Prosopography and Computer Ontologies: towards a formal representation of the 'factoid' model by means of CIDOC-CRM



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Summary

1. **Background**. Structured prosopography; factoid-based pros.; different models for different contexts.

2. **Problem**. Semantic interoperability; expressing the factoid model in a more general fashion.

3. **Approach**. Applying CIDOC-CRM; Strengths and weaknesses; open questions.

4. **Conclusions**. Ongoing work: the Factoid Prosopography portal; linked data repositories.

Prosopography: from a ‘narrative’ model...

From J.R. Martindale, *The Prosopography of the Later Roman Empire, 3: A.D. 527-641. Cambridge: Cambridge University Press. 1992.*

Eucherius 4 v.inl. 470

Of noble birth; Sid. Ap. *Ep.* III 8.2.

Addressee of a letter from Sidonius Apollinaris praising him as one to whom the Roman state owed much for his military activities without having rewarded him; Sid. Ap. *Ep.* III 8 (facile clarescit rempublicam morari beneficia vos mereri) (the date is unknown, but the circumstances to which Sidonius alludes in this letter may have been the attacks by the Visigoths in 471/474).

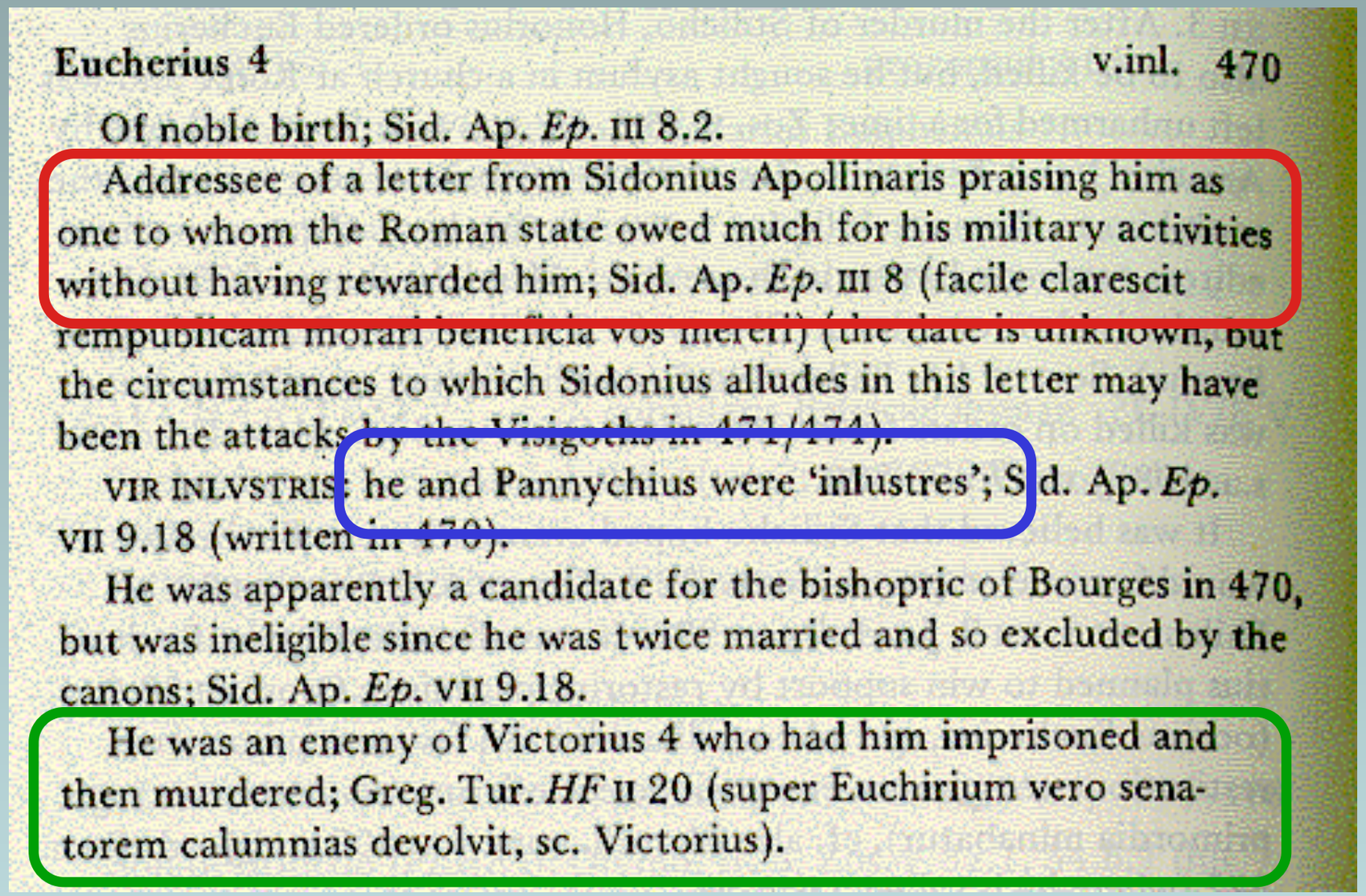
VIR INLVSTRIS: he and Pannychius were ‘inlustres’; Sid. Ap. *Ep.* VII 9.18 (written in 470).

He was apparently a candidate for the bishopric of Bourges in 470, but was ineligible since he was twice married and so excluded by the canons; Sid. Ap. *Ep.* VII 9.18.

He was an enemy of Victorius 4 who had him imprisoned and then murdered; Greg. Tur. *HF* II 20 (super Euchirium vero senatorem calumnias devolvit, sc. Victorius).

Prosopography: … to a ‘structured’ model

- Personal Information: “A was described this way”
- Status: “A held this *status*”
- Event: “A took part in this event of this *type*”



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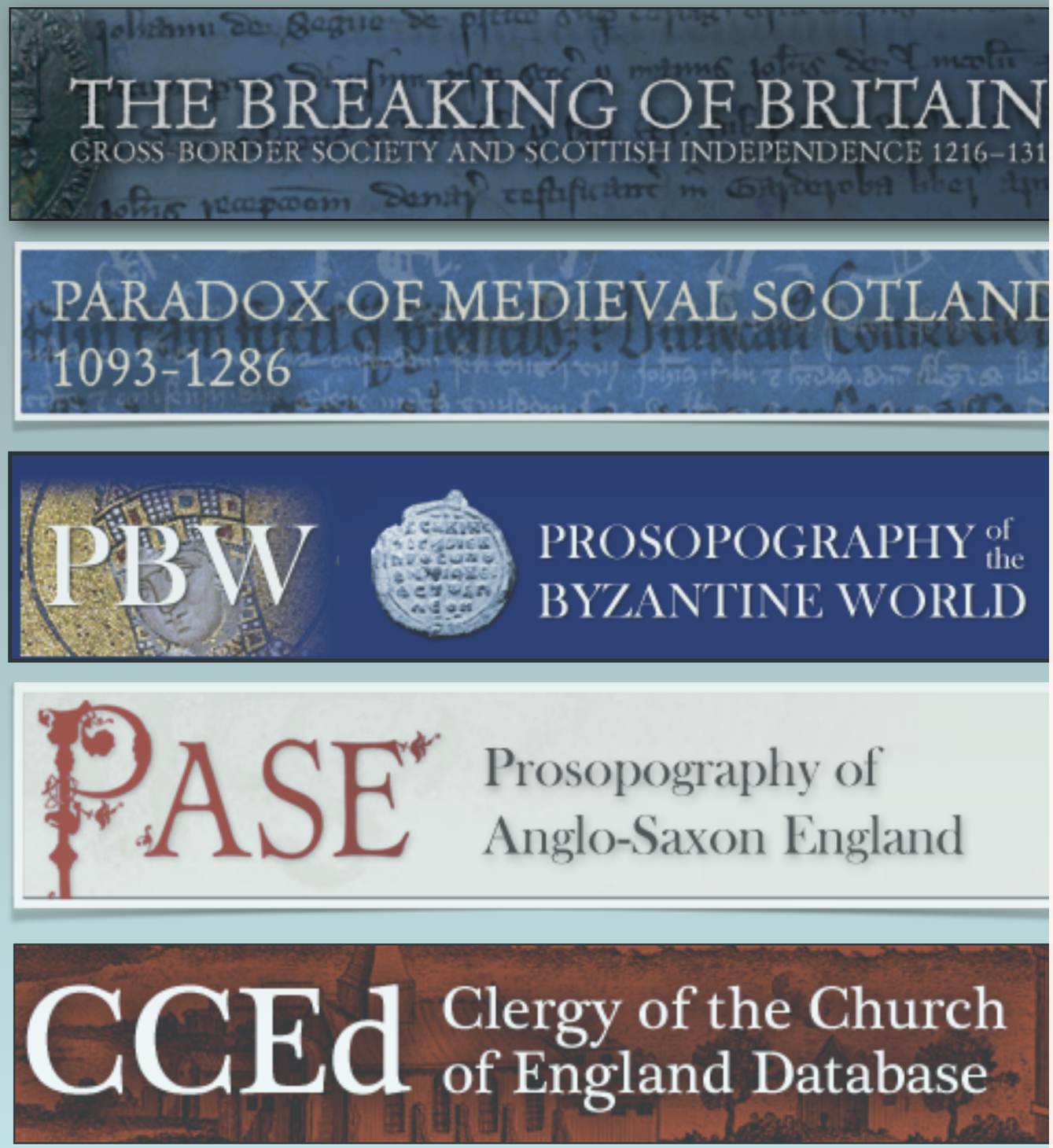
Structured Prosopography: information types



- **Authorship**: "A authored text B"
- **Education**: "A was educated by B"
- **Event**: "A took part in this event of this *type*"
- **Personal Relationship**: "A was related to B (e.g. sister)"
- **Occupation**: "A practiced this *occupation*"
- **Office**: "A held this *office*"
- **Personal Information**: "A was described this way (e.g. saintly)"
- **Possession**: "A owned this thing"
- **Recorded Name**: "A's name was written this way"
- **Status**: "A held this *status*"
- **Transaction**: "A took part in this transaction"

But…

“So, if the king could not fully bring his sense of and desire for order to Scottish society, how are modern historians supposed to do so? To what extent can a highly formal structure such as one finds in a database be useful or helpful to represent the complex and ambiguous aspects of this society?”

