Aligning HL7 CDA and CDISC ODM

An Experiment in Cardiovascular Radiology

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INSERM : U872 – team 20

- INSERM : Institut National de la Santé Et de la Recherche Médicale
  - French National Institute for Health and Medical Research (Ministry of Health & Ministry of Research)
  - 13,000 people (6000 researchers) - 360 units
    - 85% housed within university hospital or cancer treatment centers
- U872 – team 20 : Knowledge engineering in Public Health and Medical Informatics
  - Methods and tools allowing modelling, formalizing, and acquiring medical knowledge in order to develop knowledge based systems in medicine

AP-HP Patient care

- Most important French University Hospital Organization with
  - 1,000,000 hospitalized patients
  - 38 hospitals with round 23,000 beds + 1400 day care and 850 home care capacity
  - 90,000 employees including 19,000 physicians
- Single HIS/EHR: CareByThales® (Thales©) (2009)

Clinical information
Nurse notes
Discharge summaries, DRGs
Flow sheets, Care plans
Medical order
Imaging reports
Lab results

Patient focus
(Point-of-Care)

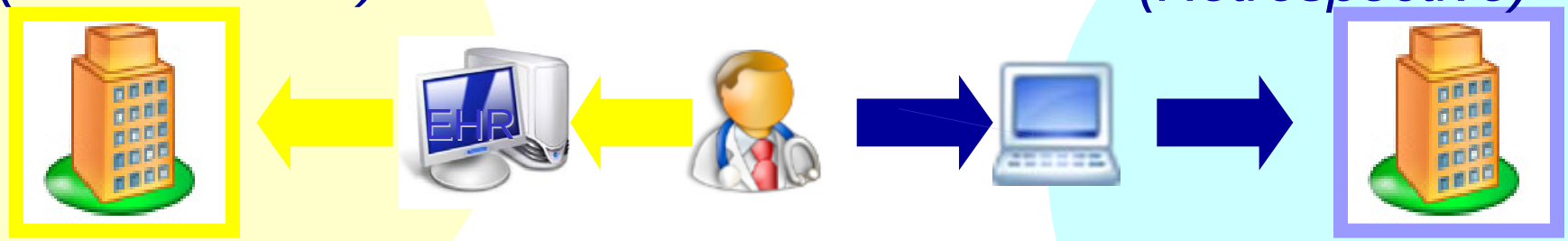
EHR

Context and problems
Redundant data entry

- Clinical data of EHR are not commonly used in clinical research

Patient focus
(Point-of-Care)

Population focus
(Retrospective)



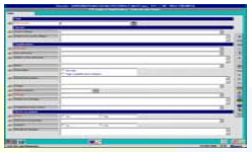
EHR : DxCare ®
(MEDASYS ©)

CDMS : Air On Line (AOL)®
(KIKAMEDICAL©)

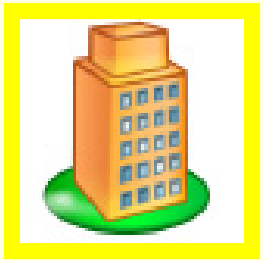
Multiple applications
Multiple data forms
=> Redundant data entry

Objective
Single data entry for multiple uses

Patient focus
(Point-of-Care)



Population focus
(Retrospective)



