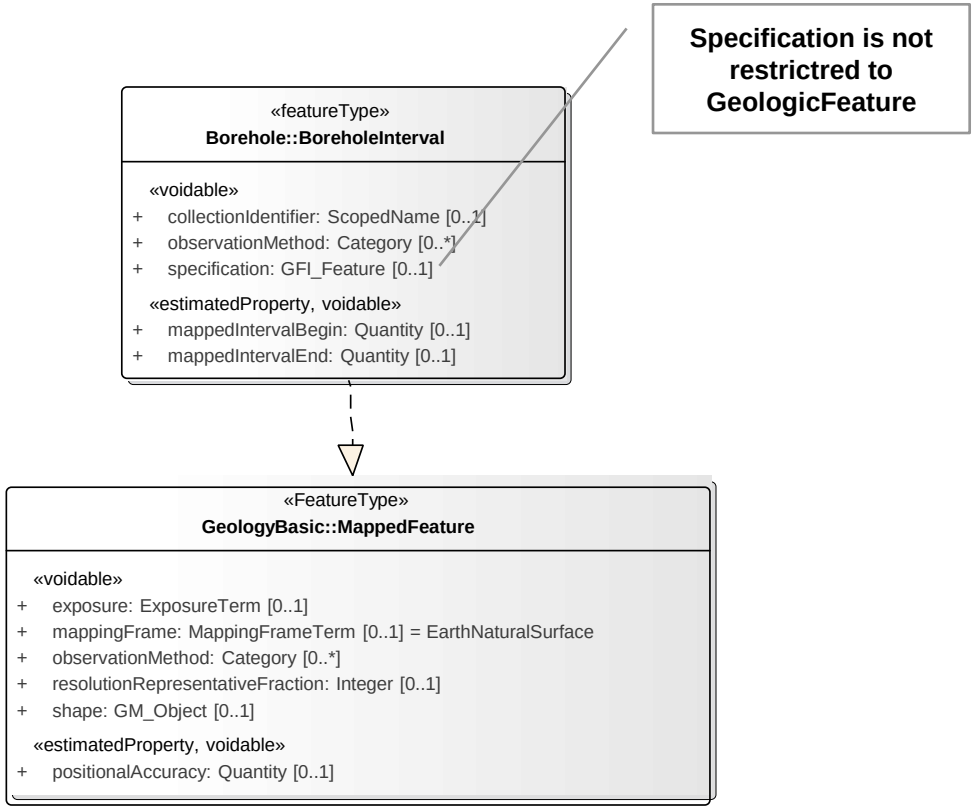
GeoSciML3.2 Borehole



Identical, except for

- **How does it compare to GeoSciML 4.0?**

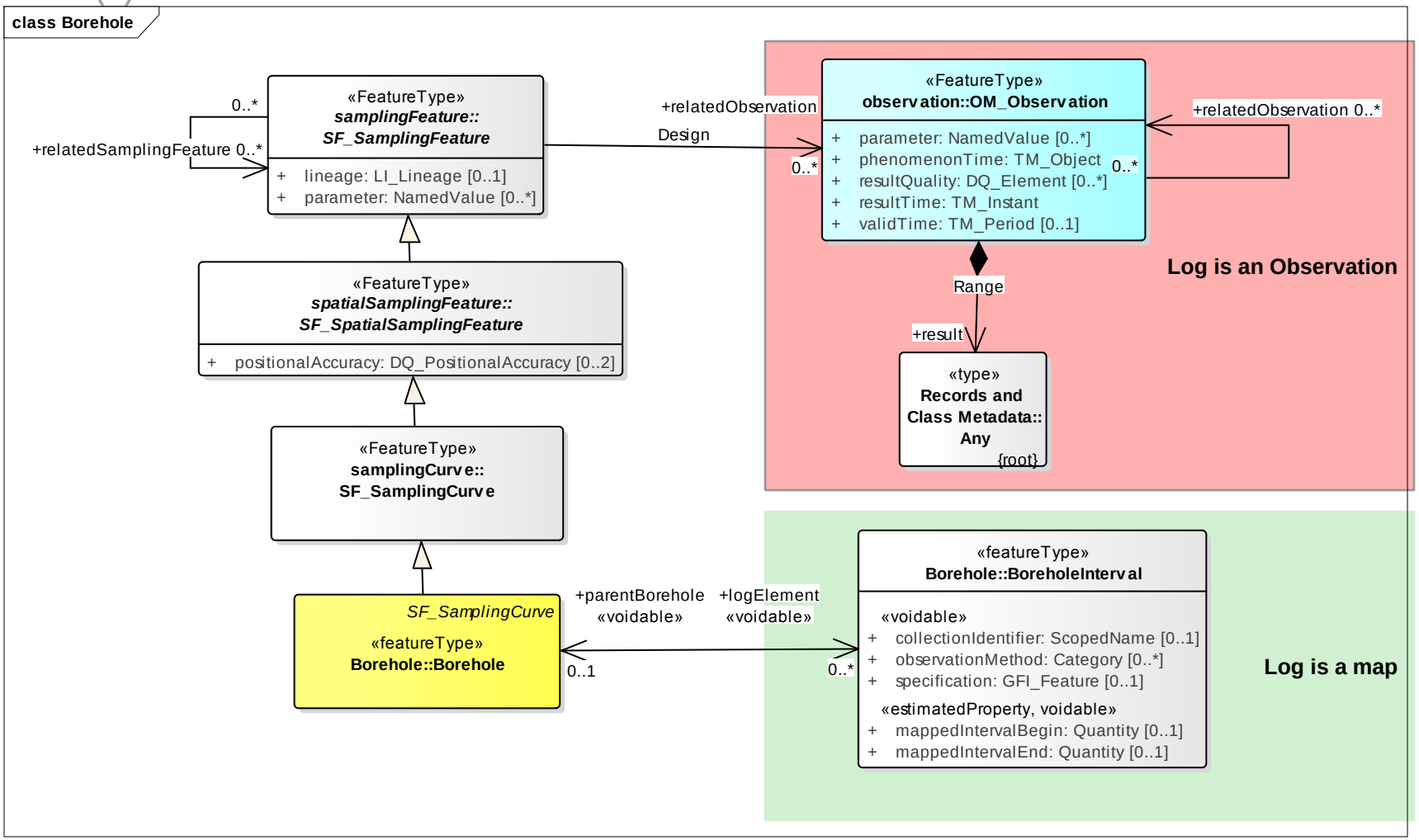




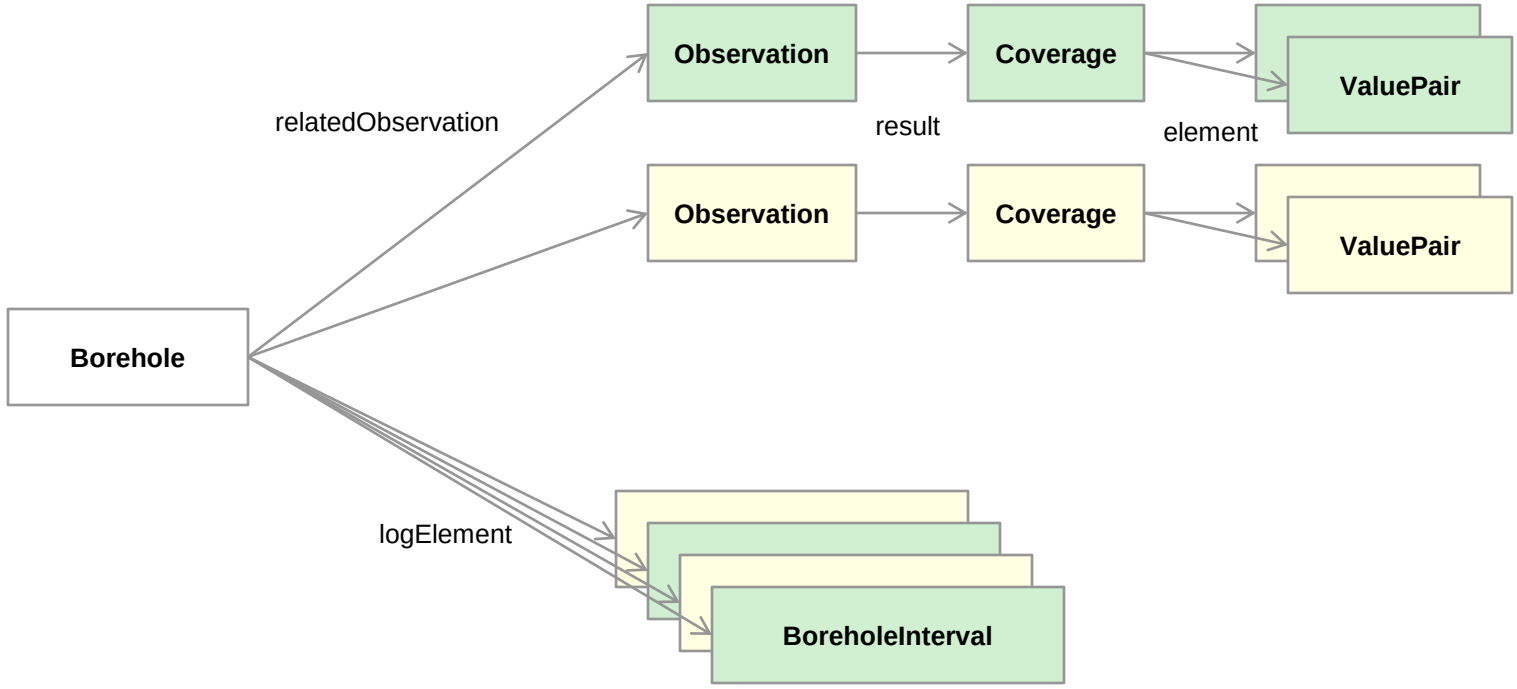
GeoSciML Borehole

1. Minimal model, essentially to support “Linear geologic map”
2. Provides basic metadata
3. BoreholeInterval is a convenience, does not prevent using O&M to report more sophisticated data

Log as Map versus Log as Observation



Encoding multiple logs



Examples of geology boreholes

Age observation according to CGI stratigraphic chart dictionary

```
- <sa:relatedObservation>
  - <om:Observation gml:id="bh.30303239375830303038.eventAge.1">
      <gml:description>Event age</gml:description>
      <om:samplingTime/>