Fact vs Factoid

- A Factoid is
  - An assertion made by the project team that **a source "S" at reference "R" states something ("F") about a person or persons ("P")**
- A "Fact" (Boute 2002)
  - "something that happens to a person at a certain moment"

    - Boute, Bruno (2002). Towards More Uniform Database Structures for Prosopographical Research: Work in Progress in University History -- the Example of the Lovanienses Database. In Keats-Rohan, K.S.B. (ed.) *Resourcing Sources*. Oxford: Unit for Prosopographical Research.

Factoid model: an abstract diagram



- notice the ‘gap’ between sources & assertions

Factoid model: how they look to users

BIOGRAPHY	Watt, *Graduates*, 170: Adam was probably from Eccles (BWK) or held the church there, and which may have been held after him by Henry of Eccles, before passing in 1209 to Radulf, priest of Dunbar. He is described as 'Adam the priest' on his seal, but is found as Master 1178×88. He appears witnessing charters from 1186×89, and ×1198. He might be the same as Adam de Nichole. Cf. Adam of Hirsel.
FLORUITS	1178 × 1188
RELATED PLACE	Eccles
MATRIX	Adam of Eccles, master (fl.1178×98)

Total number of associated factoids: 9

Transaction factoids (1) | **Title factoids (4)** | Witnesses factoids (4)

Listing items **1** to **4**, page **1** of **1**

<< First < Previous 1 Next > Last >>

Date	Short Summary	Source
undated	Master	3/647/1 (*Melr. Lib.*, no. 28)
1178 X 16 Jan. 1188	Master	2/10/108 (*SEA*, i, no. 219)
1178 X 23 Mar. 1189	Master	3/416/13 (*Melr. Lib.*, no. 94)
1188	Master	3/416/17 (*Melr. Lib.*, no. 108)

https://www.poms.ac.uk/record/person/762/

Factoid model: some real numbers

BIOGRAPHY

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	PASE I	PASE II	POMS
Number of sources	**2,013 (1356 charters)**	**2,784 (1,445 charters)**	**10,043 (5429 charters)**
Number of persons	11,758	19,807	22,536
Number of factoids	84,607	282,026	101,372

What is the factoid model for?

> “By "modeling" I mean the heuristic process of constructing and manipulating models, a "model" I take to be either a representation of something for purposes of study, or a design for realizing something new.”

McCarty, W. (2004). *Modeling: A Study in Words and Meanings*. In S. Schreibman, R. Siemens, & J. Unsworth (Eds.), A Companion to Digital Humanities. Oxford: Blackwell.

