Facilitating the Creation of Semantic Health Information models from XML Contents

Introduction
Biomedical semantic computation and interoperability are enabled by using standard formats. Further constraining these formats unifies the exchanged data into a semantically unambiguous format that improves interoperability and makes operations on the data straightforward from a technological standpoint.

✓ Using widely accepted healthcare standards
The HL7 v3 Reference Information Model (RIM), an ANSI and ISO-approved standard, provides a unified health data language to represent complex associations between entities who play roles that participate in acts.

✓ Clinical Document Architecture
CDA is a constrained subset of the RIM that specifies terminology-encoded structure and semantics for clinical documents. These can be serialized to XML that conforms to a published W3C XML schema.

✓ Template Model
The CDA model is still generic in the sense that it can capture versatile clinical content ranging from discharge summaries to referral letters and operative notes. Thus, the general CDA structure is further constrained by a set of templates that are standardized by creating a template model.

Our Goal
Create an effective method for allowing a feedback cycle between experts from the clinical domain and healthcare IT domain via the creation of a template model (i.e., the set of constraints used to specify a generic standard to a problem domain).

Overview of Processes and Feedback Cycle
- Using widely accepted healthcare standards
- Clinical Document Architecture
- Template Model
- Template Model
- A standard data instance is generated from the template model using a common instance generation mechanism
- The transformation engine is based on an Eclipse UML2 library supplied with an API provided by the MDHT project in open source Eclipse OHT
- Using a common XML editor, the clinical domain expert can modify an example instance and create an annotated minimal complete instance

The Challenge
A healthcare IT expert familiar with healthcare data representation standards is capable of creating health interoperability models and generating instances conforming to those models. A clinical domain expert is mostly familiar with the data instances and terminologies, and is less comfortable with representation models. Differences in orientation and skills form a gap where the clinical domain expert cannot review and edit the models, and the healthcare IT domain expert cannot get feedback for the created models.

Clinical Instance
Using widely accepted healthcare standards
Clinical Document Architecture
Template Model

The transformation engine is based on an Eclipse UML2 library supplied with an API provided by the MDHT project in open source Eclipse OHT

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