Using Archetypes with HL7 Messages and Clinical Documents

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HL7 Working Group Meeting

14 January 2011

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Template Data Schema (TDS)

- XML Schema representation of a clinical template using domain concepts
- TDS is used by non-Archetyped based systems as an intermediate data format to communicate Archetype-based Clinical Documents
- TDS is derived from a Clinical Template using generic rules based on Archetypes and RM

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Template Data Schema

- Element names are domain concepts from archetypes/templates
- Includes most archetype/template constraints
- Generated using Template Designer.
- Single transformation into RM (openEHR) schema for all templates

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Demo TDS auto-generation from Template Designer

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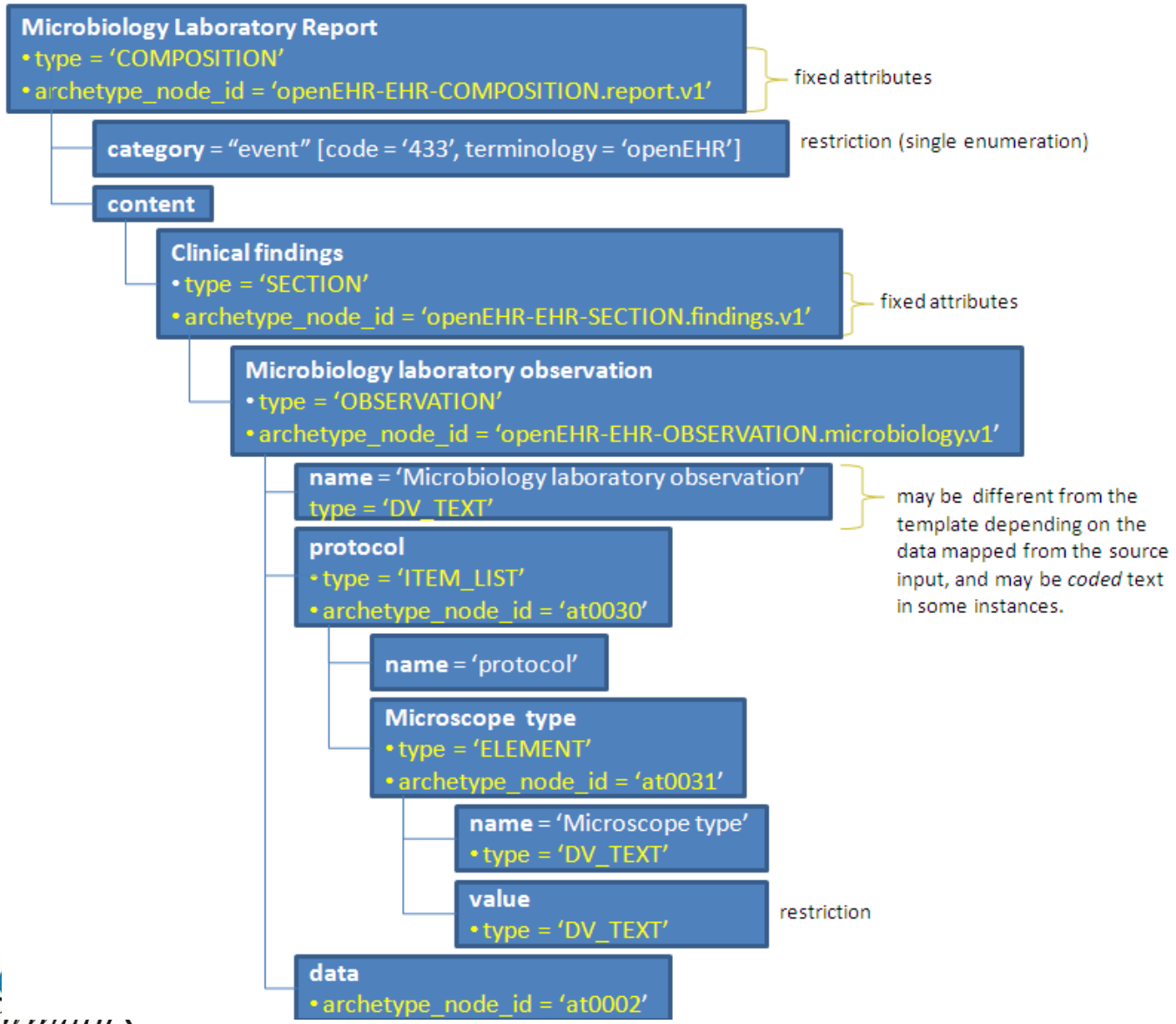
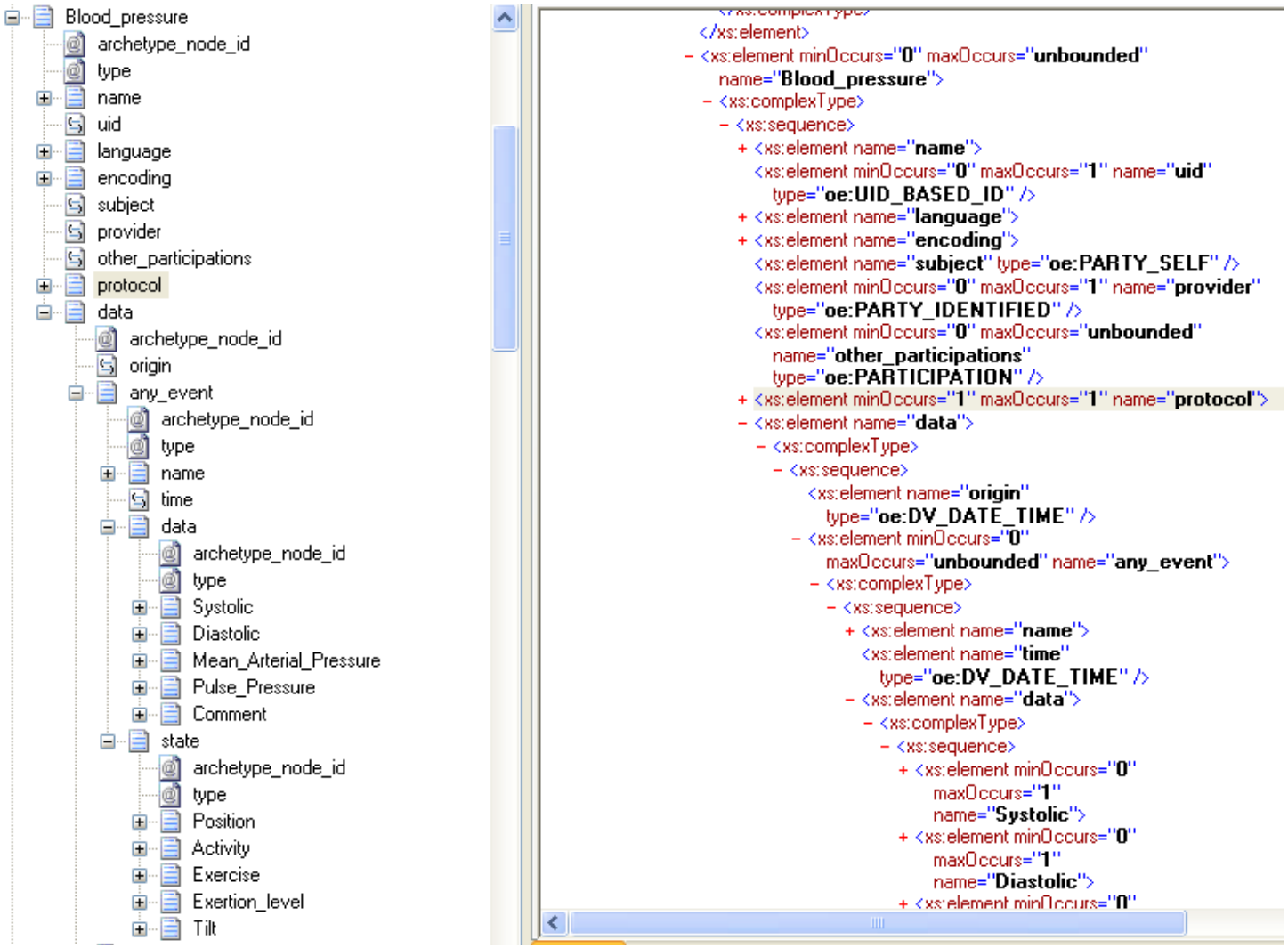
TDS Example Schematic