A Quadripartite view of models in DH

Data Acquisition



Workflow, experts habits and conceptualization

Data Storage



Efficiency, price, platform

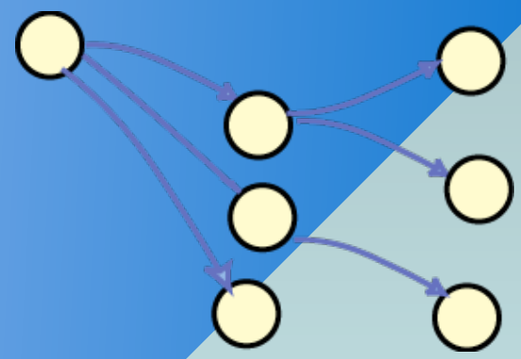
Data Presentation

Tables, colors, information layout & organization, discipline-specific discourse



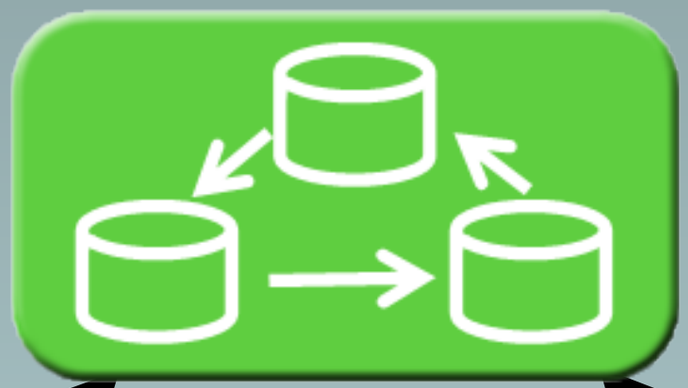
Data Integration

Semantic interoperability, adherence to recognised standards

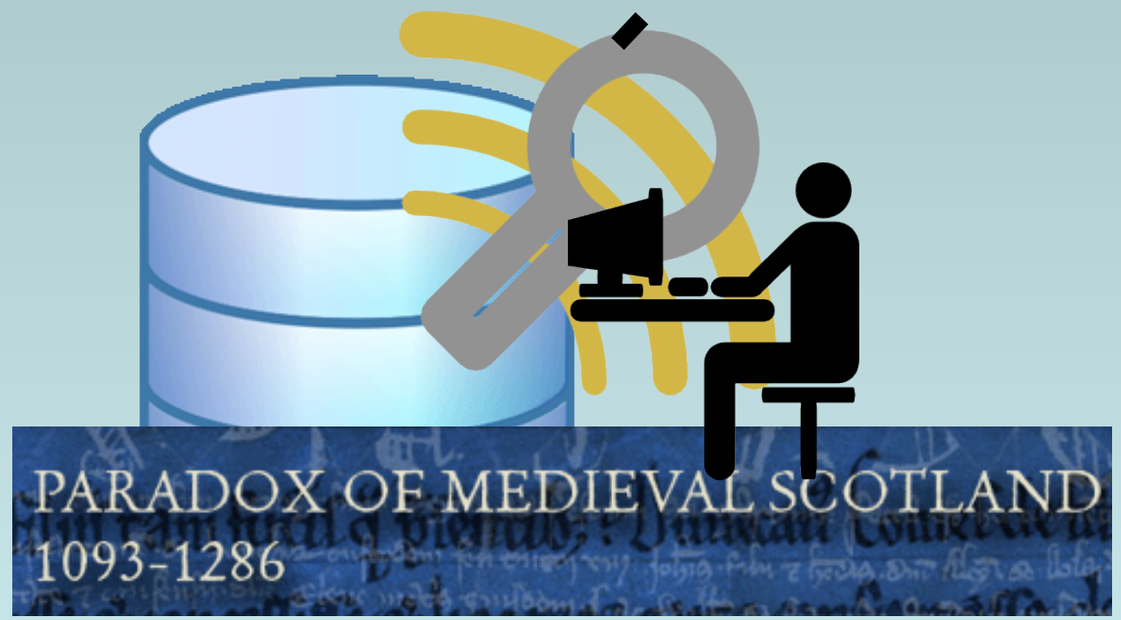


The importance of semantic interoperability





Person:
Adam of Eccles



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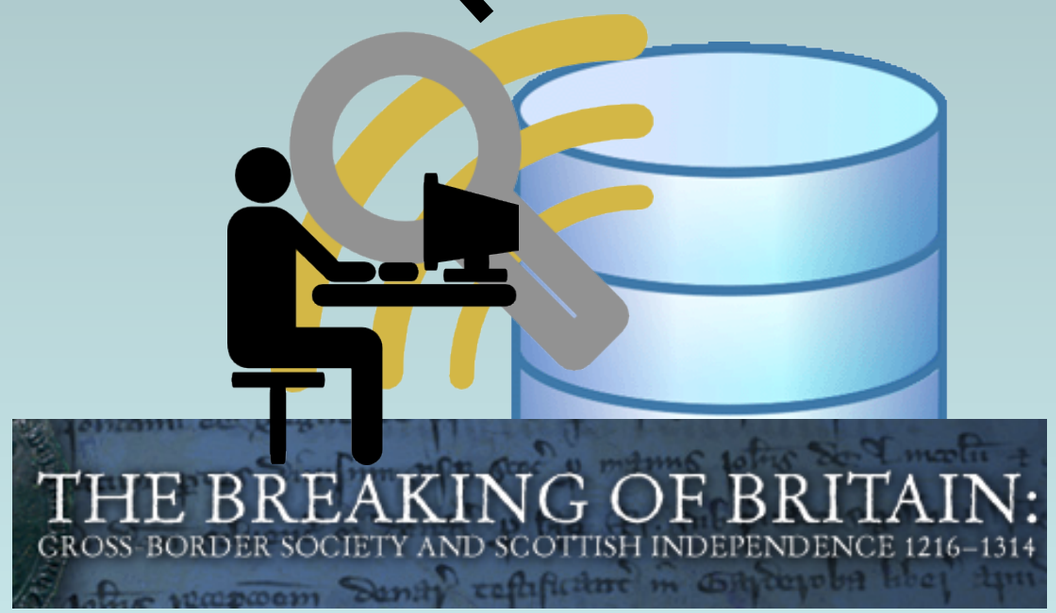
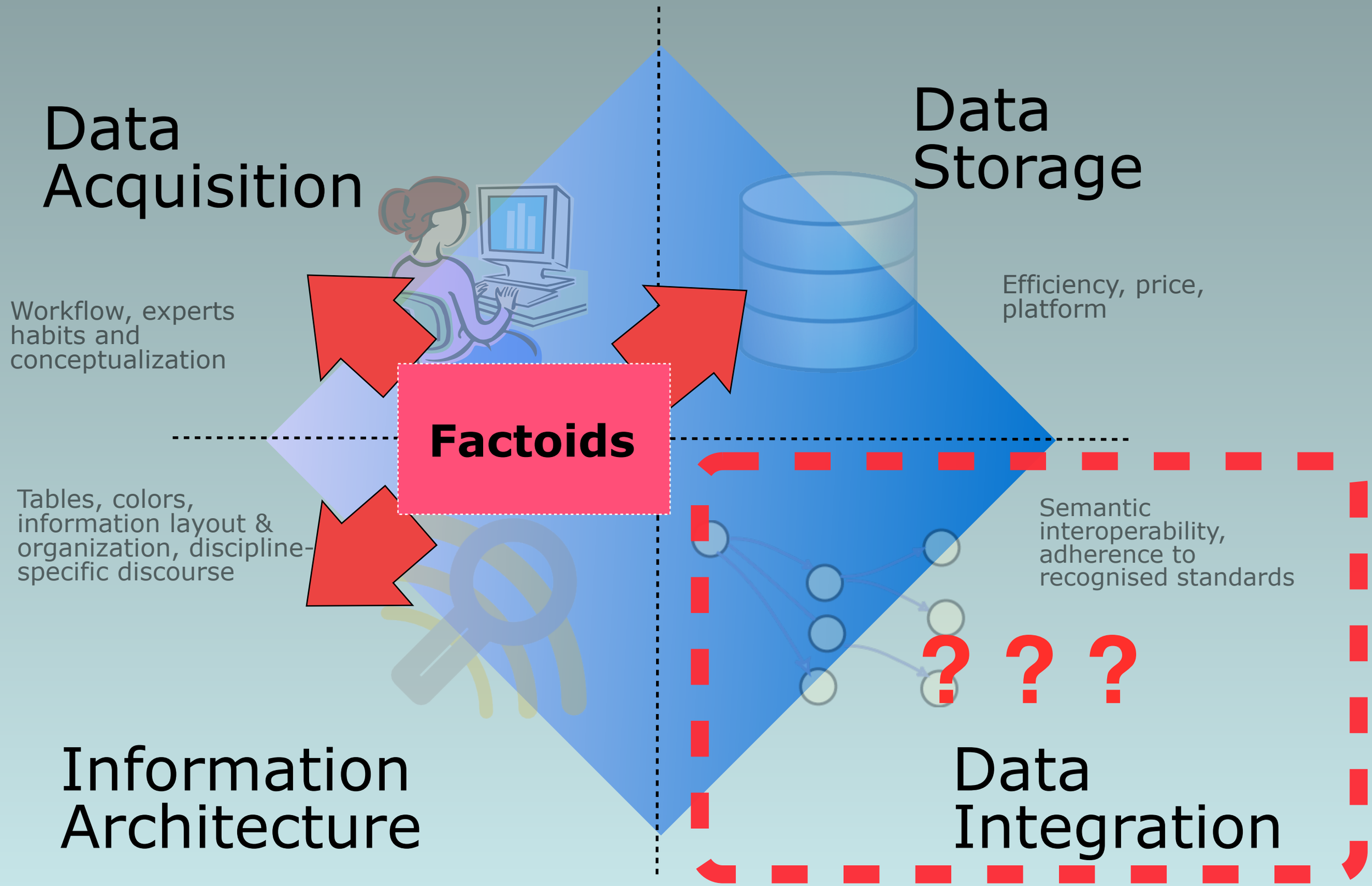


A Quadripartite view of models in DH



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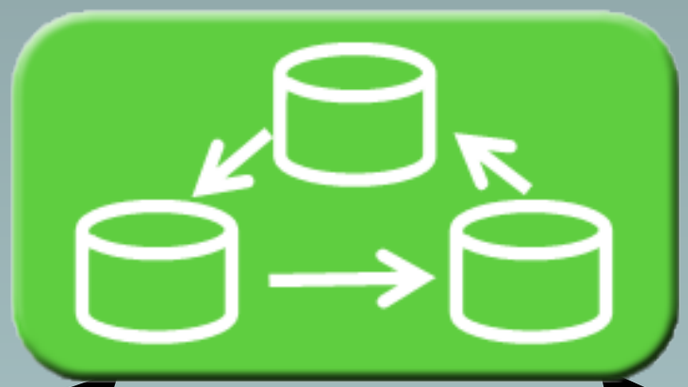


