Semantic Refinement Tool:

Software Design Document

Editor: Yunsu Lee, NIST/UMBC

Creation Date: 05/12/2014

Last Updated: 7/21/2014 5:41 PM

Draft / Version: 0.1

Status: IN PROCESS

Contributors:

Serm Kulvatunyou, NIST

Jaehun Lee, NIST/POSTECH

Michael Rowell, Oracle

Steffen Fohn, ADP

David Connelly, OAG

Ralph Hertlien, OAG/Boeing

Pat O’Connor, Infor

Ian Hedges, E2OPEN

Alonso Moncayo, E2OPEN

Change Tracking

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Author | Version | Change Detail |
| 05/12/2014 | Yunsu Lee | 0.1 | Created the first draft. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Table of Contents

[Change Tracking 2](#_Toc387651765)

[Table of Contents 3](#_Toc387651766)

[1. Introduction 5](#_Toc387651767)

[1.1 Purpose 5](#_Toc387651768)

[1.2 Scope 5](#_Toc387651769)

[1.3 Definitions, Acronyms and Abbreviations 5](#_Toc387651770)

[1.4 References 5](#_Toc387651771)

[2. Architectural Goals and Constraints 6](#_Toc387651772)

[2.1 Technical Platform 6](#_Toc387651773)

[2.2 Security 6](#_Toc387651774)

[2.3 Persistence 6](#_Toc387651775)

[2.4 Reliability/Availability 6](#_Toc387651776)

[2.5 Performance 6](#_Toc387651777)

[2.6 Internationalization 6](#_Toc387651778)

[3. Use-Case View 7](#_Toc387651779)

[3.1 Import OAGIS 10 Model into the Database 7](#_Toc387651780)

[3.1.1 Import OAGIS 10 Model into the Database 7](#_Toc387651781)

[3.1.2 Verify the OAGIS 10 Model import 7](#_Toc387651782)

[3.2 BIEs Management 7](#_Toc387651783)

[3.2.1 Create a top-level ABIE 7](#_Toc387651784)

[3.2.1.1 Expand/Collapse a descendant ASBIE 7](#_Toc387651785)

[3.2.1.2 Expand/Collapse a descendant BBIE 7](#_Toc387651786)

[3.2.1.3 Customize a child ASBIE 7](#_Toc387651787)

[3.2.1.4 Customize a child BBIE 7](#_Toc387651788)

[3.2.2 Save a top-level ABIE 7](#_Toc387651789)

[3.2.3 View and Edit a top-level ABIE 7](#_Toc387651790)

[3.2.4 Create a top-level ABIE by copy 7](#_Toc387651791)

[3.3 Generate an OAGIS Expression 7](#_Toc387651792)

[3.3.1 Generate a standalone XML Schema for a top-level ABIE 7](#_Toc387651793)

[3.4 Code List Management 7](#_Toc387651794)

[3.4.1 Create a new blank BIE code list 7](#_Toc387651795)

[3.4.2 Create a new BIE code list by restriction 7](#_Toc387651796)

[3.4.3 Save a working BIE code list 7](#_Toc387651797)

[3.4.4 Edit a BIE code list 7](#_Toc387651798)

[3.5 Manage CCs and DTs 7](#_Toc387651799)

[3.5.1 View CCs 7](#_Toc387651800)

[4. Logical View 8](#_Toc387651801)

[4.1 Overview 8](#_Toc387651802)

[4.2 Design Packages 8](#_Toc387651803)

[5. Process View 9](#_Toc387651804)

[6. Deployment View 10](#_Toc387651805)

[7. Implementation View 11](#_Toc387651806)

[7.1 Overview 11](#_Toc387651807)

[7.2 Layers 11](#_Toc387651808)

[7.2.1 Presentation Layer 11](#_Toc387651809)

[7.2.2 Control layer 11](#_Toc387651810)

[7.2.3 Resource Layer 11](#_Toc387651811)

[7.2.4 Domain Layer 11](#_Toc387651812)

[7.2.5 Common Layer 11](#_Toc387651813)

[8. Data View 12](#_Toc387651814)

# Introduction

## Purpose

## Scope

## Definitions, Acronyms and Abbreviations

## References

# Architectural Goals and Constraints

## Technical Platform

AAA

## Security

## Persistence

## Reliability/Availability

## Performance

## Internationalization

# Use-Case View

## Import OAGIS 10 Model into the Database

Create a default user with user id “OAGISUser” with password the same as the user id.