EHR

Clinical Trials

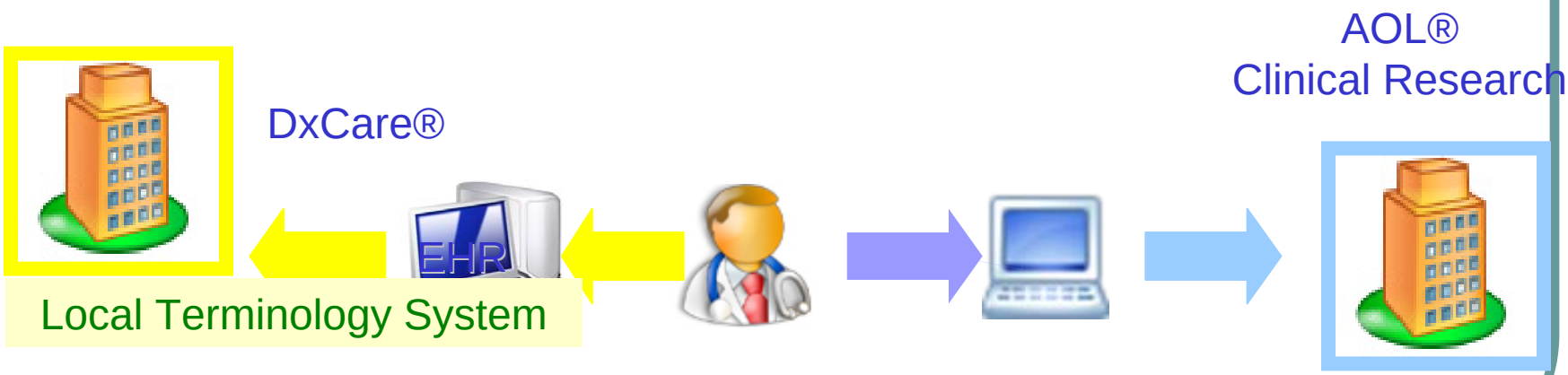
Alerts
Decision
Support system

Single application

<u>Single multi-purposes data entry form</u>

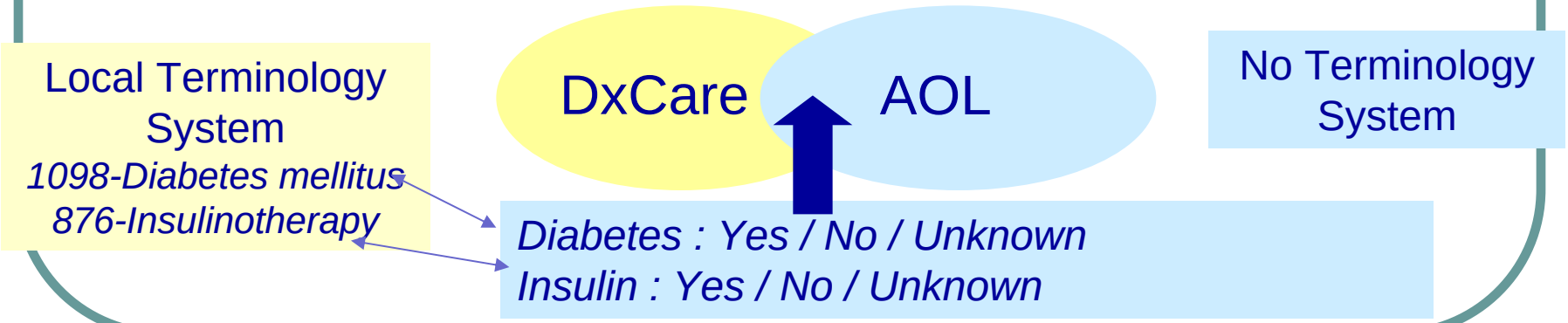
Material
HEGP : Cardiovascular radiology

- Patient care : DxCare ® (MEDASYS ©)
- Clinical research : regional & national registries
  - AIR On Line (AOL)® (KIKAMEDICAL©)
  - ViewCare®



