OpenO&M™ CIR Specification

A Common Interoperability Registry

V1.0

This document defines the Open O&M Common Interoperability Registry (CIR). It defines the underlying object model, an XML implementation of the model, and services for a registry. The services are based on the common transaction models defined in OAGIS and B2MML and specified in the ANSI/ISA 95.00.05 Transaction and IEC 62264-5 standards.

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1 Common Interoperability Registry Model

1.1 Interface Model

The CIR defines a common model for registration of entity identifiers and cross references of the identifiers for multiple systems.

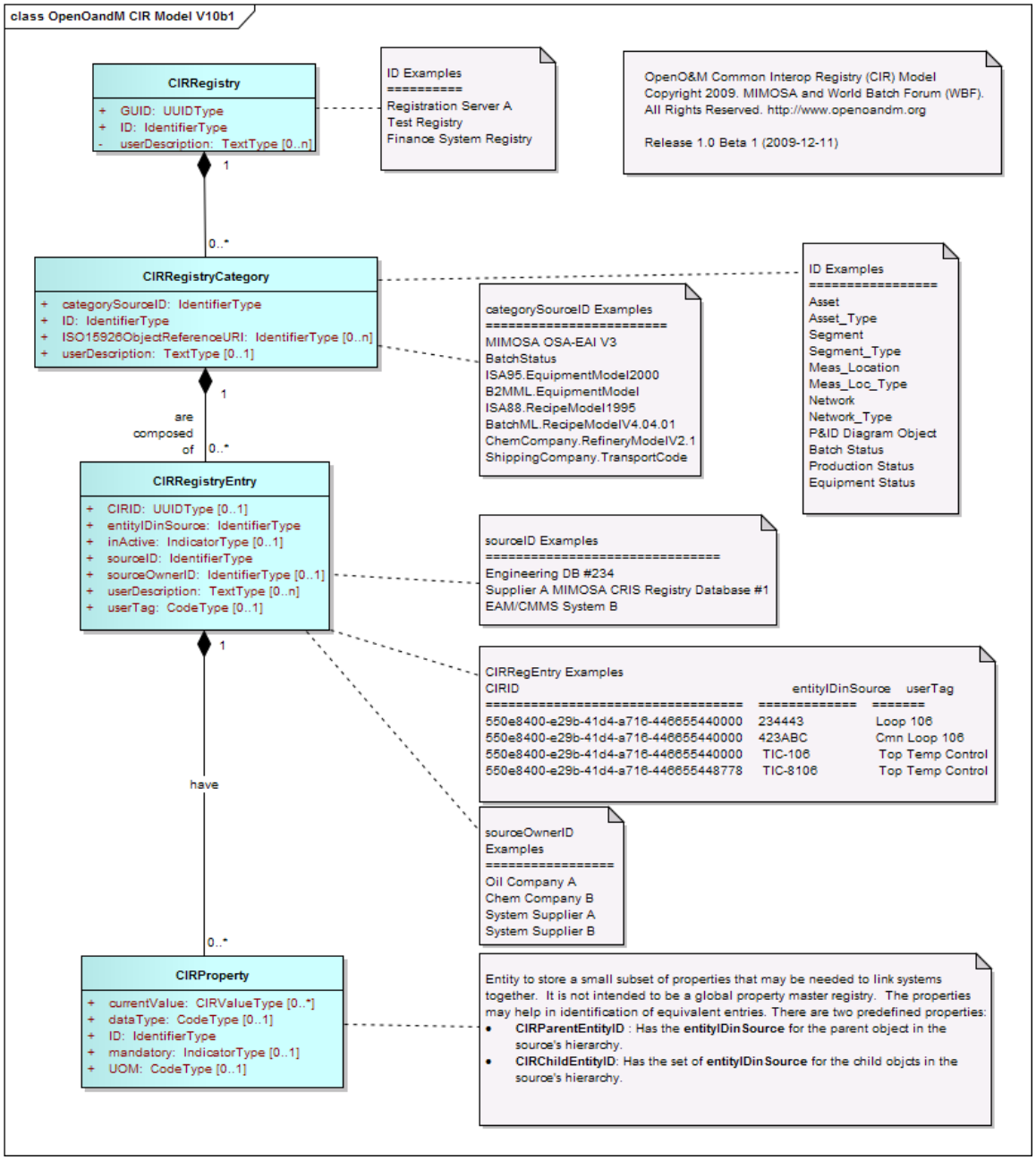


Figure 1 - Common Interoperability Object Model

1.2 CIRRegistry

A CIRRegistry object is the container object for a set of registration categories. Examples of multiple registries include: test registry, active registry, local site registry, global corporate registry.

ATTRIBUTES		
Attribute	**Description**	**Restrictions**
ID	User supplied ID of the registry. This must be unique within the registry server.	Required
GUID	System assigned globally unique ID for the registry. This is unique across all registry servers.	Required
userDescription	User description of the registry and expected use of the registry.	Multiple values allowed for multiple languages or alternate descriptions

1.3 CIRCategory

A CIRCategory object is the container object for a set of registry entries. Registry categories define sets of related, or potentially related registry entries. For example, a registry category may be defined for equipment hierarchy level names (Enterprise, Site, Area, Work Center, Work Unit), which have alternate names on different systems. The combination of ID and categorySourceID must be unique.

ATTRIBUTES		
Attribute	**Description**	**Restrictions**
ID	User supplied ID of the category	Required
categorySourceID	Identification of the category. May define the organization and specification name for the category, for example: • MIMOSA OSA-EAI V3 • ISA 88 BatchStatus • ISA 95-2000 EquipmentModel • B2MML.EquipmentModel • ISA88.RecipeModel1995 • BatchML.RecipeModelV4.04.01 • ChemCompany.RefineryModelV2.1 • ShippingCompany.TransportCode	Required
userDescription	User description of the category and expected use of the category	Multiple values allowed for multiple languages or alternate descriptions
ISO15926ObjectReferenceURI	Defines the associated part of the ISO 15926 that defines the registry category.	Optional

1.4 CIRRegistryEntry

A CIRRegistryEntry object defines a registry entry. Registry entries define named element and properties with an identifier local to the owning application and a possible global ID (CIRID) that defined equivalent entries in other applications.

For example the tag TC101 in system A may be the equivalent of tag UNIT101.TOP_TEMP in system B.

The assumption is that the combination of entityIDinSource and sourceID form a unique composite key within a registry category.

