Candidate
Oasis
Information Model

A contribution from NIST intended as one section of a
Multi-section OASIS Registry/Repository Specification**.**

Other sections of the specification, e.g. interfaces and
XML interoperability messages, could be defined in
terms of these definitions and logical structures.

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X OASIS Information Model

X.1 Concepts

The OASIS Registry/Repository specification is concerned with the administration, maintenance, presentation, and exchange of metadata related to a *registered object*. The types of objects that can be registered are determined by standardization organizations that sponsor registry/repository specifications. For example, OASIS is interested in registration of XML and SGML objects and other documents, e.g. examples and documentation, that are closely related to registered objects. EBXML is interested in the registration of XML business objects and IMS is interested in the registration of learning objects. The OASIS Registry/Repository specification hopes to be broad and inclusive enough to accommodate the common base requirements of each of these registration efforts; more specific requirements of each registry sponsor can be supported as extensions to the base model.

Each registered object is associated with two pieces of information: 1) an electronic file consisting of a specific digital instance of the registered object, and 2) metadata for naming, describing, and locating the registered object and identifying its associations and relationships with other objects. The metadata for a registered object is maintained by a Registry, and the file containing a registered object is maintained by a Repository. The Registry and Repository are tied together in that the metadata for a registered object in the Registry includes a globally unique locator for a file, in some Repository, that contains the registered object.

If the registered object is a free, publicly available object, then the locator is an anonymous URL or FTP reference that can be used to retrieve the file containing the object; otherwise, the locator may need to be supplemented with payment or password information before the file containing the object can be retrieved. Some Registries may distinguish themselves by also being the Repository for any free, publicly available objects described in the Registry.

The metadata for a registered object is represented by several general structures, described conceptually as follows:

Registry Item

A Registry Item contains information that identifies, names, and describes each registered object, gives its administrative and payment status, defines its persistence and mutability, classifies it according to pre-defined classification categories, declares its file representation type, and identifies the submitting and responsible organizations. A registry item is a root entity in a Registry in the sense that many other metadata items in the Registry are directly dependent on it. For example, deletion of a registry item results in deletion of all other metadata items that depend on it.

Each registry item has a non-public, local identifier created by the Registration Authority. This identifier is used to maintain relationships of this item with other items in the same registry. In the Registry Information Model, this identifier is said to be of type REGISTRY_ITEM. In

addition, each registry item has both a common name and a global name. The common name is intended for use by humans and is not necessarily unique except in some local human context. The global name is intended for use both by humans and by software systems; it is unique within all registries that claim conformance to the OASIS specification. In order to avoid ambiguities in presentation of information, the local identifier and the global name must be in a one-to-one correspondence with one another.

Each registry item is classified by a primary classification, and an optional sub-classification, each defined by the sponsoring organization. For example, for OASIS the primary classification identifies the registered object as either an XSGML definition, and XSGML instance, a Package of registered objects, or some Other document type. The details and constraints of these and other information items for a Registry Item are given in the Entity Sematics section below.

Association

An Association maintains pairwise relationships among registry items. One item in the pair is called the given item and the other item in the pair is called the associated item. The given item is a registry item in the same Registry as the association instance. The associated item is a registry item in any conformant Registry, possibly one not managed by the same Registration Authority. The associated item is uniquely referenced by its global name. If an associated item is also a registry item in the same Registry as the association instance, then the association instance holds the value of its local identifier.

Each pairwise relationship identifies the role played by the given item in relationship to the associated item. Initially the OASIS specification supports *uses*, *supersedes*, *contains*, and *related* roles.

- A given item *uses* an associated item if the object identified by the given item references the object identified by the associated item or if the object identified by the given item is considered to be incomplete unless the object identified by the associated item is available to it.

- A given item *supersedes* an associated item if both items remain in the Registry but it is intended that the object identified by the given item replace the object identified by the associated item whenever practical. A registry item may remain in the Registry even though the object referenced by it may be withdrawn.

- A given item *contains* an associated item if the object referenced by the given item is a package that contains a pointer to the associated item. The concept of a package is defined below.

- A given item is *related* to an associated item if the given item is documentation or some other kind of important support for the associated item. The given item and the associated item must both be registered in the same registry.

The details and constraints of associations and roles for the OASIS specification are given in the Entity Semantics section below.

Examples:

1) A registered XML document *uses* the registered XML DTD that defines its structure.

2) A registered XML DTD *uses* a registered XML element or attribute that the DTD references by the global name of the associated element or attribute.

3) A registered XML DTD *uses* a registered package consisting of other registered XML DTD's and their associated documentation and style sheets if it references the package by its global name and references package contents by their common names.

4) A registered XML element *supersedes* another registered XML element if it has the same common name but a different version ID and thus a different global name.

5) A registered diagram of some MIME type is *related* to a registered XML DTD if the diagram is a graphic visualization of the DTD.

Related Data

Related Data is a conceptual notion used to collect together references to data objects that are related to a registered object. This category of metadata is reserved for things like graphic visualizations, example sets, white papers, usage scenarios, extended documentation, etc. Sometimes related data objects will be very important, e.g. usage documentation, and will themselves be registered objects. At other times, related data objects will be less important support information for a registered item and will not themselves be registered.

In most cases, related data objects will not be registered, so their own metadata will not be maintained be a registration authority. Yet they are valuable supplements to a registered object and should be optionally available. In these cases the registration authority will only keep a list of the name and type of the related data object, with just enough additional information so that they can be presented as options on a web page. The related objects and their associated metadata will be created, held, and maintained by the submitting organization.

If a related data instance is not registered, then an instance of it consists of a human readable name, a URL, a standardized classification as a supporting object, a MIME file representation type, and a short human readable comment.

If a related data instance is registered, then its full documentation is carried as metadata in the Registry, including its MIME filetype and its standardized classification as a related data object. As with any registered item, its associations and relationships with other objects will be

maintained by the Registry. In particular, its *related* role to some other item will be captured by an association instance.

Organization

The Organization concept identifies all organizations that have some relationship to a registered object. This includes a Submitting Organization (SO), a Responsible Organization (RO), and a Registration Authority (RA). An organization wishing to become a Submitting Organization must first make an application to a recognized Registration Authority. The process of application and approval is not defined is this specification, but the end result is that a Submitting Organization and responsible contacts within that organization are known to each Registration Authority to which they intend to make submissions.

Similarly, each Registration Authority and responsible contacts within that authority must be known to some central accrediting authority before that organization can be recognized as a legitimate Registration Authority. Once an organization has been accredited as a Registration Authority, then under proper authentication that organization will be trusted by other Registration Authorities for the sharing of Registry or Repository data.

Finally, a Responsible Organization is the organization responsible for creation and revision of the registered object. In many cases, the Responsible Organization will be an accredited standards development organization (e.g. as defined by ISO or ANSI), but it may also be some Submitting Organization. Every Responsible Organization should be able to supply a set of development and voting procedures whereby an initial specification gets approved, as well as development and voting procedures for corrections, amendments, revisions, and withdrawals. The Registration Authority is responsible for additions and changes to the metadata associated with a registered object, and for ensuring that revisions and withdrawals of registered objects abide by initial stability and persistence declarations.

Each organization has a non-public local identifier created by the Registration Authority that is used to maintain relationships among organizations, contacts, and registered objects. In the Registry Information Model, this identifier is said to be of type ORGANIZATION. In addition, each organization has both a common name and a global name. The common name is intended for use by humans and is not necessarily unique except in some local human context. The global name is intended for use both by humans and by software systems; it is unique within all registries that claim conformance to the OASIS specification. In order to avoid ambiguities in presentation of information, the local identifier and the global name must be in a one-to-one correspondence with one another.

Contact

A Contact is the identification of a person, role, or other entity within an organization that has some relationship to a registered object. A contact will consist of a common name, used to identify the contact within an organization, and some specific contact information such as telephone number and email.

Each contact instance has a non-public, local identifier created by the Registration Authority that is used to maintain relationships among organizations, contacts, and registered objects. In the Registry Information Model, this identifier is said to be of type CONTACT. Each contact includes a mandatory reference to some organization. It is not necessary to maintain a global, unique name for contacts because the global name for the organization together with the common name for the contact will be sufficient to uniquely identify the contact.

Classification

A classification is a partition of a given collection of items into mutually exclusive and collectively exhaustive sub-collections. A classification depends upon a pre-existing specification of a hierarchy of values, names, and codes called a classification scheme. Registry items in a Registry may be classified by as many classification schemes as deemed appropriate by the Submitting Organization.