For all XPATH expressions below, if the node does not exist, the value should be blank (not a “null” string as Java may convert a non-existing node to a “null” string) unless otherwise specified.

### Import OAGIS 10 Model into the Database

#### Create an OAGIS user

Create a default OAGIS user. All OAGIS model content will belong to this user. Populate the User table as follows.

User\_ID = Auto-generate database key.

User\_Name = “oagis”

Password = “oagis”

Name = “Open Applications Group Developer”

Organization = “Open Applications Group”

#### Populate CDT data

Create a script to populate Core Data Types (CDTs) data based on the CCTS Data Type Catalog V3 (CCTS DTC3). Data in this section will not be coming from any OAGIS schema.

##### Populate the XSD\_BuiltIn\_Type table

Populate this table with W3C XSD built-in datatypes from the types hierarchy in the figure below (from <http://www.w3.org/TR/xmlschema-2/#built-in-datatypes>). At this point only bring in the types in the polygon.

XSD\_BuiltIn\_Type\_ID = Auto-generate database key.

BuiltIn\_Type = Take the names from the types hierarchy and prefix with ‘xsd:’, e.g., ‘xsd:token’.

Name = Take the names from the types hierarchy and apply a few separation patterns as follows.

* Use all lower case letters.
* Generally separate the camel case with a space instead, e.g., ‘positiveInteger’ -> ‘positive integer’.
* g = Gregorian

Subtype\_Of\_XSD\_BuiltIn\_Type\_ID = Self-referenced foreign key to the XSD\_BuiltIn\_Type\_ID of the parent type in the hierarchy.



##### ***Populate the CDT\_Primitive table***

Populate the CDT\_Primitive table with information from the table in section 3.2.1 of CCTS DTC3. Use the Name column for the CDT\_Primitive.Name.

##### ***Populate CDTs in the DT table***

Populate the DT table with CDT information from the CCTS DTC3 as follows.

DT\_ID = Auto-generate database key.

DT\_GUID is generated one time and then fixed.

DT\_Type = “0” (note: 0 indicates CDT).

Version\_Number = “1.0”

Previous\_Version\_DT\_ID = Leave blank.

Revision\_Type = “0” (note: 0 means NEW).

Data\_Type\_Term = Each CDT in CCTS DTC3 section 4 indicates this, e.g., “Amount”.

Qualifier = Blank.

Based\_DT\_ID = Blank.

DEN = Take the value from each CDT subsection in CCTS DTC3 section 4, e.g., “Amount. Type”.

Content\_Component\_DEN = Take the value from each CDT subsection in CCTS DTC3 section 4 indicates this, e.g., “Amount. Content”.

Definition = “CDT V3.1.” + Combine the texts from the Definition and Remarks sections from each CDT in CCTS DTC3.

Content\_Component\_Definition = Take the value from the CCTS DTC3 in the Definition column of the table in section 4.X.7.

Revision\_Documentation = Blank.

Revision\_State = “1” (note: 1 means published).

Created\_By\_User\_ID = “oagis”.

Last\_Updated\_By\_User\_ID = “oagis”.

Creation\_Timestamp = Current time.

Last\_Update\_Timestamp = Same as Creation\_Timestamp.

##### ***Populate the CDT\_Allowed\_Primitive table***

Populate the table with CDT information from the CCTS DTC3 as follows. This table capture allowed primitives of the CDT’s Content Component. Each CDT’s Content Component typically allows a few primitives, so there will be multiple records per CDT.

CDT\_Allowed\_Primitive\_ID = Auto-generate database key.

CDT\_ID = Foreign key from the DT table corresponding to the CDT being recorded.

CDT\_Primitive\_ID = Foreign key from the CDT\_Primitive table corresponding to the Allowed Primitive column in each of the CDT Content Component section/table in CCTS DTC3.

##### ***Populate the CDT\_Allowed\_Primitive\_Expression\_Type\_Map***

For each row in the CDT\_Allowed\_Primitive table, there will be zero or more rows in this table.

