

Graphentechnologien 2020

University of Vienna, 21 – 22 February 2020

Francesco Beretta

CNRS UMR5190 LARHRA – Université de Lyon

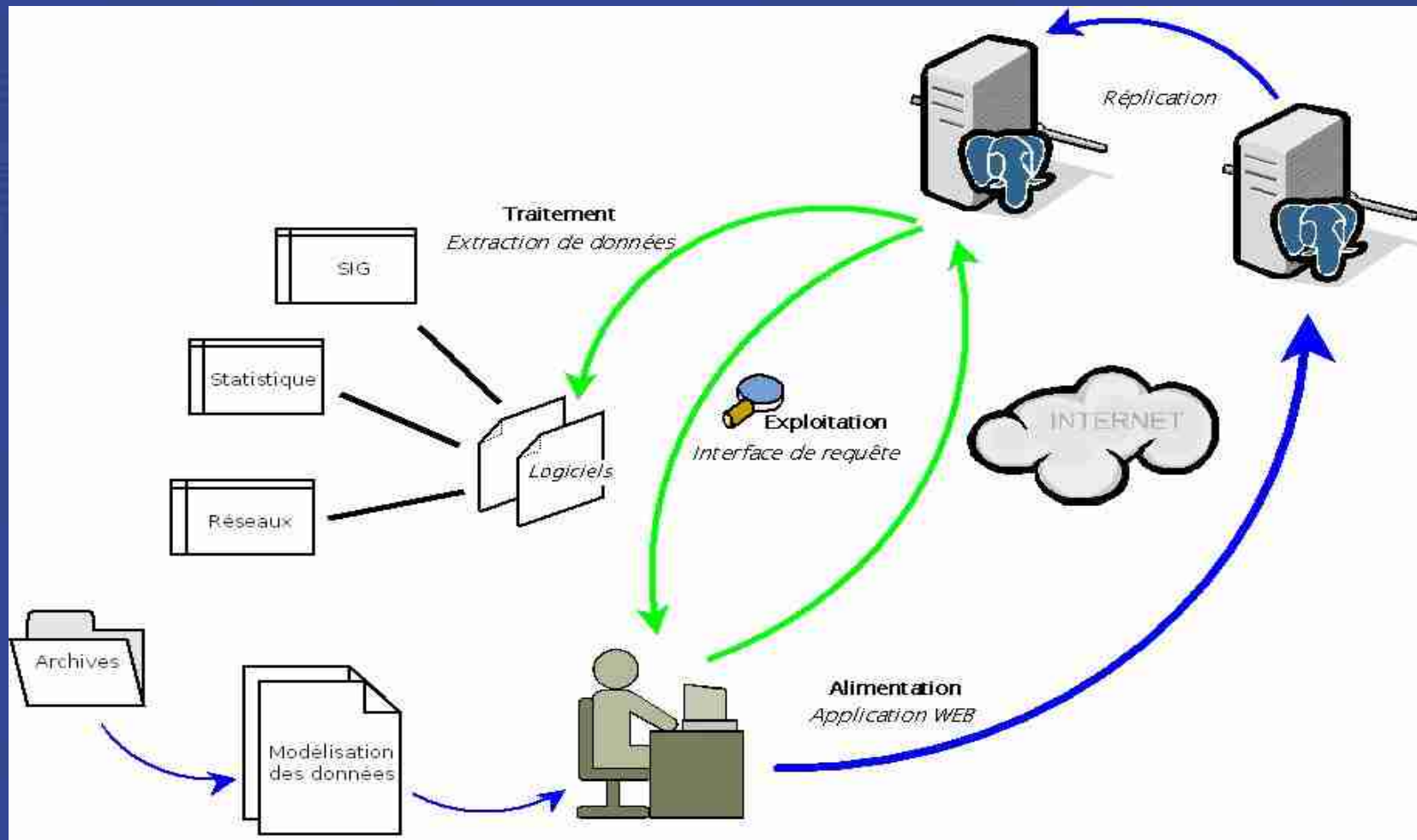
**Axe de recherche
en histoire numérique**

Modelling historical knowledge

**in the context of
graph technologies and the semantic web**

- * The *symogih.org* project's collaborative virtual research environment
- * Modelling historical knowledge in the context of the semantic web
- * Collaboratively modelling information : *dataforhistory.org*
- * Information extraction from sources : factoids or states of affairs ?

The symogih.org project : modular system for historical information management



A collaborative and cumulative information system for storing historical data: produce, share, visualise and analyse structured historical data

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

BHP - Interface de gestion des données

Objets **Unités de connaissance** Références Associations Gazetteer Déconnexion

- Acteurs
- Acteurs collectifs
- Caractères sociaux
- Objets abstraits
- Objets concrets
- Objets digitaux
- Bibliographie
- Unités documentaires

Actr : Galilei, Galileo

AbOb: Mathématiques

CoAc: Université de Padoue

Source : Dictionario biografico degli italiani, vol. 51

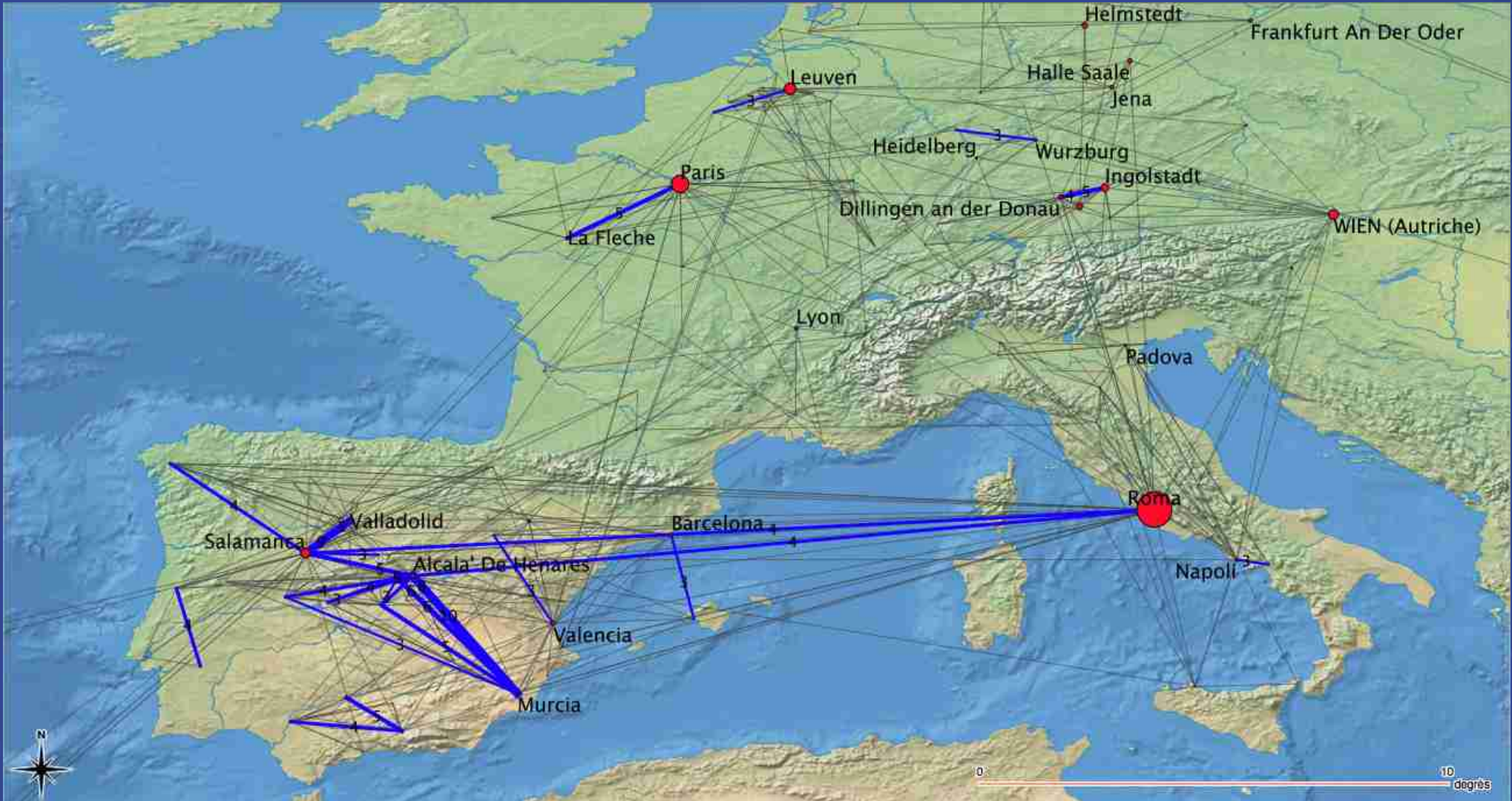
```

SELECT DISTINCT as1.cle_objet_associe 'idActeur', as1.libelle_calcule_objet_associe 'nom',
  as2.cle_objet_associe 'idLieu', as2.libelle_calcule_objet_associe as 'lieu', as2.longitude as 'longi',
as2.latitude as 'lat'
FROM web_talker_symogih.vue_association as1, web_talker_symogih.vue_association as2,
vues_bhp.acteurs_scholasticon acsc,
web_talker_symogih.vue_association as3, web_talker_symogih.vue_information inf
WHERE
/* jointure*/
as1.cle_objet_associe = acsc.CFAC AND as2.cle_etran_Info = as1.cle_etran_Info
AND as3.cle_objet_associe = as1.cle_objet_associe AND inf.cle_Info = as3.cle_etran_Info
/*selection*/
AND as1.cle_etran_TyRo = 'TyRo40'
AND as3.cle_etran_TyRo = 'TyRo12'

```

cle_acteur	nom	cle_info	date_debut	cle_lieu	lieu	long	lat
Actr38	Becanus, Martin	Info31818		NaPI2501	Köln	6,934722222222222	50,94222222222222
Actr88	Caramuel Lobkowitz, Juan	Info31980		NaPI90258	Palazuelos	-2,683333333333333	41,08333333333333
Actr88	Caramuel Lobkowitz, Juan	Info31981		NaPI10027	Salamanca	-5,656388888888889	40,96666666666667
Actr164	Gassendi, Pierre	Info32430		NaPI71971	Aix	3,30596	50,4988
Actr187	Hodierna, Giovanni Battista	Info33117		NaPI3680	Ragusa	14,731944444444444	36,92583333333333
Actr272	Nifo, Agostino	Info34073	1514	NaPI3697	Roma	12,490277777777778	41,89527777777778
Actr314	Raynaud, Théophile	Info34673		NaPI1998	Lyon	4,835833333333333	45,76666666666667
Actr349	Spina, Bartolomeo	Info35036		NaPI90265	Italie	12,60	42,50
Actr354	Suárez, Francisco	Info35079	1570	NaPI48	Espagne (Royaume d')	-4	40
Actr400	Fracastoro, Gerolamo	Info32381		NaPI90265	Italie	12,60	42,50
Actr405	Arriaga, Rodrigo de	Info31727		NaPI10124	Valladolid	-4,721388888888889	41,65027777777778
Actr405	Arriaga, Rodrigo de	Info31728		NaPI1253	PRAHA (PRAGUE)	14,456388888888889	50,10583333333333
Actr457	Spinola, Stefano	Info35039		NaPI12229	Genova	8,933611111111111	44,40611111111111
Actr537	Du Hamel, Jean Baptiste	Info32249		NaPI2085	Paris	2,348611111111111	48,85333333333333
Actr562	Bagot, Jean	Info31761		NaPI90265	Italie	12,60	42,50
Actr624	Wittich, Christoph	Info35546		NaPI4251	Nijmegen	5,858055555555556	51,8225
Actr809	Comenius, Johann Amos	Info32115	1628	NaPI90262	Lezno	18,43333333333333	54,35
Actr809	Comenius, Johann Amos	Info32116		NaPI4724	Eiblag	19,405277777777778	54,15888888888889
Actr809	Comenius, Johann Amos	Info32117		NaPI3152	Sarospatak	21,57111111111111	48,32194444444444
Actr810	Major, John	Info33643	1518	NaPI11889	Glasgow	-4,269722222222222	55,86277777777778
Actr810	Major, John	Info33644		NaPI90085	St. Andrews	-2,798888888888889	56,33861111111111
Actr1505	Eschenbach, Johann Christian	Info32297		NaPI2497	Kiel	10,120555555555556	54,32527777777778

SQL queries to extract data corresponding to the research agenda of each project participant



QGIS

symogih.org project website : documentation and data



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

Sites propulsés par SyMoGIH

- GEO-LARHRA

Système Modulaire de Gestion de l'Information Historique (SyMoGIH)

Le projet

Le projet SyMoGIH a développé un modèle générique de stockage des données historiques permettant leur interopérabilité et leur publication sélective. A partir de ce modèle, une **plateforme collaborative** pour la recherche en histoire a été mise en place, utilisée par plusieurs chercheurs et projets.

Cette plateforme permet le stockage de données primaires concernant toute activité humaine (sociale, économique, intellectuelle, ...), de textes codés en XML (traités selon le standard proposé par la **Texte Encoding Initiative**), d'images et de leur métadonnées, tout en permettant d'associer à ces différents objets leur 'empreinte spatiale'. La réalisation d'un **système d'information géographique** (SIG) joue un rôle essentiel dans le projet.

La plateforme permet :

- la modélisation progressive et évolutive de l'information historique grâce à un dictionnaire de **types d'unités de connaissance** ;
-
-

<http://symogih.org>

Project specific websites : Patrons de France

SYMOGIH

Références

PATRONS
DE
FRANCE



Systeme d'Information
Patrons et Patronat
Français

XIXe-XXe siècles

Accueil Le corpus Aide à la consultation Consultation Sources dépouillées Contributeurs

Accès rapide à la
base

- Patrons
- Institutions
- Caractères sociaux
- Lieux

Contributions et
contact

Les détenteurs d'exemplaires de bulletins ou d'annuaires indiqués comme manquants dans les collections dépouillées jusqu'à maintenant sont invités à nous contacter en envoyant un message à patronsdefrance@ish-lyon.cnrs.fr.

Consultation : liste des patrons

Affichage de 1 à 10 sur 3042

Nom, prénom Année de naissance Lieu de naissance

Contient Est égal à Contient Appliquer Réinitialiser

Nom, prénom	Genre	Année de naissance	Lieu de naissance	Année de décès
Acher, Maximilien	Homme	1862	Le Havre	1929
Acolas, Prosper	Homme	1838	Saint-Bonnet-Tronçais	1928
Adam, Alcide	Homme	1864	Ferrières	1931
Adam, Désiré	Homme	1859	Saint-Paul-du-Vernay	1929
Adenot, Henri	Homme	1904		1947
Ader, Clément	Homme	1841	Muret	1925
Adher, Pierre	Homme	1884		1955
Adnet, Aloïse	Homme	1848	Chalons-en-Champagne	1927
Agache, Donat	Homme	1882	Lille	1929
Agache, Edouard Donat Louis Joseph	Homme	1841	Lille	1923

<http://patronsdefrance.fr/>

Project specific websites : Professeurs de droit

SYMOGIH

Références

SIPROJURIS

Le corpus » Sources dépouillées Contributeurs Statuts

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



<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



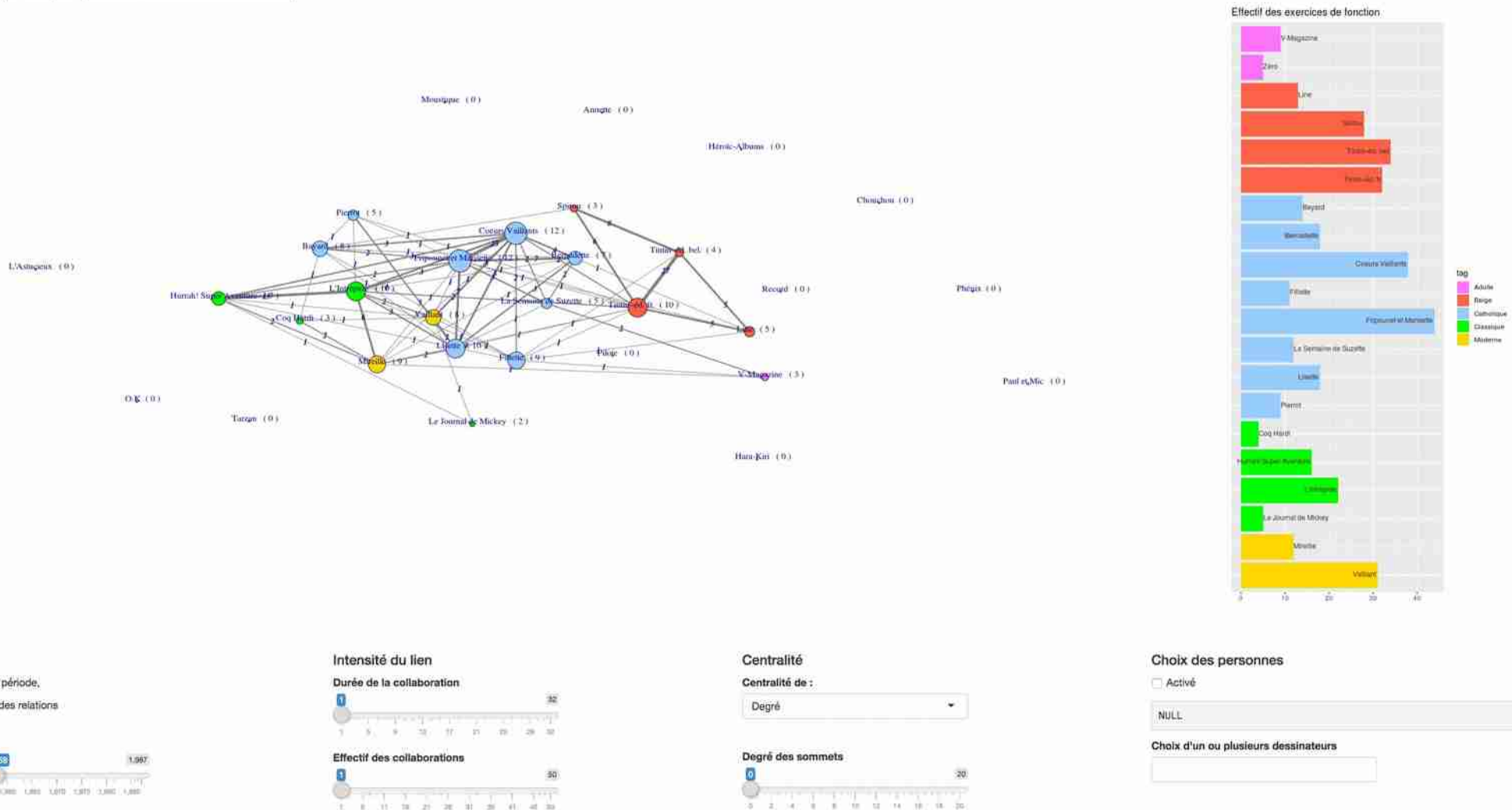
<http://siprojuris.symogih.org>

Huma-Num RStudio-Shiny

Interactive and collaborative data analysis :

<https://tinyurl.com/phn-shiny>

Relations entre périodiques (collaborations entre dessinateurs).



GEO-LARHRA

Partage de ressources géo-historiques

En construction

Accueil

Présentation

Gazetteer

Géocatalogue

Atlas historique

Consulter l'Atlas Historique

- Territoires historiques de l'Europe
- Présentation de l'atlas



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<http://geo-larhra.ish-lyon.cnrs.fr/>

Use the semantic web for historical research

Evolution des territoires en Italie

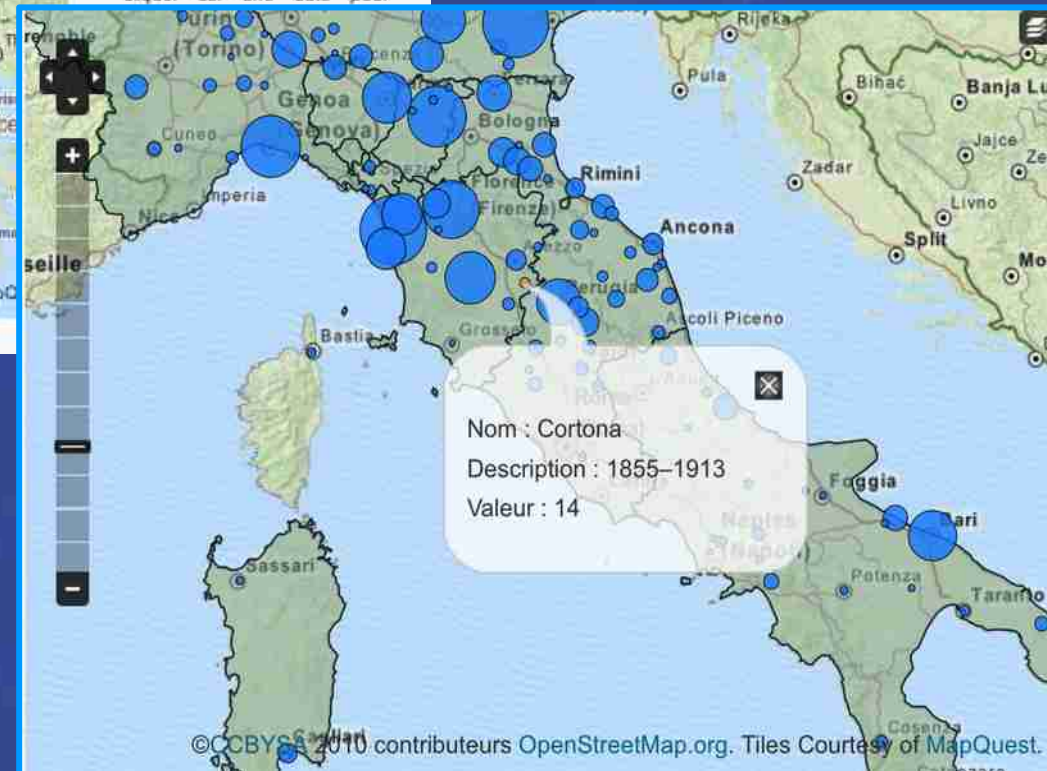
Site expérimental. Données non exhaustives, en cours de production.



Dates significatives

- 1815-06-09
- 1829-12
- 1847-12
- 1859-11-10
- 1860-03-24
- 1860-11-05
- 1861-03-17
- 1866-10-03
- 1870-10-02
- 1920-11-12
- 1929-02-11
- 1947-02-10

Cliquer sur une date pour

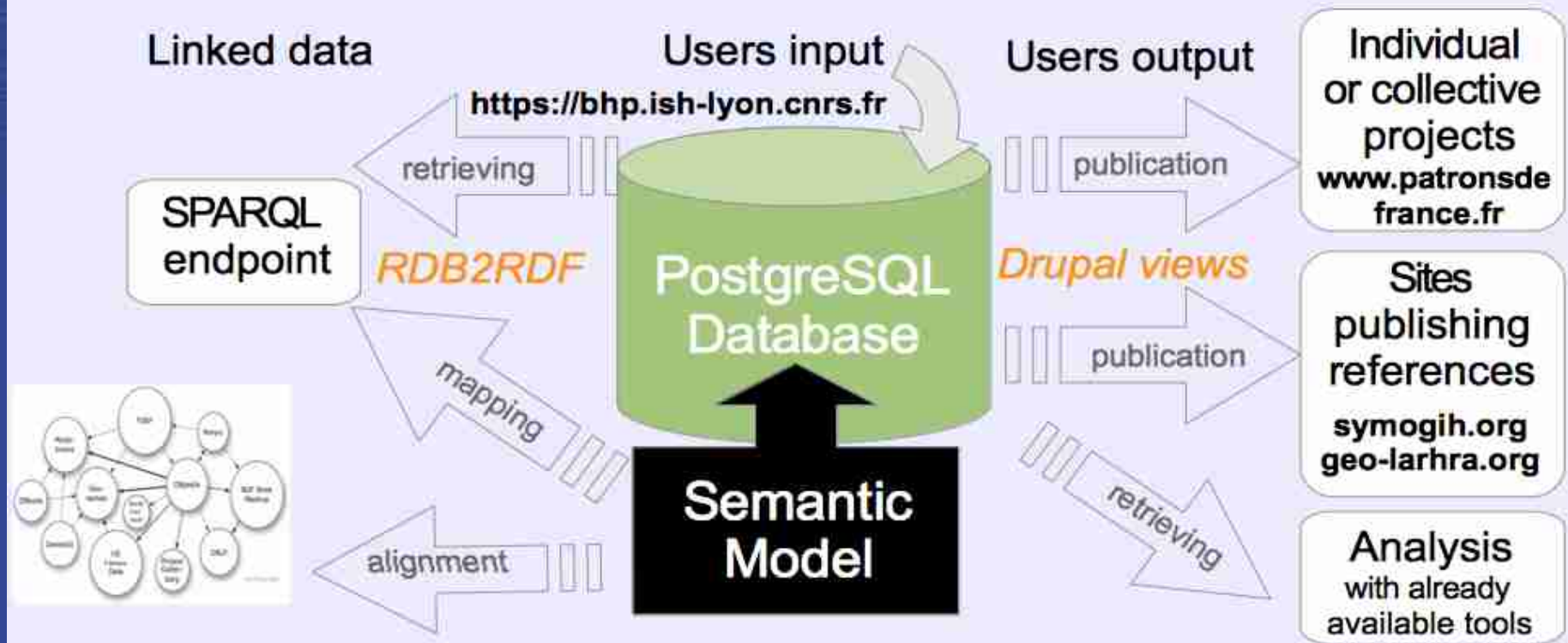


SPARQL – endpoint B3Kat

Bayerische Staatsbibliothek, Bibliotheksverbund Bayern, Kooperative Bibliotheksverbund Berlin-Brandenburg

<http://lod.b3kat.de/sparql>

Open, modular, collaborative platform for storing, analyzing and publishing historical data and texts



The symogih.org project was started in 2008.

