

Francesco Beretta
(CNRS UMR5190 LARHRA – Université de Lyon)

La conceptualisation de l'information factuelle

**Université de Neuchâtel
Novembre 2021
(version 3.0)**

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[https://en.wikipedia.org/wiki/Galileo_Galilei#Reference-Sharratt-1994]

Letter by cardinal Bellarmine to Paolo Antonio Foscarini, 12 April 1615:

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[The Galileo Affair. A Documentary History, ed. and translated by Maurice A. Finocchiaro, Berkeley e.a. University of California Press 1989, p. 67]

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Expression of an opinion

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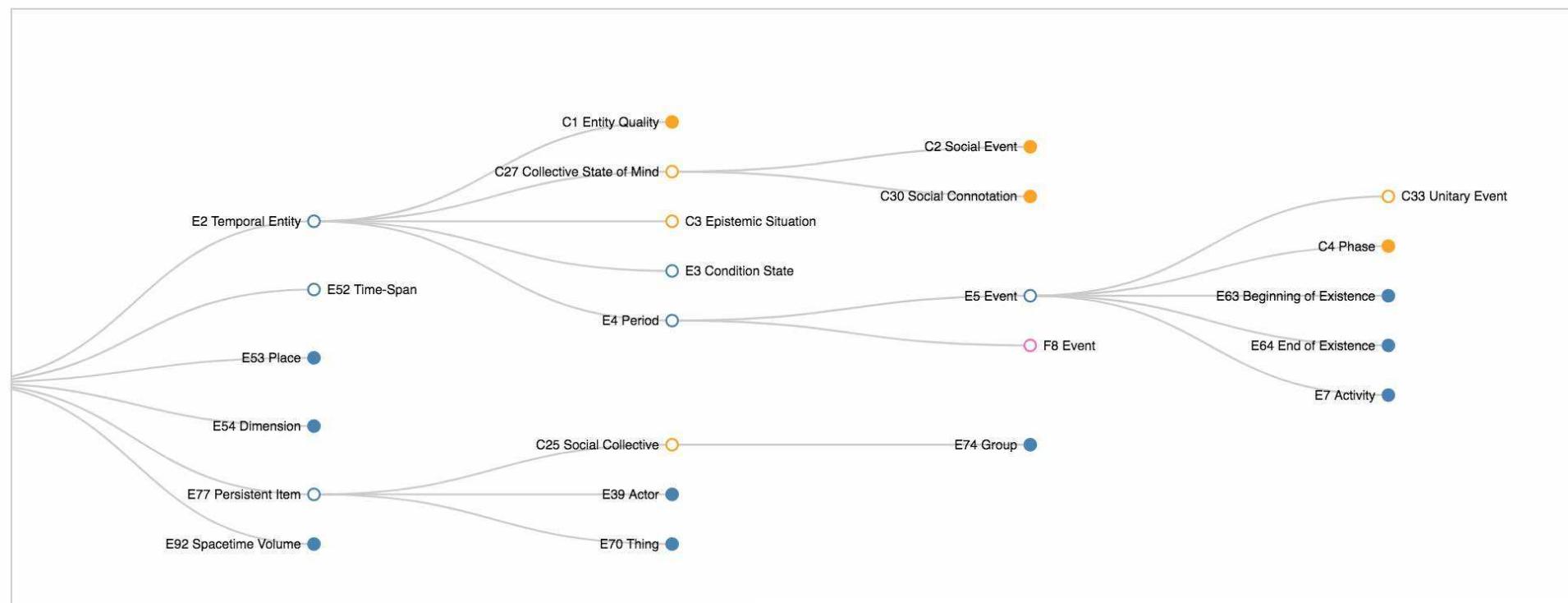
[The Galileo Affair. A Documentary History, ed. and translated by Maurice A. Finocchiaro, Berkeley e.a. University of California Press 1989, p. 67]

Classes tree

C2 Study (#424) ▾

Reset

 Use mouse wheel



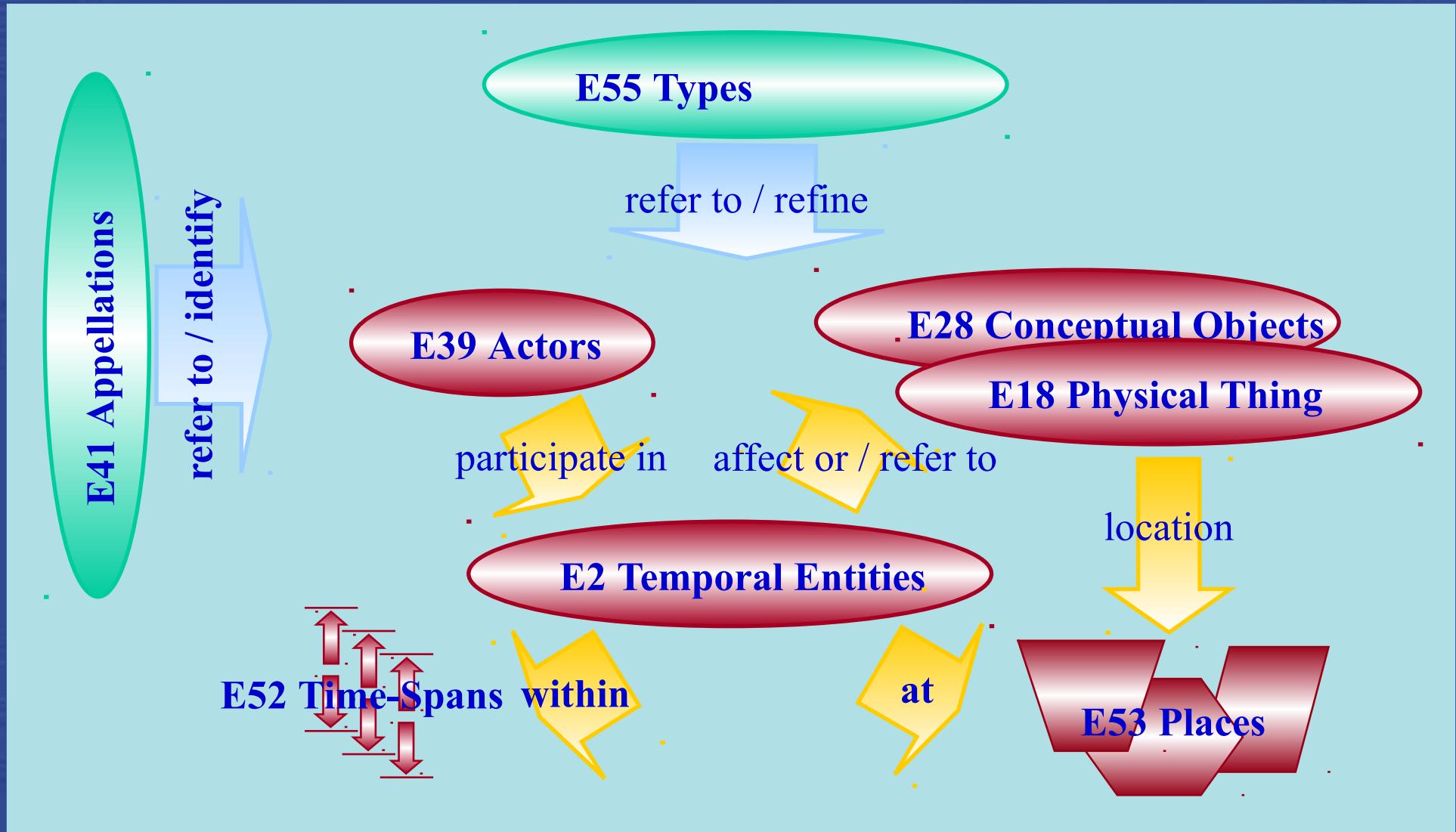
“An ontology is
a formal explicit specification
of a shared conceptualization
of a domain of interest”

- « Formality – ... a knowledge representation language that is based on the grounds of **formal semantics**. »
- « Consensus – ... an agreement on a domain conceptualization among people in a community. »
- « Conceptuality – ... in terms of conceptual symbols that can be intuitively grasped by humans, as they correspond to the elements in their **mental models**. »
- « Domain Specificity – ... limited to knowledge about a particular **domain of interest**. »

[Domingue et al. 2011, p. 510-511]

The CIDOC CRM (ISO21127:2006)

A semantic framework that provides interoperability
between different sources of cultural heritage information



Stephen Stead (2008)

Persistent items

Person

Group

Geographical place

« In 1592, he [Galileo Galilei] moved to the University of Padua where he taught geometry, mechanics, and astronomy until 1610»
[https://en.wikipedia.org/w/index.php?title=Galileo_Galilei&oldid=533819411] Sharratt-1994]

Person

Person

« Letter by cardinal Bellarmine to Paolo Antonio Foscarini, 12 April 1615:

Conceptual object

Person

Person

Conceptual object

Person

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Integration of information extracted from documents using the CIDOC CRM and its extensions

CRM Core

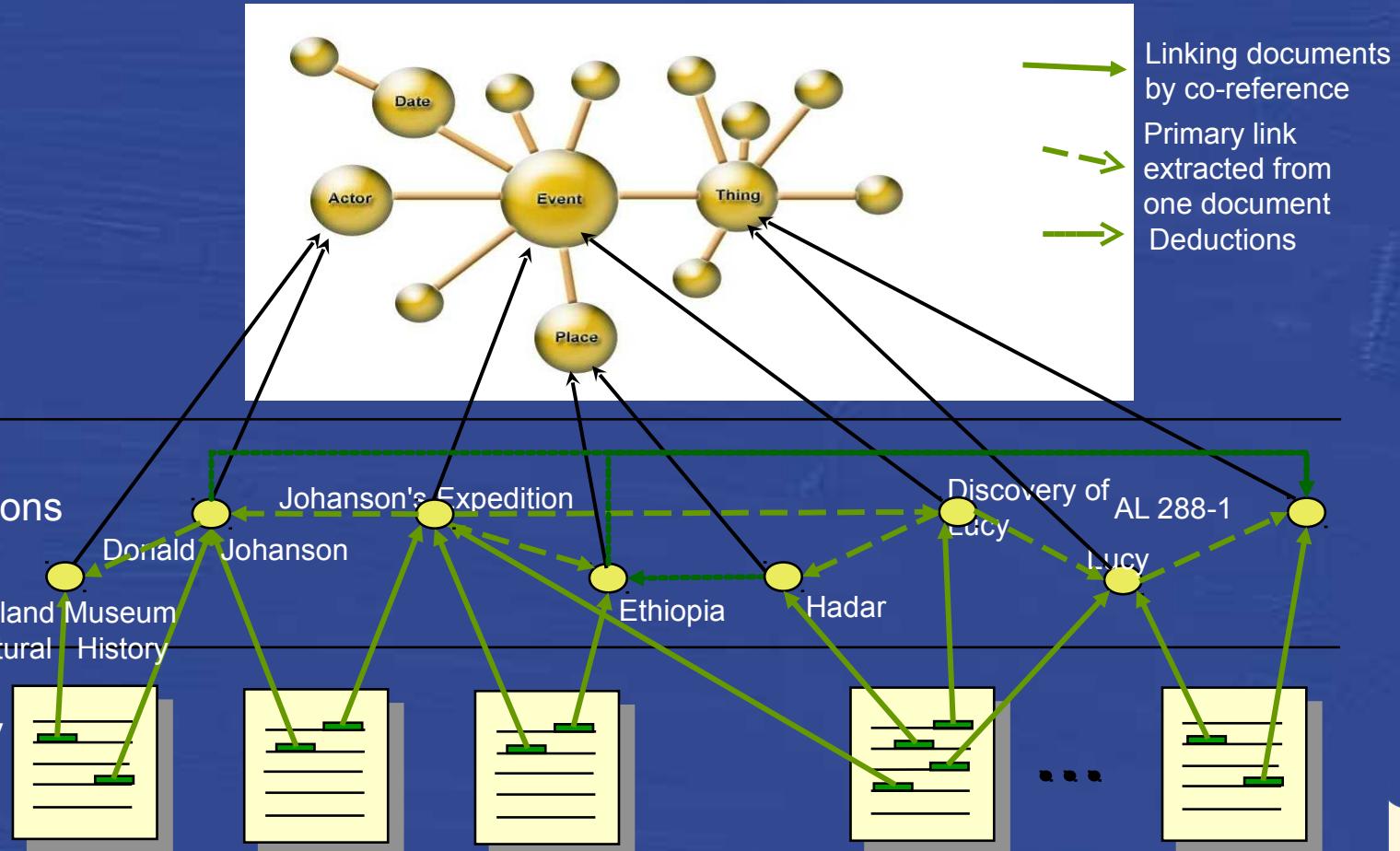
Integration of Factual Relations

Document Digital Library

TM2

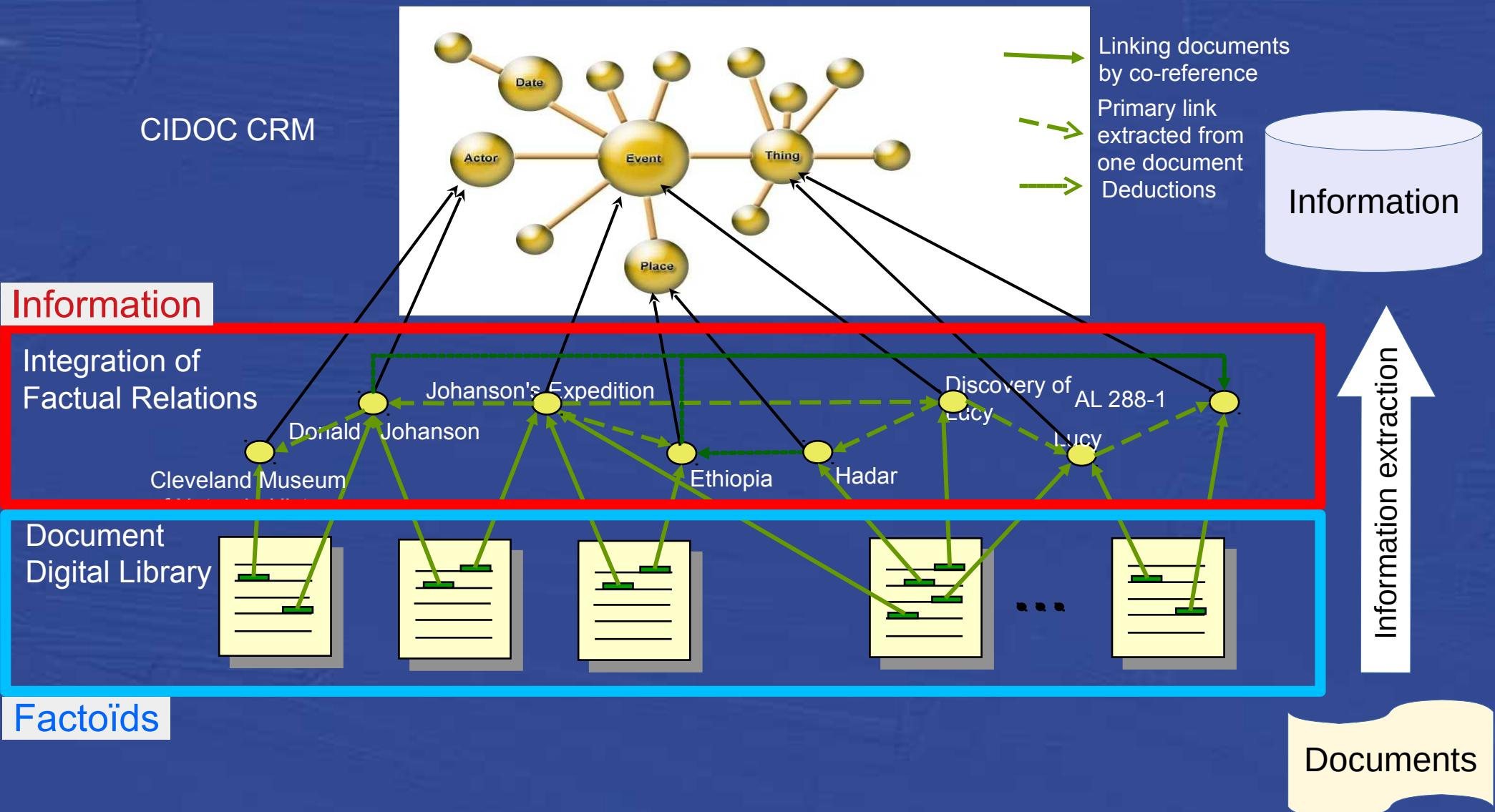
Information extraction

Source 1

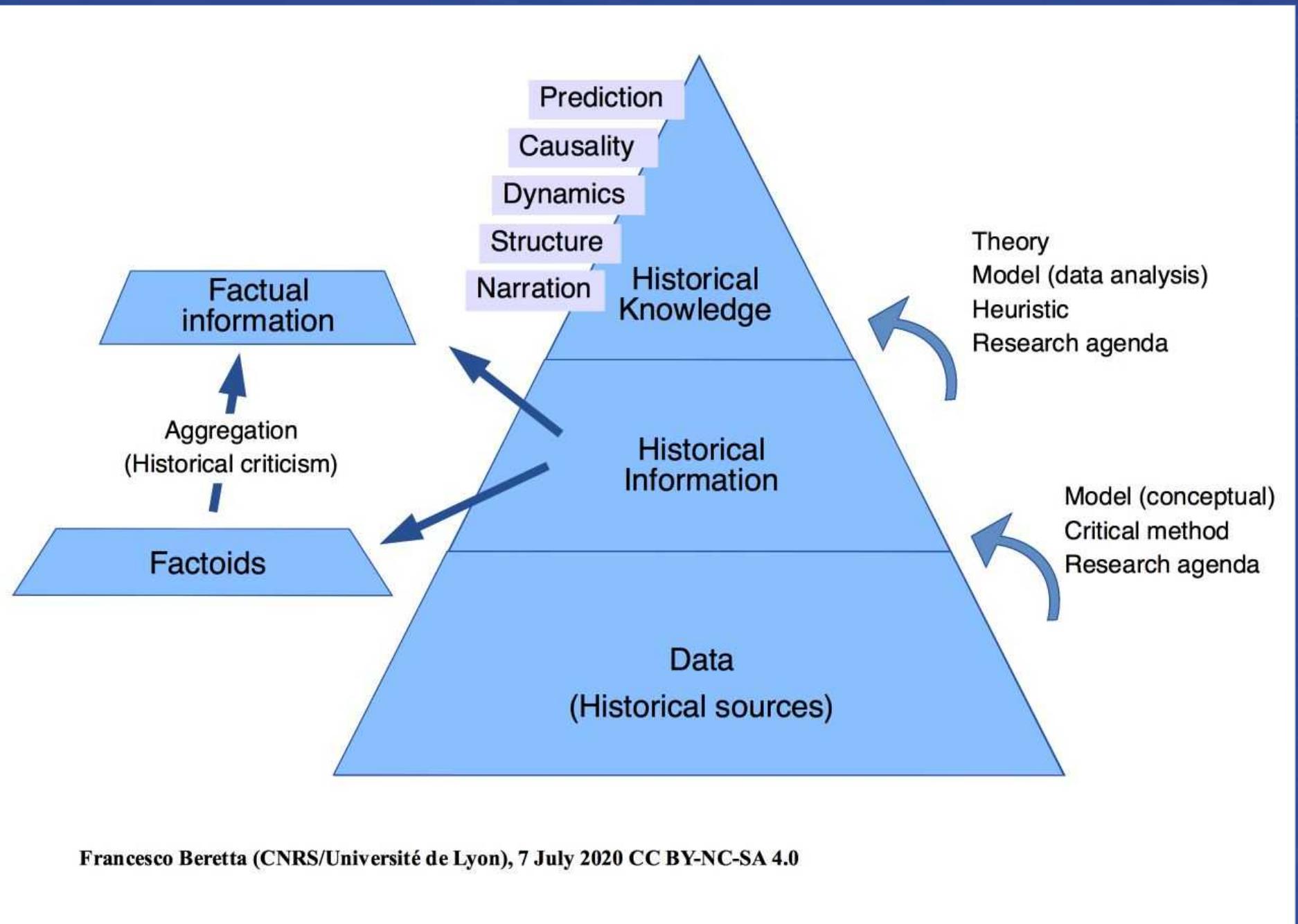


Stephen Stead (2008)