Classification Scheme

A classification scheme is a hierarchy of values that can be referenced by a classification. A classification scheme can vary from a simple set of values to a complex multi-level hierarchy. An example of a simple single-level classification is the set {Freshman, Sophomore, Junior, Senior} used to partition a collection of students. An example of a more complicated classification scheme is one based on the hierarchy of all living things with named levels for Kingdom, Phylum, Class, Order, Family, Genus and Species. The Classifications section below defines the various types of classification schemes and specifies XML representations for defining classification schemes and exchanging classifications of items dependent upon that scheme.

Package

A Package is a conceptual notion used to identify a set of registered objects. It is defined to be a registered object that is a set of pointers to other registered objects. Using this definition, a package can represent a hierarchy of registered objects, where non-terminal nodes of the hierarchy are other packages and terminal nodes are package or non-package objects. A package is a terminal node in a package hierarchy if and only if the package is empty. A registered object may be pointed to by several different packages. A package relationship between a registered package and some other registered object pointed to by a package element is represented by the *contains* role in an association instance.

Since the representation of a registered object is defined to be a file, the file representing a package object is an XML document that conforms to the OASIS Package DTD defined elsewhere in this specification. Only the owner of a package can modify its contents. Rules for package definition and package maintenance are given in the Entity Semantics section below.

Alternate Name

Alternate Name is a conceptual category used to group together alternate names used for local or global reference to a registered object. Especially significant are names used in special circumstances or contexts, e.g. short names consisting of all visible characters from a limited character set for local identifiers in a specific programming language context, or globaly unique qualified names that satisfy the hierarchical qualification structure of a specific context. Alternate names can also be used for names in different human languages with characters encoded in unusual character sets.

An alternate name instance consists of the alternate name, a context for using that name, and a human readable comment that further explains how the name should be used. An alternate name instance is tagged with a language code and a character set code that apply to all other information in that instance.

Alternate Description

Alternate Description is a conceptual category used to group together alternate descriptions, in different human languages, of a registered object. An alternate description instance is tagged with a human language code and a character set code that apply to the text of the description.

Submission

A Submission is a collection of requests, in the form of a message, sent from a Submitting Organization to a Registration Authority. For administrative accountability the Registration Authority logs each submission into the Registry information model, timestamps it with the date and time received, and stores it for potential subsequent scrutiny. Any Registry entities created, deleted, or modified by a submission should be traceable back to the submission instance and to its Submitting Organization.

Each submission instance has a non-public, local identifier created by the Registration Authority that is used to maintain its relationships among organizations, registry items, contacts, and other registry entities. In the Registry information model, this identifier is said to be of type SUBMISSION. Each submission includes a mandatory reference to a submitting Organization and to some Contact within that organization.

X.2 Registry Model

The OASIS Registry information model is an Entity-Attribute-Relationship (EAR) model that defines the logical structure of an OASIS Registry. Other parts of the OASIS specification, especially query messages sent to a Repository and answer responses from a Repository, will be defined in terms of this model. Unless otherwise indicated, each concept described above is an Entity in the model, each information item associated with a concept is an Attribute, and each association between concepts is a Relationship.

In the figures of this section, a rectangle represents an entity and lines between entity rectangles represent relationships. The attributes that define an entity are listed as rows within the entity rectangle. For each attribute, the first column of the row is its name, the second column is its datatype, and the third column is an indication of whether or not it is mandatory.

Each entity in the EAR model represents both the data structure of a single entity instance and a container that holds a collection of persistent entity instances. The attributes of an entity determine the structure of a single instance and the relationships between entities determine pairwise associations among individual entity instances as well as constraints on collections of persistent instances.

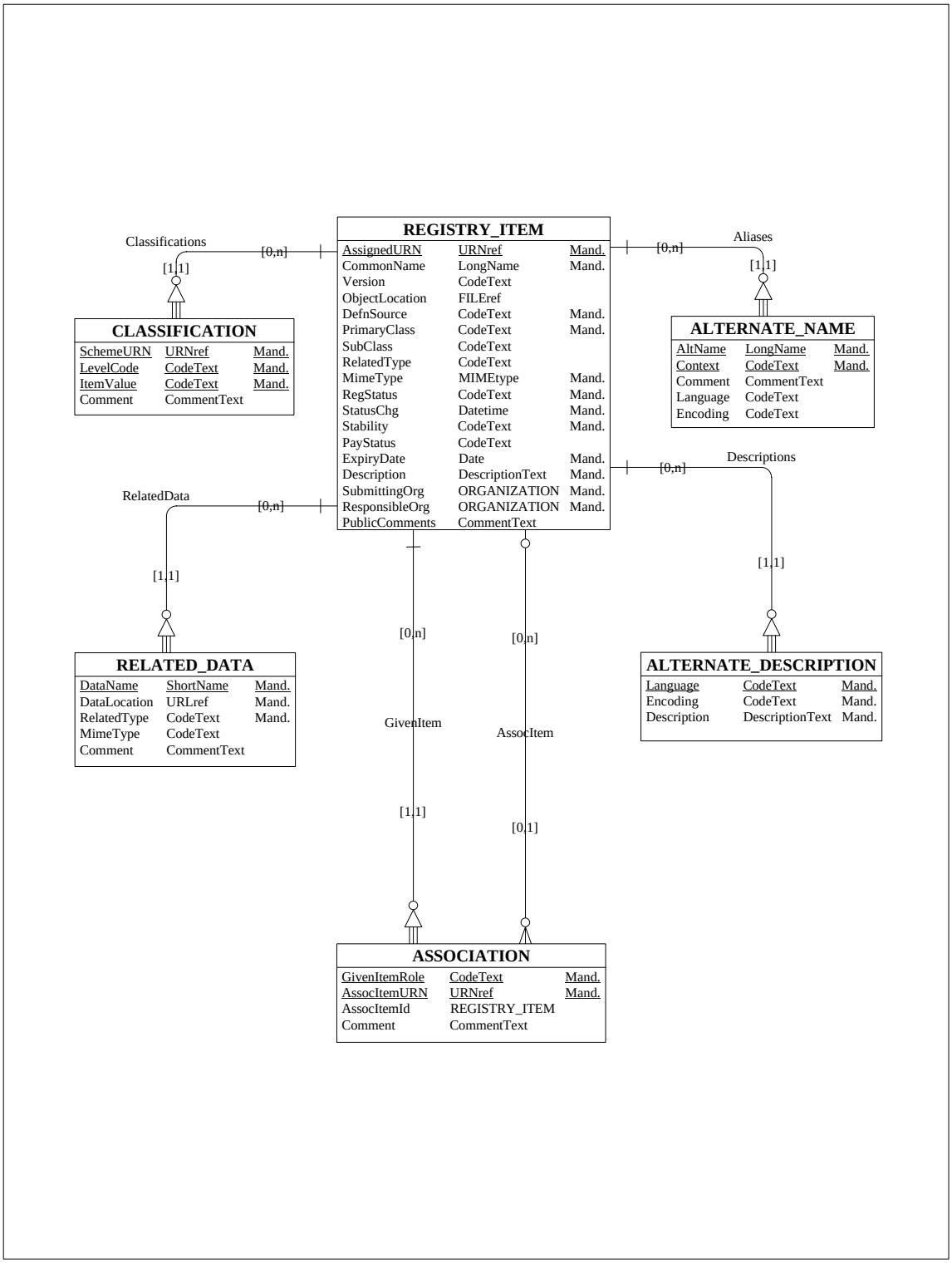
Every relationship is bi-directional, always interpretable as from one entity to another, and vice versa. Each direction can have a *cardinality* of zero-to-many, one-to-many, zero-to-one, or one-to-one. We do not allow relationships to be many-to-many; instead, we define a new entity with two different relationships that satisfy the simpler assumptions, e.g. the Association entity. A zero-to-one or zero-to-many cardinality of a directional relationship indicates *optionality*, i.e. an instance at the from-side may not map to any instance at the to-side. In the diagrams, a small circle at the to-side of a directional relationship represents such optionality, as does the notation [0,1] or [0,n] at the from-side. A zero-to-many or one-to-many cardinality of a directional relationship indicates *multiplicity*, i.e. an instance at the from-side may map to multiple instances at the to-side. In the diagrams, triple feet at the to-side of a directional relationship represent such multiplicity, as does the notation [0,n] or [1,n] at the from-side. If a directional relationship is one-to-many, then an instance at the from-side requires the existence of one or more instances at the to-side. If a directional relationship is one-to-one, then an instance at the from-side requires exactly one instance at the to-side; this means that the from-side instance has a *dependency* on that to-side instance.

Dependency can be handled in several different ways. Suppose x and y are entity instances and that y has a dependency on x. If x is deleted, what happens to y? If y is also deleted, then we say that the dependency has a *cascade delete* effect. If the deletion of x is prohibited, then we say that the dependency has a *cascade restrict* effect. If y is somehow modified to remove its dependency on x, then we say that the relationship has a *cascade modify* effect. In the diagrams, a triangle at the from-side of a directional relationship represents a dependency with a *cascade delete* effect.

