Infeworld

Interoperability for Healthcare Providers

A Software Insider's Point of View

About us

- 10 years of expertise exclusively in the medical software field
- about 200 employees (120 involved in software development)
- Microsoft Gold Partner (ISV & MBS)
- ISO 9001:2001 certified
- International presence in several countries (United Kingdom, Bulgaria, South Africa, Republic of Moldova, Germany, Austria
- HL7 International and HL7 Romania member
- IHE Connectathon participant

Agenda

- Business Case Medcenter Romania
- Interoperability nontechnical perspective
- Solution
- Architecture And Design Blueprint
- Tools & Technologies & Standards
- Change management
- Discussions

About Medcenter

- 13 clinics
- 8 laboratories
- 5 hospitals outsourced
- 500 trained users
- 480.000 exchanged documents(HL7 CDA) / month

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• 50.000 encounters / month







Interoperability levels



The ability of different systems to work in an integrated way

Requirements for a Healthcare Provider's Solution

- Leverage existing assets
- Support both customized systems and commercial offthe-shelf (COTS) packages
- Support incremental adoption and implementation
- Provide support for loose coupling between systems
- Incorporate synchronous and asynchronous communication and transaction models
- Be secure
- Support multiple programming languages and platforms
- Handle large volumes and transaction rates that exhibit peaked behavior
- Support different topologies and 24/7 operations

Questions for an electronic service

- What are the operations that we can perform?
- What are the exchanged data structure?
- What are the returned exceptions?
- What about the transport level? (FTP, e-Mail, WS..)
- What is the physical address?
- What about security? (incl. authentication & authorization)
- What is the meaning of the data? (semantic)
- What are the business rules that I should respect?
- Are the rules formalize in a language?
- Can I access the vocabularies used in data structures?
- Can I access the entities used in data structures?
- Do I have a testing environment?
- Do I have simulation features? (ex. Preauthorization)

Success criteria – Medcenter perspective

- Friendly user interface
- Electronic claiming
- Paperless
- Data exchange among all actors involved
- Transparent clinical data reporting
- Prompt implementation of new medical sheets
- Possibility to modify medical vocabularies on the fly

Solution to interoperability issues

Server based communication with HL7 v3, CDA 2.0 documents as a data contract was the chosen solution for the data exchange between healthcare providers

Deployment Architecture



Implementation Details

Architecture Backbone Components



End User Solutions Based On PnP Medical Framework



Architecture Backbone Components

Confidentiality, Integrity, Authentication, Authorization, Accountability,

- Authentication
 - Username/Password,
 SmartCard validated
 against Kerberos
 - SAML assertions verified by the called service
- Role based authorization
 - Roles stored in LDAP
 - Policies defined using XACML language
- Record level
 authorization



Enterprise Vocabulary Services Features

Coding Systems, Value Sets, Mappings



•Manages the data dictionaries for any application

•Offers the functionalities dealing with the management of the coding systems

•Based on HL7 Common Terminology Services

Identity Management Service



Entity Identification Services

•Allow the lookup and management of a wide variety of entities and roles including, but not limited to HL7 Entities:

- Patients
- Persons
- Devices
- Organizations
- Referrals
- Doctors
- Companies etc



Integrated with all end user client application

Record Location and Update Service

- Define, at a service level, an appropriate interface to locate, retrieve, and update resources among and between healthcare organizations
- It has two main components:
 - Registry
 - Repository



Publish-Subscribe Service – Features and Tools

- Used in all registry or business services
- Two delivery modes: push and pull
- Based on subscription manager
- Expiry constraints
- Includes XPath or custom filter dialects





Subscription Management Console

Query for Existing Data Service

- Aggregates clinical data from multiple sources (EHR, LIS, PACS, ADT)
- Backbone for Dashboards application
- Used by DSS and Clinical Protocols workflow engine
- •HL7 v3 interface profiled by IHE PCC
- •Implements paging ______ to improve UI responsiveness



Clinical Templates Tools

Streamlines the development of clinical documents to automate forms generation, data capture, and processing.

enables creation of forms that combine **windows and web presentation** with HL7 CDA data handling.



Template Tools - Features



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Electronic Claiming

Technical experience

- Online claims
- Batch claims
- Workflows
 - Claims
 - Eligibility checking
 - Preauthorization
 - Reimbursement etc
- Reimbursement
 - Per capita
 - Per services
 - DRG etc
- Business Rules Engine (BRE)



Batch Insurance Claiming - Workflow



Change management – BATCH eClaimimg



Tools & Technologies

Standards

- SQL Server
- .Net Framework
- SOA & WS
- Windows Forms
- ASP.net
- RIA (Silverlight)

- HL7 v3
- HL7 v3 CDA 2.0
- DICOM
- IHE Profiles
- Vocabularies: ICD 10, LOINC etc

Discussions

Questions