CDT\_Primitive\_Expression\_Type\_Map\_ID = Auto-generate database key.

CDT\_Allowed\_Primitive\_ID = Foreign key to CDT\_Allowed\_Primitive.CDT\_Allowed\_Primitive\_ID.

XSD\_BuiltIn\_Type\_ID = Foreign key to XSD\_BuiltIn\_Type. XSD\_BuiltIn\_Type\_ID

Use the following map between the CDT primitives and XSD built-in types:

Note: Double CDT Primitive is mapped to both xsd:double and xsd:float. This is under the assumption that xsd:float is technical a kind of Double, although xsd:float is not a subtype of the xsd:double in the XML schema built-in type hierarchy.

|  |  |
| --- | --- |
| **CDT Primitive** | **XSD Built-in type** |
| Binary | xsd:base64Binary |
| Binary | xsd:hexBinary |
| Boolean | xsd:boolean |
| Decimal | xsd:decimal |
| Double | xsd:double |
| Double | xsd:float |
| Float | xsd:float |
| Integer | xsd:integer |
| NormalizedString | xsd:normalizedString |
| String | xsd:string |
| TimeDuration | xsd:token |
| TimeDuration | xsd:duration |
| TimePoint | xsd:token |
| TimePoint | xsd:dateTime |
| TimePoint | xsd:date |
| TimePoint | xsd:time |
| TimePoint | xsd:gYearMonth |
| TimePoint | xsd:gYear |
| TimePoint | xsd:gMonthDay |
| TimePoint | xsd:gDay |
| TimePoint | xsd:gMonth |
| Token | xsd:token |

All CDTs maps to all XSD built-in types according to their primitives and the primitive-to-XSD-built-in-type map in the table above except for the Date and Time CDTs. Date should be mapped to everything in the Timepoint primitive except the xsd:dateTime. Time CDT should be mapped to only xsd:token and xsd:time in the Timepoint primitive. The resulting data should represent information like the example table below.

|  |  |  |
| --- | --- | --- |
| From CDT\_Allowed\_Primitive | | XSD\_BuiltInType |
| CDT\_DEN | *CDT\_Primitive* |  |
| Amount | Decimal | xsd:decimal |
| Amount | Double | xsd:double |
| Amount | Float | xsd:float |
| Amount | Integer | xsd:integer |
| Date | TimePoint | xsd:token |
| Date | TimePoint | xsd:date |
| Date | TimePoint | xsd:gYear |
| Date | TimePoint | xsd:gYearMonth |
| Date | TimePoint | xsd:gMonthDay |
| Date | TimePoint | xsd:gDay |
| Date | TimePoint | xsd:gMonth |

##### ***Populate CDTs’ supplementary component in the DT\_SC table***

Populate the table with CDT SC information from the CCTS DTC3 as follows. Sections 4.X.8 contains information for this table.

DT\_SC\_ID = Auto-generate database key.

DT\_SC\_GUID = Generate a GUID.

Property\_Term = Take the value from the Supplementary Components subsection of each CDT section in the CCTS DTC3, e.g., “Currency”.

Representation\_Term = Take the value from the Supplementary Components subsection of each CDT section in the CCTS DTC3, e.g., “Code”.

Definition = Take the value from the Supplementary Components subsection of each CDT section in the CCTS DTC3.

Owner\_DT\_ID = Foreign key to the DT table DT\_ID column for the corresponding CDT.

Min\_Cardinality = Take the value from the Supplementary Components subsection of each CDT section in the CCTS DTC3.

Max\_Cardinality = Take the value from the Supplementary Components subsection of each CDT section in the CCTS DTC3.

Based\_DT\_SC\_ID = Blank.

##### Populate the CDT\_SC\_Allowed\_Primitive table

Populate the table according the column Allowed Primitives of the table in sections 4.X.8 of CCTS DTC3.

CDT\_SC\_Allowed\_Primitive\_ID = Auto-generate database key.

CDT\_SC\_ID = Foreign key to the DT\_SC.DT\_SC\_ID representing the target SC.