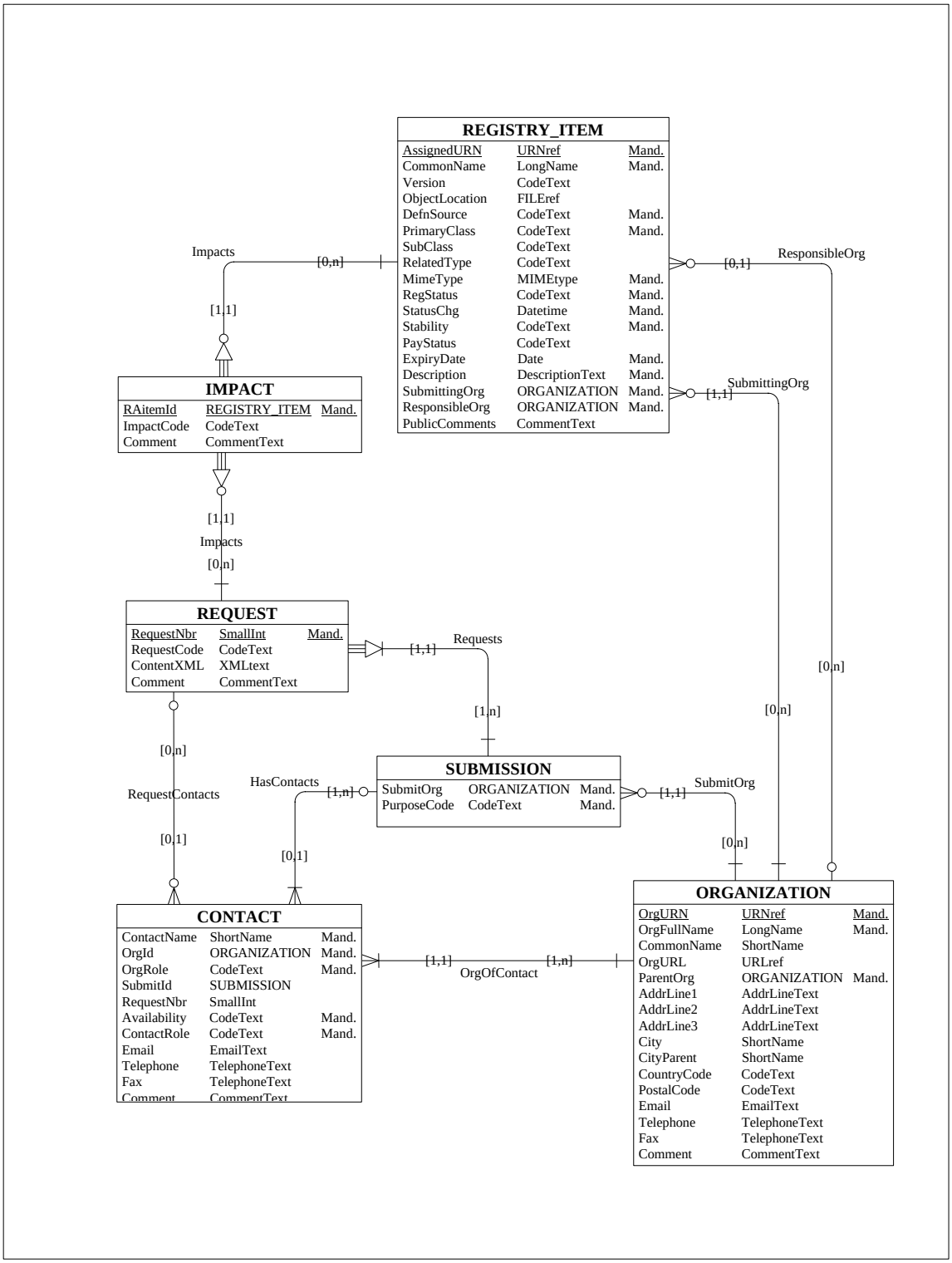
Underlined Attributes indicate *uniqueness*. If an entity is not dependent upon any other entity, then the underlined attributes uniquely determine an instance of that entity. If an entity is dependent upon some other entity, then for each instance of the other entity, the underlined attributes determine a unique instance of the given entity.

This restricted use of the Entity-Attribute-Relationship model ensures that its usage is simple enough to be consistently transferable to representations in a number of other data modeling paradigms, including relational, object-oriented, UML, or MOF. The diagrams on the next few pages give a high-level view of the EAR model of the OASIS Registry. Later sections add more detail to attribute types and specify the Semantic Rules that must be satisfied.