Metabolic TDS



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Uses of TDS

- Form data model (InfoPath/XForms)
- Interface between system components
- Interface between systems
- Data Integration Intermediate Form

Using TDS in Data Integration

- Moves the focus of mapping data from the reference model concepts to the domain (clinical) concepts – Semantic Transforms
- Enables consistency & integrity of the domain concepts to be maintained throughout the data integration process
- Supports semantic interoperability between systems using different Reference Models (openEHR, CDA, CEN)

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Template Data Document (TDD)

- The Template Data Document is an XML document (e.g. laboratory report) populated with data from the content source
- Conforms to a template data schema

Example: Microbiology laboratory report received as a HL7 V2 ORU message, transformed into a TDD that validates against microbiology_report TDS, transform into openEHR and store.

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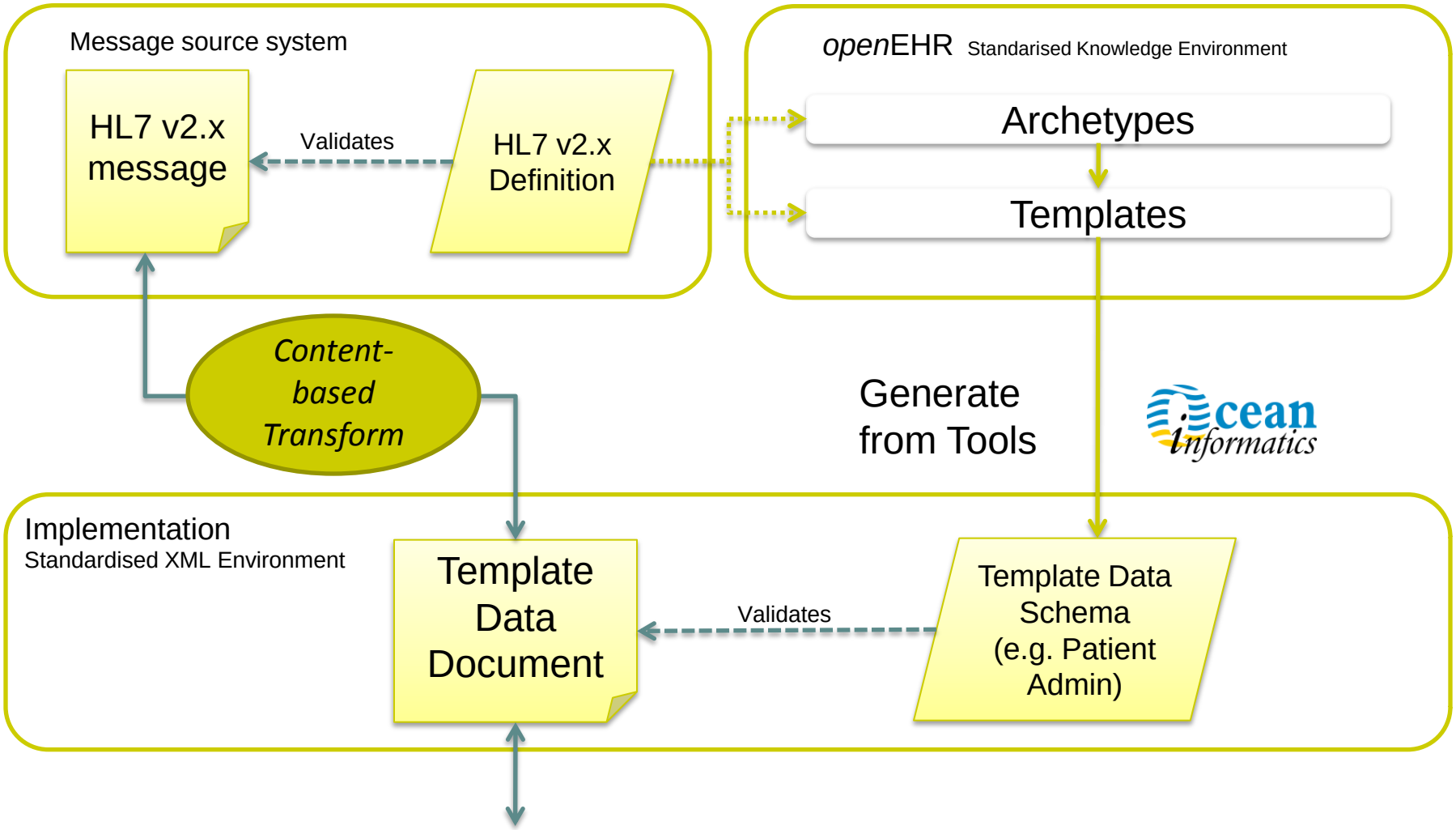
HL7 v2.x message to TDD



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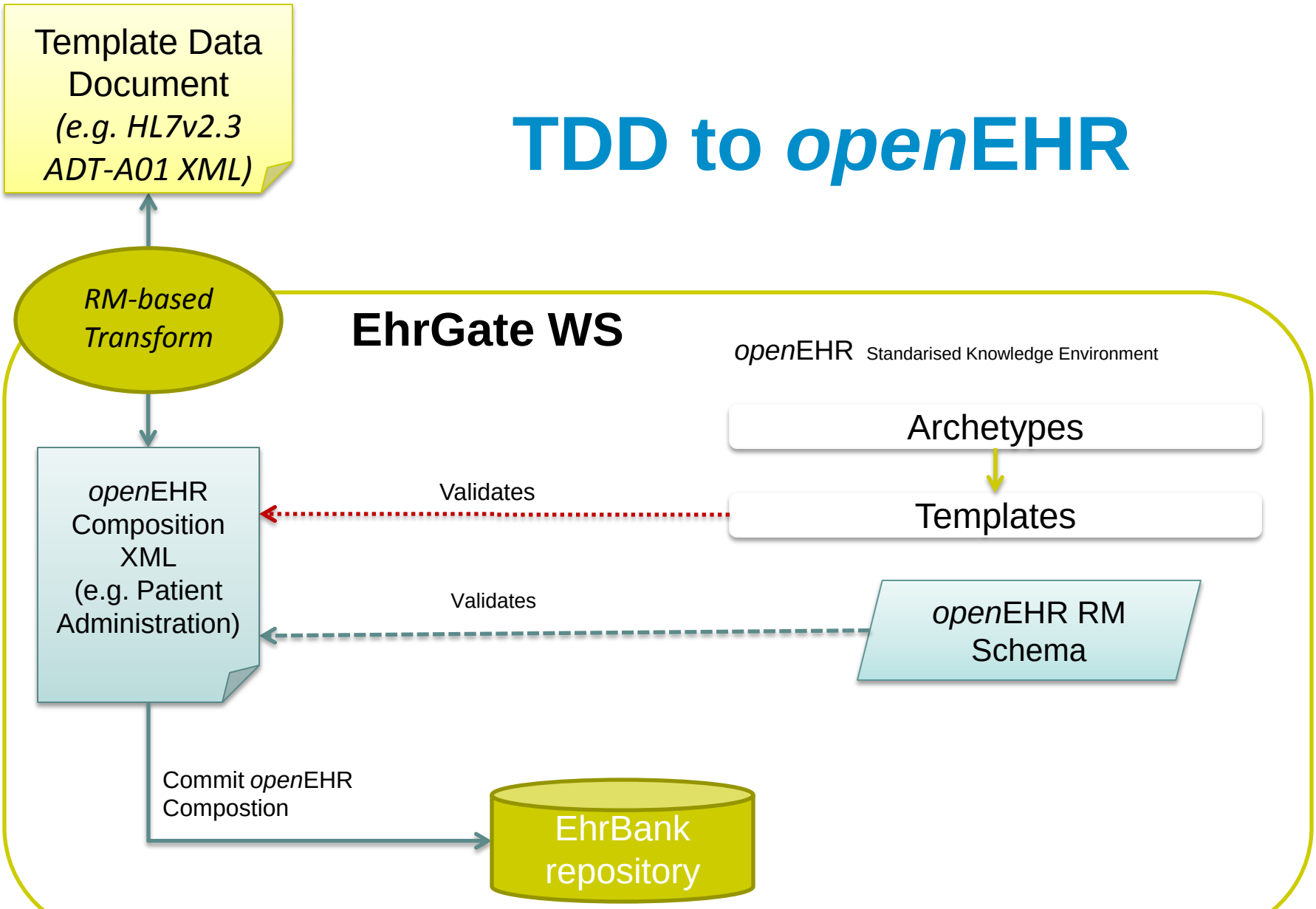
TDD to *open*EHR