About 50 scholars and students, and 15 research project, are currently using the collaborative database to store and share historical information

The screenshot displays the Geovistory web application. At the top, the browser address bar shows the URL `geovistory.com/projects/84760/edit`. The page header includes navigation links for Home, Your Projects, and Maritime history, along with a user profile icon and a 'Beta' badge.

The main interface is divided into several sections:

- Left Sidebar:** Contains navigation icons for Sources, Entities, Analysis, and Stories.
- Map:** A world map showing various locations. A red circle highlights a location in Europe, and a blue circle highlights a location in Southeast Asia (Indonesia).
- Information Panel:** A pop-up window titled 'All ship voyages' provides details for the selected location: 'Date: Apr 2, 1595 AD', 'Activated Place: Jakarta ID', and 'Value of Place at Date: 0'. It also includes a 'show details' link.
- Timeline Chart:** A line chart at the bottom shows data from 1640 to 1750. The y-axis ranges from 0 to 30. The chart displays a series of peaks and troughs, indicating fluctuations in the data over time. The current active location is 'Jakarta ID'.

The text 'geovistory.com' is overlaid in blue on the right side of the map. A 'feedback' button is visible in the bottom right corner of the chart area.

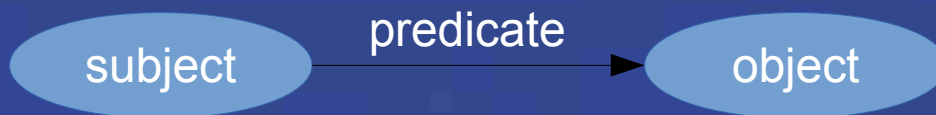
Geovistory : a VRE for historical research

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The semantic web

(<https://www.w3.org/TR/rdf11-concepts/>)

- « The Resource Description Framework (RDF) is a framework for **representing information in the Web.** »
- « A graph-based data model »



RDF triple

Knowledge Graphs for Natural Language Processing

Leibniz wrote to Caroline of Ansbach that Newton's physics was detrimental to natural theology. However, eager to defend the Newtonian view, it was Clarke who responded and the correspondence between both continued until the death of Leibniz.

text

knowledge
base

DBpedia



21

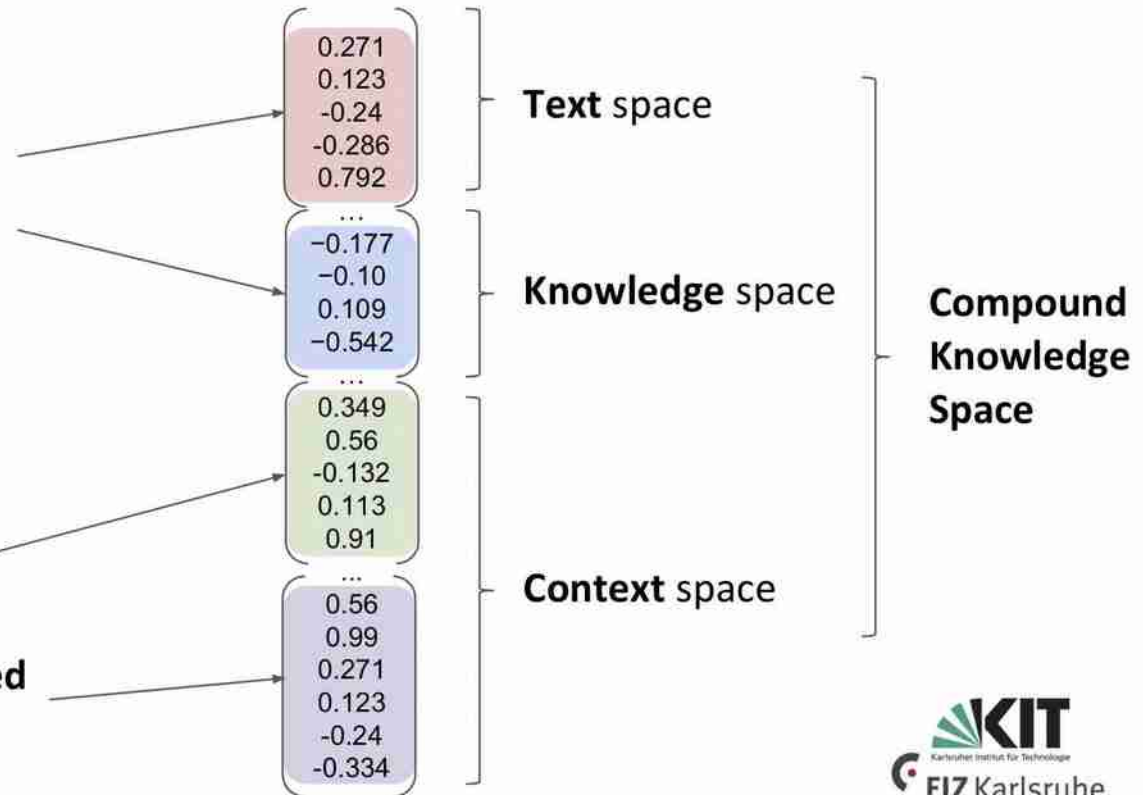
Karlsruher Institut für Technologie (29. Novembre 2017) – Antrittsvorlesung von

Prof. Dr. Harald Sack

Combining Semantics and Deep Learning for Intelligent Information Services

Combined Feature Embeddings for a Compound Knowledge Space

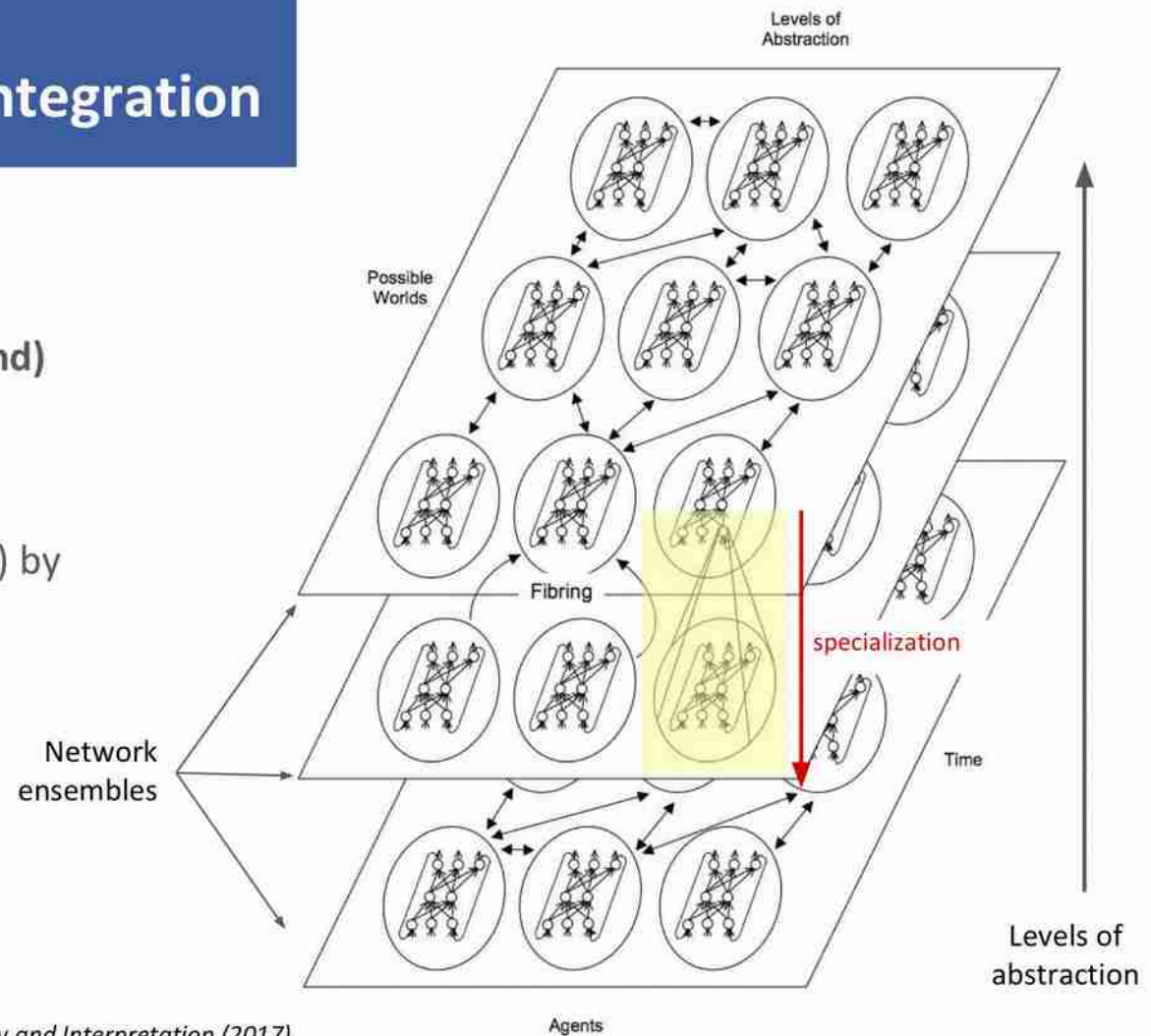
- Various feature vectors
 - **Word** embeddings
 - **Knowledge Graph** embeddings
 - Instances
 - Ontologies
 - Embeddings for **semantically enriched texts**
 - **Metadata and aggregated features**

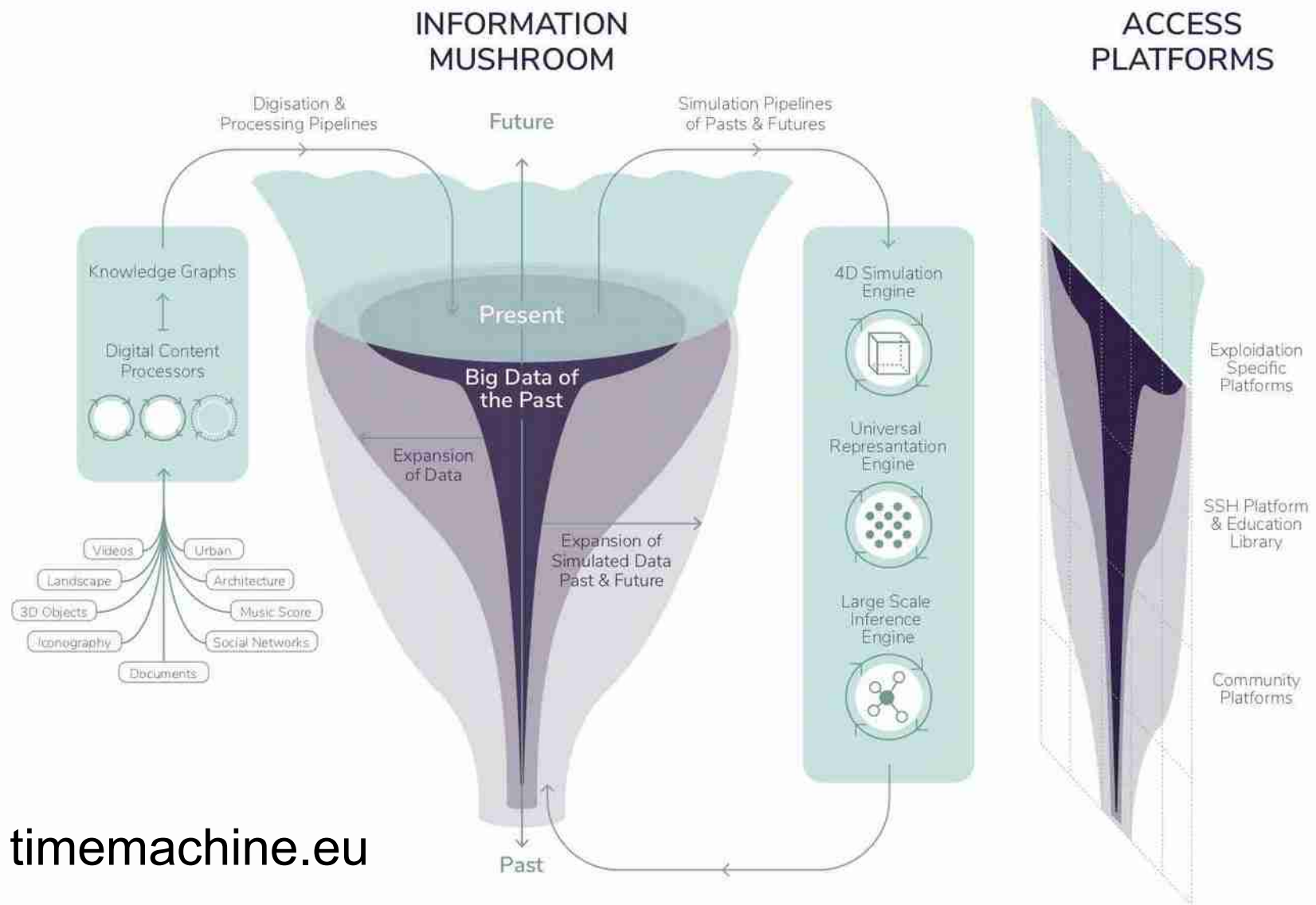


Towards Neuro-Symbolic Integration

Neuro-Symbolic Systems

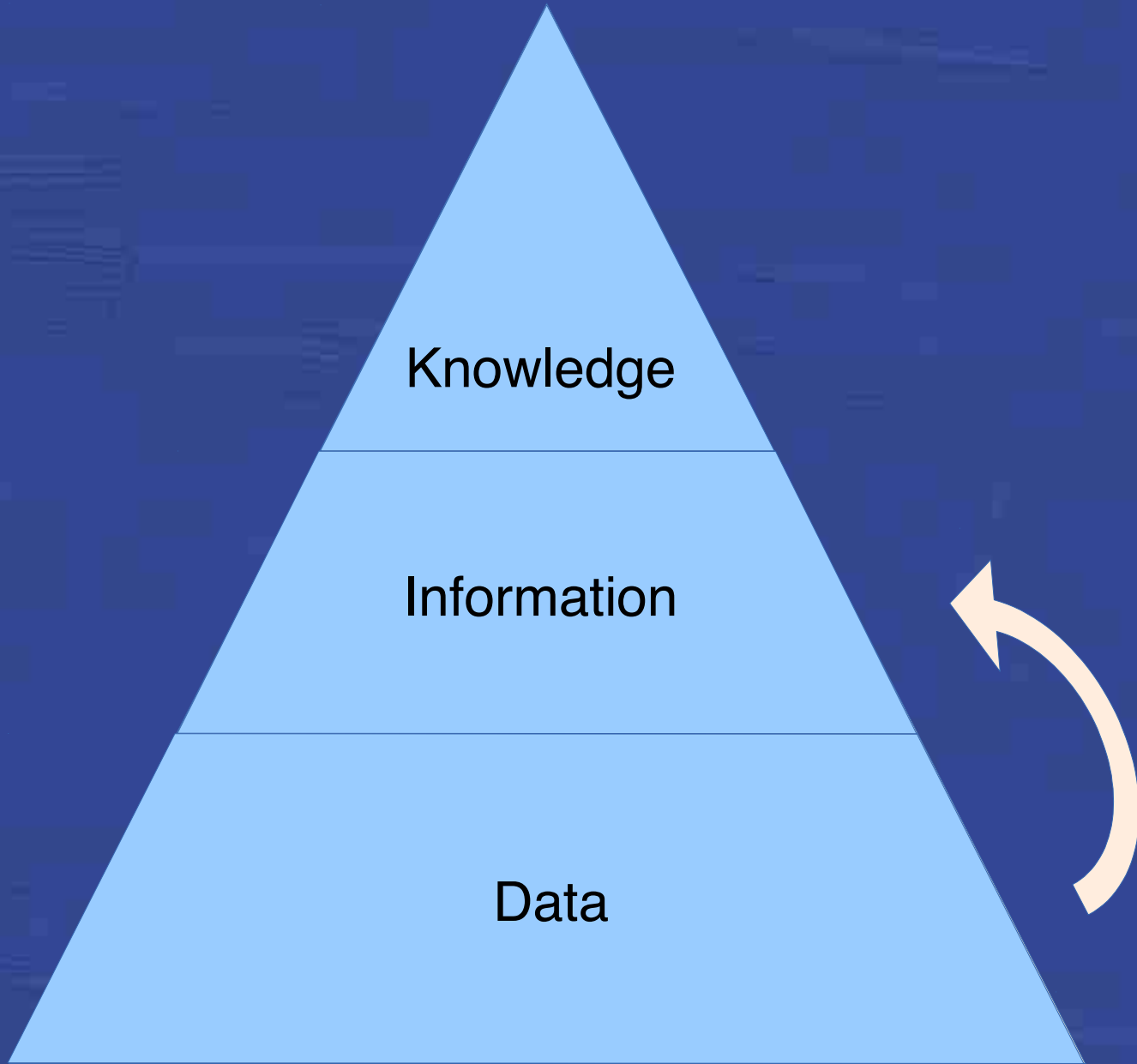
1. Translation of **symbolic (background) knowledge into the network**
2. **Learning of additional knowledge** from examples (and generalisation) by the network
3. **Executing the network** (i.e. reasoning), and
4. **Symbolic knowledge extraction** from the network.



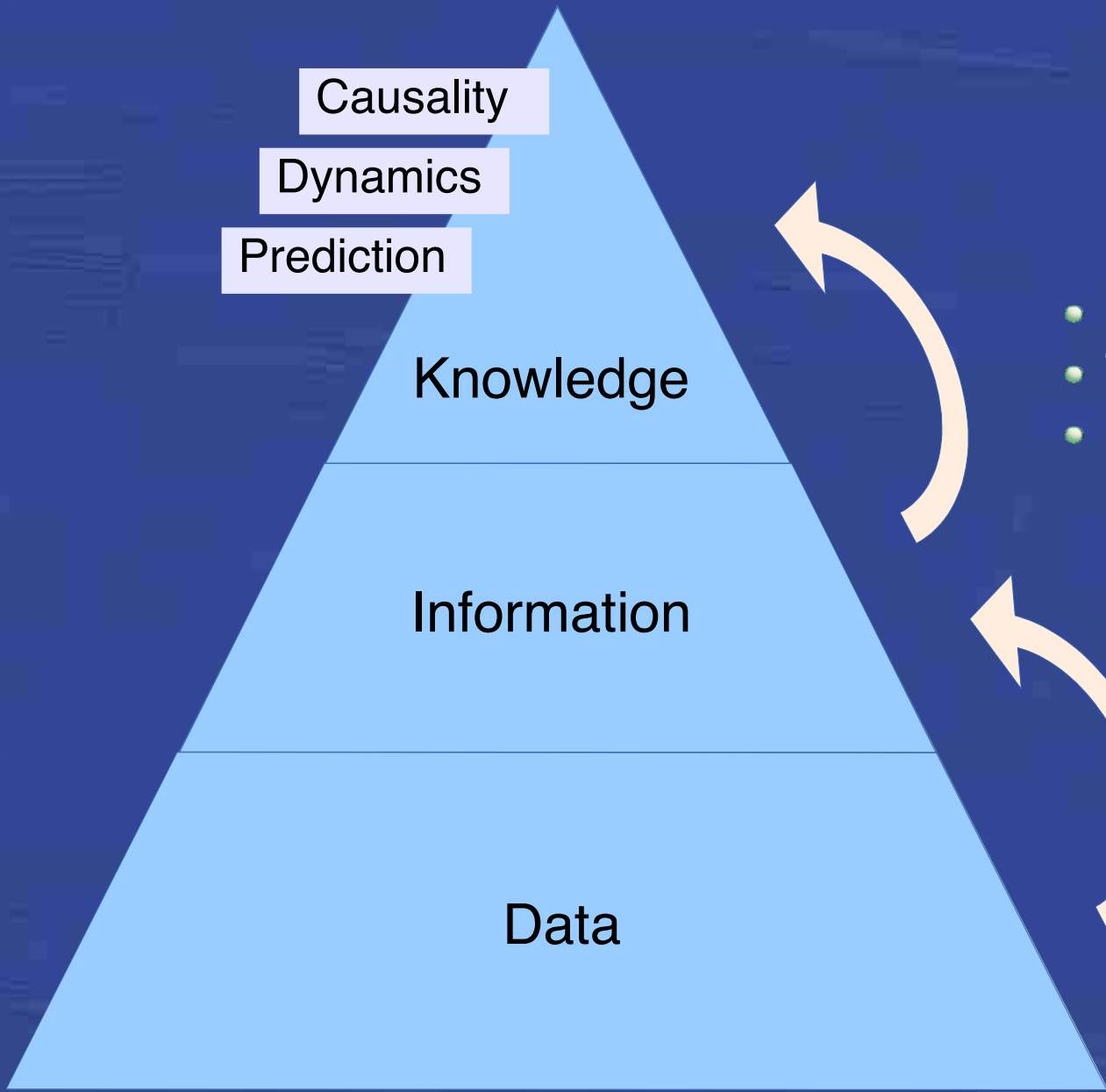


timemachine.eu

FIGURE 3: Schematic representation of the TM Digital Content Processor and the three simulation engines



- Context
- Method
- Model



Causality
Dynamics
Prediction

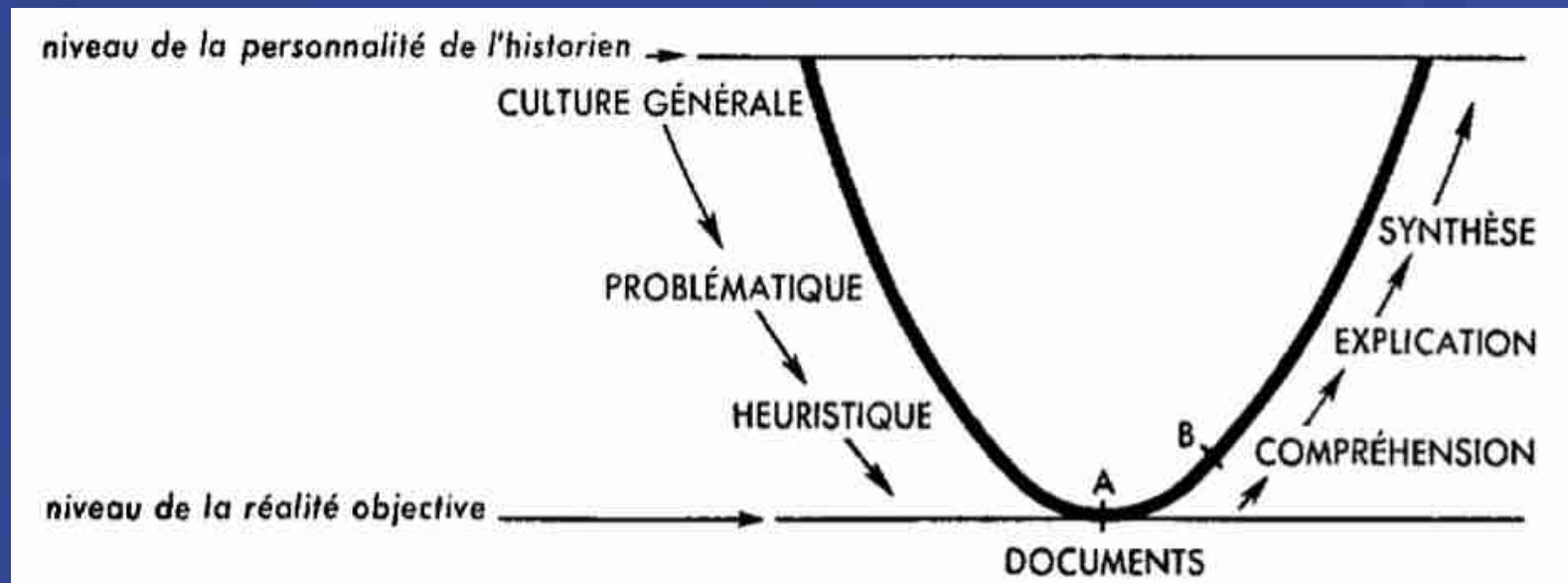
Knowledge

Information

Data

- Expertise
- Theory
- Model

- Context
- Method
- Model



Henri-Irénée Marrou, « Comment comprendre le métier de l'historien », *L'histoire et ses méthodes*, C. Samaran (éd.), Paris, Editions Gallimard, 1961, 1502.