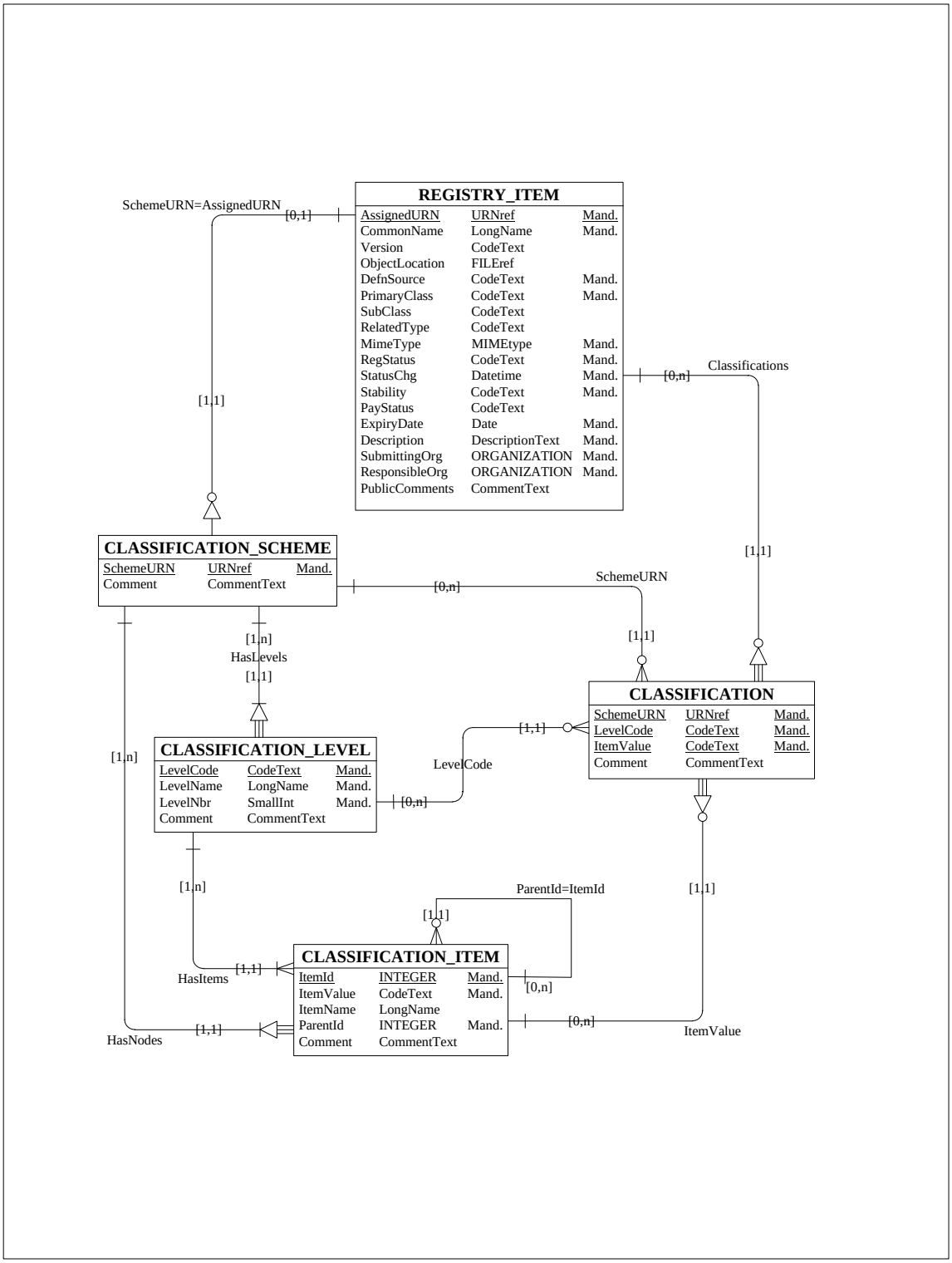
X.2.1 Registry Model - Public View



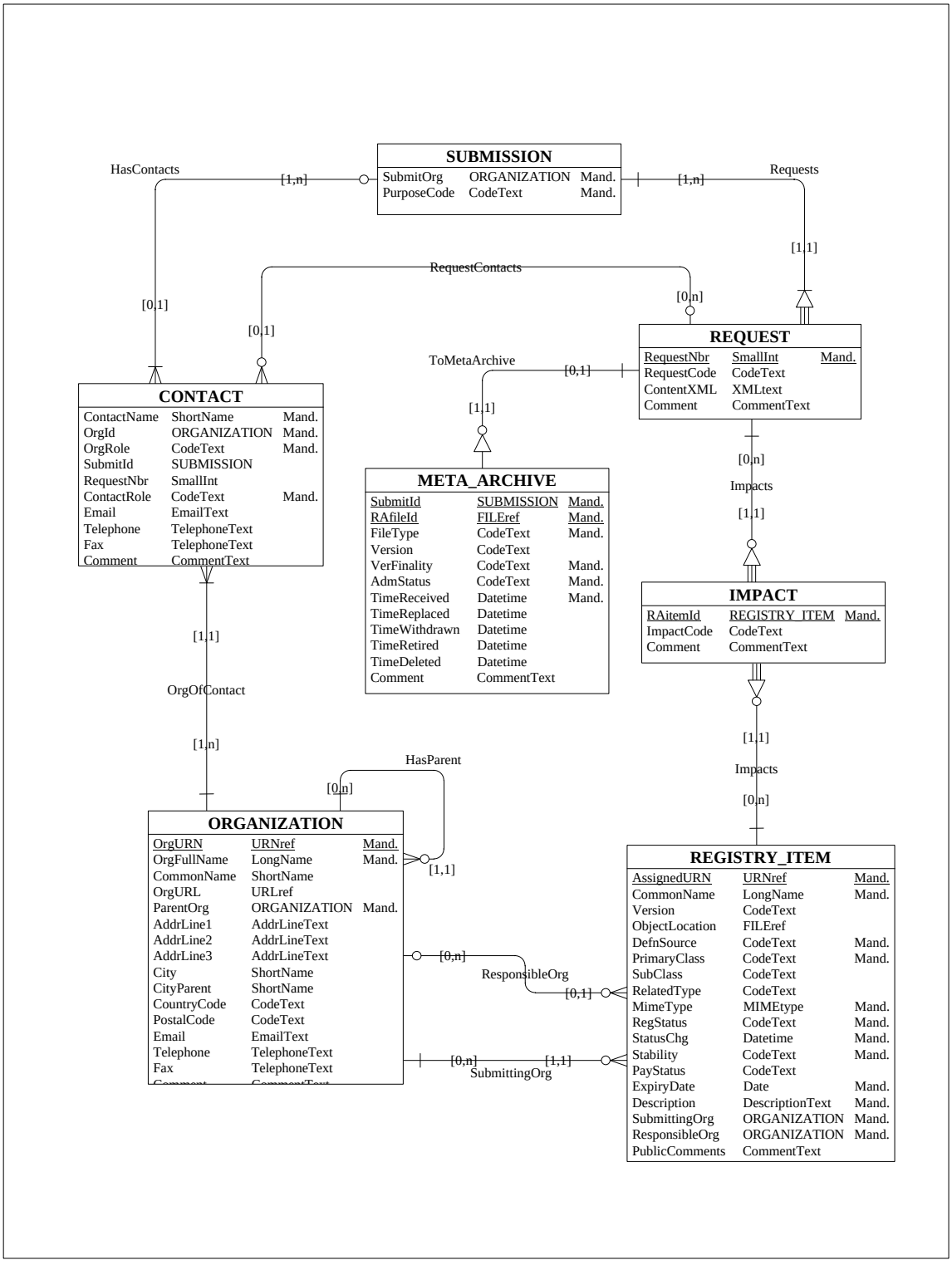
X.2.2 Registry Model – Contacts View



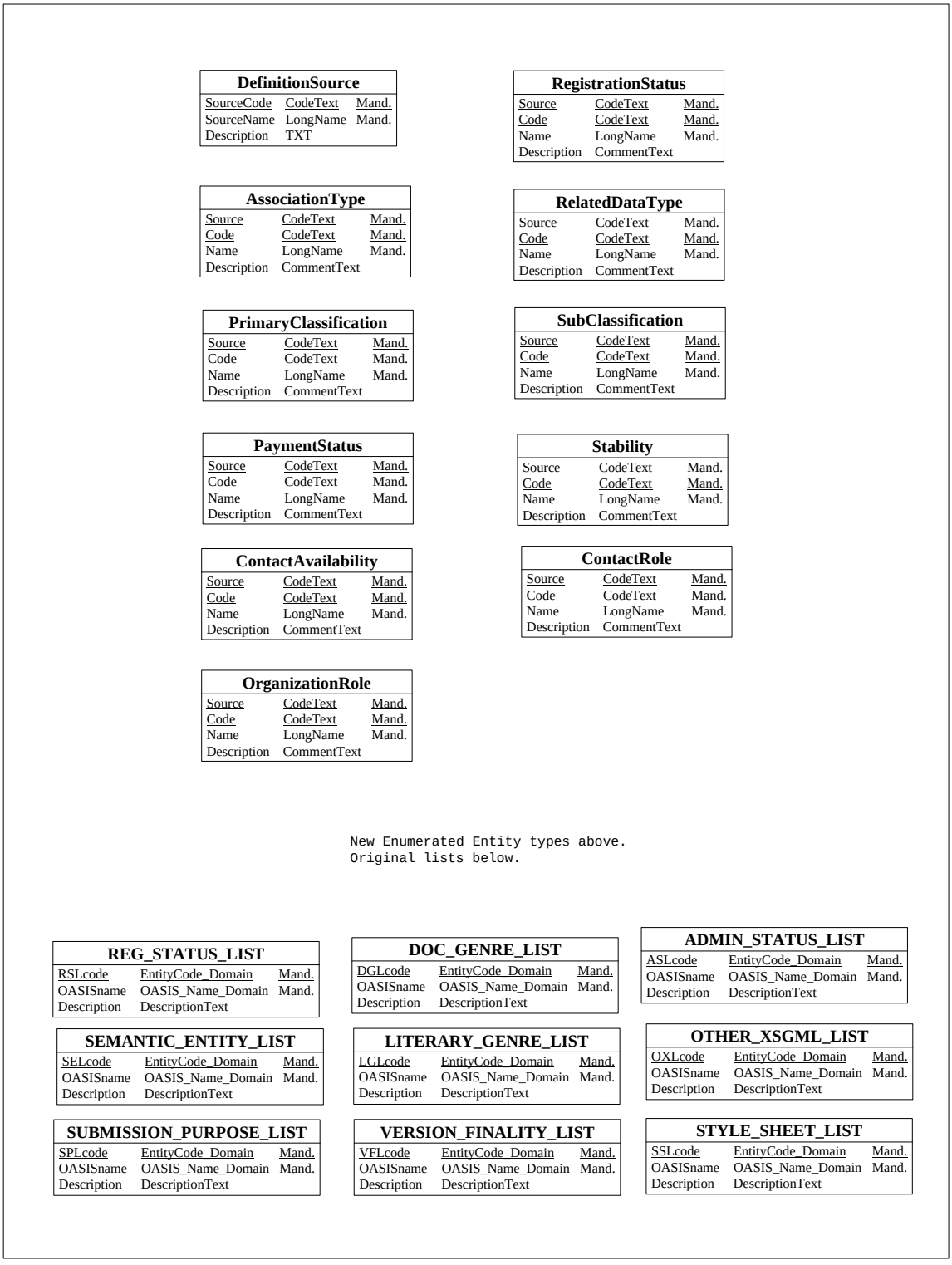
X.2.3 Registry Model – Classification View



X.2.4 Registry Model – Administration View



X.2.5 Registry Model – Enumeration Entity View



X.3 Classifications

A classification is a partition of a given collection of items into mutually exclusive and collectively exhaustive sub-collections. A classification depends upon a pre-existing specification of a hierarchy of values, names, and codes called a classification scheme. Registry items in a Registry may be classified by as many classification schemes as deemed appropriate by the Submitting Organization.

A classification scheme can be one of several different styles, or some combination of those styles. The following paragraphs describe three separate styles of classification schemes.

Simple 1-level classification scheme

A simple 1-level classification scheme is a list of distinct values that can be used to partition a collection of objects. The name of the classification scheme can be viewed as the root of the hierarchy, with each of the distinct values considered as a node at the first level. An example of such a simple classification scheme is the StudentStatus attribute of a student population, which can be used to partition the students into Freshmen, Sophomores, Juniors, Seniors, and Special students.