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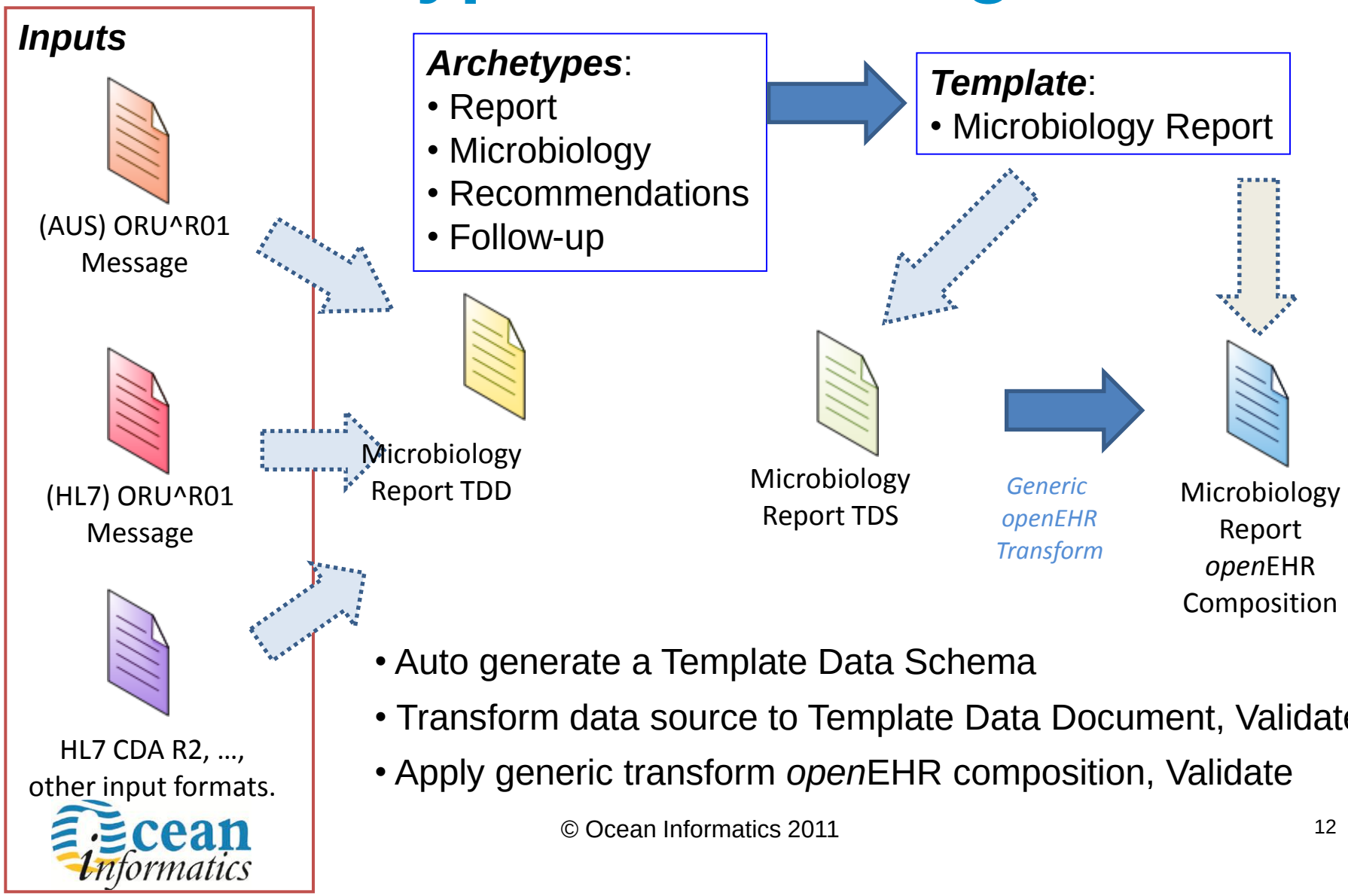
Archetype-based Integration



- Auto generate a Template Data Schema
- Transform data source to Template Data Document, Validate
- Apply generic transform *open*EHR composition, Validate

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HL7 v2.x Transformation Process

1. **Generate TDS from the Template Designer** based on the archetypes and template(s) required to capture the integrated HL7 message content.
2. **Convert HL7 v2.x ASCII message to XML**.
3. Based on the HL7 v2.x definition and required TDS-formatted output, **write the XSLT script** to map the HL7 v2.x XML nodes to TDS format.*
4. **Invoke HL7 v2.x to TDD transform**.*