      <om:procedure xlink:href="urn:cgi:classifier:CGI:ObservationMethod:Direct_observation"/>
      <om:observedProperty xlink:href="urn:cgi:propertyType:CGI:GeoSciML:2.0:GeologicEvent:eventAge"/>
      <om:featureOfInterest xlink:href="#bh.30303239375830303038"/>
    - <om:result>
      - <cv:CV_DiscreteCoverage>
          <cv:domainExtent xlink:href="#bh.30303239375830303038.Shape"/>
          <cv:rangeType/>
        - <cv:element>
          - <cv:CV_GeometryValuePair>
            - <cv:geometry>
              - <cv:CV_DomainObject>
                  <cv:spatialElement xlink:href="#bh30303239375830303038.1"/>
                </cv:CV_DomainObject>
              </cv:geometry>
              <cv:value xsi:type="gml:ReferenceType" xlink:href="urn:cgi:classifier:ICS:StratChart:2008:Quaternary"/>
            </cv:CV_GeometryValuePair>
          </cv:element>
        - <cv:element>
```

GeoSciML 2.0 !

GeoSciML Age property

Quaternary term from the CGI stratigraphic chart dictionary

Considerations

- Boreholes as a spatial reference system
  - Entities located along a borehole path have both a relative location from the beginning of the borehole and an absolute location
  - Absolute versus Relative position
  - 2D geometries
- Borehole construction elements
  - Endless collection of construction elements
  - Endless collection of methods (Processes) used to acquire observations
- Feature versus Role (Water Well a role of a BoreHole ?)

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