DIGGS 101

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- XML files contain a list of elements and nested elements expressed as tagged text (name/value):

ELEMENT <name attribute="attribute value">value</name>

- An element can have zero or multiple attributes
- The value of an element can be text, another element or series of elements (nesting)

Simple type

Complex type

```
<house type="single family">
    <noStories>2</noStories>
    <address>
        <number>123</number>
        <street>Main St.</street>
        <cityState>Anytown, CA</cityState>
    </address>
    <noBdrms>3</noBdrms
</house>
```

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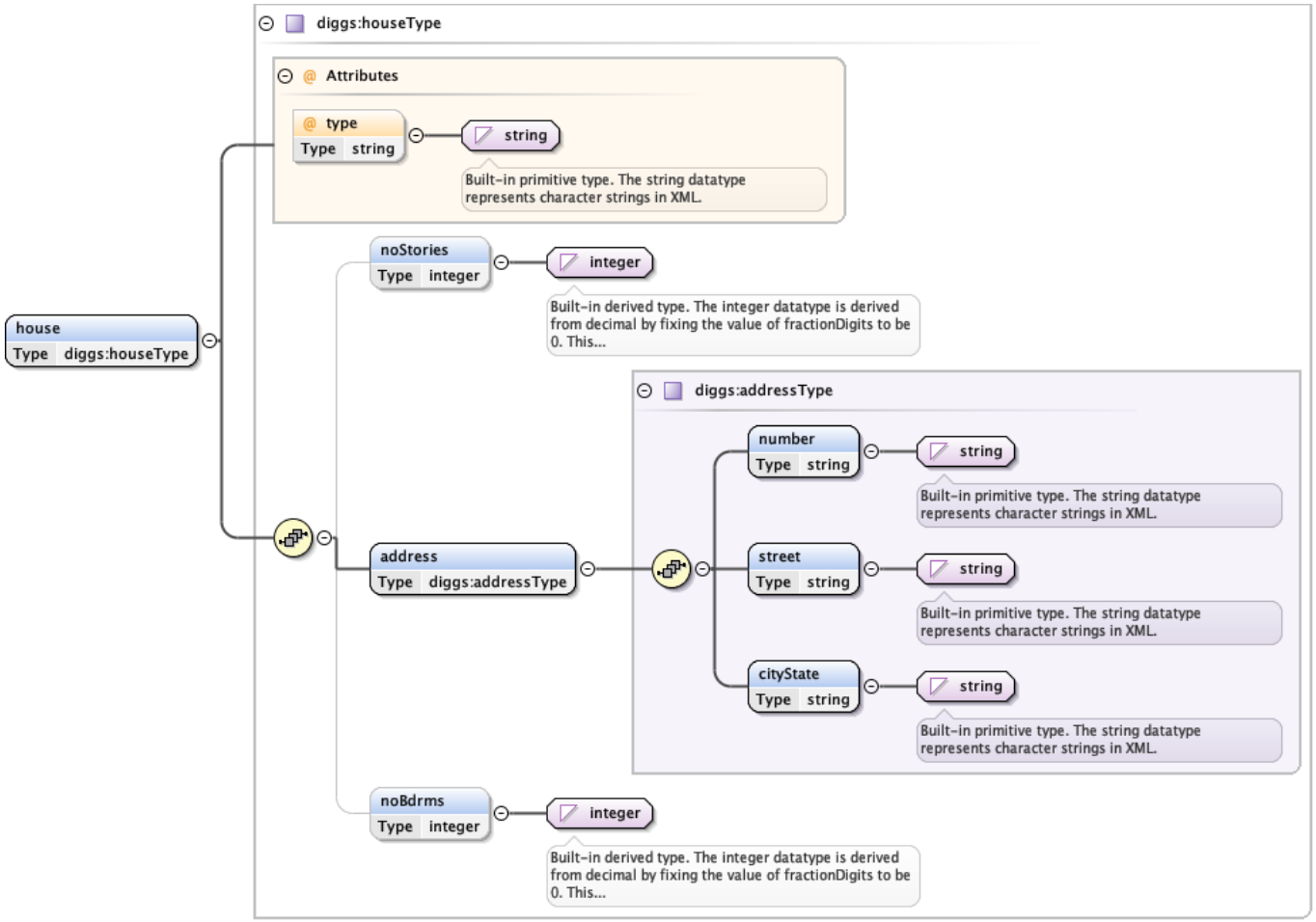
Schema Definition



