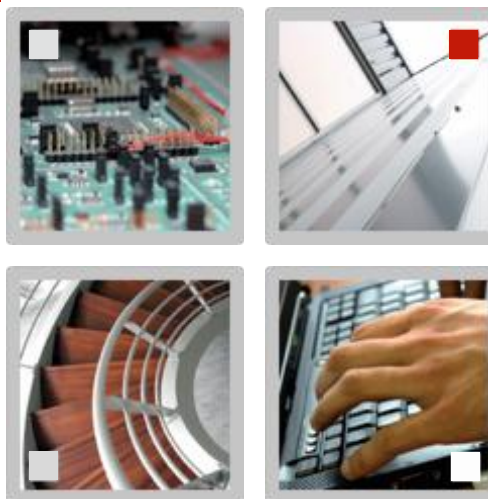


IHE Gazelle *ObjectsChecker* : Concepts, Benefits, Demonstration and Access

IHIC 2015



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February 9, 2015
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- IHE-Europe software developer/consultant on gazelle team since 2009
- Participation at 8 European and North American Connectathon
- Certified HL7 CDA / HL7 V3 Specialist
- Experienced with national and international CDA implementations
- Main designer of IHE Gazelle *ObjectsChecker*
- Created more than 30 CDA validators based on the *ObjectsChecker* Methodology for multiple projects : IHE / epSOS / ASIP santé / etc



■ IHE / IHE-Europe

- IHE is an initiative by healthcare professionals and industry to improve interoperability between healthcare IS
- A non-for-profit association attached to IHE
- Develop Test tools and organize European Connectathon

■ Connectathon

- A meeting between healthcare systems developers in order to test the interoperability between their systems/devices => next one : Luxembourg

■ Gazelle

- an open source test-bed platform that provides a wide set of tools to validate information exchange between healthcare system => for more details visit the website : <http://gazelle.ihe.net>

■ IHE CDA content profiles

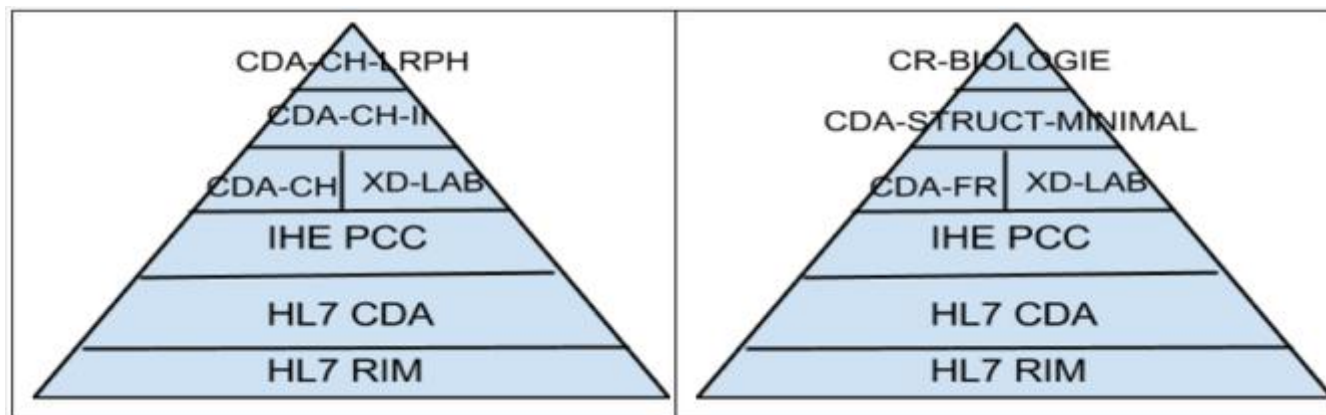
- A list of profiles restricting the CDA standards with specific requirements