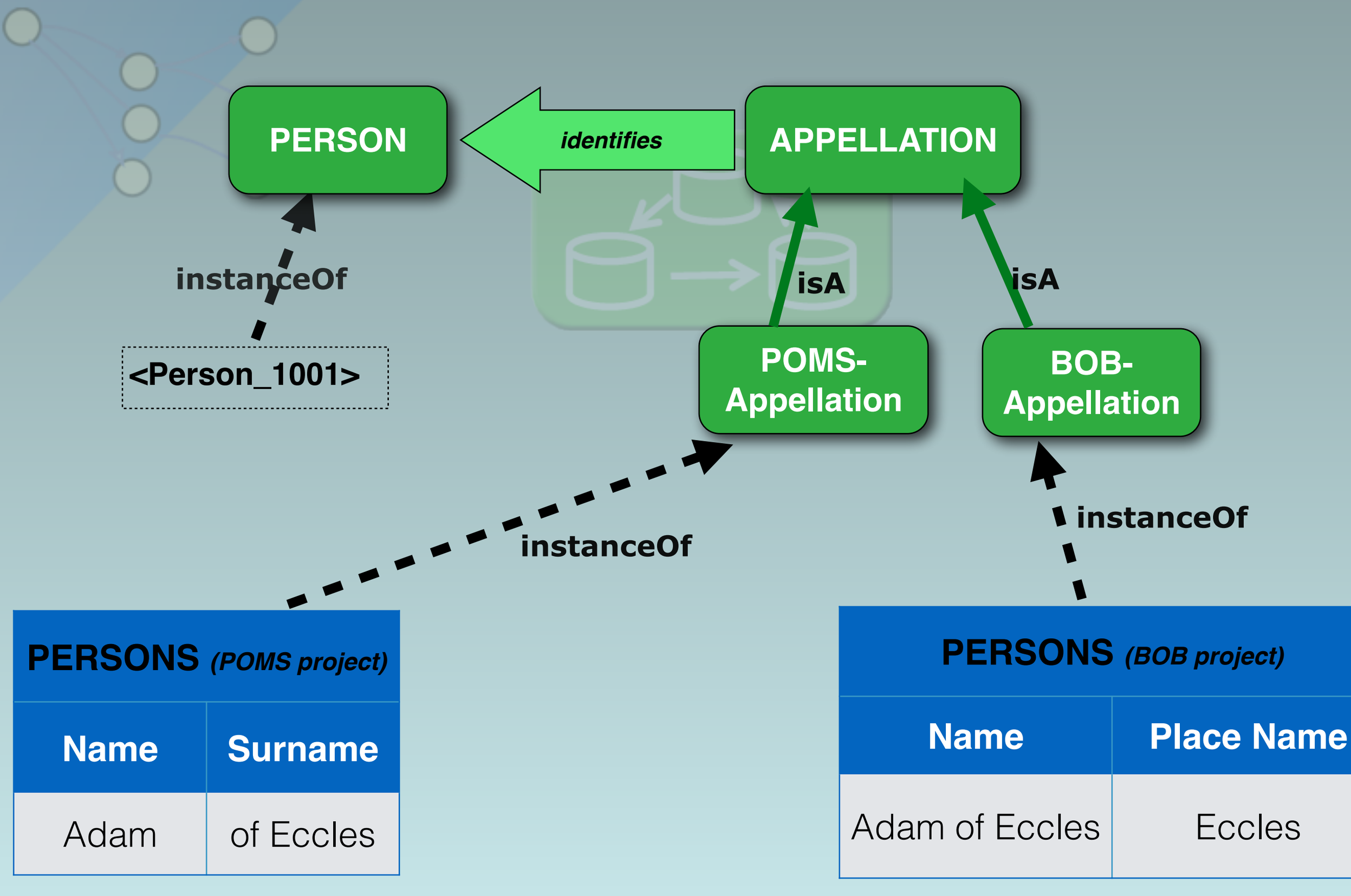
PERSONS *(POMS project)*

Name	Surname
Adam	of Eccles

PERSONS *(BOB project)*

Name	Place Name
Adam of Eccles	Eccles

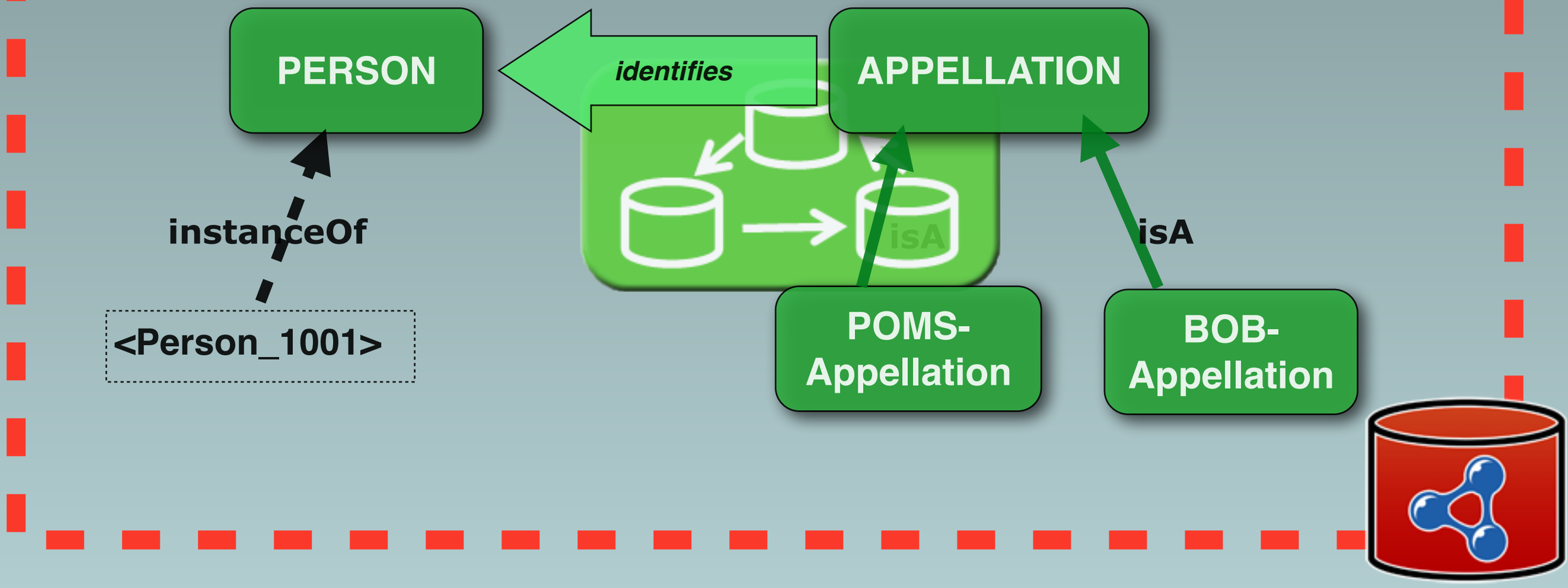
The importance of semantic interoperability



PERSONS *(POMS project)*	
Name	**Surname**
Adam	of Eccles

PERSONS *(BOB project)*	
Name	**Place Name**
Adam of Eccles	Eccles

Ontology-based semantic integration



Formal ontology provides a *theory* of how to make categorical distinctions in *systematic* and *coherent* manner

GOAL: making representational choices at the ***highest*** **level of *abstraction*, while still being as clear as possible about the meaning of terms**

Example: the CIDOC-CRM ontology

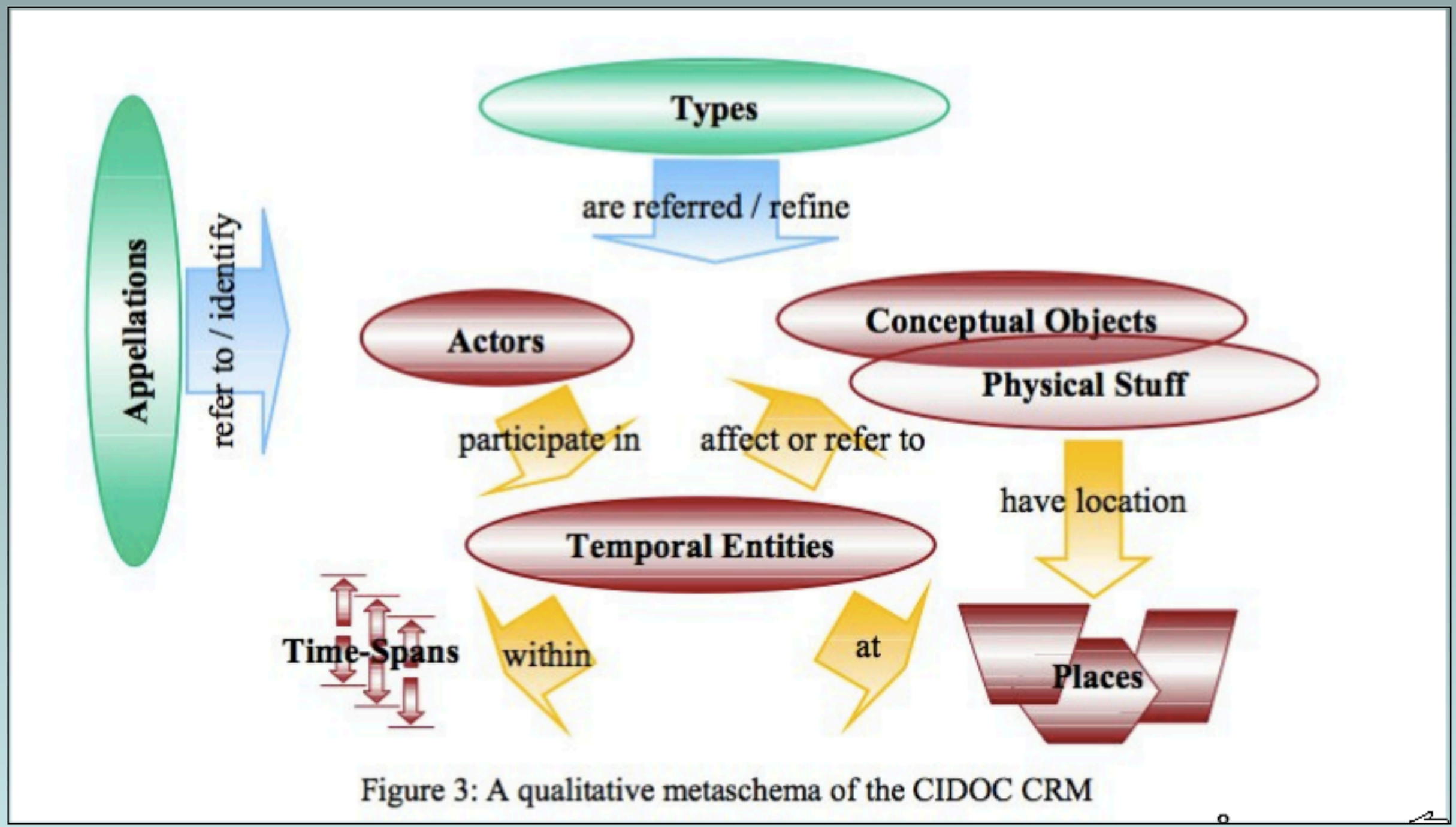
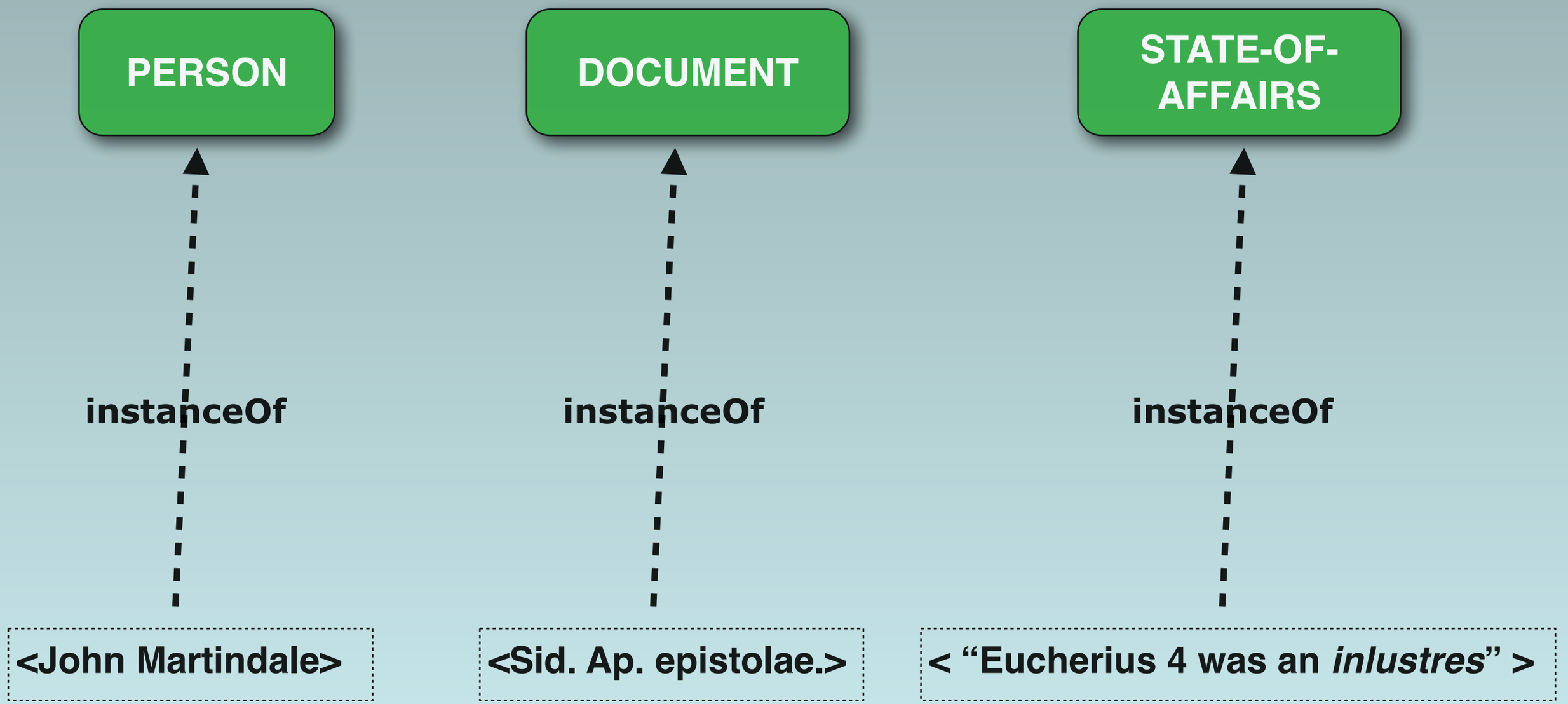