CDT\_Primitive\_ID = Foreign key to the CDT\_Primitive.CDT\_Primitive\_ID represents the CDT primitives in the Allowed Primitives column of the table in sections 4.X.8 of CCTS DTC3.

isDefault = This column indicates whether the associated CDT primitive is a default as documented in the CCTS DTC3. The values of this column are in sections 4.X.9.Y (Core Value Domains subsections). In each of the subsection, there is a table where the Allowed Primitive column either has only one allowed primitive or multiples. If there is only one allowed primitive, then that is the default, i.e., set the value to TRUE for that primitive (the rest of the allowed primitive in section 4.X.8 should be set as FALSE). If there are multiple, the table has another column indicating which primitive is the default.

Note: Because the value domains of the SCs can be viewed as tying to one of the CDTs’ content component, the same primitive expression type map (in the CDT\_Allowed\_Primitive\_Expression\_Type\_Map) can be used for SCs. In other words, there is no need for a separate CDT SC Allowed Primitive Expression Type Map table.

##### Populate the CDT\_SC\_Allowed\_Primitive\_Expression\_Type\_Map table

This table is similar to the CDT\_Allowed\_Primitive\_Expression\_Type\_Map table in section (3.1.1.2.5), but it is for the SC primitive in the above section.

For each row in the CDT\_SC\_Allowed\_Primitive table, there will be zero or more rows in this table.

CDT\_SC\_Primitive\_Expression\_Type\_Map\_ID = Auto-generate database key.

CDT\_SC\_Allowed\_Primitive\_ID = Foreign key to CDT\_SC\_Allowed\_Primitive.CDT\_SC\_Allowed\_Primitive\_ID.

XSD\_BuiltIn\_Type\_ID = Foreign key to XSD\_BuiltIn\_Type. XSD\_BuiltIn\_Type\_ID

Use the CDT Primitive to XSD Built-in type in section 3.1.1.2.5 to populate the XSD\_BuiltIn\_Type\_ID column according to the SC allowed primitives.

#### Import Identifier Scheme

The content to be imported a merge of two schemas - <http://www.unece.org/uncefact/codelist/standard/UNECE_AgencyIdentificationCode_D13A.xsd> and IdentifierScheme\_AgencyIdentification\_3055\_D08B.xsd. This is because the code list schema uses some of the Agency ID that does not exist in version D08B. The merged schema should use the schema header, element names, and type names from the OAG schema but include all the ID values from the UNECE schema (a diff may be run to make sure of the changes needed to apply to the UNECE schema to match the OAG naming pattern).

##### Populate the Agency\_ID\_List table

There is only one record to be created here.

Agency\_ID\_List\_ID = Auto-generate database key.

Agency\_ID\_List\_GUID = //xsd:simpleType[endsWith(@name, “IdentificationContentType”)]/@id

Enumeration\_Type\_GUID = //xsd:simpleType[endsWith(@name, “EnumerationType”)]/@id

Name = “Agency Identification”.

List\_ID = “3055”

Agency\_ID = Foreign key to the Agency\_ID\_List\_Value table where the Value is “6”. This column will need to be populated after populating the Agency\_ID\_List\_Value table.

Version\_ID = “D08B”.

Definition = Copy the text from the top of the schema at <http://www.unece.org/uncefact/codelist/standard/UNECE_AgencyIdentificationCode_D08B.xsd>, where it says “Schema agency: UN/CEFACT Schema version: 3.3……”

##### Populate the Agency\_ID\_List\_Value table

The content shall be taken from the element //xsd:simpleType[endsWith(@name, “EnumerationType)]. Assume this is the context element for XPATH expressions below.

Agency\_ID\_List\_Value\_ID = Auto-generate database key.

Value = Move to descendant context elements xsd:enumearation. For each descendant xsd:enumeration element, populate this column with @value.

Name = Assuming still in the xsd:enumeration context element, populate this column with //ccts:Name.

Definition = Assuming still in the xsd:enumeration context element, populate this column with //ccts:Definition.

Owner\_Agency\_ID\_List\_ID = Foreign key to the Agency\_ID\_List\_ID populated in the previous section.

#### Import Code Lists

Import code list files in the *Code List Folder* at Model/Platform/2\_0/Common/CodeLists folder. Two tables are used in this import including Code\_List and Code\_Value. Code\_List stores the meta-data about the code list and the Code\_Value table stores all the code values.