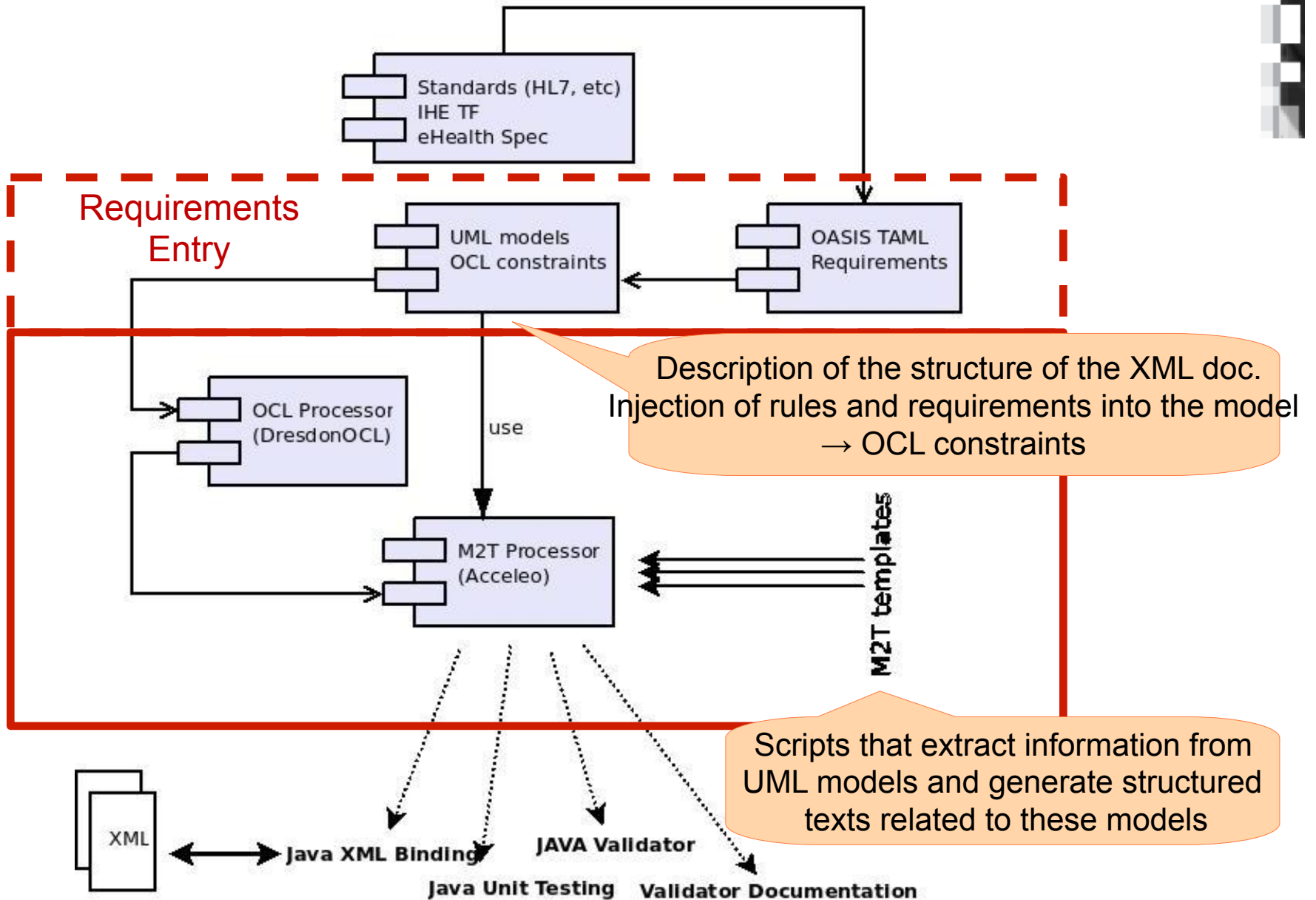
- IHE Gazelle *ObjectsChecker* : Principles and advantages
- Gazelle Validation of CDA documents
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- A methodology to describe informal requirements in healthcare IT specifications based on CDA standard, into a formal description
- An architecture that 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)





- 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
- Easily integrated into third party repositories as a front end validation tool