Figure 3: A qualitative metaschema of the CIDOC CRM

Moving towards a more interoperable model: what are ‘factoids’ in ontological terms?



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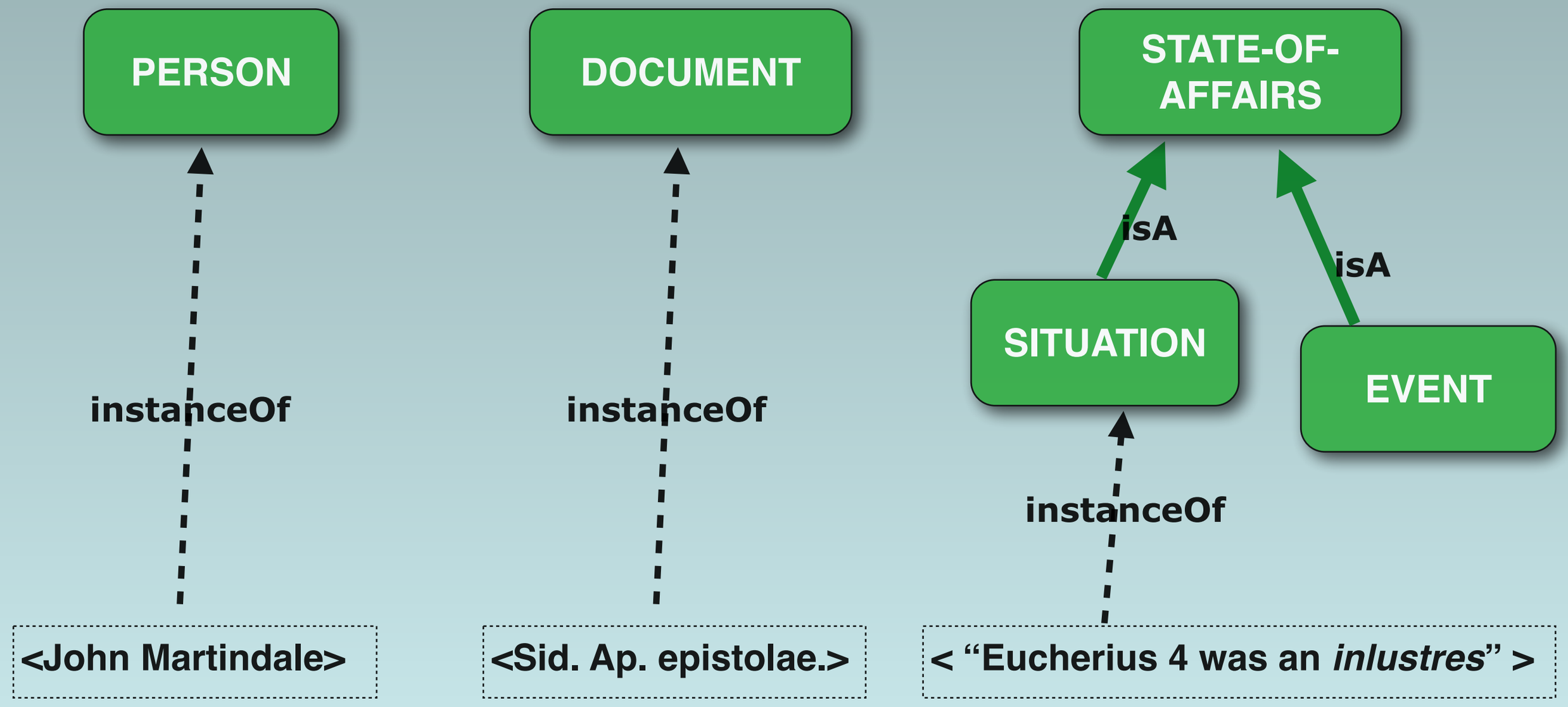
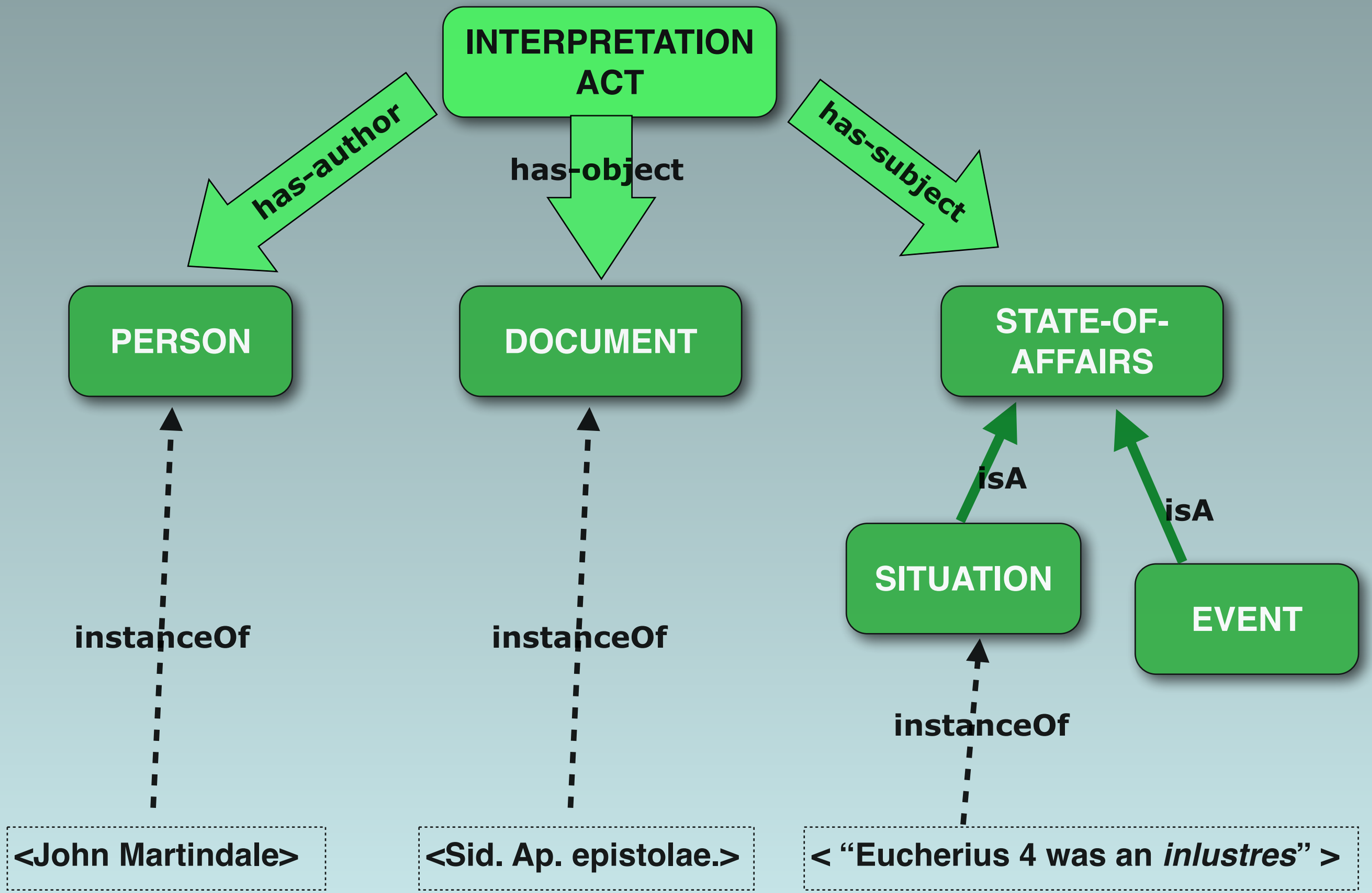
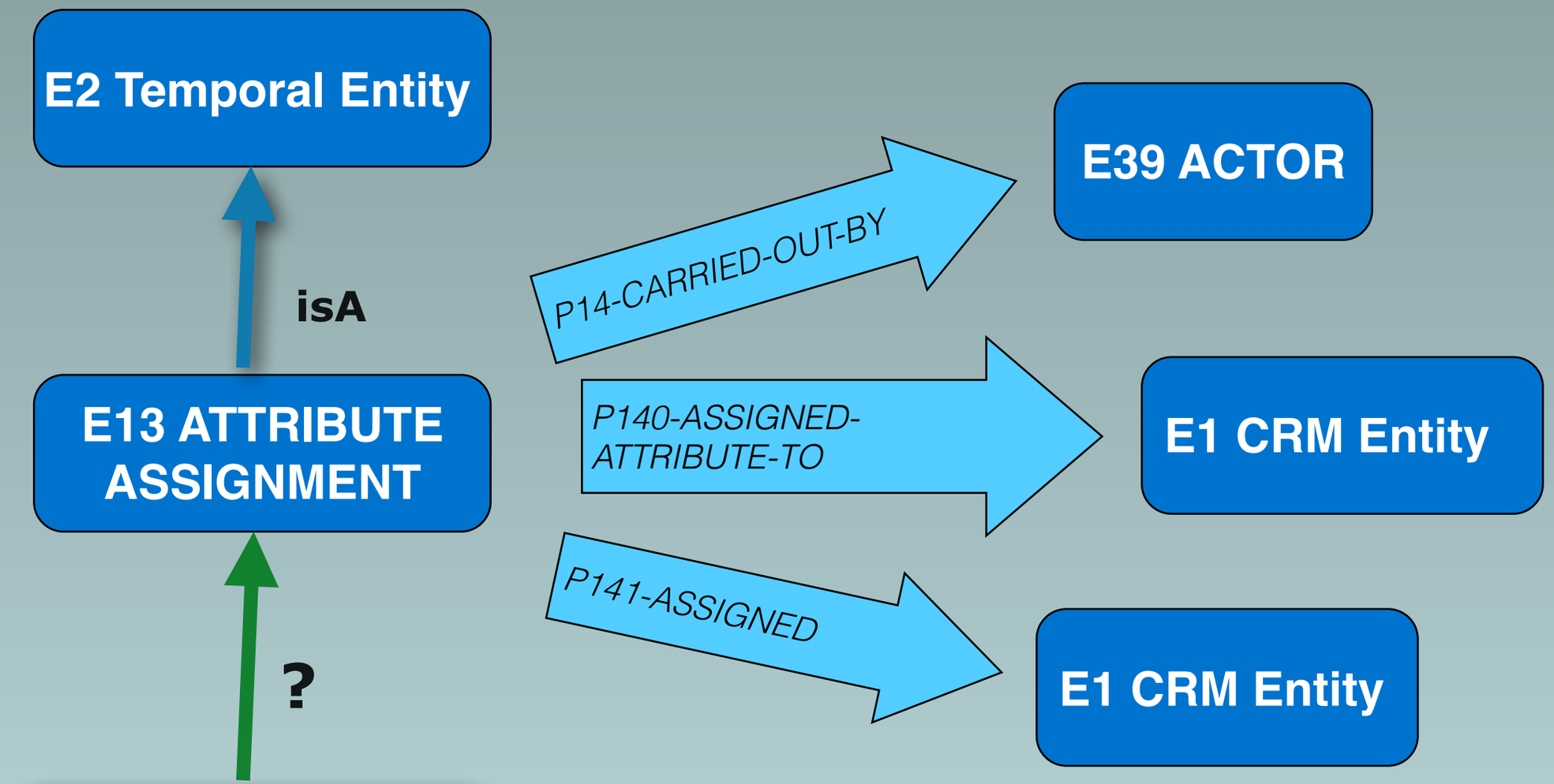