ATTRIBUTES		
Attribute	**Description**	**Restrictions**
entityIDinSource	User defined identification of the entry in the source system	Required Unique within the source system
sourceID	Identification of the source system	Required
CIRID	System assigned globally unique ID for the entry	Optional
sourceOwnerID	Organization that has responsibility for the source system or entity name space	Optional
userDescription	User description of the entry	Multiple values allowed for multiple languages or alternate descriptions
userTag	Shortcut identification of the entry, may not be unique within the source system.	Optional
inActive	Flag, if FALSE or missing indicates the entry is active and available for use. Examples of inactive entries may be data that is entered but the source system is not yet available or in use.	Optional

1.5 CIRProperty

A CIRProperty object defines a property of a registry entry. Properties may be used to help identify equivalent registry entries. The properties should be a small set of properties that may be needed to link systems together, and not intended to be a global property master registry.

ATTRIBUTES		
Attribute	**Description**	**Restrictions**
ID	User defined identification of the property	Required

		Unique within the list of entry properties
currentValue	Current value of the property	Multiple values with value key to provide for alternate values for identification
dataType	Data type of the current value	Optional
UOM	Unit of measure of the current value	Optional
mandatory	Flag that indicates if a value is required	Optional

2 Service Definitions

This section defines the detailed format for the *CIR Service* definitions.

2.1 Type Definitions

2.1.1 actionCode

0 = Success

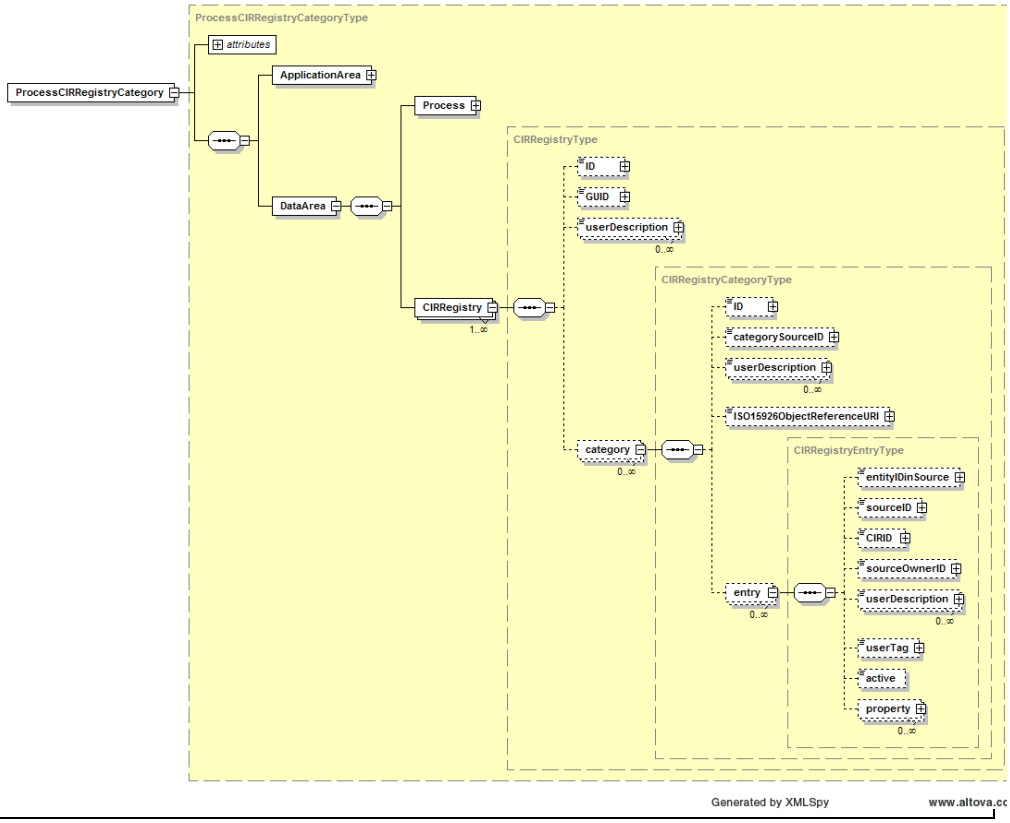
1 = Duplicate Registry or Category definition