General research
agenda



Research
questions



Collecting sources

General research
agenda



Research
questions



Collecting sources

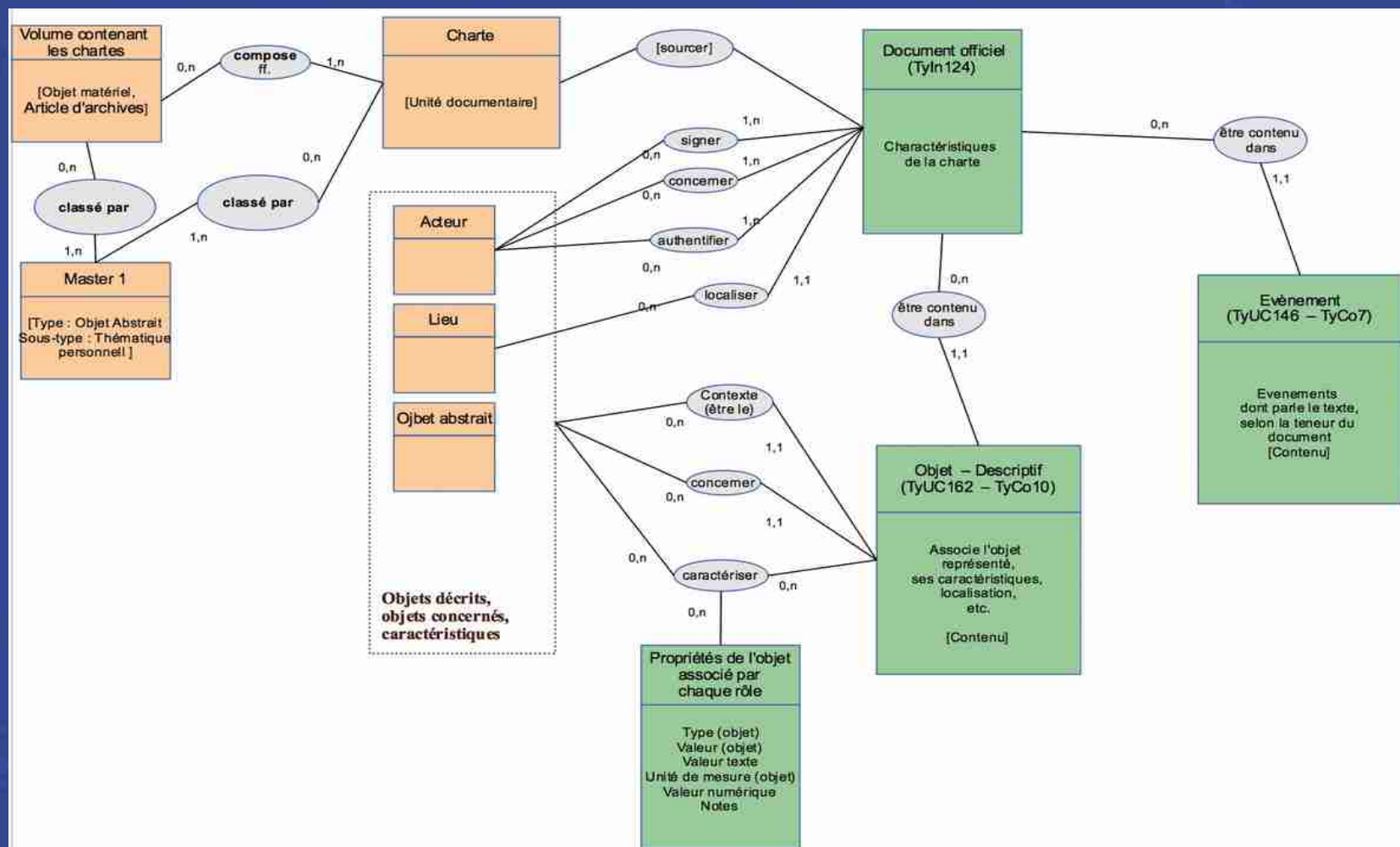


Model

Data production

Romain Chevalier, Les lettres de légitimation émises par la chancellerie de Charles VII (1430-1461)

(Mémoire de master, Université de Lyon 3, 2015)



General research agenda



Research questions



Collecting sources



Model

Data production



Data cleansing
Coding of variables



Model

Importing existing data

General research agenda



Research questions



Collecting sources



Model

Data production



Model

Data cleansing
Coding of variables



Model

Importing existing data

General research agenda



Research questions



Collecting sources



Model

Data production



Model

Data cleansing
Coding of variables



Model

Importing existing data



Data analysis,
visualization,
mining

Research questions

R – RStudio / QGIS

The screenshot displays the RStudio interface with two main panes. The left pane shows R code for data processing and plotting. The right pane shows the Environment and History tabs, and a Viewer window displaying a boxplot.

```
77
78
79
80
81
82
83
84 # première assistance
85 lpa <- read.csv("lieux_premiere_assistance_liste_20150622.csv", stringsAsFactors=FALSE)
86 s <- seq(as.Date("1678-01-01"), as.Date("1733-12-01"), by = "month")
87 x <- hist(as.Date(lpa$date_premiere_assistance), s, freq = TRUE, main='Présences dans le Refu
88           xlab = "Mois - Une mention par individu et par mois est comptée. Effectif total (blar
89           ylab ='Effectif', plot = TRUE, right = FALSE)
90
91 plot(as.Date(lpa$date_premiere_assistance), as.factor(lpa$premier_lieu_assistance))
92
93
94
95
96
97
98
99
85:1 (Top Level) - R Script -
```

```
> lpmp <- read.csv("lieux_premiere_assistance_liste_20150622.csv", stringsAsFactors=TRUE)
)
> lpmp$type_lieu <- as.factor(as.character(lpmp$orl_nature))
> lpmp$type_met <- as.factor(as.character(lpmp$met_nettoyee))
> lpmp$semestre <- as.Date(lpmp$trimestre)
> s <- seq.int(1,9)
> lpmp_1685_1695 <- subset(lpmp, lpmp$semestre > as.Date("1684-12-01")
+ & lpmp$semestre < as.Date("1696-01-01")
+ & as.integer(lpmp$met_nettoyee) %in% s)
> class(s)
[1] "integer"
> boxplot(semestre-met_nettoyee, data=lpmp_1685_1695, varwidth=TRUE, horizontal=T)
> ### premières explorations - éliminer ?
> plot(presences_annuelles_refuge$debut_annee, presences_annuelles_refuge$nombre, type = "p", col = "re
d",
+ main = "Effectifs par lieu et année",
+ xlab = "Année", ylab = "Effectif par lieu et année"
+ # , log = "y" # logarithme sur la valeur y
```

The Environment pane shows the following objects:

Object	Size
Global Environment	
lpa	2238 obs. of 9 variables
lpmp	2411 obs. of 8 variables
lpmp_1685_1695	2273 obs. of 8 variables
tst	180 obs. of 1 variable
tstf	180 obs. of 1 variable

The Values pane shows the following data types and values:

Object	Values
eti	chr [1:18] "NA" "Bal" "Br1" "Brn" "Bra" "Fra" "Gen" ...
p	List of 9
palette_man	chr [1:18] "#C0C0C0" "#87CEFA" "#FF4500" "#00CED1" ...
s	int [1:9] 1 2 3 4 5 6 7 8 9
x	List of 7

The Viewer window displays a boxplot showing the distribution of the number of individuals (nombre) for each year (debut_annee) from 1686 to 1694. The y-axis represents the number of individuals, ranging from 0 to 9. The x-axis represents the year, ranging from 1686 to 1694. The boxplot shows the median, quartiles, and outliers for each year.

