Open Source based IHE XDS.b Prototype for Regional Health Networks

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Med-e-Tel 2011 in April
Outline

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2. Integration Concepts
3. Software Components
4. Summary
Project Overview
FLOSS internship with focus on the IHE XDS.b Profile

Task Definition
Create an IHE XDS.b based document registry and repository by re-using pure Open Source components. It shall be used as centralized document storage facility within a regional Personal and Electronic Health Record (PEHR).

Scope
One semester full-time internship for three Bachelor students of Medical Informatics at the Center for Information Technology and Medical Engineering.

Project Management Method
SCRUM - an agile software development methodology
Students

- Gain practical experience in IHE and HL7.
- Learn and apply SCRUM.
- Gain knowledge and experience in working with GNU/Linux and other Open Source software components.
- Work on challenges that arise from multi-institutional PEHR settings.
Center for Information Technology and Medical Engineering

- Advance knowledge and experience in implementing IHE profiles.
- Have a IHE XDS.b test environment at hand to simulate different scenarios.
- Know status and functionality of specific FLOSS projects.
- Proof of concept of a central document registry and repository within a multi-institutional PEHR environment.
Affinity Domain with patient ID cross-referencing
according to IHE ITI TF-1 Vol. 1, Rev. 7.0 of August 10, 2010 (page 92)
Open Exchange Platform
implementing a document registry and repository, additional actors

- OpenPIXPDQ, OpenXDS and OpenATNA; Java-based implementations of the referring IHE profiles incl. XDS.b registry and repository.
  - Database: PostgreSQL, MySQL | Build environment: Maven2, Subversion | License: Apache V2
  - Homepage: http://www.projects.openhealthtools.org/sf/projects/openexchange | Used version: 1.1 / 1.0.1 / 1.0.2

Experiences

- Quite some dependencies to consider during installation.
- Configuration spread of several files, but similar for each component; professional IHE skills helpful.
- Good community support through mailing list and forum.
- Status: Up and running, performance and real life testing still pending.
OpenEMPI
implementing a Master Patient Index (MPI)

- Java-based implementation of a MPI, integrated with OpenPIXPDQ.
  - Database: PostgreSQL | Build environment: Maven2, Subversion | License: Apache V2
  - Homepage: http://openempi.kenai.com | Used version: 2.0.5

Experiences

- Quite some dependencies to consider during installation.
- No clear documentation about how OpenEMPI and OpenPIXPDQ are interrelated.
- Good community support through mailing list and forum.
- Status: Adapter up and running in OpenPIXPDQ, standalone version was installed alongside just to view the database.
Indivo X
implementing a Personal Health Record (PHR)

- Python-based implementation of a web-based PHR.
  - Database: PostgreSQL | Build environment: Git | License: GPL V3
  - Homepage: http://indivohealth.org | Used version: 0.9.1 (Beta 1)

Experiences

- Sophisticated next generation PHR system, “App”-based approach to add specific functionality.
- Unclear patient ID concept (mail address as ID?).
- Still in beta phase, Python skills required.
- Status: Integration concept clear, yet to be specified in detail and implemented.
Open eHealth Integration Platform (IPF) implementing a routing and mediation engine (middleware)

- Groovy/Java-based extension of the Apache Camel routing and mediation engine.
- Extensive support for HL7 and IHE based messaging.
  - Database: n/a | Build environment: Maven2, Git, Eclipse/IntelliJ IDEA | License: Apache V2
  - Homepage: http://repo.openehealth.org/confluence/display/ipf2/Home | Used version: 2.1.0

Experiences

- Comprehensive prior knowledge required (Apache Camel, Enterprise Integration Patterns, Groovy)
- Extensive documentation, but still quite hard to get started (steep learning curve)
- Status: Integration concept clear, yet to be implemented
OSCAR McMaster, MyOscar candidates for implementing a HIS and a PHR

OSCAR McMaster V10.06 beta
Homepage: http://oscarmcmaster.org

- GPL-ed, web-based EMR software, widely installed base through Canada (Ontario)
- Experiences: complex installation; HL7 interface available, no sufficient documentation about it
- Status: Was skipped due to reasons of time

MyOscar V1.0
Homepage: http://sourceforge.net/projects/myoscar

- GPL-ed, web-based PHR software, based on Indivo 9 (formerly PING)
- Experiences: complex installation and integration, incomplete documentation
- Status: Was abandoned in favor of Indivo X
Open Source components have turned out to be perfect subject in teaching system integration skills to students.

Basic, sometimes advanced knowledge in Linux and referring programming languages inevitable.

SCRUM is well-fitting project management method to adequately address unforeseen issues and revised project goals.

Proof of concept successful, core XDS.b registry and repository is available as simulation environment.

Next steps: to progress with Indivo X, to integrate our Consent Management Suite and Provider & Organization Registry Service in the overall set-up.
Discussion
questions, answers, discussions

Thank you for your attention!

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