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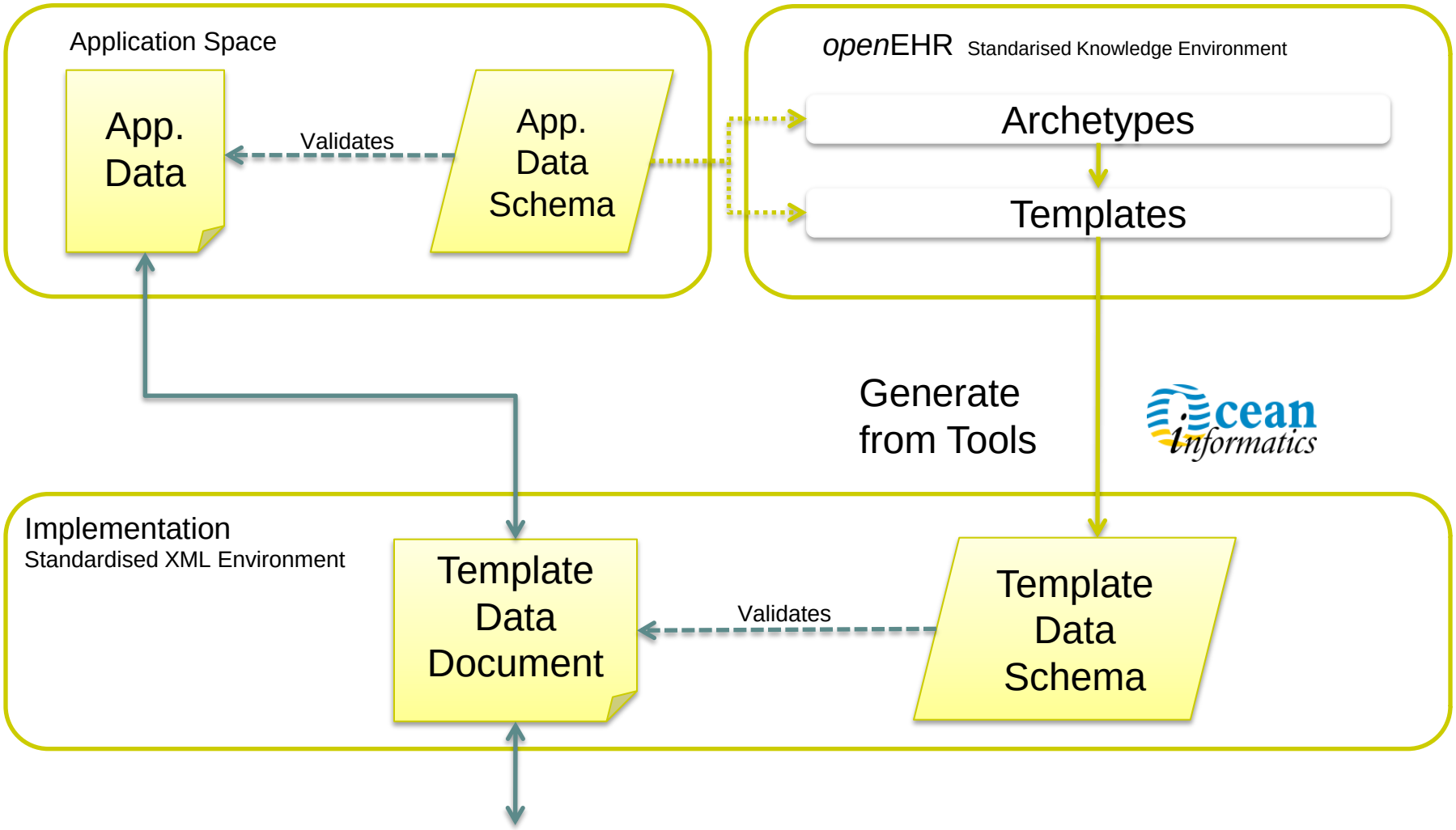
Application data to TDD



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Covert HL7 V2 Referral Message to Referral TDD Extract Demo

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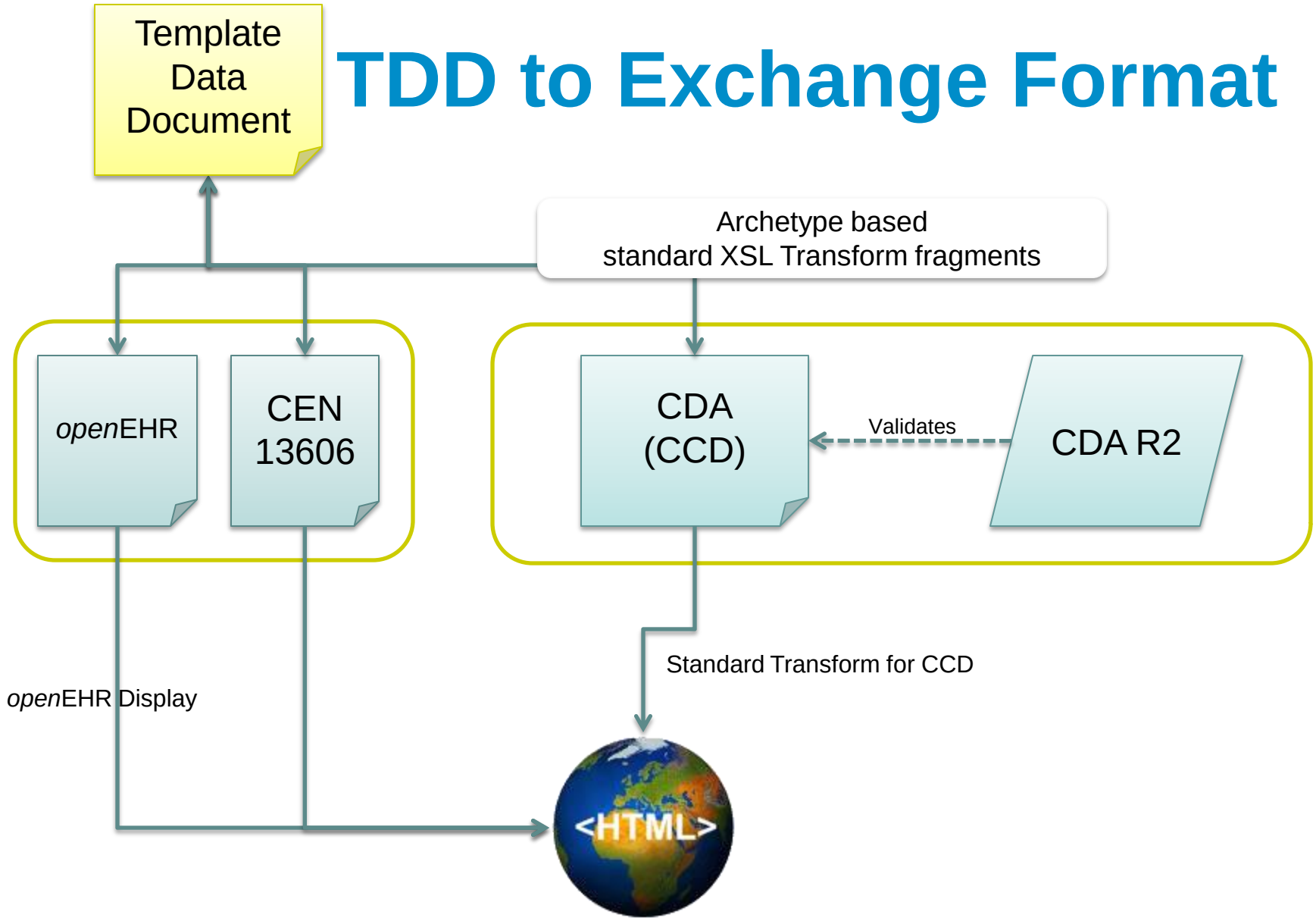
TDD to Exchange Format



