

Borehole update: simpleFeature exchange, conceptual UML model

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Ordnance Survey

Borehole update: simpleFeature exchange, conceptual UML model

104th OGC Technical Committee – GeoScience DWG session

Southampton, United Kingdom

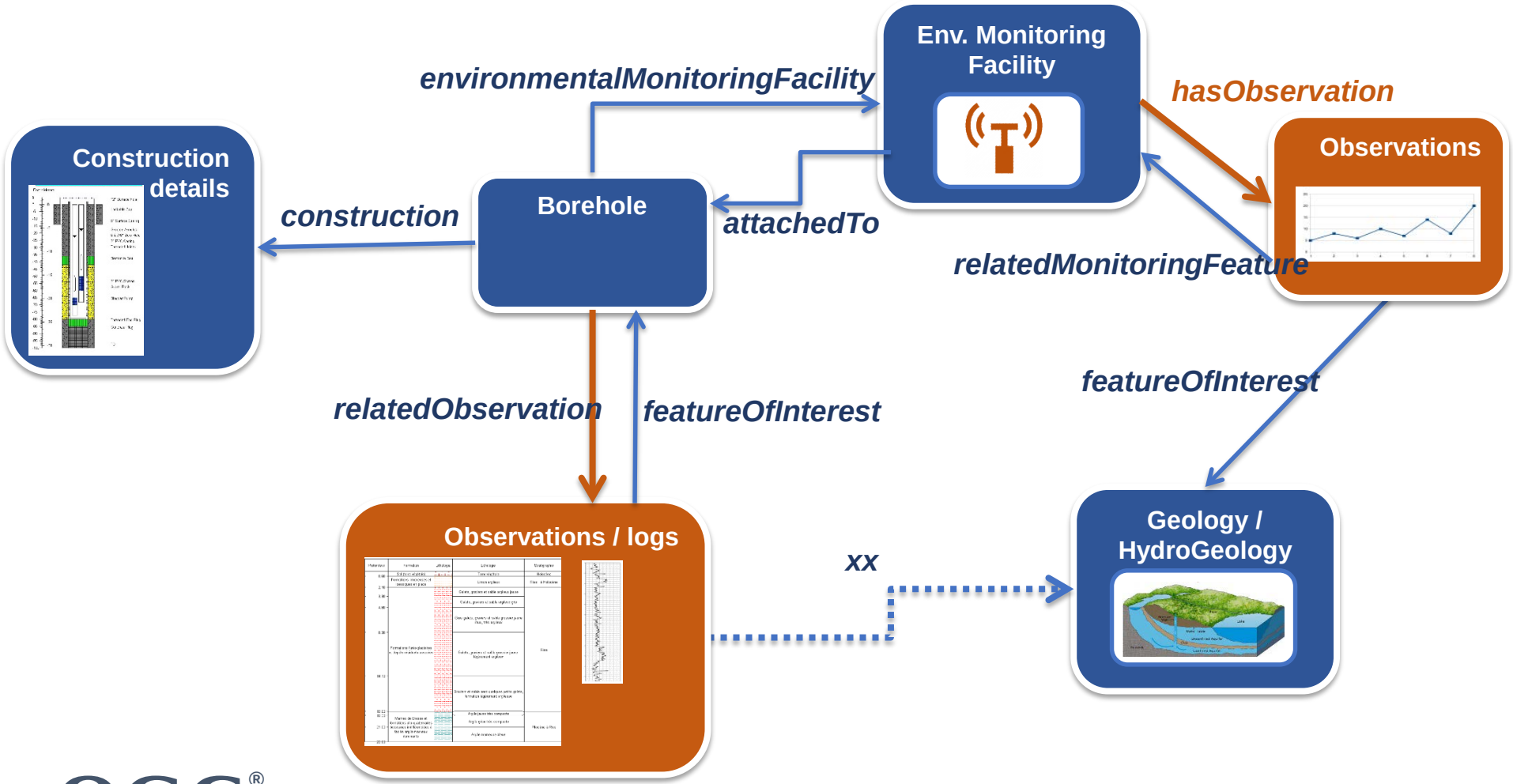
Sylvain Grellet - BRGM

GeoSciML DWG - 12 September 2017

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Making location count.

