

Representation of the HL7 V3 vocabulary in Ontylog

Data Source

The HL7 standalone vocabulary served from the Apelon DTS is based on a conversion of Vocabulary.xml (containing the HL7-defined vocabulary domain tables distributed by HL7) to the Ontylog format (the native data format supported by the DTS). The version 3 vocabulary data used in the present conversion, as well as the DTDs, is based on the RIM 2.0.7.

Vocabulary Hierarchy Structure

The present Ontylog conversion generates a vocabulary structured along the lines of the HL7 vocabulary domain tables, this was a design requirement. Root nodes in Ontylog reflect the tables containing domain-specific entities in HL7. Children concepts of these nodes reflect specific specializable, abstract, or leaf term concepts in the HL7 domains. The resulting concept hierarchy in Ontylog is the same found in the HL7 domain tables.

Concept IDs, Codes, And Names

All HL7 concepts contain an ID. However, they are internal HL7 data not to be used externally and are not unique across the namespace; in RIM 2.0.7 they are also not unique within a domain "table." In addition, codes are not assigned to all concepts; a code is a mnemonic and is assigned only to concepts that can be used in messages/coding applications (*specializable* or *leaf term* concepts). Finally, HL7 concept names are also not unique across the namespace. However, the Ontylog representation requires that concept names and codes (as well as IDs) be unique. Rather than generating totally artificial unique names or codes, the current conversion takes HL7 names and IDs (for codes) and mangles them so that they are unique throughout the Ontylog namespace (Table 1).

HL7 Entity	Fields in Ontylog Name	Prototype (using xml elements) Explanation (using descriptive names) Example
Table	2	conceptType:name type:table_name T:ActMood
External Vocabulary Domain	2	conceptType:name type:external_name E:CanadianActProcedureCode
Abstract Concept	3	conceptType:name::name type:concept_name::table_name A:ActMoodCompletionTrack::ActMood
Specialized Concept	4	conceptType:name:Code::name type:concept_name:mnemonic::table_name S:ActMoodIntent:INT::ActMood
Leaf Term	3	conceptType:Code::name type:mnemonic::table_name C:APT::ActMood

Table 1. HL7 vocabulary elements utilized in the construction of unique Ontylog concept names.

Concept Names

Table 1 illustrates the construction of Ontylog concept names. Concept names can have up to 4 subfields, containing the type of entity, the concept name, the concept mnemonic, and the domain table name. The colon is used as a delimiter between fields, except in the Abstract, Specialized, and Leaf Term concepts, where two are utilized to delimit the table name. All concept names include the HL7 type and the table name. The *conceptType* element can have one of five values, E, T, A, S, and C; the 'C' type is displayed as 'L' in the HL7 vocabulary tables, we considered a C->L conversion unnecessary for our purpose.

Concept Codes

Ontylog concept codes were constructed out of the HL7 concept ID and a unique number generated during the conversion process; the concept ID and the number are colon-delimited. The generated number reflects the position of the HL7 concept in the XML tree. The generated Ontylog concept codes are not guaranteed to remain the same in conversions of different HL7 vocabulary versions. The present Ontylog conversion does not support coding; the use-case requires that the vocabulary be utilized in message validation, and a specific property was constructed for this purpose (the OID property, see below).

Properties

Five properties have been created in the Ontylog representation. Their names and provenance in the HL7 Vocabulary file are indicated in Table 2. Two of the properties in the Ontylog representation of the HL7 vocabulary do not exist in the vocabulary file, these are the *OID* and the *table* properties. The *table* property is utilized in support of the conversion from the HL7 xml to the Ontylog xml, it simply indicates the domain that a concept belongs to. The *OID* property contains the OID value assigned to the table/domain terms by HL7 that serve as root nodes for each branch in the vocabulary; to support the HL7 SDK, the OID is followed by the concept's *mnemonic* term delimited by the hash character ('#').

Ontylog Property	HL7 Vocabulary.xml Entity	Comment
print_name	printName	
mnemonic	Code	
DEFINITION	p	
OID		The OID is assigned to the <i>table</i> (T-type) concept based on entries in the Access database in the HL7 distribution. This OID is propagated to the descendants of the <i>table</i> root node concept and the <i>mnemonic</i> of leaf terms and specializable concepts appended, with the hash mark utilized as a delimiter.
table		This property is utilized in support of the conversion.

Table 2. Properties declared in the Ontylog version of the HL7 vocabulary.