Each node of a classification scheme will allow distinctions to be made between ItemValue and ItemName. An ItemValue will always be considered as a reference to be used in place of the ItemName. With this capability, we could refine the StudentStatus classification scheme to specify the item values FR, SO, JR, SR, SP as references and replacements for the longer item names. A classification scheme defines only one item value for each item name.

Multi-level naming classification scheme

A multi-level naming classification scheme uses scoped names to identify the nodes in a classification hierarchy. Each name is meaningful only if the name of its parent node is known. Names need be unique only as children of the parent node, so in order to uniquely identify a node it is necessary to know the names of each node in a path from the root to the given node.

An example of a multi-level naming classification scheme is the scheme used by biologists to classify all living things. The scheme consists of seven levels: Kingdom, Phylum, Class, Order, Family, Genus, and Species, each with a list of recognized values. However, it is not required that names within each level be unique; there could be a species for tree that is the same as the species of some animal, because trees and animals are in different kingdoms, and thus in different branches of the hierarchy. A complete classification of all living things would thus require a value for each of the seven levels.

A classification scheme can be used for classification of a population taken from just one of its nodes. For example, since primate is an instance of Order, a classification of all primates could consist of just just three values, one for each of the levels Family, Genus, and Species. Similarly, a classification of all modern-day-trees could consist of values for just Genus and Species.

In using a naming classification scheme for classification of a given population, it is usually necessary to identify the following items: 1) a globally unique name for a classification scheme, 2) a unique identifier for each level within the scheme, and 3) a value for each level. This is easily accomplished by defining a classification to be a set of ordered triples, {(SchemeURN, LevelCode, ItemValue)}, where SchemeURN is the unique name of a classification scheme, LevelCode is a short name used to reference a longer and possibly more descriptive LevelName, and ItemValue is a short name or value used to represent a longer ItemName. Or, to eliminate the repetition of SchemeURN, and to allow optional inclusion of the full names, one could define a classification as the following XML element definition:

```
<!ELEMENT classification  (levelValuePair+)>
<!ATTLIST classification
     schemeURN   CDATA  #REQUIRED
     schemeName  CDATA  #IMPLIED >

<!ELEMENT levelValuePair (comment-text?)
<!ATTLIST levelValuePair
     levelCode  CDATA  #REQUIRED
     itemValue  CDATA  #REQUIRED
     levelName  CDATA  #IMPLIED
     levelNbr   CDATA  #IMPLIED
     itemName   CDATA  #IMPLIED >

<!ELEMENT comment-text (#PCDATA)>
```

Multi-level coded classification scheme

A multi-level coded classification scheme uses a string of codes to represent a path down the classification scheme hierarchy. Each node has a code that is unique under its parent; then, in an N-level hierarchy, a sequence of node codes from Level 1 to Level N uniquely determines a definition path through the tree. As above, each code is considered to be an ItemValue that represents an ItemName. As in the named classification scheme, item names do not need to be unique. However, the codes are chosen so that it is convenient to represent the path from the root to the given node as a short string of codes.

In a coded classification scheme, the LevelCode is defined to be the sequence of item codes from the root to the given node. Then a classification using this scheme need only supply a value for a single node. The values for each item in the path can be inferred from the sequence, thereby identifying the name for each item in the path.

An example of a coded classification scheme is one for newspaper articles that uses a 3-level scheme with 2 digits to identify Level-1 and three digits each to identify Level-2 and Level-3. The coded value "15052003" thus represents a named classification path as Sport (15), followed by Ski Jumping (052), followed by K180 Flying Jump (003).

In coded classifications, if the structure of the code path is known, i.e. 2:3:3 digits for the three levels, then the level name is unimportant. An application receiving the levelValue “15052003”

would know to break it up into three codes 15, 52, and 3 to retrieve the three item names for the item values “15”, “15052”, and “15052003”. If the code structure is not known, then it could be implied by using a separator between the codes in the path, e.g. “15:052:003”, or one could begin with the leaf node and successively find each parent node until reaching the root. In any classification scheme, we will always assume that if any node of the scheme is known, then the sequence of parent nodes, and their associated level names, can always be determined.

In coded classifications where the code structure is not known, it is convenient to have a default code for each level, e.g. Level1, Level2, etc., so that the person or application receiving the coded item value knows how many itemNames to look for.

Mapping to the information model

The diagram in Section X.2.3, “Classification View”, gives the information model for representing classification schemes and classifications. The CLASSIFICATION entity holds the classifications for any registered item. Each classification will identify a classification scheme by a SchemeURN, even though that URN may be from some other registry. Since each classification scheme referenced by a classification is registered in the local registry, the URN should identify an instance of the ALTERNATE_NAME entity, which points to a unique instance of REGISTRY_ITEM, which in turn identifies a unique instance of CLASSIFICATION_SCHEME. The description of the scheme and all of its metadata can then be retrieved from the registry.

The CLASSIFICATION_LEVEL entity identifies each level of the classification scheme. If it is a simple 1-level scheme, then there is only one level and its LevelName is unimportant. By default, the level name and level code of the single level of a simple classification scheme is “Leaf”, since each value will represent a leaf node in the 1-level hierarchy. Similarly, if no level names are defined for a multi-level coded classification scheme, then default level names will be Level1, Level2, etc., and the default level codes will be the same as the level numbers, i.e. 1,2,3, etc. If a single ItemValue is sufficient to identify the whole path leading from the root node to the identified node, then the keyword “Leaf” can be used as an alias for whatever the assigned level code of that item might be. For example, in the newspaper article example above, the 3rd level leaf value “15052003” could be transmitted as the triple (“NewsArticle”, “Leaf”, “15052003”) and the three associated level names could be derived from the scheme definition.

The CLASSIFICATION_ITEM entity identifies each node in the classification hierarchy. Since the item names need not be unique, the local registry will define a local ItemId for each node, so that the child-to-parent relationships of the nodes can be easily represented. Then given a “Leaf” node value, and no other information, the registry can follow the child-to-parent hierarchy from the given node to the root of the hierarchy to retrieve the entire name sequence for that node.

A constraint on classifications is that each referenced classification scheme must identify a registered item in the same Registry as the classification instance. Then the locator of the identified registry item for the classification scheme can be used to locate a specific, OASIS conformant classification hierarchy in this or in some other Repository. The classification

hierarchy must be defined by and transmitted by an XML document that validates to the XML ClassificationScheme DTD defined in this specification.

Candidate Classification scheme DTD

```
<!ELEMENT ClassificationScheme
    (
        comment-text?,
        scheme-level*,
        scheme-node+
    )>
<!ATTLIST ClassificationScheme schemeURN CDATA #REQUIRED>

<!ELEMENT scheme-level  (comment-text?)>
<!ATTLIST scheme-level
        levelCode  CDATA  #REQUIRED
        levelName  CDATA  #IMPLIED
        levelNbr   CDATA  #IMPLIED >

<!ELEMENT scheme-node
    (
        scheme-item,
        scheme-node*
    ) >


<!ELEMENT scheme-item  (comment-text?)>
<!ATTLIST scheme-item
        itemValue  CDATA  #REQUIRED
        itemName   CDATA  #IMPLIED
        levelNbr   CDATA  #IMPLIED
        levelCode  CDATA  #IMPLIED
        levelName  CDATA  #IMPLIED >

<!ELEMENT comment-text (#PCDATA)>
```

Example scheme DTD

```
<!--
A simple named and coded classification
for Student Status in a University

 FR   Freshman
 SO   Sophomore
 JR   Junior
 SR   Senior
 SP   Special

Subclassification of Special student

 D    Degree seeking
 N    Non-degree seeking
```

```
-->

<ClassificationScheme schemeURN="gov:nist:StudentStatus">
<comment-text>
A named and coded classification scheme for student status.
With Special student status further subclassified.
</comment-text>
<scheme-level levelNbr=”1” levelCode=”Primary”/>
<scheme-level levelNbr=”2” levelCode=”Secondary”/>
<scheme-node>
<scheme-item itemValue="FR" itemName="Freshman"/>
</scheme-node>
<scheme-node>
<scheme-item itemValue="SO" itemName="Sophomore"/>
</scheme-node>
<scheme-node>
<scheme-item itemValue="JR" itemName="Junior"/>
</scheme-node>
<scheme-node>
<scheme-item itemValue="SR" itemName="Senior"/>
</scheme-node>
<scheme-node>
<scheme-item itemValue="SP" itemName="Special"/>
    <scheme-node>
    <scheme-item itemValue="D" itemName="Degree"/>
    </scheme-node>
    <scheme-node>
    <scheme-item itemValue="N" itemName="Non-degree"/>
    </scheme-node>
</scheme-node>
</ClassificationScheme>
```

Example classification XML

```
<classification schemeURN="gov:nist:StudentStatus">
<itemLevelPair
    levelCode=”Primary” itemValue=”SP”/>
<itemLevelPair
    levelCode=”Secondary” itemValue=”N”/>
</classification>
```

X.4 Attribute Types

Attribute values in the information model will be one of the following types:

- Entity References
- Base Types

Some attribute values will be references to entity instances and some will be primitive types representable as character strings, numbers, dates, or dates and times. We have already identified entity references to be one of the following types:

REGISTRY_ITEM
ORGANIZATION
CONTACT
SUBMISSION

To this list we add the Enumeration Entities defined below in Section X.5.