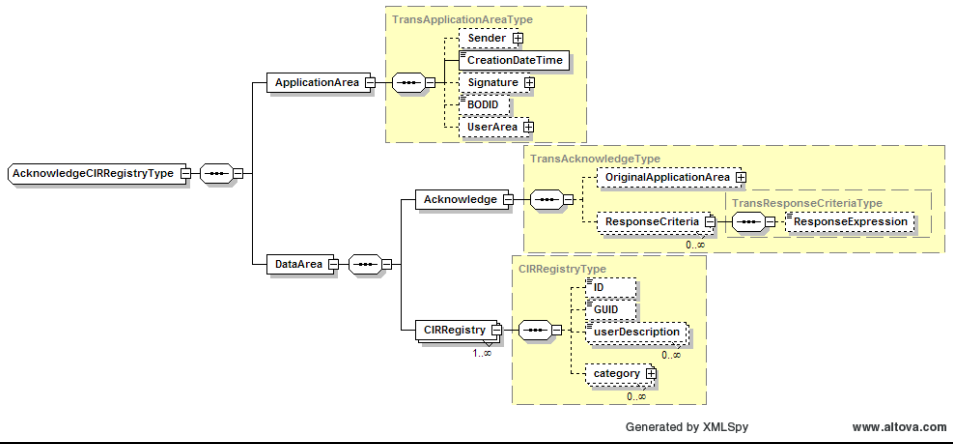
2 = Invalid channel URI

3 = Invalid channel type

2.2 CIR Services

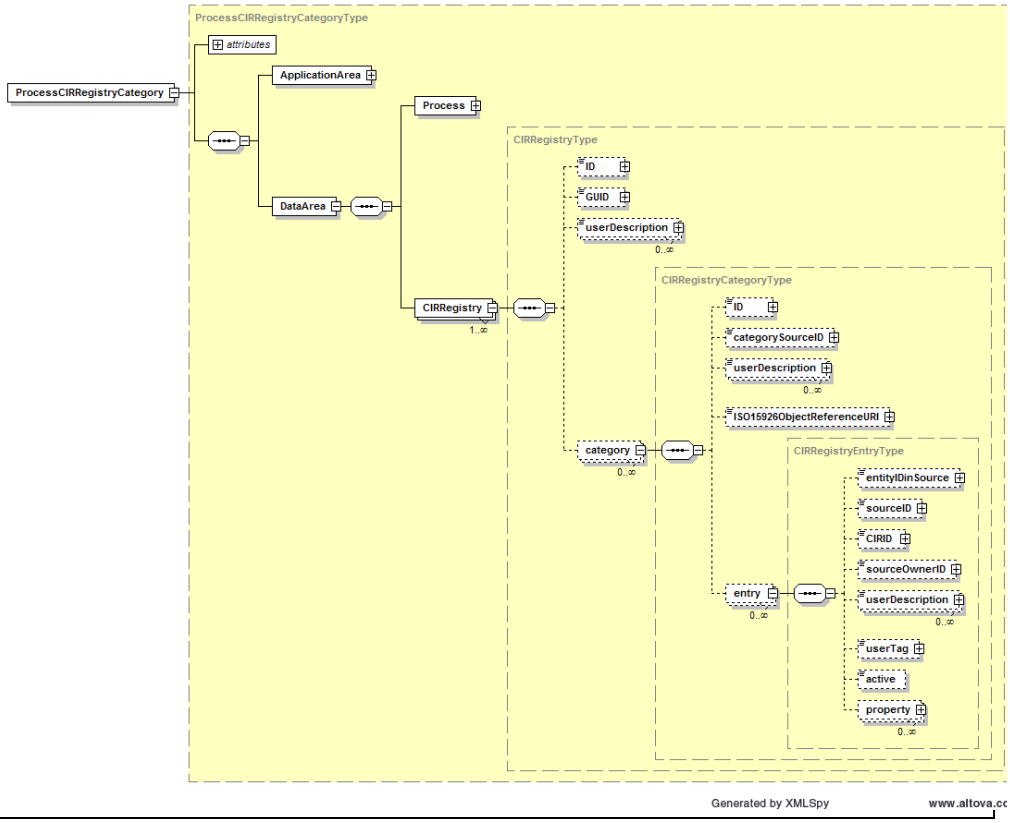
2.2.1 Create Registry

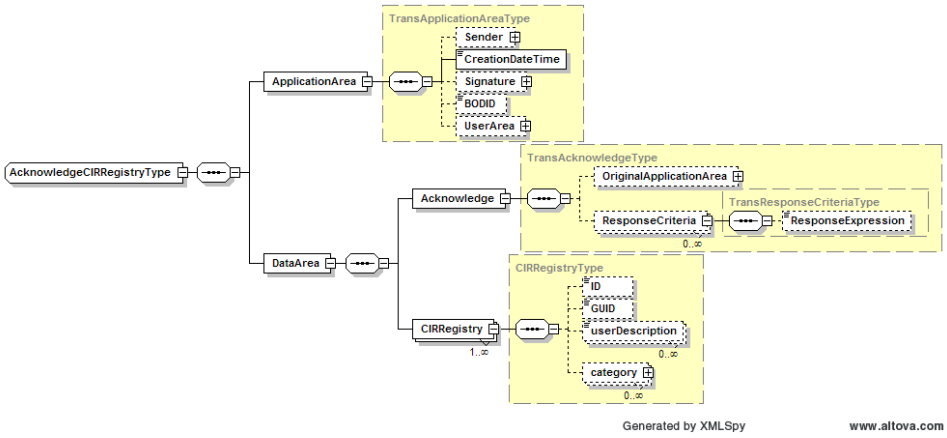
Name	CreateRegistry
Description	Creates a new registry, new category in a registry, or new entries in a category. Returns the system assigned GUID for the new registry.
Input Parameters	ProcessCIRRegistry as ProcessCIRRegistryType If no registry exists with the specified ID or GUID, then a new registry is created and the registry GUID is returned. If no category exists with the specified ID, then a new category is created. If registry entries are defined, then adds the registry entries. May include the properties for the registry entries. No CIRIDs are assigned to the registry entries. 

Returns	AcknowledgeCIRRegistry as AcknowledgeCIRRegistryType Response status in: AcknowledgeCIRRegistry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode Registry GUID in: AcknowledgeCIRRegistry/DataArea/CIRRegistry/GGUD 

2.2.2 Create Unique Registry

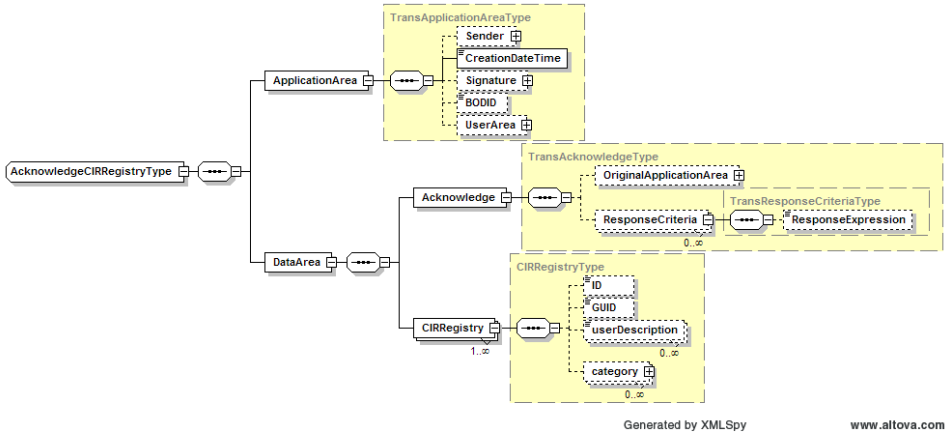
Name	CreateUniqueRegistry
Description	Creates a new registry, new category in a registry, or new entries in a category. Returns the system assigned GUID for the new registry and for the new registry entries.
Input Parameters	ProcessCIRRegistry as ProcessCIRRegistryType If no registry exists with the specified ID or GUID, then a new registry is created and the registry GUID is returned. If no category exists with the specified ID, then a new category is created. If registry entries are defined, then adds the registry entries. May include the properties for the registry entries. New CIRIDs are assigned to the registry entries.



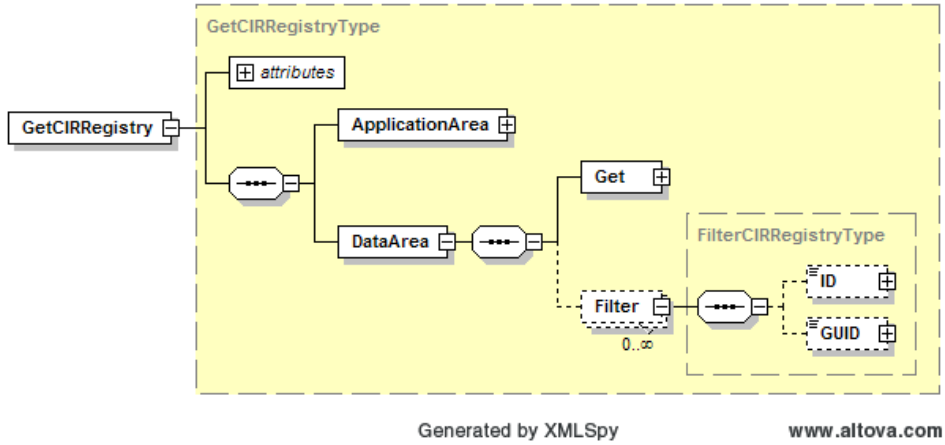
Returns	AcknowledgeCIRRegistry as AcknowledgeCIRRegistryType Response status in: AcknowledgeCIRRegistry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode Registry GUID in: AcknowledgeCIRRegistry/DataArea/CIRRegistry/GGUD Entry CIRIDs in: AcknowledgeCIRRegistry/DataArea/CIRRegistry/category/entry/CIRID 

