Art-decor and IHE Gazelle integration

Lisbon eHealth week

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Outline

- Gazelle Validation of CDA documents
- IHE Gazelle *ObjectsChecker* : Principles and advantages
- ART-DECOR and Gazelle tools
  - Schematrons integration
  - Combined use of ART-DECOR and IHE Gazelle *ObjectsChecker*
Gazelle Validation of CDA documents

IHE Gazelle _ObjectsChecker_ : Principles and advantages

ART-DECOR and Gazelle tools

- Schematrons integration
- Combined use of ART-DECOR and IHE Gazelle _ObjectsChecker_
**EVSClient** : a front end to the conformance validation services used by the Gazelle Platform ([http://gazelle.ihe.net/EVSClient](http://gazelle.ihe.net/EVSClient))
EVSClient demonstration for CDA validation
EVSCClient installations

Venice Region (Italy)
eSanté (Luxembourg)
ePSOS (EU Cross-border)
Kanta (Finland)
Gazelle Validation of CDA documents

IHE Gazelle *ObjectsChecker* : Principles and advantages

ART-DECOR and Gazelle tools

- Schematrons integration
- Combined use of ART-DECOR and IHE Gazelle *ObjectsChecker*
Gazelle *ObjectsChecker* Principles (1)

- A methodology to describe informal requirements in healthcare IT specifications based on CDA standard, into a formal description
- An architecture that allows:
  - The validation of the conformance of any kind of XML requirements
  - Provide metrics and documentary features
  - Improve the coupling between rules and requirements
  - Support the validation of inheritance between healthcare standards

Source: eHealth Suisse, Format d'échange, Rapports de laboratoire soumis à déclaration en Suisse (Projet)
Gazelle ObjectsChecker Principles (2)

Automatic and thorough Testing

Requirements Entry

HL7 CDA Implementation Guide

UML models OCL constraints

OASIS TAML Requirements

Gazelle ObjectsChecker

Formal Description of CDA requirements

JAVA Validator
Java Unit Testing
Validator Documentation
Multiple CDA validators (each testing one “content profile” specification) were developed and used by IHE and multiple national projects around the world:

- 14 IHE validators
- 11 epSOS validators
- 15 CDA validators for different national projects

30,000 CDA documents validated against Gazelle ObjectsChecker generated validators

Heavily used during European and North American Connectathon and epSOS Projectathon (like EXPANDathon)
Gazelle ObjectsChecker
Advantages

- Requirement coverage capability
  - support of complex requirements (complex algorithm, etc)
  - conditional /iterations validation
  - Data types requirements checking
- Runtime access to coded value sets from a repository of terminologies
- Easier to maintain than hand written schematrons
- Linking between the rules tested and the requirements from the specifications
Gazelle Validation of CDA documents

IHE Gazelle *ObjectsChecker* : Principles and advantages

**ART-DECOR and Gazelle tools**
- Schematrons integration
- Combined use of ART-DECOR and IHE Gazelle *ObjectsChecker*
Shared repositories with collection of artifacts

- Template Repository (building blocks for clinical document definitions) and Value Sets (code lists)
- Functional Models (datasets)
- Sharing artifacts between countries has already started by Germany, Austria, Netherlands

ART-DECOR specs → Input for Testing Tool
Art-decor Schematrons - Integration to Gazelle

1 - HTTP: Upload of document

2 - WS Call

3 - Report

EVS Front End

Gazelle Test Platform

- HL7v2/v3 Validator
- CDA Validator
- Schematon Validator
- XDW Validator
- Dicom Validator

SUT
Gazelle Validation of CDA documents
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Principle of coupling ObjectsChecker with art-decor
Advantages of coupling ObjectsChecker with art-decor

- Art-decor moves rigor at point of Content Profiles/Impl. Guides documentation and avoid discovery of issues/gaps at the time *ObjectsChecker* input is created.

- Reduces gaps and misunderstanding of CDA specifications

- Automate the generation of formal OCL description avoiding test tool manual entry
Comparison to other tools of validations

- More number of checks than other tools
- More assertions covered on the requirements
- An average of errors found better than other validation tool
EXPAND informal testing tools
Gazelle ObjectsChecker:
- presentation on IHIC 2015: http://gazelle.ihe.net/files/paper_ihic_presentation_0.pdf
- documentation of gazelle EVSClient: http://gazelle.ihe.net/content/cda-model-based-validation
- Blog in Ringholm (René Spronk): http://www.ringholm.com/column/HL7_CDA_Conformance_testing_tools_analysis.htm
- EVSClient: http://gazelle.ihe.net/EVSClient/

Art-decor:
- Art-decor website: http://art-decor.org/
- Art-decor papers and presentations: http://art-decor.org/mediawiki/index.php/Download

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Any question ?