##### Populate Code\_List table

Each schema in the Code List Folder has one or more xsd:simpleType with the following naming pattern <X>CodeContentType, <X> is the varying part. For example, CodeLists\_1.xsd has oacl\_ActionCodeContentType; and CodeList\_CharacterSetCode\_IANA\_20070514.xsd has clmIANACharacterSetCode20070514\_CharacterSetCodeContentType. Each of these must have a corresponding entry in the Code\_List table as described below. Note that XPATH expression below assumes that the context is that xsd:simpleType. For each entry in the Code\_List table, populate the Code\_List\_Value table as described in the next section.

Code\_List\_ID = Auto-generate database key.

Code\_List\_GUID = ./@id.

Enumeration\_Type\_GUID = ../xsd:simpleType[@name = concat(<X>, “EnumerationType”)]/@id.

Name = /@name. Ex. Name of the oacl\_ActionCodeContentType is “Action Code”.

List\_ID = Same as the Code\_List\_GUID for now.

Agency\_ID = This is a foreign key to the Agency\_ID\_List\_Value. Agency\_ID\_List\_Value\_ID associated with the Agency\_ID\_List\_Value. Value as follows. Code lists from CodeLists\_1.xsd, CodeList\_ConditionTypeCode\_1.xsd, CodeList\_ConstraintTypeCode\_1.xsd, CodeList\_DateFormatCode\_1.xsd, CodeList\_DateTimeFormatCode\_1.xsd, and CodeList\_TimeFormatCode\_1.xsd have the Value = “314” (taken from Scheme Agency Identification file). Code lists from CodeList\_CharacterSetCode\_IANA\_20070514.xsd and CodeList\_MIMEMediaTypeCode\_IANA\_7\_04.xsd have the Value = “379”. Codes from CodeList\_CurrentcyCode\_ISO\_7\_04.xsd and CodeList\_LanguageCode\_ISO\_7\_04.xsd have the value “5”. Codes from CodeList\_TimeZoneCode\_1.xsd have the Value = “5”. Codes from CodeList\_UnitCode\_UNECE\_7\_04.xsd have the Value = “6”.

Version\_ID = This should be taken from the file name of the file containing the code list. This is the last part of the file names that are numbers when tokenize the file name with “\_”. For example, the value from CodeList\_CharacterSetCode\_IANA\_20070514 should be “20070514”; and the value from “CodeList\_MIMEMediaTypeCode\_IANA\_7\_04.xsd” should be “7\_04”.

Definition = Take it from xsd:annotation/xsd:documentation.

Definition\_Source = Take it from xsd:annotation/xsd:documentation/@source.

Based\_Code\_List\_ID = Empty.

Extensible\_Indicator = Default value is FALSE; however, if count(xsd:union) = 1, the value must be TRUE. In other words, the condition indicates that there is a union of the enumerated values and the xsd:token.

Created\_By\_User\_ID = “oagis”.

Last\_Updated\_By\_User\_ID = “oagis”.

Creation\_Timestamp = Current time.

Last\_Update\_Timestamp = Same as Creation\_Timestamp.

**Note:**

We do not bring in the minLength and maxLength facets in this version because the current data model does not support it.

##### Populate Code\_List\_Value table

The content of this table should be from each of the xsd:simpleType[endsWith(@name, “EnumerationType”)] elements corresponding to the xsd:simpleType[endsWith(@name, “CodeContentType”)] in the previous section. The XPATH expressions below assume that the context element is xsd:simpleType[endsWith(@name, “EnumerationType”)].

Code\_List\_Value\_ID = Auto-generate database key.

Owner\_Code\_List\_ID = Foreign key to the corresponding Code\_List. Code\_List\_ID.

Value = Move context element to each descendant //xsd:enumeration element and populate this and the rest of the columns before moving to the next xsd:enumeration element. Populate this column with /@value.

Name = If the /@value is a valid dictionary word or set of words populate this column the /@value. Otherwise, leave this blank.

Definition = .//xsd:documentation.

Definition\_Source = .//xsd:documentation/@source.

Used\_Indicator = True.

Locked\_Indicator = False.