Integration of information extracted from documents using the CIDOC CRM

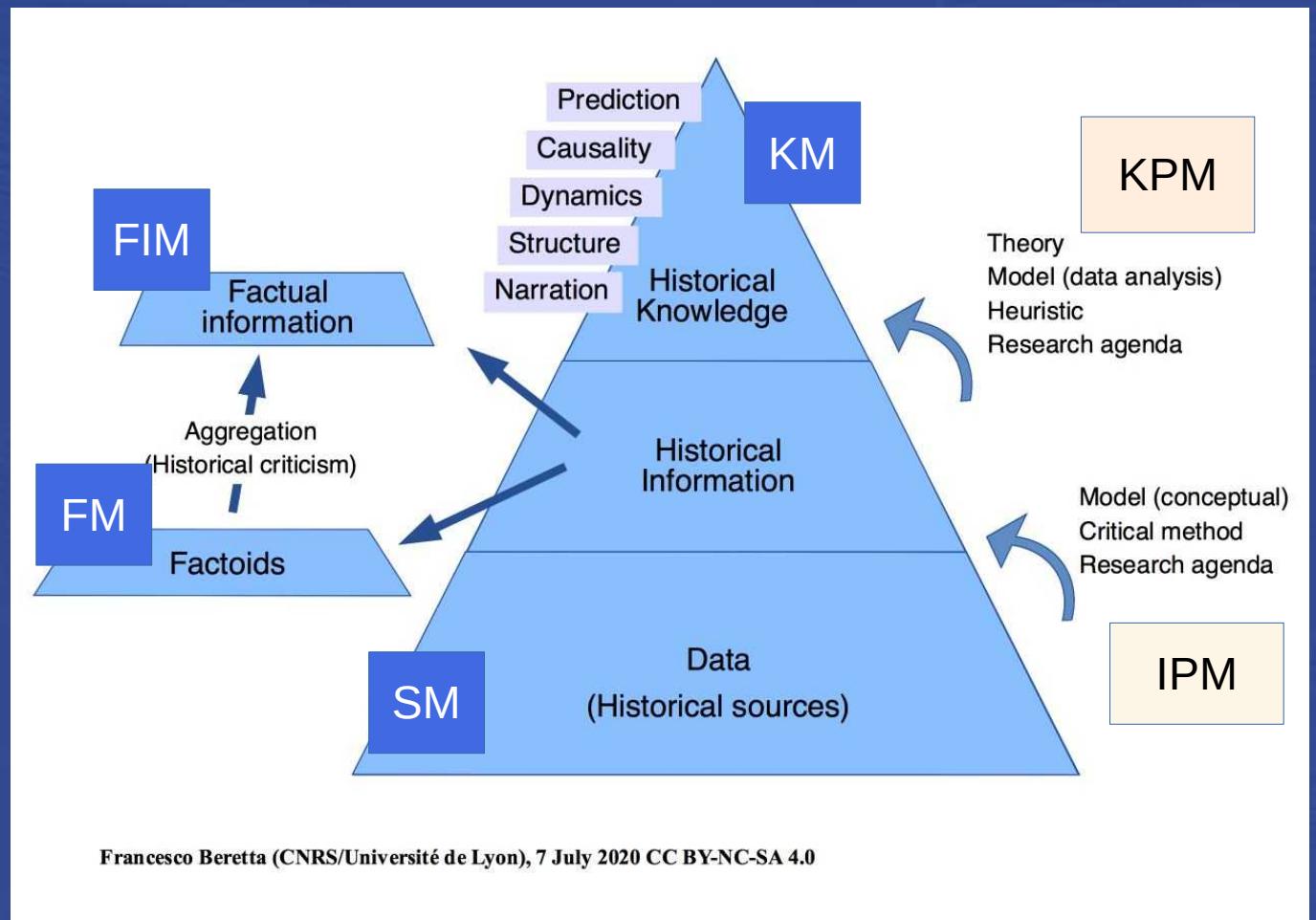
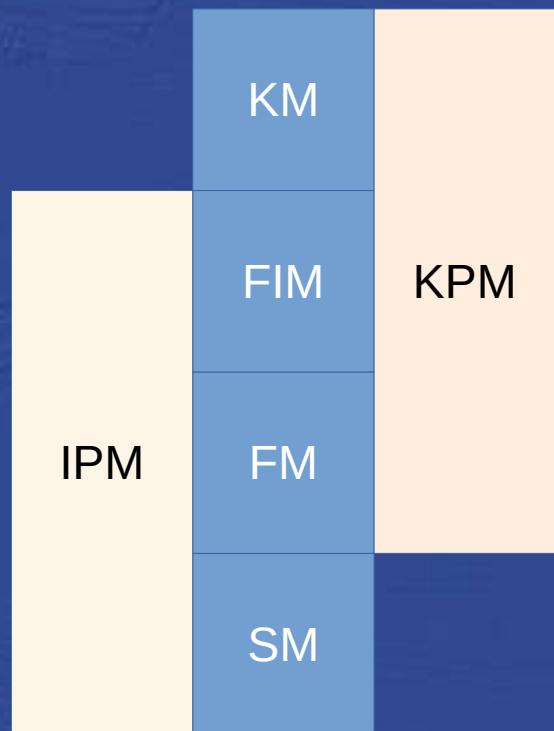


Information is not knowledge : DIK(W) pyramid



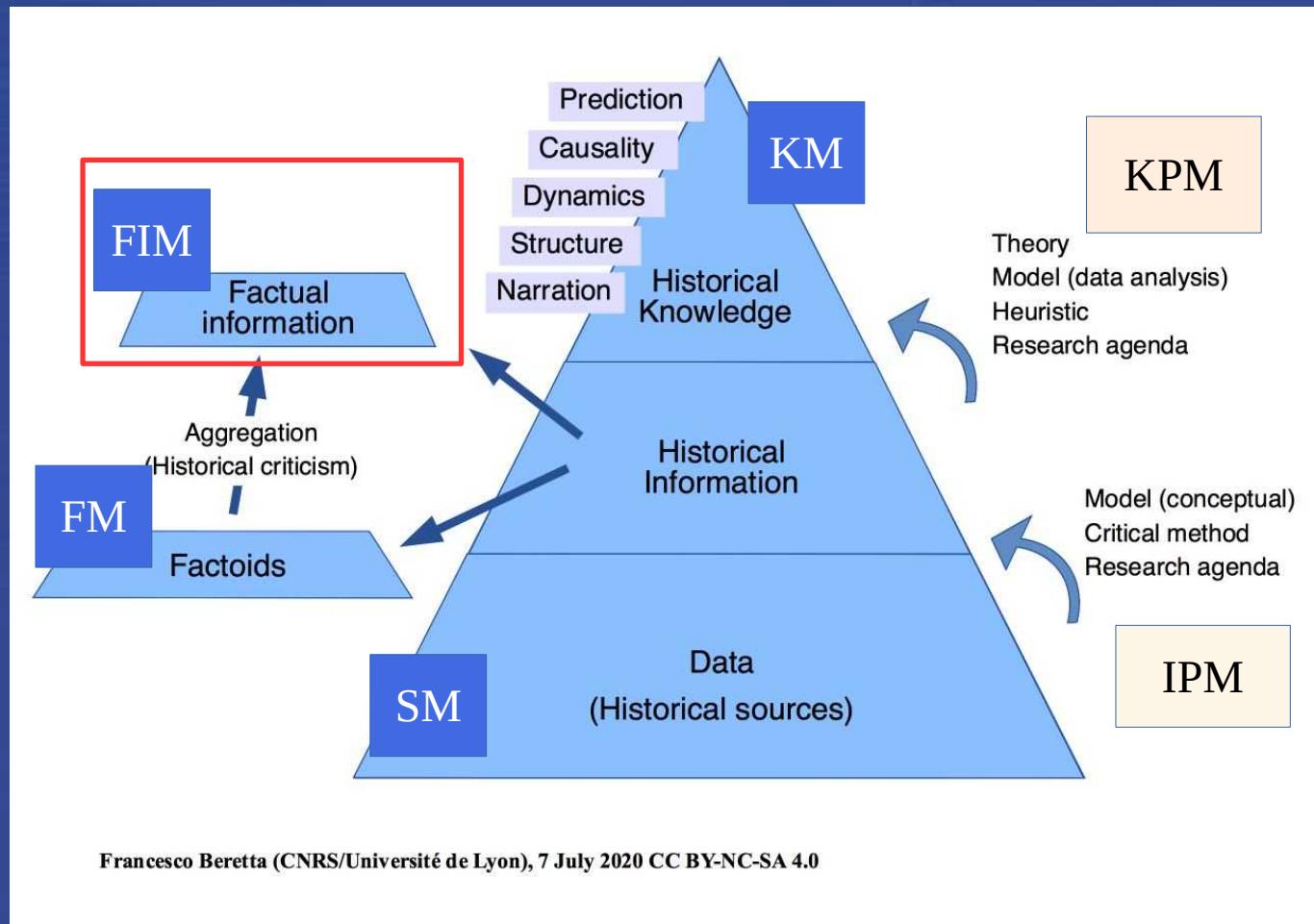
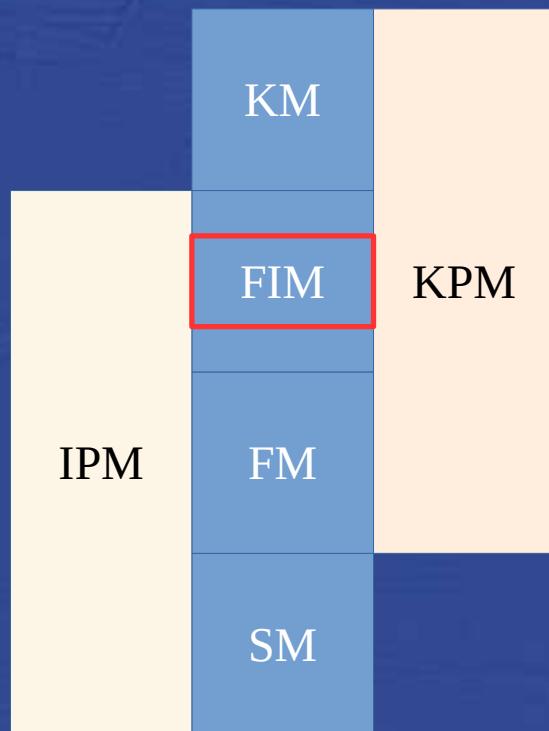
Francesco Beretta (CNRS/Université de Lyon), 7 July 2020 CC BY-NC-SA 4.0

Different models for different aspects of historical knowledge production



Francesco Beretta (CNRS/Université de Lyon), 7 July 2020 CC BY-NC-SA 4.0

Different models for different aspects of historical knowledge production



CIDOC CRM

DBpedia
Ontology

SDHSS

schema.org

DUL

KM

FIM

KPM

IPM

FM

SM

HiCO

PROV

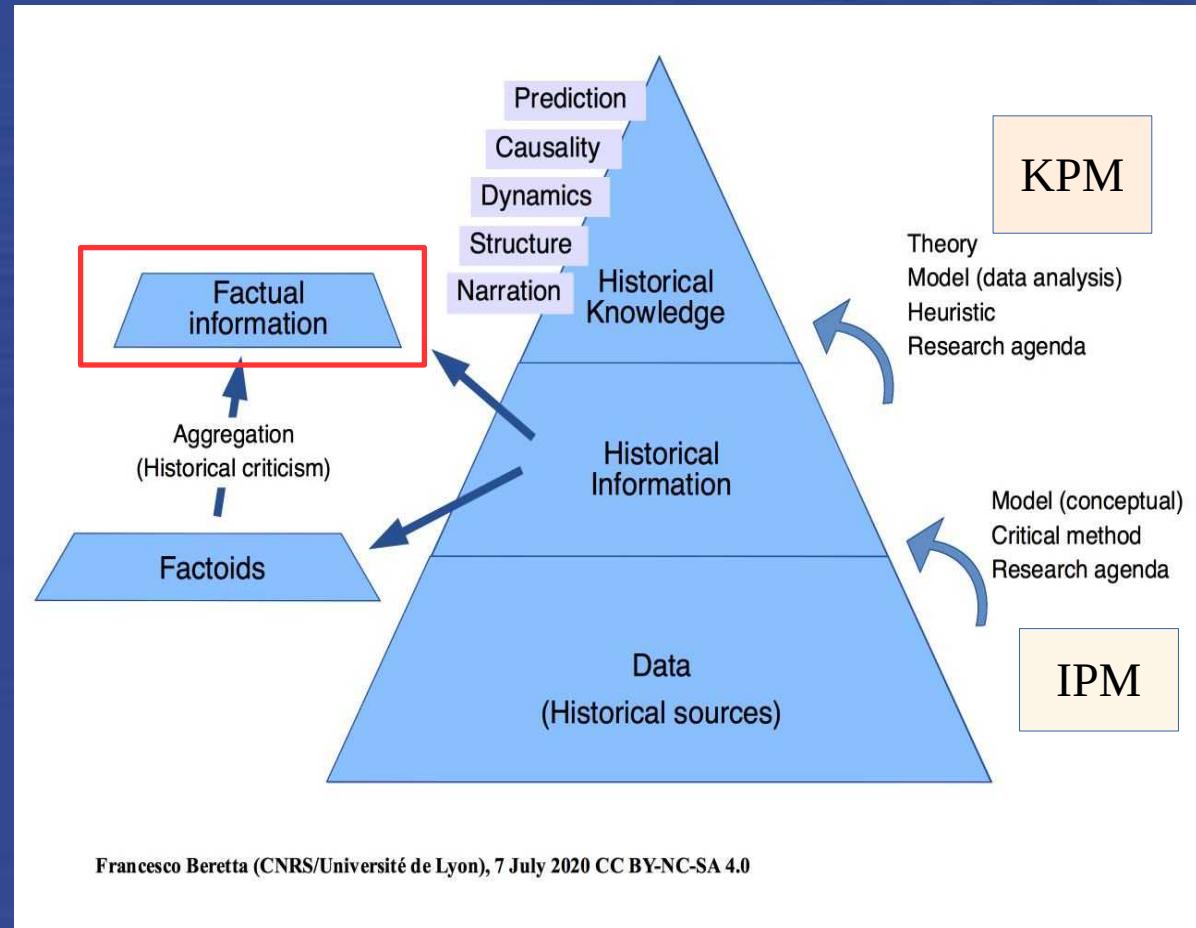
Web
Annotation
Data Model

FRBRoo
LRMoo

EAD

TEI
RiC

DCMI



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The issue of a suitable conceptualization :

Foundational ontologies
were developed to support the
verification and improvement
of the **conceptualization** of a **domain of discourse**.

OntoClean

N. Guarino/C. A. Welty, « An Overview of OntoClean », in Steffen Staab, ed., Handbook on ontologies,
2nd ed. Berlin: Springer, 2009.

OntoClean (Wikipedia)

- Identity
- Unity (Parthood)
- Rigidity (Substance and accidents)

A ‘student’ : not a class but a time-indexed property of a person.

Modelling Best Practices

- Instances (research related, detailed) and Classes (few and cleanly defined)
- Controlled Vocabularies (researchers) and Ontologies (semantic engineers)
- Property Inheritance, quantifiers

Foundational ontologies & modelling best practices

Research agenda

Research specific data model

Research data

Foundational ontologies
& modelling best practices



Generic, **domain related** core ontology

Research agenda

Research specific data model

Research data

Foundational ontologies
& modelling best practices



Generic, domain related core ontology



Domain related extensions



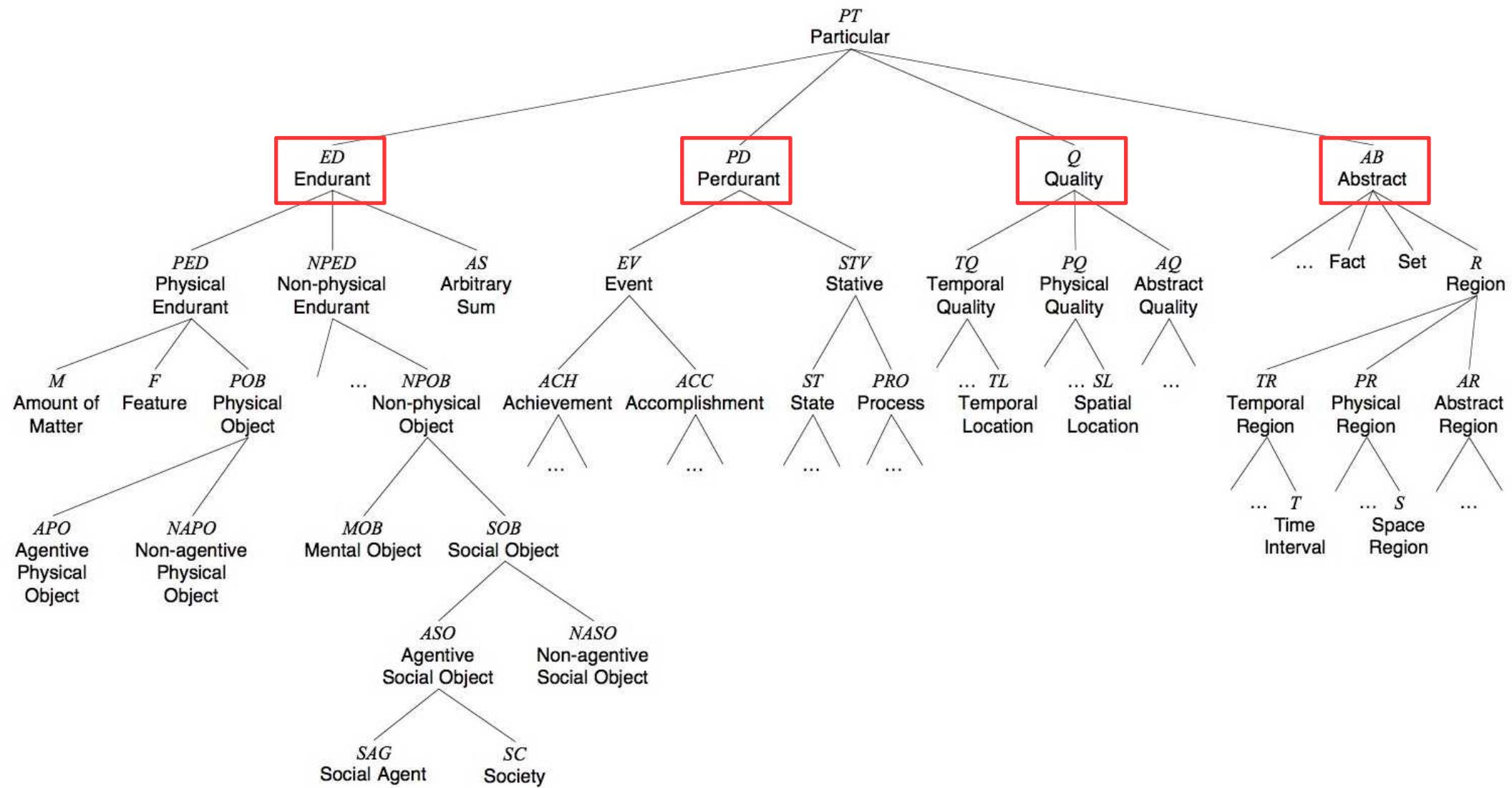
Research agenda

Research specific data model

Research data

DOLCE Lite Plus, CIDOC CRM, SDHSS

Foundation ontologies in support of data
interoperability
in the humanities and social sciences



Descriptive Ontology for Linguistic and Cognitive Engineering (DOLCE) – a foundational ontology designed in 2002 in the context of the WonderWeb EU project, developed by Nicola Guarino and his associates at the Laboratory for Applied Ontology (LOA) – WonderWeb Deliverable D18, p.14

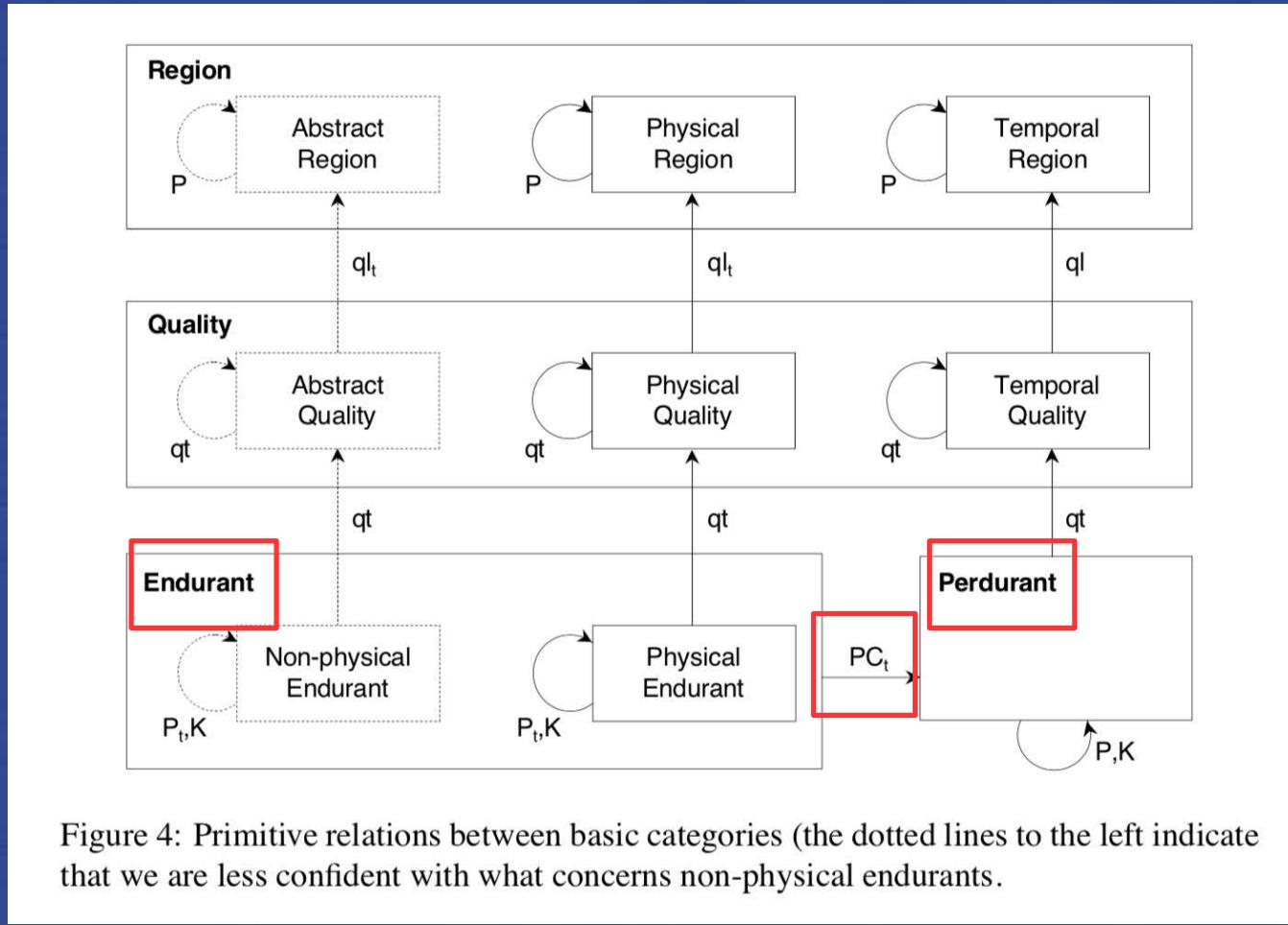


Figure 4: Primitive relations between basic categories (the dotted lines to the left indicate that we are less confident with what concerns non-physical endurants.