Method (1/2) : Single “care-research” cardio-vascular form

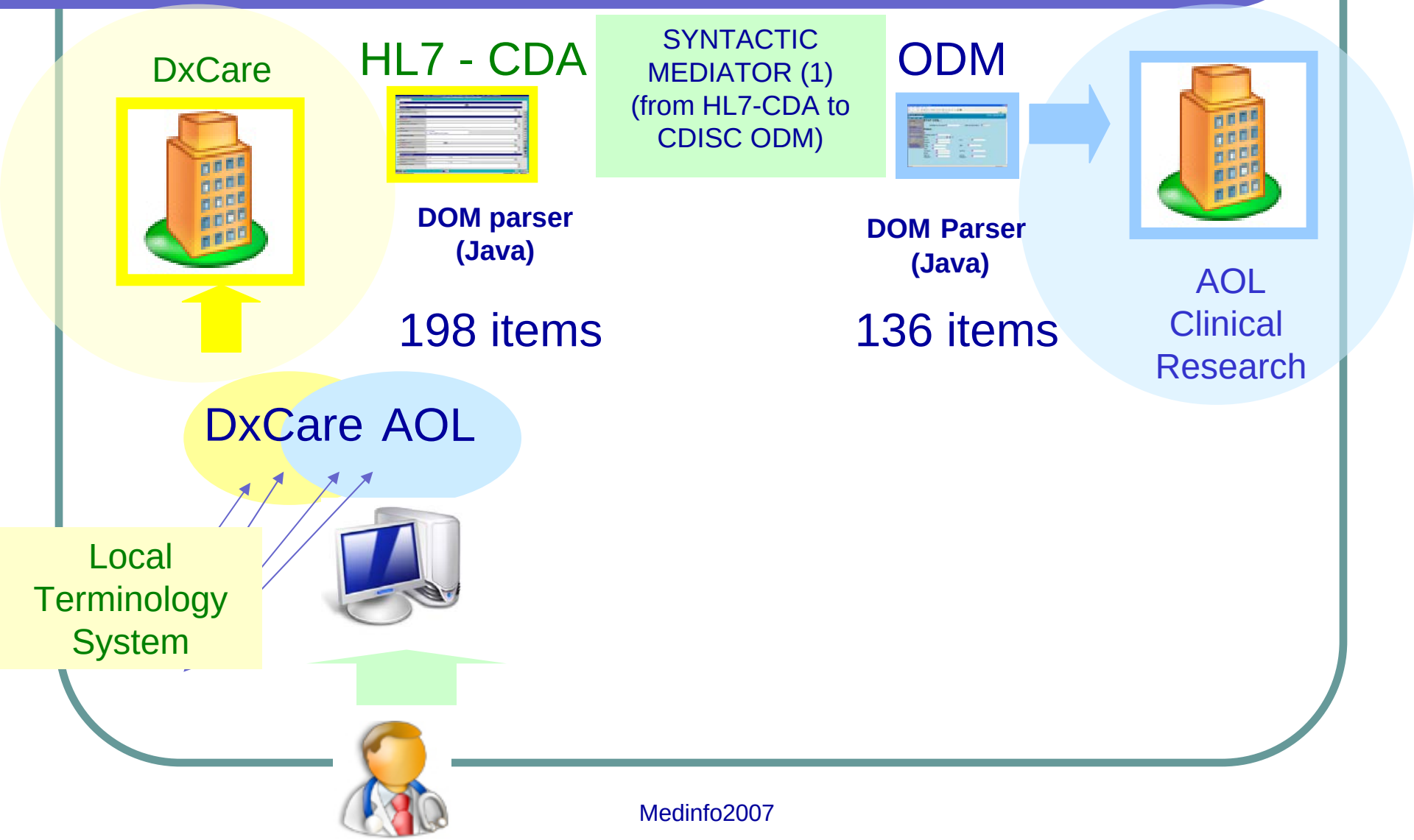
- Restrict the problem to a syntactic alignment
  - Integrating only 2 contexts (DxCare (EHR) & AOL)
  - Single cardio-vascular radiology form
    - Including all clinical items required in both contexts
    - Semantic representation of the clinical data shared by both contexts was driven by the context of clinical research