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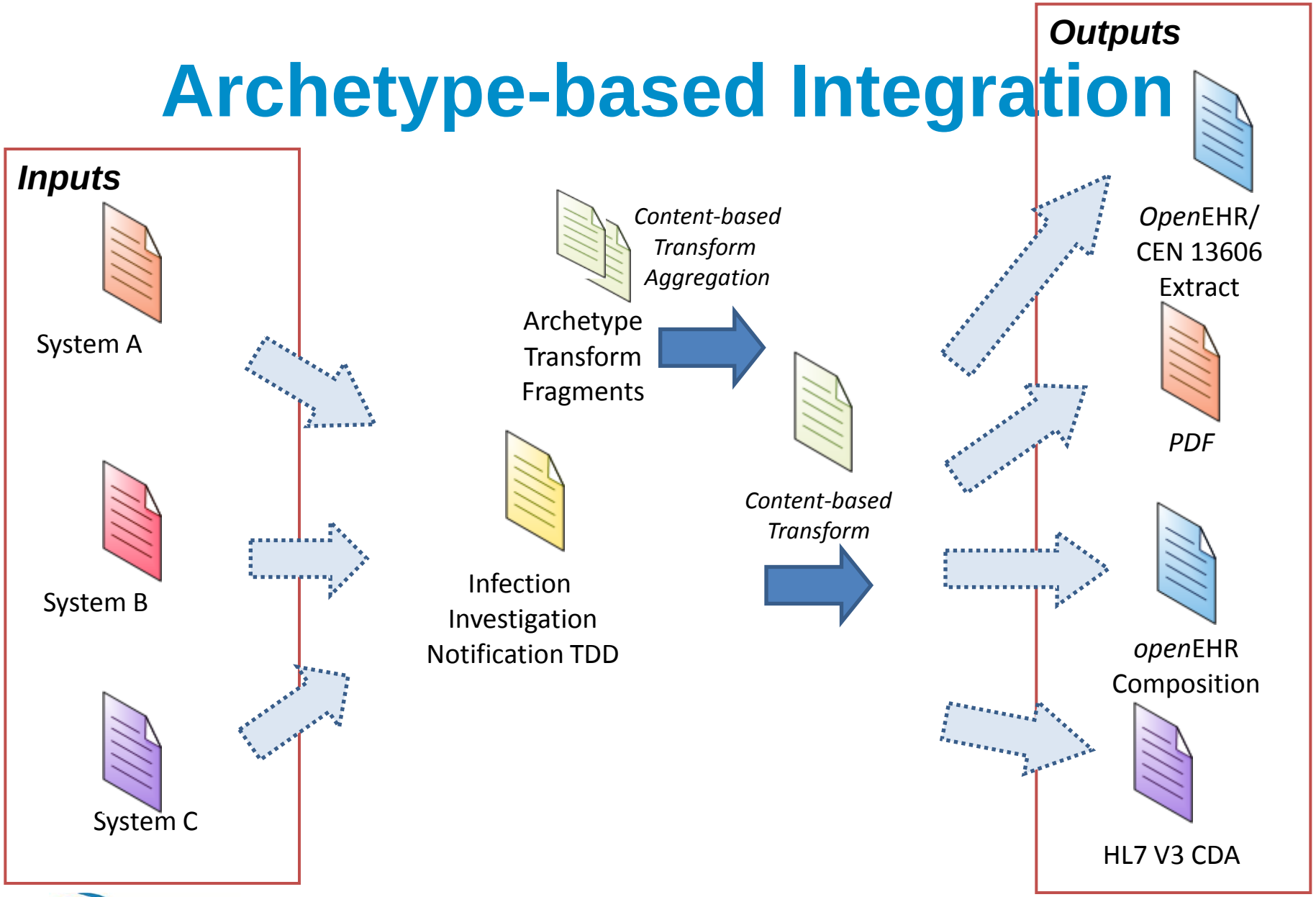
Archetype-based Integration