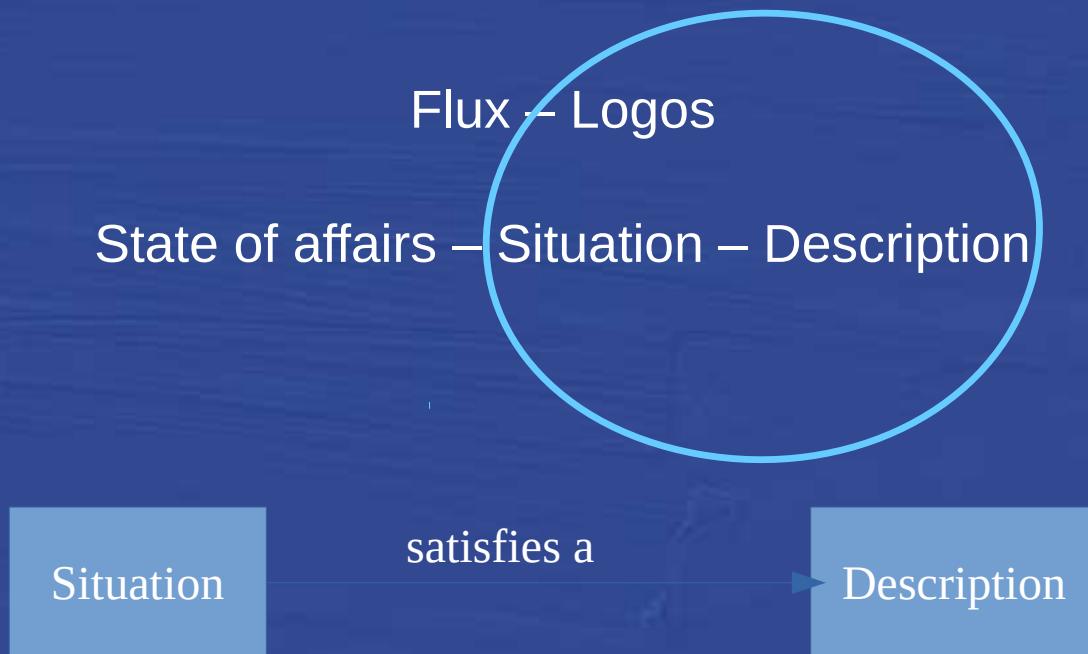
4.2.7 Participation

- (Dd63) $PC_C(x,y) \triangleq \exists t(PRE(y,t)) \wedge \forall t(PRE(y,t) \rightarrow PC(x,y,t))$ (*Const. Participation*)
- (Dd64) $PC_T(x,y,t) \triangleq PD(y) \wedge \forall z((P(z,y) \wedge PRE(z,t)) \rightarrow PC(x,z,t))$ (*Temporary Total Participation*)
- (Dd65) $PC_T(x,y) \triangleq \exists t(ql_T(t,y) \wedge PC_T(x,y,t))$ (*Total Participation*)
- (Dd66) $mpc(x,y) \triangleq x = \sigma_t z(PC_T(z,y))$ (*Maximal Participant*)
- (Dd67) $mppc(x,y) \triangleq x = \sigma_t z(PC_T(z,y) \wedge PED(z))$ (*Maximal Physical Participant*)
- (Dd68) $lf(x,y) \triangleq x = \sigma z(PC_T(y,z))$ (*Life*)

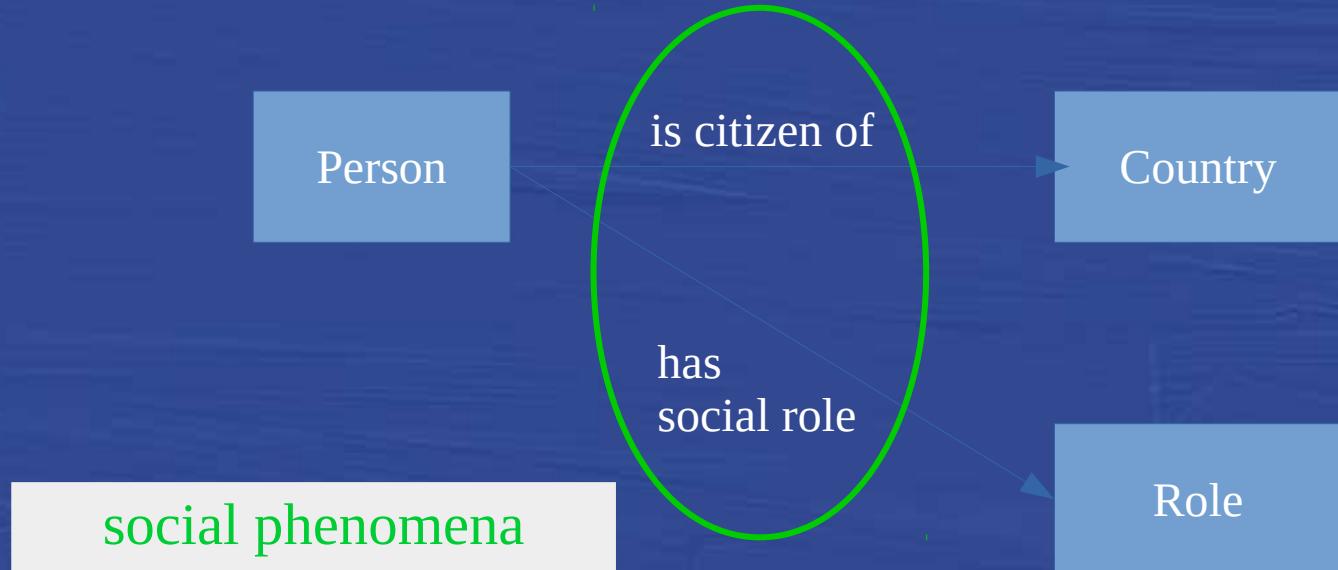
Descriptions and Situations (DnS)



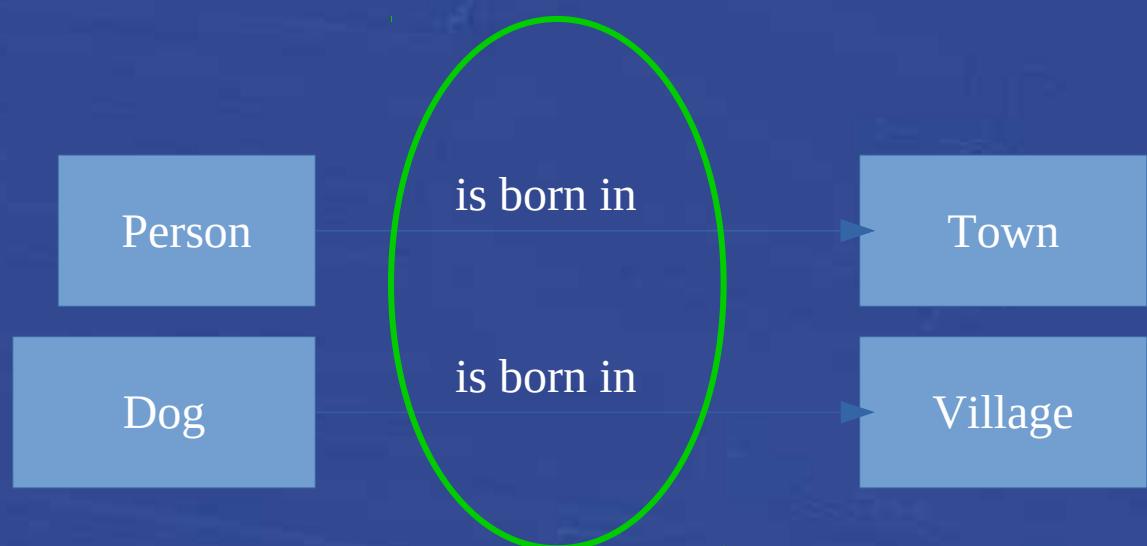
Descriptions and Situations (DnS)



Descriptions and Situations – DnS



DOLCE



Descriptions and Situations – DnS

DOLCE

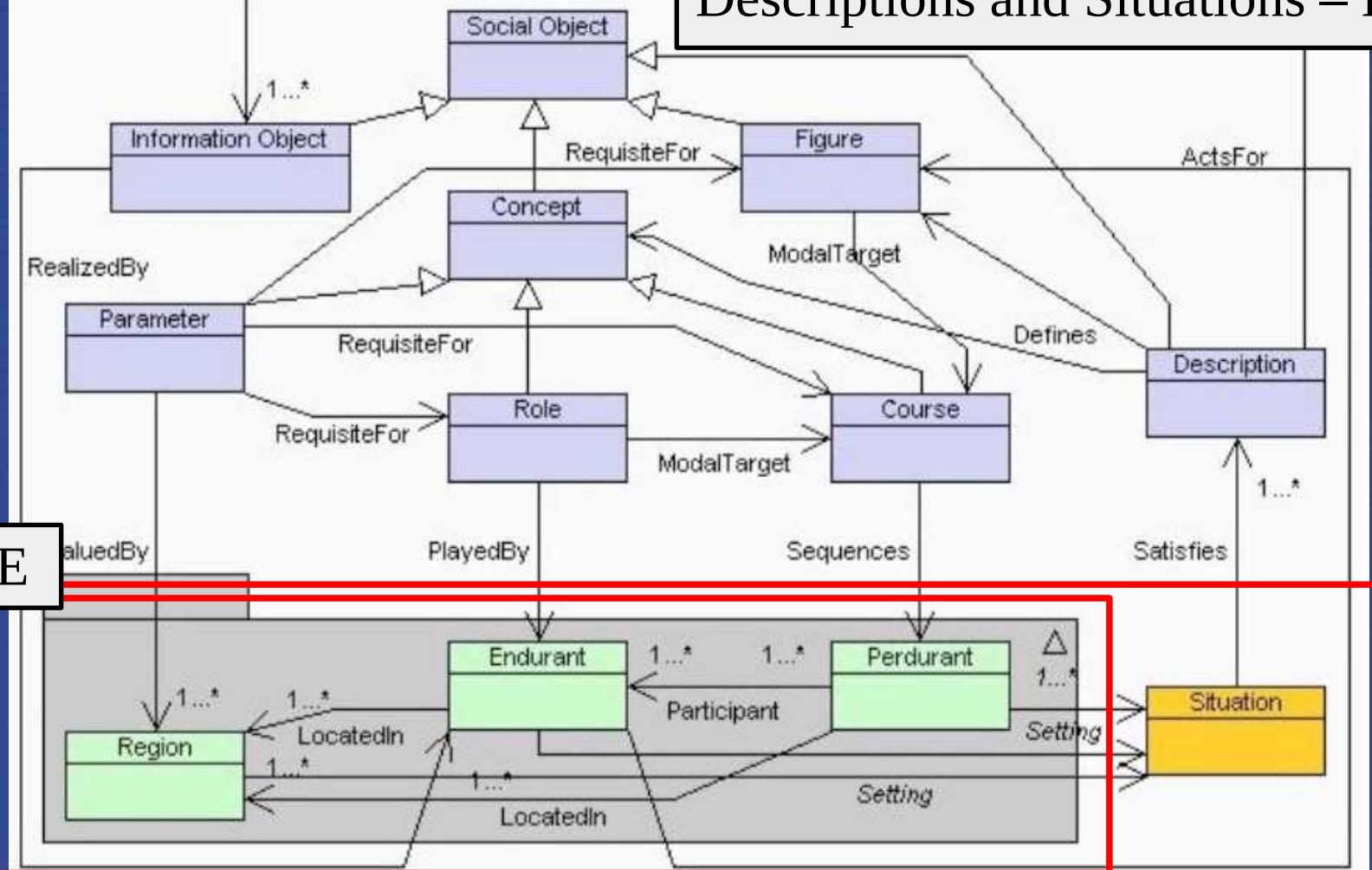
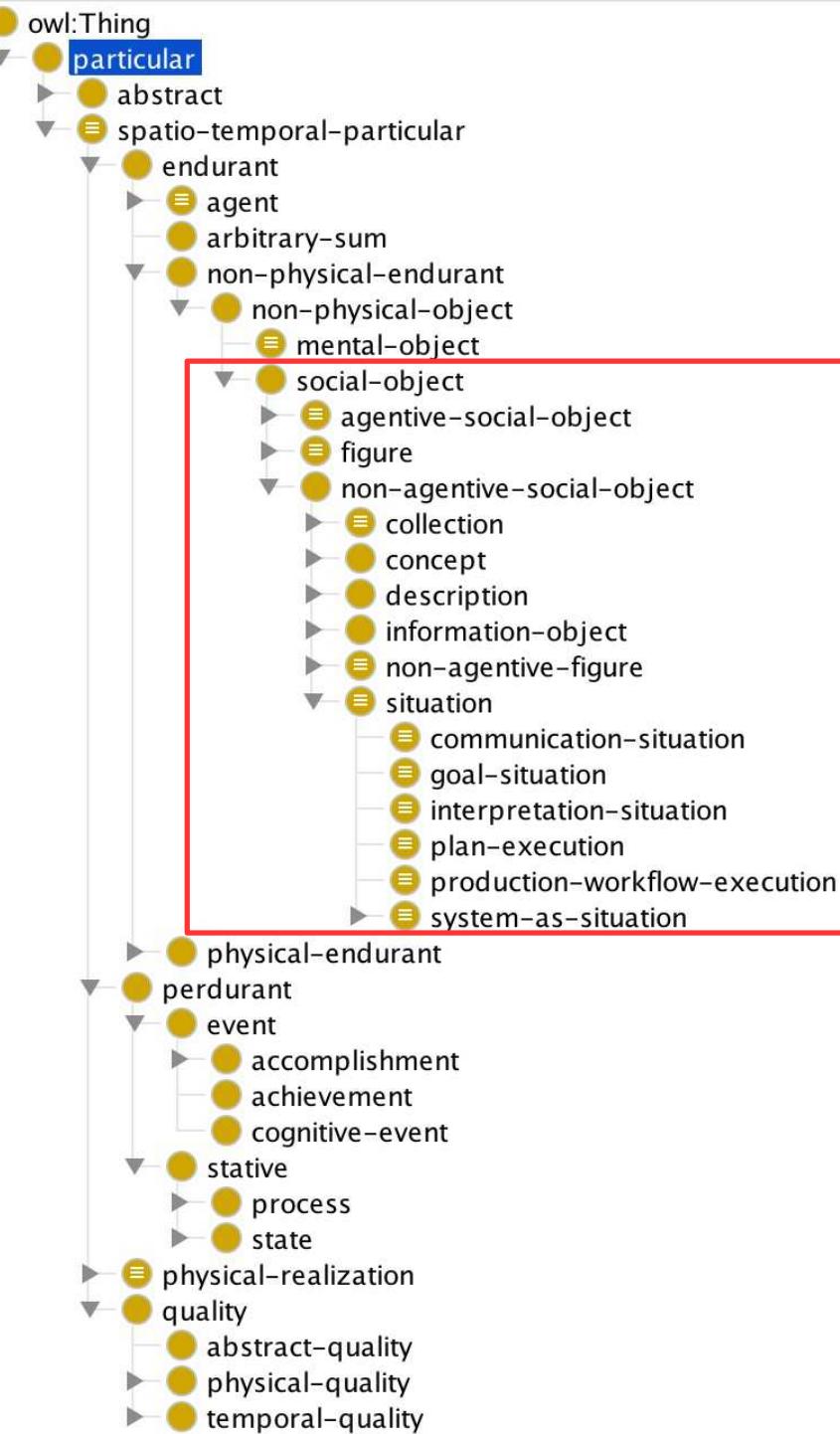


Fig. 2. A UML class diagram for D&S. The lower part of the pattern (within the grey package) is called the *ground ontology*, the higher is called the *descriptive ontology*; a situation satisfies a description if the two parts match according to the axioms specified for the concepts defined by the description.

Bottazzi E., Catenacci C., Gangemi A., Lehmann J.(2006) (from pre-print, not in published version)

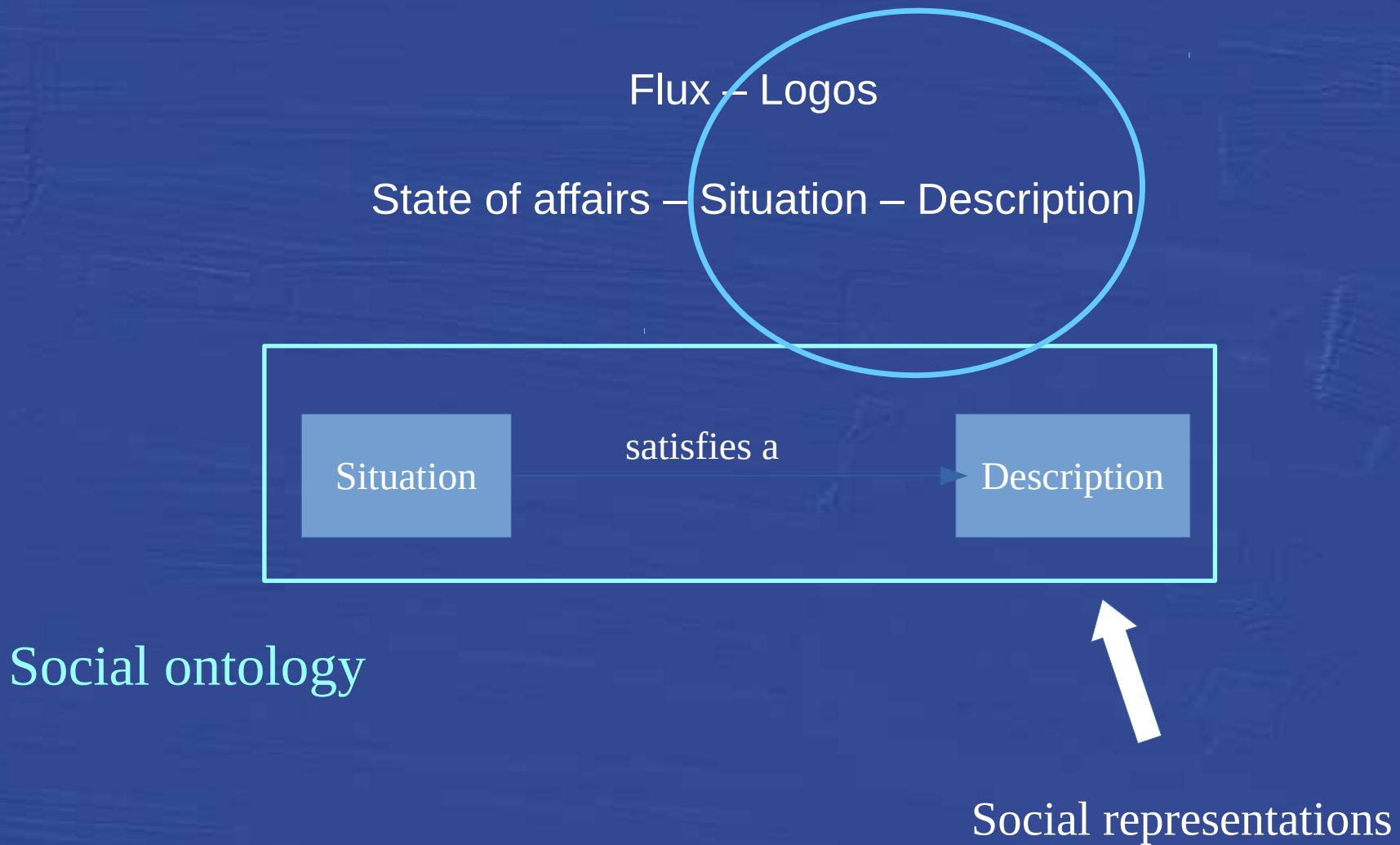


DOLCE + DnS

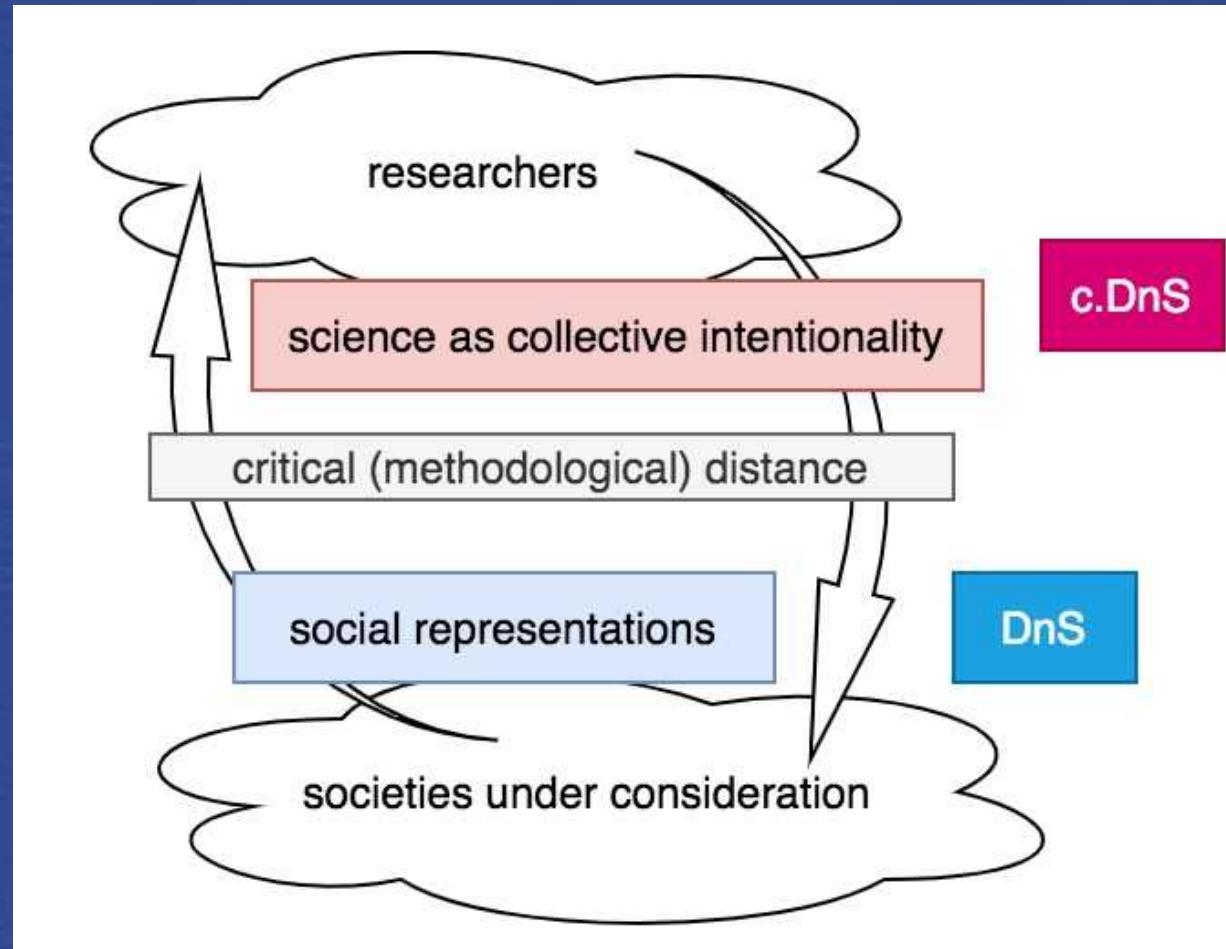
=

DOLCE Lite PLUS

Descriptions and Situations (DnS)



Whose collective intentionality is to be modelled? Scientific knowledge and social representations