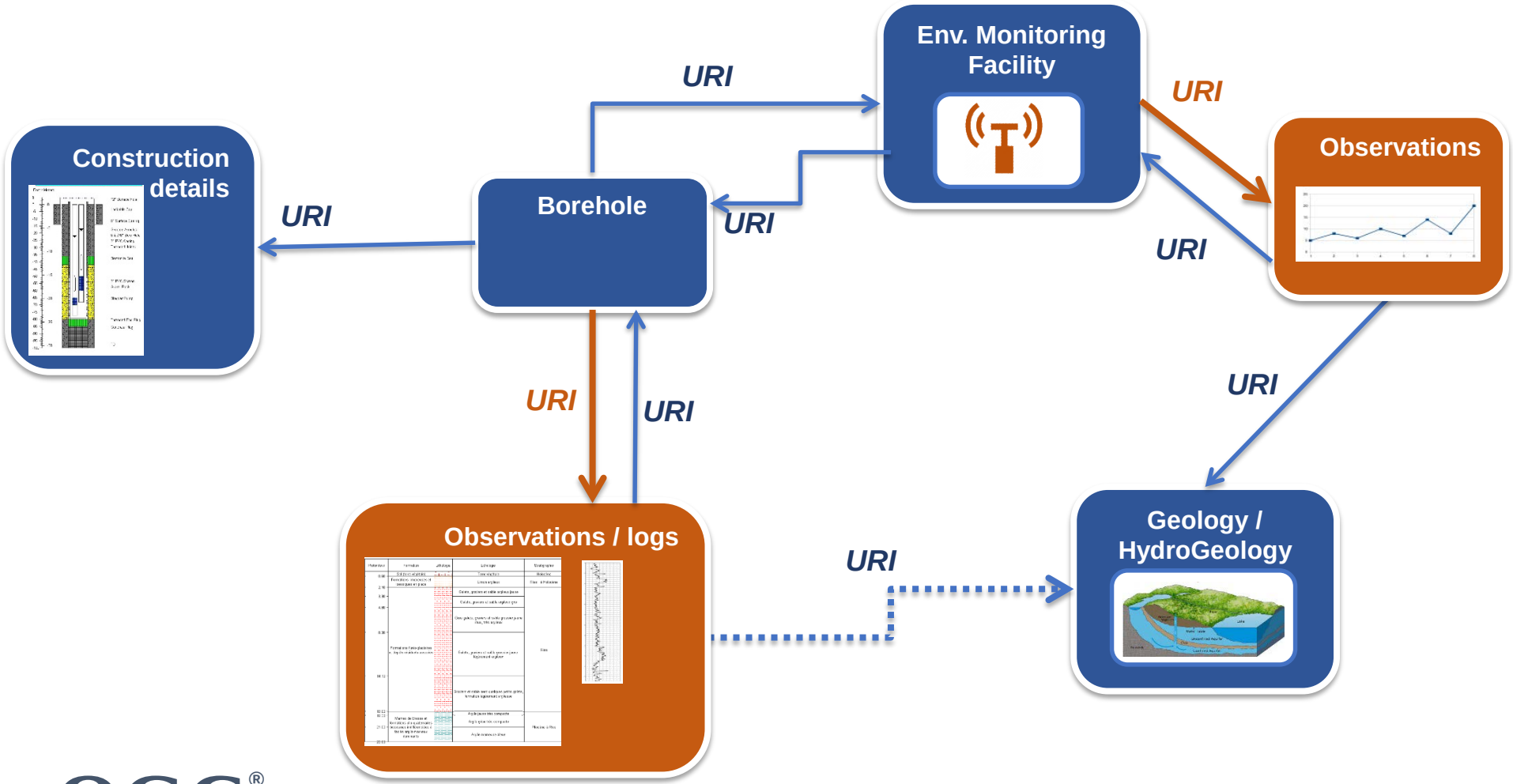
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Borehole in EPOS – Model View