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

How does IHE Gazelle ObjectsChecker compares to Schematron

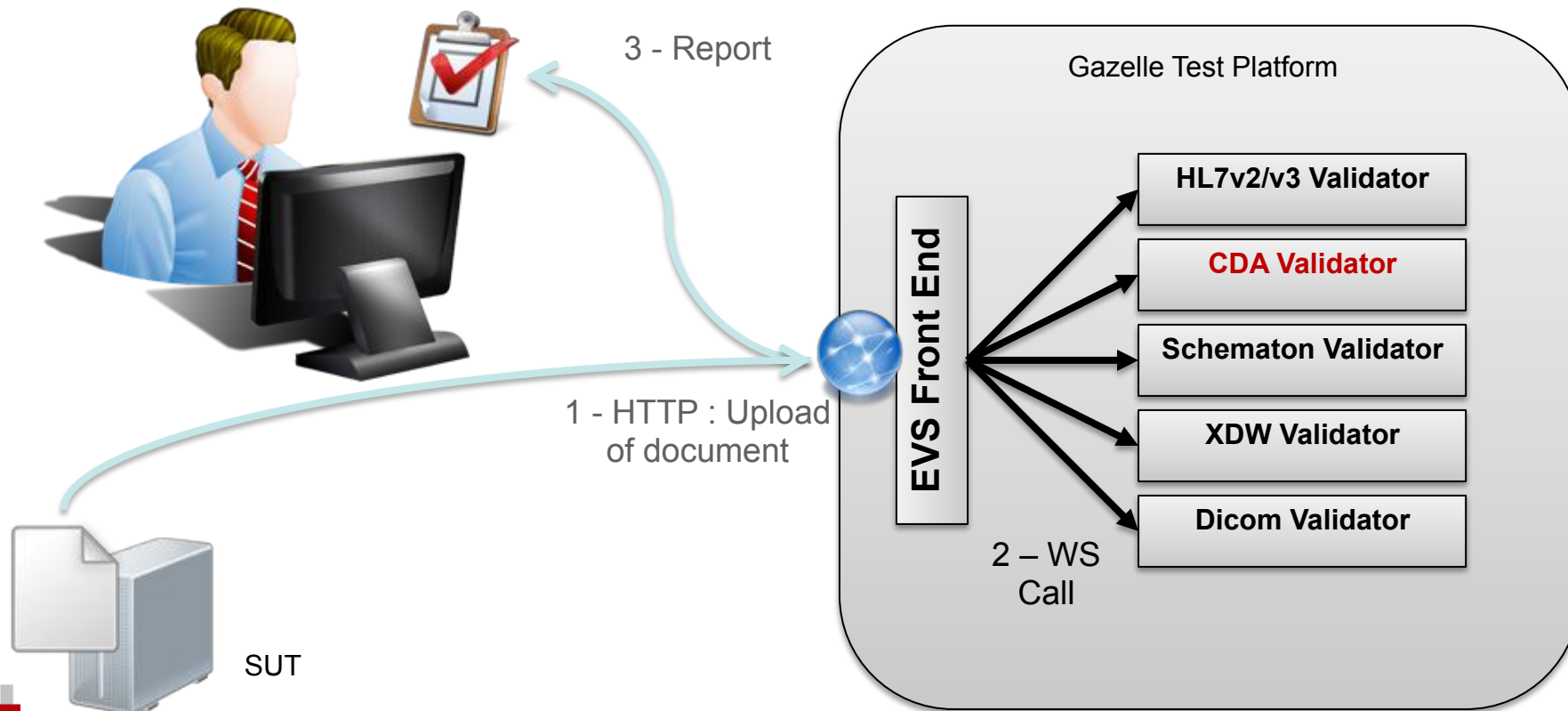


- Schematrons are useful but have inherent limitations in term of coverage. Requirements generally not covered :
 - CDA R2 base standards requirements :
 - Generic data types requirements
 - Complex requirements between CDA elements
 - XML elements type checking
 - Typical Content Profile/implementation Guides requirements
 - Complex attributes specifications (like the person identifiers structure/algorithm, telecom structures, etc)
 - Complex Conditional requirements between sections or entries
 - Specific data types requirements
 - Relationships consistency with other document content and metadata
- Elements based on the paper to be presented on Tuesday at IHIC conference: **“Model-based Analysis of HL7 CDA R2 Conformance and Requirements Coverage”**
 - Coverage of CDA R2 requirements improvements : typically from 50-60% to 100%. For details see above paper.



