

A Generic Data Form Designer Based on XML/XSL Technology

Ju Han Kim, M.D., Ph.D., Charles Safran, M.D., M.S., Warner V. Slack, M.D.

Center for Clinical Computing, Beth Israel Deaconess Medical Center, Harvard Medical School

Abstract

Extensible Markup Language (XML) and Extensible Stylesheet Language (XSL) are newly developed Internet protocols. Development of custom data entry forms requires significant programming. Visual design tools and a modifiable, template-driven approach may facilitate this process. However, these approaches generally require the predefinition of data form element types. This paper describes an approach enabling post hoc definition of elementary and composite data entry form element types using XML/XSL technologies.

Introduction

Creation of computer-based clinical dialogue program involves diverse input types and forms that require significant program development and management effort. Rapid template-driven prototyping may facilitate this process [1]. Clinical dialogue program development also requires predefined question types [2]. By offering an additional abstraction layers and a standard method of process description in a Web-based programming environment, XML/XSL can enable post hoc definition of data entry form types.

Methods and Results

The XML was invented to provide Standard General Markup Language (SGML) extensibility, structure, and data-checking capability for the Internet. XSL is a language for expressing stylesheets and consists of language for transforming XML documents (XSLT) and an XML vocabulary for specifying formatting semantics.

User interaction page of Web-based clinical dialogue programs consist of description parts (text and multimedia) and interaction parts (various input forms). We have defined an XML DTD describing the most highly abstract definition of question types based on an object-attribute-value model and implemented the structure as a relational database schema where generically modeled [3] actual dialogues entities are stored (Figure 1). An XSL processor renders HTML code with dynamically generated XML code from the question repository and matched XSL code that defines the behavior of description and interaction

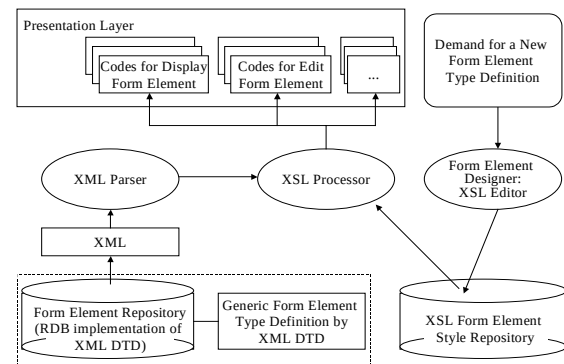


Figure 1. System architecture of generic data form designer.

parts for different application modes (i.e., display, add, and edit). When new demand calls for the definition of new form types such as visual analogue or Likert scales, it is only necessary to add a new XSL file that describes the behavior of the new type in variety of modes. Thus, no modification of the application program is required

Discussion

We have implemented a preliminary version of an XML-driven clinical dialogue authoring tool with an RDB implementation of an XML DTD, and an XML parser and an XSL processor that are publicly available. We believe our application demonstrates that the ability to represent structured data and perform post-processing may empower client applications to generically model domain entities and flexibly define and modify their building blocks even after the development of the application program.

References

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