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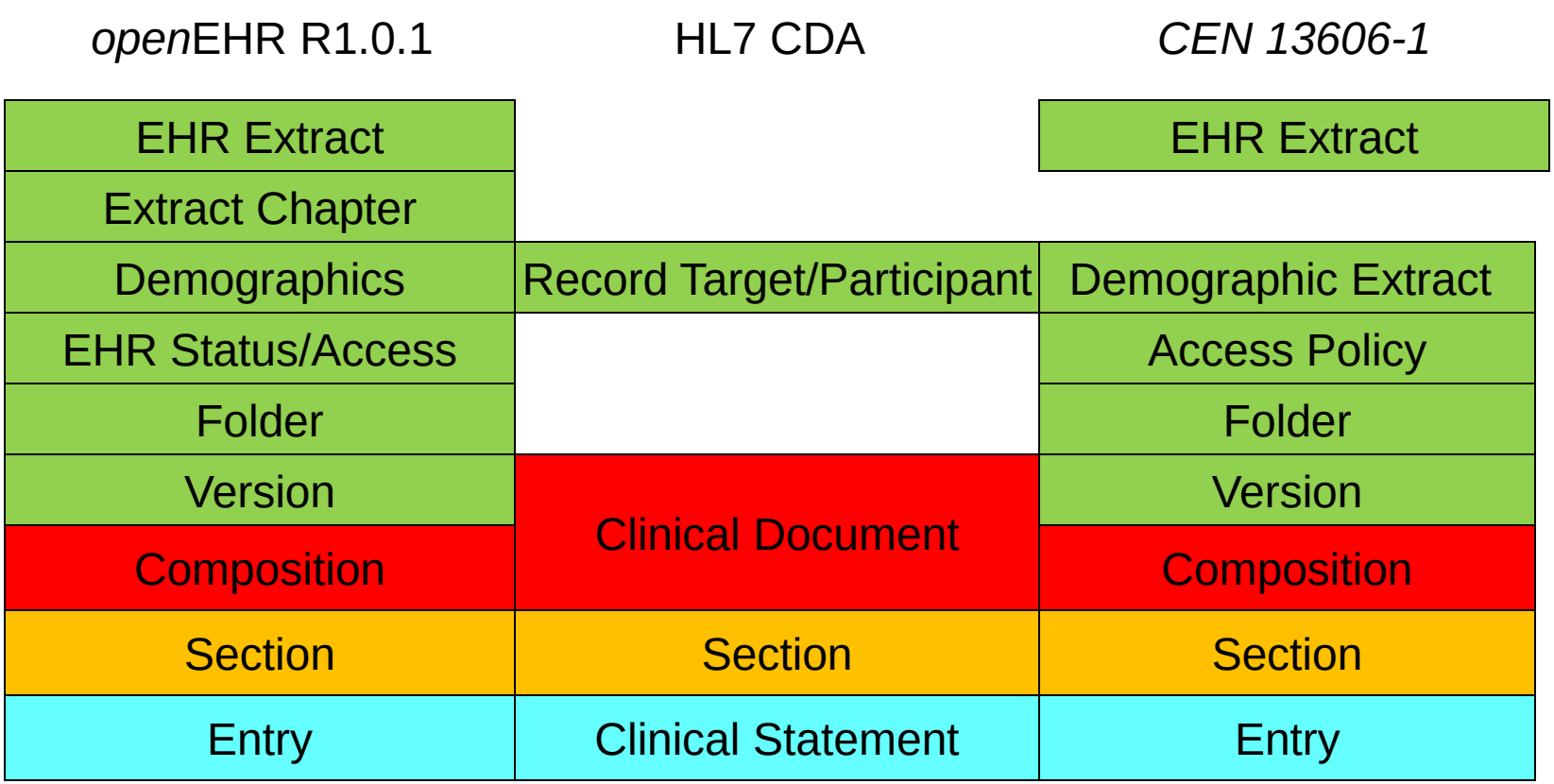
Clinical Extracts Compared



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CDA Transformation Process

- Build generic CDA Level 2 transform.
- Build Archetype-specific CDA Level 2 transform fragment for each Archetype
- Build Archetype-specific CDA Level 3 transform fragment for each Archetype
- Import archetype-specific transform fragments into generic CDA Level 2 transform based on document content
- Invoke CDA transform