General research agenda



Research questions



Collecting sources



Model

Data production



Model

Data cleansing
Coding of variables



Model

Importing existing data

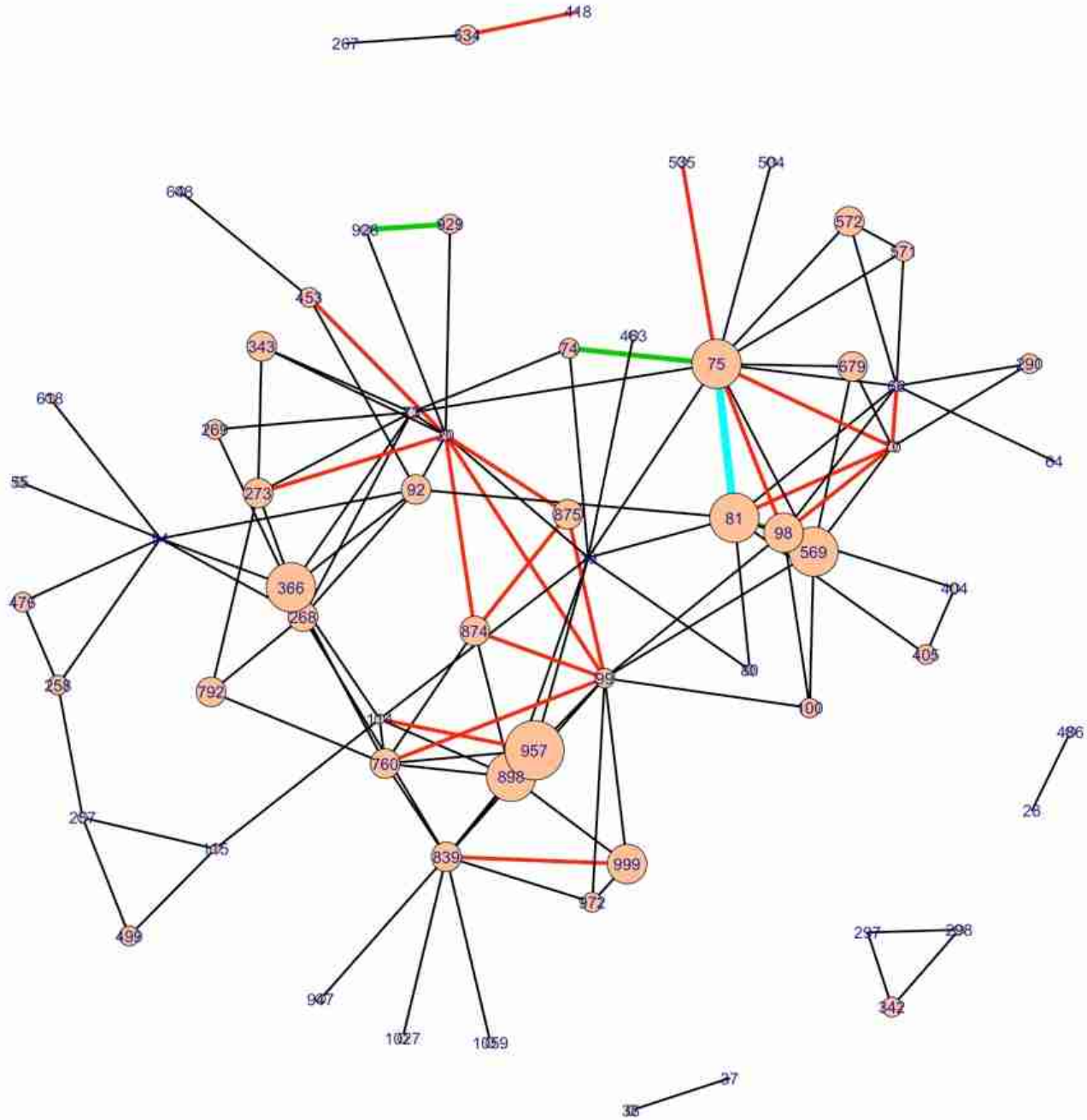
Model

Data analysis,
visualization,
mining

Research questions



Centralité de degré et nombre de liens entre signataires



General research agenda



Research questions



Collecting sources



Model

Data production



Model

Data cleansing
Coding of variables

Model



Research questions

Data analysis,
visualization,
mining



Model

Interpretation
Verification

General research agenda

Research questions

Collecting sources

Data production

Importing existing data

Model
Data cleansing
Coding of variables

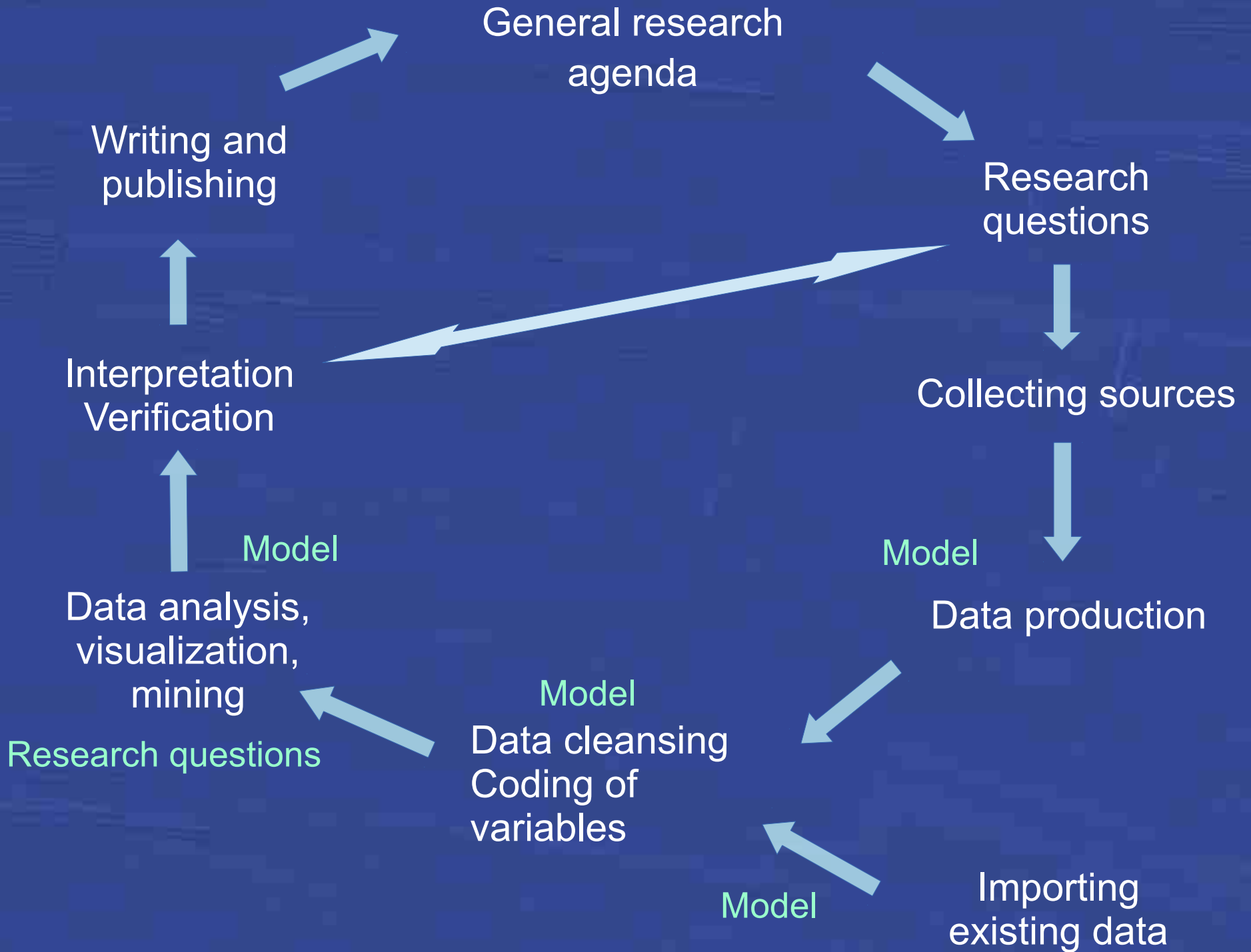
Model

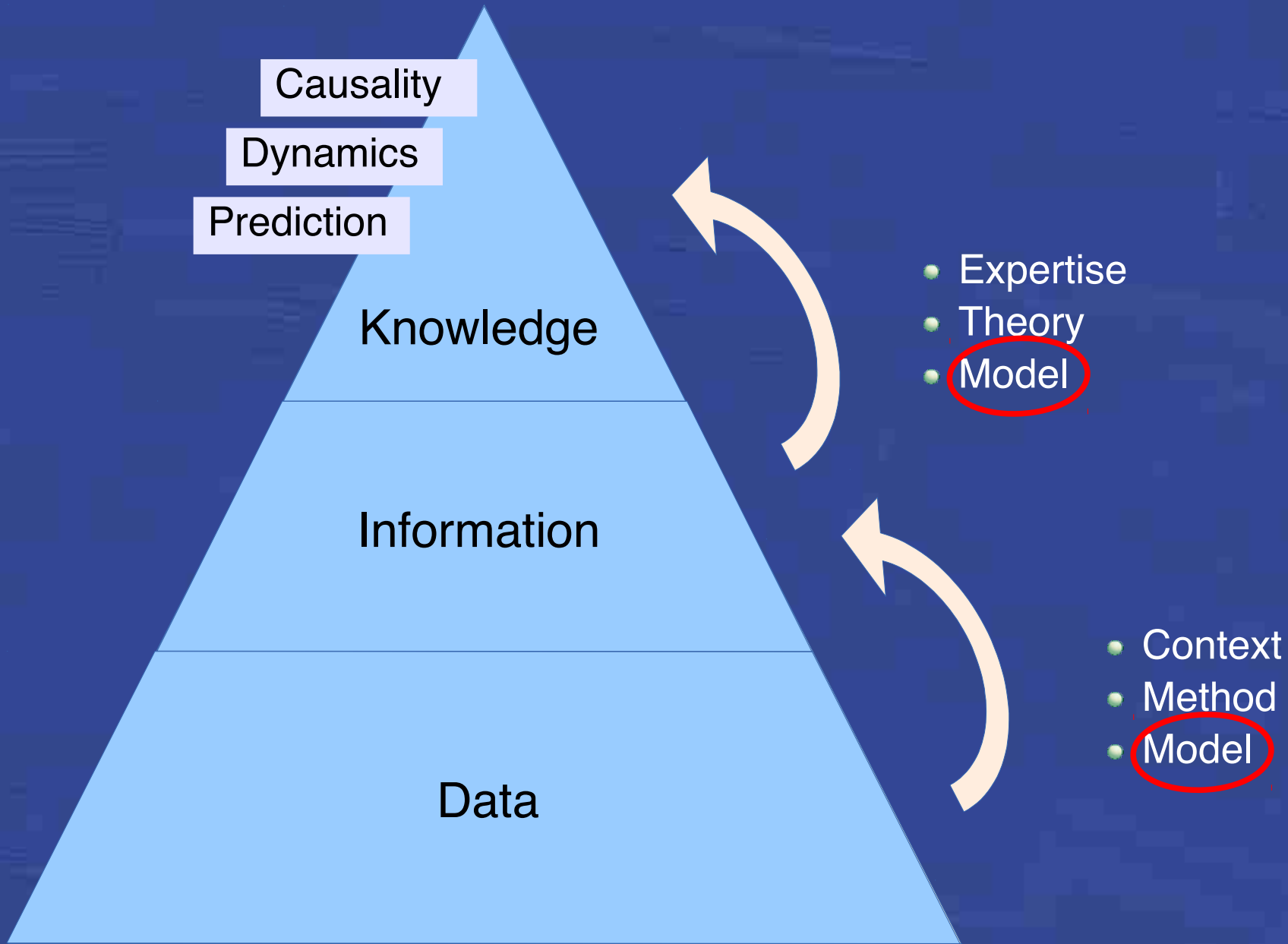
Interpretation
Verification

Model

Data analysis,
visualization,
mining

Research questions





Causality

Dynamics

Prediction

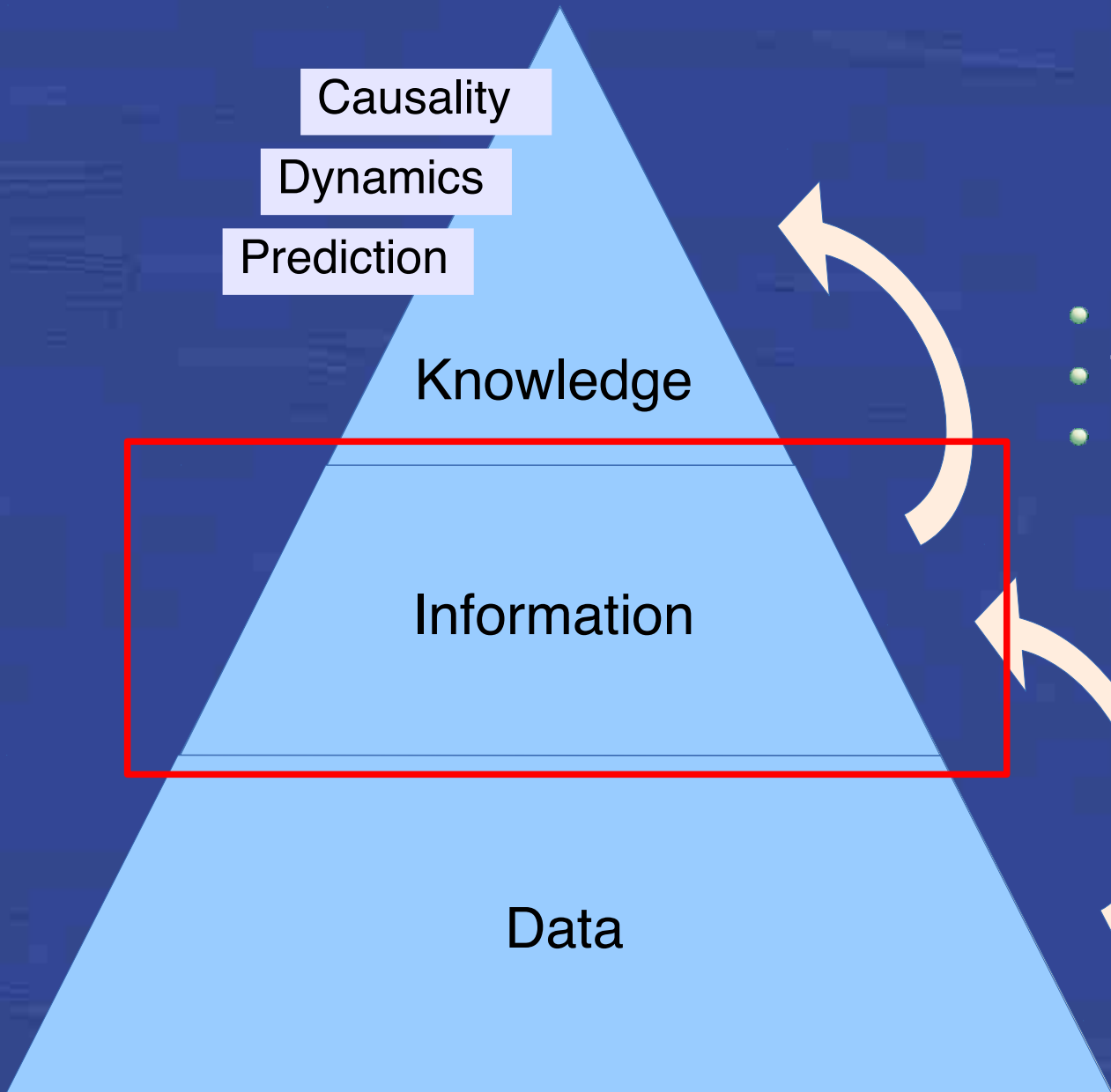
Knowledge

Information

Data

- Expertise
- Theory
- Model

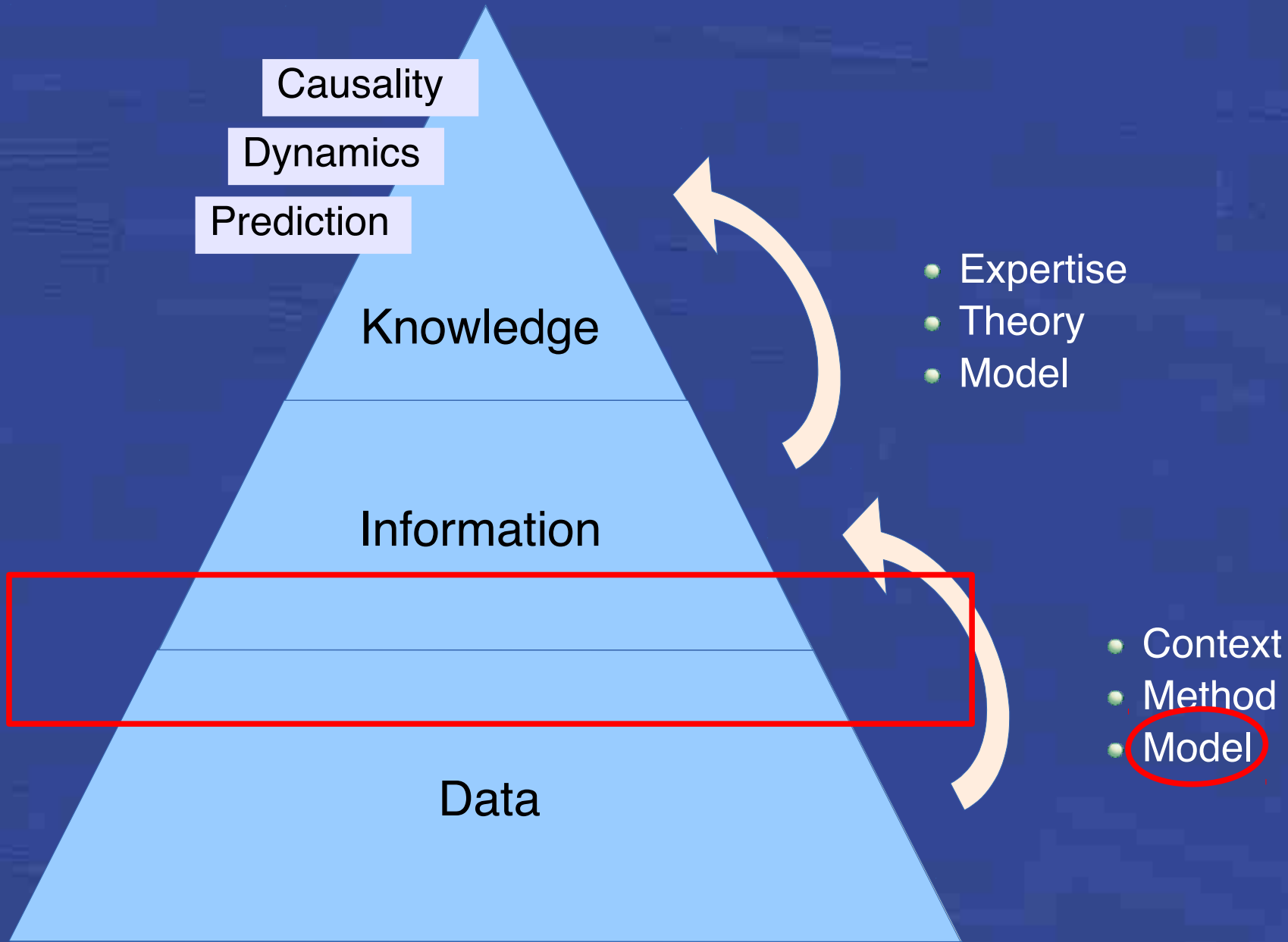
- Context
- Method
- Model



Causality
Dynamics
Prediction

- Expertise
- Theory
- Model

- Context
- Method
- Model



- * The *symogih.org* project's collaborative virtual research environment
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From a resource centered model...

Wikipedia Infobox

Cardinal de l'Église catholique	
Créé cardinal	11 septembre 1606 par le pape Paul V
Titre cardinalice	Cardinal-prêtre de Ss. <i>Quattro Coronati</i> Cardinal-prêtre de S. <i>Lorenzo in Lucina</i> Cardinal-évêque de <i>Frascati</i>

DBPedia.org

http://fr.wikipedia.org/wiki/Giovanni_Garzia_Millini

http://fr.dbpedia.org/page/Giovanni_Garzia_Millini



.. to a statement centered model...

Giovanni Garzia Millini (Q1079973)

Italian catholic cardinal (1562-1629)

> In more languages

Statements

position held

cardinal

start time 11 September 1606 *Gregorian*

1 reference

Catholic Hierarchy person ID milligg

wikidata.org

Millini,
Giovanni
Garzia

<https://www.wikidata.org/wiki/Q1079973>

statement

ps:P39
(position held)

wd:Q45722
(cardinal)

prov:wasDerivedFrom

<http://www.catholic-hierarchy.org/bishop/bmilligg.html>

pq:P580
(start time)

1606-09-11T00:00:00Z

... to an event centered model

Mellini, Gian Garsia - Nomination: Cardinal

Info93265
Type d'information: Nomination - TyIn6
Date: 1606-09-11

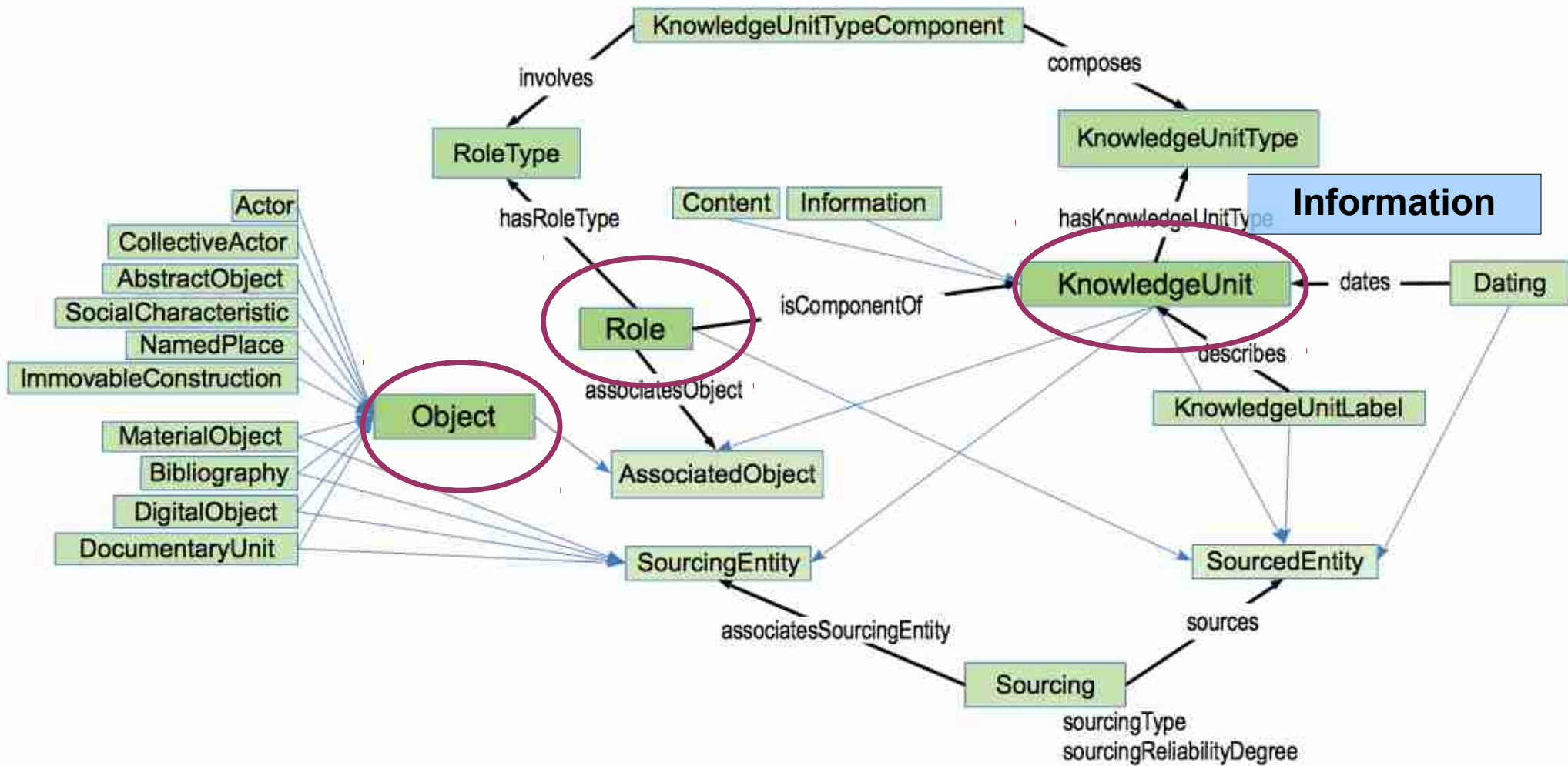
Composantes de l'information

Rôles Textes Sources

Libellé de l'objet	Type de rôle	Clé du rôle
Paulus V.	nommer	InRo257887
Mellini, Gian Garsia	nommé (être)	InRo257886
Cardinal	destination (être la)	InRo257886

symogih.org





The symogih.org ontology

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

The screenshot shows the SYMOGIIH website interface. At the top left, the logo 'SYMOGIIH' and the word 'Références' are visible. A navigation bar contains 'Accueil', 'Documentation', and 'Membres'. A large cyan banner displays the URL 'http://symogih.org'. The main content area is divided into a left sidebar and a main panel. The sidebar has two sections: 'Références' with links like 'Arborescence des classes de types d'unités de connaissances', 'Types d'informations', and 'Types de contenus'; and 'Objets' with links like 'Acteurs', 'Acteurs collectifs', 'Objets abstraits', and 'Caractères sociaux'. The main panel shows 'Classes de types d'...' and a search box 'Chercher une classe'. Below the search box is a list of categories, with 'Enseignement -' selected. The right side of the main panel displays the 'Enseignement' class definition, including its description, a note about its relationship to 'Exercice d'une fonction', and a table of associated roles.

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

Accueil

Actualités

Documentation

Membres

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

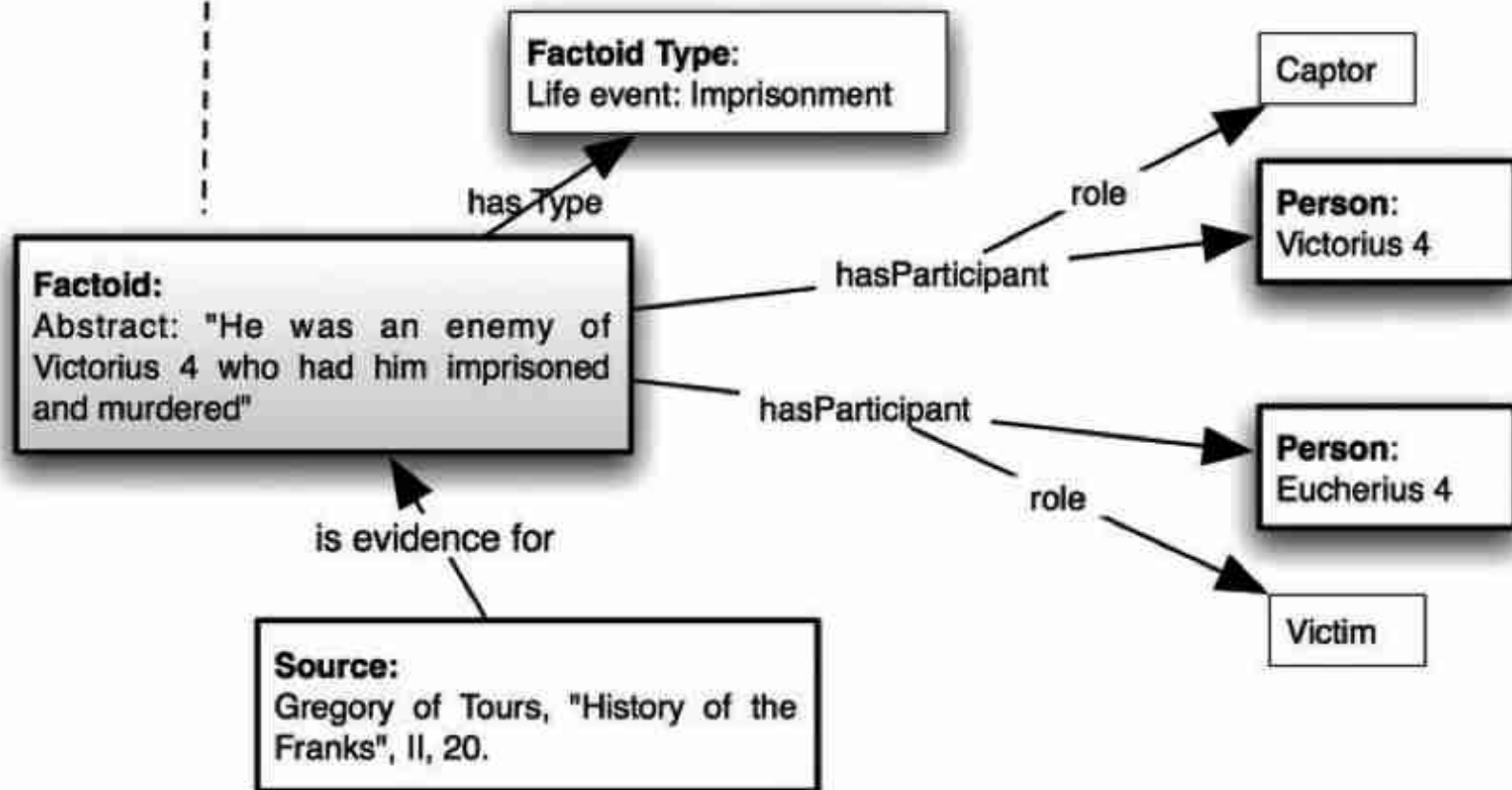
Rôles

Textes

Sources

Libellé de l'objet	Type de rôle	Clé du rôle
Galilei, Galileo	exercer	InRo261100
Université de Padoue	concerner	InRo261101
Mathématiques	enseigné (être)	InRo261102

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

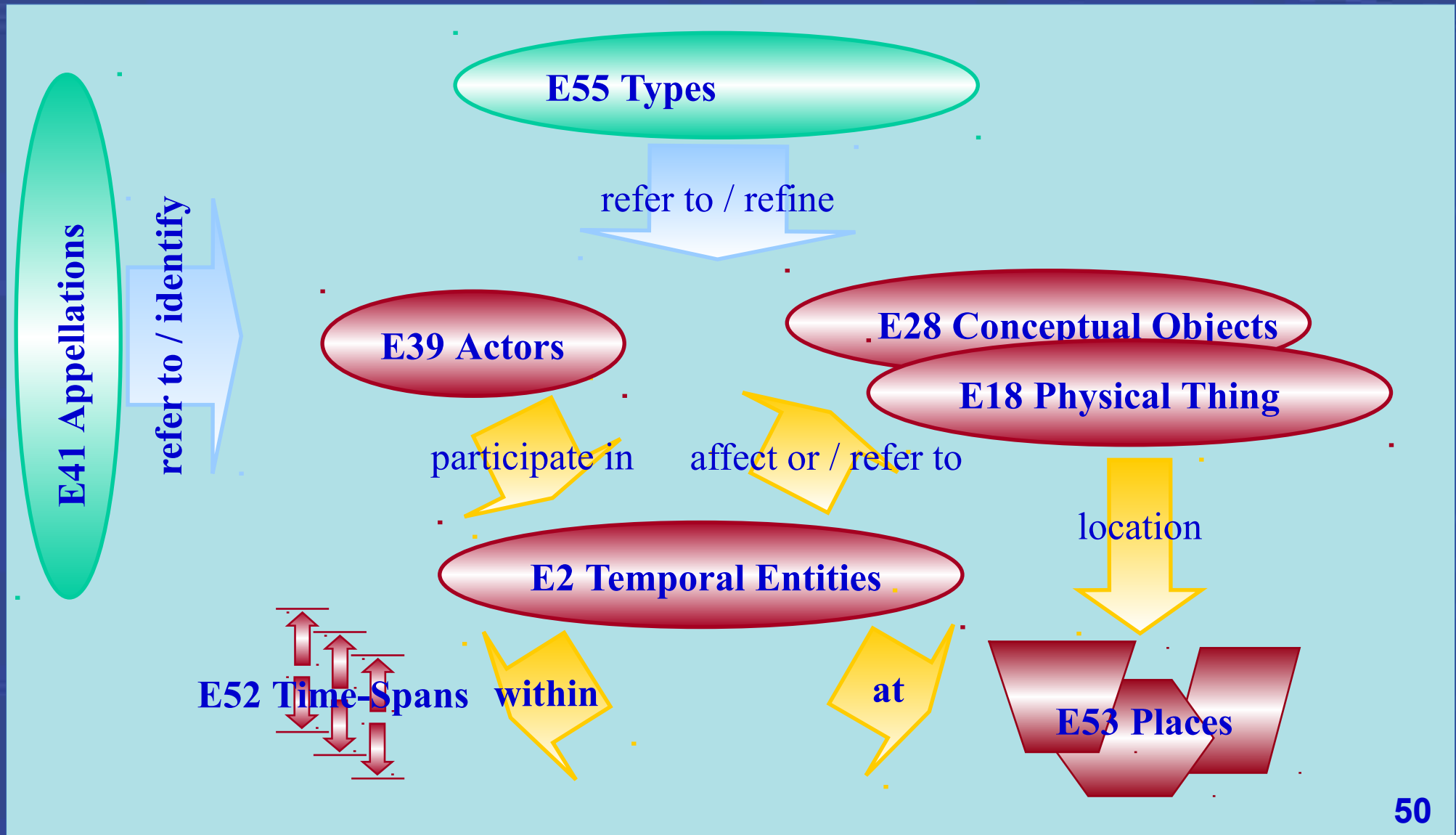


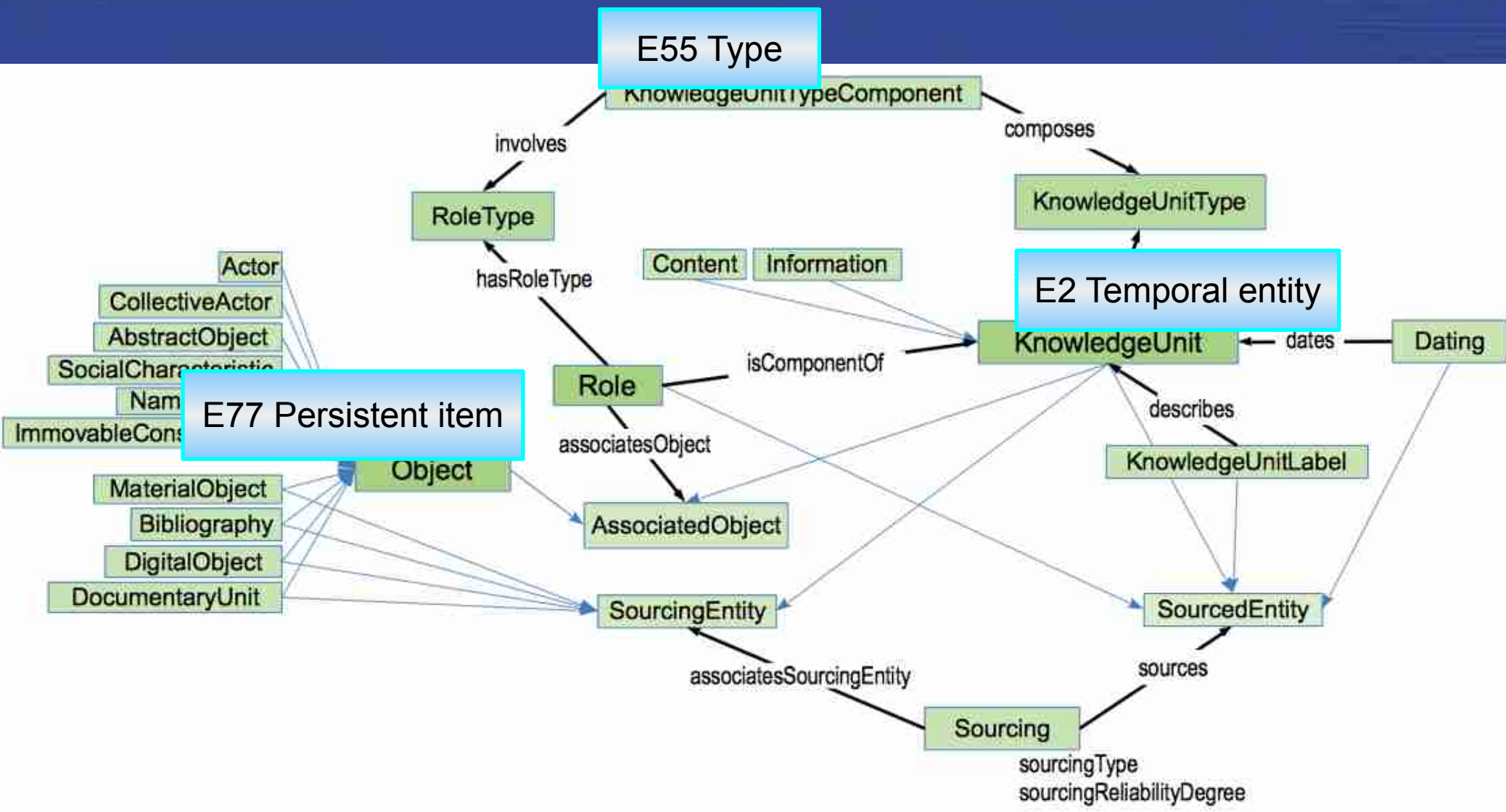
Factoid ontology

KCL's Department of Digital Humanities (DDH : Prosopographies of the Byzantine World (PBE and PBW), Anglo-Saxon England (PASE), Medieval Scotland (PoMS), Anglo-Scottish cross-border society ('Breaking of Britain': BoB)

Michele Pasin and John Bradley, Factoid-based prosopography and computer ontologies: Towards an integrated approach, Literary and Linguistic Computing Advance Access published June 29, 2013

The CIDOC CRM (ISO21127:2006)
A semantic framework that provides interoperability
between different sources of cultural heritage information





Compatible semantic structure of *symogih.org* and the CRM :
 modelling states of affairs using an event centered model