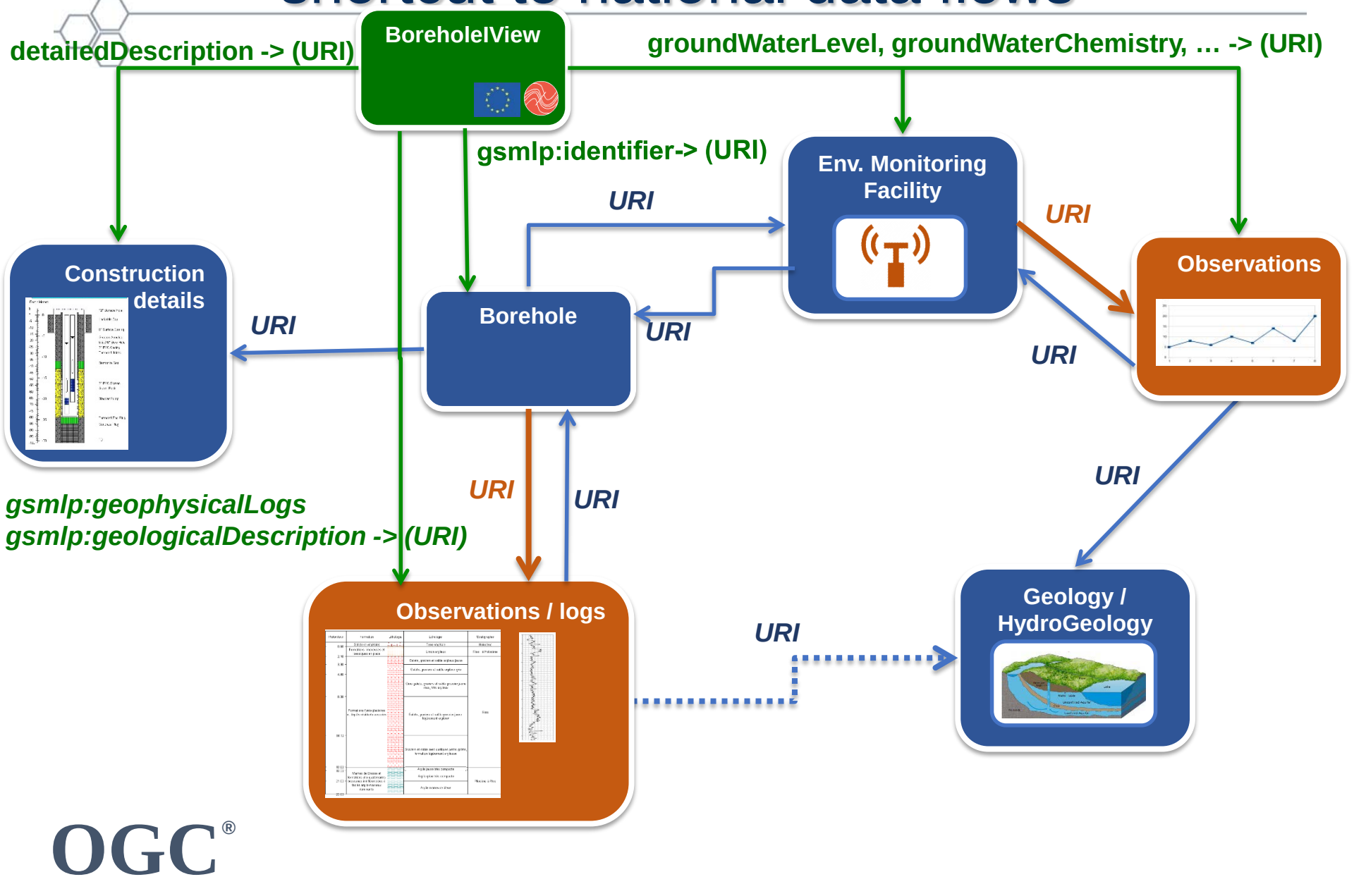
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Borehole in EPOS – Resource View



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Using BoreholeView as an EU Index and shortcut to national data flows



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- EPOS Borehole View

- EPOS Borehole conceptual model

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EPOS BoreholeView

- GeoSciML BoreholeView with Stronger typing (ex : gml:ReferenceType for vocabularies,…)
- Adding extra attributes (esp. to support reference to the complex flows)
- Ex instance

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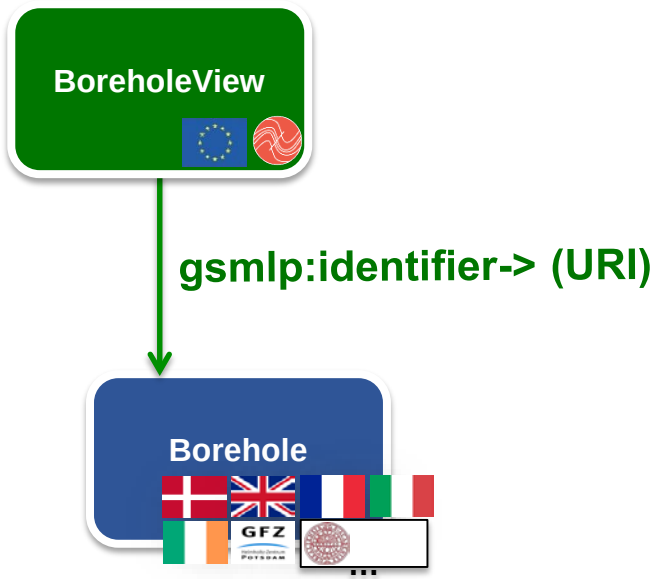
EPOS BoreholeView


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  http://schemas.opengis.net/wfs/2.0/wfs.xsd https://forge.brgm.fr/svnrepository/epos/trunk/schemas https://forge.brgm.fr/svnrepository/epos/trunk/schemas/epos-lite.xsd">
  - <wfs:member>
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        <gml:description>Borehole description</gml:description>
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        </gsmlp:identifier>
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        <gsmlp:status xlink:href="http://resource.europe-geology.eu/vocabs/BoreholeStatus/drillingCompleted" xlink:title="drilling completed"/>
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        </gsmlp:source>
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      + <gsmlp:shape></gsmlp:shape>
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        <gsmlp:accessToPhysicalDrillCore>false</gsmlp:accessToPhysicalDrillCore>
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        <gsmlp:detailedDescription xlink:href="http://www.opengis.net/def/nil/OGC/0/template" xlink:title="template "/>
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        <gsmlp:geophysicalLogs xlink:href="http://www.opengis.net/def/nil/OGC/0/unknown" xlink:title="unknown"/>
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    </wfs:member>
</wfs:FeatureCollection>
```


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EPOS BoreholeView – use