Factoids as ‘Interpretation’ events

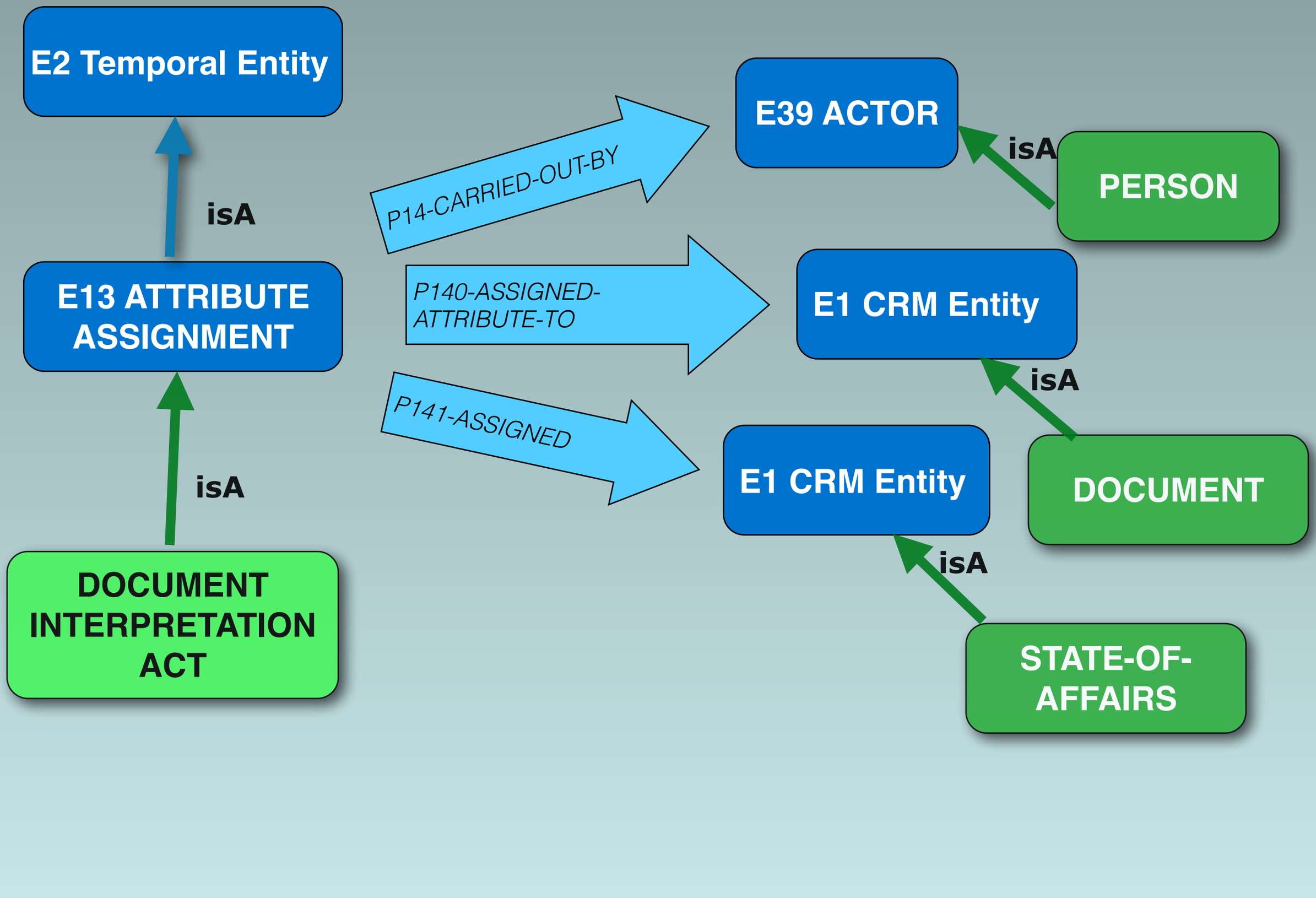


Wrapping things up using CIDOC-CRM



"This class comprises the **actions of making assertions about properties of an object or any relation between two items or concepts**. [...] the class **describes** the actions of people making **propositions and statements during certain museum procedures**, e.g. the person and date when a condition statement was made, an identifier was assigned, the museum object was measured, etc."