The following definitions identify the base types that will be used in this specification.

CodeText -- a character string consisting entirely of visible characters from an implied character set. The presence of non-visible characters, even blank spaces, is an error. The length of a CodeText string is less than or equal to 50 characters. In XML environments, CodeText may not contain XML characters with special meaning. These include the ampersand (&), etc.

ShortName -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of a ShortName string is less than or equal to 50 characters.

LongName -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of a LongName string is less than or equal to 150 characters.

EmailText -- a character string consisting entirely of visible characters from an implied character set. The presence of non-visible characters, even blank spaces, is an error. The length of an EmailText string is less than or equal to 50 characters.

TelephoneText -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of a TelephoneText string is less than or equal to 50 characters.

AddrLineText -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of an AddrLineText string is less than or equal to 50 characters.

CommentText -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces, tab characters, and return or line feed characters. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of a CommentText string is less than or equal to 250 characters.

DefinitionText -- a character string consisting of visible characters from an implied character set, together with optional use of blank spaces, tab characters, and return or line feed characters. Any other non-visible characters are ignored during processing, and other non-visible characters are stripped out before acceptance as a value of an attribute having this datatype. The length of a DefinitionText string is less than or equal to 5000 characters.

Date -- a value that represents a calendar date, constrained by the natural rules for dates using the Gregorian calendar. A Registry will be able to respond to queries involving minimal date arithmetic, e.g. finding all instances of an entity having dates for a given attribute that fall within a given range, or finding all instances having dates in the past 30 days, or finding all registry items whose registration is scheduled to expire in the next 3 months, etc. More advanced date arithmetic or date manipulation is at the discretion of the Registry.

Date Literal -- a character string value that identifies a specific date. A date literal string is of the form YYYY-MM-DD where YYYY is an integer literal for the year, MM is an integer literal for the month of the year, and DD is an integer literal for the day of the month. Whenever a date value is presented to a user, or requested from a user, the date value is presented or transmitted as the equivalent date literal.

Datetime -- a value that represents a calendar date and a time within that date, with time precision to the second, or finer. Unless otherwise indicated time is Universal Coordinated Time based on a 24-hour clock. A Registry has the capability to convert a Datetime type to a Date type, with the expected loss of precision. Any other datetime arithmetic or datetime manipulation is at the discretion of the Registry.

Datetime Literal -- a character string value that identifies a specific datetime. A datetime literal string is of the form YYYY-MM-DD HH:MM:SS where YYYY is an integer literal for the year, MM is an integer literal for the month of the year, DD is an integer literal for the day of the month, HH is an integer literal for the hour (assuming 24-hour clock), MM is an integer literal for the minute within the hour, and SS is an integer literal for the second within the minute. Whenever a datetime value is presented to a user, or requested from a user, the datetime value is presented or transmitted as the equivalent datetime literal.

SmallInt -- A non-negative integer with value less than 2**16.

URNref -- a character string that conforms to the format of a Uniform Resource Name (URN) as specified by IETF RFC 1241. The length of a URNref string is less than or equal to 150 characters.
(See http://www.ietf.cnri.reston.va.us/rfc/rfc2141.txt?number=2141)

URLref -- a character string that conforms to the format of a Uniform Resource Locator (URL) as specified by W3C. The length of a URLref string is less than or equal to 150 characters.
(See http://www.w3.org/Addressing/URL/5_BNF.html)

FTPref -- a character string that conforms to the format of a File Transfer Protocol (FTP) Uniform Resource Locator (URL) as specified by W3C. The default user name is "anonymous". The length of an FTPref string is less than or equal to 150 characters.
(See http://www.w3.org/Addressing/URL/5_BNF.html)

FILEref -- a character string that is a URLref or an FTPref.

MIMEtype – a character string that identifies a MIME type, as listed in the official list of all MIME media-types assigned by the IANA (Internet Assigned Number Authority). The length of a MIMEtype string is less than or equal to 150 characters.
(See ftp://ftp.isi.edu/in-notes/iana/assignments/media-types/media-types)

X.5 Enumeration Entities

Many of the attributes declared to be of type CodeText will have an additional constraint that the CodeText value match a specific value from a pre-defined list of values. The Registry information model represents such lists as entities with a fixed number of entity instances. We define such entities to be enumeration entities.

The paragraphs of this section define the structure and specify the contents of each enumeration entity for OASIS.

DefinitionSource

SourceCode	SourceName	Description
EBXML		Author of the EBXML Registry/Repository specification.
IEEE_LOM	IEEE Learning Technology - Learning Object Model	Author of the IEEE LOM Registry specification.
IMS		Author of the IMS Registry specification.
OASIS	Organization for the Advancement of Structured Information Standards	Author of the OASIS Registry/Repository specification.

PrimaryClassification

Source	Code	Name	Description
OASIS	defn	Definition	An XSGML definition document.
OASIS	inst	Instance	An XSGML instance document.
OASIS	pkg	Package	A package of OASIS registered items.
OASIS	other	Other	A document related to a registered item.

SubClassification

Source	Code	Name	Description
OASIS	CharEntSet	character-entity-set	
OASIS	RDFschema	rdf-schema	
OASIS	SGMLattrib	sgml-attribute	
OASIS	SGMLattSet	sgml-enumerated-attribute-set	
OASIS	SGMLattVal	sgml-enumerated-attribute-value	
OASIS	SGMLdtd	sgml-dtd	
OASIS	SGMLelem	sgml-element	

OASIS	SGMLparm	sgml-parameter-entity	
OASIS	SOXschema	sox-schema	
OASIS	XDRschema	xdr-schema	
OASIS	XMLattrib	xml-attribute	
OASIS	XMLattSet	xml-enumerated-attribute-set	
OASIS	XMLattVal	xml-enumerated-attribute-value	
OASIS	XMLdtd	xml-dtd	
OASIS	XMLelem	xml-element	
OASIS	XMLparm	xml-parameter-entity	
OASIS	XMLschema	xml-schema	

RelatedDataType

Source	Code	Name	Description
OASIS	Changelog	changelog	
OASIS	CvrLetter	cover-letter	
OASIS	DistribHP	distribution-home-page	
OASIS	DocSet	documentation-set	
OASIS	DocSetInfo	documentation-set-information	
OASIS	DSSLSS	dssl-style-sheet	
OASIS	DSSLSSinfo	dssl-style-sheet-information	
OASIS	EmailInfo	email-discussion-list-information	
OASIS	Example	example	
OASIS	ExpSet	example-set	
OASIS	ExpSetInfo	example-set-information	
OASIS	FAQ	faq	
OASIS	Other	other	
OASIS	PublicText	public-text	
OASIS	ReadMe	readme	
OASIS	RefMan	reference-manual	
OASIS	RegInfo	registration-information	
OASIS	RelDataGrp	related-data-group	
OASIS	SchemaHP	schema-home-page	
OASIS	SGMLdeclar	sgml-declaration	
OASIS	SGMLopnCat	sgml-open-catalogue	
OASIS	StyleSinfo	style-sheet-information	
OASIS	ToolInfo	tool-information	
OASIS	UserGuide	user-guide	
OASIS	WhitePaper	white-paper	
OASIS	XSLSS	xsl-style-sheet	
OASIS	XSLSSinfo	xsl-style-sheet-information	

RegistrationStatus

Source	Code	Name	Description
OASIS	expired	Expired	
OASIS	registered	Registered	
OASIS	replaced	Replaced	
OASIS	submitted	Submitted	
OASIS	superseded	Superseded	
OASIS	withdrawn	Withdrawn	

Stability

Source	Code	Name	Description
OASIS	compatible	Compatible	Registered object may be replaced only by an upward compatible object.
OASIS	dynamic	Dynamic	Registered object may change at any time.
OASIS	static	Static	Registered object will not change before expiration.

PaymentStatus

Source	Code	Name	Description
OASIS	debit	Debit	The registered object is available on-line, but requires payment of a fee before access is granted.
OASIS	free	Free	The registered object is freely available with no password or payment required.
OASIS	password	Password	The registered object is free, but password is required for retrieval.