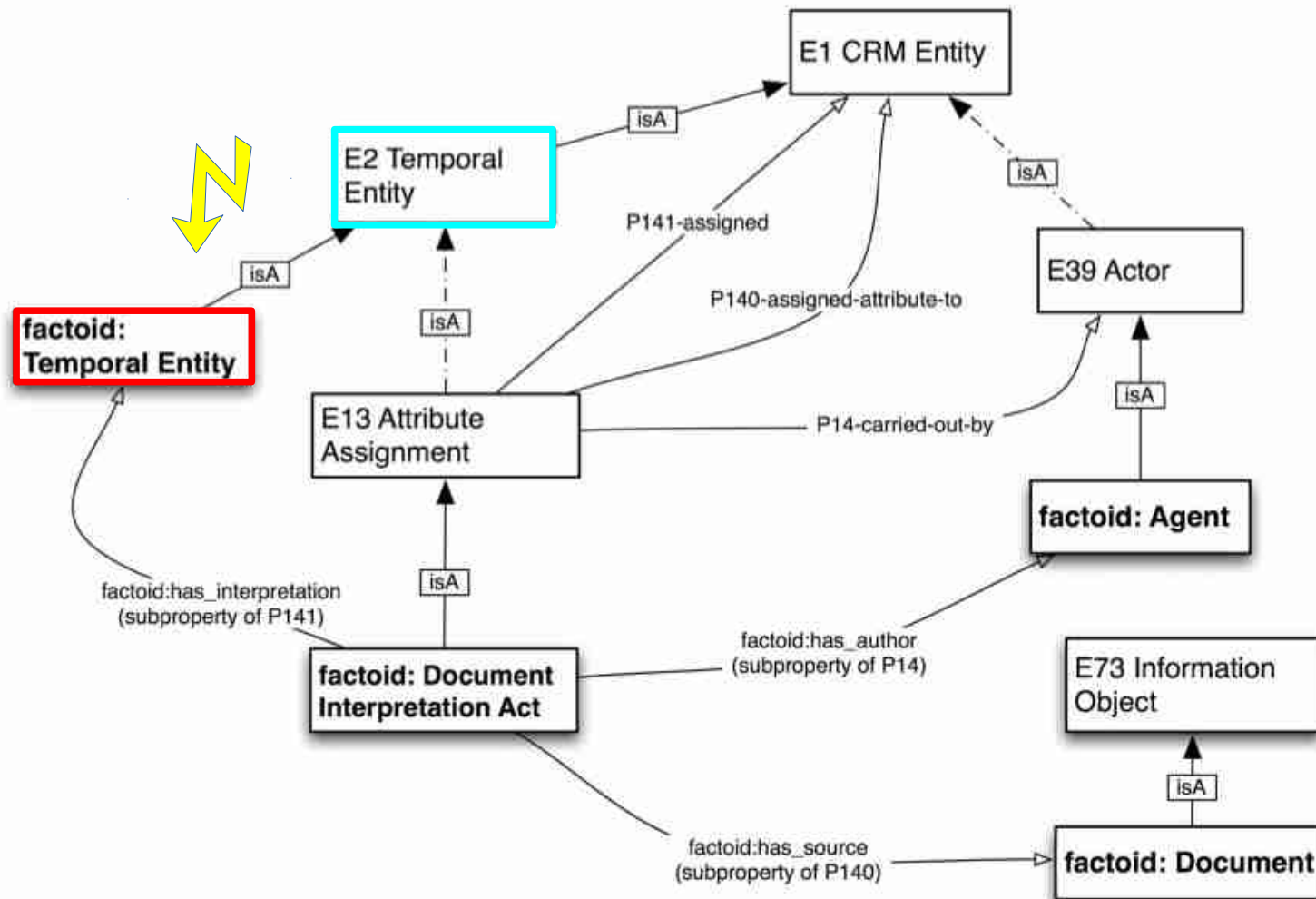
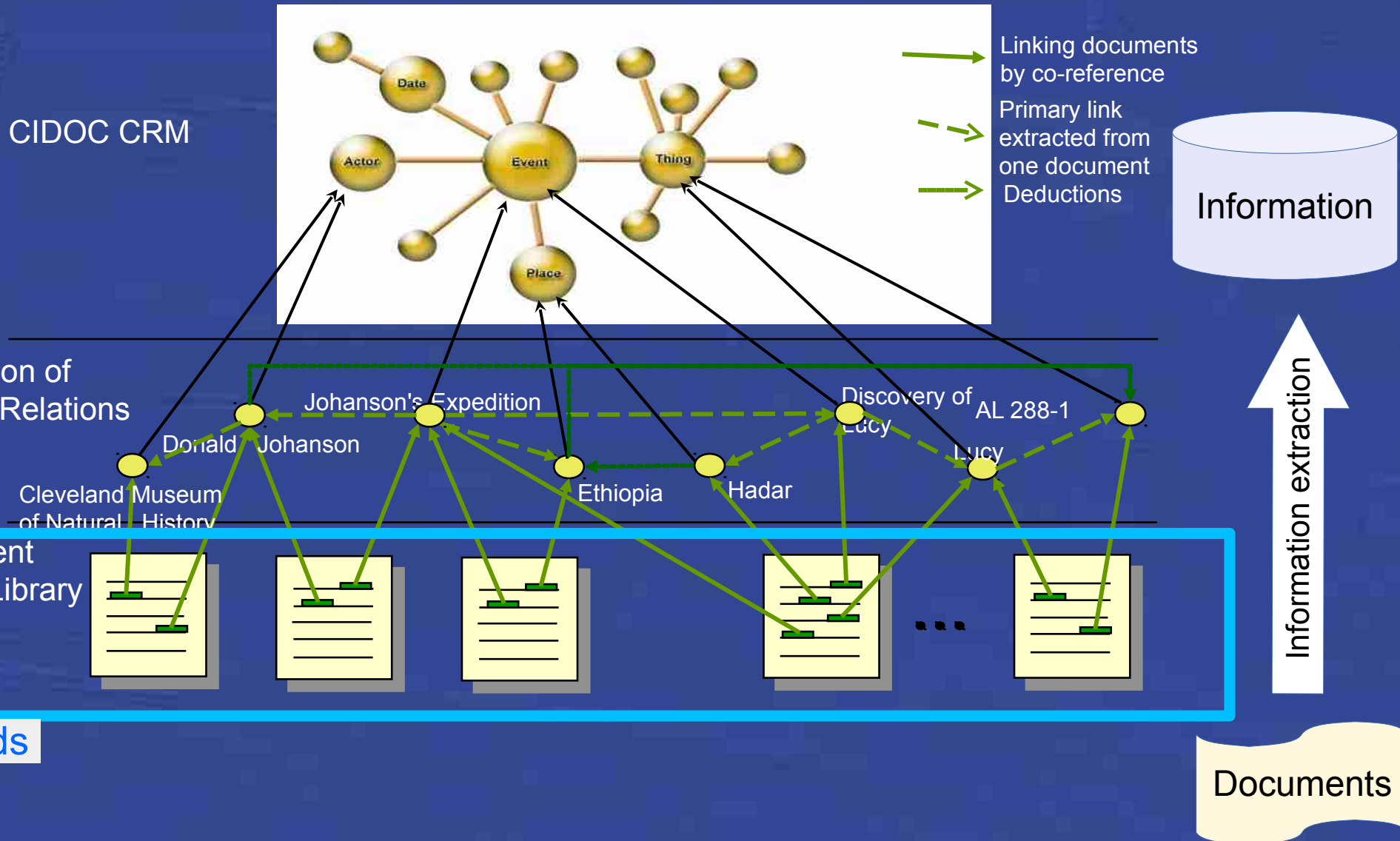


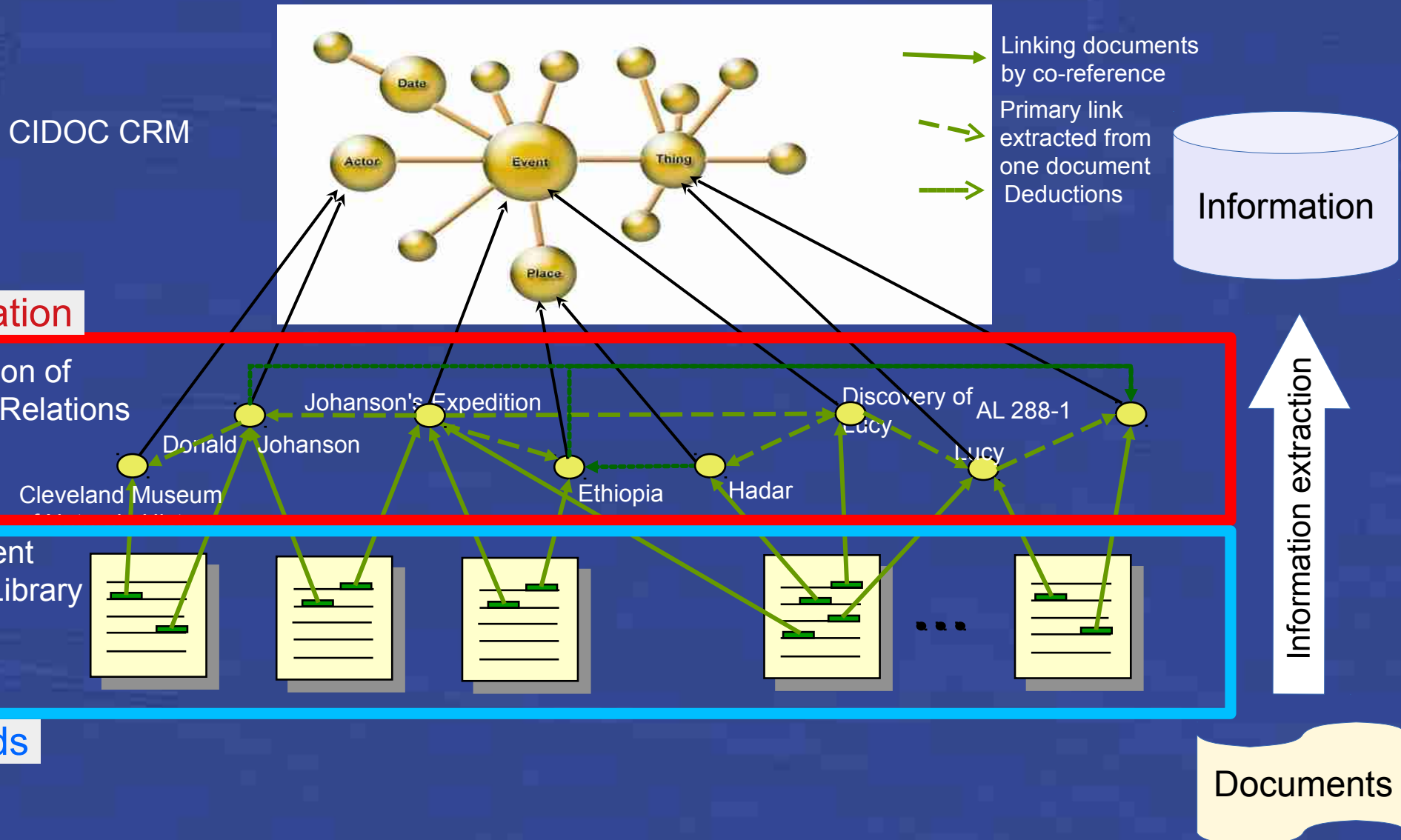
Fig. 4 Mapping the factoid model to CIDOC-CRM primitives

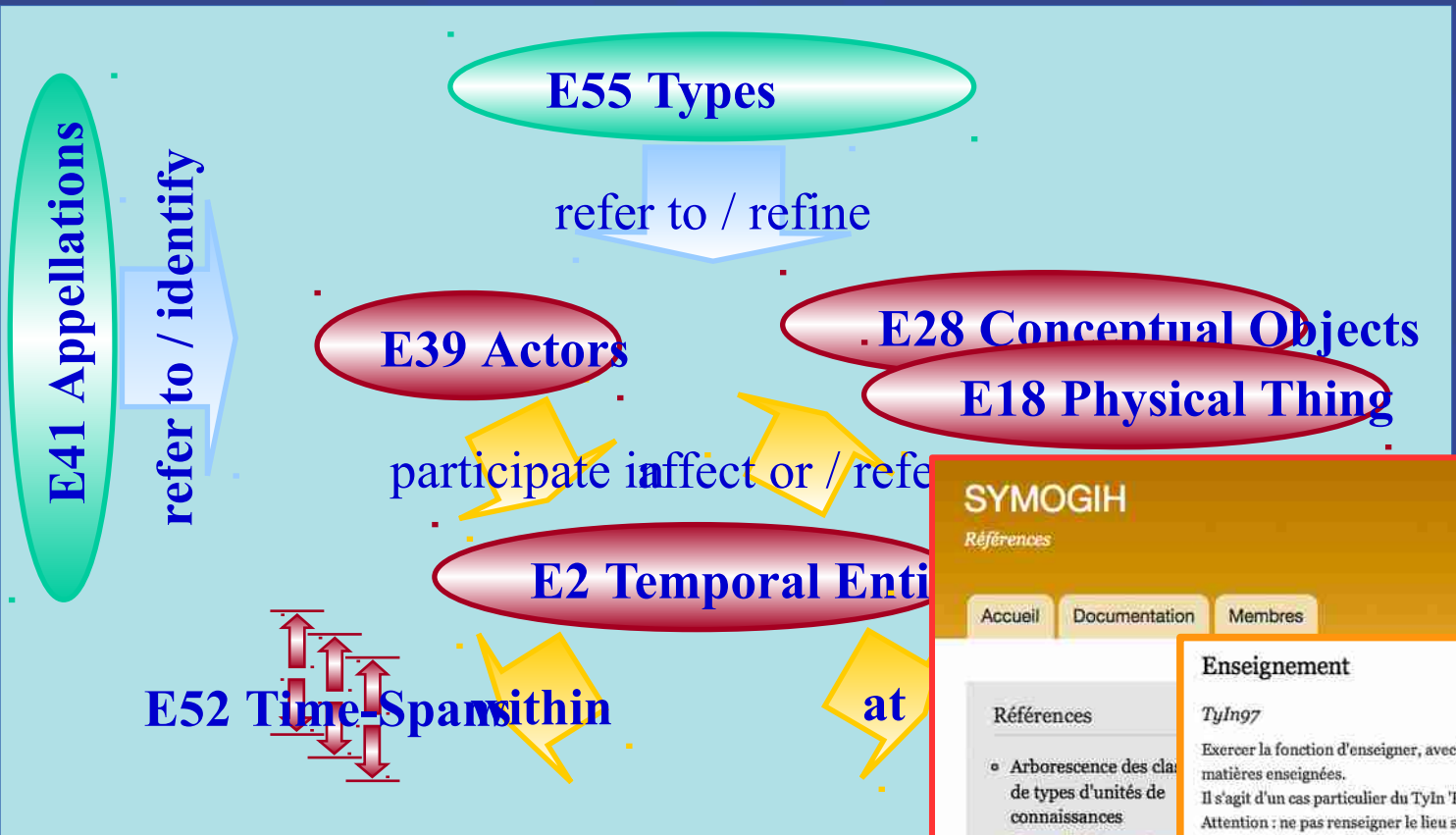
« The factoid approach prioritizes the sources, rather than our historians' reading of them » (Bradley / Pasin).

Integration of information extracted from documents using the CIDOC CRM



Integration of information extracted from documents using the CIDOC CRM





<http://symogih.org>

SYMOGIH
Références

Accueil | Documentation | Membres

Enseignement

TyIn7

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.

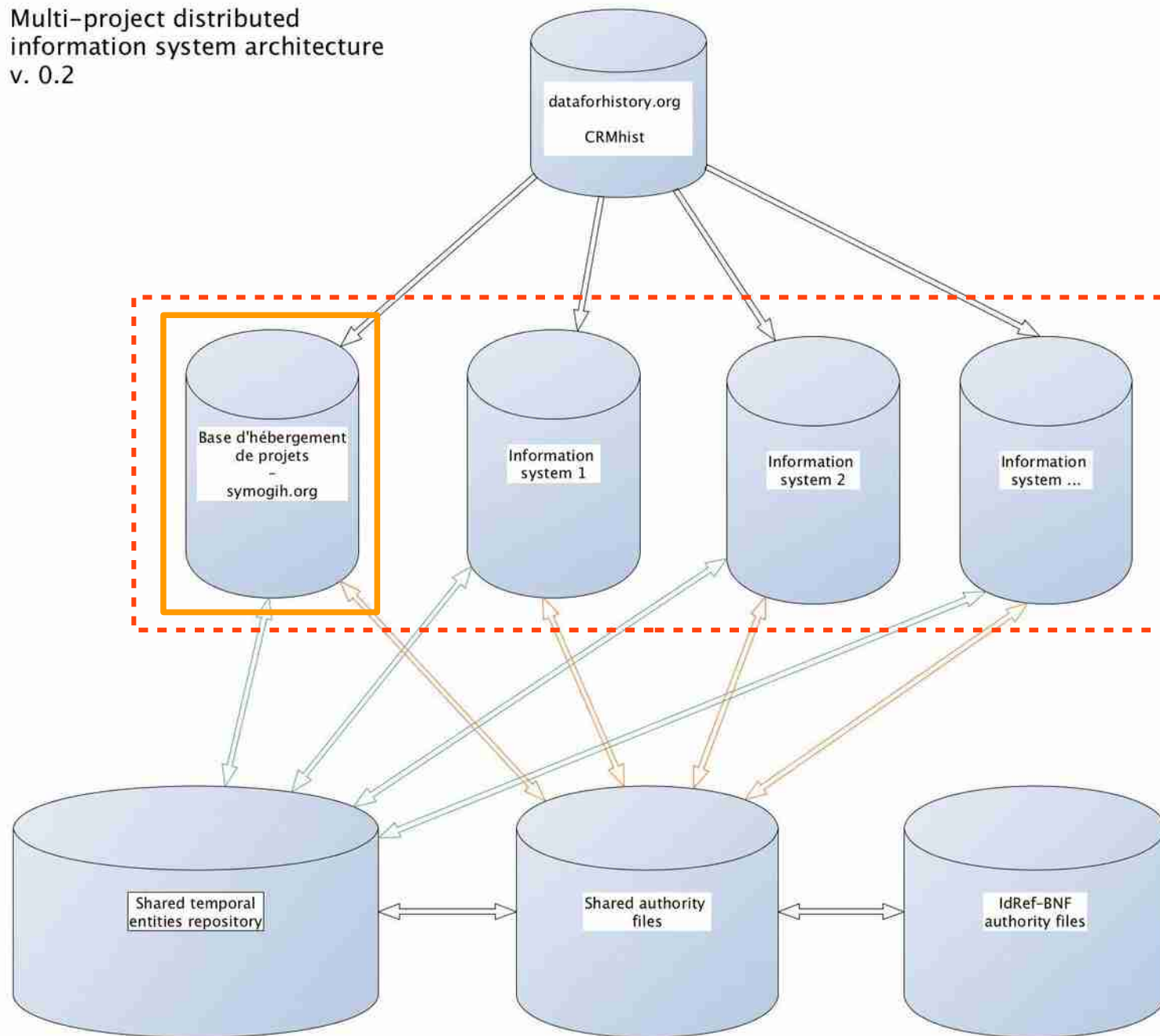
Liste des types de rôles associés

Libellé du type de rôle	Cité du TyRo	Description
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MCD disponible(s)
Télécharger ce MCD

symogih.org and the CRM :
extending the standard
for geo-historical projects'
data production

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, cosmo Einaudi, 2003)
1979	Simon, Gérard, Kepler: astronome, astrologue (Paris, Gall

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

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

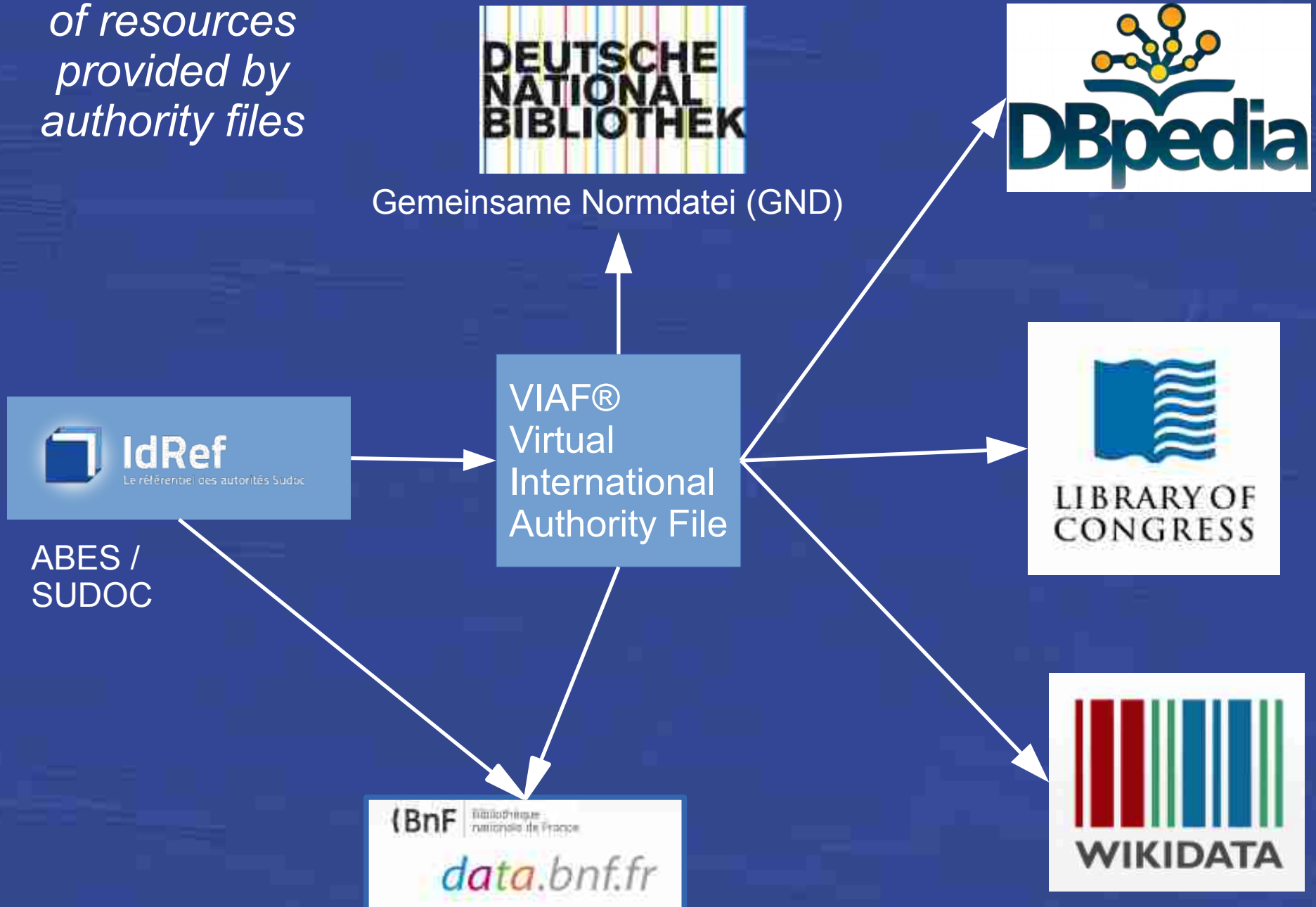
Notice de type
Personne

Forme retenue

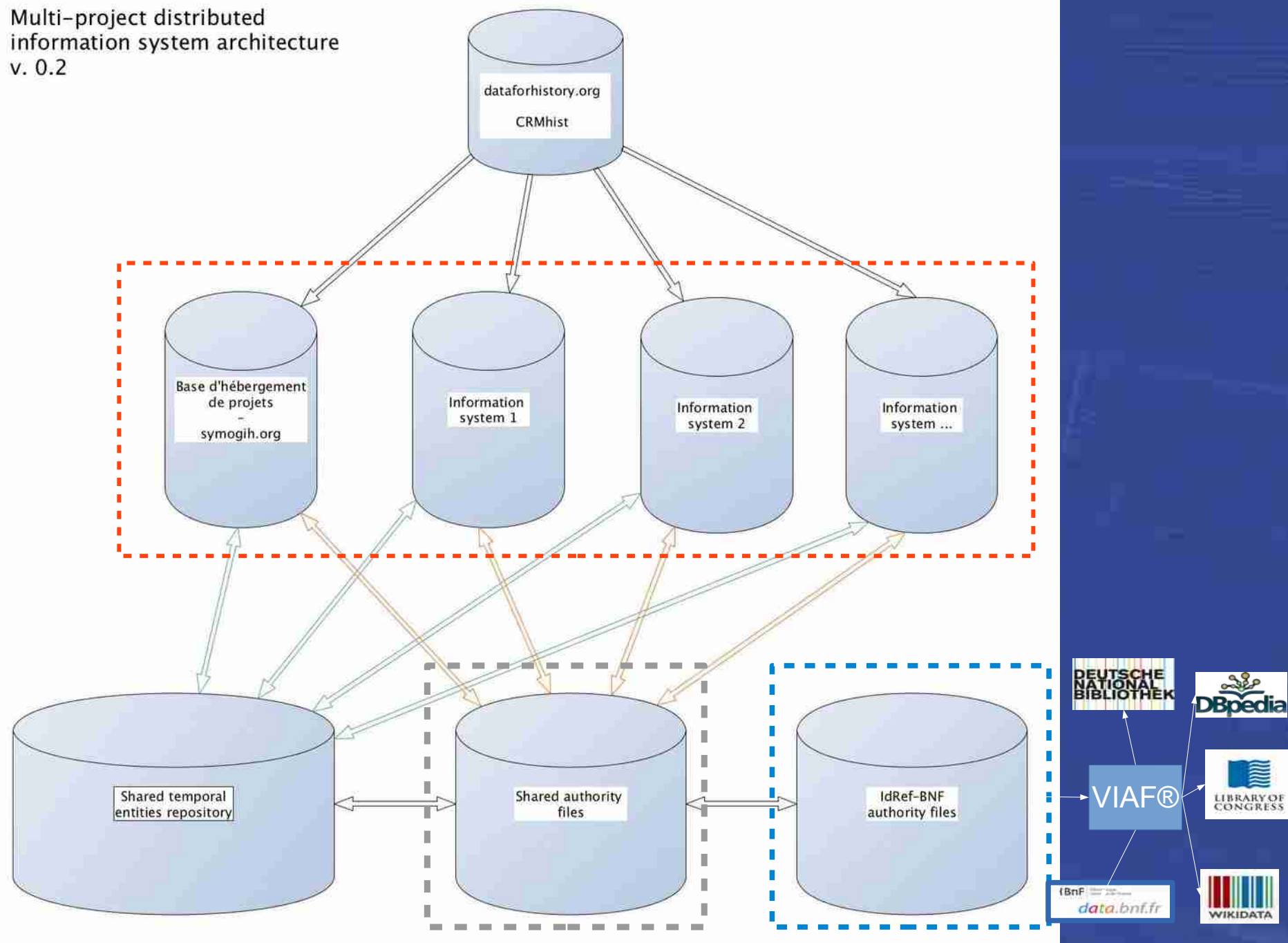
Kepler, Johannes (1571-1630)