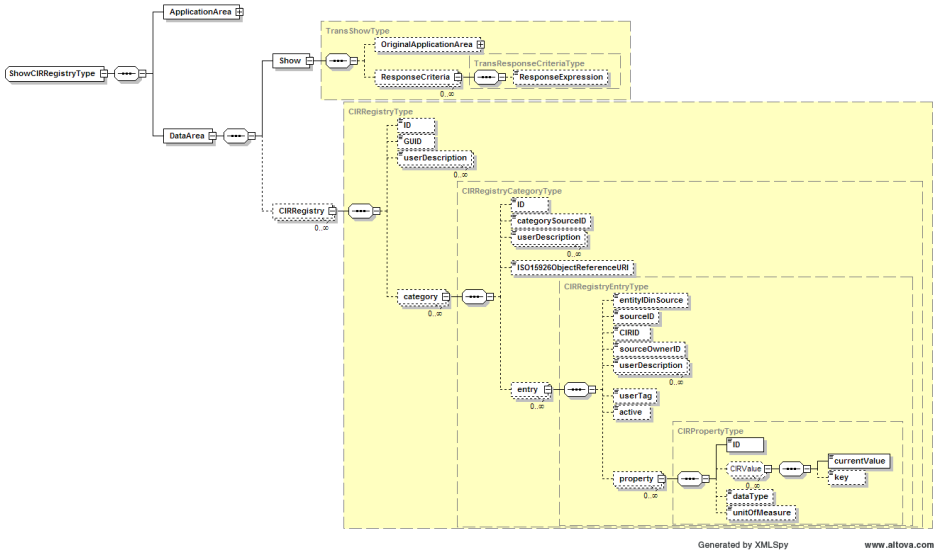
2.2.3 Combine Registries

Name	CombineRegistries
Description	Adds a list of a registry categories and registry entries to an existing registry. Return an error if the registry is not defined.
Input Parameters	▪ Registry ID or registry GUID as string ▪ Complete registry as ProcessCIRRegistryType

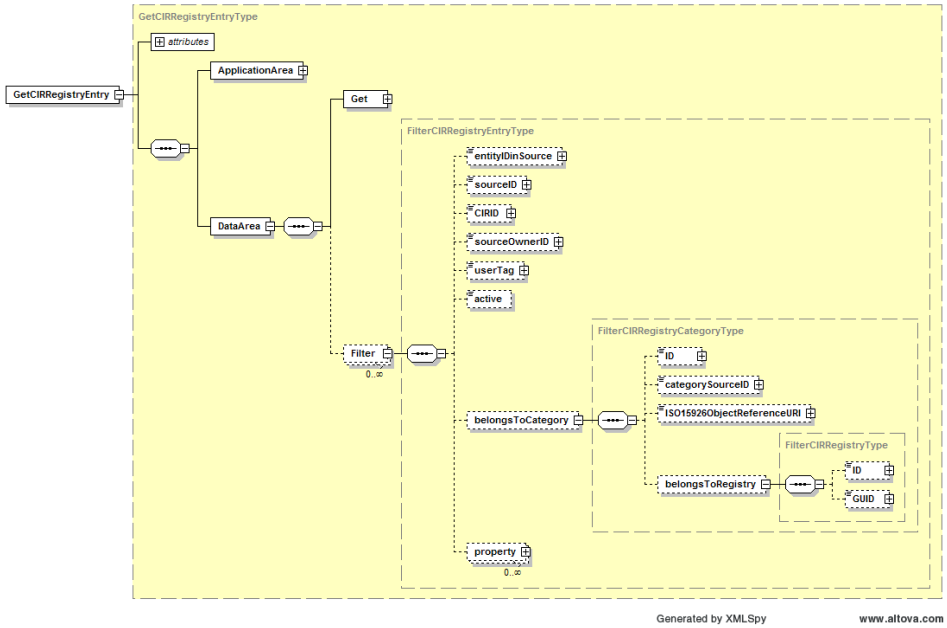
Returns	AcknowledgeCIRRegistry as AcknowledgeCIRRegistryType Response status in AcknowledgeCIRRegistry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode 

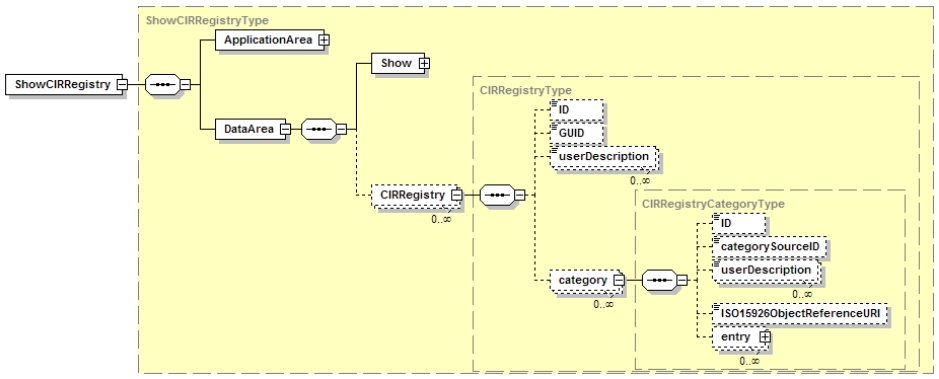
2.2.4 Get Full Registry

Name	GetFullRegistry
Description	Returns all categories and entries in a registry.
Input Parameters	GetCIRRegistry as GetCIRRegistryType If ID or GUID specified, then the identified registry is returned. If no ID or GUID is specified, then the service determines which registry information to return. 

Returns	ShowCIRRegistry as ShowCIRRegistryType Response status in ShowCIRRegistry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode 

2.2.5 Get Registry Entries

Name	GetRegistryEntries
Description	Returns entries and their properties from a category in a registry. Used to find information about registry entries.
Input Parameters	GetCIRRegistryEntry as GetCIRRegistryEntryType  If the registry is not defined, then the service selects the registry to use. If an entry CIRID is specified, than all entries with the specified CIRID are returned, Else if no category ID and no CategorySourceID is defined, then an error is returned, Else if an entryIDinSource and sourceID are specified, then all information on the specified entry is returned, Else if the entryIDinSource contains a wildcard specification (see section 2.3) and sourceID is specified, then all entries matching the wildcard specification are returned, Else if a userTag and sourceID are specified, then all information on all entries with the userTag are returned, Else if the userTag contains a wildcard specification (see section 2.3) and sourceID is specified, then all entries matching the wildcard specification are returned, Else if only a sourceID is specified, then all entries for the source ID are returned, Else an error is returned.