Foundational ontologies
& modelling best practices

DOLCE + Descriptions and Situations
& object-oriented modelling principles



Generic, domain related core ontology



Domain related extensions



Research specific data model

Research data

Foundational ontologies
& modelling best practices

DOLCE + Descriptions and Situations
& object-oriented modelling principles



Generic, **domain related** core ontology



Domain related extensions

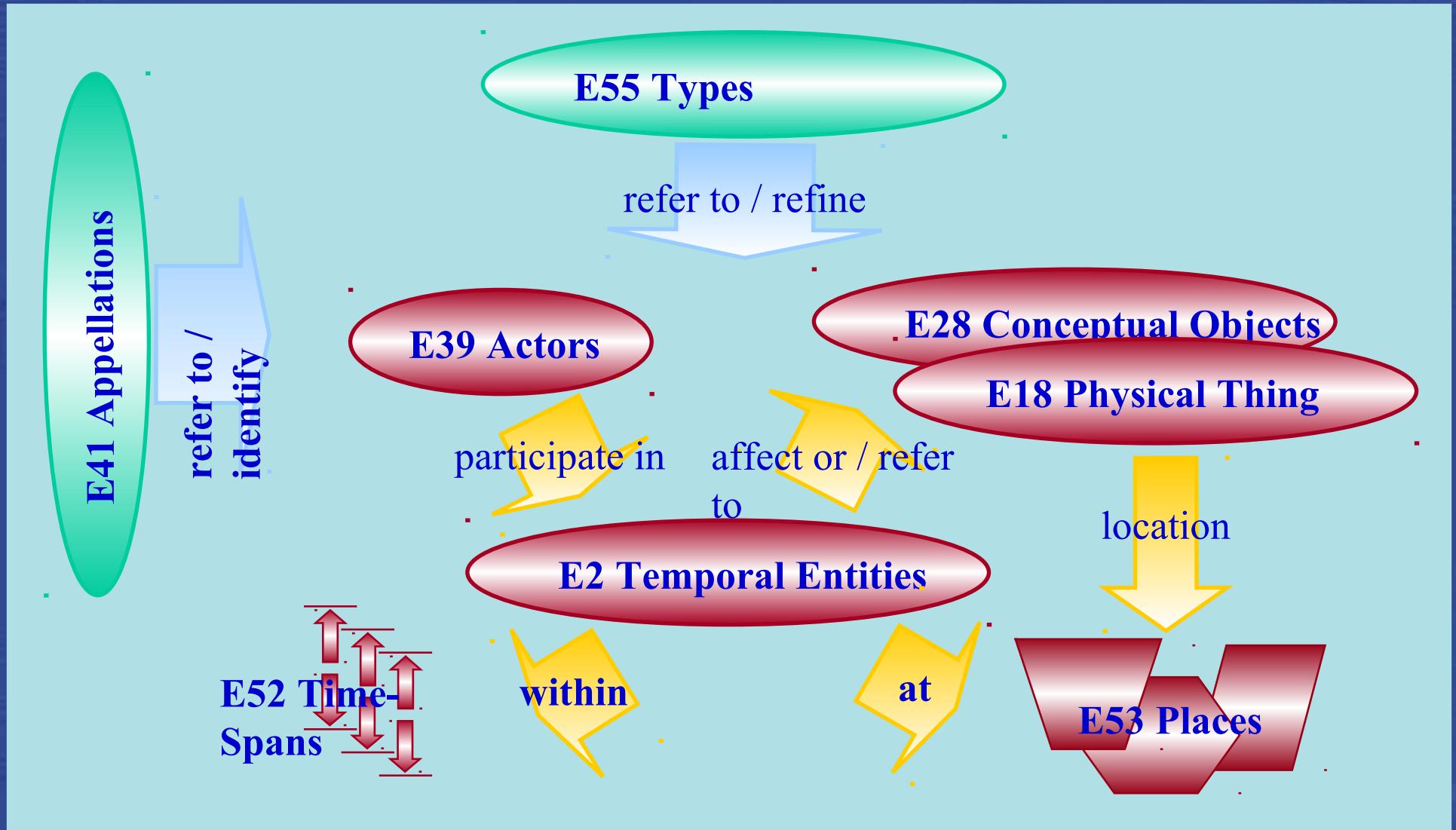


Research specific data model

Research data

The CIDOC CRM (ISO21127:2006)

A semantic framework that provides *interoperability* between different sources of **cultural heritage information**



Stephen Stead (2008)

Foundational ontologies
& modelling best practices

DOLCE + Descriptions and Situations
& object-oriented modelling principles



Generic, domain related core ontology



Domain related extensions



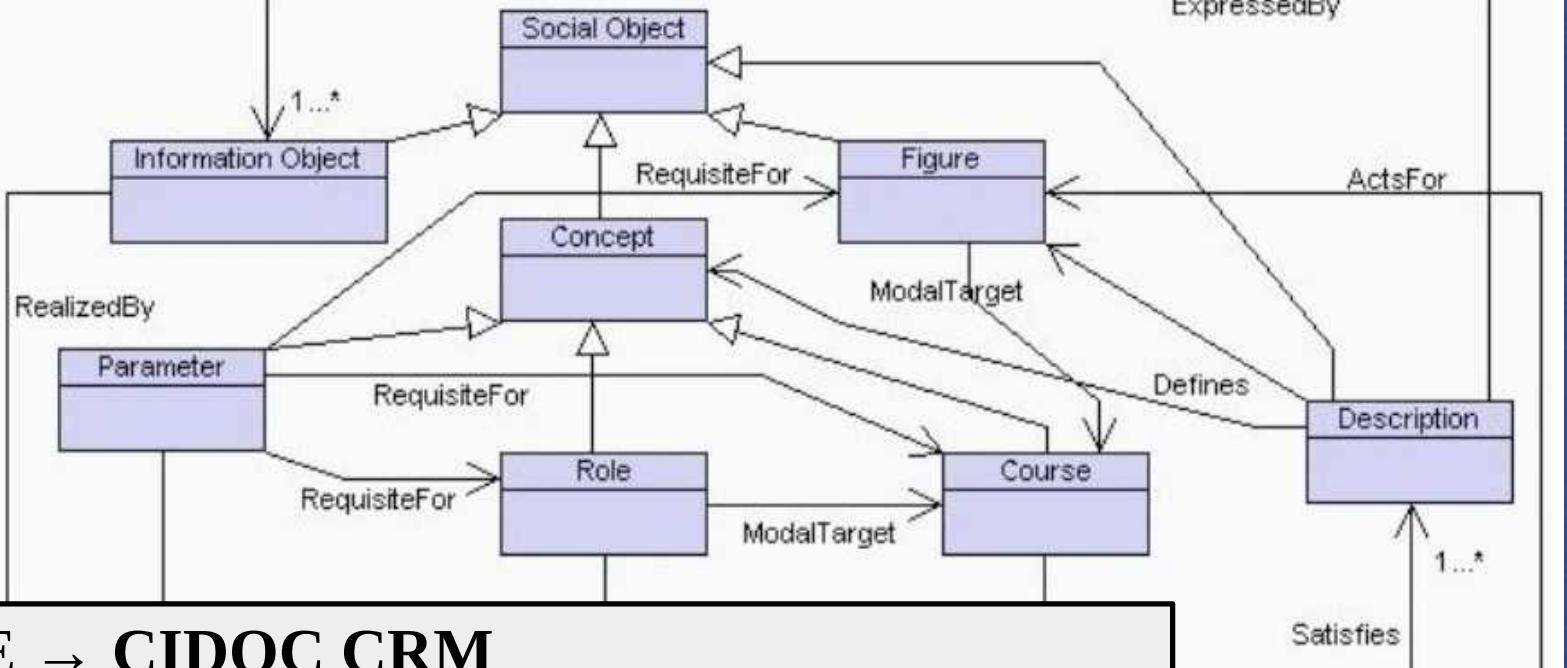
CIDOC CRM



Research specific data model

Research data

?



DOLCE → CIDOC CRM

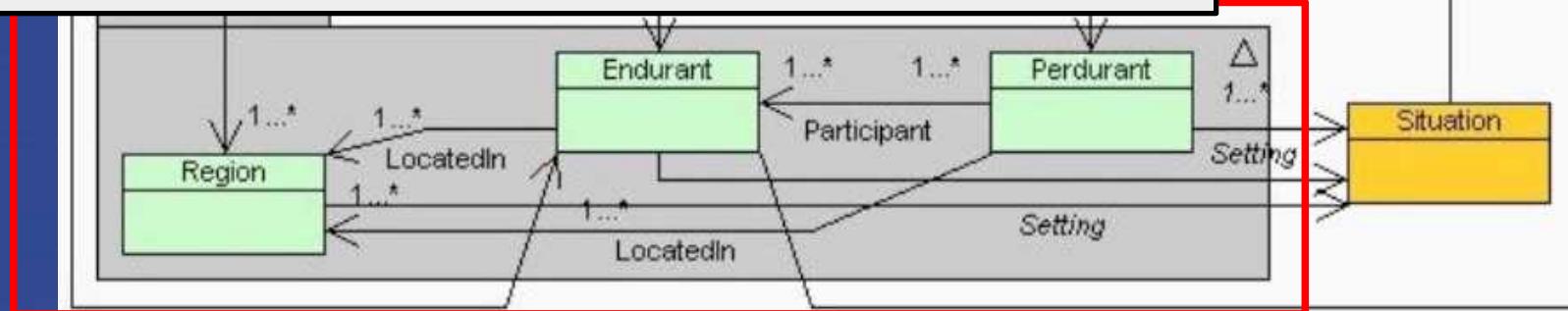
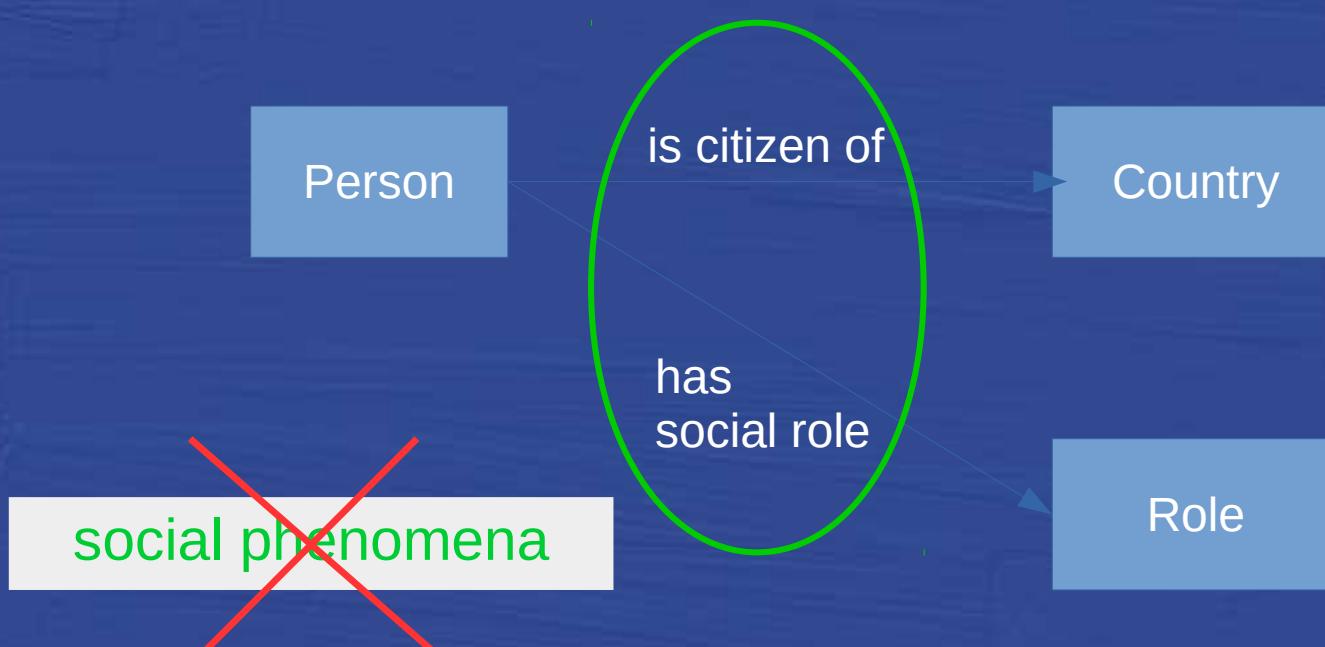
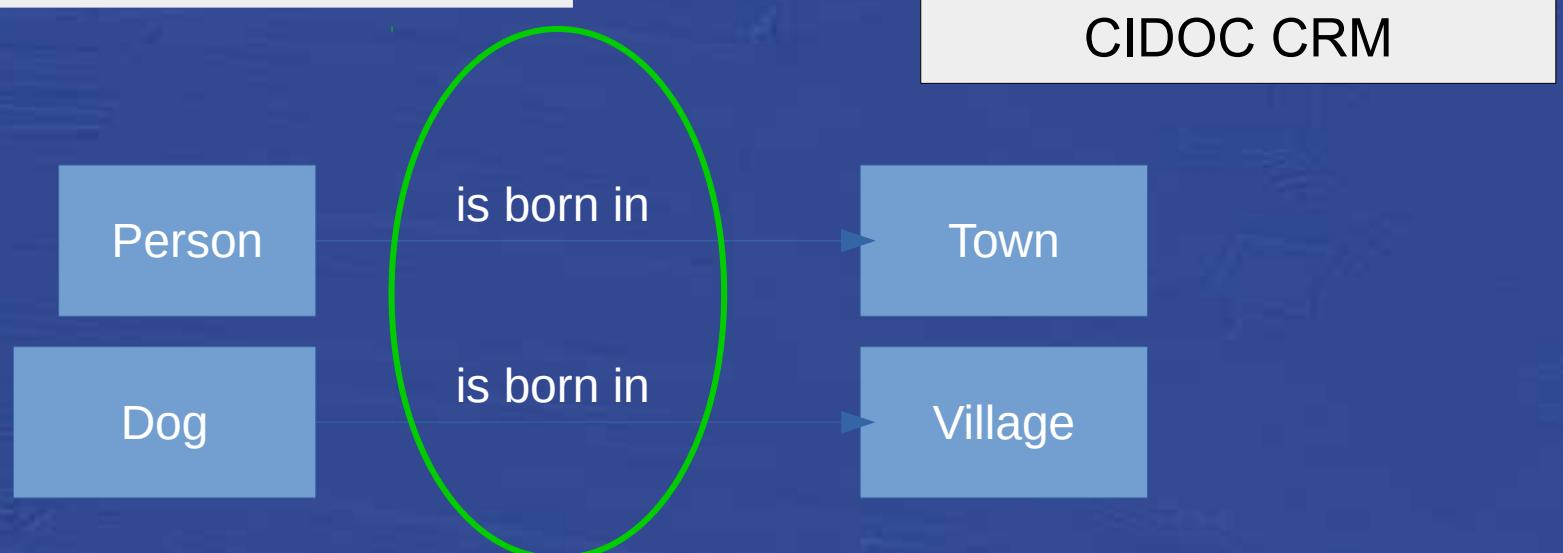


Fig. 2. A UML class diagram for D&S. The lower part of the pattern (within the grey package) is called the *ground ontology*, the higher is called the *descriptive ontology*; a situation satisfies a description if the two parts match according to the axioms specified for the concepts defined by the description.

Bottazzi E., Catenacci C., Gangemi A., Lehmann J.(2006) (from pre-print, not in published version)



physical or biological phenomena



Semantic Data for Humanities and Social Sciences (SDHSS) CIDOC CRM Top-Level Extension

Semantic Data for Humanities and Social Sciences (SDHSS) CIDOC CRM Top-Level Extension

Description:

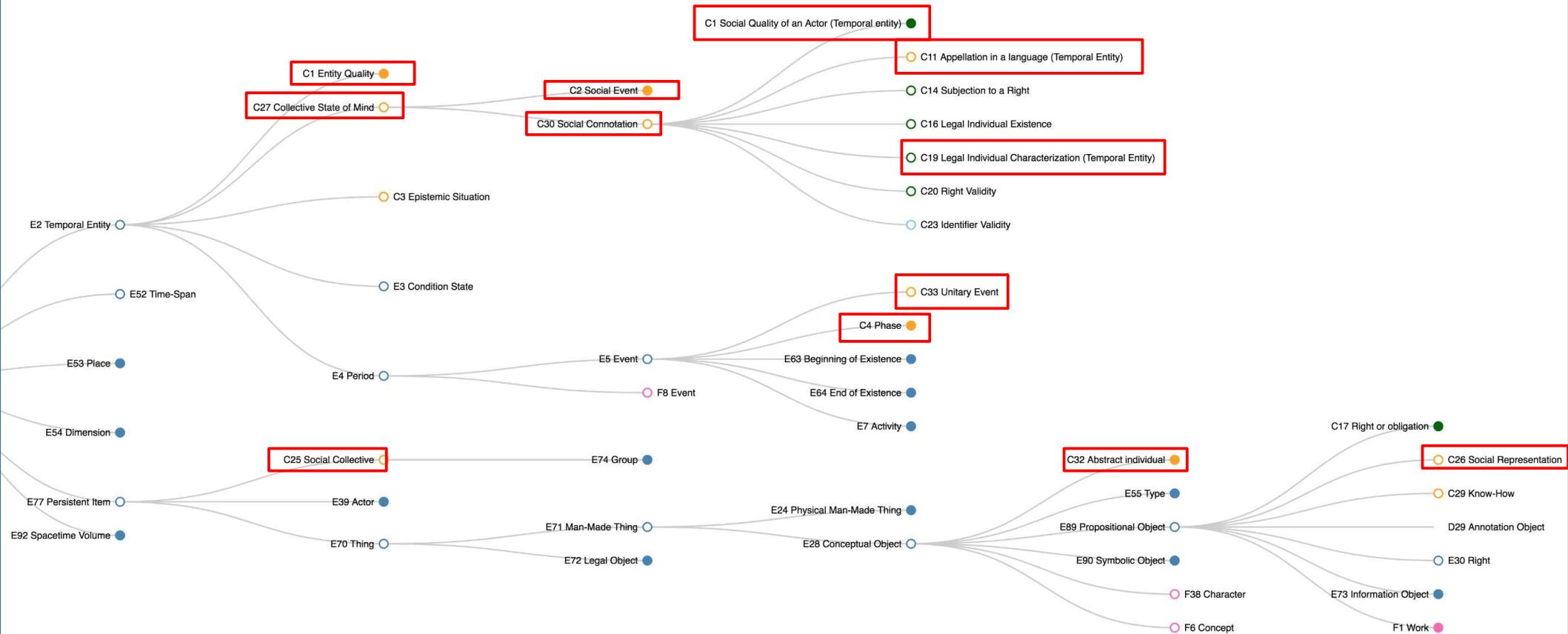
Published by Francesco Beretta (CNRS/Université de Lyon), 7 December 2020. Last revised on March 30 2021. (CC BY-SA 4.0)

The extension of CIDOC CRM for semantic data for humanities and social sciences (SDHSS) stems from the need to conceptualise the reality in the world, and more specifically factual information, from the point of view of historical research. The [ontological commitment](#) is therefore related to the domain of discourse of history but insofar as history, as a discipline that studies the life of humans and societies in the past, is interested in all the different aspects of social, economic, political, religious, literary and cultural life, the scope of this extension could be defined as the whole of social and human life, apprehended from the descriptive point of view, and global approach to reality, that characterises historical research.