Interlinking URIs of resources

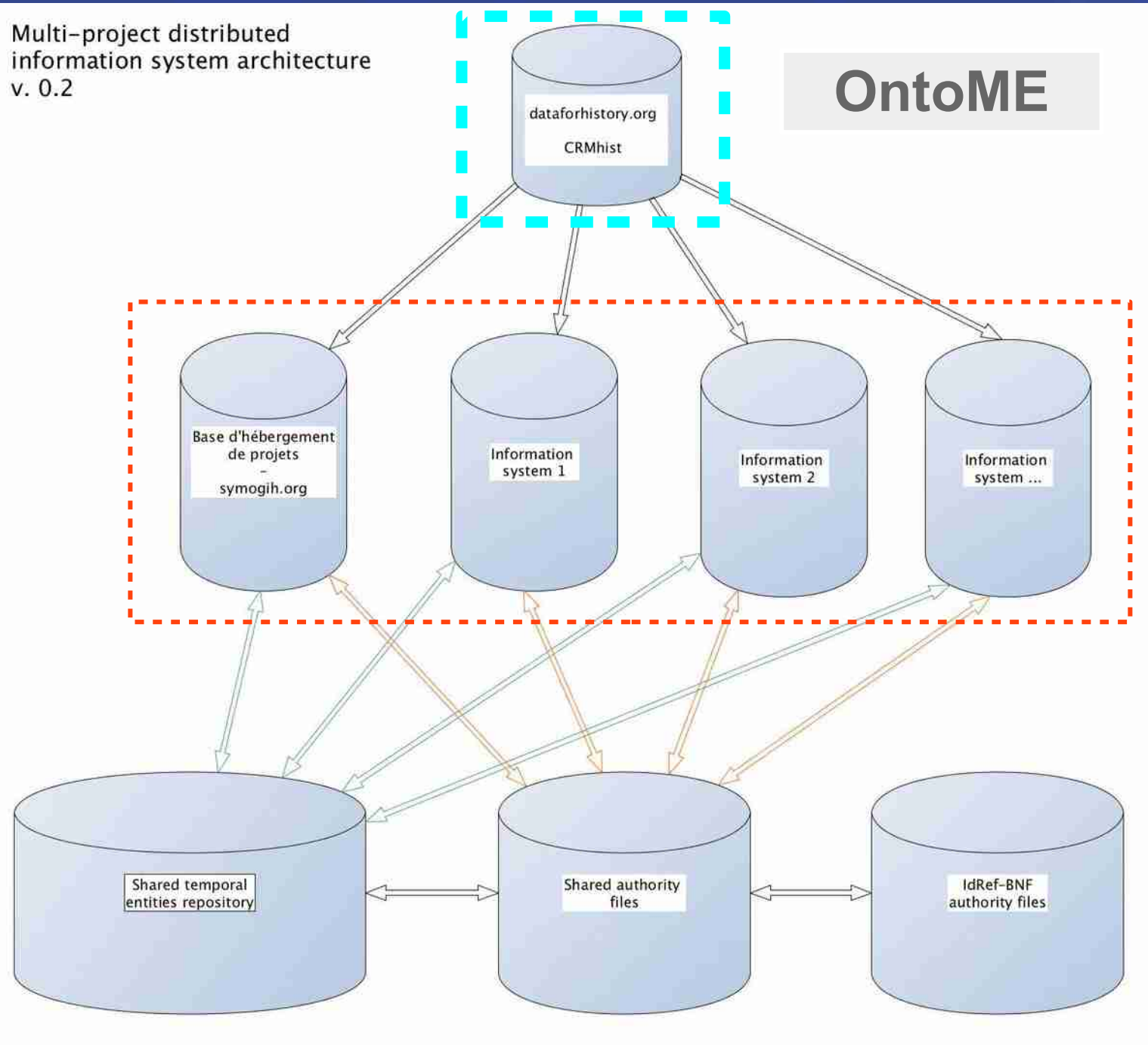
*Interlinking the URIs
of resources
provided by
authority files*



Multi-project distributed information system architecture v. 0.2



dataforhistory.org



OntoME

<http://ontome.dataforhistory.org>

Man-Made Object – E22

Ship – C2

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](#)



CIDOC CRM

CIDOC CRM



CRM hist extension

CIDOC CRM



CRM hist extension



Projects' ontology

CIDOC CRM



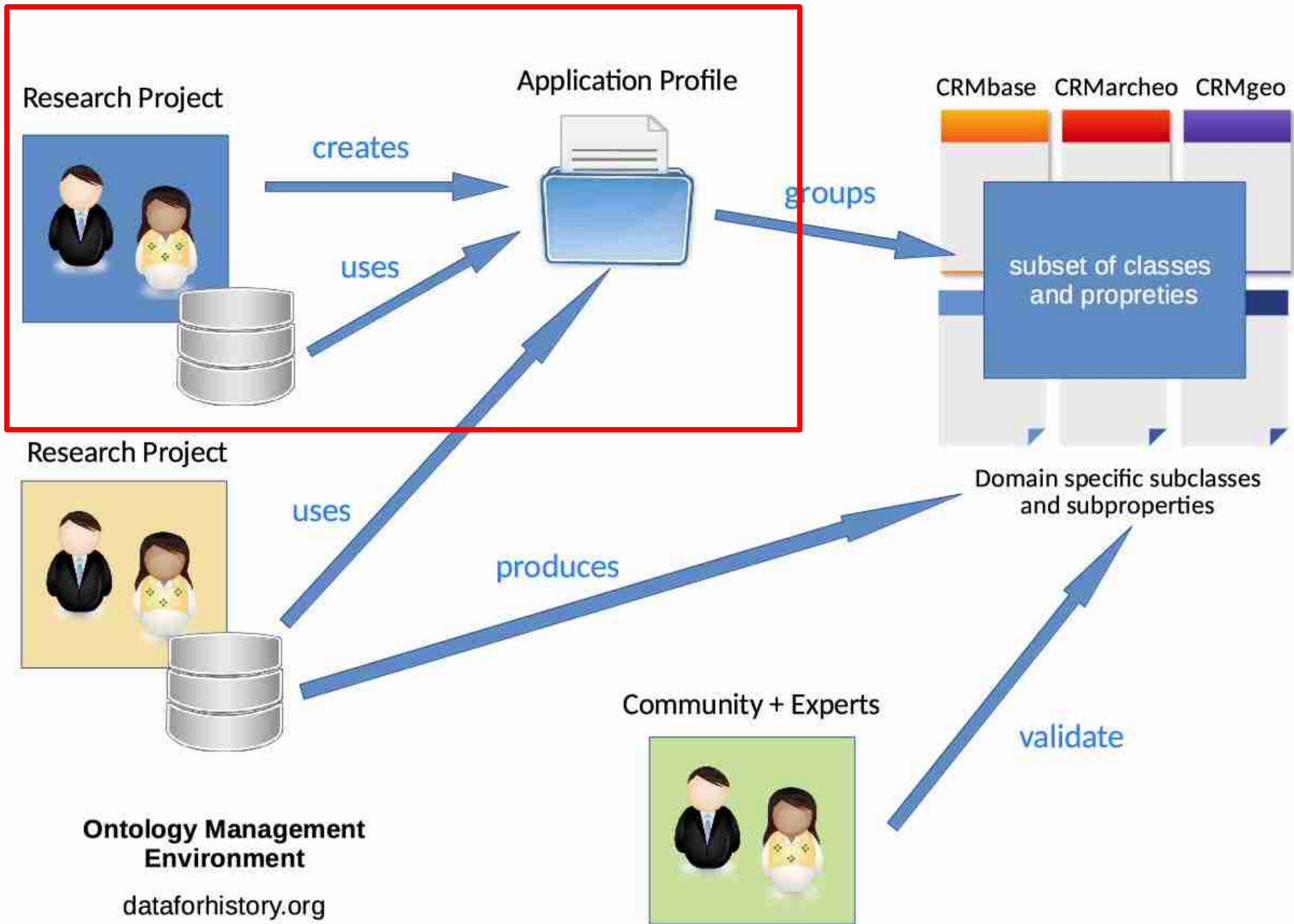
CRM hist extension



Projects' ontology



Information systems



Retrieve your project's application profiles from an API

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

JSON Données brutes En-têtes

Enregistrer Copier

▼ 5:

pk_class:	61
identfier_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
identfier_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"

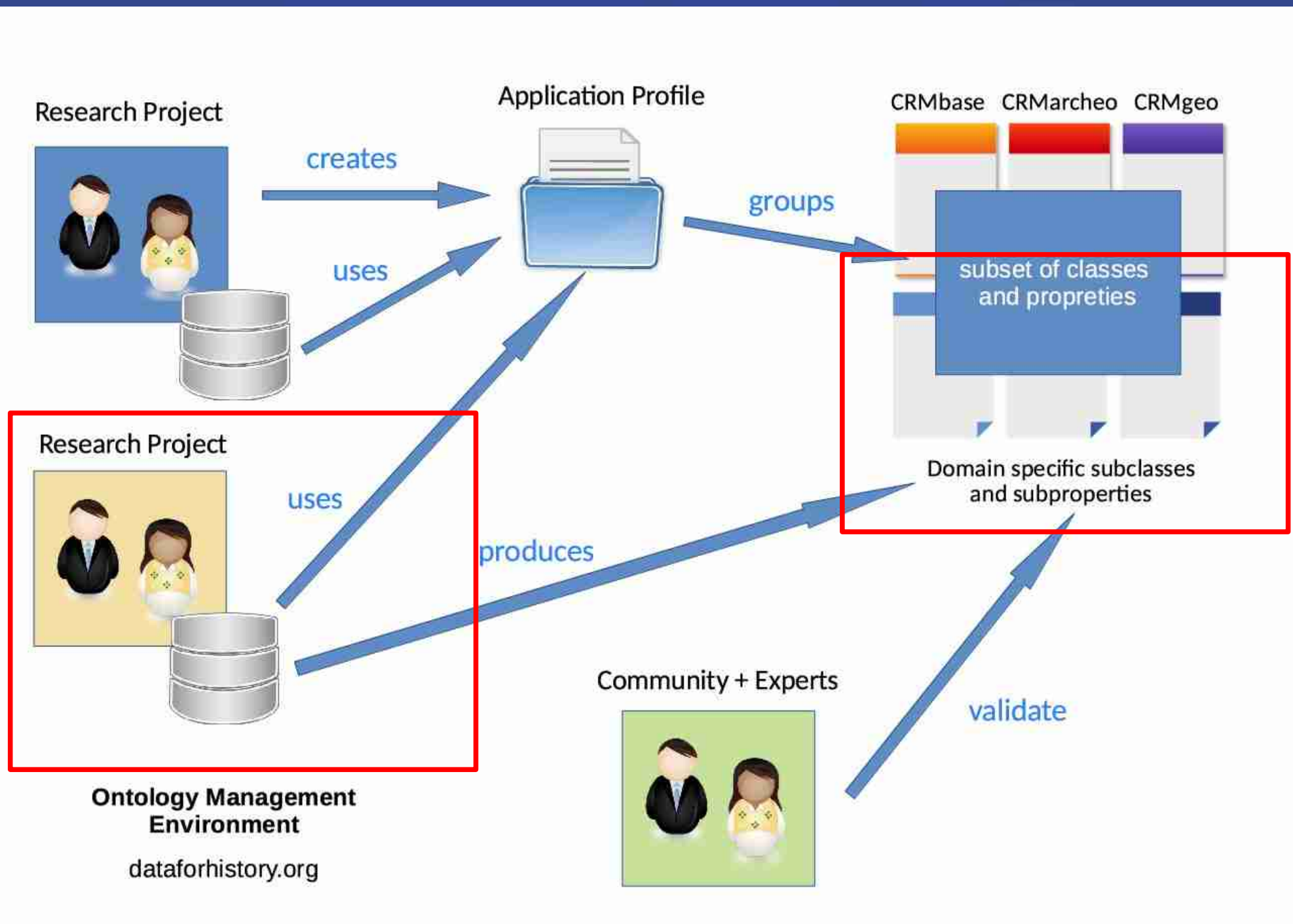
The screenshot displays the Geovistory web application. At the top, the browser address bar shows the URL `geovistory.com/projects/84760/edit`. The page header includes navigation links for Home, Your Projects, and Maritime history, along with a user profile icon and a 'Beta' badge.

The main interface is divided into several sections:

- Left Sidebar:** Contains navigation icons for Sources, Entities, Analysis, and Stories.
- Map:** A world map showing various locations. A red circle highlights a location in Europe, and a blue circle highlights a location in Southeast Asia (Indonesia).
- Information Panel:** A pop-up window titled 'All ship voyages' provides details for the selected location: 'Date: Apr 2, 1595 AD', 'Activated Place: Jakarta ID', and 'Value of Place at Date: 0'. It also includes a 'show details' link.
- Time-Series Chart:** A line graph at the bottom shows data from 1640 to 1750. The y-axis ranges from 0 to 30. The chart displays a highly volatile time series with a significant peak around 1725.
- Bottom Bar:** Includes a search icon, a slider, a zoom icon, and a dropdown menu currently set to 'Active: Jakarta ID'. A 'feedback' button is located in the bottom right corner.

The text 'geovistory.com' is overlaid in blue on the right side of the map area.

Geovistory : a VRE for historical research



Design the classes and properties of your project's namespace

<https://ontome.dataforhistory.org/api/namespaces-rdf-owl.rdf?namespace=3>

OntoME
Ontology Management Environment - beta version

Home Classes Properties **Namespaces** Projects Profiles Dashboard User guide

Active project : Maritime history

CIDOC CRM Generic Extension for Historical Data Management and Interoperability, ongoing

Summary Definition Identification Hierarchy **Classes** Properties Graph Comments

Show 25 entries

Classes

- Appellation for language – histC10
- Argument – histC15
- Argument's method – histC22
- Built work type – histC13

Class hierarchy: histC8

- owl:Thing
 - D1
 - E1
 - E13
 - E2
 - histC1
 - histC10
 - histC2
 - histC3
 - histC7
 - histC6
 - E21
 - E24
 - histC11
 - E26
 - histC8
 - E39
 - E41
 - E5
 - E54

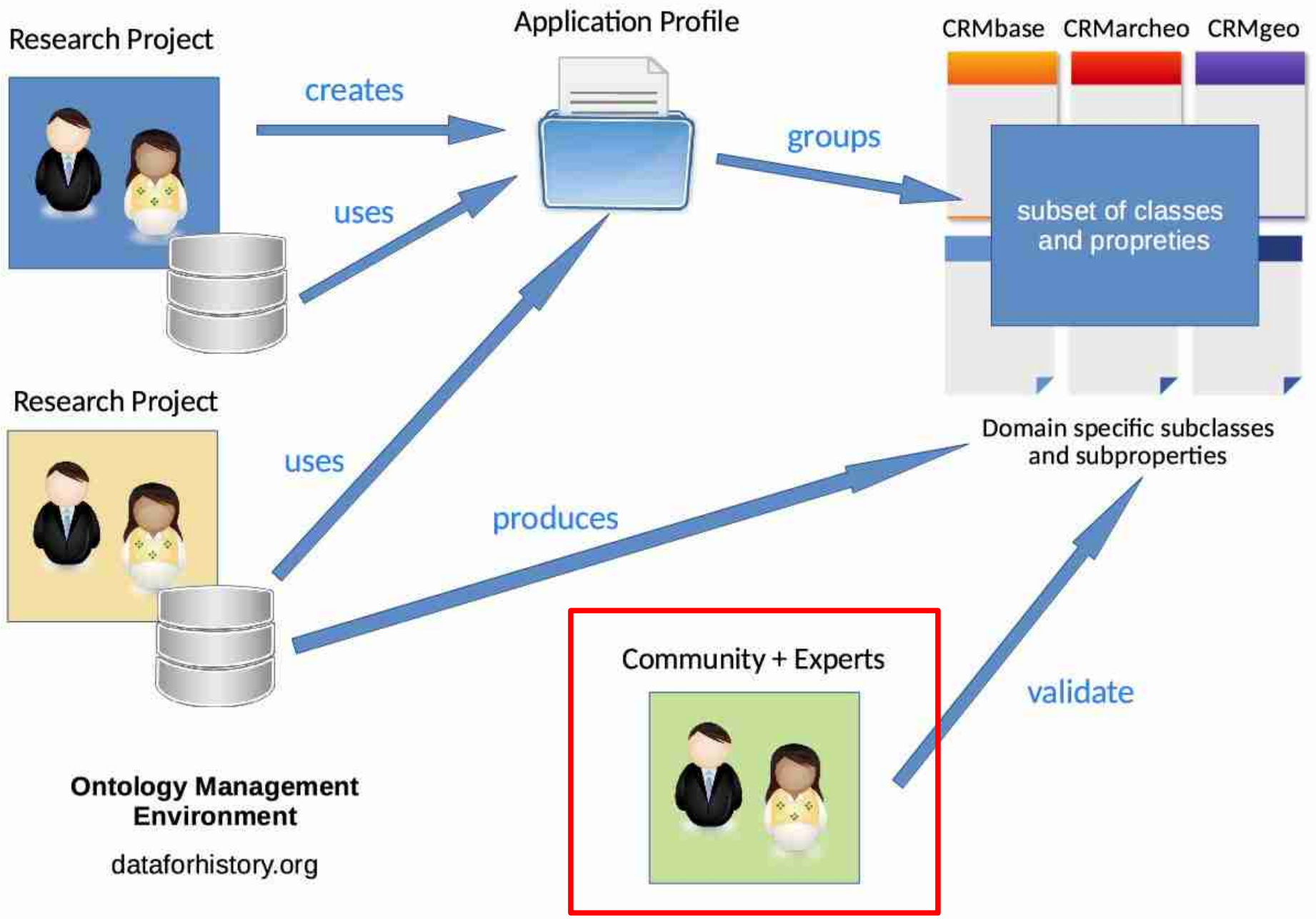
Annotations: histC8

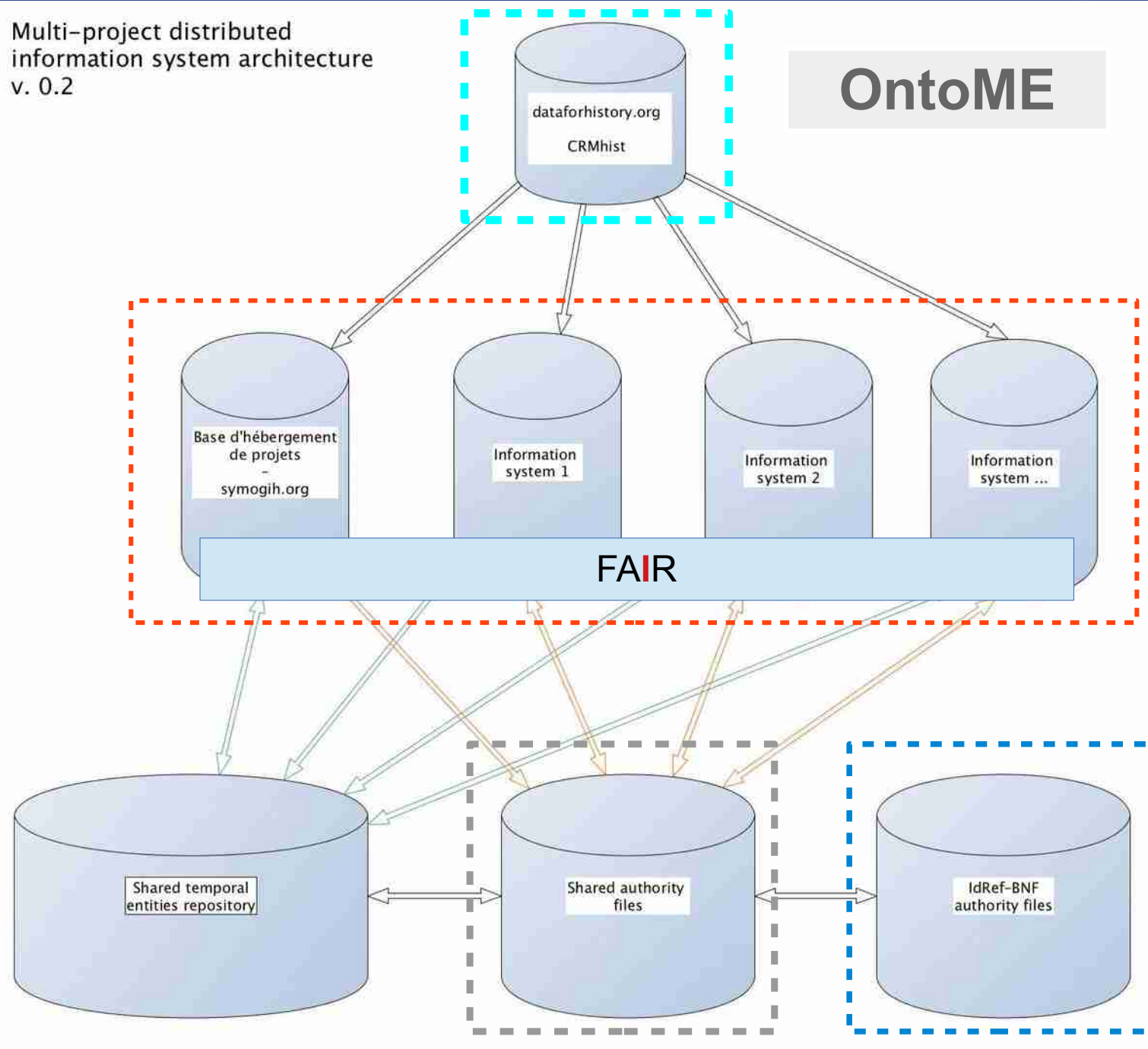
- rdfs:label [language: en] Geographical Place
- rdfs:comment [type: xsd:string] This class refers to portions of the surface of the Earth intended as constellations of matter which can be represented by photographs, paintings and maps. The relevant portion of the surface of the Earth can be covered by water (river; sea, ...). The more specific identity of instances of this class is provided by a controlled vocabulary of geographical place types.
- skos:notation [type: xsd:string] histC8

Description: histC8

- Equivalent To
- SubClass Of
 - E26
- General class axioms
- SubClass Of (Anonymous Ancestor)
- Instances