Returns	ShowCIRRegistry as ShowCIRRegistryType Response status in ShowCIRRegistry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode 

2.2.6 Find Equivalent Entry

Name	FindEquivalentEntry
Description	Finds one or more equivalent registry entries Return an error if the registry or category is not defined.
Input Parameters	▪ Source & Target Registry ID or GUID as string ▪ Source & Target Category ID as string ▪ Source EntityIDinSource (0..*) as string using the JSON[1] format for the array of IDs ▪ Source Source ID as string ▪ Target Source ID as string
Returns	▪ EntityIDinSource (0..*) in Target Source ID, returns an empty string in case of no equivalent or error. The returned value follows the JSON format for an array of equivalent entities.

[1] **JSON** (JavaScript Object Notation) [www.json.org] is a lightweight data-interchange format that is easy to read, write, parse and generate. It is based on a subset of the JavaScript Programming Language, Standard ECMA-262 3rd Edition - December 1999. JSON is a text format that is language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, and Python. JSON is built on two structures:

- A collection of name/value pairs. In various languages, this is realized as an *object*, record, struct, dictionary, hash table
- An ordered list of values. In most languages, this is realized as an array, vector, list, or sequence.

2.2.7 Add Equivalent Entry

Name	AddEquivalentEntry
Description	Adds a CIRID to a registry entry from an equivalent registry entry. If neither entry has a CIRID, then a new CIRID is created. Return an error if the registry, category, source entry, or target entry are not defined.
Input Parameters	▪ Source & Target Registry ID as string ▪ Source & Target Category ID as string ▪ Source EntityIDinSource as string ▪ Source SourceID as string ▪ Target EntityIDinSource as string ▪ Target SourceID as string
Returns	▪ CIRID as string, returns an empty string in case of error.

2.2.8 Define Equivalent Entries

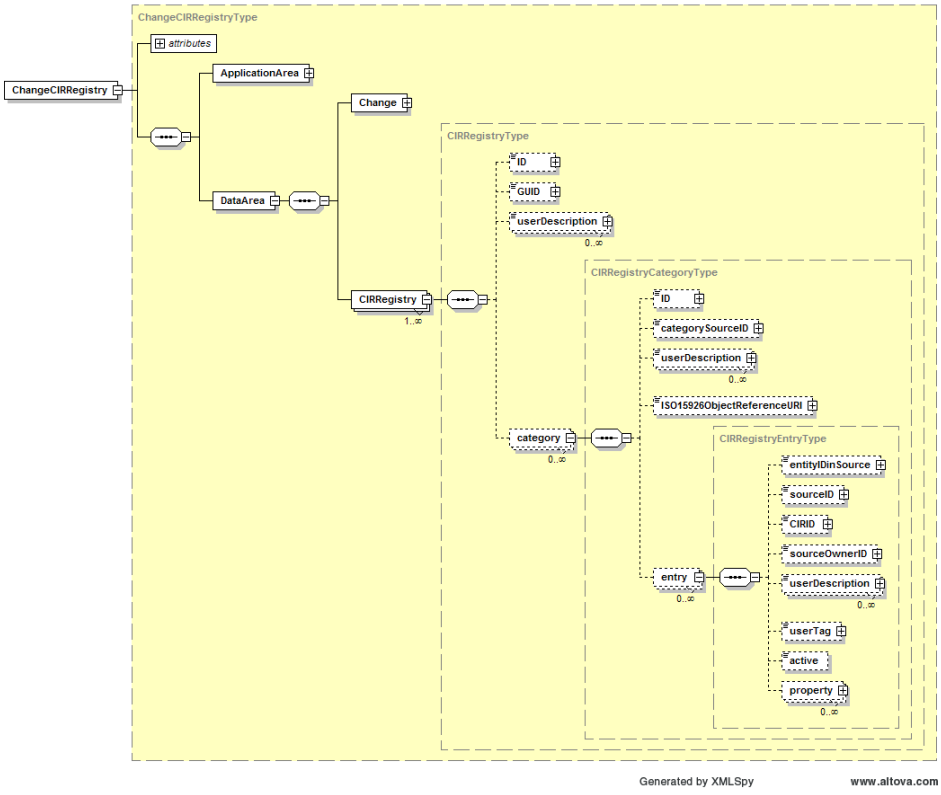
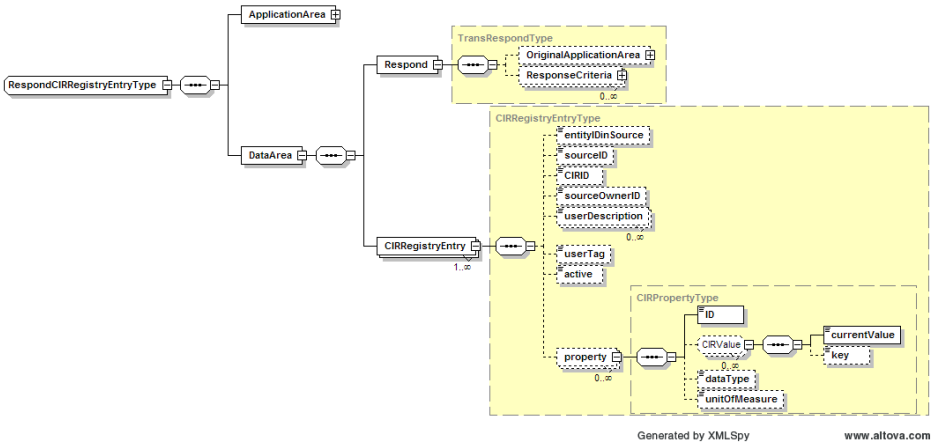
Name	DefineEquivalentEntries
Description	Defines two CIRIDs as equivalent by changing the target CIRID in all registries to the source CIRID.
Input Parameters	▪ Source CIRID ▪ Target CIRID
Returns	▪ Error string, empty string in the case of no error

2.2.9 Delete Registry Entries

Name	DeleteRegistryEntries
Description	Deletes one or more registry entries Return an error if the registry or category is not defined.
Input Parameters	▪ Registry ID or GUID as string ▪ Category ID as string ▪ List of Registry entries as GetCIRRegistryEntryListType
Returns	▪ Error string, empty string in the case of no error

2.2.10 Change Registry Entries

Name	ChangeRegistryEntries
Description	Updates one or more registry entries and associated properties.