- IHE Gazelle *ObjectsChecker* : Principles and advantages
- **Gazelle Validation of CDA documents**
- Combined use of Art-decor and IHE Gazelle *ObjectsChecker*

EVSCient : a front end to the conformance validation services used by the Gazelle Platform (<http://gazelle.ihe.net/EVSCient>)



Result overview

XML	PASSED
XSD	PASSED
ModelBased Validation	FAILED

XML Validation Report

The XML document is well-formed

XSD Validation detailed Results

The XML document is valid

Model Based Validation details

Show Templates Tree (experimental)

- 1.3.6.1.4.1.19376.1.3.3.2.2 - Laboratory Report Item Section
- 1.3.6.1.4.1.19376.1.3.1 - Laboratory Report Data Processing Entry
 - 1.3.6.1.4.1.19376.1.3.1.6 - Laboratory Observation
 - 1.3.6.1.4.1.19376.1.3.3.1.5 - Laboratory Results Validator
- 1.3.6.1.4.1.19376.1.3.3.2.2 - Laboratory Report Item Section
 - 1.3.6.1.4.1.19376.1.3.1 - Laboratory Report Data Processing Entry
 - 1.3.6.1.4.1.19376.1.3.1.6 - Laboratory Observation
 - 1.3.6.1.4.1.19376.1.3.3.1.5 - Laboratory Results Validator
- 1.3.6.1.4.1.19376.1.3.3.2.2 - Laboratory Report Item Section

External Validation Service Front-end

CAS login

Home IHE IHE epSOS CA-SIS France Schematron Statistics

Validate CDA documents

Validation

Validation of CDA document in the context of the IHE

Upload the XML File you want to validate - only files with extension ".xml" are allowed -

+ Add

schematron

Select a validator and / or

Model Based Validation

- BASIC_CDA
- IHE - SPPC
- IHE - PCC BASIC
- IHE - PHARM Dispensation
- IHE - PHARM Pharmaceutical Advice
- IHE - PHARM Prescription
- IHE - XD-LAB
- IHE - XDS-SD
- IHE - XDS-SD XDS-1b

Validate

English

Location /ClinicalDocument/participant[u]

Description ERROR : This condition is not verified : participant require time attribute (IHE Laboratory Technical Framework, Volume 3 (LAB TF-3) 2.3.3.19) more...

Report

Test connstraint_languageCode

Location /ClinicalDocument

Description Note : This condition was verified : ClinicalDocument/languageCode SHALL be present in accordance with the HL7 CDA R2 standard (IHE Laboratory Technical Framework, Volume 3 (LAB TF-3) 2.3.3.10) more...

External Validation Service Front-end (Arsenàl.IT) CAS login

Home Message Content Analyzer Arsenàl.IT Schematrons Statistics

External Validation Service Front-end (Arsenàl.IT) IHE Gazelle

Home

This is the EVSClient for Arsenàl.IT

Venice Region (Italy)

Validate
Validation logs
Statistics

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Accueil

Bienvenue sur l'application

Cette application fournit une plateforme de test Gazelle.

Services pour eSanté

eSanté (Luxembourg)

A propos | Nous contacter | Suivi de problèmes | Copyright 2013 IHE International français

EVSCient

Home

External Validation Service Front-end (Arsenàl.IT)

Welcome to the EVS Client Application

This application provides a front end to the Validation Service.

- Services for IHE
 - CDA (PHARM, BASIC, ...)
 - XD* (XDS.b, XCA, XDM, ...)
 - XDW
 - HIL7
 - Certificates
 - Dicom
- Services for epSOS
 - CLINICAL DOCUMENT ARCHIVE (CDA)
 - XP (XDS.b, XCA, XDM, ...)
 - ACPD transaction
- Services for ASIP Santé (DMP)
 - CDA document: FRCP Structuration minimale and schematron provided by CI-SIS

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EVSCient

Home

Accueil

Le contenu de la page d'accueil n'a pas été défini. Commentez-vous un tant qu'admission pour le moment.

Kanta (Finland)

