Lessons learned from migrating reports with IHE XDS

Eizen Kimura, Shinji Kobayashi, Ken Ishihara

Division of Medical Informatics, Medical School of Ehime University, Ehime, Japan

Abstract and Objective

We have experienced the migration of the medical information system of Ehime University hospital at May 2009. As there were many variations of implementations for reporting system, the migration of report documents to the new system had many work-hour requirements. Under the migration process, the quality of data decreased by losing the data granularity and deformation. Developing the standard framework for document archiving is a critical component for everlasting document archive with keeping data quality high. Currently there is no standard of enterprise content management system for healthcare. This paper describes how we tried to apply IHE XDS based repository as the enterprise content management system in healthcare.

Keywords:

IHE XDS, EHR, Data migration, Repository, Registry, Enterprise content management

Introduction

In Japan, "YEAR 2008 EHR Problem" emerged as a hot issue that without standard implementation many hospitals will face to the system replace and to handle the risk of losing or degrade the quality of medical record data under system migration process. Besides the medical record standardization problem, no systematic approach to intersystem coordination at hospital makes us impossible to taking systematic migration process. We tried to convert legacy reports to PDF/A document, wrap it with HL7 CDA Level1 header and store it to the IHE XDS repository.

Methods

The guideline for storing medical record in electronic medium in Japan requires a user to meet the triad criteria; Authenticity, Availability and Readability. We have chosen PDF/A (ISO 19005-1) as the file format for long-term archiving cause IHE selected it as the standard document format for non-radiological documents, and it meets the triad criteria. The main body of a report was stored as HTML document in the document database of EHR and images were stored external storage (Figure 1). We have developed IHE XDS based repository and registry with open source XDS implementation and a report convert tool. The conversion tool emulates the viewer, renders report to PDF/A document instead of HTML

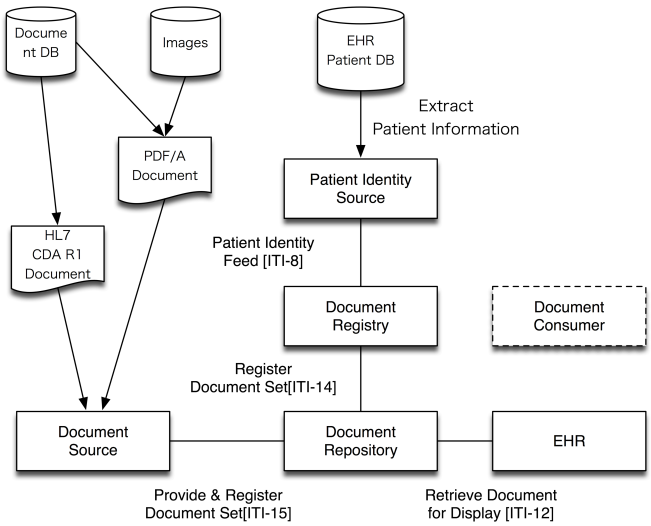

Figure 1 - Report migration with IHE XDS

document, and generates HL7 CDA R1 metadata. Then this tool publishes converted documents to IHE XDS repository in accordance with ITI-15 profile (Provide & Register Document Set). We had extracted all patient profile from EHR and feed patient identity information by ITI-8 profile (Patient Identity Feed). Currently our EHR cannot act as Document Consumer. We implemented simple REST architecture based ITI-12 profile (Retrieve Document for Display) on the repository server so that EHR can refer IHE XDS repository.

Results and Discussion

We have tried to migrate reports to a new system by adopting IHE XDS-based repository. The result suggests that IHE XDS is useful for storing non-radiology documents in healthcare. However, IHE XDS is too complex as an enterprise content management system for healthcare. The meta-data in ebXML model adopted by IHE XDS overlaps with that of HL7 CDA Level 1 header. SOAP stack is used as a foundation of the web service, but it still has interoperability problem. ebXML and SOAP are overkill for content management in healthcare, and it is preferable to use REST architecture and HL7 CDA Level 1 header information. Developing the standard framework of document archiving in healthcare is a crucial issue.