AssociationType

Source	Code	Name	Description
OASIS	contains	Contains	Given item is a package that contains the associated item.
OASIS	related	Related	Given item is related to associated item and provides supplemental information for the associated item.
OASIS	supersedes	Supersedes	Given item supersedes associated item.
OASIS	uses	Uses	Given item uses associated item.

ContactAvailability

Source	Code	Name	Description
OASIS	priv	Private	Contact available only to SO and RA.
OASIS	prot	Protected	Contact available only to RA's.
OASIS	pub	Public	Contact available to all users of registry.

ContactRole

Source	Code	Name	Description
OASIS	admin	Administrative	Contact addresses only administrative issues.
OASIS	all	All Issues	Contact addresses all issues.
OASIS	tech	Technical	Contact addresses only technical issues.

X.6 Entity Semantics

X.6.1 REGISTRY_ITEM

Structure

AttributeName	AttributeType	Presence
AssignedURN	URNref	Mandatory
CommonName	ShortName	Mandatory
Version	CodeText	
ObjectLocation	FILEref	
DefnSource	CodeText	Mandatory
PrimaryClass	CodeText	Mandatory
SubClass	CodeText	
RelatedType	CodeText	
MimeType	MIMEtype	Mandatory
RegStatus	CodeText	Mandatory
StatusChg	Datetime	Mandatory
Stability	CodeText	Mandatory
PayStatus	CodeText	Mandatory
ExpiryDate	Date	Mandatory
Description	DescriptionText	Mandatory
SubmittingOrg	ORGANIZATION	Mandatory
ResponsibleOrg	ORGANIZATION	Mandatory
PublicComments	CommentText	

Semantic Rules

1. The AssignedURN name is created and assigned by the RA. It is created to be unique within all OASIS conforming Registry/Repository implementations. When an SO makes a submission to the Registry, it provides a local reference name of type CodeText. If possible, the RA uses that name to construct the AssignedURN.

2. The CommonName is provided by the SO.

3. The Version is provided by the SO.

4. The ObjectLocation is a URL that identifies the location of the registered object. If the RA is also a repository for the item, then the RA will download the item, store it in the Repository, and create an anonymous FTP locator as a value for ObjectLocation. If the Registry is not also a Repository, then the ObjectLocation is provided by the SO and the RA has no further responsibility. Depending on the value of the PayStatus attribute, the ObjectLocation URL may need to be supplemented with payment or password information before the file

containing the object can be retrieved. Some Registries may distinguish themselves by also being the Repository for any free, publicly available objects described in the Registry.

5. The DefnSource takes its value from the DefinitionSource enumeration entity that identifies a collection of accredited Registry/Repository development organizations. If the Registry claims conformance the OASIS Registry/Repository, then the DefnSource is OASIS.

6. The PrimaryClass is provided by the SO and takes its value from the PrimaryClassification enumeration entity. If the DefnSource is OASIS, then PrimaryClass identifies an element of the set {Definition, Instance, Package, Other}.

   Let G be a registry item whose DefnSource is OASIS.

   Case:

   a) If the PrimaryClass of G identifies Definition, then the Submitting Organization declares that the registered object identified by G is an xsgml definition object. The SubClass of G will identify the specific kind of definition object it is.

   b) If the PrimaryClass of G identifies Instance, then the Submitting Organization declares that the registered object identified by G is an instance of some registered xsgml definition object. The SubClass of G identifies its type. There must exist a registry item A in the same registry as G satisfying the following conditions: A is the associated item in a *uses* association with G as the given item, A.PrimaryClass = Definition, A.SubClass = G.SubClass, and A.RegStatus=Registered.

   c) If the PrimaryClass of G identifies Package, then the Submitting Organization declares that the registered object identified by G is an OASIS package, subject to the OASIS specific rules for creating, populating, manipulating, and transmitting packages.

   d) If the PrimaryClass of G identifies Other, then the Submitting Organization declares that the registered object identified by G is not an OASIS package and has a representation other than as an xsgml definition object or an xsgml instance object.

7. The SubClass is provided by the SO and takes its value from the SubClassification enumeration entity. If the DefnSource is OASIS, then SubClass, if it exists, identifies an element of the set {char-entity-set, rdf-schema, sgml-attribute, sgml-enum-attr-set, sgml-enum-attr-value, sgml-dtd, sgml-element, sgml-param-entity, sox-schema, xdr-schema, xml-attribute, xml-enum-attr-set, xml-enum-attr-value, xml-dtd, xml-element, xml-param-entity, xml-schema}.

   Let G be a registry item whose DefnSource is OASIS.

   Case:

a) If the PrimaryClass of G identifies Definition, then G.SubClass exists and G is a definition object of the identified type.

b) If the PrimaryClass of G identifies Instance, then G.SubClass exists and G is an instance object of the identified type.

c) If the PrimaryClass of G identifies Package or Other, then G.SubClass is undefined.

8. The RelatedType is provided by the SO and takes its value from the RelatedDataType enumeration entity. If the DefnSource is OASIS, then RelatedType, if it exists, identifies an element of the set {reference-manual, user-guide, white-paper, faq, example, example-set, example-set-information, changelog, readme, email-discussion-list-information, tool-information, schema-home-page, distribution-home-page, registration-information, other}.

   Let G be a registry item whose DefnSource is OASIS. If G.RelatedType exists, then there must exist a registry item A in the same registry as G where A is the associated item in a *related* association with G as the given item.

9. The MimeType is provided by the SO. If G is a registry item whose DefnSource is OASIS, then:

   Case:

   a) If the PrimaryClass of G identifies Definition, Instance, or Package, then G.Representation must be a MIME text type. By default the type is text/plain.

   b) If the PrimaryClass of G identifies Other, then G.Representation can be any MIME type.

10. The RegStatus is provided by the RA with its value taken from the RegistrationStatus enumeration entity. For OASIS registrations, that entity includes the values {Submitted, Registered, Superseded, Replaced, Withdrawn, Expired}. The StatusChg attribute is the datetime that the RA last approved a change for RegStatus.

    Let G be a registry item whose DefnSource is OASIS.

    Case:

    a) If the RegStatus of G identifies Submitted, then G and its associated metadata is not visible to anyone other than the SO and the RA.

    b) If the RegStatus of G identifies Registered, then the RA has approved for registration the registered object identified by G. If the RA is also a Repository, then the approval process includes checking the registered object to ensure that it validates as the xsgml item identified by G.PrimaryClass and G.SubClass and that the G.MimeType declaration is appropriate.

c) If the RegStatus of G identifies Superseded, then the RA has received and acted upon a request from the SO that submitted G to supersede it with a new registered object. The original registered object remains available for continued use.

d) If the RegStatus of G identifies Replaced, then the RA has received and acted upon a request from the SO that submitted G to replace it with a new registered object. The original registered object is no longer available, although its metadata will remain in the registry for an indefinite period of time. G.ObjectLocation will now locate the new object.

e) If the RegStatus of G identifies Withdrawn, then the RA has received and acted upon a request from the SO that submitted G to withdraw it. The original registered object is no longer available, although its metadata will remain in the registry for an indefinite period of time. G.ObjectLocation will now have no value.

f) If the RegStatus of G identifies Expired, then G.ExpiryDate has passed with no reaafirmation action from the SO. The original registered object may or may not be available, although the registry item G and other relevant metadata will remain in the registry for an indefinite period of time.

11. The Stability attribute is provided by the SO with its value taken from the Stability enumeration entity. For OASIS registrations, that entity includes the values {Static, Dynamic, Compatible}.

    Let G be a registry item whose DefnSource is OASIS.

    Case:

    a) If the Stability of G identifies Static, then the SO declares that the registered object identified by G will not be replaced or withdrawn before the ExpiryDate. It is the responsibility of the RA to ensure as best it can that this declaration is not violated.

    b) If the stability of G identifies Dynamic, then the SO declares that the registered object identified by G may change without notice, possibly in incompatible ways.

    c) If the stability of G identifies Compatible, then the SO declares that the registered object defined by G will not be replaced with an incompatible object. If the registerd object is a DTD, then new element and attribute declarations may be added to the DTD, but a document that validates to the original DTD will also validate to its replacement. The notion of *compatibility* needs to be examined for all xsgml definition and instance objects and for OASIS packages!

12. The PayStatus attribute is provided by the SO with its value taken from the Payment_Status enumeration entity. For OASIS registrations, that entity includes the values {Free, Password, Debit}. It is expected that these options will expand as online payment alternatives become standardized.

Let G be a registry item whose DefnSource is OASIS.