Input Parameters	ChangeCIRRegistry as ChangeCIRRegistryType If the registry is not defined, then the service selects the registry. If the category is not defined, then an error is returned. If an entry CIRID and sourceID are defined, then the other registry information and properties are changed. Else if a sourceID and sourceOwnerID are defined, then the other registry information and properties are changed. Else an error is returned. 
Returns	RespondCIRRegistryEntry as RespondShowCIRRegistryEntryType Response status in RespondCIRRegistryEntry/DataArea/Acknowledge/ResponseCriteria/ResponseExpression@actionCode 

2.3 Wildcard Specification

Services utilitizing FilterCIRRegistryType, FilterCIRRegistryCategoryType, FilterCIRRegistryEntryType can utilize wildcards when specifying filter parameters to identify multiple objects. The convention for specifying wildcards in text strings is through limited regular expressions. In a limited regular expression a wildcard value can have the following special characters:

"*" – Indicates zero or more characters, any character is acceptable

Example 1: The wildcard "ABC*" would match "ABC", "ABCD", "ABCDEF", "ABC@4!*", but not "ABDDEF"

"%" – Indicates one or more characters, any character is acceptable

Example 2: The wildcard "ABC%" would match "ABCD", "ABCDEF", "ABC^4^*", but not "ABC"

"?" – Indicates zero or one characters at the specified position, any character is acceptable

Example 3: The wildcard "ABC?" would match "ABCX", "ABCD", "ABC!", "ABC", but not "ABCDE" or "ABDC"

The character following a "\" is considered a literal character, not a wildcard character.

Example 4: An object ID of "ABC*" defines the object ID as "ABC*".

Example 5: A property ID of "\\\\USM 123" defines the property ID "\\USM 123".

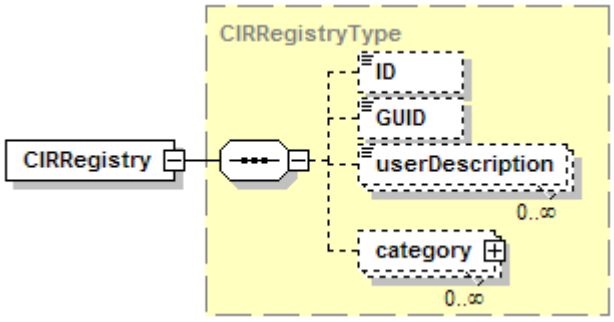
Two consecutive backslash characters, i.e. "\\" are interpreted to be a single backslash character "\".

3 XML Implementation

The XML implementation is based on the UN/CEFACT core component data types and the ISA 95.00.05, IEC 622264-5, and OAGIS 9.0 transaction specifications.

3.1 CIRRegistry

3.1.1 Data Element

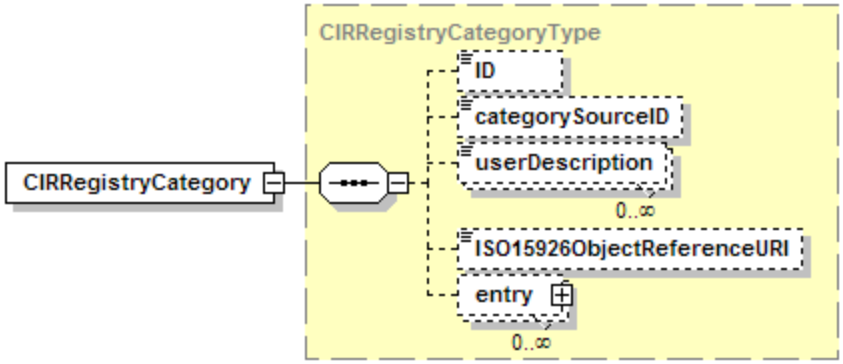


3.1.2 Transactions

Name	Description	Returns
GetCIRRegistry	Get registry information for specified registry ID or GUID. If no ID or GUID specified, return all registries.	ShowCIRRegistry
ProcessCIRRegistry	Create a new registry.	AcknowledgeCIRRegistry
ChangeCIRRegistry	Change a registry ID or userDescription.	RespondCIRRegistry
CancelCIRRegistry	Remove a registry	
SyncCIRRegistry	Publish changes to a registry	SyncCIRRegistry

3.2 CIRRegistryCategory

3.2.1 Data Element

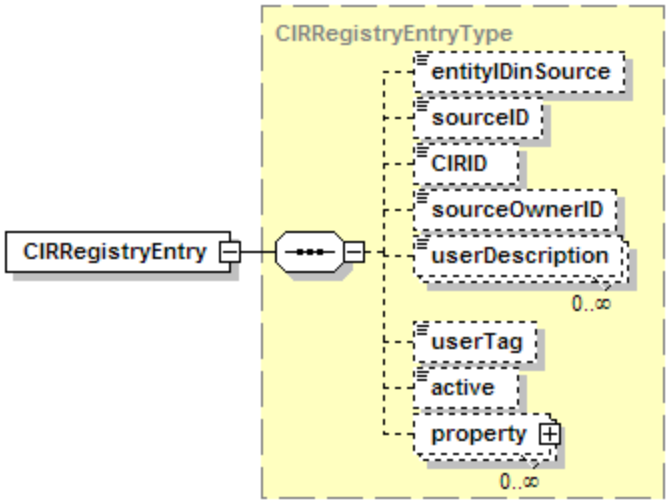


3.2.2 Transactions

Name	Description	Returns
GetCIRRegistryCategory		ShowCIRRegistryCategory
ProcessCIRRegistryCategory		AcknowledgeCIRRegistryCategory
ChangeCIRRegistryCategory		RespondCIRRegistryCategory
CancelCIRRegistryCategory		
SyncCIRRegistryCategory		SyncCIRRegistryCategory

3.3 CIRRegistryEntry

3.3.1 Data Element

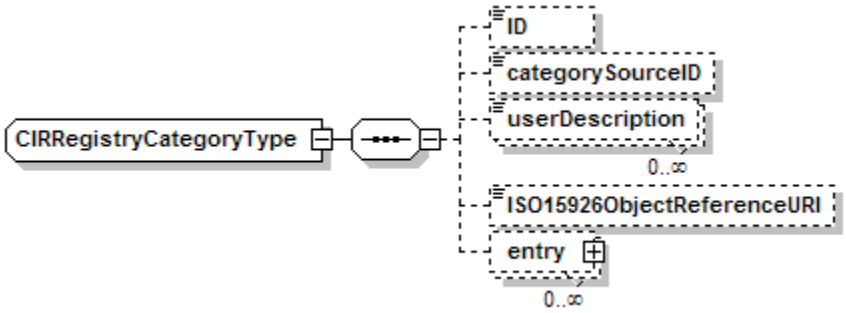


3.3.2 Transactions

Name	Description	Returns
GetCIRRegistryEntry		ShowCIRRegistryEntry
ProcessCIRRegistryEntry		AcknowledgeCIRRegistryEntry
ChangeCIRRegistryEntry		RespondCIRRegistryEntry
CancelCIRRegistryEntry		
SyncCIRRegistryEntry		SyncCIRRegistryEntry

3.4 CIRProperty

3.4.1 Data Element



Appendix A: OpenO&M-defined Properties

There are predefined OpenO&M properties that should be used to identify commonly understood relationships between entities.