```
- <wfs:FeatureCollection numberMatched="unknown" numberReturned="1" timeStamp="2017-09-05T07:42:27.003Z" xsi:schemaLocation="http://www.opengis.net
  http://schemas.opengis.net/wfs/2.0/wfs.xsd https://forge.brgm.fr/svnrepository/epos/trunk/schemas https://forge.brgm.fr/svnrepository/epos/trunk/schemas/epos-lite.xsd">
  - <wfs:member>
    - <gsmlp:BoreholeView gml:id="BSS001REWW">
        <gml:description>Borehole description</gml:description>
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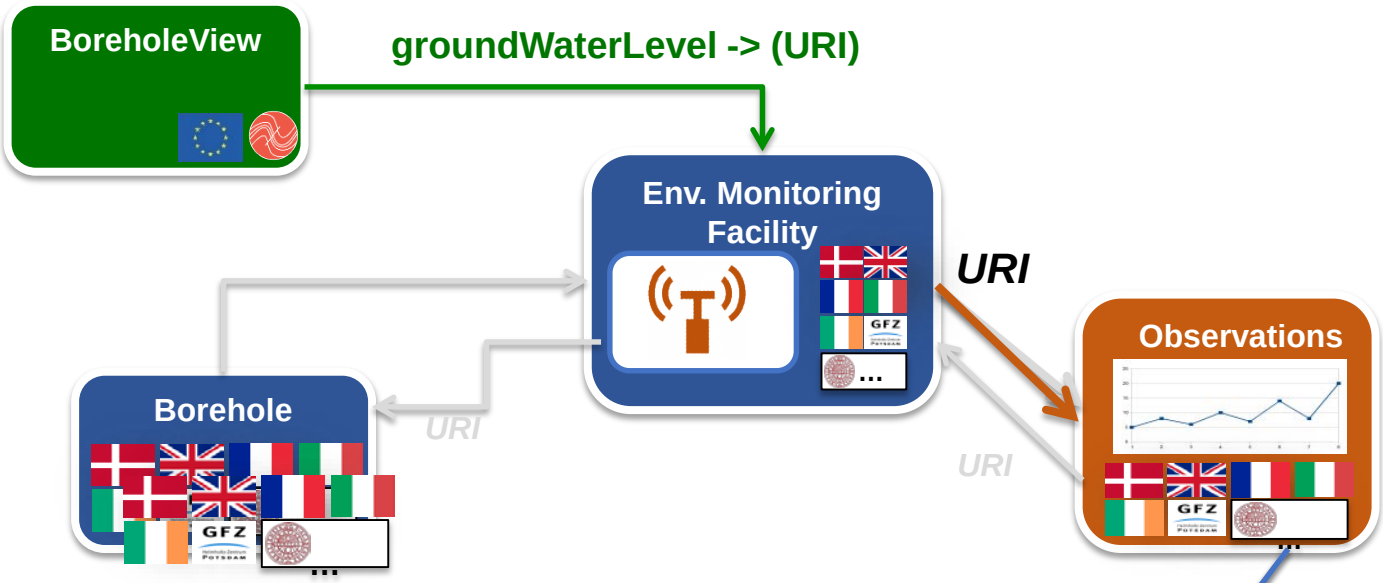
gml:identifier SHALL contain a unique identifier for this BoreholeView representation

gsmlp:identifier SHOULD resolve to an internationnaly agreed complexFeature representation of a Borehole (e.g : Inspire Geology, GeoSciML,…)

