Specifications for HL7 Templates Converter Module

Author: Abderrazek Boufahja
abderrazek.boufahja@ihe-europe.net
January 2016

Introduction

The aim of this document is to describe the constraints that shall be generated by a validation tool based on the Customer Templates Design based on HL7 Templates Standard. For each XSD element described by the HL7 Templates Standard DSTU R1 we extracted the list of requirements that a generator of constraints shall verify. This document is used by Gazelle ObjectsChecker to generate constraints based on the customer's Templates Design.

Disclaimer

This document is an interpretation of IHE Europe-gazelle team, based on the HL7 Templates Standard R1 DSTU, and it is used as a base for the import of requirements from ART-DECOR to Gazelle ObjectsChecker tool.

Constraints Generation Requirements

The list of elements which are included in this description based on the HL7 Templates Standard are: <template>, <element>, <choice>, <attribute>, <vocabulary>, <property> and <text>. For each requirement we provided a unique identifier (example: TEMPGEN-XXX). A good generator of validation tool based on HL7 Templates Standard SHOULD follow all these requirements.

General constraints

[TEMPGEN-001] When a path='/' is declared in a ClinicalDocument template, a constraint shall be generated to restrict the list of ClinicalDocuments validated

<template> constraints

[TEMPGEN-002] A constraint shall be generated when an <assert> specified with 'error' role
[TEMPGEN-003] A list of constraints shall be generated when the template is declared as @isClosed='closed'
<element> constraints

[TEMPGEN-004] When a @contains is declared, a constraint related to the included template SHALL be generated

[TEMPGEN-005] When an <assert> is declared in an <element> with the role 'error', a constraint shall be generated

[TEMPGEN-006] A list of constraints shall be generated when the <element> is declared as @isClosed='closed'

[TEMPGEN-007] When an <include> is declared in an <element>, requirements from the included template shall be processed

[TEMPGEN-008] When a <choice> is declared in an <element>, requirements related to the <choice> shall be processed

[TEMPGEN-009] When a <text> element is declared in an <element>, a constraint shall be created for the text value

[TEMPGEN-010] When an <attribute> is declared in an <element>, requirements related to the <attribute> shall be processed

[TEMPGEN-011] When a <property> element is declared, requirements related to the <property> shall be processed

[TEMPGEN-012] When a list of <vocabulary> elements is declared in an element, requirements related shall be processed

[TEMPGEN-013] When sub elements are declared in an <element>, requirements related to the sub elements shall be processed

[TEMPGEN-014] When @minimumMultiplicity is declared in an element, and its value restrict the CDA one, a constraint shall be generated

[TEMPGEN-015] When @maximumMultiplicity is declared in an element, and its value restrict the CDA one, a constraint shall be generated

[TEMPGEN-016] When @isMandatory attribute is declared in an element with the value='true', a constraint shall be generated

[TEMPGEN-017] When a @datatype is declared in an <element>, and it restrict the CDA original datatype, a constraint shall be generated

<choice> constraints

[TEMPGEN-018] When @minimumMultiplicity is declared in a <choice> element, and its value restrict the CDA one, a constraint shall be generated

[TEMPGEN-019] When @maximumMultiplicity is declared in a <choice> element, and its value restrict the CDA one, a constraint shall be generated

[TEMPGEN-020] When sub elements are declared in a <choice>, requirements related to the sub elements shall be processed

[TEMPGEN-021] When an <include> is declared in a <choice>, requirements related to the <include> shall be processed

<attribute> constraints

[TEMPGEN-022] When an <attribute> is declared as a list in the CDA model, and the @datatype specified for this attribute is not cet_cs, a requirement SHALL be generated to restrict the maximum multiplicity of the attribute to '1'
<vocabulary> constraints

When a <vocabulary> is specified for an <attribute>, requirements related to it shall be processed.

If @isOptional is specified in <attribute> element with the value 'false', and the attribute from CDA is originally optional, a constraint shall be generated.

When @prohibited attribute is specified in <attribute> element with the value='true', a constraint shall be generated.

When @value is specified in <attribute> element, a constraint shall be generated for this fixed value.

When a <vocabulary> is included with a @code attribute under an <attribute> element, a fixed value constraint shall be generated.

When a <vocabulary> is included with a @code attribute under an <element> element, a fixed value for the CDA @code attribute constraint shall be generated.

When a <vocabulary> is included with a @codeSystem attribute under an <element> element, a fixed value for the CDA @codeSystem attribute constraint shall be generated.

When a <vocabulary> is included with a @valuSet attribute under an <element> element, a constraint shall be generated to match the @code and @codeSystem to the valueSet specified.

When a <vocabulary> is included with a @valuSet attribute under an <attribute> element, a constraint shall be generated to match the value of the CDA attribute to the valueSet specified.

When multiple <vocabulary> are included in an <attribute>, a constraint shall be generated with an 'or' linking.

When multiple <vocabulary> are included in an <element>, a constraint shall be generated with an 'or' linking.

When a <vocabulary> is included in an <element>, if the referenced value set contains <exception> elements, a constraint shall be generated related to these exceptions.

When a <vocabulary> is used and reference a value set that include another valueset, the values coming from the included valueset shall be processed.

<property> constraints

If <property> element is included in an <element>, and the property contains @unit attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @currency attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @minInclude attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @maxInclude attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @fractionDigits attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @minLength attribute, a constraint shall be generated.

If <property> element is included in an <element>, and the property contains @maxLength attribute, a constraint shall be generated.
If <property> element is included in an <element>, and the property contains @value attribute, a constraint shall be generated.

**<text> constraints**

If <text> is specified in <element>, a constraint shall be generated.

If a list of <text> is specified in <element>, a constraint shall be generated with an 'or' link.

<table>
<thead>
<tr>
<th>HL7 Templates Element</th>
<th>Number of requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>general requirements</td>
<td>1</td>
</tr>
<tr>
<td>&lt;template&gt;</td>
<td>2</td>
</tr>
<tr>
<td>&lt;element&gt;</td>
<td>14</td>
</tr>
<tr>
<td>&lt;choice&gt;</td>
<td>4</td>
</tr>
<tr>
<td>&lt;attribute&gt;</td>
<td>5</td>
</tr>
<tr>
<td>&lt;vocabulary&gt;</td>
<td>9</td>
</tr>
<tr>
<td>&lt;property&gt;</td>
<td>8</td>
</tr>
<tr>
<td>&lt;text&gt;</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 1: The number of requirements by element type

The <element> type from HL7 Templates Standard is the type which contains the biggest number of type of constraints to be processed, which was expected; the <element> in the HL7 Templates Standard is the most important and complex one.