#### Import default and unqualified BDTs from Fields.xsd

There are types defined in the Fields.xsd schema file corresponding to all CDTs *except* the Ordinal CDT (OAGIS 10 just didn’t implement the Ordinal CDT). For example, the Amount CDT has the AmountType defined. There are 19 types in the schema file. These must be imported into the DT table as follows. Note that the XPATH expressions below assume the context element is xsd:complexType of xsd:simpleType of the BDT being captured.

For each of these unqualified BDTs, there will be two BDTs created – one for the unqualified BDT itself and another for the default BDT OAGIS adopted for each particular CDT. In the example snippet below, AmountType is the unqualified BDT and the AmountType\_0723C8 is the default BDT. Note that default BDTs are defined in the BusinessDataType\_1.xsd.

<xsd:complexType name="AmountType" id="oagis-id-109055a967bd4cf19ee3320755b01f8d">

<xsd:simpleContent>

<xsd:extension base="AmountType\_0723C8"/>

</xsd:simpleContent>

</xsd:complexType>

##### Populate BDTs in DT table.

DT\_ID = Auto-generate database key.

DT\_GUID = Get this from @id.

DT\_Type = “1” (note: 1 indicates BDT).

Version\_Number = “1.0”

Previous\_Version\_DT\_ID = Leave blank.

Revision\_Type = “0” (note: 0 means NEW).

Data\_Type\_Term = Same as that of the DT it is based on as indicated by the Based\_DT\_ID column.

Qualifier = Blank.

Based\_DT\_ID = Foreign key to the DT\_ID column of this table itself. This should point to the corresponding CDT for the default BDT and point to the default BDT of the unqualified BDT.

DEN = Take the type name remove the ‘Type’ substring and then concat with “. Type”.

Content\_Component\_DEN = First part of the DEN concat with ‘Content’, e.g., “Amount. Content”, “Amount\_0723C8. Content”.

Definition = Take the content from the /xsd:annotation/xsd:documentation/ccts:Definition for the default BDTs. Leave blank for the unqualified BDTs.

Content\_Component\_Definition = Take the content from //(xsd:extenstion or xsd:restriction or xsd:union)/xsd:annotation/xsd:documentation/ccts:Definition for the default BDTs. Leave blank for the unqualified BDTs.

Revision\_Documentation = Blank.

Revision\_State = “1” (note: 1 means published).

Created\_By\_User\_ID = “oagis”.

Last\_Updated\_By\_User\_ID = “oagis”.

Creation\_Timestamp = Current time.

Last\_Update\_Timestamp = Same as Creation\_Timestamp.

##### Populate BDT\_Primitive\_Restriction table

Assign CDT primitives and map XSD built-in types to the default BDTs and unqualified BDTs.

BDT\_Primitive\_Restriction\_ID = Auto-generate database key.

BDT\_ID = Foreign key to the BDTs populated in the previous section. There will be 1 or more rows in this table for each BDT because of the 1:m map between the CDT Primitive and XSD built-in type.

CDT\_Primitive\_Expression\_Type\_Map\_ID = This is a foreign key to the CDT\_Allowed\_Primitive\_Expression\_Type\_Map table in section 3.1.1.2.5. Each BDT will use all the entries from that table per its associated CDT Primitive(s). Each pair of default BDT and unqualified BDT have the same set of maps.

Code\_List\_ID = Leave blank.

isDefault = For the default BDTs where there is a //xsd:union, isDefault should be set to TRUE on the xsd:token. For default BDTs where is there is a //xsd:extension or //xsd:restriction, is Default should be set to TRUE according to the XSD built-in type indicated in the (//xsd:extension or //xsd:restriction)/@base. All other rows are set to FALSE.

##### Populate SC in DT\_SC table

Populate the supplementary components for the default BDTs and unqualified BDTs.

For default BDTs, look for //xsd:attribute elements. Populate a row in this table for each //xsd:attribute of the default BDTs. For each unqualified BDT, inherit all SCs from its based default BDT, i.e., there must be the same number of rows as those SCs for its based default BDT.

DT\_SC\_ID = Auto-generate database key.

DT\_SC\_ID = Take the value from //xsd:attribute/@id for the default BDTs. Inherit from the based default BDTs for the unqualified BDTs.