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EPOS BoreholeView – use




```
<gsmlp:geophysicalLogs xlink:href="http://www.opengis.net/def/nil/OGC/0/unknown" xlink:title="unknown"/>
<gsmlp:geologicalDescription xlink:href="http://ressource.brgm-rec.fr/obs/RawGeologicLogs/BSS001REWW" xlir
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URI



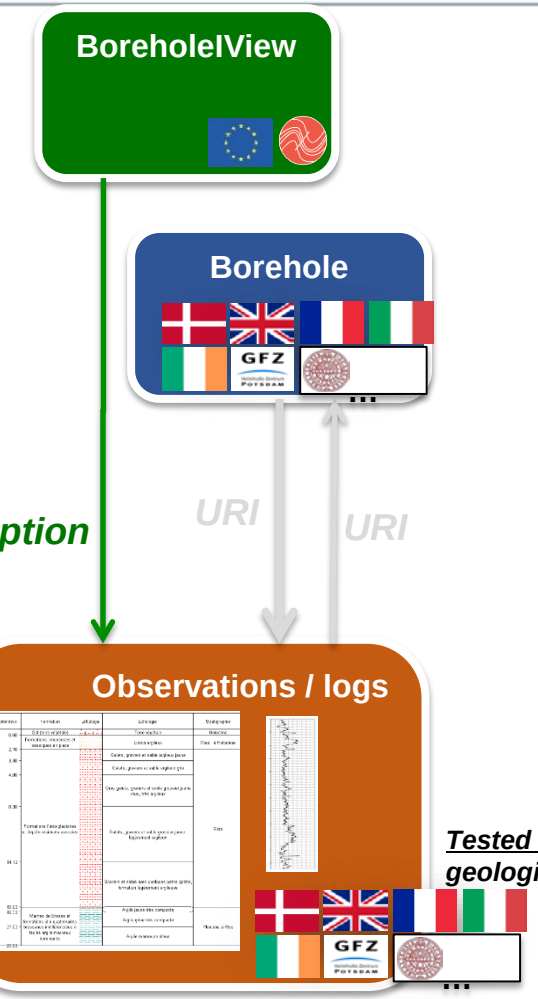
Tested Implementation

Environmental Monitoring Facility provided according to INSPIRE EF theme
groundWaterLevel provided either using OGC:WaterML2.0 and/or INSPIRE:PointTimeSeries
HydroGeology feature provided according to GWML2 and/or INSPIRE:Geology:HydroGeology

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EPOS BoreholeView – use



Tested Implementation
geologicalDescription (log) provided using GWML2:GW_GeologyLogCoverage

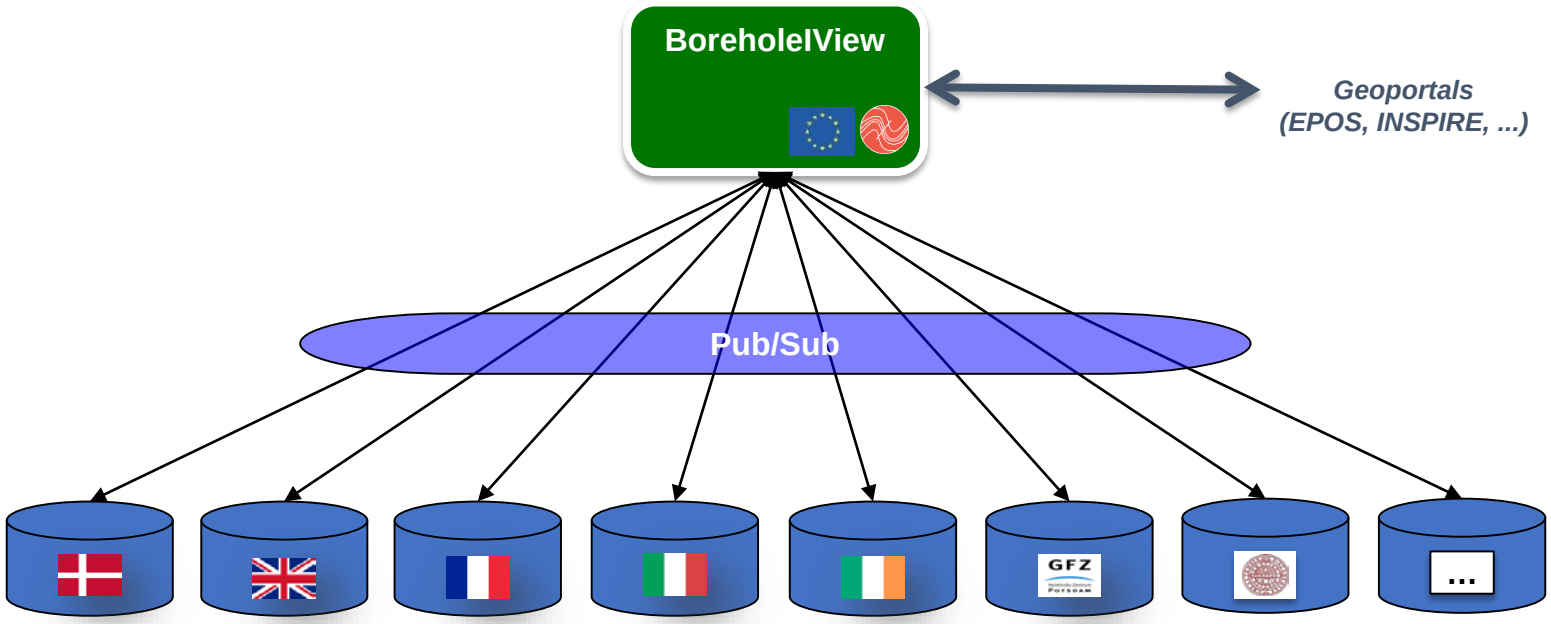
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<gsmlp:geologicalDescription xlink:href="http://ressource.brgm-rec.fr/obs/RawGeologicLogs/BSS001REWW" xlir
<gsmlp:groundWaterLevel xlink:href="http://ressource.brgm-rec.fr/data/Piezometre/06512X0037/STREMY.2" xlir
```

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EPOS BoreholeView – feeding the index

- Each institution maintains its Borehole BoreholeView (SF-0) service and underlying complexFeature flows
- Only SF-0 flows are harvested at EU level
- The index is up-to-date thanks to a pub/sub approach



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EPOS BoreholeView – Conclusions

- Exposing summary Information (SF-0) is easier/faster than complex Feature
  - Allows to add more data providers
- Harvesting simpleFeature is more reasonable than complex Feature
  - WFS on complexFeature is not meant/suited to synchronize millions of instances !
  - Harvesting a ‘Borehole vCard’ just for discovery makes more sense
- The Borehole index in turns points to National data flows
  - With respect to INSPIRE semantics
  - SF-0 just here to support discovery