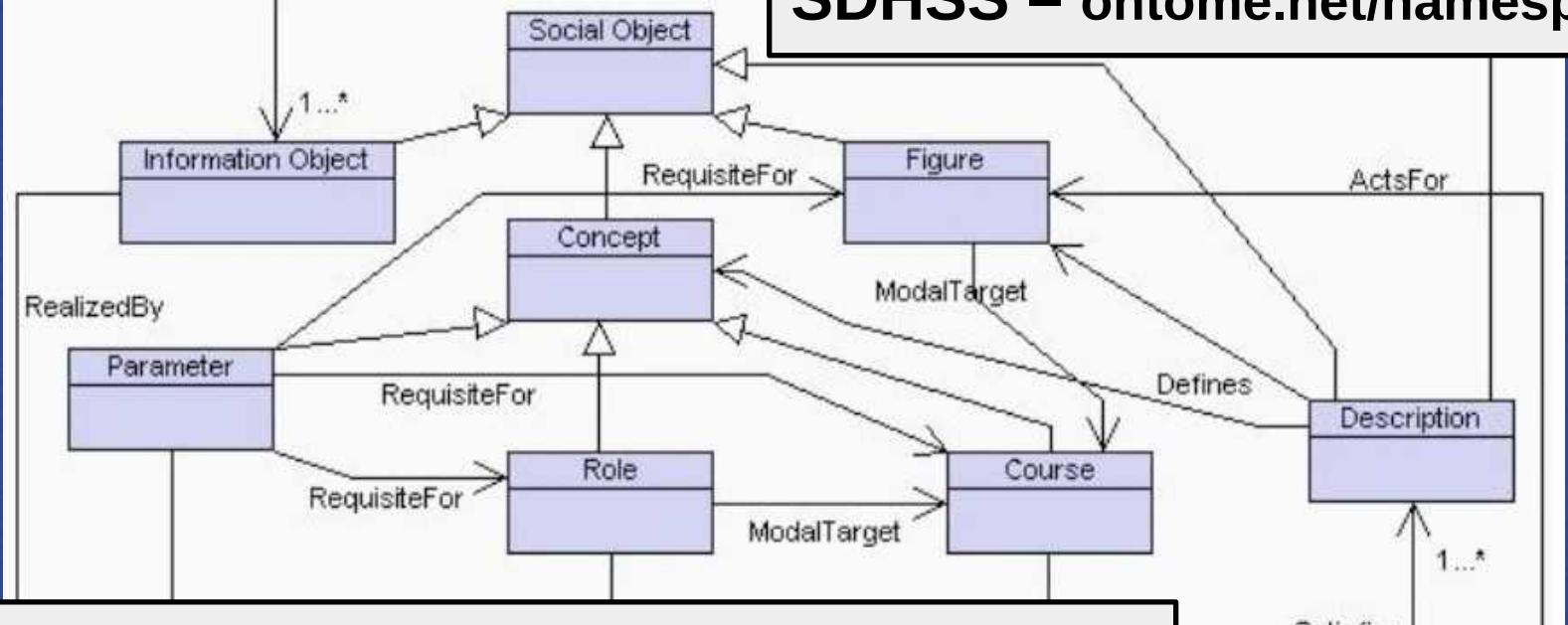
This definition of the scope or domain modelled is based on the conviction that in a [constructivist approach of scientific knowledge](#), a conceptualisation and data model can only be developed from the point of view of a specific discipline because *scientific objects* do not exist in the absolute but depend on the method and research agenda. They depend on the perspective or epistemic context researchers adopt in considering states of affairs: *scientific objects*, and [semantic models modelling them](#), are not declared to be the only appropriate and exclusive representation of *things* in the pre-Kantian sense but defined as *intentional objects* constructed from the point of view of a discipline and methodological approach in relation to things in the world. Scientific objects are not the things in the world themselves, even if they must necessarily refer to them by way of observation or experimentation, if a scientific and therefore realistic approach is to be maintained. This corresponds to the notion of inter-objectivity in social sciences relying on the distinction between things in themselves and things as perceived, experienced and discussed by human subjects, in their [shared intentionality](#) and in relation to their social practices and context.

ontome.net/namespace/11

SDHSS and extension for social life



ontome.net/namespace/11



CIDOC CRM

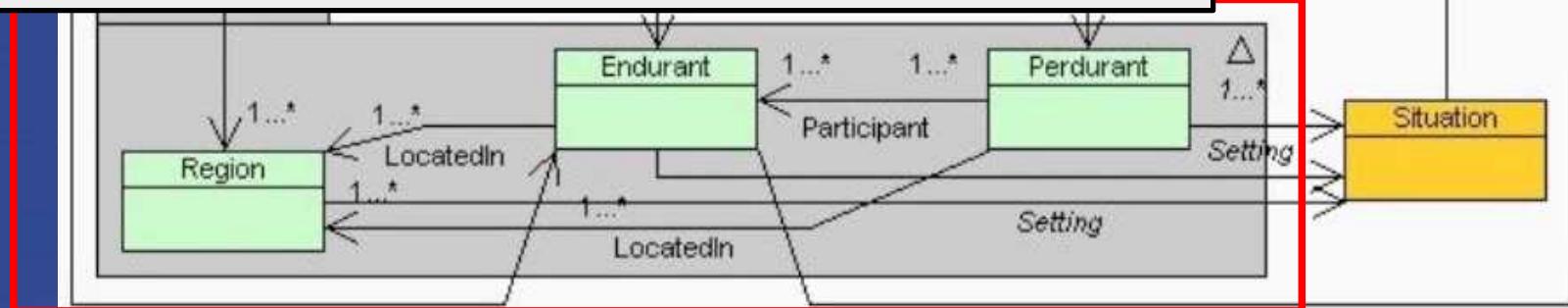


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Foundational ontologies
& modelling best practices

DOLCE + Descriptions and Situations
& object-oriented modelling principles



Generic, domain related core ontology



CIDOC CRM

SDHSS



Domain related extensions



Research specific data model

Research data

Foundational ontologies
& modelling best practices

DOLCE + Descriptions and Situations
& object-oriented modelling principles



Generic, domain related core ontology



Domain related extensions



Research specific data model

CIDOC CRM

SDHSS



CRM
Archaeo

FRBRoo

CRMsoc

CRMgeo

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Generic, domain related core ontology



Domain related extensions



Research specific data model

Research data

CIDOC CRM

SDHSS

CRM
Archaeo

FRBRoo

CRMsoc

CRMgeo

Society
& Law
(SDHSS)

Literary life
(SDHSS)

Education &
Universities
(SDHSS)

Ships &
navigation
(SDHSS)

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Generic, domain related core ontology



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CIDOC CRM

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CRMsoc

CRMgeo

Education &
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Ships &
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Projects' research specific extensions

Foundational ontologies
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DOLCE + Descriptions and Situations
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Generic, domain related core ontology



Domain related extensions

Research agenda



Research specific data model

CIDOC CRM

SDHSS

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Education &
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(SDHSS)

Ships &
navigation
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Projects' research specific extensions

Application profiles

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Generic, domain related core ontology



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Research agenda



Research specific data model

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Projects' research specific extensions

Application profiles

Research data

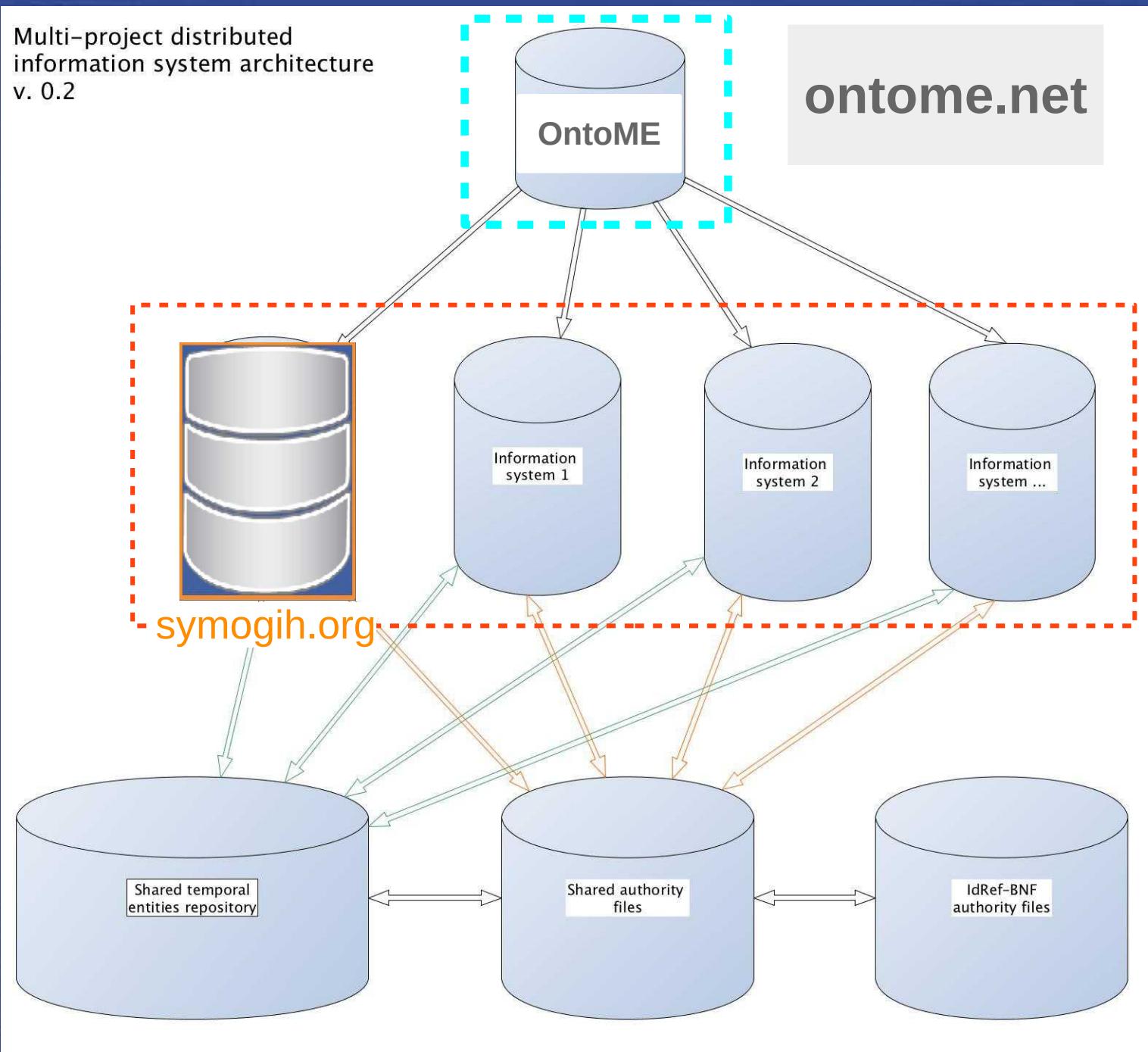
Interoperable research data



5.

A virtual environment for managing
application profiles and sub-domain extensions :

ontome.net

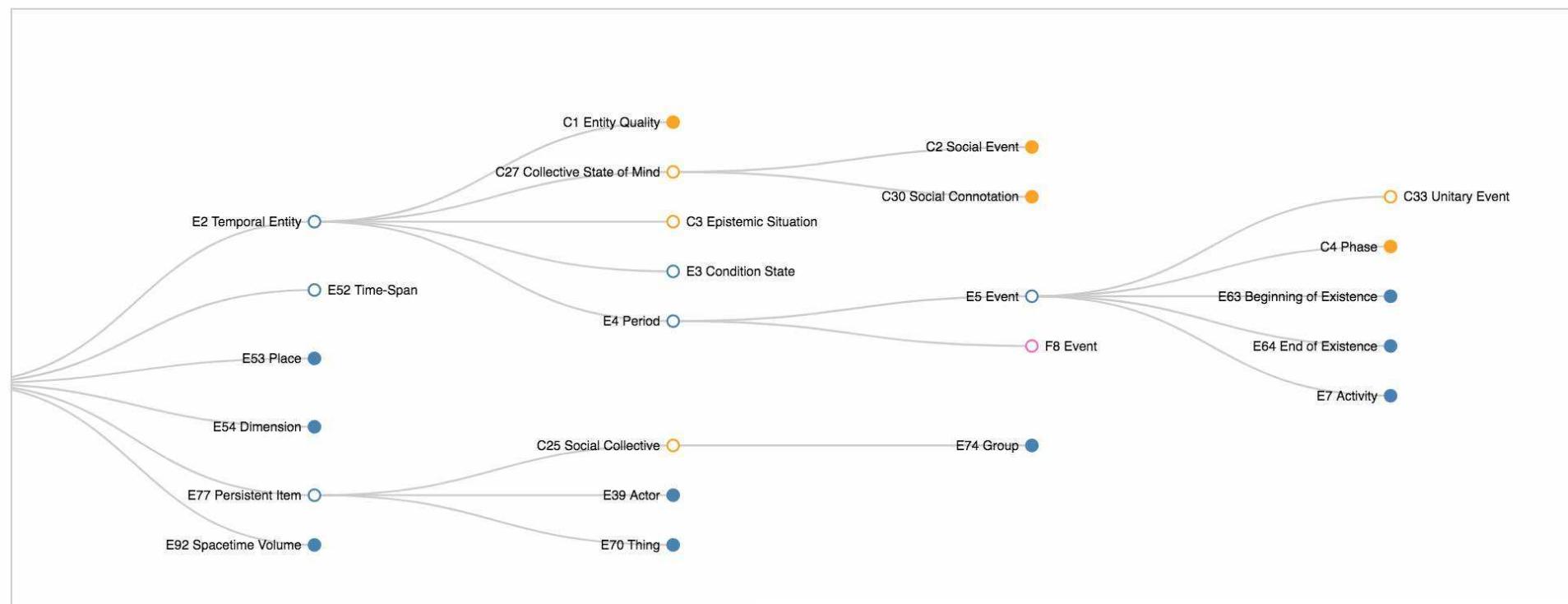


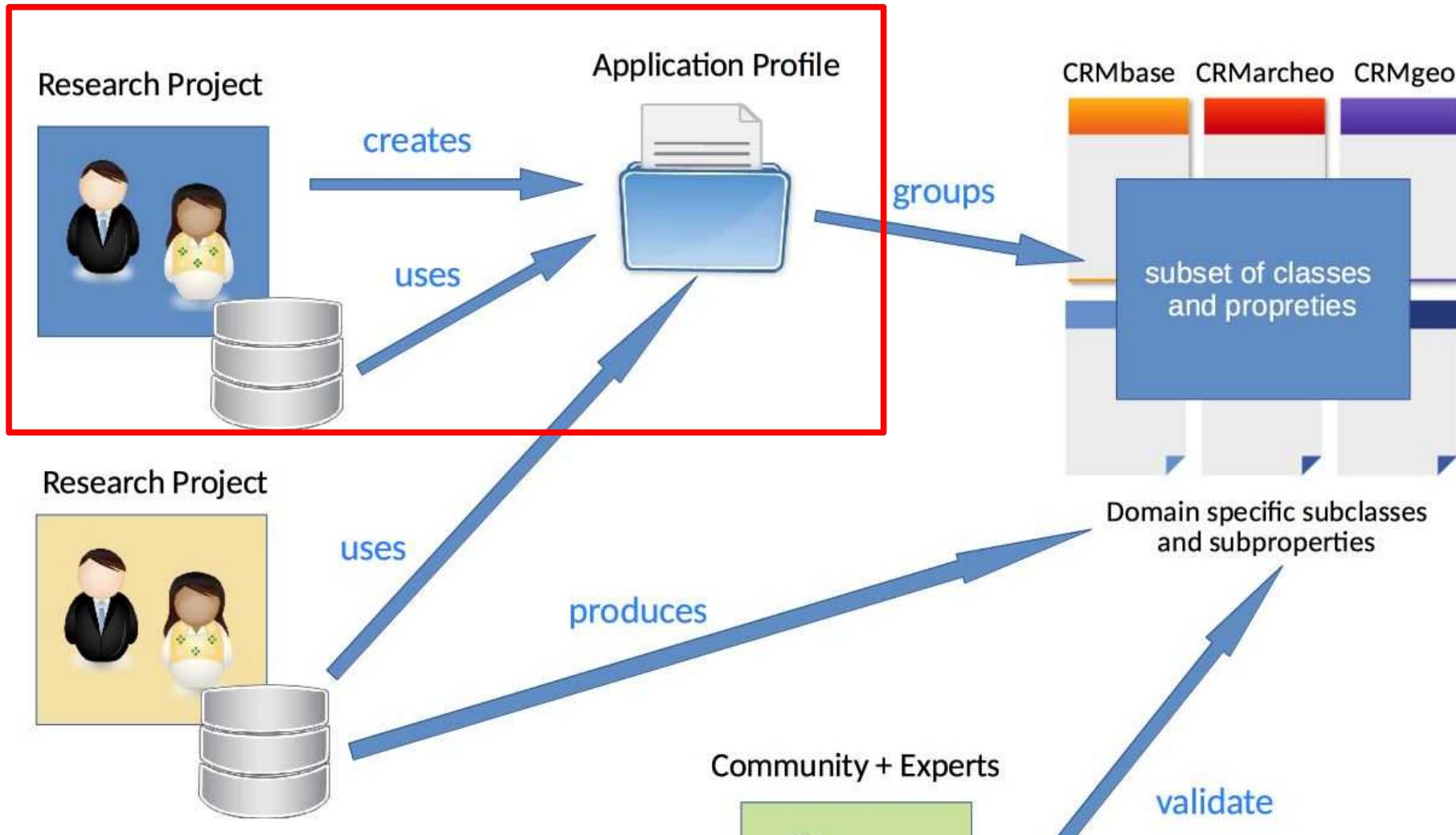
Classes tree

C2 Study (#424) ▾

Reset

 Use mouse wheel





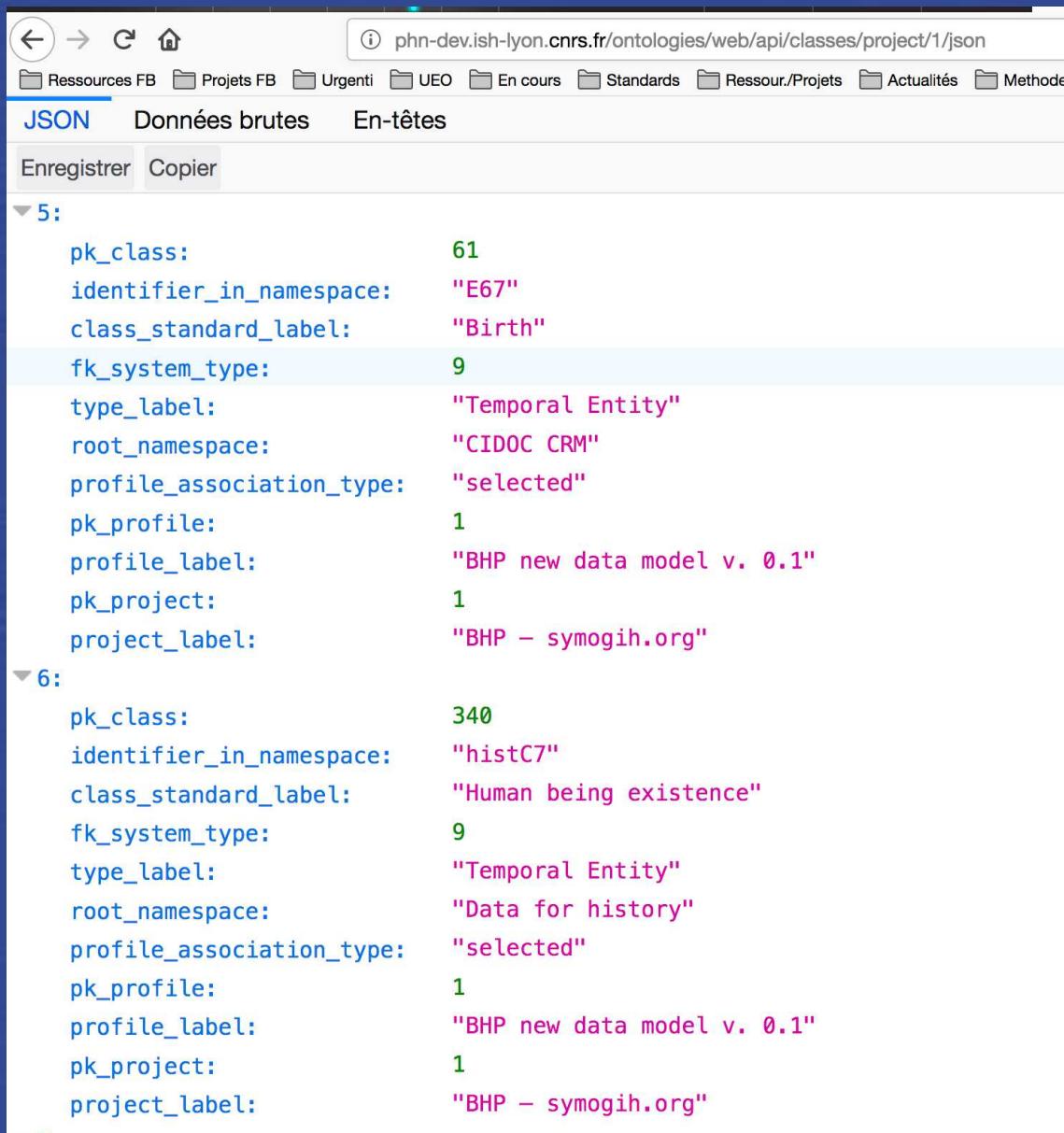
Ontology Management Environment

dataforhistory.org

ontome.net

Retrieve your project's application profiles from an API

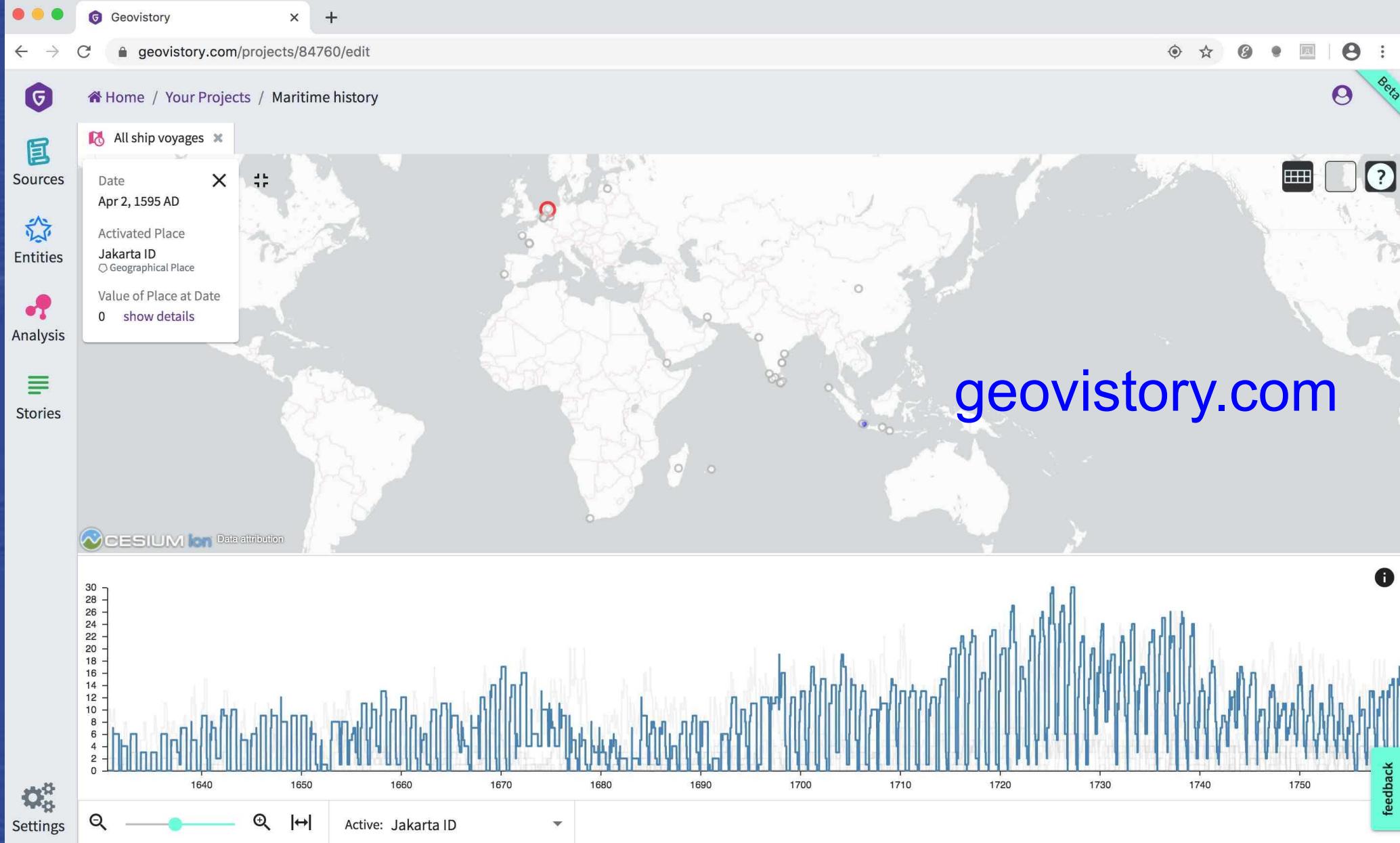
<https://ontome.net/api/classes-profile.json?lang=en&available-in-profile=8>