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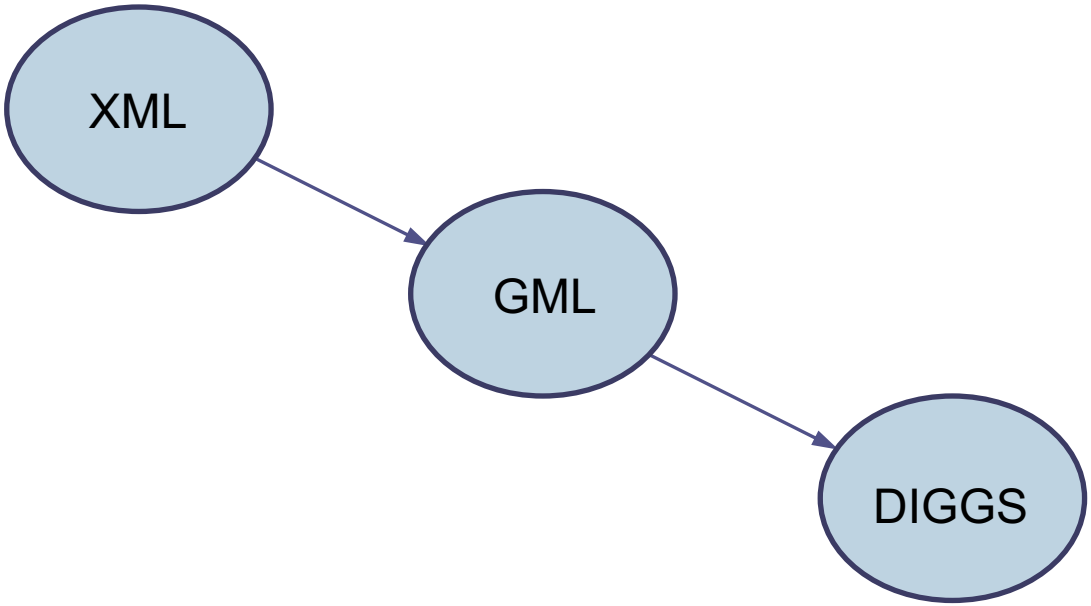
- Diggs inherits its overall structure from its parent types



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- GML nomenclature, definitions, conventions
- GML defines two types of XML elements
  - Object
    - An element of complexType with “identity” that is derived (inherits) from a base “abstract” GML type (UpperCamelCase)
  - Property
    - An element of simple type or ”propertyType” that is contained within an object (lowerCamelCase)

```
<Borehole gml:id=“b1”>
    <gml:name>Borehole 1</gml:name>
    <investigationTarget>Natural Ground</investigationTarget>
    <projectRef xlink:href = ”#p1”/>
    ….
</Borehole>
```

Inherited from GML base type (GML namespace)

Application specific properties (DIGGS namespace)

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- GML Object-Property Rule
  - All Object properties must be either of simple type or of ”property type” - a type that holds a single object.
  - This structure adds some bulk to the XML but maintains object structure and makes reuse, querying and referencing of GML data simpler.

```
<Borehole gml:id=“b1”>
    <gml:name>Borehole 1</gml:name>
    <investigationTarget>Natural Ground</investigationTarget>
    <projectRef xlink:href = ”#p1”/>
    <locality>
      <Locality gml:id="l1">
        <station>1137</station>
        <offset uom="ft">20</offset>
        <offsetDirection>left</offsetDirection>
      </Locality>
    </locality>
    …
</Borehole>
```

locality is a property of “property type”
Eg. it contains a single GML object

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- GML Feature – A GML object that contains geospatial information (a geometry object) within its properties
- DiGGS has many objects that contain geometry information

```
<Borehole gml:id="b1">
    <gml:name>Borehole 1</gml:name>
    <investigationTarget>Natural Ground</investigationTarget>
    <projectRef xlink:href = "#p1"/>
    <referencePoint>
       <PointLocation gml:id="cpt1" srsName="urn:diggs:def:crs:DIGGS:0.1:26911_5703"
                srsDimension="3">
          <gml:pos>387416.665116977 3742645.12297961 6</gml:pos>
       </PointLocation>
    </referencePoint>
</Borehole>
```

EPSG Code for UTM Zone 11 (NAD83 datum)

EPSG Code for NAVD88 height

x y z

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- DIGGS objects inherit properties from base types:
  - gml:id (attribute)
  - xml:lang (attribute)
  - gml:description
  - gml:identifier
  - gml:name (unbounded)
  - status
  - remark (unbounded)
  - associatedFile (unbounded)
  - role (unbounded)
  - internalIdentifier