CIRParentEntityID

The CIRParentEntity contains the set of entityIDinSource IDs for parent object of the entity in the source's hierarchy.

The property value should follow the JSON format for the set of entityIDinSource IDs.

CIRChildEntityID

The CIRChildEntityID contains the set of entityIDinSource IDs for child objects of the entity in the source's hierarchy.

The property value should follow the JSON format for the set of entityIDinSource IDs.

CIRPossibleEquivalentEntryID:

The CIRPossibleEquivalentEntryID contains a set of target entities which are possibly equivalent to the entity. This allows for automated equivalency determination. Each returned target entry contains the following set of information:

1. EntityIDinSource
2. SourceID
3. percentLikelihood [Optional]

The property value should follow the JSON format for the array of objects or equivalent IDs.

Examples:

```
[ {"EntityIDinSource" : "TIC101", "SourceID" : "Thor"} ]

[ {"EntityIDinSource" : "TIC101", "SourceID" : "Thor" , "percentLikelihood" : 20} ]

[ {"EntityIDinSource" : "TIC101", "SourceID" : "Thor"} ,
  {"EntityIDinSource" : "T101" , "SourceID" : "Apollo"} ]
```

Appendix B: WSDL

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:tns="http://www.openoandm.org/xml/CIRML/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
  xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
  targetNamespace="http://www.openoandm.org/xml/CIRML/"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xsd:schema elementFormDefault="qualified"
targetNamespace="http://www.openoandm.org/xml/CIRML/">
      <xsd:element name="CreateRegistry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="processCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="CreateRegistryResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="CreateRegistryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="CreateUniqueRegistry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="processCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="CreateUniqueRegistryResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="CreateUniqueRegistryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="CombineRegistry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="registryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="processCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="CombineRegistryResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="CombineRegistryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="GetFullRegistry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="getCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
```

```
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="GetFullRegistryResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="GetFullRegistryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="GetRegistryEntries">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="getCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="GetRegistryEntriesResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="GetRegistryEntriesResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="FindEquivalentEntry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="registryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="categoryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="entryIDinSource"
type="xsd:string" />
            <xsd:element minOccurs="0" maxOccurs="1" name="sourceOwnerID"
type="xsd:string" />
            <xsd:element minOccurs="0" maxOccurs="1" name="targetOwnerID"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="FindEquivalentEntryResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="FindEquivalentEntryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="AddEquivalentEntry">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="registryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="categoryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="entryIDinSource"
type="xsd:string" />
            <xsd:element minOccurs="0" maxOccurs="1" name="sourceOwnerID"
type="xsd:string" />
            <xsd:element minOccurs="0" maxOccurs="1" name="entryIDinTarget"
type="xsd:string" />
            <xsd:element minOccurs="0" maxOccurs="1" name="targetOwnerID"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="AddEquivalentEntryResponse">
        <xsd:complexType>
          <xsd:sequence>
```

```
            <xsd:element minOccurs="0" maxOccurs="1" name="AddEquivalentEntryResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="DefineEquivalentEntries">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="sourceCIRID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="targetCIRID" type="xsd:string"
/>
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="DefineEquivalentEntriesResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="DefineEquivalentEntriesResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="DeleteRegistryEntries">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="registryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="categoryID" type="xsd:string"
/>
            <xsd:element minOccurs="0" maxOccurs="1" name="getCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="DeleteRegistryEntriesResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="DeleteRegistryEntriesResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="ChangeRegistryEntries">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="changeCIRRegistry"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
      <xsd:element name="ChangeRegistryEntriesResponse">
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element minOccurs="0" maxOccurs="1" name="ChangeRegistryEntriesResult"
type="xsd:string" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:element>
    </xsd:schema>
  </wsdl:types>
  <wsdl:message name="CreateRegistrySoapIn">
    <wsdl:part name="parameters" element="tns:CreateRegistry" />
  </wsdl:message>
  <wsdl:message name="CreateRegistrySoapOut">
    <wsdl:part name="parameters" element="tns:CreateRegistryResponse" />
  </wsdl:message>
  <wsdl:message name="CreateUniqueRegistrySoapIn">
    <wsdl:part name="parameters" element="tns:CreateUniqueRegistry" />
  </wsdl:message>
  <wsdl:message name="CreateUniqueRegistrySoapOut">
```

```
    <wsdl:part name="parameters" element="tns:CreateUniqueRegistryResponse" />
  </wsdl:message>
  <wsdl:message name="CombineRegistrySoapIn">
    <wsdl:part name="parameters" element="tns:CombineRegistry" />
  </wsdl:message>
  <wsdl:message name="CombineRegistrySoapOut">
    <wsdl:part name="parameters" element="tns:CombineRegistryResponse" />
  </wsdl:message>
  <wsdl:message name="GetFullRegistrySoapIn">
    <wsdl:part name="parameters" element="tns:GetFullRegistry" />
  </wsdl:message>
  <wsdl:message name="GetFullRegistrySoapOut">
    <wsdl:part name="parameters" element="tns:GetFullRegistryResponse" />
  </wsdl:message>
  <wsdl:message name="GetRegistryEntriesSoapIn">
    <wsdl:part name="parameters" element="tns:GetRegistryEntries" />
  </wsdl:message>
  <wsdl:message name="GetRegistryEntriesSoapOut">
    <wsdl:part name="parameters" element="tns:GetRegistryEntriesResponse" />
  </wsdl:message>
  <wsdl:message name="FindEquivalentEntrySoapIn">
    <wsdl:part name="parameters" element="tns:FindEquivalentEntry" />
  </wsdl:message>
  <wsdl:message name="FindEquivalentEntrySoapOut">
    <wsdl:part name="parameters" element="tns:FindEquivalentEntryResponse" />
  </wsdl:message>
  <wsdl:message name="AddEquivalentEntrySoapIn">
    <wsdl:part name="parameters" element="tns:AddEquivalentEntry" />
  </wsdl:message>
  <wsdl:message name="AddEquivalentEntrySoapOut">
    <wsdl:part name="parameters" element="tns:AddEquivalentEntryResponse" />
  </wsdl:message>
  <wsdl:message name="DefineEquivalentEntriesSoapIn">
    <wsdl:part name="parameters" element="tns:DefineEquivalentEntries" />
  </wsdl:message>
  <wsdl:message name="DefineEquivalentEntriesSoapOut">
    <wsdl:part name="parameters" element="tns:DefineEquivalentEntriesResponse" />
  </wsdl:message>
  <wsdl:message name="DeleteRegistryEntriesSoapIn">
    <wsdl:part name="parameters" element="tns:DeleteRegistryEntries" />
  </wsdl:message>
  <wsdl:message name="DeleteRegistryEntriesSoapOut">
    <wsdl:part name="parameters" element="tns:DeleteRegistryEntriesResponse" />
  </wsdl:message>
  <wsdl:message name="ChangeRegistryEntriesSoapIn">
    <wsdl:part name="parameters" element="tns:ChangeRegistryEntries" />
  </wsdl:message>
  <wsdl:message name="ChangeRegistryEntriesSoapOut">
    <wsdl:part name="parameters" element="tns:ChangeRegistryEntriesResponse" />
  </wsdl:message>
  <wsdl:portType name="CIRServiceSoap">
    <wsdl:operation name="CreateRegistry">
      <wsdl:documentation>Creates a new registry, new category in a registry, or new
entries in a category.  Returns the system assigned GUID for the new
registry.</wsdl:documentation>
      <wsdl:input message="tns:CreateRegistrySoapIn" />
      <wsdl:output message="tns:CreateRegistrySoapOut" />
    </wsdl:operation>
    <wsdl:operation name="CreateUniqueRegistry">
      <wsdl:documentation>Creates a new registry, new category in a registry, or new
entries in a category.  Returns the system assigned GUID for the new registry and for the
new registry entries.</wsdl:documentation>
      <wsdl:input message="tns:CreateUniqueRegistrySoapIn" />
      <wsdl:output message="tns:CreateUniqueRegistrySoapOut" />
    </wsdl:operation>
    <wsdl:operation name="CombineRegistry">
      <wsdl:documentation>Adds a list of a registry categories and registry entries to an
existing registry. Return an error as AcknowledgeCIRRegistry if the registry is not
defined.</wsdl:documentation>
      <wsdl:input message="tns:CombineRegistrySoapIn" />
      <wsdl:output message="tns:CombineRegistrySoapOut" />
```