Case:

a) If the PayStatus of G identifies Free, then the URL of G.ObjectLocation follows an anonymous protocol that allows retrieval of the registered object with no password or payment obstructions.

b) If the PayStatus of G identifies Password, then access to the object is free, but a password is required. The procedure for obtaining a password is not part of this specification.

c) If the PayStatus of G identifies Debit, then it is possible to purchase the registered item on-line and then download it using the URL of G.ObjectLocation. The procedure for handling the credit card transaction is not part of this specification.

13. The ExpiryDate is assigned by the RA upon suggestion from the SO. Some RA's may follow very definite procedures for the length of time an object can remain registered before an affirmation or withdrawal action is required. If the Expiration date passes without an SO action, then the RA initiates an expiration action.

14. The Description is provided by the SO.

15. The SubmittingOrg identifies the organization submitting the registered object. It points to a unique instance of the ORGANIZATION entity. On presentation of this information, the RA substitutes the CommonName of the organization. The SO must be known to the RA before it can make submissions to the Registry/Repository, and they each know of a unique URN for the other. The process for becoming known is not part of this specification.

16. The ResponsibleOrg identifies the organization responsible for the formal specification of the registered object. It points to a unique instance of the ORGANIZATION entity. The RO may be a formal accredited standards development organization or it may be the SO. On presentation of this information, the RA substitutes the CommonName of the organization.

17. The PublicComment may be suggested by the SO, but it is supplied by the RA. In most cases the comment will explain some administrative process that cannot be clearly determined from the standardized information. For example, this comment may explain how long the metadata for a replaced or withdrawn object remains available, or how long an expired object remains available before it is deleted.

X.6.2 ASSOCIATION

Structure

AttributeName	AttributeType	Presence
GivenItemRole	CodeText	Mandatory
AssocItemURN	URNref	Mandatory
AssocItemId	REGISTRY_ITEM	
Comment	CommentText	

Semantic Rules

1. The GivenItemRole is provided by the SO with its value taken from the AssociationType enumeration entity. For OASIS registrations, that entity includes the values {Uses, Supersedes, Contains, Related}.

2. The AssocItemURN is provided by the SO. It must identify the AssignedURN of some registry item in some OASIS conformant Registry. If the Registry is not the local one, then the RA has no responsibility to ensure that it identifies a relevant item.

3. The AssocItemId is present if and only if the registry item identified by the AssocItemURN is a registry item in the same registry as the association instance. In that situation, AssocItemURN and AssocItemId identify the same registry item.

4. Let G be a registry item whose DefnSource is OASIS and let X be an association instance linked to G with G as the GivenItem.

   Case:

   a) If X.GivenItemRole identifies Uses, then the SO declares that G *uses* the registry item identified by X.AssocItemURN. The RA is under no obligation to check whether this declaration is or remains true.

   b) If X.GivenItemRole identifies Supersedes, then the SO declares that G *supersedes* the registry item identified by X.AssocItemURN. If A is that item, then A must be in the same registry as G and A.RegStatus must be Superseded.

   c) If X.GivenItemRole identifies Contains, then the SO declares that G *contains* the registry item identified by X.AssocItemURN. If A is that registry item, then A must be in the same registry as G and A.PrimaryClass must be Package.

d) If X.GivenItemRole is Related, then the SO declares that G is *related* data for the registry item identified by X.AssocItemURN. The RA is under no obligation to check whether this declaration is or remains true.

5. The Comment is provided by the SO. It may explain in more detail the relationship between the given and associated registry items.

X.6.3 RELATED_DATA

Structure

AttributeName	AttributeType	Presence
DataName	ShortName	Mandatory
DataLocation	URLref	Mandatory
RelatedType	CodeText	Mandatory
Comment	CommentText	

Semantic Rules

1. The DataName attribute is provided by the SO. It is intended that this be the link name for the DataLocation if related data items are presented visually to a user.

2. The DataLocation is provide by the SO. This link is not under the control of the RA and it may point anywhere. The RA is under no obligation to ensure that the link is a valid one.

3. The RelatedType is provided by the SO and takes its value from the RelatedDataType enumeration entity. It may include values not defined by OASIS.

4. The Comment is provided by the SO. It may further explain the relationship between the related data instance and the registry item it is linked to.

X.6.4 CLASSIFICATION

Structure

AttributeName	AttributeType	Presence
SchemeURN	URNref	Mandatory
LevelCode	CodeText	Mandatory
ItemValue	CodeText	Mandatory
Comment	CommentText	

Semantic Rules

1. The SchemeURN is provided by the SO. It must identify the AssignedURN of some registry item in the same Registry as the classification instance, and that registry item must identify a registered classification scheme.

2. The LevelCode is provided by the SO, or the RA fills it in by default, depending on the type of classification scheme identified by the SchemeURN. If that classification scheme does not require multiple levels, then the default value for LevelCode is “Leaf”.

3. The ItemValue attribute is provided by the SO. It must be a legal ItemValue as defined by the registered classification scheme.

4. The optional Comment is supplied by the SO. It might give a purpose for using the identified classification scheme, or explain why multiple values are given for the same level, or qualify the classification in some other way.

X.6.5 ORGANIZATION

Structure

AttributeName	AttributeType	Presence
OrgURN	URNref	Mandatory
OrgFullName	LongName	Mandatory
CommonName	ShortName	
OrgURL	URLref	
ParentOrg	ORGANIZATION	Mandatory
AddrLine1	AddrLineText	
AddrLine2	AddrLineText	
AddrLine3	AddrLineText	
City	ShortName	
StateProv	ShortName	
Country	ShortName	
PostalCode	CodeText	
Email	EmailText	
Telephone	TelephoneText	
Fax	TelephoneText	
Comment	CommentText	

Semantic Rules

[TO BE COMPLETED]

X.6.6 CONTACT

Structure

AttributeName	AttributeType	Presence
ContactName	ShortName	Mandatory
OrgId	ORGANIZATION	Mandatory
OrgRole	CodeText	Mandatory
SubmitId	SUBMISSION	
ReguestNbr	SmallInt	
Availability	CodeText	Mandatory
ContactRole	CodeText	Mandatory
Email	EmailText	
Telephone	TelephoneText	
Fax	TelephoneText	
Comment	CommentText	

Semantic Rules

1) The ContactName is provided by the SO. It identifies a person or office associated with the SO able to speak to technical or administrative questions about the submitted item.

2) The OrgId is provided by the RA. It is derived from the OrgURN provided by the SO as part of a submission or request.

3) The OrgRole is provided by the SO, with its value taken from the OrganizationRole enumeration entity. For OASIS registrations, that entity identifies one of the values {SO, RA, RO}.

4) The SubmitId is provided by the RA. If this contact was provided as part of a submission from the SO to the RA, then it references that submission.

5) The RequestNbr is provided by the RA. If this contact was provided as part of a reuest in a submission from the SO to the RA, then it references that request.

6) The Availability code is provided by the SO with its value taken from the ContactAvailability enumeration entity. For OASIS registrations, that entity indentifies one of the values {Private, Protected, Public}. The default value is Public.

   If the Availability value is:

   Case:

a) Private, then the RA will not reveal the <simple-contact> to any other organization.

b) Protected, then the RA may reveal the <simple-contact> to other legitimate registration authorities. [Note: legitimate left purposely undefined for now.]

c) Public, then the RA may reveal the <simple-contact> to any user of the registry maintained by the RA.

7) The ContactRole is provided by the SO with its value taken from the ContactRole enumeration entity. For OASIS registrations, that entity identifies one of the values {Administrative, Technical, All Issues}. The default value is All Issues.

   If the ContactRole value is:

   Case:

   a) Administrative, then the contact is prepared to address administrative questions related to the submitted item.

   b) Technical, then the <simple-contact> is prepared to address technical questions related to the submitted item.

   c) All Issues, then the <simple-contact> is prepared to address all issues related to the submitted item.

8) The Email address is provided by the SO. It is a global email address that is the best address to use when trying to contact someone who can respond to issues involving the submitted item.

9) The Telephone number is provided by the SO. It is a single international telephone number, possibly with an extension, that is the best number to use when trying to contact a person who can speak to issues involving the submitted item.

10) The Fax number is provided by the SO.

11) The Comment is provided by the SO. It explains in natural language the relationship of the contact to the item or items submitted for registration. It may explain further the role of the contact.

X.6.7 etc.

THIS SECTION IS INCOMPLETE

STILL NEED SEMANTIC RULES FOR THE FOLLOWING ENTITIES

ALTERNATE_NAME
ALTERNATE_DESCRIPTION
SUBMISSION
REQUEST
IMPACT
CLASSIFICATION_SCHEME
CLASSIFICATION_LEVEL
CLASSIFICATION_ITEM
META_ARCHIVE