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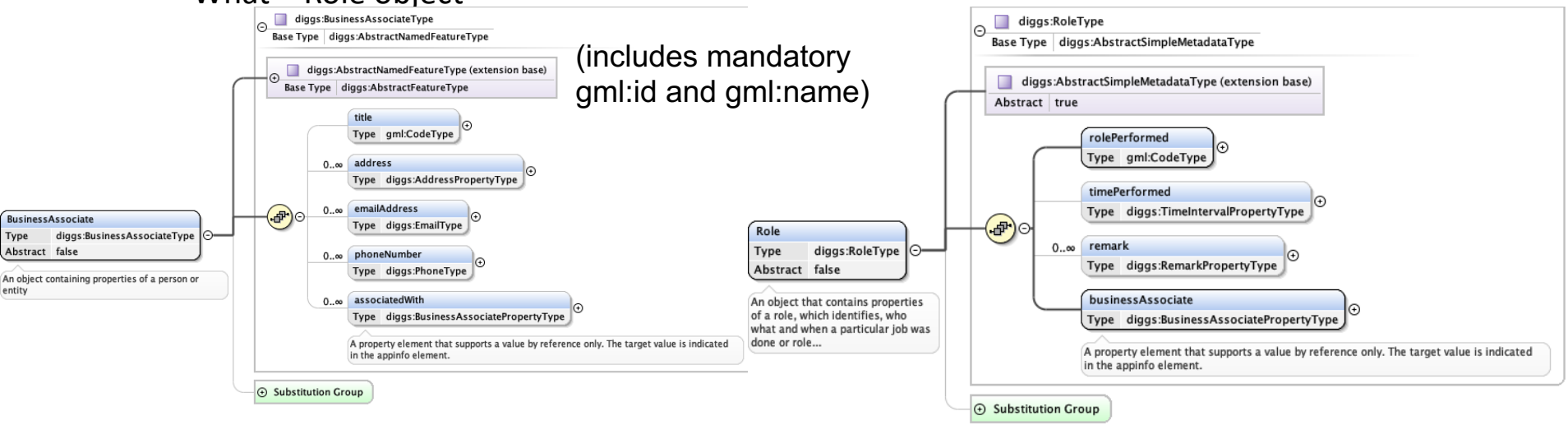
- Objects can be defined once and utilized multiple places within an XML instance
  - Eg. for a borehole, we often record who performs various roles during construction of the hole. Similarly, we record who collected a sample, or what company may have run a test.
    - Who – BusinessAssociate object
    - What – Role object



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XML Instance Example

```
<Borehole gml:id = ”b1”>
        <role>
          <Role>
            <rolePerformed>Driller</rolePerformed>
            <businessAssociate>
              <BusinessAssociate gml:id=”ba-abc">
                <gml:name>ABC Drilling</gml:name>
              </BusinessAssociate>
            </businessAssociate>
          </Role>
        </role>
        <role>
          <Role>
            <rolePerformed>Logger</rolePerformed>
            <businessAssociate xlink:href=“#ba-abc”/>
          </Role>
        </role>
```

Note how objects can be referenced

The role object is used in many instances

eg. samples, tests, etc.

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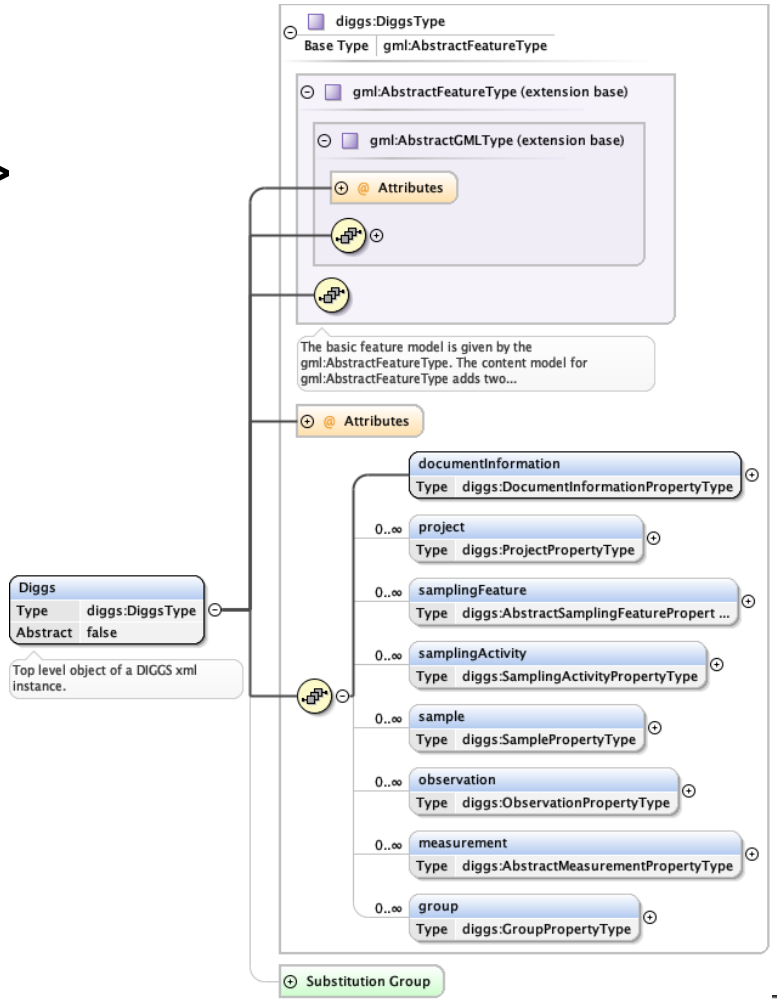
DIGGS 2.5 Top Level Properties

```
<Diggs gml:id =“QGD”>
        <documentInformation/>
        <project/>
        <samplingFeature/>
        <samplingActivity/>
        <sample/>
        <observation/>
        <measurement/>
        <group/>
</Diggs>
```



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