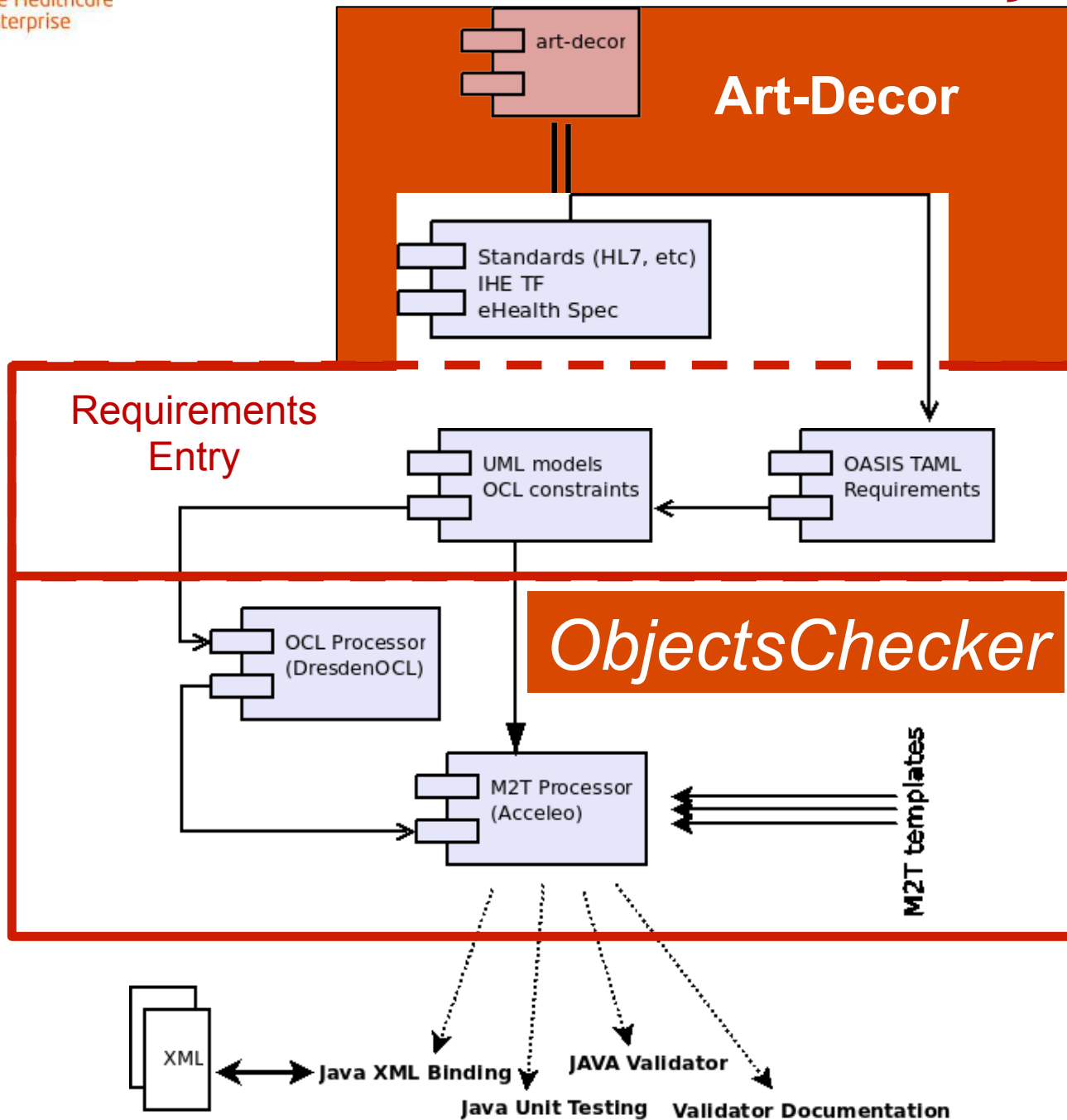
A propos | Nous contacter | Copyright 2015 IHE International

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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

Art-decor and Gazelle *ObjectsChecker* coupling



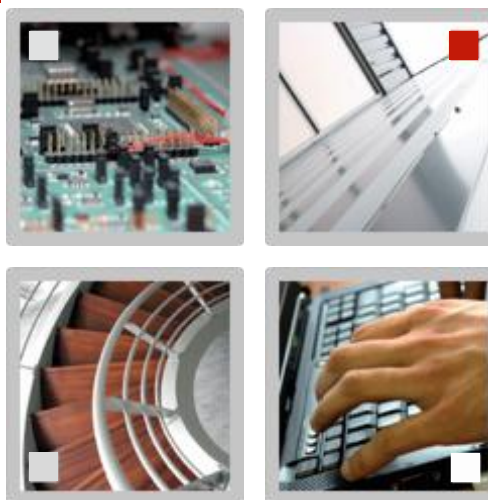
- More details : tomorrow paper “**Model-based Analysis of HL7 CDA R2 Conformance and Requirements Coverage**”
- Visit our web site : <http://gazelle.ihe.net>
- Email address : abderrazek.boufahja@ihe-europe.net



Any question ?

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