```
    </wsdl:operation>
    <wsdl:operation name="GetFullRegistry">
      <wsdl:documentation>Returns all categories and entries in a
registry.</wsdl:documentation>
      <wsdl:input message="tns:GetFullRegistrySoapIn" />
      <wsdl:output message="tns:GetFullRegistrySoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetRegistryEntries">
      <wsdl:documentation>Returns entries and their properties from a category in a
registry.  Used to find information about registry entries.</wsdl:documentation>
      <wsdl:input message="tns:GetRegistryEntriesSoapIn" />
      <wsdl:output message="tns:GetRegistryEntriesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="FindEquivalentEntry">
      <wsdl:documentation>Finds an equivalent registry entry. Return an error if the
registry or category is not defined.</wsdl:documentation>
      <wsdl:input message="tns:FindEquivalentEntrySoapIn" />
      <wsdl:output message="tns:FindEquivalentEntrySoapOut" />
    </wsdl:operation>
    <wsdl:operation name="AddEquivalentEntry">
      <wsdl:documentation>Adds a CIRID to a registry entry from an equivalent registry
entry.  If neither entry has a CIRID, then a new CIRID is created. Return an error if the
registry, category, source entry, or target entry are not defined.</wsdl:documentation>
      <wsdl:input message="tns:AddEquivalentEntrySoapIn" />
      <wsdl:output message="tns:AddEquivalentEntrySoapOut" />
    </wsdl:operation>
    <wsdl:operation name="DefineEquivalentEntries">
      <wsdl:documentation>Defines two CIRIDs as equivalent by changing the target CIRID
in all registries to the source CIRID.</wsdl:documentation>
      <wsdl:input message="tns:DefineEquivalentEntriesSoapIn" />
      <wsdl:output message="tns:DefineEquivalentEntriesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="DeleteRegistryEntries">
      <wsdl:documentation>Deletes one or more registry entries. Return an error if the
registry or category is not defined.</wsdl:documentation>
      <wsdl:input message="tns:DeleteRegistryEntriesSoapIn" />
      <wsdl:output message="tns:DeleteRegistryEntriesSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="ChangeRegistryEntries">
      <wsdl:documentation>Updates one or more registry entries and associated
properties.</wsdl:documentation>
      <wsdl:input message="tns:ChangeRegistryEntriesSoapIn" />
      <wsdl:output message="tns:ChangeRegistryEntriesSoapOut" />
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="CIRServiceSoap" type="tns:CIRServiceSoap">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="CreateRegistry">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/CreateRegistry"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateUniqueRegistry">
      <soap:operation
soapAction="http://www.openoandm.org/xml/CIRML/CreateUniqueRegistry" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CombineRegistry">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/CombineRegistry"
style="document" />
      <wsdl:input>
```

```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetFullRegistry">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/GetFullRegistry"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRegistryEntries">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/GetRegistryEntries"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FindEquivalentEntry">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/FindEquivalentEntry"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="AddEquivalentEntry">
      <soap:operation soapAction="http://www.openoandm.org/xml/CIRML/AddEquivalentEntry"
style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DefineEquivalentEntries">
      <soap:operation
soapAction="http://www.openoandm.org/xml/CIRML/DefineEquivalentEntries" style="document"
/>
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteRegistryEntries">
      <soap:operation
soapAction="http://www.openoandm.org/xml/CIRML/DeleteRegistryEntries" style="document" />
      <wsdl:input>
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ChangeRegistryEntries">
      <soap:operation
soapAction="http://www.openoandm.org/xml/CIRML/ChangeRegistryEntries" style="document" />
      <wsdl:input>
```

```
        <soap:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:binding name="CIRServiceSoap12" type="tns:CIRServiceSoap">
    <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="CreateRegistry">
      <soap12:operation soapAction="http://www.openoandm.org/xml/CIRML/CreateRegistry"
style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CreateUniqueRegistry">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/CreateUniqueRegistry" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="CombineRegistry">
      <soap12:operation soapAction="http://www.openoandm.org/xml/CIRML/CombineRegistry"
style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetFullRegistry">
      <soap12:operation soapAction="http://www.openoandm.org/xml/CIRML/GetFullRegistry"
style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetRegistryEntries">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/GetRegistryEntries" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="FindEquivalentEntry">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/FindEquivalentEntry" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="AddEquivalentEntry">
```

```
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/AddEquivalentEntry" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DefineEquivalentEntries">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/DefineEquivalentEntries" style="document"
/>
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="DeleteRegistryEntries">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/DeleteRegistryEntries" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="ChangeRegistryEntries">
      <soap12:operation
soapAction="http://www.openoandm.org/xml/CIRML/ChangeRegistryEntries" style="document" />
      <wsdl:input>
        <soap12:body use="literal" />
      </wsdl:input>
      <wsdl:output>
        <soap12:body use="literal" />
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:service name="CIRService">
    <wsdl:port name="CIRServiceSoap" binding="tns:CIRServiceSoap">
      <soap:address location="http://localhost:49574/CIRService.asmx" />
    </wsdl:port>
    <wsdl:port name="CIRServiceSoap12" binding="tns:CIRServiceSoap12">
      <soap12:address location="http://localhost:49574/CIRService.asmx" />
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```