Property\_Term = The value is the same as that of the CDT on which the BDT is based, e.g., “Currency” for BDTs based on the Amount CDT. (Alternatively get this from the default BDTs at //xsd:attribute/xsd:annotation/xsd:documentation/ccts:PropertyTermName.)

Representation\_Term = The value is the same as that of the CDT on which the BDT is based, e.g., “Code” for the “Currency” supplementary component of BDTs based on the Amount CDT. (Alternatively get this from the default BDTs at //xsd:attribute/xsd:annotation/xsd:documentation/ccts:RepresentationTermName.)

Definition = Blank for the unqualified BDTs. For the default BDTs, get this from //xsd:attribute/xsd:annotation/xsd:documentation/ccts:Definition.

Owner\_DT\_ID = Foreign key to the corresponding BDTs table DT\_ID column populated in the previous section (3.1.1.5.1).

Min\_Cardinality = For the default BDTs, take the value from //xsd:attribute/@optional. TRUE = 0. FALSE = 1. If the attribute does not exist, it means 0. For the unqualified BDTs, the value is inherited from the based default BDT, unless the SC is an extension (i.e., count(//xsd:attribute) > = 1).

Max\_Cardinality = Set to 1.

Based\_DT\_SC\_ID = For default BDTs, point to DT\_SC.DT\_SC\_ID of the corresponding CDT. For unqualified BDTs, point to the DT\_SC.DT\_SC\_ID of the default BDT on which it is based.

##### Populate BDT\_SC\_Primitive\_Restriction table

This table assigns the CDT primitive and map XSD built-in type combination to the default BDTs and unqualified BDTs.

BDT\_SC\_Primitive\_Restriction\_ID = Auto-generate database key.

BDT\_SC\_ID = Foreign key to the default BDT or the unqualified BDT.

CDT\_SC\_Allowed\_Primitive\_Expression\_Type\_Map\_ID = This is a foreign key to the CDT\_SC\_Allowed\_Primitive\_Expression\_Type\_Map table in section 3.1.1.2.8. Each BDT will use all the entries from that table per its associated CDT Primitive(s). Each pair of default BDT and unqualified BDT have the same set of maps.

Code\_List\_ID = Leave blank.

isDefault = Use the same default as in the BDT\_Primitive\_Restriction table according to the SC representation term. E.g., The Amount’s Currency Code SC representation term is Code. Look up the BDT\_Primitive\_Restriction.isDefault using a combination of Code, CDT Primitive, and XSD built-in type (according to the CDT\_SC\_Allowed\_Primitive\_Expression\_Type\_Map\_ID column) and apply the same TRUE OR FALSE value here.

#### Import BCCPs and Qualified BDTs

Basic Core Component Properties (BCCPs) are in Fields.xsd and Meta.xsd. BCCPs are xsd:element in those files that are eventually traced down to xsd:simpleContent through the type xsd:extension chain (or xsd:restriction, although I think xsd:restriction is not used at all) (note that all xsd:element in the Fields.xsd are BCCPs; however, not all xsd:element in the Meta.xsd are BCCPs so it is necessary to trace down to whether the xsd:element has a simple content or conversely does not have a complex content).

Assuming the target xsd:element is a BCCP, the xsd:element/@type is either an unqualified BDTs which we already imported in 3.1.1.5 or a new QBDT that needs to be created. The logic here is to check whether the BDT already exists in the database - if not create a new one; otherwise, associate with the existing one. To check whether a BDT already exists, we can use a GUID of the type (or name, but it is easier to use the GUID). In principle, multiple new BDTs may be necessary, i.e., a new QBDT may be basing on another new QBDT. Populate the BCCP table and DT table (for the new QBDT) as follows.

Assume there are the following functions.

IdOf(object) returns the database key of the object.

GuidOf(object) returns GUID of an object.

DEN(object) returns a DEN of the object.

CamelCase(string) returns camel case representation of the given string.

SpaceSeparate(camelCaseString) returns space-separated format of the given camelCaseString.

##### Populate a QBDT in the DT table

A QBDT should be defined in an xsd:complexType element. XPATH expressions below assume xsd:complexType is the context.