OntoME

dataforhistory.org

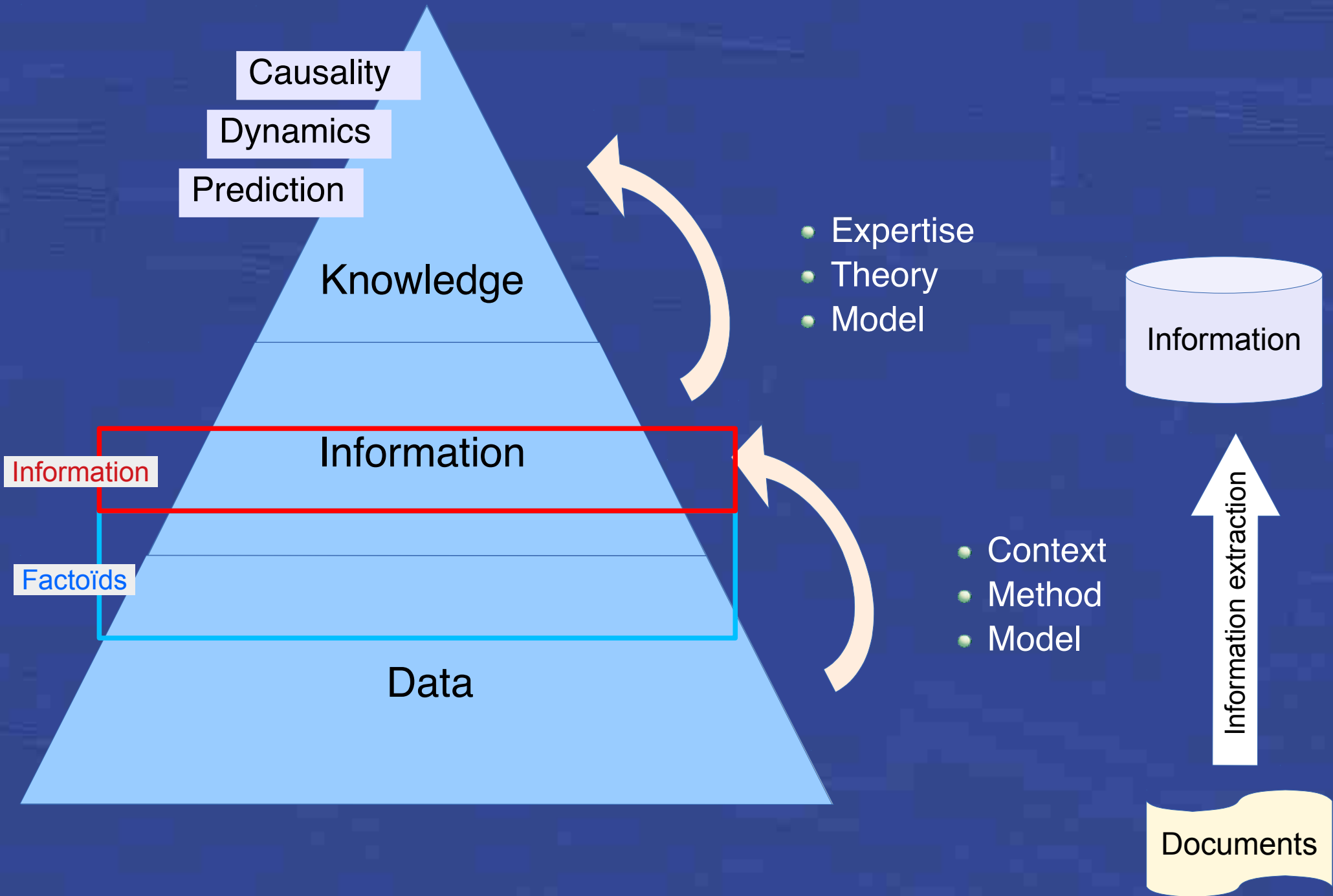
Data for History Consortium

Meetings

- Lyon, November 2017 (founding meeting)
- Lyon, Mai 2018
- Panel presenting the Data for History vision
at the EADH 2018 conference in Galway (December 2018)
- Leipzig, 4-5 April 2019
- Forthcoming : Berlin, 28-29 Mai 2020

The Data for History consortium
is in the process of being formally established
and is **open to all interested institutions and researchers**

- * The *symogih.org* project's collaborative virtual research environment
- * Modelling historical knowledge in the context of the semantic web
- * Collaboratively modelling information : *dataforhistory.org*
- * Information extraction from sources : factoids or states of affairs ?

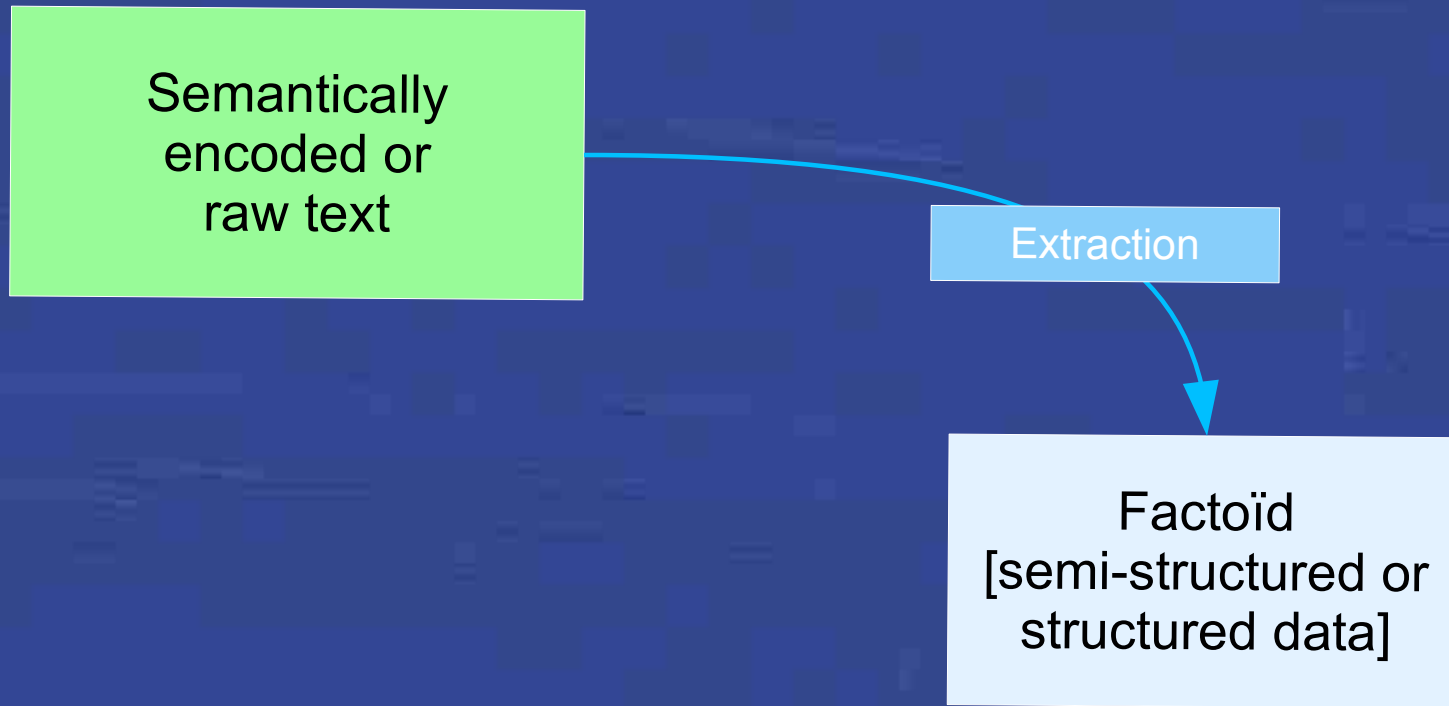


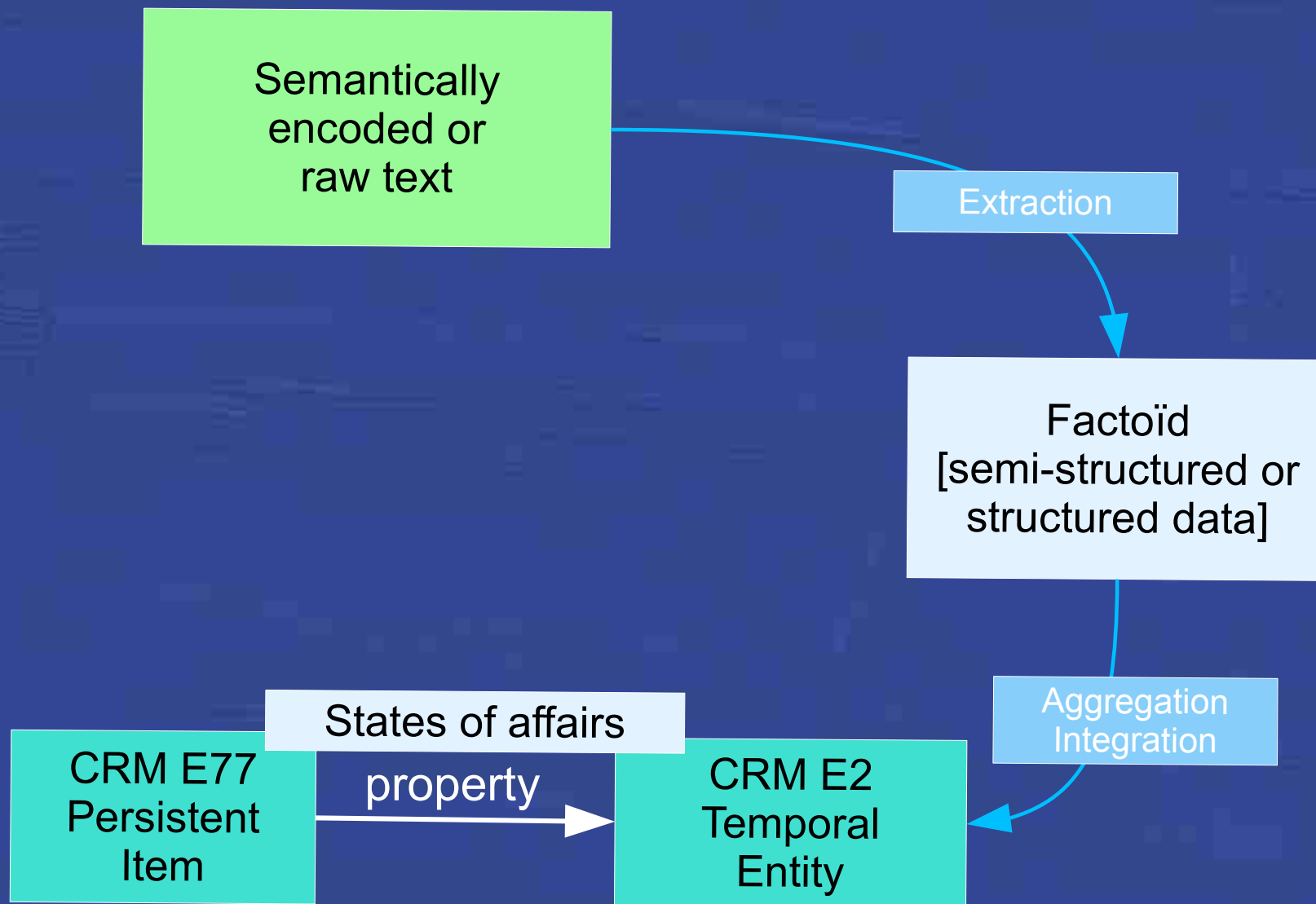
Manual encoding of the text or use of NLP techniques to identify information and produce structured data

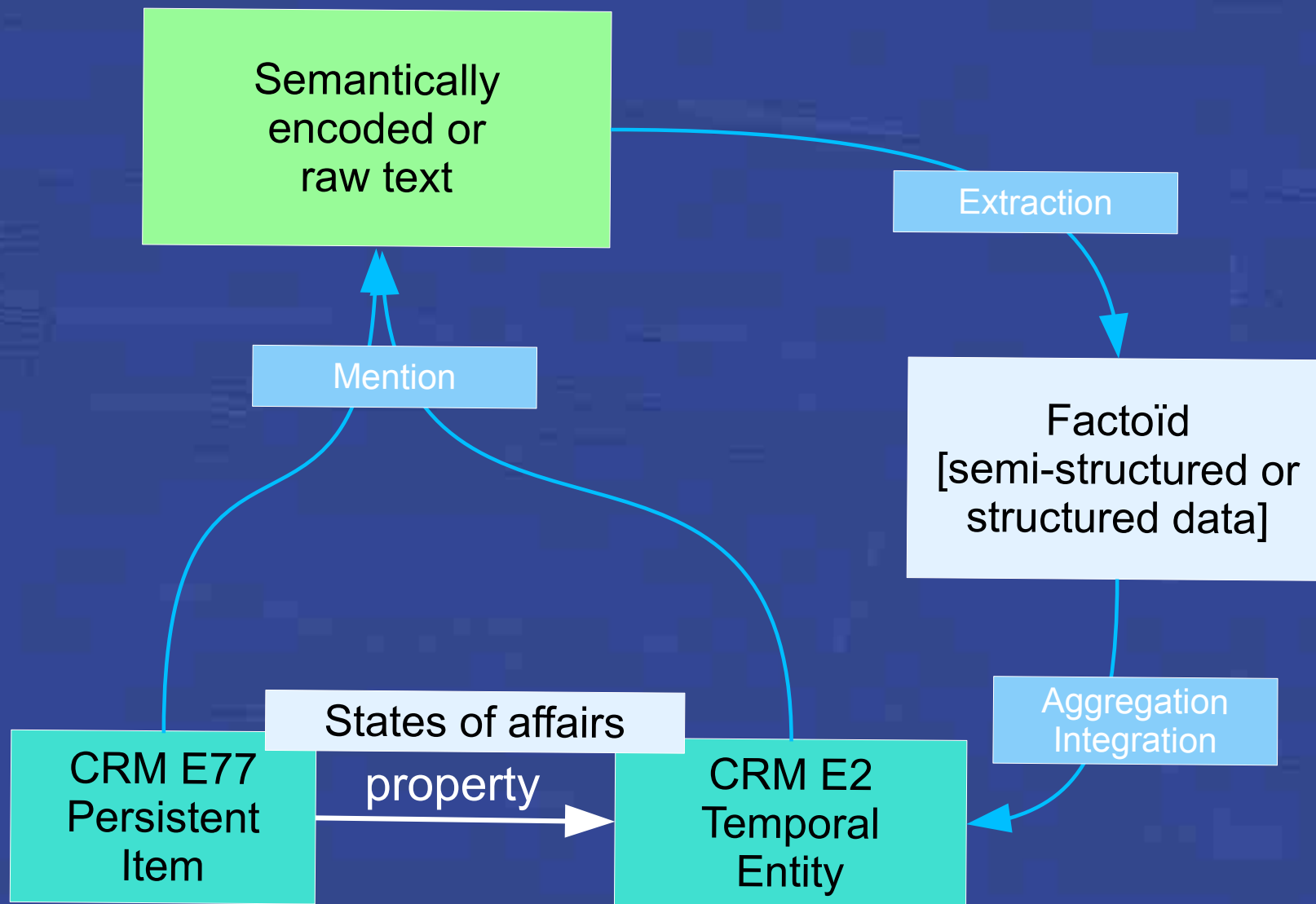
```
<p corresp="Info29659"><name ref="Actr195">Johannes Kepler</rs>
was born on <date when="1571-12-27">December 27, 1571</date> in
<name ref="NaPI90073">Weil der Stadt</name></p>
```

```
{"Tokens" : [
  {"doc" : 1, "sentence" : 6, "token_id":1,
"token" : Kepler}, was
  {"doc" : 1, "sentence" : 6, "token_id":2,
"token" : was},
  {"doc" : 1, "sentence" : 6, "token_id":3,
"token" : born},
  {"doc" : 1, "sentence" : 6, "token_id":4,
"token" : on}, was
  {"doc" : 1, "sentence" : 6, "token_id":5,
"token" : December},
  {"doc" : 1, "sentence" : 6, "token_id":6,
"token" : 27},
  {"doc" : 1, "sentence" : 6, "token_id":7,
"token" : 1571},
... ]}
```

Chunk [Tokens ids]	Entity	Value
1	Actr195	
5,6,7		1571-12-27



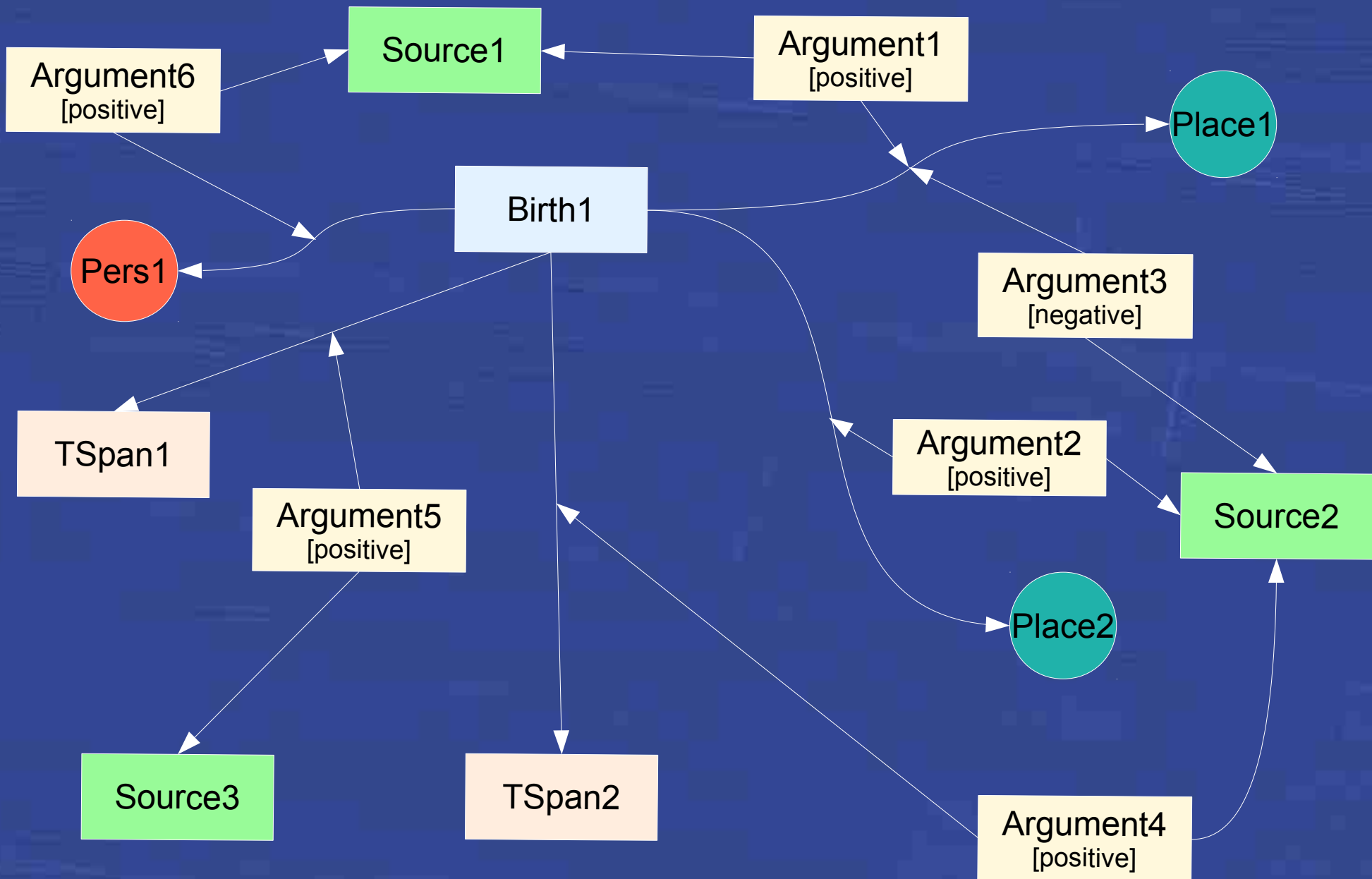


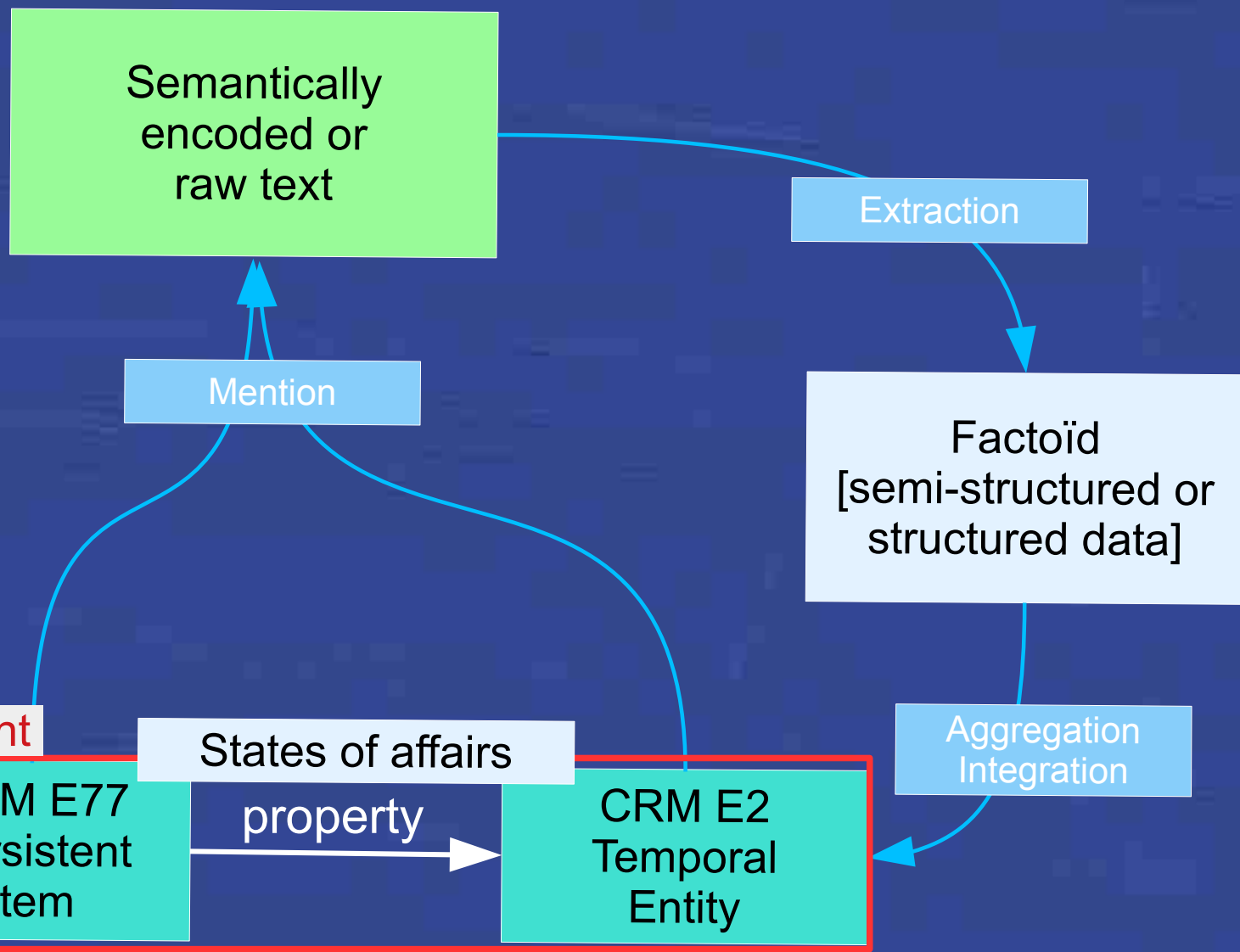


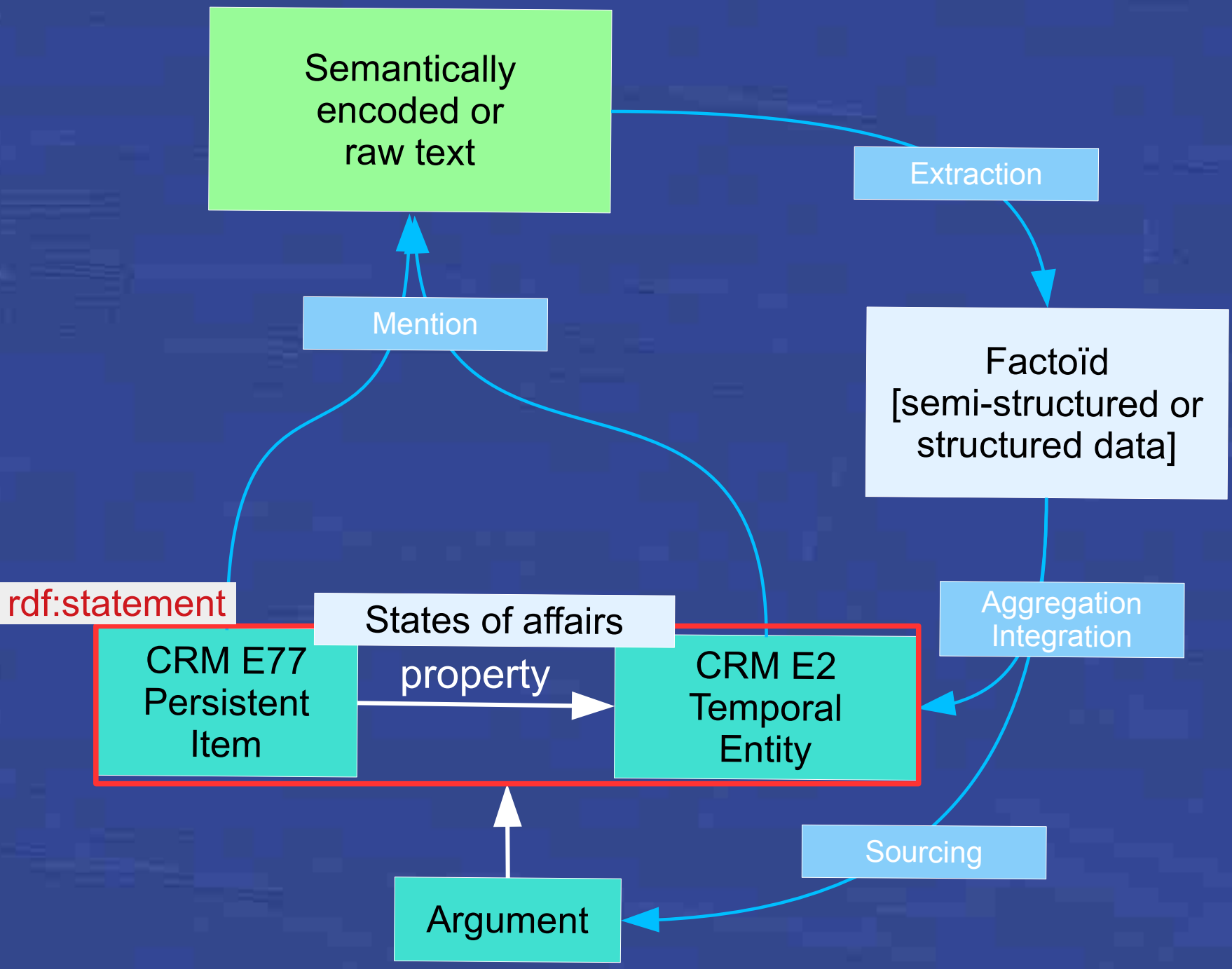
« Quantifiers for properties are provided for the purpose of semantic clarification only, and should **not** be treated as implementation recommendations.