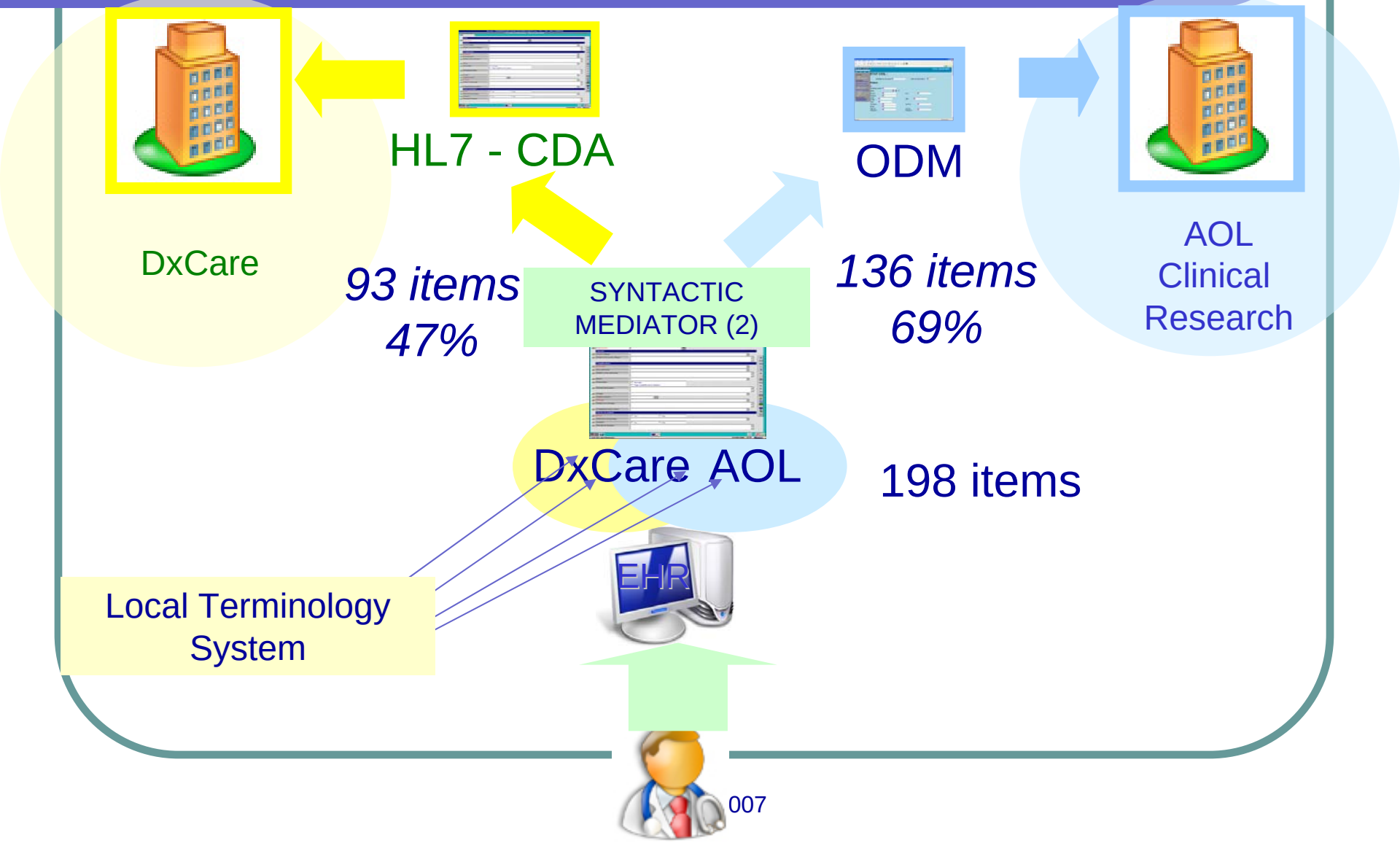
Method Step (2/2) : Syntactic mediator

- Generate from the single form 2 different messages to feed EHR and the external system with the appropriate format
  - CDA r2 (HL7) for DxCare (EHR)
  - ODM (CDISC) for AOL (national registry)
- Solution 1 : Syntactic alignment of XML structures
- Solution 2 : XForms
  - W3C standard for web forms
  - Separate the interface from the content
  - Generate several XML structures from the same interface

Results (1/2): Syntactic mediator



Results Step (2/3): : Syntactic mediator (XForms)



Discussion

- Assessment of work
  - Syntactic alignment (HL7/CDA to CDISC/ODM) avoids double data entry
    - Based on XForms : emerging technology (few implementations)
- Limits : work in progress
  - Testing integration in daily practice
  - Semantic issues
    - Documenting the semantic gap between contexts
    - Semantic mediator

References

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- **Souza T, Kush R, Evans JP. Global clinical data interchange standards are here! Drug Discov Today. 2007 Feb;12(3-4):174-81.**
- **CDA Implementation guide. : www.hl7.org**
- **Xforms: http://www.w3.org/MarkUp/Forms/**

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