

## **Proposal: A Flat XSD Rendering with a Global <Entities> element and <abstract> elements/substitution groups (Modified after the Teragrid GLUE XSD)**

The main modifications include:

- 1) Pro: All main elements are made global so that 3rd party XSD can import this schema and re-use those elements standalone.
- 2) The modified XSD includes abstract elements with corresponding concrete element implementations For example:
  - abstract <Domain> and concrete <AdminDomain> and <UserDomain>,
  - abstract <AbstractService> and concrete <Service>, <ComputingService>, <StorageService>.
- 3) The <Entities> element references abstract elements.
  - Pro: In doing this, new element specialisations that define the appropriate substitution group can be nested within the 'Entities' element in any future/extending profile (requires no future modification of the glue XSD).

Full schema and sample doc:

[http://tools.ngs.ac.uk/ngstools/glue2proposal/modifiedTeraGridXSD\\_Sample.zip](http://tools.ngs.ac.uk/ngstools/glue2proposal/modifiedTeraGridXSD_Sample.zip)

Acknowledgement: GLUE WG and whoever wrote the Teragrid XSD? Warren?

# XSD Fragment (modified from Teragrid)

```
<!-- Entities is still the DOCUMENT ROOT ELEMENT -->
<element name="Entities" type="glue:ExtensibleEntities_t"/>
<complexType name="ExtensibleEntities_t">
  <sequence>
    <!-- Abstract element references:
    Abstract elements allow sub-type specialisations. New specialisations that
    define the appropriate substitution group can be nested within this
    'Entities' element (requires no modification to this XSD). -->
    <element ref="glue:Domain" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:AbstractService" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:AbstractEndpoint" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Share" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Manager" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Resource" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:AbstractActivity" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Policy" minOccurs="0" maxOccurs="unbounded"/>
    <!-- Concrete element references:
    TODO: These elements do not have a parent abstract type. Therefore, we could
    reference them directly in the schema if we want to specify an order,
    or maybe define a new 'OtherEntities' element that can nest any element in
    the target namespace in any order (see 8 lines below) -->
    <element ref="glue:Location" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Contact" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:Benchmark" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:ApplicationEnvironment" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:ApplicationHandle" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:StorageServiceCapacity" minOccurs="0" maxOccurs="unbounded"/>
    <element ref="glue:StorageShareCapacity" minOccurs="0" maxOccurs="unbounded"/>
    <!-- List concrete elements as above Or define 'OtherEntities' -->
    <element name="OtherEntities">
      <complexType>
        <sequence>
          <any namespace="##targetNamespace" processContents="strict" minOccurs="0" maxOccurs="unbounded"/>
        </sequence>
      </complexType>
    </element>
  </sequence>
</complexType>

<element name="Location" type="glue:Location_t" />
<element name="Contact" type="glue:Contact_t" />
<element name="Domain" type="glue:Domain_t" abstract="true"/>
<element name="AdminDomain" type="glue:AdminDomain_t" substitutionGroup="glue:Domain"/>
<element name="UserDomain" type="glue:UserDomain_t" substitutionGroup="glue:Domain"/>
```

<Entities> is Document Root element  
(modified from Teragrid example)

<Entities> is an element  
bag that references other  
global elements (both  
abstract and concrete).

The main entities are also global so that they can be  
referenced from within <Entities>, and also be  
imported/used standalone in 3<sup>rd</sup> party XSD

## Sample XML Instance Doc (most elements are collapsed)

```
<?xml version="1.0" encoding="UTF-8"?>
<glue:Entities
  xmlns:xsi='http://www.w3.org/2001/XMLSchema'
  xmlns:glue='http://info.teragrid.org/glue/'
  xsi:schemaLocation='http://info.teragrid.o

  <glue:AdminDomain BaseType="Domain">
    <ID>urn://some.uniqueID</ID>
    <Description>hello world</Description>
    <WWW>http://some.url</WWW>
  </glue:AdminDomain>
  <glue:UserDomain>
  <glue:Service>
  <glue:ComputingService>
  <glue:StorageService>
  <glue:Endpoint>
  <glue:ComputingEndpoint>
  <glue:StorageEndpoint>
  <glue:ComputingShare>
  <glue:StorageShare>
  <glue:ComputingManager>
  <glue:StorageManager>
  <glue:DataStore>
  <glue:ExecutionEnvironment>
  <glue:Activity>
  <glue:ComputingActivity>
  <glue:AccessPolicy>
  <glue:MappingPolicy>
  <OtherEntities>
    <glue:MappingPolicy>
    <glue:Benchmark>
  </OtherEntities>
</glue:Entities>
```

<Entities> is Document Root element  
(an ordered element bag)

Abstract <Domain> implementations

<AbstractService> impls

<AbstractEndpoint> impls

<Share> impls

<Manager> impls

<Resource> impls

<Activity> impls

<Activity> impls

List other entities that do not have abstract parents