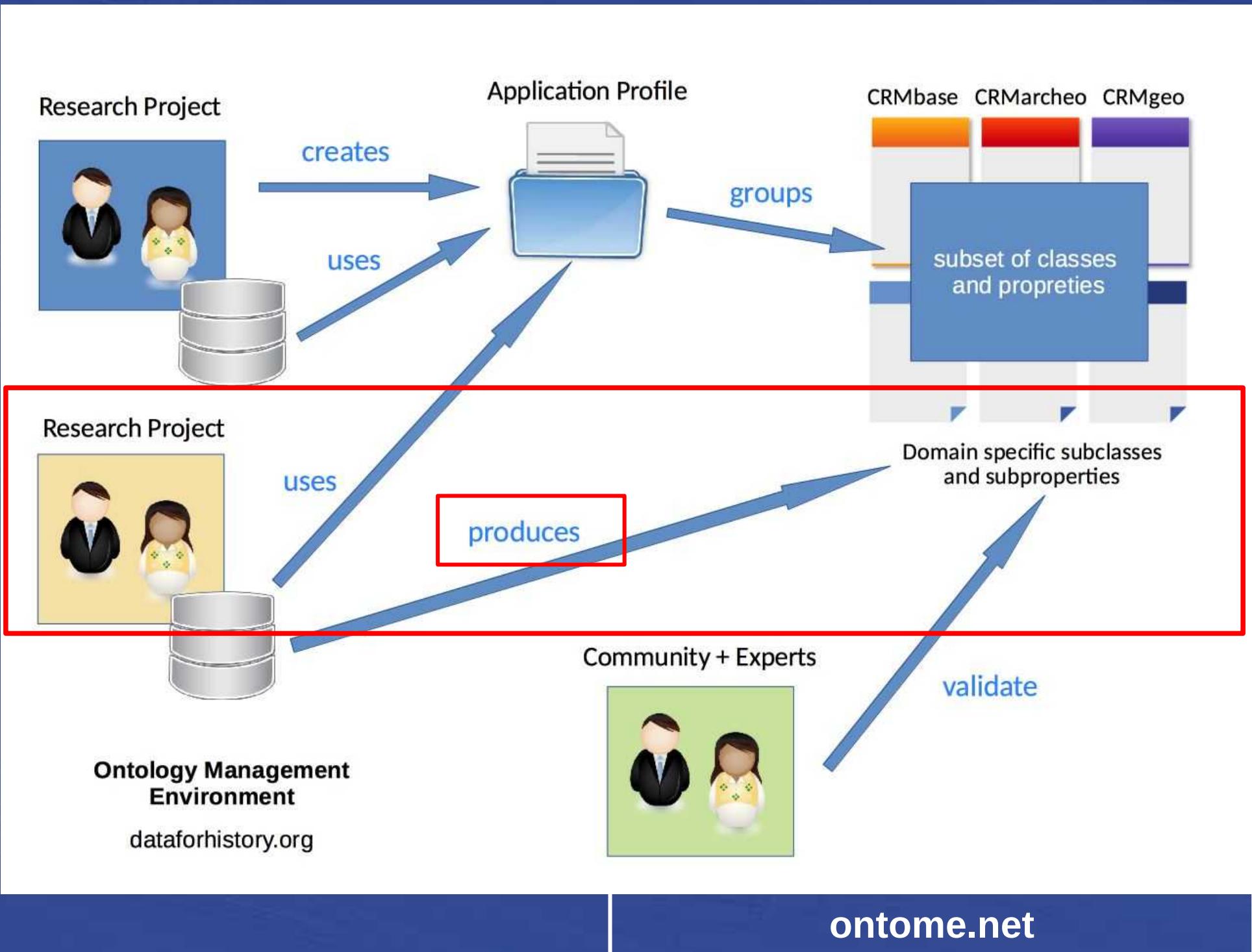
The screenshot shows a web browser displaying JSON data for two application profiles. The URL in the address bar is <https://phn-dev.ish-lyon.cnrs.fr/ontologies/web/api/classes/project/1/json>. The browser interface includes a header with back, forward, search, and home buttons, and a menu bar with links like "Ressources FB", "Projets FB", "Urgenti", "UEO", "En cours", "Standards", "Ressour./Projets", "Actualités", and "Méthodes". Below the header, there are tabs for "JSON", "Données brutes", and "En-têtes", with "JSON" being active. There are also "Enregistrer" and "Copier" buttons. The main content area displays two entries, each representing an application profile:

```
5:
pk_class: 61
identifier_in_namespace: "E67"
class_standard_label: "Birth"
fk_system_type: 9
type_label: "Temporal Entity"
root_namespace: "CIDOC CRM"
profile_association_type: "selected"
pk_profile: 1
profile_label: "BHP new data model v. 0.1"
pk_project: 1
project_label: "BHP – symogih.org"

6:
pk_class: 340
identifier_in_namespace: "histC7"
class_standard_label: "Human being existence"
fk_system_type: 9
type_label: "Temporal Entity"
root_namespace: "Data for history"
profile_association_type: "selected"
pk_profile: 1
profile_label: "BHP new data model v. 0.1"
pk_project: 1
project_label: "BHP – symogih.org"
```



Geovistory : a new VRE for the symogih.org project
developed by *kleiolab.ch* (Basel)



Foundational ontologies
& modelling best practices



Generic, domain related core ontology



Domain related extensions



Research agenda

Research specific data model

Research data

Maritime History:
<https://ontome.net/namespace/66>

Man-Made Object – E22

Summary Definition Properties Identification Namespace Hierarchy Relations Profiles Graph Comments 0

OntoME

Ontology Management Environment - beta version

Data for History

Ship – C2



Summary Definition Properties Identification Namespace Hierarchy Relations Profiles Graph Comments 0

C2 Ship

Subclass of: E22 Man-Made Object

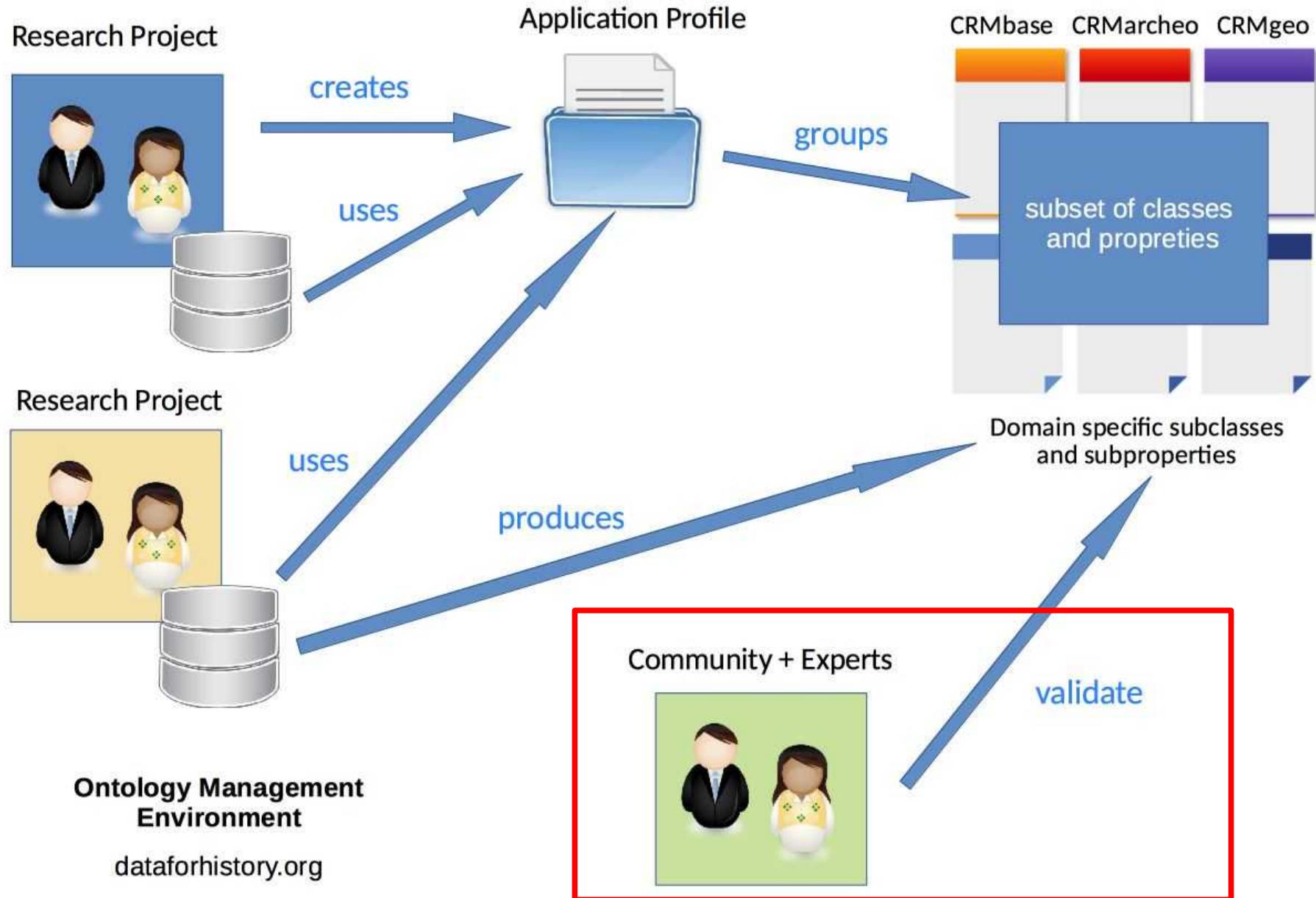
Scope note: Used to denote a watercraft that travels the world's oceans and other sufficiently deep waterways, carrying passengers or goods, or in support of specialized missions, such as defense, research and fishing.

Examples: tba

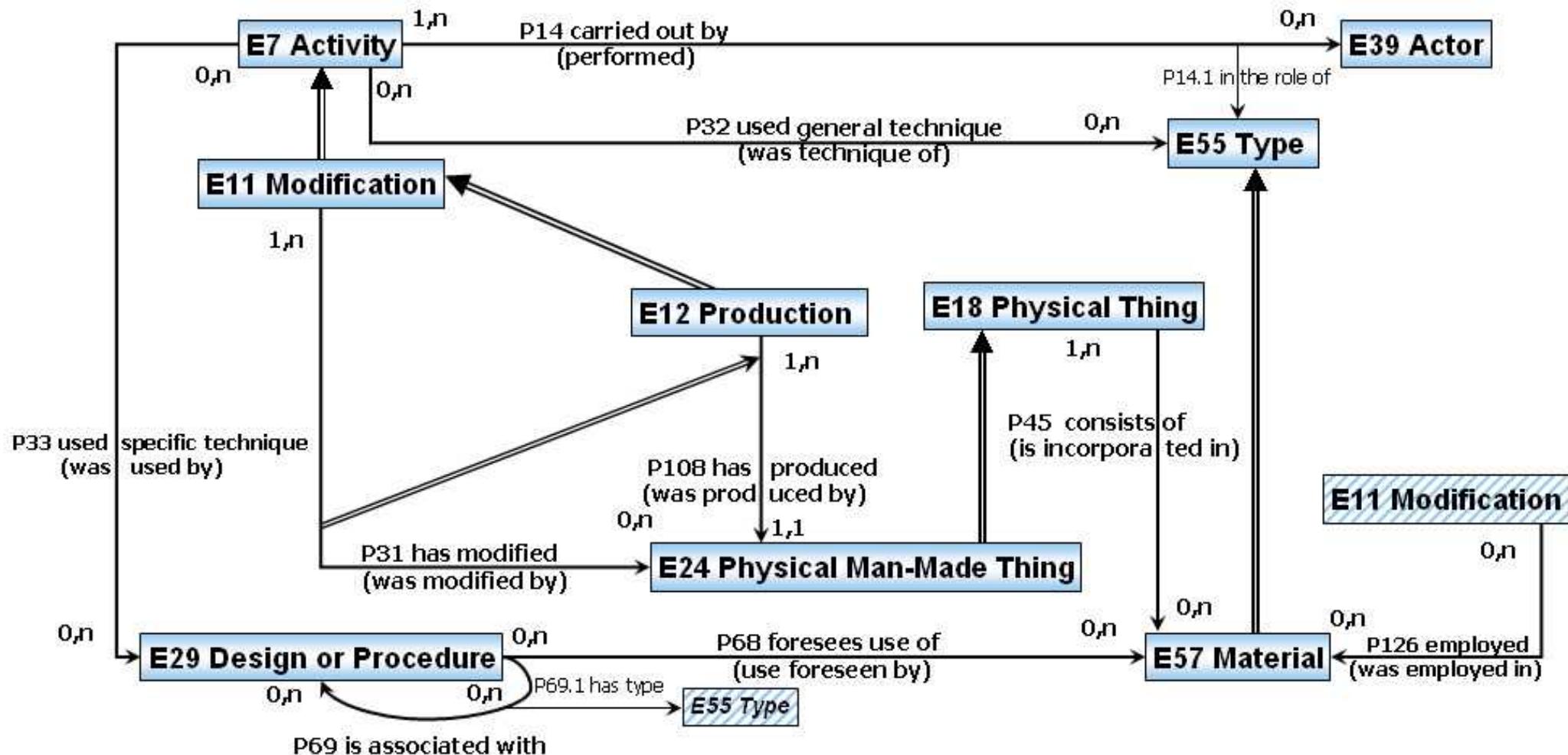
In First Order Logic: $C2(x) \supset E22(x)$

Outgoing properties: P6 has ship type → C3 Ship type

Incoming properties: C1 Ship voyage → P3 carried out by
C12 Shipbuilding → P7 has built

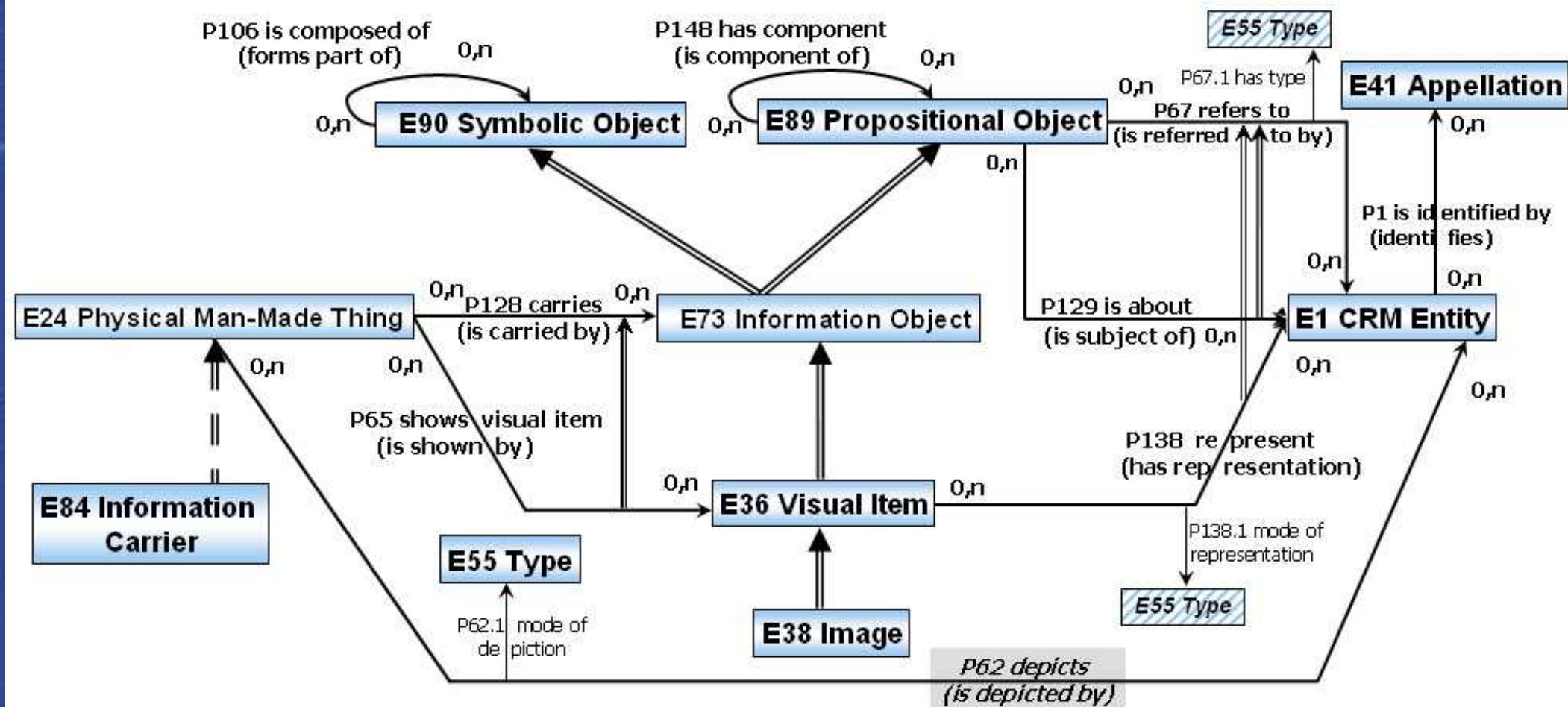


MATERIAL AND TECHNIQUE INFORMATION



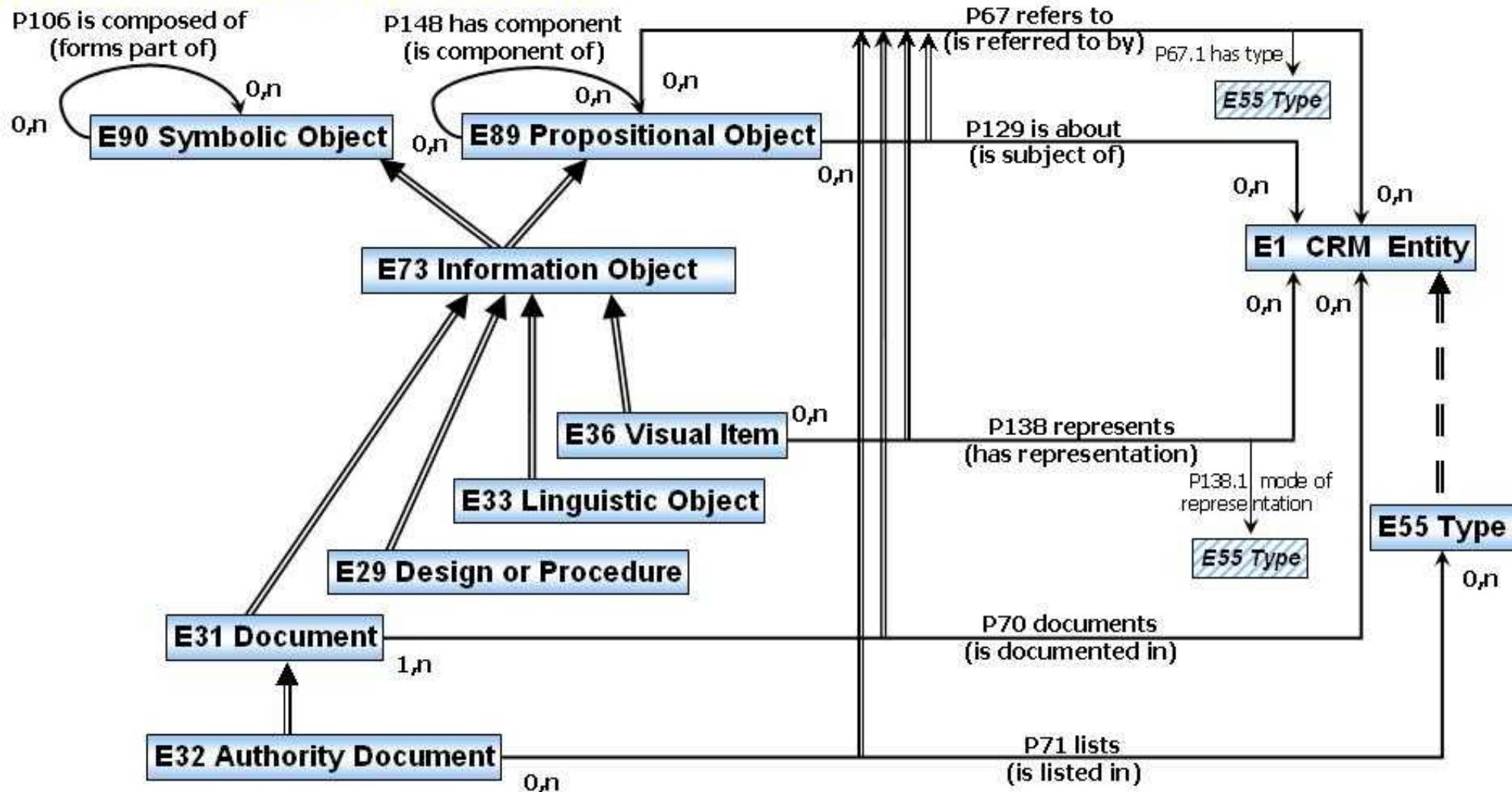
Functional overview: Material and Technique Information .