Wrapping things up using CIDOC-CRM

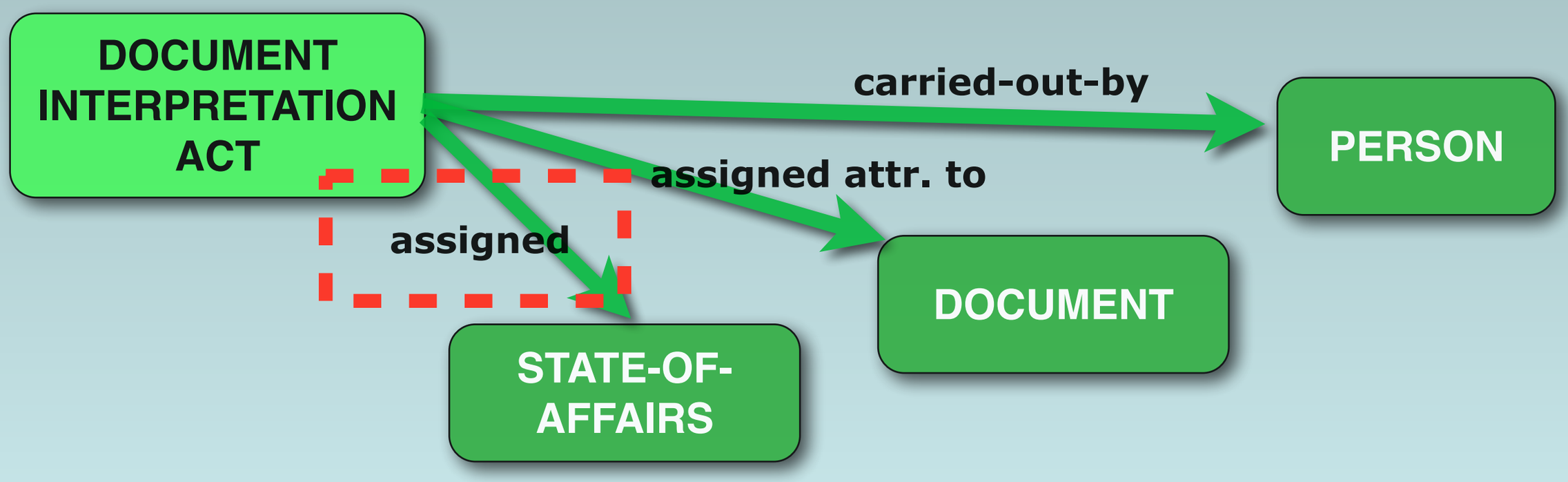


Open issues #1

CIDOC-CRM :*assigned* property semantics seems too generic

Originally, factoids are supposed to be ‘literal’ renditions of a source (= no interpretation of the transcriber)

Sub-property? Eg. ‘is-literal-evidence-for’ or ‘claims’

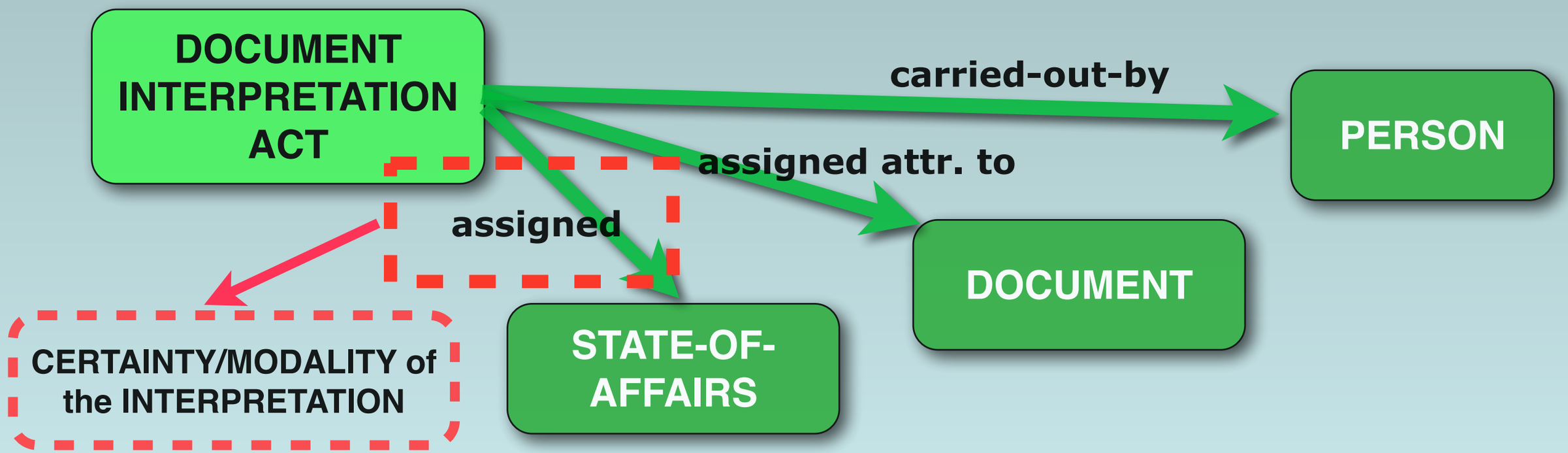


Open issues #2

The ‘interpretation’ connection strength itself could become a *variable*!

Can try to formalise the ‘certainty’ or ‘truth-value’ of the interpretation: ‘is-literal-evidence-for’; ‘is-basis-for’ ..

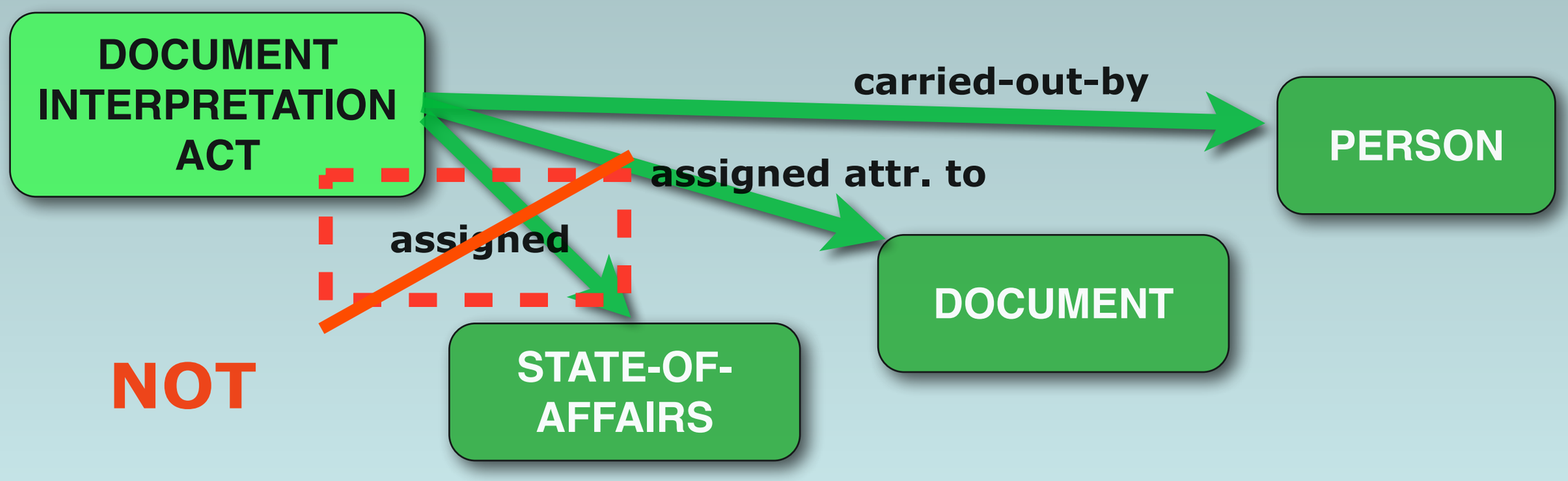
Opens up interesting paths towards **modal logic:** *X might-be about Y*



Open issues #3

What about ‘negative’ assertions? How would this play out in the context of a prosop. database?