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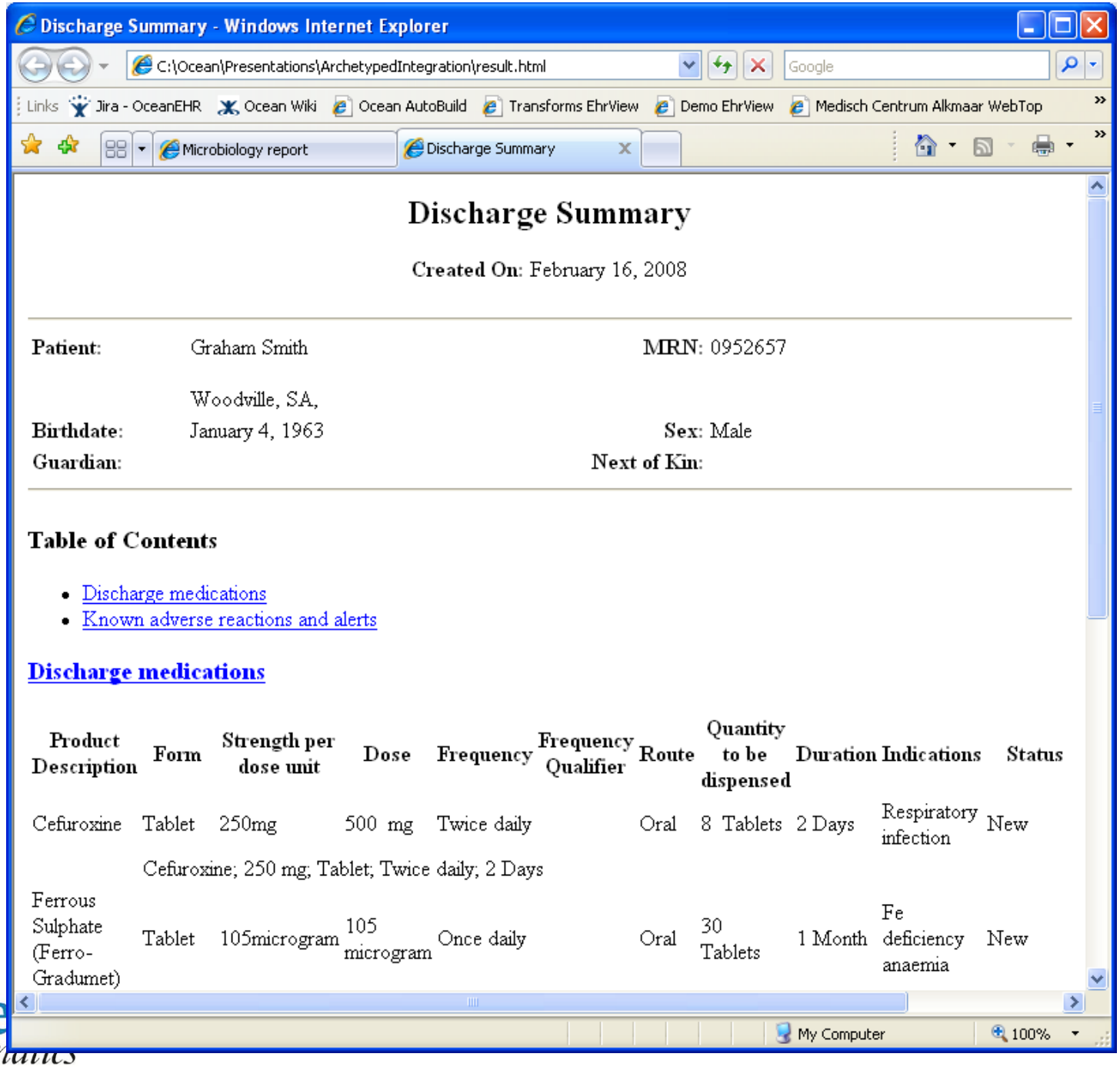
Microbiology report - Windows Internet Explorer
C:\Ocean\Presentations\ArchetypedIntegration\result.html
Google
File Edit View Favorites Tools Help
Links Jira - OceanEHR Ocean Wiki Ocean AutoBuild Transforms EhrView Demo EhrView Medisch Centrum Alkmaar WebTop
Microbiology report
Microbiology report
Created On: February 26, 2008
Patient: Graham Smith
MRN: 0952657
Woodville, SA,
Birthdate: January 4, 1963
Sex: Male
Guardian:
Next of Kin:
Table of Contents
Clinical findings
Clinical findings
1. Culture Wound: Culture Wound
2. Specimen:
o Sample description: Wound
o Site: Foot L
3. Organism:
o MRSA:
Therapeutic susceptibilities:
Eryth:
Sensitivity: 0
Ox:
Sensitivity: 0
Done
My Computer
100%



Discharge Summary

Created On: February 16, 2008

Patient: Graham Smith
MRN: 0952657

Woodville, SA,
Birthdate: January 4, 1963
Sex: Male
Guardian:
Next of Kin:

Table of Contents

Discharge medications

Product Description	Form	Strength per dose unit	Dose	Frequency	Frequency Qualifier	Route	Quantity to be dispensed	Duration	Indications	Status
Cefuroxine	Tablet	250mg	500 mg	Twice daily		Oral	8 Tablets	2 Days	Respiratory infection	New
	Cefuroxine; 250 mg; Tablet; Twice daily; 2 Days									
Ferrous Sulphate (Ferro-Gradumet)	Tablet	105microgram	105 microgram	Once daily		Oral	30 Tablets	1 Month	Fe deficiency anaemia	New

Referral TDD Extract Demo to CDA Referral Summary Document Demo

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XDS Document Meta-Data

XDS meta-data

- title
- typeCode
- languageCode
- authorPerson
- authorInstitution

TDD source

- name/value
- archetype/template ID; or
- name/defining_code
- language/code_string
- composer
- context/health_care_facility

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XDS Document Meta-Data

- practiceSettingCode
- serviceStartTime
- serviceStopTime
- intendedRecipient
- patientId
- sourcePatientInfo

- context/setting
- context/start_time
- context/end_time
- context/participations
- subject/id
- subject/identities/name

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Referral Summary Document to XDS MetaData Demo

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Discharge Summary TDD Extract to CDA Discharge Summary Document Demo

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CDA Discharge Summary Document to Discharge Summary TDD Extract Demo

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