IMAGE INFORMATION, OBJECTS AND CARRIERS



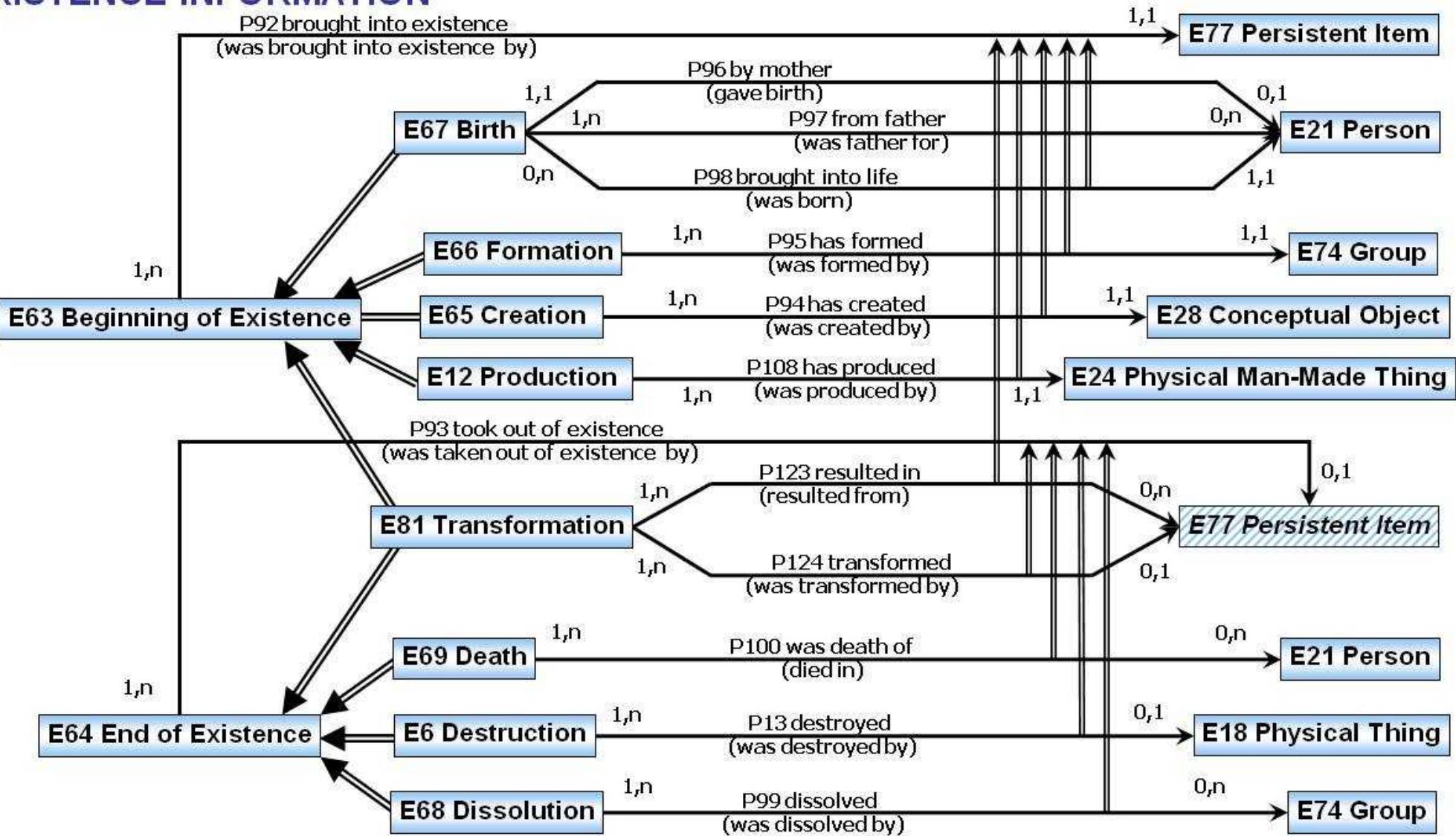
Functional overview: Image Information, Objects and Carriers .

DOCUMENTATION and REFERENCES



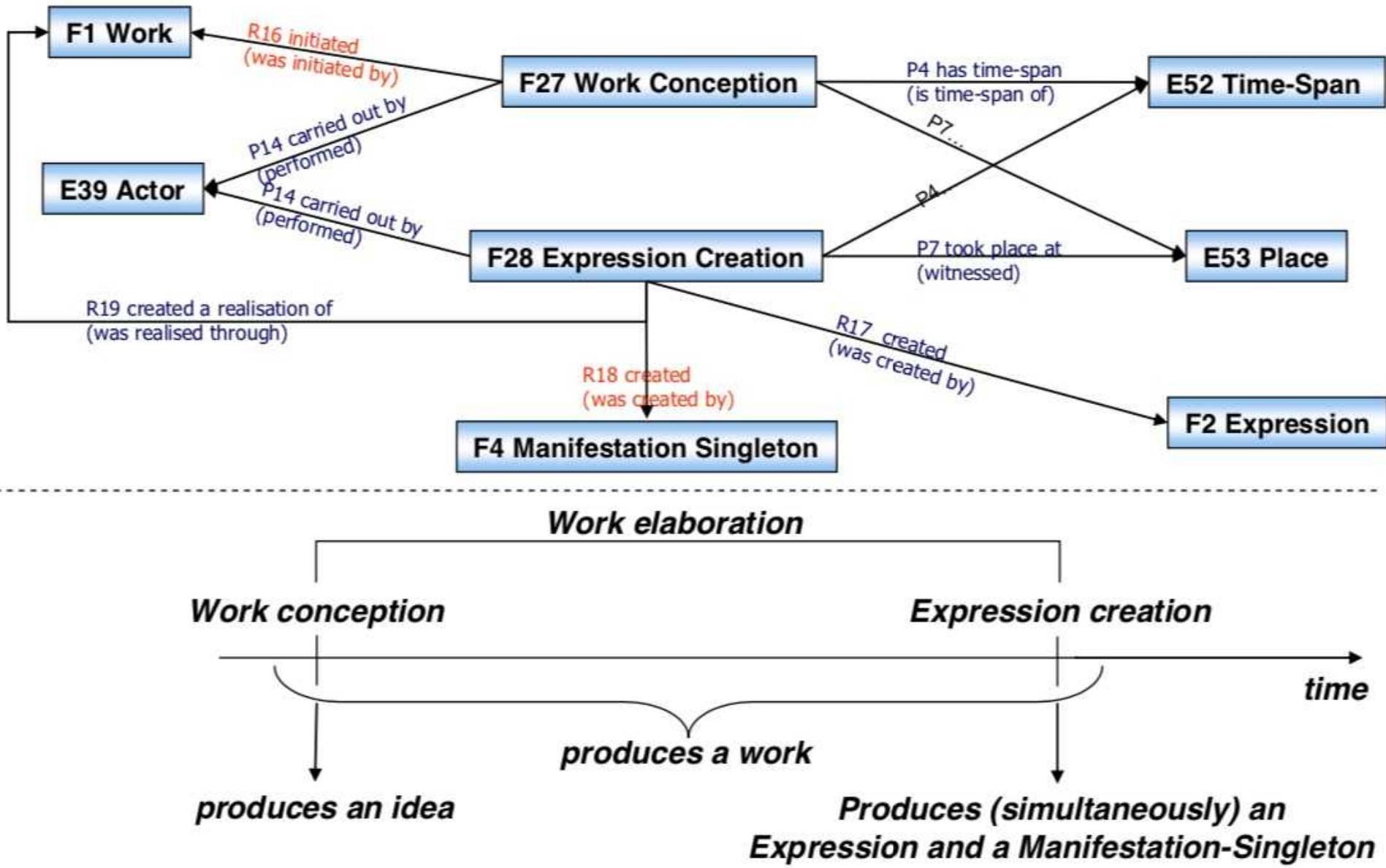
Functional overview: Documentation and References .

EXISTENCE INFORMATION



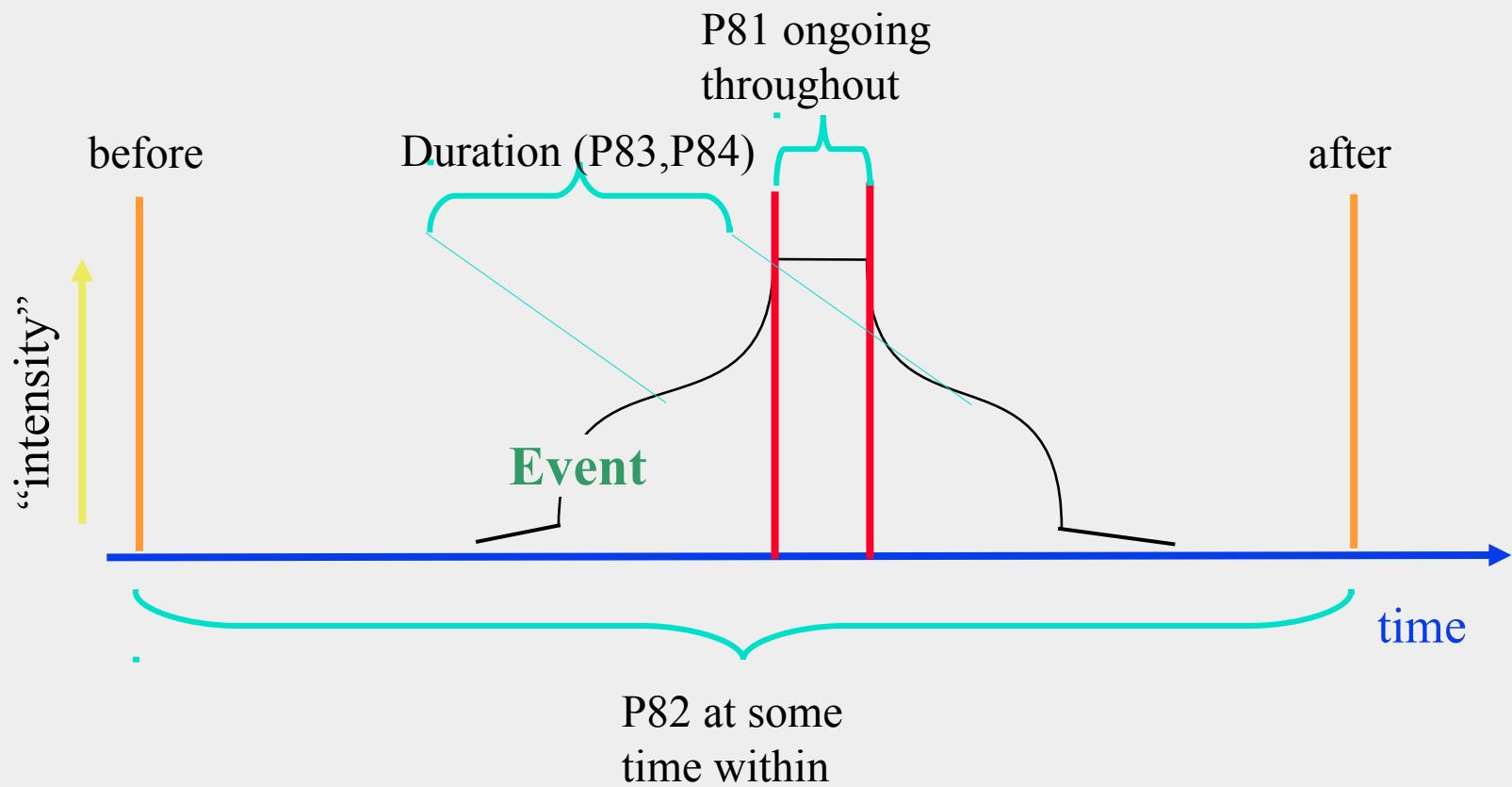
Functional overview: Existence Information .

Work and Time



FRBRoo 2.4, Figure 1, page 14 – Releases

The CIDOC CRM Time Uncertainty, Certainty and Duration

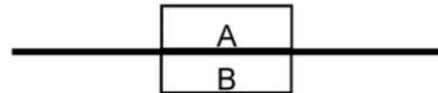


Stephen Stead (2008)

The CIDOC CRM

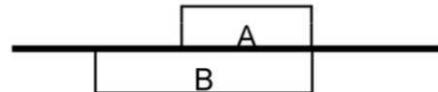
P114-120 ‘Allen’ properties (James F. Allen)

P114 is equal in time to



$A_s = B_s \text{ & } A_e = B_e \Leftrightarrow (A_{ss} = B_{ss} \text{ & } A_{se} = B_{se}) \text{ & } (A_{es} = B_{es} \text{ & } A_{ee} = B_{ee})$

P115 finishes



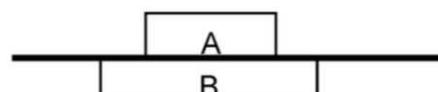
$A_s > B_s \text{ & } A_e = B_e \Leftrightarrow (B_{ss} < A_{ss} \text{ & } B_{se} < A_{se}) \text{ & } (B_{es} = A_{es} \text{ & } B_{ee} = A_{ee})$

P116 starts



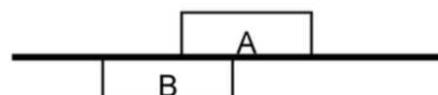
$A_e < B_e \text{ & } A_s = B_s \Leftrightarrow (A_{ss} = B_{ss} \text{ & } A_{se} = B_{se}) \text{ & } (A_{ee} < B_{ee} \text{ & } A_{es} < B_{es})$

P117 occurs during



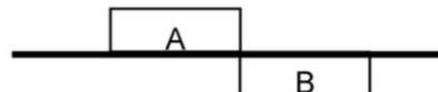
$B_s < A_s \text{ & } A_e < B_e \Leftrightarrow (B_{ss} < A_{ss} \text{ & } B_{se} < A_{se}) \text{ & } (A_{es} < B_{es} \text{ & } A_{ee} < B_{ee})$

P118 overlaps



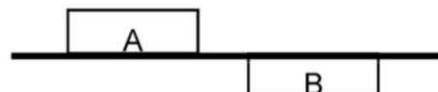
$B_s < A_s \text{ & } A_s < B_e \text{ & } B_e < A_e \Leftrightarrow (B_{ss} < A_{ss} \text{ & } B_{se} < A_{se}) \text{ & } (A_{ss} < B_{es} \text{ & } A_{se} < B_{ee}) \text{ & } (B_{es} < A_{es} \text{ & } B_{ee} < A_{ee})$

P119 meets in time with



$A_e = B_s \Leftrightarrow A_{es} = B_{ss} \text{ & } A_{ee} = B_{se}$

P120 occurs before



$A_e < B_s \Leftrightarrow A_{es} < B_{ss} \text{ & } A_{ee} < B_{se}$

J. Holmen et Ch.-E. Ore (2010)

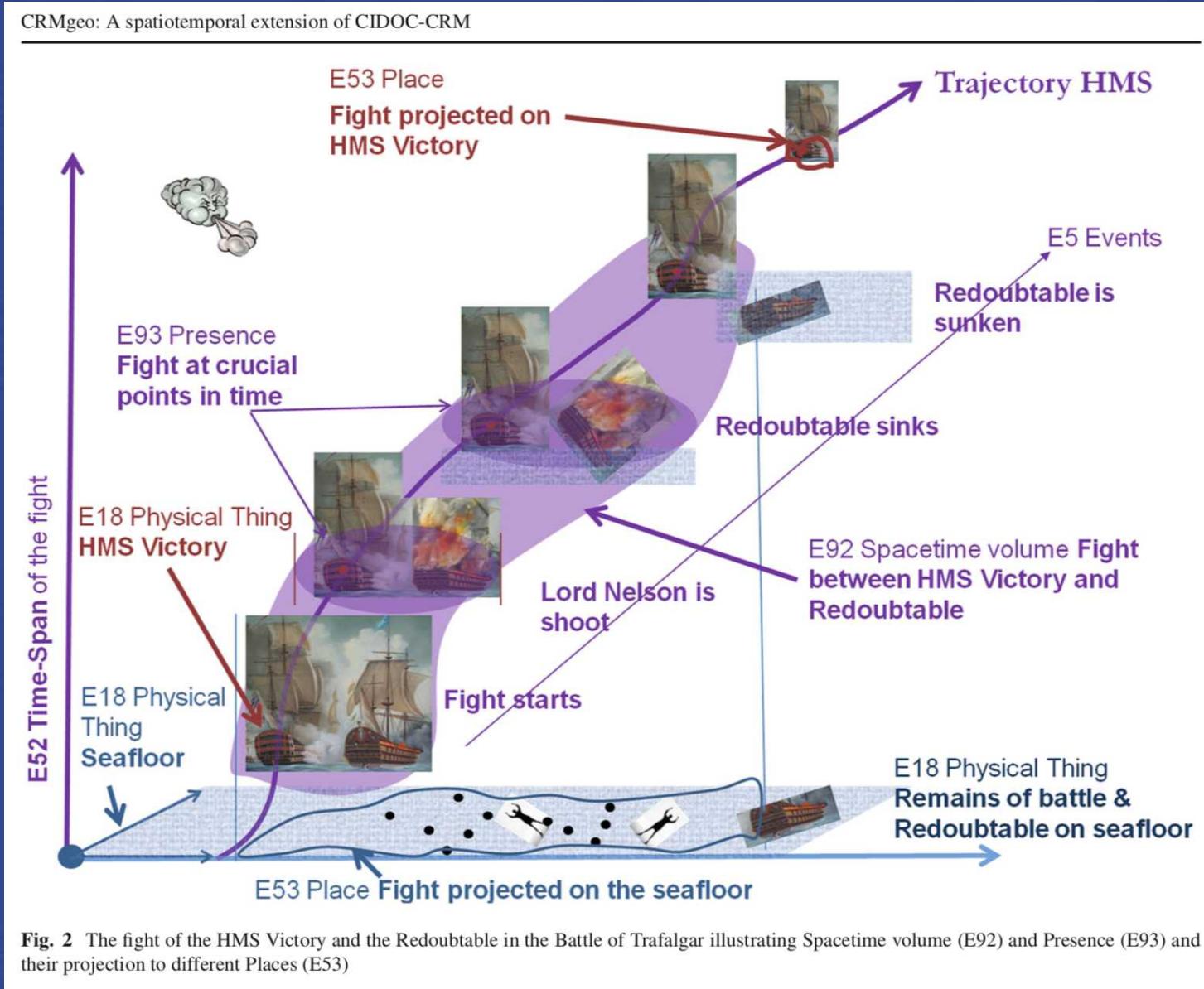


Fig. 2 The fight of the HMS Victory and the Redoutable in the Battle of Trafalgar illustrating Spacetime volume (E92) and Presence (E93) and their projection to different Places (E53)

DOI 10.1007/s00799-016-0192-4

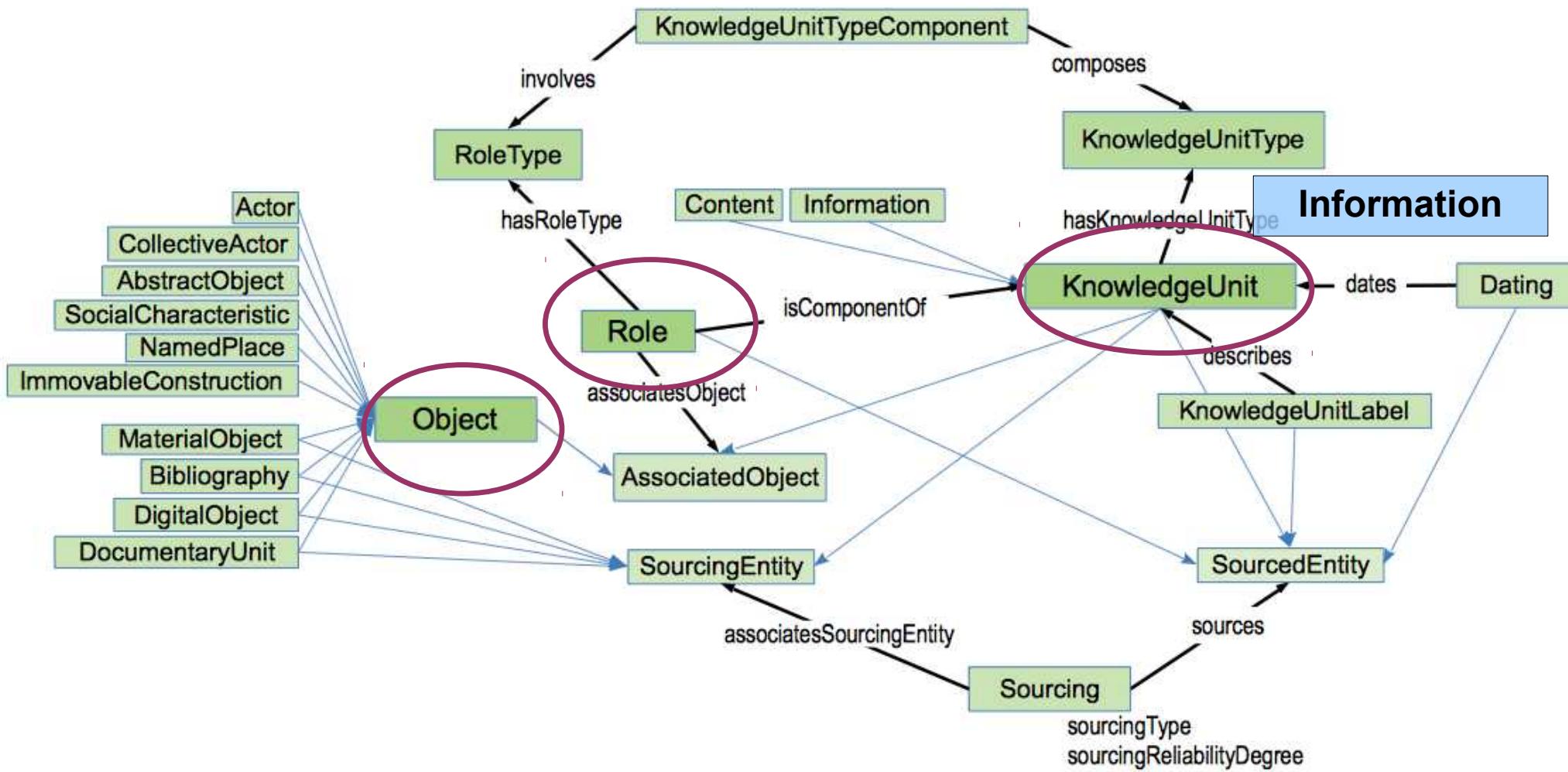
CRMgeo: A spatiotemporal extension of CIDOC-CRM Gerald Hiebel¹ · Martin Doerr² · Øyvind Eide³

Adopt a resource-centered model...



... or prefer a more robust event-centered model !





The symogih.org ontology

The definition of each instance of the data model is publicly available

The screenshot shows the SYMOGIH website interface. At the top, there is a yellow header bar with the logo "SYMOGIH" and a "Références" link. Below the header, a teal banner displays the URL "http://symogih.org". The main content area has a white background. On the left, there are two grey sidebar boxes: one for "Références" containing links to "Arborescence des classes de types d'unités de connaissances", "Types d'informations", and "Types de contenus"; and another for "Objets" containing links to "Acteurs", "Acteurs collectifs", "Objets abstraits", and "Caractères sociaux". The main content area features a navigation bar with "Accueil", "Documentation", and "Membres" buttons. A large section titled "Classes de types d'" is visible, along with a "Chercher une classe" search bar. To the right, a detailed view of the "TyIn97" class is shown under the heading "Enseignement". It includes a description: "Exercer la fonction d'enseigner, avec indication de l'institution auprès de laquelle s'exerce l'enseignement et des matières enseignées.", a note about it being a specific case of "Exercice d'une fonction", and a warning to not enter the location if it can be identified. Below this is a table titled "Liste des types de rôles associés" with columns for "Libellé du type de rôle", "Clé du TyRo", and "Description". The table lists eight roles: "concerner" (TyRo21), "enseigné (être)" (TyRo131), "exercé (être)" (TyRo47), "exercer" (TyRo12), "localiser" (TyRo8), "occasionner la fin" (TyRo176), "origine (être l')" (TyRo16), and "typer" (TyRo98). Each row provides a brief description of the role's purpose. At the bottom of the page, there is a section for "MCD disponible(s)" with a "Télécharger ce MCD" button.