-eg. “According to source X, we know that the King of England wasn’t involved in event E”



Summary

- The factoid-based approach in structured prosopography has wide applicability

- Factoids can be can be ‘ontologized’ using CIDOC-CRM e.g. for semantic interoperability

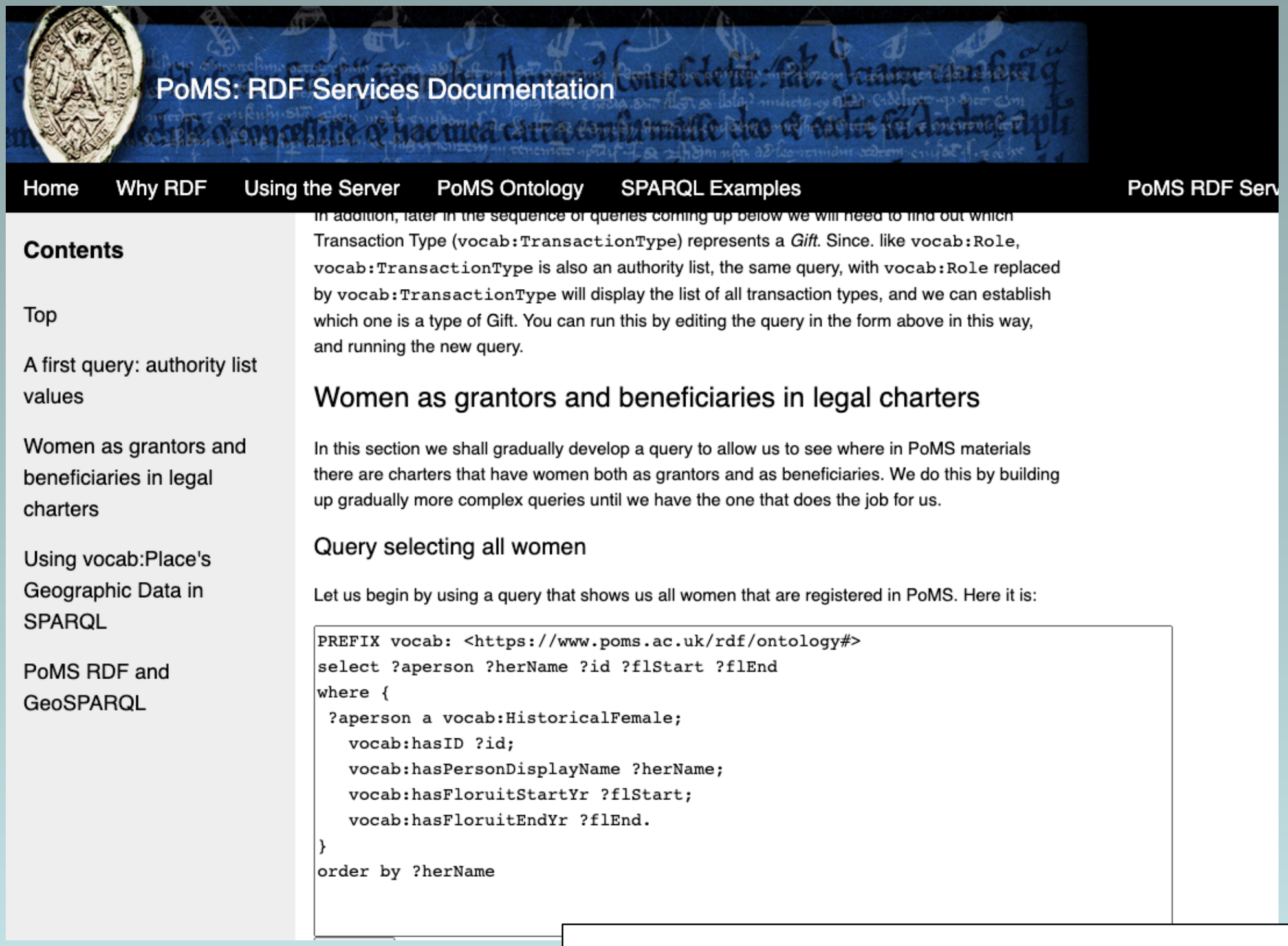
- Rethinking a model via ontologies leads also to unexpected challenges / opportunities

Ongoing work: FPO



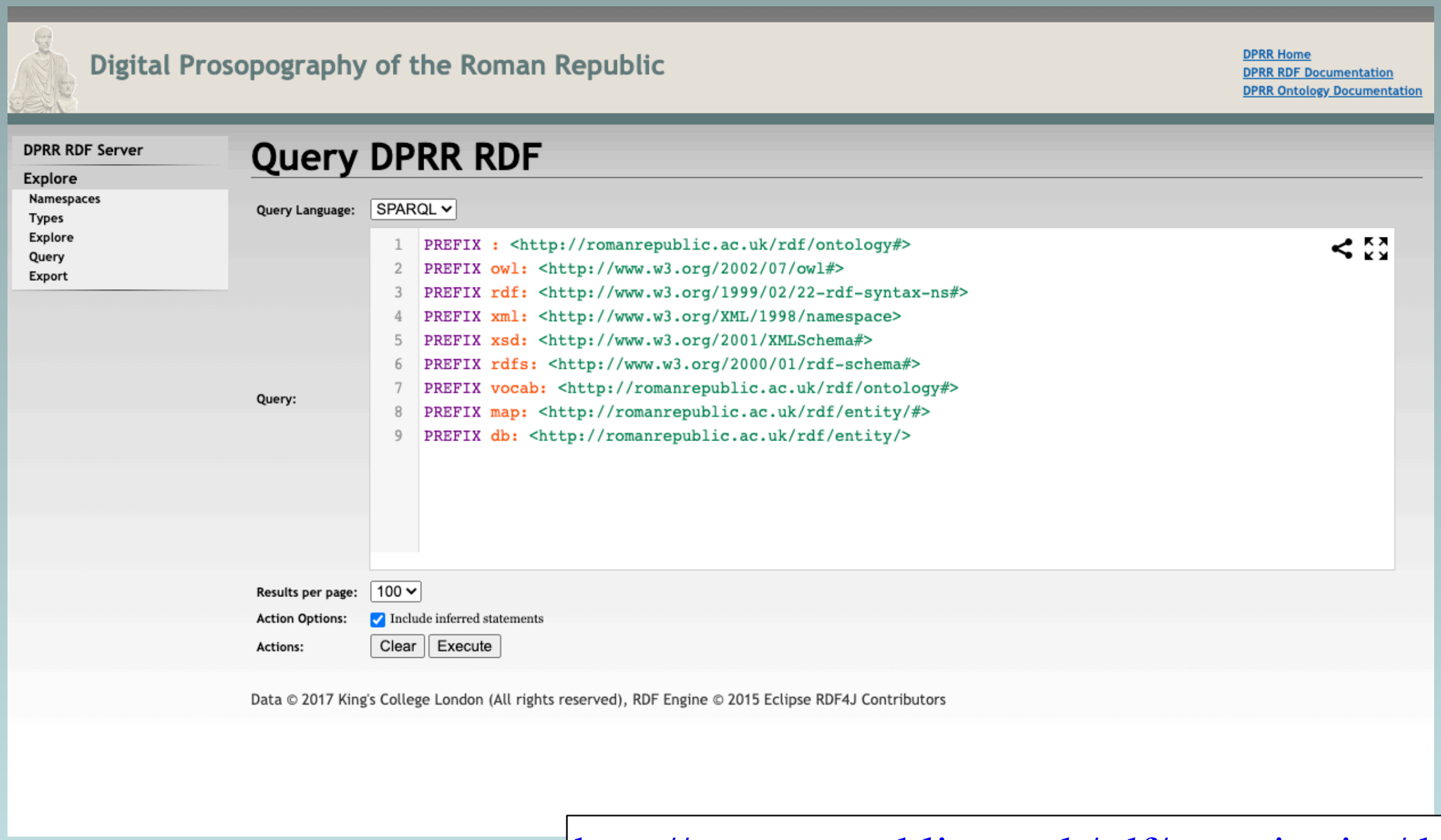
https://www.kcl.ac.uk/factoid-prosopography

Linked Data: POMS RDF endpoint



https://www.poms.ac.uk/rdf/doc/sparql.html

Linked Data: DPRR RDF endpoint



http://romanrepublic.ac.uk/rdf/repositories/dprr

References

Publications

* Factoid-based Prosopography and Computer Ontologies: towards an integrated approach. Michele Pasin, John Bradley. Digital Scholarship in the Humanities, Dec 2014. doi: 10.1093/llc/fqt037

* Texts into databases: The evolving field of new-style prosopography. Bradley, J. and Short, H. (2003). ACH/ ALLC conference. GA: Athens, pp. 1–14.

Ontologies & LOD

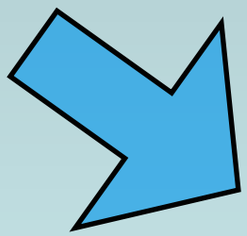
RDF repositories
* https://www.poms.ac.uk/rdf/repositories/poms/welcome
* http://romanrepublic.ac.uk/rdf/repositories/dprr

Factoid prosopography portal
* https://www.kcl.ac.uk/factoid-prosopography

Example modeling of 'event types'
* http://ontologies.michelepasin.org/docs/feudalism/index.html

Factoid model (CIDOC-CRM version)
* http://ontologies.michelepasin.org/docs/factoid/index.html

... thanks!



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