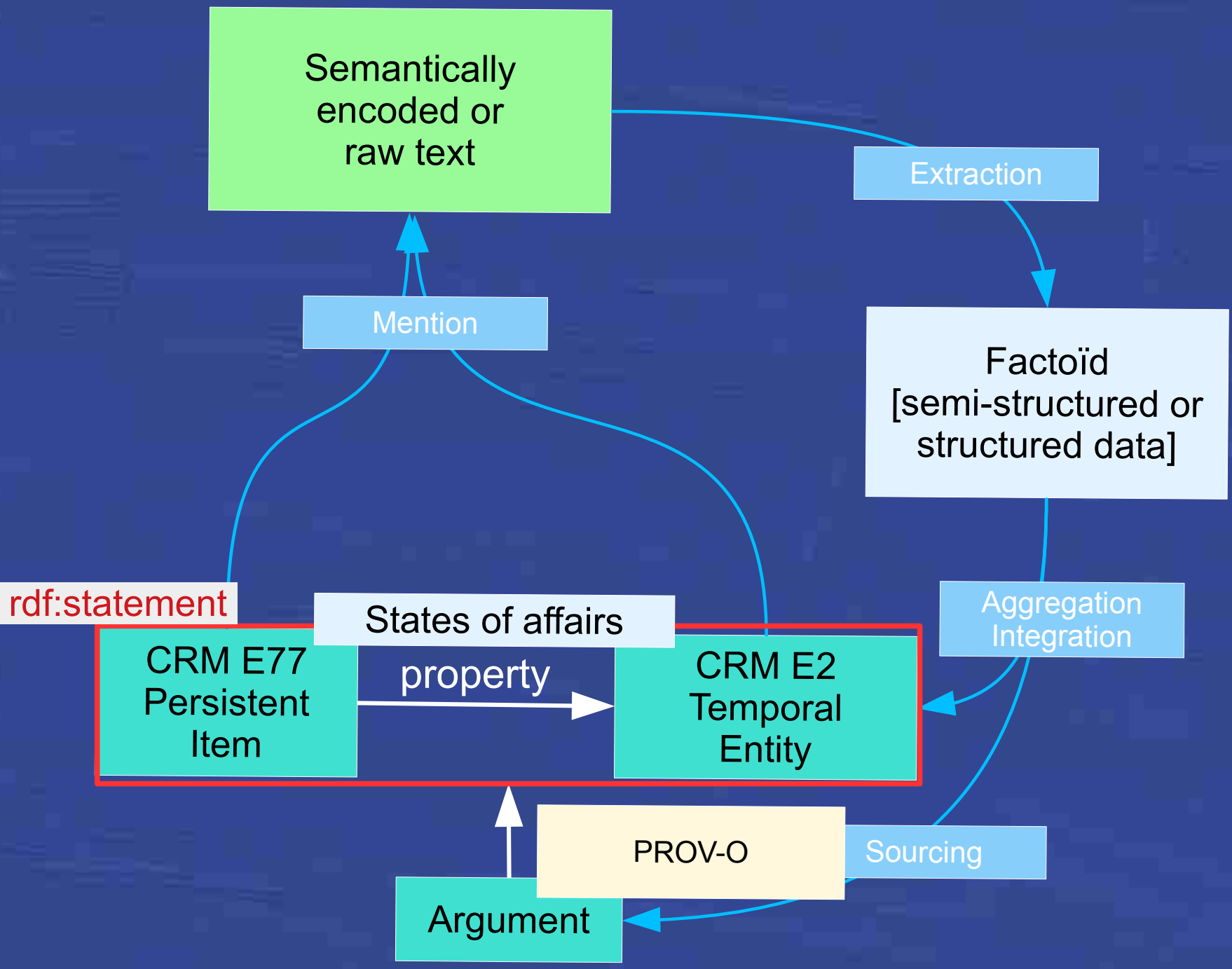
The CRM **has been designed to accommodate alternative opinions** and **incomplete information**, and therefore **all** properties should be implemented as optional and repeatable for their domain and range (“many to many (0,n:0,n)”).

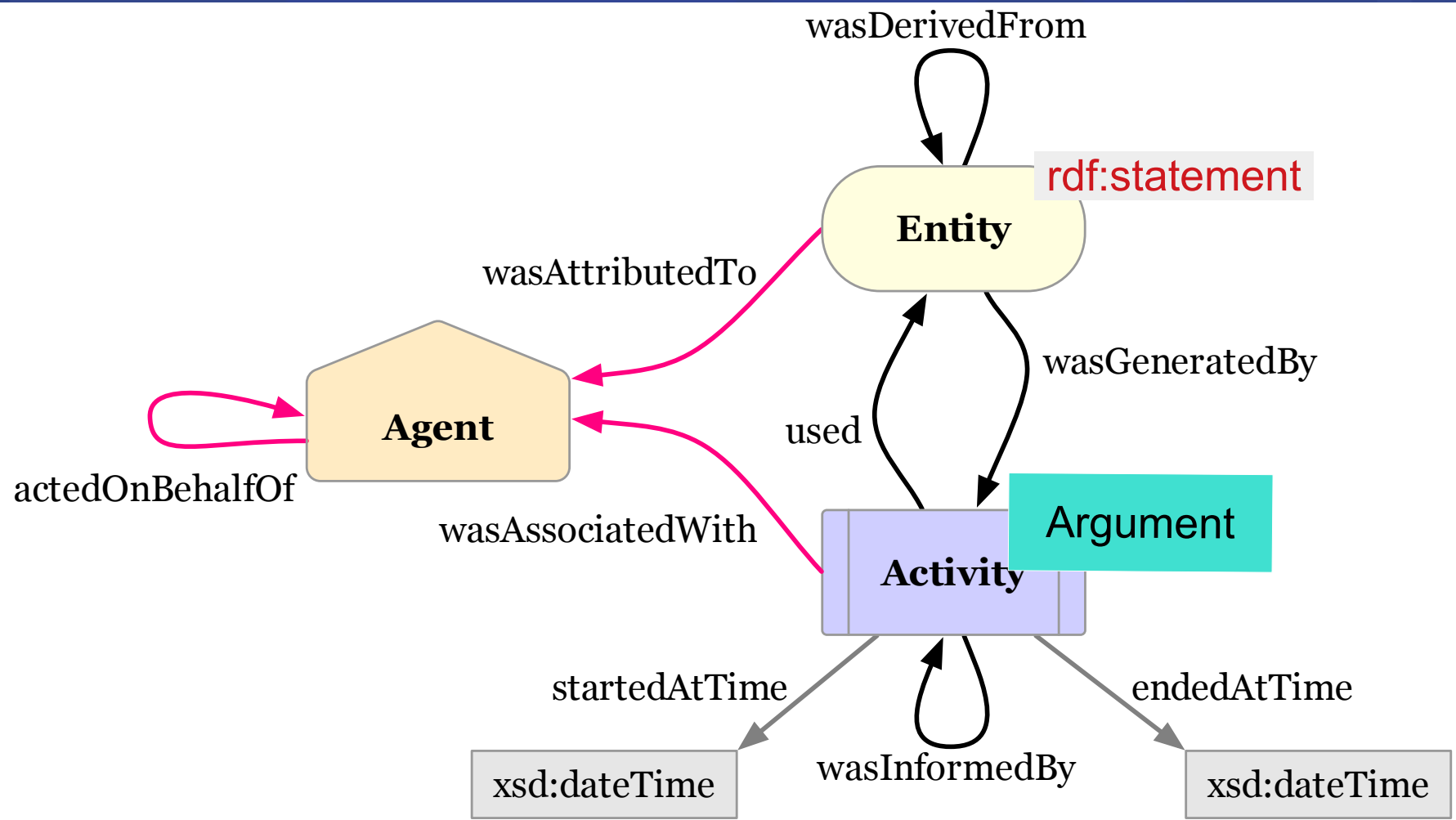
Therefore the term “cardinality constraints” is avoided here, as it typically pertains to implementations. » (CRM 6.2)





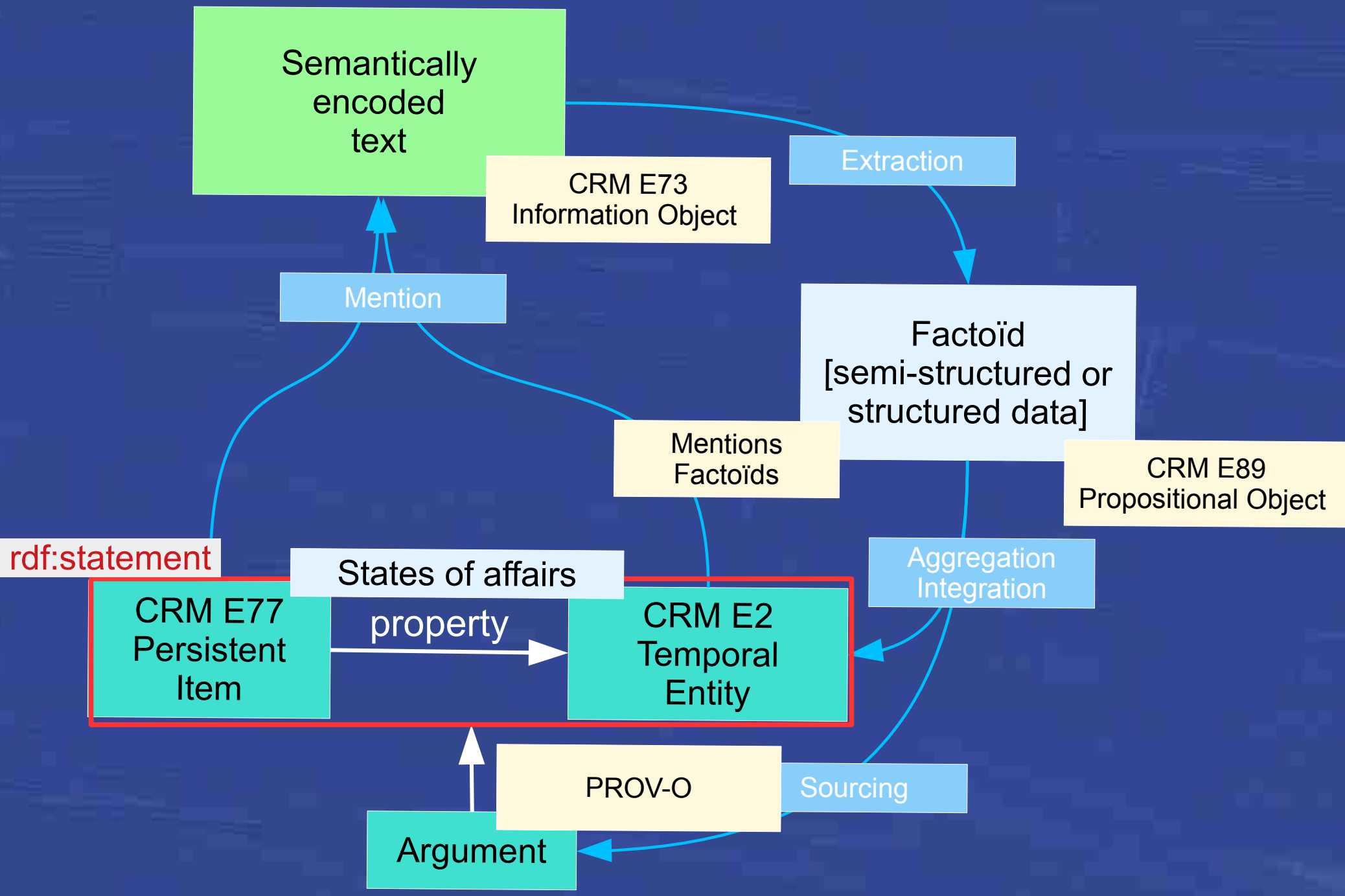






PROV-O

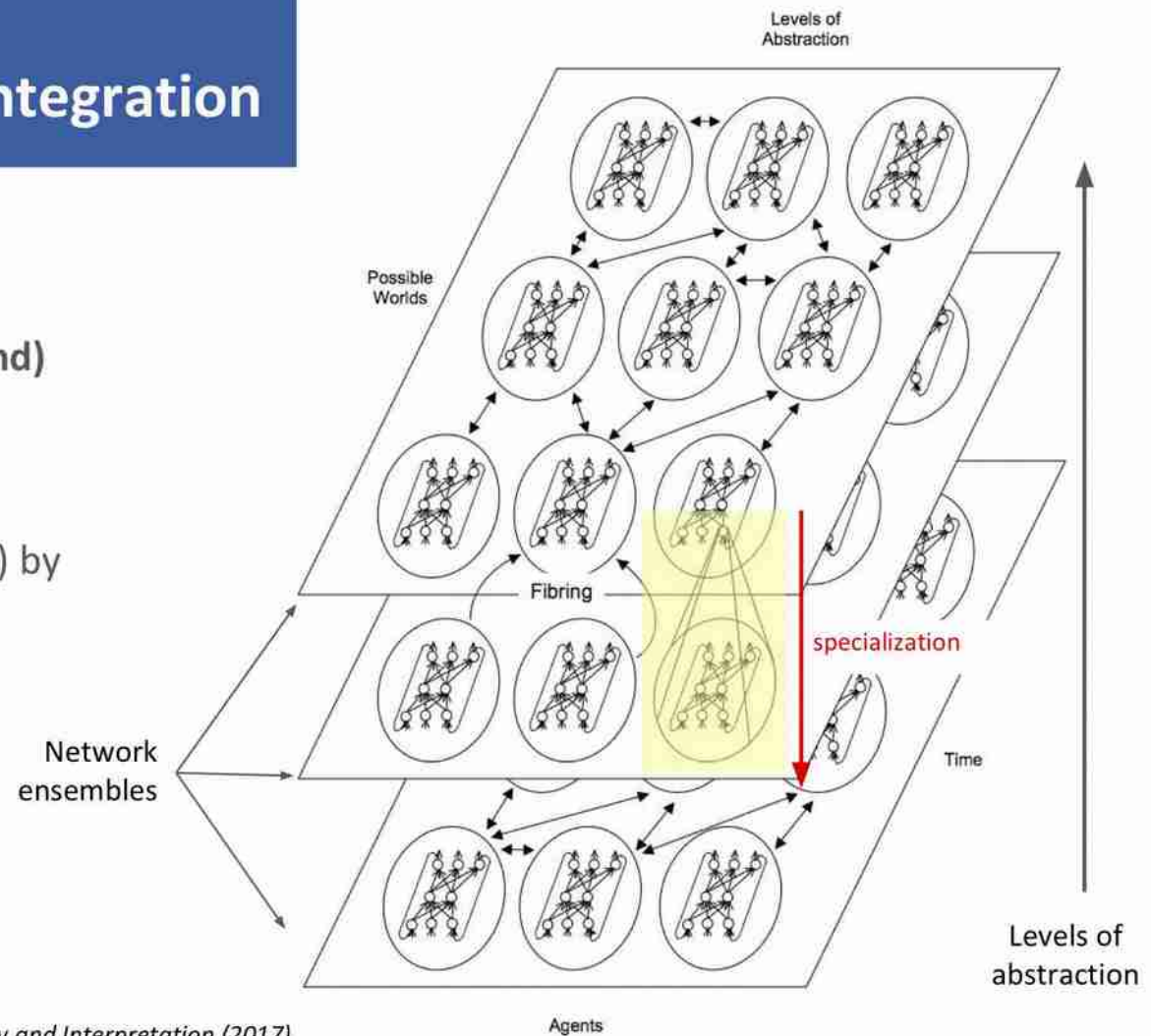
Provenance is information about entities, activities, and people involved in **producing a piece of data or thing**, which can be used to form assessments about its quality, reliability or trustworthiness.

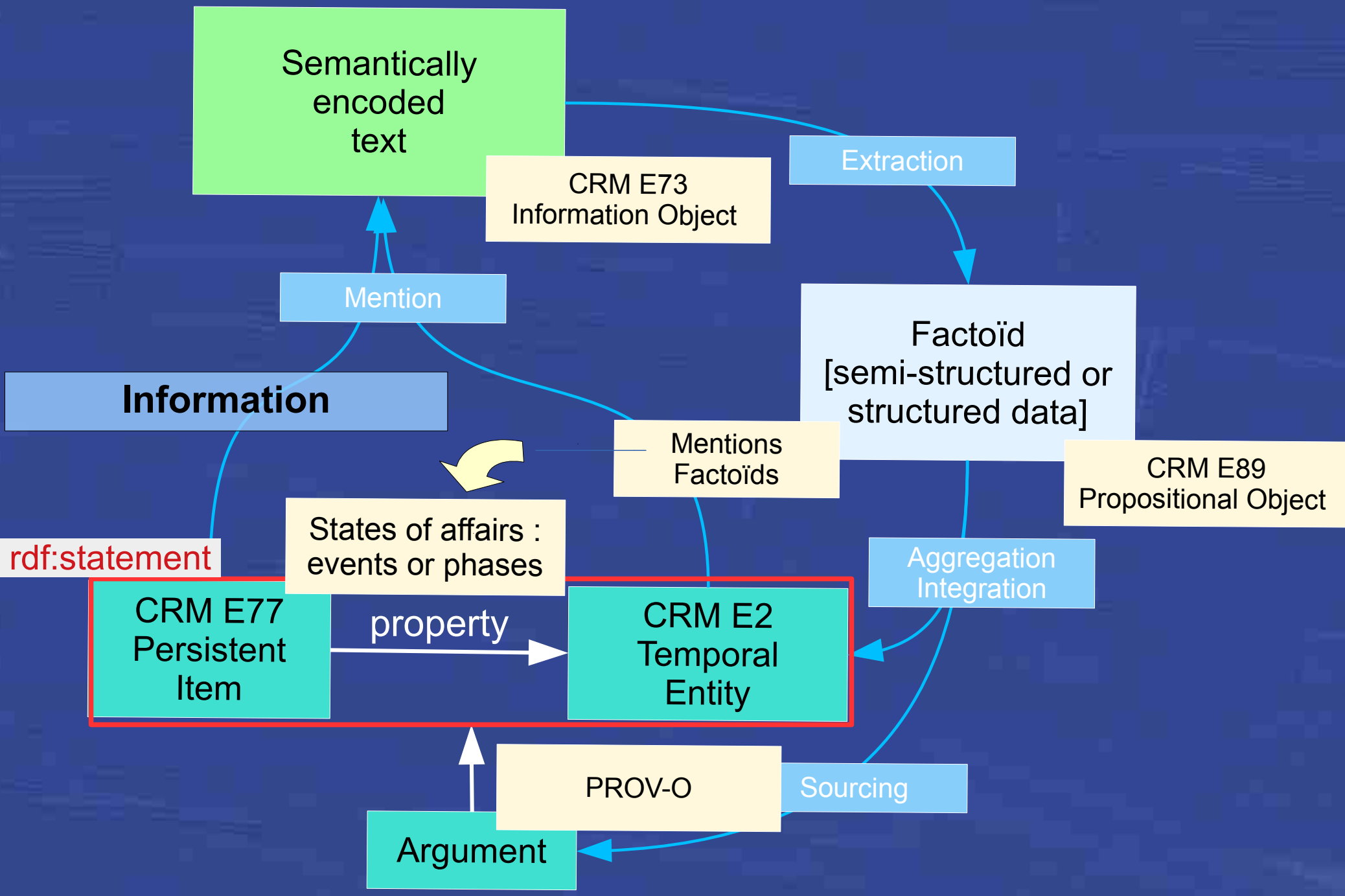


Towards Neuro-Symbolic Integration

Neuro-Symbolic Systems

1. Translation of **symbolic (background) knowledge into the network**
2. **Learning of additional knowledge** from examples (and generalisation) by the network
3. **Executing the network** (i.e. reasoning), and
4. **Symbolic knowledge extraction** from the network.





dataforhistory.org

develop methods and build infrastructure for
digital geo-historical research

FAIR

Findable

Accessible

Interoperable

Re-usable

«There is an urgent need to improve the infrastructure supporting the reuse of scholarly data »

Wilkinson, Mark D., Michel Dumontier, Ijsbrand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, et al. “

The FAIR Guiding Principles for Scientific Data Management and Stewardship.” *Scientific Data* 3 (March 15, 2016): 160018.

The FAIR data principles

To be **Findable**:

- F1. (meta)data are assigned a globally unique and eternally *persistent identifier*.
- F2. data are described with rich *metadata*.
- F3. (meta)data are registered or indexed in a *searchable resource*.
- F4. metadata specify the data identifier.

To be **Accessible**:

- A1 (meta)data are retrievable by their identifier using a *standardized communications protocol*.
 - A1.1 the protocol is open, free, and universally implementable.
 - A1.2 the protocol allows for an authentication and authorization procedure, where necessary.
- A2 *metadata are accessible*, even when the data are no longer available.

The FAIR Data Principles

To be **Interoperable**:

- I1. (meta)data use a *formal, accessible, shared, and broadly applicable language for knowledge representation*.
- I2. (meta)data use *vocabularies that follow FAIR principles*.
- I3. (meta)data include qualified references to other (meta)data.

To be **Re-usable**:

- R1. meta(data) have a plurality of accurate and relevant attributes.
 - R1.1. (meta)data are released with a *clear and accessible data usage license*.
 - R1.2. (meta)data are associated with their *provenance*.
 - R1.3. (meta)data meet *domain-relevant community standards*.