DT\_ID = Auto-generate database key.

DT\_GUID = Get it from /@id.

DT\_Type = “1” (note: 1 indicates BDT).

Version\_Number = “1.0”

Previous\_Version\_DT\_ID = Leave blank.

Revision\_Type = “0” (note: 0 means NEW).

Based\_DT\_ID = Get from idOf( //xsd:restriction/@base) or idOf(//xsd:extension/@base). If neither of the function returns an ID, it means that the QBDT is based on another new QBDT. Cascade to create another QBDT and use the DT\_ID of that new QBDT.

Data\_Type\_Term = Inherit from the based BDT identified in the Based\_DT\_ID column.

Qualifier = /@name – “Type” – CamelCase(DEN (Based\_DT\_ID)).

DEN = spaceSeparate(substring-before(/@name, “Type”)). Ex. DEN of OpenAmountType QBDT is “Open Amount”.

Content\_Component\_DEN = DEN + “. Content”. Ex. “Open Amount. Content”.

<I’m here>

Definition = “CDT V3.0.” + Combine the texts from the Definition and Remarks sections from each CDT in CCTS DTC3.

Content\_Component\_Definition = Take the value from the CCTS DTC3 in the Definition column of the table in section 4.X.7.

Revision\_Documentation = Blank.

Revision\_State = “1” (note: 1 means published).

Created\_By\_User\_ID = “oagis”.

Last\_Updated\_By\_User\_ID = “oagis”.

Creation\_Timestamp = Current time.

Last\_Update\_Timestamp = Same as Creation\_Timestamp.

##### Populate BDT\_Primitive\_Restriction table

##### Populate SC in the DT\_SC table

##### Populate the BDT\_SC\_Primitive\_Restriction table

##### Populate the BCCP table

For each xsd:element which is a BCCP, a record must be created in the BCCP table. In XPATH expressions below, it is assumed that the context is xsd:element.

BCCP\_ID = Auto-generate database key.

BCCP\_GUID = Get from /@id.

Property\_Term = Get from /@name. Parse the camel case into space-separated words.

Representation\_Term = Get from /@

BDT\_ID =

DEN =

Definition =

Created\_By\_User\_ID =

Last\_Updated\_By\_User\_ID =

Creation\_Timestamp =

Last\_Update\_Timestamp =

Qualified BDTs (QBDTs)

Basic tables

XSD\_BuiltIn\_Type

**Tables needed for CDTs**

CDT\_Primitive  
DT

CDT\_Allowed\_Primitive  
CDT\_Allowed\_Primitive\_Expression\_Type\_Map

DT\_SC

CDT\_SC\_Allowed\_Primitive

**Tables needed for BDTs**

DT  
BDT\_Primitive\_Restriction

DT\_SC  
DT\_SC\_Primitive\_Restriction

DT  
DT\_SC  
BCC  
BCCP  
BBIE  
BDT\_Primitive\_Restriction  
DT\_SC\_Primitive\_Restriction  
ASCCP  
ASBIE  
ACC  
ACC\_Business\_Term  
Code\_Value  
ASCC  
ASCCP\_Business\_Term  
Code\_List  
ABIE  
Business\_Context  
Context\_Category  
Context\_Scheme\_Value  
Context\_Scheme  
Business\_Context\_Value  
BBIE\_SC  
User  
BBIEP  
ASBIEP

### Verify the OAGIS 10 Model import

## BIEs Management

### Create a top-level ABIE

#### Expand/Collapse a descendant ASBIE

#### Expand/Collapse a descendant BBIE

#### Customize a child ASBIE

#### Customize a child BBIE

### Save a top-level ABIE

### View and Edit a top-level ABIE

### Create a top-level ABIE by copy

## Generate an OAGIS Expression

### Generate a standalone XML Schema for a top-level ABIE

## Code List Management

### Create a new blank BIE code list

### Create a new BIE code list by restriction

### Save a working BIE code list

### Edit a BIE code list

## Manage CCs and DTs

### View CCs

# Logical View

## Overview

## Design Packages

# Process View

# Deployment View

# Implementation View

## Overview

## Layers

### Presentation Layer

### Control layer

### Resource Layer

### Domain Layer

### Common Layer

# Data View