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EPOS BoreholeView – Conclusions

- ***Data provider***
  - So far: BRGM, GEUS, ISPRA, UU-SE
  - Coming: BGS, GSI, GFZ, CGS, GeoZS
  - Add more EU geological surveys and research partners
- ***IT***
  - EU Borehole Index entries now around 3 Million (this will grow)

  ⇒Need for faster WFS : Studying connexion of GeoServer app-schema with Sol'R index

- ***Having the index indexed by search engines***

  ⇒ Exposing its content in (Geo)JSON-LD

  ⇒ Where is the reference ontology we could point to

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- EPOS Borehole View

- EPOS Borehole conceptual model

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EPOS Borehole conceptual model

- To define what should be retrieved from national complexFeature flows

  ⇒ agree on the semantic

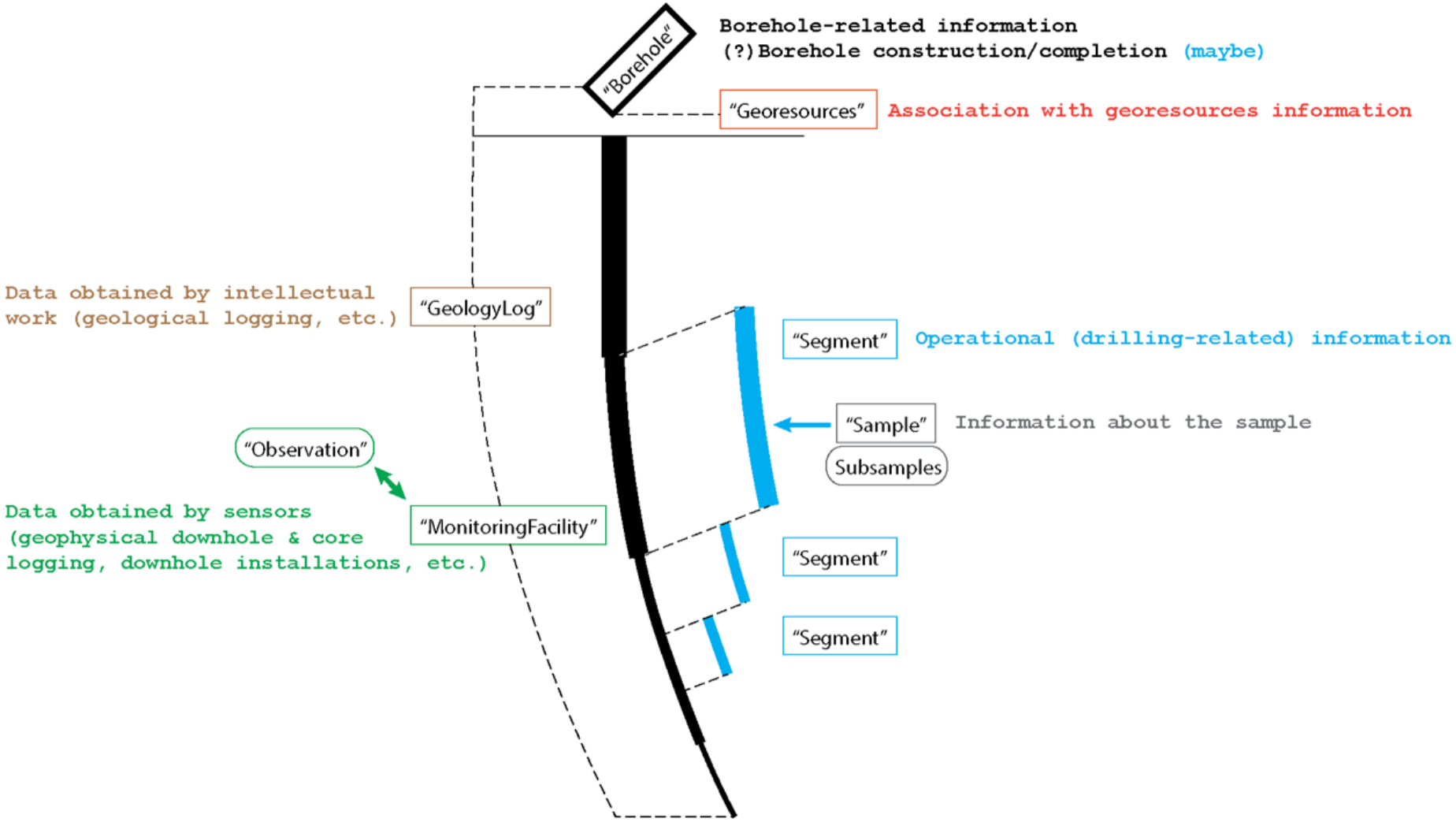
- Bridging the gap between standards

  => Map to pre-existing standards (GeoSciML 4.1, GWML2, BoreholeML, INSPIRE:GE)