SYMOGIH

Références

Accueil Documentation Membres

Références

- Arborescence des classes de types d'unités de connaissances
- Types d'informations
- Types de contenus

Objets

- Acteurs
- Acteurs collectifs
- Objets abstraits
- Caractères sociaux

http://symogih.org

Classes de types d'

Chercher une classe

- Biographie
 - Enseignement -
 - Exercice d'une fonction
 - Fin de la vie
 - Liens acteurs - institutions
 - Localisation d'un enseignement
 - Rites sociaux
 - Vie militaire
 - Vie professionnelle

Enseignement

TyIn97

Exercer la fonction d'enseigner, avec indication de l'institution auprès de laquelle s'exerce l'enseignement et des matières enseignées.

Il s'agit d'un cas particulier du TyIn 'Exercice d'une fonction' : cf. Classe TyIn 'Exercice d'une fonction'.

Attention : ne pas renseigner le lieu si on peut localiser l'institution elle-même.

Liste des types de rôles associés

Libellé du type de rôle	Clé du TyRo	Description
concerner	TyRo21	Institution auprès de laquelle s'exerce l'enseignement. Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
enseigné (être)	TyRo131	La matière enseignée (un objet abstrait). On peut en associer plusieurs si on enseigne en même temps plusieurs matières. En revanche, il faut créer plusieurs informations si les enseignements des différentes matières se succèdent ou si le contexte institutionnel est différent
exercé (être)	TyRo47	Qualification de l'enseignement : professeur, chargé de cours, etc. Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
exercer	TyRo12	Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
localiser	TyRo8	Ne pas renseigner si l'institution auprès de laquelle s'effectue l'enseignement est déjà localisée.
occasionner la fin	TyRo176	Associe l'information ou le AbOb qui explique la fin de l'enseignement
origine (être l')	TyRo16	Associe l'information (nomination, élection, ...) ou l'objet abstrait qui indiquent la cause de l'enseignement
typer	TyRo98	A utiliser dans le contexte de ce TyIn pour spécifier la nature de l'enseignement grâce à un AbOb (cours magistral, séminaire, etc.).

MCD disponible(s)

Télécharger ce MCD

Références

- Arborescence des classes de types d'unités de connaissances
- Types d'informations
- Types de contenus

Objets

- Acteurs
- Acteurs collectifs
- Lieux
- Objets abstraits
- Caractères sociaux
- Formes concrètes

Galilei, Galileo - Enseigne : Mathématiques, auprès de : Université de Padoue

Info94542

Type d'information: [Enseignement](#) - TyIn97

Date: 1592

Composantes de l'information

Rôles

Textes

Sources

Libellé de l'objet

Galilei, Galileo

Université de Padoue

Mathématiques

Type de rôle

exercer

concerner

enseigné (être)

Clé du rôle

InRo261100

InRo261101

InRo261102

Galileo Galilei taught mathematics at the University of Padua from 1592 and 1610

E41 Appellations

refer to / identify

E55 Types

refer to / refine

E39 Actors

participate in/affect or /refine

E28 Conceptual Objects

E18 Physical Thing

E2 Temporal Entity

E52 Time-Span in thing

at

<http://symogih.org>

SYMOGIH
Références

Accueil Documentation Membres

Enseignement

TyIn97

Exercer la fonction d'enseigner, avec indication de l'institution auprès de laquelle s'exerce l'enseignement et des matières enseignées.
Il s'agit d'un cas particulier du TyIn 'Exercice d'une fonction' : cf. Classe TyIn 'Exercice d'une fonction'.
Attention : ne pas renseigner le lieu si on peut localiser l'institution elle-même.

Liste des types de rôles associés

Libellé du type de rôle	Cle du TyRo	Description
concerner	TyRo21	Institution auprès de laquelle s'exerce l'enseignement. Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
enseigné (être)	TyRo131	La matière enseignée (un objet abstrait). On peut en associer plusieurs si on enseigne en même temps plusieurs matières. En revanche, il faut créer plusieurs informations si les enseignements des différentes matières se succèdent ou si le contexte institutionnel est différent.
exercé (être)	TyRo47	Qualification de l'enseignement : professeur, chargé de cours, etc. Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
exercer	TyRo12	Ce rôle a été gardé pour être l'équivalent du TyIn7 : Exercice d'une fonction.
localiser	TyRo8	Ne pas renseigner si l'institution auprès de laquelle s'effectue l'enseignement est déjà localisée.
occasionner la fin	TyRo176	Associe l'information ou le AbOb qui explique la fin de l'enseignement
origine (être l')	TyRo16	Associe l'information (nomination, élection, ...) ou l'objet abstrait qui indiquent la cause de l'enseignement.
typer	TyRo98	A utiliser dans le contexte de ce TyIn pour spécifier la nature de l'enseignement grâce à un AbOb (cours magistral, séminaire, etc.).

MCD disponible(s)

[Télécharger ce MCD](#)

symogih.org and the CRM :

extending the standard
for geo-historical projects'
data production

Project specific websites : Professeurs de droit

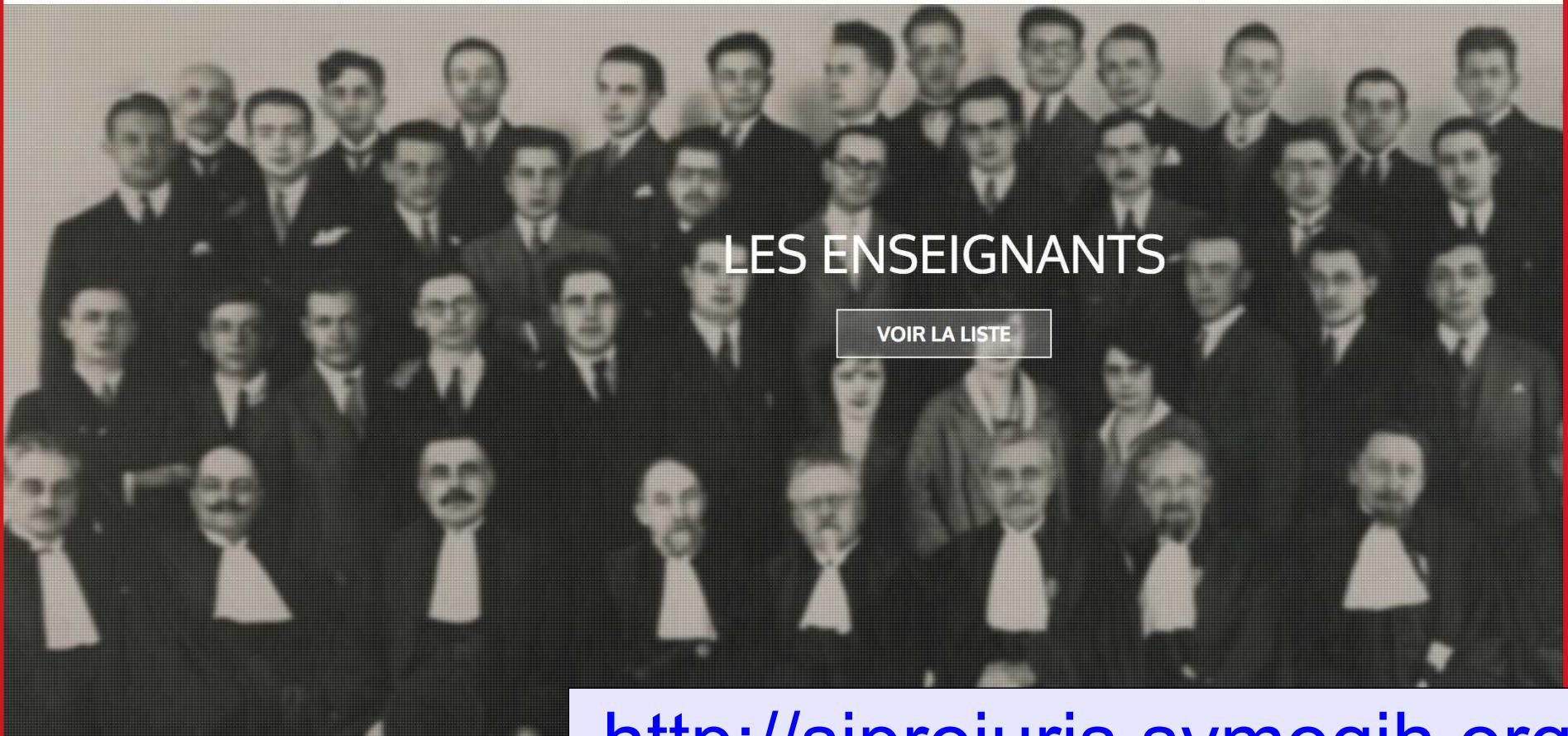
SYMOGIH

Références

SIPROJURIS

Système d'information des professeurs de droit (1804-1950)

[Le corpus](#) » [Sources dépouillées](#) [Contributeurs](#) [Statuts](#)



LES ENSEIGNANTS

[VOIR LA LISTE](#)

<http://siprojuris.symogih.org>

Défi données MaDICS-ADOC 2018

tinyurl.com/data-challenge-2018

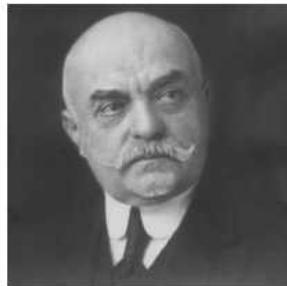
Enrichir et exploiter un corpus de données historiques publiées sous forme de LOD.

Le projet *SIPROJURIS*.

Système d'information des professeurs de droit (1804-1950)

SIPROJURIS

Bienvenue sur le site du projet SIPROJURIS.

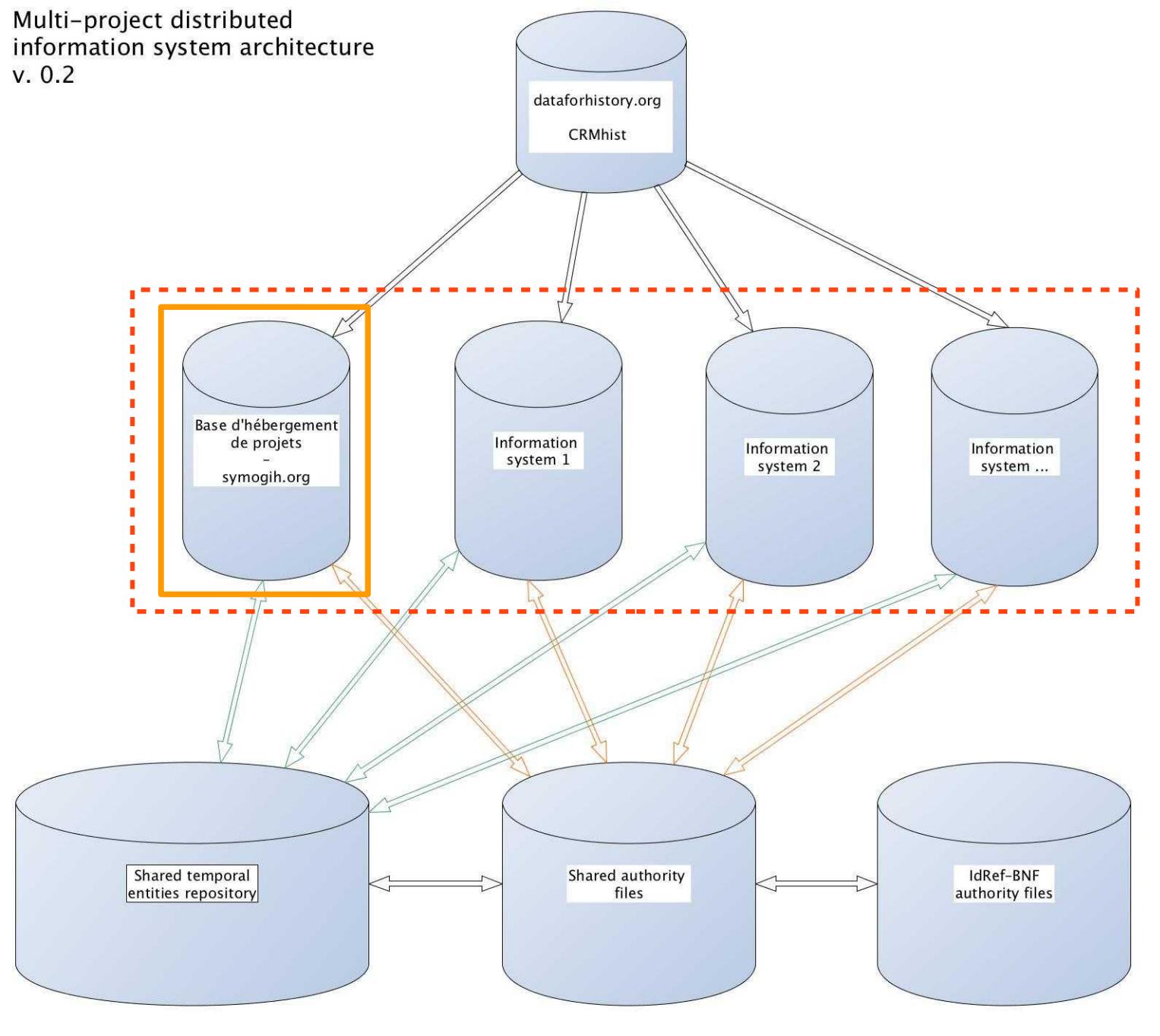


CODE
UNIVERSITAIRE
OU
LOIS ET STATUTS
DE L'UNIVERSITÉ ROYALE DE FRANCE



<http://siprojuris.symogih.org>

Multi-project distributed
information system architecture
v. 0.2



Kepler, Johannes

<http://symogih.org/resource/Actr195>

Actr195

Année de naissance: 1571 - Année de mort: 1630

Biographie – documentation

[Biographie](#) [Informations](#) [Contenus](#) [Carte](#) [Documentation](#) [Liens](#)

Date	Ressource
2005	Depondt, Philippe / Véricourt, Guillemette de, Kepler. L'ort Editions du Rouergue, 2005)
2003	Bucciantini, Massimo, Galileo e Keplero. Filosofia, cosmol Einaudi, 2003)
1979	Simon, Gérard, Kepler: astronome, astrologue (Paris, Galli

Affichage de 1 à 3 sur 3

Kepler, Johannes

Actr195

Année de naissance: 1571 - Année de mort: 1630

Biographie – documentation

[Biographie](#) [Informations](#) [Contenus](#) [Carte](#) [Documentation](#) [Liens](#)

Idref – URL identifiant un objet : [026947676](#)

Autorités BnF – identifiant pérenne : [cb11909597m](#)

DBPedia Live – URL de ressource : [Johannes_Kepler](#)

owl:sameAs



Kepler, Johannes (1571-1630)

<http://www.idref.fr/autorites/autorites.html>



[Précédent](#)

[Suivant](#)

026947676

Lien permanent

Notice de type
Personne

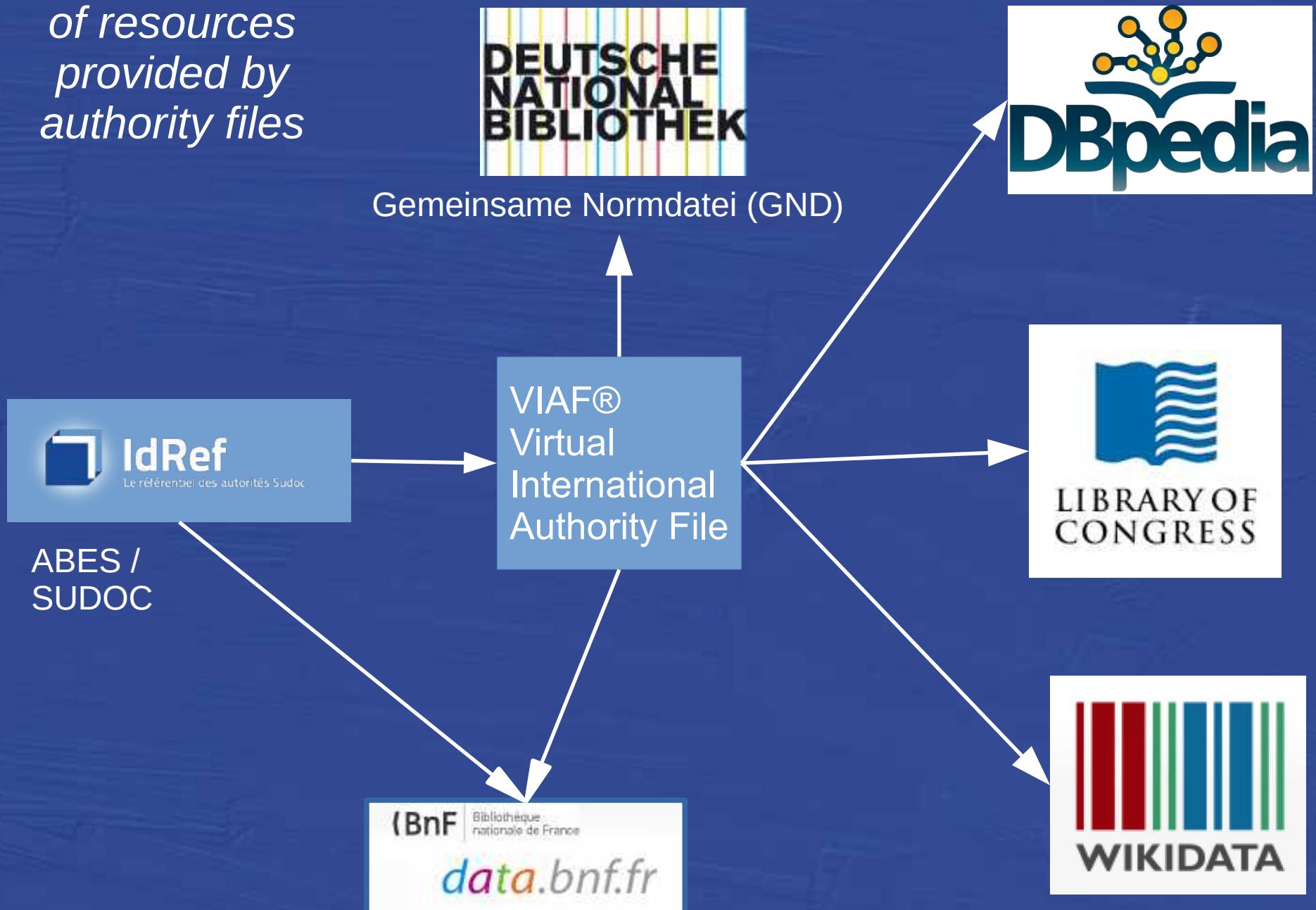
Forme retenue

Kepler, Johannes (1571-1630)

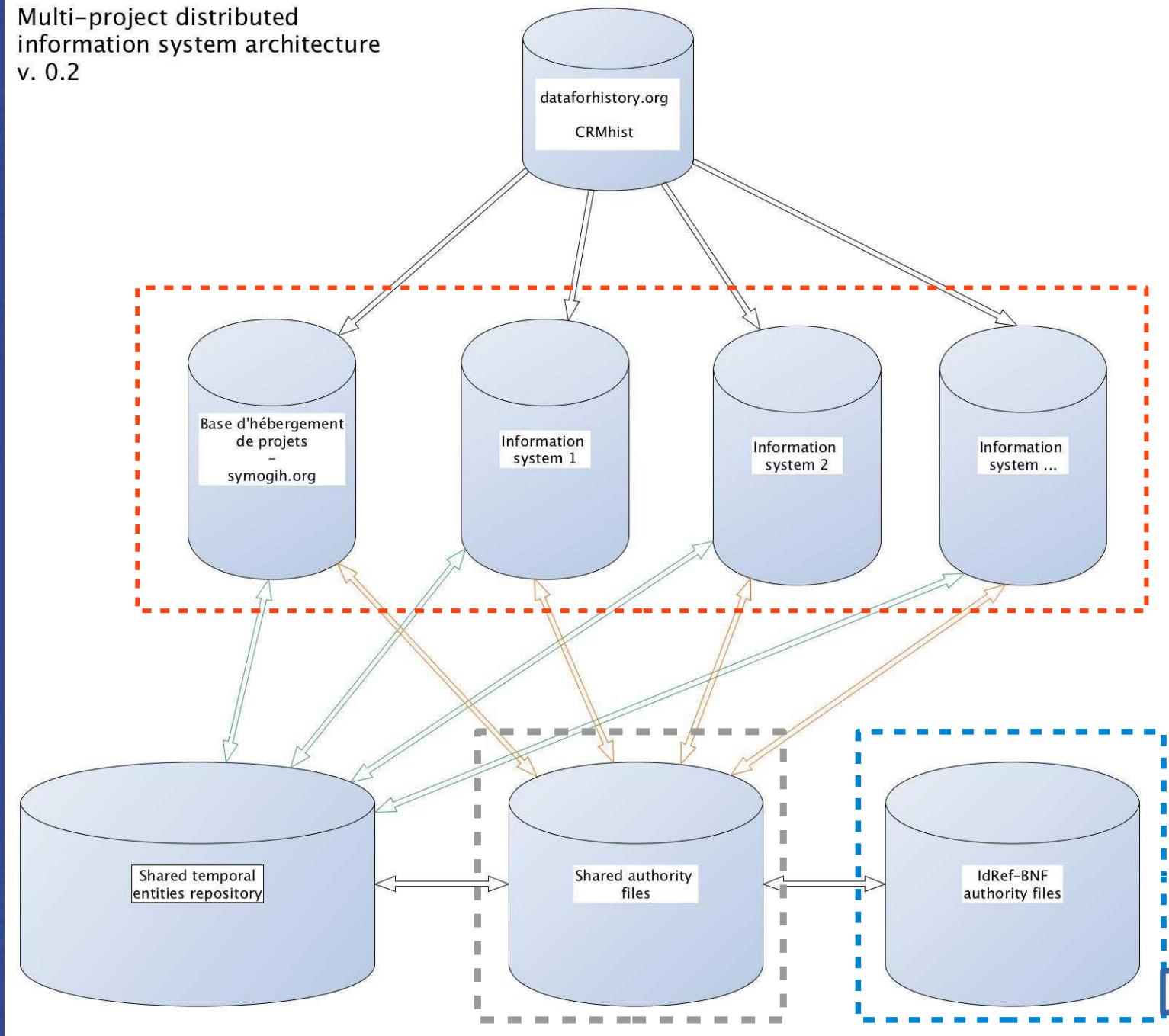
<http://www.idref.fr/026947676>

[Suivant](#)

Interlinking the URIs of resources provided by authority files



Multi-project distributed
information system architecture
v. 0.2



dataforhistory.org