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EPOS Borehole conceptual model

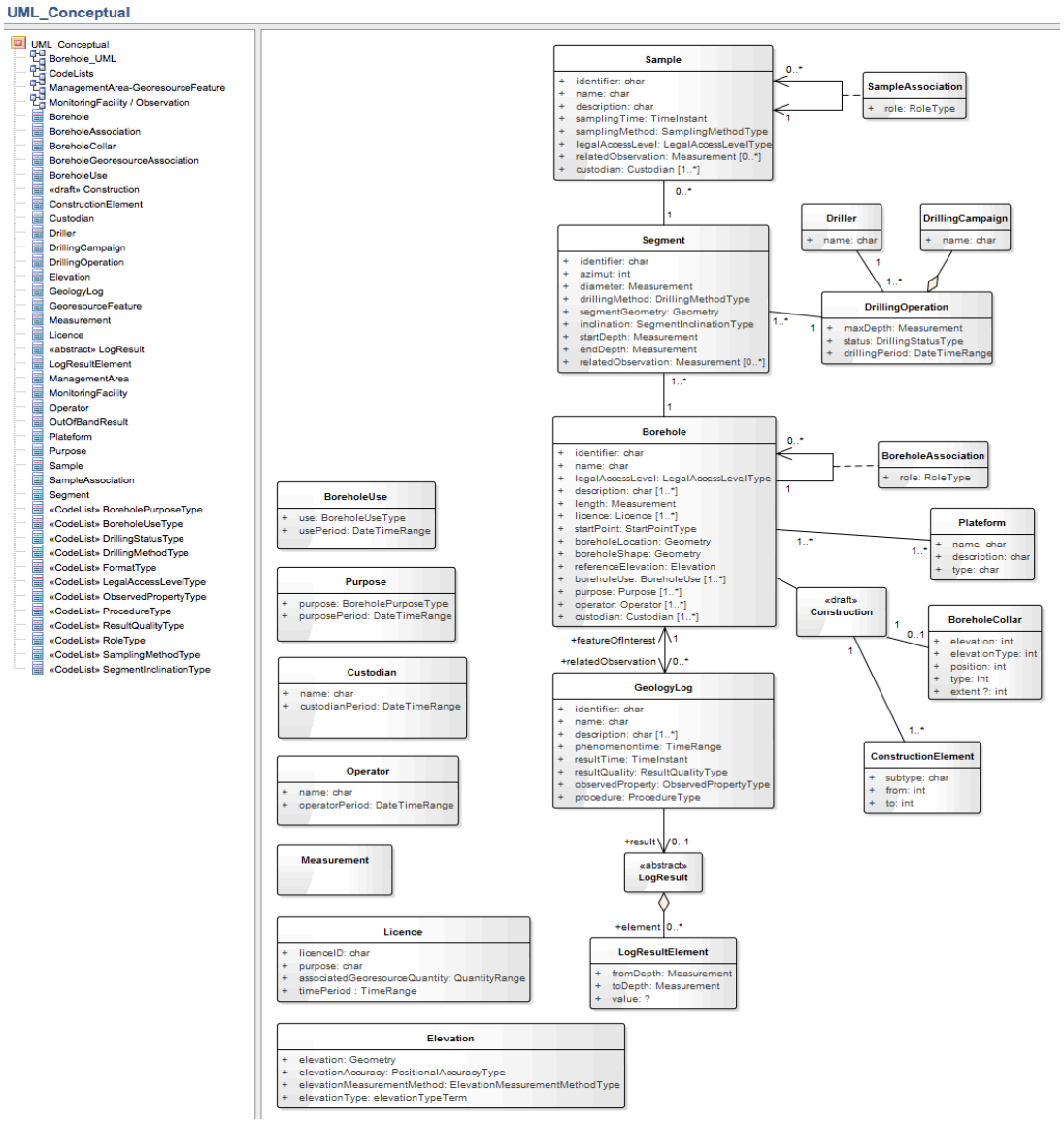


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EPOS Borehole conceptual model

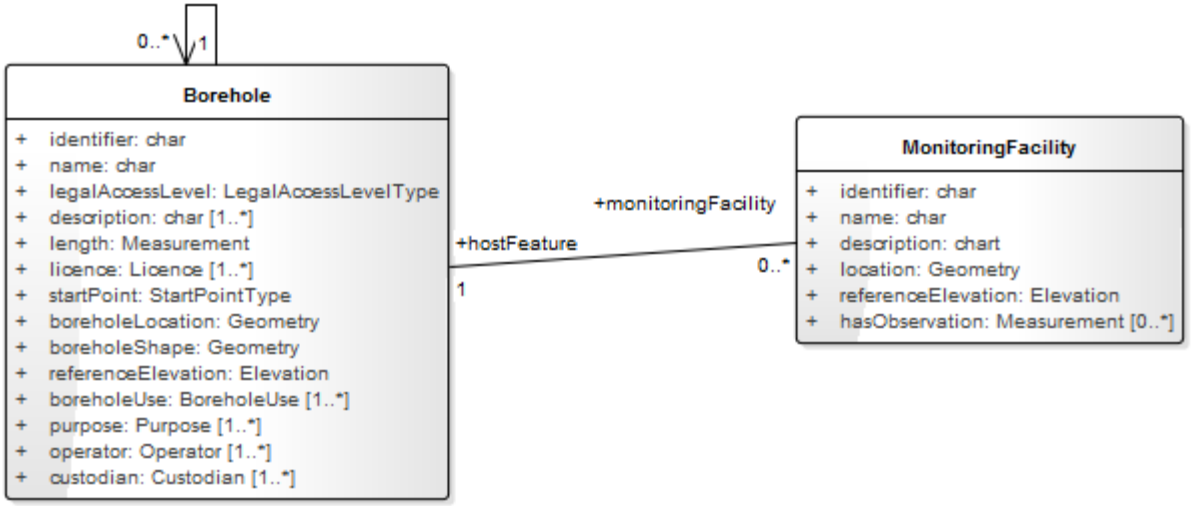




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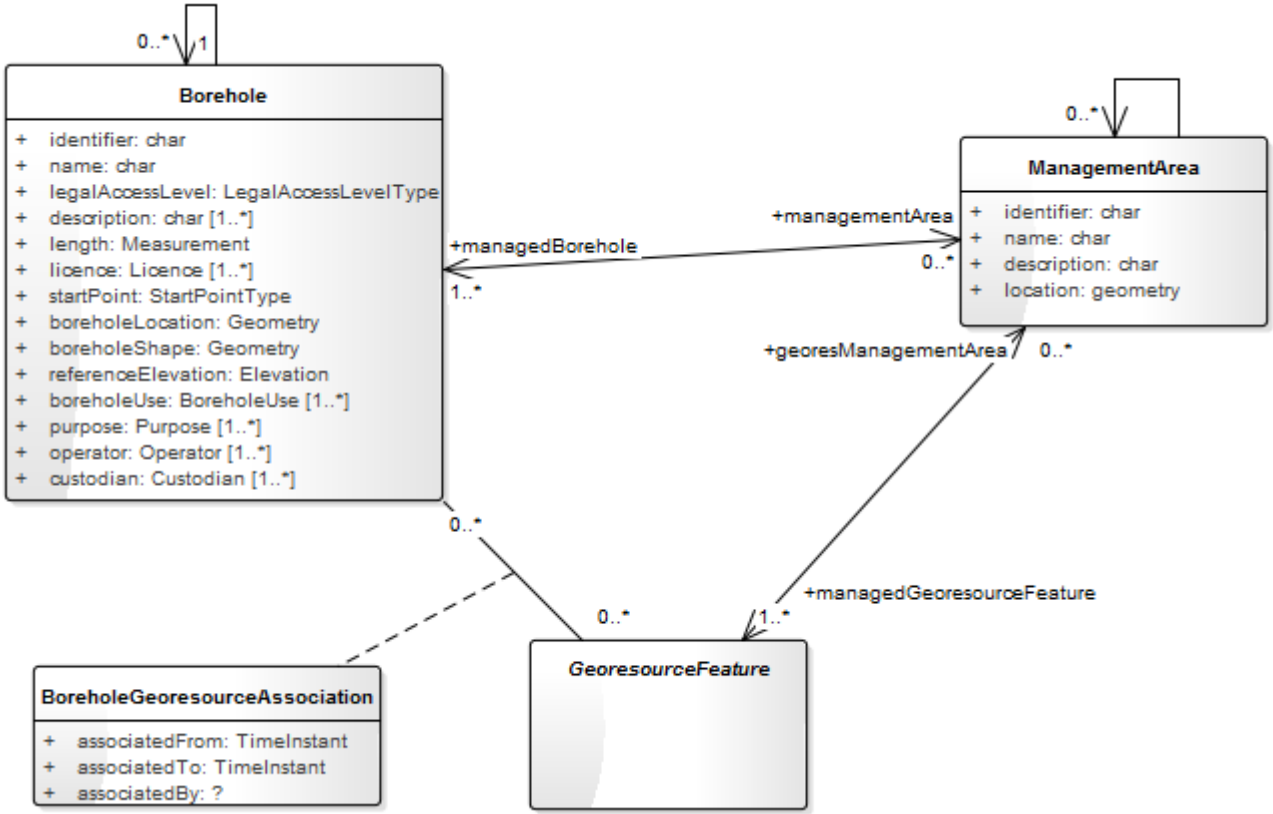
EPOS Borehole conceptual model



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EPOS Borehole conceptual model



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EPOS Borehole conceptual model – next steps

- Finish first version of conceptual UML model
  - 90% done. Only GWML2 mapping missing
  - Share it with OGC SWGs (GeoSciML, GWML) for feedback
- Decide on logical model for implementation, then services and code lists
- Logical models
  - Within OGC : GeoSciML4.1 / GWML2 overlap on this.
  - Maybe some clarification is needed
- Implement

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Thanks



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